BCFRT IRA Plan

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Appendix I

Notice of Responsibility

MassDEP

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

August 4, 2016

Barnstable County Commissioners
ATTN: Mr. Jack Yunits, County Administrator
3195 Main Street, Superior Courthouse
Barnstable, Massachusetts 02630

RE: **BARNSTABLE - HYANNIS**
Release Tracking Number (RTN) 4-0026179
Barnstable Fire/Rescue Training Academy
Off Mary Dunn Road
NOTICE OF RESPONSIBILITY/
REQUEST FOR IMMEDIATE RESPONSE
ACTION/INTERIM DEADLINE

This is an important notice.
Failure to take appropriate action in response
to this notice could result in serious legal consequences

Dear Mr. Yunits:

The Massachusetts Department of Environmental Protection (MassDEP or the Department), Bureau of Waste Site Cleanup is tasked with ensuring the cleanup of oil and hazardous material releases pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E). This law is implemented through regulations known as the Massachusetts Contingency Plan (310 CMR 40.0000 et seq. – the MCP). Both M.G.L. c. 21E and the MCP require the performance of response actions to provide for the protection of harm to health, safety, public welfare and the environment which may result from releases and/or threats of releases of oil and/or hazardous material (OHM) at disposal sites.

MassDEP has reason to believe that there has been a release to the environment which has resulted in designating the Barnstable Fire/Rescue Training Academy (BFTA) as a disposal site as defined by the MCP. Specifically, perfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) and other related compounds that are contained in aqueous film-forming foam (AFFF) have been released to the soil and groundwater at the BFTA (the Site) and thereby impacted the groundwater source which supplies the Mary Dunn Public Water Supply Wells located to the east of the BFTA. The Site is defined by M.G.L. c. 21E and the MCP as any place where OHM have come to be located. MassDEP has assigned Release Tracking Number (RTN) 4-0026179 to this release/Site.

Further, MassDEP has reason to believe that you (as used in this letter, "you" refers to the Barnstable Fire/Rescue Training Facility) are a Potentially Responsible Party (PRP) with liability under M.G.L. c.21E §5, for response action costs. The purpose of this notice is to inform you of your legal responsibilities under State law for assessing and/or remediating the release at the Site. For purposes of this Notice of Responsibility (NOR), the terms and phrases used herein shall have the meaning ascribed to such terms and phrases by the MCP unless the context clearly indicates otherwise.

BACKGROUND INFORMATION

In May 2012, the United States Environmental Protection Agency (EPA) published the final rule "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR3) for Public Water Systems" indicating that thirty chemical constituents, that have not historically been considered as drinking water contaminants, would be analyzed in samples collected from wells serving large public water systems and a representative number of public water systems serving less than 10,000 people from 2013 to 2015.

The contaminants to be analyzed included, among other compounds, PFAS, including PFOS and PFOA. Collectively, PFAS are considered "emerging contaminants" which are contaminants that were previously unregulated by any state or the federal government but due to increasing concerns about their widespread use, reports of their presence in public water supplies, and a growing body of information that the toxicity, mobility and bioaccumulation potential of these compounds have the potential to pose adverse effects to human health and the environment, the EPA included PFAS in their UCMR3 sampling program.

In May 2016, the EPA promulgated a Health Advisory (HA) for PFAS of 0.07 micrograms per liter (µg/L) for PFOS and PFOA combined. The EPA "*Fact Sheet, PFOS and PFOA Drinking Water Health Advisories*" states that if both PFOS and PFOA are detected, the combined concentrations should be compared to the 0.07 µg/L lifetime HA. The EPA HA is based on the best available peer-reviewed studies of the effects of PFOA and PFOS on laboratory animals (rats and mice), and was also informed by epidemiological studies of human populations that have been exposed to PFAS. These studies indicate that exposure to PFOA and PFOS above certain concentrations may result in adverse health effects, including developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations), cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), thyroid effects and other effects (e.g., cholesterol changes).

PFAS have been widely used in industrial and consumer applications, including stain- and water-resistant coatings for fabrics and carpets, oil-resistant coating for paper products approved for food contact, mining and oil well surfactants, floor polishes, insecticide formulations and AFFF.

Given the above, PFAS are therefore considered a hazardous material pursuant to the MCP, specifically 310 CMR 40.0342(1)(a), and is therefore subject to the requirements of M.G.L. c. 21E and the MCP.

RELEASE/SITE SPECIFIC INFORMATION

On November 30, 2013, water samples were collected from the three Mary Dunn Public Water Supply Wells in Hyannis and analyzed for PFAS under the EPA UCMR3 program. At that time, the samples from Mary Dunn Wells #1, #2 and #3 had 0.19 microgram per liter (µg/L), 0.17 µg/L and 0.11 µg/L of PFOS, respectively, and the sample from Mary Dunn Well #2 had 0.02 µg/L of PFOA.

Samples from the Mary Dunn Wells were collected on several occasions and analyzed for PFOS. The results are as follows:

Date/Location	Mary Dunn #1	Mary Dunn #2	Marry Dunn #3
1/9/2015	0.33 µg/L	0.96 µg/L	0.04 µg/L
3/19/2015	0.28 µg/L	1.6 µg/L	Not sampled
4/6/2015	Not sampled	Not sampled	0.11 µg/L

At the time the above samples were collected and analyzed, the EPA Provisional Health Advisory (PHA) was 0.2 µg/L for PFOS. Based on the above information, the Hyannis Water Division removed Mary Dunn Wells #1 and #2 from service and procured treatment for these wells to meet summer water supply demand. Treatment of the water using granulated activated carbon (GAC) from the Mary Dunn Wells #1 and #2 began in July 2015. The treated water was blended with water from Mary Dunn Well #3 to provide water to the distribution system to below the PHA of 0.2 µg/L. After the EPA revised the PHA to the current Health Advisory of 0.07 µg/L in May 2016, the Hyannis Water Division removed Mary Dunn Well #3 from service and procured GAC treatment for this well. The GAC treatment system for Mary Dunn Well #3 was completed and the well was returned to service in July 2016.

Given the fact that AFFF containing PFAS was used at the BFTA (which is located approximately 1,000 feet west of the Mary Dunn Wells), you initiated a subsurface environmental investigation in November 2013 to determine if the PFAS has impacted the groundwater at the BFTA. Results of groundwater sampling conducted in November 2013 indicated that PFOS was detected in the groundwater at concentrations up to 3.9 µg/L. Subsequent analysis indicated that PFOS was detected in the groundwater up to 320 µg/L and that the extent of PFOS detected in the groundwater extended to the Mary Dunn Wells. In addition, soil samples collected from the BFTA contained PFOS at concentrations ranging from 0.002 to 4.9 milligrams per kilogram (mg/kg) and PFOS was detected in both the surface water and the sediment in Flintrock Pond immediately adjacent to the BFTA.

On July 17, 2015 you re-activated recovery well PRW-4 of the pre-existing groundwater recovery and treatment system to reduce the concentration of PFAS in the groundwater upgradient of the Mary Dunn Wells. The groundwater was pumped from PRW-4 at approximately 60 gallons per minute (gpm) and treated with GAC and re-injected upgradient of the recovery well. The groundwater recovery and treatment system has been operating since and has treated approximately 15 million gallons of groundwater.

Given that PFAS have been detected at elevated concentrations in the soil and groundwater at the BFTA, that groundwater flow direction is from the BFTA to the Mary Dunn Wells, and that PFOS has been detected in the samples collected from the Mary Dunn Wells, MassDEP has determined that releases of PFAS from the use of AFFF at the BFTA is a source of PFAS detected in the Mary Dunn Wells.

STATUTORY LIABILITIES

M.G.L. c. 21E and the MCP require the performance of response actions to prevent harm to health, safety, public welfare and the environment which may result from this release and/or threat of release and govern the conduct of such actions.

As a current owner of the property where a release has occurred, you are a Potentially Responsible Party (PRP) with liability under M.G.L. c.21E §5, for response action costs. Section 5 makes the following parties liable under the Commonwealth of Massachusetts: current owners or operators of a site from or at which there is or has been a release or threat of release of oil and/or hazardous material; any person who has owned or operated a site at the time hazardous material was stored or disposed of; any person who arranged for the transport, disposal, storage or treatment of hazardous material to or at a site; any person who transported hazardous material to a transport, storage or treatment site from which there is or has been a release or threat of release of such material; and any person who otherwise caused or is legally responsible for a release or threat of release of oil or hazardous material at a site.

This liability is "strict", meaning that it is not based on fault, but solely on your status as owner, operator, generator, transporter, disposer or other person specified in M.G.L. c.21E §5. This liability is also "joint and several", meaning that you may be liable for all response action costs incurred at a disposal site regardless of the existence of any other liable parties.

The MCP requires PRPs to take necessary response actions at properties where there is, or has been, a release and/or threat of release of oil and/or hazardous material. If you do not take the necessary response actions, or fail to perform them in an appropriate and timely manner, MassDEP is authorized by M.G.L. c. 21E to perform the work. By taking such actions, you can avoid liability for response action costs incurred by MassDEP in performing these response actions and any sanctions that may be imposed for failure to perform response actions under the MCP.

The MCP requires PRPs and any other person undertaking response actions to perform Immediate Response Actions (IRAs) in response to sudden releases, Imminent Hazards (IH) and Conditions of Substantial Release Migration (SRM). Such persons must continue to evaluate the need for IRAs and notify MassDEP immediately if such a need exists.

If you are a PRP and you have reason to believe that your performance of the necessary response actions is beyond your technical, financial or legal ability, you should promptly notify MassDEP in writing of your inability in accordance with M.G.L. c. 21E , subsection 5(e), and 310 CMR 40.0172. If you assert or demonstrate in compliance therewith that performing or paying for such response action is beyond your ability, subsection 5(e) provides you with a limited defense to an action by the Commonwealth for recovery of two to three times MassDEP's response action costs and 310 CMR 40.0172 provides you with a limited defense to MassDEP's assessment of civil administrative penalties.

You should be aware that you may have claims against third parties for damages, including claims for contribution or reimbursement for the costs of cleanup. Such claims do not exist indefinitely but are governed by laws that establish the time allowed for bringing litigation. MassDEP encourages you to take any action necessary to protect any such claims you may have against third parties.

You must employ or engage a Licensed Site Professional (LSP) to manage, supervise or actually perform the necessary response actions at this site. You may obtain a list of the names and addresses of licensed professionals from the Board of Registration of Hazardous Waste Site Cleanup Professionals by calling (617) 556-1091, or visiting http://www.state.ma.us/lsp.

Response actions at the Site will not be deemed to be completed unless and until a level of No Significant Risk as defined at 310 CMR 40.0900 exists or has been achieved in compliance with the MCP. The MCP requires persons undertaking response actions at a disposal site to submit to MassDEP a Permanent Solution Statement prepared by a LSP upon determining that a level of No Significant Risk exists or has been achieved at the Site. You will be required to pay Annual Compliance Assurance Fees for the Site until a Permanent Solution is achieved.

NECESSARY IMMEDIATE RESPONSE ACTIONS AND INTERIM DEADLINE

The detection of PFAS in the samples collected from the Mary Dunn Wells has been addressed by the GAC treatment systems installed by the Hyannis Water Department. However, additional public and private water supply wells are located downgradient of the BFTA. Releases of oil and/or hazardous materials (OHM) that impact public and private water supplies are releases that could pose an Imminent Hazard and, pursuant to 310 CMR 40.0311(7), require notification to MassDEP within two hours. As such these releases require that an Immediate Response Action (IRA) be conducted pursuant to 310 CMR 40.0412(1).

Therefore, MassDEP hereby requests that you submit an IRA Plan prepared in compliance with 310 CMR 40.0424 to evaluate whether Imminent Hazards exist relative to public and private water supply wells downgradient of the BFTA. The IRA Plan should identify all public and private water supply wells located downgradient of the BFTA and provide any analytical data for any of these wells that have been sampled and analyzed for PFAS. If any public or private water supply well has not been sampled and analyzed for PFAS, the IRA Plan should include a schedule for conducting this work. The IRA Plan should also include the measures that BFTA will conduct to prevent, eliminate, and/or abate any hazards associated with consumption of the drinking water impacted by PFAS above the HA of 0.07 µg/L. Such measures can include, but are not limited to, provision of bottled water, installation of GAC system(s), or connection of private water supply wells to public water. A schedule for implementing these measures should be included in the IRA Plan.

In addition, MassDEP is of the opinion that reducing the mass of PFAS detected in the soil and groundwater at the BFTA is necessary to prevent, eliminate, or minimize harm to health, safety, public welfare or the environment and, pursuant to 310 CMR 40.0412(4), requests that the IRA Plan include a proposal designed to reduce the concentration of PFAS in the groundwater migrating off the BFTA Site including, but not limited to:

1. Excavating the soil "hot spot" contaminated with PFAS that is acting as an on-going source of groundwater contamination; and/or

2. Expanding the existing groundwater recovery and treatment system to include additional recovery wells or an increased pumping rate to decrease the mass of PFAS in the groundwater at the BFTA.

MassDEP hereby requests that you submit the IRA Plan **on or before September 15, 2016.**

INTERIM DEADLINE

The date established above constitutes an Interim Deadline established pursuant to 310 CMR 40.0167. Failure to comply with an Interim Deadline may result in enforcement actions by the MassDEP, including, but not limited to, the issuance of a Notice of Noncompliance, an Administrative Penalty, and/or Enforcement Orders, or, referral to the Massachusetts Attorney General's Office.

ADDITIONAL RESPONSE ACTIONS

Additional submittals are necessary with regard to this notification, including, but not limited to, the filing of a written IRA Plan, IRA Completion Statement and/or a Permanent Solution Statement (PSS). The MCP requires that a fee of $1,200.00 be submitted to the Department when a Permanent Solution Statement is filed greater than 120 days from the date of initial notification. Specific approval is required from the

Department for the implementation of all IRAs and may be required for Release Abatement Measures (RAMs). RAMs may not be conducted until a RAM Plan is submitted pursuant to 310 CMR 40.0443. Assessment activities, the construction of a fence and/or the posting of signs are actions that are exempt from this approval requirement.

The MCP requires persons undertaking response actions to perform IRAs in response to sudden releases, IHs and Conditions of SRM. In accordance with 310 CMR 40.0426, an IH Evaluation shall be performed as part of an IRA within 14 days of obtaining knowledge of such a condition and shall be submitted to the Department within 60 days.

In addition to verbal notification, 310 CMR 40.0333 requires that a completed Release Notification Form (RNF) be submitted to MassDEP **within sixty (60) calendar days of receipt of this Notice of Responsibility.**

This site shall not be deemed to have had all the necessary and required response actions taken unless and until all substantial hazards presented by the release and/or threat of release have been eliminated and a level of No Significant Risk exists or has been achieved in compliance with M.G.L. c. 21E and the MCP.

If you have any questions relative to this Notice, please contact Angela Gallagher at the letterhead address or by calling (508) 946-2790. All future communication regarding this release must reference the following Release Tracking Number: **4-0026179**.

Sincerely,

Gerard M.R. Martin
Deputy Regional Director
Bureau of Waste Site Cleanup

M/AG/ag

CERTIFIED MAIL # 7016 0750 0000 1748 8462
RETURN RECEIPT

ec: Town of Barnstable
Board of Health
Selectmen's Office

Barnstable Department of Public Works, Water Supply Division
Dan Santos, DPW Director, Daniel.Santos@town.barnstable.ma.us
Hans Keijser, Water Superintendent, Hans.Keijser@town.barnstable.ma.us

DEP – SERO
Millie Garcia-Serrano, Regional Director
David Johnston, Deputy Regional Director, BWR
Jonathan Hobill, Regional Engineer, BWR
Angela Gallagher, Project Manager, BWSC, Brownfields, C&E, and Risk Reduction Section
Lisa Ramos, Regional Enforcement Office

DEP – Boston
Paul Locke, BWSC Assistant Commissioner

LSP
Tom Cambareri
tcambareri@capecodcommission.org

cc: DEP - SERO
Regional Enforcement Office

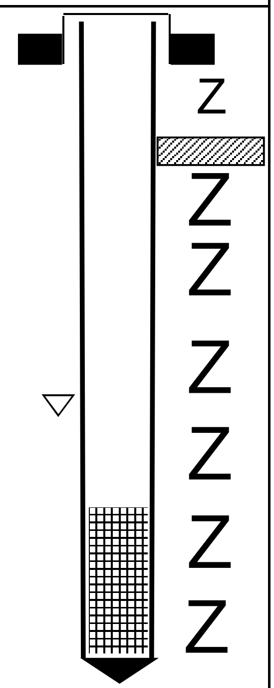
Appendix II

Soil Borings

Cape Cod Test Boring	Project	Boring No. PC1
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.619' N & 070° 17.025' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector: Tom Cambareri & Scott Michaud	Date start: 12/18/2006 Date end: 12/18/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 58 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x30' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					6" stickup with buffalo box	
0			0 - 10		F-M-C gravel	
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56			56 ±		Clay	Well Depth: 40'
58						Static: 29'
60						End of boring: N/A
62						End of sample: N/A
64						
66						

Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

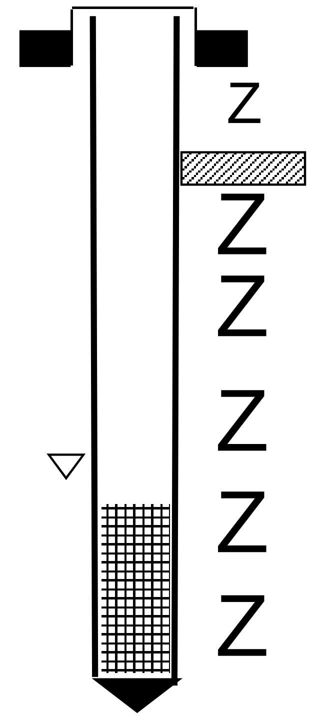
CAPE COD TEST BORING **BORING NO. PC1**

Cape Cod Test Boring	Project	Boring No. PC2
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location: 41° 40.628' N & 070° 17.024' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector: Tom Cambareri & Scott Michaud	Date start: 12/18/2006 Date end: 12/18/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x25' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description	Well Installation
+2					6" stickup with buffalo box	
0			0 - 20		F-M-C gravel	
2						
4						
6						
8						
10						
12						
14						
16						
18						
20			20 - 35		F-M-C brown sand	
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 35'
58						Static: 23'
60						End of boring: N/A
62						End of sample: N/A
64						
66						



Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used	Well Installation Key
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		- SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC2**

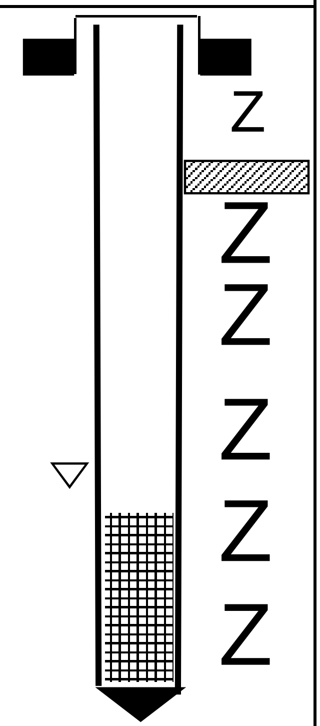
Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC3 Sheet 1 of 1

Driller: Patrick Desmond Helper: William Urqhart Inspector: Tom Cambareri & Scott Michaud	Boring location:41° 40.634' N & 070° 17.024' W Ground Surface Elevation: Date start: 12/18/2006 Date end: 12/18/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 45 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x25' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"	
+2					6" stickup with buffalo box
0			0 - 20		Gravel
2					
4					
6					
8					
10					
12					
14					
16					
18					
20			20 - 35		F-M-C light brown sand
22					
24					
26					
28					
30			30 - 35		F-M brown sand
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 35'
Static: 24'
End of boring: N/A
End of sample: N/A

Granular Soils		Cohesive Soils		Proportions Used
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC3**

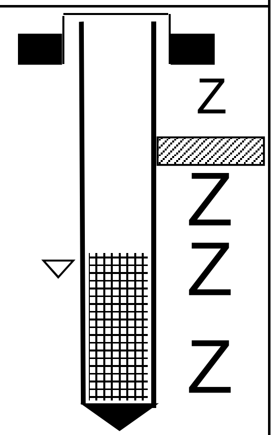
Cape Cod Test Boring	Project	Boring No. PC4
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: William Urqhart	Boring location:41° 40.638' N & 070° 17.053' W
Helper: Patrick Desmond	Ground Surface Elevation:
Inspector: Tom Cambareri & Scott Michaud	Date start: 12/18/2006 Date end: 12/18/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 30 feet with solid augers; hole collapsed at 6'; drilled with hollow stem augers to 30' and set well. Pumped off with whale pump.	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x15' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 15		Gravel
2					
4					
6					
8					
10					
12					
14					
16			15 - 30		F-M-C brown sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 23' 6"
Static: 14' 6"
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC4**

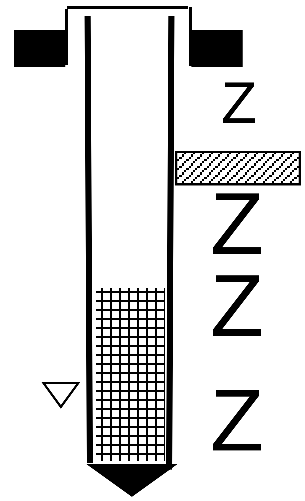
Cape Cod Test Boring	Project	Boring No. PC5
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: William Urqhart	Boring location:41° 40.642' N & 070° 17.065' W
Helper: Patrick Desmond	Ground Surface Elevation:
Inspector: Tom Cambareri & Scott Michaud	Date start: 12/19/2006 Date end: 12/19/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 25 feet with hollow stem augers.	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x15' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 5		F-M gravel
2					
4					
6			5 - 15		Gravel
8					
10					
12					
14					
16			15 - 25		F-M-C brown sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 25'
Static: 19'
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
- SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC5**

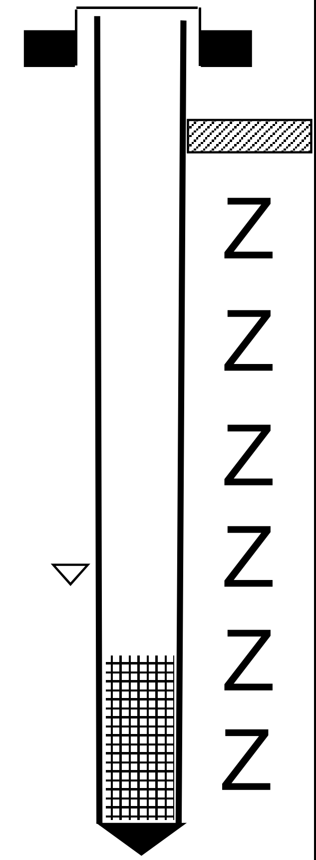
Cape Cod Test Boring	Project	Boring No. PC6
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.575' N & 070° 16.974' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/19/2006 Date end: 12/19/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers. Well was drilled, installed and abandoned.	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 10		Gravel; F-M sand
2					
4					
6					
8					
10			10 - 55		F-M-C brown sand
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 30'
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC6**

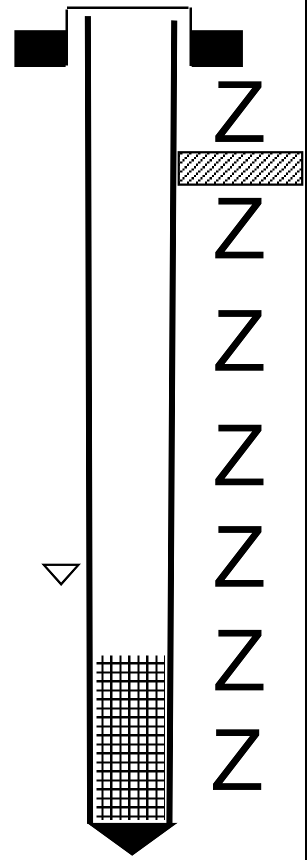
Cape Cod Test Boring	Project	Boring No. PC7
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.575' N & 070° 16.974' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/19/2006 Date end: 12/19/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 60 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0					
2					
4					
6					
8					
10					
12			12 - 15		Gravel
14					
16			15 - 49		F-M brown sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48			49 - 50		Hard layer
50			50 - 55		F-M brown sand
52					
54			55 - 58		Blue/Gray clay
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 30'
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC7**

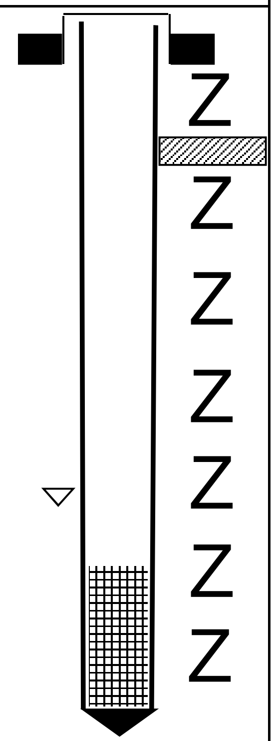
Cape Cod Test Boring	Project	Boring No. PC8
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.592' N & 070° 16.981' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/19/2006 Date end: 12/19/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 10		Gravel
2					
4					
6					
8					
10			10 - 45		F-M-C brown sand
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 29' 6"
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC8**

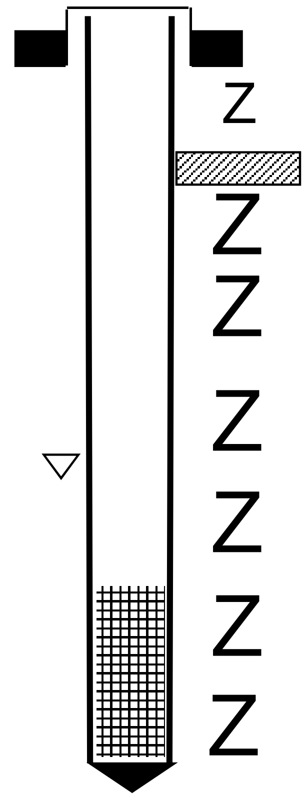
Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC9 Sheet 1 of 1

Driller: Patrick Desmond Helper: William Urqhart Inspector:	Boring location:41° 40.577' N & 070° 16.833' W Ground Surface Elevation: Date start: 12/20/2006 Date end: 12/20/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 50 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x30' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"	
+2					6" stickup with buffalo box
0			0 - 8		Gravel; F-M silty sand
2					
4					
6					
8			8 - 50		F-M-C brown sand
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 40'
Static: 17' 6"
End of boring: N/A
End of sample: N/A

Granular Soils		Cohesive Soils		Proportions Used
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC9**

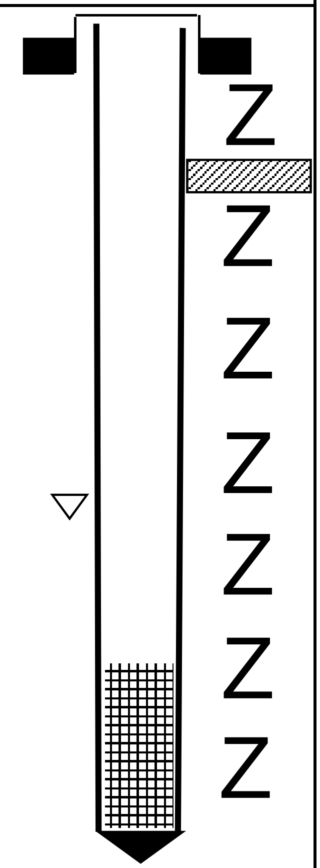
Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC10 Sheet 1 of 1

Driller: Patrick Desmond	Boring location:41° 40.588' N & 070° 16.843' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/19/2006 Date end: 12/19/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 60 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 10		Gravel; F-M silty sand
2					
4					
6					
8					
10			10 - 30		F-M brown sand
12					
14					
16					
18					
20					
22					
24					
26					
28					
30			30 - 40		F-M sand; trace silty sand
32					
34					
36					
38					
40			40 - 50		Silty sand/clay
42					
44					
46					
48					
50			50 - 58		F-M brown sand
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 25'
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

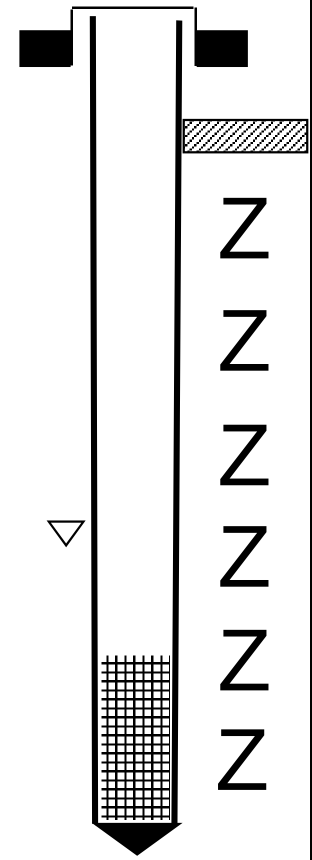
CAPE COD TEST BORING **BORING NO. PC10**

Cape Cod Test Boring	Project	Boring No. PC11
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.609' N & 070° 16.976' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/20/2006 Date end: 12/20/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 50 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					6" stickup with buffalo box	
0						
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 45'
58						Static: 28'
60						End of boring: N/A
62						End of sample: N/A
64						
66						



Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		- SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC11**

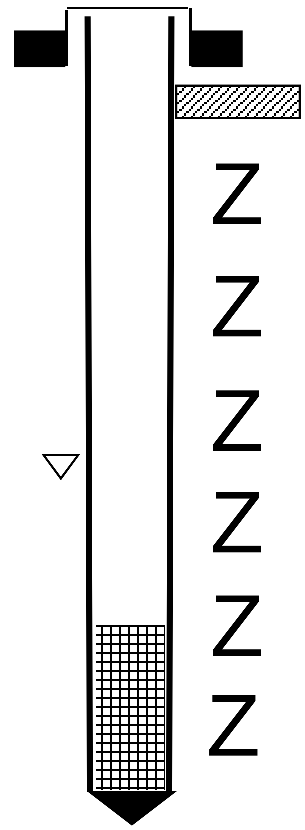
Cape Cod Test Boring	Project	Boring No. PC12
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.620' N & 070° 16.976' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/20/2006 Date end: 12/20/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 60 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 15		Gravel
2					
4					
6					
8					
10					
12					
14					
16			15 - 45		F-M-C sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46			45 - 55		F-M silty sand
48					
50					
52					
54					
56			55 - 59		Clay
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 26'
End of boring: N/A
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

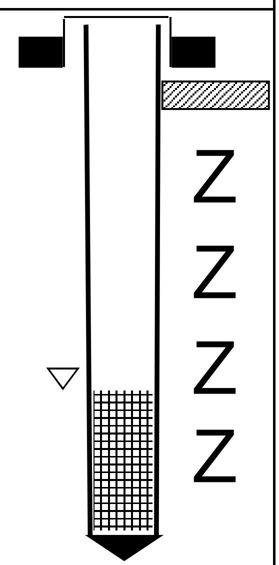
Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC12**

Cape Cod Test Boring	Project	Boring No. PC13
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.650' N & 070° 17.030' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/21/2006 Date end: 12/21/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 50 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x25' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					6" stickup with buffalo box	
0			0 - 5		F-M silty sand	
2						
4						
6			5 - 10		Gravel	
8						
10			10 - 50		F-M-C brown sand	
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 35'
58						Static: 24'
60						End of boring: 50'
62						End of sample: N/A
64						
66						

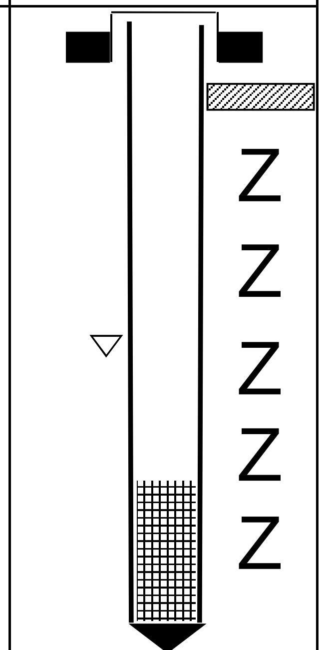
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC13**

Cape Cod Test Boring	Project	Boring No. PC14
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller:	Patrick Desmond	Boring location:41° 40.650' N & 070° 17.030' W	
Helper:	William Urqhart	Ground Surface Elevation:	
Inspector:		Date start: 12/21/2006	Date end: 12/21/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description	Well Installation
+2					6" stickup with buffalo box	
0			0 - 5		F-M silty sand	
2						
4						
6			5 - 15		Gravel	
8						
10						
12						
14						
16			15 - 45		F-M-C sand	
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46			45 - 50		F silty sand	
48						
50			50 - 55		Gray clay	
52						
54						
56						Well Depth: 42'
58						Static: 22'
60						End of boring: 55'
62						End of sample: N/A
64						
66						

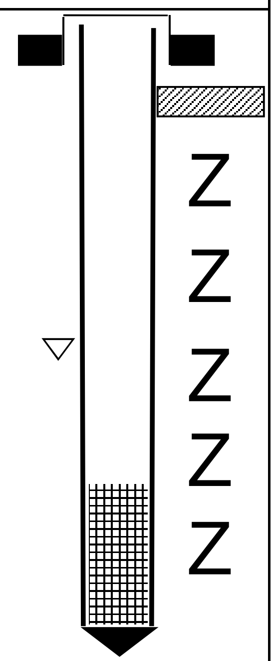
Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used	Well Installation Key
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING | **BORING NO. PC14**

Cape Cod Test Boring	Project	Boring No. PC15
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/21/2006 Date end: 12/21/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 57 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					6" stickup with buffalo box	
0			0 - 5		F silty sand	
2						
4						
6			5 - 15		Gravel	
8						
10						
12						
14						
16			15 - 45		F-M-C brown sand	
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46			45 - 57		F silty sand; clay	
48						
50						
52						
54						
56						Well Depth: 45'
58						Static: 28'
60						End of boring: 57'
62						End of sample: N/A
64						
66						

Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC15**

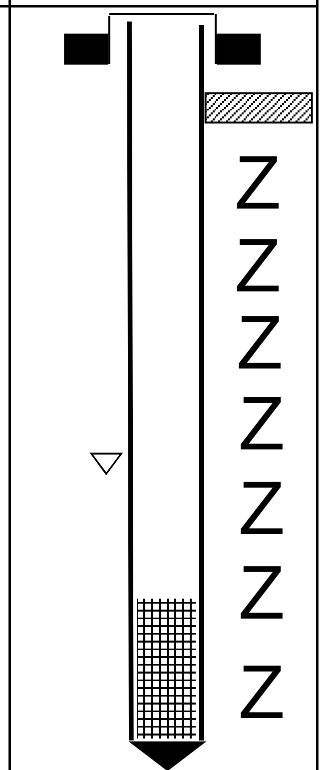
Cape Cod Test Boring	Project	Boring No. PC16A
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.608' N & 070° 16.929' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/21/2006 Date end: 12/21/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x40' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 5		F-M silty sand
2					
4					
6			5 - 15		Gravel
8					
10					
12					
14					
16			15 - 50		F-M-C sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50			50 - 59		Clay
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 50'
Static: 30'
End of boring: 59'
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

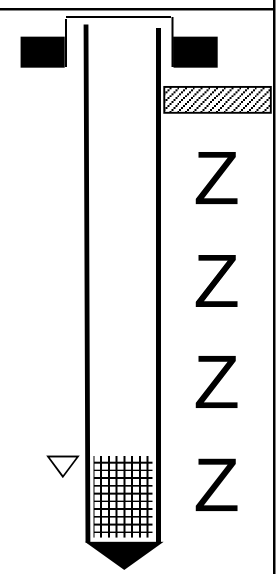
Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING | **BORING NO. PC16A**

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No.	PC16B
		Sheet 1 of	1
Driler: Patrick Desmond Helper: William Urqhart Inspector:		Boring location:41° 40.608' N & 070° 16.929' W Ground Surface Elevation: Date start: 12/21/2006	Date end: 12/21/2006
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: Screen Size:	 2"x30' SCH40 PVC FJT 2"x5'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 5		F-M silty sand
2					
4					
6			5 - 15		Gravel
8					
10					
12					
14					
16			15 - 50		F-M-C sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50			50 - 59		Clay
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 35'
Static: 30'
End of boring: 59'
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

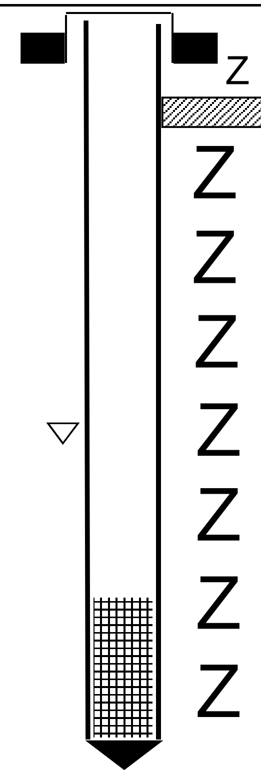
CAPE COD TEST BORING | **BORING NO. PC16B**

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC17 Sheet 1 of 1

Driller: Patrick Desmond Helper: William Urqhart Inspector:	Boring location: Ground Surface Elevation: Date start: 12/22/2006 Date end: 12/22/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x40' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					6" stickup with buffalo box	
0						
2						
4						
6						
8						
10			10 - 15		Gravel	
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50			50 - 54		F-M-C silty clay	
52						
54						
56						Well Depth: 50'
58						Static: 28'
60						End of boring: 54'
62						End of sample: N/A
64						
66						



Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC17**

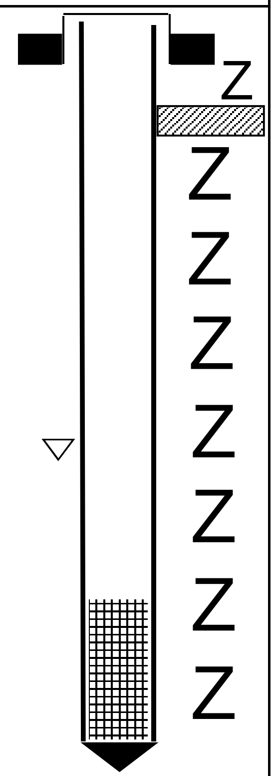
Cape Cod Test Boring	Project	Boring No. PC18
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:41° 40.586' N & 070° 16.919' W
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 12/22/2006 Date end: 12/22/2006

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes: Drilled to 55 feet with solid augers	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x40' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					6" stickup with buffalo box
0			0 - 5		Silty sand
2					
4					
6			5 - 15		Gravel
8					
10					
12					
14					
16			15 - 55		F-M-C sand
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 50'
Static: 29'
End of boring: 55'
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

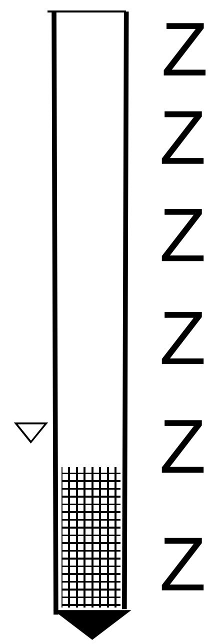
CAPE COD TEST BORING **BORING NO. PC18**

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC19 Sheet 1 of 1

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/16/2007 Date end: 1/16/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description	Well Installation
+2					Twist lock cap and 6"-8" stickup	
0			0 - 45		F-M-C brown sand	
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 45'
58						Static: 27'
60						End of boring: 45'
62						End of sample: N/A
64						
66						



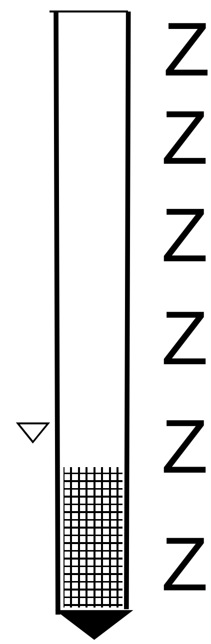
Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used	Well Installation Key
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC19**

Cape Cod Test Boring	Project	Boring No. PC20D
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/16/2007 Date end: 1/16/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					Twist lock cap and 6"-8" stickup	
0			0 - 15		Gravel	
2						
4						
6						
8						
10						
12						
14			15 - 45		F-M-C brown sand	
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 45'
58						Static: 27'
60						End of boring: 45'
62						End of sample: N/A
64						
66						

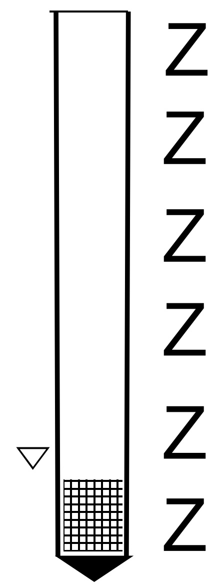
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC20D**

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC20S Sheet 1 of 1

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/16/2007 Date end: 1/16/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x30' SCH40 PVC FJT Screen Size: 2"x5'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					Twist lock cap and 6"-8" stickup	
0			0 - 15		Gravel	
2						
4						
6						
8						
10						
12						
14			15 - 45		F-M-C brown sand	
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 35'
58						Static: 29'
60						End of boring: 45'
62						End of sample: N/A
64						
66						

Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC20S**

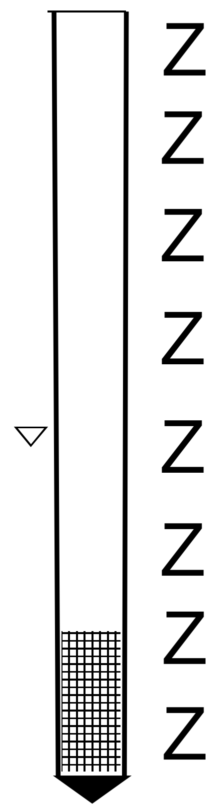
Cape Cod Test Boring	Project	Boring No. PC21D
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/16/2007 Date end: 1/16/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x40' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					Twist lock cap and 6"-8" stickup
0			0 - 15		Gravel
2					
4					
6					
8					
10					
12					
14			15 - 50		F-M-C brown sand
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 27.5'
End of boring: 50'
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

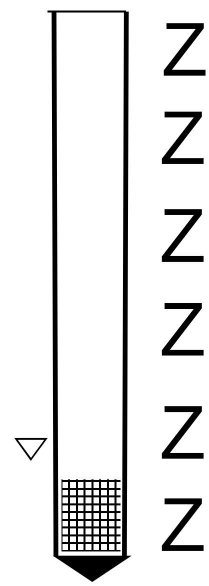
Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC21D**

Cape Cod Test Boring	Project	Boring No. PC21S
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/16/2007 Date end: 1/16/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x30' SCH40 PVC FJT Screen Size: 2"x5'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description	Well Installation
+2					Twist lock cap and 6"-8" stickup	
0			0 - 15		Gravel	
2						
4						
6						
8						
10						
12						
14			15 - 50		F-M-C brown sand	
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 35'
58						Static: 27.5'
60						End of boring: 50'
62						End of sample: N/A
64						
66						

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used	Well Installation Key
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

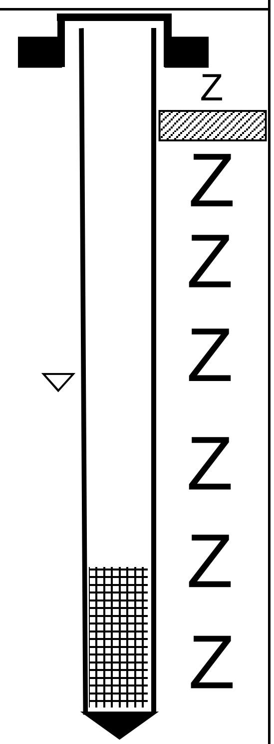
Cape Cod Test Boring	Project	Boring No. PC22
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location: 41° 40.604' 070° 16.821'
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/19/2007 Date end: 1/19/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description
+2					4"x5' well protector/6"-7" stickup
0			0 - 15		F-M-C brown sand; gravel
2					
4					
6					
8					
10					
12					
14			15 - 48		F-M-C brown sand; trace silt
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48			48 - 52		Silty sand; clay
50					
52					
54					
56					
58					
60					
62					
64					
66					

Well Installation



Well Depth: 45'
Static: 22'
End of boring: 52'
End of sample: N/A

Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%
> 50	V. DENSE	15 - 30	V. STIFF	
		> 30	HARD	

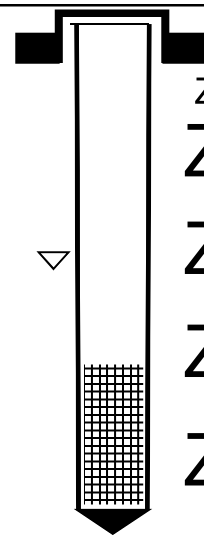
Well Installation Key
- CONCRETE
- SAND PACK
Z - SOIL BACKFILL
- BENTONITE
- SCREEN
- APPROX. WATER LEVEL

CAPE COD TEST BORING | **BORING NO. PC22**

Cape Cod Test Boring	Project	Boring No. PC23D
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Thomas E Desmond III	Boring location:
Helper: Neal Nevin	Ground Surface Elevation:
Inspector:	Date start: 1/19/2007 Date end: 1/19/2007

	Notes:PowerProbe	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x20' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth (FT)	Sample NO	PEN/REC	DEPTH/FT	BLOWS 6"	Sample Description	Well Installation
+2					Twist lock cap/6"x5' well protector	
0						
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 30'
58						Static: 14'
60						End of boring: 30'
62						End of sample: N/A
64						
66						

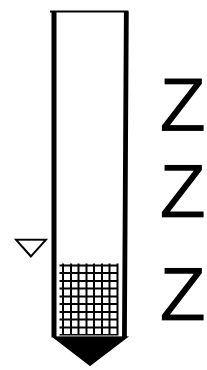
Granular Soils BLOWS/FT	DENSITY	Cohesive Soils BLOWS/FT	DENSITY	Proportions Used	Well Installation Key
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC23D**

Cape Cod Test Boring	Project	Boring No. PC23S
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Thomas E Desmond III	Boring location:
Helper: Neal Nevin	Ground Surface Elevation:
Inspector:	Date start: 1/19/2007 Date end: 1/19/2007

	Notes:PowerProbe	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x15' 9" SCH40 PVC FJT Screen Size: 2"x5'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					Twist lock cap	
0						
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 20' 9"
58						Static: 14'
60						End of boring: 30'
62						End of sample: N/A
64						
66						

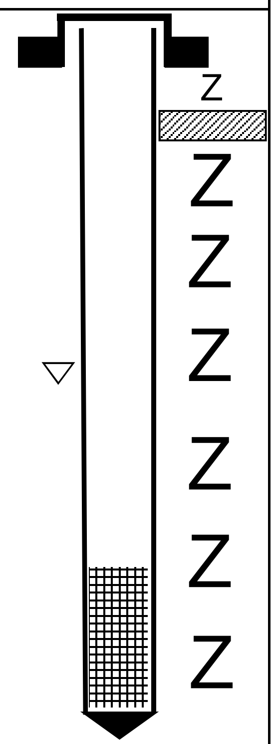
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		- CONCRETE
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- SAND PACK
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	Z - SOIL BACKFILL
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	- BENTONITE
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	# - SCREEN
> 50	V. DENSE	15 - 30	V. STIFF		▽ - APPROX. WATER LEVEL
		> 30	HARD		

CAPE COD TEST BORING | **BORING NO. PC23S**

Cape Cod Test Boring	Project	Boring No. PC24
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Patrick Desmond	Boring location:
Helper: William Urqhart	Ground Surface Elevation:
Inspector:	Date start: 1/19/2007 Date end: 1/19/2007

Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					4"x5' well protector/6"-7" stickup	
0			0 - 15		F-M-C brown sand; gravel	
2						
4						
6						
8						
10						
12						
14			15 - 48		F-M-C silty brown sand	
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48			48 - 50		Fine silty clay	
50						
52						
54						
56						Well Depth: 45'
58						Static: 21'
60						End of boring: 49'
62						End of sample: N/A
64						
66						

Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

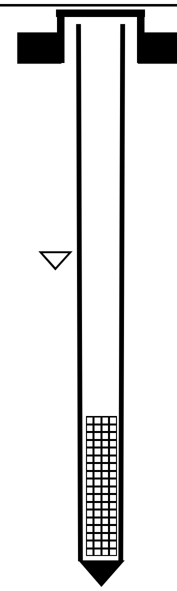
CAPE COD TEST BORING | **BORING NO. PC24**

Cape Cod Test Boring	Project	Boring No. PC25
5 Rayber Road, Orleans, MA 02653	Cape Cod Commission	
(508) 240-1000	BCFTA project	Sheet 1 of 1
div. Desmond Well Drilling, Inc.	Barnstable	

Driller: Thomas E Desmond III	Boring location:	
Helper: Neal Nevin	Ground Surface Elevation:	
Inspector:	Date start: 1/24/2007	Date end: 1/24/2007

Direct push sampler consists of 4' x 2 3/8" G3 dual tube direct push steel tooling with 4' x 1 1/2" PVC liner with 201 ft lb hydraulic hammer (percussion rate 2200 bpm)	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 1"x35' SCH40 PVC FJT Screen Size: 1"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					4"x5' well protector	
0			0 - 20		F-M-C sand; gravel	
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						Well Depth: 41'
58						Static: 13.6'
60						End of boring: 30'
62						End of sample: N/A
64						
66						

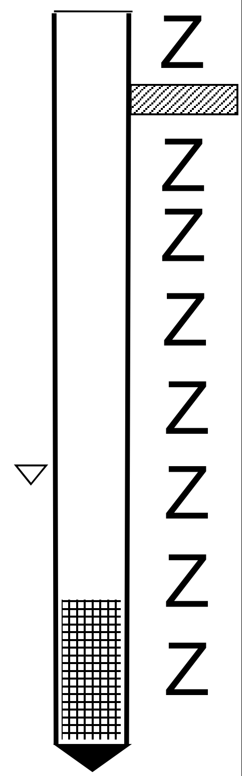


Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		▽ - APPROX. WATER LEVEL

CAPE COD TEST BORING **BORING NO. PC25**

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.	Project Cape Cod Commission BCFTA project Barnstable	Boring No. PC26 Sheet 1 of 1
Driler: Patrick Desmond Helper: William Urqhart Inspector:	Boring location: 41° 40.606' 070° 17.019' Ground Surface Elevation: Date start: 2/8/2007	Date end: 2/8/2007
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches	Notes:	Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x40' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT

Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
+2					1' stickup with twist lock cap	
0			0 - 5		F-M sand; loam	
2						
4			5 - 15		F-M-C sand; gravel	
6						
8						
10						
12						
14			15 - 52		F-M-C brown sand	
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52			52 - 57		F sand	
54						
56			57 - 60		Clay	Well Depth: 50'
58						Static: 30'
60						End of boring: 60'
62						End of sample: N/A
64						
66						

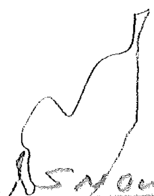


Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%	- CONCRETE
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%	- SAND PACK
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%	Z - SOIL BACKFILL
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%	- BENTONITE
> 50	V. DENSE	15 - 30	V. STIFF		# - SCREEN
		> 30	HARD		- APPROX. WATER LEVEL

CAPE COD TEST BORING | **BORING NO. PC26**

Project: BFTA **Project Location:** **Project Number:**	**Log of Boring** B-1 **Sheet 1 of 1**

Date(s) Drilled	3-24-15	Logged By	Tom C + Scott M	Checked By	
Drilling Method	DIRECT DRIVE	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	DT 90	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	≈ 10.39	Sampling Method(s)	Direct Drive	Hammer Data	
Borehole Backfill	Finish SET-UP	Location	PFW-1		



Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						SNOW DARK HUMIC SAND	Samples
							BRN SAND MED SAND	
	5					O	BRN LIGHT FINE SAND GRAVEL + SAND FINE LIGHT GRAY SAND MED BRN SAND	O B-1 4-8
	10					O	observed SAND BRN cobble gravel SAND	O B1 8-12
					▽			
	15				▽		HISTORIC	
	20						SET 2" Flush thread Joint PVC CASING & 10' screen 10 SLOT	9 AM
	25							
	30							

Date was 03-24-15

Project: BFTA	Log of Boring B2
Project Location:	Sheet 1 of 1
Project Number:	

Date(s) Drilled	3-25-15	Logged By	Tom & Scott	Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	DT 90	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	~10.45'	Sampling Method(s)	4' Sleeves	Hammer Data	
Borehole Backfill	Finn Stick-up	Location	PFW-2		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	SNOW MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DARK HUMIC	
							BRN MED SAND	
	5						GRAVEL	
		Bentonite				0	GRAVEL pieces	B2 4-8
						0		B2 8-12 CAP
	10				▽	0	BRN MD SAND	B2 8-12 WT
	15						AUGERED TO open Hole FOR well 2" Flush Joint PVC w/ 10 FT 10 slot screen	
	20							10 AM
	25							
	30							

Project: BFTA **Project Location:** WEST Next to POND **Project Number:**	**Log of Boring** B3 **Sheet 1 of 1**

Date(s) Drilled	3-24-15	Logged By	Tom Cambareri	Checked By	
Drilling Method	DIRECT DRIVE	Drill Bit Size/Type	& SM	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	DESMOND	Approximate Surface Elevation	
Groundwater Level and Date Measured	~10	Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	SNOW MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0					0	DARK HUMIC BRN-M-F SAND	B3 Upper
						0		B3 Lower
							BRN M-F SAND	
	5					0	DARK SILTY LAYER BRN M SAND GRAVEL	B3 4-8
	10						NO SAMPLE	
	15						No Well	
	20							11:30AM
	25							
	30							

[fieldlog.tpl]

Project: BFTA **Project Location:** CORNER SW BURN BLDG **Project Number:**	**Log of Boring** B4 **Sheet 1 of 1**

Date(s) Drilled	3-24-15	Logged By	Tom Cambara	Checked By	
Drilling Method	DIRECT DRIVE	Drill Bit Size/Type	8 SM	Total Depth of Borehole	
Drill Rig Type	DT90	Drilling Contractor	DESMOND	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
						O	CFM BRN S & GRAVEL	B4-0-4
	5					O	F-M LIGHT BRN - CLEAR SAND	B4 8-4
						O	COARSE BRN M SAND	B4 8-12 CAP
	10					O	FINE CLEAR SAND	B4 8-12 WT
	15						NO well	12:15 PM
	20							
	25							
	30							

(fieldlog.tpl)

Project: BFTA **Project Location:** **Project Number:** Near Basins N & OW8	**Log of Boring** B5 **Sheet 1 of 1**

Date(s) Drilled 3-25-15	Logged By Tom Cunningham	Checked By
Drilling Method Direct Drive	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type	Drilling Contractor Desmond	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s)	Hammer Data
Borehole Backfill	Location	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	5							
						O	C-M Brn sand	
						O	F-M Clear sand	
	10							
	15							
							No well	
	20							
								1:00PM
	25							
	30							

[fieldlog.tpl]

Project:	Log of Boring B6
Project Location:	Sheet 1 of 1
Project Number: Near FS1	

Date(s) Drilled 3-25-15	Logged By Tom Cambura	Checked By
Drilling Method Direct Drive	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type	Drilling Contractor Desmond	Approximate Surface Elevation
Groundwater Level and Date Measured —	Sampling Method(s)	Hammer Data
Borehole Backfill	Location	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	5							
						O	M to C SAND BRN + Clear	B6 - upper
						O		B6 - Lower
	10							
	15							
							no well	
	20							
								1:00 pm
	25							
	30							

[fieldlog.tpl]

Project: BFTA **Project Location:** **Project Number:** near old Round Pit	**Log of Boring** B7 **Sheet 1 of 1**

Date(s) Drilled	3-25-13	Logged By	Tom Cambara	Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type	E SM	Total Depth of Borehole	
Drill Rig Type	DT 70	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
							c-m BRN SAND clean	B7-2-6
	5							
							c-m SAND layer on top Fine grey SAND	B7 8-12
	10						STRONG Petroleum	smell
	15							
							No well	
	20							
								6-10
	25							
	30							

[fieldlog.tpl]

Project: BFTA **Project Location:** **Project Number:** Leach pits, south side	**Log of Boring** B-8 **Sheet 1 of 1**

Date(s) Drilled	direct push	Logged By	TC & SM	Checked By	
Drilling Method	3/25/15	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	DT90	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	11.19	Sampling Method(s)		Hammer Data	
Borehole Backfill	flush mount	Location	PFW-6		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	5							
						O	C-M BRN SAND	
	10							
							INSTalled 2" FLUSH Thread Joint PVC w/ 10' 40 slot Screen	
	15							
	20						11	11 AM
	25							
	30							

[fieldlog.tpl]

Project: **Project Location:** **Project Number:** NEXT TO BURN BOX EAST	**Log of Boring** B9 **Sheet 1 of 1**

Date(s) Drilled	3-24-15	Logged By	TC & SM	Checked By	
Drilling Method	DIRECT DRIVE	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	DT 90	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	9.77 from Stick	Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	PFW-4		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DARK HUMIC	
						O	F-S SAND - L CLAY GRAY	B9-0-4
							BRN FM SAND	
							GRAVEL	
	5					O	WET BRN C-M SAND	B9-4-8
							gravel	
							white M SAND	B9-8-12
						O	Cap M-C SAND	
	10						F-M SAND	
							AUGERED 2X	
	15						Set 2" Flush thread PVC Casing + 10' 10 SLOT SCREEN	
	20							2:30 PM
	25							
	30							

[fieldlog.tpl]

Project: BFTA **Project Location:** **Project Number:** Burn pile next to Pond	**Log of Boring** B10 **Sheet 1 of 1**

Date(s) Drilled	3-24-15	Logged By	Tom Cambatee	Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type	8 SM	Total Depth of Borehole	
Drill Rig Type	DT90	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	8.25	Sampling Method(s)		Hammer Data	
Borehole Backfill	8.25 From Stick-up	Location	PFW-3		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						F-S SAND S CLAY BEN-DARK	B10 0-4
	5		BENTONITE				F-Silty SAND DARK HUMIC MATERIAL OLIVE BRN F M SAND	B10 4-8
	10							
	15						Augered to open hole installed 2" flush thread joint PVC w/ 10' 10 slot screen	
	20							
	25							1:00 pm
	30							

7. Stick-up

[fieldlog.tpl]

Project: BSF TA Project Location: Project Number:	fence ~80' south of gate	**Log of Boring** B-11 **Sheet 1 of 1**

Date(s) Drilled	3/25/15	Logged By	Scott Michaud	Checked By	
Drilling Method	hollow stem	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	12.31 from shop	Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	PFW-5		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
							sand	
	5						cobble	
	10					▽	fine to medium sand some very fine sand	
	15						No soil sample Installed 2" F-thread joint PVC w 10' 10 slot casing	
	20							
	25							10:30 AM
	30							

[fieldlog.tpl]

Project: Project Location: BFTA Project Number: Next to Buin BLD NWest	Log of Boring B12 Sheet 1 of 1

Date(s) Drilled 3-26-15	Logged By Tom Cm[illegible]	Checked By
Drilling Method DIRECT DRIVE	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type DT90	Drilling Contractor Desmond	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s)	Hammer Data
Borehole Backfill	Location	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	5							
						O	BRN C-M SAND & GRAVEL	
						O	Light BRN M-F SAND gravel	
	10							
	15							
	20							
								2:15
	25							
	30							

[fieldlog.tpl]

Project: BFTA
Project Location:
Project Number:

Log of Boring HS-1
Sheet 1 of 1

Date(s) Drilled 1/21/16	Logged By T Cambareri	Checked By
Drilling Method Direct Drive	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type Power Probe	Drilling Contractor Desmond	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s)	Hammer Data
Borehole Backfill	Location NE-Corner Sump	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
					R	O	Sample Fine sand Med	9:41
	5							
							BRN M-F-C sand	
					R	O	Dark Gravel Fine Humic layer	
	10							
						O	Dark Coarse Gravel BRN M-F sand Moist	
	15							Set PVC 10' 10 slot Screen 3 ft into water 7 ft Exposed
	20							
	25							Bentonite Seal
	30							

dlog.tpl

Project:
Project Location: BFTA
Project Number:

Log of Boring HS-2
Sheet 1 of 1

Date(s) Drilled	1/21/16	Logged By		Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	Power Probe	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	SE Corner Sump		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
					0-4		Dam Coble Gravel Gray FS	0-4 4
						0	BRN M-Sand	4
	5				4-6	0	DK BN-Blk F-M sand	6 1050 AM
						0	C-M sand 6 ft Refusal	
	10							
	15							
	20							
	25							
	30							

ldlog.tpl

Project:
Project Location:
Project Number: BFTA

Log of Boring HS-3

Sheet 1 of 1

Date(s) Drilled	1/21/16	Logged By	TC/SM	Checked By	
Drilling Method	DIRECT DRIVE	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	POWER POINT	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	E. MIDDLE SIDE		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						Daon BLK soil	
						O	FMS gravel BRN	
	5						C-M sand orange	
						O	M-F-sand / silt BRN stone	
	10					O	C-M sand BRN-orange	
							- PFOS samples	
	15						- composite sample for TCLP-METALS VOC SVOC TS TPH	
	20							
	25							
	30							

ldlog.tpl

Project:
Project Location: BFTA
Project Number:

Log of Boring HS-4
Sheet 1 of 1

Date(s) Drilled	1/21/16	Logged By	TC SM	Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	Power PROBE	Drilling Contractor	DESMOND	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	WS - Corner		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DARK BLK SOIL F M SAND SILT STONE	
				0			BRN F-M SAND 4	PFOS Samples
	5						STONE	
							C M SAND - TAN	
				0			8	11:45
							CM SAND BRN	
	10			0			C M SAND TAN 8-12	
							C M SAND BRN STONE	
	15							
	20							
	25							
	30							

ddlog.tpl

Project:
Project Location: BFTA
Project Number:

Log of Boring ____
Sheet 1 of 1 HS-5

Date(s) Drilled	1/21/16	Logged By	TC / SM	Checked By	
Drilling Method	Direct Drive	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	Power Probe	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	W-middle side		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DK BLK SOIL	
							STONE	
							STONE	
	5			0			BRN M-C SAND OLIVE STONE	
							LGT F-M SAND	sampled for
				0			BRN/ORG M-C SAND	DFOS
							STONE	
	10			0			M-C SAND	12:19
							BRN LIGHT ORNG SAND	
							LIGHT F-M SAND	
	15							
	20							
	25							
	30							

ldlog.tpl

Project:		Log of Boring ___
Project Location:	BFTA	Sheet 1 of 1 HS-6
Project Number:		

Date(s) Drilled	DIRECT DRIVE	Logged By	TC/SM	Checked By	
Drilling Method	POWER PROBE	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	1/21/16	Drilling Contractor	DESMOND	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location	NW corner		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DK BE Soil	
				0			F silty sand moist	
							stone	
	5						BRN c-m s / orage stone	
				0			c-m sand	
				0			BRN orage sand c-m	1256 PM
	10						m Light sand / BRN	
							Light FS - moist	3'
	15						Installed 2" PVC	
							10 Casing w/ 10' 10 slot screen	
	20						3' exposed 7' in GW	
							Natural Backfill	
	25						2' Bentnite seal	
							Cap No protector	
	30							TC✓

ldlog.tpl

Project:
Project Location: BFTA
Project Number:

Log of Boring ____
Sheet 1 of 1 HS-7

Date(s) Drilled 1/21/16	Logged By TC/SM	Checked By
Drilling Method Direct Drive	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type PowerProbe	Drilling Contractor Desmond	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s)	Hammer Data
Borehole Backfill	Location under pavement middle	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						Pavement	
							C M BRN SAND stone	
				0			F SAND silt moist cobble stone	PFAS
	5							1:08
	10							
	15							
	20							
	25							
	30							

Project: **Project Location:** BFTA **Project Number:**	**Log of Boring** PC - 6A **Sheet 1 of 1**

Date(s) Drilled 3/2/16 8:45 AM	Logged By Tom	Checked By
Drilling Method Solid Stem	Drill Bit Size/Type	Total Depth of Borehole
Drill Rig Type	Drilling Contractor	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s)	Hammer Data
Borehole Backfill	Location	

Note: Drilled Solid Stems to 60 ft 47 Total 32 Top of pipe 2" PVC Finished w/ steel protector

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						BRN Humic silty fin sand	
							c-m Dk BRN sand	
10	5						c-m light sand	
20	10							
30	15							
40	20						10 ft screen 10 slot	
50	25							
							c-m sand	
60	30							

[fieldlog.tal]

Project:	
Project Location:	BFTA
Project Number:	

Log of Boring PC-30

Sheet 1 of 1

(near PC-18)

Date(s) Drilled	3/2/16	Logged By	Scott	Checked By	
Drilling Method		Drill Bit Size/Type	hollow stem	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	N/A	Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet) bgs	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	5 (10)						gravel/pebbles	
	10 (20)							
							light brown medium to coarse sand	
						▽	— H_2O @ 28'	bgs
	15 (30)							
							gray medium to coarse sand	
	20 (40)							
							silty sand	
							when depth 47'	
	25 (50)						m-c sand	bgs
							bottom of hole @ 55 ft.	
	30							

fieldlog.tpl

Project: **Project Location:** 13 FTA **Project Number:**	**Log of Boring** ______ PC-30~~2~~1 **Sheet 1 of 1**

Date(s) Drilled	3/2/16	Logged By	Tom	Checked By	
Drilling Method		Drill Bit Size/Type	6 1/4 Stem	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	DESMOND	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	NA	Hammer Data	
Borehole Backfill		Location			

Solid Stem to 59 ft
30 To water
32' / 49 Top of Pipe
15 ft 2' Stick-up

Remarks: 30 / 14 / 44

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DK BRN HUMIC Soil SILTY FINE SAND GRAVEL Cobble	
	5 (10)						LIGHT BRN M-C SAND	
	10 (20)							
	15 (30)							
	20 (40)						BRN M-C SAND	
	25 (50)						C SAND gravel	
							DENSE BLUE CLAY	
	30							

[fieldlog.tpl]

Project:	
Project Location:	BFTA
Project Number:	North of PC-29 upgradient of MD 2-2

Log of Boring 28

Sheet 1 of 1 PC-28

Date(s) Drilled	3/3/16	Logged By	Tom Cambareri	Checked By	
Drilling Method	Hollow Stem	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	CME	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
							Dk BRN F-M SAND gravel Cobble	
							Bentonite	
10	5							
								— STATIC FTD
20	10							
							Light CM SAND - SF trace biotite	
30	15							
							Light F-M SAND	
							C-M SAND	
40	20						BoHole 39'	
50	25							
	30							

[fieldlog.tpl]

Project:	
Project Location:	BFSA
Project Number:	

Log of Boring BFC-29

Sheet 1 of 1

eastern easement, near pond

Date(s) Drilled	3/3/10	Logged By	Scott	Checked By	
Drilling Method		Drill Bit Size/Type	hollow stem	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet) bgs	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						pebble/cobble brown m-c sand and gravel	
	1 ~~5~~					▽		Static 13' bgs
	2 ~~10~~							
	3 ~~15~~						brown coarse ~~m-c~~ sand some medium and fine sand	bottom well - 34' bgs
	4 ~~20~~							- bottom hole at 44' bgs
	5 ~~25~~							
	30							

15/36

Project:	**Log of Boring** PFC-32
Project Location: BFTA	**Sheet 1 of 1**
Project Number:	new downgrad of PC-19

Date(s) Drilled	3/4/06	Logged By	Scott	Checked By	
Drilling Method		Drill Bit Size/Type	hollow stem	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet) bgs	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						gravel and sand	
	10 (5)						brown M-C sand	
	20 (10)							
	30 (15)					▽	H_2O 28' bgs	static 30 / well 50 / depth 20' H_2O
	40 (20)							
	50 (25)						brown M-C sand, some fine sand clay at ~52' bottom hole ~54	well depth 48' bgs
	30							

[fieldlog.tpl]

Project:
Project Location: BFTA
Project Number:

Log of Boring PFC-33
Sheet 1 of 1
(downgrad of PC-12)

Date(s) Drilled	3/4/16	Logged By	Scott	Checked By	
Drilling Method		Drill Bit Size/Type	hollow stem	Total Depth of Borehole	
Drill Rig Type		Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)		Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet) bgs	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0							
	10 / 5						gravel/pebble	
							brown M-C sand	
	20 / 10							
							h2o 27' bgs	
						∇	gray M-C sand	
	30 / 15							static 30 / 28 well 50 / 55 h2o 20 / 27
	40 / 20							
							gray F-M sand	
	50 / 25							
							bottom of hole @ 54'	
	30							

[fieldlog.tpl]

Project:
Project Location: Southeast side of Flintrock Pond
Project Number: BFTA

Log of Boring PC-34 S+D
Sheet 1 of 1

Date(s) Drilled	4-7-16 AM	Logged By	TCamhorer	Checked By	
Drilling Method	Hollow Stem	Drill Bit Size/Type		Total Depth of Borehole	
Drill Rig Type	Power Probe 9500 VTR	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	~8'	Sampling Method(s)		Hammer Data	NA
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						soil humic	
	1					B	BRN M-F SAND	
				▽			COBBLE LAYER	
	10 / 5							
	3						Gray C-M SAND	
	4							
	20 / 10							
	5						2 inch PVC casing	
							5 foot screen Deep	
	6						10 foot screen Shallow	
	30 / 15							
	7						8.5/28.5 D static/total	
							8/15 S	
	8							
	40 / 20							
							Bott	
	50 / 25							
	30							

dlog.tpl

Project:
Project Location: South East of Flintrock
Project Number: BFTA

Log of Boring PC-35 SD
Sheet 1 of 1

Date(s) Drilled	4-7-16	Logged By	Tom Cambures	Checked By	
Drilling Method	Hollow Stem	Drill Bit Size/Type	8"	Total Depth of Borehole	
Drill Rig Type	POWER Probe PM	Drilling Contractor	Desmond	Approximate Surface Elevation	
Groundwater Level and Date Measured	~8'	Sampling Method(s)	NA	Hammer Data	
Borehole Backfill		Location			

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DARK HUMIC SOIL	
							DK BRN - SILTY SAND	
							OLIVE F-M SAND SILT	
							LIGHT BRN F-M SAND	
	10 5						Cobble Layer (Tough going)	
							BRN C-M S/gravel	
							Light C-M S	
	20 10							
							8/28	
	30 15						8/15 S STATIC/TOTAL	
							8/28 D STATIC/TOTAL	
	40 20						5' Screen set 20' into water	
							10' Screen set 7' into water	
	25						Bentonite as shown	
							Finished w/ steel casing	
	30							

Deep

dlog.tpl

Project:
Project Location:
Project Number:

Log of Boring PC 36 SD
Sheet 1 of 1

Date(s) Drilled 4-8-16	Logged By Monica	Checked By
Drilling Method Hollow Stem	Drill Bit Size/Type 8"	Total Depth of Borehole
Drill Rig Type Power Probe	Drilling Contractor	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) NA	Hammer Data
Borehole Backfill	Location	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	REMARKS AND OTHER TESTS
	0						DEEP	Shallow
							F-M sand - LGT BRN	
							~~[illegible]~~	
	10				Shallow		10 F-M sand - gray	
							T-coarse gravel	F-M-C sand BROWN
	20					Deep	20 F-M sand - gray	
							T- coarse gravel	T - coarse gravel
	30						30 ~~[illegible]~~	
							F-M sand - gray T coarse	
	40						40 Deep: 10' screen	
					deep hole		16.36 / 36 static/total	
							Backfilled to 6' ; steel casing Bentonite from 6'-4' below grade	
	50						Shallow: 10' screen	
							16. / 24 static/total	
	30						Backfilled to 5' ; steel casing	

Bentonite 5'-3' below grade

dlog.tpl

Appendix III

Soil Sampling Results

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax (905) 817-5777 www.maxxam.ca

20-Jun-15 13:24
Melissa DiGrazia
B5B9746
MAF ENV-579
C#517196-01-01

Page of

Bottle Order #: 517196
Project Manager: Melissa DiGrazia

AIR

INVOICE TO:
Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tomcambareri@capecodcomission.org

REPORT TO:
Company Name: CAPE COD COMMISSION
Attention: TOM CAMBARERI
Address: 3225 MAIN ST. BARNSTABLE MA 02630
Tel: 508-362-3828 Fax: 508-362-3136
Email: TCAMBARERI@CAPECODCOMMISSION.ORG

PROJECT INFORMATION:
Quotation #:
P.O. #:
Project:
Project Name:
Site #:
Sampled By:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		POND S1	6.18.15	12:00	WATER	537	1	
2		POND D1	6.18.15	12:00	WATER	537	1	
3		POND 1S	6.18.15	11:00	SOIL	537	1	
4		POND 1D	6.18.15	11:00	SOIL	537	1	
5		POND 2S	6.18.15	11:30	SOIL	537	1	
6		POND 2D	6.18.15	11:30	SOIL	537	1	
7		POND 3	6.18.15	11:40	SOIL	537	1	
8								
9								
10								

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/06/19	12 PM	[signature]	2015/06/20	13:24	

Laboratory Use Only			Yes	No
Time Sensitive	Temperature (°C) on Receipt: 1/0/1	Custody Seal Present		✓
		Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your P.O. #: 15004466-000
Your C.O.C. #: 517196-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/07/06
Report #: R3562589
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5B9746
Received: 2015/06/20, 13:24

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	5	N/A	2015/06/24	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	5	2015/06/29	2015/06/30	CAM SOP-00894	EPA537 m

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2015/06/29	2015/06/29	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International. is a NELAC accredited laboratory. Certificate # CANA001. Use of the NELAC logo however does not insure that Maxxam is accredited for all of the methods indicated. This certificate shall not be reproduced except in full, without the written approval of Maxxam Analytics Inc.

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AMH822			AMH823	AMH824	AMH825			
Sampling Date		2015/06/18 11:00			2015/06/18 11:00	2015/06/18 11:30	2015/06/18 11:30			
COC Number		517196-01-01			517196-01-01	517196-01-01	517196-01-01			
	Units	POND 1S	RDL	MDL	POND 1D	POND 2S	POND 2D	RDL	MDL	QC Batch
Moisture	%	38	1.0	1.0	26	23	25	1.0	1.0	4080230
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.2	0.2	0.028	<0.1	<0.1	<0.1	0.1	0.014	4086050
Perfluorobutanoic acid	ug/kg	<0.2	0.2	0.034	<0.1	<0.1	<0.1	0.1	0.017	4086050
Perfluorodecane Sulfonate	ug/kg	<0.2	0.2	0.04	<0.1	<0.1	<0.1	0.1	0.02	4086050
Perfluorodecanoic Acid (PFDA)	ug/kg	0.2	0.2	0.034	0.3	<0.1	1.0	0.1	0.017	4086050
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.2	0.2	0.05	<0.1	<0.1	<0.1	0.1	0.025	4086050
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.2	0.2	0.03	0.1	<0.1	0.2	0.1	0.015	4086050
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.9	0.2	0.03	0.7	0.3	1.1	0.1	0.015	4086050
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.5	0.2	0.022	0.3	0.2	0.4	0.1	0.011	4086050
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.2	0.2	0.046	0.2	<0.1	0.4	0.1	0.023	4086050
Perfluorononanoic Acid (PFNA)	ug/kg	0.5	0.2	0.02	0.7	0.2	2.1	0.1	0.01	4086050
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.4	0.2	0.024	0.2	<0.1	<0.1	0.1	0.012	4086050
Perfluorooctane Sulfonate (PFOS)	ug/kg	19 (1)	10	1.5	23 (1)	11 (1)	34 (1)	5	0.75	4090355
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.3	0.2	0.022	0.2	<0.1	0.2	0.1	0.011	4086050
Perfluorotetradecanoic Acid	ug/kg	<0.2	0.2	0.032	<0.1	<0.1	<0.1	0.1	0.016	4086050
Perfluorotridecanoic Acid	ug/kg	0.7	0.2	0.048	0.2	0.1	<0.1	0.1	0.024	4086050
Perfluoroundecanoic Acid (PFUnA)	ug/kg	2.8	0.2	0.044	1.6	1.9	0.8	0.1	0.022	4086050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AMH826	AMH826			
Sampling Date		2015/06/18 11:40	2015/06/18 11:40			
COC Number		517196-01-01	517196-01-01			
	Units	**POND 3**	**POND 3 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	22	N/A	1.0	1.0	4080230
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.1	<0.1	0.1	0.014	4086050
Perfluorobutanoic acid	ug/kg	<0.1	<0.1	0.1	0.017	4086050
Perfluorodecane Sulfonate	ug/kg	<0.1	<0.1	0.1	0.02	4086050
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	<0.1	0.1	0.017	4086050
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	<0.1	0.1	0.025	4086050
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.1	<0.1	0.1	0.015	4086050
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.4	0.4	0.1	0.015	4086050
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.3	0.3	0.1	0.011	4086050
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.1	0.1	0.1	0.023	4086050
Perfluorononanoic Acid (PFNA)	ug/kg	<0.1	0.2	0.1	0.01	4086050
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.1	<0.1	0.1	0.012	4086050
Perfluorooctane Sulfonate (PFOS)	ug/kg	9 (1)	7 (1)	5	0.75	4090355
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.2	0.2	0.1	0.011	4086050
Perfluorotetradecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.016	4086050
Perfluorotridecanoic Acid	ug/kg	0.4	0.4	0.1	0.024	4086050
Perfluoroundecanoic Acid (PFUnA)	ug/kg	0.4	0.5	0.1	0.022	4086050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH820	AMH820	AMH821			
Sampling Date		2015/06/18 12:00	2015/06/18 12:00	2015/06/18 12:00			
COC Number		517196-01-01	517196-01-01	517196-01-01			
	Units	**POND S1**	**POND S1 Lab-Dup**	**POND D1**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	<0.050	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	0.061	0.058	0.058	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.079	0.081	0.078	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	<0.020	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	0.058	0.057	0.061	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.18	0.18	0.17	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.55	0.56	0.56	0.020	0.0061	4088510
Perfluorohexanoic Acid (PFHxA)	ug/L	0.44	0.41	0.43	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.14	0.16	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	0.094	0.092	0.095	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	<0.020	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	2.5 (1)	2.6 (1)	2.4 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	0.27	0.25	0.27	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	89	91	78	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	103	106	81	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	67	65	67	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

TEST SUMMARY

Maxxam ID: AMH820 **Collected:** 2015/06/18
Sample ID: POND S1 **Shipped:**
Matrix: Water **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH820 Dup **Collected:** 2015/06/18
Sample ID: POND S1 **Shipped:**
Matrix: Water **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH821 **Collected:** 2015/06/18
Sample ID: POND D1 **Shipped:**
Matrix: Water **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH822 **Collected:** 2015/06/18
Sample ID: POND 1S **Shipped:**
Matrix: Soil **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH823 **Collected:** 2015/06/18
Sample ID: POND 1D **Shipped:**
Matrix: Soil **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH824 **Collected:** 2015/06/18
Sample ID: POND 2S **Shipped:**
Matrix: Soil **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH825 **Collected:** 2015/06/18
Sample ID: POND 2D **Shipped:**
Matrix: Soil **Received:** 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

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Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

TEST SUMMARY

Maxxam ID: AMH826
Sample ID: POND 3
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH826 Dup
Sample ID: POND 3
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

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GENERAL COMMENTS

Sample AMH822-01 : PFOSALCM-S: Detection limits were adjusted for high moisture content.

Sample AMH822, PFOS and PFOA in soil: Test repeated.
Sample AMH823, PFOS and PFOA in soil: Test repeated.
Sample AMH824, PFOS and PFOA in soil: Test repeated.
Sample AMH825, PFOS and PFOA in soil: Test repeated.
Sample AMH826, PFOS and PFOA in soil: Test repeated.
Sample AMH820, PFOS and PFOA in water: Test repeated.
Sample AMH821, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
4080230	BOP	RPD - Sample/Sample Dup	Moisture	2015/06/24	8.0		%	20
4084951	CM5	Matrix Spike(AMH820)	Perfluorooctane Sulfonate (PFOS)	2015/06/29		NC	%	70 - 130
4084951	CM5	Spiked Blank	Perfluorooctane Sulfonate (PFOS)	2015/06/29		100	%	70 - 130
4084951	CM5	Method Blank	Perfluorooctane Sulfonate (PFOS)	2015/06/29	<0.80		ug/L	
4084951	CM5	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/06/29	NC (1)		%	30
4086050	CM5	Matrix Spike(AMH826)	Perfluorobutane Sulfonate (PFBS)	2015/06/30		106	%	70 - 130
			Perfluorobutanoic acid	2015/06/30		104	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/30		99	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/30		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/30		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/30		99	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30		109	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/30		90	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/30		58 (2)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30		91	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/30		97	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/30		96	%	70 - 130
4086050	CM5	Spiked Blank	Perfluorobutane Sulfonate (PFBS)	2015/06/30		99	%	70 - 130
			Perfluorobutanoic acid	2015/06/30		104	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/30		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/30		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/30		102	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/30		97	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30		97	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/30		107	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/30		89	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/30		103	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/30		97	%	70 - 130
4086050	CM5	Method Blank	Perfluorobutane Sulfonate (PFBS)	2015/06/30	<0.1		ug/kg	
			Perfluorobutanoic acid	2015/06/30	<0.1		ug/kg	
			Perfluorodecane Sulfonate	2015/06/30	<0.1		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2015/06/30	<0.1		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2015/06/30	<0.1		ug/kg	
			Perfluorononanoic Acid (PFNA)	2015/06/30	<0.1		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30	<0.1		ug/kg	
			Perfluorotetradecanoic Acid	2015/06/30	<0.1		ug/kg	
			Perfluorotridecanoic Acid	2015/06/30	<0.1		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30	<0.1		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30	<0.1		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30	<0.1		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2015/06/30	<0.1		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30	<0.1		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2015/06/30	<0.1		ug/kg	
4086050	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/06/30	NC		%	30
			Perfluorobutanoic acid	2015/06/30	NC		%	30
			Perfluorodecane Sulfonate	2015/06/30	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/06/30	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluorododecanoic Acid (PFDoA)	2015/06/30	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/06/30	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30	NC		%	25
			Perfluorotetradecanoic Acid	2015/06/30	NC		%	30
			Perfluorotridecanoic Acid	2015/06/30	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/06/30	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/06/30	NC		%	30
4088510	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/07/03		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		56	%	50 - 150
4088510	CM5	Matrix Spike(AMH820)	6:2 Fluorotelomer sulfonate	2015/07/03		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		113	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		123	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		103	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		95	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		120	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		122	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		108	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		94	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		96	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		120	%	70 - 130
4088510	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/07/03		87	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		57	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		103	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		117	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		117	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		96	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		91	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		95	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		104	%	70 - 130
4088510	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/07/03		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		93	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		96	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			8:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/07/03	<0.050		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	<0.020		ug/L	
			Perfluorobutanoic acid	2015/07/03	<0.020		ug/L	
			Perfluorodecane Sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptane sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/07/03	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluorotridecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/07/03	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	<0.020		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	<0.020		ug/L	
4088510	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamide	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	NC		%	30
			N-methylperfluorooctane sulfonamide	2015/07/03	NC		%	30
			N-methylperfluorooctanesulfonamidol	2015/07/03	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	NC		%	30
			Perfluorobutanoic acid	2015/07/03	NC		%	30
			Perfluorodecane Sulfonate	2015/07/03	NC		%	30
			Perfluoroheptane sulfonate	2015/07/03	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	1.1		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	1.8		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	8.0		%	30
			Perfluorononanoic Acid (PFNA)	2015/07/03	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	6.9		%	30
			Perfluorotetradecanoic Acid	2015/07/03	NC		%	30
			Perfluorotridecanoic Acid	2015/07/03	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/07/03	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	1.5		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
4090355	CM5	Matrix Spike(AMH826)	Perfluorooctane Sulfonate (PFOS)	2015/07/03		94	%	70 - 130
4090355	CM5	Spiked Blank	Perfluorooctane Sulfonate (PFOS)	2015/07/03		102	%	70 - 130
4090355	CM5	Method Blank	Perfluorooctane Sulfonate (PFOS)	2015/07/03	<5		ug/kg	
4090355	CM5	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/07/03	NC (1)		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

(2) Matrix spike recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam AIR

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

26-Mar-15 15:30
Mike Challis
B553366
FW ENV-810

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:
Company Name:	#26475 Kerfoot Technologies Inc	Company Name:	CAPE COD COMMISSION	Quotation #:		Bottle Order #: 506215
Attention:	William Kerfoot	Attention:	TOM CAMBARERI	P.O. #:		
Address:	766 Falmouth Rd Unit B-12	Address:	3225 MAIN ST	Project:	Cape Cod Commission	
	Mashpee MA 02649		BARNSTABLE MA	Project Name:		Project Manager:
Tel:	(508) 539-3002 Fax: (508) 539-3566	Tel:	508 362 3828 Fax: 362-3136	Site #:		C#506215-01-01 Mike Challis
Email:	WBKerfoot@kerfoottech.com	Email:	tcambareri @ capecodcommission.org	Sampled By:		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☒ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ____	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Analysis		# of Bottles	Comments
1		B1 4-8	3-24-15	9 AM	Soil		537	mod	1	
2		B1 8-12	3-24-15	9 AM	Soil		537	mod	1	
3		B2 4-8	3-24-15	10 AM	Soil		537	mod	1	
4		B2 8-12 CAP	3-24-15	10 AM	Soil		537	mod	1	
5		B2 8-12 WT	3-24-15	10 AM	Soil		537	mod	1	
6		B3 0-4 Upper	3-24-15	11:30	Soil		537	mod	1	
7		B3 0-4 lower	3-24-15	11:30	Soil		537	mod	1	
8		B3 4-8	3-24-15	11:30	Soil		537	mod	1	
9		B4 0-4	3-24-15	1215	Soil		537	mod	1	
10		B4 4-8	3-24-15	1215	Soil		537	mod	1	

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	3-25-15	408P	[signature]	3/25/15	4:08 P	
			FANG WANG	2015/03/26	~~15:03~~ 15:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present	✓	
	3.3 / 3.5 / 5.1	Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics FW 2015/03/26

Maxxam — Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#26475 Kerfoot Technologies Inc	Company Name:	CAPE COD COMMISSION	Quotation #:		Maxxam Job #:	Bottle Order #: 506215
Attention:	William Kerfoot	Attention:	TOM CAMBARERI	P.O. #:			
Address:	766 Falmouth Rd Unit B-12	Address:	3225 MAIN ST	Project:	Cape Cod Commission	COC #: C#506215-01-01	Project Manager: Mike Challis
	Mashpee MA 02649		BARNSTABLE MA	Project Name:			
Tel:	(508) 539-3002 Fax: (508) 539-3566	Tel:	508 362 3828 Fax: 362-3136	Site #:			
Email:	WBKerfoot@kerfoottech.com	Email:	tcambareri@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
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☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
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Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis		# of Bottles	Comments
1		B4 8-12 Cap	3.24.15	12:15	Soil	537	Mod	1	
2		B4 8-12 WT	3.24.15	12:15	Soil	537	mod	1	
3		B9 0-4	3.24.15	2:30	Soil	537	Mod	1	
4		B9 4-8	3.24.15	2:30	Soil	537	mod	1	
5		B9 8-12	3.24.15	2:30	Soil	537	Mod	1	
6		B10 0-4-	3.24.15	1:00	Soil	537	mod	1	
7		B10 4-8	3.24.15	1:00	Soil	537	mod	1	
8		POND South	3.24.15	1:30	Soil	537	mod	1	organic/soil
9		POND NORTH	3.24.15	1:30	Soil	537	mod	1	organic matter
10		POND Delta	3.24.15	3:30	Soil	537	mod	1	organic/soil

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	3.25.15	4:08A	[signature]	3/25/15	4:08P	
			FANG WANG	2015/03/26	~~15:03~~ 15:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.3/3.5/5.1	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

FW 2015/03/26

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #26475 Kerfoot Technologies Inc	Company Name: CAPE COD COMMISSION	Quotation #:	Maxxam Job #: / Bottle Order #: 506215
Attention: William Kerfoot	Attention: TOM CAMBARERI	P.O. #:	
Address: 766 Falmouth Rd Unit B-12, Mashpee MA 02649	Address: 3225 MAIN ST, BARNSTABLE MA	Project: Cape Cod Commission	COC #: C#506215-01-01
Tel: (508) 539-3002 Fax: (508) 539-3566	Tel: 508 362 3828 Fax: 362-3136	Project Name:	Project Manager: Mike Challis
Email: WBKerfoot@kerfoottech.com	Email: tcambareri@capecodcommission.org	Site #: / Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis		# of Bottles	Comments
1		B5 6-10 upper	3/25/15	1:00	Soil	537	Mod	1	
2		B5 6-10 lower	3/25/15	1:00	Soil	537	Mod	1	
3		B6 6-10 upper	3/25/15	1:15	Soil	537	Mod	1	
4		B6 6-10 lower	3/25/15	1:15	Soil	537	Mod	1	
5		B7 2-6	3/25/15	10:00	Soil	537	Mod	1	
6		B7 8-12	3/25/15	10:00	Soil	537	Mod	1	
7		B8 6-10	3/25/15	11:00	Soil	537	Mod	1	
8		B10 8-12 upper	3/24/15	1:00	Soil	537	Mod	1	
9		B12 6-10 upper	3/25/15	2:15	Soil	537	Mod	1	
10		B12 6-10 lower	3/25/15	2:15	Soil	537	Mod	1	

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Tom Cambareri	3-25-15	4:08P	[signature]	3/25/15	4:08P			3.3/3.5/5.1	Present	✓	
			FANG WANG	2015/03/26	~~15:03~~ 15:30				Intact	✓	

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SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics FW 2015/03/26

Your Project #: Cape Cod Commission
Your C.O.C. #: 506215-01-01

Attention:PFC Reporting

Kerfoot Technologies Inc
USA
766 Falmouth Rd
Unit B-12
Mashpee, MA
USA 02649

Report Date: 2015/04/20
Report #: R3395880
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B553366
Received: 2015/03/26, 15:30

Sample Matrix: Soil
Samples Received: 30

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	30	N/A	2015/04/02	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	25	2015/04/01	2015/04/01	CAM SOP-00894	EPA537 m
PFOS and PFOA in soil	5	2015/04/08	2015/04/08	CAM SOP-00894	EPA537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Mike Challis, CET, B.Sc, C.Chem, Customer Service Manager, US Air Toxics
Email: MChallis@maxxam.ca
Phone# (905)817-5790
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages : 1

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD204	AAD205				AAD206			
Sampling Date										
COC Number		506215-01-01	506215-01-01				506215-01-01			
	Units	B1 4-8	B1 8-12	RDL	MDL	QC Batch	B2 4-8	RDL	MDL	QC Batch
Moisture	%	3.9	4.4	1.0	0.040	3970029	3.3	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.1	<0.1	0.1	0.014	3975112	<5	5	0.7	3967869
Perfluorobutanoic acid	ug/kg	<0.1	<0.1	0.1	0.017	3975112	<5	5	0.85	3967869
Perfluorodecane Sulfonate	ug/kg	<0.1	<0.1	0.1	0.02	3975112	<5	5	1	3967869
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	<0.1	0.1	0.017	3975112	<5	5	0.85	3967869
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	<0.1	0.1	0.025	3975112	<5	5	1.3	3967869
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.1	<0.1	0.1	0.015	3975112	<5	5	0.75	3967869
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.1	<0.1	0.1	0.015	3975112	<5	5	0.75	3967869
Perfluorohexanoic Acid (PFHxA)	ug/kg	<0.1	<0.1	0.1	0.011	3975112	<5	5	0.55	3967869
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.1	<0.1	0.1	0.023	3975112	<5	5	1.2	3967869
Perfluorononanoic Acid (PFNA)	ug/kg	0.2	0.1	0.1	0.01	3975112	44	5	0.5	3967869
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.1	<0.1	0.1	0.012	3975112	<5	5	0.6	3967869
Perfluorooctane Sulfonate (PFOS)	ug/kg	2.0	1.9	0.1	0.015	3975112	100	5	0.75	3967869
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.1	<0.1	0.1	0.011	3975112	<5	5	0.55	3967869
Perfluorotetradecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.016	3975112	<5	5	0.8	3967869
Perfluorotridecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.024	3975112	<5	5	1.2	3967869
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<0.1	<0.1	0.1	0.022	3975112	<5	5	1.1	3967869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD207				AAD208			
Sampling Date									
COC Number		506215-01-01				506215-01-01			
	Units	**B2 8-12 CAP**	**RDL**	**MDL**	**QC Batch**	**B2 8-12 WT**	**RDL**	**MDL**	**QC Batch**
Moisture	%	3.4	1.0	0.040	3970110	11	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	3967869	<5	5	0.7	3967869
Perfluorobutanoic acid	ug/kg	<5	5	0.85	3967869	<5	5	0.85	3967869
Perfluorodecane Sulfonate	ug/kg	<5	5	1	3967869	<5	5	1	3967869
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	3967869	<5	5	0.85	3967869
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	5	1.3	3967869	<5	5	1.3	3967869
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	3967869	<5	5	0.75	3967869
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	3967869	40	5	0.75	3967869
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	3967869	<5	5	0.55	3967869
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	3967869	<5	5	1.2	3967869
Perfluorononanoic Acid (PFNA)	ug/kg	<5	5	0.5	3967869	<5	5	0.5	3967869
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<5	5	0.6	3967869	8	5	0.6	3967869
Perfluorooctane Sulfonate (PFOS)	ug/kg	42	5	0.75	3967869	290	50	7.5	3967869
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	3967869	<5	5	0.55	3967869
Perfluorotetradecanoic Acid	ug/kg	<5	5	0.8	3967869	<5	5	0.8	3967869
Perfluorotridecanoic Acid	ug/kg	<5	5	1.2	3967869	<5	5	1.2	3967869
Perfluoroundecanoic Acid (PFUnA)	ug/kg	26	5	1.1	3967869	70	5	1.1	3967869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD209			AAD210				AAD211			
Sampling Date												
COC Number		506215-01-01			506215-01-01				506215-01-01			
	Units	**B3 0-4 UPPER**	**RDL**	**MDL**	**B3 0-4 LOWER**	**RDL**	**MDL**	**QC Batch**	**B3 4-8**	**RDL**	**MDL**	**QC Batch**
Moisture	%	6.7	1.0	0.040	11	1.0	0.040	3970110	19	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	<5	5	0.7	3967869	<5	5	0.7	3967869
Perfluorobutanoic acid	ug/kg	<5	5	0.85	<5	5	0.85	3967869	<5	5	0.85	3967869
Perfluorodecane Sulfonate	ug/kg	18	5	1	16	5	1	3967869	17	5	1	3967869
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	<5	5	0.85	3967869	21	5	0.85	3967869
Perfluorododecanoic Acid (PFDoA)	ug/kg	5	5	1.3	6	5	1.3	3967869	<5	5	1.3	3967869
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	<5	5	0.75	3967869	<5	5	0.75	3967869
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	<5	5	0.75	3967869	24	5	0.75	3967869
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	<5	5	0.55	3967869	11	5	0.55	3967869
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	<5	5	1.2	3967869	<5	5	1.2	3967869
Perfluorononanoic Acid (PFNA)	ug/kg	<5	5	0.5	5	5	0.5	3967869	<5	5	0.5	3967869
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	9	5	0.6	17	5	0.6	3967869	9	5	0.6	3967869
Perfluorooctane Sulfonate (PFOS)	ug/kg	240	5	0.75	610	50	7.5	3967869	4900	500	75	3967869
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	<5	5	0.55	3967869	<5	5	0.55	3967869
Perfluorotetradecanoic Acid	ug/kg	5	5	0.8	6	5	0.8	3967869	<5	5	0.8	3967869
Perfluorotridecanoic Acid	ug/kg	27	5	1.2	40	5	1.2	3967869	<5	5	1.2	3967869
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	5	1.1	17	5	1.1	3967869	240	5	1.1	3967869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD212	AAD213		AAD235	AAD235			
Sampling Date									
COC Number		506215-01-01	506215-01-01		506215-01-01	506215-01-01			
	Units	**B4 0-4**	**B4 4-8**	**QC Batch**	**B4 8-12 CAP**	**B4 8-12 CAP Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	5.6	3.9	3970029	11	12	1.0	0.040	3970110
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	<5	3967869	<5	N/A	5	0.7	3967869
Perfluorobutanoic acid	ug/kg	<5	<5	3967869	<5	N/A	5	0.85	3967869
Perfluorodecane Sulfonate	ug/kg	6	<5	3967869	<5	N/A	5	1	3967869
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	<5	3967869	<5	N/A	5	0.85	3967869
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	<5	3967869	<5	N/A	5	1.3	3967869
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	<5	3967869	<5	N/A	5	0.75	3967869
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	<5	3967869	<5	N/A	5	0.75	3967869
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	<5	3967869	<5	N/A	5	0.55	3967869
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	<5	3967869	<5	N/A	5	1.2	3967869
Perfluorononanoic Acid (PFNA)	ug/kg	<5	<5	3967869	<5	N/A	5	0.5	3967869
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	12	<5	3967869	<5	N/A	5	0.6	3967869
Perfluorooctane Sulfonate (PFOS)	ug/kg	18	36	3967869	60	N/A	5	0.75	3967869
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	<5	3967869	<5	N/A	5	0.55	3967869
Perfluorotetradecanoic Acid	ug/kg	<5	<5	3967869	<5	N/A	5	0.8	3967869
Perfluorotridecanoic Acid	ug/kg	33	<5	3967869	<5	N/A	5	1.2	3967869
Perfluoroundecanoic Acid (PFUnA)	ug/kg	11	<5	3967869	<5	N/A	5	1.1	3967869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD236			AAD237	AAD237			
Sampling Date									
COC Number		506215-01-01			506215-01-01	506215-01-01			
	Units	**B4 8-12 WT**	**RDL**	**MDL**	**B9 0-4**	**B9 0-4 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	18	1.0	0.040	12	12	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	<5	N/A	5	0.7	3967869
Perfluorobutanoic acid	ug/kg	<5	5	0.85	<5	N/A	5	0.85	3967869
Perfluorodecane Sulfonate	ug/kg	<5	5	1	<5	N/A	5	1	3967869
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	<5	N/A	5	0.85	3967869
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	5	1.3	<5	N/A	5	1.3	3967869
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	<5	N/A	5	0.75	3967869
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	10	N/A	5	0.75	3967869
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	<5	N/A	5	0.55	3967869
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	<5	N/A	5	1.2	3967869
Perfluorononanoic Acid (PFNA)	ug/kg	<5	5	0.5	<5	N/A	5	0.5	3967869
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<5	5	0.6	<5	N/A	5	0.6	3967869
Perfluorooctane Sulfonate (PFOS)	ug/kg	43	5	0.75	820	N/A	50	7.5	3967869
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	<5	N/A	5	0.55	3967869
Perfluorotetradecanoic Acid	ug/kg	<5	5	0.8	<5	N/A	5	0.8	3967869
Perfluorotridecanoic Acid	ug/kg	<5	5	1.2	<5	N/A	5	1.2	3967869
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	5	1.1	<5	N/A	5	1.1	3967869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD238				AAD239			
Sampling Date									
COC Number		506215-01-01				506215-01-01			
	Units	**B9 4-8**	**RDL**	**MDL**	**QC Batch**	**B9 8-12**	**RDL**	**MDL**	**QC Batch**
Moisture	%	5.1	1.0	0.040	3970029	3.6	1.0	0.040	3970110
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	3967869	<0.1	0.1	0.014	3975112
Perfluorobutanoic acid	ug/kg	<5	5	0.85	3967869	<0.1	0.1	0.017	3975112
Perfluorodecane Sulfonate	ug/kg	<5	5	1	3967869	<0.1	0.1	0.02	3975112
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	3967869	<0.1	0.1	0.017	3975112
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	5	1.3	3967869	<0.1	0.1	0.025	3975112
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	3967869	<0.1	0.1	0.015	3975112
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	3967869	<0.1	0.1	0.015	3975112
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	3967869	<0.1	0.1	0.011	3975112
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	3967869	<0.1	0.1	0.023	3975112
Perfluorononanoic Acid (PFNA)	ug/kg	<5	5	0.5	3967869	<0.1	0.1	0.01	3975112
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<5	5	0.6	3967869	<0.1	0.1	0.012	3975112
Perfluorooctane Sulfonate (PFOS)	ug/kg	14	5	0.75	3967869	0.3	0.1	0.015	3975112
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	3967869	<0.1	0.1	0.011	3975112
Perfluorotetradecanoic Acid	ug/kg	<5	5	0.8	3967869	<0.1	0.1	0.016	3975112
Perfluorotridecanoic Acid	ug/kg	<5	5	1.2	3967869	<0.1	0.1	0.024	3975112
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	5	1.1	3967869	<0.1	0.1	0.022	3975112

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD240		AAD241				AAD242			
Sampling Date											
COC Number		506215-01-01		506215-01-01				506215-01-01			
	Units	**B10 0-4**	**QC Batch**	**B10 4-8**	**RDL**	**MDL**	**QC Batch**	**POND SOUTH**	**RDL**	**MDL**	**QC Batch**
Moisture	%	15	3970029	14	1.0	0.040	3970110	92	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	3967869	<5	5	0.7	3967871	<50	50	7	3967871
Perfluorobutanoic acid	ug/kg	<5	3967869	<5	5	0.85	3967871	<50	50	8.5	3967871
Perfluorodecane Sulfonate	ug/kg	<5	3967869	<5	5	1	3967871	<50	50	10	3967871
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	3967869	<5	5	0.85	3967871	<50	50	8.5	3967871
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	3967869	<5	5	1.3	3967871	<50	50	13	3967871
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	3967869	<5	5	0.75	3967871	<50	50	7.5	3967871
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	3967869	13	5	0.75	3967871	<50	50	7.5	3967871
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	3967869	<5	5	0.55	3967871	<50	50	5.5	3967871
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	3967869	<5	5	1.2	3967871	<50	50	12	3967871
Perfluorononanoic Acid (PFNA)	ug/kg	<5	3967869	8	5	0.5	3967871	<50	50	5	3967871
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<5	3967869	<5	5	0.6	3967871	<50	50	6	3967871
Perfluorooctane Sulfonate (PFOS)	ug/kg	20	3967869	93	5	0.75	3967871	1100	50	7.5	3967871
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	3967869	<5	5	0.55	3967871	<50	50	5.5	3967871
Perfluorotetradecanoic Acid	ug/kg	<5	3967869	<5	5	0.8	3967871	<50	50	8	3967871
Perfluorotridecanoic Acid	ug/kg	<5	3967869	<5	5	1.2	3967871	<50	50	12	3967871
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	3967869	<5	5	1.1	3967871	<50	50	11	3967871

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD243				AAD244			
Sampling Date									
COC Number		506215-01-01				506215-01-01			
	Units	**POND NORTH**	**RDL**	**MDL**	**QC Batch**	**POND DELTA**	**RDL**	**MDL**	**QC Batch**
Moisture	%	95	1.0	0.040	3970029	35	1.0	0.040	3970110
Perfluorobutane Sulfonate (PFBS)	ug/kg	<50	50	7	3967871	<10	10	1.4	3967871
Perfluorobutanoic acid	ug/kg	<50	50	8.5	3967871	<10	10	1.7	3967871
Perfluorodecane Sulfonate	ug/kg	<50	50	10	3967871	<10	10	2	3967871
Perfluorodecanoic Acid (PFDA)	ug/kg	<50	50	8.5	3967871	<10	10	1.7	3967871
Perfluorododecanoic Acid (PFDoA)	ug/kg	<50	50	13	3967871	<10	10	2.5	3967871
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<50	50	7.5	3967871	<10	10	1.5	3967871
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<50	50	7.5	3967871	<10	10	1.5	3967871
Perfluorohexanoic Acid (PFHxA)	ug/kg	<50	50	5.5	3967871	<10	10	1.1	3967871
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<50	50	12	3967871	<10	10	2.3	3967871
Perfluorononanoic Acid (PFNA)	ug/kg	<50	50	5	3967871	<10	10	1	3967871
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<50	50	6	3967871	<10	10	1.2	3967871
Perfluorooctane Sulfonate (PFOS)	ug/kg	1000	50	7.5	3967871	41	10	1.5	3967871
Perfluoropentanoic Acid (PFPeA)	ug/kg	<50	50	5.5	3967871	<10	10	1.1	3967871
Perfluorotetradecanoic Acid	ug/kg	<50	50	8	3967871	<10	10	1.6	3967871
Perfluorotridecanoic Acid	ug/kg	<50	50	12	3967871	<10	10	2.4	3967871
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<50	50	11	3967871	<10	10	2.2	3967871

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD245				AAD246			
Sampling Date									
COC Number		506215-01-01				506215-01-01			
	Units	**B5 6-10 UPPER**	**RDL**	**MDL**	**QC Batch**	**B5 6-10 LOWER**	**RDL**	**MDL**	**QC Batch**
Moisture	%	3.0	1.0	0.040	3970029	3.5	1.0	0.040	3970110
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	3967871	<5	5	0.7	3967871
Perfluorobutanoic acid	ug/kg	<5	5	0.85	3967871	<5	5	0.85	3967871
Perfluorodecane Sulfonate	ug/kg	<5	5	1	3967871	<5	5	1	3967871
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	3967871	<5	5	0.85	3967871
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	5	1.3	3967871	<5	5	1.3	3967871
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	3967871	<5	5	0.75	3967871
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	3967871	<5	5	0.75	3967871
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	3967871	<5	5	0.55	3967871
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	3967871	<5	5	1.2	3967871
Perfluorononanoic Acid (PFNA)	ug/kg	8	5	0.5	3967871	<5	5	0.5	3967871
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	57	5	0.6	3967871	13	5	0.6	3967871
Perfluorooctane Sulfonate (PFOS)	ug/kg	350	50	7.5	3967871	35	5	0.75	3967871
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	3967871	<5	5	0.55	3967871
Perfluorotetradecanoic Acid	ug/kg	<5	5	0.8	3967871	<5	5	0.8	3967871
Perfluorotridecanoic Acid	ug/kg	<5	5	1.2	3967871	<5	5	1.2	3967871
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	5	1.1	3967871	<5	5	1.1	3967871

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD247	AAD247				AAD248			
Sampling Date										
COC Number		506215-01-01	506215-01-01				506215-01-01			
	Units	**B6 6-10 UPPER**	**B6 6-10 UPPER Lab-Dup**	**RDL**	**MDL**	**QC Batch**	**B6 6-10 LOWER**	**RDL**	**MDL**	**QC Batch**
Moisture	%	3.5	N/A	1.0	0.040	3970029	3.2	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.1	<0.1	0.1	0.014	3975112	<5	5	0.7	3967871
Perfluorobutanoic acid	ug/kg	<0.1	<0.1	0.1	0.017	3975112	<5	5	0.85	3967871
Perfluorodecane Sulfonate	ug/kg	<0.1	<0.1	0.1	0.02	3975112	<5	5	1	3967871
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	<0.1	0.1	0.017	3975112	<5	5	0.85	3967871
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	<0.1	0.1	0.025	3975112	<5	5	1.3	3967871
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.1	<0.1	0.1	0.015	3975112	<5	5	0.75	3967871
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.5	0.5	0.1	0.015	3975112	<5	5	0.75	3967871
Perfluorohexanoic Acid (PFHxA)	ug/kg	<0.1	<0.1	0.1	0.011	3975112	<5	5	0.55	3967871
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.3	0.3	0.1	0.023	3975112	<5	5	1.2	3967871
Perfluorononanoic Acid (PFNA)	ug/kg	0.5	0.6	0.1	0.01	3975112	<5	5	0.5	3967871
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.2	0.2	0.1	0.012	3975112	<5	5	0.6	3967871
Perfluorooctane Sulfonate (PFOS)	ug/kg	11 (1)	N/A	5	0.75	3967871	17	5	0.75	3967871
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.1	<0.1	0.1	0.011	3975112	<5	5	0.55	3967871
Perfluorotetradecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.016	3975112	<5	5	0.8	3967871
Perfluorotridecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.024	3975112	<5	5	1.2	3967871
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<0.1	<0.1	0.1	0.022	3975112	<5	5	1.1	3967871

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD249				AAD250	AAD250			
Sampling Date										
COC Number		506215-01-01				506215-01-01	506215-01-01			
	Units	**B7 2-6**	**RDL**	**MDL**	**QC Batch**	**B7 8-12**	**B7 8-12 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	5.6	1.0	0.040	3970029	7.5	N/A	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<5	5	0.7	3967871	<0.1	N/A	0.1	0.014	3975112
Perfluorobutanoic acid	ug/kg	<5	5	0.85	3967871	<0.1	N/A	0.1	0.017	3975112
Perfluorodecane Sulfonate	ug/kg	6	5	1	3967871	0.3	N/A	0.1	0.02	3975112
Perfluorodecanoic Acid (PFDA)	ug/kg	<5	5	0.85	3967871	<0.1	N/A	0.1	0.017	3975112
Perfluorododecanoic Acid (PFDoA)	ug/kg	<5	5	1.3	3967871	<0.1	N/A	0.1	0.025	3975112
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<5	5	0.75	3967871	<0.1	N/A	0.1	0.015	3975112
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<5	5	0.75	3967871	0.5	N/A	0.1	0.015	3975112
Perfluorohexanoic Acid (PFHxA)	ug/kg	<5	5	0.55	3967871	0.3	N/A	0.1	0.011	3975112
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<5	5	1.2	3967871	<0.1	N/A	0.1	0.023	3975112
Perfluorononanoic Acid (PFNA)	ug/kg	<5	5	0.5	3967871	<0.1	N/A	0.1	0.01	3975112
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	6	5	0.6	3967871	2.2	N/A	0.1	0.012	3975112
Perfluorooctane Sulfonate (PFOS)	ug/kg	120	5	0.75	3967871	6 (1)	9	5	0.75	3967871
Perfluoropentanoic Acid (PFPeA)	ug/kg	<5	5	0.55	3967871	0.2	N/A	0.1	0.011	3975112
Perfluorotetradecanoic Acid	ug/kg	<5	5	0.8	3967871	<0.1	N/A	0.1	0.016	3975112
Perfluorotridecanoic Acid	ug/kg	<5	5	1.2	3967871	<0.1	N/A	0.1	0.024	3975112
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<5	5	1.1	3967871	0.3	N/A	0.1	0.022	3975112

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD251		AAD252			
Sampling Date							
COC Number		506215-01-01		506215-01-01			
	Units	**B8 6-10**	**QC Batch**	**B10 8-12 UPPER**	**RDL**	**MDL**	**QC Batch**
Moisture	%	5.9	3970110	13	1.0	0.040	3970029
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.1	3975112	<0.1	0.1	0.014	3975112
Perfluorobutanoic acid	ug/kg	<0.1	3975112	<0.1	0.1	0.017	3975112
Perfluorodecane Sulfonate	ug/kg	<0.1	3975112	<0.1	0.1	0.02	3975112
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	3975112	<0.1	0.1	0.017	3975112
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	3975112	<0.1	0.1	0.025	3975112
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.1	3975112	0.1	0.1	0.015	3975112
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.2	3975112	0.4	0.1	0.015	3975112
Perfluorohexanoic Acid (PFHxA)	ug/kg	<0.1	3975112	0.3	0.1	0.011	3975112
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.1	3975112	0.2	0.1	0.023	3975112
Perfluorononanoic Acid (PFNA)	ug/kg	<0.1	3975112	0.3	0.1	0.01	3975112
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.1	3975112	<0.1	0.1	0.012	3975112
Perfluorooctane Sulfonate (PFOS)	ug/kg	4.6	3975112	3.0	0.1	0.015	3975112
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.1	3975112	0.3	0.1	0.011	3975112
Perfluorotetradecanoic Acid	ug/kg	<0.1	3975112	<0.1	0.1	0.016	3975112
Perfluorotridecanoic Acid	ug/kg	<0.1	3975112	<0.1	0.1	0.024	3975112
Perfluoroundecanoic Acid (PFUnA)	ug/kg	0.1	3975112	<0.1	0.1	0.022	3975112

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		AAD253		AAD254			
Sampling Date							
COC Number		506215-01-01		506215-01-01			
	Units	**B12 6-10 UPPER**	**QC Batch**	**B12 6-10 LOWER**	**RDL**	**MDL**	**QC Batch**
Moisture	%	4.5	3970029	3.2	1.0	0.040	3970110
Perfluorobutane Sulfonate (PFBS)	ug/kg	0.2	3975112	0.2	0.1	0.014	3975112
Perfluorobutanoic acid	ug/kg	0.1	3975112	0.1	0.1	0.017	3975112
Perfluorodecane Sulfonate	ug/kg	<0.1	3975112	<0.1	0.1	0.02	3975112
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	3975112	<0.1	0.1	0.017	3975112
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	3975112	<0.1	0.1	0.025	3975112
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.7	3975112	0.4	0.1	0.015	3975112
Perfluorohexane Sulfonate (PFHxS)	ug/kg	21 (1)	3967871	6 (1)	5	0.75	3967871
Perfluorohexanoic Acid (PFHxA)	ug/kg	1.0	3975112	0.9	0.1	0.011	3975112
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	1.0	3975112	0.4	0.1	0.023	3975112
Perfluorononanoic Acid (PFNA)	ug/kg	<0.1	3975112	<0.1	0.1	0.01	3975112
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.2	3975112	<0.1	0.1	0.012	3975112
Perfluorooctane Sulfonate (PFOS)	ug/kg	0.3	3975112	0.4	0.1	0.015	3975112
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.5	3975112	0.4	0.1	0.011	3975112
Perfluorotetradecanoic Acid	ug/kg	<0.1	3975112	<0.1	0.1	0.016	3975112
Perfluorotridecanoic Acid	ug/kg	<0.1	3975112	<0.1	0.1	0.024	3975112
Perfluoroundecanoic Acid (PFUnA)	ug/kg	<0.1	3975112	<0.1	0.1	0.022	3975112

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

TEST SUMMARY

Maxxam ID: AAD204
Sample ID: B1 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD205
Sample ID: B1 8-12
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD206
Sample ID: B2 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD207
Sample ID: B2 8-12 CAP
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD208
Sample ID: B2 8-12 WT
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD209
Sample ID: B3 0-4 UPPER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

TEST SUMMARY

Maxxam ID: AAD210
Sample ID: B3 0-4 LOWER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD211
Sample ID: B3 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD212
Sample ID: B4 0-4
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD213
Sample ID: B4 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD235
Sample ID: B4 8-12 CAP
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD235 Dup
Sample ID: B4 8-12 CAP
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha

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Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

TEST SUMMARY

Maxxam ID: AAD236
Sample ID: B4 8-12 WT
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD237
Sample ID: B9 0-4
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD237 Dup
Sample ID: B9 0-4
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha

Maxxam ID: AAD238
Sample ID: B9 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD239
Sample ID: B9 8-12
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD240
Sample ID: B10 0-4
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967869	2015/04/01	2015/04/01	Sin Chii Chia

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TEST SUMMARY

Maxxam ID: AAD241
Sample ID: B10 4-8
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD242
Sample ID: POND SOUTH
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD243
Sample ID: POND NORTH
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD244
Sample ID: POND DELTA
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD245
Sample ID: B5 6-10 UPPER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD246
Sample ID: B5 6-10 LOWER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

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TEST SUMMARY

Maxxam ID: AAD247
Sample ID: B6 6-10 UPPER
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD247 Dup
Sample ID: B6 6-10 UPPER
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD248
Sample ID: B6 6-10 LOWER
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD249
Sample ID: B7 2-6
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD250
Sample ID: B7 8-12
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD250 Dup
Sample ID: B7 8-12
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	3967871	2015/04/01	2015/04/01	Sin Chii Chia

Maxxam ID: AAD251
Sample ID: B8 6-10
Matrix: Soil
Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha

Maxxam Job #: B553366
Report Date: 2015/04/20

Kerfoot Technologies Inc
Client Project #: Cape Cod Commission

TEST SUMMARY

Maxxam ID: AAD251
Sample ID: B8 6-10
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD252
Sample ID: B10 8-12 UPPER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD253
Sample ID: B12 6-10 UPPER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970029	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

Maxxam ID: AAD254
Sample ID: B12 6-10 LOWER
Matrix: Soil

Collected:
Shipped:
Received: 2015/03/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3970110	N/A	2015/04/02	Chamika Deeyagaha
PFOS and PFOA in soil	LCMS	3975112	2015/04/08	2015/04/08	Sin Chii Chia

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GENERAL COMMENTS

Sample AAD241-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AAD242-01 : Perfluorinated Compounds (PFCs): Detection limits were raised due to high concentrations of the target analytes and high moisture content.

Sample AAD243-01 : Perfluorinated Compounds (PFCs): Detection limits were raised due to high concentrations of the target analytes and high moisture content.

Sample AAD244-01 : Perfluorinated Compounds (PFCs): Detection limits were raised due to high concentrations of the target analytes and high moisture content.

Sample AAD245-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were raised accordingly.

Sample AAD246-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AAD248-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AAD249-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

RESULTS OF ANALYSES OF SOIL

PFOS and PFOA in soil: Matrix Spike recovery was above the defined upper control limit for the following parameters:
Perfluorooctane Sulfonamide (PFOSA), Perfluorotridecanoic Acid (PFTrDA), Perfluoroheptanoic Acid (PFHpA), Perfluorohexanoic Acid (PFHxA), Perfluorohexane Sulfonate (PFHxS) and Perfluorooctane Sulfonate (PFOS).
Laboratory spiked soil (Spike) resulted in satisfactory recoveries for the compounds of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high in some results for these specific analytes. For results that were not detected (ND), this potential bias has no impact.

Sample AAD247, PFOS and PFOA in soil: Test repeated.
Sample AAD250, PFOS and PFOA in soil: Test repeated.
Sample AAD253, PFOS and PFOA in soil: Test repeated.
Sample AAD254, PFOS and PFOA in soil: Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
3967869	SCH	Matrix Spike(AAD205)	Perfluorobutane Sulfonate (PFBS)	2015/04/01		90	%	70 - 130
			Perfluorobutanoic acid	2015/04/01		91	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/01		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/01		110	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/01		87	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/01		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01		92	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/01		106	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/01		99	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01		86	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01		95	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/01		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/01		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/01		88	%	70 - 130
3967869	SCH	Spiked Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/01		97	%	70 - 130
			Perfluorobutanoic acid	2015/04/01		87	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/01		92	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/01		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/01		94	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/01		103	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/01		101	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/01		102	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01		98	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01		96	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/01		114	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/01		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/01		94	%	70 - 130
3967869	SCH	Method Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/01	<5		ug/kg	
			Perfluorobutanoic acid	2015/04/01	<5		ug/kg	
			Perfluorodecane Sulfonate	2015/04/01	<5		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2015/04/01	<5		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2015/04/01	<5		ug/kg	
			Perfluorononanoic Acid (PFNA)	2015/04/01	<5		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01	<5		ug/kg	
			Perfluorotetradecanoic Acid	2015/04/01	<5		ug/kg	
			Perfluorotridecanoic Acid	2015/04/01	<5		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01	<5		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01	<5		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01	<5		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2015/04/01	<5		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01	<5		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2015/04/01	<5		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2015/04/01	<5		ug/kg	
3967871	SCH	Matrix Spike(AAD250)	Perfluorobutane Sulfonate (PFBS)	2015/04/01		123	%	70 - 130
			Perfluorobutanoic acid	2015/04/01		95	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/01		129	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/01		126	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/01		122	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/01		106	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01		138 (1)	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/01		128	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/01		140 (1)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01		114	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01		134 (1)	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01		131 (1)	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/01		139 (1)	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01		119	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/01		132 (1)	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/01		98	%	70 - 130
3967871	SCH	Spiked Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/01		95	%	70 - 130
			Perfluorobutanoic acid	2015/04/01		85	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/01		97	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/01		89	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/01		98	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/01		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01		89	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/01		83	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/01		87	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01		102	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01		91	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01		100	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/01		112	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/01		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/01		98	%	70 - 130
3967871	SCH	Method Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/01	<5		ug/kg	
			Perfluorobutanoic acid	2015/04/01	<5		ug/kg	
			Perfluorodecane Sulfonate	2015/04/01	<5		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2015/04/01	<5		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2015/04/01	<5		ug/kg	
			Perfluorononanoic Acid (PFNA)	2015/04/01	<5		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/01	<5		ug/kg	
			Perfluorotetradecanoic Acid	2015/04/01	<5		ug/kg	
			Perfluorotridecanoic Acid	2015/04/01	<5		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2015/04/01	<5		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2015/04/01	<5		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2015/04/01	<5		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2015/04/01	<5		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/01	<5		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2015/04/01	<5		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2015/04/01	<5		ug/kg	
3967871	SCH	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/04/01	NC		%	30
3970029	BOP	RPD - Sample/Sample Dup	Moisture	2015/04/02	0.83		%	20
3970110	BOP	RPD - Sample/Sample Dup	Moisture	2015/04/02	2.6		%	20
3975112	SCH	Matrix Spike(AAD247)	Perfluorobutane Sulfonate (PFBS)	2015/04/08		96	%	70 - 130
			Perfluorobutanoic acid	2015/04/08		92	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/08		89	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/08		100	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/08		92	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/08		108	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/08		97	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/08		92	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/08		92	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluoroundecanoic Acid (PFUnA)	2015/04/08		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/08		96	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/08		97	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/08		112	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/08		103	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/08		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/08		97	%	70 - 130
3975112	SCH	Spiked Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/08		91	%	70 - 130
			Perfluorobutanoic acid	2015/04/08		91	%	70 - 130
			Perfluorodecane Sulfonate	2015/04/08		100	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/04/08		90	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/04/08		99	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/04/08		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/08		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/04/08		109	%	70 - 130
			Perfluorotridecanoic Acid	2015/04/08		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/04/08		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/04/08		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/04/08		97	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/04/08		114	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/08		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/04/08		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/04/08		103	%	70 - 130
3975112	SCH	Method Blank	Perfluorobutane Sulfonate (PFBS)	2015/04/08	<0.1		ug/kg	
			Perfluorobutanoic acid	2015/04/08	<0.1		ug/kg	
			Perfluorodecane Sulfonate	2015/04/08	<0.1		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2015/04/08	<0.1		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2015/04/08	<0.1		ug/kg	
			Perfluorononanoic Acid (PFNA)	2015/04/08	<0.1		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/08	<0.1		ug/kg	
			Perfluorotetradecanoic Acid	2015/04/08	<0.1		ug/kg	
			Perfluorotridecanoic Acid	2015/04/08	<0.1		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2015/04/08	<0.1		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2015/04/08	<0.1		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2015/04/08	<0.1		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2015/04/08	<0.1		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/08	<0.1		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2015/04/08	<0.1		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2015/04/08	<0.1		ug/kg	
3975112	SCH	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/04/08	NC		%	30
			Perfluorobutanoic acid	2015/04/08	NC		%	30
			Perfluorodecane Sulfonate	2015/04/08	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/04/08	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/04/08	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/04/08	9.5		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/04/08	NC		%	25
			Perfluorotetradecanoic Acid	2015/04/08	NC		%	30
			Perfluorotridecanoic Acid	2015/04/08	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/04/08	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/04/08	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/04/08	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/04/08	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/04/08	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluoropentanoic Acid (PFPeA)	2015/04/08	NC		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Technical Service

Cristina Carriere, Scientific Services

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

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AP

CHAIN OF CUSTODY RECORD

Page 1 of 3

INVOICE TO:	
Company Name:	#29803 Cape Cod Comission
Attention:	Tom Cambareri
Address:	3225 Main Street
	Barnstable MA 02630
Tel:	(508) 362-3828 x1234 Fax:
Email:	tcambareri@capecodcommission.org

REPORT TO:	
Company Name:	Cape Cod Commission
Attention:	Tom Cambareri
Address:	3225 MAIN STREET
	BARNSTABLE MA 02630
Tel:	508 362 3828 x1234 Fax: 508-362-3136
Email:	TCAMBARERI@capecodcommission.org

PROJECT INFORMATION:	
Quotation #:	
P.O. #:	
Project:	
Project Name:	BFTA
Site #:	
Sampled By:	

Laboratory Use Only:	
Maxxam Job #:	Bottle Order #: 528190
COC #: C#528190-01-01	Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Analysis	# of Bottles	Comments
1		HS-2 0-4	1/21/16	1040	soil		537 PFCs	1	
2		HS-2 4	1/21/16	1040	soil		537 PFCs		
3		HS-2 6	1/21/16	1040	soil		537 PFCs		
4		HS-3 0-4	1/21/16	1110	soil		537 PFCs		
5		HS-3 4-8	1/21/16	1110	soil		537 PFCs		
6		HS-3 8-12	1/21/16	1110	soil		537 PFC		
7		HS-1 0-4	1/21/16	0940	soil		537 PFCs		
8		HS-1 4-8	1/21/16	0940	soil		537 PFCs		
9		HS-1 8-12	1/21/16	0940	soil		537 PFCs		
10		HS-4 4	1/21/16	1140	soil		537 PFCs	↓	

28-Jan-16 14:20
Melissa DiGrazia
B618227
SEL ENV-623

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	1/26/16	1615	[signature] Jiwan Tony	2016/01/28	14:20	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.1/5.6/5.4	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:	Tom Cambareri	P.O. #:			
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:	BETA		
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 x1234 Fax: 508-362-3136	Site #:			
Email:	tcambareri@capecodcommission.org	Email:	TCambareri@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)?

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		HS-4 8	1/21/16	1140	soil	537/PFC	1	
2		HS-4 8-12	1/21/16	1140	soil	537/PFC		
3		HS-7 3-4	1/21/16	1310	soil	537/PFC		
4		HS-5 4-8 TOP	1/21/16	1210	soil	537/PFC		
5		HS-5 4-8 MID	1/21/16	1210	soil	537/PFC		
6		HS-5 8-12	1/21/16	1210	soil	537/PFC		
7		HS-6 0-4	1/21/16	1210	soil	537/PFC		
8		HS-6 4-8	1/21/16	1210	soil	537/PFC		
9		HS-6 8-12	1/21/16	1210	soil	537/PFC		
10		HS-6 12	1/21/16	1210	soil	537/PFCs		

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	1/26/16	1615	[signature]	2016/01/28	14:26			5.1/5.6/5.4	Present	✓	
									Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD — Page 3 of 3

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #29803 Cape Cod Comission	Company Name: Cape Cod Commission	Quotation #:	Maxxam Job #: / Bottle Order #: 528190
Attention: Tom Cambareri	Attention: Tom Cambareri	P.O. #:	
Address: 3225 Main Street, Barnstable MA 02630	Address: 3225 MAIN STREET, BARNSTABLE MA 02630	Project:	COC #: C#528190-01-01
Tel: (508) 362-3828 x1234 Fax:	Tel: 508 362 3828 x1234 Fax: 508 362 3136	Project Name: BETA	Project Manager: Melissa DiGrazia
Email: tcambareri@capecodcommission.org	Email: TCAMBAREFI@capecodcommission.org	Site #: / Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Other

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒ (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) Date Required: ___ Time Required: ___ Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		PFW-2	1/21/16	2:15PM	water	537/PFCs	1	
2		PRW-4	1/21/16	1:30 PM	Water	537/PFCs		
3		HSW-6	1/21/16	1540	water	537/PFCs		
4		MID PT	1/21/16	1:30 PM	water	537/PFCs		
5		HSW-1	1/21/16	1500	water	537/PFCs		
6								
7								
8								
9								
10								

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	1/26/16	1615	[signature] Juan Toro	2016/01/28	14:20	

Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt: 5.1/5.6/5.4 | Custody Seal: Present / Intact — Yes / No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/02/10
Report #: R3891122
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B618227
Received: 2016/01/28, 14:20

Sample Matrix: Soil
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	20	N/A	2016/02/05	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	20	2016/02/01	2016/02/01	CAM SOP-00894	EPA537 m

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	4	2016/01/29	2016/02/01	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/02/03	2016/02/04	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX867			BSX868			BSX869			
Sampling Date		2016/01/21 10:40			2016/01/21 10:40			2016/01/21 10:40			
COC Number		528190-01-01			528190-01-01			528190-01-01			
	UNITS	**HS-2 0-4**	**RDL**	**MDL**	**HS-2 4**	**RDL**	**MDL**	**HS-2 6**	**RDL**	**MDL**	**QC Batch**
Moisture	%	14	1.0	0.50	18	1.0	0.50	5.2	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	0.60	1	0.25	1.1	1	0.25	0.34	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	28	1	0.21	49	1	0.21	20	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	12	1	0.2	28	1	0.2	1.5	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	2.0	1	0.28	2.6	1	0.28	1.2	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	3.7	1	0.24	8.0	1	0.24	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.85	1	0.15	0.92	1	0.15	0.75	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	0.24	1	0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	2.4	1	0.19	4.6	1	0.19	1.5	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.41	1	0.21	0.70	1	0.21	0.42	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.30	1	0.12	0.57	1	0.12	0.21	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	1.1	1	0.14	1.6	1	0.14	0.81	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	7.3	1	0.17	11	1	0.17	0.64	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	160 (1)	10	0.16	610 (1)	100	16	450 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	0.46	1	0.21	0.30	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	0.37	1	0.22	0.25	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	7.3	1	0.25	7.2	1	0.25	0.44	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	30	1	0.26	200 (1)	100	26	62 (1)	10	2.6	4365440
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	105	N/A	N/A	108	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	85	N/A	N/A	95	N/A	N/A	102	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	81	N/A	N/A	85	N/A	N/A	82	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam
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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX870			BSX871	BSX872			
Sampling Date		2016/01/21 11:10			2016/01/21 11:10	2016/01/21 11:10			
COC Number		528190-01-01			528190-01-01	528190-01-01			
	UNITS	HS-3 0-4	RDL	MDL	HS-3 4-8	HS-3 8-12	RDL	MDL	QC Batch
Moisture	%	8.1	1.0	0.50	4.1	6.8	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	0.42	1	0.25	0.68	0.49	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	3.4	1	0.21	13	20	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	7.5	1	0.2	1.2	2.2	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.28	1	0.28	1.1	1.4	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	2.5	1	0.24	<0.24	0.92	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	<0.15	1	0.15	0.55	<0.15	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.59	1	0.19	0.88	0.71	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.31	1	0.21	0.24	0.28	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.12	1	0.12	<0.12	<0.12	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.42	1	0.14	0.49	0.39	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	5.7	1	0.17	0.55	1.4	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	11	1	0.16	310 (1)	370 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	2.7	1	0.22	<0.22	0.64	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	3.6	1	0.25	0.65	8.9	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	1.2	1	0.26	13	10	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	93	88	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	96	N/A	N/A	94	100	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	90	N/A	N/A	78	92	N/A	N/A	4365440

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX873			BSX874			BSX875			
Sampling Date		2016/01/21 09:40			2016/01/21 09:40			2016/01/21 09:40			
COC Number		528190-01-01			528190-01-01			528190-01-01			
	UNITS	HS-1 0-4	RDL	MDL	HS-1 4-8	RDL	MDL	HS-1 8-12	RDL	MDL	QC Batch
Moisture	%	12	1.0	0.50	25	1.0	0.50	11	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.4	1	0.25	2.4	1	0.25	1.1	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	13	1	0.21	31	1	0.21	7.8	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	7.8	1	0.2	7.8	1	0.2	0.9	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	0.72	1	0.28	3.0	1	0.28	0.54	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	3.2	1	0.24	1.3	1	0.24	0.32	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.61	1	0.15	1.8	1	0.15	0.56	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	<0.18	1	0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.7	1	0.19	5.3	1	0.19	1.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.24	1	0.21	0.42	1	0.21	0.45	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.38	1	0.12	1.0	1	0.12	0.23	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.77	1	0.14	1.2	1	0.14	0.47	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	5.5	1	0.17	3.5	1	0.17	0.48	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	160 (1)	10	1.6	830 (1)	100	16	140 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	<0.21	1	0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	0.79	1	0.22	0.29	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	30	1	0.25	6.1	1	0.25	1.3	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	13	1	0.26	66 (1)	10	2.6	10	1	0.26	4365440
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	88	N/A	N/A	94	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	96	N/A	N/A	108	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	74	N/A	N/A	99	N/A	N/A	93	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX876	BSX877			BSX878			
Sampling Date		2016/01/21 11:40	2016/01/21 11:40			2016/01/21 11:40			
COC Number		528190-01-01	528190-01-01			528190-01-01			
	UNITS	**HS-4 4**	**HS-4 8**	**RDL**	**MDL**	**HS-4 8-12**	**RDL**	**MDL**	**QC Batch**
Moisture	%	7.8	3.8	1.0	0.50	2.7	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	2.2	4.3	1	0.25	7.3	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	43	28	1	0.21	15	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	1.5	0.8	1	0.2	1.1	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	1.7	1.0	1	0.28	0.62	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	0.49	0.32	1	0.24	0.50	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.65	2.8	1	0.15	5.5	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	<0.18	1	0.18	0.41	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.4	4.5	1	0.19	6.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.34	0.32	1	0.21	0.57	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.34	0.66	1	0.12	0.77	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.84	1.0	1	0.14	1.0	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	2.3	0.85	1	0.17	1.5	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	330 (1)	280 (1)	100	16	140 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	<0.21	1	0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	<0.22	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	1.6	1.3	1	0.25	4.5	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	37	18	1	0.26	20	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	98	99	N/A	N/A	110	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	95	97	N/A	N/A	111	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	86	93	N/A	N/A	87	N/A	N/A	4365440

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX879	BSX879			BSX880	BSX881			
Sampling Date		2016/01/21 13:10	2016/01/21 13:10			2016/01/21 12:10	2016/01/21 12:10			
COC Number		528190-01-01	528190-01-01			528190-01-01	528190-01-01			
	UNITS	**HS-7 3-4**	**HS-7 3-4 Lab-Dup**	**RDL**	**MDL**	**HS-5 4-8TOP**	**HS-5 4-8MID**	**RDL**	**MDL**	**QC Batch**
Moisture	%	13	11	1.0	0.50	6.2	3.6	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.9	N/A	1	0.25	2.2	1.8	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	350 (1)	N/A	100	21	23	27	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	N/A	1	0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	N/A	1	0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	N/A	1	0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	N/A	1	0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	N/A	1	0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	N/A	1	0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	2.8	N/A	1	0.2	0.7	0.8	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	16	N/A	1	0.28	1.2	1.6	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	N/A	1	0.24	<0.24	0.35	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.96	N/A	1	0.15	0.70	1.1	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	N/A	1	0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	5.3	N/A	1	0.19	1.7	1.3	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.95	N/A	1	0.21	0.33	0.26	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.50	N/A	1	0.12	0.25	0.22	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	1.7	N/A	1	0.14	1.3	0.68	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	1.2	N/A	1	0.17	1.0	0.93	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	2000 (1)	N/A	100	16	240 (1)	350 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.42	N/A	1	0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	N/A	1	0.22	<0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	0.34	N/A	1	0.25	0.98	1.5	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	260 (1)	N/A	100	26	28	13	1	0.26	4365440
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	90	N/A	N/A	N/A	99	96	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	102	N/A	N/A	N/A	99	104	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	84	N/A	N/A	N/A	86	89	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX882	BSX883	BSX884	BSX885	BSX885			
Sampling Date		2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10			
COC Number		528190-01-01	528190-01-01	528190-01-01	528190-01-01	528190-01-01			
	UNITS	**HS-5 8-12**	**HS-6 0-4**	**HS-6 4-8**	**HS-6 8-12**	**HS-6 8-12 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	4.1	10	3.0	4.6	N/A	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.6	11	4.6	6.3	5.7	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	26	18	27	21	19	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	<0.39	<0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	<0.29	<0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	<0.25	<0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	<0.2	<0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	<0.25	<0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	<0.23	<0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	0.4	1.3	0.7	0.5	0.5	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	1.2	1.9	1.2	1.1	0.92	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	0.33	<0.24	<0.24	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.77	1.3	4.3	1.1	1.3	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	0.46	<0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.5	9.2	3.7	4.5	4.8	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	<0.21	1.4	0.32	0.37	0.34	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.22	3.7	0.62	0.89	0.90	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.75	5.7	1.3	0.51	0.55	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.17	5.9	0.71	0.24	0.23	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	380 (1)	410 (1)	500 (1)	330 (1)	360 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	<0.21	<0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	0.23	<0.22	<0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	0.56	45	0.34	0.40	0.48	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	1.6	26	15	5.4	5.6	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	103	98	90	72	66	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	110	84	94	98	98	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	83	75	89	86	91	N/A	N/A	4365440

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX886			
Sampling Date		2016/01/21 12:10			
COC Number		528190-01-01			
	UNITS	HS-6 12	RDL	MDL	QC Batch
Moisture	%	10	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.9	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	8.3	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	0.54	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	1.4	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	0.47	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	<0.15	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.41	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	3.1	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.12	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.30	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.76	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	170 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.99	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	<0.25	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	13	1	0.26	4365440
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	94	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	97	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	82	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam
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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX887	BSX887				BSX888			
Sampling Date		2016/01/21 14:15	2016/01/21 14:15				2016/01/21 13:30			
COC Number		528190-01-01	528190-01-01				528190-01-01			
	UNITS	**PFW-2**	**PFW-2 Lab-Dup**	**RDL**	**MDL**	**QC Batch**	**PRW-4**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	5.5	4.9	0.80	0.21	4364195	0.43	0.020	0.0065	4368596
8:2 Fluorotelomer sulfonate	ug/L	1.3	1.2	0.80	0.28	4364195	0.17	0.020	0.0055	4368596
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	0.80	0.28	4364195	<0.0053	0.020	0.0053	4368596
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	0.80	0.29	4364195	<0.0049	0.020	0.0049	4368596
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	0.80	0.15	4364195	<0.0040	0.020	0.0040	4368596
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	0.80	0.30	4364195	<0.0061	0.020	0.0061	4368596
Perfluorobutane Sulfonate (PFBS)	ug/L	0.64	0.70	0.80	0.23	4364195	0.14	0.020	0.0019	4368596
Perfluorobutanoic acid	ug/L	0.52	0.71	0.80	0.20	4364195	0.063	0.020	0.0066	4368596
Perfluorodecane Sulfonate	ug/L	0.25	<0.22	0.80	0.22	4364195	<0.0043	0.020	0.0043	4368596
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	<0.20	0.80	0.20	4364195	0.013	0.020	0.0066	4368596
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	0.80	0.16	4364195	<0.0057	0.020	0.0057	4368596
Perfluoroheptane sulfonate	ug/L	0.80	0.60	0.80	0.27	4364195	0.15	0.020	0.0036	4368596
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.71	0.70	0.80	0.27	4364195	0.13	0.020	0.0047	4368596
Perfluorohexane Sulfonate (PFHxS)	ug/L	4.4	4.5	0.80	0.16	4364195	1.8 (1)	0.80	0.16	4364195
Perfluorohexanoic Acid (PFHxA)	ug/L	2.3	2.3	0.80	0.17	4364195	0.37	0.020	0.0046	4368596
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.1	1.1	0.80	0.20	4364195	0.16	0.020	0.0053	4368596
Perfluorononanoic Acid (PFNA)	ug/L	0.56	0.59	0.80	0.19	4364195	0.061	0.020	0.0046	4368596
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	0.80	0.23	4364195	0.013	0.020	0.0058	4368596
Perfluorooctane Sulfonate (PFOS)	ug/L	39	40	0.80	0.14	4364195	5.2 (1)	0.80	0.14	4364195
Perfluoropentanoic Acid (PFPeA)	ug/L	1.3	1.4	0.80	0.21	4364195	0.23	0.020	0.0036	4368596
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.20	0.80	0.20	4364195	<0.0052	0.020	0.0052	4368596
Perfluorotridecanoic Acid	ug/L	<0.30	<0.30	0.80	0.30	4364195	<0.0032	0.020	0.0032	4368596
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.84	0.82	0.80	0.14	4364195	0.075	0.020	0.0037	4368596
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	105	100	N/A	N/A	4364195	109	N/A	N/A	4364195
13C4-Perfluorooctanoic acid	%	99	107	N/A	N/A	4364195	91	N/A	N/A	4368596
13C8-Perfluorooctanesulfonamide	%	104	103	N/A	N/A	4364195	82	N/A	N/A	4368596

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX889				BSX890			
Sampling Date		2016/01/21 15:40				2016/01/21 13:30			
COC Number		528190-01-01				528190-01-01			
	UNITS	HSW-6	RDL	MDL	QC Batch	MID PT	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	2.9	0.80	0.21	4364195	0.038	0.020	0.0065	4368596
8:2 Fluorotelomer sulfonate	ug/L	3.7	0.80	0.28	4364195	0.016	0.020	0.0055	4368596
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4364195	<0.0053	0.020	0.0053	4368596
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4364195	<0.0049	0.020	0.0049	4368596
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4364195	<0.0040	0.020	0.0040	4368596
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4364195	<0.0061	0.020	0.0061	4368596
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23	0.80	0.23	4364195	0.014	0.020	0.0019	4368596
Perfluorobutanoic acid	ug/L	0.42	0.80	0.20	4364195	0.016	0.020	0.0066	4368596
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4364195	<0.0043	0.020	0.0043	4368596
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4364195	<0.0066	0.020	0.0066	4368596
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4364195	0.0077	0.020	0.0057	4368596
Perfluoroheptane sulfonate	ug/L	0.55	0.80	0.27	4364195	0.017	0.020	0.0036	4368596
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.62	0.80	0.27	4364195	0.017	0.020	0.0047	4368596
Perfluorohexane Sulfonate (PFHxS)	ug/L	3.7	0.80	0.16	4364195	0.093	0.020	0.0040	4368596
Perfluorohexanoic Acid (PFHxA)	ug/L	1.5	0.80	0.17	4364195	0.056	0.020	0.0046	4368596
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.94	0.80	0.20	4364195	0.016	0.020	0.0053	4368596
Perfluorononanoic Acid (PFNA)	ug/L	0.54	0.80	0.19	4364195	0.0059	0.020	0.0046	4368596
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4364195	<0.0058	0.020	0.0058	4368596
Perfluorooctane Sulfonate (PFOS)	ug/L	77	8.0	1.4	4364195	0.27	0.020	0.0033	4368596
Perfluoropentanoic Acid (PFPeA)	ug/L	0.86	0.80	0.21	4364195	0.038	0.020	0.0036	4368596
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4364195	0.0068	0.020	0.0052	4368596
Perfluorotridecanoic Acid	ug/L	0.44	0.80	0.30	4364195	0.0051	0.020	0.0032	4368596
Perfluoroundecanoic Acid (PFUnA)	ug/L	1.1	0.80	0.14	4364195	0.0069	0.020	0.0037	4368596
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	106	N/A	N/A	4364195	86	N/A	N/A	4368596
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	4364195	91	N/A	N/A	4368596
13C8-Perfluorooctanesulfonamide	%	96	N/A	N/A	4364195	88	N/A	N/A	4368596

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX891			
Sampling Date		2016/01/21 15:00			
COC Number		528190-01-01			
	UNITS	**HSW-1**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	8.8	0.80	0.21	4364195
8:2 Fluorotelomer sulfonate	ug/L	4.2	0.80	0.28	4364195
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4364195
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4364195
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4364195
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4364195
Perfluorobutane Sulfonate (PFBS)	ug/L	0.78	0.80	0.23	4364195
Perfluorobutanoic acid	ug/L	0.82	0.80	0.20	4364195
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4364195
Perfluorodecanoic Acid (PFDA)	ug/L	0.54	0.80	0.20	4364195
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4364195
Perfluoroheptane sulfonate	ug/L	0.90	0.80	0.27	4364195
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.94	0.80	0.27	4364195
Perfluorohexane Sulfonate (PFHxS)	ug/L	7.4	0.80	0.16	4364195
Perfluorohexanoic Acid (PFHxA)	ug/L	3.3	0.80	0.17	4364195
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.7	0.80	0.20	4364195
Perfluorononanoic Acid (PFNA)	ug/L	0.77	0.80	0.19	4364195
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4364195
Perfluorooctane Sulfonate (PFOS)	ug/L	110	8.0	1.4	4364195
Perfluoropentanoic Acid (PFPeA)	ug/L	1.7	0.80	0.21	4364195
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4364195
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4364195
Perfluoroundecanoic Acid (PFUnA)	ug/L	1.4	0.80	0.14	4364195
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	118	N/A	N/A	4364195
13C4-Perfluorooctanoic acid	%	100	N/A	N/A	4364195
13C8-Perfluorooctanesulfonamide	%	106	N/A	N/A	4364195

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: BSX867
Sample ID: HS-2 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX868
Sample ID: HS-2 4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX869
Sample ID: HS-2 6
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX870
Sample ID: HS-3 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX871
Sample ID: HS-3 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX872
Sample ID: HS-3 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

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TEST SUMMARY

Maxxam ID: BSX873
Sample ID: HS-1 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX874
Sample ID: HS-1 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX875
Sample ID: HS-1 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX876
Sample ID: HS-4 4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX877
Sample ID: HS-4 8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX878
Sample ID: HS-4 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

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TEST SUMMARY

Maxxam ID: BSX879
Sample ID: HS-7 3-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX879 Dup
Sample ID: HS-7 3-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan

Maxxam ID: BSX880
Sample ID: HS-5 4-8TOP
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX881
Sample ID: HS-5 4-8MID
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX882
Sample ID: HS-5 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX883
Sample ID: HS-6 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

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TEST SUMMARY

Maxxam ID: BSX884
Sample ID: HS-6 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX885
Sample ID: HS-6 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX885 Dup
Sample ID: HS-6 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX886
Sample ID: HS-6 12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX887
Sample ID: PFW-2
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX887 Dup
Sample ID: PFW-2
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX888
Sample ID: PRW-4
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4368596	2016/02/03	2016/02/04	Colm McNamara

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BSX889
Sample ID: HSW-6
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX890
Sample ID: MID PT
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4368596	2016/02/03	2016/02/04	Colm McNamara

Maxxam ID: BSX891
Sample ID: HSW-1
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

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GENERAL COMMENTS

Sample BSX887-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX889-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX891-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX888, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B618227
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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4364195	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/01		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/01		98	%	60 - 120
4364195	CM5	Matrix Spike(BSX887)	6:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		106	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		108	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		120	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		NC	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		NC	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		NC	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		116	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		101	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		117	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		NC	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		NC	%	70 - 130
4364195	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/01		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		96	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/01		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		103	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		105	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		104	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		111	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		101	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		107	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		95	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		100	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		100	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		105	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		120	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		98	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		96	%	70 - 130
4364195	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/01		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		92	%	70 - 130

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Report Date: 2016/02/10

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Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/02/01		86	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/01	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/01	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/02/01	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/01	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	<0.23		ug/L	
			Perfluorobutanoic acid	2016/02/01	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/02/01	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/02/01	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/02/01	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/02/01	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/02/01	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/01	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	<0.14		ug/L	
4364195	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/02/01	12		%	30
			8:2 Fluorotelomer sulfonate	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/02/01	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	NC		%	30
			Perfluorobutanoic acid	2016/02/01	NC		%	30
			Perfluorodecane Sulfonate	2016/02/01	NC		%	30
			Perfluoroheptane sulfonate	2016/02/01	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	1.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	NC		%	30
			Perfluorotetradecanoic Acid	2016/02/01	NC		%	30
			Perfluorotridecanoic Acid	2016/02/01	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/01	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	3.1		%	30
4365440	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/01		86	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		113	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		87	%	50 - 120
4365440	CM5	Matrix Spike(BSX885)	6:2 Fluorotelomer sulfonate	2016/02/01		111	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		101	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2016/02/01		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		103	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		105	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		90	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		104	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		95	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		112	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		96	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		104	%	70 - 130
4365440	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/01		99	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		96	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		79	%	50 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		96	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		114	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		114	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		96	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		124	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		105	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		87	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		110	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		112	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		106	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		107	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		112	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		107	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		103	%	70 - 130
4365440	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/01		99	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		109	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		80	%	50 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01	<0.25		ug/kg	
			8:2 Fluorotelomer sulfonate	2016/02/01	<0.21		ug/kg	
			N-ethylperfluorooctane sulfonamide	2016/02/01	<0.39		ug/kg	
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	<0.29		ug/kg	
			N-methylperfluorooctane sulfonamide	2016/02/01	<0.25		ug/kg	
			N-methylperfluorooctanesulfonamidol	2016/02/01	<0.2		ug/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	<0.25		ug/kg	
			Perfluorobutanoic acid	2016/02/01	<0.23		ug/kg	
			Perfluorodecane Sulfonate	2016/02/01	<0.2		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2016/02/01	<0.28		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	<0.24		ug/kg	
			Perfluoroheptane sulfonate	2016/02/01	<0.15		ug/kg	
			Perfluorononanoic Acid (PFNA)	2016/02/01	<0.14		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	<0.17		ug/kg	
			Perfluorotetradecanoic Acid	2016/02/01	<0.22		ug/kg	
			Perfluorotridecanoic Acid	2016/02/01	<0.25		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	<0.26		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	<0.18		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	<0.19		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	<0.21		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	<0.12		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	<0.16		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	<0.21		ug/kg	
4365440	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/02/01	11		%	30
			8:2 Fluorotelomer sulfonate	2016/02/01	7.0		%	30
			N-ethylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/02/01	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	NC		%	30
			Perfluorobutanoic acid	2016/02/01	NC		%	30
			Perfluorodecane Sulfonate	2016/02/01	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/01	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	NC		%	30
			Perfluoroheptane sulfonate	2016/02/01	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	NC		%	25
			Perfluorotetradecanoic Acid	2016/02/01	NC		%	30
			Perfluorotridecanoic Acid	2016/02/01	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	4.5		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	NC (1)		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	NC		%	30
4368596	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/04		92	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/04		91	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/04		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/04		111	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/04		118	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/04		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/04		105	%	70 - 130
			Perfluorobutanoic acid	2016/02/04		102	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/04		111	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/04		100	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04		113	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/04		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/04		112	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04		113	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/04		107	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/04		110	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/04		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04		108	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/04		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/04		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04		117	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/04		108	%	70 - 130
4368596	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/04		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		84	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		74	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04		115	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/04		115	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/04		110	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/04		101	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/04		117	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/04		93	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/04		107	%	70 - 130
			Perfluorobutanoic acid	2016/02/04		123	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/04		105	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/04		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04		111	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04		102	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/04		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/04		108	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04		123	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/04		103	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/04		117	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/04		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/04		108	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/04		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04		109	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/04		118	%	70 - 130
4368596	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/04		88	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		78	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/04	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/04	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/04	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/02/04	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/04	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/04	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/02/04	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/02/04	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/02/04	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/04	<0.0046		ug/L	

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorononanoic Acid (PFNA)	2016/02/04	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/04	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/02/04	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/02/04	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/04	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/04	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/04	<0.0033		ug/L	
4368596	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2016/02/04	NC		%	30
			Perfluorobutanoic acid	2016/02/04	NC		%	30
			Perfluorodecane Sulfonate	2016/02/04	NC		%	30
			Perfluoroheptane sulfonate	2016/02/04	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/04	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/04	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/04	NC		%	30
			Perfluorotetradecanoic Acid	2016/02/04	NC		%	30
			Perfluorotridecanoic Acid	2016/02/04	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/04	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/04	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/04	NC		%	30
4372577	SB1	RPD - Sample/Sample Dup	Moisture	2016/02/05	12		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

CHARTERED
Eva Pranjic
CHEMIST

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Appendix IV

Quality Assurance Project Plan for PFC Sampling at the Ashumet Valley Groundwater Plume

CH2M HILL
1748 West Truck Road
Otis ANGB, MA 02542

CH2MHILL

26 June 2014

Ms. Rose H. Forbes, P.E.
Remediation Program Manager
AFCEC/JBCC
322 East Inner Road
Otis ANG Base, MA 02542-5028

SUBJECT: AFCEC 4P08 FA8903-08-D-8769; Task Order 0365
MMR SPEIM/LTM, Evaluation and Optimization Program
CDRL #A005
Uniform Federal Policy-Quality Assurance Project Plan for PFC Sampling at the Ashumet Valley Groundwater Plume

Dear Ms. Forbes:

As directed by the Air Force Civil Engineer Center, CH2M HILL is providing copies of the *Uniform Federal Policy-Quality Assurance Project Plan for PFC Sampling at the Ashumet Valley Groundwater Plume* dated June 2014. Enclosed are two bound, one unbound, and three compact disks.

If you have any questions or comments, please contact me at (508) 968-4670, extension 5620.

Sincerely,

CH2M HILL

N. Tindall

Nigel Tindall, P.G.
Project Manager

Enclosures: (1 unbound, 2 bound, 4 CDs)

c. AFCEC/772d ESS/PKJ (via CDUT)
Rose Forbes, AFCEC (1)
Admin Record (1 CD)
Document Control, CH2M HILL

Joint Base Cape Cod

Uniform Federal Policy-Quality Assurance Project Plan for PFC Sampling at the Ashumet Valley Groundwater Plume

June 2014

Prepared for:
AFCEC/JBCC
Installation Restoration Program
322 E. Inner Road
Otis ANGB, MA 02542

Prepared by:
CH2M HILL
1748 West Truck Road
Otis ANGB, MA 02542

473147-Program-Multiple-QAPP-001

CDRL A005

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Abbreviations and Acronyms

AED	automated external defibrillator
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
ANG	Air National Guard
AV	Ashumet Valley
A2LA	American Association of Laboratory Accreditation
BRAC	Base Realignment and Closure Commission
CCV	continuing calibration verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
COR	Contracting Officer's Representative
DI	deionized
DL	detection limit
DoD	Department of Defense
DQO	data quality objective
DSR	data summary report
EDD	electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
ERA	Environmental Resource Associates
ERPIMS	Environmental Resources Program Information Management System
ETD	extraction, treatment, and discharge
ETI	extraction, treatment, and infiltration
FD	field duplicate
ft	foot/feet
FTA	Fire Training Area
FTL	Field Team Leader
HAZWOPER	hazardous waste operations and emergency response
HDPE	high-density polyethylene
HGL	Hydrogeologic Inc.
ICAL	initial calibration
IS	internal standard
JBCC	Joint Base Cape Cod
LCS	laboratory control sample
LOD	limit of detection

LOQ	limit of quantitation
LSOP	laboratory standard operating procedure
LUC	land use control
MA	Massachusetts
MassDEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MPC	measurement performance criteria
MS	matrix spike
MSD	matrix spike duplicate
NA	not available
N/A	not applicable
NIST	National Institute Standards and Technology
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
PCE	tetrachloroethene
PDF	portable document format
PE	performance evaluation
PFBS	Perfluorobutanesulfonic acid
PFC	perfluorinated compound
PFHPA	Perfluoroheptanoic acid
PFHXS	Perfluorohexanesulfonic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PID	Photoionization Detector
PM	project manager
QA	quality assurance
QC	quality control
QSM	Quality Systems Manual
%R	percent recovery
RF	response factor
RL	reporting limit
RPD	relative percent difference
RPM	Remediation Program Manager
RSD	relative standard deviation
RT	retention time
SDG	sample delivery group
SOP	standard operating procedure

STP	Sewage Treatment Plant
TA	TestAmerica
TCE	trichloroethene
UCL	upper confidence limit
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
VOC	volatile organic compound
YSI	Yellow Springs Instrument
µg/L	micrograms per liter
^{o}C	degrees Celsius

Executive Summary

This Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) presents the data quality objectives (DQOs), analytical program, and methodology for perfluorinated compound (PFC) sampling activities at the Ashumet Valley (AV) groundwater plume, located at the Joint Base Cape Cod (JBCC) in Massachusetts (MA). This UFP-QAPP was prepared under Contract No. 4P FA8903-08-D-8769 Task Order 0365 for the Air Force Civil Engineer Center (AFCEC) by CH2M Hill.

Project Background

The JBCC is located on western Cape Cod in Barnstable County, MA, approximately 60 miles south of Boston. The JBCC property includes land in the towns of Bourne, Falmouth, Mashpee, and Sandwich, Massachusetts. The AV groundwater plume is now detached from its on-base source areas and is located entirely off-base in the Town of Falmouth and extends approximately one to four miles south of the JBCC (Figure 1).

The AV groundwater plume is a large dilute dissolved-phase groundwater plume. The plume is defined as the extent of groundwater containing the AV contaminants of concern (COCs) tetrachloroethene (PCE) and trichloroethene (TCE) at concentrations exceeding the federal Maximum Contaminant Level (MCL) of 5 micrograms per liter (µg/L) for each compound. In addition, thallium and manganese are COCs at AV, however, detections of these compounds above their respective clean up levels have been historically limited to an area immediately downgradient of the former source areas and to the west of Ashumet Pond and are not used to define the extent of the AV plume. Thallium concentrations have decreased to less than the cleanup level (MCL) and therefore thallium is no longer monitored for; manganese is still detected at concentrations above the U.S. Environmental Protection Agency (EPA) Health Advisory of 300 µg/L and monitoring for manganese continues.

One of the sources of the AV PCE and TCE plume has been identified as the former Fire Training Area-1 (FTA-1). Firefighter-training exercises were held from 1958 to 1985 at FTA-1, during which time flammable waste liquids were burned and extinguished. One of the commercial sources for PFCs is aqueous film-forming foam (AFFF), a firefighting foam the Air Force began using at FTAs in 1970. As a result, the FTAs have been the focus for sampling efforts nationwide by the Air Force to identify the emerging contaminants, PFCs. The FTA-1 at AV was active during the time AFFF containing PFCs were used, and therefore the site was identified for further investigation.

Project Objectives and Approach

The objective of this PFC sampling effort is to determine the presence/absence of PFCs originating from the AV source area (FTA-1). If PFCs are detected at the AV monitoring wells or treatment plant, four private wells will be sampled for PFCs to start assessing the potential exposure pathways and possible risk to human health.

The recommendation to perform PFC sampling at the AV Plume was presented in the *Final 4th Five-Year Review, 2007-2012 MMR Superfund Site OTIS Air National Guard Base, MA* (AFCEC 2013a). Subsequent to the Five Year Review, the EPA requested expedited sampling for PFCs at AV during the 21 November 2013 Technical Update Meeting, and re-iterated that request in a follow-up letter submitted on 16 December 2013 (Appendix A). The EPA also provided a suggested list of AV monitoring wells to sample for PFCs in a 07 January 2014 e-mail communication (Appendix A).

A PFC Sampling Plan presentation was provided to the regulatory agencies at the 14 May 2014 Technical Update Meeting at the JBCC. The sampling plan presentation provided the sampling approach and proposed sample locations; details are provided in Worksheet 9. At the 14 May 2014 Technical Update Meeting it was agreed that monitoring well USFW502117 selected by the EPA (Appendix A) would be replaced with USFW375081 based on further review of the most recent plume monitoring data (Figure 1). The PFC Sampling Plan Project Note was submitted to the regulatory agencies for review and approval on 11 June 2014. The proposed groundwater sampling will be conducted in accordance with this UFP-QAPP, and the site specific health and safety plan (AFCEC 2014).

Based on many years of characterization and monitoring at AV, the groundwater flow field from the FTA-1 source area is well understood. If PFCs were used at FTA-1, it is expected that they would migrate in groundwater on a similar flow path as the AV PCE and TCE plume. Therefore, the existing monitoring wells that monitor the AV plume are well situated to detect the presence/absence of PFCs originating from the FTA-1 source area.

Worksheet #1 and #2—Title and Approval Page

Project Name and Site Location:	Ashumet Valley (AV) Plume, Joint Base Cape Cod (JBCC), MA.
Contract Number:	4P08 FA8903-08-D-8769-0365
Document Title:	*Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) for PFC Sampling at the Ashumet Valley Groundwater Plume*
Lead Organization:	Air Force Civil Engineer Center (AFCEC) 322 East Inner Road Otis Air National Guard Base (ANG), MA 02542-5028 E-mail: Rose.Forbes@us.af.mil
Lead Regulatory Organization:	U.S. Environmental Protection Agency (EPA), Federal Facilities Superfund Section 5 Post Office Square, Suite 100 Mail Code HBT 0SRR7-3 Boston, MA 02109-3912 E-mail: Jennings.Lynne@epa.gov
Contractor's Contact Information:	CH2M Hill 1748 West Truck Road Otis ANG Base, 02542 E-mail: Nigel.Tindall@CH2M.com
Identify Regulatory Program:	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
List organizational partners (stakeholders) and connection with lead organization:	AFCEC Headquarters 2261 Hughes Avenue JBSA Lackland, TX 78236-9853, Lead Agency EPA Region 1, Regulatory Agency Massachusetts Department of Environmental Protection Southeast Region, 20 Riverside Drive Lakeville, MA 02347, Regulatory Agency
List dates and titles of work plan documents written for previous site work, if applicable:	Analytical data have been collected by the Air Force at AV since the mid-1990s, and as early as 1979 by the U.S. Geological Survey. However, this is the first PFC sampling program at AV. A discussion of this prior site work is included in the *Ashumet Valley Groundwater Plume Conceptual Site Model* (AFCEC 2013C).
Preparation Date:	May/June 2014

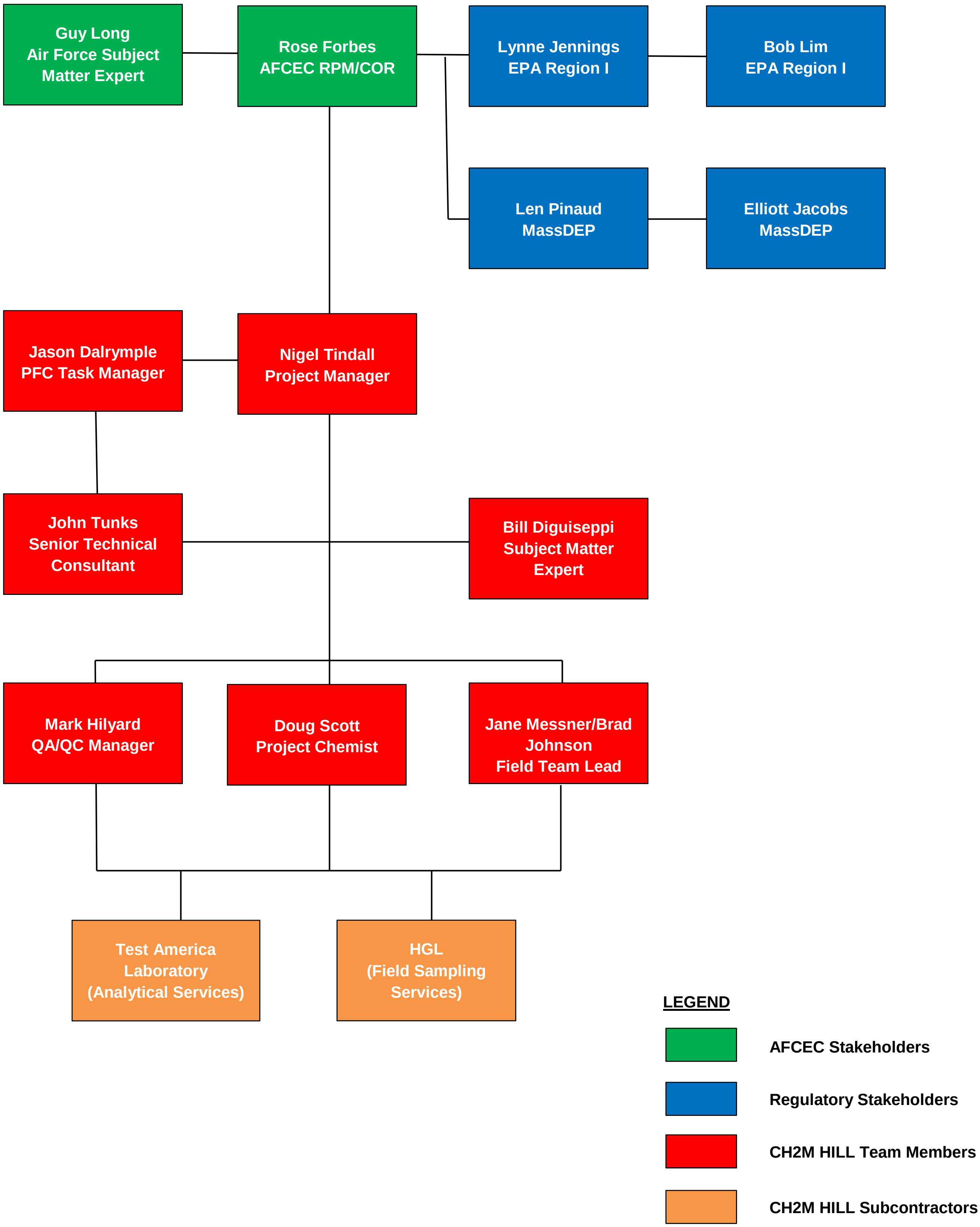
Nigel Tindall, CH2M Hill Project Manager (PM)

Date

Rose Forbes, AFCEC Remediation Program Manager (RPM)/
Contracting Officer's Representative (COR)

Date

Worksheet #3 and #5—Project Organization and UFP-QAPP Distribution



Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) Distribution
Uniform Federal Policy-Quality Assurance Project Plan for PFC Sampling at the Ashumet Valley Groundwater Plume
Contract No. 4P FA8903-08-D-8769, Task Order No. 0365

Recipient	Organization	Electronic copies (PDF)	Hard copies
Rose Forbes	AFCEC	x	x
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Len Pinaud	MassDEP	x	
Elliott Jacobs	MassDEP	x	
Nigel Tindall	CH2M Hill	x	x
Jason Dalrymple	CH2M Hill	x	x
Mark Hilyard	CH2M Hill	x	x
Administrative Record	AFCEC-JBCC	x	x

Worksheet #4, #7, and #8—Personnel Qualifications and Signoff Sheet

Organization: AFCEC/CH2M Hill/Hydrogeologic Inc. (HGL)

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature*
Rose Forbes	AFCEC RPM/COR	M.S., P.E., GS-13, 24 years of experience	Licensed professional engineer, MI, Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour Training; 8-Hour Refresher	
Nigel Tindall	CH2M Hill PM	M.S., P.G., 21 years of experience	Licensed professional geologist, New Hampshire; HAZWOPER 40-hour training; 8-hour refresher; cardiopulmonary resuscitation and first aid/automated external defibrillator (AED)	
Jason Dalrymple	CH2M Hill PFC Task Manager	B.S., 16 years of experience	HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED	
Mark Hilyard	CH2M Hill Quality Assurance (QA)/Quality Control (QC) Manager	M.S., 17 years of experience	HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED	
Jane Messner	CH2M Hill Field Team Leader (FTL)	M.S., 7 years of experience	HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED; Site Safety Coordinator Training	
Brad Johnson	CH2M Hill FTL	B.S., P.E., 25 years of experience	Licensed professional engineer, Massachusetts, HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED; Site Safety Coordinator Training; OSHA 10-Hour General Industry Safety training	
Brett Dubner	HGL Field Manager	B.S., 15 years of experience	HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED, Site Safety Coordinator Training, 10-hour Construction Supervisor Training, 30-hour Occupational Safety and Health Administration Construction Training	

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature*
Doug Scott	CH2M Hill Project Chemist	A.S., 29 years of experience	No specialized training	
Carl Woods	Health and Safety Manager	M.S., 17 years of experience	HAZWOPER 40-hour Training; 8-Hour Refresher; cardiopulmonary resuscitation and first aid/AED; Graduate Safety Professional; Certified Utility Safety Administrator	

*Signatures indicate personnel have read and agree to implement this UFP-QAPP as written.

Worksheet #6—Communication Pathways

Communication Drivers	Organization	Name	Contact Information	Procedure (Timing, Pathways, etc.)
Communication with AFCEC (lead agency)	AFCEC RPM/COR	Rose Forbes	(508) 968-4670 ext 5613	Primary point of contact for AFCEC; can delegate communication to other points of contact; communication conduit with AFCEC Headquarters, EPA, MassDEP, and other stakeholders; provides direction to CH2M Hill.
Communication with EPA	EPA Acting Chief	Lynne Jennings	(617) 918-1210	Primary point of contact for EPA; can delegate communication to other points of contact; provides technical and regulatory input and recommendations to AFCEC RPM.
Communication with CH2M Hill	CH2M Hill PM	Nigel Tindall	(508) 968-4670 ext 5620	Primary point of contact for CH2M Hill; can delegate communication to other points of contact; provides technical input and recommendations to AFCEC RPM. Receives direction from AFCEC RPM.
Secondary point of contact for CH2M Hill	CH2M Hill PFC Task Manager	Jason Dalrymple	(508) 968-4670 ext 3010	Primary point of contact for PFC related tasks; receives direction from CH2M Hill PM; provides input to CH2M Hill's PM and project team on project status.
Primary point of contact for QA/QC issues	QA/QC Manager	Mark Hilyard	(508) 968-4670 ext 5604	The QA/QC systems manager communicates directly with the CH2M Hill PM. The QA/QC manager's duties and responsibilities include the following: • Supervising all QA/QC aspects of the project to ensure field and analytical compliance with UFP-QAPP • Managing the QA/QC program including Performance Evaluation (PE) program • Ensuring all technical deliverables undergo review
Progress of field program	CH2M Hill Field Team Leader (FTL)	Jane Messner Brad Johnson (alternate)	(508) 968-4670 ext 2220 (508) 968-4754 ext 15	Conveys progress of field activities, including deviations from the UFP-QAPP; communication with CH2M Hill PM and project team; directs HGLs field manager; oversees onsite safety activities.
Secondary contact for field program progress	HGL Field Manager	Brett Dubner	(508) 968-4670 ext 2234	Manages field sampling; conveys progress of field activities; verifies that the UFP-QAPP analytical requirements are met by the laboratory and field staff; communication with CH2M Hill PM, project staff and FTL; directs HGL's field support staff; communicates with local officials and property owners (with AFCEC RPM approval).

Communication Drivers	Organization	Name	Contact Information	Procedure (Timing, Pathways, etc.)
Field and analytical corrective actions; release of analytical data	CH2M Hill Project Chemist	Doug Scott	(970) 731-0636	Verifies that the UFP-QAPP analytical requirements are met by the laboratory and field staff. Also, provides direction regarding requirements for corrective actions for field and analytical issues; evaluates and releases validated analytical results to the CH2M Hill PM and project team; supports PE program.
Health and safety issues	CH2M Hill Health and Safety Manager	Carl Woods	(513) 889-5771	Supports the CH2M Hill project team by developing site safety and health requirements; approves activity hazard analyses; conducts field audit(s).
Primary point of contact for Test America Denver Laboratories	Test America PM	Michelle Johnston	(303) 736-0110	Primary point of contact for Test America Denver Laboratory. Receives direction from CH2M Hill Project Chemist. Responsible for ensuring the UFP-QAPP requirements are met by the laboratory.

Worksheet #9—Project Scoping Session Participants Sheet

The recommendation to perform PFC sampling at the AV Plume was presented in the *Final 4th Five-Year Review, 2007-2012 MMR Superfund Site OTIS Air National Guard Base, MA* (AFCEC 2013a). Subsequent to the Five Year Review, the EPA requested expedited sampling for PFCs at JBCC during the 21 November 2013 Technical Update Meeting, and re-iterated that request in a follow-up letter submitted on 16 December 2013 (Appendix A). The EPA also provided a suggested list of AV monitoring wells to sample for PFCs in a 07 January 2014 e-mail communication (Appendix A).

CH2M Hill developed a "PFC Sampling Plan" presentation that was provided to the regulatory agencies at the 14 May 2014 Technical Update Meeting at the JBCC. The presentation included the suggested list of monitoring wells to sample for PFCs and a figure depicting their location (Table 9-1, Figure 1). The list includes the six AV monitoring wells that EPA requested in their 07 January 2014 e-mail communication (Appendix A), plus two additional AV monitoring wells selected by AFCEC, and the AV treatment plant influent and effluent sample ports. At the 14 May 2014 Technical Update Meeting it was agreed that monitoring well USFW502117 selected by the EPA (Appendix A) would be replaced with USFW375081 based on further review of the most recent plume monitoring data (Figure 1). The suggested sampling list also included four land use control (LUC) private wells to be sampled at a later date if the presence of PFCs is confirmed through the sampling of the AV monitoring wells or treatment plant sample locations. The rationale for each sample location is provided in Worksheet 17 and is summarized in the sampling plan presentation.

The PFC Sampling Plan Project Note will be submitted to the regulatory agencies for review and approval at a later date with this UFP-QAPP attached. The PFC Sampling Plan presentation and project note will include a summary of the data quality objectives (DQOs) (Worksheet 11), the reporting limits and detections limits provided by the laboratory (Worksheet 15), the planned reporting of the results, and the schedule. Consistent with the *Interim Air Force Guidance on Sampling and Response Actions for PFCs at Active and BRAC Installations* (U.S. Air Force 2012), the following six PFC compounds will be analyzed for:

a) Perfluorooctanesulfonic acid (PFOS),
b) Perfluorooctanoic acid (PFOA),
c) Perfluorohexanesulfonic acid (PFHXS),
d) Perfluoroheptanoic acid (PFHPA),
e) Perfluorononanoic acid (PFNA) and
f) Perfluorobutanesulfonic acid (PFBS).

The PFOS and PFOA results will be compared to the EPA provisional health advisory for drinking water of 0.2 microgram per liter (μg/L) for PFOS and 0.4 μg/L for PFOA. Since no standards or advisories exist for the other four PFC compounds, concentrations will be reported to determine the presence or absence of those compounds. The PFC Sampling Plan Project Note will be reviewed and signed by the regulatory agencies before sampling activities begin.

Table 9-1
Proposed PFC Sample Locations at Ashumet Valley
UFP-QAPP for PFC Sampling at the Ashumet Valley Groundwater Plume

Monitoring Location	Location/Rationale
30MW0417C*	Within FTA-1 source area
30MW0585A*	Within upgradient AV lobe
95MW1171A*	Adjacent to shutdown AV extraction well 95EW0701
95MW1235A	Leading edge well to assess if PFCs advanced farther than VOC plume
95MW1237A*	Adjacent to leading edge non-operational extraction well 95EW0704
USFW497108	Leading edge well to assess if PFCs advanced farther than VOC plume
USFW375081	Within downgradient AV lobe near Backus River (substitute for EPA requested location USFW502117)
USSD344051*	Immediately downgradient of FTA-1 source area
95PLT01001	AV Treatment Plant Influent from 95EW0703
95PLT01004	AV Treatment Plant Effluent
RS0409CURR*	LUC private well sample if PFCs are detected within plume or treatment plant samples
RS0248ASHU*	LUC private well sample if PFCs are detected within plume or treatment plant samples
RS0247HAYW*	LUC private well sample if PFCs are detected within plume or treatment plant samples
95IG0003*	LUC private well sample if PFCs are detected within plume or treatment plant samples

Notes:
* = EPA requested six specific monitoring wells to be sampled, and any private wells near Ashumet Valley (Appendix A).
Sampling locations are shown on Figure 1.

Key:
AV = Ashumet Valley
EPA = U.S. Environmental Protection Agency
FTA-1 = Fire Training Area-1
LUC = land use control
PFC = perfluorinated compound
VOC = volatile organic compound

Worksheet #10—Conceptual Site Model

Site History

Ashumet Valley Plume

The AV groundwater plume is a large dilute dissolved-phase groundwater plume. The plume is defined as the extent of groundwater containing the AV contaminants of concern (COCs) PCE and TCE at concentrations exceeding the federal Maximum Contaminant Level (MCL) of 5 µg/L for each compound. In addition, thallium and manganese are COCs at AV, however, detections of these compounds above their respective clean up levels have been limited to an area immediately downgradient of the former source areas and to the west of Ashumet Pond and are not used to define the extent of the AV plume. Thallium concentrations have decreased to less than the cleanup level (MCL) and therefore thallium is no longer monitored for; manganese is still detected at concentrations above the EPA Health Advisory of 300 µg/L and monitoring for manganese continues.

Based on groundwater monitoring data collected in 2013, the AV plume consists of three disconnected zones of contamination. The northernmost zone is approximately 3,500 feet (ft) long and 700 ft wide; the central zone is approximately 3,400 ft long and 1,100 ft wide; and the southern zone is approximately 7,300 ft long and 2,250 ft wide. The plume ranges up to 75 ft thick in the aquifer. The footprint of the AV plume occupies approximately 487 acres (Figure 1).

The AV remedial system consists of: (1) an extraction, treatment, and infiltration (ETI) remedial system; and (2) a leading edge extraction, treatment, and discharge (ETD) remedial system (Figure 1). The ETI system currently has one operational extraction well that is remediating the PCE and TCE groundwater plume. The ETD system is currently shutdown on an interim basis because PCE/TCE MCL exceedances are not present in the immediate capture zone of the extraction well.

Land above the AV plume is used for residential, limited commercial/industrial, agricultural, and recreational purposes including golf courses, and a wildlife area managed by the Massachusetts Division of Fisheries and Wildlife. Agricultural use of land in the area of the plume is primarily in the south with the cultivation and harvesting of cranberries from the Backus River bogs. The land above the AV plume can be characterized as a broad, flat, gently southward sloping glacial outwash plain. Further details regarding the AV Plume can be found in the *Ashumet Valley Groundwater Plume Conceptual Site Model* (AFCEC 2013c).

The sources of the AV PCE and TCE plume have been identified as the former FTA-1 and the former JBCC Sewage Treatment Plant (STP). Firefighter-training exercises were held from 1958 to 1985 at FTA-1, during which time flammable waste liquids were burned and extinguished. The former STP, which operated from 1936 to 1995, released treated wastewater to a series of sand infiltration beds. De-watered sewage sludge was also disposed of in a nearby wooded area.

PFC Sampling Rationale

One of the commercial sources for PFCs is aqueous film-forming foam (AFFF), a firefighting foam the Air Force began using at FTAs in 1970. As a result, the FTAs have been the focus for sampling efforts nationwide by the Air Force to identify the emerging contaminants, PFCs. The FTA-1 at AV was active during the time AFFF's containing PFCs were used, and therefore, the site was identified for further investigation. The most commonly encountered PFC compounds are PFOA and PFOS. The EPA established a provisional health advisory for drinking water of 0.2 μg/L for PFOS and 0.4 μg/L for PFOA.

Based on many years of characterization and monitoring at AV, the groundwater flow field from the source area (i.e., FTA-1 and the STP) is well understood. If PFCs were used at FTA-1, it is expected that they would migrate in groundwater on a similar flow path as the AV VOC plume. Therefore, the existing monitoring wells that monitor the AV plume are well situated to detect the presence/absence of PFCs originating from the FTA-1 source area. The treatment plant influent is being sampled to determine if extraction well 95EW0703 (the one remaining operating extraction well) is capturing PFC-contaminated groundwater (if present), and the treatment plant effluent is being sampled to determine if PFCs (if present) are being treated by granular activated carbon. If PFCs are detected in the monitoring wells or treatment plant samples, four private wells will be sampled for PFCs to start assessing the potential exposure pathways and possible risk to human health. Work Sheet #11 provides the DQOs for the PFC investigation. Worksheet # 17 defines more specific detail and rational for sample collection at each planned location.

Worksheet #11—Data Quality Objectives

Data Quality Objectives

DQOs define the type, quantity, and quality of data that are needed to answer project-specific questions and support project-specific decisions. The DQOs were developed during the work planning process, which will include input from the project stakeholders, as discussed in Worksheet #9.

Who will use the data?

AFCEC, EPA, MassDEP, and CH2M Hill will use the data to support the project-specific decisions to be made, as outlined in the Worksheet #11 tables (below) and to support updates to the project conceptual site model, as presented in Worksheet #10.

What will the data be used for?

The data will be used to determine the presence/absence of PFCs originating from the AV source area (FTA-1 and the STP). If PFCs are detected during the initial sampling round at the AV monitoring wells or treatment plant, four private wells will be sampled for PFCs to start assessing the potential exposure pathways and possible risk to human health. The PFC data will be used to update the conceptual site model to the extent possible given the scope of sampling planned.

What types of data are needed?

The sampling design and rationale is presented in Worksheet #17 (*Sampling Design and Rationale*). A complete listing of the sample analytes (six PFC compounds in accordance with the *Interim Air Force Guidance On Sampling and Response Actions for Perfluorinated Compounds at Active and BRAC Installations*) are provided in Worksheet #15 (*Reference Limits and Evaluation*).

How "good" should the data be in order to support the environmental decision?

Analytical methods are planned to be definitive quality data. Definitive data are defined as data that are suitable for final decision making. The comparison of detected concentrations against screening levels (provided in Table 15-1) will be used to support the project-specific decisions. Data are generated using rigorous analytical methods, in this case, approved, Environmental Laboratory Accreditation Program (ELAP) certified laboratory standard operating procedures (SOPs). Definitive data are not restricted in their use unless quality problems require data qualification resulting in unusable data. Data of definitive quality are typically needed to evaluate the human health risks. Definitive data will be suitable to answer the DQOs.

How much data are needed? Where, when, and how should the data be collected/generated?

Worksheet #17 (*Sampling Design and Rationale*) describes the field investigation activities planned. Worksheet #18 (*Sampling Locations and Methods*) summarizes the number of samples and the analytical parameters necessary to assess presence/absence and concentrations of PFCs at the selected locations. Additional data may be needed, based on the decision rules presented in Worksheet #11. SOPs for field sampling and analytical procedures are discussed in Worksheets #21 (*Field SOPs*) and #23 (*Analytical SOP References*). The field SOPs related to this PFC sampling project were obtained from the JBCC Quality Assurance Project Plan (AFCEC 2013b), modified as appropriate for PFC sampling, and are provided in Appendix B. The Laboratory SOPs (LSOPs) are available upon request from the laboratory. Currently, the fieldwork is planned June/July 2014 once regulatory concurrence of the PFC Sampling Work Plan Project Note is obtained.

Who will collect and generate the data?

CH2M Hills subcontractor, HGL will complete the field sampling activities. Groundwater samples will be submitted to Test America (TA) Denver Laboratories, located in Arvada, Colorado for analysis. All data will be managed by CH2M Hill for AFCEC. Data will be loaded to the Air Force Environmental Resources Program Information Management System (ERPIMS) database.

How will the data be reported? How will the data be archived?

Information generated from field activities will be documented on appropriate forms and will be maintained on-site. These include chain-of-custody records, field books, well construction forms, boring logs, location sketches, and site photographs. In addition, notes from critical project meetings and telephone conversations will be filed in the on-site document control system.

Analytical data will be reported electronically in Portable Document Format (PDF). PDF analytical data will meet reporting requirements defined in Worksheet #29. Electronic data deliverables (EDDs) will follow the CH2M Hill LabSpec 7 format defined in Appendix C. Following validation, analytical data will be provided to the Air Force for loading into the ERPIMS database.

The EDDs will be managed and stored on CH2M Hill's electronic network. The PDF data packages will be filed by the sample deliver group in project files located at AFCEC Building 1748 West Truck Road, Otis ANG Base, Massachusetts office. Analytical data and project records will be stored by CH2M Hill for five years after project completion. Project records will be archived on compact disc or digital video disc media and stored in the project file and available from CH2M Hill. Upon project closeout, the data packages will be submitted to the National Archives facility in Waltham, Massachusetts by AFCEC.

Data Quality Objectives Development

The structure of the DQO process provides an effective planning tool that can save resources by making data collection operations more effective and complete to meet overall project objectives.

DQOs are created based on establishing scientifically sound data that will address the overall problem to be solved and include the purpose and media for sample collection, the analytical detection limits (DLs) necessary to support planned data screening or comparisons to appropriate regulatory benchmarks, QA/QC needs, and knowledge of existing data and project data gaps.

Complete DQOs will allow for the end result of the project to address the original problem to be solved to reach a previously agreed upon project closure point.

The DQO process consists of seven iterative steps. Each step defines criteria that will be used to establish the final data collection design. The seven steps are as follows:

1. State the problem to be resolved.
2. Identify the decisions to be made.
3. Identify the inputs to the decisions.
4. Define the boundaries of the study.
5. Develop a decision rule.
6. Specify the tolerable limits on decision errors.
7. Optimize the design for obtaining the data.

Table 11-1 presents the DQOs developed for this PFC sampling program.

Table 11-1
Ashumet Valley Perfluorinated Compound Data Quality Objectives – Joint Base Cape Cod

Problem Statement	Decision to be Made	Inputs to the Decision	Study Area Boundaries	Decision Rule	Acceptable Limits on Decision Error	Optimize the Design
The potential presence of PFC groundwater contamination within the AV Plume associated with past Fire-Training activities in the source area has been identified. Sample collection/analysis is required to assess the presence/absence of PFCs in the AV Plume and compare detections of PFOS and PFOA to EPA provisional health advisories for drinking water.	Are PFCs present or absent within the AV groundwater plume? Are PFCs entering the AV treatment system in the plant influent; are PFCs present in the plant effluent? If PFCs are present in AV groundwater, are PFCs associated with the AV plume also present in private wells at nearby residences utilizing groundwater as a drinking water or irrigation source? If there are PFC concentrations in groundwater, do they exceed the EPA provisional health advisories in Worksheet #15?	PFC concentrations in groundwater samples collected from monitoring wells, treatment plant influent and effluent, and potentially private residences listed in Table 9-1.	Figure 1 provides the current AV plume depiction. The groundwater flow field from the source area is well delineated and understood. Therefore, the existing monitoring wells that monitor the AV VOC plume are well situated to detect the presence/absence of PFCs originating from the same potential source area.	If PFCs are not detected in AV monitoring wells or in the treatment plant influent/effluent, then PFCs will not be considered a COC for AV moving forward. If PFCs are detected, then additional sample collection will be required at four private well locations listed in Table 9-1 and shown on Figure 1 as an initial step in assessing the potential exposure pathways and possible risk to human health.	The PFC sampling network (Worksheet #17) consisting of 10 AV sample locations and up to four private wells have been proposed by the EPA with some additional input from AFCEC and CH2M Hill staff with detailed knowledge of the AV site. The selected sampling locations are appropriate to provide data to answer the problem statement with sufficient certainty. Laboratory analysis of samples collected will provide the necessary data to meet PARCCS objectives of this UFP-QAPP, compliant with the DoD QSM Version 5.0 and the *Interim Air Force Guidance On Sampling and Response Actions for Perfluorinated Compounds at Active and BRAC Installations* (US Air Force 2012). Analytical laboratory data will be of definitive data quality. The laboratory method proposed in this UFP-QAPP provides the lowest available method detection limits. This will allow for the data to be screened against the EPA provisional health advisories as defined in Worksheet #15.	Depending on the results of this project, additional investigation may be recommended. Further investigative steps (including cranberry sampling) will be discussed with stakeholders and agreed upon prior to any further action.

Key:
AV = Ashumet Valley
BRAC = Base Realignment and Closure Commission
COC = contaminant of concern
DoD = Department of Defense
EPA = U.S. Environmental Protection Agency
FTA = Fire-Training Area
PARCCS = precision, accuracy, representativeness, comparability, completeness, and sensitivity
PFC = perfluorinated compound
PFOA = Perfluorooctanoic acid
PFOS = Perfluorooctanesulfonic acid
QSM = Quality Systems Manual
STP = Sewage Treatment Plant
UFP-QAPP = uniform federal policy-quality assurance project plan

Worksheet #12—Measurement Performance Criteria

Measurement performance criteria (MPC) were established for groundwater analytical parameters for the project. Refer to the following worksheets for the required information in Worksheet #12:

- Worksheet #15 (*Reference Limits and Evaluation*) for reporting limit objectives
- Worksheet #24 (*Analytical Instrument Calibration*) and Worksheet #28 (*Analytical Quality Control and Corrective Action*) for the requirements of laboratory QA/QC activities for groundwater analytical methods
- Worksheet # 35 (*Data Verification Procedures*) and Worksheet #36 (*Data Validation Procedures*) for data review and validation process
- Worksheet #37 (*Data Usability Assessment*) for precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters

The quality of the data to be collected for this project will be verified using appropriate MPC established for both sampling procedures and analytical methods. The criteria will relate to the reporting limit objectives. The MPCs follow those defined in the Department of Defense (DoD) Quality Systems Manual (QSM) Version 5.0 (DoD 2013). The sampling procedures and the quality of the laboratory results will be evaluated for compliance with the project-specific DQOs through a review of overall PARCCS, in accordance with procedures described in Worksheet #37 (*Data Usability Assessment*). The results will be summarized in a data summary report (DSR).

Worksheet #13—Secondary Data Uses and Limitations

Secondary data refer to historical data previously collected from the site. The source(s) of the data, date of collection, planned uses, and limitations of the secondary data are summarized in the Table 13-1.

Table 13-1
Secondary Data Criteria and Limitations
UFP-QAPP for PFC Sampling at the AV Groundwater Plume

Secondary Data	Source	Date of Collection	How Data Will Be Used	Limitations on Data Use
VOC Data	Multiple AFCEC reports and ERPIMS	Mid-1990s to present	Approximately 20 years of data collection at the AV plume provides a very good understanding of the regional flow field and PCE/TCE contaminant distribution. Existing AV monitoring wells are appropriately located to monitor for PFCs potentially originating from the AV FTA-1 source area.	No limitations.

Key:
AFCEC = Air Force Civil Engineer Center
AV = Ashumet Valley
ERPIMS = Environmental Resources Program Information Management System
FTA-1 = Fire Training Area-1
PCE = tetrachloroethene
PFC = perfluorinated compound
TCE = trichloroethene
VOC = volatile organic compound

Worksheet #14 and #16—Project Tasks and Schedule

Combined Worksheets #14 and #16 provide an overview of project tasks and includes a project schedule. The following project tasks are discussed:

- Pre-sampling activities
- Sampling activities
- Laboratory analysis
- Data review, management, and usability
- Data screening comparison
- Reporting

Field activities and procedures for the groundwater investigation to achieve the project DQOs are briefly summarized in the following sections.

Pre-Sampling Activities

The pre-sampling activities will include coordinating site access, acquiring subcontractors and materials, and a detailed readiness review.

Sampling Activities

One round of groundwater samples will be collected at the ten sampling locations listed in Table 9-1 and shown on Figure 1 to gather the data to achieve the DQOs (Table 11-1), e.g., determine the presence/absence of PFCs and, if detected, compare concentrations to EPA provisional health advisories. Groundwater samples will be collected using low-flow sampling techniques. During the groundwater sampling event, water quality parameters will be collected including dissolved oxygen, oxidation-reduction potential, specific conductance, temperature, and pH. If PFCs are detected at any of the ten sample locations, samples will be collected for PFC analysis at the four private wells listed in Table 9-1. The schedule for the sampling of the private wells (if needed) will be coordinated with AFCEC and the regulatory agencies following receipt and evaluation of the groundwater and treatment plant results. It is anticipated that samples will be collected at the AV monitoring wells and treatment plant in June 2014, assuming timely approval of the sampling plan by the stakeholders.

There are a number of precautions that must be taken by sample personnel to avoid sample contamination during PFC sample collection, which are discussed in SOP-TECH-014 (*Residential Well Sampling)*, SOP-TECH-030 (*Small Diameter Well and Drive Point Groundwater Sampling*), and SOP-TECH-073 (*Port Sampling)* (Appendix B).

Laboratory Analysis

Laboratory analyses are described in Worksheet #15 (*Reference Limits and Evaluation*) and Worksheet #17 (*Sampling Design and Rationale*) and summarized in the following paragraphs.

Groundwater samples will be analyzed by laboratory specific SOP DV-LC-0012. TA Denver in Arvada, Colorado, will analyze the samples. TA currently holds DoD ELAP certification for the required method. The laboratory analyses will be performed in accordance with the analytical method, this UFP-QAPP, and the LSOP as defined in Worksheet #23 (*Analytical SOP References*).

Performance Evaluation Samples

One PE sample and an associated blank of the source water used to make the PE sample will be purchased from Environmental Resource Associates (ERA) in Denver, Colorado, and will provide for varying concentrations of target PFC compounds with a target level goal of less than 1 μg/L. These PE samples will be submitted to TA for analysis such that the sample identifications are blind, the laboratory will not be aware that the samples are PE-related. The analytical results for the PE samples will be compared to acceptance ranges provided by ERA and discussed in the DSR. Should the results be out of the acceptance limits, the potential impacts to data quality and a corrective action path forward will be discussed with all stakeholders.

Data Management, Review and Usability

Data Management

Hard copy and electronic data (field and laboratory) will be tracked, stored, handled, and managed. Field activities will be recorded in project logbooks and on the applicable standard field forms provided in the SOPs (Appendix B). Site maps will be maintained and sample locations will be updated on the maps as necessary. Field and analytical data will be consolidated and maintained within an electronic database management system. The database management system will be used to perform sample tracking, storage of electronic data, validation of data, querying data for analysis, and preparation of final data tables. Validated data will be submitted to the Air Force ERPIMS database.

Documents and Records

Project-related data, including field logs, field forms, chain-of-custody forms, correspondence, and project reports will be maintained in hard copy and/or electronic format (PDF) at the CH2M Hill JBCC on-site office.

Data Review

A three-step data review process (consisting of verification, validation, and usability assessment) will be employed to examine the collected data so that only scientifically-sound data of known and documented quality are used to make environmental decisions. Worksheets #34 (*Data Verification and Validation Inputs*) through #37 (*Data Usability Assessment*) describes the process and criteria in detail.

Analytical data obtained during the project will be validated by a qualified CH2M Hill chemist according to the specifications provided in Worksheet #36 (*Data Validation Procedures*). Full documentation of the data validation process and the results will be provided in a DSR as an appendix to the final Project Note deliverable.

Data Usability

The data usability assessment is an evaluation based on the results of data validation in the context of the overall project decisions and objectives. The assessment is used to determine whether the project execution and resulting data meet the project DQOs (Worksheet #11). Both the sampling and analytical activities must be considered, with the ultimate goal of assessing whether the final, qualified results support the decisions to be made with the data. Worksheet #37 (*Data Usability Assessment*) describes the process in detail.

As part of the data usability assessment, field data will be compiled in field logs listing the sampling details, field observations, and field parameter measurements. Field data will be used to further refine the understanding of site conditions and to update the conceptual site model, as appropriate.

Before data presentation and evaluation, analytical data will be processed to identify the "best result" for a given sample based on unique location, time, medium, and depth. The best result will then be used to compare to the applicable project screening levels (i.e., the EPA provisional health advisories), to determine preliminary assessment of the nature and extent of PFC contamination, and to determine whether private residential wells should be sampled. Best result processing is needed to produce a single representative value for each sample because of multiple records that may result from field duplicates (FDs).

A protocol has been developed that will be used to identify the best result for each sample in the project database, using the following general logic:

- If all results for a given sample are qualified as detected, then the maximum detected result is selected as best result.
- If some results for a given sample are qualified as detected and some qualified as nondetected, then the maximum detected result is selected as best result.
- If all results for a given sample are qualified as nondetected, then the result with the lowest quantitation limit is selected as the best result.
- If not rejected, flagged data will be used in the same way as the non-flagged data.

The results of the best result processing will be included in the DSR in an appendix to the final Project Note deliverable.

Data Result Screening to Objectives

The objective of this sampling program is to determine the presence/absence of PFCs at the AV groundwater plume, and if present, provide a comparison to the EPA provisional health advisories for PFOS and PFOA. If PFCs are detected at any of the ten initial sample locations (eight monitoring wells or two treatment plant samples), samples will be collected for PFC analysis at the four private wells to begin assessing the potential exposure pathways and possible risk to human health.

Reporting

Technical Update Meeting and Project Note

The PFC sample results will be presented to the regulatory agencies at the first Technical Update Meeting at JBCC following receipt of the validated results, likely in August or September 2014. PFOS and PFOA concentrations will be compared to their EPA provisional health advisory for drinking water of 0.2 μg/L and 0.4 μg/L, respectively. A project note deliverable will be prepared to document the data presentation, and will include a discussion of the results in context of whether or not the AV source area FTA-1 is a source of PFCs. Depending on the results, the project note may provide recommendations for further investigation.

Worksheet #15—Reference Limits and Evaluation

One of the primary goals of the project-specific UFP-QAPP is to select appropriate analytical methods to achieve DLs, limit of detections (LOD), and/or limit of quantitations (LOQs) that will satisfy the overall project DQOs (as defined in Worksheets # 10 [*Conceptual Site Model*] and #11 [*Data Quality Objectives*]).

To determine whether the DL, LOD, and LOQ will meet the analytical DQOs, the DLs, LODs, and LOQs have been compared to the project-specific screening criteria as follows:

Groundwater and Drinking Water: PFC U.S. EPA Provisional Health Advisory Goal, January 2009.

Table 15-1 shows the primary screening criteria with respect to the current analytical DL, LOD, and LOQ for each listed target compound. In all cases the expected detection levels are below the screening level objective.

If the LOD is below the screening criterion, the LOD and/or the LOQ are sufficient for quantitative use in a risk assessment. The DL is typically two times lower than the LOD. The LOD or the DL will be used to evaluate project objectives in the event that the LOQ exceeds the screening criterion.

Note that sample dilution because of target and or non-target compound concentrations or matrix interference may prevent DLs, LODs, or LOQs from being achieved. The samples must be initially analyzed undiluted when reasonable. If a dilution is necessary, both the original and diluted result must be delivered. Samples that are not analyzed undiluted must be supported by matrix interference documentation such as sample viscosity, color, odor, or results from other analyses of the same sample to show that an undiluted sample is not possible.

Table 15-1
Reporting Limit Objectives Compared to Screening Level Objectives for PFCs in Groundwater

UFP-QAPP for PFC Sampling at the AV Groundwater Plume

Method	Analyte	CAS	Units	EPA Provisional Health Advisory Value, January 2009	LOQ	Does LOQ Exceed Screening Level?	Estimated LOD	Does LOD Exceed Screening Level?	DL	Does DL Exceed Screening Level?	Lower Laboratory Control Limit (%)	Upper Laboratory Control Limit (%)	RPD (%)
DV-LC-0012	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	µg/L	0.2	0.03	No	0.02	No	0.0133	No	70	130	30
DV-LC-0012	Perfluorooctanoic acid(PFOA)	2706-90-3	µg/L	0.4	0.02	No	0.01	No	0.00979	No	70	130	30
DV-LC-0012	Perfluorohexanesulfonic acid (PFHXS)	307-24-4	µg/L	NA	0.03	N/A	0.01	N/A	0.00697	N/A	70	132	30
DV-LC-0012	Perfluoroheptanoic acid(PFHPA)	375-85-9	µg/L	NA	0.03	N/A	0.02	N/A	0.0132	N/A	70	135	30
DV-LC-0012	Perfluorononanoic acid (PFNA)	375-95-1	µg/L	NA	0.04	N/A	0.02	N/A	0.0174	N/A	69	143	30
DV-LC-0012	Perfluorobutanesulfonic acid (PFBS)	29420-43-3	µg/L	NA	0.02	N/A	0.01	N/A	0.00824	N/A	70	134	30
DV-LC-0012	C13 PFOS	STL01054	%	NA	NA	N/A	NA	N/A	NA	N/A	45	130	--
DV-LC-0012	C13 PFOA	STL01052	%	NA	NA	N/A	NA	N/A	NA	N/A	60	155	--

Note:
Constituents with "%" units are surrogates and are not a part of the target analytes.

Key:
DL = detection limit
EPA = U.S. Environmental Protection Agency
LOD = limit of detection
LOQ = limit of quantification
NA = not available
N/A = not applicable
PFC = perfluorinated compound
RPD = relative percent difference
µg/L = micrograms per liter

Worksheet #17—Sampling Design and Rationale

Worksheet #17 describes the planned PFC sampling activities at the AV plume. The field activities will be conducted in accordance with the PFC Sampling Plan Project Note. The number of samples and the analytical parameters planned are summarized in Worksheet #18 (*Sampling Locations and Methods*).

DQO #1—Determining Presence/Absence of PFCs in the AV Groundwater Plume

One round of groundwater samples will be collected at the ten sampling locations listed in Table 9-1 to achieve the DQOs (Table 11-1), e.g., determine the presence/absence of PFCs and compare detections of PFOS and PFOA to EPA provisional health standards. The EPA provided a suggested list of six AV monitoring wells to sample for PFCs (Appendix A, Table 9-1).

Based on many years of characterization and monitoring at AV, the groundwater flow field from the FTA-1 source area is well understood. If PFCs were used at FTA-1, it is expected that they would migrate in groundwater on a similar flow path as the AV VOC plume. Therefore, the existing monitoring wells that monitor the AV plume are well situated to detect the presence/absence of PFCs originating from the FTA-1 source area.

The following provides the rationale for each monitoring location:

- Monitoring well 30MW0417C is located within the FTA-1 source area
- Monitoring well USSD344051 is located hydraulically downgradient of the source area, in an area where the AV plume was historically detected (PCE/TCE concentrations have now decreased below the MCL in this area).
- Monitoring wells 30MW0585A and USFW375081 are located within the AV plume.
- Monitoring well 95MW1171A is located adjacent to non-operational extraction well 95EW0701, which was shutdown in May 2007.
- Monitoring well 95MW1237A is located adjacent to non-operational leading extraction well 95EW0704, which was shutdown on an interim basis in February 2014.
- Monitoring wells USFW497108 and 95MW1235A are located downgradient and outside of the leading edge of the AV plume boundary. These wells are being sampled to determine if PFCs (if present) have advanced farther downgradient than the AV VOC plume.
- The AV treatment plant influent (95PLT01001) and effluent (95PLT01004) will be sampled to determine if extraction well 95EW0703 (the one remaining operating extraction well) is capturing PFC contaminated groundwater.

If PFCs are detected at any of these ten sample locations, samples will be collected for PFC analysis at the four private wells listed in Table 9-1.

Collection of Groundwater Samples

Groundwater wells will be purged and sampled in accordance with the SOP-TECH-030 (*Small Diameter Well and Drive Point Groundwater Sampling*) (Appendix B). Static depth to groundwater measurements will be recorded in accordance with the SOP-TECH-006 (*Water Level Measurements*) (Appendix B), at the existing monitoring wells prior to sampling. During the groundwater sampling event, water quality parameters dissolved oxygen, oxidation-reduction potential, specific conductance, temperature, and pH will be collected in accordance with SOP-TECH-011 (*Field Measurements Using the YSI 6820 and 6920 Water Quality Meters*) (Appendix B). Treatment plant sample ports will be sampled in accordance with the SOP-TECH-073 (*Port Sampling)*, and if necessary, residential well sampling will be completed in accordance with SOP-TECH-014 (*Residential Well Sampling)* (Appendix B). Groundwater samples will be analyzed for the six PFC compounds listed in Worksheet #9 and #15.

Investigation-Derived Waste Management

Decontamination fluids and purge water generated during groundwater sampling will be containerized until sample results are received. If PFCs are not detected in any of the samples, the water generated during sampling will be disposed of through one of the JBCC groundwater treatment systems. If PFCs are detected, disposal options will be evaluated. Trash and personal protective equipment will be disposed of in the appropriate trash dumpsters at the JBCC.

Worksheet #18—Sampling Locations and Methods

The following table summarizes the sampling matrix, number of samples to be collected, analytical parameters, and the rationale for sampling location described in Worksheet #17 (*Sampling Design and Rationale*).

Sampling Location/ Sample Identification	Sampling ID	Matrix	Midscreen Elevation (ft msl)	Analytical Group	Estimated Number of Samples (identify FDs)	Sampling SOP Reference	Rationale for Sampling Location
Eight monitoring wells and two treatment plant samples are to be sampled to determine the presence or absence of PFCs to achieve the DQOs (Worksheet #11; Figure 1). One round of groundwater sampling at the existing locations is included.	95MW1171A	Groundwater	-102.53	PFCs	10 primary samples, 1 FD, and 1 MS/MSD per sampling event. One source blank and 2 blind PE samples will be submitted for analysis.	SOP *Low-flow Groundwater Sampling* (Appendix B) SOP *Water Level Measurements* (Appendix B)	Determine if site-related PFCs in groundwater are present or absent; quantify concentrations if detected and compare PFOS and PFOA to EPA provisional health advisories.
	95MW1235A		-86.30				
	95MW1237A		-59.85				
	USFW497108		-73.18				
	USFW375081		-50.35				
	USSD344051		30.37				
	95PLT01001		N/A				
	95PLT01004		N/A				
	30MW0417C		47.32				
	30MW0585A		-40.03				
Four private wells will be sampled if PFCs are detected in the monitoring wells or treatment plant to achieve the DQOs (Worksheet #11; Figure 1)	RS0409CURR RS0248ASHU RS0247HAYW 95IG0003	Groundwater	20.00 NA 15.00 15.00	PFCs	4 primary samples, 1 FD, and 1 MS/MSD	SOP *Residential Well Sampling* (Appendix B)	Determine if site-related PFCs are present in private well samples and quantify concentrations if detected.

Key:

DQO = data quality objective
EPA = U.S. Environmental Protection Agency
ft msl = feet mean sea level
FD = field duplicate
MS/MSD = matrix spike/matrix spike duplicate
NA = not available
N/A = not applicable
PE = performance evaluation
PFC = perfluorinated compound
PFOA = Perfluorooctanoic acid
PFOS = perfluorooctanesulfonic acid
SOP = standard operating procedure

Worksheet #19 and #30—Sample Containers, Preservation, and Hold Times

Worksheets #19 and #30 summarize the analytical methods/matrix, including the required sample volume, containers, preservation, and holding time requirements. Reference to the laboratory analytical SOPs are provided in Worksheet #23 (*Analytical SOP References*).

Table 19-1
Sample Containers, Preservation and Hold Times
UFP-QAPP for PFC Sampling at the AV Groundwater Plume

TestAmerica Laboratories						
Michelle Johnston 4955 Yarrow Street Arvada, CO 80002 Phone: 303.736.0110 E-mail: michelle.johnston@testamericainc.com			Certification: DoD ELAP Accreditation Expiration: Expiring October 30, 2015 Sample Delivery Method: FedEx Overnight services Data Deliverable: 21 Calendar Days			
Matrix	**Analytical Group**	**Analytical and Preparation Method**	**Containers**	**Quantity**	**Preservation Requirements**	**Maximum Holding Time**
Groundwater	PFCs	DV-LC-0012	250 ml HDPE	2X 250 ml HDPE (NO Teflon lids are allowed)	Cool to 4°C	7 days extract; 40 days analyze(1)

Note:
(1) Please note there is no prescribed regulatory holding time requirement for PFCs. The scientific literature indicates PFCs are highly persistent compounds in the environment. TestAmerica Denver has conducted stability studies indicating medium and low-level standard solutions of PFOA are stable for at least three months in glass, polystyrene, and polypropylene plastics at 4 + 2 °C. The 7-day/40-day holding times listed above are based on the general EPA convention for the holding time of extractable organic compounds in water.

Key:
DoD = Department of Defense
ELAP = Environmental Laboratory Accreditation Program
HDPE = high-density polyethylene
ml = milliliter
PFC = perfluorinated compound
°C = degrees Celsius

Worksheet #20—Field QC Sample Summary

The table below provides a summary of the types of samples to be collected and analyzed. Its purpose is to show the relationship between the number of field samples and associated QC samples for each combination of analyte/analytical group and matrix.

Matrix	Analyte/Analytical Group	Field Samples	FDs	Matrix Spikes	Matrix Spike Duplicates	Field Blanks	Equipment Blanks	Trip Blanks*	Other	Total # Analyses
Groundwater	PFCs	10 (8 monitoring wells and 2 treatment plant samples)	1	1	1	1 (DI source water blank)	1	0	2 (One PE sample and one PE source water blank)	17
Groundwater	PFCs	4 (private wells if needed)	1	1	1	0	0	0	0	7
TOTAL		14	2	2	2	1	1	0	2	24

*Trip Blanks not required because PFCs are non-volatile.

Key:
DI = deionized
FD = field duplicate
PE = performance evaluation
PFC = perfluorinated compound

Worksheet #21—Field SOPs

The field SOPs associated with the project sampling (including, but not limited to, sample collection and sample handling and custody) are listed in the following table. The actual field SOPs are provided in Appendix B.

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work? (Check if yes)
Tech-006	Water Level and Total Depth Measurements	AFCEC	Water Level Indicator	☐
Tech-011	Field Measurements Using the YSI 6820 and 6920 Water Quality Meters	AFCEC	YSI Water Quality Meter	☐
Tech-014	Residential Well Sampling	AFCEC	NA	☒
Tech-026	Sample Handling and Custody	AFCEC	NA	☐
Tech-027	Preserving Environmental Samples in the Field	AFCEC	NA	☐
Tech-028	Packing, and Shipping – Environmental Samples	AFCEC	NA	☐
Tech-030	Small Diameter Well and Drive Point Groundwater Sampling	AFCEC	Wattera Pump, HDPE tubing, Stainless Steel Check Valve	☒
Tech-035	Field Logbook	AFCEC	NA	☐
Tech-036	Equipment Decontamination	AFCEC	NA	☒
Tech-039	Organic Vapor Monitoring	AFCEC	PID	☐
Tech-045	Creation, Assignment, and Interpretation of Location IDs	AFCEC	NA	☐
Tech-073	Port Sampling	AFCEC	NA	☒

Worksheet #22—Field Equipment Calibration, Maintenance, Testing, and Inspection

The field equipment and instruments to be used during this PFC sampling program are listed below. The calibration, maintenance, testing, and/or inspection requirements are discussed in the specific SOPs in Appendix B.

- Water Level Indicator (SOP-TECH-006)
- Yellow Spring Instrument (YSI) (SOP-TECH-011)
- Wattera Pump (SOP-TECH-030)
- Photoionization Detector (PID) (SOP-TECH-039)

Worksheet #23—Analytical SOP References

The following LSOP references were provided by TA, Denver. Note that the LSOPs have not been modified specifically for this project and may not reflect the exact requirements of this document. The LSOPs are supplemented by internal communication systems within the laboratory to disseminate the project requirements and UFP-QAPP to technical staff. The LSOP for this effort is proprietary and cannot be distributed in the UFP-QAPP. The LSOPs may be available upon request of the laboratory. The LSOPs were included in an audit of ELAP auditors as part of the certification process.

Reference Number	Title, Revision Number, and Date	Definitive/ Screening Data	Matrix/ Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work? (Y/N)
LSOP-01	SOP DV-LC-0012, Perfluorinated compounds by LC/MS/MS Revision 11. 12/4/2013.	Definitive	Water: PFCs	LC/MS/MS	TA Denver Laboratory	N
LSOP-01	SOP DV-OP-0019, Extraction of Perfluorinated compounds in Water and Soil, Revision 5. 3/4/2014.	Definitive	Water: PFCs	None	TA Denver Laboratory	N

Key:

LC/MS/MS = Liquid chromatography/mass spectrometry/mass spectrometry

LSOP = laboratory standard operating procedure

PFC = perfluorinated compound

SOP = standard operating procedure

TA = TestAmerica

Worksheet #24—Analytical Instrument Calibration

To confirm that the analytical methods and the selected instrumentation meet the project requirements, each analytical instrument will be calibrated according to the procedures outlined in the tables provided in Worksheet #28 (*Analytical Quality Control and Corrective Action*). Information usually contained in Worksheets #24 and #28 have been combined together in Worksheet #28 for efficiency and ease of use to the CH2M Hill project chemist and the laboratory. The information provides documentation on corrective actions, flagging criteria for laboratory services, and expectations for analytical services. The tables meet the requirements of both Worksheet #28 (*Analytical Quality Control and Corrective Action*) and Worksheet #24 (*Analytical Instrument Calibration*). The tables reflect the requirements of the DoD QSM Version 5.0 (DoD 2013) and individual method requirements.

Worksheet #25—Analytical Instrument and Equipment Maintenance, Testing, and Inspection

To confirm that the analytical instrumentation and equipment are available and in working order when needed, all laboratory analytical equipment will be maintained and tested in accordance with procedures described in the LSOPs (available upon request). Field related equipment maintenance procedures are defined in project field SOPs as presented in Worksheet #21.

Worksheet #26 and #27—Sampling Handling, Custody, and Disposal

To verify sample authenticity and data defensibility, a proper sample handling system will be followed from the time of sample collection to final sample disposal.

The Field Team Leader or designee will be responsible for the sample collection, sample packing, and coordination of sample shipment. The samples will be sent to TA, Denver via FedEx overnight. The sample packing and shipping procedures are provided in SOP-TECH-028 (*Packing and Shipping of Environmental Samples*) (Appendix B).

A laboratory representative will acknowledge receipt of the sample coolers upon arrival. The field samples and all extracts/digestates will be stored at the laboratory for 30 days after a final report has been submitted to CH2M Hill. The Laboratory Hazardous Waste Manager will be responsible for the final sample disposal upon notice from the CH2M Hill Project Chemist.

Sample Handling System
Sample Collection, Packaging, and Shipment
Sample Collection (Personnel/Organization): Field Team Leader or designee, CH2M Hill/HGL **Sample Packaging (Personnel/Organization):** Field Team Leader or designee, CH2M Hill/HGL **Coordination of Shipment (Personnel/Organization):** Field Team Leader or designee, CH2M Hill/HGL **Type of Shipment/Carrier:** overnight express service FedEx
Sample Receipt and Analysis
Sample Receipt (Personnel/Organization): Laboratory representative of TA Denver **Sample Custody and Storage (Personnel/Organization):** Laboratory technician(s) of TA Denver **Sample Preparation (Personnel/Organization):** Laboratory technician(s) of TA Denver **Sample Determinative Analysis (Personnel/Organization):** Laboratory technician(s) of TA Denver
Sample Archiving
Field Sample Storage (number of days from sample collection): Laboratory representative will store samples at the laboratory for 30 days after final report has been submitted to CH2M Hill. **Sample Extract/Digestate Storage (number of days from extraction/digestion):** Laboratory technicians will store all extracts/digestates for 30 days after final report has been submitted to CH2M Hill. **Biological Sample Storage (number of days from sample collection):** Not applicable to this project.
Sample Disposal
Personnel/Organization: Laboratory Hazardous Waste Managers of TA Denver **Number of Days from Analysis:** Samples may not be disposed of until 30 days after final report has been submitted to CH2M Hill.

Proper sample handling, shipment, and maintenance of chain-of-custody forms are key components of building the documentation and support for data that can be used to make project decisions. The following section summarizes the field and laboratory sample custody procedures to be followed during the project.

27.1 Field Sample Custody Procedures

Sample collection information including sample name and time will be recorded in the field log book and field data sheets as appropriate. The following subsections provide general guidelines for field documentation, sample containers, sample labeling, handling and custody, and packaging and shipping.

27.1.1 Field Documentation

Specific requirements on field documentation procedures are outlined in SOP-TECH-035 (*Field Logbook*) (Appendix B). The Field Team Leader is responsible for ensuring that the field sampling team adheres to proper custody and documentation procedures. Field logbooks, field forms, and chain-of-custody forms will be the primary documentation mechanisms used to record and track information about each sample. Copies of the field logbooks and field forms will be retained in the project files. The field sampling team is responsible for the following field documentation activities:

- Keeping accurate written records of all onsite activities on the field forms and/or field logbooks
- Ensuring that all entries are legible, written in waterproof black ink, and contain accurate and inclusive documentation of the field activities; this documentation must include field data and observations, any problems encountered, and actions taken to solve the problem
- Recording date and initial daily entries
- Noting errors or changes using a single line to cross out the entry and dating and initialing the change
- Field logbooks and field forms will be available for review during technical audits or at any other time for QC checks. This documentation will provide verification of sampling procedures.

When photographs or videos are taken for visual documentation of a site or procedure, they will be numbered to correspond to the field logbook entries. If possible, a reference point (such as a building or sign) will be included to assist in verifying the location of the photograph and providing an approximate scale. The name of the photographer, date, time, site location, and site description will be documented in the field logbook as photos are taken. Photography will be coordinated with the Installation point of contact (the COR) to adhere to the installation security regulations.

27.1.2 Sample Containers

Sample containers will be provided by TA, Denver, and should be purchased pre-cleaned and treated according to the EPA specifications for the analytical methods. Sample containers will not be reused for any reason. Containers should be stored in clean areas to prevent exposure to fuels, solvents, or other contaminants. Once sample containers have been taken to the field, unused containers will not be returned for later use. Unused bottles will be disposed of or recycled and not be returned to the laboratory.

27.1.3 Sample Labeling

All samples will be uniquely identified as outlined in SOP-TECH-045 (*Creation, Assignment and Interpretation of Location IDs*) (Appendix B). The samples will be labeled in the field at the time of collection to meet the following minimum expectations. A sample label will be affixed to each sample collected. Sample labels will identify the sample with the following information:

- Unique identification number
- Sample type
- Analytical method requested
- Sampler's initials
- Date collected
- Time collected
- Preservation method used

27.1.4 Sample Handling and Custody

Procedures to verify the custody and integrity of the samples will begin at the time of sampling and continue through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. The procedures for sample handling and custody are described in SOP-TECH-026 (*Sample Handling and Custody*) provided in Appendix B. Records concerning the custody and condition of the samples will be maintained in field and laboratory records.

CH2M Hill will maintain the chain-of-custody records for all normal field and QC samples. A sample is defined as being under a person's custody if any of the following conditions exist:

- It is in their possession
- It is in their view, after being in their possession
- It was in their possession, and then they locked it up
- It is in a designated secure area

The following sample information will be documented on the chain-of-custody form:

- Unique sample identification
- Date and time of sample collection
- Source of sample (including name, location, and sample type)
- Designation of matrix spike/matrix spike duplicate (MS/MSD)
- Preservative used
- Analyses required
- Initials of each sampling team member
- Pertinent field data (such as temperature), if required
- Serial numbers of custody seals and transportation cases (if used)
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory
- Bill of lading or transporter tracking number (if applicable)

27.1.5 Sample Packing and Shipping

The procedures for sample packing and shipping are provided in the Field SOP-TECH-028 (*Packing and Shipping of Environmental Samples*) (Appendix B). In order to meet sample hold times, samples collected in the field will be transported to the laboratory as quickly as possible. The samples will be packed on ice to maintain the sample core temperature of 4 plus or minus 2 degrees Celsius (^{o}C) during shipment. Accordingly, a temperature blank (a sample vial filled with PFC-free DI water) will be included in every cooler and used to determine the internal temperature in the cooler upon its receipt at the laboratory.

27.2 Laboratory Sample Custody Procedures

A designated laboratory representative will accept the shipped samples and verify that the received samples match those on the chain-of-custody record. The condition, temperature, and appropriate preservation of the samples should be checked and documented on the chain-of-custody form. The occurrence of any anomalies in the received samples and their resolution should be documented in the laboratory records. All sample information will then be entered into a tracking system, and unique analytical sample identifiers will be assigned. The laboratory will review this information for accuracy.

The laboratory must supply sample receipt confirmation within 24 hours of sample receipt that includes the following:

- A fully executed copy of the chain-of-custody received with the samples
- Sample acknowledgement letter and log-in report
- Cooler and sample receipt form noting any problems, breakages, holding time issues, temperature exceedances, inconsistencies between the chain of custody, purchase order, and project instructions, etc.

Sample holding-time tracking begins with the collection of samples and continues until the analysis is complete. Holding times for analytical methods required for this project are specified in Worksheet #19 and #30 (*Sample Containers, Preservation and Hold Times*). Subcontracted analyses will be documented with the chain-of-custody form. Procedures ensuring internal laboratory chain-of-custody also will be implemented and documented by the laboratory. Specific instructions concerning the analysis specified for each sample will be communicated to the analysts. Analytical batches will be created, and laboratory QC samples will be introduced into each batch.

Samples will be stored in limited-access, temperature-controlled areas. Refrigerators, coolers, and freezers will be monitored for temperature 7 days a week. Acceptance criterion for the temperatures of the refrigerators and coolers is 4 plus or minus 2 ^{o}C. Acceptance criterion for the temperatures of the freezers is lower than minus 7 ^{o}C. All of the cold storage areas will be monitored by thermometers that have been calibrated with a National Institute Standards and Technology (NIST)-traceable thermometer. As indicated by the findings of the calibration, correction factors may be applied to each thermometer. Records regarding acceptance criteria will be maintained.

Samples will be stored for 30 days after analysis and reporting, at which time the samples will be disposed of. The samples will be disposed of by TA, Denver, in accordance with applicable local, state, and federal regulations. Disposal records will be maintained by the laboratory. SOPs describing sample control and custody will be maintained by the laboratory.

Worksheet #28—Analytical Quality Control and Corrective Action

Worksheet #28 presents analytical QC requirements relevant to analysis of environmental samples that will be followed by laboratories producing definitive data. The purpose of the laboratory QC activities is to produce data of known quality sufficient to meet the project-specific DQOs (Worksheet #11). Laboratory QC samples will follow method specific requirements of the DoD QSM version 5.0 (Appendix B of the QSM; DoD 2013) and/or the analytical method as presented in Table 28-1.

Laboratory QC samples must be included in an analytical batch with the field samples. An analytical batch is a group of samples (not exceeding 20 environmental samples plus associated laboratory QC samples) similar in composition (matrix) that are extracted or digested at the same time and with the same lot of reagents and analyzed together as a group. The analytical batch also extends to cover samples that do not need separate extraction or digestion. The identity of each analytical batch will be unambiguously reported with the analyses so that a reviewer can identify the laboratory QC samples and the associated environmental samples. The type of laboratory QC samples and the frequency of use of these samples are discussed below and in the method-specific LSOPs.

Detection Limits

The DLs will be completed for all target analytes and matrices in accordance with the DoD QSM Version 5.0 (DoD 2013). The laboratory will establish DLs for each method, matrix, and analyte. The information has been provided in Table 15-1 of Worksheet #15. The DL is used along with other measurements of sensitivity, such as the LOD and LOQ.

If multiple instruments are used, the DL used for reporting purposes will represent the least sensitive instrument response for each compound or element spiked.

Limit of Detection

The DL will be used to determine the LOD for each analyte and matrix and for all preparatory and cleanup methods routinely used on samples, as follows. After each DL determination, the laboratory must immediately establish the LOD by spiking a quality system matrix at approximately two to three times the DL (for a single-analyte standard) or one to four times the DL (for a multi-analyte standard). The spike concentration establishes the LOD; it is specific to each combination of analyte, matrix, method (including sample preparation), and instrument configuration. The LOD must be verified quarterly.

The following requirements apply to the initial DL and LOD determinations and to the quarterly LOD verifications:

- The apparent signal-to-noise ratio at the LOD must be at least 3, and the results must meet all method requirements for analyte identification (for example, ion abundance, second-column confirmation, or pattern recognition). For data systems that do not provide a noise measurement, the signal produced by the verification sample must produce a result that is at least three standard deviations greater than the mean method blank concentrations.

- If a laboratory uses multiple instruments for a given method, the LOD must be verified for each instrument.
- If the LOD verification fails, the laboratory must repeat the DL determination and LOD verification at a higher concentration, or perform and pass two consecutive LOD verifications at a higher concentration and set the LOD at the higher concentration.

The laboratory will maintain documentation for all DL determinations and LOD verifications.

Limit of Quantitation

The range at which quantitative results may be obtained with a specified degree of confidence for the method is referred to as the LOQ. The laboratory will verify LOQs by including a standard equal to or below the LOQ as the lowest point on the calibration curve.

If a result is greater than the DL and less than the LOQ, the result will be reported as a detected concentration and flagged "J." If no detected concentration is determined down to the DL, the result will be reported to the LOQ concentration (with the added variables of sample dilution, final volume, and sample mass included), reported as a nondetect result, and flagged "U." A detected result greater than or equal to the LOQ will be reported without a qualifying flag unless a specific QA/QC failure is associated with the data. No results below the DL will be reported.

At a minimum, the LOQ must be verified quarterly. The laboratory procedure for establishing the LOQ must empirically demonstrate precision and bias at the LOQ. The LOQ and associated precision and bias must meet project-specific requirements and must be reported. If the method is modified, precision and bias at the new LOQ must be demonstrated and reported.

DLs, LODs, and LOQs are provided in Table 15-1 of Worksheet #15 (*Reference Limits and Evaluation*). LODs are expected to be two to three times greater than the DL and below the LOQ. The DLs, LODs, LOQs were compared to the project-specific screening criteria to determine whether they will meet the analytical DQOs. If the DL or the LOD is below the screening criterion, the LOQ is sufficient for project decision making. Otherwise, other analyte-specific factors (for example, potential use at the site, mobility, or toxicity) may be discussed in the DQOs on a more qualitative basis.

Sample dilution because of target and or non-target compound concentrations or matrix interference could prevent LOQs from being achieved. Samples must be initially analyzed while undiluted when reasonable. If dilution is necessary, both the original and diluted results must be reported. Any samples that are not analyzed undiluted must have the express approval of CH2M Hill within extraction and analysis holding time and be supported by matrix interference documentation, such as sample viscosity, color, odor, or results from other analyses of the same sample, to show that undiluted analysis is not possible. Appropriate cleanup procedures must be followed to minimize matrix effects on LOQs.

Calibration

All analytes reported must be present in the initial and continuing calibrations. The calibrations must meet the acceptance criteria specified in the tables provided in this UFP-QAPP. All results reported must be within the calibration range. Samples will be diluted, if necessary, to bring analyte responses within the calibration range. Records of standard preparation and instrument calibration will be maintained. Records must unambiguously trace the standards and their use in calibration and quantitation of sample results.

Instrument calibration will be performed by beginning with the simplest approach first, the linear model through the origin, and then progressing through other options until the acceptance criteria are met. In cases where an analyte has more than one acceptable calibration model, results from the simplest calibration model will be reported. If more than the minimum number of standards is analyzed for the initial calibration (ICAL), all of the standards analyzed will be included in the ICAL. The only exception to this rule is that a standard at either end of the calibration curve can be dropped from the calibration, providing that the requirement for the minimum number of standards is met and the low point of the calibration curve is at or below the LOQ for each analyte.

Calibrations must use the simplest calibration model first. Non-linear calibration will be considered only when a linear approach cannot be applied. It is not acceptable to use an alternate calibration procedure (quadratic regression) when a compound fails to perform in the usual manner. When this occurs, it is indicative of instrument issues or operator error.

The continuing calibration verification (CCV) cannot be used as the laboratory control sample (LCS), except for methods that do not involve sample preparation. A CCV will be performed daily before sample analysis (unless an ICAL and second-source standard verification is performed immediately before sample analysis) and as required by the applicable method. In accordance with National ELAP requirements, the laboratory will analyze the CCV concentration to vary throughout the calibration range. Finally, the lowest standard used must be at or below the reporting limit (RL) for each analyte in the method.

Laboratory Control Samples

An LCS is a sample of known composition that is spiked with all target analytes. The LCS is used with each analytical batch to determine whether the method is in control. Each analyte in the LCS will be spiked at a level less than or equal to the midpoint of the calibration curve, which is defined as the median point of the curve instead of the middle of the range. The LCS will be carried through the complete sample preparation and analysis procedure.

At least one LCS will be included in every analytical batch. If more than one LCS is analyzed in an analytical batch, results from all LCSs will be reported. Failure of an analyte in any LCS will necessitate appropriate corrective action, including qualification of the failed analyte in all of the samples, as required.

LCS Control Limits

The LCS limits specified in Worksheet #15 (*Reference Limits and Evaluation*) will be used for this project. The LCS limits are based on those specified in the laboratory historically generated control limits.

The performance of the LCS is evaluated against the QC acceptance limits. When an analyte in the LCS is outside the acceptance limit, corrective action will be performed.

Marginal Exceedance

The laboratory may not use marginal exceedances as part of their data review practice, but are encouraged to contact the CH2M Hill Project Chemist to discuss compound-specific failures as needed.

Matrix Spike/Matrix Spike Duplicate

An MS or MSD is an aliquot of sample collected in the field and spiked with known masses and concentrations of all target analytes in the laboratory. The spiking will occur before sample preparation and analysis. Each analyte in the MS and MSD must be spiked at a level less than or equal to the midpoint of the calibration curve for that analyte. The MS/MSD is used to document potential matrix effects associated with a site/matrix and will not be used to control the analytical process. The MS/MSD results and flags will not be associated with or related to samples that are collected from the same site where the MS/MSD set were collected. The Field Team Leader will select the samples for MS/MSDs and the laboratory will use the samples to prepare the appropriate MS/MSDs.

The performance of the MS and MSD will be evaluated against the QC acceptance limits outlined in Worksheet #15 (*Reference Limits and Evaluation*). If either the MS or the MSD is outside the QC acceptance limits, the data will be evaluated to determine whether there is a matrix effect or analytical error, and the analytes in the parent sample and associated FD (if applicable) will be qualified according to the data flagging criteria of this UFP-QAPP.

If the sample concentration exceeds the spike concentration by a factor of four or more, the data will be reported unflagged. The laboratory should communicate potential matrix difficulties to the CH2M Hill Project Chemist so an evaluation can be made with respect to the project-specific DQOs.

Surrogates

Surrogates are compounds similar to the target analytes in chemical composition and behavior in the analytical process, but not normally found in environmental samples. Surrogates are used to evaluate accuracy, method performance, and extraction efficiency. Surrogates will be added to environmental samples, controls, and blanks, in accordance with the method requirements.

The QC acceptance limits outlined in Worksheet #15 (*Reference Limits and Evaluation*) will be used to control surrogates. If a surrogate recovery is outside the acceptance limit, corrective action must be performed. After the system problems have been resolved and system control has been re-established, the sample will be re-prepared and re-analyzed. If corrective actions are not performed or are ineffective, an appropriate flag will be applied to the sample results. Surrogate spikes that have been diluted out (a dilution of five times or more) will not be flagged.

Internal Standards

Internal standards are known amounts of standards that are added to a portion of a sample or sample extract and carried through the entire determination procedure. They are used as a reference for calibration and for controlling the precision and bias of the analytical method. Internal standards will be added to environmental samples, controls, and blanks, in accordance with the method requirements.

If the results of the internal standards are outside of the acceptance limits, corrective actions will be performed. After the system problems have been resolved and system control has been re-established, all samples analyzed while the system was malfunctioning will be re-analyzed. If corrective actions are not performed or are ineffective, an appropriate flag will be applied to the sample results.

Retention Time Windows

Retention time (RT) windows are used in chromatography analysis for qualitative identification of analytes. They are calculated from replicate analyses of a standard on multiple days. The procedure and calculation method are given in SW-846, Method 8000C. The center of the RT window is established for each analyte and surrogate using the RT of the midpoint standard of the ICAL. RTs are updated daily using the absolute RT in the ICAL verification.

If the RT is outside the acceptance limits, corrective action will be performed—this applies to all CCV subsequent to the ICAL verification and to LCSs. If corrective actions are not performed or are ineffective, an appropriate flag will be applied to the sample results.

Method Blank

A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank is carried through the complete sample preparation and analytical procedure, and is used to assess potential contamination resulting from the analytical process.

A method blank will be included in every analytical batch. The presence of analytes in a method blank at concentrations greater than the LOD indicates the need for further assessment of the data. The source of contamination will be investigated and measures will be taken to correct, minimize, or eliminate the problem if the concentration exceeds one-half the LOQ. If the method has known acknowledged common laboratory contaminants, the method blank must not exceed the LOQ for those compounds. No analytical data will be corrected for the presence of analytes in blanks.

If an analyte is detected in the method blank and in the associated samples and corrective actions are not performed or are ineffective, an appropriate flag may be applied to the sample results.

Quality Control Checks

Holding-time Compliance

All sample preparation and analyses will be performed within the method-required holding times as noted in Worksheet #19 (*Sample Containers, Preservation and Hold Times*). Holding time begins from the time of sample collection and ends with the time of completion of all analytical runs.

Holding times are determined based on days, hours, and minutes. If the time of sample collection is not provided, the laboratory must assume the most conservative time of day. If holding times are exceeded and the analyses are performed, the results must be flagged according to the procedures described in this worksheet.

Standard Materials

Standard materials (including second source materials) used in calibration and sample preparation must be traceable to NIST, EPA, American Association of Laboratory Accreditation (A2LA), or other equivalent approved sources, if available. If an NIST, EPA, or A2LA standard material is not available, the standard material proposed for use must be included in an addendum to the project-specific UFP-QAPP and approved before use.

The standard materials must be current, and the following expiration policy must be followed:

- Expiration dates for amputated solutions should not exceed the manufacturer's expiration date or one year from the date of receipt, whichever comes first.
- Expiration dates for laboratory-prepared stock and diluted standards must be no later than the expiration date of the stock solution or material or the date calculated from the holding time allowed by the applicable analytical method, whichever comes first.
- Expiration dates for pure chemicals will be established by the laboratory and be based on chemical stability, possibility of contamination, and environmental and storage conditions.
- Expired standard materials will be either re-validated before use or discarded. Re-validation may be performed through assignment of a true value and error window statistically derived from replicate analyses of the material as compared to an unexpired standard. The laboratory will label standard and QC materials with expiration dates.

A second source standard will be used to independently confirm the ICAL. A second source standard is a standard purchased from a vendor different from that supplying the material used in the ICAL. The second source material can be used for the continuing calibration standards and/or for the LCS. Two different lot numbers from the same vendor do not normally constitute a second source. However, when a project requires analyses for which there is not a separate vendor source available, the use of different lot numbers from the same vendor will be acceptable to verify calibration.

Supplies and Consumables

The laboratory will inspect supplies and consumables before their use in analysis. The materials description in the methods of analysis will be used as a guideline for establishing the acceptance criteria for these materials. Purity of reagents will be monitored and documented. An inventory and storage system for these materials will assure use before manufacturers' expiration dates and storage under safe and chemically compatible conditions.

Table 28-1
Summary of Calibration and Quality Control Procedures for Methods DV-LC-0012 (PFOS/PFOA)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Flagging Criteria[b]
Mass spectrometer tuning check	Before ICAL and calibration verification	Refer to criteria listed in method description.	Retune instrument and verify.	Not appropriate.
Multipoint ICAL for all analytes (minimum five standards)	Before sample analysis	Average response factor <20%D or linear regression of r = 0.990 Each calibration point must be within 75-125% of true value except the low point which may be within 70-130%	Correct problem, then repeat ICAL.	Problem must be corrected. Samples may not be analyzed until there is a valid ICAL.
Second-source calibration verification	Once per ICAL	All analytes within ± 30% of expected value.	Correct problem and verify second-source standard. Rerun second-source verification. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
CCV	Daily, before sample analysis (unless ICAL performed on same day), and after every 12 hours of analysis time	All analytes within ± 30% of expected value.	Correct problem, then rerun CCV. If that fails, repeat ICAL or immediately run two additional CCVs. If both pass, work can continue. If either fails, correct problem and rerun all samples.	Apply Q-flag to all results for the specific analyte(s) > 25% D for all samples associated with the calibration verification.
ISs	Each sample, standard, and QC sample	Retention time ± 30 seconds from retention time of the IS in the ICAL midpoint standard. Extracted ion current profile area within -50% to +100% of area from IS in ICAL mid-point standard.	Inspect mass spectrometer and gas chromatography for malfunctions and make corrections as appropriate. Reanalysis of samples analyzed while the system was malfunctioning is mandatory.	Apply Q-flag to all results for analytes associated with a failed IS (unless a matrix effect can be verified), then apply M-flag.
Method blank	One per analytical batch	No analytes detected > ½ LOQ or >1/10th the amount in the samples.	Assess data. Correct problem. If necessary, re-prepare and analyze method blank and all samples processed with the contaminated blank.	Apply B-flag to all associated positive results for the specific analyte(s), as appropriate.

Table 28-1
Summary of Calibration and Quality Control Procedures for Methods DV-LC-0012 (PFOS/PFOA)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Flagging Criteria[b]
LCS for all analytes	One LCS per analytical batch	Acceptance criteria: Worksheet #15.	Correct problem, then reanalyze. If still out, re-prepare and reanalyze the LCS and all samples in the affected batch.	If corrective action fails, apply Q-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form	Acceptance criteria: Worksheet #15.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to CH2M Hill so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in all samples collected from the same site matrix as the parent, apply J-flag if: (1) %R for MS or MSD > upper control limit (2) %R for MS or MSD < lower control limit (3) MS/MSD RPD > control limit
Surrogate spike	Every sample, spiked sample, standard, and method blank	Acceptance criteria: Worksheet #15.	Correct problem, then re-prepare and reanalyze the affected samples. If matrix effect is verified, discuss in case narrative.	For the samples: If the %R > UCL for any surrogate, apply J-flag to all positive results for associated analytes. If the %R < LCL for any surrogate, apply J-flag to all positive results for associated analytes and UJ-flag to all associated nondetects. If any surrogate recovery is <10%, apply Q-flag to all results for all associated analytes.

Table 28-1
Summary of Calibration and Quality Control Procedures for Methods DV-LC-0012 (PFOS/PFOA)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Flagging Criteria[b]
DL study (as part of the LOD process; see the DoD QSM[c])	At initial setup and then once per 12-month period or quarterly DL verification	Detection limits established will be ≤ ½ the LOQ in Worksheet 15. See 40 CFR, Part 136, Appendix B of DoD QSM[c]. All analytes must be detected and identified by method-specified criteria for the for the verification check to be valid, or the verification check must produce a response that is at least 3 times the instrument noise level and greater than the response in the blanks associated with the MDL study.	Continue the DL study until all criteria are met.	N/A
LOD determination and verification (see the DoD QSM[c])	At initial setup and verified quarterly (if a laboratory uses multiple instruments for a given method, the LOD must be verified on each)	The apparent signal-to-noise ratio must be at least 3 and the results must meet all method requirements for analyte identification.	If the LOD verification fails, the laboratory must (1) repeat the detection limit determination and LOD verification at a higher concentration or (2) perform and pass two consecutive LOD verifications at a higher concen-tration. The LOD is set at the higher concentration.	N/A; samples may not be analyzed without a valid LOD.
LOQ establishment and verification (see the DoD QSM[c])	At initial setup: (1) verify LOQ; and (2) determine precision and bias at the LOQ; then verify LOQ quarterly (if a laboratory uses multiple instruments for a given method, the LOQ must be verified on each; see of DoD QSM[c]	(1) The LOQ and associated precision and bias must meet client requirements and must be reported or (2) in the absence of client requirements, must meet LCS control limits. See the DoD QSM.	If the LOQ verification fails, the laboratory must either establish a higher LOQ or modify method to meet the client-required precision and bias.	N/A; samples may not be analyzed without a valid LOQ.
Results reported between the DL and LOD, and the LOD and LOQ	None	None.	None.	Apply J-flag to all results between DL and LOQ. If no result below the LOD, report to the LOD, flag "U."

Table 28-1
Summary of Calibration and Quality Control Procedures for Methods DV-LC-0012 (PFOS/PFOA)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Flagging Criteria[b]
Demonstrate acceptable analyst capability	Before using any test method and at any time there is a significant change in instrument type, personnel, or test method (see Appendix C of DoD QSM[c])	QC acceptance criteria published by DoD, if available; otherwise method- specified criteria.	Recalculate results; locate and fix problem, then rerun demonstration for those analytes that did not meet criteria (see the DoD QSM[c]).	N/A. This is a demonstration of ability to generate acceptable accuracy and precision using four replicate analyses of a QC check sample (e.g., LCS or PE sample). No analysis will be allowed by an analyst until capability is demonstrated.

[a]All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b]Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

[c]DoD. 2013. *DoD Quality Systems Manual for Environmental Laboratories*. Version 5.0. May.

Key:
CFR = Code of Federal Regulations
CCV = continuing calibration verification
DL = detection limit
DoD = Department of Defense
ICAL = initial calibration
IS = internal standard
J = estimated value
LCS = laboratory control sample
LOD = limit of detection
LOQ = limit of quantitation
MDL = method detection limit
MS = matrix spike
MSD = matrix spike duplicate
N/A = not applicable
PE = Performance Evaluation
QC = quality control
QSM = Quality Systems Manual
RPD = relative percent difference
U = undetected
UCL = upper confidence limit

Worksheet #29—Project Documents and Records

The required data package deliverables during every aspect of the project are identified in this worksheet and consist of the following: (1) sample collection and field measurement records, (2) analytical records, and (3) data assessment records.

Sample Collection and Field Measurement Records

Sample collection and field measurement records generally include field logbooks (SOP-TECH-0035 in Appendix B), photo documentation, equipment decontamination records, sampling instrument calibration records, boring logs, well construction diagrams, correspondence, chain-of-custody forms, and air bills.

Analytical Records

Analytical Data Deliverables

PDF deliverables (no hardcopy data required) must be provided with a summary format forms package (EPA Level III equivalent) plus all associated raw supporting data (EPA Level IV equivalent). The format deliverable may be equivalent to those specified in the latest versions of EPA Contract Laboratory Program Statements of Work for Organic Analyses or as defined in the DoD QSM version 5.0 as long as the format provides summarized, form oriented reporting, meet all method specifications, and are fully able to be validated. Reporting formats require approval from the CH2M Hill Project Chemist. The following information will be provided in the data package:

- Cover letter complete with the following information:
  - Report title and laboratory unique report identification (sample delivery group [SDG] number)
  - Project name and site location
  - Name and location of laboratory and second-site or subcontracted laboratory
  - Client name and address
  - Statement of authenticity and official signature and title of person authorizing report release.
- Table of contents
- Case narrative that addresses the following information at a minimum:
  - Sample receipt discrepancies that may affect data usability, such as temperature exceedances, etc.
  - Table summarizing samples received, correlating field sample numbers, laboratory sample numbers, and laboratory tests completed
  - Descriptions of nonconformances in the sample receipt, handling, preparation, analytical, and reporting processes and the corrective action taken in each occurrence
  - Identification of samples and analytes for which manual integration was necessary
  - Identification and justification for sample dilution

  - Discussion of all qualified data and definition of qualifying flags

- Field identification number
- Date received
- Date prepared
- Date and time of analysis
- Preparation and analytical method
- Dilution factor (provide both diluted and undiluted results when available)
- Sample-specific RL adjusted for sample size, dilution/concentration
- Sample-specific DL adjusted for sample size, dilution/concentration
- Units
- Surrogate percent recoveries
- MS/MSD and LCS spike concentrations, native sample results, spiked sample results, percent recoveries, and relative percent difference (RPD) between the MS and MSD results; associated QC limits also must be provided
- Method blank results
- Analytical batch reference number that cross references samples to QC sample analyses
- Analytical sequence or laboratory run log that contains sufficient information to correlate samples reported in the summary results to the associated method QC information, such as initial and continuing calibration analyses
- Internal standard recovery and RT information, as applicable
- Initial calibration summary, including standard concentrations, response factors (RFs), average RFs, relative standard deviations (RSDs) or correlation coefficients, and calibration plots or equations, if applicable
- CCV summary, including expected and recovered concentrations and percent differences
- Instrument tuning and mass calibration information as applicable
- Other method-specific QC sample results
- Sample preparation logs
- Example calculation for obtaining numerical results from at least one sample for each matrix analyzed; provide algorithm
- Reconstructed total ion chromatograms or selected ion current profiles for each sample (or blank) analyzed and mass spectra for each compound identified
- Executed chain of custody and sample receipt checklist

The data for this project will be collected and documented in such a manner that will allow the generation of data packages that can be used by an external data auditor to reconstruct the analytical process.

Only PDF version of the data and the EDD will be provided as part of the laboratory deliverable.

Electronic Analytical Record Format and ERPIMS

The laboratory will provide a CH2M Hill Laboratory Spec 7 electronic format deliverable, which is defined in the laboratory Statement of Work for the project. After data validation is complete, CH2M Hill will convert the data report received from the laboratory and submit an electronic deliverable report in the ERPIMS 5.0 format. The information transferred will include all required technical data such as site information, geology, hydrogeology, and chemical analytical results.

Data Assessment Records

Data assessment records include, but are not limited to, data validation reports and corrective action reports.

Worksheet #31, #32, and #33—Assessments and Corrective Actions

Periodic assessments will be performed during the course of the project so that the planned project activities are implemented in accordance with this UFP-QAPP. The type, frequency, and responsible parties of planned assessment activities to be performed for the project, as well as, any corrective action measures, are summarized in the table below. All corrective action reports will be provided to AFCEC for review.

Assessment Type	Responsible Party and Organization	Frequency	Assessment Deliverable	Timeframe of Notification	Person(s) Responsible for Responding to Assessment Findings	Assessment Response Documentation	Timeframe of Response	Person(s) Responsible for Implementing Corrective Actions	Person(s) Responsible for Monitoring Corrective Action Implementation
Field Procedure Assessment and Work Plan Compliance	Jane Messner/ Brad Johnson/ CH2M Hill	Weekly	Internal Memorandum	1 business day	Jason Dalrymple/ CH2M Hill	Internal Memorandum	1 business day	Jane Messner/ Brad Johnson/ CH2M Hill	Nigel Tindall/ CH2M Hill
Field Documentation Reviews	Jane Messner/ Brad Johnson/ CH2M Hill	Daily	Internal Memorandum	1 business day	Jason Dalrymple/ CH2M Hill	Internal Memorandum	1 business day	Jane Messner/ Brad Johnson/ CH2M Hill	Nigel Tindall/ CH2M Hill
Health and Safety Audit	Carl Woods/ CH2M Hill	Once during task order implementation	Internal Memorandum	3-5 business days	Carl Woods/ CH2M Hill	Written Audit Report	24 hours after notification	Jane Messner/ Brad Johnson/ CH2M Hill	Nigel Tindall/ CH2M Hill
Sample Condition Report	Angie Tinker/ CH2M Hill	After samples are received at the laboratory	Internal e-mail	24 hours after sample receipt	Doug Scott/ CH2M Hill	Internal and External e-mail	24 hours after notification	Jason Dalrymple/ CH2M Hill	Nigel Tindall/ CH2M Hill
Data Validation	Doug Scott/ CH2M Hill	After receiving data form laboratory and during data validation	Internal and external e-mail	14 business days	Laboratory QA Manager	Internal and external corrective action reports, updated case narratives, and corrected data submissions	7 business days	Laboratory QA Manager	Doug Scott/ CH2M Hill

Assessment Type	Responsible Party and Organization	Frequency	Assessment Deliverable	Timeframe of Notification	Person(s) Responsible for Responding to Assessment Findings	Assessment Response Documentation	Timeframe of Response	Person(s) Responsible for Implementing Corrective Actions	Person(s) Responsible for Monitoring Corrective Action Implementation
Data Quality Evaluation Report	Doug Scott/ CH2M Hill	One for each property after all data are validated	Internal and External Report	30 days after completion of validation	Recipients listed in Distribution Memorandum (Worksheet #3)	Internal and external responses to comments and applicable report revision	7-10 business days	Doug Scott/ CH2M Hill	Nigel Tindall/ CH2M Hill
Internal Project Reporting Reviews	Jason Dalrymple/ CH2M Hill	Once per report and/or per report version	Internal Report Comments	7-10 business days	Nigel Tindall/ CH2M Hill	Internal and external responses to comments and applicable report revision	7-10 business days	Varies dependent upon the expertise required by the CH2M Hill senior reviewers	Mark Hilyard/ CH2M Hill

Worksheet #34—Data Verification and Validation Inputs

To confirm that scientifically sound data of known and documented quality are used in making project decisions. This worksheet establishes the procedures that will be followed to verify and validate project data including, but are not limited to, sampling documents and analytical data packages.

Item	Description	Verification (completeness)	Validation (conformance to specifications)
Planning Documents/Records			
1	Approved UFP-QAPP	X	
2	Contract	X	
3	Field SOPs	X	
4	Laboratory SOPs	X	
Field Records (as applicable)			
5	Field logbooks	X	X
6	Equipment calibration records	X	X
7	Chain-of-custody forms	X	X
8	Sampling diagrams/surveys	X	X
9	Drilling logs	X	X
10	Geophysics reports	X	X
11	Relevant correspondence	X	X
12	Change orders/deviations	X	X
13	Field audit reports	X	X
14	Field corrective action reports	X	X
Analytical Data Package			
15	Cover sheet (laboratory identifying information)	X	X
16	Case narrative	X	X
17	Internal laboratory chain-of-custody	X	X
18	Sample receipt records	X	X
19	Sample chronology (dates and times of receipt, preparation, and analysis)	X	X
20	Communication records	X	X
21	DL/LOD/LOQ establishment and verification	X	X
22	Instrument calibration records	X	X
23	Definition of laboratory qualifiers	X	X
24	Results reporting forms	X	X
25	QC sample results	X	X
26	Corrective action reports	X	X
27	EDD	X	X

Worksheet #35—Data Verification Procedures

Data verification is a completeness check to confirm that all required activities were conducted, all specified records are present, and the contents of the records are complete. It applies to both field and laboratory records.

Verification Input	Description	Person(s) Responsible for Verification
Chain-of-Custody and Shipping Forms	Chain-of-custody forms and shipping documentation will be reviewed internally upon their completion and verified against the packed sample coolers they represent. The shipper's signature on the chain-of-custody forms will be initialed by the reviewer, a copy of the chain-of-custody retained in the project file, and the original and remaining copies taped inside the cooler for shipment.	Jane Messner /CH2M Hill Jason Dalrymple/CH2M Hill
Field Notebooks	Field notes will be reviewed internally at the end of each working day and placed in the project file.	Jane Messner /CH2M Hill Jason Dalrymple/CH2M Hill
Field SOPs	Verify that the sampling SOPs were followed.	Jane Messner /CH2M Hill Jason Dalrymple/CH2M Hill
Onsite Screening (such as photoionization readings)	Verify that the field data meets UFP-QAPP requirements for completeness and accuracy based on field calibration records.	Jane Messner /CH2M Hill Jason Dalrymple/CH2M Hill
Field Audit Reports and Corrective Actions	Verify that applicable field audits and Health and Safety meetings were completed and that all required corrective actions were defined, implemented and effective.	Jane Messner /CH2M Hill Jason Dalrymple/CH2M Hill
Analytical SOPs	Verify that the analytical SOPs were followed.	Laboratory QA Officer/TA Doug Scott/CH2M Hill
Laboratory Data	Laboratory data packages will be verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal. Received data packages will be validated internally by the CH2M Hill project chemist.	Laboratory QA Officer/TA Doug Scott /CH2M Hill
Method QC Results	Verify that the required QC samples were run and met required limits.	Laboratory QA Officer/TA Doug Scott /CH2M Hill
Field QC Sample Results	Verify that the required field QC samples were run and met required limits.	Laboratory QA Officer/TA Doug Scott /CH2M Hill
Quantification Limits	Verify that the sample results met the project quantification limit specified in the UFP-QAPP.	Doug Scott /CH2M Hill
Laboratory Corrective Actions	Verify that applicable laboratory corrective actions were defined, implemented and effective.	Laboratory QA Officer/TA Doug Scott /CH2M Hill
Project Reports	Project reports will undergo a QA review by CH2M Hill senior staff and AFCEC with applicable expertise dependent upon the content of the report.	Various/CH2M Hill/AFCEC

Worksheet #36—Data Validation Procedures

The objective of the data validation is to assess the performance associated with the analysis in order to determine the quality of the data, which will be accomplished by evaluating whether the collected data comply with the pre-defined project requirements (including method, procedural, or contractual requirements) and by comparing the collected data with criteria established based on the project DQOs.

All types of data, including screening data and definitive data, are relevant to the usability assessment. The following sections focus on the data review requirements for definitive data only. The validation criteria are defined in Work Sheet #28, and discussed below.

Data Review Requirements for Definitive Data

Scientifically sound data of known and documented quality that meet the DQOs are essential to the decision making process. Data will be examined and evaluated to varying levels of detail and specificity by a variety of personnel who have different responsibilities within the data management process. Data assessment includes verification, review, validation, evaluation and usability assessment. The data review process will be documented to facilitate efficient and accurate assessment of data quality and usability. The overall usability of the data is indicated with appropriate qualifiers.

Laboratory Requirements

The analytical data package must contain adequate information and be presented in a clear and concise manner. The laboratory data package should be organized such that the analytical results are reported on a per analytical batch basis, unless otherwise specified. A reviewer should be able to determine the PARCCS of the data, based on the information contained in the data package. Additional information may be required, depending on the detail of data review performed.

A schedule should be established so that data packages (that is, SDGs) are provided in a timely manner to CH2M Hill for data review, validation, assessment, and use. This includes identifying the anticipated number of these data packages to be generated for the project.

Laboratory Data Reporting Requirements

The following requirements should be met for reporting:

- LODs, DLs, and sample results should be reported to one decimal place more than the corresponding LOQ, unless the appropriate number of significant figures for the measurement dictates otherwise.
- Samples will be analyzed undiluted if possible. Nondetects will be reported to the LODs. All sample reporting factors have to be adjusted because of dilutions.

Manual Integrations

Manual integrations are an integral part of the chromatographic analysis process and will be done only as a corrective action measure. Examples of instances where manual integration would be warranted include, but are not limited to, co-eluting compounds resulting in poor-peak resolution, a misidentified peak, an incorrect RT, or a problematic baseline.

When manual integrations are used, the following procedures will be implemented to document the event and for consistency in performing the manual integration:

- An LSOP will be followed for manual integrations. This SOP will specify the following: (1) when automated integrations by the instrument are likely to be unreliable, (2) what constitutes an unacceptable automated integration, (3) how the problems should be resolved by the analyst, and (4) the procedures for the analyst to follow in documenting any required manual integrations.
- Raw data records will include a complete audit trail for those manipulations, including the following: (1) results of both the automated and manual integrations, (2) notation of the cause and justification for performing the manual integrations, (3) date, and (4) signature or initials of person performing the manual operations.
- All manual integrations must be reviewed and approved by the laboratory section supervisor and/or the QA officer.
- All manual integrations must be identified in the case narrative.

Laboratory Data Review Requirements

All definitive data will be reviewed first by the laboratory analyst and then by the laboratory supervisor of the respective analytical section using the same criteria before they are submitted to CH2M Hill. This internal data review process, which is multi-tiered, should include all aspects of data generation, reduction, and QC assessment. Elements for review or verification at each level must include, but are not limited to, the following :

- Sample receipt procedures and conditions
- Sample preparation
- Appropriate LSOPs and methodologies
- Accuracy and completeness of analytical results
- Correct interpretation of all raw data, including all manual integrations
- Appropriate application of QC samples and compliance with established control limits
- Verification of data transfers
- Documentation completeness
- Accuracy and completeness of data deliverables (hard copy and electronic)

Laboratory Data Evaluation

The calibration, QC, corrective actions, and flagging requirements for definitive data are provided in Worksheet #28 (*Analytical Quality Control and Corrective Action*). Data qualifiers should be applied by the laboratory as part of their internal validation activities. The allowable data qualifiers for definitive data are *Q, E, J, B, and U.* The definitions of the data qualifiers are provided in the Table 36-1. Flagging criteria apply when acceptance criteria are not met and corrective actions were not successful or not performed. The data qualifiers must be reviewed by the supervisor of the respective analytical sections.

The laboratory QA section should perform a 100 percent review of 10 percent of the completed data packages. The laboratory project representative should complete a final review on all the completed data packages.

The CH2M Hill Project Chemist or designee will subsequently evaluate the flags applied by the laboratory as part of their data review and usability assessment activities.

Laboratory Method Blank Evaluation Guidance

For method blanks, the source of contamination should be investigated. If one-half the LOQ is exceeded, the laboratory should evaluate whether reprocessing of the samples is necessary using the following criteria: 1) the method blank contamination exceeds a concentration greater than 1/10 of the measured concentration of any sample in the associated preparation batch or 2) there is evidence indicating that the blank contamination otherwise affects the sample results. Except when the sample analysis resulted in a nondetect, all samples associated with method blank contamination and meeting these criteria must be reprocessed in a subsequent preparation batch. If no sample volume remains for reprocessing, the results will be reported with a B-flag, along with any other appropriate data qualifier. If an analyte is found only in the method blank, but not in any batch samples, no flagging is necessary. Method blank contamination must be addressed in the case narrative.

Table 36-1
Laboratory Data Qualifiers
UFP-QAPP for PFC Sampling at the AV Groundwater Plume

Qualifier	Description
Q	This indicates that one or more QC criteria fail. Data must be carefully assessed by CH2M Hill with respect to the project-specific requirements and evaluated for usability. Subsequent assessment by DoD may result in rejection of data.
J	The analyte was positively identified; the quantitation is an estimation because of discrepancies in meeting certain analyte-specific QC criteria.
B	The analyte was found in an associated blank above one half the LOQ, as well as in the sample.
U	The analyte was analyzed for but not detected.
E	Exceeds calibration range of the instrument.

CH2M Hill Requirements

CH2M Hill has overall responsibility for data quality and may be assisted in its review by external organizations. Regardless of who performs the data review, the individual(s) should possess the disciplinary expertise, experience, and theoretical knowledge to perform the task, and a complete understanding of the intended use of the data and the relationship of the QC results to the usability of the data.

Data Verification Guidelines

The CH2M Hill Project Chemist will review the data verification performed by the laboratory for completeness and accuracy. Data verification may be done electronically or manually, or by a combination of both. The verification process includes, but is not limited to the following:

- Sampling documentation (such as the chain-of-custody form)
- Preservation summary and holding times
- Presence of all analyses and analytes requested
- Use of required sample preparation and analysis procedures
- LODs and LOQs
- Correctness of concentration units
- Case narrative

Data Validation Guidelines

The data validation process builds on data verification. The CH2M Hill Project Chemist will review the laboratory case narrative and data validation results, with data qualifiers removed or added if needed.

Validation will be performed on an analytical batch basis by assessing QC samples and associated field sample results. Data validation guidelines have been developed according to the method requirements, professional judgment and general DoD requirements (see Table 36-2). Note that Table 36-2 includes additional information that is not included in the table as published by the DoD QSM Version 5.0 (DoD, 2013) but can be used to help define additional general flagging criteria applied (in some cases based on professional judgment).

The following information will be reviewed as part of a Level III-type summary data validation:

- Chain-of-custody documentation
- Holding time
- QC sample frequencies
- Method blanks
- LCS
- Surrogate spikes
- MS/MSD
- Initial and continuing calibration information
- Internal standards
- Tuning criteria
- FD precision
- Case narrative review and other method-specific criteria

Raw Data Review

Data review can involve an in-depth review of the raw data to verify accuracy followed by analysis and interpretation of the data in the context of the project objectives and end-use as part of the usability assessment. The review may include but is not limited to the following:

- Method-specific instrument calibration and QC parameters
- Raw data and chromatograms
- System performance
- Proper integration (if applicable)
- Spectral matches, and/or RTs to verify analyte identification (where applicable)
- Random check of calculations
- Interference problems or system performance problems
- Estimated results (such as J-qualifiers)
- Resolution by the laboratory of any identified problems, as necessary

An automated process may be used to perform all of the comparisons against the limits for elements of QC that are available in the laboratory electronic deliverables. The automated process will include data flagging for issues related to method and field blanks, LCSs, MS/MSD samples, field duplicates, surrogate recoveries, holding time, and reconciliation of dilutions and re-extractions. All of the elements of QC, their limits, and the logic for applying flags will be incorporated in the computer application. Automated elements will be verified manually. Elements not incorporated into the automated checks such as instrument calibrations and tuning will be completed manually.

Data Assessment and Interpretation

This phase of the data validation process (assessment) may include but is not limited to the review of the following:

- All Q-flagged data and final determination of its usability
- All B-flagged data and final determination of its usability
- Laboratory and field blank contamination and parallel contamination in samples
- Duplicate and replicate sample analyses
- All matrix flagged data
- Potential LCS failure where marginal exceedances criteria may apply
- Impact of multiple data issues on the final analytical results
- Deficiencies identified during data verification and assessment of their impact on the sample results
- Incorporation of site-specific factors and assessment of their impact on the data
- Assessment of data usability and assignment of final data qualifiers listed in Table 36-3, as necessary
- Discussion of completeness, representativeness, and comparability

Data flags, as well as the reason for each flag, will be entered into an electronic database and made available to the data users. A final flag is applied to the data by the data validator/chemist after evaluating all flags entered into the database and selecting the most conservative flags.

A DSR will be prepared to summarize the findings and their impact on the overall data usability. This may be incorporated into the final usability assessment.

Method Blank Evaluation Guidance

The CH2M Hill Project Chemist will evaluate laboratory B-qualified data such as method blanks, as well as other field blanks based on the concentration of the analyte in the samples in relation to the concentration in the blank. The B-flag may be removed and not used if the analyte concentrations in the samples are much higher (≥ 5 times) than in the blank (≥ 10 times in case of common laboratory contaminants). Any blank contamination that may impact data usability must be discussed in conjunction with project-specific goals. When a data set contains low-level detects in field samples and has associated field or laboratory blanks that have detects at similar concentrations, this suggests that the low-level detects in these field samples may be artifacts because of either field or laboratory practices. A sample detect that is ≤ 5 times the blank contamination (≤ 10 times for common laboratory contaminants) may be considered a nondetect and flagged "U" at the detected concentration.

Duplicate Evaluation Guidance

QC measures for precision include FDs, field replicates, laboratory duplicates, MSDs, analytical replicates, and surrogates. These measures will be evaluated by the laboratory and qualified according to applicable procedures, with the exception of the FDs.

Specifically, FDs should be sent to the laboratory as blind samples and should be given unique sample identification numbers. These sample results can be used to assess field sampling precision, laboratory precision, and, potentially, the representativeness of the matrix sampled. Flagging of results associated with FDs should be assigned such that the level of uncertainty required, as provided by the project-specific objectives, is taken into account.

Poor overall precision may be the result of one or more of the following: field instrument variation, analytical measurement variation, poor sampling technique, sample transport problems, or spatial variation (heterogeneous sample matrices). To identify the cause of imprecision, the project team should evaluate the field sampling design rationale and sampling techniques, and review both field and analytical duplicate sample results. If poor precision is indicated in both the field and analytical duplicates, then the laboratory may be the source of error. If poor precision is limited to the FD results, then the sampling technique, field instrument variation, sample transport, and/or spatial variability may be the source of error. If data validation reports indicate that analytical imprecision exists for a particular data set or SDG, then the impact of that imprecision on usability must be discussed in the report.

Flagging Conventions

The allowable final data qualifiers for definitive data and the hierarchy of data qualifiers, listed in order of the most severe through the least severe, are R, J, UJ, and U. Their definitions are summarized in Table 36-3.

Table 36-2 presents the specific guidelines for applying these data usability qualifiers and includes additional information that is not included in the table as published by the DoD QSM Version 5.0, but can be used to help define additional general flagging criteria applied (in some cases based on professional judgment). Table 36-4 presents the final data reporting flag conventions to be used in compliance with the DoD QSM version 5.0.

Table 36-2
General Data Qualifying Conventions

UFP-QAPP for PFC Sampling at the AV Groundwater Plume

QC Requirement	Criteria	Flag	Flag Applied To
Holding Time	Time exceeded for extraction or analysis by a factor of 2 or more	J for the positive results; R or UJ for nondetects*	All analytes in the sample
Sample Preservation	Sample not preserved	J positive results; R or UJ for nondetects*	Sample
	Temperature out of control	J for positive results; UJ for nondetects* R based on professional judgment	Sample
Instrument Tuning	Mass assignment error or Ion abundance method-specific criteria not met	R for all results, if critical ions involved, use judgment otherwise	All associated samples in analytical batch
Initial Calibration	All analytes must be within method-specified criteria (Worksheet #28)	J for positive results; UJ for nondetects, R based on professional judgment	All associated samples in analytical batch
Second Source Check or Continuing Calibration	All analytes must be within method-specified criteria (Worksheet #28)	High Bias: J for positive results, no flag for nondetects Low Bias: J for positive results, UJ for nondetects J positive/R all nondetects greater than twice the control criteria	All associated samples in analytical batch
LCS	Organics: %R greater than UCL %R less than LCL and greater than 10% %R less than LCL and less than 10%	J for the positive results; J for the positive results; UJ for the nondetects J for the positive results; R for the nondetects	The specific analyte(s) in all samples in the associated analytical batch
Internal Standards	Area greater than UCL Area less than LCL Sample is re-extracted and reanalyzed and recovery outside of criteria is confirmed as a matrix effect	J for positive results J for the positive results; UJ for the nondetects If area is to low based on professional judgment, UJ or R nondetects	Sample
Surrogate Spikes	%R greater than UCL %R less than LCL and greater than 10% %R less than 10% Excessive dilution	J for positive results J for positive results; UJ for nondetects J for positive results; R for nondetects No flag required	Sample
Blanks (Method, and Field)	Analyte(s) detected greater than 1/2 LOQ (use the blank of the highest concentration)	U for positive sample results ≤ 5x highest blank concentration (10x for common laboratory contaminants)	All samples in preparation, field or analytical batch, whichever applies

Table 36-2 (Continued)
General Data Qualifying Conventions

UFP-QAPP for PFC Sampling at the AV Groundwater Plume

QC Requirement	Criteria	Flag	Flag Applied To
Field duplicates or laboratory duplicates	Both sample results greater than 5 times LOQ and RPD greater than UCL or One or both samples less than 5 times LOQ and a difference between results of ±2 times LOQ for water and air	J for the positive results J for the positive results UJ for the nondetects	The specific analyte(s) in all samples collected on the same sampling date Note: No flagging is required for RPDs based on J-flagged results
MS/MSD	%R greater than UCL %R less than LCL and >10% %R less than 10% or MS/MSD RPD greater than control limit; Sample concentration greater than 4x spike concentration; Excessive dilution*	J for positive results J for positive results; UJ for nondetects J for positive results; R for nondetects J for positive results No flag required	The specific analyte(s) in the parent sample
RT Window	Analyte within established window	R for all results	Sample

Key:
* = Based on analyte-specific review
LCL = lower confidence limit
LCS = laboratory control sample
LOQ = limit of quantitation
MS = matrix spike
MSD = matrix spike duplicate
ND = not detected
QC = quality control
RPD = relative percent difference
RT = retention time
UCL = upper confidence limit

Table 36-3
Usability Assessment Data Qualifiers

UFP-QAPP for PFC Sampling at the AV Groundwater Plume

Qualifier	Description
R	The data are rejected because of deficiencies in meeting QC criteria and may not be used for decision making.
J	The analyte was positively identified; the quantitation is an estimation because of discrepancies in meeting certain analyte-specific QC criteria or the analyte was positively identified but the associated concentration is an estimation above the DL and below the LOQ.
UJ	The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
U	The analyte was analyzed for, but not detected or is qualified as nondetect because of blank contamination.

Key:
DL = detection limit
LOQ = limit of quantitation
QC = quality control

Table 36-4
Data Qualifying Conventions—Quantitation

UFP-QAPP for PFC Sampling at the AV Groundwater Plume

Criteria	Report
< DL	Nondetect result, U at the LOD
≥ DL < LOQ	Estimated detected result flagged J
≥ LOQ	Report result, flag as needed
≥ high standard/linear range	Estimated detected result flagged J

Examples:
DL = 2, LOD = 4, LOQ = 15, sample is undiluted.
Example #1: Analytical result: not detected; reported result: <4U.
Example #2: Analytical result: 3; reported result: 3J.
Example #3: Analytical result: 10; reported result: 10J.
Sample #4: Analytical result: 15; reported result: 15.

Key:
DL = detection limit
LOD = limit of detection
LOQ = limit of quantitation

Worksheet #37—Data Usability Assessment

The data usability assessment is an evaluation based on the results of data verification and validation in the context of the overall project decisions or objectives. The assessment is used to determine whether the project execution and resulting data meet the project DQOs. Both the sampling and analytical activities must be considered, with the ultimate goal of assessing whether the final, qualified results support the decisions to be made with the data.

The following sections summarize the processes to determine whether the collected data are of the right type, quality, and quantity to support the environmental decision making for the project, and describe how data quality issues will be addressed and how limitations of the use of the data will be handled.

Summary of Usability Assessment Processes

Data gaps may be present if (1) a sample is not collected, (2) a sample is not analyzed for the requested parameters, or (3) the data are determined to be unusable. The need for further investigation will be determined on a case-by-case basis, depending on whether data can be extrapolated from adjacent sample locations, and whether the data are needed based on the results from adjacent sample locations.

The CH2M Hill Project Chemist and the laboratory will confirm that the collected data meet the LODs, LOQs, and laboratory QC limits specified in this document. During the data validation assessment, nonconformances will be documented, and data will be qualified accordingly. The CH2M Hill Project Chemist will determine whether the data are usable based on the requirements specified in this document.

All data as qualified by the CH2M Hill Project Chemist are considered useable, with the exception of rejected data. Estimated and/or biased results are considered usable. Outliers, if present, can be addressed on a case-by-case basis. There is no generic formula for determining whether a result is an outlier. Potential outliers will be referred to a statistician and/or senior consultant, who will determine which formulas are appropriate for classifying data points in a statistically appropriate and defendable manner.

Evaluative Procedures to Assess Project-Specific Overall Measurement Error

Overall measurement error is normally associated with both sampling design and quality and quantitative measures performed in both the field and laboratory. In-depth assessment will be performed during the data review and validation processes to assess conformance with the field SOPs, LSOPs, and objectives of this document. Qualifiers will be used to indicate overall usability of the data.

Personnel Responsible for Performing Usability Assessment

Doug Scott/CH2M Hill Project Chemist
Nigel Tindall/CH2M Hill PM
Jason Dalrymple/CH2M Hill PFC Task Manager
Mark Hilyard/CH2M Hill QA manager
John Tunks/CH2M Hill Senior Technical Consultant

Usability Assessment Documentation

All the results will be assembled and statistically reported for an overall quality assessment in a data validation report, which will be provided as an appendix to the final project note deliverable. The data validation report will identify precision and accuracy exceedances with respect to the laboratory performance for each batch of samples, as well as comparability of field and laboratory duplicates. Discussion will cover PARCC criteria as described in the following subsections.

Precision

Laboratory precision is measured by the variability associated with duplicate (two) or replicate (more than two) analyses. One type of sample that can be used to assess laboratory precision is the LCS. Multiple LCS analyses over the duration of the project can be used to evaluate the overall laboratory precision for the project. In this case, the comparison is not between a sample and a duplicate sample analyzed in the same batch, but between LCSs analyzed in multiple batches.

Total precision is the measurement of the variability associated with the entire sampling and analytical process. The required levels of precision for each method, matrix, and analyte are provided in Worksheet #15 (*Reference Limits and Evaluation*). Precision is determined by analysis of duplicate field samples, laboratory duplicates, and/or MSDs. Field duplicate samples, laboratory duplicate, and MSD samples should be analyzed to assess field and laboratory precision at a frequency as described in Worksheet #20 (*Field QC Sample Summary*). For duplicate sample results, the precision is evaluated using the RPD. For replicate results, the precision is measured using the RSD. The formula for the calculation of RPD and RSD are provided below.

If calculated from duplicate measurements:

$$RPD = 100\% \times \frac{(C_1 - C_2)}{(C_1 + C_2) \times \frac{1}{2}} \qquad (1)$$

Where:

RPD = relative percent difference

C_1= larger of the two observed values

C_2 = smaller of the two observed values

- If calculated from three or more replicates, use RSD rather than RPD:

$$RSD = 100\% \times (s / \bar{y}) \qquad (2)$$

Where:

RSD = relative standard deviation
s = standard deviation
$\bar{y}$ = mean of replicate analyses

Standard deviation, σ, is defined as follows:

$$\sigma = \sum_{i=1}^{n} \sqrt{\frac{(y_i - \bar{y})^2}{n-1}} \tag{3}$$

Where:

σ = standard deviation

y_i = measured value of the i^{th} replicate

$\bar{y}$ = mean of replicate analyses

n = number of replicates

Accuracy

Accuracy reflects the total error associated with a measurement. A measurement is considered accurate when the reported value agrees with the true value or known concentration of the spike or standard within acceptable limits. Analytical accuracy is measured by comparing the percent recovery (*%R*) of analytes spiked into an LCS or MS to a control limit. For many methods of organic compound analysis, surrogate compound recoveries also are used to assess accuracy and method performance for each sample analyzed.

Both accuracy and precision are calculated for each analytical batch, and the associated sample results are interpreted by considering these specific measurements. The formula for calculation of accuracy is included below as *%R* from pure and sample matrices. Accuracy requirements are listed for each method, matrix, and analyte in Worksheet #15 (*Reference Limits and Evaluation*).

For measurements where MSs are used:

$$\%R = 100\% \times \left[\frac{S-U}{C_{sa}}\right] \tag{4}$$

Where:

$\%R$ = percent recovery
S = measured concentration in spiked aliquot
U = measured concentration in unspiked aliquot
C_{sa} = actual concentration of spike added

For situations where a LCS is used instead of or in addition to MSs:

$$\%R = 100\% \times \left[\frac{C_m}{C_{sm}}\right] \tag{5}$$

Where:

$\%R$ = percent recovery
C_m = measured concentration of LCS
C_{sm} = actual concentration of LCS

Representativeness

Representativeness is a qualitative term that refers to the degree in which data accurately and precisely depicts the characteristics of a population, whether referring to the distribution of contaminant within a sample, a sample within a matrix, or the distribution of a contaminant at a site. Representativeness is determined by appropriate program design, with consideration of elements such as sampling locations. Objectives for representativeness are defined for each sampling and analysis task and are a function of the investigative objectives. Assessment of representativeness will be achieved through use of the standard field sampling and analytical procedures. Decisions regarding sample locations process and numbers and the statistical sampling design are documented in Worksheets #10 (*Conceptual Site Model*), #11 (*Data Quality Objectives*), and #17 (*Sampling Design and Rationale*).

Comparability

Comparability is a qualitative indicator of the confidence with which one data set can be compared to another data set. The objective for this QA/QC program is to produce data with the greatest possible degree of comparability. The number of matrices that are sampled and the range of field conditions encountered are considered in determining comparability. Comparability is achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions, and using standard and comprehensive reporting formats. Complete field documentation using standardized data collection forms supports the assessment of comparability. Historical comparability can be achieved through consistent use of methods and documentation procedures throughout the project. Assessment of comparability is considered subjective and the results should be interpreted by experienced environmental professionals with a clear knowledge of the DQOs and project decisions.

Completeness

Completeness is a measure of the amount of valid data obtained compared with the amount that was expected to be obtained under correct, normal conditions. It is calculated for the aggregation of data for each analyte measured for any particular sampling event or other defined set of samples (for example, by site) as set out in the DQOs. Valid data are data that are usable in the context of the project goals. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not qualified with an R-flag after a usability assessment has been performed. Completeness should not be determined only based on laboratory data qualifiers. The goal for completeness is 95 percent for all samples.

Completeness is calculated as follows for all measurements:

$$\%C = 100\% \times \left[\frac{V}{T}\right] \tag{6}$$

Where:

$\%C$ = percent completeness
V = number of measurements judged valid
T = total number of measurements

Sensitivity

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. This capability is established during the planning phase to meet project-specific objectives. It is important to be able to detect the target analytes at the levels of interest. Sensitivity requirements include the establishment of various limits such as calibration requirements, instrument LODs, and LOQs. The project QA/QC and method requirements have been established to be compliant with the DoD QSM Version 5.0 (DoD 2013). Project-specific LOD and LOQs are established in Worksheet #15 to meet the DQOs in Worksheet #11.

References

AFCEC. 2014 (June). *Health & Safety Plan (HASP)*. 473147-PROGRAM-MULTIPLE-HASP-001. Prepared by CH2M HILL for AFCEC/JBCC, Installation Restoration Program, Otis Air National Guard Base, MA.

_____. 2013a (October). *Final 4th Five Year Review, 2007-2012, Massachusetts Military Reservation Superfund Site, Otis Air National Guard Base, MA.* 473147-SPEIM-Multiple-RPT-001. Prepared by CH2M Hill for AFCEC/JBCC, Installation Restoration Program, Otis Air National Guard Base, MA.

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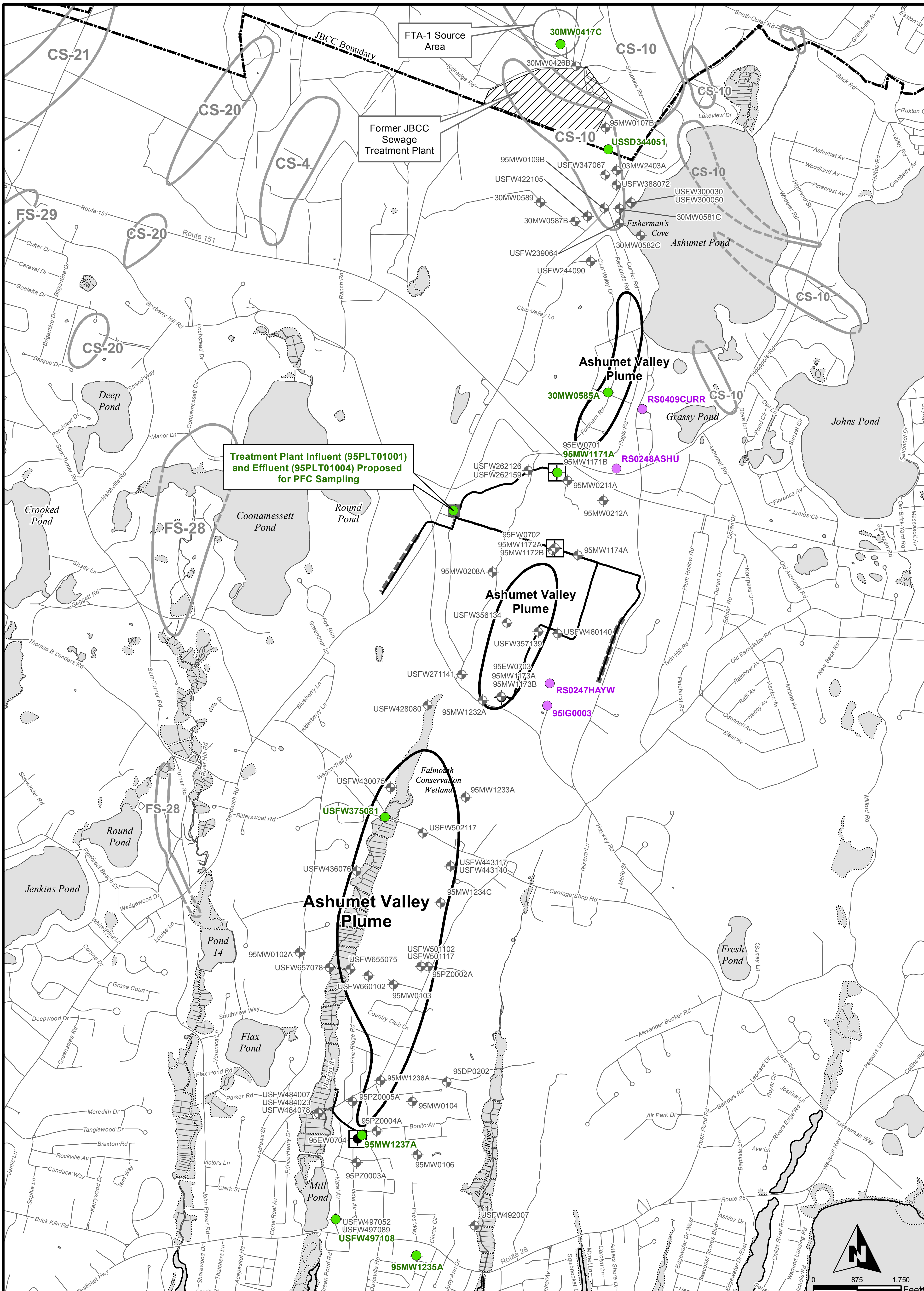
______. 2013c (January). *Ashumet Valley Groundwater Plume Conceptual Site Model.* 437075-SPEIM-AVP-CSM-001. Prepared by CH2M Hill for AFCEC/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

Department of Defense (DoD). 2013 (July). *Consolidated Quality Systems Manual for Environmental Laboratories*. Prepared by DoD and Department of Energy, Version 5.0.

U.S. Air Force. 2012 (August). *Interim Air Force Guidance on Sampling and Response Actions for PFCs at Active and BRAC Installations.*

FIGURE



Legend

Data Source: AFCEC, January 2014
JBCC Boundary from Massachusetts Air National Guard 2011

- Bog/Wetland
- Joint Base Cape Cod Boundary
- 2013 Ashumet Valley Plume Boundary
- Other Plume Boundary (Dashed Where Inferred)
- Treatment System Pipeline
- Infiltration Trench
- SPEIM/LTM Monitoring Well
- Extraction Well (On)
- Extraction Well (Off)
- Treatment Plant
- Location Proposed for Perfluorinated Compound (PFC) Sampling
- Contingency PFC Sampling Location

FIGURE 1

ASHUMET VALLEY PLUME PROPOSED PERFLUORINATED COMPOUND (PFC) SAMPLING LOCATIONS

AFCEC - Joint Base Cape Cod

UFP - QAPP for PFC Sampling at the Ashumet Valley Groundwater Plume

CH2MHILL.

Path: Y:\Figures\SPEIM\AshumetValley\2014PFC_Sampling\QAPP\GIS\Arcmap\AV_PFCqapp_Fig01.mxd Date: 5/29/2014 Time: 10:15:17 AM User: 126864787E

APPENDIX A

EPA PFC Letter and E-mail Communication

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
BOSTON, MA 02109

December 16, 2013

Rose H. Forbes, P.E.
Remediation Program Manager
HQ AFCEC/JBCC
322 East Inner Road
Otis ANG Base, MA 02542-5028

Re: Request for Perfluorinated Compound Groundwater Sampling & Analysis

Dear Ms. Forbes:

As an official follow-up to our discussions at the technical update meeting on 21 November 2013, EPA under provisions in Section VI. of the Federal Facilities Agreement (FFA) requests expediting sampling of groundwater and analysis for perfluorinated compounds (PFCs) at Joint Base Cape Cod (JBCC) rather than awaiting the national contract given site-specific circumstances especially the presence of groundwater plumes off-base and the potential for private wells to be impacted.

As you know, PFCs are emerging contaminants with two marker compounds, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). There are no toxicity values or established standards but provisional health advisory values for PFOA (0.4 ug/L) and PFOS (0.2 ug/L) in groundwater have been established. Investigations for PFCs have begun on federal facilities in New England and results have positively identified their presence at areas associated with fire training areas and in/around hangars.

Given the chemical characteristics of PFCs, the location of FTA-1 at MMR and the presence of the majority of the Ashumet Valley groundwater plume off-base, sampling of a number of monitoring wells within the Ashumet Valley groundwater plume from FTA-1 to the leading edge should be conducted since empirical data show that PFCs migrate further than VOCs. EPA requests submission within three weeks of the date of this letter a draft project note work plan providing details of the fieldwork.

If you have any questions, you can reach me at (617) 918-1392 or lim.robert@epa.gov.

Sincerely,

Robert Lim

Robert Lim, Remedial Project Manager
Federal Facilities Superfund Section

cc: Lynne Jennings/EPA
Len Pinaud/MassDEP

-----Original Message-----
From: Lim, Robert [mailto:Lim.Robert@epa.gov]
Sent: Tuesday, January 07, 2014 3:47 PM
To: FORBES, ROSE H GS-13 USAF HAF AFCEC/CZO
Cc: Jacobs, Elliot (DEP); Jennings, Lynne; 'leonard.pinaud@state.ma.us'
Subject: MMR/JBCC, PFC Sampling & Analysis at Ashumet Valley

Hi Rose,

Here are EPA and MassDEP suggestions for monitoring as an initial step in investigating PFCs.

[MassDEP: Please correct if I missed something.]

1) AV monitoring wells: 30MW0417C; USSD344051; 30MW0585A; 95MW1171A or 95EW0701; USFW502117; 95MW1237A

2) Any private wells in the LUC boundary & perhaps downgradient of the LUC boundary if it is determined that PFCs could have potentially migrated further than the AV VOC plume

We look forward to discussing the next steps, and hope that this is sufficient for your requests for funding. Let me know if you need a more formal request.

~Bob

Appendix B
Field Sampling Standard Operating Procedures

SOP-Tech-006	Water Level and Total Depth Measurements
SOP-Tech-011	Field Measurements Using the YSI 6820 and 6920 Water Quality Meters
SOP-Tech-014	Residential Well Sampling
SOP-Tech-026	Sampling Handling and Custody
SOP-Tech-027	Preserving Environmental Samples in the Field
SOP-Tech-028	Packing and Shipping – Environmental Samples
SOP-Tech-030	Small Diameter Well and Drive Point Groundwater Sampling
SOP-Tech-035	Field Logbook
SOP-Tech-036	Equipment Decontamination Procedures
SOP-Tech-039	Organic Vapor Monitoring
SOP-Tech-045	Creation, Assignment and Interpretation of Location IDs
SOP-Tech-073	Port Sampling

WATER LEVEL AND TOTAL DEPTH MEASUREMENTS

1.0 PURPOSE

The purpose of this technical procedure is to describe the equipment and methods used to accurately determine the depth to water and total depth in a groundwater monitoring well, pumping well, or piezometer.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors who take measurements of depth to water and total depths in wells at the Joint Base Cape Cod (JBCC) SPEIM/LTM/O&M Program. The procedure is applicable to the sampling of monitoring wells and must be performed prior to any activities, such as retrieval of passive sampling devices, purging, or aquifer testing, that may disturb the water level.

3.0 REFERENCES

1. Driscoll, F.G. 1986. *Groundwater and Wells.* St. Paul, MN: Johnson Division.
2. Thornhill, Jerry T. 1989. “Accuracy of Depth to Ground Water Measurements,” from EPA Superfund Ground Water Issue, EPA/540/4-89/002.
3. U.S. Department of the Interior (USDI). 1981. *Groundwater Manual, A Water Resource Technical Publication.* Water and Power Resources Services. Denver, CO: U.S. Government Printing Office.
4. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
5. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Depth to Water: Distance from the measuring point of a well to the water level within a well.
2. Total Depth: Distance from the measuring point of a well to the bottom of the well sump.
3. Duplicate: Duplicate depth to water and total depth measurements obtained at the same well with different water level meters. Duplicate measurements serve as a quality check of the meter calibration and also the field procedures.
4. Sentry Well: A selected monitoring well where depth to water and total depth is measured by each field team at the start of any water level measuring event. Total depth measurements at the sentry well serves as a quality check of the meter calibration and field procedure.
5. Potable Water: water obtained from the tap at the field services trailer. Potable water is used to check the sensitivity of the water level meter probe prior to each use. Deionized water (DI) water is not acceptable for this quality check as it does not contain the ions needed to activate the probe.

5.0 GENERAL

Water level data are used to determine the hydraulic gradient in an aquifer and changes in groundwater water levels over time. The depth to water and total depth are used to calculate the volume of standing water in the well. This volume is used to estimate the amount of water to be purged from a well prior to sampling, and to establish when wells are fully recharged following purging and slug testing. Total depth information is also used to verify the field location, prior to initiating sampling procedures.

This technical procedure requires the use of an electronic water level device that employs a battery-powered probe assembly attached to a cable marked in 0.01-foot increments. When the probe makes contact with the water surface, a circuit is closed and energy is transmitted through the cable to sound an audible alarm. This equipment will have a sensitivity adjustment switch that enables the operator to distinguish between actual and false readings caused by the presence of conductive, immiscible components, such as oil or gasoline on top of the groundwater, or wet conditions in a well above the water-table piezometric surface. The manufacturer's operating manual, which may be obtained from the Field Team Leader (FTL), should be consulted for instructions on use of the sensitivity adjustment.

The measurements of static water level and total depth must be taken at an established reference point, generally from the top of the casing at the surveyor’s mark. The mark should be permanent, such as a notch or mark on the top of the casing. If the surveyor’s point is not marked at the time of water level measurement, the north side of the casing should be used and marked. All equipment shall be decontaminated before and after introducing the equipment to the well, following procedures in technical procedure TECH-036.

If it is not possible to measure the depth of a well in which pumping equipment has been installed, the as-built construction plans will provide the total depth.

6.0 RESPONSIBILITIES

The *Plume Lead* (or designee) shall ensure that depth to water and total depth at the requested wells are obtained by completing and submitting a request for field services (RFS). .

The *Field Database Lead* or designee responsible for entry of the RFS into the Sample Tracking and Sample Scheduling (STSP) shall enter the locations into the STSP including field duplicate locations as specified in Section 7.4 of this procedure. The *Field Database Lead* or designee shall input all depth to water and total depth measurements into the STSP.

The *FTL* shall ensure that the appropriate quality control measures are included and followed as part of water level and total depth monitoring activities. The FTL is to ensure that specific procedures for water level, depth measurement and decontamination of the equipment are followed. The FTL will also review duplicate depth to water and total depth measurements obtained at an individual well where meters are calibrated.

Field Sample Staff will visually inspect the water level meter prior to each use for the appearance of bent, kinked, torn or otherwise damaged cable.

7.0 PROCEDURE

7.1 Equipment

- Water level indicator with audible alarm and a cable marked in 0.01-foot increments. The point on the probe that triggers the alarm corresponds to the zero point. The water level indicator shall be calibrated according to the manufacturer's instructions.
- Additional weight may be necessary at depths deeper than 80 feet due to the buoyancy of the cable when the weight of the tape is approximately equal to or greater than the weight of the probe.
- Spray bottle of DI water and paper towels for decontamination of water meter cable and probe.

7.2 Static Water Level Measurement

The static water level shall be measured each time a well is sampled. This must be done before any fluids or passive sampling devices are withdrawn and before any purging or sampling equipment enter a well.

If the well is sealed with an airtight cap, allow time for equilibration of pressures after the cap is removed before taking water level measurements. To verify equilibration, water level readings should be taken approximately three minutes apart to determine whether the water level is static. The water level is considered static if two consecutive readings are within 0.01 feet. The procedure is to record the first static water level measurement and then record the well's total depth before collecting the second water level measurement.

With the water level indicator switched on, slowly lower the probe until it contacts the water surface, as indicated by the audible alarm. Raise the probe out of the water until the alarm turns off. Continue raising and lowering the probe until a precise level is determined.

Record the reading on the cable at the established reference point to the nearest 0.01-foot. Record the other data required in Section 8.0 (Records).

7.3 Total Depth Measurement

Slowly lower the water level indicator, with weight attached if necessary, until the cable goes slack. Raise and lower the probe until the precise location of the bottom is determined.

Record the reading on the cable at the established reference point to the nearest 0.01-foot. The measurement must be adjusted for the offset between the bottom of the probe and the water level sensor. Record data required in Section 8.0 (Records).

The reference point for the total depth measurement is the bottom of the plumb attached to the water level indicator. Since, measured values must be adjusted for the offset between the bottom of the plumb and the water level sensor, this distance on the probe should be measured in the field, added to the measurement, and noted in the field logbook.

7.4 Synoptic Water Level Survey

Synoptic water level surveys are performed to determine the hydraulic gradient of the aquifer within a limited period of time. These surveys can include as little as two locations and as many as several hundred locations. If a water level survey consists of over 20 locations, then two or more crews may be required to complete the survey within the limited time period.

The following procedures and quality checks shall be performed for each synoptic water level survey.

- The FTL receives and reviews a Request for Services for a synoptic water level survey. Access issues and preliminary reconnaissance of the requested water level locations are reviewed prior to field crew mobilization.
- When multiple field teams are used for a field event, the FTL assigns water level locations to each individual team. Duplicate locations will be assigned to each team (generally a 10% frequency) as a quality check on the accuracy of the water level meters.
- Prior to collecting static water level measurements, the field crew shall test the operation of the water level indicator by submerging the probe into a container of potable water until the meter's alarm sounds and light illuminates. This quality check shall be performed to ensure that there is accurate probe sensitivity.
- Prior to field mobilization, all field crews shall measure one predetermined monitoring well (i.e., the "sentry well") as a control for water level meter calibration. Static water level and total depth shall be measured at the sentry well (monitoring well location 03MW0055A) and the FTL (or designee) will compare the measurements recorded by each field crew in the field log books. If each crew's measurements are within an acceptable range of the others, equal to or less than 0.1-ft, then all field crews will be permitted to complete the scheduled assignments. If one or more water level indicators do not calibrate within the acceptable range, a new water level indicator(s) will be issued and static water level and total depth measurements will be performed at the common well using the replacement indicator(s).
- Upon completion of the synoptic water level event, the duplicate water level measurements that are recorded in field log books shall be reviewed by the Field Services Group Manger (or designee) and reviewed for accuracy. If duplicate measurements are found to be greater than 0.1-ft from the survey measurement, then a third field crew will be dispatched to the water level location to confirm either the survey or duplicated measurement. Accurate water level measurements will then be transferred to Data Management for input into the database.

7.5 Water Level Meter Maintenance and Tape Calibration

If the integrity of the water level meter cable is compromised as determined through visual inspection by field sampler prior to each use, or there is a discrepancy in measurements obtained at the "sentry well" and/or a discrepancy in the comparison of measurements obtained by a second meter at a well (duplicates); or if the probe meter is found to be faulty (through checks with potable water prior to each use) the water level meter will be tagged as unacceptable for use and will be set aside for maintenance.

Maintenance and calibration of water level meter tapes will be performed by a field equipment vendor. Whenever the water level meter is submitted for maintenance, the meter tape will also be calibrated against a steel tape. Meters with non-linear or cumulative deficiencies greater than one inch in 300 feet are unacceptable for use.

8.0 RECORDS

All field notes for water level and well depth measurements will be recorded in accordance with technical procedure TECH-035, Field Logbook.

FIELD MEASUREMENTS USING THE YSI 6820 and 6920 WATER QUALITY METERS

1.0 PURPOSE

The purpose of this technical procedure is to describe the step-by-step methods for calibrating, maintaining, and operating the YSI 6820 and 6920 water quality meters.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors with responsibility for Water Quality Determinations with the YSI 6820 and 6920.

3.0 REFERENCES

1. YSI Inc. 1996. *6820 Multi-Parameter Water Quality Monitor Instruction Manual.* YSI Incorporated, Yellow Springs, Ohio.
2. YSI Inc. 2000. *YSI Model 650-MDS Operations Manual.* YSI Incorporated, Yellow Springs, Ohio.
3. *YSI Inc. 1998. Environmental Monitoring Systems Operations Manual.* YSI Incorporated*, Yellow Springs, Ohio.*
4. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
5. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Sonde: A device that houses six field-replaceable sensors designed to measure dissolved oxygen, conductivity, temperature, pH, oxidation reduction potential and turbidity.
2. Terminal: The 650-MDS Terminal is a display terminal and data logger by which the sonde communicates readings.
3. Flow-through cell: The flow through cell is an attachment for the sonde that allows air-tight water quality measurements of small streams of water (low flow), such as water pumped from a piezometer or monitoring well.

5.0 GENERAL

The YSI 6820 and 6920 water quality meters are multi-parameter, water quality and data collection systems. They are intended for use in research, assessment, and regulatory compliance applications. Instructions for maintenance will be described in the operations manuals (YSI, 1998) provided by the manufacturer. Calibration shall follow protocols designated in the calibration checklist located in each instrument's calibration logbook.

6.0 RESPONSIBILITIES

The *Field Team Leader (FTL)* shall assign trained, qualified personnel to take multi-parameter measurements with the YSI and ensure compliance with this technical procedure.

The *FTL* will oversee the daily operations as related to multi-parameter measurements with the YSI. This individual will supervise the collection and documentation of all field data generated. It is also the responsibility of the *Field Team Leader* to ensure that the equipment used is calibrated before operation and maintained correctly.

7.0 PROCEDURE

7.1 Materials

- YSI 6820 or 6920 Sonde
- YSI 650-MDS Data Logger
- Smart Terminal connector cable
- 610 Data Logger Stand
- Sonde guard
- Flow-through cell
- Discharge hoses (2)
- Sonde stand
- Concrete or plywood pad
- Heavy-duty wire ties
- Metal Securing Stake with chain and lock (pre-installed at surface water monitoring locations)

7.2 Calibration

The instrument shall be calibrated daily according to the calibration checklist specifically developed for the instrument being calibrated. The checklist is included as Attachment I. Daily calibration procedures will be retained in a bound document with an assigned document number.

7.3 Decontamination

The flow-through cell and discharge hoses will be decontaminated according to the decontamination procedures in TECH-036. To decontaminate the sonde, simply rinse with deionized water and diluted liquinox. The 650-MDS terminal shall be wiped clean with a moist paper towel as necessary.

7.4 YSI Field Usage (Discrete Measurements)

7.4.1 The procedures for measuring water quality parameters with the YSI 6820 and flow-through cell (in 650 Logging Mode) are as follows:

- Calibrate instrument in accordance with the instrument-specific calibration logbook.
- Place sonde on stand and secure discharge hose from pump to influent connector (bottom) of flow-through cell. Connect short discharge hose to effluent connector (top) of flow-through cell and run into purge water collection container.
- When turbidity has moderated, allow flow-through cell to completely fill with water. A continuous effort shall be made to keep air bubbles out of the flow-through cell.
- Connect the 650-MDS to sonde by connection cable.
- On 650-MDS Main Menu select setup/edit site list and enter location ID.
- Return to Main Menu. Select sonde menu/run/sampling interval/start sampling.
- Start logging and record parameters into logbook at 5-minute intervals.
- When parameters have stabilized (Groundwater Purging and Sampling SOP, TECH-015), select stop logging to terminate logging mode on the 650-MDS.

7.4.2 The procedures for measuring water quality parameters with the YSI 6820 without a flow-through cell (in Run Mode) are as follows:

- Connect the 650-MDS and the sonde with a connection cable.
- Remove sonde protective cover, install protective sleeve with openings and lower into sample media.
- Turn on 650-MDS and select sonde run.
- Record stabilized parameters into logbook. (Surface Water Sampling SOP, TECH-017)

7.5 Continuous Logging YSI

7.5.1 Retrieving the YSI 6920 Sonde

- Arrive at site. Make field notes of the condition the YSI 6920 is in (i.e., weeds, direction probes facing, any movement or change to surroundings that may have occurred, etc.).
- Gently pull YSI 6920 sonde from the water and remove from concrete block.

- Attach the 650-MDS data logger to the YSI 6920 sonde with a connection cable.
- Place YSI 6920 sonde into river to collect one set of water quality parameters. Turn on 650-MDS and select sonde run.
- Collect stabilized parameters in the field logbook.
- Remove YSI 6920 from river. Wrap protective sleeve with a wet towel and place in transportation cooler.

7.5.1.1 Field Check of YSI 6920

- As a field check bring a YSI 6820 into the field and take a discrete reading at the same location where the YSI 6920 was logging parameter (see section 7.4.2 of this procedure).
- Log these readings into field logbook.

7.5.2 Uploading Data from the YSI 6920 Sonde to the Computer

- To stop YSI 6920 from logging: connect 650-MDS to sonde. Select sonde menu/run/unattended sample/stop logging.
- To upload data from YSI 6920 to 650-MDS: Select sonde menu/file/quick upload.
- To upload data from 650-MDS to computer: connect modem PC cable to 650-MDS. Open EcoWatch program on PC and select sonde icon with appropriate communication port. On 650-MDS select file/upload to PC.
- In EcoWatch organize data in 60-minute intervals and note data abnormalities in field logbook.
- Export data into excel and organize data as specified by Plume Lead.
- Give 6920 YSI's to equipment room for cleaning and calibration and note any equipment problems in field logbook.

7.5.3 Redeployment and Logging Setup of the YSI 6920

The procedures for redeployment and logging setup of the Continuous YSI logging (6920) into the field are as follows:

- If applicable, remove sonde protective cover and install the protective sleeve with openings.
- Begin Logging:
- Connect 650-MDS to YSI 6920. Select sonde menu/run/unattended sample. Enter file and site name and begin logging.
- In field:

- Arrive at location and place YSI 6920 on concrete pad securing with zipties, chain and lock
- Gently place YSI 6920 into river with probes facing downstream at an angle.
- Connect the YSI 6920 to the metal securing stake using a chain and lock. Connect the chain to the metal ring which is located at the top of the YSI (end closest to cable connector).
- Gently place the YSI 6920 into the river, making sure to place the YSI 6920 (which is on the concrete or plywood pad) with the probes facing into the river current.
- Accurately describe placement procedures in field logbook.

7.6 Storage

The following tasks must be performed at the end of each day's operation of the YSI 6920:

1. Decontaminate instrument according to Section 7.3.
2. Upload data following section 7.5 guidelines.
3. Postcheck pH, conductivity, DO, and turbidity according to Attachment I.
4. Attach each terminal and sonde to its corresponding charger.

7.7 Maintenance

Maintenance will be performed as per the manufacturer's instructions.

8.0 RECORDS

All YSI parameter data collected in the field shall be entered into a bound logbook following the format and guidelines in technical procedure TECH-035, Field Logbook. Copies of the uploaded YSI data reports and plots shall be made and filed accordingly.

9.0 ATTACHMENTS

Attachment I - YSI 6820, 6920 and 650 MDS Calibration Checklist

ATTACHMENT I

Government Control Number___________________

YSI 6820/6920 and 650 DM

Calibration Datasheets

Booklet Date Range:_______________________________________

History of Full (Monthly) Calibrations:

Date	Personnel

Draft YSI 6820/6920 and 650 DM
CALIBRATION PROCEDURES

Dissolved Oxygen (DO) Calibration

1. Remove the travel cup from the sonde and inspect each individual probe for deterioration. Repair or replace as necessary (to include DO membrane). NOTE: Verify DO membrane has no water droplets on it. Also, in Section 2.10 of the YSI manual, replacing KCl electrolyte solution and DO membrane is recommended at least every 30 days during use of the sonde in sampling studies (or immediately prior to deployment for long-term logging).
2. Place sonde in travel cup with approximately 3mm (1/8 inch) potable, non-deionized water. Make certain DO and temperature probes are <u>not</u> immersed in water. Engage only 1 or 2 threads of the travel cup to insure the DO probe is vented to the atmosphere. Wait approximately 10 minutes for the air in the travel cup to become water-saturated and for the temperature to equilibrate.
3. Connect the sonde (6820 or 6920) to the 650DM, if not already. Press power key. In the 650 Main Menu, use the arrow keys to toggle down to select 'Sonde Menu' and press ↵ (ENTER). Then, toggle down to 'Calibration Mode' and press ENTER. Prompt will display all parameter options in the 'Calibration Menu', toggle to select 'dissolved oxy' and press ENTER. Then, select DO% and press ENTER.
4. Measure the ambient barometric pressure in mm Hg. RECORD this value on **Row A** of calibration datasheet. On the sonde prompt, enter the ambient barometric pressure (recorded on Row A) and press ENTER. **For post calibration check, a second barometric pressure reading should be measured. RECORD this value on Row A under post-calibration column.**
5. The DO Calibration screen will appear. Monitor temperature and DO readings for thermal equilibrium. Once the DO & Temperature readings stabilize, press ENTER to calibrate. Then, RECORD the DO & corresponding temperature results on **Row B** of calibration datasheet. 'Calibration Successful' will appear. Press ENTER to continue. Press the ESC key twice to return to 'Calibration Menu'. **Post Calibration Check Accuracy Goal is ± 0.5mg/l of the expected saturated value <u>not</u> relative to pre-calibration value! Refer to Appendix F of YSI manual for acceptable DO values of various temperatures at 760mm Hg. RECORD post-check corresponding temperature too.**

pH Calibration

1. Toggle to ISE1pH and press ENTER. The 'pH calibration' screen will appear. Select '1 point' for daily calibration or '3 point' for full (or monthly) calibration, and then press ENTER.
2. Remove the travel cup from the sonde. Rinse the probes with de-ionized water. Remove excessive water with chemistry tissue. (For daily pH 7.00 calibration procedures, follow steps 6-7. Otherwise, for full calibration procedures, continue on to step 3.)
3. Repeatedly expose probes with pH 4.00 RINSE. Afterward, place the probes into the pH 4.00 buffer solution. The 650DM display will ask to enter the 1st pH standard: type 4.00 into prompt and press ENTER.
4. Monitor temperature and pH readings for stability. Once the readings stabilize, RECORD both pH and corresponding temperature results on **Row C** of calibration datasheet, then press ENTER to calibrate. Then press ENTER to continue.
5. Remove the probe from the pH 4 buffer solution, rinse with de-ionized water. Remove excessive water with chemistry tissue.
6. Repeatedly expose probes with pH 7.00 RINSE. Afterward, set probes into the pH 7.00 buffer solution. Enter pH 7.00 into prompt and press ENTER. Monitor temperature and pH readings for stability. Once the readings stabilize, RECORD both pH and corresponding temperature results on **Row D**, then press ENTER to calibrate. Then press ENTER to continue. **Post Calibration Check Accuracy Goal is ± 0.3 units with pH 7 buffer and other bracketing buffers (pH 4 or pH 10).**
7. Remove the probe from the pH 7 buffer solution, rinse with de-ionized water. Remove excessive water with chemistry tissue, insuring no water droplets are left on any sensor. (For daily calibration, press ESC to return to 'Calibration Menu', otherwise, for full calibration, continue on to step 8.)
8. Repeatedly expose probes with pH 10.00 RINSE. Afterward, set probes into the pH 10.00 buffer solution. Enter pH 10.00 into prompt and press ENTER. Monitor temperature and pH readings for stability. Once the readings stabilize, RECORD both pH and corresponding temperature results on **Row E**, then press ENTER to calibrate. Then press ENTER to continue.
9. Remove the probe from the pH 10 buffer solution, rinse with de-ionized water. Remove excessive water with chemistry tissue, insuring no water droplets are left on any sensor. Press ESC once to return to the 'Calibration Menu'.

*Please see Calibration Datasheet for references to Rows A-I.

Conductivity Calibration

1. Rinse sonde probes with Conductivity RINSE, repeatedly exposing probes to solution. Then, set sonde probes into Conductivity solution. **NOTE: Temperature of standard should be around 25.0° C for optimal calibration.**
2. Toggle to select Conductivity and press ENTER. Then, select 'SpCond' and press ENTER. 'CondCal' will appear on the display, and the prompt will ask to enter the value of the calibration standard. Type the appropriate value for the standard and press ENTER. **NOTE: The 650DM prompt's units (ms/cm) versus the standard solution's units ($\mu S \cdot cm^{-1}$). The calibration standard's numerical value can vary depending on manufacturer and vendor.**
3. Monitor temperature and conductivity readings for stability. Once the readings stabilize (give at least 10 minutes), RECORD both Conductivity and corresponding temperature results on **Row F**. Then press ENTER to calibrate. Remove sonde probes from the conductivity standard and rinse with de-ionized water. Remove excessive water with chemistry tissue, insuring no water droplets are left on any sensor. Press ENTER to continue. Press ESC to return to the 'Calibration Menu'. **Post Calibration Check Accuracy Goal is ±10% of standard (e.g., 900 to 1100 $\mu S \cdot cm^{-1}$).**

Turbidity Calibration

1. Toggle to 'Turbidity' and press ENTER. Then, place sonde probes into the turbidity standard (0 NTU).
2. 'Optic-T Turbidity' will appear on display. Toggle to select '1 point' for daily calibration and '2 point' for full (monthly) calibration, and then press ENTER. The prompt will ask to enter the value of the first point NTU standard. Type '0.0' (NTU) and press ENTER.
3. Toggle down to select 'clean optics' and press ENTER to activate wiper. Monitor and observe the turbidity reading for stability. If necessary, continue to re-activate wiper to clean optics until a reasonable reading is displayed. Once the reading stablilizes, RECORD the Turbidity reading result on **Row G**. Then press ENTER to calibrate. Then press ENTER to continue. Remove the sonde probes from the turbidity standard, and remove excessive water with chemistry tissue, insuring no water droplets are left on any sensor *especially* the DO membrane. If conducting a '2 point' calibration, continue to step 5. Otherwise press ESC once to return to the 'Calibration Menu', and then power down the 650DM. The *daily* calibration procedures are complete. **NOTE: Always try to remove sonde probes from de-ionized water *as soon as possible*. The DO membrane electrolyte easily becomes diluted.**
4. Rinse sonde probes with the 2nd point Turbidity RINSE, repeatedly exposing probes to the solution. Then, set sonde probes into the 2nd point NTU standard solution. The prompt will ask to enter the value of this NTU standard. AFCEE uses Turbidity probe YSI 6136, so type '126.0' (NTU) and press ENTER.
5. Monitor and observe turbidity readings for stability. Once the reading stabilizes, RECORD the Turbidity reading result on **Row H**. Then press ENTER to calibrate. Then press ENTER to continue. Remove the sonde probes from the turbidity standard, and rinse with de-ionized water. Remove excessive water with chemistry tissue, ensuring no water droplets are left on any sensor especially the DO membrane. Press ESC once to return to the 'Calibration Menu'. **Post Calibration Check Accuracy Goal is ±2 NTUs of standard (-2.0 to 2.0 NTU) and <u>not</u> relative to pre-calibration value!**

ORP Calibration

1. Toggle to 'ISE2 ORP' and press ENTER.
2. Rinse sonde probes with Zobell RINSE, repeatedly and thoroughly exposing probes to solution. Then, set sonde probes into Zobell solution. **BE CAREFUL: Zobell solution contains cyanide.** The prompt will ask for the value of the ORP solution. Type '237.5' (millivolts) and press ENTER. Zobell solution should be around 20°C for optimal calibration.
3. Monitor temperature and ORP readings for stability. Once the readings stabilize (give at least 10 minutes), RECORD both ORP and corresponding temperature results on **Row I**. Then press ENTER to calibrate. Press ENTER to continue. Remove sonde probes from the Zobell standard and rinse with de-ionized water. Press ESC three times to return to the 'Main Menu'. The YSI Sonde is now calibrated. Press the POWER key to shut down the 650DM. Place the YSI 6820 or 6920 and the 650DM into its case for proper storage/transport.

*Please see Calibration Datasheet for references to Rows A-I.

HGL HydroGeoLogic, Inc
Exceeding Expectations

Good QA/QC Practices for YSI Operation and Water Quality Data Collection

1. Rinse sonde probes and travel cup thoroughly with sample media before sampling (minimizes influences from prior media conditions).
2. Refrain from leaving sonde probes immersed in sample media any longer than is necessary (exposure effects on sensors).
3. Inspect condition of sonde probes frequently (e.g. tears or air bubbles in DO membrane, debris caught inside crevices, etc).
4. When collecting parameter data, *all* parameters should be recorded *simultaneously* and *consistently* (temperature corresponds significantly with parameter values).
5. Be aware: operating environment of YSI 6820 ranges from -5° to +45° Celsius.

MODIFIED CONDUCTIVITY CALIBRATION CHART
(source: YSI conductivity solution sheet)

	YSI calibration solution numbers		
	3161	3163	3165
Temperature (°C)	Conductivity (µSiemens/cm)		
20	904	9,066	91,260
21	923	9,251	92,980
22	942	9,437	94,730
23	961	9,624	96,480
24	981	9,812	98,230
25	1,000	10,000	100,000
26	1,020	10,190	101,800
27	1,039	10,380	103,600
28	1,059	10,570	105,400
29	1,079	10,760	107,100
30	1,098	10,960	109,000

MODIFIED ZOBELL ORP CALIBRATION CHART
(source: YSI 6820 manual)

Temperature (°Celsius)	Zobell value (milliVolts)
-5	270.0
0	263.5
5	257.0
10	250.5
15	244.0
20	237.5
25	231.0
30	224.5
35	218.0
40	211.5
45	205.0
50	198.5

MODIFIED OXYGEN SOLUBILITY CHART

(source: YSI 6820 manual)

Solubility of oxygen (mg/L) in water exposed to water-saturated air at 760mm Hg pressure.

Salinity = measure of quantity of dissolved salts in water.
Chlorinity = measure of chloride content of water (by mass).
ppt = parts per thousand

Temperature (°C)	Chlorinity=0 Salinity=0	5.0 ppt 9.0 ppt	15.0 ppt 27.1 ppt	25.0 ppt 45.2 ppt
10.0	11.29	10.66	9.49	8.45
11.0	11.03	10.42	9.29	8.28
12.0	10.78	10.18	9.09	8.11
13.0	10.54	9.96	8.90	7.95
14.0	10.31	9.75	8.72	7.79
15.0	10.08	9.54	8.54	7.64
16.0	9.87	9.34	8.37	7.50
17.0	9.67	9.15	8.21	7.36
18.0	9.47	8.97	8.05	7.22
19.0	9.28	8.79	7.90	7.09
20.0	9.09	8.62	7.75	6.96
21.0	8.92	8.46	7.61	6.84
22.0	8.74	8.30	7.47	6.72
23.0	8.58	8.14	7.34	6.61
24.0	8.42	7.99	7.21	6.50
25.0	8.26	7.85	7.08	6.39
26.0	8.11	7.71	6.96	6.28
27.0	7.97	7.58	6.85	6.18
28.0	7.83	7.44	6.73	6.09
29.0	7.69	7.32	6.62	5.99
30.0	7.56	7.19	6.51	5.90

Draft YSI 6820/6920 and 650 DM
CALIBRATION DATASHEET

	Government Control Number:												
	Date:												
	Signature of Calibrator:												
	Full (monthly) or Daily Calibration?	Full or Daily		Full or Daily		Full or Daily		Full or Daily		Full or Daily		Full or Daily	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DO Parameter													
A	Barometric Pressure (mm Hg)												
B	Dissovled Oxygen (mg/l)												
	Corresponding Temperature (°C)												
pH Parameter													
C	pH 4.00 reading (pH units)												
	Corresponding Temperature (°C)												
D	pH 7.00 reading (pH units)												
	Corresponding Temperature (°C)												
E	pH 10.00 reading (pH units)												
	Corresponding Temperature (°C)												
Conductivity Parameter													
F	Conductivity reading ($\mu S \cdot cm^{-1}$)												
	Corresponding Temperature (°C)												
Turbidity Parameter													
G	0 NTU reading (NTUs)												
H	126 NTU reading (NTUs)												
ORP Parameter													
I	Oxidation-Reduction Potential (mV)												
	Corresponding Temperature (°C)												
	Was the YSI used?	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
	Initials of Post-Checker:												

Comments/Corrective Actions (reference date):

RESIDENTIAL WELL SAMPLING

1.0 PURPOSE

The purpose of this technical procedure is to describe the general methodology for collecting representative groundwater samples from residential wells within the vicinity of the Joint Base Cape Cod (JBCC). This procedure is intended to serve as guidance for field crews collecting these samples; it is not intended to cover the notification and communication elements of orchestrating these sampling events.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors who sample residential wells for the SPEIM/LTM/O&M Program. The scope of work includes the preparation, preservation, collection, and submittal of samples for analytical analysis.

3.0 REFERENCES

1. AFCEE. *Comprehensive Long Term Monitoring Plan (CLTMP)*. Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
2. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by Bhate Environmental Associates, Inc./CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
3. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
4. MassDEP. 2008. *Private Well Guidelines*. Prepared by Commonwealth of Massachusetts Department of Environmental Protection, Bureau of Resource Protection.

4.0 DEFINITIONS

1. <u>Chain-of-custody record</u>: documentation of the chain-of-custody which shows times, dates, and names of the individuals relinquishing and receiving the samples identified on the record.
2. <u>Custody</u>: physical control of an object, in this case an environmental sample.
3. <u>Purging</u>: removal of stagnant water contained in the residential well and holding tank to allow replacement by fresh formation groundwater.
4. <u>Residential well:</u> a potable water system for a residence that is obtained from a well drilled on the property containing the residence.
5. <u>Sample:</u> the media (e.g. water) being obtained for analysis.
6. <u>Sample custodian</u>: the individual who has control of the sample.

5.0 GENERAL

This technical procedure has been established to standardize the sampling team preparation, collection, preservation, and submittal of residential well water samples to the analytical laboratory. Analyses conducted on these samples may include volatile organic compounds (VOCs) by EPA Method 524.2 or 8260 and ethylene dibromide (EDB) by EPA Method 504.1. These analyses must be conducted by a Massachusetts certified laboratory. Methodologies may only be added or changed by the direction of the IRP and CH2M HILL's Technical Services Manager. To ensure the sample collected is representative of the groundwater, the system is purged prior to sample collection. This procedure is used in conjunction with other QAPP procedures to ensure the sampling event is properly documented and yields quality results.

6.0 RESPONSIBILITIES

The *Plume Lead* (or designee) shall ensure that samples are collected from each private residential well by submitting a request for field services (RFS) that details all necessary sampling and analysis instructions. The *Plume Lead* (or designee) will coordinate or confirm access to each property.

The *Field Database Lead (or* designee) responsible for entry of RFS into the Sample Tracking and Sample Scheduling (STSP) shall identify the appropriate quality control (QC) samples, in consultation with the *Project Chemist* and as specified in the QAPP, and will assign locations for QC sample collection, where applicable.

The *Field Team Lead* (FTL) shall assign the appropriate number of field staff and assure that representative private water well samples are obtained according to this procedure and other QAPP requirements.

The *Field Lead* will be responsible for maintaining the logbook documentation and shall ensure that specified procedures are followed. Any deviations or field-encountered problems shall be documented in the field logbook and communicated to the *FTL* and *Plume Lead*.

7.0 PROCEDURE

7.1 Supplies and Equipment

- Field Logbook
- waterproof pens (Sharpies)
- summary of addresses, sampling locations, purge volumes, holding tank volume, preferred sampling location (inside, outside, spigot, faucet, etc.), and other special instructions
- calculator for determining purge volume
- watch with second hand or stopwatch
- paper towels
- trash bags
- nitrile gloves
- 2 garden hoses

- 1 5-gallon bucket, 1 2-gallon bucket
- pair of pliers
- sample coolers
- sample vials (40-ml VOA)
  - pre-preserved with hydrochloric acid (HCl) for 524.2 or SW8260B VOC analyses
  - pre-preserved with sodium thiosulfate for 504.1 EDB analyses
- sample labels
- chain-of-custody sheets
- custody seals
- extra large zip-lock bags
- ice for sample preservation
- sponge
- safety glasses
- two-way radio
- YSI water quality meter
- Neighborhood Notice copies (if applicable)
- Private Well Water Sampling Notice

7.2 Sample Team Preparation

Prior to departing for the field, the field team leader will assemble the daily sample schedule listing property owner names and addresses of residential wells to be sampled. Specific well locations on the property, well depths, holding tank volumes, and other pertinent information will be disseminated.

7.3 Contacts with the Property Owner

Ring the doorbell and identify yourself and your purpose. Offer your base access badge to the property owner for inspection. Determine if the sample will be obtained from an indoor or an outdoor source. If from an outdoor source, ask if the owner has a preference for where to direct the purge water.

If the information hasn't already been provided, the property owner should be questioned as to the well depth and holding tank capacity, if known. Additionally, the owner should be asked if they have a water filtration or conditioning unit in their system. If a water filter is connected to the water system, permission should be asked to obtain the sample before the water passes through such systems.

If the property owner is not home but has given permission to sample, consult the sampling instructions for the location of the outside spigot.

7.4 Perfluorinated Compound (PFC) Specific Sample Collection Considerations

The following precautions must be taken by sample personnel to avoid sample contamination during PFC sample collection. The following protocols are designed to control sample contamination during the collection process:

- Sample personnel should not use Post-it Notes at any time during sample handling, or mobilization/demobilization.
- Sample personnel should wear only old, well laundered (at least 6 washings since purchase) clothing.
- Sample personnel should not wear water resistant clothing prior or during sample collection. Tyvek suits must not be worn during sample handling.
- Nitrile glove must be worn at all times while collecting and handling samples.
- Many food and snack products are packaged in wrappers treated with PFCs. Therefore, hands will be thoroughly washed after handling fast food, carryout food, or snacks.
- Prewrapped food or snacks (like candy bars, microwave popcorn, etc.) must not be in the possession of the sampling personnel during sampling.
- Blue ice must not be used to cool samples or be used in sample coolers.

Teflon is known to be a significant source of PFCs. All sample collection tools will be free of Teflon to the extent possible, including sample tubing.

7.5 Well Purging

Determine the purge rate:

Houses with inside tap:

- If the faucet is fixed with an aerator (a small screen), remove the aerator carefully. If pliers are needed, place a nitrile glove or similar between the pliers and aerator to protect it.
- Establish a constant flow and determine the purge flow rate using a known volume container and timer.

Houses with outside spigot:

- If a hose is already connected, disconnect it.
- Attach the purge hose. Establish a constant flow and determine the purge flow rate using a known volume container and a timer.

Determine the purge volume:

Total purge volume required will be calculated as follows:

- <u>If the house has a holding tank and the volume is known</u>, estimate length of piping to the well, and attempt to determine well depth. The total volume to purge the system = tank volume + well volume + water line volume.

- <u>If the holding tank volume is unknown</u>:

  - Assume a 35-gallon tank.
  - Assume that ~4 gallons are contained in the water line.
  - Assume well volume ≈16 gallons.
  - Assume total purge volume = 55 gallons.

  The total volume to purge the system = tank volume + well volume + water line volume.

Determine the purge time:

1. Turn spigot on full (leave at constant flow). Time the filling of a 5-gallon bucket (outside) or a 2-liter beaker (inside).
2. Calculate the purge time based on the purge rate and total volume.

Example:

55 gallons in system / 5 (bucket volume) = 11 (# of bucket volumes in the system)
If it takes 45 seconds to fill one 5-gallon bucket, 11 x 45 (sec) = 495 seconds or 8 minutes and 15 seconds to purge required volume.

- **Purge the system.** Let the water flow for the required purge time. The purpose of the purge hose at an outside spigot is to direct the purge water away from the house. Follow any homeowner instruction regarding where to direct the purge water. All reasonable efforts should be made to prevent water ponding near the residence.

- As the water system is purging:
  1. Fill in the following information on the sample labels and apply them to the sample containers:
     - sample date
     - sample time
     - samplers initials
  2. Complete entries in the Field Logbook including: sample street address and town, date, time, remarks. Note in the field logbook the sampling location in relation to the property or residence.
  3. Using a YSI water quality measurement meter, record the following measurements at the beginning, middle and end of the purge: dissolved oxygen, oxygen reduction potential, temperature, pH, specific conductance and turbidity.
  4. Note any unusual color, turbidity or odor associated with the water as it is purging and during sampling.

7.6 Sample Collection

Once purging is completed, sample collection can begin. If a hose was used to direct away the purge water, remove the hose before filling the sample vials. To collect the sample:

- Use a very low flow rate. Turn the faucet down to a flow of < 100 mL/min and allow the water to run a few seconds before collecting the sampling.
- Wear nitrile gloves to fill the sample vials. This is to maintain the integrity of the sample and to protect your skin from any spillage of the preservative in the vials.
- Fill the vials at arms length, pointing away from you. Wear safety glasses.
- VOC sample vials should be completely filled so the water forms a convex meniscus at the top, then capped so that no air space exists in the vial. Turn the vial over and

tap it to check for air bubbles. If air bubbles are observed in the vial, discard it and collect another sample.

- Do not allow the vials with preservative to overflow. If a preserved vial overflows, discard it and sample again with a new vial to avoid dilution of the preservative.
- After the samples have been collected, they should immediately be placed in an ice-filled cooler until relinquished or shipped to the appropriate contract laboratory.
- Replace any faucet aerators, or reattach homeowner's hose, if necessary.
- Pick up and remove all waste and wipe up any water spillage.
- If the owner is present, tell them you have completed the task and are leaving. If the owner is not present, place the "Private Well Water Sampling Notice"in the door or other convenient location.

8.0 RECORDS

Field notes shall be kept in a bound field logbook as specified in the Field Notebook technical procedure (TECH-035). In addition the purge volume information, the following information shall be recorded using waterproof ink:

- names of Sampling Team members
- weather conditions
- project number and project title
- chain-of-custody numbers
- location and address of residential well
- date and time of sampling
- location of sampling (inside or outside)
- notation of where on property/structure showing where sample was collected
- calculations (e.g., calculation of purged volume)
- analyses that shall be performed by the laboratory
- volume of water purged before sampling
- purge start/stop times
- sample volume, number, and container types
- method of sample collection
- sample cooler shipping document number, if applicable
- sample preservation
- QA/QC samples collected
- irregularities or problems

SAMPLE HANDLING AND CUSTODY

1.0 PURPOSE

The purpose of this technical procedure is to delineate protocols for sample handling and custody. An example of the Sample Tracking and Scheduling Program (STSP) generated sample label and chain-of-custody (CoC) form is provided as part of this procedure (see Attachments A and B). Other formats with identical information are acceptable.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors collecting environmental samples.

3.0 REFERENCES

1. U.S. Environmental Protection Agency (EPA), Office of Emergency and Remedial Response, EPA/540/R-96/0, Dec 96 - *Sampler's Guide to the Contract Laboratory Program.*
2. EPA, Office of Emergency and Remedial Response, EPA/540/R-941/013, Feb 94 - *User's Guide to the Contract Laboratory Program.*
3. AFCEE (U.S. Air Force Center for Environmental Excellence. 2000 (September). Quality Program Plan. AFC-J23-35Q85101-M3-0002. Prepared by Jacobs Engineering Group Inc. for AFCEE/MMR Installation Restoration Program, Otis Air National Guard Base, MA.
4. American Society for Testing and Materials. 1996. Standard Guide for Sampling Chain-of-Custody Procedures. D 4840-95.
5. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
6. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Custody: physical possession or control. A sample is under custody if it is in possession or under control so as to prevent tampering or alteration of its characteristics.

2. Sample Label: a record attached to samples to ensure legal documentation of traceability. Attachment A is a copy of the sample labels that are used.

3. Chain-of-Custody Record (CoC): legal documentation of custody of sample materials and instructions for analytical laboratory. Attachment B provides the form used and detailed definitions of the various parts of the form.

5.0 GENERAL

An essential part of the sampling activities of any environmental project is assuring the integrity of the sample from collection to data reporting. Sample labels and CoC forms are used to document identification and handling of samples from the time of collection through the completion of chemical analysis. In some projects, analytical data may be used in litigation. Accountability of the history of a sample must be available to demonstrate that the data are a true representation of the environment. The chain-of-custody record is used as evidence in legal proceedings to demonstrate that a sample was not tampered with or altered in any way that may bias the analytical accuracy of the laboratory results. It is extremely important that chain-of-custody records be complete, accurate and consistent.

6.0 RESPONSIBILITIES

The *Field Technician* shall ensure that the samples are correctly collected, labeled, tracked by CoC, and stored until they are delivered directly to the *Sample Shipper.* The *Field Technician* shall maintain custody of the samples until they are relinquished to the *Sample Shipper.* The *Field Technician* shall be responsible for informing the *Sample Shipper* of sampling conditions and if any of the samples are potentially hazardous. (NOTE: The Field Technician and Sample Shipper can be the same person.)

The *Field Team Lead (FTL)* is responsible for overall compliance and training with this procedure. The *FTL* shall be aware of these procedures and schedule accordingly, taking into account that packing hazardous samples requires more materials (e.g., properly labeled paint cans and manifests) and more time than packing non-hazardous samples.

The *Field Database Lead or* designee responsible for entry of the request for field services into the Sample Tracking and Sample Scheduling (STSP) shall create CoC forms from the STSP database. In addition, the Field Database Lead is responsible for production of CoC forms and sample labels for the field crews.

The *Sample Shipper* shall pack the sample shipping coolers, ensure that the CoC forms are correct, and ship the samples as described in TECH-028. The *Sample Shipper, in consultation with the FTL, will* determine which samples are potentially hazardous and ship them accordingly.

7.0 PROCEDURE

7.1 Sample Custody

Sample custody procedures are designed to ensure that sample integrity is maintained from collection to final disposition. A critical aspect of sound sample collection and analysis protocols is the maintenance of strict chain-of-custody procedures as described in this technical procedure. Chain-of-custody procedures include tracking and documentation during sample collection, shipment, and laboratory processing. A sample is considered to be in an individual's custody if it is (1) in the physical possession of the responsible party; (2) in view of the responsible party after being in their possession (3) secured to prevent tampering; or (4) placed in a designated, secure area that is controlled and restricted by the responsible party.

Custody will be documented throughout all sampling activities on the chain-of-custody record for each day of sampling. This record will accompany the samples from the site to the laboratory. All personnel with sample custody are required to sign, date, and note on the record the time when receiving and relinquishing samples from their immediate custody. Any discrepancies will be noted at this time. Samples will be shipped to subcontractor laboratories via overnight FedEx ground or air courier. Bills of lading will be used as custody documentation during this time and will be retained as part of the permanent sample custody documentation. In some cases, samples may be hand delivered to the laboratory; hand delivery will be noted on the COC form. The subcontractor laboratory is responsible for sample custody once samples are received.

7.2 Sample Labels

A label will be attached to all sample containers at the time of sample collection. The label will be generated along with the chain of custody form using the STSP database. The label will be preprinted with the following information:

- Unique chain-of-custody control number
- Analytical laboratory code
- Project name/number
- Sample matrix
- Sample containers
- Analyses requested
- Preservative used

When the sample collection is complete; the *Field Technician* fills in the following information in indelible ink:

- Date and time of sample collection
- Sampler’s initials.

Once complete; the label will be covered with clear tape, unless using waterproof labels, and prepared for shipment following TECH-028.

7.3 Chain-of-Custody Record

COC forms will be used to document the integrity of all samples. To maintain a record of sample collection, transfer of samples between personnel, shipment of samples, and receipt of samples at the laboratory, COC forms will be filled out for each sample/analysis at each sampling location.

The Field Database Lead or designee generates the CoC form, in accordance with applicable Requests for Service (RFS) generated by the Plume Lead. Information entered by the Field Database Lead or designee includes:

- Project name, project number, WBS code;
- Name and address of laboratory to receive the samples;
- Chain-of-custody control number;
- Sample type, sample method
- Location ID, Field Sample ID
- Matrix code
- Analyses requested
- Field QC for FD and/or MS/MSD, if applicable
- Container type, size and number
- Preservatives used
- Turn-around-time for laboratory analysis
- Comments to Laboratory or Field Technician, if applicable

The *Field Technician* will enter the following information using indelible black or blue ink:

- Sampler's initials
- Date of collection
- Time of collection (24-hour format)
- Depths, if applicable
- Pump/equipment number, if applicable
- Void reason, if applicable

The Field Technician shall verify that the CoC record is complete, accurate in all aspects, and consistent with all other sample documentation (e.g., number of samples, sample labels, field logs). The Field Technician will sign the "Sampled By" and "Relinquished By" fields on the CoC record, marking the date and time custody is transferred to the Sample Shipper or other authorized person.

The *Sample Shipper* will perform the following duties:

- obtain the signature of the *Field Technician* to transfer sample custody

- record the carrier service and airbill number on the CoC
- sign and enter the date and time relinquished to the shipper
- prepare the samples for shipment from the field to the laboratory

The Sample Shipper or sample custodian will sign the "Received By" box, marking the date and time of receipt of the samples from the Field Technician or other sample custodian. Every transfer of physical custody shall be documented on the chain-of-custody record.

Any corrections to the COC form entries will be made by a single-line strike mark through the incorrect item, and then entering the correct entry adjacent to the strikeout item. Corrections will be initialed and dated by the person making the change. After the form has been inspected and determined to be satisfactorily complete, the sample shipper will sign, date, and note the time of transferal and will reference a shipper tracking number on the form. The COC form will be placed in a recloseable plastic bag and placed inside the cooler after the sample packer has detached or made an appropriate copy of the form. Field copies of the completed COC forms are maintained in 3-ring binders by Task Order and stored in the Field Services trailer.

7.4 Overnight Sample Storage

In some cases, samples that cannot be shipped immediately to a laboratory must be temporarily stored in a CH2M HILL Field Services sample refrigerator until arrangements can be made for delivery. The sample custodian shall place samples in the refrigerator (samples and signed chain of custody record(s) in Ziploc bags) and secure the refrigerator with a unique, keyed lock, restricting access to one custodian at a time. A temperature blank must accompany samples stored overnight.

Samples temporarily stored in the refrigerator must be received by the custodian that placed them in storage, and in turn, may be “relinquished to” the appropriate laboratory, the Sample Shipper or another sample custodian. Each transfer of custody shall be recorded on the appropriate CoC form(s).

8.0 RECORDS

Distribution of the CoC record:

- Original - sealed in plastic bag and taped inside the top of the shipping container
- Copies to 3-ring binders maintained by Task Order at the Field Services trailer.

9.0 ATTACHMENTS

Attachment A - Sample Label
Attachment B - Sample Chain-of-Custody Form

ATTACHMENT A

SAMPLE LABEL

S2003/04 FS-12 EW Packer Sampling 01 #:
176585.01.06.04.03

Sample: CHPD00012E00103

Date: ____________

Time: ____________

Matrix: Groundwater **Sampler:** ____________

Container: 40mL Glass Vial Lab: SVTW

Preservative: $Na_2S_2O_3$,4'C

Containers: 1 of 2

Methods: E504.1

S2003/04 FS-12 EW Packer Sampling 01 #:
176585.01.06.04.03

Sample: CHPD00012E00103

Date: ____________

Time: ____________

Matrix: Groundwater **Sampler:** ____________

Container: 40mL Glass Vial Lab: SVTW

Preservative: HCl, pH<2, 4'C

Containers: 1 of 2

Methods: SW8260

ATTACHMENT B

Chain of Custody Record

COC Number: CH002219 — CH2MHILL — Page 1 of 3

Project Name MMR **Location** MMR
Task Order 164 **Project** 2004/05 FS-12 SPEIM GW
Project Number 187615.05.90.04
Project Manager N Tindall
Sample Manager Drew Tingley 508-564-6192
Turnaround Time 14 Days
PO Number RC

Sample ID	Sample Date/Time	Type	Matrix	# Containers	Preserv	E504.1	SW8260
CHPD00037-A0104		N	Water				
		Field Filtered ☐		3	Na2S2O3,4'C	☑	☐
		Field Filtered ☐		3	HCl, pH<2, 4'C	☐	☑
		Total Containers:		6			
CHPD00038-A0104		N	Water				
		Field Filtered ☐		3	HCl, pH<2, 4'C	☐	☑
		Total Containers:		3			
CHPD00039-A0104		N	Water				
		Field Filtered ☐		3	HCl, pH<2, 4'C	☐	☑
		Total Containers:		3			
CHPD00040-A0104		N	Water				
		Field Filtered ☐		3	Na2S2O3,4'C	☑	☐
		Field Filtered ☐		3	HCl, pH<2, 4'C	☐	☑
		Total Containers:		6			

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by		
Received by		
Relinquished by		
Received by		

Shipping Details

Method of Shipment:
Airbill No:
Lab Name: Groundwater Analytical - On-site
Lab Phone:

ATTN:
Sample Custody
and
Greg Yogis

Special Instructions:

Report Copy to
Vito D'Aurora
530-229-3365

Chain of Custody (CoC) Modification Form

1. List Today's Date:
2. List CoC number:
3. List the collection date for samples on CoC:
4. Identify item on CoC to be modified:
5. List the replacement item that will appear on the new CoC:
6. Has the CoC already been submitted to the laboratory? If yes, go to Procedure A. If no, go to Procedure B.

Procedure A

- ☐ Make modification in Sample Tracking and Scheduling Program (STSP).
- ☐ Print new copy of CoC.
- ☐ Circle new item on CoC.
- ☐ At the top of the new CoC document your initials, today's date, and write "Modified CoC" at the top.
- ☐ Fax new CoC to laboratory project manager with cover letter instructing the laboratory to attach the modified CoC to the existing CoC (which they already have), and make appropriate changes to any analyses that have been scheduled or already performed. Indicate that the CoC modifications should be reflected in the hardcopy and edata submittals.
- ☐ Fax CoC Modification Form and new CoC to CH2M HILL Redding, California office with instructions for Redding to file with the applicable hardcopy data package.
- ☐ Attach a copy of the new CoC and the CoC Modification Form to the modified CoC in the CoC files kept at CH2M HILL field services trailer on site.

Procedure B

- ☐ Make modification in STSP.
- ☐ Print new copy of CoC.
- ☐ Locate CoC to be modified. Transcribe any sampling notes on existing CoC to new CoC, and locate appropriate people to re-sign new CoC if necessary.
- ☐ Discard existing CoC and ship new CoC with samples.

PRESERVING ENVIRONMENTAL SAMPLES IN THE FIELD

1.0 PURPOSE

The purpose of this technical procedure is to ensure that the chemical integrity of a sample is maintained from the time of collection until chemical analysis.

2.0 SCOPE

This technical procedure documents the protocols and chemicals to be used for the preservation of field samples, including soils, sediments, solid waste and aqueous samples. This procedure applies to all CH2M HILL personnel and subcontractors involved with the collection, shipping or chemical analysis of environmental samples.

3.0 REFERENCES

1. EPA (U.S. Environmental Protection Agency). 1990 (November). *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846. 3rd Edition, Final Update I. EPA Office of Solid Waste.
2. EPA. 1991 (June). *Statement of Work for Organics Analysis.* Document Number OLMO1.0, EPA Contract Laboratory Program.
3. EPA. 1990 (March). *Statement of Work for Inorganics Analysis.* Document Number ILMO1.0. EPA Contract Laboratory Program.
4. EPA. 1982 (December). *Methods for Chemical Analysis of Water and Wastes.* EPA-600/4-82-055.
5. American Public Health Association. 1985. *Standard Methods for the Examination of Water and Wastewater.* 16th Edition.
6. U.S. Congressional Federal Register. 1990 (July). CFR 136, Code of Federal Regulations.

4.0 DEFINITIONS

1. Holding Time: the amount of time that may elapse before sample preparation, extraction or digestion, or analysis is completed. It is calculated from the date and time of collection in the field. Holding times are usually measured to the nearest day with the exception of those analyses that must be completed within 24 or 48 hours.
2. Preservation: adjustments made to temperature or pH to prevent or slow the loss of target analytes through precipitation, volatilization, decomposition or biodegradation.
3. Temperature: the temperature within the refrigerator, cooler or ice chest that holds the samples. Samples shall be held at 4°C (2-6°C represents the acceptable range). The temperature within a cooler or ice chest is measured from a 40-mL VOA vial or equivalent included as a temperature blank.

5.0 GENERAL

Not applicable.

6.0 RESPONSIBILITIES

6.1 Field Services Group Manager

The *Field Services Group Manager* shall ensure that field staff are trained on this and other related QAPP sampling procedures and that these procedures are followed in the field. Rev. 1

6.2 Field Team Leader

The *Field Team Leader* shall ensure that specified preservation and storage procedures are followed during sampling.

6.3 Project Chemist

The Project Chemist will ensure that enough sample containers with appropriate preservatives are provided by the laboratory in a timely manner. Rev. 1

7.0 PROCEDURE

7.1 General

Most chemical and biological reactions and many physical processes are slowed by lowering the temperature. As a general rule, therefore, all samples need to be cooled at the time of collection and kept cool until they are analyzed. Temperature is not critical in the case of metals analysis since most metals exist in the form of involatile salts. Exceptions include liquid mercury and organometallic compounds, such as tetraethyl lead. Hexavalent chromium is kept cold in order to slow its reduction to trivalent chromium.

Aqueous samples are considered homogenous and amenable to chemical preservation as applicable. In addition to keeping such samples cold, chemical preservatives are employed depending on the analyte(s).

7.2 Sample Containers

With the exception of the stainless steel or brass sleeves used to capture soil boring samples, all sample containers will be supplied in advance by the subcontracting laboratories.

The required chemical preservatives for aqueous samples will normally be added to the appropriate containers by the subcontracting laboratories prior to delivery to the field. There are two reasons why pre-preserved containers are preferred. One, the laboratory scheduled to do the analysis maintains control over sample integrity and container cleanliness, and two, field crews are generally not equipped to deal safely with hazardous chemicals, such as hydrochloric acid, used to preserve samples.

The responsibility for maintaining adequate supplies of containers and preservatives rests with the Project Chemist. Rev. 1

Field personnel shall ensure that the appropriate containers and preservatives are used to collect the samples.

Sample preservatives shall be identified on the Chain-of-Custody record and the sample label.

7.3 Soil, Sediment and Solid Waste

Following collection, solid samples in any type of container will be labeled and then immediately placed in an ice chest containing sufficient ice to maintain a temperature range of 2-6° C throughout the day. Soil and other solid samples require no other preservation effort.

Sufficient ice chests and quantities of ice to manage all samples to be collected during that sampling event shall be maintained at the sampling site.

Samples are maintained in ice or, if available, in refrigerators, within a range of 2-6° C, from the time the Field Team Leader assumes custody until the samples are packed for shipment and relinquished to the shipper or other transport agent.

All samples are shipped in ice chests packed with sufficient ice to maintain a temperature range of 2-6° C for at least 24 hours (refer to technical procedure TECH-028 for packing and shipping procedures).

7.4 Aqueous Samples

Aqueous samples shall be kept within a temperature range of 2-6° C.

Chemical preservatives must be added to water samples, as indicated in QAPP Table 1 to prevent or slow the loss of analytes through precipitation, volatilization, decomposition, or biodegradation.

- Volatile acids (HCN, H_2S) are rendered involatile in the presence of a strong base (e.g., NaOH, pH > 12).
- Volatile bases (ammonia) are rendered involatile in the presence of a strong acid (e.g., H_2SO_4, pH < 2).
- Biodegradation of organic compounds is retarded under strongly acidic conditions (e.g., HCl or H_2SO_4, pH < 2).
- Dehydrohalogenation (loss of HCl) of chlorinated solvents is counteracted in the presence of acid (HCl, pH $\leq$ 2).
- Oxidation of target analytes by the chlorine found in drinking water is eliminated by destroying the chlorine with a reducing agent such as sodium thiosulfate.

- Many soluble metal salts tend to plate out on the walls of the container or form precipitates with time. This can be prevented by the addition of nitric acid to a pH of < 2 which maintains the metals as soluble nitrate salts.

The amount of acid preservative provided by the laboratory may not suffice to lower the pH to < 2 in the case of highly buffered waters. The pH of such samples shall be monitored on a regular basis. Aqueous samples preserved with sodium hydroxide to maintain a pH of >12 shall also be regularly monitored.

Groundwater samples for dissolved metals analysis are filtered prior to preservation with nitric acid. The filtrate is added directly to the 500-ml or 1-liter plastic container which has been supplied with the proper amount of 1:1 nitric acid.

Except in the case of 40-mL VOA vials, the receiving laboratory will verify the pH of preserved samples upon receipt. The laboratory will notify the Project Chemist immediately in the case of improperly preserved samples.

7.5 Reagents

Reagent-grade inorganic chemicals conforming to the specifications of the Committee on Analytical Reagents of the American Chemical Society (ACS) shall be used as preservatives.

Analyte-free reagent water, must be prepared as described in reference 1, (p. 26), or can be purchased.

Chemical Reagents must conform to:

- Nitric Acid, ACS-grade, 16N.
- Sodium Hydroxide, ACS-grade, pellets.
- Sulfuric Acid, ACS-grade, 37N.
- Hydrochloric Acid, ACS-grade, 12N.
- Sodium Thiosulfate, ACS-grade crystals.

8.0 RECORDS

Records of sample preservation are maintained in the logbooks and the chains-of-custody consistent with Tech-035 and Tech-028. Rev. 1

PACKING AND SHIPPING ENVIRONMENTAL SAMPLES

1.0 PURPOSE

The purpose of this technical procedure is to provide a guide for packing and shipping environmental samples with the appropriate chain-of-custody (CoC) forms. This is in accordance with all applicable transportation regulations and analytical requirements.

2.0 SCOPE

These procedures apply to all field personnel including CH2M HILL and subcontractors involved in the packing and shipping of environmental samples.

3.0 REFERENCES

1. U.S. Department of Transportation. 2001 (January). *Code of Federal Regulations*. Title 49, Parts 171 - 180, Washington, DC.
2. EPA. 2012 (June), *Code of Federal Regulations*. Title 40, Part 261, Section 4. Washington, DC.
3. Dangerous Goods Regulations (International Air Transport Association Regulation 618, Attachment "A"), 43rd edition, 2002.
4. Dangerous Goods Manual, CH2M HILL.
5. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP)*. Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
6. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. <u>Absorbent Material:</u> packing material with absorbent capacity, including asbestos-free vermiculite and perlite.
2. <u>Chain-of-Custody (CoC) Record:</u> documentation of the collection and custody of environmental samples, also provides direction to the laboratory for sample analysis.
3. <u>Courier:</u> person who maintains personal custody of packaged samples and CoC records while delivering the samples from the field to a specified laboratory.
4. <u>Custody:</u> guarded possession of samples.
5. <u>Custody Seals:</u> single use tape used to seal containers.
6. <u>Environmental Samples:</u> samples of air, water, soil, or sediment collected during an environmental investigation.
7. <u>Hazardous Samples:</u> samples that are determined by the field team to be potentially hazardous. These are typically samples from chemical/fuel drums or tanks, samples

of sludge or floating product, environmental samples from known areas of concentrated contamination, samples with very high photoionization detector (PID) or lower explosive limit monitor (LEL) readings, or samples that are grossly contaminated (e.g., stained soils).

8. Packing Material: bubble wrap, corrugated paper padding, vermiculite, styrofoam, kitty-litter, and other material used to adsorb moisture or dampen shock during sample shipment.
9. Receipt: acquisition of samples from the person who had custody of the samples.
10. Relinquishment: transfer of sample custody.
11. Shipping Manifest: a Department of Transportation (DOT) document that describes the material being transported, identifies the generator and transporter(s), and instructs the transporter(s) on any special handling requirements.

The shipping manifest serves three primary purposes:

- It serves as a tracking device to trace shipments of hazardous substances.
- It provides information on the contents manifested during transport emergencies.
- It is used by the EPA and the disposal facility for record keeping and reporting on hazardous substance shipping.

5.0 GENERAL

Environmental samples and quality control (QC) samples are collected, labeled, and sealed in the field and custody is maintained as defined in TECH-026, Sample Handling and Custody.

6.0 RESPONSIBILITIES

The *Field Team Lead* is responsible for overall compliance with this technical procedure. The Field Team Lead shall determine which samples are potentially hazardous and ship them accordingly.

The *Field Database Lead* is responsible for ensuring that all information (labels and CoCs) generated by or input to the Sample Tracking and Scheduling Program is correct and reflects scope of work specified in the request for field services (RFS) that is generated by the Plume Lead.

The *Field Technician* shall ensure that the samples are correctly collected, labeled, tracked by CoC, and stored per Technical Procedure-026 until they are delivered to the Sample Shipper. The Field Technician shall maintain custody of the samples until they are relinquished to the Sample Shipper. The Field Technician shall be responsible for informing the Sample Shipper of sampling conditions and if any of the samples are potentially hazardous. (Note the Field Technician and the Sample Technician can be the same person).

The *Sample Shipper* shall pack the coolers, ensure that the CoCs are correct, and ship the samples as described in Section 7.0.

7.0 PROCEDURES

7.1 Determining Sample Status: Hazardous or Environmental

The Code of Federal Regulations (EPA 2012) describes sample shipping requirements. It states that:

> "... a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing its characteristics or composition, is not subject to any requirements of this part (hazardous materials shipping requirements)... when:
>
> (i) The sample is being transported to a laboratory for the purpose of testing; or
>
> (ii) The sample is being transported back to the sample collector after testing.
>
> In order to qualify for the(se) exemption(s)..., a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:
>
> (i) Comply with DOT, U.S. Postal Service (USPS), or any other applicable shipping requirements; or
>
> (ii) Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:
>
> (A) Assure that the following information accompanies the sample:
>
> (1) the sample collector's name, mailing address, and telephone number;
>
> (2) the laboratory's name, mailing address, and telephone number;
>
> (3) the quantity of the sample;
>
> (4) the date of shipment; and
>
> (5) a description of the sample.
>
> (B) Package the sample so that it does not leak, spill, or vaporize from its packaging."

Samples shall be assessed to determine potential hazard. Potentially hazardous samples are required by law to be properly handled and labeled. Additional guidance on hazardous materials shipping can be obtained on the CH2M HILL Virtual Office (VO) under the Health, Safety, Security and Environment (HSSE) webpage, under “tools/ HazMat ShipRight tool”.

Hazardous samples must be labeled, packaged, and shipped as hazardous materials per CH2M HILL the shipper’s (Fedex, UPS) requirements.

Samples determined to be non-hazardous by the Field Sampling Lead are environmental samples. They are to be labeled, packaged, documented, and shipped as described below.

7.2 Packaging Samples

Determine the maximum allowable weight of each cooler (Federal Express limit is 150 pounds).

Place each container in a zip-lock bag and seal, squeezing as much air as possible from the bag before closing. Glass jars will be wrapped in bubble wrap.

Tape the cooler's drain plug shut on the inside and the outside.

Place approximately 2 inches of material, such as asbestos-free vermiculite or perlite in the bottom of the cooler.

Place a large plastic bag (e.g., trash bag) in the cooler to contain samples.

Place the bottles upright in the plastic bag, with enough room for ice bags to be placed among and around the containers; insulate with enough bubble wrap to deter breakage.

To ensure uniform cooling, place a minimum of three 1-gallon bags of ice (double-bagged) among the containers along the walls and at the top of each cooler. The volume of ice in each bag may be reduced, when smaller sample shipments are being packed for shipment to a laboratory. When shipping soil samples, place one bag of ice along the bottom of the cooler as well. For water samples, place the bottles upright in absorbent material to provide additional stability. Do not use “blue ice” as its heat capacity is lower than regular ice. Do not use dry ice. For the receiving laboratory to have an accurate method of assessing the temperature of samples, a temperature blank will be placed in every cooler. Also, additional ice or less samples per cooler will be practiced in order to ensure all samples arrive at the laboratory within the 2^{o} to 6^{o} C temperature range. This practice will be of particular importance during periods of warmer summer like weather.

Fill the remaining space in the cooler with inert cushioning material (e.g., asbestos-free vermiculite, perlite, beads, or bubble wrap).

7.3 Shipping Samples

If shipping via commercial carrier (e.g., FedEx), write the carrier's name and airbill number on the CoC form, place the appropriate pages of the CoC form inside a zip-lock bag and seal the bag with a signed, dated custody seal. The CoC form sent to the lab must be completed with all designated information; the pages must be originals (not photocopies); and the CoC must be unique to the samples contained in the cooler.

If a courier from the laboratory is collecting the samples and delivering them to the lab, have the courier confirm that all samples listed are present and then sign the CoC form.

Tape the zip-lock bag containing the CoC form to the inside lid of the cooler; close and latch the cooler.

Wrap strapping tape completely around the cooler on both sides of the latch.

Affix "This Side Up" labels on all four sides of the cooler and "Fragile" labels on all four sides and top of cooler.

Affix the shipping label with the address and telephone number of the laboratory and the CH2M HILL field office.

Affix signed custody seals on front right and back left of the cooler.

The laboratory shall be notified if the samples are being delivered via courier. The lab must be prepared to receive and check the samples and sign the CoC form.

8.0 RECORDS

A Sample Packaging and Shipping Checklist shall be completed by the Sample Shipper and forwarded to the Quality Assurance Manager for inclusion in the QA file. Instructions for completing CoC forms are presented in the technical procedure TECH-026, Sample Handling and Custody.

SMALL DIAMETER WELL AND DRIVE POINT GROUNDWATER SAMPLING

1.0 PURPOSE

The purpose of this technical procedure is to describe the methodology for collecting shallow and deep groundwater samples from various types of small diameter wells.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors with responsibility for water quality determinations and for the collection, preparation, preservation, and submittal of groundwater samples for laboratory analysis. Types of wells include: drive points, piezometers, microwells, and multipoint wells. This procedure will explain site set-up, sampling procedure, and logbook documentation.

3.0 REFERENCES

1. U.S. Environmental Protection Agency (EPA). 1977. *Procedures Manual for Ground Water Monitoring at Solid Waste Disposal Facilities.* EPA-530/SW-611.
2. de Vera, E.R., B.P. Simians, R.D. Stephens, and D.L. Storm. 1990. *Samplers and Sampling Procedures for Hazardous Waste Streams.* EPA-600/2-80-018.
3. Korte, N. and P. Kearl. 1984. *Procedures for the Collection and Preservation of Groundwater and Surface Water Samples and for the Installation of Monitoring Wells*. U.S. Department of Energy, Grand Junction, Colorado.
4. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
5. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Drive Point: a sampling point installed by pushing a well screen into the ground.
2. Piezometer: a small-diameter well monitored for the purpose of measuring water levels.
3. Microwell: a small-diameter well generally installed in water bodies at depths below pond bottom.
4. Multipoint well: a very small-diameter well usually accompanied by other multipoint wells set at varying depths and all encased together.
5. Sampling Equipment: any equipment used during the process of sample collection.
6. Sampling Location: a set location where the sample(s) will be collected.

5.0 GENERAL

Piezometers, microwells, multipoint wells and drive points are installed on land and in or around water bodies for the purposes of monitoring water levels and collecting chemical data from water samples. Similar to monitoring wells, data are obtained by conducting regular sampling and synoptic survey events for various projects. In contrast, piezometers, microwells, multipoint wells and drive points are drilled and constructed differently and have smaller diameters (usually one inch or less) than the standard monitoring well. Due to these differences, sampling methods are different, requiring a separate technical procedure to be followed.

6.0 RESPONSIBILITIES

The Plume Lead (or designee) shall ensure that appropriate water samples are obtained by providing the Field Team Lead (FTL) with a request for field services.

The FTL is responsible for expediting the request for services and to ensure that qualified personnel are assigned to complete the work. Also, the FTL is required to communicate problems and/or deviations encountered in the field to the Plume Lead.

The FTL will lead the sampling team and shall ensure that specified sampling procedures are followed; that samples are labeled, handled and controlled correctly; and that a strict chain of custody is initiated, maintained, and documented.

7.0 PROCEDURE

7.1 Equipment, Materials, and Supplies

- drive-point equipment (post driver or sledge hammer, screened drive point)
- peristaltic pump and battery
- air quality instrument (e.g., photoionization detector)
- YSI water quality instrument and YSI stand
- flow cell apparatus (flow cell, Teflon tubing inflow/outflow connections)
- water level meter
- table and chairs
- decontamination equipment (deionized water, Liquinox)
- decontamination equipment for perflourinated compound (PFC) sampling includes PFC-free deionized rinse water
- other tubing (medical grade silicon, peristaltic tubing)
- high density polyethylene tubing for PFC sampling (Teflon-free)
- purge water containers (e.g., gerry containers)
- 1-liter beaker and funnel
- hip or chest waders (if needed, for any sampling in or around a water body)
- appropriate personnel protective equipment (nitrile gloves, safety glasses, steel-toed boots, and hard hat)

- field logbook and water proof permanent marker
- sample vials, labels, and waterproof permanent maker
- chain-of-custody forms
- cooler with ice for sample preservation
- measuring tape
- stop watch
- a boat, and associated equipment, may be required for on-pond sampling.

7.2 Training

The field team leader must, at a minimum, be signed-off on this procedure (TECH-030) by a qualified individual.

7.3 Site Preparation

1. Organize all necessary supplies and equipment.
2. Upon arrival at site, record site conditions. Site conditions are also to be recorded upon departure from site.
3. Set up sampling equipment, materials and site according to CH2M HILL's health and safety policy (exclusions, etc.). For sites requiring boat access, exclusion zones are not required.

7.4 Water Sample Collection Procedures

Proceed with sample collection by following one of the next two water sample collection methods.

7.4.1 Procedure for Water Sampling Using the Water Lift Method

A one-way check valve, such as those produced by Watterra®, shall be used to lift water from the drive point screen to the surface. This method is preferred when collecting samples for volatile organic compounds (VOC) analysis.

1. Obtain initial air monitoring levels upon opening well. Measure initial static water level and total depth.
2. Install the one-way check valve in the Teflon tubing of a length long enough to reach the bottom of the drive point screen and long enough to facilitate convenient dispensing of water into sample bottles.
3. Insert tubing into well.
4. Begin purge by raising and lowering the tubing in the drive point to lift water past the check valve. Containerize all purged water.
5. A three well volume minimum purge is required.
6. Attach tubing to Flow-through cell to obtain YSI water quality data. Or fill a 1-liter beaker (or similar) with water and then place YSI sonde in beaker and measure one set of water quality parameters.

7. Prior to filling sample containers, confirm container ID with ID recorded in logbook. Sampling can now begin.
8. Collect samples in the proper order as specified in TECH-015.
9. After the samples have been collected, place them immediately in an ice-filled cooler until relinquished.
10. Decontaminate all equipment (YSI meter, Teflon tubing, 1-liter beaker, etc.) in accordance with Technical Procedure -036. Discard silicon tubing and any filters that were used by placing them in a properly labeled trash bag.
11. Break down the site and record site conditions upon departure.
12. For wells located in water bodies record the following in the logbook:
    - Estimate of depth of water
    - Associated staff gauge measurement
    - Water level (a manometer is to be used)

If the situation arises where the well is not hydraulically connected to the aquifer an attempt at redeveloping the well shall occur.

- An initial static water level shall be obtained.
- Teflon tubing shall be inserted into the well screen and the appropriate connections for the peristaltic method shall be made.
- If significant drawdown occurs, 3.0 ft. or greater, the well is not hydraulically connected to the aquifer and shall be manually surged. In manually surging the well (using the Watterra® method) there is a potential for redevelopment.
- The water level shall be checked periodically using a small diameter water level meter to ensure that surging the well is in fact clearing the well screen.
- Field parameters and sample collection shall occur once the well has recharged.

7.4.2 PFC Specific Sample Collection Considerations

The following precautions must be taken by sample personnel to avoid sample contamination during PFC sample collection. The following protocols are designed to control sample contamination during the collection process:

- Sample personnel should not use Post-it Notes at any time during sample handling, or mobilization/demobilization.
- Sample personnel should wear only old, well laundered (at least 6 washings since purchase) clothing.
- Sample personnel should not wear water resistant clothing prior or during sample collection. Tyvek suits must not be worn during sample handling.
- Nitrile glove must be worn at all times while collecting and handling samples.
- Many food and snack products are packaged in wrappers treated with PFCs. Therefore, hands will be thoroughly washed after handling fast food, carryout food, or snacks.

- Prewrapped food or snacks (like candy bars, microwave popcorn, etc.) must not be in the possession of the sampling personnel during sampling.
- Blue ice must not be used to cool samples or be used in sample coolers.

Teflon is known to be a significant source of PFCs. All sample collection tools will be free of Teflon to the extent possible, including sample tubing and pump check valves.

7.4.3 Procedure for Water Sampling Using the Peristaltic Pump

Another sampling method is by the use of a portable peristaltic pump. This collection system consists of a peristaltic pump capable of achieving a pump rate of 100 mL/min to 2000 mL/min, and a combination of silicon, polyethylene, and/or Teflon tubing for extending the suction intake. A battery-operated pump is preferable for ease of operation. In this method, the sample is drawn through heavy wall tubing and pumped directly into the sample container. This method is preferred when larger volumes of water are required to be purged. A three well volume purge is required for sampling piezometers, microwells, multipoints, and drive points. Following the purge, one set of water quality parameters is to be recorded before sampling commences. If the well has a filter pack, the saturated filter pack volume plus the casing unit volume shall be used to calculate the required unit volume to be removed. Most small-diameter wells have no filter pack, thus only the casing unit volume needs to be calculated. When a well is pumped dry before the three well volume purge is complete, the sample shall be collected immediately after a sufficient amount of fluid has re-entered the well (after sample collection, if possible, measure one set of water quality parameters).

1. Measure initial air monitoring levels upon opening the well. Measure the initial static water level and total depth.
2. Insert tubing (Teflon or peristaltic) to desired depth. If Teflon tubing is used, connect it to peristaltic tubing and run the peristaltic tubing through the pump.
3. Connect the open end of the peristaltic tubing to the inflow Teflon tubing of the flow-through cell. A small piece of silicon tubing might be needed to connect the peristaltic and Teflon tubing.
4. Connect the inflow Teflon tubing to the inflow port of the flow-through cell. Connect the outflow Teflon tubing to the outflow port of the flow-through cell and insert open end of the tubing into a purge water container (gerry can).
5. Insert YSI sonde into flow-through cell.
6. Turn pump on and begin initial three-well volume purge. Containerize all purge water.
7. After the three-well volume purge, continue purging and measure one set of water quality parameters.
8. Measure the water level at each interval. If limited space in the well will not allow a water level measurement, document as such in the field logbook.
9. Prior to filling sample containers, confirm container ID with ID recorded in logbook. Sampling can now begin.
10. Collect samples in proper order as specified in the TECH-015.

11. After the samples have been collected, immediately place them in an ice-filled cooler until relinquished.
12. Decontaminate all equipment (YSI meter, Teflon tubing, flow-through cell, water level meter) TECH-036. Discard silicon tubing and any used filters by placing them in a properly labeled trash bag.
13. Break down the site and record site conditions upon departure.
14. For wells located in water bodies record the following in the logbook:
    - Estimate of depth of water
    - Associated staff gauge measurement
    - Water level (a manometer is to be used)

7.5 Completion of Sampling Operation

If the drive point is not to be a permanent installation, remove it. If a vehicle mount hoist is available, it can be used to remove the drive point. Otherwise, a jack may be used to remove the drive point.

For all samples, mark the sampling location on a site map. Photograph (optional but recommended) and describe each location, and place a numbered stake at the sampling location. The photographs and description must be adequate to allow the sampling location to be relocated at a future date.

Dispose of all sampling waste and PPE in properly labeled containers, as required by the Investigation-Derived Materials Management Plan.

7.6 Equipment Decontamination

Prior to sampling and between sampling locations, all sampling equipment (flow-through cell, YSI meter, Teflon tubing), and any other equipment that will be used from one location to the next shall be decontaminated according to the procedures set forth in TECH-036.

8.0 RECORDS

Field notes shall be kept in a bound field log book, following the format specified in technical procedure TECH-035.

FIELD LOGBOOK

1.0 PURPOSE

The purpose of this technical procedure is to set Joint Base Cape Cod (JBCC) site-wide criteria for the content of field logbooks.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors who record information in field logbooks.

3.0 DEFINITIONS

1. <u>Representativeness</u> of environmental data describes the degree to which data are a true representation of the conditions existing at a three-dimensional point in space and time.

4.0 GENERAL

An essential part of the sampling portion of any environmental project is proper documentation. The primary document used to record site data is the field logbook. Tasks in which analytical data or conclusions based on analytical data may be used in litigation demand that accountability of the history of a sample be available to demonstrate that the data are a true representation of the environment. The field logbook may be used as evidence in legal proceedings to defend procedures and techniques employed during site investigations. Therefore, it is extremely important that field logbook documentation be factual, complete, accurate and consistent.

5.0 RESPONSIBILITIES

The *Field Team Lead* will be responsible for daily check-in and check-out of logbooks. The FTL will ensure that a document control number is assigned to every log book that is used. The Quality Assurance/Quality Control Manager will ensure that routine QC checks will be completed.

Each *Field Team Leader* (FTL) is responsible for ensuring that the data entries made in the field logbooks comply with this technical procedure and that all Field Technicians are trained in this technical procedure.

All *Site Personnel* who make logbook entries are required to read this procedure prior to engaging in this activity. The FTL will advise personnel who will be responsible for field book entries, care and maintenance.

The Document Control Coordinator is responsible for maintaining a photocopy file of each log book at the Field Services Office. This file will be used by on-site technical staff to review log book entries, rather than signing-out original logbooks for the purposes of information retrieval and/or review.

6.0 PROCEDURE

6.1 Preparation

New field logbooks will be obtained as needed from the Field Team Lead (or designee). The Field Team Lead is responsible for control of every logbook and may choose to use a sign-out sheet to control logbooks, depending on the frequency and number of logbooks that may be in use.

Field logbooks will be bound with lined, consecutively numbered pages. All pages must be numbered prior to initial use of the logbook. The following information shall be recorded inside the front cover of the logbook:

- Field Document Control Number
- Activity
- CH2M HILL
- Phone Number of Field Services trailer where Field Team Lead is
- Site Contact (Field Team Lead)

The first three pages of the logbook will be reserved for a table of contents. The first page will be marked with the following heading:

<u>TABLE OF CONTENTS</u>

Date and Description of Activities	Page
(Start Date)	1 - 5

The remaining pages of the Table of Contents (TOC) will be designated as such with "TOC" written on the top center of each page. The TOC is to be updated on a daily basis at conclusion of activities.

6.2 Operation

The following requirements must be followed when using a logbook:

- The date must be recorded at the top of each page.
- If data collection forms are specified by an activity-specific plan or procedure, the information need not be duplicated, but forms must be referenced in the logbook.
- All changes must be made with a single line through the deletion. Changes must be initialed and dated.
- A diagonal line must be drawn through any space left at the bottom of each page.
- The bottom of each page shall be signed by the author.
- Do not remove any pages from the logbook.

A statement relinquishing ownership of the logbook is to be recorded in the logbook when:

- Another individual takes over operation of the logbook. The exception to this requirement is in the case where the logbook is being shared between members of the field team (see below).
- An individual other than the field crew leaves the site with the logbook in their possession.

The relinquishment statement is to be recorded below the last entry and is to state the person's name that is taking over operation, and is to be signed and dated by the first owner.

A relinquishment statement is not required when:

- A logbook is shared between members of a field team (Field Team Leader and second, O&M operators), both acting as logbook operators.
- Another individual does not take over operation, but performs an onsite logbook review only. Examples of this would be reviews in the field by a Health & Safety representative, QA representative, field supervisor, client, client representative, or regulator.

Entries in the field logbook shall be preceded with the time (written in military units). The time should be recorded frequently and at the point of events or measurements that are critical to the activity being logged.

At each station where a sample is collected or an observation made, a detailed description of the location is required. A sketch of the location indicating boring or sample locations is required. The sketch or diagram should be detailed enough for other individuals to locate the points at future times. A direction indicator or compass direction should be included in the sketch. It is preferred that maps and sketches be oriented so that north is towards the top of each page. A wind direction arrow should also be recorded on the sketch.

Events and observations that shall be recorded include but are not limited to:

- Field activity.
- Site conditions (upon arrival and departure).
- Changes in weather that may impact field activities.
- Deviations from procedures outlined in any governing documents. Also record the reason for any noted deviation.
- Problems, downtime, or delays.
- Upgrade or downgrade of personal protective equipment.
- All equipment models and serial numbers used at the site.
- All team members and visitors.
- Health and safety monitoring equipment, including actual and background readings.
- Identification of equipment used, including property or serial ID numbers.
- Start and end times of sampling.
- Decontamination times and methods.

When samples are collected the following shall be recorded:

- Sample location
- Sample number
- Sample methodology
- Sample description
- Sample collector
- Sample depth
- Sample type
- Sample analyses requested
- Sample preservation and confirmation
- Manufacturer and lot number of preservatives
- QC sample numbers and types
- Chain-of-custody number
- Name of individual to whom the samples are relinquished.

6.3 Post-Operation

At the conclusion of each day, the logbook entries for that day will be photocopied and forwarded to Document Control Coordinator for inclusion in the project files. The log book will then be returned to the Field Team Lead, who is responsible for maintaining and controlling the logbooks. On a routine basis the QA/QC manager (or designee) will perform a QC content check for compliance with this technical procedure.

At the conclusion of a task or when a logbook has been completed, it will be submitted to the Field Team Leader for records retention by the document control coordinator.

7.0 RECORDS

Documentation shall follow all guidelines contained in this technical procedure.

EQUIPMENT DECONTAMINATION PROCEDURES

1.0 PURPOSE

The purpose of this technical procedure is to provide the step-by-step procedures for field decontamination of equipment. Decontamination of equipment and personal protective equipment (PPE) is designed to ensure that the introduction and transfer of contamination is minimized.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors collecting environmental samples or operating in environments in which hazardous or contaminating substances are expected to be present.

3.0 REFERENCES

EPA. *Procedures to Schedule and Complete Sampling Activities in Cooperation with EPA Region VII Environmental Services Division* (Feb. 1990).

1. EPA Region VII. *Environmental Services Division Operations and Quality Assurance Manual* (Feb. 1, 1991).
2. EPA. *A Compendium of Superfund Field Operations Methods.* Volumes I and II. EPA/540/P 87/001a&b.
3. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
4. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Decontamination Area: an area that is not expected to be contaminated and is upwind of suspected contaminants.
2. Health and Safety Plan: a plan developed to ensure that all hazards associated with a site are evaluated prior to site entry.
3. Measurement\Monitoring Equipment: any equipment used to check or evaluate site conditions.
4. Potable: acceptable to drink.
5. Sampling Equipment: any equipment used during the process of sample collection.

5.0 GENERAL

Decontamination consists of physically removing contaminants. To prevent the transfer of harmful materials, and to prevent unwanted cross-contamination, certain procedures must be implemented before anyone enters a site.

A decontamination plan should be based on the worst-case scenario (if information about the site is limited). The plan can be modified, if justified by supplemental information. Initially, the decontamination plan assumes that all protective clothing and equipment which leave the exclusion zone are contaminated. Based on this assumption, a system is established to wash and rinse all non-disposable equipment. This procedure will serve as the site decontamination plan for routine Joint Base Cape Cod (JBCC)-related sampling activities.

The type of decontamination procedures and solutions needed at each site should be determined after considering the following site-specific conditions:

- the type of equipment to be decontaminated
- the type of contaminant(s) present
- extent of contamination

6.0 RESPONSIBILITIES

The *Field Team Lead* is responsible for ensuring overall compliance with this Technical procedure.

The *Field Sample Technician* is responsible for assigning equipment and technicians to perform decontamination tasks.

7.0 PROCEDURE

All sampling equipment used at the site must be decontaminated both before activities begin and after each sample is collected. All drilling equipment must be decontaminated both before activities begin and between each drilling location.

7.1 Decontamination Site

The central decontamination area is located within the Central Staging Area (CSA) of the CH2M HILL compound at 1748 West Truck Road, Otis Air National Guard Base, MA.

The decontamination area was chosen so that decontamination fluids and soil wastes could be easily discarded or discharged into controlled areas. All decontamination liquids shall be treated with granular-activated carbon units prior to discharge.

Smaller decontamination tasks, such as surface water/sediment equipment decontamination, may take place at the sampling locations. In this case, all required decontamination (decon) supplies and equipment must be mobilized to the site.

7.2 Decontamination Equipment

The following is a list of equipment and materials that may be needed to perform decontamination:

- concrete or synthetic material-lined decontamination pad
- brushes, garden-type water sprayers (without oil-lubricated, moving parts), rinse bottles, flat-bladed scrapers
- portable steam cleaner
- sump or collection system for contaminated liquid
- wash tubs and buckets
- materials (potable water, deionized water from the Field Services Millipore system, and detergent)
- stainless steel pump sprayers

7.3 Decontamination Procedure

7.3.1 Sample Bottles

At the completion of each sampling activity, the outside of each sample bottle must be decontaminated as follows:

- Be sure that the bottle lids are on tight.
- Wipe the outside of the bottle with a paper towel.

7.3.2 Personnel and Personal Protective Equipment

Review the project Health and Safety Plan for appropriate decontamination.

7.3.3 Sampling Equipment

Note: See Section 7.3.6 for groundwater sampling pumps.

The following steps will be used to decontaminate sampling equipment:

- Decon personnel will wear the appropriate personal protective equipment as required by the site-specific Health and Safety Plan.
- The sequence of actual decontamination will be as follows:
  - Gross contamination of equipment will be scraped off at the sampling site.
  - Water-resistant equipment will be placed in a wash tub of potable water containing Liquinox (non-phosphate), or equivalent laboratory-grade detergent, and scrubbed with a bristle brush or similar utensil.

- Equipment will be thoroughly rinsed with potable water in a second wash tub followed by a deionized water rinse from the Field Services Millipore system.
- Perflourinated compound (PFC) sampling equipment will be rinsed with PFC-free deionized water obtained from a laboratory.

- Deionized water from the Field Services Millipore system shall be stored and dispensed in approved containers, such as polypropylene spray bottles or stainless steel pump sprayers.
- Depending on site conditions and the number of samples collected at each location, rinse and detergent water will normally be replaced with new solutions between borings or sample locations.
- Following decontamination, equipment will be placed in a clean area on clean plastic sheeting to prevent contact with contaminated soil. All equipment should be allowed time to dry before re-use. If the equipment is not used immediately, it will be covered or wrapped in oil-free aluminum foil to minimize potential airborne contamination.

7.3.4 Measurement Devices/Monitoring Equipment

The pH probe, specific conductance probe, water level indicator, and thermometer will be rinsed with deionized water from the Field Services Millipore system before and after each use. Any delicate instrument that cannot be decontaminated easily should be protected while it is being used.

7.3.5 Bailers

New bailers and nylon rope, which are dedicated for each well and not used for well purging, will only require a rinse using deionized water from the Field Services Millipore system prior to sample collection. If the bailers are used for purging, they will be decontaminated, as outlined for sampling equipment, before they are used for groundwater sample collection, regardless if a bailer is dedicated for each well. This procedure will be followed to ensure that any contaminants associated with the stagnant water present in the casing prior to purging does not impact the groundwater sample through retention on the bailer. Similarly, if bailers come in contact with the ground or any other potential source of contamination, they will be decontaminated according to the procedure outlined for sampling equipment.

7.3.6 Groundwater Sampling Pumps

Proper decontamination between wells is essential to avoid introducing contaminants from the sampling equipment. The following steps shall be adhered to during decontamination:

- At least two hose volumes of potable water with a non-phosphate detergent such as Liquinox shall be flushed through the pump and then discharged into the containment system.

- Potable water will then be flushed through the pump and over the outside of the hoses for a minimum of one minute to assure that all of the detergent solution has been removed.
- At least two hose volumes of deionized water from the Field Services Millipore system shall then be flushed through the pump.
- The pump will then be placed in a clean plastic bag; or pump apparatus to be wrapped in aluminum foil at a minimum and stored in the equipment area.

Note: Wells that historically have high contaminant levels will require additional volumes to be purged through lines (i.e., double, triple decon). The Plume Lead shall identify on the request for field services (RFS) of the high contaminant wells to the FTL, who will ensure that the appropriate level of decon is achieved.

7.3.7 Drilling and Subsurface Soil Sampling Equipment

Drilling equipment and associated materials will be decontaminated by the drilling contractor prior to any drilling operations and between borings. All external surfaces of all drilling equipment (e.g., rigs, tools, drill bits, drilling stem, mud tubs, mud pumps, hoses) will be thoroughly cleaned after each hole is completed. All tools used for soil sampling (e.g., split spoon, split barrel, Hydropunch samplers) will be decontaminated as specified in Section 7.3.3 when collecting analytical data by the drilling subcontractor prior to the collection of each sample. When collecting samples for geotechnical analysis only, sample equipment shall be deconned the same as other drilling tools.

All drilling rigs and tools including direct push/vertical profiling equipment will be steam-cleaned at the CSA prior to the commencement of drilling activities. All fluids will be captured and managed by the CSA treatment system. Decontamination begins by completely removing all soil and visible contamination (e.g., hydraulic fluids and soils) from the equipment with a high-pressure steam cleaner, and thoroughly flushing the interior and exterior of all downhole tools (including drill pipes, collars, bits and tremie pipe) with potable water.

If sampling for metals is required all downhole tooling must be rinsed thoroughly with deionized water from the Field Services Millipore system. This procedure is to ensure that residual metals from the potable water source have been removed from the downhole tooling.

7.3.8 Decontamination of Heavy Equipment

Heavy equipment (e.g. bulldozers, back-hoes, and trucks) is generally washed with water under pressure, if possible. Portable steam-cleaners and hand washing with a brush and detergent, followed by a potable water rinse, can also be used. Particular care must be given to the components in direct contact with contaminants, such as tires and buckets. Wipe sampling may be utilized to establish effectiveness of decontamination procedures.

7.3.9 Decontamination of Surface Water Sampling Equipment (e.g., Niskin™Bottle)

Decontamination procedures are essential to avoid introducing contaminants from the sampling equipment to the environmental samples being collected. Surface water sampling equipment shall be fully decontaminated between ecosystem locations (e.g., ponds), but shall be decontaminated with a deionized water from the Field Services Millipore system rinse between samples collected within the same ecosystem (within a pond). Under no circumstances shall plastic surface water sampling equipment (e.g., Niskin ™ bottle) be rinsed with solvents which will dissolve the sampling device. Additionally, if the sampling device is to be used for the collection of nutrient samples (e.g., nitrate, nitrite, and ammonia) the sampling device shall not be rinsed with nitric acid.

7.3.9.1 Surface Water Sampling Equipment Decontamination Procedure Between Ecosystems

- Potable water with a non-phosphate detergent such as Liquinox shall be flushed through the Niskin™Bottle and over the outside.
- Using a scrub brush, the entire Niskin™Bottle including the sample port and O-rings shall be thoroughly scrubbed with potable water containing a non-phosphate detergent such as Liquinox.
- Five gallons of potable water with a non-phosphate detergent such as Liquinox will then be drained through the sample port.
- Potable water will then be flushed through the Niskin™Bottle and over the outside. Once thoroughly rinsed, five gallons of potable water shall be drained through the sample port.
- Deionized water from the Field Services Millipore system shall then be flushed through the Niskin™Bottle and over the outside. Then, five gallons of deionized water from the Field Services Millipore system shall be drained through the sample port.
- The Niskin™Bottle will then be wrapped in aluminum foil and stored in the ECO-shed.

7.3.9.2 Surface Water Sampling Equipment Decontamination Procedure Within Ecosystems

This procedure shall be used for decontaminating surface water sampling equipment between samples collected within the same ecosystem.

- Using a deionized water sprayer, thoroughly rinse the inside of the surface water sampler with deionized water from the Field Services Millipore system.
- Allow at least 1L of deionized water from the Field Services Millipore system to drain through the sampling port of the surface water sampler.

8.0 RECORDS

Sampling personnel will be responsible for documenting the decontamination of sampling and drilling equipment. The documentation will be recorded in the field logbooks as per technical procedure TECH-035, Field Logbook. The information entered in the field logbook concerning decontamination shall include the following:

- Decontamination personnel
- Decontamination solutions used
- Date, start and end times
- General decontamination methods and observations
- Equipment identification numbers
- Manufacturer names and lot numbers of decon solutions (methanol, deionized water from the Field Services Millipore system, nitric acid)

ORGANIC VAPOR MONITORING

1.0 PURPOSE

This technical procedure provides guidance for conducting soil gas field surveys, landfill gas vent, and gas probe surveys and general atmospheric monitoring with hand held monitoring devices.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel and subcontractors engaged in taking organic vapor measurements on the SPEIM/LTM/O&M Program.

3.0 REFERENCES

1. U.S. Department of Commerce. 1985. *Technical Guidance for Corrective Measures - Subsurface Gas.* National Technical Information Service.
2. U.S. Environmental Protection Agency. 1990. *Volatile Organics in Soil Gas-Absorbent Tube Method.* FASP Method Number F080.008.
3. EPA. 1988. *Field Screening Methods Catalog, User's Guide.* Office of Emergency and Remedial Response.
4. EPA. 1987. *Compendium of Methods for the Elimination of Toxic Organic Compounds in Ambient Air.* EPA-6-094-84-04 (Methods T0-1 to T0-14).
5. EPA. 1986. *RCRA Ground-Water Monitoring Technical Enforcement Guidance Document*. Office of Waste Programs Enforcement, Office of Solid Waste and Emergency Response.
6. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. <u>Combustible gas indicator (CGI)</u>: measures the concentration of a combustible gas or vapor. A filament, usually made of platinum, is heated by burning the combustible gas or vapor. The heat measured in the combustion chamber is proportional to the gas concentration.
2. <u>Continuing calibration verification</u>: an analytical standard run periodically to verify the calibration of an instrument.
3. <u>Flame ionization detector (FID)</u>: detects total concentrations of many organic gases and vapors. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present.
4. <u>Headspace gases</u>: the accumulated gaseous components found above solid or liquid layers in closed vessels.
5. <u>Initial calibration</u>: an analysis of standard gases at a series of different specified concentrations; used to define the linearity and dynamic range of the response of an instrument to the target compounds.

6. Ionization potential (IP): the potential difference through which a bound electron must be raised to free it from the atom or molecule to which it is attached. In particular, the ionization potential is the difference between the initial state, in which the electron is bound, and the final state, in which it is at rest at an indefinite distance from the molecule.
7. Photoionization detector (PID): detects total concentrations of many organic and some inorganic gases and vapors. Molecules are ionized using ultraviolet radiation. A current is produced in proportion to the number of ions present.
8. Volatile organic compounds (VOCs): organic compounds that evaporate when exposed to air (> 100 mm Hg).

5.0 GENERAL

Atmospheric monitoring at hazardous waste sites allows for onsite analytical screening of air, water, sediment, and soils. Such measurements can be used to evaluate the exposure risk and as a basis for setting health and safety levels of protection. Screening results can also be used to select locations for sample collections followed by laboratory analysis.

Field measurements of volatile organic vapors and other atmospheric constituents (O_2, CO_2, methane, etc.) will be made using one or more of the following instruments:

- photoionization detector (PID)
- flame ionization detector (FID)
- combustible gas indicator (CGI)
- oxygen meter (LEL/O_2)
- direct reading colorimetric indicator tubes

The analysis of organic vapors associated with sample media by FID or PID for an onsite, real-time assessment of potentially contaminated soils, water and air has become an increasingly important means of measuring the distribution of contamination. Measuring organic vapor is both cost effective and efficient in the delineation of organic plumes. Atmospheric monitoring is a key element in the health and safety protocol associated with routine field activities (well vault entry, well sampling, soil sampling etc.)

Organic vapor samples in air can also be collected for offsite laboratory analyses using evacuated Summa™ canisters (per Technical Procedure-041).

6.0 RESPONSIBILITIES

The *Field Team Lead* shall ensure that all atmospheric monitoring equipment is maintained and calibrated prior to distribution of equipment to field staff. The FTL shall ensure that atmospheric monitoring is conducted in accordance with protocols and frequency for each specific task as specified in the project HASP. The FTL shall ensure and document that trained, qualified personnel make organic vapor measurements as described in this procedure.

The *Field Lead* supervises the collection and documentation of all field data generated, and ensures that the equipment used by the operator is calibrated at the appropriate frequency and maintained correctly at all times. The Field Lead shall ensure that atmospheric monitoring data are recorded in the Field Log Book in accordance with Tech-035.

7.0 PROCEDURE

7.1 Photoionization Detector (PID):

There are numerous portable organic vapor meters currently available which utilize the principle of photoionization. CH2M HILL currently utilizes an Ion Science PhoCheck® Tiger, which is relatively easy to operate. This instrument is a portable, non-specific vapor/gas detector employing the principle of photoionization to detect a wide variety of organic and inorganic chemical compounds.

- The instrument will operate in continuous use for up to 8 hours before requiring battery recharging.
- The PID shall be field calibrated each day prior to use in accordance with the Field Calibration Checklist (Attachment I; derived from the manufacturer's instructions). The instrument shall be post-checked at the end of each day's task. If the instrument fails the field calibration then the PID shall be tagged and sent to service provider for a factory calibration of the PID.
- A small DC-operated pump is used to pull air through the photoionization sensor. The fan provides nearly instantaneous response times while consuming little power. However, characteristics of the fan are such that it cannot tolerate a significant pressure drop without affecting the flow rate and, therefore, the instrument reading or response time. Because photoionization is essentially a nondestructive technique, changes in flow rate do not affect the signal but, if a large pressure drop is imposed at the inlet of the probe, the sample may not reach the sensor.
- The ionized molecules in the detector cell are subjected to a continuous electric field between the repeller electrode and the collector electrode. The ions move in the electric field, generating a current, which is proportional to the concentration of the ionized molecules in the detector cell. An electrometer circuit converts the current to a voltage, which is then fed to the microprocessor.
- *Elevated water vapor concentrations will foul the PID and may result in a negative or erroneous reading.*
- PID readings are always relative to the calibration gas. After calibration with isobutylene, the PID will respond directly in units equivalent to isobutylene. Most volatile organic compounds will be detected by the PhoCheck Tiger PID. It cannot distinguish between isobutylene and other ionizable compounds. A reading of 10 ppm indicates all ionizable compounds that are present have generated an ion current proportional to 10 ppm of isobutylene. The reading is actually 10 ppm isobutylene equivalent units. PID readings give an indication of the total ionizables present and their concentration relative to the calibration gas.
- The lamp window must be periodically cleaned to ensure ionization of the containments.
- The instrument was designed to measure trace gases over a concentration range from less than 1 ppm to 2000 ppm. Higher levels of various gases (to percentage range) can be measured but the recommended procedure is to first dilute the sample with clean air to a concentration of less than 500 ppm. This is generally

within the linear range of the instrument and, if the concentration is multiplied by the dilution ratio, the correct concentration in the stream can be determined.

- If the probe is used close to AC power lines or power transformers, an error may be observed. Zero the instrument in an electrically quiet area, in the standby position, then move the instrument to the questionable area involved. If AC pickup is going to be a problem, the meter (in the standby position) will indicate the magnitude of the error.

7.1.1 Equipment

The following equipment is recommended for field measurement of volatile organic vapors using the PID:

- PhoCheck Tiger photoionization detector
- Span gas calibration standard (isobutylene)
- AC-battery recharging unit

7.1.2 Standards

Commercially prepared standard span gases are purchased for calibration. The choice of standards is dependent on the monitoring requirements for the actual chemical contaminants at the facility.

7.1.3 Calibration

Follow the calibration checklist for calibration. See Attachment I.

7.1.4 Monitoring

Turn the PID on and allow to warm up for a minimum of 10 minutes. Measurements will be recorded as required by the Health and Safety Plan, and headspace protocols as necessary. When performing headspace analysis of soils, follow Tech-040. If the instrument indicates erratic readings, a replacement shall be obtained.

7.2 Flame Ionization Detection (FID)

The FID uses ionization as the detection method, much the same as the PID, except that the ionization is caused by a hydrogen flame rather than by a UV light. This flame has sufficient energy to ionize any organic species with an ionization potential (IP) of 15.4 eV or less. The ions are then passed between two charged plates. The conductivity change is measured; the current charge is measured in parts per million and displayed on an external meter.

As with the PID, the FID responds differently to different compounds. Below is a list, provided by the manufacturer, of the relative sensitivities of the FID to some common organic compounds. Since the instrument is factory-calibrated to methane, all relative responses are given in percent, with methane at 100.

Compound	Relative Response (%)
Methane	100
Ethane	90
Propane	64
n-Butane	61
n-Pentane	100
Ethylene	85
Acetylene	200
Benzene	150
Toluene	120
Acetone	100
Methyl ethyl ketone	80
Methyl isobutyl ketone	100
Methanol	15
Ethanol	25
Isopropyl alcohol	65
Carbon tetrachloride	10
Chloroform	70
Trichloroethylene	72
Vinyl chloride	35

The Century Systems OVA is a portable FID unit that consists of two major parts:

- A 9-pound package containing the sampling pump, battery pack, support electronics, flame ionization detector, hydrogen gas cylinder, and an optional gas chromatography (GC) column.
- A hand-held meter/sampling probe assembly

7.2.1 Measurement/Operations

The FID can operate in two modes:

- Survey mode: A sample of ambient air is routed through the FID into the detector, allowing all organic species to be ionized and detected at the same time. Based on the sensitivity of the instrument to various compounds, a concentration is displayed on.
- Gas chromatography mode: Gas chromatography (GC) is a technique for separating volatile substances by percolating a gas stream over a stationary phase. The components to be separated are carried through a column packed with an inert solid. A liquid is spread as a thin film over this solid and is the basis for separation. The different components of the sample migrate through the column at different rates. The component bands then leave the column and are measured by the detector. In this fashion, individual components of the ambient atmosphere may be analyzed. More complete instructions on the use of Century Systems OVA can be found in the owner's manual.

7.2.2 Quality Assurance

Quality assurance for use of the OVA is similar to that of the Ion Science PhoCheck Tiger. However, if the OVA is used in the chromatographic mode, calibration must be achieved using gas/vapor standards of known quality. Certified gas/vapor standards may be obtained through certified or approved vendors, as necessary, for identification or quantification of specific VOCs.

7.3 Combustible Gas Indicator

A combustible gas indicator consists of three primary components; the sensor (hotwire, catalytic, solid state, etc.), signal processor, and readout display. A sample is introduced to the sensor either by diffusion into a passive sensor or by pumping. The sensor produces a signal which is processed and displayed as the ratio of the combustible gas present to the total required to reach the lower explosion limit (LEL). Combustible gas indicators may also be designed to measure multiple gases at once, such as the Landtec GEM 500 which provides percent volume readings for methane, carbon dioxide, oxygen and LEL. **The SPEIM program uses the Landtec GEM 500 (or similar) to measure these gases at the LF-1 soil vapor probe locations. Landfill gas surveys shall be completed in accordance with the procedures outlined on the Joint Base Cape Cod (JBCC) Post-Closure Landfill Monitoring Form (Attachment II).**

The LEL (also LFL, lower flammability limit) is defined as the lowest concentration of gas or vapor in air which can be ignited by an ignition source and cause an explosion or flame propagation. Conversely, the upper explosive limit or UEL (also UFL, upper flammability limit) is the concentration of gas in air above which there is insufficient oxygen available to support combustion, and an explosion is unlikely. A flame, however, may burn at the gas-air interface, or should additional air enter the mixture, a very explosive atmosphere can develop. In general, the instruments respond in the following manner.

- The meter indicates 0.5 LEL (50 percent). This means that 50 percent of the concentration of combustible gas needed to reach an unstable combustible situation is present. If the LEL of the gas is 5 percent in air, then the instrument indicates a 2.5 percent mixture is present.
- The meter needle stays above 1.0 LEL (100 percent). This means that the concentration of combustible gas is greater than the LEL and less than the UEL and, therefore, immediately combustible and explosive.
- The meter needed rises above the 1.0 (100 percent) mark and then returns to zero. This indicates the ambient atmosphere has a combustible gas concentration greater than the UEL.

7.3.1 Measurement Problems and Instrument Limitations

Of the many instruments commercially available for detecting combustible or explosive gas, some are not certified safe for operation in the atmospheres they can detect. It is important to use only those monitors that are certified safe for use in atmospheres greater than 25 percent of the LEL.

Some combustible gas monitors provide readouts in units of percent LEL, some in percent combustible gases by volume, and some have scales for both. Many situations may occur where types of combustible gases to be encountered are unknown. In such instances the more explosive the calibration gas (the lower the LEL) the more sensitive the indication of explosivity and thus the greater margin of safety. The operator should be familiar with the LEL concentrations for specific gases to effectively use instruments that provide data in percent combustible (by volume) only.

7.3.2 Calibration

Although monitors can be purchased that are factory calibrated using gases such as butane, pentane, natural gas, or petroleum vapors, methane calibration is the most common. The LEL of methane is 5 percent by volume in air, therefore, an air mixture containing 5 percent methane will be read as 100 percent LEL and will be explosive if a source of ignition is present. When combustible gases other than methane are sampled, the relative response of the detector for these other gases must be considered. Recalibration to other gases may be possible; see manufacturer's recommendations. The relative sensitivity of the detector and the differences in LEL for different gases will produce varying meter responses equal concentrations of different gases. Correlation equations that will convert the percent LEL (based on methane) read by the unit to a percent LEL for another combustible gas can usually be found in the operating manual.

Many units also have alarm systems which can be adjusted for various LEL's and several are available that incorporate oxygen analyzers.

7.3.3 Measurement/Operation

In general, combustible gas detectors are used to determine the potential for combustion or explosion of unknown atmospheres. These instruments, in combination with oxygen detectors, should be the first monitors used when entering a hazardous area. In this sense they provide a <u>general</u> indication of the degree of immediate hazard to personnel and can be used to assist the safety officer in making decisions on levels of protection required at the site. However, they provide little or no information about the presence of compounds hazardous or toxic at trace level concentrations.

- Make sure the instrument is clean and serviceable, especially sample lines and detector surfaces.
- Check battery charge level. If in doubt, charge battery as described in operating manual. Some units have charge level meters, while others have only low charge alarms.
- Turn unit to ON position, and allow instrument sufficient warm-up time.
- Verify that sample pump is operable (if so equipped) when analyzer is ON.
- With the intake assembly is combustible gas-free ambient air, zero the meter by rotating the zero control until the meter reads 0 percent LEL.
- Calibrate unit against known concentration of a calibration gas by rotating the calibration control (span or gain) until the meter reads the same concentration as the known standard. For those instruments with internal or nonadjustable span, a calibration curve should be prepared, using concentrations in the range expected to be encountered.

- If necessary, adjust alarm setting to appropriate combustibility setting.
- Position intake assembly or cell in close proximity to area in question to get accurate reading.
- If alarm occurs, or if readings reach the action levels designated in the safety plan, personnel should evacuate area.
- If instrument malfunction occurs, personnel should evacuate area.
- Some important factors to keep in mind during use are:
  - Slow sweeping motions of intake or cell assembly will help assure that problem atmospheres are not bypassed. Cover an area from floor (ground) to ceiling, or above breathing zone.
  - Operation of unit in temperatures outside of recommended operating range may compromise the accuracy of readings or damage the instrument.
  - Platinum filament detectors may be poisoned (reduced in sensitivity) by gases such as leaded gasoline vapors (tetraethyl lead), sulfur compounds (mercaptan and hydrogen sulfide) and silicon compounds.
  - Many combustible gas detectors are not designed for use in oxygen-enriched or depleted atmospheres. If this condition is encountered or suspected, personnel should evacuate the area. Specially designed units are available for operation in such atmospheres.
  - An oxygen detector should always be used in conjunction with explosimeters.
  - Accurate data depends on regular calibration and battery charging. See operating manual.
  - More than any other factor, effective utilization of unit requires operator with full understanding of operating principles and procedures for the specific instrument in use.

7.4 Oxygen Meter

The oxygen content in a confined space is of prime concern to anyone about to enter that space. Removal of oxygen by combustion, reduction reactions, or displacement by gases or vapors may be a hazard. Consequently, remote measurements must be made before anyone enters any confined space.

An oxygen detector uses an electrochemical sensor to determine the oxygen concentration in air. The sensor consists of: two electrodes, a sensing and a counting electrode; a housing containing a basic electrolytic solution; and a semipermeable Teflon membrane.

Oxygen (O_2) molecules diffuse through the membrane into the solution. Reactions between the oxygen and the electrodes produce a minute electric current which is directly proportional to the sensor's oxygen content. The current passes through the electronic circuit. The resulting signal is shown as a needle deflection on a meter, which is usually calibrated to read 0-10 percent, 0-25 percent, or 0-100 percent oxygen.

The operation of oxygen meters depends on the absolute atmospheric pressure. The concentration of natural oxygen (to differentiate it from manufactured or generated oxygen) is a function of the atmospheric pressure at a given altitude.

At sea level, where the pressure of the atmosphere is the greatest, more O_2 molecules are compressed into a given volume than at higher elevations. As elevation increases, this compression decreases, resulting in fewer O_2 molecules being squeezed into a given volume. Consequently, an O_2 indicator calibrated at sea level and operated at an altitude of several thousand feet will falsely indicate an oxygen-deficient atmosphere (less than 19.5 percent).

High concentrations of carbon dioxide (CO_2) shorten the useful life of the oxygen detector cell. Therefore, the unit can be used in atmospheres greater than .05 percent CO_2 but only with frequent replacing or rejuvenating of the oxygen detector cell.

Although several instruments can measure an oxygen-enriched atmosphere greater than 21 percent, no testing or other work should ever be performed under such conditions because a spark, arc, or flame could lead to fire or explosion. Oxygen measurements are most informative when paired with combustible gas measurements. Together, they provide response personnel with quick and reliable data on the hazards they may encounter.

7.5 Direct-Reading Colorimetric Indicator Tubes

In evaluating hazardous waste sites, the need often arises to quickly measure a specific vapor or gas. In most cases, direct-reading colorimetric indicator tubes can successfully fill that need.

The interaction of two or more substances may result in chemical reactions. This change may be as subtle as two clear liquids producing a third clear liquid, or as obvious as a colorless vapor and colored solid producing a differently colored solid. Indicator tubes use this latter phenomenon to estimate the concentration of gas or vapor in air.

Colorimetric indicator tubes consist of a glass tube impregnated with an indicator chemical. The tube is connected to a piston cylinder- or-bellows-type pump. A known volume of contaminated air is pulled at the predetermined rate through the tube. The contaminant reacts with the indicator chemical in the tube, producing a stain whose length is proportional to the contaminant's concentration. A preconditioning filter may precede the indicator chemical to:

- Remove contaminants (other than the one in question) that may interfere with the measurement.
- React with the contaminant to change it into a compound that reacts with the indicating chemical.
- Completely change a nonindicating contaminant into an indicating one.

Several indicating chemicals may be able to measure the concentration of a particular gas or vapor, each operating on a different chemical principle and each affected in varying degrees by temperature, air volume pulled through the tube, and interfering gases or vapors. A "true" concentration versus the "measured" concentration may vary considerably among and between manufacturers. To limit these sources of error, control the numerous types and manufacturers of tubes, and provide a degree of confidence to users, the National Institute of Occupational Safety and Health (NIOSH) tests and certifies indicator tubes. Certified tubes have an accuracy of $\pm$ 35% at 1/2 the TLV of the chemical and $\pm$ 25% at the TLV.

To improve performance, all tubes should be:

- Refrigerated prior to use to maintain shelf life of approximately 2 years.
- Calibrated at the same temperature they will be used at in the field.
- Calibrated with the pump prior to sampling (pressure test) and on a quarterly basis (volumetric test).

Undoubtedly the greatest source of error is how the operator interprets the endpoint. The jagged edge where the contaminant meets the indicator chemical makes it difficult to get accurate results from this seemingly simple test. A diligent and experienced operator should be able to accurately read the endpoint.

8.0 RECORDS

All calibrations will be documented in separate calibration checklist logbooks for each instrument. All field measurements will be recorded in the field logbook.

9.0 ATTACHMENTS

Attachment I - PID 20/20 Calibration Checklist
Attachment II – JBCC Post-Closure Landfill Monitoring Form

ATTACHMENT I

PhoCheck® Tiger Field Calibration Checklist

Name: ______________________
Date: _______________________
Time: _______________________

___ 1. Press the On/Off button and allow the instrument to warm-up for a minimum of 10 (ten) minutes.

___ 2. Press the "B" Key to select the “tool” function menu.

___ 3. Use arrow keys to highlight the “Calibration” function menu (Scale-bar). Then press “ENTER”.

___ 4. Select “Custom Calibration” function (Stick-figure). Press “ENTER”. Screen should read “zero” with a 15 second counter clock. ‘

___ 5. Press “ENTER” to begin zero gas (ambient air) calibration. After a countdown of 15 seconds, a check mark will appear indicating a success. Press “ENTER” to move onto SPAN1.

____6. Open valve on calibration gas canister to fill the attached Tedlar bag. Connect PID to Tedlar bag hose then open valve on the hose to allow calibration gas to flow from the bag to the PID.

____ 7. Operate the PID for at least 15 seconds to purge ambient air from the instrument and instrument hoses.

____ 8. Press “ENTER” to run a span gas calibration. After a 15 second countdown, a check mark will appear indicating success. Press “ENTER” then “ESC” to verify the results.

____9. If an “Intolerable/Unacceptable” result is achieved, retry the bump test calibration. If after several attempts the PID will not calibrate, tag the PID as needing service and send to service provider for factory calibration.

ATTACHMENT II
JBCC POST-CLOSURE LANDFILL MONITORING FORM

Doc. Control Number: ____________________________ page 1 of 2

GAS PROBE SCREENING

WEATHER______________________

DATE OF SAMPLING _____________

MAX. TEMP.______MIN. TEMP.______

SAMPLER'S SIGNATURE __________________________
Black Hose (10') White Hose (20')

VENT LOCATION	TIME	CH_4 %	LEL %	CO_2 %	O_2 %	Remainder %	PID (ppm)
GP-01 (10')							
GP-01 (20')							
GP-02 (10')							
GP-02 (20')							
GP-03 (10')							
GP-03 (20')							
GP-04(10')							
GP-04 (20')							
GP-05 (10')							
GP-05 (20')							
GP-06 (10')							
GP-06 (20')							
GP-07 (10')							
GP-07 (20')							
GP-08 (10')							
GP-08 (20')							
GP-09 (10')							
GP-09 (20')							
GP-10 (10')							
GP-10 (20')							
GP-11 (10')							
GP-11 (20')							
GP-12 (10')							
GP-12 (20')							
27GS2206*							

* note: record atmospheric monitoring readings at 27GS2206 only if LEL>25 at GP-02 (a.k.a 27VP0002)

Procedure:

1. Record barometric pressure using barometer in field services equipment room prior to starting field event and at the end.
2. Once at sampling port in field, note physical condition of the port, record info on this form and in logbook.
3. Take readings with PID first. Connect PID to port tubing, allow to stabilize and record information.
4. Ensure that gas meter is zeroed then connect Landtec GEM 500 to tubing on the port, allow for meter to stabilize take reading
5. Record information on this form and in field logbook per Tech-Pro 35
6. Submit form to document control coordinator for inclusion into the project file

Barometric pressure: ____________ inches Hg Start Time: ____________
Barometric pressure: ____________ inches Hg End Time: ____________
Barometric pressure: ____________ inches Hg Time: ____________

ATTACHMENT II
JBCC POST-CLOSURE LANDFILL MONITORING FORM

JBCC LANDFILL POST-CLOSURE MONITORING

page 2 of 2

GAS PROBE SCREENING

WEATHER______________________

DATE OF SAMPLING ______________

MAX. TEMP.______MIN. TEMP.______

SAMPLER'S SIGNATURE ___________________________

VENT LOCATION	Label/Cap	Lock Yes/No	Casing Condition		Notes
GP-01 (10')					
GP-01 (20')					
GP-02 (10')					
GP-02 (20')					
GP-03 (10')					
GP-03 (20')					
GP-04(10')					
GP-04 (20')					
GP-05 (10')					
GP-05 (20')					
GP-06 (10')					
GP-06 (20')					
GP-07 (10')					
GP-07 (20')					
GP-08 (10')					
GP-08 (20')					
GP-09 (10')					
GP-09 (20')					
GP-10 (10')					
GP-10 (20')					
GP-11 (10')					
GP-11 (20')					
GP-12 (10')					
GP-12 (20')					
27GS2206					

CREATION, ASSIGNMENT, AND INTERPRETATION OF LOCATION IDS

1.0 PURPOSE

This technical procedure defines the processes involved in the application and interpretation of the naming convention used to identify data collection locations at the Joint Base Cape Cod (JBCC).

2.0 SCOPE

This procedure standardizes the naming convention for all new and existing locations where data are collected (e.g., monitoring wells). This procedure applies to all of CH2M HILL's data collection activities in support of the JBCC SPEIM/LTM/O&M program. Each data collection point existing or planned must have a location ID (LOC ID) issued in accordance with this procedure prior to data collection. The LOC ID provides a unique way to reference an individual location and its supporting data.

This procedure applies to all CH2M HILL personnel and subcontractors who are involved in JBCC SPEIM/LTM/O&M activities, such as planning, scheduling, surveying, and sampling and analysis.

3.0 REFERENCES

1. AFCEE. 2000 (September). *Quality Program Plan*. Prepared by Jacobs Engineering Group Inc. for AFCEE/MMR Installation Restoration Program, Otis Air National Guard Base, MA.
2. AFCEE. 1997 (October). *Environmental Resources Program Information Management System (ERPIMS) Data Loading Handbook*. Version 4.0.
3. AFCEE. 1993 (January). ERPTools/PC 4.0.0 User Manual, Validation Rules Version 4.0.0. Environmental Resources Program Information Management System (ERPIMS) Software Engineering and Maintenance Support.
4. AFCEE. 1995 (December). *IRP Tools/PC User's Manual.*
5. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Location Identification: the LOCID is a code consisting of no more than 15 characters. The characters that comprise the LOCID represent: an Integrated Site Identification System Code (ISIS Code), Type Identifier, Type Number, and in certain situations a Suffix. The LOC ID consists of alphabetical and numeric characters.

2. Integrated Site Identification System (ISIS) Code: the ISIS code is a two-character code used to identify the contaminant source.
3. Type Identifier: abbreviation used to indicate the type of location.
4. Type Number: a sequential number assigned to each specific location of a given type; also used to indicate the place of ecological sampling.
5. Suffix: a field that further defines a specific location.

5.0 GENERAL

Correct location identification is an essential element to an accurate and efficient environmental data management system. The nomenclature is standardized to assure that one location is not assigned multiple LOCIDs.

LOCIDs should be obtained at the onset of a planned task. It is critical that documents supporting a task (e.g., sampling plans, piping and instrumentation diagrams, requests for field services) have official LOCIDs assigned. Official LOCIDs can be issued only by the LOCID coordinator or their designated alternate.

6.0 RESPONSIBILITIES

The *Data Warehouse Manager* is responsible for overall compliance of this technical procedure and will ensure the resources and training for execution of this procedure. The *Data Warehouse Manager* is also responsible for assigning appropriate LOCIDs. It is the responsibility of the *Data Warehouse Manager* to maintain and update when necessary the tables of information supporting LOCID assignment (see attachments).

The *Sampling Manager* is responsible for data collection activities. The sampling task manager ensures that data are not collected for any location that does not first have an official LOCID assigned.

The *Plume Lead* shall consult with the Data Warehouse Manager for the creation of all new LOC IDs. All site personnel conducting sampling, drilling, surveying, data retrieval or other field activities must have knowledge of the official LOC ID's assigned to the task.

7.0 PROCEDURE FOR REQUESTING NEW LOCATION IDS

LOCIDs may be assigned only by the designated Location ID Coordinator (or designee). Official LOCIDs shall be used in all situations when preparing presentations or reports. Alternative references in lieu of official IDs are prohibited (e.g., "location A, B, & C"). Incorporation of unofficial LOCIDs, obtained by speculation of anticipated IDs, into presentations or reports is prohibited.

Requests may be made to the Location ID Coordinator via e-mail or telephone.

8.0 PROCEDURE FOR CREATING NEW LOCATION IDS

8.1 Preparation

Project Managers or their designated task manager will coordinate with the Location ID Coordinator to obtain required LOCIDs. This activity needs to occur well in advance of field activities.

8.2 Assignment of Location IDs

Data collection locations shall be assigned a LOCID consisting of a string of characters as described below. The LOCID consists of no more than 15 characters (a maximum of 10 is recommended) and is constructed as follows:

Part 1 - ISIS Code (Attachment I) ....(2 characters)
Part 2 - Type Identifier (Attachment II) ....(2 - 4 characters)
Part 3 - Type Number...(3 - 4 characters)
Part 4 - Suffix ....(2 - 5 characters)

Five generic formats govern LOCID generation. The five LOCID formats currently in use at JBCC are:

1. Historical, existing and new environmental sampling locations.
2. Non-exportable data.
3. Extraction, treatment, and reinjection (ETR) plant data.

These formats define the consistency of the respective LOCID.

8.2.1 Historical, Existing, and New Environmental Sampling Locations

8.2.1.1 New Environmental Sampling Locations

The location ID for new environmental sampling locations, consist of the following:

Part 1 - ISIS Code (Attachment I) ....(2 characters)
Part 2 - Type Identifier (Attachment II) ....(2 - 4 characters)
Part 3 - Sequential Rolling Number ....(3 - 4 characters)
Part 4 - Suffix ....(2 - 5 characters)

The ISIS code (Attachment I) for the primary plume under investigation is utilized for the first two characters (e.g., ***15***MW0001A, ***95***BH0001). Sometimes a location, such as a monitoring well or a borehole, will support activities for more than one plume. In this situation, the plume under investigation for the project paying for most of the location installation costs will be utilized for the ISIS code.

The type identifier (Attachment II) that describes the type of sampling location will fill positions three and four of the LOCID (e.g., 15***MW***0001A, 95***BH***0001). The type identifier will be selected by the description that best fits the type of location. All permanent well installations, whether used for hydrologic monitoring or groundwater sampling purposes, will be assigned a type identifier of ***MW***. Boreholes, within which no wells are installed, that are drilled using conventional drill rigs will be assigned the type identifier of ***BH***. Any boreholes drilled using a direct push rig, within which a well installation is not intended, will be assigned the type identifier of ***DP***.

Special cases may exist where a drilling or direct push location is initiated with the intent of a subsequent well installation. However, upon completion of drilling, if it is decided to not install a well or wells at that location, the type identifier will be changed to ***BH*** for a drill rig-completed borehole or ***DP*** for a direct push-completed borehole. As soon as it is known that an MW location will be converted to a ***BH*** or ***DP*** LOCID after its advancement, the Location ID Coordinator shall be notified.

The sequential rolling number is a four-digit rolling number (e.g., 15MW***0001***A, 95BH***0001***). The length of the sequential number string is defined by the type identifier. The number is assigned by considering the last existing number of that particular type identifier in the ISIS code respective to the plume in question.

A suffix will be added only when the "MW" or "SG" designations are utilized as the type identifier. In the case of monitoring well locations, the ninth position will consist of a suffix (e.g., 15MW0001***A***). Monitoring wells shall be assigned a letter suffix "A" initially. If the well is a cluster well, the "A" designation is assigned to the well with the deepest screened interval (samples may be collected in bedrock deeper than the "A" location). Each well in a cluster will be issued sequential alphabetical characters starting at the deepest aquifer monitoring depth ("A"). The well with the second deepest screened interval is the "B" location, and so forth.

The suffix following a location with the ***SG*** type identifier, for staff gauges, will be three to four characters long, consisting of a "-" followed by the two-digit year, representing the actual year in which that staff gauge was installed. An example is "-05" for a staff gauge installed in 2005. In cases where a staff gauge must be reinstalled within the year of its original installation, an "A" will be added after the two-digit year. For example, a reinstallation of staff gauge "69SG0010-06" would be assigned the LOC ID of "69SG0010-06A." See example below.

Plume	Location Type	Rolling Number	Suffix	LOC ID
FS-28	**Staff Gauge**	**0010**	**-06**	**69SG0010-06**

Two examples have been prepared below to help in understanding and working with other locations.

Plume	Location Type	Rolling Number	Suffix	LOC ID
CS-10	Monitoring Well	0030	A	03MW0030A
CS-4	Borehole	1283	None Required	02BH1283
FS-28	Staff Gauge	0010	-06	69SG0010-06

There are existing locations, implemented before this technical procedure was updated, that use slightly different nomenclature. The suffix on older wells was not applied with the same rationale. The "A" location in older well clusters may not be the deepest well. The Location ID Coordinator can provide clarification related to this older system of nomenclature.

8.2.1.2 Existing or Historical Environmental Sampling Locations

The location ID for existing or historical environmental sampling locations consist of the following:

Part 1 - ISIS Code ....(2 characters)
Part 2 - Type Identifier...(2 characters)
Part 3 – Historical Well ID ....(3 characters)
Part 4 - Well Depth (suffix) ....(3 characters)

Except for U.S. Geological Survey (USGS) wells, the ISIS code for the primary plume under investigation is utilized for the first two characters (e.g., ***15***MW010100, ***US***FW015225). USGS wells are issued a LOCID that utilizes the ISIS code "US".

The type identifier (Attachment II) that best fits the type of sampling location will fill positions three and four of the LOCID (e.g., 15***MW***010100, US***FW***015225). The type identifier will be selected by the description that best fits the type of location.

LOCID positions five through eight will be carefully selected from the historic ID of the well (e.g., 15MW***010***100, USFW***015***225). Review of the current LOC ID data prior to assigning the new LOCID will ensure that duplicate IDs are not assigned.

The suffix consists of a three-digit number indicating the total depth (in feet) of the well in question (e.g., 15MW010***100***, USFW015***225***).

Two examples have been prepared below to help in understanding and working with these existing locations.

Plume	Historical Well ID	Well Depth	LOCID
CS-1	MW-010	100 feet	15MW010100
USGS	FSW-015	225 feet	USFW015225

There are existing locations, implemented before this technical procedure was updated, that use slightly different nomenclature. The primary location ID coordinator can provide clarification of confusion related to this older system of nomenclature.

8.2.2 Non-Exportable Data

Some data that are collected in support of the SPEIM/LTM/O&M program are designated as non-exportable (e.g., investigation derived material data, portable water treatment system data). These data are identified by using the suffix “IDM” in the field sample ID.

8.2.3 Extraction, Treatment, and Reinjection (ETR) Plant Data

The LOCID format for monitoring locations within a remediation treatment system consists of 10 characters:

Part 1 - ISIS Code .... (2 characters)
Part 2 - Type Identifier .... (3 characters)
Part 3 - Plant Number .... (2 characters)
Part 4 - Suffix .... (3 characters)

The ISIS codes (Attachment I) for the treatment facility’s primary plume is utilized for the first two characters (e.g., ***90***PLT01001, ***95***PLT02001).

The type identifier is always the three digits “PLT” (e.g., 90***PLT***01001, 95***PLT***02001).

Each plume may have multiple treatment facilities. The facility is assigned a rolling number respective to its ISIS code. The sixth and seventh position of the LOCID is filled by this sequential rolling number (e.g., 90PLT***01***001, 95PLT***02***001).

The suffix is a rolling number three characters long. As sample ports are identified they are assigned a three digit sequential number (e.g., 90PLT01***001***, 95PLT02***001***).

Two examples have been prepared below to help in understanding and working with these locations.

Plume	Plant Number	Rolling Location Number	LOCID
FS-12	01	001	90PLT01001
AVA	02	001	95PLT02001

The Data Warehouse Manager can provide clarification related to this nomenclature.

8.3 LOCID Record Completion Requirement

It is the responsibility of the person who has requested the LOCID to provide survey coordinate and elevation data, any supporting information regarding the establishment of the location in the data management system. This information must be provided in a timely manner.

9.0 ATTACHMENTS

Attachment I	ISIS Code and Site Identifier Cross-reference Table
Attachment II	Type Identifier
Attachment III	Type Number Ecological Locations
Attachment IV	Common Loc ID Suffixes
Attachment V	Class Code (LTC)

Attachment I
ISIS Code and Site Identifier Cross-Reference Table

Location	ISIS Code	SITE ID	Location	ISIS Code	SITE ID
Ashumet Valley	95	20	FS-12 (Sandwich Study Area)	90	18
CS-1 (SI)	07	56	FS-13	38	38
CS-1 (sump)	47	47	FS-14 (ARNG)	11	70
CS-1 (USCG)	15	35	FS-15	50	50
CS-2	05	53	FS-16 (ARNG)	51	51
CS-2 (USCG)	46	46	FS-17 (ARNG)	23	79
CS-3 (ARNG/ANG)	22	11	FS-18 (ARNG)	21	78
CS-3 (USCG)	48	48	FS-19 (ARNG)	08	57
CS-4 (ARNG)	02	12	FS-20 (ARNG)	52	52
CS-4 (USCG)	99	90	FS-21 (ARNG)	04	45
CS-5 (ARNG)	13	71	FS-22	26	84
CS-5 (USCG)	17	74	FS-23 (ARNG/ANG)	22	17
CS-6	25	82	FS-24 (ARNG)	03	40
CS-6 (USCG)	44	44	FS-25	94	94
CS-7 (ARNG)	19	76	FS-26 (USCG)	01	39
CS-7 (USCG)	20	77	FS-27	06	54
CS-8 (ARNG)	04	41	FS-28 (1202 GW Study)	69	19
CS-8 (USCG)	84	101	FS-29	80	98
CS-9	31	87	FTA-1	30	1
CS-10 (ARNG)	03	14	FTA-2	39	2
CS-11 (ARNG/ANG)	18	75	FTA-3	37	37
CS-12 (VA)	10	68	LF-1 (ANG/ARNG/CG)	27	3
CS-13	12	15	LF-1 (USCG)	92	92
CS-14	98	25	LF-2	39	22
CS-15	35	36	LF-2 (USCG)	60	60
CS-16	34	9	LF-3 (ARNG)	61	61
CS-17	34	16	LF-3 (USCG)	62	62
CS-18 (ARNG)	16	73	LF-4	63	63
CS-19 (ARNG)	58	26	LF-5 (VA)	64	64
CS-20	81	99	LF-6	65	65
CS-21	82	100	LF-7	66	66
CS-22	83	102	PFSA	24	81
CS-23	69	103	SD-1	67	13
CY-1 (ARNG)	25	83	SD-2	91	23
CY-2	33	88	SD-3	37	32
CY-3 (VA)	42	42	SD-4	29	86
CY-4	43	43	SD-5	28	8

Attachment I
ISIS Code and Site Identifier Cross-Reference Table

Location	ISIS Code	SITE ID	Location	ISIS Code	SITE ID
FS-1	36	34	SERGOU	00	27
FS-1 (USCG)	99	67	Mashpee	MA	30
FS-2	32	31	HGI	H1	95
FS-2 (USCG)	49	49	HGII	H2	96
FS-3	55	10	HGIII	H3	97
FS-4	97	69	USGS Well (FSW,SDW, MIW)	US	28
FS-5	28	85	Ecological Studies	EC	33
FS-6	91	91	Bourne Water District Wells	BO	89
FS-7 (ARNG)	14	72	Sandwich Water District Wells	SA	58
FS-8	91	93	Residential Sampling Program	RS	21
FS-9 (ARNG)	09	59	Long-Range Water Supply	LR	29
FS-10	24	80	Longshank Dominee Trust	LS	55
FS-11	24	24	K Range	KRNG	152
FS-12 (ARNG)	96	18	KD SAR	KDSAR	153
Ammunition Supply Point (ASP)			L Range	LRNG	154
B Range	BRNG	106	M-2	M2	156
C Range	CRNG	107	MP-1	MP1	157
Central Impact Area	CIA	108	MP-2	MP2	158
D Range	DRNG	109	MP-3	MP3	159
Demolition Area 1	DA1	110	MP-4	MP4	160
Demolition Area 2	DA2	111	MP-5	MP5	161
Demolition Area 3	DA3	112	MP-6	MP6	162
Demolition Area 4	DA4	113	MP-7	MP7	163
E Range	ERNG	114	MP-8	MP8	164
Former A Range	FARNG	115	MP-9	MP9	165
Former Ammunition Supply Point – ASP	FASP	116	N Range	NRNG	166
Former B Range	FBRNG	117	Northwest Corner	NWC	167
Former C Range	FCRNG	118	O Range	ORNG	168
Former D Range	FDRNG	119	Old GP-1	OGP1	169
Former E Range	FERNG	120	Old GP-2	OGP2	170
Former F Range	FFRNG	121	Old GP-3 Area 53	OGP3-53	171
Former H Range	FHRNG	122	Old GP-4 Area 55	OGP4-55	172
Former K Range	FKRNG	123	Old GP-4 Area 56	OGP4-56	173
G Range	GRNG	125	Old GP-15	OGP15	174
GA Range	GARNG	126	Old GP-19	OGP19	175
GB Range	GBRNG	127	Old MP-1	OMP1	176
GP-2	GP2	128	Old MP-2	OMP2	177
GP-5	GP5	130	Old MP-3	OMP3	178
GP-6	GP6	131	P Range	PRNG	180

Attachment I
ISIS Code and Site Identifier Cross-Reference Table

Location	ISIS Code	SITE ID	Location	ISIS Code	SITE ID
GP-7	GP7	132	R Range	RRNG	181
GP-8	GP8	133	SE Range	SERNG	182
GP-10	GP10	135	Skeet Range 1	SKRNG	183
GP-11	GP11	136	SW Range	SWRNG	185
GP-12	GP12	137	T Range	TRNG	186
GP-14	GP14	138	U Range	URNG	187
GP-16	GP16	139	Western Boundary	WB	188
GP-17	GP17	140	J1 Range Southeast	J1S	189
GP-18	GP18	141	J2 Range East	J2E	190
GP-20	GP20	142	BIVOUAC Area 1	BA-1	191
GP-22	GP22	143	GP-9	GP9	134
GP-24	GP24	144	NUCLR/BIO/CHEM Warfare Trng Area	NBC	192
H Range	HRNG	145	A Range	ARANGE	105
I Range	IRNG	146	Former L-1 Range	FL-1	124
Inactive Demo Sites in TA A-2	IATAA2	147	GP-3 Area 63	GP3-63	129
J1 Range North	J1N	148	M-1	M1	155
J2 Range North	J2N	149	OP 5, 6 & 7	OP567	179
J3 Range	J3	150	Succonsette Pond	SUCNST	184
J Range	JULRNG	151			

FS-	fuel spill
CS-	chemical spill
SD-	storm drain
CY-	coal yard
LF-	landfill
FTA-	fire training area
PFSA-	petroleum fuel storage area
ANG-	Air National Guard
ARNG-	Army National Guard
USCG-	United States Coast Guard
FSW-	USGS well
SDW-	USGS well
MIW-	USGS well
VA-	Veterans Administration
SERGOU-	southeast regional groundwater operable unit
HG-	hydrogeologic
SI-	site investigation

ATTACHMENT II
Type Identifier

Identifier	Description of Identifier	Status
BLD	Building	Any sampling inside a building on base
MW	Monitor Well	Monitoring well for groundwater sampling
UT	Utilidor	CS-10 unit training equipment site (UTES)
VL	Vault	CS-10 UTES
PLT	Treatment Plant	Location inside treatment plants
SG	Staff Gauge	Measurement of water levels in lakes, ponds, rivers etc.
FW	USGS Falmouth Well (Formerly FSW)	USGS well format
GS	Soil gas	Soil gas
JB	J. Braden Thompson Well	J. Braden Thompson Well
MA	USGS Mashpee Well (Formerly MIW)	USGS well format
MP	Multipoint Well (Solinst)	Not used any more
PWS	Public Water Supply Well	Reserved for public water supply wells
SD	USGS Sandwich Well (Formerly SDW)	USGS well format
WT	Water Table Well	Water table well
GB	Geotechnical Boring	Geotechnical boring
VG	Vent Gas	Landfill gas sample location
VP	Vent Port	Landfill gas sample location (ports)
TP	Test Pit	Excavation pit for sampling, usually geotechnical sampling
SW	Surface Water	Surface water location
DP	Direct Push	Used for direct push rig-advanced boreholes
BH	Borehole	Utilized for borings that will be back-filled (i.e., no installation)
SS	Soil Sample	Surface soil sampling (sample depth 0 to 3 ft)
GA, FR,PMP	GAC Unit (Mobile), Frac Tank, Pump	Used with “CH” ISIS code for sampling of investigation-derived materials
VH	Water Tank (Vehicle)	Used with “CH” ISIS code for IDM sampling purposes
IG	Irrigation Well	Wells use for bog irrigation
RW	Recirculation Well	Wells used to extract and re-inject plume contaminants
EW	Extraction Well	Wells used to remove groundwater for treatment
RIW	Reinjection Well	Wells used to replace treated groundwater
PZ	Piezometer	Small diameter well utilized primarily for water level measurements
RS	Residential	Private drinking water well
SMP	Sump	Samples taken from a sump

ATTACHMENT III
Type Number
Ecological Locations

Type	Identifier		Type	Identifier
Abandoned Bog 1	AB1		Red Brook Harbor	RBH
Abandoned Bog 2	AB2		Red Brook Pond	RBP
Abandoned Bog 3	AB3		Red Maple Swamp 1	RM1
Ashumet Pond	AMP		Red Maple Swamp 2	RM2
Backhus River	BKR		Snake Pond	SNP
Bournes Pond	BPE		Spectacle Pond	SPP
Bournes Pond River	BPR		Spectacle Wetland	SPW
Cuffs Pond	CFP		Squeteague Harbor	SQH
Childs River	CHR		Santuit River	STR
Coonamessett Pond	CNP			
East Pond	EAP		Triangle Pond	TRP
Falmouth Conservation Wetland	FCW		Vernal Pool 1	VP1
Flax Pond	FXP		Vernal Pool 2	VP2
Green Pond	GPE		Vernal Pool 3	VP3
Johns Pond	JNP		Vernal Pool 5	VP5
Lawrence Pond	LAW		Vernal Pool 5	VP5
Long Pond	LGP		Vernal Pool 7	VP7
Little Jenkins Pond	LJP		Wakeby Pond	WAP
Mashpee Pond	MAP		Wild Harbor	WDH
Megansett Harbor	MEH		West Pond	WEP
Mashpee River	MPR		West Falmouth Harbor	WFH
Power Line Wetland	PLW		Weeks Pond	**WK***
Peters Pond	PTP		Weeks Pond	WKP
Quashnet River	QSR		Washburn Pond	WSB

* Location identifiers that are no longer used.

ATTACHMENT IV
Common LOCID Suffixes

Loc ID Suffix	Description
AA	ambient air
EF	recirculation well effluent (water)
EFA	recirculation well effluent (air)
IN	recirculation well influent (water)
INA	recirculation well influent (air)
MDA	recirculation well midpoint (air)
A	deep well
B	intermediate well
C	shallow well
D	deep well
M	medium well
S	shallow well
D-02	deep well used in 2002
S-02	shallow well used in 2002
SG-04	staff gauge installed in 2004

ATTACHMENT V
Class Code (LTC)

LTC Code	Description
A	AIR
AS	PUMP AND TREAT (E.G., AIR STRIPPING)
AV	SPARGE AND VENT GROUNDWATER TREATMENT SYSTEM
BH	BOREHOLE
BL	MANMADE BUILDING MATERIALS (E.G., ROOF, WALLS, BASEMENT)
BR	NON-FIXED LOCATIONS (E.G., BARRELS & CONTAINERS)
CH	CHANNEL/DITCH
CP	COMPOSITE FROM SEVERAL LOCATIONS
EP	TREATABILITY UNIT EFFLUENT MONITORING POINT
FW	FAUCET/TAP
HP	HOLDING POND/LAGOON
HW	HISTORIC WELL
IP	TREATABILITY UNIT INFLUENT MONITORING POINT
LH	LEACHATE FROM LANDFILL
LK	LAKE/POND
MS	MARINE SEDIMENT
NQ	LOCATION NOT APPLICABLE (E.G., QC SAMPLE)
OC	OUTCROP
ON	OCEAN
PH	CONE PENETROMETER/HYDROPUNCH/GEOPROBE
PR	SOIL GAS PROBE
PZ	PIEZOMETER
RE	RESIDENCE
RV	RIVER/STREAM
SE	SEEP
SL	SURFACE LOCATION
SP	SPRING
SR	SEWER SYSTEM
SS	SURFACE SURVEY
SV	SOIL VAPOR EXTRACTION SYSTEM
SW	STORM WATER
TE	TANK/PIPE REMOVAL EXCAVATION
TK	FIX LOCATION RECEPTACLE (E.G., TANKS, CONTAINERS AND VATS)
TP	TEST PIT
WL	WELL
WT	WETLANDS/SWAMP
WW	WASTEWATER

PORT SAMPLING

1.0 PURPOSE

The purpose of this technical procedure is to describe the methodology for collecting water samples at various types of sample ports located in SPEIM/LTM/O&M program treatment plants and extraction well vaults.

2.0 SCOPE

This procedure applies to all CH2M HILL personnel or subcontractors who perform sampling operations at the various sampling port locations included in the Joint Base Cape Cod (JBCC) SPEIM/LTM/O&M Program. Types of sampling locations include influent/ midpoint/effluent-sampling ports at all the treatment plants and extraction/reinjection well sampling ports. This procedure does not apply to private wells that may be sampled as part of the Land Use Control Program (refer to TECH-014). This procedure will explain site setup, sampling procedures, and logbook documentation.

3.0 REFERENCES

1. AFCEE (Air Force Center for Environmental Excellence). *Comprehensive Long Term Monitoring Plan (CLTMP)*. Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
2. AFCEE. *Operations and Maintenance Plan (O&M Plan) for the Groundwater Extraction Treatment Systems.* Prepared by Bhate Environmental Associates, Inc./CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
3. AFCEE. *SPEIM/LTM/O&M Health and Safety Plan (HASP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.
4. AFCEE. *AFCEE MMR SPEIM/LTM/O&M Program Quality Assurance Project Plan (QAPP).* Prepared by CH2M HILL for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA.

4.0 DEFINITIONS

1. Sampling Port: An accessible port with regulated flow, which provides representative water from influent, midpoint and effluent lines at each water treatment facility and extraction/reinjection wells.
2. <u>Chain-of-Custody (CoC) record</u>: documentation of the chain of custody, which shows times, dates, and names of the individuals initiating, relinquishing and receiving the samples identified on the record.
3. <u>Custody</u>: physical control of an object, in this case an environmental sample.
4. <u>Purging</u>: the act of removing stagnant water contained in a sampling port and line leading to the port to allow replacement of fresh treated or untreated water.

5. Vault: An enclosed structure housing extraction and reinjection wells and associated plumbing and electrical connections.
6. Sample: the media (e.g., water) being obtained for analysis from a sampling port.

5.0 GENERAL

Essentially, port sampling is performed periodically for the evaluation of treatment systems. Port sampling data will be used to assess remedial system performance.

6.0 RESPONSIBILITIES

For O&M-related treatment plant sampling (such as routine monthly sampling), the *Chief Operator* (or designee) shall ensure that appropriate water samples are obtained by completing and submitting a request for field services (RFS) that details all necessary sampling and analysis instructions. O&M-related sampling locations and frequencies are detailed in the O&M Plan.

For SPEIM-related sampling (such as extraction wells or reinjection wells), the *Plume Lead* (or designee) shall ensure that appropriate water samples are obtained by completing and submitting an RFS that details all necessary sampling and analysis instructions. SPEIM-related sampling locations and frequencies are detailed in the CLTMP.

The *Field Database Lead or* designee responsible for entry of RFS into the Sample Tracking and Sample Scheduling (STSP) shall identify the appropriate quality control (QC) samples, in consultation with the *Project Chemist* and as specified in the QAPP, and will assign locations for QC sample collection, where applicable.

The *Field Team Leader* (FTL) or designee will lead the sampling team and shall ensure that specified sampling procedures are followed, that samples are labeled, handled and controlled correctly, and that a strict chain-of-custody is initiated, maintained, and documented. Further, the FTL or designee will communicate any problems/deviations to the Technical Services Group Manager or O&M Manager, depending on the group requesting the sampling, as well as the Plume Lead.

7.0 PROCEDURE

7.1 Supplies and Equipment List

- Field logbook
- Waterproof pens
- Copy of RFS
- PPE (nitrile gloves, hard hat, safety glasses, steel-toed boots, tick-protection)
- Radio (or cell phone)
- Flow-through cell, tubing (Teflon-lined tubing or silicon tubing) (if applicable)
- 1-liter beaker (if applicable)
- YSI 6820 water quality meter (if applicable)

- Water level indicator (extraction/reinjection well sampling) (if applicable)
- PID (if applicable)
- Decontamination supplies including deionized water
- Table and chair (optional)
- Drums/containers for purge water (if applicable for extraction/reinjection well sampling)
- Sampling port fittings (necessary for only a few sampling ports at select extraction/ reinjection well locations)
- Vicegrips and/or 8” crescent wrench
- Sample coolers with ice (for sample preservation)
- Sample containers
- Sample labels
- Chain-of-custody sheets
- Zip-lock bags
- Site map (if necessary)
- Health & Safety Plan
- Keys (vaults, gates, plants, etc.)

Additional Equipment (for sampling in extraction/reinjection well vaults)

- Tripod and winch
- Safety harness
- 4-gas meter & PID
- Confined space non-permit certificate
- Pry bars
- Blower fan

7.2 Procedure for Extraction/Reinjection Well Port Sampling

7.2.1 Preparation

1. Organize all necessary supplies and equipment (e.g., sampling equipment and containers, decon fluids and containers, site maps, confined space and other health and safety equipment, logbook, and trip blanks as noted on Chain of Custody.
2. Wear personnel protective equipment (e.g., hard hat, safety glasses, steel-toed boots, tick protection, sunblock).
3. Upon arrival at site, record site conditions and/or plant conditions. Also, include conditions inside the vault.
4. Comply with project confined space entry requirements. Reference CH2M HILL JBCC SPEIM/LTM/O&M Confined Space Entry Program and HASP.
5. Set up site according to CH2M HILL’s Health and Safety Policy (e.g., exclusion zones). For confined spaces, additional equipment is needed prior to entry (see HASP).

7.2.2 Port Purging

1. A minimum of 1 gallon of water shall be purged from the sampling port to ensure that stagnant water is removed. In some cases, sampling ports may require more than 1 gallon of purging prior to sampling to ensure that all particulate matter is flushed from the line and well.
2. Containerize all purge water and avoid accumulating water on vault floors. If feasible, purge water can be returned to the well via the sounding tube eliminating the need to containerize the purge water.

7.2.3 Sample Collection

When purging is completed, sample collection can begin. The procedure below assumes the collection of water quality parameters is required unless otherwise noted on the RFS; if no water quality parameters are needed, samplers should adjust the sampling technique accordingly to collect the sample directly from the sampling port following the initial purge (Section 7.2.2).

1. Set up sampling equipment and materials (e.g., flow-through cell, YSI meter, Teflon tubing or silicon tubing). Connect the sample tubing to port and flow-through cell apparatus. Samples for measurement of water quality parameters will be collected using the flow-through cell or using a 1-liter beaker (or similar). Collect analytical samples directly from the port. For filtered samples, connect a small length of silicon tubing between the port and the filter before sampling. If a sounding tube is present in the vault, measure the initial water level.
2. Wear a new/unused pair of nitrile gloves when filling the sample containers.
3. Wear safety glasses during all sample collection activities.
4. Use a very low flow rate. Set the port flow regulator to a flow rate that produces the most stable parameters (if being collected). The flow rate may range from 100 to 2000 mL/min.
5. Record water quality parameters in the field logbook (if requested).
6. Disconnect the flow-through cell from the sampling port after recording the water quality parameters (if requested).
7. Confirm that the container ID label matches the ID recorded in the logbook and on chain-of-custody form, and then fill the sample containers.
8. Record the sampling time on the CoC, sample container ID label, and field logbook.
9. VOC sample vials shall be completely filled so the water forms a convex meniscus at the top when capped and no air space exists in the vial. Turn the vial over and tap it to check for bubbles, which indicate air. If air bubbles are observed in the vial, top off the VOA again and check for air bubbles. If bubbles are present after three attempts, discard the vial and collect another sample.

10. Do not allow the containers with preservatives to overflow. If an HCl-preserved vial overflows, discard it and sample again with a new vial. This is to avoid dilution of the preservative.
11. After the samples have been collected, immediately place them in an ice-filled cooler until they are relinquished.

7.2.4 Site Closure

1. Break down site by securing sampling port in “closed” position.
2. Record air monitoring levels as specified in the confined space program of the HASP.
3. Decontaminate all equipment (flow-through cell, YSI meter, tubing, water level meter, etc.) according to the procedures set forth in TECH-036 to avoid potential cross contamination and properly dispose of silicon tubing and filter (if used).
4. Pick up and remove all waste from extraction/reinjection vault.
5. Upon departure, record site conditions.
6. Lock gates when entering or exiting site.
7. Sign the CoC and closeout the logbook with sample custody information (per TECH-026).

7.3 Procedure for Treatment Plant Port Sampling

7.3.1 Site Preparation

1. Organize all necessary supplies and equipment (e.g., sampling equipment and containers, decon fluids and containers, logbook, trip blanks for VOC sampling (prepare per Section 3.6.1.2 of the QAPP).
2. Before entering the treatment plant, don personnel protective equipment (hard hat, safety glasses, and steel-toed boots). In addition, don Nitrile gloves during sampling.
3. Upon arrival at sampling port, record site conditions and/or current treatment plant operations (e.g. carbon changes, maintenance activities, etc.) in the field logbook.

7.3.2 Port Purging

1. Open port valve and regulate the flow to allow a sufficient amount of water to discharge from the sampling port (a minimum of 1 gallon).
2. Purge water will be discharged to the plant floor where it will be collected by the plant sump system.

7.3.3 Sample Collection

When purging is completed, sample collection can begin. The procedure below assumes the collection of water quality parameters has been requested on the RFS; if no water quality parameters are needed, samplers should adjust the sampling technique accordingly to collect the sample directly from the sampling port following the initial purge (Section 7.3.2).

1. Prepare for sampling by setting up sampling equipment. Samples for measurement of water quality parameters (if requested on the RFS) will be collected using the flow-through cell and YSI meter. Collect samples for laboratory analysis directly from the port. For filtered samples, connect a small length of silicon tubing between the port and the filter before sampling.
2. Wear a new/unused pair of nitrile gloves for each sampling port when filling the sample containers.
3. Wear safety glasses during all sample collection activities.
4. Use a very low flow rate. Set the port flow regulator to a flow rate that produces the most stable parameters (if collected). The flow rate may range from 100 to 2000 mL/min.
5. Record water quality parameters in the field logbook (if requested).
6. Disconnect the flow-through cell from the sampling port after recording the water quality parameters (if collected).
7. Confirm that the sample ID on the container label matches the ID tag on the plant sampling port, the ID recorded in logbook, RFS, and CoC, and then fill the sample containers directly from the sample port.
8. Record sampling time on CoC, sample container label, and field logbook.
9. VOC sample vials shall be completely filled so the water forms a convex meniscus at the top when capped and no air space exists in the vial. Turn the vial over and tap it to check for bubbles, which indicate air. If air bubbles are observed in the vial, top off the VOA again and check for air bubbles. If bubbles are present after three attempts, discard the vial and collect another sample. Do not allow the containers with preservatives to overflow. If an HCl-preserved vial overflows, discard it and sample again with a new correctly labeled vial. This is to avoid dilution of the preservative. After the samples have been collected, immediately place them in an ice-filled cooler until they are relinquished.

7.3.4 Perfluorinated Compound (PFC) Specific Sample Collection Considerations

The following precautions must be taken by sample personnel to avoid sample contamination during PFC sample collection. The following protocols are designed to control sample contamination during the collection process:

- Sample personnel should not use Post-it Notes at any time during sample handling, or mobilization/demobilization.
- Sample personnel should wear only old, well laundered (at least 6 washings since purchase) clothing.
- Sample personnel should not wear water resistant clothing prior or during sample collection. Tyvek suits must not be worn during sample handling.
- Nitrile glove must be worn at all times while collecting and handling samples.
- Many food and snack products are packaged in wrappers treated with PFCs. Therefore, hands will be thoroughly washed after handling fast food, carryout food, or snacks.
- Prewrapped food or snacks (like candy bars, microwave popcorn, etc.) must not be in the possession of the sampling personnel during sampling.
- Blue ice must not be used to cool samples or be used in sample coolers.

Teflon is known to be a significant source of PFCs. All sample collection tools will be free of Teflon to the extent possible, including sample tubing.

7.3.5 Site Closure

1. Break down site by securing sampling port in "closed" position.
2. Decontaminate all equipment (flow-through cell, YSI meter, tubing, etc.) according to the procedures set forth in TECH-036 to avoid potential cross contamination and properly dispose of silicon tubing and filter (if used).
3. Pick up and remove all waste from site.
4. Upon departure, record site conditions and lock gates.
5. Sign the CoC and closeout the logbook with sample custody information (per TECH-026).

7.4 Sample Identification, Handling, and Documentation

Samples shall be identified, handled, and recorded as described in this technical procedure and in accordance with standard sample handling protocols presented in the Sample Handling and Custody technical procedure (TECH-026).

8.0 RECORDS

Field notes shall be kept in a bound field logbook as specified in the field logbook technical procedure (TECH-035).

Chain-of-custody records shall be handled in accordance with TECH-026.

APPENDIX C

CH2M Hill Electronic Data Deliverable Format

Electronic Data Deliverable Format for CH2M HILL

The electronic data deliverable (EDD) file from the laboratory will be a comma-delimited ASCII (CDA) file in the format listed below. There will be one file per hard copy report and the filename of the EDD file will be in the format REPORTID.txt or REPORTID.csv, where REPORTID is the hard copy report identifier of sample delivery group.

The first row of the EDD will contain the 48 field name values as listed in the EDD Specification Table

The EDD Specification Table lists the attributes of the columns for each row of the CDA file. The fields should be reported in the order indicated.

The **Data Type** column describes the value in the field as either text (alphanumeric), number (numeric only), date (format: mm/dd/yyyy), or time (24-hour format hh:mm). If the field is conditional or optional and there is no value to be reported, report a null (i.e., no) value. For a text field, do not report a zero-length string (i.e., “”).

The **Data Length** column contains the maximum length of a text value for the particular data field.

The **Rqmt** column contains a code indicating whether the value is required (R) for all rows, optional (O) for all rows, or conditional (C) and depends on the type of result reported.

The VVL (Valid Value List) column contains a flag to indicate whether the data field has (Y) or does not have (N) a valid value list provided by CH2M HILL associated with it.

Modification Notes:

Changes as of September 2006 Revision:

1. Change the Requirement for CAS to R (Field No. 21).

Changes as of February 2011 Revision:

1. Add new field to the end of labspec named "Spike_Added" (Field No. 48).
2. Add new field to end of labspec named 'Surr_Spike_Units' (Field No. 49).
3. Add new field to end of labspec named "LOD" (Field No. 50).
4. Add new field to end of labspec named "LODAdjusted (Field No. 51).
5. FieldID expanded to 30 characters.

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
1	VersionCode	text	15	R	Y	Code identifying the version of the EDD deliverable.
2	LabName	text	10	R	Y	Identification code for the laboratory performing the work. This value is used to distinguish among different facilities.
3	SDG	text	15	R	N	Sample delivery group designation. Always populated for all samples, including QC.
4	FieldID	text	30	R	N	Client sample ID as appears on COC with lab-assigned suffixes to make it unique. Suffixes to add: "DL" (dilution), "RE" (reanalysis), "DUP" (laboratory duplicate), and "CF" (confirmation). For multiple dilutions or re-analyses of the same sample append the replicate number after the suffix (i.e., "RE", "RE1", "RE2", etc.) If the sample identifier on the COC and the prefix/suffix is greater than 20 characters, abbreviate the value but make it unique. For laboratory QC samples (i.e., method blanks, lab control samples), use a unique lab sample identifier.
5	NativeID	text	30	R	N	Client sample ID, exactly as on the COC. No prefix or suffix allowed on client sample IDs. Used to identify the native sample from which other samples are derived (e.g., QAQCType = "LR", "MS", or "SD"). For laboratory QC samples (i.e., method blanks, lab control samples), use the FieldID value that was assigned. However, for lab blank spike duplicate samples, use the FieldID value that was assigned to the associated lab blank spike sample.
6	QAQCType	text	2	R	Y	This is the code for the sample type. Any field sample that is not used as lab QC and is not otherwise marked on the COC should have the designation of "N" (normal field sample). No suffix allowed (i.e., do not add numbers as suffixes to the QAQCType values as is called for in the ERPIMS guidelines). Note that if all analyses for a given sample are diluted, then the first dilution should be designated as the normal sample.without LRType of DL .Also note for a laboratory duplicate the QA/QCType should be LR with a LRType of "D". (see LRType, below).

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
7	LRType	text	3	C	Y	This is the code for laboratory replicate sample type. Values are: blank (if QAQCType value is not "LR" and sample is not a dilution), "DL" (dilution), "RE" (re-analysis), "D" (inorganic duplicate), "CF" (confirmation). For multiple dilutions or re-analyses of the same sample, append the replicate number after the LRType value (i.e., "RE", "RE2", "RE3", etc.).
8	Matrix	text	5	R	Y	Sample matrix code. Valid values are as follows: "AIR", "WATER", "SOIL", unless otherwise provided by the project data manager and marked on the COC. The use of "liquid", "solid", etc. for lab QC is not allowed.
9	LabSampleID	text	17	R	N	Laboratory sample ID that is assigned by the laboratory. For dilution, reextractions and confirmation results a suffix will be assigned as follows: "DL" (dilution), "RE" (reanalysis), "D" (laboratory duplicate), and "CF" (confirmation). For multiple dilutions or re-analyses of the same sample append the replicate number after the suffix (i.e., "DL", "DL1", "DL2", etc.). Ex: "D97-11111RE" is acceptable.
10	AnalysisMethod	text	20	R	Y	Analysis method code. This is the identifier of the analytical method that was performed on the sample. Example: SW8260B. Generic names such as "EPA" should not be used.
11	ExtractionMethod	text	20	R	Y	Preparation method code. A value in this field is required. If the preparation is described in the method, use "METHOD". If there is no separate preparation required, use "NONE". Note that Total and Dissolved metal analyses are differentiated by the value in this column. Note that Total, TCLP, and SPLP analyses are now differentiated by the value in the LeachMethod column (see below).
12	SampleDate	date		C	N	Date of sample collection. Value is required for all samples sent to the laboratory and samples derived from those samples. Format: mm/dd/yyyy.

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
13	SampleTime	time		C	N	Time of sample collection. Value is required for all samples sent to the laboratory and samples derived from those samples. 24-hour format: hh:mm
14	ReceiveDate	date		C	N	Date of sample receipt in the lab. Value is required for all samples sent to the laboratory and samples derived from those samples. Format: mm/dd/yyyy
15	ExtractDate	date		C	N	Date of sample preparation (extraction or digestion). Value is required if the ExtractionMethod field value is other than "NONE". Format: mm/dd/yyyy
16	ExtractTime	time		C	N	Time of sample preparation. Value is required if the ExtractionMethod field value is other than "NONE". 24-hour format: hh:mm
17	AnalysisDate	date		R	N	Date of sample analysis. Value is required for all records. Format: mm/dd/yyyy
18	AnalysisTime	time		R	N	Time of sample analysis. Value is required for all records. 24-hour format: hh:mm
19	PercentSolids	number		R	N	Percent solids within the sample. Should be zero for water samples.
20	LabLotCtlNum	text	10	C	N	Identifier of an autonomous group of environmental samples and associated QC samples **prepared** together. For example, its value can be a digestion or extraction batch ID. If there is no separate extraction or preparation performed, leave this field blank.
21	CAS	text	20	R	N	CAS number of analyte, if available.
22	ParamID	text	12	R	Y	Parameter identifier code for the parameter listed in the Analyte field.
23	Analyte	text	60	R	N	Name of analyte, chemical name.
24	Result	text	10	R	N	Result of the analysis. Surrogate analytes will be reported in units of percent. All others will be reported in sample concentration units. If undetected, report the MDLadjusted, LODadjusted or RLadjusted, depending on the project. (Reported as a text field to preserve significant figures.)
25	ExpectedValue	number		C	N	"100" for surrogates; "0" (zero) for blanks; spike level plus parent result for LCS, and MS/MSD; parent value for lab duplicate; etc.

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
26	Units	text	10	R	Y	Units of measure used in the analysis. Report "PERCENT" for surrogate analytes and concentration units for all others.
27	Dilution	number		R	N	Total dilution reported in the analysis. Default value should be 1 (one). This value should reflect changes to sample preparation amounts as defined by the method (e.g., less sample used for standard VOC analysis).
28	MDL	number		C	N	Minimum detection limit adjusted for preparation and dilution. Note that this value may be the method detection limit or the instrument detection limit, depending on the method and the project requirements. This value is **not** adjusted for percent moisture.
29	RL	number		C	N	Reporting limit adjusted for preparation and dilution. Value is **not** adjusted for percent moisture. Equivalent to QSM LOQ.
30	LabQualifier	text	6	R	N	Lab qualifier for the results, as reported on the hard copy. Use "=" as first (or only) qualifier value for detected results if there are no other qualifiers for the result.
31	Surrogate	text	1	R	Y	Is the chemical a surrogate? Report "Y" for yes or "N" for no.
32	Comments	text	240	O	N	Comment field
33	ParValUncert	text	16	C	N	Radiological parameter value uncertainty.
34	Recovery	number		C	N	Percent recovery for MS, SD, LCS, LCSD, and surrogate compounds.
35	LowerControlLimit	number		C	N	Lower control limit value for spiked compounds, expressed in units of Percent. A value in this field is required if there is a value in the Recovery field (Field No. 34).
36	UpperControlLimit	number		C	N	Upper control limit value for spiked compounds, expressed in units of Percent. A value in this field is required if there is a value in the Recovery field (Field No. 34).
37	Basis	text	1	R	Y	Weight basis for soil (or solid) sample analysis. Use "D" for dry-weight basis, "W" for wet-weight basis, or "X" if not applicable.
38	ConcQual	text	1	R	Y	Concentration qualifier. Use "=" for detects, "J" for estimated value (value between detection limit and reporting limit), "U" for a nondetected result, or "E" for a result that has exceed the calibration range.

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
39	MDLAdjusted	number		C	N	Minimum detection limit adjusted for preparation, dilution **and percent moisture**. See the description of the MDL field (Field No. 28) for an explanation of the contents of this field.
40	RLAdjusted	number		C	N	Reporting limit adjusted for preparation, dilution **and percent moisture**. Equivalent to QSM LOQ
41	SampleDescription	text	30	C	N	Full sample identifier value as it appears on the COC. In some cases, this may be the name of the sampling location instead of the sample. Required for all samples that are either collected in the field and specified on the COC, or derived from samples that are collected in the field and specified on the COC.
42	LeachMethod	text	20	R	Y	Analytical method used for leaching the sample. This applies to TCLP, SPLP, or other leaching or pre-extraction leaching procedures. Use "NONE" if the sample was not leached.
43	LeachDate	date		C	N	Date that the leaching method was performed (start date for multi-date leaching procedures). Value is required if the LeachMethod field value is other then "NONE". Format: mm/dd/yyyy.
44	LeachTime	time		C	N	Time that the leaching procedure started. Value is required if the LeachMethod field value is other then "NONE". 24-hour format: hh:mm.
45	LeachLot	text	10	C	N	Identifier of an autonomous group of environmental samples and associated QC samples **leached** at the same time. Value is required if the LeachMethod field value is other then "NONE". If the sample was not leached, leave this field blank.
46	AnalysisLot	text	10	R	N	Identifier of an autonomous group of environmental samples and associated QC samples **analyzed** together. A value in this field is mandatory (i.e., it should not be blank).
47	CalRefID	text	10	C	N	Identifier of a group of environmental and QC samples linked by a common set of calibration records. All results with the same CalRefID value will have had the same initial calibration run.
48	Spike_Added	number	18	C	N	Concentration of an analyte spiked into a sample. Populate for MS, SD, BS,BD, and surrogate compounds (maximum 6 decimal places).
49	Surr_Spike_Units	text	10	R	Y	Concentration unit for the surrogate spike added.

EDD Specification Table						
Field Number	**Field Name**	**Data Type**	**Data Length**	**Rqmt**	**VVL**	**Description and Comments**
50	LOD	number		C	N	Limit of detection (QSM LOD) adjusted for preparation and dilution. Value is **not** adjusted for percent moisture.
51	LODAdjusted	number		C	N	Limit of detection (QSM LOD) adjusted for preparation, dilution **and percent moisture**.

Each row is uniquely identified by the values in the following fields:

- FieldID
- LabSampleID
- AnalysisMethod
- ExtractionMethod
- LeachMethod
- ParamID

If an analytical sample must be diluted or reanalyzed and reported in addition to the original analytical sample, the diluted or reanalyzed sample should have a FieldID value that is different that that of the original sample. This can be accomplished through the addition of a suffix to the original FieldID that establishes a new and unique FieldID for the associated records.

Example Valid Values

The project data manager will provide the laboratory with a list of valid values that the laboratory will use in constructing the EDD. Listed below are some example valid values.

Field Name	Valid Value	Meaning
VersionCode	4.20AFCEE3	Format 4.20, AFCEE data values. LabQualifier field contains the laboratory qualifier values defined in the AFCEE QAPP, version 3.0.
VersionCode	4.20EPACLP	Format 4.20, EPA data values. LabQualifier field contains the standard EPA CLP lab qualifiers.

Field Name	Valid Value	Meaning
QAQCType	N	Normal, environmental sample
QAQCType	LB	Laboratory method blank
QAQCType	MS	Laboratory matrix spike sample
QAQCType	SD	Laboratory matrix spike duplicate
QAQCType	LR	Laboratory replicate (, reanalysis, re-extraction and duplicate)
QAQCType	BS	Laboratory method blank spike
QAQCType	BD	Laboratory method blank spike duplicate
LRType	DL	First dilution sample
LRType	DL2	Second dilution sample
LRType	DL3	Third dilution sample
LRType	RE	First reanalysis/re-extraction sample
LRType	RE2	Second reanalysis/re-extraction sample
LRType	RE3	Third reanalysis/re-extraction sample
LRType	D	Inorganic duplicate sample
LRType	CF	First confirmation analysis sample
LRType	CF2	Second confirmation analysis sample
LRType	CF3	Third confirmation analysis sample
AnalysisMethod	SW8260B	Volatiles by method 8260B in EPA SW846.
AnalysisMethod	SW8270C	Semivolatiles by method 8270C in EPA SW846.

Field Name	**Valid Value**	**Meaning**
AnalysisMethod	SW6010B	ICP metals by method 6010B in EPA SW846.
AnalysisMethod	SW7060	GFAA Arsenic by method 7060 in EPA SW846.
ExtractionMethod	FLDFLT	Field filtration for dissolved metals analysis
ExtractionMethod	C3050	CLP-modified SW3050 acid digestion for metals analysis in soil samples.
ExtractionMethod	SW1311	TCLP extraction
ExtractionMethod	DISWAT	Distilled water extraction for analytes in soil samples.
ExtractionMethod	SW3510	Separatory funnel extraction
ExtractionMethod	SW3540	Soxhlet extraction
ExtractionMethod	TOTAL	Digestion of unfiltered waters for total metals analysis
ParamID	ACE	Acetone
ParamID	AS	Arsenic
ParamID	BHCGAMMA	gamma-BHC (Lindane)
ParamID	BZ	Benzene
ParamID	CDS	Carbon disulfide
ParamID	PB	Lead
ParamID	PHENOL	Phenol
ParamID	SE	Selenium
ParamID	TCE	Trichloroethene

Appendix V

Groundwater Sampling Results

PWSID	PWSName	Siz	FacilityID	FacilityName	FacilityWater	SamplePoin	SamplePointName	SamplePointTy	AssociatedFacilty	AssociatedSamplePointID	CollectionDate	SampleID	Contamina	MRL	MethodID	AnalyticIDes	AnalyticalResultVal	SampleEventI	MonitoringRequirement	Region	State
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFBS	0.09	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFHpA	0.01	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFHxS	0.03	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFNA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFOA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	10	Airport #1	GW	1644	EPTDS from Airport #1	EP	99001	U99001	11/20/2013 0:00	201311220130AM	PFOS	0.04	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFHpA	0.01	EPA 537	=	0.02	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFHxS	0.03	EPA 537	=	0.066	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFOS	0.04	EPA 537	=	0.19	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFBS	0.09	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFNA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	4	Mary Dunn Well #1	GW	1651	EPTDS from Mary Dunn Well #1	EP	99001	U99001	11/20/2013 0:00	201311220122AM	PFOA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFOA	0.02	EPA 537	=	0.02	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFHpA	0.01	EPA 537	=	0.021	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFHxS	0.03	EPA 537	=	0.082	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFOS	0.04	EPA 537	=	0.17	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFBS	0.09	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	5	Mary Dunn Well #2	GW	1652	EPTDS from Mary Dunn Well #2	EP	99001	U99001	11/20/2013 0:00	201311220124AM	PFNA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFHpA	0.01	EPA 537	=	0.017	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFHxS	0.03	EPA 537	=	0.053	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFOS	0.04	EPA 537	=	0.11	SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFBS	0.09	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFNA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	8	Mary Dunn Well #3	GW	1653	EPTDS from Mary Dunn Well #3	EP	99001	U99001	11/20/2013 0:00	201311220126AM	PFOA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFBS	0.09	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFHpA	0.01	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFHxS	0.03	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFNA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFOA	0.02	EPA 537	<		SE1	AM	1	MA
MA4020004	Hyannis Water System	L	9	Mary Dunn Well #4	GW	1654	EPTDS from Mary Dunn Well #4	EP	99001	U99001	11/20/2013 0:00	201311220128AM	PFOS	0.04	EPA 537	<		SE1	AM	1	MA

G1377943

Cape Cod Commission

LABORATORY REPORT

This report contains 5 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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UL LLC
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Laboratory Report

Client:	Barnstable County Department of Health and Environment	Report:	307714
Attn:	Gongmin Lei 3195 Main Street Barnstable, MA 02630	Priority:	Standard Written
		Status:	Final
		PWS ID:	Not Supplied

Copies to: None

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2936954	1377943-02/MW-10 -02	537	11/22/13 10:00	Client	11/26/13 10:30
2936955	1377943-03/OW-8A -03	537	11/22/13 10:15	Client	11/26/13 10:30
2936956	1377943-05/SBV-3 -05	537	11/22/13 11:00	Client	11/26/13 10:30
2936957	1377943-07/MW-1 -07	537	11/22/13 11:45	Client	11/26/13 10:30
2936958	1377943-08/MW-7 -8	537	11/22/13 12:00	Client	11/26/13 10:30

Report Summary

Project: CCC/BFTA

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

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Jim Van Fleit PM

Digitally signed by james.a.vanfleit@ul.com
Date: 2013.12.17 08:50:43 -05'00'

Authorized Signature Title Date

Client Name: Barnstable County Department of Health and Environment
Report #: 307714

UL LLC
110 S. Hill St., South Bend, IN 46617-2702 USA
T: 800.332.4345 / F: 574.233.8207 / W: UL.com

Client Name: Barnstable County Department of Health and Environment Report #: 307714

Sampling Point: 1377943-02/MW-10 PWS ID: Not Supplied

UL Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2000**	ng/L	12/02/13 07:45	12/09/13 11:10	2936954
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**670**	ng/L	12/02/13 07:45	12/09/13 11:10	2936954

Sampling Point: 1377943-03/OW-8A PWS ID: Not Supplied

UL Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2700**	ng/L	12/02/13 07:45	12/09/13 11:41	2936955
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**430**	ng/L	12/02/13 07:45	12/09/13 11:41	2936955

Sampling Point: 1377943-05/SBV-3 PWS ID: Not Supplied

UL Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1100**	ng/L	12/02/13 07:45	12/09/13 12:12	2936956
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**350**	ng/L	12/02/13 07:45	12/09/13 12:12	2936956

Sampling Point: 1377943-07/MW-1 PWS ID: Not Supplied

UL Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3900**	ng/L	12/02/13 07:45	12/09/13 12:43	2936957
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**320**	ng/L	12/02/13 07:45	12/09/13 12:43	2936957

Sampling Point: 1377943-08/MW-7 PWS ID: Not Supplied

UL Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3100**	ng/L	12/02/13 07:45	12/09/13 13:14	2936958
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**580**	ng/L	12/02/13 07:45	12/09/13 13:14	2936958

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL

Bot Order# 77943

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 244645
Batch # 407714

www.ul.com/water

CHAIN OF CUSTODY RECORD

Shaded area for UL use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
	[signature]			CCC/ BFTA	

BILL TO:

COMPLIANCE MONITORING: Yes ___ No x

POPULATION SERVED:

SOURCE WATER: groundwater

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	2936954	11/22/13	1000			MW-10 G -02	537 13 77943-02				3		
2	955		1015			2W-8a -03	-03						
3	956		1100			SBY-3 -05	-05						
4	957		1145			MW-1 -07	-07						
5	958		1200			MW-7 -08	-08						
6							per bottles KD						
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	11/22/13	1325	E L Hughes	11/22/13	1325
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
			Kellen Depree	11-26-13	1030

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ___ Ambient 5.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%
RV* = Rush Verbal: (5 working days)	50%
RW* = Rush Written: (5 working days)	75%
IV* = Immediate Verbal: (3 working days)	100%
IW* = Immediate Written: (3 working days)	125%
SP* = Weekend, Holiday	CALL
STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Barnstable County Department of Health and the Environment

Superior Court House
P. O. Box 427
Barnstable, MA 02630
(508) 375-6605;6612

CHAIN OF CUSTODY

CLIENT NAME: Cape Cod Commission

ADDRESS: Barnstable, MA

PROJECT NAME: BVTA **PROJECT NUMBER:** 1

PROJECT SITE: **SAMPLER:** Scott Michaud

DATE/ TIME:	SAMPLE NUMBER	SAMPLE LOCATION	NO. OF SAMPLES	ANALYSES REQUIRED	COMMENTS
11/22/13 0944		MW-13S	2	524.2	
1000		MW-10	3+3+2	524.2, VPH	EPH
1015		OW-3m	3+3+2	524.2, VPH, EPH	
1045		FS-1sa2	3+3+2	524.2 VPH, EPH	
1100		SBV-3	3+2	524.2 EPH	
1115		MW-3S	3+2+2	524.2 VPH, EPH	
1145		MW-1	2	524.2	
12.00		MW-7	2	524.2	

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
[illegible]	11/22/13 1320	E. J. Hughes	11/22/13 1320

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

UL

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 244645
Batch #

www.ul.com/water

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
	[signature]			CCC/ BFTA	
BILL TO:	COMPLIANCE MONITORING — Yes: / No: x	POPULATION SERVED:	SOURCE WATER: Groundwater		

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1		11/22/13	1000			MW-10	537				3		
2		↓	1015			OW-8a	↓				↓		
3			1100			SBY-3							
4			1145			MW-1							
5			1200			MW-7							
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME (AM/PM)	RECEIVED BY:(Signature)	DATE	TIME (AM/PM)
[signature]	11/22/13	1325	E L Hughes	11/22/13	1325
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one):

____ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt ____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

*** Please call, expedited service not available for all testing**

06-LO-F0435 Issue 2.0 Effective Date: 01/20/2012

Ref Order# 77943

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order #
Batch #

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Shaded area for UL use only

REPORT TO:

BILL TO:

SAMPLER (Signature)

COMPLIANCE MONITORING — Yes / No: X (No)

PWS ID #

POPULATION SERVED

STATE (sample origin)

SOURCE WATER: Groundwater

PROJECT NAME: CCC/BFTA

PO#

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	2436954	11/22/13	1000			MW-10 GW -02	537 13 77943 02				3		
2	955		1015			RW-8A -03	-03						
3	956		1100			SBY-3 -05	-05						
4	957		1145			MW-1 -07	-07						
5	958		1200			MW-7 -08	-08						
6							purbelled KD						
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	11/22/13	1325 AM / PM	E L Hughes	11/22/13	1325 AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED BY:(Signature)	DATE	TIME AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED FOR LABORATORY BY: Kellie Depree	11-26-13	1030 AM / PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one)
X Iced: Wet/Blue ___ Ambient 5.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	
RV* = Rush Verbal: (5 working days)	50%	
RW* = Rush Written: (5 working days)	75%	
IV* = Immediate Verbal: (3 working days)	100%	
IW* = Immediate Written: (3 working days)	125%	
SP* = Weekend, Holiday	CALL	
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* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 2.0 Effective Date: 01/20/2012

Sample analysis will be provided according to the standard UL GSA/Water Services Terms, which are available upo... Any other te... by Customer are deemed material alterations and are rejected unless expressly agree to in writing by UL.

Results from May 22, 2014 was conducted by EPA (part of the UCMR)

Legend: OK | Warn | Abve | <- Comparison to currently availat

LIST

Locations	EPA 200.8					EPA 522	EPA 300.1	EPA 218.7	EP		
	Chromium ug/L	Cobalt ug/L	Molybdenum ug/L	Strontium ug/L	Vanadium ug/L	1,4-Dioxane ug/L	Chlorate ug/L	Chromium(VI) ug/L	Perfluoro octane-sulfonic acid - PFOS ug/L	Perfluoro-1-butane-sulfonic acid PFBS ug/L	Perfluoro-1-hexane-sulfonic acid PFHxS ug/L
Reporting Limit:	0.2	1	1	0.3	0.2	0.07	20	0.03	0.04	0.09	0.03
Health Guidline:	50	TBD	40	4000	15	0.3	210	10	0.2	TBD	TBD
Storage Tank	0.26	ND	ND	84	ND	0.13	75	0.26	0.06	ND	[illegible]
Storage Tank	0.22	ND	ND	95	ND	0.19	44	0.14	ND	N	[illegible]
Mary Dunn Well #1	ND	ND	ND	25	0.29	ND	140	ND	0.19	ND	0.07
Mary Dunn Well #1	ND	ND	ND	12	ND	ND	77	ND	0.1	ND	ND
Mary Dunn Well #2	ND	ND	ND	9	ND	ND	180	0.03	0.17	ND	0.0
Mary Dunn Well #2	ND	ND	ND	21	ND	ND	92	ND	0.43	ND	0.2
Mary Dunn Well #3	ND	ND	ND	40	ND	0.2	190	0.06	0.11	ND	0.0
Mary Dunn Well #3	0.26	ND	ND	46	0.21	0.15	91	0.29	0.21	ND	0.0
Mary Dunn Well #4	ND	ND	ND	31	ND	ND	ND	ND	ND	ND	ND
Mary Dunn Well #4	ND	ND	ND	28	ND	ND	ND	0.03	ND	ND	ND
Airport #1	ND	ND	ND	22	ND	ND	98	0.09	ND	ND	ND
Airport #1	ND	ND	ND	26	ND	ND	48	0.1	ND	ND	ND
Maher TP	ND	ND	ND	38	ND	0.26	72	0.06	0.06	ND	0.0
Maher TP	ND	ND	ND	42	ND	0.37	49	0.06	0.09	ND	0.0
Distribution	ND	ND	ND	39	ND	NA	81	0.13	NA	NA	NA
Distribution	0.23	ND	ND	99	ND	NA	51	0.16	NA	NA	NA

**Massachusettes

EPA He

LABORATORY REPORT

This report contains 12 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Barnstable County Dept. of Health and Environment

Attn: Gongmin Lei
3195 Main Street
Barnstable, MA 02630

Report: 318916
Priority: Standard Written
Status: Amended
PWS ID: Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3039321	1480217-01/MW-1	537	06/03/14 13:30	Client	06/06/14 09:15
3039322	1480217-02/MW-3S	537	06/03/14 14:10	Client	06/06/14 09:15
3039323	1480217-03/OW-8A	537	06/03/14 15:10	Client	06/06/14 09:15
3039324	1480217-04/Field Blank	537	06/03/14 15:30	Client	06/06/14 09:15
3039325	1480217-05/OW-2A	537	06/04/14 10:30	Client	06/06/14 09:15
3039326	1480217-06/MW-1 (TP)	537	06/04/14 11:00	Client	06/06/14 09:15

Report Summary

Note: This report was amended on 11/03/14 to report all Method 537 compounds and QC, at the request of the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature　　Title　　Date

Client Name: Barnstable County Dept. of Health and Environment   Report #: 318916

Sampling Point: 1480217-01/MW-1   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**300**	ng/L	06/13/14 07:40	06/14/14 03:30	3039321
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**290**	ng/L	06/13/14 07:40	06/14/14 14:50	3039321
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2900**	ng/L	06/13/14 07:40	06/14/14 14:50	3039321
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**380**	ng/L	06/13/14 07:40	06/14/14 14:50	3039321
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**4400**	ng/L	06/13/14 07:40	06/14/14 14:50	3039321
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**880**	ng/L	06/13/14 07:40	06/14/14 14:50	3039321

Sampling Point: 1480217-02/MW-3S   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	06/13/14 07:40	06/14/14 04:01	3039322
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**490**	ng/L	06/13/14 07:40	06/14/14 15:21	3039322
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2200**	ng/L	06/13/14 07:40	06/14/14 15:21	3039322
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**160**	ng/L	06/13/14 07:40	06/14/14 04:01	3039322
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**4900**	ng/L	06/13/14 07:40	06/14/14 15:21	3039322
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**530**	ng/L	06/13/14 07:40	06/14/14 15:21	3039322

Sampling Point: 1480217-03/OW-8A   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	06/13/14 07:40	06/14/14 04:32	3039323
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**420**	ng/L	06/13/14 07:40	06/14/14 15:52	3039323
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2900**	ng/L	06/13/14 07:40	06/14/14 15:52	3039323
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**560**	ng/L	06/13/14 07:40	06/14/14 15:52	3039323
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**8600**	ng/L	06/13/14 07:40	06/14/14 16:23	3039323
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**1000**	ng/L	06/13/14 07:40	06/14/14 15:52	3039323

Client Name: Barnstable County Dept. of Health and Environment Report #: 318916

Sampling Point: 1480217-04/Field Blank PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	06/13/14 07:40	06/14/14 05:03	3039324
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	06/13/14 07:40	06/14/14 05:03	3039324
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	06/13/14 07:40	06/14/14 05:03	3039324
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	06/13/14 07:40	06/14/14 05:03	3039324
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40	ng/L	06/13/14 07:40	06/14/14 05:03	3039324
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	06/13/14 07:40	06/14/14 05:03	3039324

Sampling Point: 1480217-05/OW-2A PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**110**	ng/L	06/13/14 07:40	06/14/14 05:34	3039325
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**180**	ng/L	06/13/14 07:40	06/14/14 16:54	3039325
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**880**	ng/L	06/13/14 07:40	06/14/14 16:54	3039325
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**80**	ng/L	06/13/14 07:40	06/14/14 05:34	3039325
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1300**	ng/L	06/13/14 07:40	06/14/14 16:54	3039325
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**150**	ng/L	06/13/14 07:40	06/14/14 05:34	3039325

Sampling Point: 1480217-06/MW-1 (TP) PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**230**	ng/L	06/13/14 07:40	06/14/14 06:05	3039326
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**280**	ng/L	06/13/14 07:40	06/14/14 17:25	3039326
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2000**	ng/L	06/13/14 07:40	06/14/14 17:25	3039326
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**230**	ng/L	06/13/14 07:40	06/14/14 06:05	3039326
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3200**	ng/L	06/13/14 07:40	06/14/14 17:25	3039326
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**590**	ng/L	06/13/14 07:40	06/14/14 17:25	3039326

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

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Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL

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South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 2541093
Batch # 318916

www.ul.com/water

CHAIN OF CUSTODY RECORD

REPORT TO: Tom Cambareri, Cape Cod Commission	SAMPLER (Signature) Tom Cambareri	PWS ID # N/A	STATE (sample origin) MA	PROJECT NAME 80217 BFTA	PO#
BILL TO: Barnstable Co.	COMPLIANCE MONITORING Yes: / No: X	POPULATION SERVED N/A	SOURCE WATER Ground water		

	LAB Number (For UL use only)	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3039321	6-3-14	1:30		X	* MW-1	PFOS / PFOA 1480 Method 537	217-021			3	GW	SW
2	322	6-3-14	2:10		X	MW-35		-032			3	GW	SW
3	323	6-3-14	3:10		X	* OW-8A		-043			3	GW	SW
4	324	6-3-14	3:30		X	* FIELD BLANK		-054			3	GW	SW
5	325	6-4-14	1030	X		OW-2a		-065			3	GW	SW
6	326	6-4-14	1100	X		MW-1 (TP)		-071			3	GW	SW
7							per Bottles KD 6	6-6-2014 KD					
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	6-4-14	1215 PM	[signature]	6/4/14	1215 PM
[signature] ~~Ed Hughes~~	6-4-14	1405	Ed Hughes	6-4-14	1405
			RECEIVED FOR LABORATORY BY: K Depue	6-6-14	0915

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS (For UL use only)

* one bottle lost in each site due to <95% volume after checks. 6/6/14 KD

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ___ Ambient 3.8 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

* Please call, expedited service not available for all testing

06-LO-F0435 Issue 3.0 Effective Date: 2013-09-11

Eurofins Eaton Analytical
Run Log

Run ID: **192072** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3043971		OS	CY	06/13/2014 22:22	061314M537a.mdb
LRB	3043953		RW	CY	06/13/2014 23:54	061314M537a.mdb
FBL	3043954		RW	CY	06/14/2014 00:25	061314M537a.mdb
FBH	3043955		RW	CY	06/14/2014 00:56	061314M537a.mdb
FS	3039321	1480217-01/MW-1	DW	CY	06/14/2014 03:30	061314M537a.mdb
FS	3039322	1480217-02/MW-3S	DW	CY	06/14/2014 04:01	061314M537a.mdb
FS	3039323	1480217-03/OW-8A	DW	CY	06/14/2014 04:32	061314M537a.mdb
FS	3039324	1480217-04/Field Blank	DW	CY	06/14/2014 05:03	061314M537a.mdb
FS	3039325	1480217-05/OW-2A	DW	CY	06/14/2014 05:34	061314M537a.mdb
FS	3039326	1480217-06/MW-1 (TP)	DW	CY	06/14/2014 06:05	061314M537a.mdb
CCM	3043972		OS	CY	06/14/2014 08:09	061314M537a.mdb
CCH	3043973		OS	CY	06/14/2014 13:48	061314M537a.mdb
FS	3039321	1480217-01/MW-1	DW	CY	06/14/2014 14:50	061314M537a.mdb
FS	3039322	1480217-02/MW-3S	DW	CY	06/14/2014 15:21	061314M537a.mdb
FS	3039323	1480217-03/OW-8A	DW	CY	06/14/2014 16:23	061314M537a.mdb
FS	3039325	1480217-05/OW-2A	DW	CY	06/14/2014 16:54	061314M537a.mdb
FS	3039326	1480217-06/MW-1 (TP)	DW	CY	06/14/2014 17:25	061314M537a.mdb
CCM	3044996		OS	CY	06/14/2014 18:26	061314M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		21.46	21455.7	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	IS-PFOS-13C4	537	N/A	---		17.66	17663.2	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	SS-PFDA-13C2	537	N/A	---		0.0983	100	ug/L	98	70 - 130	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	SS-PFHxA-13C2	537	N/A	---		0.0489	50.0	ug/L	98	70 - 130	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0923	90.0	ug/L	103	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0103	10.0	ug/L	103	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0304	30.0	ug/L	101	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0210	20.0	ug/L	105	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0419	40.0	ug/L	105	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
CCL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0210	20.0	ug/L	105	50 - 150	---	---	1.0	06/05/2014 09:24	06/13/2014 22:22	3043971
LRB	IS-PFOA-13C2	537	N/A	---		22.35	21455.7	ug/L	104	70 - 140	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	IS-PFOS-13C4	537	N/A	---		18.38	17663.2	ug/L	104	70 - 140	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	SS-PFDA-13C2	537	N/A	---		0.0978	100	ug/L	98	70 - 130	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	SS-PFHxA-13C2	537	N/A	---		0.0495	50.0	ug/L	99	70 - 130	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---	<	0.09		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluoroheptanoic acid (PFHpA)	537	0.01	---	<	0.01		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---	<	0.03		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluorononanoic acid (PFNA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluorooctane sulfonate (PFOS)	537	0.04	---	<	0.04		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
LRB	Perfluorooctanoic acid (PFOA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/13/2014 23:54	3043953
FBL	IS-PFOA-13C2	537	N/A	---		23.03	21455.7	ug/L	107	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	IS-PFOS-13C4	537	N/A	---		19.10	17663.2	ug/L	108	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	SS-PFDA-13C2	537	N/A	---		0.0932	100	ug/L	93	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	SS-PFHxA-13C2	537	N/A	---		0.0467	50.0	ug/L	93	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0872	90.0	ug/L	97	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0095	10.0	ug/L	95	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0285	30.0	ug/L	95	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0197	20.0	ug/L	99	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0388	40.0	ug/L	97	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0196	20.0	ug/L	98	50 - 150	---	---	1.0	06/13/2014 07:40	06/14/2014 00:25	3043954
FBH	IS-PFOA-13C2	537	N/A	---		22.34	21455.7	ug/L	104	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	IS-PFOS-13C4	537	N/A	---		18.69	17663.2	ug/L	106	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	SS-PFDA-13C2	537	N/A	---		0.0964	100	ug/L	96	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	SS-PFHxA-13C2	537	N/A	---		0.0488	50.0	ug/L	98	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		1.0664	1125	ug/L	95	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1181	125	ug/L	94	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3583	375	ug/L	96	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluorononanoic acid (PFNA)	537	0.02	---		0.2363	250	ug/L	95	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.4732	500	ug/L	95	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955
FBH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2372	250	ug/L	95	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 00:56	3043955

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	1480217-01/MW-1		20.38	17527.9	ug/L	95	70 - 140	---	---	0.98	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	IS-PFOA-13C2	537	N/A	1480217-01/MW-1		20.38	17527.9	ug/L	95	70 - 140	---	---	9.8	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	IS-PFOS-13C4	537	N/A	1480217-01/MW-1		15.71	14870.8	ug/L	89	70 - 140	---	---	0.98	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	IS-PFOS-13C4	537	N/A	1480217-01/MW-1		15.71	14870.8	ug/L	89	70 - 140	---	---	9.8	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	SS-PFDA-13C2	537	N/A	1480217-01/MW-1		0.1011	100	ug/L	103	70 - 130	---	---	0.98	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	SS-PFHxA-13C2	537	N/A	1480217-01/MW-1		0.0482	50.0	ug/L	98	70 - 130	---	---	0.98	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-01/MW-1		0.30		ug/L	---	---	---	---	0.98	06/13/2014 07:40	06/14/2014 03:30	3039321
FS	IS-PFOA-13C2	537	N/A	1480217-02/MW-3S		20.91	17527.9	ug/L	106	70 - 140	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	IS-PFOA-13C2	537	N/A	1480217-02/MW-3S		20.91	17527.9	ug/L	106	70 - 140	---	---	10.3	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	IS-PFOS-13C4	537	N/A	1480217-02/MW-3S		15.78	14870.8	ug/L	89	70 - 140	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	IS-PFOS-13C4	537	N/A	1480217-02/MW-3S		15.78	14870.8	ug/L	89	70 - 140	---	---	10.3	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	SS-PFDA-13C2	537	N/A	1480217-02/MW-3S		0.1075	100	ug/L	104	70 - 130	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	SS-PFHxA-13C2	537	N/A	1480217-02/MW-3S		0.0450	50.0	ug/L	87	70 - 130	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-02/MW-3S	<	0.09		ug/L	---	---	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-02/MW-3S		0.16		ug/L	---	---	---	---	1.03	06/13/2014 07:40	06/14/2014 04:01	3039322
FS	IS-PFOA-13C2	537	N/A	1480217-03/OW-8A		19.52	17527.9	ug/L	91	70 - 140	---	---	0.94	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOA-13C2	537	N/A	1480217-03/OW-8A		19.52	17527.9	ug/L	91	70 - 140	---	---	9.4	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOA-13C2	537	N/A	1480217-03/OW-8A		19.52	17527.9	ug/L	91	70 - 140	---	---	18.8	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOS-13C4	537	N/A	1480217-03/OW-8A		11.26	14870.8	ug/L	**64**	70 - 140	---	---	0.94	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOS-13C4	537	N/A	1480217-03/OW-8A		11.26	14870.8	ug/L	**64**	70 - 140	---	---	9.4	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOS-13C4	537	N/A	1480217-03/OW-8A		11.26	14870.8	ug/L	**64**	70 - 140	---	---	18.8	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	SS-PFDA-13C2	537	N/A	1480217-03/OW-8A		0.1065	100	ug/L	113	70 - 130	---	---	0.94	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	SS-PFHxA-13C2	537	N/A	1480217-03/OW-8A		0.0421	50.0	ug/L	90	70 - 130	---	---	0.94	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-03/OW-8A	<	0.09		ug/L	---	---	---	---	0.94	06/13/2014 07:40	06/14/2014 04:32	3039323
FS	IS-PFOA-13C2	537	N/A	1480217-04/Field Blank		21.63	21455.7	ug/L	101	70 - 140	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	IS-PFOS-13C4	537	N/A	1480217-04/Field Blank		18.37	17663.2	ug/L	104	70 - 140	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	SS-PFDA-13C2	537	N/A	1480217-04/Field Blank		0.0809	100	ug/L	91	70 - 130	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	SS-PFHxA-13C2	537	N/A	1480217-04/Field Blank		0.0411	50.0	ug/L	92	70 - 130	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-04/Field Blank	<	0.09		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-04/Field Blank	<	0.01		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-04/Field Blank	<	0.03		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-04/Field Blank	<	0.02		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-04/Field Blank	<	0.04		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-04/Field Blank	<	0.02		ug/L	---	---	---	---	0.89	06/13/2014 07:40	06/14/2014 05:03	3039324
FS	IS-PFOA-13C2	537	N/A	1480217-05/OW-2A		20.23	17527.9	ug/L	94	70 - 140	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	IS-PFOA-13C2	537	N/A	1480217-05/OW-2A		20.23	17527.9	ug/L	94	70 - 140	---	---	5.15	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	IS-PFOS-13C4	537	N/A	1480217-05/OW-2A		17.21	14870.8	ug/L	97	70 - 140	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	IS-PFOS-13C4	537	N/A	1480217-05/OW-2A		17.21	14870.8	ug/L	97	70 - 140	---	---	5.15	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	SS-PFDA-13C2	537	N/A	1480217-05/OW-2A		0.0972	100	ug/L	94	70 - 130	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	SS-PFHxA-13C2	537	N/A	1480217-05/OW-2A		0.0491	50.0	ug/L	95	70 - 130	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-05/OW-2A		0.11		ug/L	---	---	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-05/OW-2A		0.08		ug/L	---	---	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-05/OW-2A		0.15		ug/L	---	---	---	---	1.03	06/13/2014 07:40	06/14/2014 05:34	3039325
FS	IS-PFOA-13C2	537	N/A	1480217-06/MW-1 (TP)		19.44	17527.9	ug/L	93	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	IS-PFOA-13C2	537	N/A	1480217-06/MW-1 (TP)		19.44	17527.9	ug/L	93	70 - 140	---	---	10	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	IS-PFOS-13C4	537	N/A	1480217-06/MW-1 (TP)		15.89	14870.8	ug/L	90	70 - 140	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	IS-PFOS-13C4	537	N/A	1480217-06/MW-1 (TP)		15.89	14870.8	ug/L	90	70 - 140	---	---	10	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	SS-PFDA-13C2	537	N/A	1480217-06/MW-1 (TP)		0.0852	100	ug/L	85	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	SS-PFHxA-13C2	537	N/A	1480217-06/MW-1 (TP)		0.0460	50.0	ug/L	92	70 - 130	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1480217-06/MW-1 (TP)		0.23		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-06/MW-1 (TP)		0.23		ug/L	---	---	---	---	1.0	06/13/2014 07:40	06/14/2014 06:05	3039326
CCM	IS-PFOA-13C2	537	N/A	---		18.39	18387.8	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	IS-PFOS-13C4	537	N/A	---		15.83	15829.7	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	SS-PFDA-13C2	537	N/A	---		0.0962	100	ug/L	96	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	SS-PFHxA-13C2	537	N/A	---		0.0506	50.0	ug/L	101	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.6695	675	ug/L	99	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0736	75.0	ug/L	98	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2216	225	ug/L	98	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1495	150	ug/L	100	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.2979	300	ug/L	99	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1492	150	ug/L	99	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 08:09	3043972
CCH	IS-PFOA-13C2	537	N/A	---		17.53	17527.9	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	IS-PFOS-13C4	537	N/A	---		14.87	14870.8	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	SS-PFDA-13C2	537	N/A	---		0.0966	100	ug/L	97	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	SS-PFHxA-13C2	537	N/A	---		0.0515	50.0	ug/L	103	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		1.1653	1125	ug/L	104	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1250	125	ug/L	100	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3835	375	ug/L	102	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluorononanoic acid (PFNA)	537	0.02	---		0.2470	250	ug/L	99	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.5095	500	ug/L	102	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
CCH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2506	250	ug/L	100	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 13:48	3043973
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-01/MW-1		0.29		ug/L	---	---	---	---	9.8	06/13/2014 07:40	06/14/2014 14:50	3039321
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-01/MW-1		2.9		ug/L	---	---	---	---	9.8	06/13/2014 07:40	06/14/2014 14:50	3039321
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-01/MW-1		0.38		ug/L	---	---	---	---	9.8	06/13/2014 07:40	06/14/2014 14:50	3039321
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-01/MW-1		4.4		ug/L	---	---	---	---	9.8	06/13/2014 07:40	06/14/2014 14:50	3039321
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-01/MW-1		0.88		ug/L	---	---	---	---	9.8	06/13/2014 07:40	06/14/2014 14:50	3039321
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-02/MW-3S		0.49		ug/L	---	---	---	---	10.3	06/13/2014 07:40	06/14/2014 15:21	3039322
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-02/MW-3S		2.2		ug/L	---	---	---	---	10.3	06/13/2014 07:40	06/14/2014 15:21	3039322
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-02/MW-3S		4.9		ug/L	---	---	---	---	10.3	06/13/2014 07:40	06/14/2014 15:21	3039322
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-02/MW-3S		0.53		ug/L	---	---	---	---	10.3	06/13/2014 07:40	06/14/2014 15:21	3039322
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-03/OW-8A		0.42		ug/L	---	---	---	---	9.4	06/13/2014 07:40	06/14/2014 15:52	3039323
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-03/OW-8A		2.9		ug/L	---	---	---	---	9.4	06/13/2014 07:40	06/14/2014 15:52	3039323

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorononanoic acid (PFNA)	537	0.02	1480217-03/OW-8A		0.56		ug/L	---	---	---	---	9.4	06/13/2014 07:40	06/14/2014 15:52	3039323
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-03/OW-8A		1.0		ug/L	---	---	---	---	9.4	06/13/2014 07:40	06/14/2014 15:52	3039323
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-03/OW-8A		8.6		ug/L	---	---	---	---	18.8	06/13/2014 07:40	06/14/2014 16:23	3039323
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-05/OW-2A		0.18		ug/L	---	---	---	---	5.15	06/13/2014 07:40	06/14/2014 16:54	3039325
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-05/OW-2A		0.88		ug/L	---	---	---	---	5.15	06/13/2014 07:40	06/14/2014 16:54	3039325
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-05/OW-2A		1.3		ug/L	---	---	---	---	5.15	06/13/2014 07:40	06/14/2014 16:54	3039325
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1480217-06/MW-1 (TP)		0.28		ug/L	---	---	---	---	10	06/13/2014 07:40	06/14/2014 17:25	3039326
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1480217-06/MW-1 (TP)		2.0		ug/L	---	---	---	---	10	06/13/2014 07:40	06/14/2014 17:25	3039326
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1480217-06/MW-1 (TP)		3.2		ug/L	---	---	---	---	10	06/13/2014 07:40	06/14/2014 17:25	3039326
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1480217-06/MW-1 (TP)		0.59		ug/L	---	---	---	---	10	06/13/2014 07:40	06/14/2014 17:25	3039326
CCM	IS-PFOA-13C2	537	N/A	---		17.51	17512.6	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	IS-PFOS-13C4	537	N/A	---		14.82	14817.9	ug/L	100	70 - 140	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	SS-PFDA-13C2	537	N/A	---		0.0965	100	ug/L	97	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	SS-PFHxA-13C2	537	N/A	---		0.0517	50.0	ug/L	103	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.6947	675	ug/L	103	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0720	75.0	ug/L	96	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2275	225	ug/L	101	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1490	150	ug/L	99	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.3127	300	ug/L	104	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996
CCM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1501	150	ug/L	100	70 - 130	---	---	1.0	06/05/2014 09:24	06/14/2014 18:26	3044996

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

Barnstable County Department of
Health and the Environment

Superior Court House
P. O. Box 427
Barnstable, MA 02630
(508) 375-6605;6612

CHAIN OF CUSTODY

CLIENT NAME: Cape Cod Commission

ADDRESS: Barnstable, MA

PROJECT NAME: MFTA **PROJECT NUMBER:**

PROJECT SITE: **SAMPLER:** Scott Michaud

DATE/ TIME:	SAMPLE NUMBER	SAMPLE LOCATION	NO. OF SAMPLES	ANALYSES REQUIRED	COMMENTS
6/3/14	1300	MW-13	3	524.2	
	1330	MW-10	3+2	524.2 + VPH	
	1345	MW-35	3+2	524.2 + VPH	
	1430	SBW-3	3+2	524.2 + VPH	
	1450	OW-3a	3+2	524.2 + VPH	
	1500	FS-1502	3+2	524.2 + VPH	

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
[illegible]	6/4/14 1405	[illegible]	[illegible] 1405

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

UL

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 2541093

Batch #

www.ul.com/water

CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO: Tom Cambareri, Cape Cod Commission	SAMPLER (Signature): Tom Cambareri	PWS ID #: NA	STATE (sample origin): MA	PROJECT NAME: BFTA	PO#:
BILL TO: Barnstable Co.	COMPLIANCE MONITORING: Yes: — No: X	POPULATION SERVED: NA	SOURCE WATER: Ground water		

	LAB Number (For UL use only)	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1		6-3-14	1:30		X	MW-1	PFOS/PFOA				3	GW	SW
2		6-3-14	2:10		X	MW-35	Method 537				3	GW	SW
3		6-3-14	3:10		X	OW-8A					3	GW	SW
4		6-3-14	3:30		X	FIELD BLANK					3	GW	SW
5		6-4-14	1030	X		OW-2a					3	GW	SW
6		6-4-14	1100	X		MW-1 (TP)					3	GW	SW
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	6.4.14	12:15 PM	[signature]	6/4/14	1215 PM
[signature] / Ed Hughes	6-4-14	1405	Ed Hughes	6-4-14	1405
		AM PM	RECEIVED FOR LABORATORY BY:		AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS (For UL use only)

CONDITIONS UPON RECEIPT (check one):

____ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt ____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	
RV* = Rush Verbal: (5 working days)	50%	
RW* = Rush Written: (5 working days)	75%	
IV* = Immediate Verbal: (3 working days)	100%	
IW* = Immediate Written: (3 working days)	125%	
SP* = Weekend, Holiday	CALL	
STAT* = Less than 48 hours	CALL	

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

* Please call, expedited service not available for all testing

06-LO-F0435 Issue 3.0 Effective Date: 2013-09-11

LABORATORY REPORT

This report contains 16 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client:	Barnstable County Dept. of Health and Environment	Report:	323901
Attn:	Gongmin Lei 3195 Main Street Barnstable, MA 02630	Priority:	Standard Written
		Status:	Amended
		PWS ID:	Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3088327	BFTA MW-12s	537	08/20/14 11:15	Client	08/21/14 09:15
3088328	BFTA MW-19i	537	08/20/14 11:40	Client	08/21/14 09:15
3088329	BFTA PC-3	537	08/20/14 12:15	Client	08/21/14 09:15
3088330	BFTA PC-1	537	08/20/14 12:30	Client	08/21/14 09:15
3088331	BFTA PC-14	537	08/20/14 13:45	Client	08/21/14 09:15
3088332	BFTA PC-17	537	08/20/14 14:15	Client	08/21/14 09:15
3088333	BFTA MW-35i	537	08/20/14 14:45	Client	08/21/14 09:15
3088334	Field Blank/Trip	537	08/20/14 14:50	Client	08/21/14 09:15

Report Summary

Note: This report was amended on 11/03/14 to report all Method 537 compounds and QC, at the request of the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature | Title | Date

Sampling Point: BFTA MW-12s PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 00:43	3088327
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**230**	ng/L	08/29/14 08:00	09/17/14 09:08	3088327
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**1400**	ng/L	08/29/14 08:00	09/17/14 09:08	3088327
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**70**	ng/L	08/29/14 08:00	08/30/14 00:43	3088327
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2500**	ng/L	08/29/14 08:00	09/17/14 09:08	3088327
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**400**	ng/L	08/29/14 08:00	09/17/14 09:08	3088327

Sampling Point: BFTA MW-19i PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 01:14	3088328
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	08/29/14 08:00	08/30/14 01:14	3088328
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	08/29/14 08:00	08/30/14 01:14	3088328
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 01:14	3088328
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40	ng/L	08/29/14 08:00	08/30/14 01:14	3088328
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 01:14	3088328

Sampling Point: BFTA PC-3 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**140**	ng/L	08/29/14 08:00	08/30/14 01:45	3088329
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**150**	ng/L	08/29/14 08:00	08/30/14 01:45	3088329
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**1200**	ng/L	08/29/14 08:00	09/17/14 09:39	3088329
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**70**	ng/L	08/29/14 08:00	08/30/14 01:45	3088329
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3100**	ng/L	08/29/14 08:00	09/17/14 09:39	3088329
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**180**	ng/L	08/29/14 08:00	08/30/14 01:45	3088329

Sampling Point: BFTA PC-1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 02:16	3088330
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**130**	ng/L	08/29/14 08:00	08/30/14 02:16	3088330
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**360**	ng/L	08/29/14 08:00	08/30/14 02:16	3088330
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**40**	ng/L	08/29/14 08:00	08/30/14 02:16	3088330
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**320**	ng/L	08/29/14 08:00	08/30/14 02:16	3088330
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**120**	ng/L	08/29/14 08:00	08/30/14 02:16	3088330

Sampling Point: BFTA PC-14 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 02:46	3088331
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**50**	ng/L	08/29/14 08:00	08/30/14 02:46	3088331
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**120**	ng/L	08/29/14 08:00	08/30/14 02:46	3088331
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**40**	ng/L	08/29/14 08:00	08/30/14 02:46	3088331
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**550**	ng/L	08/29/14 08:00	08/30/14 02:46	3088331
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**40**	ng/L	08/29/14 08:00	08/30/14 02:46	3088331

Sampling Point: BFTA PC-17 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 05:52	3088332
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**10**	ng/L	08/29/14 08:00	08/30/14 05:52	3088332
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**30**	ng/L	08/29/14 08:00	08/30/14 05:52	3088332
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 05:52	3088332
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**140**	ng/L	08/29/14 08:00	08/30/14 05:52	3088332
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 05:52	3088332

Client Name: Barnstable County Dept. of Health and Environment Report #: 323901

Sampling Point: BFTA MW-35i PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 06:23	3088333
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	08/29/14 08:00	08/30/14 06:23	3088333
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**40**	ng/L	08/29/14 08:00	08/30/14 06:23	3088333
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 06:23	3088333
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**60**	ng/L	08/29/14 08:00	08/30/14 06:23	3088333
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 06:23	3088333

Sampling Point: Field Blank/Trip PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	08/29/14 08:00	08/30/14 06:53	3088334
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	08/29/14 08:00	08/30/14 06:53	3088334
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	08/29/14 08:00	08/30/14 06:53	3088334
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 06:53	3088334
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40	ng/L	08/29/14 08:00	08/30/14 06:53	3088334
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	08/29/14 08:00	08/30/14 06:53	3088334

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

eurofins | Eaton Analytical

82876

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South Bend, IN 46617
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F: 1.574.233.8207

Order # 257981
Batch # 323901

www.eatonanalytical.com

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Tom Cambareri	Tom Cambareri		MA	BFTA	82876

BILL TO:	COMPLIANCE MONITORING Yes	No	POPULATION SERVED	SOURCE WATER
		X	NA	NA

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3088327 -01	8-20-14	11:15	X		BFTA MW-12s	CL- EPA 537 (PFOS)	(PFOA)		✓	3		
2	328 -02	8-20-14	11:40	X		BFTA MW-19i	" "			✓	3		
3	329 -03	8-20-14	12:15		X	BFTA PC-3	" "			✓	3		
4	330 -04	8-20-14	12:30		X	BFTA PC-1	" "			✓	3		
5	331 -05	8-20-14	1:45		X	BFTA PC-14	" "			✓	3		
6	332 -06	8-20-14	2:15		X	BFTA PC-17	" "			✓	3		
7	333 -07	8-20-14	2:45		X	BFTA MW-35i	" "			✓	3		
8	334 -08	8-20-14	2:50		X	FIELD BLANK/TRIP	" "			✓	3		
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	8-20-14	3:36 PM			AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED BY:(Signature)	DATE	TIME AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED FOR LABORATORY BY: K Dupuis	8-21-14	0915 AM / PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ___ Ambient 2.6 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Eurofins Eaton Analytical
Run Log

Run ID: **194987** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3093958		OS	CY	08/29/2014 19:03	082914M537a.mdb
LRB	3094263		RW	CY	08/29/2014 20:36	082914M537a.mdb
FBL	3094259		RW	CY	08/29/2014 21:06	082914M537a.mdb
FBM	3094260		RW	CY	08/29/2014 21:37	082914M537a.mdb
FS	3088327	BFTA MW-12s	DW	CY	08/30/2014 00:43	082914M537a.mdb
FS	3088328	BFTA MW-19i	DW	CY	08/30/2014 01:14	082914M537a.mdb
FS	3088329	BFTA PC-3	DW	CY	08/30/2014 01:45	082914M537a.mdb
FS	3088330	BFTA PC-1	DW	CY	08/30/2014 02:16	082914M537a.mdb
FS	3088331	BFTA PC-14	DW	CY	08/30/2014 02:46	082914M537a.mdb
CCM	3093959		OS	CY	08/30/2014 04:50	082914M537a.mdb
FS	3088332	BFTA PC-17	DW	CY	08/30/2014 05:52	082914M537a.mdb
FS	3088333	BFTA MW-35i	DW	CY	08/30/2014 06:23	082914M537a.mdb
FS	3088334	Field Blank/Trip	DW	CY	08/30/2014 06:53	082914M537a.mdb
CCH	3093960		OS	CY	08/30/2014 10:30	082914M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		17.06	17062.8	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	IS-PFOS-13C4	537	N/A	---		13.85	13845.3	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	SS-PFDA-13C2	537	N/A	---		0.0983	100	ug/L	98	70 - 130	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	SS-PFHxA-13C2	537	N/A	---		0.0495	50.0	ug/L	99	70 - 130	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0882	90.0	ug/L	98	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0098	10.0	ug/L	98	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0288	30.0	ug/L	96	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0201	20.0	ug/L	100	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0391	40.0	ug/L	98	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
CCL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0202	20.0	ug/L	101	50 - 150	---	---	1.0	08/26/2014 08:00	08/29/2014 19:03	3093958
LRB	IS-PFOA-13C2	537	N/A	---		17.31	17062.8	ug/L	101	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	IS-PFOS-13C4	537	N/A	---		13.53	13845.3	ug/L	98	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	SS-PFDA-13C2	537	N/A	---		0.0939	100	ug/L	94	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	SS-PFHxA-13C2	537	N/A	---		0.0472	50.0	ug/L	94	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---	<	0.09		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluoroheptanoic acid (PFHpA)	537	0.01	---	<	0.01		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---	<	0.03		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluorononanoic acid (PFNA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluorooctane sulfonate (PFOS)	537	0.04	---	<	0.04		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
LRB	Perfluorooctanoic acid (PFOA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	08/29/2014 08:00	08/29/2014 20:36	3094263
FBL	IS-PFOA-13C2	537	N/A	---		17.63	17062.8	ug/L	103	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	IS-PFOS-13C4	537	N/A	---		13.99	13845.3	ug/L	101	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	SS-PFDA-13C2	537	N/A	---		0.0920	100	ug/L	92	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	SS-PFHxA-13C2	537	N/A	---		0.0458	50.0	ug/L	92	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0839	90.0	ug/L	93	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0093	10.0	ug/L	93	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0273	30.0	ug/L	91	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0200	20.0	ug/L	100	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0373	40.0	ug/L	93	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0195	20.0	ug/L	97	50 - 150	---	---	1.0	08/29/2014 08:00	08/29/2014 21:06	3094259
FBM	IS-PFOA-13C2	537	N/A	---		17.62	17062.8	ug/L	103	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	IS-PFOS-13C4	537	N/A	---		14.19	13845.3	ug/L	102	70 - 140	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	SS-PFDA-13C2	537	N/A	---		0.0924	100	ug/L	92	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	SS-PFHxA-13C2	537	N/A	---		0.0468	50.0	ug/L	94	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.5732	675	ug/L	85	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0626	75.0	ug/L	83	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.1875	225	ug/L	83	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1313	150	ug/L	88	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.2543	300	ug/L	85	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260
FBM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1277	150	ug/L	85	70 - 130	---	---	1.0	08/29/2014 08:00	08/29/2014 21:37	3094260

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	BFTA MW-12s		17.16	16925	ug/L	101	70 - 140	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	IS-PFOS-13C4	537	N/A	BFTA MW-12s		12.20	13400	ug/L	91	70 - 140	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	SS-PFDA-13C2	537	N/A	BFTA MW-12s		0.0937	100	ug/L	98	70 - 130	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	SS-PFHxA-13C2	537	N/A	BFTA MW-12s		0.0392	50.0	ug/L	82	70 - 130	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA MW-12s	<	0.09		ug/L	---	---	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA MW-12s		0.07		ug/L	---	---	---	---	0.96	08/29/2014 08:00	08/30/2014 00:43	3088327
FS	IS-PFOA-13C2	537	N/A	BFTA MW-19i		17.45	17062.8	ug/L	102	70 - 140	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	IS-PFOS-13C4	537	N/A	BFTA MW-19i		13.77	13845.3	ug/L	99	70 - 140	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	SS-PFDA-13C2	537	N/A	BFTA MW-19i		0.0879	100	ug/L	93	70 - 130	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	SS-PFHxA-13C2	537	N/A	BFTA MW-19i		0.0432	50.0	ug/L	91	70 - 130	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA MW-19i	<	0.09		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA MW-19i	<	0.01		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA MW-19i	<	0.03		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA MW-19i	<	0.02		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA MW-19i	<	0.04		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA MW-19i	<	0.02		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 01:14	3088328
FS	IS-PFOA-13C2	537	N/A	BFTA PC-3		17.39	16925	ug/L	103	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	IS-PFOS-13C4	537	N/A	BFTA PC-3		12.07	13400	ug/L	90	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	SS-PFDA-13C2	537	N/A	BFTA PC-3		0.0877	100	ug/L	93	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	SS-PFHxA-13C2	537	N/A	BFTA PC-3		0.0439	50.0	ug/L	93	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA PC-3		0.14		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA PC-3		0.15		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA PC-3		0.07		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA PC-3		0.18		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 01:45	3088329
FS	IS-PFOA-13C2	537	N/A	BFTA PC-1		15.96	17062.8	ug/L	94	70 - 140	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	IS-PFOS-13C4	537	N/A	BFTA PC-1		13.35	13845.3	ug/L	96	70 - 140	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	SS-PFDA-13C2	537	N/A	BFTA PC-1		0.0891	100	ug/L	97	70 - 130	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	SS-PFHxA-13C2	537	N/A	BFTA PC-1		0.0424	50.0	ug/L	92	70 - 130	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA PC-1	<	0.09		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA PC-1		0.13		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA PC-1		0.36		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA PC-1		0.04		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA PC-1		0.32		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA PC-1		0.12		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 02:16	3088330
FS	IS-PFOA-13C2	537	N/A	BFTA PC-14		17.06	17062.8	ug/L	100	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	IS-PFOS-13C4	537	N/A	BFTA PC-14		13.37	13845.3	ug/L	97	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	SS-PFDA-13C2	537	N/A	BFTA PC-14		0.0899	100	ug/L	96	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	SS-PFHxA-13C2	537	N/A	BFTA PC-14		0.0442	50.0	ug/L	94	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA PC-14	<	0.09		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA PC-14		0.05		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA PC-14		0.12		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA PC-14		0.04		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA PC-14		0.55		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA PC-14		0.04		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 02:46	3088331
CCM	IS-PFOA-13C2	537	N/A	---		16.56	16564.1	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	IS-PFOS-13C4	537	N/A	---		13.05	13052.3	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	SS-PFDA-13C2	537	N/A	---		0.0965	100	ug/L	96	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	SS-PFHxA-13C2	537	N/A	---		0.0498	50.0	ug/L	100	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.6700	675	ug/L	99	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0707	75.0	ug/L	94	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2200	225	ug/L	98	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1434	150	ug/L	96	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.2897	300	ug/L	97	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
CCM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1424	150	ug/L	95	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 04:50	3093959
FS	IS-PFOA-13C2	537	N/A	BFTA PC-17		17.89	16564.1	ug/L	108	70 - 140	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	IS-PFOS-13C4	537	N/A	BFTA PC-17		14.05	13052.3	ug/L	108	70 - 140	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	SS-PFDA-13C2	537	N/A	BFTA PC-17		0.0836	100	ug/L	88	70 - 130	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	SS-PFHxA-13C2	537	N/A	BFTA PC-17		0.0436	50.0	ug/L	92	70 - 130	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA PC-17	<	0.09		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA PC-17		0.01		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA PC-17		0.03		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA PC-17	<	0.02		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA PC-17		0.14		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA PC-17	<	0.02		ug/L	---	---	---	---	0.95	08/29/2014 08:00	08/30/2014 05:52	3088332
FS	IS-PFOA-13C2	537	N/A	BFTA MW-35i		17.10	16564.1	ug/L	103	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	IS-PFOS-13C4	537	N/A	BFTA MW-35i		13.33	13052.3	ug/L	102	70 - 140	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	SS-PFDA-13C2	537	N/A	BFTA MW-35i		0.0876	100	ug/L	93	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	SS-PFHxA-13C2	537	N/A	BFTA MW-35i		0.0443	50.0	ug/L	94	70 - 130	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	BFTA MW-35i	<	0.09		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA MW-35i	<	0.01		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA MW-35i		0.04		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluorononanoic acid (PFNA)	537	0.02	BFTA MW-35i	<	0.02		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA MW-35i		0.06		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA MW-35i	<	0.02		ug/L	---	---	---	---	0.94	08/29/2014 08:00	08/30/2014 06:23	3088333
FS	IS-PFOA-13C2	537	N/A	Field Blank/Trip		18.53	16564.1	ug/L	112	70 - 140	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	IS-PFOS-13C4	537	N/A	Field Blank/Trip		14.66	13052.3	ug/L	112	70 - 140	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	SS-PFDA-13C2	537	N/A	Field Blank/Trip		0.0862	100	ug/L	94	70 - 130	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	SS-PFHxA-13C2	537	N/A	Field Blank/Trip		0.0437	50.0	ug/L	95	70 - 130	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	Field Blank/Trip	<	0.09		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	Field Blank/Trip	<	0.01		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	Field Blank/Trip	<	0.03		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	Perfluorononanoic acid (PFNA)	537	0.02	Field Blank/Trip	<	0.02		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	Field Blank/Trip	<	0.04		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
FS	Perfluorooctanoic acid (PFOA)	537	0.02	Field Blank/Trip	<	0.02		ug/L	---	---	---	---	0.92	08/29/2014 08:00	08/30/2014 06:53	3088334
CCH	IS-PFOA-13C2	537	N/A	---		15.15	15152.5	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	IS-PFOS-13C4	537	N/A	---		11.98	11978.5	ug/L	100	70 - 140	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	SS-PFDA-13C2	537	N/A	---		0.1041	100	ug/L	104	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	SS-PFHxA-13C2	537	N/A	---		0.0534	50.0	ug/L	107	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		1.1908	1125	ug/L	106	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1280	125	ug/L	102	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3993	375	ug/L	106	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluorononanoic acid (PFNA)	537	0.02	---		0.2566	250	ug/L	103	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.5273	500	ug/L	105	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960
CCH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2565	250	ug/L	103	70 - 130	---	---	1.0	08/26/2014 08:00	08/30/2014 10:30	3093960

Eurofins Eaton Analytical
Run Log

Run ID: **195018** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3103634		OS	CY	09/16/2014 20:15	091614M537a.mdb
CCL	3103634		OS	CY	09/16/2014 20:15	091614M537a.mdb
LRB	3103604		RW	CY	09/16/2014 22:19	091614M537a.mdb
LRB	3103604		RW	CY	09/16/2014 22:19	091614M537a.mdb
FBL	3103605		RW	CY	09/16/2014 22:50	091614M537a.mdb
FBL	3103605		RW	CY	09/16/2014 22:50	091614M537a.mdb
FBH	3103606		RW	CY	09/16/2014 23:21	091614M537a.mdb
FBH	3103606		RW	CY	09/16/2014 23:21	091614M537a.mdb
CCM	3103635		OS	CY	09/17/2014 05:31	091614M537a.mdb
CCM	3103635		OS	CY	09/17/2014 05:31	091614M537a.mdb
FS	3088327	BFTA MW-12s	DW	CY	09/17/2014 09:08	091614M537a.mdb
FS	3088329	BFTA PC-3	DW	CY	09/17/2014 09:39	091614M537a.mdb
CCH	3103636		OS	CY	09/17/2014 13:15	091614M537a.mdb
CCH	3103636		OS	CY	09/17/2014 13:15	091614M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0101	10.0	ug/L	101	50 - 150	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0298	30.0	ug/L	99	50 - 150	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0400	40.0	ug/L	100	50 - 150	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0207	20.0	ug/L	103	50 - 150	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	IS-PFOA-13C2	537	N/A	---		18081.10	18081.1	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	IS-PFOS-13C4	537	N/A	---		14966.00	14966	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	SS-PFDA-13C2	537	N/A	---		98.8363	100	ng/L	99	70 - 130	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
CCL	SS-PFHxA-13C2	537	N/A	---		50.5122	50.0	ng/L	101	70 - 130	---	---	1.0	09/16/2014 10:21	09/16/2014 20:15	3103634
LRB	Perfluoroheptanoic acid (PFHpA)	537	0.01	---	<	0.01		ug/L	---	---	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---	<	0.03		ug/L	---	---	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	Perfluorooctane sulfonate (PFOS)	537	0.04	---	<	0.04		ug/L	---	---	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	Perfluorooctanoic acid (PFOA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	IS-PFOA-13C2	537	N/A	---		19086.60	18081.1	ng/L	106	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	IS-PFOS-13C4	537	N/A	---		15551.40	14966	ng/L	104	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	SS-PFDA-13C2	537	N/A	---		95.0370	100	ng/L	95	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
LRB	SS-PFHxA-13C2	537	N/A	---		47.3692	50.0	ng/L	95	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 22:19	3103604
FBL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0101	10.0	ug/L	101	50 - 150	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0309	30.0	ug/L	103	50 - 150	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0407	40.0	ug/L	102	50 - 150	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0209	20.0	ug/L	105	50 - 150	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	IS-PFOA-13C2	537	N/A	---		18659.70	18081.1	ng/L	103	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	IS-PFOS-13C4	537	N/A	---		15377.90	14966	ng/L	103	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	SS-PFDA-13C2	537	N/A	---		94.7066	100	ng/L	95	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBL	SS-PFHxA-13C2	537	N/A	---		48.2807	50.0	ng/L	97	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 22:50	3103605
FBH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1186	125	ug/L	95	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3679	375	ug/L	98	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.4840	500	ug/L	97	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2413	250	ug/L	97	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	IS-PFOA-13C2	537	N/A	---		18366.40	18081.1	ng/L	102	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	IS-PFOS-13C4	537	N/A	---		15035.80	14966	ng/L	100	70 - 140	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	SS-PFDA-13C2	537	N/A	---		100.4660	100	ng/L	100	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
FBH	SS-PFHxA-13C2	537	N/A	---		50.0848	50.0	ng/L	100	70 - 130	---	---	1.0	09/16/2014 07:45	09/16/2014 23:21	3103606
CCM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0754	75.0	ug/L	101	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2348	225	ug/L	104	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.3022	300	ug/L	101	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1525	150	ug/L	102	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	IS-PFOA-13C2	537	N/A	---		17874.60	17874.6	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	IS-PFOS-13C4	537	N/A	---		14652.90	14652.9	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	SS-PFDA-13C2	537	N/A	---		99.8258	100	ng/L	100	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635
CCM	SS-PFHxA-13C2	537	N/A	---		51.4361	50.0	ng/L	103	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 05:31	3103635

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	BFTA MW-12s		0.23		ug/L	---	---	---	---	9.6	08/29/2014 08:00	09/17/2014 09:08	3088327
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA MW-12s		1.4		ug/L	---	---	---	---	9.6	08/29/2014 08:00	09/17/2014 09:08	3088327
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA MW-12s		2.5		ug/L	---	---	---	---	9.6	08/29/2014 08:00	09/17/2014 09:08	3088327
FS	Perfluorooctanoic acid (PFOA)	537	0.02	BFTA MW-12s		0.40		ug/L	---	---	---	---	9.6	08/29/2014 08:00	09/17/2014 09:08	3088327
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	BFTA PC-3		1.2		ug/L	---	---	---	---	9.4	08/29/2014 08:00	09/17/2014 09:39	3088329
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	BFTA PC-3		3.1		ug/L	---	---	---	---	9.4	08/29/2014 08:00	09/17/2014 09:39	3088329
CCH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1238	125	ug/L	99	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3821	375	ug/L	102	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.5000	500	ug/L	100	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2489	250	ug/L	100	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	IS-PFOA-13C2	537	N/A	---		16933.70	16933.7	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	IS-PFOS-13C4	537	N/A	---		14248.00	14248	ng/L	100	70 - 140	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	SS-PFDA-13C2	537	N/A	---		99.9541	100	ng/L	100	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636
CCH	SS-PFHxA-13C2	537	N/A	---		53.6834	50.0	ng/L	107	70 - 130	---	---	1.0	09/16/2014 10:21	09/17/2014 13:15	3103636

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

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LABORATORY REPORT

This report contains 11 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Barnstable County Dept. of Health and Environment

Attn: Gongmin Lei
3195 Main Street
Barnstable, MA 02630

Report: 332026
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3167234	1585221-01 MD-2	537	01/09/15 10:30	Client	01/12/15 10:00
3167235	1585221-02 MD-3	537	01/09/15 10:50	Client	01/12/15 10:00
3167236	1585221-03 MD-1	537	01/09/15 11:10	Client	01/12/15 10:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 223-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Jim Van Fleit ASM 01/16/2015

Authorized Signature Title Date

Client Name: Barnstable County Dept. of Health and Environment
Report #: 332026

Client Name: Barnstable County Dept. of Health and Environment   Report #: 332026

Sampling Point: 1585221-01 MD-2   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	01/13/15 08:00	01/14/15 03:58	3167234
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**60**	ng/L	01/13/15 08:00	01/14/15 03:58	3167234
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**410**	ng/L	01/13/15 08:00	01/14/15 03:58	3167234
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**40**	ng/L	01/13/15 08:00	01/14/15 03:58	3167234
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**960**	ng/L	01/13/15 08:00	01/14/15 09:07	3167234
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**80**	ng/L	01/13/15 08:00	01/14/15 03:58	3167234

Sampling Point: 1585221-02 MD-3   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	01/13/15 08:00	01/14/15 04:29	3167235
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	01/13/15 08:00	01/14/15 04:29	3167235
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	01/13/15 08:00	01/14/15 04:29	3167235
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	01/13/15 08:00	01/14/15 04:29	3167235
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**50**	ng/L	01/13/15 08:00	01/14/15 04:29	3167235
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	01/13/15 08:00	01/14/15 04:29	3167235

Sampling Point: 1585221-03 MD-1   PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	01/13/15 08:00	01/14/15 05:00	3167236
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	01/13/15 08:00	01/14/15 05:00	3167236
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**40**	ng/L	01/13/15 08:00	01/14/15 05:00	3167236
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**20**	ng/L	01/13/15 08:00	01/14/15 05:00	3167236
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**330**	ng/L	01/13/15 08:00	01/14/15 05:00	3167236
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	01/13/15 08:00	01/14/15 05:00	3167236

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

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South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 263641
Batch # 332026

www.eatonanalytical.com

Shaded area for EEA use only

CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Barnstable County Lab P O Box 427 Barnstable, MA 02630	Scott M			85221	

BILL TO: the same

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3167234 1/9/15	1/9/15	10:30	✓		MD-2 1585221-01	EPA 537 (PFOA/PFOS)*	Six Compounds		✓	2	GW	SW
2	235	1/9/15	10:50	✓		MD-3 02	EPA 537 (PFOA/PFOS)*	↓		✓	2	↓	↓
3	236	1/9/15	11:10	✓		MD-1 03	EPA 537 (PFOA/PFOS)*	↓		✓	2	↓	↓
4						per bottles SS 1-12-15							
5													
6													
7							Cl-A for all bottles	SS 1-12-15					
8													
9													
10							Cross Offs on COC by Client						
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
E A Hughes	1355 1-9-15	1355 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	1-12-15	1000 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
Call 508-375-6606 if any questions.
* See the attached for a list of compounds.

CONDITIONS UPON RECEIPT (check one):
X Iced: Wet/Blue ____ Ambient 2.4 °C Upon Receipt____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	**IV*** = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	**IW*** =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	**SP*** = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

LAB RESULTS

STATUS: **Pending**

Asbestos | Test Run | QA/QC | Samples | Metals | Worksheets | Reports | By Test Type | Edits | View Grapl

PARAMETERS

Water - Drinkin

	Raw Result	EPA Qual'r	Units	MDL	RL	MCL	Tested
Perfluorobutanesulfonic Acid (PFBS)			ng/L	**90**	**90**	**1**	
Perfluoroheptanoic Acid (PFHpA)			ng/L	**10**	**10**	**1**	
Perfluorohexanesulfonic Acid (PFHxS)			ng/L	**30**	**30**	**1**	
Perfluorononanoic Acid (PFNA)			ng/L	**20**	**20**	**1**	
Perfluorooctanesulfonic Acid (PFOS)			ng/L	**40**	**40**	**1**	
Perfluorooctanoic Acid (PFOA)			ng/L	**20**	**20**	**1**	

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Run Log

Run ID: **198636** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3168067		OS	CY	01/13/2015 21:17	011315M537a.mdb
LRB	3168049		RW	CY	01/13/2015 22:50	011315M537a.mdb
FBL	3168050		RW	CY	01/13/2015 23:20	011315M537a.mdb
FBM	3168051		RW	CY	01/13/2015 23:51	011315M537a.mdb
FS	3167234	1585221-01 MD-2	GW	CY	01/14/2015 03:58	011315M537a.mdb
FS	3167235	1585221-02 MD-3	GW	CY	01/14/2015 04:29	011315M537a.mdb
FS	3167236	1585221-03 MD-1	GW	CY	01/14/2015 05:00	011315M537a.mdb
CCM	3168068		OS	CY	01/14/2015 06:02	011315M537a.mdb
FS	3167234	1585221-01 MD-2	GW	CY	01/14/2015 09:07	011315M537a.mdb
CCH	3168069		OS	CY	01/14/2015 11:11	011315M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		6.95	6948.98	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	IS-PFOS-13C4	537	N/A	---		4.99	4990.77	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	SS-PFDA-13C2	537	N/A	---		0.0961	100	ug/L	96	70 - 130	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	SS-PFHxA-13C2	537	N/A	---		0.0502	50.0	ug/L	100	70 - 130	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0921	90.0	ug/L	102	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0098	10.0	ug/L	98	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0306	30.0	ug/L	102	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0204	20.0	ug/L	102	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0415	40.0	ug/L	104	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
CCL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0200	20.0	ug/L	100	50 - 150	---	---	1.0	01/13/2015 14:00	01/13/2015 21:17	3168067
LRB	IS-PFOA-13C2	537	N/A	---		7.09	6948.98	ug/L	102	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	IS-PFOS-13C4	537	N/A	---		5.12	4990.77	ug/L	102	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	SS-PFDA-13C2	537	N/A	---		0.0944	100	ug/L	94	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	SS-PFHxA-13C2	537	N/A	---		0.0500	50.0	ug/L	100	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---	<	0.09		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluoroheptanoic acid (PFHpA)	537	0.01	---	<	0.01		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---	<	0.03		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluorononanoic acid (PFNA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluorooctane sulfonate (PFOS)	537	0.04	---	<	0.04		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
LRB	Perfluorooctanoic acid (PFOA)	537	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	01/13/2015 08:00	01/13/2015 22:50	3168049
FBL	IS-PFOA-13C2	537	N/A	---		6.89	6948.98	ug/L	99	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	IS-PFOS-13C4	537	N/A	---		5.12	4990.77	ug/L	103	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	SS-PFDA-13C2	537	N/A	---		0.0927	100	ug/L	93	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	SS-PFHxA-13C2	537	N/A	---		0.0491	50.0	ug/L	98	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.0891	90.0	ug/L	99	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0098	10.0	ug/L	98	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.0293	30.0	ug/L	98	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluorononanoic acid (PFNA)	537	0.02	---		0.0194	20.0	ug/L	97	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.0390	40.0	ug/L	97	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBL	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.0203	20.0	ug/L	101	50 - 150	---	---	1.0	01/13/2015 08:00	01/13/2015 23:20	3168050
FBM	IS-PFOA-13C2	537	N/A	---		6.73	6948.98	ug/L	97	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	IS-PFOS-13C4	537	N/A	---		5.03	4990.77	ug/L	101	70 - 140	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	SS-PFDA-13C2	537	N/A	---		0.0954	100	ug/L	95	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	SS-PFHxA-13C2	537	N/A	---		0.0501	50.0	ug/L	100	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.6498	675	ug/L	96	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0692	75.0	ug/L	92	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2136	225	ug/L	95	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1423	150	ug/L	95	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.2829	300	ug/L	94	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051
FBM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1426	150	ug/L	95	70 - 130	---	---	1.0	01/13/2015 08:00	01/13/2015 23:51	3168051

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	1585221-01 MD-2		6.81	6630.22	ug/L	103	70 - 140	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	IS-PFOA-13C2	537	N/A	1585221-01 MD-2		6.81	6630.22	ug/L	103	70 - 140	---	---	9.4	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	IS-PFOS-13C4	537	N/A	1585221-01 MD-2		5.16	4970.9	ug/L	104	70 - 140	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	IS-PFOS-13C4	537	N/A	1585221-01 MD-2		5.16	4970.9	ug/L	104	70 - 140	---	---	9.4	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	SS-PFDA-13C2	537	N/A	1585221-01 MD-2		0.0869	100	ug/L	92	70 - 130	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	SS-PFHxA-13C2	537	N/A	1585221-01 MD-2		0.0448	50.0	ug/L	95	70 - 130	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1585221-01 MD-2	<	0.09		ug/L	---	---	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1585221-01 MD-2		0.06		ug/L	---	---	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1585221-01 MD-2		0.41		ug/L	---	---	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	Perfluorononanoic acid (PFNA)	537	0.02	1585221-01 MD-2		0.04		ug/L	---	---	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1585221-01 MD-2		0.08		ug/L	---	---	---	---	0.94	01/13/2015 08:00	01/14/2015 03:58	3167234
FS	IS-PFOA-13C2	537	N/A	1585221-02 MD-3		6.95	6948.98	ug/L	100	70 - 140	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	IS-PFOS-13C4	537	N/A	1585221-02 MD-3		5.03	4990.77	ug/L	101	70 - 140	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	SS-PFDA-13C2	537	N/A	1585221-02 MD-3		0.0895	100	ug/L	92	70 - 130	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	SS-PFHxA-13C2	537	N/A	1585221-02 MD-3		0.0472	50.0	ug/L	97	70 - 130	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1585221-02 MD-3	<	0.09		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1585221-02 MD-3	<	0.01		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1585221-02 MD-3	<	0.03		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluorononanoic acid (PFNA)	537	0.02	1585221-02 MD-3	<	0.02		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1585221-02 MD-3		0.05		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1585221-02 MD-3	<	0.02		ug/L	---	---	---	---	0.97	01/13/2015 08:00	01/14/2015 04:29	3167235
FS	IS-PFOA-13C2	537	N/A	1585221-03 MD-1		7.06	6948.98	ug/L	102	70 - 140	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	IS-PFOS-13C4	537	N/A	1585221-03 MD-1		5.22	4990.77	ug/L	105	70 - 140	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	SS-PFDA-13C2	537	N/A	1585221-03 MD-1		0.0867	100	ug/L	90	70 - 130	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	SS-PFHxA-13C2	537	N/A	1585221-03 MD-1		0.0468	50.0	ug/L	98	70 - 130	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluorobutanesulfonic acid (PFBS)	537	0.09	1585221-03 MD-1	<	0.09		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluoroheptanoic acid (PFHpA)	537	0.01	1585221-03 MD-1		0.02		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	1585221-03 MD-1		0.04		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluorononanoic acid (PFNA)	537	0.02	1585221-03 MD-1		0.02		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1585221-03 MD-1		0.33		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
FS	Perfluorooctanoic acid (PFOA)	537	0.02	1585221-03 MD-1	<	0.02		ug/L	---	---	---	---	0.96	01/13/2015 08:00	01/14/2015 05:00	3167236
CCM	IS-PFOA-13C2	537	N/A	---		6.63	6630.22	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	IS-PFOS-13C4	537	N/A	---		4.97	4970.9	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	SS-PFDA-13C2	537	N/A	---		0.0989	100	ug/L	99	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	SS-PFHxA-13C2	537	N/A	---		0.0525	50.0	ug/L	105	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		0.7118	675	ug/L	105	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.0731	75.0	ug/L	97	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.2256	225	ug/L	100	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluorononanoic acid (PFNA)	537	0.02	---		0.1497	150	ug/L	100	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.3075	300	ug/L	102	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068
CCM	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.1518	150	ug/L	101	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 06:02	3168068

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorooctane sulfonate (PFOS)	537	0.04	1585221-01 MD-2		0.96		ug/L	---	---	---	---	9.4	01/13/2015 08:00	01/14/2015 09:07	3167234
CCH	IS-PFOA-13C2	537	N/A	---		5.65	5645.64	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	IS-PFOS-13C4	537	N/A	---		4.41	4409.94	ug/L	100	70 - 140	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	SS-PFDA-13C2	537	N/A	---		0.0959	100	ug/L	96	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	SS-PFHxA-13C2	537	N/A	---		0.0514	50.0	ug/L	103	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluorobutanesulfonic acid (PFBS)	537	0.09	---		1.1490	1125	ug/L	102	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluoroheptanoic acid (PFHpA)	537	0.01	---		0.1216	125	ug/L	97	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	0.03	---		0.3738	375	ug/L	100	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluorononanoic acid (PFNA)	537	0.02	---		0.2454	250	ug/L	98	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluorooctane sulfonate (PFOS)	537	0.04	---		0.4898	500	ug/L	98	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069
CCH	Perfluorooctanoic acid (PFOA)	537	0.02	---		0.2517	250	ug/L	101	70 - 130	---	---	1.0	01/13/2015 14:00	01/14/2015 11:11	3168069

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

Town of Barnstable 85883-01-03

eurofins | Eaton Analytical

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # ______
Batch # ______

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CHAIN OF COUSTODY RECORD

Page ____ of ____

REF / BILL
Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature): Tom Cambareri

COMPLIANCE MONITORING	Yes	No
		X

PWS ID #	STATE (sample origin)	POPULATION SERVED	SOURCE WATER	PROJECT NAME	PO#

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1		3.19.15	215			AIRPORT	522 Low				2		
2		3.19.15	240			MZ	522 Low				2		
3		3.19.15	252			M7	522 Low				2		
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME (AM / PM)	RECEIVED BY:(Signature)	DATE	TIME (AM / PM)
Tom Cambareri	3.19.15	400	E L Hughes	3-19-15	1600
RELINQUISHED BY:(Signature)	DATE	TIME (AM / PM)	RECEIVED BY:(Signature)	DATE	TIME (AM / PM)
RELINQUISHED BY:(Signature)	DATE	TIME (AM / PM)	RECEIVED FOR LABORATORY BY:	DATE	TIME (AM / PM)

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
1,4-Dioxane
Please Return our Cooler thanks

CONDITIONS UPON RECEIPT (check one):
____ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt____ N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

all to eurofins Fed Ex 3-19-15 overnite

County CCCO 85884

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Batch # ____

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CHAIN OF CUSTODY RECORD

Page ____ of ____

RF/BI
Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature): Tom Cambareri

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#

COMPLIANCE MONITORING: Yes ___ No ___ | POPULATION SERVED | SOURCE WATER

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1		3.19.15	2:10			AIRPORT	537				3		
2		3.19.15	2:35			M2	537				3		
3		3.19.15	245			M1	537				3		
4		3.19.15	335			DC-24	537				3		
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
Tom Cambareri	3.19.15	4:00 AM/PM	Ed Hughes	3-19-15	1600 AM/PM
RELINQUISHED BY: (Signature)	DATE	TIME AM/PM	RECEIVED BY: (Signature)	DATE	TIME AM/PM
RELINQUISHED BY: (Signature)	DATE	TIME AM/PM	RECEIVED FOR LABORATORY BY:	DATE	TIME AM/PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
NOTE: please Return our Cooler Thanks

CONDITIONS UPON RECEIPT (check one):
___ Iced: Wet/Blue ___ Ambient ___ °C Upon Receipt ___ N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

all to eurofins FedEX 3-19-15 overnite

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client:	Barnstable County Department of Health and Environm	Report:	336805
Attn:	Gongmin Lei 3195 Main Street Barnstable, MA 02630	Priority:	Standard Written
		Status:	Final
		PWS ID:	Not Supplied
Copies to:	None		

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3210308	1585883-01/Airport	522	03/19/15 14:15	Client	03/20/15 09:00
3210309	1585883-02/M2	522	03/19/15 14:40	Client	03/20/15 09:00
3210310	1585883-03/M1	522	03/19/15 14:52	Client	03/20/15 09:00

Report Summary

Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Jim Van Fleit ASM

04/03/2015

Authorized Signature Title Date

Client Name: Barnstable County Department of Health and Environme
Report #: 336805

Client Name: Barnstable County Department of Health and Environment   Report #: 336805

Sampling Point: 1585883-01/Airport   PWS ID: Not Supplied

Volatile Organic Chemicals									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
123-91-1	1,4-Dioxane	522	---	0.07	< 0.07	ug/L	03/27/15 11:14	03/28/15 02:26	3210308

Sampling Point: 1585883-02/M2   PWS ID: Not Supplied

Volatile Organic Chemicals									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
123-91-1	1,4-Dioxane	522	---	0.07	< 0.07	ug/L	03/27/15 11:14	03/28/15 02:56	3210309

Sampling Point: 1585883-03/M1   PWS ID: Not Supplied

Volatile Organic Chemicals									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
123-91-1	1,4-Dioxane	522	---	0.07	< 0.07	ug/L	03/27/15 11:14	03/28/15 03:26	3210310

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

Town of Barnstable

85883-01-03

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110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # ~~263644~~ 251511
Batch # 336805

www.eatonanalytical.com

CHAIN OF CUSTODY RECORD

Page ____ of ____

Shaded area for EEA use only

REF / BILL:
Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Tom Cambareri				

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
		X		

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	pH=	SAMPLE REMARKS Cl=	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3210 308	3.19.15	215			AIRPORT 1585883-01	522 Low	<4	A			2		
2	309	3.19.15	240			MZ -02	522 Low	↓	↓			2		
3	310	3.19.15	252			MI -03	522 Low	↓	↓			2		
4														
5														
6														
7														
8														
9														
10														
11														
12							Client Provided Sample Container							
13														
14														

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	3-19-15	400	E L Hughes	3-19-15	1600
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
			dmartes	3/20/15	0900

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
1,4 - Dioxane
Please Return our cooler thanks

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt 1.6 N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	E87775
Arizona	AZ0432	Neveda	IN000352015-1
Arkansas	IN035	New Hampshire*	2124
California	2920	New Mexico	IN00035
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida (Primary AB)*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon*	IN200001
Idaho	IN00035/E87775	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	200001	Rhode Island	LAO00241
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-14-7
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA150003	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	00127
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Barnstable County Department of Health and Environm

Attn: Gongmin Lei
3195 Main Street
Barnstable, MA 02630

Copies to: None

Report: 336774
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3210142	1585884-01/Airport	537	03/19/15 14:10	Client	03/20/15 09:00
3210143	1585884-02/M2	537	03/19/15 14:35	Client	03/20/15 09:00
3210144	1585884-03/M1	537	03/19/15 14:45	Client	03/20/15 09:00
3210145	1585884-04/DC-24	537	03/19/15 15:35	Client	03/20/15 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Jim Van Fleit ASM

04/10/2015

Authorized Signature Title Date

Client Name: Barnstable County Department of Health and Environme
Report #: 336774

Sampling Point: 1585884-01/Airport PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	03/30/15 07:30	04/03/15 21:10	3210142
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10	ng/L	03/30/15 07:30	04/03/15 21:10	3210142
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	03/30/15 07:30	04/03/15 21:10	3210142
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	03/30/15 07:30	04/03/15 21:10	3210142
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40	ng/L	03/30/15 07:30	04/03/15 21:10	3210142
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	03/30/15 07:30	04/03/15 21:10	3210142

Sampling Point: 1585884-02/M2 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	03/30/15 07:30	04/03/15 21:41	3210143
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**90**	ng/L	03/30/15 07:30	04/03/15 21:41	3210143
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**570**	ng/L	03/30/15 07:30	04/06/15 20:34	3210143
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**60**	ng/L	03/30/15 07:30	04/03/15 21:41	3210143
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1600**	ng/L	03/30/15 07:30	04/06/15 20:34	3210143
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**130**	ng/L	03/30/15 07:30	04/03/15 21:41	3210143

Sampling Point: 1585884-03/M1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	03/30/15 07:30	04/03/15 22:12	3210144
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**30**	ng/L	03/30/15 07:30	04/03/15 22:12	3210144
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**40**	ng/L	03/30/15 07:30	04/03/15 22:12	3210144
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	03/30/15 07:30	04/03/15 22:12	3210144
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**280**	ng/L	03/30/15 07:30	04/03/15 22:12	3210144
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	03/30/15 07:30	04/03/15 22:12	3210144

Client Name: Barnstable County Department of Health and Environment Report #: 336774

Sampling Point: 1585884-04/DC-24 PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	03/30/15 07:30	04/03/15 22:43	3210145
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**50**	ng/L	03/30/15 07:30	04/03/15 22:43	3210145
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**130**	ng/L	03/30/15 07:30	04/03/15 22:43	3210145
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**50**	ng/L	03/30/15 07:30	04/03/15 22:43	3210145
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**520**	ng/L	03/30/15 07:30	04/03/15 22:43	3210145
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**40**	ng/L	03/30/15 07:30	04/03/15 22:43	3210145

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

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Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

County "CCCO 85884

eurofins | Eaton Analytical

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South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 263641
Batch # 336774

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CHAIN OF COUSTODY RECORD

Page ____ of ____

Shaded area for EEA use only

Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature): Tom Cambareri

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME Cl=	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3210142	3.19.15	2:10			AIRPORT 15858841	537				3		
2	143	3.19.15	2:35			M2 -03	537				3		
3	144	3.19.15	245			MI -03	537				3		
4	145	3.19.15	335			DC-24 -04	537				3		
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	3-19-15	4:00	Ed Hughes	3-19-15	1600
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
			Amartis	3/20/15	0900

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
NOTE: Please Return our Cooler Thanks

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt 1.6 N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
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* Please call, expedited service not available for all testing

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06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

Eurofins Eaton Analytical
Run Log

Run ID: **201499** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3215287		OS	CY	04/03/2015 17:33	040315M537a.mdb
LRB	3215266		RW	CY	04/03/2015 19:06	040315M537a.mdb
FBL	3215269		RW	CY	04/03/2015 19:37	040315M537a.mdb
FBH	3215270		RW	CY	04/03/2015 20:08	040315M537a.mdb
FS	3210142	1585884-01/Airport	DW	CY	04/03/2015 21:10	040315M537a.mdb
FS	3210143	1585884-02/M2	DW	CY	04/03/2015 21:41	040315M537a.mdb
FS	3210144	1585884-03/M1	DW	CY	04/03/2015 22:12	040315M537a.mdb
FS	3210145	1585884-04/DC-24	DW	CY	04/03/2015 22:43	040315M537a.mdb
CCM	3215288		OS	CY	04/04/2015 02:19	040315M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		2481.80	2481.8	ng/L	100	70 - 140	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	IS-PFOS-13C4	537	N/A	---		2449.48	2449.48	ng/L	100	70 - 140	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	SS-PFDA-13C2	537	N/A	---		102.8170	100	ng/L	103	70 - 130	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	SS-PFHxA-13C2	537	N/A	---		51.1228	50.0	ng/L	102	70 - 130	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		92.1765	90.0	ng/L	102	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.9357	10.0	ng/L	109	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		31.1173	30.0	ng/L	104	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluorononanoic acid (PFNA)	537	20	---		20.4500	20.0	ng/L	102	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.9199	40.0	ng/L	102	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		20.3835	20.0	ng/L	102	50 - 150	---	---	1.0	03/30/2015 13:15	04/03/2015 17:33	3215287
LRB	IS-PFOA-13C2	537	N/A	---		2439.76	2481.8	ng/L	98	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	IS-PFOS-13C4	537	N/A	---		2467.82	2449.48	ng/L	101	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	SS-PFDA-13C2	537	N/A	---		101.6380	100	ng/L	102	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	SS-PFHxA-13C2	537	N/A	---		51.5363	50.0	ng/L	103	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluorobutanesulfonic acid (PFBS)	537	90	---	<	90		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluoroheptanoic acid (PFHpA)	537	10	---	<	10		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluorononanoic acid (PFNA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
LRB	Perfluorooctanoic acid (PFOA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	03/30/2015 07:30	04/03/2015 19:06	3215266
FBL	IS-PFOA-13C2	537	N/A	---		2471.02	2481.8	ng/L	100	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	IS-PFOS-13C4	537	N/A	---		2523.13	2449.48	ng/L	103	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	SS-PFDA-13C2	537	N/A	---		96.5833	100	ng/L	97	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	SS-PFHxA-13C2	537	N/A	---		48.1133	50.0	ng/L	96	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		95.5037	90.0	ng/L	106	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.2209	10.0	ng/L	102	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		31.4389	30.0	ng/L	105	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluorononanoic acid (PFNA)	537	20	---		21.3438	20.0	ng/L	107	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.5743	40.0	ng/L	101	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBL	Perfluorooctanoic acid (PFOA)	537	20	---		20.7508	20.0	ng/L	104	50 - 150	---	---	1.0	03/30/2015 07:30	04/03/2015 19:37	3215269
FBH	IS-PFOA-13C2	537	N/A	---		2481.22	2481.8	ng/L	100	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	IS-PFOS-13C4	537	N/A	---		2593.91	2449.48	ng/L	106	70 - 140	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	SS-PFDA-13C2	537	N/A	---		94.8377	100	ng/L	95	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	SS-PFHxA-13C2	537	N/A	---		48.6352	50.0	ng/L	97	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		1109.6100	1125	ng/L	99	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluoroheptanoic acid (PFHpA)	537	10	---		121.0020	125	ng/L	97	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		367.1540	375	ng/L	98	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluorononanoic acid (PFNA)	537	20	---		250.0020	250	ng/L	100	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluorooctane sulfonate (PFOS)	537	40	---		476.4900	500	ng/L	95	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270
FBH	Perfluorooctanoic acid (PFOA)	537	20	---		241.6220	250	ng/L	97	70 - 130	---	---	1.0	03/30/2015 07:30	04/03/2015 20:08	3215270

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	1585884-01/Airport		2592.95	2481.8	ng/L	104	70 - 140	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	IS-PFOS-13C4	537	N/A	1585884-01/Airport		2702.76	2449.48	ng/L	110	70 - 140	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	SS-PFDA-13C2	537	N/A	1585884-01/Airport		93.7603	100	ng/L	93	70 - 130	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	SS-PFHxA-13C2	537	N/A	1585884-01/Airport		50.6340	50.0	ng/L	100	70 - 130	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	1585884-01/Airport	<	90		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluoroheptanoic acid (PFHpA)	537	10	1585884-01/Airport	<	10		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	1585884-01/Airport	<	30		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluorononanoic acid (PFNA)	537	20	1585884-01/Airport	<	20		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluorooctane sulfonate (PFOS)	537	40	1585884-01/Airport	<	40		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	Perfluorooctanoic acid (PFOA)	537	20	1585884-01/Airport	<	20		ng/L	---	---	---	---	1.01	03/30/2015 07:30	04/03/2015 21:10	3210142
FS	IS-PFOA-13C2	537	N/A	1585884-02/M2		2627.24	2481.8	ng/L	106	70 - 140	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	IS-PFOS-13C4	537	N/A	1585884-02/M2		2577.10	2449.48	ng/L	105	70 - 140	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	SS-PFDA-13C2	537	N/A	1585884-02/M2		91.0440	100	ng/L	93	70 - 130	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	SS-PFHxA-13C2	537	N/A	1585884-02/M2		48.4959	50.0	ng/L	99	70 - 130	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	1585884-02/M2	<	90		ng/L	---	---	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	Perfluoroheptanoic acid (PFHpA)	537	10	1585884-02/M2		90		ng/L	---	---	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	Perfluorononanoic acid (PFNA)	537	20	1585884-02/M2		60		ng/L	---	---	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	Perfluorooctanoic acid (PFOA)	537	20	1585884-02/M2		130		ng/L	---	---	---	---	0.98	03/30/2015 07:30	04/03/2015 21:41	3210143
FS	IS-PFOA-13C2	537	N/A	1585884-03/M1		2666.02	2481.8	ng/L	107	70 - 140	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	IS-PFOS-13C4	537	N/A	1585884-03/M1		2693.42	2449.48	ng/L	110	70 - 140	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	SS-PFDA-13C2	537	N/A	1585884-03/M1		86.2741	100	ng/L	90	70 - 130	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	SS-PFHxA-13C2	537	N/A	1585884-03/M1		45.7273	50.0	ng/L	95	70 - 130	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	1585884-03/M1	<	90		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluoroheptanoic acid (PFHpA)	537	10	1585884-03/M1		30		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	1585884-03/M1		40		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluorononanoic acid (PFNA)	537	20	1585884-03/M1	<	20		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluorooctane sulfonate (PFOS)	537	40	1585884-03/M1		280		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	Perfluorooctanoic acid (PFOA)	537	20	1585884-03/M1	<	20		ng/L	---	---	---	---	0.96	03/30/2015 07:30	04/03/2015 22:12	3210144
FS	IS-PFOA-13C2	537	N/A	1585884-04/DC-24		2529.10	2481.8	ng/L	102	70 - 140	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	IS-PFOS-13C4	537	N/A	1585884-04/DC-24		2590.03	2449.48	ng/L	106	70 - 140	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	SS-PFDA-13C2	537	N/A	1585884-04/DC-24		85.7832	100	ng/L	94	70 - 130	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	SS-PFHxA-13C2	537	N/A	1585884-04/DC-24		45.6259	50.0	ng/L	100	70 - 130	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	1585884-04/DC-24	<	90		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluoroheptanoic acid (PFHpA)	537	10	1585884-04/DC-24		50		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	1585884-04/DC-24		130		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluorononanoic acid (PFNA)	537	20	1585884-04/DC-24		50		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluorooctane sulfonate (PFOS)	537	40	1585884-04/DC-24		520		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
FS	Perfluorooctanoic acid (PFOA)	537	20	1585884-04/DC-24		40		ng/L	---	---	---	---	0.91	03/30/2015 07:30	04/03/2015 22:43	3210145
CCM	IS-PFOA-13C2	537	N/A	---		2413.48	2413.48	ng/L	100	70 - 140	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	IS-PFOS-13C4	537	N/A	---		2515.38	2515.38	ng/L	100	70 - 140	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	SS-PFDA-13C2	537	N/A	---		102.2690	100	ng/L	102	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	SS-PFHxA-13C2	537	N/A	---		51.7531	50.0	ng/L	104	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		701.8370	675	ng/L	104	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		77.3687	75.0	ng/L	103	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		222.5180	225	ng/L	99	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluorononanoic acid (PFNA)	537	20	---		154.2560	150	ng/L	103	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		310.0670	300	ng/L	103	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		151.1380	150	ng/L	101	70 - 130	---	---	1.0	03/30/2015 13:15	04/04/2015 02:19	3215288

Eurofins Eaton Analytical
Run Log

Run ID: **201542** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3216358		OS	CY	04/06/2015 16:58	040615M537a.mdb
CCL	3216358		OS	CY	04/06/2015 16:58	040615M537a.mdb
LRB	3216342		RW	CY	04/06/2015 18:31	040615M537a.mdb
LRB	3216342		RW	CY	04/06/2015 18:31	040615M537a.mdb
FBL	3216343		RW	CY	04/06/2015 19:02	040615M537a.mdb
FBL	3216343		RW	CY	04/06/2015 19:02	040615M537a.mdb
FBM	3216344		RW	CY	04/06/2015 19:32	040615M537a.mdb
FBM	3216344		RW	CY	04/06/2015 19:32	040615M537a.mdb
FS	3210143	1585884-02/M2	DW	CY	04/06/2015 20:34	040615M537a.mdb
CCM	3216359		OS	CY	04/07/2015 09:20	040615M537a.mdb
CCM	3216359		OS	CY	04/07/2015 09:20	040615M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		29.5390	30.0	ng/L	98	50 - 150	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.0658	40.0	ng/L	100	50 - 150	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
CCL	IS-PFOA-13C2	537	N/A	---		3422.82	3422.82	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
CCL	IS-PFOS-13C4	537	N/A	---		3396.18	3396.18	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
CCL	SS-PFDA-13C2	537	N/A	---		103.7210	100	ng/L	104	70 - 130	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
CCL	SS-PFHxA-13C2	537	N/A	---		49.8328	50.0	ng/L	100	70 - 130	---	---	1.0	04/01/2015 14:00	04/06/2015 16:58	3216358
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
LRB	IS-PFOA-13C2	537	N/A	---		3462.79	3422.82	ng/L	101	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
LRB	IS-PFOS-13C4	537	N/A	---		3402.01	3396.18	ng/L	100	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
LRB	SS-PFDA-13C2	537	N/A	---		96.6438	100	ng/L	97	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
LRB	SS-PFHxA-13C2	537	N/A	---		50.0034	50.0	ng/L	100	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 18:31	3216342
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		30.0315	30.0	ng/L	100	50 - 150	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.8511	40.0	ng/L	102	50 - 150	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBL	IS-PFOA-13C2	537	N/A	---		3360.57	3422.82	ng/L	98	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBL	IS-PFOS-13C4	537	N/A	---		3354.60	3396.18	ng/L	99	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBL	SS-PFDA-13C2	537	N/A	---		101.7950	100	ng/L	102	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBL	SS-PFHxA-13C2	537	N/A	---		51.3071	50.0	ng/L	103	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:02	3216343
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		218.2140	225	ng/L	97	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FBM	Perfluorooctane sulfonate (PFOS)	537	40	---		288.0520	300	ng/L	96	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FBM	IS-PFOA-13C2	537	N/A	---		3404.57	3422.82	ng/L	99	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FBM	IS-PFOS-13C4	537	N/A	---		3305.93	3396.18	ng/L	97	70 - 140	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FBM	SS-PFDA-13C2	537	N/A	---		97.5055	100	ng/L	98	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FBM	SS-PFHxA-13C2	537	N/A	---		50.4276	50.0	ng/L	101	70 - 130	---	---	1.0	04/01/2015 08:30	04/06/2015 19:32	3216344
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	1585884-02/M2		570		ng/L	---	---	---	---	9.8	03/30/2015 07:30	04/06/2015 20:34	3210143
FS	Perfluorooctane sulfonate (PFOS)	537	40	1585884-02/M2		1600		ng/L	---	---	---	---	9.8	03/30/2015 07:30	04/06/2015 20:34	3210143
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		217.5620	225	ng/L	97	70 - 130	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		293.4910	300	ng/L	98	70 - 130	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359
CCM	IS-PFOA-13C2	537	N/A	---		4216.07	4216.07	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359
CCM	IS-PFOS-13C4	537	N/A	---		4231.01	4231.01	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359
CCM	SS-PFDA-13C2	537	N/A	---		95.0617	100	ng/L	95	70 - 130	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359
CCM	SS-PFHxA-13C2	537	N/A	---		52.3813	50.0	ng/L	105	70 - 130	---	---	1.0	04/01/2015 14:00	04/07/2015 09:20	3216359

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	E87775
Arizona	AZ0432	Nevada	IN000352015-1
Arkansas	IN035	New Hampshire*	2124
California	2920	New Mexico	IN00035
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida (Primary AB)*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon*	IN200001
Idaho	IN00035/E87775	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	200001	Rhode Island	LAO00241
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-14-7
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA150003	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	00127
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

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LABORATORY CASE NARRATIVE

Client: Barnstable County Department of Health and Environment   Report #: 337586QC

All method QC was within acceptance limits, with the exception of:

Method 537

See attached QC Summary Report for method recovery limits.

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Authorized Signature	Title	Date
Jeri Van Hiet	ASM	04/20/2015

Page 1 of 1

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Barnstable County Department of Health and Environm

Attn: Gongmin Lei
3195 Main Street
Barnstable, MA 02630

Report: 337586
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3218209	PC-0	537	04/02/15 09:50	Client	04/03/15 09:00
3218210	PC-7	537	04/02/15 10:40	Client	04/03/15 09:00
3218211	PC-11	537	04/02/15 11:20	Client	04/03/15 09:00
3218212	PC-19	537	04/02/15 12:00	Client	04/03/15 09:00
3218213	PC-16d	537	04/02/15 12:30	Client	04/03/15 09:00
3218214	PC-15	537	04/02/15 13:40	Client	04/03/15 09:00
3218215	PC-22	537	04/02/15 14:20	Client	04/03/15 09:00
3218216	MW-37d	537	04/02/15 15:15	Client	04/03/15 09:00
3218217	MW-15d	537	04/02/15 15:52	Client	04/03/15 09:00
3218218	Pond	537	04/02/15 15:44	Client	04/03/15 09:00
3218219	PC-9	537	04/02/15 13:05	Client	04/03/15 09:00
3218220	PFW 5	537	03/31/15 15:00	Client	04/03/15 09:00
3218233	PFW 5	522	03/31/15 15:00	Client	04/03/15 09:00
3218221	PFW 4	537	04/01/15 13:50	Client	04/03/15 09:00
3218222	PFW 2	537	04/01/15 14:30	Client	04/03/15 09:00
3218223	PFW 1	537	04/01/15 14:50	Client	04/03/15 09:00
3218224	PFW 3	537	04/01/15 15:05	Client	04/03/15 09:00
3218225	PFW 6	537	04/01/15 15:30	Client	04/03/15 09:00
3218226	MW-6	537	04/01/15 16:05	Client	04/03/15 09:00
3218227	MW-28s	537	04/01/15 16:00	Client	04/03/15 09:00
3218228	MW-12s	537	04/01/15 16:20	Client	04/03/15 09:00
3218229	MW-30	537	04/01/15 16:50	Client	04/03/15 09:00
3218230	PRW-1	537	04/01/15 10:20	Client	04/03/15 09:00
3218231	PRW-4	537	04/01/15 11:00	Client	04/03/15 09:00
3218232	RW-1	537	04/01/15 11:10	Client	04/03/15 09:00

Report Summary

Note: See attached page for additional comments.

Note: Sample container for method 522 was provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call James Van Fleit at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Jim Van Fleit ASM

04/20/2015

Authorized Signature	Title	Date

Sampling Point: PC-0 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/08/15 23:10	3218209
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	04/08/15 07:25	04/08/15 23:10	3218209
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30	ng/L	04/08/15 07:25	04/08/15 23:10	3218209
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/08/15 07:25	04/08/15 23:10	3218209
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**110**	ng/L	04/08/15 07:25	04/08/15 23:10	3218209
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	04/08/15 07:25	04/08/15 23:10	3218209

Sampling Point: PC-7 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**7700**	ng/L	04/08/15 07:25	04/14/15 00:43	3218210
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**2000**	ng/L	04/08/15 07:25	04/14/15 00:12	3218210
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**37000**	ng/L	04/08/15 07:25	04/14/15 00:12	3218210
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**600**	ng/L	04/08/15 07:25	04/14/15 00:43	3218210
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**17000**	ng/L	04/08/15 07:25	04/14/15 00:12	3218210
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**3500**	ng/L	04/08/15 07:25	04/14/15 00:12	3218210

Sampling Point: PC-11 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**190**	ng/L	04/08/15 07:25	04/09/15 00:12	3218211
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**490**	ng/L	04/08/15 07:25	04/14/15 01:14	3218211
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2100**	ng/L	04/08/15 07:25	04/14/15 01:14	3218211
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**100**	ng/L	04/08/15 07:25	04/09/15 00:12	3218211
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**4400**	ng/L	04/08/15 07:25	04/14/15 01:14	3218211
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**550**	ng/L	04/08/15 07:25	04/14/15 01:14	3218211

Sampling Point: PC-19 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**170**	ng/L	04/08/15 07:25	04/09/15 00:43	3218212
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**370**	ng/L	04/08/15 07:25	04/14/15 01:45	3218212
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2200**	ng/L	04/08/15 07:25	04/14/15 01:45	3218212
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**120**	ng/L	04/08/15 07:25	04/09/15 00:43	3218212
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3300**	ng/L	04/08/15 07:25	04/14/15 01:45	3218212
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**260**	ng/L	04/08/15 07:25	04/09/15 00:43	3218212

Sampling Point: PC-16d PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 01:14	3218213
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**160**	ng/L	04/08/15 07:25	04/14/15 02:16	3218213
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**560**	ng/L	04/08/15 07:25	04/14/15 02:16	3218213
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**60**	ng/L	04/08/15 07:25	04/09/15 01:14	3218213
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**700**	ng/L	04/08/15 07:25	04/14/15 02:16	3218213
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**70**	ng/L	04/08/15 07:25	04/09/15 01:14	3218213

Sampling Point: PC-15 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 01:44	3218214
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**90**	ng/L	04/08/15 07:25	04/09/15 01:44	3218214
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**360**	ng/L	04/08/15 07:25	04/09/15 01:44	3218214
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**50**	ng/L	04/08/15 07:25	04/09/15 01:44	3218214
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1300**	ng/L	04/08/15 07:25	04/14/15 02:47	3218214
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**100**	ng/L	04/08/15 07:25	04/09/15 01:44	3218214

Sampling Point: PC-22 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 07:24	3218215
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**120**	ng/L	04/09/15 07:30	04/11/15 07:24	3218215
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**370**	ng/L	04/09/15 07:30	04/11/15 07:24	3218215
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**100**	ng/L	04/09/15 07:30	04/11/15 07:24	3218215
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1200**	ng/L	04/09/15 07:30	04/14/15 19:47	3218215
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**100**	ng/L	04/09/15 07:30	04/11/15 07:24	3218215

Sampling Point: MW-37d PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 07:55	3218216
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**50**	ng/L	04/09/15 07:30	04/11/15 07:55	3218216
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**90**	ng/L	04/09/15 07:30	04/11/15 07:55	3218216
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 07:55	3218216
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**60**	ng/L	04/09/15 07:30	04/11/15 07:55	3218216
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**90**	ng/L	04/09/15 07:30	04/11/15 07:55	3218216

Sampling Point: MW-15d PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 08:26	3218217
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**40**	ng/L	04/09/15 07:30	04/11/15 08:26	3218217
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**60**	ng/L	04/09/15 07:30	04/11/15 08:26	3218217
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 08:26	3218217
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**60**	ng/L	04/09/15 07:30	04/11/15 08:26	3218217
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**60**	ng/L	04/09/15 07:30	04/11/15 08:26	3218217

Sampling Point: Pond PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 08:57	3218218
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**120**	ng/L	04/09/15 07:30	04/11/15 08:57	3218218
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**420**	ng/L	04/09/15 07:30	04/11/15 08:57	3218218
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**60**	ng/L	04/09/15 07:30	04/11/15 08:57	3218218
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1600**	ng/L	04/09/15 07:30	04/14/15 20:18	3218218
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**100**	ng/L	04/09/15 07:30	04/11/15 08:57	3218218

Sampling Point: PC-9 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 09:28	3218219
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**30**	ng/L	04/09/15 07:30	04/11/15 09:28	3218219
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**90**	ng/L	04/09/15 07:30	04/11/15 09:28	3218219
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**50**	ng/L	04/09/15 07:30	04/11/15 09:28	3218219
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**580**	ng/L	04/09/15 07:30	04/14/15 20:49	3218219
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**30**	ng/L	04/09/15 07:30	04/11/15 09:28	3218219

Sampling Point: PFW 5 PWS ID: Not Supplied

Volatile Organic Chemicals									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
123-91-1	1,4-Dioxane	522	---	0.07	< 0.07	ug/L	04/08/15 08:00	04/10/15 22:28	3218233

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 02:15	3218220
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**120**	ng/L	04/08/15 07:25	04/09/15 02:15	3218220
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**860**	ng/L	04/08/15 07:25	04/14/15 03:18	3218220
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**40**	ng/L	04/08/15 07:25	04/09/15 02:15	3218220
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2700**	ng/L	04/08/15 07:25	04/14/15 03:18	3218220
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**250**	ng/L	04/08/15 07:25	04/09/15 02:15	3218220

Sampling Point: PFW 4 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**110**	ng/L	04/08/15 07:25	04/09/15 02:46	3218221
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**700**	ng/L	04/08/15 07:25	04/14/15 06:23	3218221
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**1900**	ng/L	04/08/15 07:25	04/14/15 06:23	3218221
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**110**	ng/L	04/08/15 07:25	04/09/15 02:46	3218221
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3300**	ng/L	04/08/15 07:25	04/14/15 06:23	3218221
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**420**	ng/L	04/08/15 07:25	04/14/15 06:23	3218221

Sampling Point: PFW 2 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**460**	ng/L	04/08/15 07:25	04/09/15 03:17	3218222
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**630**	ng/L	04/08/15 07:25	04/14/15 04:50	3218222
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**51000**	ng/L	04/08/15 07:25	04/14/15 03:49	3218222
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**750**	ng/L	04/08/15 07:25	04/14/15 04:50	3218222
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**220000**	ng/L	04/08/15 07:25	04/14/15 03:49	3218222
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**5200**	ng/L	04/08/15 07:25	04/14/15 04:20	3218222

Sampling Point: PFW 1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**150**	ng/L	04/08/15 07:25	04/09/15 06:23	3218223
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**500**	ng/L	04/08/15 07:25	04/14/15 07:25	3218223
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2200**	ng/L	04/08/15 07:25	04/14/15 07:25	3218223
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**120**	ng/L	04/08/15 07:25	04/09/15 06:23	3218223
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**8400**	ng/L	04/08/15 07:25	04/14/15 06:54	3218223
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**360**	ng/L	04/08/15 07:25	04/14/15 07:25	3218223

Sampling Point: PFW 3 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**160**	ng/L	04/08/15 07:25	04/09/15 06:53	3218224
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**320**	ng/L	04/08/15 07:25	04/14/15 08:27	3218224
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**700**	ng/L	04/08/15 07:25	04/14/15 08:27	3218224
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**150**	ng/L	04/08/15 07:25	04/09/15 06:53	3218224
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2700**	ng/L	04/08/15 07:25	04/14/15 08:27	3218224
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**140**	ng/L	04/08/15 07:25	04/09/15 06:53	3218224

Sampling Point: PFW 6 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**100**	ng/L	04/08/15 07:25	04/09/15 07:24	3218225
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**410**	ng/L	04/08/15 07:25	04/14/15 08:58	3218225
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**1600**	ng/L	04/08/15 07:25	04/14/15 08:58	3218225
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**140**	ng/L	04/08/15 07:25	04/09/15 07:24	3218225
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**3400**	ng/L	04/08/15 07:25	04/14/15 08:58	3218225
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**350**	ng/L	04/08/15 07:25	04/14/15 08:58	3218225

Sampling Point: MW-6 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	**140**	ng/L	04/08/15 07:25	04/09/15 07:55	3218226
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**370**	ng/L	04/08/15 07:25	04/14/15 09:29	3218226
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**2100**	ng/L	04/08/15 07:25	04/14/15 09:29	3218226
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**180**	ng/L	04/08/15 07:25	04/09/15 07:55	3218226
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**5700**	ng/L	04/08/15 07:25	04/14/15 09:29	3218226
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**510**	ng/L	04/08/15 07:25	04/14/15 09:29	3218226

Sampling Point: MW-28s PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 08:26	3218227
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**70**	ng/L	04/08/15 07:25	04/09/15 08:26	3218227
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**590**	ng/L	04/08/15 07:25	04/14/15 10:00	3218227
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**50**	ng/L	04/08/15 07:25	04/09/15 08:26	3218227
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2100**	ng/L	04/08/15 07:25	04/14/15 10:00	3218227
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**90**	ng/L	04/08/15 07:25	04/09/15 08:26	3218227

Sampling Point: MW-12s PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 08:57	3218228
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**350**	ng/L	04/08/15 07:25	04/14/15 10:31	3218228
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**1300**	ng/L	04/08/15 07:25	04/14/15 10:31	3218228
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**70**	ng/L	04/08/15 07:25	04/09/15 08:57	3218228
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**4800**	ng/L	04/08/15 07:25	04/14/15 10:31	3218228
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**470**	ng/L	04/08/15 07:25	04/14/15 10:31	3218228

Sampling Point: MW-30 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 09:28	3218229
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	04/08/15 07:25	04/09/15 09:28	3218229
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**210**	ng/L	04/08/15 07:25	04/09/15 09:28	3218229
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/08/15 07:25	04/09/15 09:28	3218229
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1400**	ng/L	04/08/15 07:25	04/14/15 11:02	3218229
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**130**	ng/L	04/08/15 07:25	04/09/15 09:28	3218229

Client Name: Barnstable County Department of Health and Environment Report #: 337586

Sampling Point: PRW-1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 09:59	3218230
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**150**	ng/L	04/08/15 07:25	04/09/15 09:59	3218230
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**860**	ng/L	04/08/15 07:25	04/14/15 18:15	3218230
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**80**	ng/L	04/08/15 07:25	04/09/15 09:59	3218230
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**1600**	ng/L	04/08/15 07:25	04/14/15 18:15	3218230
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**150**	ng/L	04/08/15 07:25	04/09/15 09:59	3218230

Sampling Point: PRW-4 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 10:30	3218231
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**80**	ng/L	04/08/15 07:25	04/09/15 10:30	3218231
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**300**	ng/L	04/08/15 07:25	04/09/15 10:30	3218231
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**30**	ng/L	04/08/15 07:25	04/09/15 10:30	3218231
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**760**	ng/L	04/08/15 07:25	04/14/15 18:46	3218231
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**60**	ng/L	04/08/15 07:25	04/09/15 10:30	3218231

Sampling Point: RW-1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/08/15 07:25	04/09/15 11:01	3218232
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**270**	ng/L	04/08/15 07:25	04/14/15 19:16	3218232
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**820**	ng/L	04/08/15 07:25	04/14/15 19:16	3218232
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**100**	ng/L	04/08/15 07:25	04/09/15 11:01	3218232
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**2300**	ng/L	04/08/15 07:25	04/14/15 19:16	3218232
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**240**	ng/L	04/08/15 07:25	04/09/15 11:01	3218232

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

86069.

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South Bend, IN 46617
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F: 1.574.233.8207

Order # 263641
Batch # 337586

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CHAIN OF CUSTODY RECORD

Page 1 of 2

Shaded area for EEA use only

Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3218 209	4.2.15	9:50	x		PC-0	537 ~~554315~~	Cl-A ss		2			
2	210	4.2.15	10:40	X		PC-7				2			
3	211	4.2.15	11:20	X		PC-11				2			
4	212	4.2.15	12:00		x	PC-19				2			
5	213	4.2.15	12:30		x	PC-16d				2			
6	214	4.2.15	1:40		x	PC-15				2			
7	215	4.2.15	2:20		x	PC-22				2			
8	216	4.2.15	3:15		x	MW-37d				2			
9	217	4.2.15	3:52		x	MW-15d				2			
10	218	4.2.15	3:40		x	POND				2			
11													
12	219	4.2.15	1:05		x	PC-9				~~1~~ 2 ss 4315			
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	4.2.15	4:30 PM	[signature]	4/2/15	4:30
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
			[signature]	4.3.15	0900

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Please return Cooler.

CONDITIONS UPON RECEIPT (check one):
X Iced/Wet/Blue ___ Ambient 1.6 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

86069

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Batch # ____

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CHAIN OF CUSTODY RECORD

Page ____ of ____

Shaded area for EEA use only

Attn: Gongmin Lei (508-375-6606)
Barnstable County Lab
P O Box 427
Barnstable, MA 02630
gmlei@barnstablecounty.org

SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Tom Cambareri	/	MA	BFTA	

COMPLIANCE MONITORING: Yes	No	POPULATION SERVED	SOURCE WATER
	X		

#	~~LAB Number~~ SITE	DATE	TIME	AM	PM	~~SAMPLING SITE~~ LAB #	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	PFW 5	3·31·15	3PM		X	3218,220	Cl-A 537 also received	522 bottle SS			2	GW	
2	PFW 4	4·1·15	1:50		X	221	SS 537			4-3-15	2		
3	PFW 2	4·1·15	2:30		X	222	537				2		
4	PFW 1	4·1·15	2:50		X	223	537				2		
5	PFW 3	4·1·15	3:05		X	1 bottle shows PCW 3 SS 4-3-15	537 3218224				2		
6	PFW 6	4·1·15	3:30		X	225 WP	537				2		
7	MW-6	4·1·15	2:05		X	226 site on COC. JVD 4/3/15	537				2		
8	MW-28S	4·1·15	4:00		X	227	537				2		
9	MW-12S	4·1·15	4:20		X	228	537				2		
10	MW-30	4·1·15	4:50		X	229	537				2		
11	PRW-1	4·1·15	10 20	X		230	537				2		
12	PRW-4	4·1·15	11:00	X		231	537				2		
13	RW-1	4·1·15	11:10	X		232	537				2		
14	SS ~~RW-1~~ PFW5 4-3-15	3-31-15	1500			233	522 pH<4	Cl-A	SS 4-3-15				

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Tom Cambareri	4·2·15	4:30 PM	Jeff Wolcott	4/2/15	4:30
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY:	DATE	TIME
			[signature]	4-3-15	0900

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

Cross Offs on COC by Client

LAB COMMENTS: Run 522 + 537 for PFW 5 per Gongmin Lei. JVD 4/3/15

Please return Cooler

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ____ Ambient 1.6 °C Upon Receipt ____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Client Provided Sample Container } 522 sample SS

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

Eurofins Eaton Analytical
Run Log

Run ID: **201667** Method: **522**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3219686		OS	DM	04/10/2015 14:01	522-02122015-DM.M
LRB	3219684		RW	DM	04/10/2015 14:46	522-02122015-DM.M
FBL	3219685		RW	DM	04/10/2015 15:21	522-02122015-DM.M
CCM	3219687		OS	DM	04/10/2015 21:29	522-02122015-DM.M
FS	3218233	PFW 5	GW	DM	04/10/2015 22:28	522-02122015-DM.M
CCH	3219688		OS	DM	04/11/2015 03:42	522-02122015-DM.M

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-Tetrahydrofuran-d8	522	N/A	---		43054	43054	ug/L	100	70 - 130	---	---	1.0	04/08/2015 10:49	04/10/2015 14:01	3219686
CCL	SS-1,4-Dioxane-d8	522	N/A	---		10.4400	10.0	ug/L	104	70 - 130	---	---	1.0	04/08/2015 10:49	04/10/2015 14:01	3219686
CCL	1,4-Dioxane	522	0.07	---		0.0830	0.07	ug/L	119	50 - 150	---	---	1.0	04/08/2015 10:49	04/10/2015 14:01	3219686
LRB	IS-Tetrahydrofuran-d8	522	N/A	---		41890	43054	ug/L	97	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 14:46	3219684
LRB	SS-1,4-Dioxane-d8	522	N/A	---		10.0000	10.0	ug/L	100	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 14:46	3219684
LRB	1,4-Dioxane	522	0.07	---	<	0.07		ug/L	---	---	---	---	1.0	04/08/2015 08:00	04/10/2015 14:46	3219684
FBL	IS-Tetrahydrofuran-d8	522	N/A	---		44005	43054	ug/L	102	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 15:21	3219685
FBL	SS-1,4-Dioxane-d8	522	N/A	---		9.8700	10.0	ug/L	99	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 15:21	3219685
FBL	1,4-Dioxane	522	0.07	---		0.0790	0.07	ug/L	113	50 - 150	---	---	1.0	04/08/2015 08:00	04/10/2015 15:21	3219685
CCM	IS-Tetrahydrofuran-d8	522	N/A	---		44688	44688	ug/L	100	70 - 130	---	---	1.0	04/08/2015 10:49	04/10/2015 21:29	3219687
CCM	SS-1,4-Dioxane-d8	522	N/A	---		10.5900	10.0	ug/L	106	70 - 130	---	---	1.0	04/08/2015 10:49	04/10/2015 21:29	3219687
CCM	1,4-Dioxane	522	0.07	---		1.1760	1.0	ug/L	118	70 - 130	---	---	1.0	04/08/2015 10:49	04/10/2015 21:29	3219687
FS	IS-Tetrahydrofuran-d8	522	N/A	PFW 5		44649	44688	ug/L	100	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 22:28	3218233
FS	SS-1,4-Dioxane-d8	522	N/A	PFW 5		9.9500	10.0	ug/L	100	70 - 130	---	---	1.0	04/08/2015 08:00	04/10/2015 22:28	3218233
FS	1,4-Dioxane	522	0.07	PFW 5	<	0.07		ug/L	---	---	---	---	1.0	04/08/2015 08:00	04/10/2015 22:28	3218233
CCH	IS-Tetrahydrofuran-d8	522	N/A	---		45896	45896	ug/L	100	70 - 130	---	---	1.0	04/08/2015 10:49	04/11/2015 03:42	3219688
CCH	SS-1,4-Dioxane-d8	522	N/A	---		10.6800	10.0	ug/L	107	70 - 130	---	---	1.0	04/08/2015 10:49	04/11/2015 03:42	3219688
CCH	1,4-Dioxane	522	0.07	---		11.1800	10.0	ug/L	112	70 - 130	---	---	1.0	04/08/2015 10:49	04/11/2015 03:42	3219688

Eurofins Eaton Analytical

Eurofins Eaton Analytical
Run Log

Run ID: **201588** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3219815		OS	CY	04/08/2015 20:05	040815M537a.mdb
FS	3218210	PC-7	GW	CY	04/08/2015 23:41	040815M537a.mdb
FS	3218222	PFW 2	GW	CY	04/09/2015 03:17	040815M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		2812.37	2812.37	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3219815
CCL	IS-PFOS-13C4	537	N/A	---		2950.20	2950.2	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3219815
FS	IS-PFOA-13C2	537	N/A	PC-7		2431.78	2812.37	ng/L	86	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 23:41	3218210
FS	IS-PFOS-13C4	537	N/A	PC-7		1861.71	2950.2	ng/L	**63**	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 23:41	3218210
FS	IS-PFOA-13C2	537	N/A	PFW 2		2225.97	2812.37	ng/L	79	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 03:17	3218222
FS	IS-PFOS-13C4	537	N/A	PFW 2		731.02	2950.2	ng/L	**25**	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 03:17	3218222

Eurofins Eaton Analytical
Run Log

Run ID: **201828** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3224744		OS	CY	04/08/2015 20:05	040815M537a-Ext.mdb
LRB	3224748		RW	CY	04/08/2015 21:37	040815M537a-Ext.mdb
FBL	3224749		RW	CY	04/08/2015 22:08	040815M537a-Ext.mdb
FS	3218209	PC-0	GW	CY	04/08/2015 23:10	040815M537a-Ext.mdb
FS	3218211	PC-11	GW	CY	04/09/2015 00:12	040815M537a-Ext.mdb
FS	3218212	PC-19	GW	CY	04/09/2015 00:43	040815M537a-Ext.mdb
FS	3218213	PC-16d	GW	CY	04/09/2015 01:14	040815M537a-Ext.mdb
FS	3218214	PC-15	GW	CY	04/09/2015 01:44	040815M537a-Ext.mdb
FS	3218220	PFW 5	GW	CY	04/09/2015 02:15	040815M537a-Ext.mdb
FS	3218221	PFW 4	GW	CY	04/09/2015 02:46	040815M537a-Ext.mdb
FS	3218222	PFW 2	GW	CY	04/09/2015 03:17	040815M537a-Ext.mdb
CCM	3224745		OS	CY	04/09/2015 05:21	040815M537a-Ext.mdb
FS	3218223	PFW 1	GW	CY	04/09/2015 06:23	040815M537a-Ext.mdb
FS	3218224	PFW 3	GW	CY	04/09/2015 06:53	040815M537a-Ext.mdb
FS	3218225	PFW 6	GW	CY	04/09/2015 07:24	040815M537a-Ext.mdb
FS	3218226	MW-6	GW	CY	04/09/2015 07:55	040815M537a-Ext.mdb
FS	3218227	MW-28s	GW	CY	04/09/2015 08:26	040815M537a-Ext.mdb
FS	3218228	MW-12s	GW	CY	04/09/2015 08:57	040815M537a-Ext.mdb
FS	3218229	MW-30	GW	CY	04/09/2015 09:28	040815M537a-Ext.mdb
FS	3218230	PRW-1	GW	CY	04/09/2015 09:59	040815M537a-Ext.mdb
FS	3218231	PRW-4	GW	CY	04/09/2015 10:30	040815M537a-Ext.mdb
FS	3218232	RW-1	GW	CY	04/09/2015 11:01	040815M537a-Ext.mdb
CCH	3224746		OS	CY	04/09/2015 11:32	040815M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		2812.37	2812.37	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	IS-PFOS-13C4	537	N/A	---		2950.20	2950.2	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	SS-PFDA-13C2	537	N/A	---		98.5169	100	ng/L	99	70 - 130	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	SS-PFHxA-13C2	537	N/A	---		48.3580	50.0	ng/L	97	70 - 130	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		95.5050	90.0	ng/L	106	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		9.9567	10.0	ng/L	100	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		29.5521	30.0	ng/L	99	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluorononanoic acid (PFNA)	537	20	---		20.2255	20.0	ng/L	101	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.3506	40.0	ng/L	101	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		19.7974	20.0	ng/L	99	50 - 150	---	---	1.0	04/01/2015 14:00	04/08/2015 20:05	3224744
LRB	IS-PFOA-13C2	537	N/A	---		2908.47	2812.37	ng/L	103	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	IS-PFOS-13C4	537	N/A	---		3053.32	2950.2	ng/L	103	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	SS-PFDA-13C2	537	N/A	---		96.1401	100	ng/L	96	70 - 130	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	SS-PFHxA-13C2	537	N/A	---		48.8800	50.0	ng/L	98	70 - 130	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluorobutanesulfonic acid (PFBS)	537	90	---	<	90		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluoroheptanoic acid (PFHpA)	537	10	---	<	10		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluorononanoic acid (PFNA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
LRB	Perfluorooctanoic acid (PFOA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/08/2015 21:37	3224748
FBL	IS-PFOA-13C2	537	N/A	---		2925.22	2812.37	ng/L	104	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	IS-PFOS-13C4	537	N/A	---		3117.48	2950.2	ng/L	106	70 - 140	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	SS-PFDA-13C2	537	N/A	---		90.8809	100	ng/L	91	70 - 130	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	SS-PFHxA-13C2	537	N/A	---		48.2205	50.0	ng/L	96	70 - 130	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		99.7266	90.0	ng/L	111	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.3619	10.0	ng/L	104	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		30.4815	30.0	ng/L	102	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluorononanoic acid (PFNA)	537	20	---		19.8877	20.0	ng/L	99	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		39.0456	40.0	ng/L	98	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FBL	Perfluorooctanoic acid (PFOA)	537	20	---		19.9601	20.0	ng/L	100	50 - 150	---	---	1.0	04/08/2015 07:25	04/08/2015 22:08	3224749
FS	IS-PFOA-13C2	537	N/A	PC-0		2908.91	2812.37	ng/L	103	70 - 140	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	IS-PFOS-13C4	537	N/A	PC-0		3014.13	2950.2	ng/L	102	70 - 140	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	SS-PFDA-13C2	537	N/A	PC-0		92.9360	100	ng/L	92	70 - 130	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	SS-PFHxA-13C2	537	N/A	PC-0		49.6612	50.0	ng/L	98	70 - 130	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-0	<	90		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-0		20		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-0	<	30		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluorononanoic acid (PFNA)	537	20	PC-0	<	20		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-0		110		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-0	<	20		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/08/2015 23:10	3218209

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	PC-11		2750.15	2812.37	ng/L	98	70 - 140	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	IS-PFOS-13C4	537	N/A	PC-11		2558.29	2950.2	ng/L	87	70 - 140	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	SS-PFDA-13C2	537	N/A	PC-11		102.5880	100	ng/L	99	70 - 130	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	SS-PFHxA-13C2	537	N/A	PC-11		51.6888	50.0	ng/L	99	70 - 130	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-11		190		ng/L	---	---	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	Perfluorononanoic acid (PFNA)	537	20	PC-11		100		ng/L	---	---	---	---	1.04	04/08/2015 07:25	04/09/2015 00:12	3218211
FS	IS-PFOA-13C2	537	N/A	PC-19		3036.68	2812.37	ng/L	108	70 - 140	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	IS-PFOS-13C4	537	N/A	PC-19		2781.78	2950.2	ng/L	94	70 - 140	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	SS-PFDA-13C2	537	N/A	PC-19		93.3529	100	ng/L	91	70 - 130	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	SS-PFHxA-13C2	537	N/A	PC-19		46.4262	50.0	ng/L	90	70 - 130	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-19		170		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	Perfluorononanoic acid (PFNA)	537	20	PC-19		120		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-19		260		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 00:43	3218212
FS	IS-PFOA-13C2	537	N/A	PC-16d		2820.60	2812.37	ng/L	100	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	IS-PFOS-13C4	537	N/A	PC-16d		3074.47	2950.2	ng/L	104	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	SS-PFDA-13C2	537	N/A	PC-16d		97.5747	100	ng/L	96	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	SS-PFHxA-13C2	537	N/A	PC-16d		50.1103	50.0	ng/L	98	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-16d	<	90		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	Perfluorononanoic acid (PFNA)	537	20	PC-16d		60		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-16d		70		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 01:14	3218213
FS	IS-PFOA-13C2	537	N/A	PC-15		2898.64	2812.37	ng/L	103	70 - 140	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	IS-PFOS-13C4	537	N/A	PC-15		3007.61	2950.2	ng/L	102	70 - 140	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	SS-PFDA-13C2	537	N/A	PC-15		91.6361	100	ng/L	93	70 - 130	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	SS-PFHxA-13C2	537	N/A	PC-15		47.9198	50.0	ng/L	97	70 - 130	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-15	<	90		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-15		90		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-15		360		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	Perfluorononanoic acid (PFNA)	537	20	PC-15		50		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-15		100		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 01:44	3218214
FS	IS-PFOA-13C2	537	N/A	PFW 5		2908.20	2812.37	ng/L	103	70 - 140	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	IS-PFOS-13C4	537	N/A	PFW 5		2770.27	2950.2	ng/L	94	70 - 140	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	SS-PFDA-13C2	537	N/A	PFW 5		97.2357	100	ng/L	94	70 - 130	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	SS-PFHxA-13C2	537	N/A	PFW 5		49.9402	50.0	ng/L	97	70 - 130	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 5	<	90		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 5		120		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 5		40		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 5		250		ng/L	---	---	---	---	1.03	04/08/2015 07:25	04/09/2015 02:15	3218220
FS	IS-PFOA-13C2	537	N/A	PFW 4		2656.10	2812.37	ng/L	94	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221
FS	IS-PFOS-13C4	537	N/A	PFW 4		2590.16	2950.2	ng/L	88	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221
FS	SS-PFDA-13C2	537	N/A	PFW 4		96.2074	100	ng/L	94	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221
FS	SS-PFHxA-13C2	537	N/A	PFW 4		46.7523	50.0	ng/L	92	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 4		110		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 4		110		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 02:46	3218221
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 2		460		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 03:17	3218222
CCM	IS-PFOA-13C2	537	N/A	---		2607.72	2607.72	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	IS-PFOS-13C4	537	N/A	---		2833.84	2833.84	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	SS-PFDA-13C2	537	N/A	---		100.9740	100	ng/L	101	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	SS-PFHxA-13C2	537	N/A	---		51.1951	50.0	ng/L	102	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		685.4400	675	ng/L	102	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		75.2205	75.0	ng/L	100	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		226.9820	225	ng/L	101	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluorononanoic acid (PFNA)	537	20	---		148.8340	150	ng/L	99	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		303.5180	300	ng/L	101	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		151.0590	150	ng/L	101	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 05:21	3224745
FS	IS-PFOA-13C2	537	N/A	PFW 1		2819.80	2607.72	ng/L	108	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	IS-PFOS-13C4	537	N/A	PFW 1		1948.40	2833.84	ng/L	**69**	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	SS-PFDA-13C2	537	N/A	PFW 1		87.6882	100	ng/L	88	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	SS-PFHxA-13C2	537	N/A	PFW 1		45.7854	50.0	ng/L	92	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 1		150		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 1		120		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 06:23	3218223
FS	IS-PFOA-13C2	537	N/A	PFW 3		2926.03	2607.72	ng/L	112	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	IS-PFOS-13C4	537	N/A	PFW 3		2849.28	2833.84	ng/L	101	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	SS-PFDA-13C2	537	N/A	PFW 3		96.6648	100	ng/L	95	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	SS-PFHxA-13C2	537	N/A	PFW 3		43.3082	50.0	ng/L	85	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 3		160		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 3		150		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 3		140		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 06:53	3218224
FS	IS-PFOA-13C2	537	N/A	PFW 6		2936.72	2607.72	ng/L	113	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	IS-PFOS-13C4	537	N/A	PFW 6		2878.70	2833.84	ng/L	102	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	SS-PFDA-13C2	537	N/A	PFW 6		95.5228	100	ng/L	96	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	SS-PFHxA-13C2	537	N/A	PFW 6		46.7031	50.0	ng/L	93	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PFW 6		100		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 6		140		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 07:24	3218225
FS	IS-PFOA-13C2	537	N/A	MW-6		2928.85	2607.72	ng/L	112	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	IS-PFOS-13C4	537	N/A	MW-6		2543.21	2833.84	ng/L	90	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	SS-PFDA-13C2	537	N/A	MW-6		93.3071	100	ng/L	93	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	SS-PFHxA-13C2	537	N/A	MW-6		48.4577	50.0	ng/L	97	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-6		140		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	Perfluorononanoic acid (PFNA)	537	20	MW-6		180		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 07:55	3218226
FS	IS-PFOA-13C2	537	N/A	MW-28s		2890.86	2607.72	ng/L	111	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	IS-PFOS-13C4	537	N/A	MW-28s		2789.52	2833.84	ng/L	98	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	SS-PFDA-13C2	537	N/A	MW-28s		87.1621	100	ng/L	87	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFHxA-13C2	537	N/A	MW-28s		47.5149	50.0	ng/L	95	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-28s	<	90		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-28s		70		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	Perfluorononanoic acid (PFNA)	537	20	MW-28s		50		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-28s		90		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:26	3218227
FS	IS-PFOA-13C2	537	N/A	MW-12s		3036.26	2607.72	ng/L	116	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	IS-PFOS-13C4	537	N/A	MW-12s		2526.03	2833.84	ng/L	89	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	SS-PFDA-13C2	537	N/A	MW-12s		90.9062	100	ng/L	91	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	SS-PFHxA-13C2	537	N/A	MW-12s		46.5830	50.0	ng/L	93	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-12s	<	90		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	Perfluorononanoic acid (PFNA)	537	20	MW-12s		70		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 08:57	3218228
FS	IS-PFOA-13C2	537	N/A	MW-30		2848.22	2607.72	ng/L	109	70 - 140	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	IS-PFOS-13C4	537	N/A	MW-30		3066.50	2833.84	ng/L	108	70 - 140	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	SS-PFDA-13C2	537	N/A	MW-30		95.7247	100	ng/L	95	70 - 130	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	SS-PFHxA-13C2	537	N/A	MW-30		48.9704	50.0	ng/L	97	70 - 130	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-30	<	90		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-30		20		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-30		210		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	Perfluorononanoic acid (PFNA)	537	20	MW-30	<	20		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-30		130		ng/L	---	---	---	---	1.01	04/08/2015 07:25	04/09/2015 09:28	3218229
FS	IS-PFOA-13C2	537	N/A	PRW-1		2822.82	2607.72	ng/L	108	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	IS-PFOS-13C4	537	N/A	PRW-1		2911.15	2833.84	ng/L	103	70 - 140	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	SS-PFDA-13C2	537	N/A	PRW-1		92.5521	100	ng/L	93	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	SS-PFHxA-13C2	537	N/A	PRW-1		49.0194	50.0	ng/L	98	70 - 130	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PRW-1	<	90		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PRW-1		150		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	Perfluorononanoic acid (PFNA)	537	20	PRW-1		80		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	Perfluorooctanoic acid (PFOA)	537	20	PRW-1		150		ng/L	---	---	---	---	1.0	04/08/2015 07:25	04/09/2015 09:59	3218230
FS	IS-PFOA-13C2	537	N/A	PRW-4		2856.13	2607.72	ng/L	110	70 - 140	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	IS-PFOS-13C4	537	N/A	PRW-4		3105.93	2833.84	ng/L	110	70 - 140	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	SS-PFDA-13C2	537	N/A	PRW-4		85.6964	100	ng/L	87	70 - 130	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	SS-PFHxA-13C2	537	N/A	PRW-4		46.9441	50.0	ng/L	95	70 - 130	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PRW-4	<	90		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PRW-4		80		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PRW-4		300		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	Perfluorononanoic acid (PFNA)	537	20	PRW-4		30		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	Perfluorooctanoic acid (PFOA)	537	20	PRW-4		60		ng/L	---	---	---	---	0.99	04/08/2015 07:25	04/09/2015 10:30	3218231
FS	IS-PFOA-13C2	537	N/A	RW-1		2888.22	2607.72	ng/L	111	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
FS	IS-PFOS-13C4	537	N/A	RW-1		2787.81	2833.84	ng/L	98	70 - 140	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
FS	SS-PFDA-13C2	537	N/A	RW-1		93.2291	100	ng/L	91	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
FS	SS-PFHxA-13C2	537	N/A	RW-1		49.1884	50.0	ng/L	96	70 - 130	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	RW-1	<	90		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
FS	Perfluorononanoic acid (PFNA)	537	20	RW-1		100		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
FS	Perfluorooctanoic acid (PFOA)	537	20	RW-1		240		ng/L	---	---	---	---	1.02	04/08/2015 07:25	04/09/2015 11:01	3218232
CCH	IS-PFOA-13C2	537	N/A	---		2500.33	2500.33	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	IS-PFOS-13C4	537	N/A	---		2647.57	2647.57	ng/L	100	70 - 140	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	SS-PFDA-13C2	537	N/A	---		98.5254	100	ng/L	99	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	SS-PFHxA-13C2	537	N/A	---		51.9410	50.0	ng/L	104	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		1126.2400	1125	ng/L	100	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluoroheptanoic acid (PFHpA)	537	10	---		123.8000	125	ng/L	99	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		391.0380	375	ng/L	104	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluorononanoic acid (PFNA)	537	20	---		238.1340	250	ng/L	95	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluorooctane sulfonate (PFOS)	537	40	---		524.6280	500	ng/L	105	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746
CCH	Perfluorooctanoic acid (PFOA)	537	20	---		250.0170	250	ng/L	100	70 - 130	---	---	1.0	04/01/2015 14:00	04/09/2015 11:32	3224746

Eurofins Eaton Analytical
Run Log

Run ID: **201840** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3225335		OS	CY	04/10/2015 21:06	041015M537a-Ext.mdb
LRB	3225339		RW	CY	04/10/2015 22:39	041015M537a-Ext.mdb
FBL	3225340		RW	CY	04/10/2015 23:10	041015M537a-Ext.mdb
FBM	3225341		RW	CY	04/10/2015 23:40	041015M537a-Ext.mdb
CCM	3225336		OS	CY	04/11/2015 06:22	041015M537a-Ext.mdb
FS	3218215	PC-22	GW	CY	04/11/2015 07:24	041015M537a-Ext.mdb
FS	3218216	MW-37d	GW	CY	04/11/2015 07:55	041015M537a-Ext.mdb
FS	3218217	MW-15d	GW	CY	04/11/2015 08:26	041015M537a-Ext.mdb
FS	3218218	Pond	GW	CY	04/11/2015 08:57	041015M537a-Ext.mdb
FS	3218219	PC-9	GW	CY	04/11/2015 09:28	041015M537a-Ext.mdb
CCH	3225338		OS	CY	04/11/2015 12:33	041015M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		4675.10	4675.1	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	IS-PFOS-13C4	537	N/A	---		3914.25	3914.25	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	SS-PFDA-13C2	537	N/A	---		99.9380	100	ng/L	100	70 - 130	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	SS-PFHxA-13C2	537	N/A	---		49.3180	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		88.8943	90.0	ng/L	99	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		9.9751	10.0	ng/L	100	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		30.4437	30.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorononanoic acid (PFNA)	537	20	---		20.1635	20.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.5852	40.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		20.8176	20.0	ng/L	104	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
LRB	IS-PFOA-13C2	537	N/A	---		4500.97	4675.1	ng/L	96	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	IS-PFOS-13C4	537	N/A	---		3774.28	3914.25	ng/L	96	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	SS-PFDA-13C2	537	N/A	---		98.3732	100	ng/L	98	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	SS-PFHxA-13C2	537	N/A	---		47.7204	50.0	ng/L	95	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorobutanesulfonic acid (PFBS)	537	90	---	<	90		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluoroheptanoic acid (PFHpA)	537	10	---	<	10		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorononanoic acid (PFNA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorooctanoic acid (PFOA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
FBL	IS-PFOA-13C2	537	N/A	---		4427.09	4675.1	ng/L	95	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	IS-PFOS-13C4	537	N/A	---		3615.75	3914.25	ng/L	92	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	SS-PFDA-13C2	537	N/A	---		96.3069	100	ng/L	96	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	SS-PFHxA-13C2	537	N/A	---		46.7189	50.0	ng/L	93	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		87.3584	90.0	ng/L	97	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.8060	10.0	ng/L	108	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		32.3138	30.0	ng/L	108	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorononanoic acid (PFNA)	537	20	---		21.0174	20.0	ng/L	105	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		43.4159	40.0	ng/L	109	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorooctanoic acid (PFOA)	537	20	---		21.0918	20.0	ng/L	105	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBM	IS-PFOA-13C2	537	N/A	---		4201.20	4675.1	ng/L	90	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	IS-PFOS-13C4	537	N/A	---		3733.55	3914.25	ng/L	95	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	SS-PFDA-13C2	537	N/A	---		103.5340	100	ng/L	104	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	SS-PFHxA-13C2	537	N/A	---		49.4640	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		608.4740	675	ng/L	90	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluoroheptanoic acid (PFHpA)	537	10	---		74.3400	75.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		218.2880	225	ng/L	97	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorononanoic acid (PFNA)	537	20	---		152.0250	150	ng/L	101	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorooctane sulfonate (PFOS)	537	40	---		286.7780	300	ng/L	96	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorooctanoic acid (PFOA)	537	20	---		149.3060	150	ng/L	100	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOA-13C2	537	N/A	---		4088.25	4088.25	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	IS-PFOS-13C4	537	N/A	---		3857.33	3857.33	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	SS-PFDA-13C2	537	N/A	---		101.6130	100	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	SS-PFHxA-13C2	537	N/A	---		51.3005	50.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		639.1320	675	ng/L	95	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		76.6327	75.0	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		216.2880	225	ng/L	96	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorononanoic acid (PFNA)	537	20	---		157.3730	150	ng/L	105	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		298.2610	300	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		154.2610	150	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
FS	IS-PFOA-13C2	537	N/A	PC-22		3856.11	4088.25	ng/L	94	70 - 140	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	IS-PFOS-13C4	537	N/A	PC-22		3528.37	3857.33	ng/L	91	70 - 140	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	SS-PFDA-13C2	537	N/A	PC-22		99.3537	100	ng/L	99	70 - 130	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	SS-PFHxA-13C2	537	N/A	PC-22		51.3558	50.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-22	<	90		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-22		120		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-22		370		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	Perfluorononanoic acid (PFNA)	537	20	PC-22		100		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-22		100		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/11/2015 07:24	3218215
FS	IS-PFOA-13C2	537	N/A	MW-37d		3617.67	4088.25	ng/L	88	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	IS-PFOS-13C4	537	N/A	MW-37d		3482.21	3857.33	ng/L	90	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	SS-PFDA-13C2	537	N/A	MW-37d		96.4223	100	ng/L	101	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	SS-PFHxA-13C2	537	N/A	MW-37d		48.2098	50.0	ng/L	101	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-37d	<	90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-37d		50		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-37d		90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluorononanoic acid (PFNA)	537	20	MW-37d	<	20		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-37d		60		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-37d		90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 07:55	3218216
FS	IS-PFOA-13C2	537	N/A	MW-15d		4019.18	4088.25	ng/L	98	70 - 140	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	IS-PFOS-13C4	537	N/A	MW-15d		3739.74	3857.33	ng/L	97	70 - 140	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	SS-PFDA-13C2	537	N/A	MW-15d		95.0796	100	ng/L	98	70 - 130	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	SS-PFHxA-13C2	537	N/A	MW-15d		48.3529	50.0	ng/L	100	70 - 130	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-15d	<	90		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-15d		40		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-15d		60		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluorononanoic acid (PFNA)	537	20	MW-15d	<	20		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-15d		60		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-15d		60		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:26	3218217
FS	IS-PFOA-13C2	537	N/A	Pond		4295.88	4088.25	ng/L	105	70 - 140	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	IS-PFOS-13C4	537	N/A	Pond		3796.89	3857.33	ng/L	98	70 - 140	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFDA-13C2	537	N/A	Pond		97.9425	100	ng/L	101	70 - 130	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	SS-PFHxA-13C2	537	N/A	Pond		49.7078	50.0	ng/L	102	70 - 130	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	Pond	<	90		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	Perfluoroheptanoic acid (PFHpA)	537	10	Pond		120		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	Pond		420		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	Perfluorononanoic acid (PFNA)	537	20	Pond		60		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	Perfluorooctanoic acid (PFOA)	537	20	Pond		100		ng/L	---	---	---	---	0.97	04/09/2015 07:30	04/11/2015 08:57	3218218
FS	IS-PFOA-13C2	537	N/A	PC-9		4267.78	4088.25	ng/L	104	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	IS-PFOS-13C4	537	N/A	PC-9		4047.61	3857.33	ng/L	105	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	SS-PFDA-13C2	537	N/A	PC-9		92.4563	100	ng/L	98	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	SS-PFHxA-13C2	537	N/A	PC-9		48.6441	50.0	ng/L	103	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-9	<	90		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-9		30		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-9		90		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	Perfluorononanoic acid (PFNA)	537	20	PC-9		50		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-9		30		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 09:28	3218219
CCH	IS-PFOA-13C2	537	N/A	---		3570.05	3570.05	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	IS-PFOS-13C4	537	N/A	---		3545.37	3545.37	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	SS-PFDA-13C2	537	N/A	---		108.1770	100	ng/L	108	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	SS-PFHxA-13C2	537	N/A	---		51.6450	50.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		972.3830	1125	ng/L	86	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluoroheptanoic acid (PFHpA)	537	10	---		133.6800	125	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		366.6140	375	ng/L	98	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorononanoic acid (PFNA)	537	20	---		268.7450	250	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorooctane sulfonate (PFOS)	537	40	---		495.2430	500	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorooctanoic acid (PFOA)	537	20	---		260.5880	250	ng/L	104	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338

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Run Log

Run ID: **201862** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3222582		OS	CY	04/13/2015 22:40	041315M537a-Ext.mdb
CCL	3222582		OS	CY	04/13/2015 22:40	041315M537a-Ext.mdb
FS	3218210	PC-7	GW	CY	04/14/2015 00:43	041315M537a-Ext.mdb
FS	3218211	PC-11	GW	CY	04/14/2015 01:14	041315M537a-Ext.mdb
FS	3218212	PC-19	GW	CY	04/14/2015 01:45	041315M537a-Ext.mdb
FS	3218213	PC-16d	GW	CY	04/14/2015 02:16	041315M537a-Ext.mdb
FS	3218214	PC-15	GW	CY	04/14/2015 02:47	041315M537a-Ext.mdb
FS	3218220	PFW 5	GW	CY	04/14/2015 03:18	041315M537a-Ext.mdb
FS	3218222	PFW 2	GW	CY	04/14/2015 04:50	041315M537a-Ext.mdb
CCM	3222584		OS	CY	04/14/2015 05:21	041315M537a-Ext.mdb
CCM	3222584		OS	CY	04/14/2015 05:21	041315M537a-Ext.mdb
FS	3218221	PFW 4	GW	CY	04/14/2015 06:23	041315M537a-Ext.mdb
FS	3218223	PFW 1	GW	CY	04/14/2015 07:25	041315M537a-Ext.mdb
FS	3218224	PFW 3	GW	CY	04/14/2015 08:27	041315M537a-Ext.mdb
FS	3218225	PFW 6	GW	CY	04/14/2015 08:58	041315M537a-Ext.mdb
FS	3218226	MW-6	GW	CY	04/14/2015 09:29	041315M537a-Ext.mdb
FS	3218227	MW-28s	GW	CY	04/14/2015 10:00	041315M537a-Ext.mdb
FS	3218228	MW-12s	GW	CY	04/14/2015 10:31	041315M537a-Ext.mdb
FS	3218229	MW-30	GW	CY	04/14/2015 11:02	041315M537a-Ext.mdb
CCH	3222586		OS	CY	04/14/2015 11:33	041315M537a-Ext.mdb
CCH	3222586		OS	CY	04/14/2015 11:33	041315M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		96.7290	90.0	ng/L	107	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.0123	10.0	ng/L	100	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		30.9538	30.0	ng/L	103	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	Perfluorononanoic acid (PFNA)	537	20	---		19.2940	20.0	ng/L	96	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		39.9886	40.0	ng/L	100	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		20.1030	20.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	IS-PFOA-13C2	537	N/A	---		4685.98	4685.98	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	IS-PFOS-13C4	537	N/A	---		5426.39	5426.39	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	SS-PFDA-13C2	537	N/A	---		99.1922	100	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
CCL	SS-PFHxA-13C2	537	N/A	---		49.4821	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/13/2015 22:40	3222582
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-7		2000		ng/L	---	---	---	---	100	04/08/2015 07:25	04/14/2015 00:12	3218210
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-7		37000		ng/L	---	---	---	---	100	04/08/2015 07:25	04/14/2015 00:12	3218210
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-7		17000		ng/L	---	---	---	---	100	04/08/2015 07:25	04/14/2015 00:12	3218210
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-7		3500		ng/L	---	---	---	---	100	04/08/2015 07:25	04/14/2015 00:12	3218210
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-7		7700		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 00:43	3218210
FS	Perfluorononanoic acid (PFNA)	537	20	PC-7		600		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 00:43	3218210
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-11		490		ng/L	---	---	---	---	10.4	04/08/2015 07:25	04/14/2015 01:14	3218211
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-11		2100		ng/L	---	---	---	---	10.4	04/08/2015 07:25	04/14/2015 01:14	3218211
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-11		4400		ng/L	---	---	---	---	10.4	04/08/2015 07:25	04/14/2015 01:14	3218211
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-11		550		ng/L	---	---	---	---	10.4	04/08/2015 07:25	04/14/2015 01:14	3218211
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-19		370		ng/L	---	---	---	---	10.3	04/08/2015 07:25	04/14/2015 01:45	3218212
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-19		2200		ng/L	---	---	---	---	10.3	04/08/2015 07:25	04/14/2015 01:45	3218212
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-19		3300		ng/L	---	---	---	---	10.3	04/08/2015 07:25	04/14/2015 01:45	3218212
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-16d		160		ng/L	---	---	---	---	5.1	04/08/2015 07:25	04/14/2015 02:16	3218213
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-16d		560		ng/L	---	---	---	---	5.1	04/08/2015 07:25	04/14/2015 02:16	3218213
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-16d		700		ng/L	---	---	---	---	5.1	04/08/2015 07:25	04/14/2015 02:16	3218213
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-15		1300		ng/L	---	---	---	---	9.9	04/08/2015 07:25	04/14/2015 02:47	3218214
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 5		860		ng/L	---	---	---	---	10.3	04/08/2015 07:25	04/14/2015 03:18	3218220
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 5		2700		ng/L	---	---	---	---	10.3	04/08/2015 07:25	04/14/2015 03:18	3218220
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 2		51000		ng/L	---	---	---	---	1000	04/08/2015 07:25	04/14/2015 03:49	3218222
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 2		220000		ng/L	---	---	---	---	1000	04/08/2015 07:25	04/14/2015 03:49	3218222
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 2		5200		ng/L	---	---	---	---	50	04/08/2015 07:25	04/14/2015 04:20	3218222
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 2		630		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 04:50	3218222
FS	Perfluorononanoic acid (PFNA)	537	20	PFW 2		750		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 04:50	3218222
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		618.1860	675	ng/L	92	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		77.2698	75.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		229.9680	225	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	Perfluorononanoic acid (PFNA)	537	20	---		155.1980	150	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		298.3110	300	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		151.7650	150	ng/L	101	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOA-13C2	537	N/A	---		3792.31	3792.31	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	IS-PFOS-13C4	537	N/A	---		4513.33	4513.33	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	SS-PFDA-13C2	537	N/A	---		100.9300	100	ng/L	101	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
CCM	SS-PFHxA-13C2	537	N/A	---		52.8458	50.0	ng/L	106	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 05:21	3222584
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 4		700		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 06:23	3218221
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 4		1900		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 06:23	3218221
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 4		3300		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 06:23	3218221
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 4		420		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 06:23	3218221
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 1		8400		ng/L	---	---	---	---	50	04/08/2015 07:25	04/14/2015 06:54	3218223
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 1		500		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 07:25	3218223
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 1		2200		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 07:25	3218223
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 1		360		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 07:25	3218223
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 3		320		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 08:27	3218224
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 3		700		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 08:27	3218224
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 3		2700		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 08:27	3218224
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PFW 6		410		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 08:58	3218225
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PFW 6		1600		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 08:58	3218225
FS	Perfluorooctane sulfonate (PFOS)	537	40	PFW 6		3400		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 08:58	3218225
FS	Perfluorooctanoic acid (PFOA)	537	20	PFW 6		350		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 08:58	3218225
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-6		370		ng/L	---	---	---	---	20	04/08/2015 07:25	04/14/2015 09:29	3218226
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-6		2100		ng/L	---	---	---	---	20	04/08/2015 07:25	04/14/2015 09:29	3218226
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-6		5700		ng/L	---	---	---	---	20	04/08/2015 07:25	04/14/2015 09:29	3218226
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-6		510		ng/L	---	---	---	---	20	04/08/2015 07:25	04/14/2015 09:29	3218226
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-28s		590		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:00	3218227
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-28s		2100		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:00	3218227
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-12s		350		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:31	3218228
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-12s		1300		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:31	3218228
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-12s		4800		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:31	3218228
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-12s		470		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 10:31	3218228
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-30		1400		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 11:02	3218229
CCH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		1142.5500	1125	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	Perfluoroheptanoic acid (PFHpA)	537	10	---		129.3110	125	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		375.3460	375	ng/L	100	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	Perfluorononanoic acid (PFNA)	537	20	---		268.0070	250	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	Perfluorooctane sulfonate (PFOS)	537	40	---		495.3920	500	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	Perfluorooctanoic acid (PFOA)	537	20	---		247.0200	250	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	IS-PFOA-13C2	537	N/A	---		4269.07	4269.07	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	IS-PFOS-13C4	537	N/A	---		4998.90	4998.9	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	SS-PFDA-13C2	537	N/A	---		97.7087	100	ng/L	98	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586
CCH	SS-PFHxA-13C2	537	N/A	---		53.7249	50.0	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 11:33	3222586

Eurofins Eaton Analytical
Run Log

Run ID: **201864** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3222583		OS	CY	04/14/2015 16:42	041415M537a-Ext.mdb
CCL	3222583		OS	CY	04/14/2015 16:42	041415M537a-Ext.mdb
FS	3218230	PRW-1	GW	CY	04/14/2015 18:15	041415M537a-Ext.mdb
FS	3218231	PRW-4	GW	CY	04/14/2015 18:46	041415M537a-Ext.mdb
FS	3218232	RW-1	GW	CY	04/14/2015 19:16	041415M537a-Ext.mdb
FS	3218215	PC-22	GW	CY	04/14/2015 19:47	041415M537a-Ext.mdb
FS	3218218	Pond	GW	CY	04/14/2015 20:18	041415M537a-Ext.mdb
FS	3218219	PC-9	GW	CY	04/14/2015 20:49	041415M537a-Ext.mdb
CCM	3222585		OS	CY	04/14/2015 22:22	041415M537a-Ext.mdb
CCM	3222585		OS	CY	04/14/2015 22:22	041415M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.4572	10.0	ng/L	105	50 - 150	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		29.2030	30.0	ng/L	97	50 - 150	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.5418	40.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	IS-PFOA-13C2	537	N/A	---		4446.48	4446.48	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	IS-PFOS-13C4	537	N/A	---		5212.08	5212.08	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	SS-PFDA-13C2	537	N/A	---		98.3838	100	ng/L	98	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	SS-PFHxA-13C2	537	N/A	---		49.4553	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PRW-1		860		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 18:15	3218230
FS	Perfluorooctane sulfonate (PFOS)	537	40	PRW-1		1600		ng/L	---	---	---	---	10	04/08/2015 07:25	04/14/2015 18:15	3218230
FS	Perfluorooctane sulfonate (PFOS)	537	40	PRW-4		760		ng/L	---	---	---	---	9.9	04/08/2015 07:25	04/14/2015 18:46	3218231
FS	Perfluoroheptanoic acid (PFHpA)	537	10	RW-1		270		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 19:16	3218232
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	RW-1		820		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 19:16	3218232
FS	Perfluorooctane sulfonate (PFOS)	537	40	RW-1		2300		ng/L	---	---	---	---	10.2	04/08/2015 07:25	04/14/2015 19:16	3218232
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-22		1200		ng/L	---	---	---	---	10	04/09/2015 07:30	04/14/2015 19:47	3218215
FS	Perfluorooctane sulfonate (PFOS)	537	40	Pond		1600		ng/L	---	---	---	---	9.7	04/09/2015 07:30	04/14/2015 20:18	3218218
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-9		580		ng/L	---	---	---	---	4.7	04/09/2015 07:30	04/14/2015 20:49	3218219
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		75.1436	75.0	ng/L	100	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		230.2210	225	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		307.6150	300	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	IS-PFOA-13C2	537	N/A	---		4821.49	4821.49	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	IS-PFOS-13C4	537	N/A	---		5504.53	5504.53	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	SS-PFDA-13C2	537	N/A	---		96.2269	100	ng/L	96	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	SS-PFHxA-13C2	537	N/A	---		50.4317	50.0	ng/L	101	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	E87775
Arizona	AZ0432	Nevada	IN000352015-1
Arkansas	IN035	New Hampshire*	2124
California	2920	New Mexico	IN00035
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida (Primary AB)*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon*	IN200001
Idaho	IN00035/E87775	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	200001	Rhode Island	LAO00241
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-14-7
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA150003	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	00127
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

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Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client:	Barnstable County Dept. of Health and Environment	Report:	337813
		Priority:	Standard Written
Attn:	Gongmin Lei 3195 Main Street Barnstable, MA 02630	Status:	Final
		PWS ID:	Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3220374	MW-991	537	04/06/15 11:20	Client	04/08/15 09:45
3220375	MW-36d	537	04/06/15 12:40	Client	04/08/15 09:45
3220376	PC-10	537	04/06/15 14:20	Client	04/08/15 09:45
3220377	MW-22	537	04/06/15 14:45	Client	04/08/15 09:45
3220378	MD-3	537	04/07/15 09:00	Client	04/08/15 09:45
3220379	MD-3	522	04/07/15 09:00	Client	04/08/15 09:45

Report Summary

Project: 86107

Note: The samples submitted for analysis were received at a temperature of 14°C.

Note: Sample container for Method 522 was provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Jim Vernon at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Jim Vernon ASM

04/27/2015

Authorized Signature | Title | Date

Client Name: Barnstable County Dept. of Health and Environment
Report #: 337813

Sampling Point: MW-991 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 09:59	3220374
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**110**	ng/L	04/09/15 07:30	04/11/15 09:59	3220374
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**210**	ng/L	04/09/15 07:30	04/11/15 09:59	3220374
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**120**	ng/L	04/09/15 07:30	04/11/15 09:59	3220374
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**730**	ng/L	04/09/15 07:30	04/14/15 21:20	3220374
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**70**	ng/L	04/09/15 07:30	04/11/15 09:59	3220374

Sampling Point: MW-36d PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 10:30	3220375
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	04/09/15 07:30	04/11/15 10:30	3220375
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**90**	ng/L	04/09/15 07:30	04/11/15 10:30	3220375
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 10:30	3220375
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**140**	ng/L	04/09/15 07:30	04/11/15 10:30	3220375
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 10:30	3220375

Sampling Point: PC-10 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 11:01	3220376
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**70**	ng/L	04/09/15 07:30	04/11/15 11:01	3220376
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**250**	ng/L	04/09/15 07:30	04/11/15 11:01	3220376
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	**60**	ng/L	04/09/15 07:30	04/11/15 11:01	3220376
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**790**	ng/L	04/09/15 07:30	04/14/15 21:51	3220376
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**50**	ng/L	04/09/15 07:30	04/11/15 11:01	3220376

Client Name: Barnstable County Dept. of Health and Environment Report #: 337813

Sampling Point: MW-22 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 11:32	3220377
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	04/09/15 07:30	04/11/15 11:32	3220377
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**340**	ng/L	04/09/15 07:30	04/11/15 11:32	3220377
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 11:32	3220377
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**600**	ng/L	04/09/15 07:30	04/11/15 11:32	3220377
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	**90**	ng/L	04/09/15 07:30	04/11/15 11:32	3220377

Sampling Point: MD-3 PWS ID: Not Supplied

Volatile Organic Chemicals									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
123-91-1	1,4-Dioxane	522	---	0.07	< 0.07	ug/L	04/13/15 08:15	04/22/15 20:11	3220379

EEA Methods									
Analyte ID #	**Analyte**	**Method**	**Reg Limit**	**MRL†**	**Result**	**Units**	**Preparation Date**	**Analyzed Date**	**EEA ID #**
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	04/09/15 07:30	04/11/15 12:03	3220378
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	04/09/15 07:30	04/11/15 12:03	3220378
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**70**	ng/L	04/09/15 07:30	04/11/15 12:03	3220378
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 12:03	3220378
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**110**	ng/L	04/09/15 07:30	04/11/15 12:03	3220378
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	04/09/15 07:30	04/11/15 12:03	3220378

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

275298

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Client Provided Sample Container
522 only

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Batch # 337813

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Shaded area for EEA use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Barnstable County Lab, MA	Scott 17			86107	

BILL TO:	COMPLIANCE MONITORING Yes	No	POPULATION SERVED	SOURCE WATER
same				

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	86107 3226-374	4.6.15	1120			MW-991	537	A		x	2	GW	SW
2	375	4.6.15	1240			MW-36d	537	A		x	2	GW	SW
3	376	4.6.15	1420			PC-10	537	A		x	2	GW	SW
4	377	4.6.15	1445			MW-22	537	A		x	2	GW	SW
5	378	4.7.15	0900	x		MD-3	537 & 522 pH<4	A		x	3	DW	SW
6	379						522						
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	4.7.15	1037	[signature]	4/7/15	10:_
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
			[signature]	4-8-15	0945

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
low level 1,4-Dioxane

CONDITIONS UPON RECEIPT (check one):
___ Iced: Wet/Blue _X_ Ambient 14 °C Upon Receipt___ N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

Eurofins Eaton Analytical
Run Log

Run ID: **201760** Method: **522**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3222899		OS	DM	04/14/2015 08:38	522-02122015-DM.M
LRB	3222880		RW	DM	04/14/2015 09:09	522-02122015-DM.M
FBL	3222881		RW	DM	04/14/2015 09:37	522-02122015-DM.M
FBM	3222882		RW	DM	04/14/2015 10:05	522-02122015-DM.M

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-Tetrahydrofuran-d8	522	N/A	---		40879	40879	ug/L	100	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 08:38	3222899
CCL	SS-1,4-Dioxane-d8	522	N/A	---		10.3400	10.0	ug/L	103	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 08:38	3222899
CCL	1,4-Dioxane	522	0.07	---		0.0560	0.07	ug/L	80	50 - 150	---	---	1.0	04/13/2015 08:15	04/14/2015 08:38	3222899
LRB	IS-Tetrahydrofuran-d8	522	N/A	---		44365	40879	ug/L	109	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 09:09	3222880
LRB	SS-1,4-Dioxane-d8	522	N/A	---		9.9800	10.0	ug/L	100	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 09:09	3222880
LRB	1,4-Dioxane	522	0.07	---	<	0.07		ug/L	---	---	---	---	1.0	04/13/2015 08:15	04/14/2015 09:09	3222880
FBL	IS-Tetrahydrofuran-d8	522	N/A	---		40046	40879	ug/L	98	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 09:37	3222881
FBL	SS-1,4-Dioxane-d8	522	N/A	---		10.2200	10.0	ug/L	102	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 09:37	3222881
FBL	1,4-Dioxane	522	0.07	---		0.0890	0.07	ug/L	127	50 - 150	---	---	1.0	04/13/2015 08:15	04/14/2015 09:37	3222881
FBM	IS-Tetrahydrofuran-d8	522	N/A	---		36999	40879	ug/L	91	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 10:05	3222882
FBM	SS-1,4-Dioxane-d8	522	N/A	---		10.0800	10.0	ug/L	101	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 10:05	3222882
FBM	1,4-Dioxane	522	0.07	---		1.1100	1.0	ug/L	111	70 - 130	---	---	1.0	04/13/2015 08:15	04/14/2015 10:05	3222882

Eurofins Eaton Analytical
Run Log

Run ID: **202054** Method: **522**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3229087		OS	DM	04/22/2015 15:38	522-04222015-DM.M
FS	3220379	MD-3	GW	DM	04/22/2015 20:11	522-04222015-DM.M
LFSML	3222883	MD-3	GW	DM	04/22/2015 20:42	522-04222015-DM.M
LFSMDL	3222884	MD-3	GW	DM	04/22/2015 21:17	522-04222015-DM.M
CCH	3222901		OS	DM	04/23/2015 00:34	522-04222015-DM.M

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-Tetrahydrofuran-d8	522	N/A	---		41939	41939	ug/L	100	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 15:38	3229087
CCL	SS-1,4-Dioxane-d8	522	N/A	---		9.8400	10.0	ug/L	98	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 15:38	3229087
CCL	1,4-Dioxane	522	0.07	---		0.0640	0.07	ug/L	91	50 - 150	---	---	1.0	04/13/2015 08:15	04/22/2015 15:38	3229087
FS	IS-Tetrahydrofuran-d8	522	N/A	MD-3		41084	41939	ug/L	98	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 20:11	3220379
FS	SS-1,4-Dioxane-d8	522	N/A	MD-3		9.7500	10.0	ug/L	98	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 20:11	3220379
FS	1,4-Dioxane	522	0.07	MD-3	<	0.07		ug/L	---	---	---	---	1.0	04/13/2015 08:15	04/22/2015 20:11	3220379
LFSML	IS-Tetrahydrofuran-d8	522	N/A	MD-3		40789	41939	ug/L	97	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 20:42	3222883
LFSML	SS-1,4-Dioxane-d8	522	N/A	MD-3		9.5500	10.0	ug/L	96	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 20:42	3222883
LFSML	1,4-Dioxane	522	0.07	MD-3		0.0840	0.07	ug/L	120	50 - 150	---	---	1.0	04/13/2015 08:15	04/22/2015 20:42	3222883
LFSMDL	IS-Tetrahydrofuran-d8	522	N/A	MD-3		40139	41939	ug/L	96	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 21:17	3222884
LFSMDL	SS-1,4-Dioxane-d8	522	N/A	MD-3		9.7300	10.0	ug/L	97	70 - 130	---	---	1.0	04/13/2015 08:15	04/22/2015 21:17	3222884
LFSMDL	1,4-Dioxane	522	0.07	MD-3		0.0820	0.07	ug/L	117	50 - 150	2.4	50	1.0	04/13/2015 08:15	04/22/2015 21:17	3222884
CCH	IS-Tetrahydrofuran-d8	522	N/A	---		41636	41636	ug/L	100	70 - 130	---	---	1.0	04/13/2015 08:15	04/23/2015 00:34	3222901
CCH	SS-1,4-Dioxane-d8	522	N/A	---		9.7300	10.0	ug/L	97	70 - 130	---	---	1.0	04/13/2015 08:15	04/23/2015 00:34	3222901
CCH	1,4-Dioxane	522	0.07	---		9.7120	10.0	ug/L	97	70 - 130	---	---	1.0	04/13/2015 08:15	04/23/2015 00:34	3222901

Eurofins Eaton Analytical
Run Log

Run ID: **201840** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3225335		OS	CY	04/10/2015 21:06	041015M537a-Ext.mdb
LRB	3225339		RW	CY	04/10/2015 22:39	041015M537a-Ext.mdb
FBL	3225340		RW	CY	04/10/2015 23:10	041015M537a-Ext.mdb
FBM	3225341		RW	CY	04/10/2015 23:40	041015M537a-Ext.mdb
CCM	3225336		OS	CY	04/11/2015 06:22	041015M537a-Ext.mdb
FS	3220374	MW-991	DW	CY	04/11/2015 09:59	041015M537a-Ext.mdb
FS	3220375	MW-36d	DW	CY	04/11/2015 10:30	041015M537a-Ext.mdb
FS	3220376	PC-10	DW	CY	04/11/2015 11:01	041015M537a-Ext.mdb
FS	3220377	MW-22	DW	CY	04/11/2015 11:32	041015M537a-Ext.mdb
FS	3220378	MD-3	DW	CY	04/11/2015 12:03	041015M537a-Ext.mdb
CCH	3225338		OS	CY	04/11/2015 12:33	041015M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		4675.10	4675.1	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	IS-PFOS-13C4	537	N/A	---		3914.25	3914.25	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	SS-PFDA-13C2	537	N/A	---		99.9380	100	ng/L	100	70 - 130	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	SS-PFHxA-13C2	537	N/A	---		49.3180	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		88.8943	90.0	ng/L	99	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		9.9751	10.0	ng/L	100	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		30.4437	30.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorononanoic acid (PFNA)	537	20	---		20.1635	20.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.5852	40.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		20.8176	20.0	ng/L	104	50 - 150	---	---	1.0	04/09/2015 14:00	04/10/2015 21:06	3225335
LRB	IS-PFOA-13C2	537	N/A	---		4500.97	4675.1	ng/L	96	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	IS-PFOS-13C4	537	N/A	---		3774.28	3914.25	ng/L	96	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	SS-PFDA-13C2	537	N/A	---		98.3732	100	ng/L	98	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	SS-PFHxA-13C2	537	N/A	---		47.7204	50.0	ng/L	95	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorobutanesulfonic acid (PFBS)	537	90	---	<	90		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluoroheptanoic acid (PFHpA)	537	10	---	<	10		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorononanoic acid (PFNA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
LRB	Perfluorooctanoic acid (PFOA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	04/09/2015 07:30	04/10/2015 22:39	3225339
FBL	IS-PFOA-13C2	537	N/A	---		4427.09	4675.1	ng/L	95	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	IS-PFOS-13C4	537	N/A	---		3615.75	3914.25	ng/L	92	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	SS-PFDA-13C2	537	N/A	---		96.3069	100	ng/L	96	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	SS-PFHxA-13C2	537	N/A	---		46.7189	50.0	ng/L	93	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		87.3584	90.0	ng/L	97	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.8060	10.0	ng/L	108	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		32.3138	30.0	ng/L	108	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorononanoic acid (PFNA)	537	20	---		21.0174	20.0	ng/L	105	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		43.4159	40.0	ng/L	109	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBL	Perfluorooctanoic acid (PFOA)	537	20	---		21.0918	20.0	ng/L	105	50 - 150	---	---	1.0	04/09/2015 07:30	04/10/2015 23:10	3225340
FBM	IS-PFOA-13C2	537	N/A	---		4201.20	4675.1	ng/L	90	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	IS-PFOS-13C4	537	N/A	---		3733.55	3914.25	ng/L	95	70 - 140	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	SS-PFDA-13C2	537	N/A	---		103.5340	100	ng/L	104	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	SS-PFHxA-13C2	537	N/A	---		49.4640	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		608.4740	675	ng/L	90	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluoroheptanoic acid (PFHpA)	537	10	---		74.3400	75.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		218.2880	225	ng/L	97	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorononanoic acid (PFNA)	537	20	---		152.0250	150	ng/L	101	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorooctane sulfonate (PFOS)	537	40	---		286.7780	300	ng/L	96	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341
FBM	Perfluorooctanoic acid (PFOA)	537	20	---		149.3060	150	ng/L	100	70 - 130	---	---	1.0	04/09/2015 07:30	04/10/2015 23:40	3225341

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOA-13C2	537	N/A	---		4088.25	4088.25	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	IS-PFOS-13C4	537	N/A	---		3857.33	3857.33	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	SS-PFDA-13C2	537	N/A	---		101.6130	100	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	SS-PFHxA-13C2	537	N/A	---		51.3005	50.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		639.1320	675	ng/L	95	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		76.6327	75.0	ng/L	102	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		216.2880	225	ng/L	96	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorononanoic acid (PFNA)	537	20	---		157.3730	150	ng/L	105	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		298.2610	300	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		154.2610	150	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 06:22	3225336
FS	IS-PFOA-13C2	537	N/A	MW-991		3772.04	4088.25	ng/L	92	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	IS-PFOS-13C4	537	N/A	MW-991		3519.89	3857.33	ng/L	91	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	SS-PFDA-13C2	537	N/A	MW-991		91.8743	100	ng/L	97	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	SS-PFHxA-13C2	537	N/A	MW-991		48.5821	50.0	ng/L	102	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-991	<	90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-991		110		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-991		210		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	Perfluorononanoic acid (PFNA)	537	20	MW-991		120		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-991		70		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 09:59	3220374
FS	IS-PFOA-13C2	537	N/A	MW-36d		3635.94	4088.25	ng/L	89	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	IS-PFOS-13C4	537	N/A	MW-36d		3442.10	3857.33	ng/L	89	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	SS-PFDA-13C2	537	N/A	MW-36d		91.8527	100	ng/L	98	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	SS-PFHxA-13C2	537	N/A	MW-36d		46.1043	50.0	ng/L	98	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-36d	<	90		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-36d		20		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-36d		90		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluorononanoic acid (PFNA)	537	20	MW-36d	<	20		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-36d		140		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-36d	<	20		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 10:30	3220375
FS	IS-PFOA-13C2	537	N/A	PC-10		3625.32	4088.25	ng/L	89	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	IS-PFOS-13C4	537	N/A	PC-10		3385.78	3857.33	ng/L	88	70 - 140	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	SS-PFDA-13C2	537	N/A	PC-10		93.5314	100	ng/L	100	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	SS-PFHxA-13C2	537	N/A	PC-10		46.9175	50.0	ng/L	100	70 - 130	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	PC-10	<	90		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	Perfluoroheptanoic acid (PFHpA)	537	10	PC-10		70		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	PC-10		250		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	Perfluorononanoic acid (PFNA)	537	20	PC-10		60		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	Perfluorooctanoic acid (PFOA)	537	20	PC-10		50		ng/L	---	---	---	---	0.94	04/09/2015 07:30	04/11/2015 11:01	3220376
FS	IS-PFOA-13C2	537	N/A	MW-22		3521.36	4088.25	ng/L	86	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	IS-PFOS-13C4	537	N/A	MW-22		3353.67	3857.33	ng/L	87	70 - 140	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	SS-PFDA-13C2	537	N/A	MW-22		96.4783	100	ng/L	102	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFHxA-13C2	537	N/A	MW-22		48.3708	50.0	ng/L	102	70 - 130	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MW-22	<	90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MW-22		20		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MW-22		340		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluorononanoic acid (PFNA)	537	20	MW-22	<	20		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-22		600		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	Perfluorooctanoic acid (PFOA)	537	20	MW-22		90		ng/L	---	---	---	---	0.95	04/09/2015 07:30	04/11/2015 11:32	3220377
FS	IS-PFOA-13C2	537	N/A	MD-3		3548.00	4088.25	ng/L	87	70 - 140	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	IS-PFOS-13C4	537	N/A	MD-3		3398.23	3857.33	ng/L	88	70 - 140	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	SS-PFDA-13C2	537	N/A	MD-3		97.0593	100	ng/L	101	70 - 130	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	SS-PFHxA-13C2	537	N/A	MD-3		49.0163	50.0	ng/L	102	70 - 130	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	MD-3	<	90		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluoroheptanoic acid (PFHpA)	537	10	MD-3		20		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	MD-3		70		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluorononanoic acid (PFNA)	537	20	MD-3	<	20		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluorooctane sulfonate (PFOS)	537	40	MD-3		110		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
FS	Perfluorooctanoic acid (PFOA)	537	20	MD-3	<	20		ng/L	---	---	---	---	0.96	04/09/2015 07:30	04/11/2015 12:03	3220378
CCH	IS-PFOA-13C2	537	N/A	---		3570.05	3570.05	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	IS-PFOS-13C4	537	N/A	---		3545.37	3545.37	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	SS-PFDA-13C2	537	N/A	---		108.1770	100	ng/L	108	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	SS-PFHxA-13C2	537	N/A	---		51.6450	50.0	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		972.3830	1125	ng/L	86	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluoroheptanoic acid (PFHpA)	537	10	---		133.6800	125	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		366.6140	375	ng/L	98	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorononanoic acid (PFNA)	537	20	---		268.7450	250	ng/L	107	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorooctane sulfonate (PFOS)	537	40	---		495.2430	500	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338
CCH	Perfluorooctanoic acid (PFOA)	537	20	---		260.5880	250	ng/L	104	70 - 130	---	---	1.0	04/09/2015 14:00	04/11/2015 12:33	3225338

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Eurofins Eaton Analytical
Run Log

Run ID: **201864** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3222583		OS	CY	04/14/2015 16:42	041415M537a-Ext.mdb
CCL	3222583		OS	CY	04/14/2015 16:42	041415M537a-Ext.mdb
FS	3220374	MW-991	DW	CY	04/14/2015 21:20	041415M537a-Ext.mdb
FS	3220376	PC-10	DW	CY	04/14/2015 21:51	041415M537a-Ext.mdb
CCM	3222585		OS	CY	04/14/2015 22:22	041415M537a-Ext.mdb
CCM	3222585		OS	CY	04/14/2015 22:22	041415M537a-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.5418	40.0	ng/L	101	50 - 150	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	IS-PFOA-13C2	537	N/A	---		4446.48	4446.48	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	IS-PFOS-13C4	537	N/A	---		5212.08	5212.08	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	SS-PFDA-13C2	537	N/A	---		98.3838	100	ng/L	98	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
CCL	SS-PFHxA-13C2	537	N/A	---		49.4553	50.0	ng/L	99	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 16:42	3222583
FS	Perfluorooctane sulfonate (PFOS)	537	40	MW-991		730		ng/L	---	---	---	---	4.75	04/09/2015 07:30	04/14/2015 21:20	3220374
FS	Perfluorooctane sulfonate (PFOS)	537	40	PC-10		790		ng/L	---	---	---	---	4.7	04/09/2015 07:30	04/14/2015 21:51	3220376
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		307.6150	300	ng/L	103	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	IS-PFOA-13C2	537	N/A	---		4821.49	4821.49	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	IS-PFOS-13C4	537	N/A	---		5504.53	5504.53	ng/L	100	70 - 140	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	SS-PFDA-13C2	537	N/A	---		96.2269	100	ng/L	96	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585
CCM	SS-PFHxA-13C2	537	N/A	---		50.4317	50.0	ng/L	101	70 - 130	---	---	1.0	04/09/2015 14:00	04/14/2015 22:22	3222585

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LFSMDL	LFSM Duplicate Low		
LFSML	LFSM Low		
LRB	Laboratory Reagent Blank		

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4/21

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

Order # 86107

Batch # ______

www.eatonanalytical.com

CHAIN OF CUSTODY RECORD

Page ____ of ____

Shaded area for EEA use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Barnstable County Lab, MA	Scott 17			86107	
BILL TO: same	COMPLIANCE MONITORING Yes / No	POPULATION SERVED	SOURCE WATER		

#	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	86107	4·6·15	1120			MW-99I ✓	537			X	2	GW	SW
2	↓	4·6·15	1740			MW-36d ✓	537			X	2	GW	SW
3	↓	4·6·15	1420			PC-10 ✓	537			X	2	GW	SW
4	↓	4·6·15	1445			MW-22 ✓	537			X	2	GW	SW
5	↓	4·7·15	0900	X		MD-3 ✓	537 & 522			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

MW-35d 9next to well House)

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME	LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT
[signature]	4·7·15	1037 AM / PM	[signature]	4/7/15	10:__ AM / PM	LAB COMMENTS: low level 1,4-Dioxane
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED BY:(Signature)	DATE	TIME AM / PM	
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED FOR LABORATORY BY:	DATE	TIME AM / PM	CONDITIONS UPON RECEIPT (check one): ____ Iced: Wet/Blue ____ Ambient ____ °C Upon Receipt____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

* Please call, expedited service not available for all testing

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

Well Measurements

Well Series	No.	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	# Bottles	
Pond							
PFW	2	19.95	11.81	3.9	6/18	2	10:00 Am
PC	1	38.8	27.90	[illegible]	6/17/15	2	10:40 Am
PC	2	34.9	24.28	5	6/17	2	11:00 Am
PC	3	34.9	24.70	5	6/17	2	11:20 Am
PC	4	22.10	14.81	7	6/17	2	9:40 Am
PC	6	NA	—	—	—	—	
PC	7	44.5	30.69	7.5	6/17	2	14:20
PC	12 ~~8~~	45	27.95		6/17	2	14:20
PC	8 ~~12~~	45.0	30.5	15	6/17	2	15:35
PC	13	31.5	21.94	5	6/17	2	11:35
PC	18	50.2	29.57	10	6/17	2	15:15
PC	23	24.8	14.89	[illegible]	6/17	2	16:10
PC	25	39.2	15.19	15 Ft	6/17	2	16:00
PC	26	~~[illegible]~~ 48.30	31.24	8.3	6/17	2	10:20 Am
BFD	2	4 hours	run time	15 m	6/16/15	2	9:50 AM
BFD	5	"	"	30 m	6/16/15	2	10:00 AM
8-90		63.5	7.63	56 ft	6/16/15	2	11:00 AM

2½ ~~||||~~ |||| ||

S 20.5

D 14.89

Example Purge Volumes

2 " dia wells

ft water	3x Water Volume (gallons)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.4
6	2.9
7	3.4
8	3.9
9	4.4
10	4.9
11	5.4
12	5.9
13	6.4
14	6.9
15	7.3

POND S1 - Gen 8 — 6/18 12:00PM

POND D1 - Mishm — 6/18 12:00PM

~~POND S2~~

~~POND D2~~

POND 1S — 6/18 along south ~~east~~ shoreline (see map) ~~[illegible]~~ ~~11:30~~ Am 11:00

POND 1D — 6/18 ~~[illegible]~~ ~~11:30~~ Am 11:00

POND 2S — 6/18 along northeast shoreline (see map) ~~11:00~~ Am 11:30

POND 2D — 6/18 ~~11:00 Am~~ 11:30

POND #3 - 3 FD. Sample 6/18 11:40 AM

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your P.O. #: 15004466-000
Your C.O.C. #: 517196-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/07/06
Report #: R3562588
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5B9751
Received: 2015/06/20, 13:24

Sample Matrix: Water
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	12	2015/06/29	2015/06/29	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	4	2015/07/02	2015/07/03	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH832	AMH833	AMH834			
Sampling Date		2015/06/16 09:50	2015/06/16 10:00	2015/06/16 11:00			
COC Number		517196-01-01	517196-01-01	517196-01-01			
	Units	BFD-2	BFD-5	8-90	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	<0.050	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.020	<0.020	<0.020	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	<0.020	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	<0.020	<0.020	<0.020	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.020	<0.020	<0.020	0.020	0.0061	4088510
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	<0.020	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.020	<0.020	<0.020	0.020	0.0037	4088510
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	88	97	91	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	98	95	86	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	77	82	74	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH835				AMH836			
Sampling Date		2015/06/17 09:40				2015/06/17 10:20			
COC Number		517196-01-01				517196-01-01			
	Units	PC-4	RDL	MDL	QC Batch	PC-26	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	0.085	0.050	0.015	4088510	0.51	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	0.055	0.050	0.013	4088510	0.10	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	0.050	0.0026	4088510	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0028	4088510	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	0.040	0.020	0.0041	4088510	0.18	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.090	0.020	0.0030	4088510	0.12	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0037	4088510	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0025	4088510	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0058	4088510	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	0.033	0.020	0.0043	4088510	0.064	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.14	0.020	0.0026	4088510	0.26	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.55	0.020	0.0061	4088510	1.6 (1)	0.80	0.24	4084951
Perfluorohexanoic Acid (PFHxA)	ug/L	0.22	0.020	0.0022	4088510	0.55	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.079	0.020	0.0054	4088510	0.21	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	0.036	0.020	0.0040	4088510	0.067	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	0.020	0.00099	4088510	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	2.2 (1)	0.80	0.15	4084951	1.0 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	0.26	0.020	0.0035	4088510	0.37	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0039	4088510	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0055	4088510	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0055	4088510	0.12	0.020	0.0055	4088510
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	89	N/A	N/A	4088510	91	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	105	N/A	N/A	4088510	112	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	82	N/A	N/A	4088510	78	N/A	N/A	4088510

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH837				AMH838			
Sampling Date		2015/06/17 10:40				2015/06/17 11:00			
COC Number		517196-01-01				517196-01-01			
	Units	**PC-1**	**RDL**	**MDL**	**QC Batch**	**PC-2**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	7.9	2.0	0.60	4084951	<2.0 (1)	2.0	0.60	4084951
8:2 Fluorotelomer sulfonate	ug/L	<2.0	2.0	0.52	4084951	0.20	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<2.0	2.0	0.21	4084951	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<2.0	2.0	0.10	4084951	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<2.0	2.0	0.11	4084951	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<2.0	2.0	0.21	4084951	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	1.1	0.80	0.16	4084951	0.085	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	<0.80	0.80	0.12	4084951	0.13	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.80	0.80	0.15	4084951	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.80	0.80	0.10	4084951	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.80	0.80	0.23	4084951	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	1.3	0.80	0.17	4084951	0.063	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.80	0.80	0.10	4084951	0.24	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	10	0.80	0.24	4084951	1.1 (1)	0.80	0.24	4084951
Perfluorohexanoic Acid (PFHxA)	ug/L	2.8	0.80	0.088	4084951	0.50	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.1	0.80	0.22	4084951	0.22	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	<0.80	0.80	0.16	4084951	0.18	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.80	0.80	0.040	4084951	0.028	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	48	0.80	0.15	4084951	3.8 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	1.2	0.80	0.14	4084951	0.43	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.80	0.80	0.16	4084951	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.80	0.80	0.22	4084951	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.82	0.80	0.22	4084951	0.054	0.020	0.0055	4088510
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	93	N/A	N/A	4084951	79	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	99	N/A	N/A	4084951	89	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	101	N/A	N/A	4084951	76	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH839	AMH840				AMH841			
Sampling Date		2015/06/17 11:20	2015/06/17 11:35				2015/06/17 14:20			
COC Number		517196-01-01	517196-01-01				517196-01-01			
	Units	**PC-3**	**PC-13**	**RDL**	**MDL**	**QC Batch**	**PC-7**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.20	0.52	0.050	0.015	4088510	0.12	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	0.12	<0.050	0.050	0.013	4088510	<0.050	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	<0.050	0.050	0.0026	4088510	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	0.050	0.0028	4088510	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	0.075	0.090	0.020	0.0041	4088510	0.029	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.099	0.13	0.020	0.0030	4088510	0.028	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	<0.020	0.020	0.0037	4088510	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	<0.020	0.020	0.0025	4088510	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	<0.020	0.020	0.0058	4088510	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	0.099	0.099	0.020	0.0043	4088510	<0.020	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.24	0.26	0.020	0.0026	4088510	0.073	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.0 (1)	1.3 (1)	0.80	0.24	4084951	0.22	0.020	0.0061	4088510
Perfluorohexanoic Acid (PFHxA)	ug/L	0.37	0.50	0.020	0.0022	4088510	0.12	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.20	0.28	0.020	0.0054	4088510	0.027	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	0.097	0.077	0.020	0.0040	4088510	0.031	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.053	0.024	0.020	0.00099	4088510	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	4.7 (1)	2.4 (1)	0.80	0.15	4084951	0.50	0.020	0.0037	4088510
Perfluoropentanoic Acid (PFPeA)	ug/L	0.33	0.48	0.020	0.0035	4088510	0.11	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	<0.020	0.020	0.0039	4088510	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	<0.020	0.020	0.0055	4088510	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	<0.020	0.020	0.0055	4088510	0.16	0.020	0.0055	4088510
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	84	82	N/A	N/A	4088510	85	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	106	97	N/A	N/A	4088510	92	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	83	71	N/A	N/A	4088510	74	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH842				AMH843			
Sampling Date		2015/06/17 14:20				2015/06/17 15:15			
COC Number		517196-01-01				517196-01-01			
	Units	**PC-12**	**RDL**	**MDL**	**QC Batch**	**PC-18**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.48	0.050	0.015	4088510	0.46	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	<0.050	0.050	0.013	4088510	<0.050	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	0.050	0.0026	4088510	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0028	4088510	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	0.050	0.0053	4088510	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	0.042	0.020	0.0041	4088510	0.072	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.13	0.020	0.0030	4088510	0.071	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0037	4088510	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0025	4088510	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0058	4088510	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	<0.020	0.020	0.0043	4088510	0.023	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.20	0.020	0.0026	4088510	0.15	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.50	0.020	0.0061	4088510	0.82 (1)	0.80	0.24	4084951
Perfluorohexanoic Acid (PFHxA)	ug/L	0.56	0.020	0.0022	4088510	0.27	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.020	0.0054	4088510	0.11	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	0.094	0.020	0.0040	4088510	0.071	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.050 (2)	0.050	0.0025	4088510	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	1.3 (1)	0.80	0.15	4084951	1.2 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	0.67	0.020	0.0035	4088510	0.22	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0039	4088510	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0055	4088510	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0055	4088510	<0.020	0.020	0.0055	4088510
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	75	N/A	N/A	4088510	85	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	95	N/A	N/A	4088510	111	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	83	N/A	N/A	4088510	87	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

(2) Detection limit raised due to potential matrix interference.

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH844				AMH845			
Sampling Date		2015/06/17 15:35				2015/06/17 16:00			
COC Number		517196-01-01				517196-01-01			
	Units	PC-8	RDL	MDL	QC Batch	PC-25	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	13	2.0	0.60	4084951	0.18	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	<2.0	2.0	0.52	4084951	0.092	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<2.0	2.0	0.21	4084951	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<2.0	2.0	0.10	4084951	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<2.0	2.0	0.11	4084951	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<2.0	2.0	0.21	4084951	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	5.1	0.80	0.16	4084951	0.020	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.89	0.80	0.12	4084951	0.071	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.80	0.80	0.15	4084951	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.80	0.80	0.10	4084951	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.80	0.80	0.23	4084951	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	1.9	0.80	0.17	4084951	0.023	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	1.6	0.80	0.10	4084951	0.15	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	24	0.80	0.24	4084951	1.0 (1)	0.80	0.24	4084951
Perfluorohexanoic Acid (PFHxA)	ug/L	6.1	0.80	0.088	4084951	0.30	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	2.8	0.80	0.22	4084951	0.26	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	<0.80	0.80	0.16	4084951	0.089	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.80	0.80	0.040	4084951	<0.15 (2)	0.15	0.0074	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	15	0.80	0.15	4084951	2.3 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	2.0	0.80	0.14	4084951	0.26	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.80	0.80	0.16	4084951	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.80	0.80	0.22	4084951	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.84	0.80	0.22	4084951	0.044	0.020	0.0055	4088510
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	114	N/A	N/A	4084951	78	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	119	N/A	N/A	4084951	90	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	112	N/A	N/A	4084951	89	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

(2) Detection limit raised due to potential matrix interference.

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH846				AMH847			
Sampling Date		2015/06/17 16:10				2015/06/18 10:00			
COC Number		517196-01-01				517196-01-01			
	Units	**PC-23D**	**RDL**	**MDL**	**QC Batch**	**PFW2**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.18	0.050	0.015	4088510	<2.0	2.0	0.60	4084951
8:2 Fluorotelomer sulfonate	ug/L	<0.050	0.050	0.013	4088510	7.4	2.0	0.52	4084951
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0053	4088510	<2.0	2.0	0.21	4084951
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	0.050	0.0026	4088510	<2.0	2.0	0.10	4084951
N-methylperfluorooctane sulfonamide	ug/L	<0.050	0.050	0.0028	4088510	<2.0	2.0	0.11	4084951
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	0.050	0.0053	4088510	<2.0	2.0	0.21	4084951
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.020	0.020	0.0041	4088510	<0.80	0.80	0.16	4084951
Perfluorobutanoic acid	ug/L	0.042	0.020	0.0030	4088510	<0.80	0.80	0.12	4084951
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0037	4088510	<0.80	0.80	0.15	4084951
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0025	4088510	<0.80	0.80	0.10	4084951
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0058	4088510	<0.80	0.80	0.23	4084951
Perfluoroheptane sulfonate	ug/L	<0.020	0.020	0.0043	4088510	<0.80	0.80	0.17	4084951
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.052	0.020	0.0026	4088510	<0.80	0.80	0.10	4084951
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.31	0.020	0.0061	4088510	1.4	0.80	0.24	4084951
Perfluorohexanoic Acid (PFHxA)	ug/L	0.18	0.020	0.0022	4088510	<0.80	0.80	0.088	4084951
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.073	0.020	0.0054	4088510	<0.80	0.80	0.22	4084951
Perfluorononanoic Acid (PFNA)	ug/L	0.037	0.020	0.0040	4088510	<0.80	0.80	0.16	4084951
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.30 (1)	0.30	0.015	4088510	<0.80	0.80	0.040	4084951
Perfluorooctane Sulfonate (PFOS)	ug/L	1.0 (2)	0.80	0.15	4084951	200	8.0	1.5	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	0.26	0.020	0.0035	4088510	<0.80	0.80	0.14	4084951
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0039	4088510	<0.80	0.80	0.16	4084951
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0055	4088510	<0.80	0.80	0.22	4084951
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0055	4088510	1.9	0.80	0.22	4084951
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	77	N/A	N/A	4088510	144 (3)	N/A	N/A	4084951
13C4-Perfluorooctanoic acid	%	96	N/A	N/A	4088510	113	N/A	N/A	4084951
13C8-Perfluorooctanesulfonamide	%	82	N/A	N/A	4088510	95	N/A	N/A	4084951

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Detection limit raised due to potential matrix interference.

(2) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

(3) Surrogate recovery was above the defined upper control limit (UCL). Because quantitation is performed using isotope dilution techniques, any losses (or apparent gains) of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar loss (or apparent gain) of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of this target compound is not affected by the low recovery.

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Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

TEST SUMMARY

Maxxam ID: AMH832
Sample ID: BFD-2
Matrix: Water

Collected: 2015/06/16
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH833
Sample ID: BFD-5
Matrix: Water

Collected: 2015/06/16
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH834
Sample ID: 8-90
Matrix: Water

Collected: 2015/06/16
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH835
Sample ID: PC-4
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH836
Sample ID: PC-26
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH837
Sample ID: PC-1
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4084951	2015/06/29	2015/06/29	Colm McNamara

Maxxam ID: AMH838
Sample ID: PC-2
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4084951	2015/06/29	2015/06/29	Colm McNamara

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TEST SUMMARY

Maxxam ID: AMH839
Sample ID: PC-3
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH840
Sample ID: PC-13
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH841
Sample ID: PC-7
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH842
Sample ID: PC-12
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH843
Sample ID: PC-18
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH844
Sample ID: PC-8
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4084951	2015/06/29	2015/06/29	Colm McNamara

Maxxam ID: AMH845
Sample ID: PC-25
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

TEST SUMMARY

Maxxam ID: AMH846
Sample ID: PC-23D
Matrix: Water

Collected: 2015/06/17
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH847
Sample ID: PFW2
Matrix: Water

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4084951	2015/06/29	2015/06/29	Colm McNamara

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GENERAL COMMENTS

Sample AMH837-01 : Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AMH844-01 : Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AMH847-01 : Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample AMH835, PFOS and PFOA in water: Test repeated.
Sample AMH836, PFOS and PFOA in water: Test repeated.
Sample AMH838, PFOS and PFOA in water: Test repeated.
Sample AMH839, PFOS and PFOA in water: Test repeated.
Sample AMH840, PFOS and PFOA in water: Test repeated.
Sample AMH842, PFOS and PFOA in water: Test repeated.
Sample AMH843, PFOS and PFOA in water: Test repeated.
Sample AMH845, PFOS and PFOA in water: Test repeated.
Sample AMH846, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
4084951	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/06/29		108	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/06/29		119	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/06/29		118	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/06/29		106	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/06/29		111	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/06/29		107	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/06/29		83	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/06/29		109	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/06/29		126	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/06/29		106	%	70 - 130
			Perfluorobutanoic acid	2015/06/29		109	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/29		114	%	70 - 130
			Perfluoroheptane sulfonate	2015/06/29		93	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/29		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/29		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/29		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/29		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/29		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/29		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/29		NC	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/29		130	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/29		84	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/29		85	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/29		116	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/29		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/06/29		NC	%	70 - 130
4084951	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/06/29		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/06/29		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/06/29		120	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/06/29		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/06/29		105	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/06/29		105	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/06/29		126	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/06/29		112	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/06/29		128	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/06/29		107	%	70 - 130
			Perfluorobutanoic acid	2015/06/29		112	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/29		108	%	70 - 130
			Perfluoroheptane sulfonate	2015/06/29		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/29		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/29		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/29		97	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/29		95	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/29		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/29		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/29		125	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/29		119	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/29		91	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/29		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/29		129	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/29		95	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/06/29		100	%	70 - 130
4084951	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/06/29		119	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/06/29		106	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/06/29		111	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/06/29	<2.0		ug/L	
			8:2 Fluorotelomer sulfonate	2015/06/29	<2.0		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/06/29	<2.0		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/06/29	<2.0		ug/L	
			N-methylperfluorooctane sulfonamide	2015/06/29	<2.0		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/06/29	<2.0		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/06/29	<0.80		ug/L	
			Perfluorobutanoic acid	2015/06/29	<0.80		ug/L	
			Perfluorodecane Sulfonate	2015/06/29	<0.80		ug/L	
			Perfluoroheptane sulfonate	2015/06/29	<0.80		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/06/29	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/06/29	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/06/29	<0.80		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/06/29	<0.80		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/29	<0.80		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/06/29	<0.80		ug/L	
			Perfluorotetradecanoic Acid	2015/06/29	<0.80		ug/L	
			Perfluorotridecanoic Acid	2015/06/29	<0.80		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/06/29	<0.80		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/06/29	<0.80		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/06/29	<0.80		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/29	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/06/29	<0.80		ug/L	
4084951	CM5	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/06/29	NC (1)		%	30
4088510	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/07/03		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		56	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		113	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		123	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		103	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		95	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		120	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		122	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		108	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		94	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		96	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		120	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/07/03		NC	%	70 - 130
4088510	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/07/03		87	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		57	%	50 - 150

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			6:2 Fluorotelomer sulfonate	2015/07/03		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		103	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		117	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		117	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		96	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		91	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		95	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/07/03		104	%	70 - 130
4088510	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/07/03		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		93	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		96	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			8:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/07/03	<0.050		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	<0.020		ug/L	
			Perfluorobutanoic acid	2015/07/03	<0.020		ug/L	
			Perfluorodecane Sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptane sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/07/03	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluorotridecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/07/03	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	<0.020		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	<0.020		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/07/03	<0.020		ug/L	
4088510	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamide	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	NC		%	30
			N-methylperfluorooctane sulfonamide	2015/07/03	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			N-methylperfluorooctanesulfonamidol	2015/07/03	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	NC		%	30
			Perfluorobutanoic acid	2015/07/03	NC		%	30
			Perfluorodecane Sulfonate	2015/07/03	NC		%	30
			Perfluoroheptane sulfonate	2015/07/03	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	1.1		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	1.8		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	8.0		%	30
			Perfluorononanoic Acid (PFNA)	2015/07/03	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	6.9		%	30
			Perfluorotetradecanoic Acid	2015/07/03	NC		%	30
			Perfluorotridecanoic Acid	2015/07/03	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/07/03	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	1.5		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Success Through Science®

Maxxam Job #: B5B9751
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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20-Jun-15 13:24
Melissa DiGrazia
B5B9751
MAF ENV-784

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:
Company Name:	#29803 Cape Cod Comission	Company Name:	CAPE COD COMMISSION	Quotation #:		Bottle Order #: 517196
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:		
Address:	3225 Main Street	Address:	3225 MAIN ST.	Project:		
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:		Project Manager:
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3136	Site #:		C#517196-01-01
Email:	tomcambareri@capecodcomission.org	Email:	TCAMBARERI@CAPECODCOMMISSION.ORG	Sampled By:		Melissa DiGrazia

AIR

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Res/Park / Medium/Fine; Table 2 / Ind/Comm / Coarse; Table 3 / Agri/Other / For RSC; Table ___

Other Regulations: CCME; Sanitary Sewer Bylaw; Reg 558; Storm Sewer Bylaw; MISA; Municipality ______; PWQO; Other ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Analysis	# of Bottles	Comments
1		BFD-2	6.16.15	9:50	WATER		537	2	
2		BFD-5	6.16.15	10:00	WATER		537	2	
3		8-90	6.16.15	11:00	WATER		537	2	
4		PC-4	6.17.15	9:40	WATER		537	2	
5		PC-26	6.17.15	10:20	WATER		537	2	
6		PC-1	6.17.15	10:40	WATER		537	2	
7		PC-2	6.17.15	11:00	WATER		537	2	
8		PC-3	6.17.15	11:20	WATER		537	2	
9		PC-13	6.17.15	11:35	WATER		537	2	
10		PC-7	6.17.15	14:20	WATER		537	2	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Tom Cambareri	15/06/19	12 AM	MARK KESER	2015/06/20	1324			1/0/1	Present		✓
									Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam — Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #29803 Cape Cod Comission	Company Name: CAPE COD COMMISSION	Quotation #:	Maxxam Job #: B5B9751 MH
Attention: Tom Cambareri	Attention: TOM CAMBARERI	P.O. #:	Bottle Order #: 517196
Address: 3225 Main Street	Address: 3225 MAIN ST.	Project:	COC #: C#517196-01-01
Barnstable MA 02630	BARNSTABLE, MA 02630	Project Name:	Project Manager: Melissa DiGrazia
Tel: (508) 362-3828 x1234 Fax:	Tel: 508-362-3828 Fax: 508-362-3136	Site #:	
Email: tomcambareri@capecodcomission.org	Email: TCAMBARERI@CAPECODCOMMISSION.ORG	Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ______ ☐ PWQO ☐ Other ______

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ ☐
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI											# of Bottles	Comments
1		PC-12	6.17.15	14:20	WATER		537										2	
2		PC-18	6.17.15	15:15	WATER		537										2	
3		PC-8	6.17.15	15:35	WATER		537										2	
4		PC-25	6.17.15	16:00	WATER		537										2	
5		PC-23d	6.17.15	16:10	WATER		537										2	
6		PFW-2	6.18.15	10:00	WATER		537										2	
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Tom Cambareri	15/06/19	12 PM	[signature] MAXXAM	2015/06/20	13:24			1/0/1	Present		✓
									Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	CAPE COD COMMISSION	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street	Address:	3225 MAIN ST.	Project:	
	Barnstable MA 02630		BARNSTABLE MA 02630	Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3136	Site #:	
Email:	tomcambareri@capecodcomission.org	Email:	TCAMBARERI@CAPECODCOMMISSION.ORG	Sampled By:	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	517196
COC #:	Project Manager:
C#517196-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558. ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI											# of Bottles	Comments
1		POND S1	6.18.15	12:00	WATER		537										1	
2		POND D1	6.18.15	12:00	WATER		537										1	
3		POND 1S	6.18.15	11:00	SOIL		537										1	
4		POND 1D	6.18.15	11:00	SOIL		537										1	
5		POND 2S	6.18.15	11:30	SOIL		537										1	
6		POND 2D	6.18.15	11:30	SOIL		537										1	
7		POND 3	6.18.15	11:40	SOIL		537										1	
8																		
9																		
10																		

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/06/19	12 PM				

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Original

INVOICE #: AU3060295
Invoice Date:2015/07/06

ATTN: TOM CAMBARERI
CAPE COD COMISSION
CAPE COD COMMISSION
3225 MAIN STREET
BARNSTABLE,MA
USA 02630

CLIENT #: 29803 ACCOUNT #: COD9300
YOUR P.O. #: 15004466-000
QUOTE #: B53924
COC #: 517196-01-01
CAPE COD COMISSION CONTACT: TOM CAMBARERI
MAXXAM JOB #: B5B9746
DATE SAMPLE(S) RECEIVED: 2015/06/20

FOR SERVICES RENDERED RE:

Moisture -BAL (Soil)	
5 @ 0.00/each ----------	$ 0.00
PFOS and PFOA in soil -LCMS (Soil)	
5 @ 250.00/each ----------	1,250.00
PFOS and PFOA in water -LCMS (Water)	
2 @ 250.00/each ----------	500.00
SUBTOTAL	1,750.00
TOTAL $ USD	1,750.00

PAYABLE IN U.S. FUNDS

PLEASE MAKE CHEQUE PAYABLE TO: **MAXXAM ANALYTICS**
PLEASE REMIT TO: **Maxxam Analytics, C/O TH0069, PO Box 4269, Postal Station A, Toronto ON, M5W 5V2**
Please refer to invoice number when making payment.
Thank you for using MAXXAM ANALYTICS

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Success Through Science®

Your P.O. #: 15004466-000
Your C.O.C. #: 517196-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/07/06
Report #: R3562589
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5B9746
Received: 2015/06/20, 13:24

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	5	N/A	2015/06/24	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	5	2015/06/29	2015/06/30	CAM SOP-00894	EPA537 m

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2015/06/29	2015/06/29	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Total Cover Pages : 1

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AMH822			AMH823	AMH824	AMH825			
Sampling Date		2015/06/18 11:00			2015/06/18 11:00	2015/06/18 11:30	2015/06/18 11:30			
COC Number		517196-01-01			517196-01-01	517196-01-01	517196-01-01			
	Units	**POND 1S**	**RDL**	**MDL**	**POND 1D**	**POND 2S**	**POND 2D**	**RDL**	**MDL**	**QC Batch**
Moisture	%	38	1.0	1.0	26	23	25	1.0	1.0	4080230
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.2	0.2	0.028	<0.1	<0.1	<0.1	0.1	0.014	4086050
Perfluorobutanoic acid	ug/kg	<0.2	0.2	0.034	<0.1	<0.1	<0.1	0.1	0.017	4086050
Perfluorodecane Sulfonate	ug/kg	<0.2	0.2	0.04	<0.1	<0.1	<0.1	0.1	0.02	4086050
Perfluorodecanoic Acid (PFDA)	ug/kg	0.2	0.2	0.034	0.3	<0.1	1.0	0.1	0.017	4086050
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.2	0.2	0.05	<0.1	<0.1	<0.1	0.1	0.025	4086050
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.2	0.2	0.03	0.1	<0.1	0.2	0.1	0.015	4086050
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.9	0.2	0.03	0.7	0.3	1.1	0.1	0.015	4086050
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.5	0.2	0.022	0.3	0.2	0.4	0.1	0.011	4086050
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.2	0.2	0.046	0.2	<0.1	0.4	0.1	0.023	4086050
Perfluorononanoic Acid (PFNA)	ug/kg	0.5	0.2	0.02	0.7	0.2	2.1	0.1	0.01	4086050
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.4	0.2	0.024	0.2	<0.1	<0.1	0.1	0.012	4086050
Perfluorooctane Sulfonate (PFOS)	ug/kg	19 (1)	10	1.5	23 (1)	11 (1)	34 (1)	5	0.75	4090355
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.3	0.2	0.022	0.2	<0.1	0.2	0.1	0.011	4086050
Perfluorotetradecanoic Acid	ug/kg	<0.2	0.2	0.032	<0.1	<0.1	<0.1	0.1	0.016	4086050
Perfluorotridecanoic Acid	ug/kg	0.7	0.2	0.048	0.2	0.1	<0.1	0.1	0.024	4086050
Perfluoroundecanoic Acid (PFUnA)	ug/kg	2.8	0.2	0.044	1.6	1.9	0.8	0.1	0.022	4086050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AMH826	AMH826			
Sampling Date		2015/06/18 11:40	2015/06/18 11:40			
COC Number		517196-01-01	517196-01-01			
	Units	POND 3	POND 3 Lab-Dup	RDL	MDL	QC Batch
Moisture	%	22	N/A	1.0	1.0	4080230
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.1	<0.1	0.1	0.014	4086050
Perfluorobutanoic acid	ug/kg	<0.1	<0.1	0.1	0.017	4086050
Perfluorodecane Sulfonate	ug/kg	<0.1	<0.1	0.1	0.02	4086050
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.1	<0.1	0.1	0.017	4086050
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.1	<0.1	0.1	0.025	4086050
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.1	<0.1	0.1	0.015	4086050
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.4	0.4	0.1	0.015	4086050
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.3	0.3	0.1	0.011	4086050
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.1	0.1	0.1	0.023	4086050
Perfluorononanoic Acid (PFNA)	ug/kg	<0.1	0.2	0.1	0.01	4086050
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.1	<0.1	0.1	0.012	4086050
Perfluorooctane Sulfonate (PFOS)	ug/kg	9 (1)	7 (1)	5	0.75	4090355
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.2	0.2	0.1	0.011	4086050
Perfluorotetradecanoic Acid	ug/kg	<0.1	<0.1	0.1	0.016	4086050
Perfluorotridecanoic Acid	ug/kg	0.4	0.4	0.1	0.024	4086050
Perfluoroundecanoic Acid (PFUnA)	ug/kg	0.4	0.5	0.1	0.022	4086050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

RESULTS OF ANALYSES OF WATER

Maxxam ID		AMH820	AMH820	AMH821			
Sampling Date		2015/06/18 12:00	2015/06/18 12:00	2015/06/18 12:00			
COC Number		517196-01-01	517196-01-01	517196-01-01			
	Units	**POND S1**	**POND S1 Lab-Dup**	**POND D1**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.015	4088510
8:2 Fluorotelomer sulfonate	ug/L	<0.050	<0.050	<0.050	0.050	0.013	4088510
N-ethylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.050	<0.050	<0.050	0.050	0.0026	4088510
N-methylperfluorooctane sulfonamide	ug/L	<0.050	<0.050	<0.050	0.050	0.0028	4088510
N-methylperfluorooctanesulfonamidol	ug/L	<0.050	<0.050	<0.050	0.050	0.0053	4088510
Perfluorobutane Sulfonate (PFBS)	ug/L	0.061	0.058	0.058	0.020	0.0041	4088510
Perfluorobutanoic acid	ug/L	0.079	0.081	0.078	0.020	0.0030	4088510
Perfluorodecane Sulfonate	ug/L	<0.020	<0.020	<0.020	0.020	0.0037	4088510
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0025	4088510
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0058	4088510
Perfluoroheptane sulfonate	ug/L	0.058	0.057	0.061	0.020	0.0043	4088510
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.18	0.18	0.17	0.020	0.0026	4088510
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.55	0.56	0.56	0.020	0.0061	4088510
Perfluorohexanoic Acid (PFHxA)	ug/L	0.44	0.41	0.43	0.020	0.0022	4088510
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.14	0.16	0.020	0.0054	4088510
Perfluorononanoic Acid (PFNA)	ug/L	0.094	0.092	0.095	0.020	0.0040	4088510
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	<0.020	<0.020	0.020	0.00099	4088510
Perfluorooctane Sulfonate (PFOS)	ug/L	2.5 (1)	2.6 (1)	2.4 (1)	0.80	0.15	4084951
Perfluoropentanoic Acid (PFPeA)	ug/L	0.27	0.25	0.27	0.020	0.0035	4088510
Perfluorotetradecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0039	4088510
Perfluorotridecanoic Acid	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	<0.020	<0.020	0.020	0.0055	4088510
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	89	91	78	N/A	N/A	4088510
13C4-Perfluorooctanoic acid	%	103	106	81	N/A	N/A	4088510
13C8-Perfluorooctanesulfonamide	%	67	65	67	N/A	N/A	4088510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

TEST SUMMARY

Maxxam ID: AMH820
Sample ID: POND S1
Matrix: Water

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH820 Dup
Sample ID: POND S1
Matrix: Water

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH821
Sample ID: POND D1
Matrix: Water

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4088510	2015/07/02	2015/07/03	Colm McNamara

Maxxam ID: AMH822
Sample ID: POND 1S
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH823
Sample ID: POND 1D
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH824
Sample ID: POND 2S
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH825
Sample ID: POND 2D
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

TEST SUMMARY

Maxxam ID: AMH826
Sample ID: POND 3
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4080230	N/A	2015/06/24	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam ID: AMH826 Dup
Sample ID: POND 3
Matrix: Soil

Collected: 2015/06/18
Shipped:
Received: 2015/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	4086050	2015/06/29	2015/06/30	Colm McNamara

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

GENERAL COMMENTS

Sample AMH822-01 : PFOSALCM-S: Detection limits were adjusted for high moisture content.

Sample AMH822, PFOS and PFOA in soil: Test repeated.
Sample AMH823, PFOS and PFOA in soil: Test repeated.
Sample AMH824, PFOS and PFOA in soil: Test repeated.
Sample AMH825, PFOS and PFOA in soil: Test repeated.
Sample AMH826, PFOS and PFOA in soil: Test repeated.
Sample AMH820, PFOS and PFOA in water: Test repeated.
Sample AMH821, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
4080230	BOP	RPD - Sample/Sample Dup	Moisture	2015/06/24	8.0		%	20
4084951	CM5	Matrix Spike(AMH820)	Perfluorooctane Sulfonate (PFOS)	2015/06/29		NC	%	70 - 130
4084951	CM5	Spiked Blank	Perfluorooctane Sulfonate (PFOS)	2015/06/29		100	%	70 - 130
4084951	CM5	Method Blank	Perfluorooctane Sulfonate (PFOS)	2015/06/29	<0.80		ug/L	
4084951	CM5	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/06/29	NC (1)		%	30
4086050	CM5	Matrix Spike(AMH826)	Perfluorobutane Sulfonate (PFBS)	2015/06/30		106	%	70 - 130
			Perfluorobutanoic acid	2015/06/30		104	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/30		99	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/30		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/30		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/30		99	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30		109	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/30		90	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/30		58 (2)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30		91	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/30		97	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/30		96	%	70 - 130
4086050	CM5	Spiked Blank	Perfluorobutane Sulfonate (PFBS)	2015/06/30		99	%	70 - 130
			Perfluorobutanoic acid	2015/06/30		104	%	70 - 130
			Perfluorodecane Sulfonate	2015/06/30		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/06/30		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/06/30		102	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/06/30		97	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30		97	%	70 - 130
			Perfluorotetradecanoic Acid	2015/06/30		107	%	70 - 130
			Perfluorotridecanoic Acid	2015/06/30		89	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/06/30		103	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/06/30		97	%	70 - 130
4086050	CM5	Method Blank	Perfluorobutane Sulfonate (PFBS)	2015/06/30	<0.1		ug/kg	
			Perfluorobutanoic acid	2015/06/30	<0.1		ug/kg	
			Perfluorodecane Sulfonate	2015/06/30	<0.1		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2015/06/30	<0.1		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2015/06/30	<0.1		ug/kg	
			Perfluorononanoic Acid (PFNA)	2015/06/30	<0.1		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30	<0.1		ug/kg	
			Perfluorotetradecanoic Acid	2015/06/30	<0.1		ug/kg	
			Perfluorotridecanoic Acid	2015/06/30	<0.1		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30	<0.1		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30	<0.1		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30	<0.1		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2015/06/30	<0.1		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30	<0.1		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2015/06/30	<0.1		ug/kg	
4086050	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/06/30	NC		%	30
			Perfluorobutanoic acid	2015/06/30	NC		%	30
			Perfluorodecane Sulfonate	2015/06/30	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/06/30	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluorododecanoic Acid (PFDoA)	2015/06/30	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/06/30	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/06/30	NC		%	25
			Perfluorotetradecanoic Acid	2015/06/30	NC		%	30
			Perfluorotridecanoic Acid	2015/06/30	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/06/30	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/06/30	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/06/30	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/06/30	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/06/30	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/06/30	NC		%	30
4088510	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/07/03		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		56	%	50 - 150
4088510	CM5	Matrix Spike(AMH820)	6:2 Fluorotelomer sulfonate	2015/07/03		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		113	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		123	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		103	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		95	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		120	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		122	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		108	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		94	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		96	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		120	%	70 - 130
4088510	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/07/03		87	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		57	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/07/03		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/07/03		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/07/03		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/07/03		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/07/03		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/07/03		103	%	70 - 130
			Perfluorobutanoic acid	2015/07/03		117	%	70 - 130
			Perfluorodecane Sulfonate	2015/07/03		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/07/03		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/07/03		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/07/03		117	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03		96	%	70 - 130

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
			Perfluoropentanoic Acid (PFPeA)	2015/07/03		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/07/03		91	%	70 - 130
			Perfluorotridecanoic Acid	2015/07/03		95	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/07/03		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/07/03		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03		104	%	70 - 130
4088510	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/07/03		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/07/03		93	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/07/03		96	%	50 - 150
			6:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			8:2 Fluorotelomer sulfonate	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctane sulfonamide	2015/07/03	<0.050		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/07/03	<0.050		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	<0.020		ug/L	
			Perfluorobutanoic acid	2015/07/03	<0.020		ug/L	
			Perfluorodecane Sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptane sulfonate	2015/07/03	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/07/03	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluorotridecanoic Acid	2015/07/03	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/07/03	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	<0.020		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	<0.020		ug/L	
4088510	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamide	2015/07/03	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/07/03	NC		%	30
			N-methylperfluorooctane sulfonamide	2015/07/03	NC		%	30
			N-methylperfluorooctanesulfonamidol	2015/07/03	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/07/03	NC		%	30
			Perfluorobutanoic acid	2015/07/03	NC		%	30
			Perfluorodecane Sulfonate	2015/07/03	NC		%	30
			Perfluoroheptane sulfonate	2015/07/03	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/07/03	1.1		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/07/03	1.8		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/07/03	8.0		%	30
			Perfluorononanoic Acid (PFNA)	2015/07/03	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/07/03	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/07/03	6.9		%	30
			Perfluorotetradecanoic Acid	2015/07/03	NC		%	30
			Perfluorotridecanoic Acid	2015/07/03	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/07/03	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/07/03	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/07/03	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/07/03	1.5		%	30

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5B9746
Report Date: 2015/07/06

Cape Cod Comission
Your P.O. #: 15004466-000

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	Units	QC Limits
4090355	CM5	Matrix Spike(AMH826)	Perfluorooctane Sulfonate (PFOS)	2015/07/03		94	%	70 - 130
4090355	CM5	Spiked Blank	Perfluorooctane Sulfonate (PFOS)	2015/07/03		102	%	70 - 130
4090355	CM5	Method Blank	Perfluorooctane Sulfonate (PFOS)	2015/07/03	<5		ug/kg	
4090355	CM5	RPD - Sample/Sample Dup	Perfluorooctane Sulfonate (PFOS)	2015/07/03	NC (1)		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

(2) Matrix spike recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Sin Chii Chia, Scientific Services

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

20-Jun-15 13:24
Melissa DiGrazia
B5B9746
MAF ENV-579
C#517196-01-01

Page of

Bottle Order #: 517196
Project Manager: Melissa DiGrazia

AIR

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	CAPE COD COMMISSION	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street	Address:	3225 MAIN ST.	Project:	
	Barnstable MA 02630		BARNSTABLE MA 02630	Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3136	Site #:	
Email:	tomcambareri@capecodcomission.org	Email:	TCAMBARERI@CAPECODCOMMISSION.ORG	Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other ___; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		POND S1	6.18.15	12:00	WATER	537	1	
2		POND D1	6.18.15	12:00	WATER	537	1	
3		POND 1S	6.18.15	11:00	SOIL	537	1	
4		POND 1D	6.18.15	11:00	SOIL	537	1	
5		POND 2S	6.18.15	11:30	SOIL	537	1	
6		POND 2D	6.18.15	11:30	SOIL	537	1	
7		POND 3	6.18.15	11:40	SOIL	537	1	
8								
9								
10								

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/06/19	12 PM	[signature]	2015/06/20	13:24	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	1/0/1	Present		✓
		Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5F4796

Client Project #: BFTA

6 Samples

Samples Received 2015/08/05
Client Confirmation 2015/08/07
Expected Report Delivery 2015/08/19 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

INFLUENT 7/17/15 Sampled 2015/07/17 COC# 515457-01-01 Matrix: WATER
Maxxam #: ATD213
*PFOS and PFOA in water

INFLUENT 7/21/15 Sampled 2015/07/21
Maxxam #: ATD214
*PFOS and PFOA in water

EFFLUENT 7/21/15 Sampled 2015/07/21
Maxxam #: ATD215
*PFOS and PFOA in water

INFLUENT PRW-4 Sampled 2015/08/04 09:50
Maxxam #: ATD216
*PFOS and PFOA in water

MIDPOINT Sampled 2015/08/04 09:50
Maxxam #: ATD217
*PFOS and PFOA in water

EFFLUENT 8/4/15 Sampled 2015/08/04 09:50
Maxxam #: ATD218
*PFOS and PFOA in water

Comments:
Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5F4796 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # ATD213, Sample IDN: **INFLUENT 7/17/15**
Maxxam # ATD214, Sample IDN: **INFLUENT 7/21/15**
Maxxam # ATD215, Sample IDN: **EFFLUENT 7/21/15**
Maxxam # ATD216, Sample IDN: **INFLUENT PRW-4**
Maxxam # ATD217, Sample IDN: **MIDPOINT**
Maxxam # ATD218, Sample IDN: **EFFLUENT 8/4/15**

PFOS AND PFOA IN WATER

+N-ethylperfluorooctane sulfonamide	0.05 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.05 ug/L
+N-methylperfluorooctane sulfonamide	0.05 ug/L	+N-methylperfluorooctanesulfonamidol	0.05 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
+Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission / Barnstable Co	Company Name:	Same	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tomcambareri@capecodcomission.org	Email:		Sampled By:	Tom Cambareri / Scott Michaud

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	515457
COC #:	Project Manager:
C#515457-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ ☐
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)										# of Bottles	Comments
1		INFLUENT	7/17/15	-	GW	N/A											1	
2		INFLUENT	7/21/15	-	GW												1	
3		EFFLUENT	7/21/15	-	H_2O												1	
4		INFLUENT PRW-4	8/4/15	0950	GW												1	
5		Midpoint	8/4/15	0950	H_2O												1	
6		Effluent	8/4/15	0950	H_2O												1	
7																		
8																		
9																		
10																		

05-Aug-15 14:00
Melissa DiGrazia
B5F4796
RGN ENV-875

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	8/4/15	1630	[signature] CHRISTINA ANDERSEN	2015/08/05	14:00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3/4/3	Present		✓
		Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Your Project #: BFTA
Your C.O.C. #: 515457-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/08/18
Report #: R3631763
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5F4796
Received: 2015/08/05, 14:00

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	6	2015/08/12	2015/08/13	CAM SOP-00894	EPA 537 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATD213	ATD213			
Sampling Date		2015/07/17	2015/07/17			
COC Number		515457-01-01	515457-01-01			
	UNITS	**INFLUENT 7/17/15**	**INFLUENT 7/17/15 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Perfluorobutane Sulfonate (PFBS)	ug/L	0.95	N/A	0.020	0.0041	4142036
Perfluorobutanoic acid	ug/L	0.17	N/A	0.020	0.0030	4142036
Perfluorodecane Sulfonate	ug/L	<0.0037	N/A	0.020	0.0037	4142036
Perfluorodecanoic Acid (PFDA)	ug/L	0.0052	N/A	0.020	0.0025	4142036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0058	N/A	0.020	0.0058	4142036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.32	N/A	0.020	0.0026	4142036
Perfluorohexane Sulfonate (PFHxS)	ug/L	5.6	5.4	0.80	0.22	4150765
Perfluorohexanoic Acid (PFHxA)	ug/L	1.0	N/A	0.020	0.0022	4142036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.46	N/A	0.020	0.0054	4142036
Perfluorononanoic Acid (PFNA)	ug/L	0.23	N/A	0.020	0.0040	4142036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.014	N/A	0.020	0.00099	4142036
Perfluorooctane Sulfonate (PFOS)	ug/L	5.6	4.5	0.80	0.15	4150765
Perfluoropentanoic Acid (PFPeA)	ug/L	0.44	N/A	0.020	0.0035	4142036
Perfluorotetradecanoic Acid	ug/L	<0.0039	N/A	0.020	0.0039	4142036
Perfluorotridecanoic Acid	ug/L	<0.0055	N/A	0.020	0.0055	4142036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.058	N/A	0.020	0.0055	4142036
Surrogate Recovery (%)						
13C4-Perfluorooctanesulfonate	%	88	99	N/A	N/A	4150765
13C4-Perfluorooctanoic acid	%	90	87	N/A	N/A	4150765
13C8-Perfluorooctanesulfonamide	%	83	N/A	N/A	N/A	4142036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Success Through Science®

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATD214				ATD215			
Sampling Date		2015/07/21				2015/07/21			
COC Number		515457-01-01				515457-01-01			
	UNITS	**INFLUENT 7/21/15**	**RDL**	**MDL**	**QC Batch**	**EFFLUENT 7/21/15**	**RDL**	**MDL**	**QC Batch**
Perfluorobutane Sulfonate (PFBS)	ug/L	1.1	0.020	0.0041	4142036	<0.0041	0.020	0.0041	4142036
Perfluorobutanoic acid	ug/L	0.16	0.020	0.0030	4142036	<0.0030	0.020	0.0030	4142036
Perfluorodecane Sulfonate	ug/L	<0.0037	0.020	0.0037	4142036	<0.0037	0.020	0.0037	4142036
Perfluorodecanoic Acid (PFDA)	ug/L	0.0082	0.020	0.0025	4142036	<0.0025	0.020	0.0025	4142036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0058	0.020	0.0058	4142036	<0.0058	0.020	0.0058	4142036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.32	0.020	0.0026	4142036	<0.0026	0.020	0.0026	4142036
Perfluorohexane Sulfonate (PFHxS)	ug/L	5.9	0.80	0.22	4150765	<0.0061	0.020	0.0061	4142036
Perfluorohexanoic Acid (PFHxA)	ug/L	1.2	0.80	0.15	4150765	<0.0022	0.020	0.0022	4142036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.52	0.020	0.0054	4142036	<0.0054	0.020	0.0054	4142036
Perfluorononanoic Acid (PFNA)	ug/L	0.28	0.020	0.0040	4142036	<0.0040	0.020	0.0040	4142036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.014	0.020	0.00099	4142036	<0.00099	0.020	0.00099	4142036
Perfluorooctane Sulfonate (PFOS)	ug/L	5.2	0.80	0.15	4150765	<0.0037	0.020	0.0037	4142036
Perfluoropentanoic Acid (PFPeA)	ug/L	0.46	0.020	0.0035	4142036	<0.0035	0.020	0.0035	4142036
Perfluorotetradecanoic Acid	ug/L	<0.0039	0.020	0.0039	4142036	<0.0039	0.020	0.0039	4142036
Perfluorotridecanoic Acid	ug/L	<0.0055	0.020	0.0055	4142036	<0.0055	0.020	0.0055	4142036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.073	0.020	0.0055	4142036	<0.0055	0.020	0.0055	4142036
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	99	N/A	N/A	4150765	91	N/A	N/A	4142036
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	4150765	100	N/A	N/A	4142036
13C8-Perfluorooctanesulfonamide	%	94	N/A	N/A	4142036	89	N/A	N/A	4142036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATD216				ATD217			
Sampling Date		2015/08/04 09:50				2015/08/04 09:50			
COC Number		515457-01-01				515457-01-01			
	UNITS	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**	**MIDPOINT**	**RDL**	**MDL**	**QC Batch**
Perfluorobutane Sulfonate (PFBS)	ug/L	1.4	0.80	0.16	4150765	<0.0041	0.020	0.0041	4142036
Perfluorobutanoic acid	ug/L	0.21	0.020	0.0030	4142036	<0.0030	0.020	0.0030	4142036
Perfluorodecane Sulfonate	ug/L	<0.0037	0.020	0.0037	4142036	<0.0037	0.020	0.0037	4142036
Perfluorodecanoic Acid (PFDA)	ug/L	0.0073	0.020	0.0025	4142036	<0.0025	0.020	0.0025	4142036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0058	0.020	0.0058	4142036	<0.0058	0.020	0.0058	4142036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.43	0.020	0.0026	4142036	<0.0026	0.020	0.0026	4142036
Perfluorohexane Sulfonate (PFHxS)	ug/L	6.4	0.80	0.22	4150765	<0.0061	0.020	0.0061	4142036
Perfluorohexanoic Acid (PFHxA)	ug/L	1.6	0.80	0.15	4150765	<0.0022	0.020	0.0022	4142036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.55	0.020	0.0054	4142036	<0.0054	0.020	0.0054	4142036
Perfluorononanoic Acid (PFNA)	ug/L	0.24	0.020	0.0040	4142036	<0.0040	0.020	0.0040	4142036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.0088	0.020	0.00099	4142036	<0.00099	0.020	0.00099	4142036
Perfluorooctane Sulfonate (PFOS)	ug/L	5.9	0.80	0.15	4150765	<0.0037	0.020	0.0037	4142036
Perfluoropentanoic Acid (PFPeA)	ug/L	0.58	0.020	0.0035	4142036	<0.0035	0.020	0.0035	4142036
Perfluorotetradecanoic Acid	ug/L	<0.0039	0.020	0.0039	4142036	<0.0039	0.020	0.0039	4142036
Perfluorotridecanoic Acid	ug/L	<0.0055	0.020	0.0055	4142036	<0.0055	0.020	0.0055	4142036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.076	0.020	0.0055	4142036	<0.0055	0.020	0.0055	4142036
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	99	N/A	N/A	4150765	91	N/A	N/A	4142036
13C4-Perfluorooctanoic acid	%	88	N/A	N/A	4150765	93	N/A	N/A	4142036
13C8-Perfluorooctanesulfonamide	%	93	N/A	N/A	4142036	89	N/A	N/A	4142036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATD218			
Sampling Date		2015/08/04 09:50			
COC Number		515457-01-01			
	UNITS	**EFFLUENT 8/4/15**	**RDL**	**MDL**	**QC Batch**
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0041	0.020	0.0041	4142036
Perfluorobutanoic acid	ug/L	<0.0030	0.020	0.0030	4142036
Perfluorodecane Sulfonate	ug/L	<0.0037	0.020	0.0037	4142036
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0025	0.020	0.0025	4142036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0058	0.020	0.0058	4142036
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0026	0.020	0.0026	4142036
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0061	0.020	0.0061	4142036
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0022	0.020	0.0022	4142036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0054	0.020	0.0054	4142036
Perfluorononanoic Acid (PFNA)	ug/L	<0.0040	0.020	0.0040	4142036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.00099	0.020	0.00099	4142036
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.0037	0.020	0.0037	4142036
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0035	0.020	0.0035	4142036
Perfluorotetradecanoic Acid	ug/L	<0.0039	0.020	0.0039	4142036
Perfluorotridecanoic Acid	ug/L	<0.0055	0.020	0.0055	4142036
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0055	0.020	0.0055	4142036
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	86	N/A	N/A	4142036
13C4-Perfluorooctanoic acid	%	102	N/A	N/A	4142036
13C8-Perfluorooctanesulfonamide	%	84	N/A	N/A	4142036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: ATD213
Sample ID: INFLUENT 7/17/15
Matrix: Water

Collected: 2015/07/17
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

Maxxam ID: ATD213 Dup
Sample ID: INFLUENT 7/17/15
Matrix: Water

Collected: 2015/07/17
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4150765	2015/08/17	2015/08/17	Sin Chii Chia

Maxxam ID: ATD214
Sample ID: INFLUENT 7/21/15
Matrix: Water

Collected: 2015/07/21
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

Maxxam ID: ATD215
Sample ID: EFFLUENT 7/21/15
Matrix: Water

Collected: 2015/07/21
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

Maxxam ID: ATD216
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

Maxxam ID: ATD217
Sample ID: MIDPOINT
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

Maxxam ID: ATD218
Sample ID: EFFLUENT 8/4/15
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4142036	2015/08/12	2015/08/13	Colm McNamara

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Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

GENERAL COMMENTS

Sample ATD213-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample ATD214-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample ATD216-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample ATD213, PFOS and PFOA in water: Test repeated.
Sample ATD214, PFOS and PFOA in water: Test repeated.
Sample ATD216, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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A Bureau Veritas Group Company

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4142036	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/08/13		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/13		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/08/13		90	%	50 - 150
			Perfluorobutane Sulfonate (PFBS)	2015/08/13		100	%	70 - 130
			Perfluorobutanoic acid	2015/08/13		112	%	70 - 130
			Perfluorodecane Sulfonate	2015/08/13		90	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/08/13		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/08/13		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/08/13		103	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/08/13		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/08/13		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/08/13		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/08/13		97	%	70 - 130
			Perfluorotridecanoic Acid	2015/08/13		141 (1)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/08/13		104	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/08/13		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/08/13		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/08/13		92	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/08/13		105	%	70 - 130
4142036	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2015/08/13		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/13		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/08/13		99	%	50 - 150
			Perfluorobutane Sulfonate (PFBS)	2015/08/13		108	%	70 - 130
			Perfluorobutanoic acid	2015/08/13		113	%	70 - 130
			Perfluorodecane Sulfonate	2015/08/13		100	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/08/13		96	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/08/13		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/08/13		110	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/08/13		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/08/13		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/08/13		101	%	70 - 130
			Perfluorotetradecanoic Acid	2015/08/13		101	%	70 - 130
			Perfluorotridecanoic Acid	2015/08/13		108	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/08/13		93	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/08/13		99	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/08/13		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/08/13		97	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/08/13		105	%	70 - 130
4142036	CM5	MS/MSD RPD	Perfluorobutane Sulfonate (PFBS)	2015/08/13	7.9		%	30
			Perfluorobutanoic acid	2015/08/13	0.53		%	30
			Perfluorodecane Sulfonate	2015/08/13	10		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/08/13	4.5		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/08/13	3.7		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/08/13	6.4		%	30
			Perfluorononanoic Acid (PFNA)	2015/08/13	3.1		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/08/13	1.2		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/08/13	2.0		%	30
			Perfluorotetradecanoic Acid	2015/08/13	4.6		%	30
			Perfluorotridecanoic Acid	2015/08/13	26		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/08/13	11		%	30
			Perfluorodecanoic Acid (PFDA)	2015/08/13	4.5		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/08/13	2.2		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/08/13	4.7		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/08/13	0.19		%	30

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Success Through Science®

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4142036	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/08/13		94	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/13		93	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/08/13		89	%	50 - 150
			Perfluorobutane Sulfonate (PFBS)	2015/08/13		100	%	70 - 130
			Perfluorobutanoic acid	2015/08/13		107	%	70 - 130
			Perfluorodecane Sulfonate	2015/08/13		93	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/08/13		96	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/08/13		98	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/08/13		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/08/13		111	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/08/13		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/08/13		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/08/13		82	%	70 - 130
			Perfluorotridecanoic Acid	2015/08/13		95	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/08/13		90	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/08/13		100	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/08/13		92	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/08/13		91	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/08/13		101	%	70 - 130
4142036	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/08/13		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/13		104	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/08/13		114	%	50 - 150
			Perfluorobutane Sulfonate (PFBS)	2015/08/13	<0.0041		ug/L	
			Perfluorobutanoic acid	2015/08/13	<0.0030		ug/L	
			Perfluorodecane Sulfonate	2015/08/13	<0.0037		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/08/13	<0.0026		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/08/13	<0.0061		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/08/13	<0.0022		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/08/13	<0.0040		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/08/13	<0.00099		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/08/13	<0.0035		ug/L	
			Perfluorotetradecanoic Acid	2015/08/13	<0.0039		ug/L	
			Perfluorotridecanoic Acid	2015/08/13	<0.0055		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/08/13	<0.0055		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/08/13	<0.0025		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/08/13	<0.0058		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/08/13	<0.0054		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/08/13	<0.0037		ug/L	
4150765	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/08/17		99	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/17		88	%	70 - 130
4150765	SCH	Matrix Spike(ATD213)	Perfluorobutane Sulfonate (PFBS)	2015/08/17		114	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/08/17		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/08/17		111	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/08/17		NC	%	70 - 130
4150765	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/08/17		99	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/17		88	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/08/17		117	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/08/17		107	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/08/17		111	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/08/17		99	%	70 - 130
4150765	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2015/08/17		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/08/17		85	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/08/17	<0.16		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/08/17	<0.22		ug/L	

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Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexanoic Acid (PFHxA)	2015/08/17	<0.15		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/08/17	<0.15		ug/L	
4150765	SCH	RPD - Sample/Sample Dup	Perfluorohexane Sulfonate (PFHxS)	2015/08/17	2.9		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/08/17	21		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

(1) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

Maxxam Job #: B5F4796
Report Date: 2015/08/18

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Technical Service

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:

Company Name: #29803 Cape Cod Comission / Barnstable Co
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tomcambareri@capecodcomission.org

REPORT TO:

Company Name: Same
Attention:
Address:
Tel: Fax:
Email:

PROJECT INFORMATION:

Quotation #:
P.O. #:
Project:
Project Name: BFTA
Site #:
Sampled By: Tom Cambarer. / Scott Michaud

Laboratory Use Only:

Maxxam Job #:
Bottle Order #: 515457
COC #: C#515457-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required: ☐
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		INFLUENT	7/17/15	-	GW	N/A		1	
2		INFLUENT	7/21/15	-	GW			1	
3		EFFLUENT	7/21/15	-	H_2O			1	
4		INFLUENT PRW-4	8/4/15	0950	GW			1	
5		Midpoint	8/4/15	0950	H_2O			1	
6		Effluent	8/4/15	0950	H_2O	✓		1	
7									
8									
9									
10									

05-Aug-15 14:00
Melissa DiGrazia
B5F4796
RGN ENV-875

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	8/4/15	1630	[signature] CHRISTINA ANDERSEN	2015/08/05	14:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3/4/3	Present		✓
		Intact		✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:		Quotation #:	
Attention:	Tom Cambareri	Attention:	SAME	P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

Laboratory Use Only:	
Maxxam Job #:	Bottle Order #:
	528190
COC #:	Project Manager:
C#528190-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ **For RSC**	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCs										# of Bottles	Comments
1		PRW-4	9/9	1545	GW		✓											
2		MID	↓	1545	GW		✓											
3		EFFLUENT	↓	1545	GW		✓											
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/9/15	1615				

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BETA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	528190
COC #:	Project Manager:
C#528190-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 ☐ Res/Park ☐ Medium/Fine; Table 2 ☐ Ind/Comm ☐ Coarse; Table 3 ☐ Agri/Other ☐ For RSC; Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA Municipality ___; ☐ PWQO; ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCS										# of Bottles	Comments
	PRW-4	9/9	1545	GW		✓											
	MID	↓	1545	GW		✓											
	EFFLUENT	↓	1545	GW		✓											

11-Sep-15 14:30
Melissa DiGrazia
B5I4250
MK3 ENV-932

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/9/15	1615	[signature] RACHEL DEVLIN	2015/09/11	14:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	16/16/17	Present	✓	
		Intact	✓	

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5I4250

Client Project #: BFTA
Quote #: B53924

3 Samples

Samples Received 2015/09/11
Client Confirmation 2015/09/16
Expected Report Delivery 2015/09/25 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PRW-4 Sampled 2015/09/09 15:45 COC# 528190-01-01 Matrix: WATER
Maxxam #: AYV633
Environmental Sample Disposal
*PFOS and PFOA in water

MID Sampled 2015/09/09 15:45
Maxxam #: AYV634
Environmental Sample Disposal
*PFOS and PFOA in water

EFFLUENT Sampled 2015/09/09 15:45
Maxxam #: AYV635
Environmental Sample Disposal
*PFOS and PFOA in water

Comments:
Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5I4250 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # AYV633, Sample IDN: **PRW-4**
Maxxam # AYV634, Sample IDN: **MID**
Maxxam # AYV635, Sample IDN: **EFFLUENT**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:		Maxxam Job #: / Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:		P.O. #:		
Address:	3225 Main Street	Address:		Project:		COC #: C#528190-01-01
	Barnstable MA 02630			Project Name:	BFTA	Project Manager: Melissa DiGrazia
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:		
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 ☐ Res/Park ☐ Medium/Fine; Table 2 ☐ Ind/Comm ☐ Coarse; Table 3 ☐ Agri/Other ☐ For RSC; Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 PFCs

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 PFCs	# of Bottles	Comments
	PRW-4	9/9	1545	GW		✓		
	MID	↓	1545	GW		✓		
	EFFLUENT	↓	1545	GW		✓		

11-Sep-15 14:30
Melissa DiGrazia
B5I4250
MK3 ENV-932

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/9/15	1615	[signature] RACHEL DEVIN	2015/09/11	14:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	16/16/17	Present	✓	
		Intact	✓	

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/09/24
Report #: R3675969
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5I4250
Received: 2015/09/11, 14:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	3	2015/09/17	2015/09/18	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.
Maxxam Analytics International. is a NELAC accredited laboratory. Certificate # 04012. Use of the NELAC logo however does not insure that Maxxam is accredited for all of the methods indicated. This certificate shall not be reproduced except in full, without the written approval of Maxxam Analytics Inc.

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Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		AYV633				AYV634	AYV635			
Sampling Date		2015/09/09 15:45				2015/09/09 15:45	2015/09/09 15:45			
COC Number		528190-01-01				528190-01-01	528190-01-01			
	UNITS	**PRW-4**	**RDL**	**MDL**	**QC Batch**	**MID**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	3.3	0.80	0.21	4200034	<0.020	<0.020	0.020	0.0052	4193078
8:2 Fluorotelomer sulfonate	ug/L	0.35	0.020	0.0065	4193078	<0.020	<0.020	0.020	0.0065	4193078
N-ethylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0078	4193078	<0.020	<0.020	0.020	0.0078	4193078
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.020	0.020	0.0071	4193078	<0.020	<0.020	0.020	0.0071	4193078
N-methylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0050	4193078	<0.020	<0.020	0.020	0.0050	4193078
N-methylperfluorooctanesulfonamidol	ug/L	<0.020	0.020	0.0093	4193078	<0.020	<0.020	0.020	0.0093	4193078
Perfluorobutane Sulfonate (PFBS)	ug/L	1.2 (1)	0.80	0.19	4200034	<0.020	<0.020	0.020	0.0047	4193078
Perfluorobutanoic acid	ug/L	0.21	0.020	0.0058	4193078	<0.020	<0.020	0.020	0.0058	4193078
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0054	4193078	<0.020	<0.020	0.020	0.0054	4193078
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0065	4193078	<0.020	<0.020	0.020	0.0065	4193078
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0035	4193078	<0.020	<0.020	0.020	0.0035	4193078
Perfluoroheptane sulfonate	ug/L	0.93	0.020	0.0041	4193078	<0.020	<0.020	0.020	0.0041	4193078
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.46	0.020	0.0054	4193078	<0.020	<0.020	0.020	0.0054	4193078
Perfluorohexane Sulfonate (PFHxS)	ug/L	8.7 (1)	0.80	0.22	4200034	<0.020	<0.020	0.020	0.0054	4193078
Perfluorohexanoic Acid (PFHxA)	ug/L	1.6 (1)	0.80	0.20	4200034	<0.020	<0.020	0.020	0.0049	4193078
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.84	0.020	0.0044	4193078	<0.020	<0.020	0.020	0.0044	4193078
Perfluorononanoic Acid (PFNA)	ug/L	0.25	0.020	0.0063	4193078	<0.020	<0.020	0.020	0.0063	4193078
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	0.020	0.0051	4193078	<0.020	<0.020	0.020	0.0051	4193078
Perfluorooctane Sulfonate (PFOS)	ug/L	11 (1)	0.80	0.15	4200034	<0.020	<0.020	0.020	0.0037	4193078
Perfluoropentanoic Acid (PFPeA)	ug/L	0.70	0.020	0.0049	4193078	<0.020	<0.020	0.020	0.0049	4193078
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0050	4193078	<0.020	<0.020	0.020	0.0050	4193078
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0058	4193078	<0.020	<0.020	0.020	0.0058	4193078
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.094	0.020	0.0054	4193078	<0.020	<0.020	0.020	0.0054	4193078
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	128	N/A	N/A	4200034	103	107	N/A	N/A	4193078
13C4-Perfluorooctanoic acid	%	118	N/A	N/A	4200034	102	107	N/A	N/A	4193078
13C8-Perfluorooctanesulfonamide	%	83	N/A	N/A	4193078	81	75	N/A	N/A	4193078

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: AYV633
Sample ID: PRW-4
Matrix: Water

Collected: 2015/09/09
Shipped:
Received: 2015/09/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4200034	2015/09/22	2015/09/23	Colm McNamara

Maxxam ID: AYV634
Sample ID: MID
Matrix: Water

Collected: 2015/09/09
Shipped:
Received: 2015/09/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4193078	2015/09/17	2015/09/18	Sin Chii Chia

Maxxam ID: AYV635
Sample ID: EFFLUENT
Matrix: Water

Collected: 2015/09/09
Shipped:
Received: 2015/09/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4193078	2015/09/17	2015/09/18	Sin Chii Chia

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GENERAL COMMENTS

Sample AYV633, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4193078	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/09/18		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/18		95	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/09/18		74	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/18		106	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/09/18		92	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/09/18		109	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/09/18		103	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/09/18		103	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/09/18		106	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/09/18		100	%	70 - 130
			Perfluorobutanoic acid	2015/09/18		102	%	70 - 130
			Perfluorodecane Sulfonate	2015/09/18		79	%	70 - 130
			Perfluoroheptane sulfonate	2015/09/18		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/09/18		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/09/18		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/09/18		91	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/09/18		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/09/18		118	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/09/18		106	%	70 - 130
			Perfluorotetradecanoic Acid	2015/09/18		105	%	70 - 130
			Perfluorotridecanoic Acid	2015/09/18		98	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/09/18		104	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/09/18		103	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/09/18		117	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/09/18		96	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/09/18		NC	%	70 - 130
4193078	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/09/18		104	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/18		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/09/18		68 (1)	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/18		92	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/09/18		108	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/09/18		103	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/09/18		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/09/18		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/09/18		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/09/18		99	%	70 - 130
			Perfluorobutanoic acid	2015/09/18		92	%	70 - 130
			Perfluorodecane Sulfonate	2015/09/18		78	%	70 - 130
			Perfluoroheptane sulfonate	2015/09/18		98	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/09/18		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/09/18		100	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/09/18		92	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/09/18		103	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/09/18		118	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/09/18		102	%	70 - 130
			Perfluorotetradecanoic Acid	2015/09/18		110	%	70 - 130
			Perfluorotridecanoic Acid	2015/09/18		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/09/18		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/09/18		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/09/18		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/09/18		93	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/09/18		94	%	70 - 130
4193078	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2015/09/18		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/18		101	%	70 - 130

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Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/09/18		67 (2)		70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/18	<0.020		ug/L	
			8:2 Fluorotelomer sulfonate	2015/09/18	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/09/18	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/09/18	<0.020		ug/L	
			N-methylperfluorooctane sulfonamide	2015/09/18	<0.020		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/09/18	<0.020		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/09/18	<0.020		ug/L	
			Perfluorobutanoic acid	2015/09/18	<0.020		ug/L	
			Perfluorodecane Sulfonate	2015/09/18	<0.020		ug/L	
			Perfluoroheptane sulfonate	2015/09/18	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/09/18	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/09/18	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/09/18	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/09/18	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/09/18	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/09/18	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2015/09/18	<0.020		ug/L	
			Perfluorotridecanoic Acid	2015/09/18	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/09/18	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/09/18	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/09/18	<0.020		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/09/18	<0.020		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/09/18	<0.020		ug/L	
4193078	SCH	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2015/09/18	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/09/18	NC		%	30
			N-ethylperfluorooctane sulfonamide	2015/09/18	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/09/18	NC		%	30
			N-methylperfluorooctane sulfonamide	2015/09/18	NC		%	30
			N-methylperfluorooctanesulfonamidol	2015/09/18	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/09/18	NC		%	30
			Perfluorobutanoic acid	2015/09/18	NC		%	30
			Perfluorodecane Sulfonate	2015/09/18	NC		%	30
			Perfluoroheptane sulfonate	2015/09/18	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/09/18	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/09/18	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/09/18	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/09/18	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/09/18	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/09/18	NC		%	30
			Perfluorotetradecanoic Acid	2015/09/18	NC		%	30
			Perfluorotridecanoic Acid	2015/09/18	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/09/18	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/09/18	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/09/18	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/09/18	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/09/18	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/09/18	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/09/18	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/09/18	2.4		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/09/18	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/09/18	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/09/18	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/09/18	1.9		%	30

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Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4200034	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/09/23		NC	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/23		NC	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/23		NC	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/09/23		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/09/23		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/09/23		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/09/23		NC	%	70 - 130
4200034	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2015/09/23		NC	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/23		NC	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/23		NC	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/09/23		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/09/23		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/09/23		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/09/23		NC	%	70 - 130
4200034	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2015/09/23	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/09/23	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/09/23	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/09/23	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/09/23	NC		%	30
4200034	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/09/23		103	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/23		110	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/23		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/09/23		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/09/23		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/09/23		100	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/09/23		102	%	70 - 130
4200034	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/09/23		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/09/23		110	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/09/23	<0.80		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/09/23	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/09/23	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/09/23	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/09/23	<0.80		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Surrogate recovery was below the defined lower control limit (LCL). Because quantitation is performed using isotope dilution techniques, any losses of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar loss of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the low surrogate recovery.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B5I4250
Report Date: 2015/09/24

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Technical Service

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BETA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	528190
COC #:	Project Manager:
C#528190-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)

Table 1 ☐ Res/Park ☐ Medium/Fine
Table 2 ☐ Ind/Comm ☐ Coarse
Table 3 ☐ Agri/Other ☐ For RSC
Table ___

Other Regulations

☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg 558 ☐ Storm Sewer Bylaw
☐ MISA Municipality ______
☐ PWQO
☐ Other ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ ☐
Rush Confirmation Number: ______ *(call lab for #)*

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCS										# of Bottles	Comments
	PRW-4	9/9	1545	GW		✓											
	MID	↓	1545	GW		✓											
	EFFLUENT	↓	1545	GW		✓											

11-Sep-15 14:30
Melissa DiGrazia
B5I4250
MK3 ENV-932

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/9/15	1615	[signature] RACHEL DEVLIN	2015/09/11	14:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	16/16/17	Present	✓	
		Intact	✓	

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAI[N OF CUSTODY]

01-Oct-15 14:05
Melissa DiGrazia
B5J9566
J L ENV-910
C#528190-01-01
Melissa DiGrazia

Page 1 of 1

Order #: 190
Manager:

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	Barnstable Fire
	Barnstable MA 02630			Project Name:	Training Academy
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	Scott Michaud

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	9/30/15	1250	gw		✓	1	
2		MID	9/30/15	1250	H2O ~~gw~~ gm		✓	1	
3		EFFLUENT	9/30/15	1250	H2O		✓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/30/15	1530	[signature] FATIMA SHAHID	2015/10/01	14:05	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.2/5.4/5.0	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

302521

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5J9566

Client Project #: BARNSTABLE FIRE
Quote #: B53924
Site Location: TRAINING ACADEMY

3 Samples

Samples Received 2015/10/01
Client Confirmation 2015/10/01
Expected Report Delivery 2015/10/16 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PRW-4 Sampled 2015/09/30 12:50 COC# C#528190-01-01 Matrix: WATER
Maxxam #: BBX249
*PFOS and PFOA in water

MID Sampled 2015/09/30 12:50
Maxxam #: BBX250
*PFOS and PFOA in water

EFFLUENT Sampled 2015/09/30 12:50
Maxxam #: BBX251
*PFOS and PFOA in water

Comments:
Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam

Maxxam Job # B5J9566 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BBX249, Sample IDN: **PRW-4**
Maxxam # BBX250, Sample IDN: **MID**
Maxxam # BBX251, Sample IDN: **EFFLUENT**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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CHAI

01-Oct-15 14:05
Melissa DiGrazia
B5J9566
J L ENV-910
C#528190-01-01

Page 1 of 1

Order #:
190
Manager: Melissa DiGrazia

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:
Company Name: #29803 Cape Cod Comission	Company Name: SAME	Quotation #:
Attention: Tom Cambareri	Attention:	P.O. #:
Address: 3225 Main Street	Address:	Project: Barnstable Fire
Barnstable MA 02630		Project Name: Training Academy
Tel: (508) 362-3828 x1234 Fax:	Tel: Fax:	Site #:
Email: tcambareri@capecodcommission.org	Email:	Sampled By: Scott Michaud

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)									# of Bottles	Comments
1		PRW-4	9/30/15	1250	gw		✓									1	
2		MID	9/30/15	1250	H2O ~~gw~~ gm		✓									1	
3		EFFLUENT	9/30/15	1250	H2O		✓									1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/30/15	1530	[signature] FATIMA SHAHID	2015/10/01	14:05	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.2 / 5.4 / 5.0	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

#302521

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5J9566

Client Project #: BARNSTABLE FIRE
Quote #: B53924
Site Location: TRAINING ACADEMY

3 Samples

Samples Received 2015/10/01
Client Confirmation 2015/10/01
Expected Report Delivery 2015/10/16 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PRW-4 Sampled 2015/09/30 12:50 COC# C#528190-01-01 Matrix: WATER
Maxxam #: BBX249
*PFOS and PFOA in water

MID Sampled 2015/09/30 12:50
Maxxam #: BBX250
*PFOS and PFOA in water

EFFLUENT Sampled 2015/09/30 12:50
Maxxam #: BBX251
*PFOS and PFOA in water

Comments:
Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5J9566 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BBX249, Sample IDN: **PRW-4**
Maxxam # BBX250, Sample IDN: **MID**
Maxxam # BBX251, Sample IDN: **EFFLUENT**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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CHAI

01-Oct-15 14:05
Melissa DiGrazia
B5J9566
J L ENV-910
C#528190-01-01

Page 1 of 1

Order #: 190
Manager: Melissa DiGrazia

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	Barnstable Fire
	Barnstable MA 02630			Project Name:	Training Academy
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	Scott Michaud

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	9/30/15	1250	gw		✓	1	
2		MID	9/30/15	1250	H_2O ~~gw~~		✓	1	
3		EFFLUENT	9/30/15	1250	H_2O		✓	1	
4									
5									
6									
7									
8									
9									
10									

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required: ☐
Rush Confirmation Number: *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/30/15	1530	[signature] FATIMA SHAHID	2015/10/01	14:05	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.2 / 5.4 / 5.0	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

#302521

Maxxam
A Bureau Veritas Group Company

Your Project #: BARNSTABLE FIRE
Site Location: TRAINING ACADEMY
Your C.O.C. #: C#528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/10/14
Report #: R3720160
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5J9566
Received: 2015/10/01, 14:05

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2015/10/05	2015/10/05	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	2	2015/10/07	2015/10/08	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation is a NELAC accredited laboratory. Certificate # 04012. Use of the NELAC logo however does not insure that Maxxam is accredited for all of the methods indicated. This certificate shall not be reproduced except in full, without the written approval of Maxxam.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5J9566
Report Date: 2015/10/14

Cape Cod Comission
Client Project #: BARNSTABLE FIRE
Site Location: TRAINING ACADEMY
Sampler Initials: SM

RESULTS OF ANALYSES OF WATER

Maxxam ID		BBX249				BBX250	BBX251			
Sampling Date		2015/09/30 12:50				2015/09/30 12:50	2015/09/30 12:50			
COC Number		C#528190-01-01				C#528190-01-01	C#528190-01-01			
	UNITS	**PRW-4**	**RDL**	**MDL**	**QC Batch**	**MID**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	3.2	0.80	0.21	4216651	<0.020	<0.020	0.020	0.0052	4220059
8:2 Fluorotelomer sulfonate	ug/L	<0.80	0.80	0.26	4216651	<0.020	<0.020	0.020	0.0065	4220059
N-ethylperfluorooctane sulfonamide	ug/L	<0.80	0.80	0.31	4216651	<0.020	<0.020	0.020	0.0078	4220059
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.80	0.80	0.28	4216651	<0.020	<0.020	0.020	0.0071	4220059
N-methylperfluorooctane sulfonamide	ug/L	<0.80	0.80	0.20	4216651	<0.020	<0.020	0.020	0.0050	4220059
N-methylperfluorooctanesulfonamidol	ug/L	<0.80	0.80	0.37	4216651	<0.020	<0.020	0.020	0.0093	4220059
Perfluorobutane Sulfonate (PFBS)	ug/L	0.92	0.80	0.19	4216651	<0.020	<0.020	0.020	0.0047	4220059
Perfluorobutanoic acid	ug/L	<0.80	0.80	0.23	4216651	<0.020	<0.020	0.020	0.0058	4220059
Perfluorodecane Sulfonate	ug/L	<0.80	0.80	0.22	4216651	<0.020	<0.020	0.020	0.0054	4220059
Perfluorodecanoic Acid (PFDA)	ug/L	<0.80	0.80	0.26	4216651	<0.020	<0.020	0.020	0.0065	4220059
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.80	0.80	0.14	4216651	<0.020	<0.020	0.020	0.0035	4220059
Perfluoroheptane sulfonate	ug/L	0.91	0.80	0.16	4216651	<0.020	<0.020	0.020	0.0041	4220059
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.80	0.80	0.22	4216651	<0.020	<0.020	0.020	0.0054	4220059
Perfluorohexane Sulfonate (PFHxS)	ug/L	7.3	0.80	0.22	4216651	<0.020	<0.020	0.020	0.0054	4220059
Perfluorohexanoic Acid (PFHxA)	ug/L	2.0	0.80	0.20	4216651	<0.020	<0.020	0.020	0.0049	4220059
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.84	0.80	0.18	4216651	<0.020	<0.020	0.020	0.0044	4220059
Perfluorononanoic Acid (PFNA)	ug/L	<0.80	0.80	0.25	4216651	<0.020	<0.020	0.020	0.0063	4220059
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.80	0.80	0.20	4216651	<0.020	<0.020	0.020	0.0051	4220059
Perfluorooctane Sulfonate (PFOS)	ug/L	17	0.80	0.15	4216651	<0.020	<0.020	0.020	0.0037	4220059
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.80	0.80	0.20	4216651	<0.020	<0.020	0.020	0.0049	4220059
Perfluorotetradecanoic Acid	ug/L	<0.80	0.80	0.20	4216651	<0.020	<0.020	0.020	0.0050	4220059
Perfluorotridecanoic Acid	ug/L	<0.80	0.80	0.23	4216651	<0.020	<0.020	0.020	0.0058	4220059
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.80	0.80	0.22	4216651	<0.020	<0.020	0.020	0.0054	4220059
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	108	N/A	N/A	4216651	107	111	N/A	N/A	4220059
13C4-Perfluorooctanoic acid	%	110	N/A	N/A	4216651	100	107	N/A	N/A	4220059
13C8-Perfluorooctanesulfonamide	%	98	N/A	N/A	4216651	95	95	N/A	N/A	4220059

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B5J9566
Report Date: 2015/10/14

Cape Cod Comission
Client Project #: BARNSTABLE FIRE
Site Location: TRAINING ACADEMY
Sampler Initials: SM

TEST SUMMARY

Maxxam ID: BBX249
Sample ID: PRW-4
Matrix: Water

Collected: 2015/09/30
Shipped:
Received: 2015/10/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4216651	2015/10/05	2015/10/05	Sin Chii Chia

Maxxam ID: BBX250
Sample ID: MID
Matrix: Water

Collected: 2015/09/30
Shipped:
Received: 2015/10/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4220059	2015/10/07	2015/10/08	Colm McNamara

Maxxam ID: BBX251
Sample ID: EFFLUENT
Matrix: Water

Collected: 2015/09/30
Shipped:
Received: 2015/10/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4220059	2015/10/07	2015/10/08	Colm McNamara

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GENERAL COMMENTS

Sample BBX249-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4216651	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/10/05		117	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/05		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/05		100	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/05		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/05		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/05		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/05		93	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/05		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/05		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/05		95	%	70 - 130
			Perfluorobutanoic acid	2015/10/05		118	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/05		112	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/05		107	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/05		94	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/05		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/05		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/05		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/05		89	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/05		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/05		97	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/05		113	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/05		104	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/05		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/05		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/05		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/05		NC	%	70 - 130
4216651	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/10/05		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/05		106	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/05		101	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/05		103	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/05		107	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/05		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/05		95	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/05		101	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/05		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/05		101	%	70 - 130
			Perfluorobutanoic acid	2015/10/05		104	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/05		109	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/05		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/05		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/05		102	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/05		98	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/05		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/05		98	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/05		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/05		98	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/05		102	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/05		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/05		103	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/05		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/05		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/05		100	%	70 - 130

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Cape Cod Comission
Client Project #: BARNSTABLE FIRE
Site Location: TRAINING ACADEMY
Sampler Initials: SM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4216651	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2015/10/05		110	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/05		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/05		106	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/05	<0.80		ug/L	
			8:2 Fluorotelomer sulfonate	2015/10/05	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/05	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/05	<0.80		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/05	<0.80		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/05	<0.80		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/10/05	<0.80		ug/L	
			Perfluorobutanoic acid	2015/10/05	<0.80		ug/L	
			Perfluorodecane Sulfonate	2015/10/05	<0.80		ug/L	
			Perfluoroheptane sulfonate	2015/10/05	<0.80		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/05	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/10/05	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/10/05	<0.80		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/05	<0.80		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/05	<0.80		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/05	<0.80		ug/L	
			Perfluorotetradecanoic Acid	2015/10/05	<0.80		ug/L	
			Perfluorotridecanoic Acid	2015/10/05	<0.80		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/05	<0.80		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/05	<0.80		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/05	<0.80		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/05	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/10/05	<0.80		ug/L	
4216651	SCH	RPD - Sample/Sample Dup	Perfluorohexane Sulfonate (PFHxS)	2015/10/05	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/10/05	NC		%	30
4220059	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/10/08		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/08		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/08		94	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/08		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/08		96	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/08		105	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/08		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/08		102	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/08		93	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/08		102	%	70 - 130
			Perfluorobutanoic acid	2015/10/08		119	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/08		90	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/08		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/08		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/08		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/08		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/08		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/08		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/08		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/08		103	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/08		100	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/08		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/08		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/08		103	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/08		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/08		NC	%	70 - 130
4220059	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/10/08		104	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/08		114	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/08		86	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/08		99	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/08		93	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/08		104	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/08		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/08		99	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/08		100	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/08		96	%	70 - 130
			Perfluorobutanoic acid	2015/10/08		110	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/08		85	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/08		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/08		103	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/08		98	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/08		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/08		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/08		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/08		95	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/08		105	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/08		128	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/08		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/08		108	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/08		104	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/08		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/08		103	%	70 - 130
4220059	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/10/08		108	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/08		117	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/08		99	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/08	<0.020		ug/L	
			8:2 Fluorotelomer sulfonate	2015/10/08	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/08	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/08	<0.020		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/08	<0.020		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/08	<0.020		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/10/08	<0.020		ug/L	
			Perfluorobutanoic acid	2015/10/08	<0.020		ug/L	
			Perfluorodecane Sulfonate	2015/10/08	<0.020		ug/L	
			Perfluoroheptane sulfonate	2015/10/08	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/08	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/10/08	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/10/08	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/08	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/08	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/08	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2015/10/08	<0.020		ug/L	
			Perfluorotridecanoic Acid	2015/10/08	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/08	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/08	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/08	<0.020		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/08	<0.020		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/10/08	<0.020		ug/L	
4220059	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/10/08	NC		%	30
			Perfluorobutanoic acid	2015/10/08	16		%	30
			Perfluorodecane Sulfonate	2015/10/08	NC		%	30
			Perfluoroheptane sulfonate	2015/10/08	16		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/10/08	12		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/10/08	3.4		%	30
			Perfluorononanoic Acid (PFNA)	2015/10/08	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/08	8.6		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/10/08	7.0		%	30
			Perfluorotetradecanoic Acid	2015/10/08	NC		%	30
			Perfluorotridecanoic Acid	2015/10/08	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/10/08	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/10/08	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/10/08	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/08	10		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5J9566
Report Date: 2015/10/14

Cape Cod Comission
Client Project #: BARNSTABLE FIRE
Site Location: TRAINING ACADEMY
Sampler Initials: SM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Technical Service

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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CHAI[N OF CUSTODY]

01-Oct-15 14:05
Melissa DiGrazia
B5J9566
J. L. ENV-910
C#528190-01-01

Page 1 of 1

Order #: 190
Manager: Melissa DiGrazia

INVOICE TO:
Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tcambareri@capecodcommission.org

REPORT TO:
Company Name: SAME
Attention:
Address:
Tel: Fax:
Email:

PROJECT INFORMATION:
Quotation #:
P.O. #:
Project: Barnstable Fire
Project Name: Training Academy
Site #:
Sampled By: Scott Michaud

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	9/30/15	1250	gw		✓	1	
2		MID	9/30/15	1250	H2O gw		✓	1	
3		EFFLUENT	9/30/15	1250	H2O		✓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	9/30/15	1530	[signature] FATIMA SHAHID	2015/10/01	14:05	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 5.2 / 5.4 / 5.0; Custody Seal: Present — Yes ✓; Intact — Yes ✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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302521

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #29803 Cape Cod Comission	Company Name: (SAME) Cape Cod Commission	Quotation #:	Maxxam Job #:
Attention: Tom Cambareri	Attention: TOM CAMBARERI	P.O. #:	Bottle Order #: 528190
Address: 3225 Main Street, Barnstable MA 02630	Address: 3225 MAIN STREET, BARNSTABLE, MA 02630	Project:	COC #: C#528190-01-01
Tel: (508) 362-3828 x1234 Fax:	Tel: 508 362 3828 Fax: 508 362 3136	Project Name: BFTA	Project Manager: Melissa DiGrazia
Email: tcambareri@capecodcommission.org	Email: TCAMBARERI@capecodcommission.org	Site #:	
		Sampled By: Team	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Res/Park / Medium/Fine / Table 2 / Ind/Comm / Coarse / Table 3 / Agri/Other / For RSC / Table ___

Other Regulations: CCME / Sanitary Sewer Bylaw / Reg 558 / Storm Sewer Bylaw / MISA / Municipality ___ / PWQO / Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; Method 537 PFCs

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals / Hg / Cr VI	Method 537 PFCs	# of Bottles	Comments
1		PC-9	15/10/07	12:15	WATER	537	✓	1	
2		PC-16d	15/10/07	14:00	WATER	537	✓	1	
3		PC-18	15/10/07	13:15	WATER	537	✓	1	
4		PC-7	15/10/07	14:40	WATER	537	✓	1	
5		PC-1	15/10/07	16:00	WATER	537	✓	1	
6		PFW-1	15/10/08	15:00	WATER	537	✓	1	
7		PC-8	15/10/08	14:45	WATER	537	✓	1	
8		PC-17	15/10/08	10:45	WATER	537	✓	1	
9		PC-26	15/10/08	11:15	WATER	537	✓	1	
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/10/08	16:00	[signature]	15/10/08	16:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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09-Oct-15 14:20
Melissa DiGrazia
B5K6826
MB5 ENV-612

Page of

Only:

Bottle Order #: 528190

Project Manager: Melissa DiGrazia

C#528190-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Commission	Company Name:	(SAME) Cape Cod Commission	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street Barnstable MA 02630	Address:	3225 MAIN STREET BARNSTABLE, MA 02630	Project:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 Fax: 508 362 3136	Project Name:	BFTA
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Site #:	
				Sampled By:	Team

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Method 537 PFCs	# of Bottles	Comments
1		PC-9	15/10/07	12:15	WATER	537	✓	1	
2		PC-16d	15/10/07	14:00	WATER	537	✓	1	
3		PC-18	15/10/07	13:15	WATER	537	✓	1	
4		PC-7	15/10/07	14:40	WATER	537	✓	1	
5		PC-1	15/10/07	16:00	WATER	537	✓	1	
6		PFW-1	15/10/08	15:00	WATER	537	✓	1	
7		PC-8	15/10/08	14:45	WATER	537	✓	1	
8		PC-17	15/10/08	10:45	WATER	537	✓	1	
9		PC-26	15/10/08	11:15	WATER	537	✓	1	
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Tom Cambareri	15/10/08	16:00	Relinquished by [signature]	15/10/08	16:08			10/5/7°C	Present	✓	
			JOSEPH UMAN	2015/10/09	14:20				Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

MWB # 302532

Maxxam Analytics International Corporation o/a Maxxam Analytics

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5K6826

Client Project #: BFTA
Quote #: B53924

9 Samples

Samples Received 2015/10/09
Client Confirmation 2015/10/14
Expected Report Delivery 2015/10/26 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PC-9 Sampled 2015/10/07 12:15 COC# C#528190-01-01 Matrix: WATER
Maxxam #: BDI565
Environmental Sample Disposal
*PFOS and PFOA in water

PC-16D Sampled 2015/10/07 14:00
Maxxam #: BDI566
Environmental Sample Disposal
*PFOS and PFOA in water

PC-18 Sampled 2015/10/07 13:15
Maxxam #: BDI567
Environmental Sample Disposal
*PFOS and PFOA in water

PC-7 Sampled 2015/10/07 14:40
Maxxam #: BDI568
Environmental Sample Disposal
*PFOS and PFOA in water

PC-1 Sampled 2015/10/07 16:00
Maxxam #: BDI569
Environmental Sample Disposal
*PFOS and PFOA in water

PFW-1 Sampled 2015/10/08 15:00
Maxxam #: BDI570
Environmental Sample Disposal
*PFOS and PFOA in water

PC-8 Sampled 2015/10/08 14:45

Maxxam #: BDI571

Environmental Sample Disposal

*PFOS and PFOA in water

PC-17 Sampled 2015/10/08 10:45

Maxxam #: BDI572

Environmental Sample Disposal

*PFOS and PFOA in water

PC-26 Sampled 2015/10/08 11:15

Maxxam #: BDI573

Environmental Sample Disposal

*PFOS and PFOA in water

Comments:

Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.

Your Maxxam Project Manager for this submission is: Melissa DiGrazia.

Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5K6826 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BDI565, Sample IDN: **PC-9**
Maxxam # BDI566, Sample IDN: **PC-16D**
Maxxam # BDI567, Sample IDN: **PC-18**
Maxxam # BDI568, Sample IDN: **PC-7**
Maxxam # BDI569, Sample IDN: **PC-1**
Maxxam # BDI570, Sample IDN: **PFW-1**
Maxxam # BDI571, Sample IDN: **PC-8**
Maxxam # BDI572, Sample IDN: **PC-17**
Maxxam # BDI573, Sample IDN: **PC-26**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

09-Oct-15 14:20
Melissa DiGrazia
B5K6826
MB5 ENV-612

Page of

Only:

Bottle Order #: 528190

Project Manager: Melissa DiGrazia

C#528190-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Commission	Company Name:	(SAME) Cape Cod Commission	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:	
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 Fax: 508 362 3136	Site #:	
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Sampled By:	Team

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; Method 537 PFCs

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals / Hg / Cr VI	Method 537 PFCs	# of Bottles	Comments
1		PC-9	15/10/07	12:15	WATER	537	✓	1	
2		PC-16d	15/10/07	14:00	WATER	537	✓	1	
3		PC-18	15/10/07	13:15	WATER	537	✓	1	
4		PC-7	15/10/07	14:40	WATER	537	✓	1	
5		PC-1	15/10/07	16:00	WATER	537	✓	1	
6		PFW-1	15/10/08	15:00	WATER	537	✓	1	
7		PC-8	15/10/08	14:45	WATER	537	✓	1	
8		PC-17	15/10/08	10:45	WATER	537	✓	1	
9		PC-26	15/10/08	11:15	WATER	537	✓	1	
10						Tom			

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/10/08	16:00	Relinquished by [signature]	15/10/08	16:08	
			JOSEPH UMALI	2015/10/09	14:20	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10/5/7°C	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

MWB # 302532

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: BFTA
Your C.O.C. #: C#528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/10/26
Report #: R3734353
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5K6826
Received: 2015/10/09, 14:20

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	5	2015/10/14	2015/10/16	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	4	2015/10/21	2015/10/22	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation is a NELAC accredited laboratory. Certificate # 04012. Use of the NELAC logo however does not insure that Maxxam is accredited for all of the methods indicated. This certificate shall not be reproduced except in full, without the written approval of Maxxam.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

RESULTS OF ANALYSES OF WATER

Maxxam ID		BDI565	BDI566			
Sampling Date		2015/10/07 12:15	2015/10/07 14:00			
COC Number		C#528190-01-01	C#528190-01-01			
	UNITS	PC-9	PC-16D	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	0.16	0.17	0.020	0.0052	4238036
8:2 Fluorotelomer sulfonate	ug/L	0.031	0.027	0.020	0.0065	4238036
N-ethylperfluorooctane sulfonamide	ug/L	<0.0078	<0.0078	0.020	0.0078	4238036
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0071	<0.0071	0.020	0.0071	4238036
N-methylperfluorooctane sulfonamide	ug/L	<0.0050	<0.0050	0.020	0.0050	4238036
N-methylperfluorooctanesulfonamidol	ug/L	<0.0093	<0.0093	0.020	0.0093	4238036
Perfluorobutane Sulfonate (PFBS)	ug/L	0.021	0.035	0.020	0.0047	4238036
Perfluorobutanoic acid	ug/L	0.047	0.077	0.020	0.0058	4238036
Perfluorodecane Sulfonate	ug/L	<0.0054	<0.0054	0.020	0.0054	4238036
Perfluorodecanoic Acid (PFDA)	ug/L	0.0067	0.0081	0.020	0.0065	4238036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0035	<0.0035	0.020	0.0035	4238036
Perfluoroheptane sulfonate	ug/L	0.012	0.015	0.020	0.0041	4238036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.080	0.11	0.020	0.0054	4238036
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.16	0.26	0.020	0.0054	4238036
Perfluorohexanoic Acid (PFHxA)	ug/L	0.13	0.25	0.020	0.0049	4238036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.040	0.084	0.020	0.0044	4238036
Perfluorononanoic Acid (PFNA)	ug/L	0.038	0.045	0.020	0.0063	4238036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.032	0.028	0.020	0.0051	4238036
Perfluorooctane Sulfonate (PFOS)	ug/L	0.51	0.56	0.020	0.0037	4238036
Perfluoropentanoic Acid (PFPeA)	ug/L	0.13	0.27	0.020	0.0049	4238036
Perfluorotetradecanoic Acid	ug/L	<0.0050	<0.0050	0.020	0.0050	4238036
Perfluorotridecanoic Acid	ug/L	<0.0058	<0.0058	0.020	0.0058	4238036
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0054	<0.0054	0.020	0.0054	4238036
Surrogate Recovery (%)						
13C4-Perfluorooctanesulfonate	%	99	98	N/A	N/A	4238036
13C4-Perfluorooctanoic acid	%	92	101	N/A	N/A	4238036
13C8-Perfluorooctanesulfonamide	%	84	93	N/A	N/A	4238036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

RESULTS OF ANALYSES OF WATER

Maxxam ID		BDI567				BDI568			
Sampling Date		2015/10/07 13:15				2015/10/07 14:40			
COC Number		C#528190-01-01				C#528190-01-01			
	UNITS	**PC-18**	**RDL**	**MDL**	**QC Batch**	**PC-7**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	3.5	0.80	0.21	4228962	0.078	0.020	0.0052	4238036
8:2 Fluorotelomer sulfonate	ug/L	0.11	0.020	0.0065	4240594	0.011	0.020	0.0065	4238036
N-ethylperfluorooctane sulfonamide	ug/L	<0.0078	0.020	0.0078	4240594	<0.0078	0.020	0.0078	4238036
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0071	0.020	0.0071	4240594	<0.0071	0.020	0.0071	4238036
N-methylperfluorooctane sulfonamide	ug/L	<0.0050	0.020	0.0050	4240594	<0.0050	0.020	0.0050	4238036
N-methylperfluorooctanesulfonamidol	ug/L	<0.0093	0.020	0.0093	4240594	<0.0093	0.020	0.0093	4238036
Perfluorobutane Sulfonate (PFBS)	ug/L	0.85	0.80	0.19	4228962	0.11	0.020	0.0047	4238036
Perfluorobutanoic acid	ug/L	0.27	0.020	0.0058	4240594	0.087	0.020	0.0058	4238036
Perfluorodecane Sulfonate	ug/L	<0.0054	0.020	0.0054	4240594	<0.0054	0.020	0.0054	4238036
Perfluorodecanoic Acid (PFDA)	ug/L	0.0085	0.020	0.0065	4240594	0.0093	0.020	0.0065	4238036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0035	0.020	0.0035	4240594	<0.0035	0.020	0.0035	4238036
Perfluoroheptane sulfonate	ug/L	0.37	0.020	0.0041	4240594	0.030	0.020	0.0041	4238036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.38	0.020	0.0054	4240594	0.18	0.020	0.0054	4238036
Perfluorohexane Sulfonate (PFHxS)	ug/L	4.1	0.80	0.22	4228962	0.57	0.020	0.0054	4238036
Perfluorohexanoic Acid (PFHxA)	ug/L	1.3	0.80	0.20	4228962	0.42	0.020	0.0049	4238036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.59	0.020	0.0044	4240594	0.098	0.020	0.0044	4238036
Perfluorononanoic Acid (PFNA)	ug/L	0.16	0.020	0.0063	4240594	0.073	0.020	0.0063	4238036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.012	0.020	0.0051	4240594	<0.0051	0.020	0.0051	4238036
Perfluorooctane Sulfonate (PFOS)	ug/L	3.9	0.80	0.15	4228962	0.70	0.020	0.0037	4238036
Perfluoropentanoic Acid (PFPeA)	ug/L	0.65	0.020	0.0049	4240594	0.30	0.020	0.0049	4238036
Perfluorotetradecanoic Acid	ug/L	<0.0050	0.020	0.0050	4240594	<0.0050	0.020	0.0050	4238036
Perfluorotridecanoic Acid	ug/L	<0.0058	0.020	0.0058	4240594	<0.0058	0.020	0.0058	4238036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.042	0.020	0.0054	4240594	0.038	0.020	0.0054	4238036
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	114	N/A	N/A	4228962	90	N/A	N/A	4238036
13C4-Perfluorooctanoic acid	%	78	N/A	N/A	4240594	97	N/A	N/A	4238036
13C8-Perfluorooctanesulfonamide	%	67 (1)	N/A	N/A	4240594	86	N/A	N/A	4238036

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Surrogate recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data low. Because quantitation is performed using isotope dilution techniques, any losses of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar loss of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the low surrogate recovery.

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Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

RESULTS OF ANALYSES OF WATER

Maxxam ID		BDI569			BDI570			
Sampling Date		2015/10/07 16:00			2015/10/08 15:00			
COC Number		C#528190-01-01			C#528190-01-01			
	UNITS	PC-1	RDL	MDL	PFW-1	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	1.9	0.80	0.21	8.7	0.80	0.21	4228962
8:2 Fluorotelomer sulfonate	ug/L	0.90	0.80	0.26	5.1	0.80	0.26	4228962
N-ethylperfluorooctane sulfonamide	ug/L	<0.80	0.80	0.31	<0.80	0.80	0.31	4228962
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.80	0.80	0.28	<0.80	0.80	0.28	4228962
N-methylperfluorooctane sulfonamide	ug/L	<0.80	0.80	0.20	<0.80	0.80	0.20	4228962
N-methylperfluorooctanesulfonamidol	ug/L	<0.80	0.80	0.37	<0.80	0.80	0.37	4228962
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.80	0.80	0.19	<0.80	0.80	0.19	4228962
Perfluorobutanoic acid	ug/L	<0.80	0.80	0.23	<0.80	0.80	0.23	4228962
Perfluorodecane Sulfonate	ug/L	<0.80	0.80	0.22	<0.80	0.80	0.22	4228962
Perfluorodecanoic Acid (PFDA)	ug/L	<0.80	0.80	0.26	<0.80	0.80	0.26	4228962
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.80	0.80	0.14	<0.80	0.80	0.14	4228962
Perfluoroheptane sulfonate	ug/L	<0.80	0.80	0.16	3.2	0.80	0.16	4228962
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.80	0.80	0.22	<0.80	0.80	0.22	4228962
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.7	0.80	0.22	9.6	0.80	0.22	4228962
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.80	0.80	0.20	2.4	0.80	0.20	4228962
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.80	0.80	0.18	1.8	0.80	0.18	4228962
Perfluorononanoic Acid (PFNA)	ug/L	<0.80	0.80	0.25	1.1	0.80	0.25	4228962
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.80	0.80	0.20	<0.80	0.80	0.20	4228962
Perfluorooctane Sulfonate (PFOS)	ug/L	12	0.80	0.15	260	8.0	1.5	4228962
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.80	0.80	0.20	1.6	0.80	0.20	4228962
Perfluorotetradecanoic Acid	ug/L	<0.80	0.80	0.20	<0.80	0.80	0.20	4228962
Perfluorotridecanoic Acid	ug/L	<0.80	0.80	0.23	<0.80	0.80	0.23	4228962
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.80	0.80	0.22	0.84	0.80	0.22	4228962
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	149 (1)	N/A	N/A	4228962
13C4-Perfluorooctanoic acid	%	113	N/A	N/A	102	N/A	N/A	4228962
13C8-Perfluorooctanesulfonamide	%	101	N/A	N/A	104	N/A	N/A	4228962

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Surrogate recovery was above the defined upper control limit (UCL). Laboratory spiked water resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data high. Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

RESULTS OF ANALYSES OF WATER

Maxxam ID		BDI571				BDI572			
Sampling Date		2015/10/08 14:45				2015/10/08 10:45			
COC Number		C#528190-01-01				C#528190-01-01			
	UNITS	**PC-8**	**RDL**	**MDL**	**QC Batch**	**PC-17**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.76	0.020	0.0052	4238036	0.037	0.020	0.0052	4238036
8:2 Fluorotelomer sulfonate	ug/L	0.31	0.020	0.0065	4238036	0.0096	0.020	0.0065	4238036
N-ethylperfluorooctane sulfonamide	ug/L	<0.0078	0.020	0.0078	4238036	<0.0078	0.020	0.0078	4238036
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0071	0.020	0.0071	4238036	<0.0071	0.020	0.0071	4238036
N-methylperfluorooctane sulfonamide	ug/L	<0.0050	0.020	0.0050	4238036	<0.0050	0.020	0.0050	4238036
N-methylperfluorooctanesulfonamidol	ug/L	<0.0093	0.020	0.0093	4238036	<0.0093	0.020	0.0093	4238036
Perfluorobutane Sulfonate (PFBS)	ug/L	0.31	0.020	0.0047	4238036	0.014	0.020	0.0047	4238036
Perfluorobutanoic acid	ug/L	0.20	0.020	0.0058	4238036	0.027	0.020	0.0058	4238036
Perfluorodecane Sulfonate	ug/L	<0.0054	0.020	0.0054	4238036	<0.0054	0.020	0.0054	4238036
Perfluorodecanoic Acid (PFDA)	ug/L	0.018	0.020	0.0065	4238036	<0.0065	0.020	0.0065	4238036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0035	0.020	0.0035	4238036	<0.0035	0.020	0.0035	4238036
Perfluoroheptane sulfonate	ug/L	0.13	0.020	0.0041	4238036	0.010	0.020	0.0041	4238036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.34	0.020	0.0054	4238036	0.042	0.020	0.0054	4238036
Perfluorohexane Sulfonate (PFHxS)	ug/L	2.2	0.80	0.22	4228962	0.12	0.020	0.0054	4238036
Perfluorohexanoic Acid (PFHxA)	ug/L	0.86	0.80	0.20	4228962	0.076	0.020	0.0049	4238036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.37	0.020	0.0044	4238036	0.024	0.020	0.0044	4238036
Perfluorononanoic Acid (PFNA)	ug/L	0.12	0.020	0.0063	4238036	0.017	0.020	0.0063	4238036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.016	0.020	0.0051	4238036	0.0075	0.020	0.0051	4238036
Perfluorooctane Sulfonate (PFOS)	ug/L	2.5	0.80	0.15	4228962	0.23	0.020	0.0037	4238036
Perfluoropentanoic Acid (PFPeA)	ug/L	0.62	0.020	0.0049	4238036	0.071	0.020	0.0049	4238036
Perfluorotetradecanoic Acid	ug/L	<0.0050	0.020	0.0050	4238036	<0.0050	0.020	0.0050	4238036
Perfluorotridecanoic Acid	ug/L	<0.0058	0.020	0.0058	4238036	<0.0058	0.020	0.0058	4238036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.24	0.020	0.0054	4238036	<0.0054	0.020	0.0054	4238036
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	4228962	99	N/A	N/A	4238036
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	4238036	95	N/A	N/A	4238036
13C8-Perfluorooctanesulfonamide	%	79	N/A	N/A	4238036	82	N/A	N/A	4238036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

RESULTS OF ANALYSES OF WATER

Maxxam ID		BDI573			
Sampling Date		2015/10/08 11:15			
COC Number		C#528190-01-01			
	UNITS	**PC-26**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.14	0.020	0.0052	4238036
8:2 Fluorotelomer sulfonate	ug/L	0.015	0.020	0.0065	4238036
N-ethylperfluorooctane sulfonamide	ug/L	<0.0078	0.020	0.0078	4238036
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0071	0.020	0.0071	4238036
N-methylperfluorooctane sulfonamide	ug/L	<0.0050	0.020	0.0050	4238036
N-methylperfluorooctanesulfonamidol	ug/L	<0.0093	0.020	0.0093	4238036
Perfluorobutane Sulfonate (PFBS)	ug/L	0.15	0.020	0.0047	4238036
Perfluorobutanoic acid	ug/L	0.11	0.020	0.0058	4238036
Perfluorodecane Sulfonate	ug/L	<0.0054	0.020	0.0054	4238036
Perfluorodecanoic Acid (PFDA)	ug/L	0.011	0.020	0.0065	4238036
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0035	0.020	0.0035	4238036
Perfluoroheptane sulfonate	ug/L	0.12	0.020	0.0041	4238036
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.21	0.020	0.0054	4238036
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.89	0.80	0.22	4228962
Perfluorohexanoic Acid (PFHxA)	ug/L	0.53	0.020	0.0049	4238036
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.19	0.020	0.0044	4238036
Perfluorononanoic Acid (PFNA)	ug/L	0.12	0.020	0.0063	4238036
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.0063	0.020	0.0051	4238036
Perfluorooctane Sulfonate (PFOS)	ug/L	1.9	0.80	0.15	4228962
Perfluoropentanoic Acid (PFPeA)	ug/L	0.31	0.020	0.0049	4238036
Perfluorotetradecanoic Acid	ug/L	<0.0050	0.020	0.0050	4238036
Perfluorotridecanoic Acid	ug/L	<0.0058	0.020	0.0058	4238036
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.11	0.020	0.0054	4238036
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	101	N/A	N/A	4228962
13C4-Perfluorooctanoic acid	%	87	N/A	N/A	4238036
13C8-Perfluorooctanesulfonamide	%	76	N/A	N/A	4238036

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: BDI565 **Collected:** 2015/10/07
Sample ID: PC-9 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

Maxxam ID: BDI566 **Collected:** 2015/10/07
Sample ID: PC-16D **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

Maxxam ID: BDI567 **Collected:** 2015/10/07
Sample ID: PC-18 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4228962	2015/10/14	2015/10/16	Colm McNamara

Maxxam ID: BDI568 **Collected:** 2015/10/07
Sample ID: PC-7 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

Maxxam ID: BDI569 **Collected:** 2015/10/07
Sample ID: PC-1 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4228962	2015/10/14	2015/10/16	Colm McNamara

Maxxam ID: BDI570 **Collected:** 2015/10/08
Sample ID: PFW-1 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4228962	2015/10/14	2015/10/16	Colm McNamara

Maxxam ID: BDI571 **Collected:** 2015/10/08
Sample ID: PC-8 **Shipped:**
Matrix: Water **Received:** 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

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Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

TEST SUMMARY

Maxxam ID: BDI572
Sample ID: PC-17
Matrix: Water

Collected: 2015/10/08
Shipped:
Received: 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

Maxxam ID: BDI573
Sample ID: PC-26
Matrix: Water

Collected: 2015/10/08
Shipped:
Received: 2015/10/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4238036	2015/10/21	2015/10/22	Sin Chii Chia

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GENERAL COMMENTS

Sample BDI567-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits werwe adjusted accordingly.

Sample BDI569-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits werwe adjusted accordingly.

Sample BDI570-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits werwe adjusted accordingly.

Sample BDI571-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits werwe adjusted accordingly.

Sample BDI573-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits werwe adjusted accordingly.

Sample BDI567, PFOS and PFOA in water: Test repeated.
Sample BDI571, PFOS and PFOA in water: Test repeated.
Sample BDI573, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4228962	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/10/16		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/16		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/16		106	%	70 - 130
4228962	CM5	Matrix Spike(BDI565)	6:2 Fluorotelomer sulfonate	2015/10/16		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/16		86	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/16		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/16		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/16		97	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/16		96	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/16		96	%	70 - 130
			Perfluorobutanoic acid	2015/10/16		106	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/16		125	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/16		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/16		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/16		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/16		98	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/16		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/16		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/16		99	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/16		99	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/16		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/16		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/16		104	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/16		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/16		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/16		NC	%	70 - 130
4228962	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/10/16		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/16		104	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/16		102	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/16		99	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/16		86	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/16		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/16		95	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/16		97	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/16		89	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/16		101	%	70 - 130
			Perfluorobutanoic acid	2015/10/16		93	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/16		102	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/16		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/16		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/16		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/16		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/16		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/16		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/16		95	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/16		107	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/16		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/16		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/16		97	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/16		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/16		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/16		100	%	70 - 130
4228962	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/10/16		99	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2015/10/16		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/16		94	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/16	<0.80		ug/L	
			8:2 Fluorotelomer sulfonate	2015/10/16	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/16	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/16	<0.80		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/16	<0.80		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/16	<0.80		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/10/16	<0.80		ug/L	
			Perfluorobutanoic acid	2015/10/16	<0.80		ug/L	
			Perfluorodecane Sulfonate	2015/10/16	<0.80		ug/L	
			Perfluoroheptane sulfonate	2015/10/16	<0.80		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/16	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/10/16	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/10/16	<0.80		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/16	<0.80		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/16	<0.80		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/16	<0.80		ug/L	
			Perfluorotetradecanoic Acid	2015/10/16	<0.80		ug/L	
			Perfluorotridecanoic Acid	2015/10/16	<0.80		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/16	<0.80		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/16	<0.80		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/16	<0.80		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/16	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/10/16	<0.80		ug/L	
4238036	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/10/22		91	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/22		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/22		89	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/22		115	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/22		106	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/22		112	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/22		140 (1)	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/22		120	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/22		92	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/22		99	%	70 - 130
			Perfluorobutanoic acid	2015/10/22		110	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/22		105	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/22		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/22		111	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/22		91	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/22		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/22		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/22		105	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/22		107	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/22		110	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/22		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/22		108	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/22		114	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/22		105	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/22		115	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/22		107	%	70 - 130
4238036	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/10/22		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/22		99	%	70 - 130

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			13C8-Perfluorooctanesulfonamide	2015/10/22		90	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/22		122	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/22		124	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/22		113	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/22		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/22		114	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/22		108	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/22		113	%	70 - 130
			Perfluorobutanoic acid	2015/10/22		122	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/22		99	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/22		107	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/22		114	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/22		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/22		121	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/22		112	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/22		111	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/22		102	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/22		110	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/22		115	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/22		114	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/22		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/22		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/22		112	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/22		107	%	70 - 130
4238036	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2015/10/22		107	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/22		108	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/22		89	%	70 - 130
			6:2 Fluorotelomer sulfonate	2015/10/22	<0.0052		ug/L	
			8:2 Fluorotelomer sulfonate	2015/10/22	<0.0065		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/22	<0.0078		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/22	<0.0071		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/22	<0.0050		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/22	<0.0093		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/10/22	<0.0047		ug/L	
			Perfluorobutanoic acid	2015/10/22	<0.0058		ug/L	
			Perfluorodecane Sulfonate	2015/10/22	<0.0054		ug/L	
			Perfluoroheptane sulfonate	2015/10/22	<0.0041		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/22	<0.0054		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/10/22	<0.0054		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/10/22	<0.0049		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/22	<0.0063		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/22	<0.0051		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/22	<0.0049		ug/L	
			Perfluorotetradecanoic Acid	2015/10/22	<0.0050		ug/L	
			Perfluorotridecanoic Acid	2015/10/22	<0.0058		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/22	<0.0054		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/22	<0.0065		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/22	<0.0035		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/22	<0.0044		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/10/22	<0.0037		ug/L	
4238036	SCH	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/10/22	NC		%	30
			Perfluorobutanoic acid	2015/10/22	NC		%	30
			Perfluorodecane Sulfonate	2015/10/22	NC		%	30

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoroheptane sulfonate	2015/10/22	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/10/22	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/10/22	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/10/22	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/10/22	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/22	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/10/22	NC		%	30
			Perfluorotetradecanoic Acid	2015/10/22	NC		%	30
			Perfluorotridecanoic Acid	2015/10/22	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/10/22	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/10/22	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/10/22	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/22	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/10/22	NC		%	30
4240594	CM5	Spiked Blank	13C4-Perfluorooctanoic acid	2015/10/23		83	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/23		74	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/23		90	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/23		107	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/23		103	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/23		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/23		99	%	70 - 130
			Perfluorobutanoic acid	2015/10/23		130	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/23		113	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/23		114	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/23		114	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/23		99	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/23		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/23		104	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/23		103	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/23		118	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/23		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/23		116	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/23		113	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/23		107	%	70 - 130
4240594	CM5	Spiked Blank DUP	13C4-Perfluorooctanoic acid	2015/10/23		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/23		85	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/23		87	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/23		109	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/23		107	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/23		101	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/23		94	%	70 - 130
			Perfluorobutanoic acid	2015/10/23		107	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/23		101	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/23		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/23		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/23		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/23		91	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/23		104	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/23		103	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/23		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/23		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/23		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/23		106	%	70 - 130

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			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/23		102	%	70 - 130
4240594	CM5	RPD	8:2 Fluorotelomer sulfonate	2015/10/23	2.9		%	30
			N-ethylperfluorooctane sulfonamide	2015/10/23	2.2		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/10/23	4.0		%	30
			N-methylperfluorooctane sulfonamide	2015/10/23	6.7		%	30
			N-methylperfluorooctanesulfonamidol	2015/10/23	4.8		%	30
			Perfluorobutanoic acid	2015/10/23	19		%	30
			Perfluorodecane Sulfonate	2015/10/23	12		%	30
			Perfluoroheptane sulfonate	2015/10/23	12		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/10/23	4.8		%	30
			Perfluorononanoic Acid (PFNA)	2015/10/23	5.1		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/23	12		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/10/23	0.58		%	30
			Perfluorotetradecanoic Acid	2015/10/23	0.19		%	30
			Perfluorotridecanoic Acid	2015/10/23	10		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/10/23	2.6		%	30
			Perfluorodecanoic Acid (PFDA)	2015/10/23	9.0		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/10/23	6.4		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/23	4.6		%	30
4240594	CM5	Method Blank	13C4-Perfluorooctanoic acid	2015/10/23		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/23		78	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/23	<0.0065		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/23	<0.0078		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/23	<0.0071		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/23	<0.0050		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/23	<0.0093		ug/L	
			Perfluorobutanoic acid	2015/10/23	<0.0058		ug/L	
			Perfluorodecane Sulfonate	2015/10/23	<0.0054		ug/L	
			Perfluoroheptane sulfonate	2015/10/23	<0.0041		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/23	<0.0054		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/23	<0.0063		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/23	<0.0051		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/23	<0.0049		ug/L	
			Perfluorotetradecanoic Acid	2015/10/23	<0.0050		ug/L	
			Perfluorotridecanoic Acid	2015/10/23	<0.0058		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/23	<0.0054		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/23	<0.0065		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/23	<0.0035		ug/L	

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Client Project #: BFTA
Sampler Initials: T

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/23	<0.0044		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.

Maxxam Job #: B5K6826
Report Date: 2015/10/26

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: T

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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09-Oct-15 14:20
Melissa DiGrazia
B5K6826
MB5 ENV-612

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Only:

Bottle Order #: 528190

Project Manager: Melissa DiGrazia

C#528190-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Commission	Company Name:	(SAME) Cape Cod Commission	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:	
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 Fax: 508 362 3136	Site #:	
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Sampled By:	team

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw; Municipality

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Method 537 PFCs	# of Bottles	Comments
1		PC-9	15/10/07	12:15	WATER	537	✓	1	
2		PC-16d	15/10/07	14:00	WATER	537	✓	1	
3		PC-18	15/10/07	13:15	WATER	537	✓	1	
4		PC-7	15/10/07	14:40	WATER	537	✓	1	
5		PC-1	15/10/07	16:00	WATER	537	✓	1	
6		PFW-1	15/10/08	15:00	WATER	537	✓	1	
7		PC-8	15/10/08	14:45	WATER	537	✓	1	
8		PC-17	15/10/08	10:45	WATER	537	✓	1	
9		PC-26	15/10/08	11:15	WATER	537	✓	1	
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/10/08	16:00	Relinquished by	15/10/08	16:08	
			JOSEPH UMALI	2015/10/09	14:20	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10/5/7°C	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

MWB # 302532

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16-Oct-15 14:44
Melissa DiGrazia
B5L2034
MB5 ENV-418

Page of

Laboratory Use Only:
Bottle Order #: 528190
C#528190-01-01
Project Manager: Melissa DiGrazia

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:	
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:	
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:	
	Barnstable MA 02630		BARNSTABLE MA 02630	Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3186	Site #:	
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Method 537	# of Bottles	Comments
1		INFLUENT	10-15-15	9:00 AM	WATER		✓	1	
2		MID	10-15-15	9:00 AM	WATER		✓	1	
3		PFW-3	10-15-15	9:15 AM	WATER		✓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	2015-10-15	4:30PM	HARWIN GREWAL	2015/10/16	14:44	

Laboratory Use Only			
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes / No
	4.4/4.1/4.1	Present	Y
		Intact	Y

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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#302549

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5L2034

Client Project #: BFTA
Quote #: B53924

3 Samples

Samples Received 2015/10/16
Client Confirmation 2015/10/16
Expected Report Delivery 2015/10/30 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

INFLUENT Sampled 2015/10/15 09:00 COC# C#528190-01-01 Matrix: WATER
Maxxam #: BEJ835
Environmental Sample Disposal
*PFOS and PFOA in water

MID Sampled 2015/10/15 09:00
Maxxam #: BEJ836
Environmental Sample Disposal
*PFOS and PFOA in water

PFW-3 Sampled 2015/10/15 09:15
Maxxam #: BEJ837
Environmental Sample Disposal
*PFOS and PFOA in water

Comments:
Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5L2034 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BEJ835, Sample IDN: **INFLUENT**
Maxxam # BEJ836, Sample IDN: **MID**
Maxxam # BEJ837, Sample IDN: **PFW-3**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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16-Oct-15 14:44
Melissa DiGrazia
B5L2034
MB5 ENV-418

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:		Bottle Order #:	528190
Attention:	Tom Cambareri	Attention:	TOM CAMBARERI	P.O. #:			
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:		Project Manager:	
	Barnstable MA 02630		BARNSTABLE MA 02630	Project Name:	BFTA		
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3186	Site #:		C#528190-01-01	Melissa DiGrazia
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)			Other Regulations		Special Instructions
☐ Table 1	☐ Res/Park	☐ Medium/Fine	☐ CCME	☐ Sanitary Sewer Bylaw	
☐ Table 2	☐ Ind/Comm	☐ Coarse	☐ Reg 558.	☐ Storm Sewer Bylaw	
☐ Table 3	☐ Agri/Other	☐ For RSC	☐ MISA	Municipality ____	
☐ Table ___			☐ PWQO		
			☐ Other ____		

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; Method 537

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ________ Time Required: ______ ☐
Rush Confirmation Number: ________ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals / Hg / Cr VI	Method 537	# of Bottles	Comments
1		INFLUENT	10-15-15	9:00 AM	WATER		✓	1	
2		MID	10-15-15	9:00 AM	WATER		✓	1	
3		PFW-3	10-15-15	9:15 AM	WATER		✓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	2015-10-15	4:30PM	HARWIN GREWAL	2015/10/16	14:44	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	4.4/4.1/4.1	Present	Y	
		Intact	Y	

* IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

#302549

Your Project #: BFTA
Your C.O.C. #: C#528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/11/03
Report #: R3748680
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5L2034
Received: 2015/10/16, 14:44

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2015/10/26	2015/10/27	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2015/10/28	2015/11/03	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BEJ835				BEJ836			
Sampling Date		2015/10/15 09:00				2015/10/15 09:00			
COC Number		C#528190-01-01				C#528190-01-01			
	UNITS	**INFLUENT**	**RDL**	**MDL**	**QC Batch**	**MID**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	1.8	0.80	0.21	4245176	<0.0065	0.020	0.0065	4248254
8:2 Fluorotelomer sulfonate	ug/L	0.49	0.80	0.28	4245176	<0.0055	0.020	0.0055	4248254
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4245176	<0.0053	0.020	0.0053	4248254
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4245176	<0.0049	0.020	0.0049	4248254
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4245176	<0.0040	0.020	0.0040	4248254
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4245176	<0.0061	0.020	0.0061	4248254
Perfluorobutane Sulfonate (PFBS)	ug/L	0.65	0.80	0.23	4245176	0.0062	0.020	0.0019	4248254
Perfluorobutanoic acid	ug/L	<0.20	0.80	0.20	4245176	<0.0066	0.020	0.0066	4248254
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4245176	<0.0043	0.020	0.0043	4248254
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4245176	<0.0066	0.020	0.0066	4248254
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4245176	<0.0057	0.020	0.0057	4248254
Perfluoroheptane sulfonate	ug/L	0.71	0.80	0.27	4245176	0.0061	0.020	0.0036	4248254
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.36	0.80	0.27	4245176	<0.0047	0.020	0.0047	4248254
Perfluorohexane Sulfonate (PFHxS)	ug/L	4.5	0.80	0.16	4245176	0.0062	0.020	0.0040	4248254
Perfluorohexanoic Acid (PFHxA)	ug/L	1.3	0.80	0.17	4245176	<0.0046	0.020	0.0046	4248254
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.56	0.80	0.20	4245176	<0.0053	0.020	0.0053	4248254
Perfluorononanoic Acid (PFNA)	ug/L	0.25	0.80	0.19	4245176	<0.0046	0.020	0.0046	4248254
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4245176	<0.0058	0.020	0.0058	4248254
Perfluorooctane Sulfonate (PFOS)	ug/L	9.9	0.80	0.14	4245176	0.0094	0.020	0.0033	4248254
Perfluoropentanoic Acid (PFPeA)	ug/L	0.52	0.80	0.21	4245176	<0.0036	0.020	0.0036	4248254
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4245176	<0.0052	0.020	0.0052	4248254
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4245176	<0.0032	0.020	0.0032	4248254
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14	0.80	0.14	4245176	<0.0037	0.020	0.0037	4248254
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	110	N/A	N/A	4245176	125	N/A	N/A	4248254
13C4-Perfluorooctanoic acid	%	104	N/A	N/A	4245176	130	N/A	N/A	4248254
13C8-Perfluorooctanesulfonamide	%	106	N/A	N/A	4245176	102	N/A	N/A	4248254

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BEJ837			
Sampling Date		2015/10/15 09:15			
COC Number		C#528190-01-01			
	UNITS	**PFW-3**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.095	0.020	0.0065	4248254
8:2 Fluorotelomer sulfonate	ug/L	0.024	0.020	0.0055	4248254
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4248254
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4248254
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4248254
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4248254
Perfluorobutane Sulfonate (PFBS)	ug/L	0.069	0.020	0.0019	4248254
Perfluorobutanoic acid	ug/L	0.11	0.020	0.0066	4248254
Perfluorodecane Sulfonate	ug/L	0.0064	0.020	0.0043	4248254
Perfluorodecanoic Acid (PFDA)	ug/L	0.018	0.020	0.0066	4248254
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4248254
Perfluoroheptane sulfonate	ug/L	0.073	0.020	0.0036	4248254
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.20	0.020	0.0047	4248254
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.49	0.020	0.0040	4248254
Perfluorohexanoic Acid (PFHxA)	ug/L	0.51	0.020	0.0046	4248254
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.17	0.020	0.0053	4248254
Perfluorononanoic Acid (PFNA)	ug/L	0.16	0.020	0.0046	4248254
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4248254
Perfluorooctane Sulfonate (PFOS)	ug/L	3.8 (1)	0.80	0.14	4245176
Perfluoropentanoic Acid (PFPeA)	ug/L	0.36	0.020	0.0036	4248254
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4248254
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4248254
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.067	0.020	0.0037	4248254
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	111	N/A	N/A	4245176
13C4-Perfluorooctanoic acid	%	121	N/A	N/A	4248254
13C8-Perfluorooctanesulfonamide	%	93	N/A	N/A	4248254

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BEJ835
Sample ID: INFLUENT
Matrix: Water

Collected: 2015/10/15
Shipped:
Received: 2015/10/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4245176	2015/10/26	2015/10/27	Colm McNamara

Maxxam ID: BEJ836
Sample ID: MID
Matrix: Water

Collected: 2015/10/15
Shipped:
Received: 2015/10/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4248254	2015/10/28	2015/11/03	Colm McNamara

Maxxam ID: BEJ837
Sample ID: PFW-3
Matrix: Water

Collected: 2015/10/15
Shipped:
Received: 2015/10/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4248254	2015/10/28	2015/11/03	Colm McNamara

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GENERAL COMMENTS

Sample BEJ835-01 : PFOSALCM-W: Due to high concentration of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BEJ837, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4245176	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/10/27		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/27		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/27		103	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/10/27		84	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/27		95	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/27		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/27		98	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/27		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/27		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/27		98	%	70 - 130
			Perfluorobutanoic acid	2015/10/27		91	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/27		89	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/27		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/27		104	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/27		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/27		103	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/27		100	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/27		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/27		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/27		89	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/27		95	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/27		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/27		92	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/27		103	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/27		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/27		101	%	70 - 130
4245176	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/10/27		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/27		98	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/10/27		96	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/10/27		96	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/10/27		105	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/10/27		102	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/10/27		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/10/27		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/10/27		107	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/10/27		96	%	70 - 130
			Perfluorobutanoic acid	2015/10/27		79	%	70 - 130
			Perfluorodecane Sulfonate	2015/10/27		99	%	70 - 130
			Perfluoroheptane sulfonate	2015/10/27		110	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/10/27		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/10/27		97	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/10/27		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/10/27		95	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/27		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/10/27		104	%	70 - 130
			Perfluorotetradecanoic Acid	2015/10/27		99	%	70 - 130
			Perfluorotridecanoic Acid	2015/10/27		100	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/10/27		110	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/10/27		99	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/10/27		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/27		101	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/10/27		104	%	70 - 130
4245176	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/10/27		127	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/10/27		122	%	70 - 130

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/10/27		106	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/10/27	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2015/10/27	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/10/27	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/10/27	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2015/10/27	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/10/27	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/10/27	<0.23		ug/L	
			Perfluorobutanoic acid	2015/10/27	<0.20		ug/L	
			Perfluorodecane Sulfonate	2015/10/27	<0.22		ug/L	
			Perfluoroheptane sulfonate	2015/10/27	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/10/27	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/10/27	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/10/27	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/10/27	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/10/27	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/10/27	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2015/10/27	<0.20		ug/L	
			Perfluorotridecanoic Acid	2015/10/27	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/10/27	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/10/27	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/10/27	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/10/27	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/10/27	<0.14		ug/L	
4248254	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/11/03		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/03		106	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/03		92	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/03		94	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/03		101	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/03		117	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/03		92	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/03		99	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/03		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/03		94	%	70 - 130
			Perfluorobutanoic acid	2015/11/03		117	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/03		103	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/03		98	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/03		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/03		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/03		97	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/03		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/03		90	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/03		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/03		98	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/03		97	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/03		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/03		104	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/03		98	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/03		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/03		101	%	70 - 130
4248254	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/11/03		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/03		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/03		104	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/03		91	%	70 - 130

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2015/11/03		123	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/03		104	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/03		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/03		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/03		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/03		101	%	70 - 130
			Perfluorobutanoic acid	2015/11/03		109	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/03		84	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/03		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/03		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/03		100	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/03		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/03		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/03		92	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/03		95	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/03		103	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/03		99	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/03		120	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/03		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/03		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/03		109	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/03		93	%	70 - 130
4248254	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/11/03		108	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/03		107	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/03		93	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/03	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2015/11/03	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/11/03	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/11/03	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2015/11/03	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/11/03	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/11/03	<0.0019		ug/L	
			Perfluorobutanoic acid	2015/11/03	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2015/11/03	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2015/11/03	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/11/03	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/11/03	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/11/03	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/11/03	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/03	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/11/03	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2015/11/03	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2015/11/03	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/11/03	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/11/03	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/11/03	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/03	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/11/03	<0.0033		ug/L	
4248254	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2015/11/03	NC		%	30
			Perfluorobutanoic acid	2015/11/03	1.7		%	30
			Perfluorodecane Sulfonate	2015/11/03	NC		%	30
			Perfluoroheptane sulfonate	2015/11/03	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/11/03	4.8		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/11/03	NC		%	30

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Maxxam Job #: B5L2034
Report Date: 2015/11/03

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexanoic Acid (PFHxA)	2015/11/03	7.7		%	30
			Perfluorononanoic Acid (PFNA)	2015/11/03	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/03	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/11/03	12		%	30
			Perfluorotetradecanoic Acid	2015/11/03	NC		%	30
			Perfluorotridecanoic Acid	2015/11/03	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/11/03	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/11/03	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/11/03	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/03	6.3		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/11/03	NC		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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16-Oct-15 14:44
Melissa DiGrazia
B5L2034
MB5 ENV-418

Page of

Laboratory Use Only:
Bottle Order #: 528190
C#528190-01-01
Project Manager: Melissa DiGrazia

INVOICE TO:

Company Name:	#29803 Cape Cod Comission
Attention:	Tom Cambareri
Address:	3225 Main Street
	Barnstable MA 02630
Tel:	(508) 362-3828 x1234 Fax:
Email:	tcambareri@capecodcommission.org

REPORT TO:

Company Name:	Cape Cod Commission
Attention:	TOM CAMBARERI
Address:	3225 MAIN STREET
	BARNSTABLE MA 02630
Tel:	508-362-3828 Fax: 508-362-3136
Email:	TCAMBARERI@capecodcommission.org

PROJECT INFORMATION:

Quotation #:	
P.O. #:	
Project:	
Project Name:	BFTA
Site #:	
Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; Method 537

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Method 537	# of Bottles	Comments
1		INFLUENT	10-15-15	9:00 AM	WATER		✓	1	
2		MID	10-15-15	9:00 AM	WATER		✓	1	
3		PFW-3	10-15-15	9:15 AM	WATER		✓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	2015-10-15	4:30 PM	HARWIN GREWAL	2015/10/16	14:44	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	4.4 / 4.1 / 4.1	Present	Y	
		Intact	Y	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

#302549

eurofins | Eaton Analytical

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

AT-1807

Laboratory Report

for

United Water-Hyannis
47 Old Yarmouth Road
Hyannis, MA 02601
Attention: Mark Lavoie
Fax: 508-790-1313

Date of Issue
11/13/2015

EUROFINS EATON
ANALYTICAL

TDF: Thomas.D.French

Project Manager

NELAP ACCREDITED TNI LABORATORY

ORELAP 4034

Report: 559966
Project: PFOA-PFOS
Group: MD Wells

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all **TNI 2009 and ISO/IEC 17025:2005** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* This report shall not be reproduced except in full, without the written approval of the laboratory.

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Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Hits
Report: 559966

United Water-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
10/28/2015 1422

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201510280400	**Airport Raw**				
11/07/2015 04:03	Perfluoroheptanoic acid		0.0031		ug/L	0.0025
11/07/2015 04:03	Perfluorohexanoic acid		0.0095		ug/L	0.0025
	201510280401	**MD#3 Raw**				
11/07/2015 04:23	Perfluorobutanesulfonic acid		0.0058		ug/L	0.0025
11/07/2015 04:23	Perfluoroheptanoic acid		0.021		ug/L	0.0025
11/07/2015 04:23	Perfluorohexanesulfonic acid		0.069		ug/L	0.0025
11/07/2015 04:23	Perfluorohexanoic acid		0.040		ug/L	0.0025
11/07/2015 04:23	Perfluorononanoic acid		0.0096		ug/L	0.0025
11/07/2015 05:46	Perfluorooctanesulfonic acid		0.099		ug/L	0.025
11/07/2015 04:23	Perfluorooctanoic acid		0.022		ug/L	0.0025
	201510280402	**MD#2 Raw (Pre-Filtration)**				
11/07/2015 04:44	Perfluorobutanesulfonic acid		0.014		ug/L	0.0025
11/07/2015 04:44	Perfluoroheptanoic acid		0.030		ug/L	0.0025
11/07/2015 06:06	Perfluorohexanesulfonic acid		0.096		ug/L	0.025
11/07/2015 04:44	Perfluorohexanoic acid		0.056		ug/L	0.0025
11/07/2015 04:44	Perfluorononanoic acid		0.022		ug/L	0.0025
11/07/2015 06:06	Perfluorooctanesulfonic acid		0.24		ug/L	0.025
11/07/2015 04:44	Perfluorooctanoic acid		0.026		ug/L	0.0025
	201510280403	**MD#1 Raw (Pre-Filtration)**				
11/07/2015 05:05	Perfluorobutanesulfonic acid		0.010		ug/L	0.0025
11/07/2015 05:05	Perfluorodecanoic acid		0.0028		ug/L	0.0025
11/07/2015 05:05	Perfluoroheptanoic acid		0.029		ug/L	0.0025
11/07/2015 05:05	Perfluorohexanesulfonic acid		0.074		ug/L	0.0025
11/07/2015 05:05	Perfluorohexanoic acid		0.053		ug/L	0.0025
11/07/2015 05:05	Perfluorononanoic acid		0.022		ug/L	0.0025
11/07/2015 06:27	Perfluorooctanesulfonic acid		0.21		ug/L	0.025
11/07/2015 05:05	Perfluorooctanoic acid		0.019		ug/L	0.0025
11/07/2015 05:05	Perfluoroundecanoic acid		0.014		ug/L	0.0025

SUMMARY OF POSITIVE DATA ONLY

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Comments
Report: 559966

United Water-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

The Comments Report may be blank if there are no comments for this report.

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:		P.O. #:			
Address:	3225 Main Street	Address:		Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630			Project Name:			
Tel:	(508) 362-3828 x1234 Fax:	Tel: Fax:		Site #:			
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions: See comments

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)	# of Bottles	Comments
1		PFW-2	10/27/15	1115	gw	N/A	✓	1	
2		Foam	10/27/15	1115	N/A	N/A	✓	1	unidentified foam was sampled from ground surface: call re analysis to identify compound as AFFF.
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	10/27/2015	1530				

Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt | Custody Seal Yes No: Present / Intact

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5M0768

Quote #: B57344

2 Samples

Samples Received 2015/10/28
Client Confirmation 2015/10/28
Expected Report Delivery 2015/11/12 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PFW-2 Sampled 2015/10/27 11:15 COC# "#52819&-01-01 Matrix: WATER

Maxxam #: BGC850
Environmental Sample Disposal
*PFOS and PFOA in water

FOAM Sampled 2015/10/27 11:15

Maxxam #: BGC851
Environmental Sample Disposal
*PFOS and PFOA in water

Comments:

Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.
Your Maxxam Project Manager for this submission is: Melissa DiGrazia.
Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5M0768 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BGC850, Sample IDN: **PFW-2**
Maxxam # BGC851, Sample IDN: **FOAM**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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28-Oct-15 15:09
Melissa DiGrazia
B5M0768
MB5 ENV-873

Page of

Only:
Bottle Order #: 528190
C#528190-01-01
Project Manager: Melissa DiGrazia

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street Barnstable MA 02630	Address:		Project:	
				Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ______ ☐ PWQO ☐ Other ______

Special Instructions: see comments

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)	# of Bottles	Comments
1		PFW-2	10/27/15	1115	gw	N/A	✓	1	
2		Foam	10/27/15	1115	N/A	N/A	✓	1	unidentified foam was sampled from ground surface: call re analysis to identify compound as AFFF.
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	10/27/2015	1530	[signature] MARWIN GREWAL	2015/10/28	15:09	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3/8/4/4/3.8	Present	Y	
		Intact	Y	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

#306668

Your C.O.C. #: #528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/11/12
Report #: R3763125
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5M0768
Received: 2015/10/28, 15:09

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2015/11/05	2015/11/09	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B5M0768
Report Date: 2015/11/12

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BGC850			BGC851			
Sampling Date		2015/10/27 11:15			2015/10/27 11:15			
COC Number		#528190-01-01			#528190-01-01			
	UNITS	**PFW-2**	**RDL**	**MDL**	**FOAM**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	1.6	0.80	0.21	26	80	21	4260845
8:2 Fluorotelomer sulfonate	ug/L	1.2	0.80	0.28	500	80	28	4260845
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	<28	80	28	4260845
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	<29	80	29	4260845
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	<15	80	15	4260845
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	<30	80	30	4260845
Perfluorobutane Sulfonate (PFBS)	ug/L	0.58	0.80	0.23	<23	80	23	4260845
Perfluorobutanoic acid	ug/L	0.36	0.80	0.20	<20	80	20	4260845
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	<22	80	22	4260845
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	<20	80	20	4260845
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	<16	80	16	4260845
Perfluoroheptane sulfonate	ug/L	0.42	0.80	0.27	<27	80	27	4260845
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.44	0.80	0.27	<27	80	27	4260845
Perfluorohexane Sulfonate (PFHxS)	ug/L	2.7	0.80	0.16	<16	80	16	4260845
Perfluorohexanoic Acid (PFHxA)	ug/L	1.3	0.80	0.17	<17	80	17	4260845
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.35	0.80	0.20	<20	80	20	4260845
Perfluorononanoic Acid (PFNA)	ug/L	0.29	0.80	0.19	<19	80	19	4260845
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	<23	80	23	4260845
Perfluorooctane Sulfonate (PFOS)	ug/L	32	0.80	0.14	310	80	14	4260845
Perfluoropentanoic Acid (PFPeA)	ug/L	0.56	0.80	0.21	<21	80	21	4260845
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	<20	80	20	4260845
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	<30	80	30	4260845
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.93	0.80	0.14	<14	80	14	4260845
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	81	N/A	N/A	100	N/A	N/A	4260845
13C4-Perfluorooctanoic acid	%	92	N/A	N/A	111	N/A	N/A	4260845
13C8-Perfluorooctanesulfonamide	%	80	N/A	N/A	83	N/A	N/A	4260845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: BGC850
Sample ID: PFW-2
Matrix: Water

Collected: 2015/10/27
Shipped:
Received: 2015/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4260845	2015/11/05	2015/11/09	Sin Chii Chia

Maxxam ID: BGC851
Sample ID: FOAM
Matrix: Water

Collected: 2015/10/27
Shipped:
Received: 2015/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4260845	2015/11/05	2015/11/09	Sin Chii Chia

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GENERAL COMMENTS

Sample BGC850-01 : PFOSALCM-W: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BGC851-01 : PFOSALCM-W: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5M0768
Report Date: 2015/11/12

Cape Cod Comission

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4260845	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/11/09		88	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/09		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/09		97	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/09		83	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/09		101	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/09		100	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/09		108	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/09		103	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/09		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/09		NC	%	70 - 130
			Perfluorobutanoic acid	2015/11/09		110	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/09		120	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/09		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/09		109	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/09		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/09		112	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/09		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/09		100	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/09		106	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/09		NC	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/09		NC	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/09		111	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/09		107	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/09		106	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/09		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/09		NC	%	70 - 130
4260845	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/11/09		79	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/09		77	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/09		85	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/09		96	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/09		97	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/09		101	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/09		111	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/09		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/09		101	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/09		102	%	70 - 130
			Perfluorobutanoic acid	2015/11/09		106	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/09		112	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/09		105	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/09		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/09		106	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/09		104	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/09		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/09		105	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/09		112	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/09		108	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/09		111	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/09		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/09		113	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/09		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/09		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/09		104	%	70 - 130
4260845	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2015/11/09		114	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/09		116	%	70 - 130

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Maxxam Job #: B5M0768
Report Date: 2015/11/12

Cape Cod Comission

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/11/09		93	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/09	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2015/11/09	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/11/09	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/11/09	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2015/11/09	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/11/09	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/11/09	<0.23		ug/L	
			Perfluorobutanoic acid	2015/11/09	<0.20		ug/L	
			Perfluorodecane Sulfonate	2015/11/09	<0.22		ug/L	
			Perfluoroheptane sulfonate	2015/11/09	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/11/09	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/11/09	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/11/09	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/11/09	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/09	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/11/09	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2015/11/09	<0.20		ug/L	
			Perfluorotridecanoic Acid	2015/11/09	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/11/09	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/11/09	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/11/09	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/09	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/11/09	<0.14		ug/L	
4260845	SCH	RPD - Sample/Sample Dup	Perfluorohexane Sulfonate (PFHxS)	2015/11/09	NC (1)		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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28-Oct-15 15:09
Melissa DiGrazia
B5M0768
MB5 ENV-873

Page of

Only:

Bottle Order #: 528190

Project Manager: Melissa DiGrazia

C#528190-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions: see comments

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)	# of Bottles	Comments
1		PFW-2	10/27/15	1115	gw	N/A	✓	1	
2		Foam	10/27/15	1115	N/A	N/A	✓	1	unidentified foam was sampled from ground surface: call re analysis to identify compound as AFFF.
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	10/27/2015	1530	[signature] MARWIN GREWAL	2015/10/28	10:09	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.8/4.4/3.8	Present	Y	
		Intact	Y	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

306668

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B5N3985

Quote #: B57344

2 Samples

Samples Received 2015/11/13
Client Confirmation 2015/11/16
Expected Report Delivery 2015/11/30 18:00

Report will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
Ph 5083623828-1234
tcambareri@capecodcommission.org

Invoice will be sent to:

Tom Cambareri
Cape Cod Comission
3225 Main Street
Barnstable
02630
tcambareri@capecodcommission.org

We have received the following samples:

PRW-4 Sampled 2015/11/12 15:00 COC# 536601-01-01 Matrix: WATER

Maxxam #: BIS806

Environmental Sample Disposal
*PFOS and PFOA in water

MID Sampled 2015/11/12 15:00

Maxxam #: BIS807

Environmental Sample Disposal
*PFOS and PFOA in water

Comments:

Maxxam has received the following samples for analysis and the requested analyses are listed below. Your Expected Report Delivery date is listed at the top of Page 1 of this report. For revisions/corrections please contact your Maxxam Project Management team at 905-817-5700 or Fax 905-817-5777.

Your Maxxam Project Manager for this submission is: Melissa DiGrazia.

Thank you for your submission. Note: Summa ® canisters will be held for 5 business days after analysis at which time they will be cleaned.

Maxxam Job # B5N3985 PARAMETERS FOR ANALYSIS REQUESTED

The values listed below are RDL's and not results. Report Detection Limit (RDL) may be elevated if there are matrix interferences or limited sample amounts.

Maxxam # BIS806, Sample IDN: **PRW-4**
Maxxam # BIS807, Sample IDN: **MID**

PFOS AND PFOA IN WATER

+6:2 Fluorotelomer sulfonate	0.02 ug/L	+8:2 Fluorotelomer sulfonate	0.02 ug/L
+N-ethylperfluorooctane sulfonamide	0.02 ug/L	+N-ethylperfluorooctane sulfonamidoe	0.02 ug/L
+N-methylperfluorooctane sulfonamide	0.02 ug/L	+N-methylperfluorooctanesulfonamidol	0.02 ug/L
Perfluorobutanoic acid	0.02 ug/L	Perfluorobutane Sulfonate (PFBS)	0.02 ug/L
Perfluorodecanoic Acid (PFDA)	0.02 ug/L	Perfluorododecanoic Acid (PFDoA)	0.02 ug/L
Perfluorodecane Sulfonate	0.02 ug/L	Perfluoroheptanoic Acid (PFHpA)	0.02 ug/L
Perfluoroheptane sulfonate	0.02 ug/L	Perfluorohexanoic Acid (PFHxA)	0.02 ug/L
Perfluorohexane Sulfonate (PFHxS)	0.02 ug/L	Perfluorononanoic Acid (PFNA)	0.02 ug/L
Perfluoro-n-Octanoic Acid (PFOA)	0.02 ug/L	Perfluorooctane Sulfonate (PFOS)	0.02 ug/L
Perfluorooctane Sulfonamide (PFOSA)	0.02 ug/L	Perfluoropentanoic Acid (PFPeA)	0.02 ug/L
Perfluorotetradecanoic Acid	0.02 ug/L	Perfluorotridecanoic Acid	0.02 ug/L
Perfluoroundecanoic Acid (PFUnA)	0.02 ug/L		

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13-Nov-15 14:45
Melissa DiGrazia
B5N3985
FSD ENV-965

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Scott Michaud Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	smichaud@capecodcommission.org	Email:	tcambareri@capecodcommission.org	Sampled By:	

Laboratory Use Only:
Bottle Order #: 536601
C#536601-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 | Res/Park | Medium/Fine | Table 2 | Ind/Comm | Coarse | Table 3 | Agri/Other | For RSC | Table ___

Other Regulations: CCME | Sanitary Sewer Bylaw | Reg 558 | Storm Sewer Bylaw | MISA | Municipality ___ | PWQO | Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	11/12/15	1500	gw		✓		
2		Mid	11/12/15	1500	System		✓		
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	11/12/15	1515	[signature] MATT BADRAN	2015/11/13	1445	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	2.4 / 3.3 / 3.7	Present	Y	
		Intact	Y	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam
A Bureau Veritas Group Company

Your C.O.C. #: 536601-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/12/01
Report #: R3788295
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5N3985
Received: 2015/11/13, 14:45

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2015/11/18	2015/11/19	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2015/11/20	2015/11/30	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B5N3985
Report Date: 2015/12/01

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BIS806		BIS806				BIS807			
Sampling Date		2015/11/12 15:00		2015/11/12 15:00				2015/11/12 15:00			
COC Number		536601-01-01		536601-01-01				536601-01-01			
	UNITS	**PRW-4**	**MDL**	**PRW-4 Lab-Dup**	**RDL**	**MDL**	**QC Batch**	**MID**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	1.4	0.21	1.3	0.80	0.21	4277187	<0.0065	0.020	0.0065	4289802
8:2 Fluorotelomer sulfonate	ug/L	<0.28	0.28	<0.28	0.80	0.28	4277187	<0.0055	0.020	0.0055	4289802
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.28	<0.28	0.80	0.28	4277187	<0.0053	0.020	0.0053	4289802
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.29	<0.29	0.80	0.29	4277187	<0.0049	0.020	0.0049	4289802
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.15	<0.15	0.80	0.15	4277187	<0.0040	0.020	0.0040	4289802
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.30	<0.30	0.80	0.30	4277187	<0.0061	0.020	0.0061	4289802
Perfluorobutane Sulfonate (PFBS)	ug/L	0.51	0.23	0.56	0.80	0.23	4277187	<0.0019	0.020	0.0019	4289802
Perfluorobutanoic acid	ug/L	<0.20	0.20	<0.20	0.80	0.20	4277187	<0.0066	0.020	0.0066	4289802
Perfluorodecane Sulfonate	ug/L	<0.22	0.22	<0.22	0.80	0.22	4277187	<0.0043	0.020	0.0043	4289802
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.20	<0.20	0.80	0.20	4277187	<0.0066	0.020	0.0066	4289802
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.16	<0.16	0.80	0.16	4277187	<0.0057	0.020	0.0057	4289802
Perfluoroheptane sulfonate	ug/L	0.34	0.27	0.33	0.80	0.27	4277187	<0.0036	0.020	0.0036	4289802
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.28	0.27	<0.27	0.80	0.27	4277187	<0.0047	0.020	0.0047	4289802
Perfluorohexane Sulfonate (PFHxS)	ug/L	3.7	0.16	3.7	0.80	0.16	4277187	<0.0040	0.020	0.0040	4289802
Perfluorohexanoic Acid (PFHxA)	ug/L	0.95	0.17	0.87	0.80	0.17	4277187	<0.0046	0.020	0.0046	4289802
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<2.0	2.0	0.45	0.80	0.20	4277187	<0.0053	0.020	0.0053	4289802
Perfluorononanoic Acid (PFNA)	ug/L	0.19	0.19	0.23	0.80	0.19	4277187	<0.0046	0.020	0.0046	4289802
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.23	<0.23	0.80	0.23	4277187	<0.0058	0.020	0.0058	4289802
Perfluorooctane Sulfonate (PFOS)	ug/L	9.0	0.14	8.7	0.80	0.14	4277187	<0.0033	0.020	0.0033	4289802
Perfluoropentanoic Acid (PFPeA)	ug/L	0.56	0.21	0.60	0.80	0.21	4277187	<0.0036	0.020	0.0036	4289802
Perfluorotetradecanoic Acid	ug/L	<0.20	0.20	<0.20	0.80	0.20	4277187	<0.0052	0.020	0.0052	4289802
Perfluorotridecanoic Acid	ug/L	<0.30	0.30	<0.30	0.80	0.30	4277187	<0.0032	0.020	0.0032	4289802
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14	0.14	<0.14	0.80	0.14	4277187	<0.0037	0.020	0.0037	4289802
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	100	N/A	115	N/A	N/A	4277187	108	N/A	N/A	4289802
13C4-Perfluorooctanoic acid	%	112	N/A	107	N/A	N/A	4277187	120	N/A	N/A	4289802
13C8-Perfluorooctanesulfonamide	%	94	N/A	98	N/A	N/A	4277187	106	N/A	N/A	4289802

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: BIS806
Sample ID: PRW-4
Matrix: Water

Collected: 2015/11/12
Shipped:
Received: 2015/11/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4277187	2015/11/18	2015/11/19	Colm McNamara

Maxxam ID: BIS806 Dup
Sample ID: PRW-4
Matrix: Water

Collected: 2015/11/12
Shipped:
Received: 2015/11/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4277187	2015/11/18	2015/11/19	Colm McNamara

Maxxam ID: BIS807
Sample ID: MID
Matrix: Water

Collected: 2015/11/12
Shipped:
Received: 2015/11/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4289802	2015/11/20	2015/11/30	Adam Robinson

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GENERAL COMMENTS

Sample BIS806-01 : PFOSALCM-W: Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Report Date: 2015/12/01

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4277187	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/11/19		86	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/19		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/19		99	%	60 - 120
4277187	CM5	Matrix Spike(BIS806)	6:2 Fluorotelomer sulfonate	2015/11/19		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/19		113	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/19		88	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/19		104	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/19		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/19		109	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/19		NC	%	70 - 130
			Perfluorobutanoic acid	2015/11/19		85	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/19		109	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/19		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/19		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/19		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/19		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/19		108	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/19		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/19		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/19		99	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/19		112	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/19		112	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/19		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/19		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/19		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/19		NC	%	70 - 130
4277187	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/11/19		104	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/19		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/19		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/19		108	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/19		121	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/19		90	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/19		108	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/19		100	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/19		98	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/19		117	%	70 - 130
			Perfluorobutanoic acid	2015/11/19		78	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/19		95	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/19		118	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/19		91	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/19		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/19		90	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/19		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/19		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/19		84	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/19		100	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/19		117	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/19		104	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/19		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/19		113	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/19		95	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/19		107	%	70 - 130
4277187	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/11/19		114	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/19		108	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/11/19		116	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/19	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2015/11/19	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/11/19	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/11/19	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2015/11/19	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/11/19	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/11/19	<0.23		ug/L	
			Perfluorobutanoic acid	2015/11/19	<0.20		ug/L	
			Perfluorodecane Sulfonate	2015/11/19	<0.22		ug/L	
			Perfluoroheptane sulfonate	2015/11/19	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/11/19	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/11/19	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/11/19	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/11/19	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/19	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/11/19	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2015/11/19	<0.20		ug/L	
			Perfluorotridecanoic Acid	2015/11/19	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/11/19	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/11/19	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/11/19	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/19	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/11/19	<0.14		ug/L	
4277187	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2015/11/19	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/11/19	NC		%	30
			N-ethylperfluorooctane sulfonamide	2015/11/19	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/11/19	NC		%	30
			N-methylperfluorooctane sulfonamide	2015/11/19	NC		%	30
			N-methylperfluorooctanesulfonamidol	2015/11/19	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/11/19	NC		%	30
			Perfluorobutanoic acid	2015/11/19	NC		%	30
			Perfluorodecane Sulfonate	2015/11/19	NC		%	30
			Perfluoroheptane sulfonate	2015/11/19	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/11/19	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/11/19	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/11/19	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/11/19	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/19	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/11/19	NC		%	30
			Perfluorotetradecanoic Acid	2015/11/19	NC		%	30
			Perfluorotridecanoic Acid	2015/11/19	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/11/19	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2015/11/19	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/11/19	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/19	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/11/19	3.7		%	30
4289802	AR	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/11/30		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/30		94	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/30		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/30		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/30		119	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/30		93	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/30		86	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2015/11/30		99	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/30		88	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/30		108	%	70 - 130
			Perfluorobutanoic acid	2015/11/30		97	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/30		81	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/30		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/30		92	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/30		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/30		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/30		95	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/30		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/30		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/30		100	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/30		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/30		96	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/30		92	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/30		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/30		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/30		NC	%	70 - 130
4289802	AR	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2015/11/30		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/30		107	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/30		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/30		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/30		92	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/30		88	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/30		94	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/30		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/30		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/30		104	%	70 - 130
			Perfluorobutanoic acid	2015/11/30		87	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/30		83	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/30		93	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/30		91	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/30		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/30		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/30		100	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/30		93	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/30		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/30		103	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/30		107	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/30		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/30		97	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/30		97	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/30		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/30		NC	%	70 - 130
4289802	AR	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2015/11/30	NC		%	30
			8:2 Fluorotelomer sulfonate	2015/11/30	25		%	30
			N-ethylperfluorooctane sulfonamide	2015/11/30	5.8		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/11/30	8.6		%	30
			N-methylperfluorooctane sulfonamide	2015/11/30	5.1		%	30
			N-methylperfluorooctanesulfonamidol	2015/11/30	11		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/11/30	3.0		%	30
			Perfluorobutanoic acid	2015/11/30	11		%	30
			Perfluorodecane Sulfonate	2015/11/30	2.7		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoroheptane sulfonate	2015/11/30	3.8		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/11/30	0.65		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/11/30	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/11/30	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/11/30	5.7		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/30	2.8		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/11/30	NC		%	30
			Perfluorotetradecanoic Acid	2015/11/30	3.7		%	30
			Perfluorotridecanoic Acid	2015/11/30	1.1		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/11/30	9.3		%	30
			Perfluorodecanoic Acid (PFDA)	2015/11/30	5.3		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/11/30	4.0		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/30	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/11/30	NC		%	30
4289802	AR	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/11/30		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/30		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/30		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/30		117	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/11/30		86	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/11/30		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/11/30		91	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/11/30		94	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/11/30		112	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/11/30		108	%	70 - 130
			Perfluorobutanoic acid	2015/11/30		107	%	70 - 130
			Perfluorodecane Sulfonate	2015/11/30		97	%	70 - 130
			Perfluoroheptane sulfonate	2015/11/30		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/11/30		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/11/30		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/11/30		95	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/11/30		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/30		108	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/11/30		101	%	70 - 130
			Perfluorotetradecanoic Acid	2015/11/30		102	%	70 - 130
			Perfluorotridecanoic Acid	2015/11/30		112	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/11/30		104	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/11/30		108	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/11/30		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/30		97	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/11/30		102	%	70 - 130
4289802	AR	Method Blank	13C4-Perfluorooctanesulfonate	2015/11/30		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/11/30		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/11/30		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/11/30	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2015/11/30	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/11/30	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/11/30	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2015/11/30	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/11/30	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/11/30	<0.0019		ug/L	
			Perfluorobutanoic acid	2015/11/30	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2015/11/30	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2015/11/30	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/11/30	<0.0047		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2015/11/30	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/11/30	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/11/30	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/11/30	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/11/30	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2015/11/30	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2015/11/30	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/11/30	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/11/30	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/11/30	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/11/30	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/11/30	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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13-Nov-15 14:45
Melissa DiGrazia
B5N3985
FSD ENV-965

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Scott Michaud Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel: Fax:		Site #:	
Email:	smichaud@capecodcommission.org	Email:	tcambareri@capecodcommission.org	Sampled By:	

Laboratory Use Only:
Bottle Order #: 536601
Project Manager: Melissa DiGrazia
C#536601-01-01

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___, Res/Park, Ind/Comm, Agri/Other, Medium/Fine, Coarse, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other ___, Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	11/12/15	1500	gw		✓		
2		Mid	11/12/15	1500	System		✓		
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	11/12/15	1515	[signature] MATT BADRAN	2015/11/13	14 45	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	2.4 / 3.3 / 3.7	Present	Y	
		Intact	Y	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

CHAIN OF CUSTODY

PAGE 1 OF 1

BARNSTABLE COUNTY DEPARTMENT OF HEALTH & ENVIRONMENT
WATER QUALITY LABORATORY
3195 Main Street/PO Box 427, Barnstable, MA 02630 Phone: 508-375-6605; Fax: 508-362-7103

REPORT GOES TO	BILLING INFORMATION	INFORMATION FOR MA DEP
ATTENTION: Tom Cambareri	ATTENTION: Same	PWS ID:
COMPANY NAME: CCC	COMPANY NAME:	PWS NAME:
ADDRESS: Barnstable, MA	ADDRESS:	PWS CLASS:
		TURN-AROUND TIME Standard: Ten Business days
E-MAIL: tcambareri@capecodcommission.org	E-MAIL:	Rush: One___ Two___ Three___ Four___ Five___
PHONE: 508 744 1234 FAX: 362 3136	PHONE: FAX:	REPORT DELIVERY Fax___ E-mail___ Hardcopy___

LAB ID	SAMPLE LOCATION / IDENTIFICATION (Street Address + City + State)	COLLECTION DATE	COLLECTION TIME	COLLECTION SAMPLER	MA DEP LOCATION ID or MAP +PARCEL	SAMPLE TYPE Routine (RS)	Special (SS)	RO, UR, DR, AR, RW, PT	Multiple (M)	Single (S)	Raw (R)	Finish (F)	SAMPLE MATRIX	# OF BOTTLES	ANALYSIS Routine[1]	Routine+VOC[2]	Fe	Fe bac		COMMENT
	Mid point	11/12/15	1500	sm							✓		Sys.	2			✓	✓		

Relinquished By:	Date/Time	Received By:	Date/Time	Container Type[3]	P	P, GV				
[illegible]	11/13/15	[illegible]	[illegible]	Preservative HCl		√				See reverse side for Routine sampling instruction.
				HNO$_3$	√	√				
				Others[4]	S	S				

[1] Routine includes *pH, Nitrate, Total Coliform, Sodium, Copper, Iron, Conductance.*

[2] Routine+VOC (Real Estate Kit). VOC=Volatile Organic Compounds

[3] Container Type: P = Plastics; CG = Clear Glass; AG = Amber Glass; GV = Glass Vial

[4] H = H_2SO_4; T = $Na_2S_2O_3$ (THIO); S = Sterile; N = NaOH

CUSTOMER COPY

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:		Maxxam Job #:	Bottle Order #:
Attention:	Scott Michaud Tom Cambareri	Attention:		P.O. #:			536601
Address:	3225 Main Street	Address:		Project:		COC #:	Project Manager:
	Barnstable MA 02630			Project Name:		C#536601-01-01	Melissa DiGrazia
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:			
Email:	smichaud@capecodcommission.org	Email:	tcambareri@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)									# of Bottles	Comments
1		PRW-4	11/12/15	1500	gw		✓										
2		Mid	11/12/15	1500	System		✓										
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	11/12/15	15:15				

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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Your Project #: BFTA
Your C.O.C. #: 515457-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2015/12/10
Report #: R3801951
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O7768
Received: 2015/12/02, 14:49

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2015/12/04	2015/12/07	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2015/12/09	2015/12/10	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Total Cover Pages : 1

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BLL895				BLL896			
Sampling Date		2015/11/24 15:00				2015/11/24 15:00			
COC Number		515457-01-01				515457-01-01			
	UNITS	MID-POINT	RDL	MDL	QC Batch	INEFFLUENT	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	<0.020	0.020	0.0065	4305620	1.5	0.80	0.21	4299544
8:2 Fluorotelomer sulfonate	ug/L	<0.020	0.020	0.0055	4305620	0.46	0.80	0.28	4299544
N-ethylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0053	4305620	<0.28	0.80	0.28	4299544
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.020	0.020	0.0049	4305620	<0.29	0.80	0.29	4299544
N-methylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0040	4305620	<0.15	0.80	0.15	4299544
N-methylperfluorooctanesulfonamidol	ug/L	<0.020	0.020	0.0061	4305620	<0.30	0.80	0.30	4299544
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.020	0.020	0.0019	4305620	0.67	0.80	0.23	4299544
Perfluorobutanoic acid	ug/L	<0.020	0.020	0.0066	4305620	0.24	0.80	0.20	4299544
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0043	4305620	<0.22	0.80	0.22	4299544
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0066	4305620	<0.20	0.80	0.20	4299544
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0057	4305620	<0.16	0.80	0.16	4299544
Perfluoroheptane sulfonate	ug/L	<0.020	0.020	0.0036	4305620	0.49	0.80	0.27	4299544
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.020	0.020	0.0047	4305620	<0.27	0.80	0.27	4299544
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.020	0.020	0.0040	4305620	3.5	0.80	0.16	4299544
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.020	0.020	0.0046	4305620	0.93	0.80	0.17	4299544
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.020	0.020	0.0053	4305620	0.38	0.80	0.20	4299544
Perfluorononanoic Acid (PFNA)	ug/L	<0.020	0.020	0.0046	4305620	0.24	0.80	0.19	4299544
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	0.020	0.0058	4305620	<0.23	0.80	0.23	4299544
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.020	0.020	0.0033	4305620	9.9	0.80	0.14	4299544
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.020	0.020	0.0036	4305620	0.42	0.80	0.21	4299544
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0052	4305620	<0.20	0.80	0.20	4299544
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0032	4305620	<0.30	0.80	0.30	4299544
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0037	4305620	0.17	0.80	0.14	4299544
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	106	N/A	N/A	4305620	106	N/A	N/A	4299544
13C4-Perfluorooctanoic acid	%	102	N/A	N/A	4305620	109	N/A	N/A	4299544
13C8-Perfluorooctanesulfonamide	%	87	N/A	N/A	4305620	109	N/A	N/A	4299544

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BLL895
Sample ID: MID-POINT
Matrix: Water

Collected: 2015/11/24
Shipped:
Received: 2015/12/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4305620	2015/12/09	2015/12/10	Colm McNamara

Maxxam ID: BLL896
Sample ID: INEFFLUENT
Matrix: Water

Collected: 2015/11/24
Shipped:
Received: 2015/12/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4299544	2015/12/04	2015/12/07	Adam Robinson

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GENERAL COMMENTS

Sample BLL896-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4299544	AR	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/12/07		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/07		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/07		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/07		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/12/07		97	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/12/07		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/12/07		NC	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/12/07		102	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/12/07		107	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/12/07		69 (1)	%	70 - 130
			Perfluorobutanoic acid	2015/12/07		101	%	70 - 130
			Perfluorodecane Sulfonate	2015/12/07		97	%	70 - 130
			Perfluoroheptane sulfonate	2015/12/07		89	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/12/07		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/12/07		89	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/12/07		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/12/07		94	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/07		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/12/07		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/12/07		NC	%	70 - 130
			Perfluorotridecanoic Acid	2015/12/07		NC	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/12/07		107	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/12/07		99	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/12/07		105	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/07		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/12/07		106	%	70 - 130
4299544	AR	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/12/07		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/07		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/07		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/07		112	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/12/07		94	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/12/07		105	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/12/07		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/12/07		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/12/07		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/12/07		99	%	70 - 130
			Perfluorobutanoic acid	2015/12/07		94	%	70 - 130
			Perfluorodecane Sulfonate	2015/12/07		102	%	70 - 130
			Perfluoroheptane sulfonate	2015/12/07		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/12/07		103	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/12/07		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/12/07		96	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/12/07		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/07		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/12/07		100	%	70 - 130
			Perfluorotetradecanoic Acid	2015/12/07		117	%	70 - 130
			Perfluorotridecanoic Acid	2015/12/07		102	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/12/07		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/12/07		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/12/07		106	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/07		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/12/07		101	%	70 - 130
4299544	AR	Method Blank	13C4-Perfluorooctanesulfonate	2015/12/07		117	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/07		118	%	70 - 130

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2015/12/07		108	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/07	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2015/12/07	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/12/07	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/12/07	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2015/12/07	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/12/07	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/12/07	<0.23		ug/L	
			Perfluorobutanoic acid	2015/12/07	<0.20		ug/L	
			Perfluorodecane Sulfonate	2015/12/07	<0.22		ug/L	
			Perfluoroheptane sulfonate	2015/12/07	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/12/07	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/12/07	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/12/07	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/12/07	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/07	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/12/07	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2015/12/07	<0.20		ug/L	
			Perfluorotridecanoic Acid	2015/12/07	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/12/07	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/12/07	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/12/07	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/07	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2015/12/07	<0.14		ug/L	
4305620	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2015/12/10		99	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/10		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/10		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/10		103	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/12/10		104	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/12/10		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/12/10		95	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/12/10		103	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/12/10		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/12/10		105	%	70 - 130
			Perfluorobutanoic acid	2015/12/10		NC	%	70 - 130
			Perfluorodecane Sulfonate	2015/12/10		103	%	70 - 130
			Perfluoroheptane sulfonate	2015/12/10		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/12/10		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/12/10		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/12/10		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/12/10		97	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/10		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/12/10		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/12/10		118	%	70 - 130
			Perfluorotridecanoic Acid	2015/12/10		134 (2)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/12/10		118	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/12/10		115	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/12/10		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/10		111	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/12/10		111	%	70 - 130
4305620	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2015/12/10		104	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/10		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/10		92	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/10		106	%	70 - 130

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2015/12/10		99	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/12/10		101	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/12/10		92	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/12/10		90	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/12/10		109	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2015/12/10		106	%	70 - 130
			Perfluorobutanoic acid	2015/12/10		NC	%	70 - 130
			Perfluorodecane Sulfonate	2015/12/10		92	%	70 - 130
			Perfluoroheptane sulfonate	2015/12/10		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/12/10		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/12/10		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/12/10		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/12/10		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/10		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/12/10		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2015/12/10		102	%	70 - 130
			Perfluorotridecanoic Acid	2015/12/10		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/12/10		111	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/12/10		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/12/10		88	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/10		101	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/12/10		109	%	70 - 130
4305620	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2015/12/10	2.5		%	30
			8:2 Fluorotelomer sulfonate	2015/12/10	5.1		%	30
			N-ethylperfluorooctane sulfonamide	2015/12/10	2.0		%	30
			N-ethylperfluorooctane sulfonamidoe	2015/12/10	2.4		%	30
			N-methylperfluorooctane sulfonamide	2015/12/10	13		%	30
			N-methylperfluorooctanesulfonamidol	2015/12/10	9.4		%	30
			Perfluorobutane Sulfonate (PFBS)	2015/12/10	0.94		%	30
			Perfluorobutanoic acid	2015/12/10	NC		%	30
			Perfluorodecane Sulfonate	2015/12/10	11		%	30
			Perfluoroheptane sulfonate	2015/12/10	1.4		%	30
			Perfluoroheptanoic Acid (PFHpA)	2015/12/10	3.3		%	30
			Perfluorohexane Sulfonate (PFHxS)	2015/12/10	3.3		%	30
			Perfluorohexanoic Acid (PFHxA)	2015/12/10	NC		%	30
			Perfluorononanoic Acid (PFNA)	2015/12/10	9.8		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/10	1.2		%	30
			Perfluoropentanoic Acid (PFPeA)	2015/12/10	NC		%	30
			Perfluorotetradecanoic Acid	2015/12/10	14		%	30
			Perfluorotridecanoic Acid	2015/12/10	20		%	30
			Perfluoroundecanoic Acid (PFUnA)	2015/12/10	5.8		%	30
			Perfluorodecanoic Acid (PFDA)	2015/12/10	13		%	30
			Perfluorododecanoic Acid (PFDoA)	2015/12/10	15		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/10	9.4		%	30
			Perfluorooctane Sulfonate (PFOS)	2015/12/10	2.2		%	30
4305620	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2015/12/10		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/10		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/10		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/10		105	%	70 - 130
			8:2 Fluorotelomer sulfonate	2015/12/10		104	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2015/12/10		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2015/12/10		95	%	70 - 130
			N-methylperfluorooctane sulfonamide	2015/12/10		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2015/12/10		98	%	70 - 130

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2015/12/10		95	%	70 - 130
			Perfluorobutanoic acid	2015/12/10		93	%	70 - 130
			Perfluorodecane Sulfonate	2015/12/10		87	%	70 - 130
			Perfluoroheptane sulfonate	2015/12/10		105	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2015/12/10		109	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2015/12/10		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2015/12/10		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2015/12/10		106	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/10		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2015/12/10		98	%	70 - 130
			Perfluorotetradecanoic Acid	2015/12/10		97	%	70 - 130
			Perfluorotridecanoic Acid	2015/12/10		98	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2015/12/10		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2015/12/10		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2015/12/10		95	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/10		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2015/12/10		105	%	70 - 130
4305620	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2015/12/10		89	%	70 - 130
			13C4-Perfluorooctanoic acid	2015/12/10		82	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2015/12/10		70	%	60 - 120
			6:2 Fluorotelomer sulfonate	2015/12/10	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2015/12/10	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2015/12/10	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2015/12/10	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2015/12/10	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2015/12/10	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2015/12/10	<0.0019		ug/L	
			Perfluorobutanoic acid	2015/12/10	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2015/12/10	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2015/12/10	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2015/12/10	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2015/12/10	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2015/12/10	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2015/12/10	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2015/12/10	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2015/12/10	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2015/12/10	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2015/12/10	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2015/12/10	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2015/12/10	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2015/12/10	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2015/12/10	<0.0053		ug/L	

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Maxxam Job #: B5O7768
Report Date: 2015/12/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorooctane Sulfonate (PFOS)	2015/12/10	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

(1) Recovery of the matrix spike was below the lower control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data low for this specific analyte.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high for this specific analyte. For results that were not detected (ND), this potential bias has no impact.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:		Maxxam Job #:	Bottle Order #: 515457
Attention:	Tom Cambareri	Attention:		P.O. #:			
Address:	3225 Main Street, Barnstable MA 02630	Address:		Project:		COC #: C#515457-01-01	Project Manager: Melissa DiGrazia
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Project Name:	BFTA		
Email:	tomcambareri@capecodcomission.org	Email:		Site #:			
				Sampled By:	TCAM		

AIR

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; M 537 PFAS

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	M 537 PFAS	# of Bottles	Comments
1		MID-Point	11/24/15	3 PM	WATER		PFOS	1	
2		INEFFLUENT	11/24/15	3 PM	WATER		PFOS	1	
3									
4									
5									
6									
7									
8									
9									
10									

02-Dec-15 14:49
Melissa DiGrazia
B5O7768
HGR ENV-746

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/12/01	3 PM	[signature]	15/12/01	3 pm	
[signature]	15/12/01	5:20pm	GURPREET KAUR	2015/12/02	14:49	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	2.9 / 2.9 / 2.0	Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:		Maxxam Job #:	Bottle Order #: 515457
Attention:	Tom Cambareri	Attention:		P.O. #:			
Address:	3225 Main Street	Address:		Project:		COC #: C#515457-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630			Project Name:	BFTA		
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:			
Email:	tomcambareri@capecodcomission.org	Email:		Sampled By:	team		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558. ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ______
- ☐ PWQO
- ☐ Other ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Field Filtered (please circle): Metals / Hg / Cr VI

M 537 PFAS

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	M 537 PFAS	# of Bottles	Comments
1		MID-Point	11/24/15	3 PM	WATER		PFOS	1	
2		INEffluent	11/24/15	3 PM	WATER		PFOS	1	
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	15/12/01	3 PM				

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

eurofins Eaton Analytical

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	E87775
Arizona	AZ0432	Nevada	IN000352015-1
Arkansas	IN035	New Hampshire*	2124
California	2920	New Mexico	IN00035
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida (Primary AB)*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon*	IN200001
Idaho	IN00035/E87775	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	200001	Rhode Island	LAO00241
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-14-7
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA150003	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	00127
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Barnstable County Department of Health and Environm

Attn: Gongmin Lei
3195 Main Street
Barnstable, MA 02630

Report: 353683
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies to: None

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3365501	91199 Hydrate by Bird Building	537	11/24/15 11:40	Client	11/25/15 09:00
3365502	91199 PAN	537	11/24/15 12:00	Client	11/25/15 09:00
3365503	91199 Truck	537	11/24/15 12:00	Client	11/25/15 09:00
3365504	91199 "Joy" Detergent	537	11/24/15 12:00	Client	11/25/15 09:00

Report Summary

Note: Sample containers were provided by the client. The samples were preserved by laboratory personnel upon receipt.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Jim Vernon at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature　　Title　　Date 12/11/2015

Client Name: Barnstable County Department of Health and Environme
Report #: 353683

Sampling Point: 91199 Hydrate by Bird Building PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	12/01/15 07:15	12/02/15 06:23	3365501
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	12/01/15 07:15	12/02/15 06:23	3365501
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**70**	ng/L	12/01/15 07:15	12/02/15 06:23	3365501
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	12/01/15 07:15	12/02/15 06:23	3365501
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**170**	ng/L	12/01/15 07:15	12/02/15 06:23	3365501
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	12/01/15 07:15	12/02/15 06:23	3365501

Sampling Point: 91199 PAN PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20000	ng/L	12/01/15 07:15	12/02/15 07:25	3365502

Sampling Point: 91199 Truck PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90	ng/L	12/01/15 07:15	12/02/15 06:54	3365503
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	**20**	ng/L	12/01/15 07:15	12/02/15 06:54	3365503
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	**60**	ng/L	12/01/15 07:15	12/02/15 06:54	3365503
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20	ng/L	12/01/15 07:15	12/02/15 06:54	3365503
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	**160**	ng/L	12/01/15 07:15	12/02/15 06:54	3365503
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20	ng/L	12/01/15 07:15	12/02/15 06:54	3365503

Client Name: Barnstable County Department of Health and Environment Report #: 353683

Sampling Point: 91199 "Joy" Detergent PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537	---	90	< 90000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504
375-85-9	Perfluoroheptanoic acid (PFHpA)	537	---	10	< 10000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537	---	30	< 30000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504
375-95-1	Perfluorononanoic acid (PFNA)	537	---	20	< 20000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504
1763-23-1	Perfluorooctane sulfonate (PFOS)	537	---	40	< 40000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	20	< 20000	ng/L	12/01/15 07:15	12/02/15 13:51	3365504

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample al6iquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

eurofins | Eaton Analytical

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South Bend, IN 46617
T: 1.800.332.4345
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Order # 287269
Batch # 353683

www.eatonanalytical.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

Shaded area for EEA use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Barnstable County Lab 3195 Main St. Barnstable, MA	George, Gongmin			Fire Traing Facility 91199	
BILL TO: 02630 the same	COMPLIANCE MONITORING Yes / No	POPULATION SERVED	SOURCE WATER		

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3365.501	11/24/15	12:00			Hydrate by Bird Building	EPA 537. PFOA/PFOS	Cl-A ss		✓	3		
2	502	↓	↓			PAN	↓			✓	3		
3	503	↓	↓			Truck	↓	Cl-A ss		✓	3		
4	504	↓	↓			"Joy" Detergent	↓			✓	1		
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

Hydrate Sample bottles show time of 1140 – all other bottles show 1200
1-Hydrate bottle shows Burn Bldg – use for Bird Bldg per Kelly T. SS 11-30-15
1-Hydrate bottle Cl. P prior to preservation. SS 11-30-15

Client Provided Sample Container

Will use earliest time given for Hydrate Sample.

Chlorine checked before and after preservation for Hydrate/PAN – will check after SS 11-30-15 preservation for Truck and after dilution and preservation for PAN and Joy SS 11-30-15 per Josh

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Gongmin Lei	11/24/15	12:30 AM / PM			AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED BY:(Signature)	DATE	TIME AM / PM
RELINQUISHED BY:(Signature)	DATE	TIME AM / PM	RECEIVED FOR LABORATORY BY: amartes	11/25/15	0900 AM / PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS
① No preservative in the bottles.
② Check if "Joy" detergent contains any PFOA/PFOS & levels.

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ___ Ambient 3.4 °C Upon Receipt ___ N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

Sheri Spurgeon

From: James Vernon
Sent: Friday, November 27, 2015 9:10 AM
To: Sheri Spurgeon; Donna Martis
Subject: FW: Project 91199

Samples can be logged in.

From: Gongmin Lei [mailto:gmlei@barnstablecounty.org]
Sent: Friday, November 27, 2015 8:42 AM
To: James Vernon
Subject: RE: Project 91199

Jim,

Please go ahead for the analysis.

Thanks.

Gongmin

From: James Vernon [mailto:JamesVernon@eurofinsUS.com]
Sent: Wednesday, November 25, 2015 12:55 PM
To: Gongmin Lei
Subject: Project 91199

Gongmin,

We received your 4 samples in today but need to tell you that the two samples "Pan & Joy Detergent" will have dilutions done maybe even serial dilutions will be needed. The MRL's will be raised accordingly. The cost for each of those two samples will be $500.00 a piece and the other samples will be charged $400.00 each. Total cost will be $1,800.00 for these set of four samples.

Thanks,

Jim

Eurofins Eaton Analytical
Run Log

Run ID: **210703** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	3366012		OS	CY	12/01/2015 21:38	120115M537a.mdb
LRB	3365986		RW	CY	12/01/2015 23:11	120115M537a.mdb
FBL	3365987		RW	CY	12/01/2015 23:41	120115M537a.mdb
CCM	3366014		OS	CY	12/02/2015 05:22	120115M537a.mdb
FS	3365501	91199 Hydrate by Bird Building	DW	CY	12/02/2015 06:23	120115M537a.mdb
FS	3365503	91199 Truck	DW	CY	12/02/2015 06:54	120115M537a.mdb
FS	3365502	91199 PAN	OS	CY	12/02/2015 07:25	120115M537a.mdb
LFSMM	3365990	91199 PAN	OS	CY	12/02/2015 07:56	120115M537a.mdb
CCH	3366015		OS	CY	12/02/2015 09:29	120115M537a.mdb
LFSMM	3365992	91199 "Joy" Detergent	OS	CY	12/02/2015 13:12	120115M537a.mdb
FS	3365504	91199 "Joy" Detergent	OS	CY	12/02/2015 13:51	120115M537a.mdb
CCM	3367064		OS	CY	12/02/2015 14:28	120115M537a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		10250.20	10250.2	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	IS-PFOS-13C4	537	N/A	---		13213.20	13213.2	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	SS-PFDA-13C2	537	N/A	---		96.8370	100	ng/L	97	70 - 130	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	SS-PFHxA-13C2	537	N/A	---		49.5770	50.0	ng/L	99	70 - 130	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		91.8606	90.0	ng/L	102	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluoroheptanoic acid (PFHpA)	537	10	---		10.1921	10.0	ng/L	102	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		29.2861	30.0	ng/L	98	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluorononanoic acid (PFNA)	537	20	---		21.0141	20.0	ng/L	105	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluorooctane sulfonate (PFOS)	537	40	---		40.2540	40.0	ng/L	101	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
CCL	Perfluorooctanoic acid (PFOA)	537	20	---		20.3424	20.0	ng/L	102	50 - 150	---	---	1.0	11/25/2015 09:55	12/01/2015 21:38	3366012
LRB	IS-PFOA-13C2	537	N/A	---		10459.60	10250.2	ng/L	102	70 - 140	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	IS-PFOS-13C4	537	N/A	---		13299.80	13213.2	ng/L	101	70 - 140	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	SS-PFDA-13C2	537	N/A	---		91.6624	100	ng/L	92	70 - 130	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	SS-PFHxA-13C2	537	N/A	---		45.9173	50.0	ng/L	92	70 - 130	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluorobutanesulfonic acid (PFBS)	537	90	---	<	90		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluoroheptanoic acid (PFHpA)	537	10	---	<	10		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	30	---	<	30		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluorononanoic acid (PFNA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluorooctane sulfonate (PFOS)	537	40	---	<	40		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
LRB	Perfluorooctanoic acid (PFOA)	537	20	---	<	20		ng/L	---	---	---	---	1.0	12/01/2015 07:15	12/01/2015 23:11	3365986
FBL	IS-PFOA-13C2	537	N/A	---		10492.00	10250.2	ng/L	102	70 - 140	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	IS-PFOS-13C4	537	N/A	---		13512.00	13213.2	ng/L	102	70 - 140	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	SS-PFDA-13C2	537	N/A	---		93.7322	100	ng/L	94	70 - 130	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	SS-PFHxA-13C2	537	N/A	---		46.9849	50.0	ng/L	94	70 - 130	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluorobutanesulfonic acid (PFBS)	537	90	---		88.9742	90.0	ng/L	99	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluoroheptanoic acid (PFHpA)	537	10	---		9.2821	10.0	ng/L	93	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		27.8937	30.0	ng/L	93	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluorononanoic acid (PFNA)	537	20	---		20.1053	20.0	ng/L	101	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluorooctane sulfonate (PFOS)	537	40	---		38.6899	40.0	ng/L	97	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
FBL	Perfluorooctanoic acid (PFOA)	537	20	---		18.8272	20.0	ng/L	94	50 - 150	---	---	1.0	12/01/2015 07:15	12/01/2015 23:41	3365987
CCM	IS-PFOA-13C2	537	N/A	---		9810.60	9810.6	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	IS-PFOS-13C4	537	N/A	---		13042.90	13042.9	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	SS-PFDA-13C2	537	N/A	---		101.3270	100	ng/L	101	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	SS-PFHxA-13C2	537	N/A	---		50.9363	50.0	ng/L	102	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		692.1180	675	ng/L	103	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		75.5255	75.0	ng/L	101	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		221.3280	225	ng/L	98	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluorononanoic acid (PFNA)	537	20	---		154.8420	150	ng/L	103	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		296.0520	300	ng/L	99	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		151.9920	150	ng/L	101	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 05:22	3366014

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	91199 Hydrate by Bird Building		9943.52	9810.6	ng/L	101	70 - 140	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	IS-PFOS-13C4	537	N/A	91199 Hydrate by Bird Building		12963.60	13042.9	ng/L	99	70 - 140	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	SS-PFDA-13C2	537	N/A	91199 Hydrate by Bird Building		94.2728	100	ng/L	91	70 - 130	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	SS-PFHxA-13C2	537	N/A	91199 Hydrate by Bird Building		47.8594	50.0	ng/L	92	70 - 130	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 Hydrate by Bird Building	<	90		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluoroheptanoic acid (PFHpA)	537	10	91199 Hydrate by Bird Building		20		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 Hydrate by Bird Building		70		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluorononanoic acid (PFNA)	537	20	91199 Hydrate by Bird Building	<	20		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluorooctane sulfonate (PFOS)	537	40	91199 Hydrate by Bird Building		170		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	Perfluorooctanoic acid (PFOA)	537	20	91199 Hydrate by Bird Building	<	20		ng/L	---	---	---	---	1.04	12/01/2015 07:15	12/02/2015 06:23	3365501
FS	IS-PFOA-13C2	537	N/A	91199 Truck		9758.54	9810.6	ng/L	99	70 - 140	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	IS-PFOS-13C4	537	N/A	91199 Truck		12920.30	13042.9	ng/L	99	70 - 140	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	SS-PFDA-13C2	537	N/A	91199 Truck		95.5548	100	ng/L	98	70 - 130	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	SS-PFHxA-13C2	537	N/A	91199 Truck		45.5728	50.0	ng/L	93	70 - 130	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 Truck	<	90		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluoroheptanoic acid (PFHpA)	537	10	91199 Truck		20		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 Truck		60		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluorononanoic acid (PFNA)	537	20	91199 Truck	<	20		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluorooctane sulfonate (PFOS)	537	40	91199 Truck		160		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	Perfluorooctanoic acid (PFOA)	537	20	91199 Truck	<	20		ng/L	---	---	---	---	0.98	12/01/2015 07:15	12/02/2015 06:54	3365503
FS	IS-PFOA-13C2	537	N/A	91199 PAN		9327.00	9810.6	ng/L	95	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	IS-PFOS-13C4	537	N/A	91199 PAN		12863.30	13042.9	ng/L	99	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	SS-PFDA-13C2	537	N/A	91199 PAN		94508.3000	100	ng/L	95	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	SS-PFHxA-13C2	537	N/A	91199 PAN		46720.2000	50.0	ng/L	93	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 PAN	<	90000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluoroheptanoic acid (PFHpA)	537	10	91199 PAN	<	10000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 PAN	<	30000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluorononanoic acid (PFNA)	537	20	91199 PAN	<	20000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluorooctane sulfonate (PFOS)	537	40	91199 PAN	<	40000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
FS	Perfluorooctanoic acid (PFOA)	537	20	91199 PAN	<	20000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 07:25	3365502
LFSMM	IS-PFOA-13C2	537	N/A	91199 PAN		9514.59	9810.6	ng/L	97	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	IS-PFOS-13C4	537	N/A	91199 PAN		12933.20	13042.9	ng/L	99	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	SS-PFDA-13C2	537	N/A	91199 PAN		98589.7000	100	ng/L	99	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	SS-PFHxA-13C2	537	N/A	91199 PAN		48449.6000	50.0	ng/L	97	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 PAN		676395.0000	675	ng/L	100	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluoroheptanoic acid (PFHpA)	537	10	91199 PAN		72352.3000	75.0	ng/L	96	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 PAN		218924.0000	225	ng/L	97	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluorononanoic acid (PFNA)	537	20	91199 PAN		148297.0000	150	ng/L	99	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluorooctane sulfonate (PFOS)	537	40	91199 PAN		292795.0000	300	ng/L	98	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
LFSMM	Perfluorooctanoic acid (PFOA)	537	20	91199 PAN		146116.0000	150	ng/L	97	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 07:56	3365990
CCH	IS-PFOA-13C2	537	N/A	---		8921.39	8921.39	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	IS-PFOS-13C4	537	N/A	---		11815.30	11815.3	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	SS-PFDA-13C2	537	N/A	---		117.2840	100	ng/L	117	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	SS-PFHxA-13C2	537	N/A	---		46.6743	50.0	ng/L	93	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluorobutanesulfonic acid (PFBS)	537	90	---		1059.7400	1125	ng/L	94	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluoroheptanoic acid (PFHpA)	537	10	---		128.1440	125	ng/L	103	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		366.6880	375	ng/L	98	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluorononanoic acid (PFNA)	537	20	---		272.0790	250	ng/L	109	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluorooctane sulfonate (PFOS)	537	40	---		499.3800	500	ng/L	100	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
CCH	Perfluorooctanoic acid (PFOA)	537	20	---		239.7350	250	ng/L	96	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 09:29	3366015
LFSMM	IS-PFOA-13C2	537	N/A	91199 "Joy" Detergent		6092.25	8921.39	ng/L	**68**	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	IS-PFOS-13C4	537	N/A	91199 "Joy" Detergent		2421.52	11815.3	ng/L	**20**	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	SS-PFDA-13C2	537	N/A	91199 "Joy" Detergent		7062.5400	100	ng/L	**7**	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	SS-PFHxA-13C2	537	N/A	91199 "Joy" Detergent		39120.6000	50.0	ng/L	78	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 "Joy" Detergent		1568310.0000	675	ng/L	**232**	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluoroheptanoic acid (PFHpA)	537	10	91199 "Joy" Detergent		76738.2000	75.0	ng/L	102	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 "Joy" Detergent		791408.0000	225	ng/L	**352**	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluorononanoic acid (PFNA)	537	20	91199 "Joy" Detergent		23334.3000	150	ng/L	**16**	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluorooctane sulfonate (PFOS)	537	40	91199 "Joy" Detergent		282927.0000	300	ng/L	94	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
LFSMM	Perfluorooctanoic acid (PFOA)	537	20	91199 "Joy" Detergent		105936.0000	150	ng/L	71	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:12	3365992
FS	IS-PFOA-13C2	537	N/A	91199 "Joy" Detergent		5565.19	8921.39	ng/L	**62**	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	IS-PFOS-13C4	537	N/A	91199 "Joy" Detergent		2234.74	11815.3	ng/L	**19**	70 - 140	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	SS-PFDA-13C2	537	N/A	91199 "Joy" Detergent		6895.1700	100	ng/L	**7**	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	SS-PFHxA-13C2	537	N/A	91199 "Joy" Detergent		47570.2000	50.0	ng/L	95	70 - 130	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluorobutanesulfonic acid (PFBS)	537	90	91199 "Joy" Detergent	<	90000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluoroheptanoic acid (PFHpA)	537	10	91199 "Joy" Detergent	<	10000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluorohexanesulfonic acid (PFHxS)	537	30	91199 "Joy" Detergent	<	30000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluorononanoic acid (PFNA)	537	20	91199 "Joy" Detergent	<	20000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluorooctane sulfonate (PFOS)	537	40	91199 "Joy" Detergent	<	40000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
FS	Perfluorooctanoic acid (PFOA)	537	20	91199 "Joy" Detergent	<	20000		ng/L	---	---	---	---	1000	12/01/2015 07:15	12/02/2015 13:51	3365504
CCM	IS-PFOA-13C2	537	N/A	---		8384.43	8384.43	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	IS-PFOS-13C4	537	N/A	---		11868.50	11868.5	ng/L	100	70 - 140	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	SS-PFDA-13C2	537	N/A	---		116.6750	100	ng/L	117	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	SS-PFHxA-13C2	537	N/A	---		44.4709	50.0	ng/L	89	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluorobutanesulfonic acid (PFBS)	537	90	---		628.8720	675	ng/L	93	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluoroheptanoic acid (PFHpA)	537	10	---		73.3552	75.0	ng/L	98	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	30	---		217.0890	225	ng/L	96	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluorononanoic acid (PFNA)	537	20	---		170.2870	150	ng/L	114	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluorooctane sulfonate (PFOS)	537	40	---		304.7200	300	ng/L	102	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064
CCM	Perfluorooctanoic acid (PFOA)	537	20	---		144.2220	150	ng/L	96	70 - 130	---	---	1.0	11/25/2015 09:55	12/02/2015 14:28	3367064

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
LFSMM	LFSM Mid		
LRB	Laboratory Reagent Blank		

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B600762
Report Date: 2016/01/18

Barnstable County Dept. of Health and Env.
Client Project #: 91487
Site Location: 91487

RESULTS OF ANALYSES OF WATER

Maxxam ID		BPJ470	BPJ471	BPJ472	BPJ472	BPJ473			
Sampling Date		2016/01/04 12:25	2016/01/04 09:50	2016/01/04 11:06	2016/01/04 11:06	2016/01/04 13:40			
COC Number		69768	69768	69768	69768	69768			
	UNITS	GP WELL#1	GP WELL#2	GP WELL#3	GP WELL#3 Lab-Dup	GP WELL#4	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	0.020	0.0065	4341448
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	0.020	0.0055	4341448
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	0.020	0.0053	4341448
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	0.020	0.0049	4341448
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.020	0.0040	4341448
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	<0.0061	<0.0061	<0.0061	0.020	0.0061	4341448
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	0.014	<0.0019	<0.0019	<0.0019	0.020	0.0019	4341448
Perfluorobutanoic acid	ug/L	<0.0066	<0.0066	<0.0066	<0.0066	<0.0066	0.020	0.0066	4341448
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	0.020	0.0043	4341448
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	<0.0066	<0.0066	<0.0066	<0.0066	0.020	0.0066	4341448
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	0.020	0.0057	4341448
Perfluoroheptane sulfonate	ug/L	<0.0036	0.0044	<0.0036	<0.0036	<0.0036	0.020	0.0036	4341448
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	0.020	0.0047	4341448
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0040	0.0078	<0.0040	<0.0040	0.0097	0.020	0.0040	4341448
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	0.020	0.0046	4341448
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	0.020	0.0053	4341448
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	0.020	0.0046	4341448
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	0.020	0.0058	4341448
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.0033	0.0084	<0.0033	<0.0033	0.023	0.020	0.0033	4341448
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0036	0.0038	<0.0036	<0.0036	<0.0036	0.020	0.0036	4341448
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	0.020	0.0052	4341448
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	0.020	0.0032	4341448
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	0.020	0.0037	4341448
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	87	93	94	91	78	N/A	N/A	4341448
13C4-Perfluorooctanoic acid	%	92	97	103	95	98	N/A	N/A	4341448
13C8-Perfluorooctanesulfonamide	%	85	91	81	90	82	N/A	N/A	4341448

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam
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Maxxam Job #: B600762
Report Date: 2016/01/18

Barnstable County Dept. of Health and Env.
Client Project #: 91487
Site Location: 91487

RESULTS OF ANALYSES OF WATER

Maxxam ID		BPJ474			
Sampling Date		2016/01/04 21:06			
COC Number		69768			
	UNITS	GP WELL#5	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.020	0.0065	4341448
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4341448
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4341448
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4341448
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4341448
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4341448
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	0.020	0.0019	4341448
Perfluorobutanoic acid	ug/L	<0.0066	0.020	0.0066	4341448
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4341448
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4341448
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4341448
Perfluoroheptane sulfonate	ug/L	0.0043	0.020	0.0036	4341448
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	0.020	0.0047	4341448
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.0098	0.020	0.0040	4341448
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0046	0.020	0.0046	4341448
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	0.020	0.0053	4341448
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4341448
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4341448
Perfluorooctane Sulfonate (PFOS)	ug/L	0.013	0.020	0.0033	4341448
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0036	0.020	0.0036	4341448
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4341448
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4341448
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4341448
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	91	N/A	N/A	4341448
13C4-Perfluorooctanoic acid	%	93	N/A	N/A	4341448
13C8-Perfluorooctanesulfonamide	%	88	N/A	N/A	4341448

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Your Project #: CAPE COD PFCS BFTA
Your C.O.C. #: 543517-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/01/18
Report #: R3855349
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B603218
Received: 2016/01/07, 15:45

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2016/01/11	2016/01/11	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/01/13	2016/01/14	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B603218
Report Date: 2016/01/18

Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BPV881				BPV882			
Sampling Date		2016/01/06 14:30				2016/01/06 14:30			
COC Number		543517-01-01				543517-01-01			
	UNITS	PRW-4	RDL	MDL	QC Batch	MIDPOINT	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	0.70	0.020	0.0065	4343194	0.024	0.020	0.0065	4343194
8:2 Fluorotelomer sulfonate	ug/L	0.36	0.020	0.0055	4343194	<0.0055	0.020	0.0055	4343194
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4343194	<0.0053	0.020	0.0053	4343194
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4343194	<0.0049	0.020	0.0049	4343194
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4343194	<0.0040	0.020	0.0040	4343194
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4343194	<0.0061	0.020	0.0061	4343194
Perfluorobutane Sulfonate (PFBS)	ug/L	0.23	0.020	0.0019	4343194	0.011	0.020	0.0019	4343194
Perfluorobutanoic acid	ug/L	0.093	0.020	0.0066	4343194	0.011	0.020	0.0066	4343194
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4343194	<0.0043	0.020	0.0043	4343194
Perfluorodecanoic Acid (PFDA)	ug/L	0.016	0.020	0.0066	4343194	<0.0066	0.020	0.0066	4343194
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4343194	<0.0057	0.020	0.0057	4343194
Perfluoroheptane sulfonate	ug/L	0.24	0.020	0.0036	4343194	0.0078	0.020	0.0036	4343194
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.17	0.020	0.0047	4343194	0.0061	0.020	0.0047	4343194
Perfluorohexane Sulfonate (PFHxS)	ug/L	2.3 (1)	0.80	0.16	4340117	0.046	0.020	0.0040	4343194
Perfluorohexanoic Acid (PFHxA)	ug/L	0.59	0.020	0.0046	4343194	0.022	0.020	0.0046	4343194
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.26	0.020	0.0053	4343194	0.0075	0.020	0.0053	4343194
Perfluorononanoic Acid (PFNA)	ug/L	0.092	0.020	0.0046	4343194	<0.0046	0.020	0.0046	4343194
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.011	0.020	0.0058	4343194	<0.0058	0.020	0.0058	4343194
Perfluorooctane Sulfonate (PFOS)	ug/L	7.6 (1)	0.80	0.13	4340117	0.12	0.020	0.0033	4343194
Perfluoropentanoic Acid (PFPeA)	ug/L	0.29	0.020	0.0036	4343194	0.014	0.020	0.0036	4343194
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4343194	<0.0052	0.020	0.0052	4343194
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4343194	<0.0032	0.020	0.0032	4343194
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.097	0.020	0.0037	4343194	<0.0037	0.020	0.0037	4343194
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	97	N/A	N/A	4340117	93	N/A	N/A	4343194
13C4-Perfluorooctanoic acid	%	88	N/A	N/A	4343194	95	N/A	N/A	4343194
13C8-Perfluorooctanesulfonamide	%	81	N/A	N/A	4343194	79	N/A	N/A	4343194

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B603218
Report Date: 2016/01/18

Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

TEST SUMMARY

Maxxam ID: BPV881
Sample ID: PRW-4
Matrix: Water

Collected: 2016/01/06
Shipped:
Received: 2016/01/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4343194	2016/01/13	2016/01/14	Colm McNamara

Maxxam ID: BPV882
Sample ID: MIDPOINT
Matrix: Water

Collected: 2016/01/06
Shipped:
Received: 2016/01/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4343194	2016/01/13	2016/01/14	Colm McNamara

GENERAL COMMENTS

Sample BPV881, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4340117	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/01/11		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/01/11		95	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/01/11		97	%	70 - 130
4340117	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/01/11		88	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/01/11		86	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/01/11		98	%	70 - 130
4340117	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/01/11		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/01/11	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/01/11	<0.80		ug/L	
4343194	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/01/14		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/01/14		94	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/01/14		79	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/01/14		102	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/01/14		104	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/01/14		95	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/01/14		88	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/01/14		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/01/14		101	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/01/14		97	%	70 - 130
			Perfluorobutanoic acid	2016/01/14		114	%	70 - 130
			Perfluorodecane Sulfonate	2016/01/14		89	%	70 - 130
			Perfluoroheptane sulfonate	2016/01/14		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/01/14		104	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/01/14		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/01/14		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/01/14		103	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/01/14		113	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/01/14		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/01/14		118	%	70 - 130
			Perfluorotridecanoic Acid	2016/01/14		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/01/14		110	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/01/14		107	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/01/14		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/01/14		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/01/14		95	%	70 - 130
4343194	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/01/14		86	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/01/14		81	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/01/14		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/01/14		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/01/14		105	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/01/14		91	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/01/14		98	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/01/14		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/01/14		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/01/14		97	%	70 - 130
			Perfluorobutanoic acid	2016/01/14		105	%	70 - 130
			Perfluorodecane Sulfonate	2016/01/14		86	%	70 - 130
			Perfluoroheptane sulfonate	2016/01/14		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/01/14		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/01/14		92	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/01/14		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/01/14		103	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/01/14		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/01/14		102	%	70 - 130

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Maxxam Job #: B603218
Report Date: 2016/01/18

Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorotetradecanoic Acid	2016/01/14		119	%	70 - 130
			Perfluorotridecanoic Acid	2016/01/14		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/01/14		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/01/14		100	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/01/14		92	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/01/14		122	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/01/14		105	%	70 - 130
4343194	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/01/14		91	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/01/14		94	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/01/14		85	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/01/14	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/01/14	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/01/14	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/01/14	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/01/14	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/01/14	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/01/14	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/01/14	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/01/14	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/01/14	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/01/14	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/01/14	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/01/14	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/01/14	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/01/14	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/01/14	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/01/14	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/01/14	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/01/14	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/01/14	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/01/14	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/01/14	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/01/14	<0.0033		ug/L	
4343194	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/01/14	NC		%	30
			8:2 Fluorotelomer sulfonate	2016/01/14	NC		%	30
			N-ethylperfluorooctane sulfonamide	2016/01/14	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/01/14	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/01/14	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/01/14	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/01/14	NC		%	30
			Perfluorobutanoic acid	2016/01/14	NC		%	30
			Perfluorodecane Sulfonate	2016/01/14	NC		%	30
			Perfluoroheptane sulfonate	2016/01/14	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/01/14	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/01/14	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/01/14	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/01/14	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/01/14	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/01/14	NC		%	30
			Perfluorotetradecanoic Acid	2016/01/14	NC		%	30
			Perfluorotridecanoic Acid	2016/01/14	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/01/14	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/01/14	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/01/14	NC		%	30

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Maxxam Job #: B603218
Report Date: 2016/01/18

Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2016/01/14	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/01/14	NC		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B603218
Report Date: 2016/01/18

Cape Cod Comission
Client Project #: CAPE COD PFCS BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Scott Michaud	Attention:	Tom Cambareri	P.O. #:	
Address:	3225 Main Street	Address:		Project:	Cape Cod PFCs
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	X1234 Fax:	Site #:	
Email:	smichaud@capecodcommission.org	Email:	Tcambareri@capecodcommission.org	Sampled By:	Scott Michaud

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	543517
COC #:	Project Manager:
C#543517-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFCs)

Turnaround Time (TAT) Required
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFCs)	# of Bottles	Comments
1		PRW-4	1/6/16	1430	H_2O groundwater		✓	1	
2		MID POINT	1/6/16	1430	H_2O		✓	1	
3									
4									
5									
6									
7									
8									
9									
10									

07-Jan-16 15:45
Melissa DiGrazia
B603218
RGN ENV-633

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	1/6/16	1500	G. MAGDALENA	2016/01/07	15:45	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.2 / 5.2 / 5.4	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/02/10
Report #: R3891122
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B618227
Received: 2016/01/28, 14:20

Sample Matrix: Soil
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	20	N/A	2016/02/05	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	20	2016/02/01	2016/02/01	CAM SOP-00894	EPA537 m

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	4	2016/01/29	2016/02/01	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/02/03	2016/02/04	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX867			BSX868			BSX869			
Sampling Date		2016/01/21 10:40			2016/01/21 10:40			2016/01/21 10:40			
COC Number		528190-01-01			528190-01-01			528190-01-01			
	UNITS	**HS-2 0-4**	**RDL**	**MDL**	**HS-2 4**	**RDL**	**MDL**	**HS-2 6**	**RDL**	**MDL**	**QC Batch**
Moisture	%	14	1.0	0.50	18	1.0	0.50	5.2	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	0.60	1	0.25	1.1	1	0.25	0.34	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	28	1	0.21	49	1	0.21	20	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	12	1	0.2	28	1	0.2	1.5	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	2.0	1	0.28	2.6	1	0.28	1.2	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	3.7	1	0.24	8.0	1	0.24	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.85	1	0.15	0.92	1	0.15	0.75	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	0.24	1	0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	2.4	1	0.19	4.6	1	0.19	1.5	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.41	1	0.21	0.70	1	0.21	0.42	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.30	1	0.12	0.57	1	0.12	0.21	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	1.1	1	0.14	1.6	1	0.14	0.81	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	7.3	1	0.17	11	1	0.17	0.64	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	160 (1)	10	0.16	610 (1)	100	16	450 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	0.46	1	0.21	0.30	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	0.37	1	0.22	0.25	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	7.3	1	0.25	7.2	1	0.25	0.44	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	30	1	0.26	200 (1)	100	26	62 (1)	10	2.6	4365440
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	105	N/A	N/A	108	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	85	N/A	N/A	95	N/A	N/A	102	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	81	N/A	N/A	85	N/A	N/A	82	N/A	N/A	4365440

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX870			BSX871	BSX872			
Sampling Date		2016/01/21 11:10			2016/01/21 11:10	2016/01/21 11:10			
COC Number		528190-01-01			528190-01-01	528190-01-01			
	UNITS	**HS-3 0-4**	**RDL**	**MDL**	**HS-3 4-8**	**HS-3 8-12**	**RDL**	**MDL**	**QC Batch**
Moisture	%	8.1	1.0	0.50	4.1	6.8	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	0.42	1	0.25	0.68	0.49	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	3.4	1	0.21	13	20	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	7.5	1	0.2	1.2	2.2	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.28	1	0.28	1.1	1.4	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	2.5	1	0.24	<0.24	0.92	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	<0.15	1	0.15	0.55	<0.15	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	0.59	1	0.19	0.88	0.71	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.31	1	0.21	0.24	0.28	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.12	1	0.12	<0.12	<0.12	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.42	1	0.14	0.49	0.39	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	5.7	1	0.17	0.55	1.4	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	11	1	0.16	310 (1)	370 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	2.7	1	0.22	<0.22	0.64	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	3.6	1	0.25	0.65	8.9	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	1.2	1	0.26	13	10	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	93	88	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	96	N/A	N/A	94	100	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	90	N/A	N/A	78	92	N/A	N/A	4365440

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX873			BSX874			BSX875			
Sampling Date		2016/01/21 09:40			2016/01/21 09:40			2016/01/21 09:40			
COC Number		528190-01-01			528190-01-01			528190-01-01			
	UNITS	HS-1 0-4	RDL	MDL	HS-1 4-8	RDL	MDL	HS-1 8-12	RDL	MDL	QC Batch
Moisture	%	12	1.0	0.50	25	1.0	0.50	11	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.4	1	0.25	2.4	1	0.25	1.1	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	13	1	0.21	31	1	0.21	7.8	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1	0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	7.8	1	0.2	7.8	1	0.2	0.9	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	0.72	1	0.28	3.0	1	0.28	0.54	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	3.2	1	0.24	1.3	1	0.24	0.32	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.61	1	0.15	1.8	1	0.15	0.56	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	1	0.18	<0.18	1	0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.7	1	0.19	5.3	1	0.19	1.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.24	1	0.21	0.42	1	0.21	0.45	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.38	1	0.12	1.0	1	0.12	0.23	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.77	1	0.14	1.2	1	0.14	0.47	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	5.5	1	0.17	3.5	1	0.17	0.48	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	160 (1)	10	1.6	830 (1)	100	16	140 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1	0.21	<0.21	1	0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	0.79	1	0.22	0.29	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	30	1	0.25	6.1	1	0.25	1.3	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	13	1	0.26	66 (1)	10	2.6	10	1	0.26	4365440
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	116	N/A	N/A	88	N/A	N/A	94	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	96	N/A	N/A	108	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	74	N/A	N/A	99	N/A	N/A	93	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX876	BSX877			BSX878			
Sampling Date		2016/01/21 11:40	2016/01/21 11:40			2016/01/21 11:40			
COC Number		528190-01-01	528190-01-01			528190-01-01			
	UNITS	**HS-4 4**	**HS-4 8**	**RDL**	**MDL**	**HS-4 8-12**	**RDL**	**MDL**	**QC Batch**
Moisture	%	7.8	3.8	1.0	0.50	2.7	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	2.2	4.3	1	0.25	7.3	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	43	28	1	0.21	15	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	<0.39	1	0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	<0.29	1	0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	<0.2	1	0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	<0.25	1	0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	<0.23	1	0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	1.5	0.8	1	0.2	1.1	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	1.7	1.0	1	0.28	0.62	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	0.49	0.32	1	0.24	0.50	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.65	2.8	1	0.15	5.5	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	<0.18	1	0.18	0.41	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.4	4.5	1	0.19	6.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.34	0.32	1	0.21	0.57	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.34	0.66	1	0.12	0.77	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.84	1.0	1	0.14	1.0	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	2.3	0.85	1	0.17	1.5	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	330 (1)	280 (1)	100	16	140 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	<0.21	1	0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	<0.22	1	0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	1.6	1.3	1	0.25	4.5	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	37	18	1	0.26	20	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	98	99	N/A	N/A	110	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	95	97	N/A	N/A	111	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	86	93	N/A	N/A	87	N/A	N/A	4365440

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX879	BSX879			BSX880	BSX881			
Sampling Date		2016/01/21 13:10	2016/01/21 13:10			2016/01/21 12:10	2016/01/21 12:10			
COC Number		528190-01-01	528190-01-01			528190-01-01	528190-01-01			
	UNITS	**HS-7 3-4**	**HS-7 3-4 Lab-Dup**	**RDL**	**MDL**	**HS-5 4-8TOP**	**HS-5 4-8MID**	**RDL**	**MDL**	**QC Batch**
Moisture	%	13	11	1.0	0.50	6.2	3.6	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.9	N/A	1	0.25	2.2	1.8	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	350 (1)	N/A	100	21	23	27	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	N/A	1	0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	N/A	1	0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	N/A	1	0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	N/A	1	0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	N/A	1	0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	N/A	1	0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	2.8	N/A	1	0.2	0.7	0.8	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	16	N/A	1	0.28	1.2	1.6	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	N/A	1	0.24	<0.24	0.35	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.96	N/A	1	0.15	0.70	1.1	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	N/A	1	0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	5.3	N/A	1	0.19	1.7	1.3	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.95	N/A	1	0.21	0.33	0.26	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.50	N/A	1	0.12	0.25	0.22	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	1.7	N/A	1	0.14	1.3	0.68	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	1.2	N/A	1	0.17	1.0	0.93	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	2000 (1)	N/A	100	16	240 (1)	350 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.42	N/A	1	0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	N/A	1	0.22	<0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	0.34	N/A	1	0.25	0.98	1.5	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	260 (1)	N/A	100	26	28	13	1	0.26	4365440
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	90	N/A	N/A	N/A	99	96	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	102	N/A	N/A	N/A	99	104	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	84	N/A	N/A	N/A	86	89	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX882	BSX883	BSX884	BSX885	BSX885			
Sampling Date		2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10	2016/01/21 12:10			
COC Number		528190-01-01	528190-01-01	528190-01-01	528190-01-01	528190-01-01			
	UNITS	**HS-5 8-12**	**HS-6 0-4**	**HS-6 4-8**	**HS-6 8-12**	**HS-6 8-12 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Moisture	%	4.1	10	3.0	4.6	N/A	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.6	11	4.6	6.3	5.7	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	26	18	27	21	19	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	<0.39	<0.39	<0.39	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	<0.29	<0.29	<0.29	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	<0.25	<0.25	<0.25	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	<0.2	<0.2	<0.2	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	<0.25	<0.25	<0.25	<0.25	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	<0.23	<0.23	<0.23	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	0.4	1.3	0.7	0.5	0.5	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	1.2	1.9	1.2	1.1	0.92	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	0.33	<0.24	<0.24	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	0.77	1.3	4.3	1.1	1.3	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<0.18	0.46	<0.18	<0.18	<0.18	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.5	9.2	3.7	4.5	4.8	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	<0.21	1.4	0.32	0.37	0.34	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.22	3.7	0.62	0.89	0.90	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.75	5.7	1.3	0.51	0.55	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.17	5.9	0.71	0.24	0.23	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	380 (1)	410 (1)	500 (1)	330 (1)	360 (1)	100	16	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	<0.21	<0.21	<0.21	<0.21	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	0.23	<0.22	<0.22	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	0.56	45	0.34	0.40	0.48	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	1.6	26	15	5.4	5.6	1	0.26	4365440
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	103	98	90	72	66	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	110	84	94	98	98	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	83	75	89	86	91	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BSX886			
Sampling Date		2016/01/21 12:10			
COC Number		528190-01-01			
	UNITS	**HS-6 12**	**RDL**	**MDL**	**QC Batch**
Moisture	%	10	1.0	0.50	4372577
6:2 Fluorotelomer sulfonate	ug/kg	1.9	1	0.25	4365440
8:2 Fluorotelomer sulfonate	ug/kg	8.3	1	0.21	4365440
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1	0.39	4365440
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1	0.29	4365440
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1	0.25	4365440
N-methylperfluorooctanesulfonamidol	ug/kg	<0.2	1	0.2	4365440
Perfluorobutane Sulfonate (PFBS)	ug/kg	0.54	1	0.25	4365440
Perfluorobutanoic acid	ug/kg	<0.23	1	0.23	4365440
Perfluorodecane Sulfonate	ug/kg	1.4	1	0.2	4365440
Perfluorodecanoic Acid (PFDA)	ug/kg	0.47	1	0.28	4365440
Perfluorododecanoic Acid (PFDoA)	ug/kg	<0.24	1	0.24	4365440
Perfluoroheptane sulfonate	ug/kg	<0.15	1	0.15	4365440
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.41	1	0.18	4365440
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.4	1	0.19	4365440
Perfluorohexanoic Acid (PFHxA)	ug/kg	3.1	1	0.21	4365440
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<0.12	1	0.12	4365440
Perfluorononanoic Acid (PFNA)	ug/kg	0.30	1	0.14	4365440
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.76	1	0.17	4365440
Perfluorooctane Sulfonate (PFOS)	ug/kg	170 (1)	10	1.6	4365440
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.99	1	0.21	4365440
Perfluorotetradecanoic Acid	ug/kg	<0.22	1	0.22	4365440
Perfluorotridecanoic Acid	ug/kg	<0.25	1	0.25	4365440
Perfluoroundecanoic Acid (PFUnA)	ug/kg	13	1	0.26	4365440
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	94	N/A	N/A	4365440
13C4-Perfluorooctanoic acid	%	97	N/A	N/A	4365440
13C8-Perfluorooctanesulfonamide	%	82	N/A	N/A	4365440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX887	BSX887				BSX888			
Sampling Date		2016/01/21 14:15	2016/01/21 14:15				2016/01/21 13:30			
COC Number		528190-01-01	528190-01-01				528190-01-01			
	UNITS	**PFW-2**	**PFW-2 Lab-Dup**	**RDL**	**MDL**	**QC Batch**	**PRW-4**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	5.5	4.9	0.80	0.21	4364195	0.43	0.020	0.0065	4368596
8:2 Fluorotelomer sulfonate	ug/L	1.3	1.2	0.80	0.28	4364195	0.17	0.020	0.0055	4368596
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	0.80	0.28	4364195	<0.0053	0.020	0.0053	4368596
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	0.80	0.29	4364195	<0.0049	0.020	0.0049	4368596
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	0.80	0.15	4364195	<0.0040	0.020	0.0040	4368596
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	0.80	0.30	4364195	<0.0061	0.020	0.0061	4368596
Perfluorobutane Sulfonate (PFBS)	ug/L	0.64	0.70	0.80	0.23	4364195	0.14	0.020	0.0019	4368596
Perfluorobutanoic acid	ug/L	0.52	0.71	0.80	0.20	4364195	0.063	0.020	0.0066	4368596
Perfluorodecane Sulfonate	ug/L	0.25	<0.22	0.80	0.22	4364195	<0.0043	0.020	0.0043	4368596
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	<0.20	0.80	0.20	4364195	0.013	0.020	0.0066	4368596
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	0.80	0.16	4364195	<0.0057	0.020	0.0057	4368596
Perfluoroheptane sulfonate	ug/L	0.80	0.60	0.80	0.27	4364195	0.15	0.020	0.0036	4368596
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.71	0.70	0.80	0.27	4364195	0.13	0.020	0.0047	4368596
Perfluorohexane Sulfonate (PFHxS)	ug/L	4.4	4.5	0.80	0.16	4364195	1.8 (1)	0.80	0.16	4364195
Perfluorohexanoic Acid (PFHxA)	ug/L	2.3	2.3	0.80	0.17	4364195	0.37	0.020	0.0046	4368596
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.1	1.1	0.80	0.20	4364195	0.16	0.020	0.0053	4368596
Perfluorononanoic Acid (PFNA)	ug/L	0.56	0.59	0.80	0.19	4364195	0.061	0.020	0.0046	4368596
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	0.80	0.23	4364195	0.013	0.020	0.0058	4368596
Perfluorooctane Sulfonate (PFOS)	ug/L	39	40	0.80	0.14	4364195	5.2 (1)	0.80	0.14	4364195
Perfluoropentanoic Acid (PFPeA)	ug/L	1.3	1.4	0.80	0.21	4364195	0.23	0.020	0.0036	4368596
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.20	0.80	0.20	4364195	<0.0052	0.020	0.0052	4368596
Perfluorotridecanoic Acid	ug/L	<0.30	<0.30	0.80	0.30	4364195	<0.0032	0.020	0.0032	4368596
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.84	0.82	0.80	0.14	4364195	0.075	0.020	0.0037	4368596
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	105	100	N/A	N/A	4364195	109	N/A	N/A	4364195
13C4-Perfluorooctanoic acid	%	99	107	N/A	N/A	4364195	91	N/A	N/A	4368596
13C8-Perfluorooctanesulfonamide	%	104	103	N/A	N/A	4364195	82	N/A	N/A	4368596

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX889				BSX890			
Sampling Date		2016/01/21 15:40				2016/01/21 13:30			
COC Number		528190-01-01				528190-01-01			
	UNITS	**HSW-6**	**RDL**	**MDL**	**QC Batch**	**MID PT**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	2.9	0.80	0.21	4364195	0.038	0.020	0.0065	4368596
8:2 Fluorotelomer sulfonate	ug/L	3.7	0.80	0.28	4364195	0.016	0.020	0.0055	4368596
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4364195	<0.0053	0.020	0.0053	4368596
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4364195	<0.0049	0.020	0.0049	4368596
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4364195	<0.0040	0.020	0.0040	4368596
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4364195	<0.0061	0.020	0.0061	4368596
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23	0.80	0.23	4364195	0.014	0.020	0.0019	4368596
Perfluorobutanoic acid	ug/L	0.42	0.80	0.20	4364195	0.016	0.020	0.0066	4368596
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4364195	<0.0043	0.020	0.0043	4368596
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4364195	<0.0066	0.020	0.0066	4368596
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4364195	0.0077	0.020	0.0057	4368596
Perfluoroheptane sulfonate	ug/L	0.55	0.80	0.27	4364195	0.017	0.020	0.0036	4368596
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.62	0.80	0.27	4364195	0.017	0.020	0.0047	4368596
Perfluorohexane Sulfonate (PFHxS)	ug/L	3.7	0.80	0.16	4364195	0.093	0.020	0.0040	4368596
Perfluorohexanoic Acid (PFHxA)	ug/L	1.5	0.80	0.17	4364195	0.056	0.020	0.0046	4368596
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.94	0.80	0.20	4364195	0.016	0.020	0.0053	4368596
Perfluorononanoic Acid (PFNA)	ug/L	0.54	0.80	0.19	4364195	0.0059	0.020	0.0046	4368596
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4364195	<0.0058	0.020	0.0058	4368596
Perfluorooctane Sulfonate (PFOS)	ug/L	77	8.0	1.4	4364195	0.27	0.020	0.0033	4368596
Perfluoropentanoic Acid (PFPeA)	ug/L	0.86	0.80	0.21	4364195	0.038	0.020	0.0036	4368596
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4364195	0.0068	0.020	0.0052	4368596
Perfluorotridecanoic Acid	ug/L	0.44	0.80	0.30	4364195	0.0051	0.020	0.0032	4368596
Perfluoroundecanoic Acid (PFUnA)	ug/L	1.1	0.80	0.14	4364195	0.0069	0.020	0.0037	4368596
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	106	N/A	N/A	4364195	86	N/A	N/A	4368596
13C4-Perfluorooctanoic acid	%	91	N/A	N/A	4364195	91	N/A	N/A	4368596
13C8-Perfluorooctanesulfonamide	%	96	N/A	N/A	4364195	88	N/A	N/A	4368596

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BSX891			
Sampling Date		2016/01/21 15:00			
COC Number		528190-01-01			
	UNITS	**HSW-1**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	8.8	0.80	0.21	4364195
8:2 Fluorotelomer sulfonate	ug/L	4.2	0.80	0.28	4364195
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4364195
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4364195
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4364195
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4364195
Perfluorobutane Sulfonate (PFBS)	ug/L	0.78	0.80	0.23	4364195
Perfluorobutanoic acid	ug/L	0.82	0.80	0.20	4364195
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4364195
Perfluorodecanoic Acid (PFDA)	ug/L	0.54	0.80	0.20	4364195
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4364195
Perfluoroheptane sulfonate	ug/L	0.90	0.80	0.27	4364195
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.94	0.80	0.27	4364195
Perfluorohexane Sulfonate (PFHxS)	ug/L	7.4	0.80	0.16	4364195
Perfluorohexanoic Acid (PFHxA)	ug/L	3.3	0.80	0.17	4364195
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.7	0.80	0.20	4364195
Perfluorononanoic Acid (PFNA)	ug/L	0.77	0.80	0.19	4364195
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4364195
Perfluorooctane Sulfonate (PFOS)	ug/L	110	8.0	1.4	4364195
Perfluoropentanoic Acid (PFPeA)	ug/L	1.7	0.80	0.21	4364195
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4364195
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4364195
Perfluoroundecanoic Acid (PFUnA)	ug/L	1.4	0.80	0.14	4364195
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	118	N/A	N/A	4364195
13C4-Perfluorooctanoic acid	%	100	N/A	N/A	4364195
13C8-Perfluorooctanesulfonamide	%	106	N/A	N/A	4364195

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BSX867
Sample ID: HS-2 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX868
Sample ID: HS-2 4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX869
Sample ID: HS-2 6
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX870
Sample ID: HS-3 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX871
Sample ID: HS-3 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX872
Sample ID: HS-3 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

TEST SUMMARY

Maxxam ID: BSX873
Sample ID: HS-1 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX874
Sample ID: HS-1 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX875
Sample ID: HS-1 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX876
Sample ID: HS-4 4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX877
Sample ID: HS-4 8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX878
Sample ID: HS-4 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BSX879
Sample ID: HS-7 3-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX879 Dup
Sample ID: HS-7 3-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan

Maxxam ID: BSX880
Sample ID: HS-5 4-8TOP
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX881
Sample ID: HS-5 4-8MID
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX882
Sample ID: HS-5 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX883
Sample ID: HS-6 0-4
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

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TEST SUMMARY

Maxxam ID: BSX884
Sample ID: HS-6 4-8
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX885
Sample ID: HS-6 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX885 Dup
Sample ID: HS-6 8-12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX886
Sample ID: HS-6 12
Matrix: Soil

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4372577	N/A	2016/02/05	Chun Yan
PFOS and PFOA in soil	LCMS	4365440	2016/02/01	2016/02/01	Colm McNamara

Maxxam ID: BSX887
Sample ID: PFW-2
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX887 Dup
Sample ID: PFW-2
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX888
Sample ID: PRW-4
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4368596	2016/02/03	2016/02/04	Colm McNamara

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TEST SUMMARY

Maxxam ID: BSX889
Sample ID: HSW-6
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

Maxxam ID: BSX890
Sample ID: MID PT
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4368596	2016/02/03	2016/02/04	Colm McNamara

Maxxam ID: BSX891
Sample ID: HSW-1
Matrix: Water

Collected: 2016/01/21
Shipped:
Received: 2016/01/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4364195	2016/01/29	2016/02/01	Colm McNamara

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GENERAL COMMENTS

Sample BSX887-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX889-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX891-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BSX888, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4364195	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/01		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/01		98	%	60 - 120
4364195	CM5	Matrix Spike(BSX887)	6:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		106	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		108	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		120	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		NC	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		NC	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		NC	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		116	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		101	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		117	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		NC	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		NC	%	70 - 130
4364195	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/01		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		96	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/01		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		103	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		105	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		104	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		111	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		101	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		107	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		95	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		100	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		100	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		105	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		120	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		98	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		96	%	70 - 130
4364195	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/01		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/01		92	%	70 - 130

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/02/01		86	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/01	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/01	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/02/01	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/01	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	<0.23		ug/L	
			Perfluorobutanoic acid	2016/02/01	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/02/01	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/02/01	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/02/01	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/02/01	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/02/01	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/01	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	<0.14		ug/L	
4364195	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/02/01	12		%	30
			8:2 Fluorotelomer sulfonate	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/02/01	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	NC		%	30
			Perfluorobutanoic acid	2016/02/01	NC		%	30
			Perfluorodecane Sulfonate	2016/02/01	NC		%	30
			Perfluoroheptane sulfonate	2016/02/01	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	1.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	NC		%	30
			Perfluorotetradecanoic Acid	2016/02/01	NC		%	30
			Perfluorotridecanoic Acid	2016/02/01	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/01	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	3.1		%	30
4365440	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/01		86	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		113	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		87	%	50 - 120
4365440	CM5	Matrix Spike(BSX885)	6:2 Fluorotelomer sulfonate	2016/02/01		111	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		101	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2016/02/01		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		103	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		105	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		90	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		104	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		95	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		112	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		96	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		104	%	70 - 130
4365440	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/01		99	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		96	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		79	%	50 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/01		96	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/01		114	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/01		114	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/01		96	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/01		124	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/01		105	%	70 - 130
			Perfluorobutanoic acid	2016/02/01		87	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/01		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/01		110	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/01		112	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/01		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/01		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01		106	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/01		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/01		107	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/01		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01		112	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/01		107	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/01		103	%	70 - 130
4365440	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/01		99	%	50 - 120
			13C4-Perfluorooctanoic acid	2016/02/01		109	%	50 - 120
			13C8-Perfluorooctanesulfonamide	2016/02/01		80	%	50 - 120
			6:2 Fluorotelomer sulfonate	2016/02/01	<0.25		ug/kg	
			8:2 Fluorotelomer sulfonate	2016/02/01	<0.21		ug/kg	
			N-ethylperfluorooctane sulfonamide	2016/02/01	<0.39		ug/kg	
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	<0.29		ug/kg	
			N-methylperfluorooctane sulfonamide	2016/02/01	<0.25		ug/kg	
			N-methylperfluorooctanesulfonamidol	2016/02/01	<0.2		ug/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	<0.25		ug/kg	
			Perfluorobutanoic acid	2016/02/01	<0.23		ug/kg	
			Perfluorodecane Sulfonate	2016/02/01	<0.2		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2016/02/01	<0.28		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	<0.24		ug/kg	
			Perfluoroheptane sulfonate	2016/02/01	<0.15		ug/kg	
			Perfluorononanoic Acid (PFNA)	2016/02/01	<0.14		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	<0.17		ug/kg	
			Perfluorotetradecanoic Acid	2016/02/01	<0.22		ug/kg	
			Perfluorotridecanoic Acid	2016/02/01	<0.25		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	<0.26		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	<0.18		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	<0.19		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	<0.21		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	<0.12		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	<0.16		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	<0.21		ug/kg	
4365440	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/02/01	11		%	30
			8:2 Fluorotelomer sulfonate	2016/02/01	7.0		%	30
			N-ethylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/02/01	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/02/01	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/02/01	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/02/01	NC		%	30
			Perfluorobutanoic acid	2016/02/01	NC		%	30
			Perfluorodecane Sulfonate	2016/02/01	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/01	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/01	NC		%	30
			Perfluoroheptane sulfonate	2016/02/01	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/01	NC		%	25
			Perfluorotetradecanoic Acid	2016/02/01	NC		%	30
			Perfluorotridecanoic Acid	2016/02/01	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/01	4.5		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/01	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/01	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/01	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/01	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/01	NC (1)		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/01	NC		%	30
4368596	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/04		92	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/04		91	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/04		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/04		111	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/04		118	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/04		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/04		105	%	70 - 130
			Perfluorobutanoic acid	2016/02/04		102	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/04		111	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/04		100	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04		113	%	70 - 130

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Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/04		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/04		112	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04		113	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/04		107	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/04		110	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/04		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04		108	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/04		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/04		101	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04		117	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/04		108	%	70 - 130
4368596	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/04		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		84	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		74	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04		115	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/04		115	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/04		110	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/04		101	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/04		117	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/04		93	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/04		107	%	70 - 130
			Perfluorobutanoic acid	2016/02/04		123	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/04		105	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/04		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04		111	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04		102	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/04		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/04		108	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04		123	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/04		103	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/04		117	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/04		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04		109	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/04		108	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/04		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04		109	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/04		118	%	70 - 130
4368596	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/04		88	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/04		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/04		78	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/04	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/04	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/04	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/04	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/02/04	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/04	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/04	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/02/04	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/02/04	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/02/04	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/04	<0.0046		ug/L	

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A Bureau Veritas Group Company

Maxxam Job #: B618227
Report Date: 2016/02/10

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorononanoic Acid (PFNA)	2016/02/04	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/04	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/02/04	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/02/04	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/04	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/04	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/04	<0.0033		ug/L	
4368596	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2016/02/04	NC		%	30
			Perfluorobutanoic acid	2016/02/04	NC		%	30
			Perfluorodecane Sulfonate	2016/02/04	NC		%	30
			Perfluoroheptane sulfonate	2016/02/04	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/04	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/04	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/04	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/04	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/04	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/04	NC		%	30
			Perfluorotetradecanoic Acid	2016/02/04	NC		%	30
			Perfluorotridecanoic Acid	2016/02/04	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/04	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/04	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/04	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/04	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/04	NC		%	30
4372577	SB1	RPD - Sample/Sample Dup	Moisture	2016/02/05	12		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

CHARTERED
Eva Pranjic
CHEMIST

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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ATP

CHAIN OF CUSTODY RECORD

Page 1 of 3

INVOICE TO:
Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tcambareri@capecodcommission.org

REPORT TO:
Company Name: Cape Cod Commission
Attention: Tom Cambareri
Address: 3225 MAIN STREET
BARNSTABLE MA 02630
Tel: 508 362 3828 x1234 Fax: 508-362-3136
Email: TCAMBARERI@capecodcommission.org

PROJECT INFORMATION:
Quotation #:
P.O. #:
Project:
Project Name: BFTA
Site #:
Sampled By:

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 528190
COC #: C#528190-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Res/Park / Medium/Fine; Table 2 / Ind/Comm / Coarse; Table 3 / Agri/Other / For RSC; Table ___

Other Regulations: CCME; Reg 558; MISA; PWQO; Other; Sanitary Sewer Bylaw; Storm Sewer Bylaw; Municipality

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		HS-2 0-4	1/21/16	1040	soil	537 PFCs	1	
2		HS-2 4	1/21/16	1040	soil	537 PFCs		
3		HS-2 6	1/21/16	1040	soil	537 PFCs		
4		HS-3 0-4	1/21/16	1110	soil	537 PFCs		
5		HS-3 4-8	1/21/16	1110	soil	537 PFCs		
6		HS-3 8-12	1/21/16	1110	soil	537 PFCs		
7		HS-1 0-4	1/21/16	0940	soil	537 PFCs		
8		HS-1 4-8	1/21/16	0940	soil	537 PFCs		
9		HS-1 8-12	1/21/16	0940	soil	537 PFCs		
10		HS-4 4	1/21/16	1140	soil	537 PFCs	V	

28-Jan-16 14:20
Melissa DiGrazia
B618227
SEL ENV-623

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	1/26/16	1615	[signature] Juan Long	2016/01/28	14:20	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 5.1/5.6/5.4
Custody Seal: Present — Yes / No; Intact — Yes

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 2 of 3

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PROJECT INFORMATION:
Quotation #:
P.O. #:
Project:
Project Name: BFTA
Site #:
Sampled By:

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 528190
COC #: C#528190-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other, Medium/Fine, Coarse, For RSC
Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality ___
Special Instructions
Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
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Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		HS-4 8	1/21/16	1140	soil	537 / PFC	1	
2		HS-4 8-12	1/21/16	1140	soil	537 / PFC		
3		HS-7 3-4	1/21/16	1310	soil	537 PFC		
4		HS-5 4-8 TOP	1/21/16	1210	soil	537 PFC		
5		HS-5 4-8 MID	1/21/16	1210	soil	537 PFC		
6		HS-5 8-12	1/21/16	1210	soil	537 PFC		
7		HS-6 0-4	1/21/16	1210	soil	537 PFC		
8		HS-6 4-8	1/21/16	1210	soil	537 PFC		
9		HS-6 8-12	1/21/16	1210	soil	537 PFC		
10		HS-6 12	1/21/16	1210	soil	537 PFCs		

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	1/26/16	1615	[signature]	2016/01/28	14:26	

Laboratory Use Only
Time Sensitive | Temperature (°C) on Receipt: 5.1/5.6/5.4 | Custody Seal: Present Yes ✓; Intact Yes ✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #29803 Cape Cod Comission	Company Name: Cape Cod Commission	Quotation #:	Maxxam Job #:
Attention: Tom Cambareri	Attention: Tom Cambareri	P.O. #:	Bottle Order #: 528190
Address: 3225 Main Street, Barnstable MA 02630	Address: 3225 MAIN STREET, BARNSTABLE MA 02630	Project:	COC #: C#528190-01-01
Tel: (508) 362-3828 x1234 Fax:	Tel: 508 362 3828 x1234 Fax: 508 362 3136	Project Name: BETA	Project Manager: Melissa DiGrazia
Email: tcambareri@capecodcommission.org	Email: TCAMBAREFI @ capecodcommission.org	Site #:	
		Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		PFW-2	1/21/16	2:15PM	water	537/PFCs	1	
2		PRW-4	1/21/16	1:30 PM	Water	537/PFCs		
3		HSW-6	1/21/16	1540	water	537/PFCs		
4		MID PT	1/21/16	1:30 PM	water	537/PFCs		
5		HSW-1	1/21/16	1500	water	537/PFCs		
6								
7								
8								
9								
10								

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	1/26/16	1615	[signature]	2016/01/28	14:20			5,1/5,6/5,4	Present	✓	
									Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:		Maxxam Job #:	Bottle Order #:
Attention:	Tom Cambareri	Attention:	Tom Cambareri	P.O. #:			528190
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:		COC #:	Project Manager:
	Barnstable MA 02630		BARNSTABLE MA 02630	Project Name:	BFTA	C#528190-01-01	Melissa DiGrazia
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 x1234 Fax: 508-362-3136	Site #:			
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☐ PWQO
- ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		HS-2 0-4	1/21/16	1040	soil	537 PFCs	1	
2		HS-2 4	1/21/16	1040	soil	537 PFCs		
3		HS-2 6	1/21/16	1040	soil	537 PFCs		
4		HS-3 0-4	1/21/16	1110	soil	537 PFCs		
5		HS-3 4-8	1/21/16	1110	soil	537 PFCs		
6		HS-3 8-12	1/21/16	1110	soil	537 PFCs		
7		HS-1 0-4	1/21/16	0940	soil	537 PFCs		
8		HS-1 4-8	1/21/16	0940	soil	537 PFCs		
9		HS-1 8-12	1/21/16	0940	soil	537 PFCs		
10		HS-4 4	1/21/16	1140	soil	537 PFCs	✓	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:	Tom Cambareri	P.O. #:			
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:	BFTA		
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508 362 3828 x1234 Fax: 508-362-3136	Site #:			
Email:	tcambareri@capecodcommission.org	Email:	TCambareri@capecodcommission.org	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Other ____

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Analysis	# of Bottles	Comments
1		HS-4 8	1/21/16	1140	soil		537 PFC	1	
2		HS-4 8-12	1/21/16	1140	soil		537 PFC		
3		HS-7 3-4	1/21/16	1310	soil		537 PFC		
4		HS-5 4-8 TOP	1/21/16	1210	soil		537 PFC		
5		HS-5 4-8 MID	1/21/16	1210	soil		537 PFC		
6		HS-5 8-12	1/21/16	1210	soil		537 PFC		
7		HS-6 0-4	1/21/16	1210	soil		537 PFC		
8		HS-6 4-8	1/21/16	1210	soil		537 PFC		
9		HS-6 8-12	1/21/16	1210	soil		537 PFC		
10		HS-6 12	1/21/16	1210	soil		537 PFCs		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# Jars used and not submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
									Present		
									Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Your C.O.C. #: 515457-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/02/18
Report #: R3899619
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B623757
Received: 2016/02/04, 13:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2016/02/10	2016/02/11	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/02/17	2016/02/18	CAM SOP-00894	EPA 537 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B623757
Report Date: 2016/02/18

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BUI291				BUI292			
Sampling Date		2016/02/03 14:30				2016/02/03 14:30			
COC Number		515457-01-01				515457-01-01			
	UNITS	**PRW-4**	**RDL**	**MDL**	**QC Batch**	**MIDPOINT**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.39	0.020	0.0065	4384307	0.059	0.020	0.0065	4384307
8:2 Fluorotelomer sulfonate	ug/L	0.19	0.020	0.0055	4384307	0.028	0.020	0.0055	4384307
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4384307	<0.0053	0.020	0.0053	4384307
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4384307	<0.0049	0.020	0.0049	4384307
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4384307	<0.0040	0.020	0.0040	4384307
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4384307	<0.0061	0.020	0.0061	4384307
Perfluorobutane Sulfonate (PFBS)	ug/L	0.099	0.020	0.0019	4384307	0.023	0.020	0.0019	4384307
Perfluorobutanoic acid	ug/L	0.068	0.020	0.0066	4384307	0.034	0.020	0.0066	4384307
Perfluorodecane Sulfonate	ug/L	0.010	0.020	0.0043	4384307	<0.0043	0.020	0.0043	4384307
Perfluorodecanoic Acid (PFDA)	ug/L	0.016	0.020	0.0066	4384307	<0.0066	0.020	0.0066	4384307
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4384307	<0.0057	0.020	0.0057	4384307
Perfluoroheptane sulfonate	ug/L	0.12	0.020	0.0036	4384307	0.021	0.020	0.0036	4384307
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.11	0.020	0.0047	4384307	0.024	0.020	0.0047	4384307
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.0 (1)	0.80	0.16	4376859	0.15	0.020	0.0040	4384307
Perfluorohexanoic Acid (PFHxA)	ug/L	0.31	0.020	0.0046	4384307	0.063	0.020	0.0046	4384307
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.020	0.0053	4384307	0.026	0.020	0.0053	4384307
Perfluorononanoic Acid (PFNA)	ug/L	0.061	0.020	0.0046	4384307	0.013	0.020	0.0046	4384307
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.016	0.020	0.0058	4384307	0.0064	0.020	0.0058	4384307
Perfluorooctane Sulfonate (PFOS)	ug/L	3.5 (1)	0.80	0.14	4376859	0.54	0.020	0.0033	4384307
Perfluoropentanoic Acid (PFPeA)	ug/L	0.17	0.020	0.0036	4384307	0.041	0.020	0.0036	4384307
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4384307	<0.0052	0.020	0.0052	4384307
Perfluorotridecanoic Acid	ug/L	0.0069	0.020	0.0032	4384307	0.0071	0.020	0.0032	4384307
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.084	0.020	0.0037	4384307	0.013	0.020	0.0037	4384307
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	120	N/A	N/A	4376859	80	N/A	N/A	4384307
13C4-Perfluorooctanoic acid	%	80	N/A	N/A	4384307	79	N/A	N/A	4384307
13C8-Perfluorooctanesulfonamide	%	73	N/A	N/A	4384307	71	N/A	N/A	4384307

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B623757
Report Date: 2016/02/18

Cape Cod Comission

TEST SUMMARY

Maxxam ID: BUI291
Sample ID: PRW-4
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4384307	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BUI292
Sample ID: MIDPOINT
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4384307	2016/02/17	2016/02/18	Colm McNamara

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GENERAL COMMENTS

Results relate only to the items tested.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B623757
Report Date: 2016/02/18

Cape Cod Comission

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4376859	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/11		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/11		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/11		NC	%	70 - 130
4376859	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/11		97	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/11		96	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/11		100	%	70 - 130
4376859	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/11		95	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/11	<0.16		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/11	<0.14		ug/L	
4376859	CM5	RPD - Sample/Sample Dup	Perfluorohexane Sulfonate (PFHxS)	2016/02/11	0		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/11	0.32		%	30
4384307	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/18		45 (1)	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		34 (1)	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		71	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/18		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/18		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/18		120	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/18		94	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/18		109	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/18		110	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		131 (2)	%	70 - 130
			Perfluorobutanoic acid	2016/02/18		122	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/18		97	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/18		111	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		132 (2)	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/18		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		120	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/18		119	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/18		104	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/18		115	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/18		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/18		117	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/18		114	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/18		112	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		140 (2)	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		NC	%	70 - 130
4384307	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/18		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		76	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/18		120	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/18		121	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/18		108	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/18		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/18		112	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/18		114	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		103	%	70 - 130
			Perfluorobutanoic acid	2016/02/18		127	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/18		119	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/18		111	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		120	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		108	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/18		112	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		118	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/18		124	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/18		103	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/18		116	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/18		117	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/18		113	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/18		125	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/18		117	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		122	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		127	%	70 - 130
4384307	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/18		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		83	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/18	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/18	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/18	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/18	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/02/18	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/18	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/18	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/02/18	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/02/18	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/02/18	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/18	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/02/18	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/18	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/18	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/02/18	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/02/18	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/18	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/18	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/18	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	<0.0033		ug/L	
4384307	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2016/02/18	10		%	30
			Perfluorobutanoic acid	2016/02/18	11		%	30
			Perfluorodecane Sulfonate	2016/02/18	NC		%	30
			Perfluoroheptane sulfonate	2016/02/18	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	10		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	5.8		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/18	2.4		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/18	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/18	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/18	1.0		%	30
			Perfluorotetradecanoic Acid	2016/02/18	NC		%	30
			Perfluorotridecanoic Acid	2016/02/18	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/18	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/18	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/18	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	7.1		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Surrogate recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data low. Because quantitation is performed using isotope dilution techniques, any losses of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar loss of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the low surrogate recovery.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam Analytics International Corporation o/a Maxxam Analytics
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AIR

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:

Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tomcambareri@capecodcomission.org

REPORT TO:

Company Name: Sami
Attention:
Address:
Tel: Fax:
Email: smichaud@capecodcommission.org

PROJECT INFORMATION:

Quotation #:
P.O. #:
Project:
Project Name:
Site #:
Sampled By:

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	515457
COC #:	Project Manager:
C#515457-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)									# of Bottles	Comments
1	PRW-4 →		2/3/16	1430	gw		✓									1	
2	Midpoint →		2/3/16	1430	h2o		✓									1	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

04-Feb-16 13:40
Melissa DiGrazia
B623757
GK1 ENV-935

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	2/3/16	1600	[signature] ROHELYN GRACIAH	2016/02/04	13:40			3.6/3.6/3.9	Present	✓	
									Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:		P.O. #:			
Address:	3225 Main Street	Address:		Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630			Project Name:			
Tel:	(508) 362-3828 x1234 Fax:	Tel: Fax:		Site #:	059		
Email:	tcambareri@capecodcommission.org	Email:	Smichaud@capecodcommission	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required: ☐
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFCs)										# of Bottles	Comments
1	Midpoint		2/17/16	1245	h2o	N/A	✓										1	
2	Influent PRW-4		2/17/16	1245	gw		✓										1	
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	2/17/16	1530							Present		
									Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

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Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri
Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/02/25
Report #: R3909064
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B633759
Received: 2016/02/18, 13:35

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2016/02/23	2016/02/25	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation is a NELAP accredited laboratory. Certificates #04012 and #4079-001. This certificate shall not be reproduced except in full, without the written approval of Maxxam.

Maxxam Job #: B633759
Report Date: 2016/02/25

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BWN286	BWN287			
Sampling Date		2016/02/17 12:45	2016/02/17 12:45			
COC Number		528190-01-01	528190-01-01			
	UNITS	**MID POINT**	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.065	0.42	0.020	0.0065	4391638
8:2 Fluorotelomer sulfonate	ug/L	0.023	0.18	0.020	0.0055	4391638
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	0.020	0.0053	4391638
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	0.020	0.0049	4391638
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	0.020	0.0040	4391638
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	0.020	0.0061	4391638
Perfluorobutane Sulfonate (PFBS)	ug/L	0.020	0.16	0.020	0.0019	4391638
Perfluorobutanoic acid	ug/L	0.029	0.075	0.020	0.0066	4391638
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	0.020	0.0043	4391638
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.022	0.020	0.0066	4391638
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	0.020	0.0057	4391638
Perfluoroheptane sulfonate	ug/L	0.022	0.19	0.020	0.0036	4391638
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.023	0.13	0.020	0.0047	4391638
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.14	1.2	0.020	0.0040	4391638
Perfluorohexanoic Acid (PFHxA)	ug/L	0.075	0.34	0.020	0.0046	4391638
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.024	0.14	0.020	0.0053	4391638
Perfluorononanoic Acid (PFNA)	ug/L	0.015	0.11	0.020	0.0046	4391638
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.050	0.020	0.0058	4391638
Perfluorooctane Sulfonate (PFOS)	ug/L	0.52	4.5	0.020	0.0033	4391638
Perfluoropentanoic Acid (PFPeA)	ug/L	0.062	0.24	0.020	0.0036	4391638
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	0.020	0.0052	4391638
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	0.020	0.0032	4391638
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.0089	0.079	0.020	0.0037	4391638
Surrogate Recovery (%)						
13C4-Perfluorooctanesulfonate	%	103	95	N/A	N/A	4391638
13C4-Perfluorooctanoic acid	%	103	95	N/A	N/A	4391638
13C8-Perfluorooctanesulfonamide	%	92	85	N/A	N/A	4391638

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: BWN286
Sample ID: MID POINT
Matrix: Water

Collected: 2016/02/17
Shipped:
Received: 2016/02/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4391638	2016/02/23	2016/02/25	Sin Chii Chia

Maxxam ID: BWN287
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2016/02/17
Shipped:
Received: 2016/02/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4391638	2016/02/23	2016/02/25	Sin Chii Chia

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B633759
Report Date: 2016/02/25

Cape Cod Comission

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4391638	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/25		89	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/25		95	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/25		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/25		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/25		101	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/25		95	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/25		99	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/25		108	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/25		90	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/25		105	%	70 - 130
			Perfluorobutanoic acid	2016/02/25		118	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/25		90	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/25		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/25		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/25		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/25		94	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/25		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/25		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/25		105	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/25		99	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/25		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/25		105	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/25		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/25		105	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/25		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/25		101	%	70 - 130
4391638	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/02/25		88	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/25		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/25		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/25		90	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/25		91	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/25		92	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/25		104	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/25		102	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/25		116	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/25		75	%	70 - 130
			Perfluorobutanoic acid	2016/02/25		118	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/25		84	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/25		98	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/25		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/25		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/25		98	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/25		97	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/25		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/25		91	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/25		94	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/25		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/25		105	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/25		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/25		104	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/25		97	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/25		104	%	70 - 130
4391638	SCH	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/02/25	10		%	30
			8:2 Fluorotelomer sulfonate	2016/02/25	10		%	30

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Maxxam Job #: B633759
Report Date: 2016/02/25

Cape Cod Comission

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/02/25	3.0		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/02/25	4.5		%	30
			N-methylperfluorooctane sulfonamide	2016/02/25	5.3		%	30
			N-methylperfluorooctanesulfonamidol	2016/02/25	26		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/02/25	33 (1)		%	30
			Perfluorobutanoic acid	2016/02/25	0.17		%	30
			Perfluorodecane Sulfonate	2016/02/25	7.1		%	30
			Perfluoroheptane sulfonate	2016/02/25	2.1		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/25	1.2		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/25	2.5		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/02/25	4.4		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/25	0.62		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/25	4.6		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/02/25	14		%	30
			Perfluorotetradecanoic Acid	2016/02/25	5.6		%	30
			Perfluorotridecanoic Acid	2016/02/25	7.4		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/02/25	0.57		%	30
			Perfluorodecanoic Acid (PFDA)	2016/02/25	11		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/02/25	0.96		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/25	2.2		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/25	3.3		%	30
4391638	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/25		108	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/25		114	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/25		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/25		97	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/02/25		88	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/02/25		84	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/02/25		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/02/25		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/02/25		107	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/25		81	%	70 - 130
			Perfluorobutanoic acid	2016/02/25		109	%	70 - 130
			Perfluorodecane Sulfonate	2016/02/25		84	%	70 - 130
			Perfluoroheptane sulfonate	2016/02/25		87	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/25		93	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/25		90	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/02/25		92	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/25		89	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/25		100	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/02/25		95	%	70 - 130
			Perfluorotetradecanoic Acid	2016/02/25		92	%	70 - 130
			Perfluorotridecanoic Acid	2016/02/25		100	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/02/25		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/02/25		91	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/02/25		96	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/25		91	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/25		86	%	70 - 130
4391638	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/25		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/25		106	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/25		93	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/02/25	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/02/25	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/02/25	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/02/25	<0.0049		ug/L	

Maxxam Job #: B633759
Report Date: 2016/02/25

Cape Cod Comission

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2016/02/25	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/02/25	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/02/25	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/02/25	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/02/25	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/02/25	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/25	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/25	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/02/25	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/02/25	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/02/25	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/02/25	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/02/25	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/02/25	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/02/25	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/02/25	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/02/25	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/25	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/25	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B633759
Report Date: 2016/02/25

Cape Cod Comission

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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18-Feb-16 13:35
Melissa DiGrazia
B633759
ABH ENV-1114

Page 1 of 1

Only:

Bottle Order #: 528190

Project Manager: Melissa DiGrazia

C#528190-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	059
Email:	tcambareri@capecodcommission.org	Email:	Smichaud@capecodcommission.org	Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required: ☐
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle):	Metals / Hg / Cr VI	537 (PFCs)										# of Bottles	Comments
1	Midpoint		2/17/16	1245	h2o	N/A		✓										1	
2	Influent PRW-4		2/17/16	1245	gw			✓										1	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	2/17/16	1530	[signature] ALICA DATEL	2016/02/18	13:35			4.2 / 4.3 / 4.3	Present	✓	
									Intact	✓	

Laboratory Use Only

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/03/23
Report #: R3940402
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B648188
Received: 2016/03/09, 13:40

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	8	2016/03/10	2016/03/17	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	2	2016/03/18	2016/03/21	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation is a NELAP accredited laboratory. Certificates #04012 and #4079-001. This certificate shall not be reproduced except in full, without the written approval of Maxxam.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZL940	BZL940			
Sampling Date		2016/03/08 09:15	2016/03/08 09:15			
COC Number		528190-01-01	528190-01-01			
	UNITS	**PRW-4 INFLUENT**	**PRW-4 INFLUENT Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters						
6:2 Fluorotelomer sulfonate	ug/L	0.88 (1)	0.84	0.80	0.26	4419211
8:2 Fluorotelomer sulfonate	ug/L	0.19	N/A	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	N/A	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	N/A	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	N/A	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	N/A	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.097	N/A	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.068	N/A	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	<0.0043	N/A	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	0.011	N/A	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	N/A	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.13	N/A	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.13	N/A	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.2 (1)	1.3	0.80	0.16	4419211
Perfluorohexanoic Acid (PFHxA)	ug/L	0.36	N/A	0.020	0.0046	4423830
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	N/A	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.070	N/A	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.012	N/A	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	3.7 (1)	3.9	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.22	N/A	0.020	0.0036	4423830
Perfluorotetradecanoic Acid	ug/L	<0.0052	N/A	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	N/A	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.092	N/A	0.020	0.0037	4423830
Surrogate Recovery (%)						
13C4-Perfluorooctanesulfonate	%	78	N/A	N/A	N/A	4423830
13C4-Perfluorooctanoic acid	%	95	100	N/A	N/A	4419211
13C8-Perfluorooctanesulfonamide	%	76	N/A	N/A	N/A	4423830

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZL941	BZL942				BZL943			
Sampling Date		2016/03/08 09:15	2016/03/08 09:15				2016/03/08 10:15			
COC Number		528190-01-01	528190-01-01				528190-01-01			
	UNITS	**MID POINT SYS**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**	**PC-31**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.070	<0.0065	0.020	0.0065	4423830	0.12	0.020	0.0065	4423830
8:2 Fluorotelomer sulfonate	ug/L	0.0089	<0.0055	0.020	0.0055	4423830	0.022	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	0.020	0.0053	4423830	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	0.020	0.0049	4423830	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	0.020	0.0040	4423830	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	0.020	0.0061	4423830	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.018	<0.0019	0.020	0.0019	4423830	0.068	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.041	<0.0066	0.020	0.0066	4423830	0.060	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	0.020	0.0043	4423830	<0.0043	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	<0.0066	0.020	0.0066	4423830	<0.0066	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	0.020	0.0057	4423830	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.012	<0.0036	0.020	0.0036	4423830	0.064	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.019	<0.0047	0.020	0.0047	4423830	0.14	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.12	<0.0040	0.020	0.0040	4423830	0.52	0.020	0.0040	4423830
Perfluorohexanoic Acid (PFHxA)	ug/L	0.079	<0.0046	0.020	0.0046	4423830	0.34	0.020	0.0046	4423830
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.019	<0.0053	0.020	0.0053	4423830	0.11	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.0093	<0.0046	0.020	0.0046	4423830	0.079	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	<0.0058	0.020	0.0058	4423830	0.0094	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	0.42	<0.0033	0.020	0.0033	4423830	1.2 (1)	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.063	<0.0036	0.020	0.0036	4423830	0.22	0.020	0.0036	4423830
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	0.020	0.0052	4423830	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	0.020	0.0032	4423830	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.0077	<0.0037	0.020	0.0037	4423830	0.12	0.020	0.0037	4423830
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	90	93	N/A	N/A	4423830	98	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	89	96	N/A	N/A	4423830	83	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	83	82	N/A	N/A	4423830	84	N/A	N/A	4423830

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZL944				BZL945	BZL946			
Sampling Date		2016/03/08 10:45				2016/03/08 11:00	2016/03/08 11:35			
COC Number		528190-01-01				528190-01-01	528190-01-01			
	UNITS	PC-7	RDL	MDL	QC Batch	PC-8	PC-26	RDL	MDL	QC Batch
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.072	0.020	0.0065	4423830	0.092	0.19	0.020	0.0065	4423830
8:2 Fluorotelomer sulfonate	ug/L	0.0057	0.020	0.0055	4423830	0.063	<0.0055	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830	<0.0053	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830	<0.0049	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830	<0.0040	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830	<0.0061	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.12	0.020	0.0019	4423830	0.072	0.053	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.059	0.020	0.0066	4423830	0.046	0.068	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4423830	<0.0043	<0.0043	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	0.0074	0.020	0.0066	4423830	0.0071	<0.0066	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830	<0.0057	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.095	0.020	0.0036	4423830	0.073	0.034	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.15	0.020	0.0047	4423830	0.13	0.15	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.88 (1)	0.80	0.16	4419211	0.54	0.36	0.020	0.0040	4423830
Perfluorohexanoic Acid (PFHxA)	ug/L	0.37	0.020	0.0046	4423830	0.27	0.35	0.020	0.0046	4423830
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.020	0.0053	4423830	0.097	0.098	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.098	0.020	0.0046	4423830	0.086	0.097	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4423830	0.010	<0.0058	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	1.7 (1)	0.80	0.13	4419211	1.6 (1)	1.2 (1)	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.22	0.020	0.0036	4423830	0.17	0.25	0.020	0.0036	4423830
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830	<0.0052	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830	<0.0032	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.029	0.020	0.0037	4423830	0.13	0.045	0.020	0.0037	4423830
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4419211	102	96	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	79	N/A	N/A	4423830	79	75	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	80	N/A	N/A	4423830	76	75	N/A	N/A	4423830

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZL947				BZL948			
Sampling Date		2016/03/08 12:00				2016/03/08 13:10			
COC Number		528190-01-01				528190-01-01			
	UNITS	PC-4	RDL	MDL	QC Batch	PFW-6	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.37	0.020	0.0065	4423830	3.0 (1)	0.80	0.26	4419211
8:2 Fluorotelomer sulfonate	ug/L	0.45	0.020	0.0055	4423830	0.014	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.073	0.020	0.0019	4423830	0.10	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.13	0.020	0.0066	4423830	0.85 (1)	0.80	0.26	4419211
Perfluorodecane Sulfonate	ug/L	0.0051	0.020	0.0043	4423830	<0.0043	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	0.020	0.020	0.0066	4423830	0.0094	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.039	0.020	0.0036	4423830	0.070	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.19	0.020	0.0047	4423830	0.55	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.0 (1)	0.80	0.16	4419211	1.7 (1)	0.80	0.16	4419211
Perfluorohexanoic Acid (PFHxA)	ug/L	0.44	0.020	0.0046	4423830	1.3 (1)	0.80	0.18	4419211
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.16	0.020	0.0053	4423830	0.47	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.092	0.020	0.0046	4423830	0.12	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.024	0.020	0.0058	4423830	<0.0058	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	4.6 (1)	0.80	0.13	4419211	2.4 (1)	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.43	0.020	0.0036	4423830	1.9 (1)	0.80	0.14	4419211
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.015	0.020	0.0037	4423830	<0.0037	0.020	0.0037	4423830
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	100	N/A	N/A	4419211	96	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	80	N/A	N/A	4423830	78	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	71	N/A	N/A	4423830	75	N/A	N/A	4423830

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZL949			
Sampling Date		2016/03/08 13:50			
COC Number		528190-01-01			
	UNITS	**PFW-1**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters					
6:2 Fluorotelomer sulfonate	ug/L	1.6 (1)	0.80	0.26	4419211
8:2 Fluorotelomer sulfonate	ug/L	0.51	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.12	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.25	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	0.019	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	0.048	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.15	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.47	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.8 (1)	0.80	0.16	4419211
Perfluorohexanoic Acid (PFHxA)	ug/L	1.1 (1)	0.80	0.18	4419211
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.34	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.37	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.019	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	7.0 (1)	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	1.0 (1)	0.80	0.14	4419211
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.33	0.020	0.0037	4423830
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	92	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	74	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	66	N/A	N/A	4423830

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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TEST SUMMARY

Maxxam ID: BZL940
Sample ID: PRW-4 INFLUENT
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4419211	2016/03/10	2016/03/17	Colm McNamara

Maxxam ID: BZL940 Dup
Sample ID: PRW-4 INFLUENT
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4419211	2016/03/15	2016/03/17	Colm McNamara

Maxxam ID: BZL941
Sample ID: MID POINT SYS
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL942
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL943
Sample ID: PC-31
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL944
Sample ID: PC-7
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL945
Sample ID: PC-8
Matrix: Water

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

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Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

TEST SUMMARY

Maxxam ID: BZL946 **Collected:** 2016/03/08
Sample ID: PC-26 **Shipped:**
Matrix: Water **Received:** 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL947 **Collected:** 2016/03/08
Sample ID: PC-4 **Shipped:**
Matrix: Water **Received:** 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZL948 **Collected:** 2016/03/08
Sample ID: PFW-6 **Shipped:**
Matrix: Water **Received:** 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4419211	2016/03/10	2016/03/17	Colm McNamara

Maxxam ID: BZL949 **Collected:** 2016/03/08
Sample ID: PFW-1 **Shipped:**
Matrix: Water **Received:** 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4419211	2016/03/10	2016/03/17	Colm McNamara

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GENERAL COMMENTS

Sample BZL940, PFOS and PFOA in water: Test repeated.
Sample BZL943, PFOS and PFOA in water: Test repeated.
Sample BZL944, PFOS and PFOA in water: Test repeated.
Sample BZL945, PFOS and PFOA in water: Test repeated.
Sample BZL946, PFOS and PFOA in water: Test repeated.
Sample BZL947, PFOS and PFOA in water: Test repeated.
Sample BZL948, PFOS and PFOA in water: Test repeated.
Sample BZL949, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Cape Cod Comission

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4419211	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/03/17		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		100	%	70 - 130
4419211	CM5	Matrix Spike(BZL940)	6:2 Fluorotelomer sulfonate	2016/03/17		NC	%	70 - 130
			Perfluorobutanoic acid	2016/03/17		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/17		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/17		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/17		NC	%	70 - 130
4419211	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/03/17		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		99	%	70 - 130
			6:2 Fluorotelomer sulfonate	2016/03/17		103	%	70 - 130
			Perfluorobutanoic acid	2016/03/17		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/17		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/17		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/17		94	%	70 - 130
4419211	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/03/17		113	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		110	%	70 - 130
			6:2 Fluorotelomer sulfonate	2016/03/17	<0.80		ug/L	
			Perfluorobutanoic acid	2016/03/17	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/03/17	<0.80		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/03/17	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/03/17	<0.80		ug/L	
4419211	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/03/17	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/03/17	NC		%	30
4423830	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/03/21		76	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/21		82	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		80	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/21		106	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/21		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/21		90	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/21		83	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/21		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/21		87	%	70 - 130
			Perfluorobutanoic acid	2016/03/21		94	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/21		82	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/21		92	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/21		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/21		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/21		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/21		96	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/21		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/21		94	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/21		97	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21		115	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/21		NC	%	70 - 130
4423830	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/03/21		101	%	70 - 130

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Cape Cod Comission

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2016/03/21		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		81	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21		87	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/21		120	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/21		116	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/21		104	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/21		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/21		111	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/21		95	%	70 - 130
			Perfluorobutanoic acid	2016/03/21		91	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/21		106	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/21		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/21		110	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/21		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21		117	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/21		102	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/21		104	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/21		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/21		103	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/21		105	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/21		107	%	70 - 130
4423830	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/03/21		83	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/21		92	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		77	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/03/21	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/03/21	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/03/21	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/03/21	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/03/21	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/03/21	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/03/21	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/03/21	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/03/21	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/03/21	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/03/21	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/03/21	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/03/21	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/03/21	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/03/21	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/03/21	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/03/21	<0.0033		ug/L	
4423830	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2016/03/21	7.2		%	30
			Perfluorobutanoic acid	2016/03/21	19		%	30
			Perfluorodecane Sulfonate	2016/03/21	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoroheptane sulfonate	2016/03/21	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21	0.74		%	30
			Perfluorononanoic Acid (PFNA)	2016/03/21	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/03/21	7.1		%	30
			Perfluorotetradecanoic Acid	2016/03/21	NC		%	30
			Perfluorotridecanoic Acid	2016/03/21	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/03/21	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/03/21	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21	3.9		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B648188
Report Date: 2016/03/23

Cape Cod Comission

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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09-Mar-16 13:40
Melissa DiGrazia
B648188
ABH ENV-1118

Page 1 of 1

Only:
Bottle Order #: 528190
Project Manager: Melissa DiGrazia
C#528190-01-01

INVOICE TO:

Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tcambareri@capecodcommission.org

REPORT TO:

Company Name: Same
Attention:
Address:
Tel: Fax:
Email: smichaud@capecodcommission.org

PROJECT INFORMATION:

Quotation #:
P.O. #:
Project:
Project Name:
Site #:
Sampled By: team

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 (PFC's)	# of Bottles	Comments
1		PRW-4 Influent	3/8/16	0915	gw		✓	1	
2		Midpoint sys		0915	h_2o		✓	1	
3		Effluent		0915	h_2o		✓	1	
4		PC-31		1015	sw		✓	1	
5		PC-7		1045			✓	1	
6		PC-8		1100			✓	1	
7		PC-26		1135			✓	1	
8		PC-4		1200			✓	1	
9		PFW ~~PRW~~ 6 sm		1310			✓	1	
10		PFW-1		1350			✓	1	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	3/8/16	1500	RACHEL DEVLIN	2016/03/09	13:40	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.4/3.2/4.5	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics #321178

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/03/23
Report #: R3940156
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B650295
Received: 2016/03/11, 14:40

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	4	2016/03/15	2016/03/17	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	3	2016/03/18	2016/03/21	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.
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A Bureau Veritas Group Company

Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZX163				BZX164			
Sampling Date		2016/03/09 09:45				2016/03/09 11:40			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-6A**	**RDL**	**MDL**	**QC Batch**	**PC-9**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.064	0.020	0.0065	4423830	6.6	0.80	0.26	4419211
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4423830	<0.80	0.80	0.22	4419211
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830	<0.80	0.80	0.21	4419211
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830	<0.80	0.80	0.20	4419211
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830	<0.80	0.80	0.16	4419211
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830	<0.80	0.80	0.24	4419211
Perfluorobutane Sulfonate (PFBS)	ug/L	0.096	0.020	0.0019	4423830	1.9	0.80	0.076	4419211
Perfluorobutanoic acid	ug/L	0.058	0.020	0.0066	4423830	0.86	0.80	0.26	4419211
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4423830	<0.80	0.80	0.17	4419211
Perfluorodecanoic Acid (PFDA)	ug/L	0.011	0.020	0.0066	4423830	<0.80	0.80	0.26	4419211
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830	<0.80	0.80	0.23	4419211
Perfluoroheptane sulfonate	ug/L	0.051	0.020	0.0036	4423830	0.84	0.80	0.14	4419211
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.15	0.020	0.0047	4423830	0.91	0.80	0.19	4419211
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.80 (1)	0.80	0.16	4419211	8.7	0.80	0.16	4419211
Perfluorohexanoic Acid (PFHxA)	ug/L	0.32	0.020	0.0046	4423830	2.8	0.80	0.18	4419211
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.11	0.020	0.0053	4423830	1.2	0.80	0.21	4419211
Perfluorononanoic Acid (PFNA)	ug/L	0.073	0.020	0.0046	4423830	<0.80	0.80	0.18	4419211
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4423830	<0.80	0.80	0.23	4419211
Perfluorooctane Sulfonate (PFOS)	ug/L	1.3 (1)	0.80	0.13	4419211	5.3	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.22	0.020	0.0036	4423830	1.6	0.80	0.14	4419211
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830	<0.80	0.80	0.21	4419211
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830	<0.80	0.80	0.13	4419211
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.035	0.020	0.0037	4423830	<0.80	0.80	0.15	4419211
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	99	N/A	N/A	4419211	100	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	87	N/A	N/A	4423830	102	N/A	N/A	4419211
13C8-Perfluorooctanesulfonamide	%	78	N/A	N/A	4423830	98	N/A	N/A	4419211

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZX165				BZX166	BZX167			
Sampling Date		2016/03/09 10:15				2016/03/09 14:30	2016/03/09 13:30			
COC Number		528190-01-01				528190-01-01	528190-01-01			
	UNITS	**PC-20D**	**RDL**	**MDL**	**QC Batch**	**PC-21D**	**PC-28**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.26	0.020	0.0065	4423830	0.046	0.11	0.020	0.0065	4423830
8:2 Fluorotelomer sulfonate	ug/L	0.12	0.020	0.0055	4423830	<0.0055	0.023	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830	<0.0053	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830	<0.0049	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830	<0.0040	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830	<0.0061	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	0.095	0.020	0.0019	4423830	0.018	0.017	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	0.13	0.020	0.0066	4423830	0.019	0.035	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4423830	<0.0043	<0.0043	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	0.0097	0.020	0.0066	4423830	<0.0066	<0.0066	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830	<0.0057	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	0.087	0.020	0.0036	4423830	0.0071	0.0064	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.25	0.020	0.0047	4423830	0.040	0.092	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.3 (1)	0.80	0.16	4419211	0.14	0.10	0.020	0.0040	4423830
Perfluorohexanoic Acid (PFHxA)	ug/L	0.48	0.020	0.0046	4423830	0.078	0.11	0.020	0.0046	4423830
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.20	0.020	0.0053	4423830	0.019	0.027	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	0.090	0.020	0.0046	4423830	0.017	0.044	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.039	0.020	0.0058	4423830	<0.0058	0.037	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	3.2 (1)	0.80	0.13	4419211	0.23	0.40	0.020	0.0033	4423830
Perfluoropentanoic Acid (PFPeA)	ug/L	0.43	0.020	0.0036	4423830	0.090	0.11	0.020	0.0036	4423830
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830	<0.0052	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830	<0.0032	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.014	0.020	0.0037	4423830	<0.0037	0.079	0.020	0.0037	4423830
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	101	N/A	N/A	4419211	82	85	N/A	N/A	4423830
13C4-Perfluorooctanoic acid	%	95	N/A	N/A	4423830	80	80	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	82	N/A	N/A	4423830	85	76	N/A	N/A	4423830

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZX168				BZX169			
Sampling Date		2016/03/09 13:50				2016/03/09 11:15			
COC Number		528190-01-01				528190-01-01			
	UNITS	PC-29	RDL	MDL	QC Batch	PC-30	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.020	0.0065	4423830	0.064	0.020	0.0065	4423830
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4423830	<0.0055	0.020	0.0055	4423830
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4423830	<0.0053	0.020	0.0053	4423830
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4423830	<0.0049	0.020	0.0049	4423830
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4423830	<0.0040	0.020	0.0040	4423830
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4423830	<0.0061	0.020	0.0061	4423830
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	0.020	0.0019	4423830	0.092	0.020	0.0019	4423830
Perfluorobutanoic acid	ug/L	<0.0066	0.020	0.0066	4423830	0.073	0.020	0.0066	4423830
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4423830	<0.0043	0.020	0.0043	4423830
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4423830	0.0074	0.020	0.0066	4423830
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4423830	<0.0057	0.020	0.0057	4423830
Perfluoroheptane sulfonate	ug/L	<0.0036	0.020	0.0036	4423830	0.031	0.020	0.0036	4423830
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	0.020	0.0047	4423830	0.16	0.020	0.0047	4423830
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.0072	0.020	0.0040	4423830	0.55	0.020	0.0040	4423830
Perfluorohexanoic Acid (PFHxA)	ug/L	0.0047	0.020	0.0046	4423830	0.35	0.020	0.0046	4423830
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	0.020	0.0053	4423830	0.088	0.020	0.0053	4423830
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4423830	0.097	0.020	0.0046	4423830
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4423830	0.0088	0.020	0.0058	4423830
Perfluorooctane Sulfonate (PFOS)	ug/L	0.028	0.020	0.0033	4423830	0.98 (1)	0.80	0.13	4419211
Perfluoropentanoic Acid (PFPeA)	ug/L	0.0079	0.020	0.0036	4423830	0.27	0.020	0.0036	4423830
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4423830	<0.0052	0.020	0.0052	4423830
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4423830	<0.0032	0.020	0.0032	4423830
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4423830	0.084	0.020	0.0037	4423830
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	84	N/A	N/A	4423830	91	N/A	N/A	4419211
13C4-Perfluorooctanoic acid	%	86	N/A	N/A	4423830	85	N/A	N/A	4423830
13C8-Perfluorooctanesulfonamide	%	78	N/A	N/A	4423830	84	N/A	N/A	4423830

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: BZX163 **Collected:** 2016/03/09
Sample ID: PC-6A **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZX164 **Collected:** 2016/03/09
Sample ID: PC-9 **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4419211	2016/03/15	2016/03/17	Colm McNamara

Maxxam ID: BZX165 **Collected:** 2016/03/09
Sample ID: PC-20D **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZX166 **Collected:** 2016/03/09
Sample ID: PC-21D **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZX167 **Collected:** 2016/03/09
Sample ID: PC-28 **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZX168 **Collected:** 2016/03/09
Sample ID: PC-29 **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

Maxxam ID: BZX169 **Collected:** 2016/03/09
Sample ID: PC-30 **Shipped:**
Matrix: Water **Received:** 2016/03/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4423830	2016/03/18	2016/03/21	Colm McNamara

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GENERAL COMMENTS

Sample BZX164-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample BZX163, PFOS and PFOA in water: Test repeated.
Sample BZX165, PFOS and PFOA in water: Test repeated.
Sample BZX169, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4419211	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/03/17		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/17		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/17		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/17		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/17		103	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/17		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/17		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/17		96	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/17		NC	%	70 - 130
			Perfluorobutanoic acid	2016/03/17		NC	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/17		111	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/17		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/17		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/17		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/17		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/17		114	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/17		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/17		NC	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/17		126	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/17		NC	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/17		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/17		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/17		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/17		NC	%	70 - 130
4419211	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/03/17		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/17		98	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/17		103	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/17		100	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/17		107	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/17		96	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/17		107	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/17		98	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/17		104	%	70 - 130
			Perfluorobutanoic acid	2016/03/17		99	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/17		96	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/17		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/17		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/17		102	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/17		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/17		108	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/17		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/17		111	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/17		115	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/17		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/17		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/17		104	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/17		101	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/17		94	%	70 - 130
4419211	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/03/17		113	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/17		110	%	70 - 130

Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/03/17		108	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/17	<0.80		ug/L	
			8:2 Fluorotelomer sulfonate	2016/03/17	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/03/17	<0.80		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/03/17	<0.80		ug/L	
			N-methylperfluorooctane sulfonamide	2016/03/17	<0.80		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/03/17	<0.80		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/03/17	<0.80		ug/L	
			Perfluorobutanoic acid	2016/03/17	<0.80		ug/L	
			Perfluorodecane Sulfonate	2016/03/17	<0.80		ug/L	
			Perfluoroheptane sulfonate	2016/03/17	<0.80		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/03/17	<0.80		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17	<0.80		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/03/17	<0.80		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/03/17	<0.80		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/17	<0.80		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/03/17	<0.80		ug/L	
			Perfluorotetradecanoic Acid	2016/03/17	<0.80		ug/L	
			Perfluorotridecanoic Acid	2016/03/17	<0.80		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/03/17	<0.80		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/03/17	<0.80		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/03/17	<0.80		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/17	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/03/17	<0.80		ug/L	
4419211	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/03/17	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/03/17	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/03/17	NC		%	30
4423830	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/03/21		76	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/21		82	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		80	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/21		106	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/21		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/21		90	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/21		83	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/21		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/21		87	%	70 - 130
			Perfluorobutanoic acid	2016/03/21		94	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/21		82	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/21		92	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/21		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/21		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/21		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/21		96	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/21		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/21		94	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/21		97	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21		115	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/21		NC	%	70 - 130
4423830	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/03/21		101	%	70 - 130

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Maxxam Job #: B650295
Report Date: 2016/03/23

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2016/03/21		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		81	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21		87	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/03/21		120	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/03/21		116	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/03/21		104	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/03/21		104	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/03/21		111	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/03/21		95	%	70 - 130
			Perfluorobutanoic acid	2016/03/21		91	%	70 - 130
			Perfluorodecane Sulfonate	2016/03/21		106	%	70 - 130
			Perfluoroheptane sulfonate	2016/03/21		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/03/21		110	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/03/21		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21		117	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/03/21		102	%	70 - 130
			Perfluorotetradecanoic Acid	2016/03/21		104	%	70 - 130
			Perfluorotridecanoic Acid	2016/03/21		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/03/21		103	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/03/21		105	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/21		107	%	70 - 130
4423830	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/03/21		83	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/03/21		92	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/03/21		77	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/03/21	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/03/21	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/03/21	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/03/21	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/03/21	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/03/21	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/03/21	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/03/21	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/03/21	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/03/21	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/03/21	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/03/21	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/03/21	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/03/21	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/03/21	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/03/21	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/03/21	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/03/21	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/03/21	<0.0033		ug/L	
4423830	CM5	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2016/03/21	7.2		%	30
			Perfluorobutanoic acid	2016/03/21	19		%	30
			Perfluorodecane Sulfonate	2016/03/21	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoroheptane sulfonate	2016/03/21	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/03/21	0.74		%	30
			Perfluorononanoic Acid (PFNA)	2016/03/21	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/03/21	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/03/21	7.1		%	30
			Perfluorotetradecanoic Acid	2016/03/21	NC		%	30
			Perfluorotridecanoic Acid	2016/03/21	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/03/21	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/03/21	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/03/21	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/03/21	3.9		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Your Project #: PFC
Your C.O.C. #: 552582-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/07
Report #: R3953900
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B659697
Received: 2016/03/24, 14:50

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2016/03/30	2016/03/30	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	3	2016/04/01	2016/04/02	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
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Maxxam Job #: B659697
Report Date: 2016/04/07

Cape Cod Comission
Client Project #: PFC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CBU265				CBU266	CBU267			
Sampling Date		2016/03/23 15:15				2016/03/23 15:15	2016/03/23 15:15			
COC Number		552582-01-01				552582-01-01	552582-01-01			
	UNITS	**PRW-4 INFLUENT**	**RDL**	**MDL**	**QC Batch**	**MID POINT**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.44	0.020	0.0065	4439831	0.12	<0.0065	0.020	0.0065	4439831
8:2 Fluorotelomer sulfonate	ug/L	0.20	0.020	0.0055	4439831	0.018	<0.0055	0.020	0.0055	4439831
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4439831	<0.0053	<0.0053	0.020	0.0053	4439831
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4439831	<0.0049	<0.0049	0.020	0.0049	4439831
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4439831	<0.0040	<0.0040	0.020	0.0040	4439831
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4439831	<0.0061	<0.0061	0.020	0.0061	4439831
Perfluorobutane Sulfonate (PFBS)	ug/L	0.11	0.020	0.0019	4439831	0.029	<0.0019	0.020	0.0019	4439831
Perfluorobutanoic acid	ug/L	0.068	0.020	0.0066	4439831	0.048	<0.0066	0.020	0.0066	4439831
Perfluorodecane Sulfonate	ug/L	0.0070	0.020	0.0043	4439831	<0.0043	<0.0043	0.020	0.0043	4439831
Perfluorodecanoic Acid (PFDA)	ug/L	0.010	0.020	0.0066	4439831	<0.0066	<0.0066	0.020	0.0066	4439831
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4439831	<0.0057	<0.0057	0.020	0.0057	4439831
Perfluoroheptane sulfonate	ug/L	0.12	0.020	0.0036	4439831	0.026	<0.0036	0.020	0.0036	4439831
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.12	0.020	0.0047	4439831	0.038	<0.0047	0.020	0.0047	4439831
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.3 (1)	0.80	0.16	4436274	0.27	<0.0040	0.020	0.0040	4439831
Perfluorohexanoic Acid (PFHxA)	ug/L	0.34	0.020	0.0046	4439831	0.11	<0.0046	0.020	0.0046	4439831
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.15	0.020	0.0053	4439831	0.039	<0.0053	0.020	0.0053	4439831
Perfluorononanoic Acid (PFNA)	ug/L	0.065	0.020	0.0046	4439831	0.014	<0.0046	0.020	0.0046	4439831
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.012	0.020	0.0058	4439831	<0.0058	<0.0058	0.020	0.0058	4439831
Perfluorooctane Sulfonate (PFOS)	ug/L	5.0 (1)	0.80	0.13	4436274	0.65	<0.0033	0.020	0.0033	4439831
Perfluoropentanoic Acid (PFPeA)	ug/L	0.24	0.020	0.0036	4439831	0.085	<0.0036	0.020	0.0036	4439831
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4439831	<0.0052	<0.0052	0.020	0.0052	4439831
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4439831	<0.0032	<0.0032	0.020	0.0032	4439831
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.089	0.020	0.0037	4439831	<0.0037	<0.0037	0.020	0.0037	4439831
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	81	N/A	N/A	4436274	104	98	N/A	N/A	4439831
13C4-Perfluorooctanoic acid	%	87	N/A	N/A	4439831	106	104	N/A	N/A	4439831
13C8-Perfluorooctanesulfonamide	%	81	N/A	N/A	4439831	96	87	N/A	N/A	4439831

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B659697
Report Date: 2016/04/07

Cape Cod Comission
Client Project #: PFC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CBU268			
Sampling Date		2016/03/23 15:15			
COC Number		552582-01-01			
	UNITS	TAP	RDL	MDL	QC Batch
Miscellaneous Parameters					
6:2 Fluorotelomer sulfonate	ug/L	0.070	0.020	0.0065	4439831
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4439831
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4439831
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4439831
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4439831
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4439831
Perfluorobutane Sulfonate (PFBS)	ug/L	0.010	0.020	0.0019	4439831
Perfluorobutanoic acid	ug/L	0.029	0.020	0.0066	4439831
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4439831
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4439831
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4439831
Perfluoroheptane sulfonate	ug/L	0.0092	0.020	0.0036	4439831
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.038	0.020	0.0047	4439831
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.15	0.020	0.0040	4439831
Perfluorohexanoic Acid (PFHxA)	ug/L	0.074	0.020	0.0046	4439831
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.044	0.020	0.0053	4439831
Perfluorononanoic Acid (PFNA)	ug/L	0.021	0.020	0.0046	4439831
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.054	0.020	0.0058	4439831
Perfluorooctane Sulfonate (PFOS)	ug/L	0.30	0.020	0.0033	4439831
Perfluoropentanoic Acid (PFPeA)	ug/L	0.082	0.020	0.0036	4439831
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4439831
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4439831
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4439831
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	106	N/A	N/A	4439831
13C4-Perfluorooctanoic acid	%	101	N/A	N/A	4439831
13C8-Perfluorooctanesulfonamide	%	94	N/A	N/A	4439831

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B659697
Report Date: 2016/04/07

Cape Cod Comission
Client Project #: PFC

TEST SUMMARY

Maxxam ID: CBU265
Sample ID: PRW-4 INFLUENT
Matrix: Water

Collected: 2016/03/23
Shipped:
Received: 2016/03/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4439831	2016/04/01	2016/04/02	Sin Chii Chia

Maxxam ID: CBU266
Sample ID: MID POINT
Matrix: Water

Collected: 2016/03/23
Shipped:
Received: 2016/03/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4439831	2016/04/01	2016/04/02	Sin Chii Chia

Maxxam ID: CBU267
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/03/23
Shipped:
Received: 2016/03/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4439831	2016/04/01	2016/04/02	Sin Chii Chia

Maxxam ID: CBU268
Sample ID: TAP
Matrix: Water

Collected: 2016/03/23
Shipped:
Received: 2016/03/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4439831	2016/04/01	2016/04/02	Sin Chii Chia

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GENERAL COMMENTS

Sample CBU265, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4436274	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/03/30		87	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/30		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/30		NC	%	70 - 130
4436274	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/03/30		89	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/30		101	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/03/30		103	%	70 - 130
4436274	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/03/30		92	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/03/30	<0.80		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/03/30	<0.80		ug/L	
4436274	CM5	RPD - Sample/Sample Dup	Perfluorohexane Sulfonate (PFHxS)	2016/03/30	1.5		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/03/30	0.98		%	30
4439831	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/02		83	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/02		95	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/02		95	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/02		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/02		107	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/02		90	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/02		97	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/02		130	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/02		NC	%	70 - 130
			Perfluorobutanoic acid	2016/04/02		NC	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/02		80	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/02		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/02		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/02		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/02		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/02		100	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/02		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/02		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/02		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/02		110	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/02		96	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/02		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/02		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/02		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/02		NC	%	70 - 130
4439831	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/04/02		85	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/02		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/02		93	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/02		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/02		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/02		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/02		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/02		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/02		NC	%	70 - 130
			Perfluorobutanoic acid	2016/04/02		NC	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/02		88	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/02		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/02		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/02		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/02		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/02		98	%	70 - 130

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Maxxam Job #: B659697
Report Date: 2016/04/07

Cape Cod Comission
Client Project #: PFC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/02		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/02		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/02		92	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/02		98	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/02		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/02		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/02		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/02		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/02		NC	%	70 - 130
4439831	SCH	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/04/02	NC		%	30
			8:2 Fluorotelomer sulfonate	2016/04/02	NC		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/02	7.4		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/02	15		%	30
			N-methylperfluorooctane sulfonamide	2016/04/02	8.5		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/02	24		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/02	NC		%	30
			Perfluorobutanoic acid	2016/04/02	NC		%	30
			Perfluorodecane Sulfonate	2016/04/02	9.5		%	30
			Perfluoroheptane sulfonate	2016/04/02	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/02	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/02	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/02	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/02	2.2		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/02	2.4		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/02	NC		%	30
			Perfluorotetradecanoic Acid	2016/04/02	8.3		%	30
			Perfluorotridecanoic Acid	2016/04/02	12		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/02	4.9		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/02	2.6		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/02	0.20		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/02	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/02	NC		%	30
4439831	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/02		107	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/02		107	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/02		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/02		101	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/02		102	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/02		100	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/02		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/02		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/02		103	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/02		94	%	70 - 130
			Perfluorobutanoic acid	2016/04/02		107	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/02		90	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/02		88	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/02		104	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/02		91	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/02		94	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/02		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/02		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/02		105	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/02		99	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/02		99	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/02		100	%	70 - 130

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Report Date: 2016/04/07

Cape Cod Comission
Client Project #: PFC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorodecanoic Acid (PFDA)	2016/04/02		100	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/02		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/02		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/02		102	%	70 - 130
4439831	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/02		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/02		112	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/02		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/02	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/02	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/02	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/02	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/02	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/02	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/02	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/04/02	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/04/02	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/04/02	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/02	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/02	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/02	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/02	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/02	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/02	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/04/02	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/04/02	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/02	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/02	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/02	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/02	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/02	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

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Maxxam Job #: B659697
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Cape Cod Comission
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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AIR

24-Mar-16 14:50
Melissa DiGrazia
B659697
J L ENV-574

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Scott Michaud	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	PFC
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	smichaud@capecodcommission.org	Email:	Smichaud@capecodcommission.org	Sampled By:	SM

Laboratory Use Only: Bottle Order #: 552582 — COC #: C#552582-01-01 — Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFCs)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals / Hg / Cr VI	537 (PFCs)	# of Bottles	Comments
1		PRW-4 influent	3/23/16	1515	SW		✓	1	no preservative
2		Midpoint	↓	↓	h_2o		✓	1	
3		Effluent	↓	↓	↓		✓	1	
4		Tap	↓	↓	↓		✓	1	
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	3/23/16	1600	[signature]	2016/03/24	14:50	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.0/2.9/3.3	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam A Bureau Veritas Group Company — Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Cape Cod Commission	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:	Tom Cambareri	P.O. #:			
Address:	3225 Main Street	Address:	3225 MAIN STREET	Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630		BARNSTABLE, MA 02630	Project Name:	BFTA		
Tel:	(508) 362-3828 x1234 Fax:	Tel:	508-362-3828 Fax: 508-362-3136	Site #:			
Email:	tcambareri@capecodcommission.org	Email:	TCAMBARERI@capecodcommission.org smichaud@capecodcommission.org	Sampled By:	team		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Analysis	# of Bottles	Comments
1		PC-6a	3/9/16	9:45	water		537 PFCs	1	
2		PC-9	3/9/16	11:40	water		537 PFCs	1	
3		PC-20d	3/9/16	10:15	water		537 PFCs	1	
4		PC-21d	3/9/16	14:30	water		537 PFCs	1	
5		PC-28	3/9/16	13:30	water		537 PFCs	1	
6		PC-29	3/9/16	13:50	water		537 PFCs	1	
7		PC-30	3/9/16	11:15	water		537 PFCs	1	
8									
9									
10									

11-Mar-16 14:40
Melissa DiGrazia
B650295
MK3 ENV-1121

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	3/10/16	1600	Shruti SHRUTI PATEL	2016/03/11	14:40	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	2.1 / 2.6 / 2.9	Present		✓
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/14
Report #: R3960426
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B664451
Received: 2016/04/01, 14:30

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	7	2016/04/04	2016/04/06	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/04/07	2016/04/08	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCU041				CCU042			
Sampling Date		2016/03/30 16:00				2016/03/30 15:20			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-1**	**RDL**	**MDL**	**QC Batch**	**PC-19**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	7.8	0.80	0.21	4442997	0.16	0.020	0.0065	4448174
8:2 Fluorotelomer sulfonate	ug/L	3.9	0.80	0.28	4442997	0.0084	0.020	0.0055	4448174
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4442997	<0.0053	0.020	0.0053	4448174
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4442997	<0.0049	0.020	0.0049	4448174
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4442997	<0.0040	0.020	0.0040	4448174
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4442997	<0.0061	0.020	0.0061	4448174
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23	0.80	0.23	4442997	0.060	0.020	0.0019	4448174
Perfluorobutanoic acid	ug/L	0.33	0.80	0.20	4442997	0.093	0.020	0.0066	4448174
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4442997	<0.0043	0.020	0.0043	4448174
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4442997	<0.0066	0.020	0.0066	4448174
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4442997	<0.0057	0.020	0.0057	4448174
Perfluoroheptane sulfonate	ug/L	0.66	0.80	0.27	4442997	0.054	0.020	0.0036	4448174
Perfluoroheptanoic Acid (PFHpA)	ug/L	1.0	0.80	0.27	4442997	0.15	0.020	0.0047	4448174
Perfluorohexane Sulfonate (PFHxS)	ug/L	5.4	0.80	0.16	4442997	0.44	0.020	0.0040	4448174
Perfluorohexanoic Acid (PFHxA)	ug/L	1.6	0.80	0.17	4442997	0.38	0.020	0.0046	4448174
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.2	0.80	0.20	4442997	0.12	0.020	0.0053	4448174
Perfluorononanoic Acid (PFNA)	ug/L	0.41	0.80	0.19	4442997	0.10	0.020	0.0046	4448174
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4442997	0.025	0.020	0.0058	4448174
Perfluorooctane Sulfonate (PFOS)	ug/L	56 (1)	8.0	1.4	4442997	1.6 (2)	0.80	0.14	4442997
Perfluoropentanoic Acid (PFPeA)	ug/L	1.5	0.80	0.21	4442997	0.32	0.020	0.0036	4448174
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4442997	<0.0052	0.020	0.0052	4448174
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4442997	<0.0032	0.020	0.0032	4448174
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.99	0.80	0.14	4442997	0.0092	0.020	0.0037	4448174
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	133 (3)	N/A	N/A	4442997	124	N/A	N/A	4442997
13C4-Perfluorooctanoic acid	%	135 (3)	N/A	N/A	4442997	95	N/A	N/A	4448174
13C8-Perfluorooctanesulfonamide	%	126 (3)	N/A	N/A	4442997	93	N/A	N/A	4448174

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample was analyzed by high level analysis with 10x dilution. Detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample was analyzed by high level analysis. Detection limit was adjusted accordingly.

(3) Surrogate recovery was above the defined upper control limit (UCL). Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCU043				CCU044			
Sampling Date		2016/03/30 11:30				2016/03/30 12:10			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-9**	**RDL**	**MDL**	**QC Batch**	**PC-33**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	8.5	0.80	0.21	4442997	0.31	0.020	0.0065	4448174
8:2 Fluorotelomer sulfonate	ug/L	0.45	0.80	0.28	4442997	0.038	0.020	0.0055	4448174
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4442997	<0.0053	0.020	0.0053	4448174
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4442997	<0.0049	0.020	0.0049	4448174
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4442997	<0.0040	0.020	0.0040	4448174
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4442997	<0.0061	0.020	0.0061	4448174
Perfluorobutane Sulfonate (PFBS)	ug/L	3.2	0.80	0.23	4442997	0.082	0.020	0.0019	4448174
Perfluorobutanoic acid	ug/L	0.56	0.80	0.20	4442997	0.12	0.020	0.0066	4448174
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4442997	<0.0043	0.020	0.0043	4448174
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4442997	0.0082	0.020	0.0066	4448174
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4442997	<0.0057	0.020	0.0057	4448174
Perfluoroheptane sulfonate	ug/L	0.88	0.80	0.27	4442997	0.074	0.020	0.0036	4448174
Perfluoroheptanoic Acid (PFHpA)	ug/L	1.1	0.80	0.27	4442997	0.24	0.020	0.0047	4448174
Perfluorohexane Sulfonate (PFHxS)	ug/L	16	0.80	0.16	4442997	1.1 (1)	0.80	0.16	4442997
Perfluorohexanoic Acid (PFHxA)	ug/L	4.2	0.80	0.17	4442997	0.48	0.020	0.0046	4448174
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	1.6	0.80	0.20	4442997	0.25	0.020	0.0053	4448174
Perfluorononanoic Acid (PFNA)	ug/L	0.36	0.80	0.19	4442997	0.15	0.020	0.0046	4448174
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4442997	0.023	0.020	0.0058	4448174
Perfluorooctane Sulfonate (PFOS)	ug/L	8.1	0.80	0.14	4442997	2.7 (1)	0.80	0.14	4442997
Perfluoropentanoic Acid (PFPeA)	ug/L	2.3	0.80	0.21	4442997	0.44	0.020	0.0036	4448174
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4442997	<0.0052	0.020	0.0052	4448174
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4442997	<0.0032	0.020	0.0032	4448174
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.23	0.80	0.14	4442997	0.0091	0.020	0.0037	4448174
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	124	N/A	N/A	4442997	125	N/A	N/A	4442997
13C4-Perfluorooctanoic acid	%	126	N/A	N/A	4442997	96	N/A	N/A	4448174
13C8-Perfluorooctanesulfonamide	%	120	N/A	N/A	4442997	96	N/A	N/A	4448174

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample was analyzed by high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCU045				CCU046			
Sampling Date		2016/03/30 10:50				2016/03/30 12:40			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-14**	**RDL**	**MDL**	**QC Batch**	**PC-32**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	1.6 (1)	0.80	0.21	4442997	0.65	0.020	0.0065	4448174
8:2 Fluorotelomer sulfonate	ug/L	0.11	0.020	0.0055	4448174	0.0085	0.020	0.0055	4448174
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4448174	<0.0053	0.020	0.0053	4448174
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4448174	<0.0049	0.020	0.0049	4448174
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4448174	<0.0040	0.020	0.0040	4448174
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4448174	<0.0061	0.020	0.0061	4448174
Perfluorobutane Sulfonate (PFBS)	ug/L	0.29	0.020	0.0019	4448174	0.078	0.020	0.0019	4448174
Perfluorobutanoic acid	ug/L	0.14	0.020	0.0066	4448174	0.099	0.020	0.0066	4448174
Perfluorodecane Sulfonate	ug/L	0.0055	0.020	0.0043	4448174	<0.0043	0.020	0.0043	4448174
Perfluorodecanoic Acid (PFDA)	ug/L	0.010	0.020	0.0066	4448174	0.0083	0.020	0.0066	4448174
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4448174	<0.0057	0.020	0.0057	4448174
Perfluoroheptane sulfonate	ug/L	0.073	0.020	0.0036	4448174	0.044	0.020	0.0036	4448174
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.31	0.020	0.0047	4448174	0.18	0.020	0.0047	4448174
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.7 (1)	0.80	0.16	4442997	0.59	0.020	0.0040	4448174
Perfluorohexanoic Acid (PFHxA)	ug/L	0.68	0.020	0.0046	4448174	0.46	0.020	0.0046	4448174
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.25	0.020	0.0053	4448174	0.13	0.020	0.0053	4448174
Perfluorononanoic Acid (PFNA)	ug/L	0.11	0.020	0.0046	4448174	0.14	0.020	0.0046	4448174
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.020	0.020	0.0058	4448174	0.028	0.020	0.0058	4448174
Perfluorooctane Sulfonate (PFOS)	ug/L	2.1 (1)	0.80	0.14	4442997	1.2 (1)	0.80	0.14	4442997
Perfluoropentanoic Acid (PFPeA)	ug/L	0.53	0.020	0.0036	4448174	0.42	0.020	0.0036	4448174
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4448174	<0.0052	0.020	0.0052	4448174
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4448174	<0.0032	0.020	0.0032	4448174
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.017	0.020	0.0037	4448174	0.0043	0.020	0.0037	4448174
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	132 (2)	N/A	N/A	4442997	123	N/A	N/A	4442997
13C4-Perfluorooctanoic acid	%	93	N/A	N/A	4448174	103	N/A	N/A	4448174
13C8-Perfluorooctanesulfonamide	%	100	N/A	N/A	4448174	89	N/A	N/A	4448174

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample was analyzed by high level analysis. Detection limit was adjusted accordingly.

(2) Surrogate recovery was above the defined upper control limit (UCL). Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCU047				CCU048			
Sampling Date		2016/03/30 10:15				2016/03/31 15:30			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-24**	**RDL**	**MDL**	**QC Batch**	**POND GRAB**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.032	0.020	0.0065	4448174	0.011	0.020	0.0065	4448174
8:2 Fluorotelomer sulfonate	ug/L	0.0065	0.020	0.0055	4448174	0.0081	0.020	0.0055	4448174
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4448174	<0.0053	0.020	0.0053	4448174
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4448174	<0.0049	0.020	0.0049	4448174
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4448174	<0.0040	0.020	0.0040	4448174
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4448174	<0.0061	0.020	0.0061	4448174
Perfluorobutane Sulfonate (PFBS)	ug/L	0.015	0.020	0.0019	4448174	0.037	0.020	0.0019	4448174
Perfluorobutanoic acid	ug/L	0.030	0.020	0.0066	4448174	0.054	0.020	0.0066	4448174
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4448174	0.0046	0.020	0.0043	4448174
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4448174	0.026	0.020	0.0066	4448174
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4448174	<0.0057	0.020	0.0057	4448174
Perfluoroheptane sulfonate	ug/L	0.011	0.020	0.0036	4448174	0.036	0.020	0.0036	4448174
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.048	0.020	0.0047	4448174	0.10	0.020	0.0047	4448174
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.14	0.020	0.0040	4448174	0.34	0.020	0.0040	4448174
Perfluorohexanoic Acid (PFHxA)	ug/L	0.081	0.020	0.0046	4448174	0.26	0.020	0.0046	4448174
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.022	0.020	0.0053	4448174	0.097	0.020	0.0053	4448174
Perfluorononanoic Acid (PFNA)	ug/L	0.024	0.020	0.0046	4448174	0.11	0.020	0.0046	4448174
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4448174	<0.0058	0.020	0.0058	4448174
Perfluorooctane Sulfonate (PFOS)	ug/L	0.42	0.020	0.0033	4448174	2.7 (1)	0.80	0.14	4442997
Perfluoropentanoic Acid (PFPeA)	ug/L	0.091	0.020	0.0036	4448174	0.15	0.020	0.0036	4448174
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4448174	<0.0052	0.020	0.0052	4448174
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4448174	<0.0032	0.020	0.0032	4448174
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4448174	0.019	0.020	0.0037	4448174
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4448174	148 (2)	N/A	N/A	4442997
13C4-Perfluorooctanoic acid	%	101	N/A	N/A	4448174	92	N/A	N/A	4448174
13C8-Perfluorooctanesulfonamide	%	92	N/A	N/A	4448174	84	N/A	N/A	4448174

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample was analyzed by high level analysis. Detection limit was adjusted accordingly.

(2) Surrogate recovery was above the defined upper control limit (UCL). Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: CCU041
Sample ID: PC-1
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442997	2016/04/04	2016/04/06	Sin Chii Chia

Maxxam ID: CCU042
Sample ID: PC-19
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4448174	2016/04/07	2016/04/08	Sin Chii Chia

Maxxam ID: CCU043
Sample ID: PC-9
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442997	2016/04/04	2016/04/06	Sin Chii Chia

Maxxam ID: CCU044
Sample ID: PC-33
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4448174	2016/04/07	2016/04/08	Sin Chii Chia

Maxxam ID: CCU045
Sample ID: PC-14
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442997	2016/04/04	2016/04/06	Sin Chii Chia

Maxxam ID: CCU046
Sample ID: PC-32
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4448174	2016/04/07	2016/04/08	Sin Chii Chia

Maxxam ID: CCU047
Sample ID: PC-24
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4448174	2016/04/07	2016/04/08	Sin Chii Chia

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TEST SUMMARY

Maxxam ID: CCU048
Sample ID: POND GRAB
Matrix: Water

Collected: 2016/03/31
Shipped:
Received: 2016/04/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4448174	2016/04/07	2016/04/08	Sin Chii Chia

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GENERAL COMMENTS

Sample CCU041-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Sample CCU043-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Sample CCU042, PFOS and PFOA in water: Test repeated.
Sample CCU044, PFOS and PFOA in water: Test repeated.
Sample CCU045, PFOS and PFOA in water: Test repeated.
Sample CCU046, PFOS and PFOA in water: Test repeated.
Sample CCU048, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4442997	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/06		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/06		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/06		97	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/06		112	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/06		108	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/06		110	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/06		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/06		106	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/06		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/06		109	%	70 - 130
			Perfluorobutanoic acid	2016/04/06		122	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/06		94	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/06		98	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/06		110	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/06		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/06		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/06		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/06		106	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/06		106	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/06		102	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/06		166 (1)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/06		112	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/06		114	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/06		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/06		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/06		112	%	70 - 130
4442997	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/06		110	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/06		112	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/06		109	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/06		105	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/06		106	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/06		111	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/06		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/06		111	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/06		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/06		115	%	70 - 130
			Perfluorobutanoic acid	2016/04/06		108	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/06		106	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/06		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/06		108	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/06		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/06		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/06		106	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/06		105	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/06		103	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/06		109	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/06		125	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/06		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/06		113	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/06		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/06		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/06		110	%	70 - 130
4442997	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/06		129	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/06		130	%	70 - 130

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Maxxam Job #: B664451
Report Date: 2016/04/14

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/04/06		122 (2)		60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/06	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/06	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/06	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/06	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/06	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/06	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/06	<0.23		ug/L	
			Perfluorobutanoic acid	2016/04/06	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/04/06	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/04/06	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/06	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/06	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/06	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/06	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/06	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/06	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/04/06	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/04/06	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/06	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/06	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/06	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/06	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/06	<0.14		ug/L	
4448174	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/08		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/08		106	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/08		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/08		101	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/08		102	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/08		86	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/08		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/08		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/08		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/08		97	%	70 - 130
			Perfluorobutanoic acid	2016/04/08		81	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/08		103	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/08		93	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/08		108	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/08		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/08		102	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/08		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/08		107	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/08		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/08		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/08		109	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/08		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/08		106	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/08		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/08		103	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/08		93	%	70 - 130
4448174	SCH	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/04/08		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/08		108	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/08		93	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/08		96	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2016/04/08		109	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/08		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/08		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/08		85	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/08		91	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/08		85	%	70 - 130
			Perfluorobutanoic acid	2016/04/08		114	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/08		95	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/08		86	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/08		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/08		95	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/08		99	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/08		111	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/08		106	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/08		96	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/08		86	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/08		100	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/08		102	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/08		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/08		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/08		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/08		94	%	70 - 130
4448174	SCH	RPD	6:2 Fluorotelomer sulfonate	2016/04/08	5.3		%	30
			8:2 Fluorotelomer sulfonate	2016/04/08	6.7		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/08	9.8		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/08	5.2		%	30
			N-methylperfluorooctane sulfonamide	2016/04/08	8.3		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/08	4.9		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/08	13		%	30
			Perfluorobutanoic acid	2016/04/08	34 (3)		%	30
			Perfluorodecane Sulfonate	2016/04/08	8.9		%	30
			Perfluoroheptane sulfonate	2016/04/08	7.6		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/08	7.7		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/08	6.5		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/08	3.8		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/08	3.5		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/08	0.94		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/08	1.9		%	30
			Perfluorotetradecanoic Acid	2016/04/08	18		%	30
			Perfluorotridecanoic Acid	2016/04/08	8.4		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/08	3.8		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/08	3.3		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/08	2.2		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/08	4.6		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/08	1.1		%	30
4448174	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/08		84	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/08		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/08		78	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/08	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/08	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/08	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/08	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/08	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/08	<0.0061		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/04/08	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/04/08	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/04/08	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/04/08	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/08	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/08	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/08	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/08	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/08	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/08	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/04/08	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/04/08	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/08	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/08	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/08	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/08	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/08	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

(2) Surrogate recovery was above the defined upper control limit (UCL). Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B664451
Report Date: 2016/04/14

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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AIR

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01-Apr-16 14:30
Melissa DiGrazia
B664451
J L ENV-1129

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	Team

Bottle Order #: 528190
COC #: C#528190-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Res/Park, Medium/Fine, Table 2, Ind/Comm, Coarse, Table 3, Agri/Other, For RSC, Table ___

Other Regulations: CCME, Sanitary Sewer Bylaw, Reg 558, Storm Sewer Bylaw, MISA, Municipality ___, PWQO, Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Metals / Hg / Cr VI	Analysis	# of Bottles	Comments
1		PC-1	3/30/16	16:00	water			537 PFCs	1	
2		PC-19	↓	15:20	↓			↓	↓	
3		PC-9	↓	11:30	↓			↓	↓	
4		PC-33	↓	12:10	↓			↓	↓	
5		PC-14	↓	10:50	↓			↓	↓	
6		PC-32	↓	12:40	↓			↓	↓	
7		PC-24	↓	10:15	↓			↓	↓	
8		Pond Grab	3/31/16	1530	h_2o			537 PFC	1	
9										
10										

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	16/03/30	16:40	[signature]	3/30/16	1640	
[signature]	3/31/16	1600	[signature] BIM BHAGWAN	2016/04/01	14:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	4.2/4.8/4.3	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

MW# 330245

Your Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA
Your C.O.C. #: na

Attention:Alan Moore

Cape Cod Commission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/14
Report #: R3961368
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B668668
Received: 2016/04/07, 13:43

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2016/04/11	2016/04/12	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CDO879	CDO880	CDO880			
Sampling Date		2016/03/30 14:30	2016/03/30 14:45	2016/03/30 14:45			
COC Number		na	na	na			
	UNITS	HSW-6 T=0	PFW-2 T=0	PFW-2 T=0 Lab-Dup	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	12	16	17	0.80	0.21	4452050
8:2 Fluorotelomer sulfonate	ug/L	12	5.5	5.1	0.80	0.28	4452050
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	<0.28	0.80	0.28	4452050
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	<0.29	0.80	0.29	4452050
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	<0.15	0.80	0.15	4452050
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4452050
Perfluorobutane Sulfonate (PFBS)	ug/L	0.29	0.36	0.40	0.80	0.23	4452050
Perfluorobutanoic acid	ug/L	0.30	0.39	0.41	0.80	0.20	4452050
Perfluorodecane Sulfonate	ug/L	0.53	0.24	0.24	0.80	0.22	4452050
Perfluorodecanoic Acid (PFDA)	ug/L	0.45	0.23	0.20	0.80	0.20	4452050
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	<0.16	0.80	0.16	4452050
Perfluoroheptane sulfonate	ug/L	5.4	2.3	2.2	0.80	0.27	4452050
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.40	0.46	0.47	0.80	0.27	4452050
Perfluorohexane Sulfonate (PFHxS)	ug/L	17	13	13	0.80	0.16	4452050
Perfluorohexanoic Acid (PFHxA)	ug/L	1.7	2.3	2.3	0.80	0.17	4452050
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	2.8	2.1	2.0	0.80	0.20	4452050
Perfluorononanoic Acid (PFNA)	ug/L	0.75	0.83	0.74	0.80	0.19	4452050
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	<0.23	0.80	0.23	4452050
Perfluorooctane Sulfonate (PFOS)	ug/L	320 (1)	120 (1)	120 (1)	8.0	1.4	4452050
Perfluoropentanoic Acid (PFPeA)	ug/L	0.76	1.3	1.2	0.80	0.21	4452050
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.20	<0.20	0.80	0.20	4452050
Perfluorotridecanoic Acid	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4452050
Perfluoroundecanoic Acid (PFUnA)	ug/L	5.6	2.5	2.5	0.80	0.14	4452050
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	105	109	108	N/A	N/A	4452050
13C4-Perfluorooctanoic acid	%	101	107	107	N/A	N/A	4452050
13C8-Perfluorooctanesulfonamide	%	103	102	111	N/A	N/A	4452050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

TEST SUMMARY

Maxxam ID: CDO879
Sample ID: HSW-6 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

Maxxam ID: CDO880
Sample ID: PFW-2 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

Maxxam ID: CDO880 Dup
Sample ID: PFW-2 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

GENERAL COMMENTS

Sample CDO879-01 : Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Sample CDO880-01 : Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4452050	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/12		110	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/12		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		109	%	60 - 120
4452050	SCH	Matrix Spike(CDO880)	6:2 Fluorotelomer sulfonate	2016/04/12		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/12		88	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/12		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/12		86	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/12		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/12		108	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/12		102	%	70 - 130
			Perfluorobutanoic acid	2016/04/12		112	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/12		92	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/12		90	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/12		99	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/12		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12		92	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/12		93	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/12		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/12		123	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12		93	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/12		97	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/12		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/12		NC	%	70 - 130
4452050	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/12		109	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/12		105	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		104	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/12		106	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/12		96	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/12		93	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/12		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/12		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/12		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/12		96	%	70 - 130
			Perfluorobutanoic acid	2016/04/12		100	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/12		95	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/12		92	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12		89	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/12		104	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/12		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/12		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/12		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/12		97	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12		96	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/12		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/12		95	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/12		91	%	70 - 130
4452050	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/12		105	%	70 - 130

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2016/04/12		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		100	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/12	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/12	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/12	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/12	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/12	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/12	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/12	<0.23		ug/L	
			Perfluorobutanoic acid	2016/04/12	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/04/12	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/04/12	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/12	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/12	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/12	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/04/12	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/04/12	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/12	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/12	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/12	<0.14		ug/L	
4452050	SCH	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/04/12	7.5		%	30
			8:2 Fluorotelomer sulfonate	2016/04/12	7.8		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/12	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/12	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/04/12	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/12	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/12	NC		%	30
			Perfluorobutanoic acid	2016/04/12	NC		%	30
			Perfluorodecane Sulfonate	2016/04/12	NC		%	30
			Perfluoroheptane sulfonate	2016/04/12	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12	1.5		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/12	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/12	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/12	NC		%	30
			Perfluorotetradecanoic Acid	2016/04/12	NC		%	30
			Perfluorotridecanoic Acid	2016/04/12	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/12	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/12	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12	NC		%	30

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorooctane Sulfonate (PFOS)	2016/04/12	1.7 (1)		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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A Bureau Veritas Group Company

Your Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA
Your C.O.C. #: na

Attention:Alan Moore

Cape Cod Commission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/14
Report #: R3961368
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B668668
Received: 2016/04/07, 13:43

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2016/04/11	2016/04/12	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CDO879	CDO880	CDO880			
Sampling Date		2016/03/30 14:30	2016/03/30 14:45	2016/03/30 14:45			
COC Number		na	na	na			
	UNITS	HSW-6 T=0	PFW-2 T=0	PFW-2 T=0 Lab-Dup	RDL	MDL	QC Batch
6:2 Fluorotelomer sulfonate	ug/L	12	16	17	0.80	0.21	4452050
8:2 Fluorotelomer sulfonate	ug/L	12	5.5	5.1	0.80	0.28	4452050
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	<0.28	0.80	0.28	4452050
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	<0.29	0.80	0.29	4452050
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	<0.15	0.80	0.15	4452050
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4452050
Perfluorobutane Sulfonate (PFBS)	ug/L	0.29	0.36	0.40	0.80	0.23	4452050
Perfluorobutanoic acid	ug/L	0.30	0.39	0.41	0.80	0.20	4452050
Perfluorodecane Sulfonate	ug/L	0.53	0.24	0.24	0.80	0.22	4452050
Perfluorodecanoic Acid (PFDA)	ug/L	0.45	0.23	0.20	0.80	0.20	4452050
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	<0.16	0.80	0.16	4452050
Perfluoroheptane sulfonate	ug/L	5.4	2.3	2.2	0.80	0.27	4452050
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.40	0.46	0.47	0.80	0.27	4452050
Perfluorohexane Sulfonate (PFHxS)	ug/L	17	13	13	0.80	0.16	4452050
Perfluorohexanoic Acid (PFHxA)	ug/L	1.7	2.3	2.3	0.80	0.17	4452050
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	2.8	2.1	2.0	0.80	0.20	4452050
Perfluorononanoic Acid (PFNA)	ug/L	0.75	0.83	0.74	0.80	0.19	4452050
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	<0.23	0.80	0.23	4452050
Perfluorooctane Sulfonate (PFOS)	ug/L	320 (1)	120 (1)	120 (1)	8.0	1.4	4452050
Perfluoropentanoic Acid (PFPeA)	ug/L	0.76	1.3	1.2	0.80	0.21	4452050
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.20	<0.20	0.80	0.20	4452050
Perfluorotridecanoic Acid	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4452050
Perfluoroundecanoic Acid (PFUnA)	ug/L	5.6	2.5	2.5	0.80	0.14	4452050
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	105	109	108	N/A	N/A	4452050
13C4-Perfluorooctanoic acid	%	101	107	107	N/A	N/A	4452050
13C8-Perfluorooctanesulfonamide	%	103	102	111	N/A	N/A	4452050

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

TEST SUMMARY

Maxxam ID: CDO879
Sample ID: HSW-6 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

Maxxam ID: CDO880
Sample ID: PFW-2 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

Maxxam ID: CDO880 Dup
Sample ID: PFW-2 T=0
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4452050	2016/04/11	2016/04/12	Sin Chii Chia

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GENERAL COMMENTS

Sample CDO879-01 : Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Sample CDO880-01 : Due to high concentrations of the target analytes, sample was analyzed by high level analysis. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam
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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4452050	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/12		110	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/12		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		109	%	60 - 120
4452050	SCH	Matrix Spike(CDO880)	6:2 Fluorotelomer sulfonate	2016/04/12		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/12		88	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/12		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/12		86	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/12		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/12		108	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/12		102	%	70 - 130
			Perfluorobutanoic acid	2016/04/12		112	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/12		92	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/12		90	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/12		99	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/12		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12		92	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/12		93	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/12		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/12		123	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12		93	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/12		97	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/12		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/12		NC	%	70 - 130
4452050	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/12		109	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/12		105	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		104	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/12		106	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/12		96	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/12		93	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/12		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/12		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/12		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/12		96	%	70 - 130
			Perfluorobutanoic acid	2016/04/12		100	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/12		95	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/12		92	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12		89	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/12		104	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/12		96	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/12		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/12		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/12		97	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12		96	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/12		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/12		95	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/12		91	%	70 - 130
4452050	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/12		105	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2016/04/12		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/12		100	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/12	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/12	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/12	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/12	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/12	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/12	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/12	<0.23		ug/L	
			Perfluorobutanoic acid	2016/04/12	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/04/12	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/04/12	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/12	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/12	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/12	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/04/12	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/04/12	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/12	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/12	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/12	<0.14		ug/L	
4452050	SCH	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/04/12	7.5		%	30
			8:2 Fluorotelomer sulfonate	2016/04/12	7.8		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/12	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/12	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/04/12	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/12	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/12	NC		%	30
			Perfluorobutanoic acid	2016/04/12	NC		%	30
			Perfluorodecane Sulfonate	2016/04/12	NC		%	30
			Perfluoroheptane sulfonate	2016/04/12	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/12	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/12	1.5		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/12	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/12	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/12	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/12	NC		%	30
			Perfluorotetradecanoic Acid	2016/04/12	NC		%	30
			Perfluorotridecanoic Acid	2016/04/12	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/12	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/12	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/12	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/12	NC		%	30

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A Bureau Veritas Group Company

Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorooctane Sulfonate (PFOS)	2016/04/12	1.7 (1)		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B668668
Report Date: 2016/04/14

Cape Cod Commission
Client Project #: CCC-TREAT STUDY
Site Location: HYANNIS, MA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

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Your Project #: PFC
Site Location: 92285
Your C.O.C. #: 552948-01-01

Attention:Gongmin Lei

Barnstable County Dept. of Health and Env.
3195 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/14
Report #: R3961370
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B663085
Received: 2016/03/31, 10:40

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	5	2016/04/04	2016/04/05	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
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Maxxam
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Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCM531	CCM532	CCM533	CCM534			
Sampling Date		2016/03/30 11:00	2016/03/30 11:10	2016/03/30 11:35	2016/03/30 12:00			
COC Number		552948-01-01	552948-01-01	552948-01-01	552948-01-01			
	UNITS	**RETIREMENT**	**CAPE TIRE SHOP**	**RTA**	**HYANNIS FIRE**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	0.028	<0.0065	0.020	<0.0065	0.040	0.0065	4442530
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	<0.0055	<0.0055	<0.0055	0.020	0.0055	4442530
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	<0.0053	<0.0053	0.020	0.0053	4442530
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	<0.0049	<0.0049	0.020	0.0049	4442530
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	<0.0040	<0.0040	0.020	0.0040	4442530
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	<0.0061	<0.0061	0.020	0.0061	4442530
Perfluorobutane Sulfonate (PFBS)	ug/L	0.0091	0.0042	0.0033	0.0051	0.020	0.0019	4442530
Perfluorobutanoic acid	ug/L	0.022	0.012	0.016	0.0075	0.020	0.0066	4442530
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	<0.0043	<0.0043	0.020	0.0043	4442530
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	<0.0066	<0.0066	<0.0066	0.020	0.0066	4442530
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	<0.0057	<0.0057	0.020	0.0057	4442530
Perfluoroheptane sulfonate	ug/L	0.0045	<0.0036	0.0037	<0.0036	0.020	0.0036	4442530
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.031	0.014	0.018	0.0064	0.020	0.0047	4442530
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.11	0.045	0.048	0.031	0.020	0.0040	4442530
Perfluorohexanoic Acid (PFHxA)	ug/L	0.062	0.027	0.036	0.012	0.020	0.0046	4442530
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.034	0.019	0.023	0.012	0.020	0.0053	4442530
Perfluorononanoic Acid (PFNA)	ug/L	0.016	0.0051	0.0082	<0.0046	0.020	0.0046	4442530
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.041	0.0084	0.0060	<0.0058	0.020	0.0058	4442530
Perfluorooctane Sulfonate (PFOS)	ug/L	0.23	0.10	0.12	0.046	0.020	0.0033	4442530
Perfluoropentanoic Acid (PFPeA)	ug/L	0.071	0.037	0.052	0.019	0.020	0.0036	4442530
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	<0.0052	<0.0052	0.020	0.0052	4442530
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	<0.0032	<0.0032	0.020	0.0032	4442530
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	<0.0037	<0.0037	<0.0037	0.020	0.0037	4442530
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	87	81	90	90	N/A	N/A	4442530
13C4-Perfluorooctanoic acid	%	87	88	90	96	N/A	N/A	4442530
13C8-Perfluorooctanesulfonamide	%	81	83	75	73	N/A	N/A	4442530

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

RESULTS OF ANALYSES OF WATER

Maxxam ID		CCM535			
Sampling Date		2016/03/30 12:00			
COC Number		552948-01-01			
	UNITS	**QC**	**RDL**	**MDL**	**QC Batch**
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.040	0.0065	4442530
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4442530
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4442530
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4442530
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4442530
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4442530
Perfluorobutane Sulfonate (PFBS)	ug/L	0.0045	0.020	0.0019	4442530
Perfluorobutanoic acid	ug/L	0.0076	0.020	0.0066	4442530
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4442530
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4442530
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4442530
Perfluoroheptane sulfonate	ug/L	<0.0036	0.020	0.0036	4442530
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.0056	0.020	0.0047	4442530
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.026	0.020	0.0040	4442530
Perfluorohexanoic Acid (PFHxA)	ug/L	0.013	0.020	0.0046	4442530
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.015	0.020	0.0053	4442530
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4442530
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4442530
Perfluorooctane Sulfonate (PFOS)	ug/L	0.046	0.020	0.0033	4442530
Perfluoropentanoic Acid (PFPeA)	ug/L	0.017	0.020	0.0036	4442530
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4442530
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4442530
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4442530
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	98	N/A	N/A	4442530
13C4-Perfluorooctanoic acid	%	88	N/A	N/A	4442530
13C8-Perfluorooctanesulfonamide	%	85	N/A	N/A	4442530

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

TEST SUMMARY

Maxxam ID: CCM531
Sample ID: RETIREMENT
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/03/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442530	2016/04/04	2016/04/05	Sin Chii Chia

Maxxam ID: CCM532
Sample ID: CAPE TIRE SHOP
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/03/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442530	2016/04/04	2016/04/05	Sin Chii Chia

Maxxam ID: CCM533
Sample ID: RTA
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/03/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442530	2016/04/04	2016/04/05	Sin Chii Chia

Maxxam ID: CCM534
Sample ID: HYANNIS FIRE
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/03/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442530	2016/04/04	2016/04/05	Sin Chii Chia

Maxxam ID: CCM535
Sample ID: QC
Matrix: Water

Collected: 2016/03/30
Shipped:
Received: 2016/03/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4442530	2016/04/04	2016/04/05	Sin Chii Chia

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GENERAL COMMENTS

RESULTS OF ANALYSES OF WATER

PFOS and PFOA in water: Perfluorinated Compounds (PFCs) in Water: Elevated 6:2 Fluorotelomer sulfonate RDL due to low level calibration performance.

Results relate only to the items tested.

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Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4442530	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/05		79	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/05		86	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/05		76	%	60 - 120
4442530	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/04/05		79	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/05		82	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/05		78	%	60 - 120
4442530	SCH	Matrix Spike(CCM531)	6:2 Fluorotelomer sulfonate	2016/04/05		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/05		118	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/05		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/05		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/05		102	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/05		90	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/05		98	%	70 - 130
			Perfluorobutanoic acid	2016/04/05		97	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/05		84	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/05		96	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/05		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/05		92	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/05		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/05		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/05		102	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/05		100	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/05		102	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/05		104	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/05		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/05		107	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/05		111	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/05		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/05		100	%	70 - 130
4442530	SCH	Matrix Spike DUP(CCM531)	6:2 Fluorotelomer sulfonate	2016/04/05		102	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/05		111	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/05		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/05		107	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/05		102	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/05		95	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/05		105	%	70 - 130
			Perfluorobutanoic acid	2016/04/05		102	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/05		81	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/05		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/05		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/05		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/05		105	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/05		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/05		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/05		111	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/05		104	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/05		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/05		99	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/05		103	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/05		99	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/05		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/05		102	%	70 - 130
4442530	SCH	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/04/05	6.7		%	30

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Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2016/04/05	6.1		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/05	4.6		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/05	4.6		%	30
			N-methylperfluorooctane sulfonamide	2016/04/05	0.39		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/05	5.2		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/05	7.1		%	30
			Perfluorobutanoic acid	2016/04/05	5.0		%	30
			Perfluorodecane Sulfonate	2016/04/05	3.4		%	30
			Perfluoroheptane sulfonate	2016/04/05	1.3		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/05	6.4		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/05	2.1		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/05	1.5		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/05	4.1		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/05	3.2		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/05	9.8		%	30
			Perfluorotetradecanoic Acid	2016/04/05	1.8		%	30
			Perfluorotridecanoic Acid	2016/04/05	2.3		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/05	1.2		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/05	3.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/05	11		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/05	0.81		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/05	2.2		%	30
4442530	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/05		91	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/05		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/05		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/05		103	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/05		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/05		110	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/05		113	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/05		115	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/05		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/05		111	%	70 - 130
			Perfluorobutanoic acid	2016/04/05		91	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/05		87	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/05		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/05		103	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/05		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/05		101	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/05		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/05		108	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/05		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/05		112	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/05		115	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/05		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/05		108	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/05		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/05		109	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/05		102	%	70 - 130
4442530	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/05		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/05		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/05		95	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/05	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/05	<0.0055		ug/L	

Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/04/05	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/05	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/05	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/05	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/05	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/04/05	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/04/05	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/04/05	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/05	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/05	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/05	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/05	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/05	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/05	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/04/05	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/04/05	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/05	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/05	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/05	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/05	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/05	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Maxxam Job #: B663085
Report Date: 2016/04/14

Barnstable County Dept. of Health and Env.
Client Project #: PFC
Site Location: 92285

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

INVOICE TO:
Company Name: #29803 Cape Cod Comission
Attention: Tom Cambareri
Address: 3225 Main Street
Barnstable MA 02630
Tel: (508) 362-3828 x1234 Fax:
Email: tcambareri@capecodcommission.org

REPORT TO:
Company Name: SAME
Attention:
Address:
Tel: Fax:
Email:

PROJECT INFORMATION:
Quotation #:
P.O. #:
Project: BETA
Project Name:
Site #:
Sampled By:

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 528190
COC #: C#528190-01-01
Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCs	# of Bottles	Comments
1		PC-34S	4/14/2016	10:30	water		537 PFCs	1	
2		PC-34D	↓	10:15	↓		↓	↓	
3		PC-35S	↓	11:15	↓		↓	↓	
4		PC-35D	↓	10:50	↓		↓	↓	
5		PC-36S	↓	11:45	↓		↓	↓	
6		PC-36D	↓	12:10	↓		↓	↓	
7		OW-2S	↓	13:00	↓		↓	↓	
8		OW-2D	↓	13:40	↓		↓	↓	
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	4/14/16	16:00				

Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt | Custody Seal Yes No | Present | Intact

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	BFTA
	Barnstable MA 02630			Project Name:	
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	528190
COC #:	Project Manager:
C#528190-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ______	
☐ Table ___	☐ PWQO	
	☐ Other ______	

Include Criteria on Certificate of Analysis (Y/N)? ______

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ ☐
Rush Confirmation Number: ______ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Analysis Requested	# of Bottles	Comments
1		PRW-4 INFLUENT	4/14/2016	9:00	water		537 PFCs	1	
2		MID-POINT		9:00				1	
3		EFFLUENT		9:00				1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	4/14/16	16:00				

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
		Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/22
Report #: R3969718
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B675760
Received: 2016/04/15, 14:50

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	6	2016/04/19	2016/04/20	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	2	2016/04/20	2016/04/21	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation is a NELAP accredited laboratory. Certificates #04012 and #4079-001. This certificate shall not be reproduced except in full, without the written approval of Maxxam.

Maxxam
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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CEW972	CEW973	CEW974	CEW975			
Sampling Date		2016/04/14 10:30	2016/04/14 10:15	2016/04/14 11:15	2016/04/14 10:50			
COC Number		528190-01-01	528190-01-01	528190-01-01	528190-01-01			
	UNITS	**PC-34S**	**PC-34D**	**PC-35S**	**PC-35D**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters								
6:2 Fluorotelomer sulfonate	ug/L	0.018	0.21	0.020	0.13	0.020	0.0065	4464604
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.012	0.0066	0.020	0.020	0.0055	4464604
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	<0.0053	<0.0053	0.020	0.0053	4464604
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	<0.0049	<0.0049	0.020	0.0049	4464604
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	<0.0040	<0.0040	0.020	0.0040	4464604
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	<0.0061	<0.0061	0.020	0.0061	4464604
Perfluorobutane Sulfonate (PFBS)	ug/L	0.059	0.094	0.048	0.085	0.020	0.0019	4464604
Perfluorobutanoic acid	ug/L	0.025	0.089	0.11	0.088	0.020	0.0066	4464604
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	0.0046	<0.0043	0.020	0.0043	4464604
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.0087	0.013	0.0082	0.020	0.0066	4464604
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	<0.0057	<0.0057	0.020	0.0057	4464604
Perfluoroheptane sulfonate	ug/L	0.036	0.042	0.037	0.067	0.020	0.0036	4464604
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.10	0.21	0.17	0.18	0.020	0.0047	4464604
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.68	0.62	0.59	0.61	0.020	0.0040	4464604
Perfluorohexanoic Acid (PFHxA)	ug/L	0.18	0.49	0.37	0.45	0.020	0.0046	4464604
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.072	0.15	0.13	0.14	0.020	0.0053	4464604
Perfluorononanoic Acid (PFNA)	ug/L	0.037	0.23	0.055	0.13	0.020	0.0046	4464604
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	<0.0058	<0.0058	<0.0058	0.020	0.0058	4464604
Perfluorooctane Sulfonate (PFOS)	ug/L	1.3 (1)	1.4 (1)	1.7 (1)	2.0 (1)	0.80	0.14	4462967
Perfluoropentanoic Acid (PFPeA)	ug/L	0.080	0.31	0.23	0.28	0.020	0.0036	4464604
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	<0.0052	<0.0052	0.020	0.0052	4464604
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	<0.0032	<0.0032	0.020	0.0032	4464604
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.018	0.014	0.030	<0.0037	0.020	0.0037	4464604
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	103	112	114	108	N/A	N/A	4462967
13C4-Perfluorooctanoic acid	%	110	117	114	119	N/A	N/A	4464604
13C8-Perfluorooctanesulfonamide	%	104	103	89	96	N/A	N/A	4464604

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CEW976				CEW977			
Sampling Date		2016/04/14 11:45				2016/04/14 12:10			
COC Number		528190-01-01				528190-01-01			
	UNITS	PC-36S	RDL	MDL	QC Batch	PC-36D	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.0069	0.020	0.0065	4464604	0.057	0.020	0.0065	4464604
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4464604	0.020	0.020	0.0055	4464604
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4464604	<0.0053	0.020	0.0053	4464604
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4464604	<0.0049	0.020	0.0049	4464604
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4464604	<0.0040	0.020	0.0040	4464604
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4464604	<0.0061	0.020	0.0061	4464604
Perfluorobutane Sulfonate (PFBS)	ug/L	0.0066	0.020	0.0019	4464604	0.071	0.020	0.0019	4464604
Perfluorobutanoic acid	ug/L	0.0076	0.020	0.0066	4464604	0.10	0.020	0.0066	4464604
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4464604	0.0045	0.020	0.0043	4464604
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4464604	0.012	0.020	0.0066	4464604
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4464604	<0.0057	0.020	0.0057	4464604
Perfluoroheptane sulfonate	ug/L	0.0049	0.020	0.0036	4464604	0.059	0.020	0.0036	4464604
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.012	0.020	0.0047	4464604	0.20	0.020	0.0047	4464604
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.031	0.020	0.0040	4464604	0.72	0.020	0.0040	4464604
Perfluorohexanoic Acid (PFHxA)	ug/L	0.033	0.020	0.0046	4464604	0.47	0.020	0.0046	4464604
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	0.020	0.0053	4464604	0.15	0.020	0.0053	4464604
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4464604	0.095	0.020	0.0046	4464604
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4464604	<0.0058	0.020	0.0058	4464604
Perfluorooctane Sulfonate (PFOS)	ug/L	0.035	0.020	0.0033	4464604	3.1 (1)	0.80	0.14	4462967
Perfluoropentanoic Acid (PFPeA)	ug/L	0.026	0.020	0.0036	4464604	0.26	0.020	0.0036	4464604
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4464604	<0.0052	0.020	0.0052	4464604
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4464604	<0.0032	0.020	0.0032	4464604
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4464604	0.038	0.020	0.0037	4464604
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	118	N/A	N/A	4464604	118	N/A	N/A	4462967
13C4-Perfluorooctanoic acid	%	119	N/A	N/A	4464604	109	N/A	N/A	4464604
13C8-Perfluorooctanesulfonamide	%	77	N/A	N/A	4464604	90	N/A	N/A	4464604

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CEW978				CEW979			
Sampling Date		2016/04/14 13:00				2016/04/14 13:40			
COC Number		528190-01-01				528190-01-01			
	UNITS	**OW-2S**	**RDL**	**MDL**	**QC Batch**	**OW-2D**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.15	0.020	0.0065	4464604	0.0092	0.020	0.0065	4464604
8:2 Fluorotelomer sulfonate	ug/L	0.017	0.020	0.0055	4464604	<0.0055	0.020	0.0055	4464604
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4464604	<0.0053	0.020	0.0053	4464604
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4464604	<0.0049	0.020	0.0049	4464604
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4464604	<0.0040	0.020	0.0040	4464604
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4464604	<0.0061	0.020	0.0061	4464604
Perfluorobutane Sulfonate (PFBS)	ug/L	0.080	0.020	0.0019	4464604	<0.0019	0.020	0.0019	4464604
Perfluorobutanoic acid	ug/L	0.25	0.020	0.0066	4464604	<0.0066	0.020	0.0066	4464604
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4464604	<0.0043	0.020	0.0043	4464604
Perfluorodecanoic Acid (PFDA)	ug/L	0.0098	0.020	0.0066	4464604	<0.0066	0.020	0.0066	4464604
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4464604	<0.0057	0.020	0.0057	4464604
Perfluoroheptane sulfonate	ug/L	0.059	0.020	0.0036	4464604	<0.0036	0.020	0.0036	4464604
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.48	0.020	0.0047	4464604	<0.0047	0.020	0.0047	4464604
Perfluorohexane Sulfonate (PFHxS)	ug/L	2.6 (1)	0.80	0.16	4462967	<0.0040	0.020	0.0040	4464604
Perfluorohexanoic Acid (PFHxA)	ug/L	1.0 (1)	0.80	0.17	4462967	<0.0046	0.020	0.0046	4464604
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.25	0.020	0.0053	4464604	<0.0053	0.020	0.0053	4464604
Perfluorononanoic Acid (PFNA)	ug/L	0.13	0.020	0.0046	4464604	<0.0046	0.020	0.0046	4464604
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.0067	0.020	0.0058	4464604	<0.0058	0.020	0.0058	4464604
Perfluorooctane Sulfonate (PFOS)	ug/L	2.4 (1)	0.80	0.14	4462967	0.0060	0.020	0.0033	4464604
Perfluoropentanoic Acid (PFPeA)	ug/L	1.1 (1)	0.80	0.21	4462967	<0.0036	0.020	0.0036	4464604
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4464604	<0.0052	0.020	0.0052	4464604
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4464604	<0.0032	0.020	0.0032	4464604
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.028	0.020	0.0037	4464604	<0.0037	0.020	0.0037	4464604
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	118	N/A	N/A	4462967	107	N/A	N/A	4464604
13C4-Perfluorooctanoic acid	%	114	N/A	N/A	4464604	121	N/A	N/A	4464604
13C8-Perfluorooctanesulfonamide	%	86	N/A	N/A	4464604	96	N/A	N/A	4464604

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: CEW972
Sample ID: PC-34S
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW973
Sample ID: PC-34D
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW974
Sample ID: PC-35S
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW975
Sample ID: PC-35D
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW976
Sample ID: PC-36S
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW977
Sample ID: PC-36D
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW978
Sample ID: OW-2S
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID:	CEW979	**Collected:**	2016/04/14
Sample ID:	OW-2D	**Shipped:**	
Matrix:	Water	**Received:**	2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

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GENERAL COMMENTS

Sample CEW972, PFOS and PFOA in water: Test repeated.
Sample CEW973, PFOS and PFOA in water: Test repeated.
Sample CEW974, PFOS and PFOA in water: Test repeated.
Sample CEW975, PFOS and PFOA in water: Test repeated.
Sample CEW977, PFOS and PFOA in water: Test repeated.
Sample CEW978, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam
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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4462967	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/20		106	%	70 - 130
4462967	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/04/20		100	%	70 - 130
4462967	SCH	Matrix Spike(CEW972)	Perfluorohexane Sulfonate (PFHxS)	2016/04/20		98	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/20		106	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/20		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		104	%	70 - 130
4462967	SCH	Matrix Spike DUP(CEW972)	Perfluorohexane Sulfonate (PFHxS)	2016/04/20		95	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/20		107	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/20		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		108	%	70 - 130
4462967	SCH	MS/MSD RPD	Perfluorohexane Sulfonate (PFHxS)	2016/04/20	3.3		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/20	0.67		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/20	4.3		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/20	3.7		%	30
4462967	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/20		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/20		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/20		110	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		109	%	70 - 130
4462967	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/20		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/20	<0.17		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/20	<0.21		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/20	<0.14		ug/L	
4464604	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/21		109	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		116	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/21		122	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/21		112	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/21		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/21		115	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/21		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/21		95	%	70 - 130
			Perfluorobutanoic acid	2016/04/21		109	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/21		99	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/21		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21		113	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21		107	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/21		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/21		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/21		112	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/21		101	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/21		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21		95	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/21		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/21		104	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21		112	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/21		111	%	70 - 130
4464604	SCH	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/04/21		120	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		122	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		99	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21		108	%	70 - 130

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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2016/04/21		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/21		106	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/21		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/21		110	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/21		92	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/21		91	%	70 - 130
			Perfluorobutanoic acid	2016/04/21		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/21		83	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/21		88	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21		96	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21		98	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/21		91	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/21		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/21		97	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/21		94	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/21		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21		97	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/21		93	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/21		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21		91	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/21		95	%	70 - 130
4464604	SCH	RPD	6:2 Fluorotelomer sulfonate	2016/04/21	7.9		%	30
			8:2 Fluorotelomer sulfonate	2016/04/21	10		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/21	5.3		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/21	9.7		%	30
			N-methylperfluorooctane sulfonamide	2016/04/21	4.6		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/21	13		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/21	3.9		%	30
			Perfluorobutanoic acid	2016/04/21	13		%	30
			Perfluorodecane Sulfonate	2016/04/21	18		%	30
			Perfluoroheptane sulfonate	2016/04/21	12		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21	16		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21	8.7		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/21	20		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/21	4.3		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21	4.1		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/21	15		%	30
			Perfluorotetradecanoic Acid	2016/04/21	7.6		%	30
			Perfluorotridecanoic Acid	2016/04/21	4.8		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21	2.3		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/21	8.5		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/21	3.9		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21	21		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/21	16		%	30
4464604	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/21		121	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		122	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		105	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/21	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/21	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/21	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/21	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/21	<0.0061		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/04/21	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/04/21	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/04/21	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/04/21	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/21	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/21	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/21	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/04/21	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/04/21	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/21	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/21	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/21	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Maxxam Job #: B675760
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #29803 Cape Cod Comission	Company Name: SAME	Quotation #:	Maxxam Job #: / Bottle Order #: 528190
Attention: Tom Cambareri	Attention:	P.O. #:	
Address: 3225 Main Street, Barnstable MA 02630	Address:	Project: BFTA	COC #: C#528190-01-01 / Project Manager: Melissa DiGrazia
Tel: (508) 362-3828 x1234 Fax:	Tel: Fax:	Project Name:	
Email: tcambareri@capecodcommission.org	Email:	Site #:	
		Sampled By: Team	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Res/Park / Medium/Fine; Table 2 / Ind/Comm / Coarse; Table 3 / Agri/Other / For RSC; Table ___

Other Regulations: CCME / Sanitary Sewer Bylaw; Reg 558 / Storm Sewer Bylaw; MISA / Municipality; PWQO; Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	537/PFAS	# of Bottles	Comments
1		PC-34S	4/14/2016	10:30	water	✓	1	
2		PC-34D	↓	10:15	↓	↓	↓	
3		PC-35S	↓	11:15	↓	↓	↓	
4		PC-35D	↓	10:50	↓	↓	↓	
5		PC-36S	↓	11:45	↓	↓	↓	
6		PC-36D	↓	12:10	↓	↓	↓	
7		OW-2S	↓	13:00	↓	↓	↓	
8		OW-2D	↓	13:40	↓	↓	↓	
9								
10								

15-Apr-16 14:50
Melissa DiGrazia
B675760
GK1 ENV-1104

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	4/14/16	16:00	[signature] ASHITHA SUKUMARAN	2016/04/15	14:50	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.5/6.6/2.9	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/04/22
Report #: R3969719
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B675761
Received: 2016/04/15, 14:50

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2016/04/19	2016/04/20	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	2	2016/04/20	2016/04/21	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CEW980				CEW981	CEW982			
Sampling Date		2016/04/14 09:00				2016/04/14 09:00	2016/04/14 09:00			
COC Number		528190-01-01				528190-01-01	528190-01-01			
	UNITS	**PRW-4 INFLUENT**	**RDL**	**MDL**	**QC Batch**	**MID-POINT**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.43	0.020	0.0065	4464604	0.073	<0.0065	0.020	0.0065	4464604
8:2 Fluorotelomer sulfonate	ug/L	0.17	0.020	0.0055	4464604	0.019	<0.0055	0.020	0.0055	4464604
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4464604	<0.0053	<0.0053	0.020	0.0053	4464604
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4464604	<0.0049	<0.0049	0.020	0.0049	4464604
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4464604	<0.0040	<0.0040	0.020	0.0040	4464604
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4464604	<0.0061	<0.0061	0.020	0.0061	4464604
Perfluorobutane Sulfonate (PFBS)	ug/L	0.091	0.020	0.0019	4464604	0.017	<0.0019	0.020	0.0019	4464604
Perfluorobutanoic acid	ug/L	0.074	0.020	0.0066	4464604	0.043	<0.0066	0.020	0.0066	4464604
Perfluorodecane Sulfonate	ug/L	0.0051	0.020	0.0043	4464604	<0.0043	<0.0043	0.020	0.0043	4464604
Perfluorodecanoic Acid (PFDA)	ug/L	0.0073	0.020	0.0066	4464604	<0.0066	<0.0066	0.020	0.0066	4464604
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4464604	<0.0057	<0.0057	0.020	0.0057	4464604
Perfluoroheptane sulfonate	ug/L	0.12	0.020	0.0036	4464604	0.018	<0.0036	0.020	0.0036	4464604
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.12	0.020	0.0047	4464604	0.029	<0.0047	0.020	0.0047	4464604
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.4 (1)	0.80	0.16	4462967	0.17	<0.0040	0.020	0.0040	4464604
Perfluorohexanoic Acid (PFHxA)	ug/L	0.35	0.020	0.0046	4464604	0.094	<0.0046	0.020	0.0046	4464604
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.14	0.020	0.0053	4464604	0.026	<0.0053	0.020	0.0053	4464604
Perfluorononanoic Acid (PFNA)	ug/L	0.061	0.020	0.0046	4464604	0.0094	<0.0046	0.020	0.0046	4464604
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.013	0.020	0.0058	4464604	<0.0058	<0.0058	0.020	0.0058	4464604
Perfluorooctane Sulfonate (PFOS)	ug/L	4.8 (1)	0.80	0.14	4462967	0.61	<0.0033	0.020	0.0033	4464604
Perfluoropentanoic Acid (PFPeA)	ug/L	0.22	0.020	0.0036	4464604	0.069	<0.0036	0.020	0.0036	4464604
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4464604	<0.0052	<0.0052	0.020	0.0052	4464604
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4464604	<0.0032	<0.0032	0.020	0.0032	4464604
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.075	0.020	0.0037	4464604	0.0058	<0.0037	0.020	0.0037	4464604
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	115	N/A	N/A	4462967	122	108	N/A	N/A	4464604
13C4-Perfluorooctanoic acid	%	111	N/A	N/A	4464604	128	114	N/A	N/A	4464604
13C8-Perfluorooctanesulfonamide	%	90	N/A	N/A	4464604	94	92	N/A	N/A	4464604

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: CEW980
Sample ID: PRW-4 INFLUENT
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW981
Sample ID: MID-POINT
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

Maxxam ID: CEW982
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/04/14
Shipped:
Received: 2016/04/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4464604	2016/04/20	2016/04/21	Sin Chii Chia

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GENERAL COMMENTS

Sample CEW980, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4462967	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/04/20		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20		98	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		104	%	70 - 130
4462967	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/04/20		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20		95	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		108	%	70 - 130
4462967	SCH	MS/MSD RPD	Perfluorohexane Sulfonate (PFHxS)	2016/04/20	3.3		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/20	3.7		%	30
4462967	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/20		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/20		109	%	70 - 130
4462967	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/20		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/20	<0.16		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/20	<0.14		ug/L	
4464604	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/04/21		109	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		116	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/21		122	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/21		112	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/21		110	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/21		115	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/21		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/21		95	%	70 - 130
			Perfluorobutanoic acid	2016/04/21		109	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/21		99	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/21		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21		113	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21		107	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/21		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/21		105	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/21		112	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/21		101	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/21		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21		95	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/21		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/21		104	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21		112	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/21		111	%	70 - 130
4464604	SCH	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/04/21		120	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		122	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		99	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21		108	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/04/21		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/04/21		106	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/04/21		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/04/21		110	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/04/21		92	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/04/21		91	%	70 - 130
			Perfluorobutanoic acid	2016/04/21		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/04/21		83	%	70 - 130
			Perfluoroheptane sulfonate	2016/04/21		88	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21		96	%	70 - 130

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21		98	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/04/21		91	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/04/21		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/04/21		97	%	70 - 130
			Perfluorotetradecanoic Acid	2016/04/21		94	%	70 - 130
			Perfluorotridecanoic Acid	2016/04/21		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21		97	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/04/21		93	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/04/21		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21		91	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/04/21		95	%	70 - 130
4464604	SCH	RPD	6:2 Fluorotelomer sulfonate	2016/04/21	7.9		%	30
			8:2 Fluorotelomer sulfonate	2016/04/21	10		%	30
			N-ethylperfluorooctane sulfonamide	2016/04/21	5.3		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/04/21	9.7		%	30
			N-methylperfluorooctane sulfonamide	2016/04/21	4.6		%	30
			N-methylperfluorooctanesulfonamidol	2016/04/21	13		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/04/21	3.9		%	30
			Perfluorobutanoic acid	2016/04/21	13		%	30
			Perfluorodecane Sulfonate	2016/04/21	18		%	30
			Perfluoroheptane sulfonate	2016/04/21	12		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21	16		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21	8.7		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/04/21	20		%	30
			Perfluorononanoic Acid (PFNA)	2016/04/21	4.3		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21	4.1		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/04/21	15		%	30
			Perfluorotetradecanoic Acid	2016/04/21	7.6		%	30
			Perfluorotridecanoic Acid	2016/04/21	4.8		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21	2.3		%	30
			Perfluorodecanoic Acid (PFDA)	2016/04/21	8.5		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/04/21	3.9		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21	21		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/04/21	16		%	30
4464604	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/04/21		121	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/04/21		122	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/04/21		105	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/04/21	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/04/21	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/04/21	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/04/21	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/04/21	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/04/21	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/04/21	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/04/21	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/04/21	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/04/21	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/04/21	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/04/21	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/04/21	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/04/21	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/04/21	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/04/21	<0.0036		ug/L	

Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorotetradecanoic Acid	2016/04/21	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/04/21	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/04/21	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/04/21	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/04/21	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/04/21	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/04/21	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B675761
Report Date: 2016/04/22

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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15-Apr-16 14:50
Melissa DiGrazia
B675761
ABH ENV-569

Page 1 of 1

INVOICE TO:	
Company Name:	#29803 Cape Cod Comission
Attention:	Tom Cambareri
Address:	3225 Main Street
	Barnstable MA 02630
Tel:	(508) 362-3828 x1234 Fax:
Email:	tcambareri@capecodcommission.org

REPORT TO:	
Company Name:	SAME
Attention:	
Address:	
Tel:	Fax:
Email:	

PROJECT INFORMATION:	
Quotation #:	
P.O. #:	
Project:	BFTA
Project Name:	
Site #:	
Sampled By:	Team

Bottle Order #: 528190
Project Manager: Melissa DiGrazia
C#528190-01-01

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Res/Park / Medium/Fine / Table 2 / Ind/Comm / Coarse / Table 3 / Agri/Other / For RSC / Table ___

Other Regulations: CCME / Sanitary Sewer Bylaw / Reg 558 / Storm Sewer Bylaw / MISA / Municipality ___ / PWQO / Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCs	# of Bottles	Comments
1		PRW-4 INFLUENT	4/14/2016	9:00	water		537 PFCs	1	
2		MID-POINT	↓	9:00	↓		↓	1	
3		EFFLUENT	↓	9:00	↓		↓	1	
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	4/14/16	16:00	[signature] ASHITHA SUKUMAR	2016/04/15	14:50	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	2.9 / 3.0 / 3.8	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: BFTA
Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/05/30
Report #: R4009777
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B697559
Received: 2016/05/13, 15:00

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	5	2016/05/18	2016/05/27	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	2	2016/05/27	2016/05/30	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CIX578				CIX579			
Sampling Date		2016/04/28 09:30				2016/04/28 09:30			
COC Number		528190-01-01				528190-01-01			
	UNITS	PRW-4 4/28/16	RDL	MDL	QC Batch	VESSEL 2 EFFLUENT	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.70	0.80	0.21	4503158	<0.020	0.020	0.0065	4515099
8:2 Fluorotelomer sulfonate	ug/L	<0.28	0.80	0.28	4503158	<0.020	0.020	0.0055	4515099
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	0.80	0.28	4503158	<0.020	0.020	0.0053	4515099
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	0.80	0.29	4503158	<0.020	0.020	0.0049	4515099
N-methylperfluorooctane sulfonamide	ug/L	<0.15	0.80	0.15	4503158	<0.020	0.020	0.0040	4515099
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	0.80	0.30	4503158	<0.020	0.020	0.0061	4515099
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23	0.80	0.23	4503158	<0.020	0.020	0.0019	4515099
Perfluorobutanoic acid	ug/L	0.24	0.80	0.20	4503158	<0.020	0.020	0.0066	4515099
Perfluorodecane Sulfonate	ug/L	<0.22	0.80	0.22	4503158	<0.020	0.020	0.0043	4515099
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	0.80	0.20	4503158	<0.020	0.020	0.0066	4515099
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	0.80	0.16	4503158	<0.020	0.020	0.0057	4515099
Perfluoroheptane sulfonate	ug/L	0.38	0.80	0.27	4503158	<0.020	0.020	0.0036	4515099
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.27	0.80	0.27	4503158	<0.020	0.020	0.0047	4515099
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.8	0.80	0.16	4503158	<0.020	0.020	0.0040	4515099
Perfluorohexanoic Acid (PFHxA)	ug/L	0.34	0.80	0.17	4503158	<0.020	0.020	0.0046	4515099
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.20	0.80	0.20	4503158	<0.020	0.020	0.0053	4515099
Perfluorononanoic Acid (PFNA)	ug/L	<0.19	0.80	0.19	4503158	<0.020	0.020	0.0046	4515099
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	0.80	0.23	4503158	<0.020	0.020	0.0058	4515099
Perfluorooctane Sulfonate (PFOS)	ug/L	6.3	0.80	0.14	4503158	<0.020	0.020	0.0033	4515099
Perfluoropentanoic Acid (PFPeA)	ug/L	0.21	0.80	0.21	4503158	<0.020	0.020	0.0036	4515099
Perfluorotetradecanoic Acid	ug/L	<0.20	0.80	0.20	4503158	<0.020	0.020	0.0052	4515099
Perfluorotridecanoic Acid	ug/L	<0.30	0.80	0.30	4503158	<0.020	0.020	0.0032	4515099
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14	0.80	0.14	4503158	<0.020	0.020	0.0037	4515099
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	88	N/A	N/A	4503158	76	N/A	N/A	4515099
13C4-Perfluorooctanoic acid	%	94	N/A	N/A	4503158	80	N/A	N/A	4515099
13C8-Perfluorooctanesulfonamide	%	98	N/A	N/A	4503158	76	N/A	N/A	4515099

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CIX580	CIX581	CIX581			
Sampling Date		2016/05/03 09:30	2016/05/12 12:10	2016/05/12 12:10			
COC Number		528190-01-01	528190-01-01	528190-01-01			
	UNITS	**PRW-4 5/3/16**	**PC-11**	**PC-11 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters							
6:2 Fluorotelomer sulfonate	ug/L	1.3	2.6	2.7	0.80	0.21	4503158
8:2 Fluorotelomer sulfonate	ug/L	0.31	1.1	1.2	0.80	0.28	4503158
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	<0.28	0.80	0.28	4503158
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	<0.29	0.80	0.29	4503158
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	<0.15	0.80	0.15	4503158
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4503158
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23	0.35	0.35	0.80	0.23	4503158
Perfluorobutanoic acid	ug/L	<0.20	0.38	0.35	0.80	0.20	4503158
Perfluorodecane Sulfonate	ug/L	<0.22	<0.22	<0.22	0.80	0.22	4503158
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	<0.20	<0.20	0.80	0.20	4503158
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	<0.16	0.80	0.16	4503158
Perfluoroheptane sulfonate	ug/L	0.36	0.50	0.48	0.80	0.27	4503158
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.27	0.47	0.44	0.80	0.27	4503158
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.9	3.3	3.4	0.80	0.16	4503158
Perfluorohexanoic Acid (PFHxA)	ug/L	0.62	1.5	1.4	0.80	0.17	4503158
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.20	0.43	0.47	0.80	0.20	4503158
Perfluorononanoic Acid (PFNA)	ug/L	<0.19	0.26	<0.19	0.80	0.19	4503158
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	<0.23	0.80	0.23	4503158
Perfluorooctane Sulfonate (PFOS)	ug/L	16	32	33	0.80	0.14	4503158
Perfluoropentanoic Acid (PFPeA)	ug/L	0.30	1.2	1.0	0.80	0.21	4503158
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.20	<0.20	0.80	0.20	4503158
Perfluorotridecanoic Acid	ug/L	<0.30	<0.30	<0.30	0.80	0.30	4503158
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14	0.24	0.25	0.80	0.14	4503158
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	86	85	91	N/A	N/A	4503158
13C4-Perfluorooctanoic acid	%	91	92	96	N/A	N/A	4503158
13C8-Perfluorooctanesulfonamide	%	93	95	94	N/A	N/A	4503158

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CIX582				CIX583			
Sampling Date		2016/05/12 12:30				2016/05/12 12:40			
COC Number		528190-01-01				528190-01-01			
	UNITS	**PC-12**	**RDL**	**MDL**	**QC Batch**	**PRW 4 INFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.13	0.020	0.0065	4515099	0.68	0.80	0.21	4503158
8:2 Fluorotelomer sulfonate	ug/L	0.026	0.020	0.0055	4515099	<0.28	0.80	0.28	4503158
N-ethylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0053	4515099	<0.28	0.80	0.28	4503158
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.020	0.020	0.0049	4515099	<0.29	0.80	0.29	4503158
N-methylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0040	4515099	<0.15	0.80	0.15	4503158
N-methylperfluorooctanesulfonamidol	ug/L	<0.020	0.020	0.0061	4515099	<0.30	0.80	0.30	4503158
Perfluorobutane Sulfonate (PFBS)	ug/L	0.094	0.020	0.0019	4515099	<0.23	0.80	0.23	4503158
Perfluorobutanoic acid	ug/L	0.081	0.020	0.0066	4515099	<0.20	0.80	0.20	4503158
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0043	4515099	<0.22	0.80	0.22	4503158
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0066	4515099	<0.20	0.80	0.20	4503158
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0057	4515099	<0.16	0.80	0.16	4503158
Perfluoroheptane sulfonate	ug/L	0.073	0.020	0.0036	4515099	0.37	0.80	0.27	4503158
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.16	0.020	0.0047	4515099	<0.27	0.80	0.27	4503158
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.94	0.80	0.16	4503158	1.8	0.80	0.16	4503158
Perfluorohexanoic Acid (PFHxA)	ug/L	0.42	0.020	0.0046	4515099	0.44	0.80	0.17	4503158
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.15	0.020	0.0053	4515099	<0.20	0.80	0.20	4503158
Perfluorononanoic Acid (PFNA)	ug/L	0.094	0.020	0.0046	4515099	<0.19	0.80	0.19	4503158
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.039	0.020	0.0058	4515099	<0.23	0.80	0.23	4503158
Perfluorooctane Sulfonate (PFOS)	ug/L	1.7	0.80	0.14	4503158	6.8	0.80	0.14	4503158
Perfluoropentanoic Acid (PFPeA)	ug/L	0.26	0.020	0.0036	4515099	0.21	0.80	0.21	4503158
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0052	4515099	<0.20	0.80	0.20	4503158
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0032	4515099	<0.30	0.80	0.30	4503158
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0037	4515099	<0.14	0.80	0.14	4503158
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	85	N/A	N/A	4503158	82	N/A	N/A	4503158
13C4-Perfluorooctanoic acid	%	95	N/A	N/A	4515099	78	N/A	N/A	4503158
13C8-Perfluorooctanesulfonamide	%	96	N/A	N/A	4515099	105	N/A	N/A	4503158

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CIX584			
Sampling Date		2016/05/12 12:40			
COC Number		528190-01-01			
	UNITS	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters					
6:2 Fluorotelomer sulfonate	ug/L	<0.020	0.020	0.0065	4515099
8:2 Fluorotelomer sulfonate	ug/L	<0.020	0.020	0.0055	4515099
N-ethylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0053	4515099
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.020	0.020	0.0049	4515099
N-methylperfluorooctane sulfonamide	ug/L	<0.020	0.020	0.0040	4515099
N-methylperfluorooctanesulfonamidol	ug/L	<0.020	0.020	0.0061	4515099
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.020	0.020	0.0019	4515099
Perfluorobutanoic acid	ug/L	<0.020	0.020	0.0066	4515099
Perfluorodecane Sulfonate	ug/L	<0.020	0.020	0.0043	4515099
Perfluorodecanoic Acid (PFDA)	ug/L	<0.020	0.020	0.0066	4515099
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.020	0.020	0.0057	4515099
Perfluoroheptane sulfonate	ug/L	<0.020	0.020	0.0036	4515099
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.020	0.020	0.0047	4515099
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.020	0.020	0.0040	4515099
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.020	0.020	0.0046	4515099
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.020	0.020	0.0053	4515099
Perfluorononanoic Acid (PFNA)	ug/L	<0.020	0.020	0.0046	4515099
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.020	0.020	0.0058	4515099
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.020	0.020	0.0033	4515099
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.020	0.020	0.0036	4515099
Perfluorotetradecanoic Acid	ug/L	<0.020	0.020	0.0052	4515099
Perfluorotridecanoic Acid	ug/L	<0.020	0.020	0.0032	4515099
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.020	0.020	0.0037	4515099
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	102	N/A	N/A	4515099
13C4-Perfluorooctanoic acid	%	101	N/A	N/A	4515099
13C8-Perfluorooctanesulfonamide	%	103	N/A	N/A	4515099

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

TEST SUMMARY

Maxxam ID: CIX578
Sample ID: PRW-4 4/28/16
Matrix: Water

Collected: 2016/04/28
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4503158	2016/05/18	2016/05/27	Colm McNamara

Maxxam ID: CIX579
Sample ID: VESSEL 2 EFFLUENT
Matrix: Water

Collected: 2016/04/28
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4515099	2016/05/27	2016/05/30	Colm McNamara

Maxxam ID: CIX580
Sample ID: PRW-4 5/3/16
Matrix: Water

Collected: 2016/05/03
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4503158	2016/05/18	2016/05/27	Colm McNamara

Maxxam ID: CIX581
Sample ID: PC-11
Matrix: Water

Collected: 2016/05/12
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4503158	2016/05/18	2016/05/27	Colm McNamara

Maxxam ID: CIX581 Dup
Sample ID: PC-11
Matrix: Water

Collected: 2016/05/12
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4503158	2016/05/18	2016/05/27	Colm McNamara

Maxxam ID: CIX582
Sample ID: PC-12
Matrix: Water

Collected: 2016/05/12
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4515099	2016/05/27	2016/05/30	Colm McNamara

Maxxam ID: CIX583
Sample ID: PRW 4 INFLUENT
Matrix: Water

Collected: 2016/05/12
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4503158	2016/05/18	2016/05/27	Colm McNamara

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

TEST SUMMARY

Maxxam ID: CIX584
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/05/12
Shipped:
Received: 2016/05/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4515099	2016/05/27	2016/05/30	Colm McNamara

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GENERAL COMMENTS

Confirmation received to proceed with samples received past method recommended holding time. Due to the stability of PFCs, this is expected to have minimal impact on the data.

Sample CIX578-01 : Perfluorinated Compounds (PFCs): Analysis was performed past sample holding time. This may increase the variability associated with these results.

Sample CIX580-01 : Perfluorinated Compounds (PFCs): Analysis was performed past sample holding time. This may increase the variability associated with these results.

Sample CIX582, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4503158	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/05/27		108	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/27		113	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/27		102	%	60 - 120
4503158	CM5	Matrix Spike(CIX581)	6:2 Fluorotelomer sulfonate	2016/05/27		94	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/05/27		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/05/27		100	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/05/27		78	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/05/27		109	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/05/27		108	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/05/27		109	%	70 - 130
			Perfluorobutanoic acid	2016/05/27		120	%	70 - 130
			Perfluorodecane Sulfonate	2016/05/27		51 (1)	%	70 - 130
			Perfluoroheptane sulfonate	2016/05/27		102	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/05/27		103	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/05/27		114	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/05/27		113	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/05/27		109	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/27		116	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/05/27		114	%	70 - 130
			Perfluorotetradecanoic Acid	2016/05/27		113	%	70 - 130
			Perfluorotridecanoic Acid	2016/05/27		196 (2)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/05/27		108	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/05/27		114	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/05/27		127	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/27		116	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/05/27		NC	%	70 - 130
4503158	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/05/27		79	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/27		78	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/27		80	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/27		105	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/05/27		113	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/05/27		103	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/05/27		104	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/05/27		100	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/05/27		111	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/05/27		106	%	70 - 130
			Perfluorobutanoic acid	2016/05/27		106	%	70 - 130
			Perfluorodecane Sulfonate	2016/05/27		122	%	70 - 130
			Perfluoroheptane sulfonate	2016/05/27		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/05/27		103	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/05/27		111	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/05/27		121	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/05/27		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/27		116	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/05/27		110	%	70 - 130
			Perfluorotetradecanoic Acid	2016/05/27		106	%	70 - 130
			Perfluorotridecanoic Acid	2016/05/27		122	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/05/27		115	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/05/27		129	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/05/27		136 (3)	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/27		114	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/05/27		109	%	70 - 130
4503158	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/05/26		90	%	70 - 130

Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C4-Perfluorooctanoic acid	2016/05/26		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/26		101	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/26	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/05/26	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/05/26	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/05/26	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/05/26	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/05/26	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/05/26	<0.23		ug/L	
			Perfluorobutanoic acid	2016/05/26	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/05/26	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/05/26	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/05/26	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/05/26	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/05/26	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/05/26	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/26	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/05/26	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/05/26	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/05/26	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/05/26	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/05/26	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/05/26	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/26	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/05/26	<0.14		ug/L	
4503158	CM5	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2016/05/27	NC		%	30
			8:2 Fluorotelomer sulfonate	2016/05/27	NC		%	30
			N-ethylperfluorooctane sulfonamide	2016/05/27	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/05/27	NC		%	30
			N-methylperfluorooctane sulfonamide	2016/05/27	NC		%	30
			N-methylperfluorooctanesulfonamidol	2016/05/27	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/05/27	NC		%	30
			Perfluorobutanoic acid	2016/05/27	NC		%	30
			Perfluorodecane Sulfonate	2016/05/27	NC		%	30
			Perfluoroheptane sulfonate	2016/05/27	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/05/27	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/05/27	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/05/27	NC		%	30
			Perfluorononanoic Acid (PFNA)	2016/05/27	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/27	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/05/27	NC		%	30
			Perfluorotetradecanoic Acid	2016/05/27	NC		%	30
			Perfluorotridecanoic Acid	2016/05/27	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/05/27	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2016/05/27	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/05/27	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/27	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/05/27	2.1		%	30
4515099	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/05/30		87	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/30		88	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/30		84	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/30		96	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/05/30		103	%	70 - 130

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Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/05/30		103	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/05/30		96	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/05/30		97	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/05/30		101	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/05/30		105	%	70 - 130
			Perfluorobutanoic acid	2016/05/30		112	%	70 - 130
			Perfluorodecane Sulfonate	2016/05/30		109	%	70 - 130
			Perfluoroheptane sulfonate	2016/05/30		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/05/30		109	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/05/30		107	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/05/30		116	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/05/30		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/30		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/05/30		107	%	70 - 130
			Perfluorotetradecanoic Acid	2016/05/30		95	%	70 - 130
			Perfluorotridecanoic Acid	2016/05/30		81	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/05/30		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/05/30		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/05/30		111	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/30		103	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/05/30		97	%	70 - 130
4515099	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/05/30		94	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/30		94	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/30		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/30		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/05/30		98	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/05/30		100	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/05/30		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/05/30		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/05/30		98	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/05/30		107	%	70 - 130
			Perfluorobutanoic acid	2016/05/30		109	%	70 - 130
			Perfluorodecane Sulfonate	2016/05/30		121	%	70 - 130
			Perfluoroheptane sulfonate	2016/05/30		110	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/05/30		112	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/05/30		117	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/05/30		112	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/05/30		104	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/30		105	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/05/30		104	%	70 - 130
			Perfluorotetradecanoic Acid	2016/05/30		113	%	70 - 130
			Perfluorotridecanoic Acid	2016/05/30		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/05/30		111	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/05/30		123	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/05/30		115	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/30		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/05/30		100	%	70 - 130
4515099	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/05/30	3.9		%	30
			8:2 Fluorotelomer sulfonate	2016/05/30	5.2		%	30
			N-ethylperfluorooctane sulfonamide	2016/05/30	2.6		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/05/30	8.4		%	30
			N-methylperfluorooctane sulfonamide	2016/05/30	1.4		%	30
			N-methylperfluorooctanesulfonamidol	2016/05/30	2.6		%	30

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/05/30	2.3		%	30
			Perfluorobutanoic acid	2016/05/30	3.1		%	30
			Perfluorodecane Sulfonate	2016/05/30	10		%	30
			Perfluoroheptane sulfonate	2016/05/30	8.5		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/05/30	2.7		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/05/30	8.8		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/05/30	3.3		%	30
			Perfluorononanoic Acid (PFNA)	2016/05/30	2.9		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/30	4.5		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/05/30	3.2		%	30
			Perfluorotetradecanoic Acid	2016/05/30	17		%	30
			Perfluorotridecanoic Acid	2016/05/30	24		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/05/30	9.3		%	30
			Perfluorodecanoic Acid (PFDA)	2016/05/30	19		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/05/30	3.7		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/30	1.9		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/05/30	3.7		%	30
4515099	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/05/30		91	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/30		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/30		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/30		113	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/05/30		110	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/05/30		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/05/30		114	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/05/30		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/05/30		99	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/05/30		111	%	70 - 130
			Perfluorobutanoic acid	2016/05/30		107	%	70 - 130
			Perfluorodecane Sulfonate	2016/05/30		122	%	70 - 130
			Perfluoroheptane sulfonate	2016/05/30		115	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/05/30		115	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/05/30		118	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/05/30		114	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/05/30		118	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/30		111	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/05/30		105	%	70 - 130
			Perfluorotetradecanoic Acid	2016/05/30		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/05/30		87	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/05/30		105	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/05/30		116	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/05/30		114	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/30		105	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/05/30		100	%	70 - 130
4515099	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/05/30		86	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/05/30		85	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/05/30		82	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/05/30	<0.020		ug/L	
			8:2 Fluorotelomer sulfonate	2016/05/30	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/05/30	<0.020		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/05/30	<0.020		ug/L	
			N-methylperfluorooctane sulfonamide	2016/05/30	<0.020		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/05/30	<0.020		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/05/30	<0.020		ug/L	

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Maxxam Job #: B697559
Report Date: 2016/05/30

Cape Cod Comission
Client Project #: BFTA
Sampler Initials: TC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutanoic acid	2016/05/30	<0.020		ug/L	
			Perfluorodecane Sulfonate	2016/05/30	<0.020		ug/L	
			Perfluoroheptane sulfonate	2016/05/30	<0.020		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/05/30	<0.020		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/05/30	<0.020		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/05/30	<0.020		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/05/30	<0.020		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/05/30	<0.020		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/05/30	<0.020		ug/L	
			Perfluorotetradecanoic Acid	2016/05/30	<0.020		ug/L	
			Perfluorotridecanoic Acid	2016/05/30	<0.020		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/05/30	<0.020		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/05/30	<0.020		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/05/30	<0.020		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/05/30	<0.020		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/05/30	<0.020		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery of the matrix spike was below the lower control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data low.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

(3) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

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AIR

13-May-16 15:00
Melissa DiGrazia
B697559
ABH ENV-1172

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:	
Attention:	Tom Cambareri	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:	TOM CAMBARERI

Laboratory Use Only: Bottle Order #: 528190 · COC #: C#528190-01-01 · Project Manager: Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___ · Res/Park · Ind/Comm · Agri/Other · Medium/Fine · Coarse · For RSC

Other Regulations: CCME · Reg 558 · MISA · PWQO · Other · Sanitary Sewer Bylaw · Storm Sewer Bylaw · Municipality

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)?

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis	# of Bottles	Comments
1		PRW-4	4/28/16	9:30 Am	Water	537 PFCs	1	
2		VESSEL 2 EFFLUENT	4/28/16	9:30 AM	Water	537 PFCs	1	
3		PRW-4	5/3/16	9:30Am	water	537 PFCs	1	
4		PC-11	5/12/16	12:10 PM	water	537/PFCs	1	
5		PC-12	5/12/16	12:30 PM	water	537/PFCs	1	
6		PRW4 influent	5/12/16	12:40	water	537/PFCs	1	
7		Effluent	5/12/16	12:40	Water	537/PFCs	1	
8								
9								
10								

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tom Cambareri	5/12/16		[signature]	5/12/16	3:30 PM	
[signature]	5/12/16	3:40pm	[signature]	5/12/16	1540	

Laboratory Use Only: Time Sensitive · Temperature (°C) on Receipt: 4.6/4.8/5.3 · Custody Seal: Present Yes ✓ · Intact Yes ✓

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

MARWIN GREWAL 2016/05/13 15:00

eurofins Eaton Analytical

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

AT-1807

Laboratory Report

for

Suez-Hyannis
47 Old Yarmouth Road
Hyannis, MA 02601
Attention: Mark Lavoie
Fax: 508-790-1313

NELAP ACCREDITED TNI LABORATORY
ORELAP 4034

Date of Issue
06/06/2016

EUROFINS EATON ANALYTICAL

TDF: Thomas.D.French

Project Manager

Report: 592555
Project: PFOA-PFOS
Group: GW PFC

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all **TNI 2009 and ISO/IEC 17025:2005** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* This report shall not be reproduced except in full, without the written approval of the laboratory.

eurofins | Eaton Analytical

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Mississippi**	Certified
----------	--------	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA00006-2016
California-Monrovia-ELAP	2813	**New Hampshire ***	2959
California-Colton- ELAP	2812	**New Jersey ***	CA 008
California-Folsom- ELAP	2820	**New Mexico**	Certified
California-Fresno- ELAP	2966	**New York ***	11320
Colorado	Certified	**North Carolina**	06701
Connecticut	PH-0107	**North Dakota**	R-009
Delaware	CA 006	**Oregon (Primary AB) ***	**ORELAP 4034**
Florida *	E871024	**Pennsylvania ***	68-565
Georgia	947	**Puerto Rico**	Certified
Guam	16-003r	**Rhode Island**	LAO00326
Hawaii	Certified	**South Carolina**	87016
Idaho	Certified	**South Dakota**	Certified
Illinois *	200033	**Tennessee**	TN02839
Indiana	C-CA-01	**Texas ***	T104704230-15-9
Kansas *	E-10268	**Utah ***	CA000062016-10
Kentucky	90107	**Vermont**	VT0114
Louisiana *	LA16003	**Virginia ***	460260
Maine	CA0006	**Washington**	C838
Maryland	224	----------	----------
Commonwealth of Northern Marianas Is.	MP0004	----------	----------
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, Inc.
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 626-386-1101
www.EatonAnalytical.com

The tests listed below are accredited and meet the requirements of ISO 17025 as verified by the ANSI-ASQ National Accreditation Board/ANAB.

Refer to Certificate and scope of accreditation (AT 1807) found at: http://www.eatonanalytical.com

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
Bicarbonate Alkalinity as HCO3	SM 2320B	x	x	x
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cryptosporidium	EPA 1622, 1623	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Giardia	EPA 1623	x		x
Glyphosate	EPA 547	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	CDC Legionella	x		x
Mercury	EPA 245.1	x	x	x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
NDMA	EPA 521	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphate	SM 4500P E			x
Ortho Phosphorous	SM 4500P E	x		
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Semi-VOC	EPA 625		x	x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure (2346)	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2/EPA 524.3	x		x
VOC	EPA 624		x	x
VOC	EPA SW 846 8260	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x

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Acknowledgement of Samples Received

Addr: **Suez-Hyannis**
47 Old Yarmouth Road
Hyannis, MA 02601

Client ID: UNITED-MA
Folder #: 592555
Project: PFOA-PFOS
Sample Group: GW PFC

Attn: Mark Lavoie
Phone: (508) 775-0063

Project Manager: Thomas.D.French
Phone: (480) 778-1558

The following samples were received from you on **May 27, 2016** at **1421**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical.

Sample #	Sample ID	Sample Date
201605270252	Combined M Dunn	05/23/2016 1355
	@537 Freight - Outbound	
201605270253	M. Dunn 4	05/23/2016 1429
	@537	
201605270254	M. Dunn 1	05/23/2016 1402
	@537	
201605270255	M. Dunn 2	05/23/2016 1410
	@537	
201605270256	M. Dun n 3	05/23/2016 1416
	@537	

Test Description

@537 -- Perfluorinated Alkyl Acids

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CHAIN OF CUSTODY RECORD

592555

750 Royal Oaks, Suite 100
Monrovia, California 91016
Phone: (626) 386-1100
(800) 566-5227
Fax: (626) 386-1101

EEA LAB USE ONLY:

LOGIN COMMENTS:

SAMPLES CHECKED AGAINST COC BY: MAC

SAMPLE TEMP RECEIVED AT:

☐ Colton / Sacramento / Scottsdale ___ °C (Compliance: 4 +/- 2°C)

SAMPLES LOGGED IN BY: UD

RECEIVED FROM CLIENT: REFRIGERATED___ ON ICE___

☒ Monrovia 4.3 °C (Compliance: 4 +/- 2°C)

SAMPLES REC'D DAY OF COLLECTION ☐ (check for yes)

CONDITION OF ICE: FROZEN___ PARTIALLY FROZEN X THAWED___

TO BE COMPLETED BY SAMPLER:

COMPANY, UTILITY or PROJECT: Suez Water/Hyannis Water System

SYSTEM #: 4020004

(check for yes) COMPLIANCE SAMPLES ☒ - Requires state forms ☒

(check for yes) NON-COMPLIANCE SAMPLES ☐ REGULATION INVOLVED:

Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION (eg. SDWA, Phase V, NPDES, FDA,...)

EEA CLIENT CODE:

P.O.# / JOB # / PROJECT : PFOA-PFOS

SEE ATTACHED BOTTLE ORDER FOR ANALYSES ☐ (check for yes), ***OR***

LIST ANALYSES REQUIRED BELOW(enter number of bottles sent for each test for each sample)

SAMPLER PRINTED NAME AND SIGNATURE:

TAT requested: rush by adv notice only

STD___ 1 week___ 3 day___ 2 day___ 1 day___

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	GRAB	COMP	EPA 537	SAMPLER COMMENTS
5.23.16	13:55	Combined M Dunn	10033	CFW			2	
5.23.16	14:29	M. Dunn 4	096	RGW			2	
5.23.16	14:02	M. Dunn 1	046	RGW			2	
5.23.16	14:10	M. Dunn 2	05G	RGW			2	
5.23.16	14:16	M. Dunn 3	08G	RGW			2	

*** MATRIX TYPES:**
RSW = Raw Surface Water, RGW = Raw Ground Water, CFW = Chlor(am)inated Finished Water, FW = Other Finished Water, CWW = Chlorinated Waste Water, WW = Other Waste Water, BW = Bottled Water, SW = Storm Water, SO = Soil, SL = Sludge

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	S. Williams	Scott Williams	SEUZ OP & M Teck II	5.23.16	15:26
RELINQUISHED BY:	S. Williams	Scott Williams	SEUZ OP & M. Teck II	5.23.16	15:26 to Refrigerator
RECEIVED BY:					
RELINQUISHED BY:	Charles R. Johnson	Charles R. Johnson	SUEZ WATER/WATER TREATMENT OPERATOR	5/26/16	09:00 to FED EX
RECEIVED BY:	MAC	MAC	EEA-MON	5-27-16	14:21
RELINQUISHED BY:					
RECEIVED BY:					

PAGE ___ OF ___

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INTERNAL CHAIN OF CUSTODY RECORD

COMPANY NAME / EEA CLIENT CODE:	PROJECT CODE:

SAMPLES REC'D DAY OF COLLECTION? ☐

SAMPLE TEMP. RECEIVED:

IR Gun ID = 518A (Observation= 4.8 °C) (Corr.Factor -.5 °C) (Final = 4.3 °C)

TYPE OF ICE: Real ____ Synthetic ✗ No Ice ____   CONDITION OF ICE: Frozen ____ Partially Frozen ✗ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____________

Compliance Acceptance Criteria:

1) **Chemistry:** >0, ≤6°C, not frozen (NELAP) (if received after 24 hrs of sample collection)

2) **Microbiology, Distribution:** < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) **Microbiology, Surface Water:** < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4) UCMR3 : (non-GLEC) **524.3:** (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

522: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

≤ 10°C if received within 48 hours of sample collection (not the same business day); ≤ 6°C if received after 48 hours of sample collection. Measure temperature for each method above.

5) **LT2: Giardia /Cryptosporidium:** <20 °C, not frozen (received after 8 hours of sample collection)

E. Coli: < 10°C, not frozen (if received after 2 hours of sample collection)

Giardia/Crypto: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

E.Coli: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

6) **Dioxin (1613 or 2,3,7,8 TCDD):** must be between 0-4 °C, not frozen (if received after 24 hrs of sample collection)

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	MAV	MAV	Eurofins Eaton Analytical	5-21-16	14:21

Page ___ of ___

QA FO 0083.3 (QA FO-FRM5504) (03/30/16) Ver 4

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750 Royal Oaks Drive, Suite 100
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Tel: (626) 386-1100
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1 800 566 LABS (1 800 566 5227)

Laboratory Hits
Report: 592555

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
05/27/2016 1421

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201605270252	**Combined M Dunn**				
06/02/2016 18:50	Perfluoroheptanoic acid		0.0078		ug/L	0.0025
06/02/2016 18:50	Perfluorohexanesulfonic acid		0.036		ug/L	0.0025
06/02/2016 18:50	Perfluorohexanoic acid		0.015		ug/L	0.0025
06/02/2016 18:50	Perfluorononanoic acid		0.0035		ug/L	0.0025
06/02/2016 18:50	Perfluorooctanesulfonic acid		0.074		ug/L	0.0025
06/02/2016 18:50	Perfluorooctanoic acid		0.0087		ug/L	0.0025
	201605270254	**M. Dunn 1**				
06/02/2016 19:31	Perfluoroheptanoic acid		0.0095		ug/L	0.0025
06/02/2016 19:31	Perfluorohexanesulfonic acid		0.020		ug/L	0.0025
06/02/2016 19:31	Perfluorohexanoic acid		0.016		ug/L	0.0025
06/02/2016 19:31	Perfluorononanoic acid		0.0078		ug/L	0.0025
06/03/2016 14:10	Perfluorooctanesulfonic acid		0.12		ug/L	0.025
06/02/2016 19:31	Perfluorooctanoic acid		0.0047		ug/L	0.0025
06/02/2016 19:31	Perfluoroundecanoic acid		0.0062		ug/L	0.0025
	201605270255	**M. Dunn 2**				
06/02/2016 19:51	Perfluorobutanesulfonic acid		0.0081		ug/L	0.0025
06/02/2016 19:51	Perfluoroheptanoic acid		0.018		ug/L	0.0025
06/03/2016 14:30	Perfluorohexanesulfonic acid		0.078		ug/L	0.025
06/02/2016 19:51	Perfluorohexanoic acid		0.038		ug/L	0.0025
06/02/2016 19:51	Perfluorononanoic acid		0.013		ug/L	0.0025
06/03/2016 14:30	Perfluorooctanesulfonic acid		0.21		ug/L	0.025
06/02/2016 19:51	Perfluorooctanoic acid		0.016		ug/L	0.0025
	201605270256	**M. Dun n 3**				
06/02/2016 20:12	Perfluorobutanesulfonic acid		0.0066		ug/L	0.0025
06/02/2016 20:12	Perfluoroheptanoic acid		0.024		ug/L	0.0025
06/03/2016 14:51	Perfluorohexanesulfonic acid		0.11		ug/L	0.025
06/02/2016 20:12	Perfluorohexanoic acid		0.046		ug/L	0.0025
06/02/2016 20:12	Perfluorononanoic acid		0.010		ug/L	0.0025
06/03/2016 14:51	Perfluorooctanesulfonic acid		0.18		ug/L	0.025
06/02/2016 20:12	Perfluorooctanoic acid		0.026		ug/L	0.0025

SUMMARY OF POSITIVE DATA ONLY

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
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1 800 566 LABS (1 800 566 5227)

Laboratory Comments
Report: 592555

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

The Comments Report may be blank if there are no comments for this report.

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1 800 566 LABS (1 800 566 5227)

Laboratory Data Report: 592555

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on: 05/27/2016 1421

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
Combined M Dunn (201605270252)					**Sampled on 05/23/2016 1355**			
			EPA 537 - Perfluorinated Alkyl Acids					
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorobutanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluoroheptanoic acid	0.0078	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorohexanesulfonic acid	0.036	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorohexanoic acid	0.015	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorononanoic acid	0.0035	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorooctanesulfonic acid	0.074	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorooctanoic acid	0.0087	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	Perfluoroundecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	13C-PFDA	101	%		1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	13C-PFHxA	89	%		1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	13C-PFOA	106	%		1
6/1/2016	06/02/2016 18:50	914529	(EPA 537)	13C-PFOS	105	%		1
M. Dunn 4 (201605270253)					**Sampled on 05/23/2016 1429**			
			EPA 537 - Perfluorinated Alkyl Acids					
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorobutanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluoroheptanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorohexanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorohexanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorononanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorooctanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorooctanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	Perfluoroundecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	13C-PFDA	100	%		1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	13C-PFHxA	87	%		1
6/1/2016	06/02/2016 19:10	914529	(EPA 537)	13C-PFOA	109	%		1

Rounding on totals after summation.
(c) - indicates calculated results

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Laboratory Data Report: 592555

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
05/27/2016 1421

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/02/2016	19:10	914529	(EPA 537)	13C-PFOS	111	%		1

M. Dunn 1 (201605270254) — **Sampled on 05/23/2016 1402**

EPA 537 - Perfluorinated Alkyl Acids

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorobutanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluoroheptanoic acid	0.0095	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorohexanesulfonic acid	0.020	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorohexanoic acid	0.016	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorononanoic acid	0.0078	ug/L	0.0025	1
6/1/2016	06/03/2016	14:10	915035	(EPA 537)	Perfluorooctanesulfonic acid	0.12	ug/L	0.025	10
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorooctanoic acid	0.0047	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	Perfluoroundecanoic acid	0.0062	ug/L	0.0025	1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	13C-PFDA	95	%		1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	13C-PFHxA	87	%		1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	13C-PFOA	106	%		1
6/1/2016	06/02/2016	19:31	914529	(EPA 537)	13C-PFOS	104	%		1

M. Dunn 2 (201605270255) — **Sampled on 05/23/2016 1410**

EPA 537 - Perfluorinated Alkyl Acids

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorobutanesulfonic acid	0.0081	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluoroheptanoic acid	0.018	ug/L	0.0025	1
6/1/2016	06/03/2016	14:30	915035	(EPA 537)	Perfluorohexanesulfonic acid	0.078	ug/L	0.025	10
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorohexanoic acid	0.038	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorononanoic acid	0.013	ug/L	0.0025	1
6/1/2016	06/03/2016	14:30	915035	(EPA 537)	Perfluorooctanesulfonic acid	0.21	ug/L	0.025	10
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorooctanoic acid	0.016	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	Perfluoroundecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	13C-PFDA	80	%		1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	13C-PFHxA	84	%		1

Rounding on totals after summation.
(c) - indicates calculated results

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Laboratory Data
Report: 592555

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
05/27/2016 1421

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	13C-PFOA	108	%		1
6/1/2016	06/02/2016	19:51	914529	(EPA 537)	13C-PFOS	105	%		1

M. Dun n 3 (201605270256) — **Sampled on 05/23/2016 1416**

EPA 537 - Perfluorinated Alkyl Acids

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorobutanesulfonic acid	0.0066	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluoroheptanoic acid	0.024	ug/L	0.0025	1
6/1/2016	06/03/2016	14:51	915035	(EPA 537)	Perfluorohexanesulfonic acid	0.11	ug/L	0.025	10
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorohexanoic acid	0.046	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorononanoic acid	0.010	ug/L	0.0025	1
6/1/2016	06/03/2016	14:51	915035	(EPA 537)	Perfluorooctanesulfonic acid	0.18	ug/L	0.025	10
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorooctanoic acid	0.026	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	Perfluoroundecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	13C-PFDA	84	%		1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	13C-PFHxA	89	%		1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	13C-PFOA	107	%		1
6/1/2016	06/02/2016	20:12	914529	(EPA 537)	13C-PFOS	108	%		1

Rounding on totals after summation.
(c) - indicates calculated results

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Suez-Hyannis

Perfluorinated Alkyl Acids

Prep Batch: 913964 Analytical Batch: 914529 **Analysis Date: 06/02/2016**

201605270252	Combined M Dunn	Analyzed by: 1CL
201605270253	M. Dunn 4	Analyzed by: 1CL
201605270254	M. Dunn 1	Analyzed by: 1CL
201605270255	M. Dunn 2	Analyzed by: 1CL
201605270256	M. Dun n 3	Analyzed by: 1CL

Perfluorinated Alkyl Acids

Analytical Batch: 915035 **Analysis Date: 06/03/2016**

201605270254	M. Dunn 1	Analyzed by: 1CL
201605270255	M. Dunn 2	Analyzed by: 1CL
201605270255	M. Dunn 2	Analyzed by: 1CL
201605270256	M. Dun n 3	Analyzed by: 1CL
201605270256	M. Dun n 3	Analyzed by: 1CL

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Laboratory QC
Report: 592555

Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
Perfluorinated Alkyl Acids by EPA 537									
Prep Batch: 913964 Analytical Batch: 914529							**Analysis Date: 06/02/2016**		
LCS1	13C-PFDA (S)			105	%	105	(70-130)		
LCS2	13C-PFDA (S)			99.2	%	99	(70-130)		
MBLK	13C-PFDA (S)			105	%	105	(70-130)		
MRL_CHK	13C-PFDA (S)			98.1	%	98	(70-130)		
MS1_201606010411	13C-PFDA (S)			97.4	%	97	(70-130)		
MSD1_201606010411	13C-PFDA (S)			96.4	%	96	(70-130)		
LCS1	13C-PFHxA (S)			92.3	%	92	(70-130)		
LCS2	13C-PFHxA (S)			87.6	%	88	(70-130)		
MBLK	13C-PFHxA (S)			94.3	%	94	(70-130)		
MRL_CHK	13C-PFHxA (S)			88.5	%	89	(70-130)		
MS1_201606010411	13C-PFHxA (S)			86.0	%	86	(70-130)		
MSD1_201606010411	13C-PFHxA (S)			86.4	%	86	(70-130)		
LCS1	13C-PFOA (I)			106	%	106	(50-150)		
LCS2	13C-PFOA (I)			107	%	107	(50-150)		
MBLK	13C-PFOA (I)			107	%	107	(50-150)		
MRL_CHK	13C-PFOA (I)			107	%	107	(50-150)		
MS1_201606010411	13C-PFOA (I)			106	%	106	(50-150)		
MSD1_201606010411	13C-PFOA (I)			109	%	109	(50-150)		
LCS1	13C-PFOS (I)			104	%	104	(50-150)		
LCS2	13C-PFOS (I)			102	%	102	(50-150)		
MBLK	13C-PFOS (I)			104	%	104	(50-150)		
MRL_CHK	13C-PFOS (I)			104	%	104	(50-150)		
MS1_201606010411	13C-PFOS (I)			102	%	102	(50-150)		
MSD1_201606010411	13C-PFOS (I)			104	%	104	(50-150)		
LCS1	Perfluorobutanesulfonic acid		0.022	0.0223	ug/L	100	(70-130)		
LCS2	Perfluorobutanesulfonic acid		0.022	0.0226	ug/L	102	(70-130)	30	1.3
MBLK	Perfluorobutanesulfonic acid			<0.00074	ug/L				
MRL_CHK	Perfluorobutanesulfonic acid		0.0022	0.00254	ug/L	114	(50-150)		
MS1_201606010411	Perfluorobutanesulfonic acid	ND	0.022	0.0208	ug/L	92	(70-130)		
MSD1_201606010411	Perfluorobutanesulfonic acid	ND	0.022	0.0214	ug/L	95	(70-130)	30	2.8
LCS1	Perfluorodecanoic acid		0.025	0.0238	ug/L	95	(70-130)		
LCS2	Perfluorodecanoic acid		0.025	0.0232	ug/L	93	(70-130)	30	2.5
MBLK	Perfluorodecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorodecanoic acid		0.0025	0.00259	ug/L	104	(50-150)		
MS1_201606010411	Perfluorodecanoic acid	ND	0.025	0.0220	ug/L	88	(70-130)		

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Laboratory QC Report: 592555

Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD1_201606010411	Perfluorodecanoic acid	ND	0.025	0.0212	ug/L	85	(70-130)	30	3.2
LCS1	Perfluorododecanoic acid		0.025	0.0239	ug/L	96	(70-130)		
LCS2	Perfluorododecanoic acid		0.025	0.0233	ug/L	93	(70-130)	30	2.5
MBLK	Perfluorododecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorododecanoic acid		0.0025	0.00284	ug/L	113	(50-150)		
MS1_201606010411	Perfluorododecanoic acid	ND	0.025	0.0214	ug/L	86	(70-130)		
MSD1_201606010411	Perfluorododecanoic acid	ND	0.025	0.0208	ug/L	83	(70-130)	30	2.8
LCS1	Perfluoroheptanoic acid		0.025	0.0229	ug/L	92	(70-130)		
LCS2	Perfluoroheptanoic acid		0.025	0.0221	ug/L	89	(70-130)	30	3.6
MBLK	Perfluoroheptanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluoroheptanoic acid		0.0025	0.00265	ug/L	106	(50-150)		
MS1_201606010411	Perfluoroheptanoic acid	ND	0.025	0.0230	ug/L	91	(70-130)		
MSD1_201606010411	Perfluoroheptanoic acid	ND	0.025	0.0216	ug/L	85	(70-130)	30	6.3
LCS1	Perfluorohexanesulfonic acid		0.024	0.0242	ug/L	102	(70-130)		
LCS2	Perfluorohexanesulfonic acid		0.024	0.0234	ug/L	99	(70-130)	30	3.4
MBLK	Perfluorohexanesulfonic acid			<0.00079	ug/L				
MRL_CHK	Perfluorohexanesulfonic acid		0.0024	0.00252	ug/L	106	(50-150)		
MS1_201606010411	Perfluorohexanesulfonic acid	ND	0.024	0.0245	ug/L	100	(70-130)		
MSD1_201606010411	Perfluorohexanesulfonic acid	ND	0.024	0.0237	ug/L	97	(70-130)	30	3.3
LCS1	Perfluorohexanoic acid		0.025	0.0249	ug/L	99	(70-130)		
LCS2	Perfluorohexanoic acid		0.025	0.0245	ug/L	98	(70-130)	30	1.6
MBLK	Perfluorohexanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorohexanoic acid		0.0025	0.00286	ug/L	115	(50-150)		
MS1_201606010411	Perfluorohexanoic acid	ND	0.025	0.0257	ug/L	95	(70-130)		
MSD1_201606010411	Perfluorohexanoic acid	ND	0.025	0.0247	ug/L	91	(70-130)	30	4.0
LCS1	Perfluorononanoic acid		0.025	0.0239	ug/L	96	(70-130)		
LCS2	Perfluorononanoic acid		0.025	0.0233	ug/L	93	(70-130)	30	2.5
MBLK	Perfluorononanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorononanoic acid		0.0025	0.00305	ug/L	122	(50-150)		
MS1_201606010411	Perfluorononanoic acid	ND	0.025	0.0232	ug/L	92	(70-130)		
MSD1_201606010411	Perfluorononanoic acid	ND	0.025	0.0222	ug/L	88	(70-130)	30	4.4
LCS1	Perfluorooctanesulfonic acid		0.024	0.0248	ug/L	103	(70-130)		
LCS2	Perfluorooctanesulfonic acid		0.024	0.0246	ug/L	103	(70-130)	30	0.81
MBLK	Perfluorooctanesulfonic acid			<0.0008	ug/L				
MRL_CHK	Perfluorooctanesulfonic acid		0.0024	0.00240	ug/L	100	(50-150)		
MS1_201606010411	Perfluorooctanesulfonic acid	ND	0.024	0.0253	ug/L	100	(70-130)		
MSD1_201606010411	Perfluorooctanesulfonic acid	ND	0.024	0.0236	ug/L	93	(70-130)	30	7.0
LCS1	Perfluorooctanoic acid		0.025	0.0238	ug/L	95	(70-130)		

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Laboratory QC
Report: 592555

Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
LCS2	Perfluorooctanoic acid		0.025	0.0230	ug/L	92	(70-130)	30	3.0
MBLK	Perfluorooctanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorooctanoic acid		0.0025	0.00304	ug/L	122	(50-150)		
MS1_201606010411	Perfluorooctanoic acid	ND	0.025	0.0242	ug/L	91	(70-130)		
MSD1_201606010411	Perfluorooctanoic acid	ND	0.025	0.0230	ug/L	86	(70-130)	30	5.1
LCS1	Perfluorotetradecanoic acid		0.025	0.0213	ug/L	85	(70-130)		
LCS2	Perfluorotetradecanoic acid		0.025	0.0203	ug/L	81	(70-130)	30	4.8
MBLK	Perfluorotetradecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorotetradecanoic acid		0.0025	0.00236	ug/L	95	(50-150)		
MS1_201606010411	Perfluorotetradecanoic acid	ND	0.025	0.0192	ug/L	76	(70-130)		
MSD1_201606010411	Perfluorotetradecanoic acid	ND	0.025	0.0191	ug/L	76	(70-130)	30	0.52
LCS1	Perfluorotridecanoic acid		0.025	0.0221	ug/L	88	(70-130)		
LCS2	Perfluorotridecanoic acid		0.025	0.0215	ug/L	86	(70-130)	30	2.8
MBLK	Perfluorotridecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorotridecanoic acid		0.0025	0.00252	ug/L	101	(50-150)		
MS1_201606010411	Perfluorotridecanoic acid	ND	0.025	0.0195	ug/L	78	(70-130)		
MSD1_201606010411	Perfluorotridecanoic acid	ND	0.025	0.0194	ug/L	78	(70-130)	30	0.51
LCS1	Perfluoroundecanoic acid		0.025	0.0251	ug/L	100	(70-130)		
LCS2	Perfluoroundecanoic acid		0.025	0.0245	ug/L	98	(70-130)	30	2.4
MBLK	Perfluoroundecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluoroundecanoic acid		0.0025	0.00290	ug/L	116	(50-150)		
MS1_201606010411	Perfluoroundecanoic acid	ND	0.025	0.0232	ug/L	93	(70-130)		
MSD1_201606010411	Perfluoroundecanoic acid	ND	0.025	0.0220	ug/L	88	(70-130)	30	5.3

Spike recovery is already corrected for native results.
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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
AT-1807

Laboratory Report

for

Suez-Hyannis
47 Old Yarmouth Road
Hyannis, MA 02601
Attention: Mark Lavoie
Fax: 508-790-1313

Date of Issue
06/05/2016

EUROFINS EATON ANALYTICAL

TDF: Thomas.D.French

Project Manager

NELAP ACCREDITED TNI LABORATORY
ORELAP 4034

Report: 592557
Project: PFOA-PFOS
Group: GW PFC

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all **TNI 2009 and ISO/IEC 17025:2005** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* This report shall not be reproduced except in full, without the written approval of the laboratory.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Mississippi**	Certified
----------	--------	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA00006-2016
California-Monrovia-ELAP	2813	**New Hampshire ***	2959
California-Colton- ELAP	2812	**New Jersey ***	CA 008
California-Folsom- ELAP	2820	**New Mexico**	Certified
California-Fresno- ELAP	2966	**New York ***	11320
Colorado	Certified	**North Carolina**	06701
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Kentucky	90107	**Vermont**	VT0114
Louisiana *	LA16003	**Virginia ***	460260
Maine	CA0006	**Washington**	C838
Maryland	224	----------	----------
Commonwealth of Northern Marianas Is.	MP0004	----------	----------
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264

* NELAP/TNI Recognized Accreditation Bodies

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ISO 17025 Accredited Method List

The tests listed below are accredited and meet the requirements of ISO 17025 as verified by the ANSI-ASQ National Accreditation Board/ANAB.

Refer to Certificate and scope of accreditation (AT 1807) found at: http://www.eatonanalytical.com

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
Bicarbonate Alkalinity as HCO3	SM 2320B	x	x	x
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D	x		x
Chlorine -Total/Free/ Combined Residua	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cryptosporidium	EPA 1622, 1623	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Giardia	EPA 1623	x		x
Glyphosate	EPA 547	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	CDC Legionella	x		x
Mercury	EPA 245.1	x	x	x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
NDMA	EPA 521	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphate	SM 4500P E			x
Ortho Phosphorous	SM 4500P E	x		
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Semi-VOC	EPA 625		x	x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-S$^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure (2346)	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2/EPA 524.3	x		x
VOC	EPA 624		x	x
VOC	EPA SW 846 8260	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x

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Acknowledgement of Samples Received

Addr: **Suez-Hyannis**
47 Old Yarmouth Road
Hyannis, MA 02601

Attn: Mark Lavoie
Phone: (508) 775-0063

Client ID: UNITED-MA
Folder #: 592557
Project: PFOA-PFOS
Sample Group: GW PFC

Project Manager: Thomas.D.French
Phone: (480) 778-1558

The following samples were received from you on **May 27, 2016** at **1421**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical.

Sample #	Sample ID	Sample Date
201605270259	Airport Raw	05/25/2016 1335
	@537	

Test Description

@537 -- Perfluorinated Alkyl Acids

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750 Royal Oaks, Suite 100
Monrovia, California 91016
Phone: (626) 386-1100
(800) 566-5227
Fax: (626) 386-1101

CHAIN OF CUSTODY RECORD

592557

EEA LAB USE ONLY:

LOGIN COMMENTS:

SAMPLES CHECKED AGAINST COC BY: MAL

SAMPLE TEMP RECEIVED AT:

☐ Colton / Sacramento / Scottsdale ___ °C (Compliance: 4 +/- 2°C)

SAMPLES LOGGED IN BY: CD

RECEIVED FROM CLIENT: REFRIGERATED___ ON ICE___

SAMPLES REC'D DAY OF COLLECTION ☐ (check for yes)

☒ Monrovia 4.3 °C (Compliance: 4 +/- 2°C)

CONDITION OF ICE: FROZEN___ PARTIALLY FROZEN_X_ THAWED___

TO BE COMPLETED BY SAMPLER:

COMPANY, UTILITY or PROJECT: Suez water / Hyannis Water System

SYSTEM #: 4020004

COMPLIANCE SAMPLES ☐ (check for yes) - Requires state forms ☐

NON-COMPLIANCE SAMPLES ☐ (check for yes)
REGULATION INVOLVED:
(eg. SDWA, Phase V, NPDES, FDA,...)

Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION

EEA CLIENT CODE:

P.O.# / JOB # / PROJECT : PFOA/PFOS

SEE ATTACHED BOTTLE ORDER FOR ANALYSES ☐ (check for yes), OR
LIST ANALYSES REQUIRED BELOW(enter number of bottles sent for each test for each sample)

SAMPLER PRINTED NAME AND SIGNATURE: Joe Messier

TAT requested: rush by adv notice only
STD___ 1 week___ 3 day___ 2 day___ 1 day___

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	GRAB	COMP	EPA537															SAMPLER COMMENTS
5-25-16	1335	Airport Raw	022R	RGW	X		X															

*** MATRIX TYPES:**
RSW = Raw Surface Water, RGW = Raw Ground Water, CFW = Chlor(am)inated Finished Water, FW = Other Finished Water, CWW = Chlorinated Waste Water, WW = Other Waste Water, BW = Bottled Water, SW = Storm Water, SO = Soil, SL = Sludge

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	Joe Messier	Joe Messier	Suez APM	5-25-16	1335
RELINQUISHED BY:		Joe Messier	Suez APM	5-25-16	1345 to refrigerator
RECEIVED BY:					
RELINQUISHED BY:	Charles R. Johnson	Charles R. Johnson	Suez Water/Water Treatment Operator	5-26-16	0:900 to FEDEx
RECEIVED BY:	MAL	MAL	EEA-MON	5-27-16	14:21
RELINQUISHED BY:					
RECEIVED BY:					

PAGE ___ OF ___

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INTERNAL CHAIN OF CUSTODY RECORD

COMPANY NAME / EEA CLIENT CODE:	PROJECT CODE:

SAMPLES REC'D DAY OF COLLECTION? ☐

SAMPLE TEMP. RECEIVED:

IR Gun ID = 518A (Observation= 4.8 °C) (Corr.Factor -.5 °C) (Final = 4.3 °C)

TYPE OF ICE: Real ____ Synthetic X No Ice ____ **CONDITION OF ICE:** Frozen ____ Partially Frozen X Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: __________

Compliance Acceptance Criteria:

1) **Chemistry:** >0, ≤6°C, not frozen (NELAP) (if received after 24 hrs of sample collection)

2) **Microbiology, Distribution:** < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) **Microbiology, Surface Water:** < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4) UCMR3 : (non-GLEC) **524.3:** (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

522: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

≤10°C if received within 48 hours of sample collection (not the same business day); ≤ 6°C if received after 48 hours of sample collection. Measure temperature for each method above.

5) **LT2: Giardia /Cryptosporidium:** <20 °C, not frozen (received after 8 hours of sample collection)

E. Coli: < 10°C, not frozen (if received after 2 hours of sample collection)

Giardia/Crypto: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

E.Coli: (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

6) **Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (if received after 24 hrs of sample collection)**

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	MAV	MAV	Eurofins Eaton Analytical	5-21-16	14:21

Page ____ of ____

QA FO 0083.3 (QA FO-FRM5504) (03/30/16) Ver 4

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Laboratory Hits
Report: 592557

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
05/27/2016 1421

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201605270259	**Airport Raw**				
06/03/2016 9:56	Perfluoroheptanoic acid		0.0038		ug/L	0.0025
06/03/2016 9:56	Perfluorohexanesulfonic acid		0.0027		ug/L	0.0025
06/03/2016 9:56	Perfluorohexanoic acid		0.012		ug/L	0.0025

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Comments
Report: 592557

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

The Comments Report may be blank if there are no comments for this report.

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Laboratory Data
Report: 592557

Suez-Hyannis
Mark Lavoie
47 Old Yarmouth Road
Hyannis, MA 02601

Samples Received on:
05/27/2016 1421

Airport Raw (201605270259) **Sampled on 05/25/2016 1335**

EPA 537 - Perfluorinated Alkyl Acids

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorobutanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorodecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorododecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluoroheptanoic acid	0.0038	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorohexanesulfonic acid	0.0027	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorohexanoic acid	0.012	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorononanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorooctanesulfonic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorooctanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorotetradecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluorotridecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	Perfluoroundecanoic acid	ND	ug/L	0.0025	1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	13C-PFDA	91	%		1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	13C-PFHxA	101	%		1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	13C-PFOA	99	%		1
6/1/2016	06/03/2016 9:56	914681	(EPA 537)	13C-PFOS	90	%		1

Rounding on totals after summation.
(c) - indicates calculated results

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Suez-Hyannis

Perfluorinated Alkyl Acids

Prep Batch: 914151 Analytical Batch: 914681 **Analysis Date: 06/03/2016**

201605270259 Airport Raw Analyzed by: 1CL

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Laboratory QC
Report: 592557

Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
Perfluorinated Alkyl Acids by EPA 537									
Prep Batch: 914151 Analytical Batch: 914681						**Analysis Date: 06/03/2016**			
LCS1	13C-PFDA (S)			107	%	107	(70-130)		
LCS2	13C-PFDA (S)			101	%	101	(70-130)		
MBLK	13C-PFDA (S)			103	%	103	(70-130)		
MRL_CHK	13C-PFDA (S)			97.6	%	98	(70-130)		
MS_201606010415	13C-PFDA (S)			107	%	107	(70-130)		
MSD_201606010415	13C-PFDA (S)			104	%	104	(70-130)		
LCS1	13C-PFHxA (S)			104	%	104	(70-130)		
LCS2	13C-PFHxA (S)			102	%	102	(70-130)		
MBLK	13C-PFHxA (S)			102	%	103	(70-130)		
MRL_CHK	13C-PFHxA (S)			100	%	100	(70-130)		
MS_201606010415	13C-PFHxA (S)			107	%	107	(70-130)		
MSD_201606010415	13C-PFHxA (S)			106	%	107	(70-130)		
LCS1	13C-PFOA (I)			99.8	%	100	(50-150)		
LCS2	13C-PFOA (I)			103	%	103	(50-150)		
MBLK	13C-PFOA (I)			102	%	102	(50-150)		
MRL_CHK	13C-PFOA (I)			105	%	105	(50-150)		
MS_201606010415	13C-PFOA (I)			100	%	100	(50-150)		
MSD_201606010415	13C-PFOA (I)			99.1	%	99	(50-150)		
LCS1	13C-PFOS (I)			93.3	%	93	(50-150)		
LCS2	13C-PFOS (I)			94.5	%	95	(50-150)		
MBLK	13C-PFOS (I)			98.3	%	98	(50-150)		
MRL_CHK	13C-PFOS (I)			100	%	100	(50-150)		
MS_201606010415	13C-PFOS (I)			94.3	%	94	(50-150)		
MSD_201606010415	13C-PFOS (I)			93.2	%	93	(50-150)		
LCS1	Perfluorobutanesulfonic acid		0.022	0.0262	ug/L	118	(70-130)		
LCS2	Perfluorobutanesulfonic acid		0.022	0.0253	ug/L	114	(70-130)	30	3.5
MBLK	Perfluorobutanesulfonic acid			<0.00074	ug/L				
MRL_CHK	Perfluorobutanesulfonic acid		0.0022	0.00213	ug/L	96	(50-150)		
MS_201606010415	Perfluorobutanesulfonic acid	ND	0.0022	0.00260	ug/L	99	(50-150)		
MSD_201606010415	Perfluorobutanesulfonic acid	ND	0.0022	0.00280	ug/L	108	(50-150)	50	7.8
LCS1	Perfluorodecanoic acid		0.025	0.0287	ug/L	115	(70-130)		
LCS2	Perfluorodecanoic acid		0.025	0.0268	ug/L	107	(70-130)	30	6.8
MBLK	Perfluorodecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorodecanoic acid		0.0025	0.00238	ug/L	95	(50-150)		
MS_201606010415	Perfluorodecanoic acid	ND	0.0025	0.00261	ug/L	104	(50-150)		

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD_201606010415	Perfluorodecanoic acid	ND	0.0025	0.00271	ug/L	108	(50-150)	50	3.8
LCS1	Perfluorododecanoic acid		0.025	0.0280	ug/L	112	(70-130)		
LCS2	Perfluorododecanoic acid		0.025	0.0260	ug/L	104	(70-130)	30	7.4
MBLK	Perfluorododecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorododecanoic acid		0.0025	0.00239	ug/L	96	(50-150)		
MS_201606010415	Perfluorododecanoic acid	ND	0.0025	0.00281	ug/L	112	(50-150)		
MSD_201606010415	Perfluorododecanoic acid	ND	0.0025	0.00284	ug/L	114	(50-150)	50	1.1
LCS1	Perfluoroheptanoic acid		0.025	0.0293	ug/L	117	(70-130)		
LCS2	Perfluoroheptanoic acid		0.025	0.0278	ug/L	111	(70-130)	30	5.3
MBLK	Perfluoroheptanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluoroheptanoic acid		0.0025	0.00254	ug/L	102	(50-150)		
MS_201606010415	Perfluoroheptanoic acid	ND	0.0025	0.00309	ug/L	101	(50-150)		
MSD_201606010415	Perfluoroheptanoic acid	ND	0.0025	0.00333	ug/L	111	(50-150)	50	7.5
LCS1	Perfluorohexanesulfonic acid		0.024	0.0280	ug/L	118	(70-130)		
LCS2	Perfluorohexanesulfonic acid		0.024	0.0266	ug/L	112	(70-130)	30	5.1
MBLK	Perfluorohexanesulfonic acid			<0.00079	ug/L				
MRL_CHK	Perfluorohexanesulfonic acid		0.0024	0.00225	ug/L	95	(50-150)		
MS_201606010415	Perfluorohexanesulfonic acid	ND	0.0024	0.00330	ug/L	100	(50-150)		
MSD_201606010415	Perfluorohexanesulfonic acid	ND	0.0024	0.00379	ug/L	121	(50-150)	50	14
LCS1	Perfluorohexanoic acid		0.025	0.0286	ug/L	114	(70-130)		
LCS2	Perfluorohexanoic acid		0.025	0.0281	ug/L	112	(70-130)	30	1.8
MBLK	Perfluorohexanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorohexanoic acid		0.0025	0.00254	ug/L	102	(50-150)		
MS_201606010415	Perfluorohexanoic acid	0.0033	0.0025	0.00586	ug/L	103	(50-150)		
MSD_201606010415	Perfluorohexanoic acid	0.0033	0.0025	0.00601	ug/L	109	(50-150)	50	2.5
LCS1	Perfluorononanoic acid		0.025	0.0288	ug/L	115	(70-130)		
LCS2	Perfluorononanoic acid		0.025	0.0274	ug/L	110	(70-130)	30	5.0
MBLK	Perfluorononanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorononanoic acid		0.0025	0.00278	ug/L	111	(50-150)		
MS_201606010415	Perfluorononanoic acid	ND	0.0025	0.00275	ug/L	100	(50-150)		
MSD_201606010415	Perfluorononanoic acid	ND	0.0025	0.00282	ug/L	103	(50-150)	50	2.5
LCS1	Perfluorooctanesulfonic acid		0.024	0.0258	ug/L	108	(70-130)		
LCS2	Perfluorooctanesulfonic acid		0.024	0.0263	ug/L	110	(70-130)	30	1.9
MBLK	Perfluorooctanesulfonic acid			<0.0008	ug/L				
MRL_CHK	Perfluorooctanesulfonic acid		0.0024	0.00188	ug/L	78	(50-150)		
MS_201606010415	Perfluorooctanesulfonic acid	ND	0.0024	0.00432	ug/L	102	(50-150)		
MSD_201606010415	Perfluorooctanesulfonic acid	ND	0.0024	0.00399	ug/L	89	(50-150)	50	7.9
LCS1	Perfluorooctanoic acid		0.025	0.0295	ug/L	118	(70-130)		

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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Laboratory QC
Report: 592557

Suez-Hyannis

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
LCS2	Perfluorooctanoic acid		0.025	0.0285	ug/L	114	(70-130)	30	3.5
MBLK	Perfluorooctanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorooctanoic acid		0.0025	0.00302	ug/L	121	(50-150)		
MS_201606010415	Perfluorooctanoic acid	ND	0.0025	0.00463	ug/L	101	(50-150)		
MSD_201606010415	Perfluorooctanoic acid	ND	0.0025	0.00511	ug/L	120	(50-150)	50	9.9
LCS1	Perfluorotetradecanoic acid		0.025	0.0254	ug/L	102	(70-130)		
LCS2	Perfluorotetradecanoic acid		0.025	0.0242	ug/L	97	(70-130)	30	4.4
MBLK	Perfluorotetradecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorotetradecanoic acid		0.0025	0.00224	ug/L	90	(50-150)		
MS_201606010415	Perfluorotetradecanoic acid	ND	0.0025	0.00241	ug/L	88	(50-150)		
MSD_201606010415	Perfluorotetradecanoic acid	ND	0.0025	0.00255	ug/L	94	(50-150)	50	5.7
LCS1	Perfluorotridecanoic acid		0.025	0.0266	ug/L	106	(70-130)		
LCS2	Perfluorotridecanoic acid		0.025	0.0246	ug/L	99	(70-130)	30	7.4
MBLK	Perfluorotridecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluorotridecanoic acid		0.0025	0.00237	ug/L	95	(50-150)		
MS_201606010415	Perfluorotridecanoic acid	ND	0.0025	0.00239	ug/L	94	(50-150)		
MSD_201606010415	Perfluorotridecanoic acid	ND	0.0025	0.00259	ug/L	101	(50-150)	50	8.0
LCS1	Perfluoroundecanoic acid		0.025	0.0295	ug/L	118	(70-130)		
LCS2	Perfluoroundecanoic acid		0.025	0.0285	ug/L	114	(70-130)	30	3.5
MBLK	Perfluoroundecanoic acid			<0.00083	ug/L				
MRL_CHK	Perfluoroundecanoic acid		0.0025	0.00266	ug/L	106	(50-150)		
MS_201606010415	Perfluoroundecanoic acid	ND	0.0025	0.00296	ug/L	118	(50-150)		
MSD_201606010415	Perfluoroundecanoic acid	ND	0.0025	0.00290	ug/L	116	(50-150)	50	2.0

Spike recovery is already corrected for native results.
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

Your Project #: PFC
Your C.O.C. #: 558437-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/06/07
Report #: R4018573
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A6307
Received: 2016/05/26, 14:15

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2016/06/03	2016/06/06	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A6307
Report Date: 2016/06/07

Cape Cod Comission
Client Project #: PFC

RESULTS OF ANALYSES OF WATER

Maxxam ID		CKP939				CKP940			
Sampling Date		2016/05/25 09:45				2016/05/25 09:45			
COC Number		558437-01-01				558437-01-01			
	UNITS	INFLUENT PRW-4	RDL	MDL	QC Batch	EFFLUENT	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.87 (1)	0.80	0.21	4524407	<0.0065	0.020	0.0065	4524543
8:2 Fluorotelomer sulfonate	ug/L	<0.28 (1)	0.80	0.28	4524407	<0.0055	0.020	0.0055	4524543
N-ethylperfluorooctane sulfonamide	ug/L	<0.28 (1)	0.80	0.28	4524407	<0.0053	0.020	0.0053	4524543
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29 (1)	0.80	0.29	4524407	<0.0049	0.020	0.0049	4524543
N-methylperfluorooctane sulfonamide	ug/L	<0.15 (1)	0.80	0.15	4524407	<0.0040	0.020	0.0040	4524543
N-methylperfluorooctanesulfonamidol	ug/L	<0.30 (1)	0.80	0.30	4524407	<0.0061	0.020	0.0061	4524543
Perfluorobutane Sulfonate (PFBS)	ug/L	0.31 (1)	0.80	0.23	4524407	<0.0019	0.020	0.0019	4524543
Perfluorobutanoic acid	ug/L	0.24 (1)	0.80	0.20	4524407	<0.0066	0.020	0.0066	4524543
Perfluorodecane Sulfonate	ug/L	<0.22 (1)	0.80	0.22	4524407	<0.0043	0.020	0.0043	4524543
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20 (1)	0.80	0.20	4524407	<0.0066	0.020	0.0066	4524543
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16 (1)	0.80	0.16	4524407	<0.0057	0.020	0.0057	4524543
Perfluoroheptane sulfonate	ug/L	<0.27 (1)	0.80	0.27	4524407	<0.0036	0.020	0.0036	4524543
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.27 (1)	0.80	0.27	4524407	<0.0047	0.020	0.0047	4524543
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.8 (1)	0.80	0.16	4524407	<0.0040	0.020	0.0040	4524543
Perfluorohexanoic Acid (PFHxA)	ug/L	0.52 (1)	0.80	0.17	4524407	<0.0046	0.020	0.0046	4524543
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.21 (1)	0.80	0.20	4524407	<0.0053	0.020	0.0053	4524543
Perfluorononanoic Acid (PFNA)	ug/L	0.19 (1)	0.80	0.19	4524407	<0.0046	0.020	0.0046	4524543
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23 (1)	0.80	0.23	4524407	<0.0058	0.020	0.0058	4524543
Perfluorooctane Sulfonate (PFOS)	ug/L	6.9 (1)	0.80	0.14	4524407	<0.0033	0.020	0.0033	4524543
Perfluoropentanoic Acid (PFPeA)	ug/L	0.48 (1)	0.80	0.21	4524407	<0.0036	0.020	0.0036	4524543
Perfluorotetradecanoic Acid	ug/L	<0.20 (1)	0.80	0.20	4524407	<0.0052	0.020	0.0052	4524543
Perfluorotridecanoic Acid	ug/L	<0.30 (1)	0.80	0.30	4524407	<0.0032	0.020	0.0032	4524543
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.19 (1)	0.80	0.14	4524407	<0.0037	0.020	0.0037	4524543
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	90	N/A	N/A	4524407	90	N/A	N/A	4524543
13C4-Perfluorooctanoic acid	%	97	N/A	N/A	4524407	87	N/A	N/A	4524543
13C8-Perfluorooctanesulfonamide	%	95	N/A	N/A	4524407	81	N/A	N/A	4524543

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentrations of the target analytes, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B6A6307
Report Date: 2016/06/07

Cape Cod Comission
Client Project #: PFC

TEST SUMMARY

Maxxam ID: CKP939
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2016/05/25
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4524407	2016/06/03	2016/06/06	Colm McNamara

Maxxam ID: CKP940
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/05/25
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4524543	2016/06/03	2016/06/06	Colm McNamara

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GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4524407	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/06/06		96	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		103	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06		91	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/06		106	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/06		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/06		105	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/06		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/06		104	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/06		97	%	70 - 130
			Perfluorobutanoic acid	2016/06/06		104	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/06		113	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/06		97	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06		104	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/06		105	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/06		103	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06		103	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/06		101	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/06		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/06		145 (1)	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/06		109	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/06		110	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/06		NC	%	70 - 130
4524407	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/06/06		90	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		87	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		85	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06		97	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/06		108	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/06		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/06		109	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/06		101	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/06		101	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/06		104	%	70 - 130
			Perfluorobutanoic acid	2016/06/06		110	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/06		114	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/06		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06		109	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/06		111	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/06		107	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06		107	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/06		97	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/06		100	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/06		127	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06		93	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/06		111	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/06		109	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06		115	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/06		NC	%	70 - 130
4524407	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/06/06	6.1		%	30
			8:2 Fluorotelomer sulfonate	2016/06/06	1.0		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/06/06	4.8		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/06/06	3.7		%	30
			N-methylperfluorooctane sulfonamide	2016/06/06	6.2		%	30
			N-methylperfluorooctanesulfonamidol	2016/06/06	2.8		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/06/06	6.8		%	30
			Perfluorobutanoic acid	2016/06/06	5.7		%	30
			Perfluorodecane Sulfonate	2016/06/06	0.31		%	30
			Perfluoroheptane sulfonate	2016/06/06	6.7		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06	5.4		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/06/06	5.3		%	30
			Perfluorononanoic Acid (PFNA)	2016/06/06	3.7		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06	3.4		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/06/06	4.0		%	30
			Perfluorotetradecanoic Acid	2016/06/06	0.36		%	30
			Perfluorotridecanoic Acid	2016/06/06	13		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06	4.8		%	30
			Perfluorodecanoic Acid (PFDA)	2016/06/06	2.6		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/06/06	1.6		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06	15		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/06/06	NC		%	30
4524407	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/06/06		92	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		91	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/06		101	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/06		90	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/06		113	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/06		98	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/06		90	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/06		95	%	70 - 130
			Perfluorobutanoic acid	2016/06/06		104	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/06		112	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/06		102	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06		108	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06		104	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/06		112	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/06		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/06		100	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/06		95	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/06		110	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06		94	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/06		107	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/06		110	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06		101	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/06		99	%	70 - 130
4524407	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/06/06		94	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		89	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/06/06	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/06/06	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/06/06	<0.29		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2016/06/06	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/06/06	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/06/06	<0.23		ug/L	
			Perfluorobutanoic acid	2016/06/06	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/06/06	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/06/06	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/06/06	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/06/06	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/06/06	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/06/06	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/06/06	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/06/06	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/06/06	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/06/06	<0.14		ug/L	
4524543	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/06/06		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		90	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		83	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06		99	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/06		101	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/06		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/06		91	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/06		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/06		92	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/06		109	%	70 - 130
			Perfluorobutanoic acid	2016/06/06		104	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/06		125	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/06		106	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06		109	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06		115	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/06		124	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/06		116	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/06		114	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/06		97	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/06		84	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06		121	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/06		115	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/06		121	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06		120	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/06		99	%	70 - 130
4524543	CM5	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/06/06		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		95	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		97	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06		87	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/06		86	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/06		85	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/06		92	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/06		86	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/06		90	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/06/06		97	%	70 - 130
			Perfluorobutanoic acid	2016/06/06		101	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/06		102	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/06		88	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06		92	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06		106	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/06		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/06		102	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06		94	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/06		97	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/06		91	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/06		92	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06		92	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/06		107	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/06		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06		103	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/06		92	%	70 - 130
4524543	CM5	RPD	6:2 Fluorotelomer sulfonate	2016/06/06	13		%	30
			8:2 Fluorotelomer sulfonate	2016/06/06	16		%	30
			N-ethylperfluorooctane sulfonamide	2016/06/06	10		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/06/06	0.65		%	30
			N-methylperfluorooctane sulfonamide	2016/06/06	7.4		%	30
			N-methylperfluorooctanesulfonamidol	2016/06/06	2.6		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/06/06	12		%	30
			Perfluorobutanoic acid	2016/06/06	3.3		%	30
			Perfluorodecane Sulfonate	2016/06/06	20		%	30
			Perfluoroheptane sulfonate	2016/06/06	19		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06	17		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06	8.3		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/06/06	16		%	30
			Perfluorononanoic Acid (PFNA)	2016/06/06	13		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06	11		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/06/06	17		%	30
			Perfluorotetradecanoic Acid	2016/06/06	6.0		%	30
			Perfluorotridecanoic Acid	2016/06/06	9.3		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06	26		%	30
			Perfluorodecanoic Acid (PFDA)	2016/06/06	7.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/06/06	13		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06	15		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/06/06	7.1		%	30
4524543	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/06/06		93	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/06		91	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/06		88	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/06	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/06/06	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/06/06	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/06/06	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/06/06	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/06/06	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/06/06	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/06/06	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/06/06	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/06/06	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/06/06	<0.0047		ug/L	

Maxxam Job #: B6A6307
Report Date: 2016/06/07

Cape Cod Comission
Client Project #: PFC

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2016/06/06	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/06/06	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/06/06	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/06	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/06/06	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/06/06	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/06/06	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/06/06	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/06/06	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/06/06	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/06	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/06/06	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

(1) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6A6307
Report Date: 2016/06/07

Cape Cod Comission
Client Project #: PFC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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AIR

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#29803 Cape Cod Comission	Company Name	Same	Quotation #	
Attention	Scott Michaud	Attention	Tom Cambareri	P.O. #	
Address	3225 Main Street	Address		Project	PFC
	Barnstable MA 02630			Project Name	
Tel	(508) 362-3828 x1234 Fax	Tel	Fax	Site #	
Email	smichaud@capecodcommission.org	Email	tcambareri@capecodcommission.org	Sampled By	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	558437
COC #:	Project Manager:
C#558437-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required ___ Time Required ___
Rush Confirmation Number ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	PFAS (537)	# of Bottles	Comments
1		Influent PRW-4	5/25/16	0945	gw	N	✓	1	
2		Effluent	5/25/16	0945	gw	N	✓	1	
3									
4									
5									
6									
7									
8									
9									
10									

26-May-16 14:15
Melissa DiGrazia
B6A6307
HGR ENV-646

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	5/25/16	1630	Ashitha Sukumar / ASHITHA SUKUMAR	2016/05/26	14:15	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5.4 / 5.2 / 5.2	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: PFC BFTA
Your C.O.C. #: 558437-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/06/24
Report #: R4040252
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C7439
Received: 2016/06/21, 14:35

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	3	2016/06/22	2016/06/23	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6C7439
Report Date: 2016/06/24

Cape Cod Comission
Client Project #: PFC BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		COP019		COP020			COP021			
Sampling Date		2016/06/16 09:11		2016/06/20 08:30			2016/06/20 08:30			
COC Number		558437-01-01		558437-01-01			558437-01-01			
	UNITS	FS-1SA	MDL	PRW-4	RDL	MDL	EFFLUENT	RDL	MDL	QC Batch
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.088	0.0065	0.63	0.020	0.0065	<0.0065	0.020	0.0065	4549894
8:2 Fluorotelomer sulfonate	ug/L	0.013	0.0055	0.23	0.020	0.0055	<0.0055	0.020	0.0055	4549894
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.0053	<0.0053	0.020	0.0053	<0.0053	0.020	0.0053	4549894
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.0049	<0.0049	0.020	0.0049	<0.0049	0.020	0.0049	4549894
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.0040	<0.0040	0.020	0.0040	<0.0040	0.020	0.0040	4549894
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.0061	<0.0061	0.020	0.0061	<0.0061	0.020	0.0061	4549894
Perfluorobutane Sulfonate (PFBS)	ug/L	0.017	0.0019	0.091	0.020	0.0019	<0.0019	0.020	0.0019	4549894
Perfluorobutanoic acid	ug/L	0.11	0.0066	0.079	0.020	0.0066	<0.0066	0.020	0.0066	4549894
Perfluorodecane Sulfonate	ug/L	0.0088	0.0043	0.0058	0.020	0.0043	<0.0043	0.020	0.0043	4549894
Perfluorodecanoic Acid (PFDA)	ug/L	0.060	0.0066	0.012	0.020	0.0066	<0.0066	0.020	0.0066	4549894
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.0057	<0.0057	0.020	0.0057	<0.0057	0.020	0.0057	4549894
Perfluoroheptane sulfonate	ug/L	0.046	0.0036	0.17	0.020	0.0036	<0.0036	0.020	0.0036	4549894
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.18	0.0047	0.14	0.020	0.0047	<0.0047	0.020	0.0047	4549894
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.4 (1)	0.0040	1.5 (1)	0.20	0.040	<0.0040	0.020	0.0040	4549894
Perfluorohexanoic Acid (PFHxA)	ug/L	0.23	0.0046	0.43	0.020	0.0046	<0.0046	0.020	0.0046	4549894
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.55	0.0053	0.16	0.020	0.0053	<0.0053	0.020	0.0053	4549894
Perfluorononanoic Acid (PFNA)	ug/L	0.12	0.0046	0.073	0.020	0.0046	<0.0046	0.020	0.0046	4549894
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.24	0.0058	0.016	0.020	0.0058	<0.0058	0.020	0.0058	4549894
Perfluorooctane Sulfonate (PFOS)	ug/L	1.7 (1)	0.0033	7.8 (1)	0.20	0.033	<0.0033	0.020	0.0033	4549894
Perfluoropentanoic Acid (PFPeA)	ug/L	0.24	0.0036	0.26	0.020	0.0036	<0.0036	0.020	0.0036	4549894
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.0052	<0.0052	0.020	0.0052	<0.0052	0.020	0.0052	4549894
Perfluorotridecanoic Acid	ug/L	<0.0032	0.0032	<0.0032	0.020	0.0032	<0.0032	0.020	0.0032	4549894
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.12	0.0037	0.059	0.020	0.0037	<0.0037	0.020	0.0037	4549894
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	78	N/A	80	N/A	N/A	105	N/A	N/A	4549894
13C4-Perfluorooctanoic acid	%	86	N/A	105	N/A	N/A	92	N/A	N/A	4549894
13C8-Perfluorooctanesulfonamide	%	82	N/A	94	N/A	N/A	85	N/A	N/A	4549894

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B6C7439
Report Date: 2016/06/24

Cape Cod Comission
Client Project #: PFC BFTA

TEST SUMMARY

Maxxam ID: COP019
Sample ID: FS-1SA
Matrix: Water

Collected: 2016/06/16
Shipped:
Received: 2016/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4549894	2016/06/22	2016/06/23	Colm McNamara

Maxxam ID: COP020
Sample ID: PRW-4
Matrix: Water

Collected: 2016/06/20
Shipped:
Received: 2016/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4549894	2016/06/22	2016/06/23	Colm McNamara

Maxxam ID: COP021
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/06/20
Shipped:
Received: 2016/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4549894	2016/06/22	2016/06/23	Colm McNamara

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6C7439
Report Date: 2016/06/24

Cape Cod Comission
Client Project #: PFC BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4549894	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/06/23		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/23		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/23		95	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/23		100	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/23		82	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/23		95	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/23		83	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/23		89	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/23		86	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/23		93	%	70 - 130
			Perfluorobutanoic acid	2016/06/23		89	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/23		92	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/23		89	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/23		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/23		90	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/23		94	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/23		83	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/23		101	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/23		89	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/23		87	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/23		98	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/23		107	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/23		91	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/23		94	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/23		94	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/23		92	%	70 - 130
4549894	CM5	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/06/23		107	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/23		111	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/23		81	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/23		99	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/06/23		71	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/06/23		89	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/06/23		92	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/06/23		90	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/06/23		91	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/06/23		97	%	70 - 130
			Perfluorobutanoic acid	2016/06/23		92	%	70 - 130
			Perfluorodecane Sulfonate	2016/06/23		90	%	70 - 130
			Perfluoroheptane sulfonate	2016/06/23		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/06/23		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/06/23		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/06/23		101	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/06/23		94	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/23		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/06/23		91	%	70 - 130
			Perfluorotetradecanoic Acid	2016/06/23		92	%	70 - 130
			Perfluorotridecanoic Acid	2016/06/23		93	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/06/23		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/06/23		88	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/06/23		80	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/23		89	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/06/23		88	%	70 - 130
4549894	CM5	RPD	6:2 Fluorotelomer sulfonate	2016/06/23	0.60		%	30
			8:2 Fluorotelomer sulfonate	2016/06/23	14		%	30

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Maxxam Job #: B6C7439
Report Date: 2016/06/24

Cape Cod Comission
Client Project #: PFC BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/06/23	6.8		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/06/23	10		%	30
			N-methylperfluorooctane sulfonamide	2016/06/23	1.6		%	30
			N-methylperfluorooctanesulfonamidol	2016/06/23	6.3		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/06/23	4.6		%	30
			Perfluorobutanoic acid	2016/06/23	3.1		%	30
			Perfluorodecane Sulfonate	2016/06/23	2.2		%	30
			Perfluoroheptane sulfonate	2016/06/23	13		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/06/23	6.5		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/06/23	6.2		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/06/23	7.6		%	30
			Perfluorononanoic Acid (PFNA)	2016/06/23	13		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/23	3.1		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/06/23	1.8		%	30
			Perfluorotetradecanoic Acid	2016/06/23	5.6		%	30
			Perfluorotridecanoic Acid	2016/06/23	4.6		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/06/23	3.8		%	30
			Perfluorodecanoic Acid (PFDA)	2016/06/23	4.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/06/23	16		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/23	5.3		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/06/23	4.7		%	30
4549894	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/06/23		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/06/23		101	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/06/23		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/06/23	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/06/23	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/06/23	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/06/23	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/06/23	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/06/23	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/06/23	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/06/23	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/06/23	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/06/23	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/06/23	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/06/23	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/06/23	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/06/23	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/06/23	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/06/23	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/06/23	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/06/23	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/06/23	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/06/23	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/06/23	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/06/23	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/06/23	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6C7439
Report Date: 2016/06/24

Cape Cod Comission
Client Project #: PFC BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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AIR RUSH

Maxxam Analytics
...ada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

21-Jun-16 14:35
Melissa DiGrazia
B6C7439
MAF ENV-1193

Page 1 of 1

...Only:
Bottle Order #: 558437
Project Manager: Melissa DiGrazia
C#558437-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#29803 Cape Cod Comission	Company Name:	Same	Quotation #:	
Attention:	Scott Michaud	Attention:		P.O. #:	
Address:	3225 Main Street	Address:		Project:	PFC
	Barnstable MA 02630			Project Name:	BFTA
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:	
Email:	smichaud@capecodcommission.org	Email:	tcambareri@capecodcommission.org	Sampled By:	tcambareri

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ______
- ☐ PWQO
- ☐ Other ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; 537 (PFAS)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. SEE BELOW

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ ☐
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals	537 (PFAS)	# of Bottles	Comments
1		FS-15a	6/16/16	9:11a	gw		✓	1	Standard TAT
2		PRW-4	6/20/16	8:30a	~~h2o~~ gw		✓	1	Standard TAT
3		Effluent	6/20/16	8:30a	h2o		✓	1	results by 6/24/16
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	16/20/06	3:45P	[signature]	16/06/20	15:45	
[signature]	16/6/20	16:30	[signature]	2016/06/21	14:35	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	4,4,4 / 4,4 / 4,8	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your C.O.C. #: 528190-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/07/13
Report #: R4062161
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6E0135
Received: 2016/07/07, 14:13

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	2	2016/07/08	2016/07/11	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	6	2016/07/12	2016/07/13	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6E0135
Report Date: 2016/07/13

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		CQY656				CQY657			
Sampling Date		2016/07/06 11:00				2016/07/06 12:40			
COC Number		528190-01-01				528190-01-01			
	UNITS	**POND MD**	**RDL**	**MDL**	**QC Batch**	**POND FR**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.020	0.0065	4574913	0.024	0.020	0.0065	4574913
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4574913	0.023	0.020	0.0055	4574913
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4574913	<0.0053	0.020	0.0053	4574913
N-ethylperfluorooctane sulfonamidoe	ug/L	0.0090	0.020	0.0049	4574913	<0.0049	0.020	0.0049	4574913
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4574913	<0.0040	0.020	0.0040	4574913
N-methylperfluorooctanesulfonamidol	ug/L	0.0065	0.020	0.0061	4574913	<0.0061	0.020	0.0061	4574913
Perfluorobutane Sulfonate (PFBS)	ug/L	0.015	0.020	0.0019	4574913	0.039	0.020	0.0019	4574913
Perfluorobutanoic acid	ug/L	0.0080	0.020	0.0066	4574913	0.060	0.020	0.0066	4574913
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4574913	<0.0043	0.020	0.0043	4574913
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4574913	0.015	0.020	0.0066	4574913
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4574913	<0.0057	0.020	0.0057	4574913
Perfluoroheptane sulfonate	ug/L	0.0079	0.020	0.0036	4574913	0.032	0.020	0.0036	4574913
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.027	0.020	0.0047	4574913	0.11	0.020	0.0047	4574913
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.054	0.020	0.0040	4574913	0.31	0.020	0.0040	4574913
Perfluorohexanoic Acid (PFHxA)	ug/L	0.037	0.020	0.0046	4574913	0.30	0.020	0.0046	4574913
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.012	0.020	0.0053	4574913	0.11	0.020	0.0053	4574913
Perfluorononanoic Acid (PFNA)	ug/L	0.011	0.020	0.0046	4574913	0.078	0.020	0.0046	4574913
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4574913	<0.0058	0.020	0.0058	4574913
Perfluorooctane Sulfonate (PFOS)	ug/L	0.082	0.020	0.0033	4574913	1.5 (1)	0.80	0.14	4570773
Perfluoropentanoic Acid (PFPeA)	ug/L	0.029	0.020	0.0036	4574913	0.17	0.020	0.0036	4574913
Perfluorotetradecanoic Acid	ug/L	0.0082	0.020	0.0052	4574913	0.0076	0.020	0.0052	4574913
Perfluorotridecanoic Acid	ug/L	0.0094	0.020	0.0032	4574913	0.0085	0.020	0.0032	4574913
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4574913	0.019	0.020	0.0037	4574913
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4574913	94	N/A	N/A	4570773
13C4-Perfluorooctanoic acid	%	99	N/A	N/A	4574913	98	N/A	N/A	4574913
13C8-Perfluorooctanesulfonamide	%	79	N/A	N/A	4574913	82	N/A	N/A	4574913

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6E0135
Report Date: 2016/07/13

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		CQY658				CQY659	CQY660			
Sampling Date		2016/07/06 12:35				2016/07/06 12:35	2016/07/06 09:10			
COC Number		528190-01-01				528190-01-01	528190-01-01			
	UNITS	**PRW-4**	**RDL**	**MDL**	**QC Batch**	**EFFLUENT**	**HW-1S**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters										
6:2 Fluorotelomer sulfonate	ug/L	0.77 (1)	0.80	0.21	4570773	<0.0065	<0.0065	0.020	0.0065	4574913
8:2 Fluorotelomer sulfonate	ug/L	<0.28 (1)	0.80	0.28	4570773	<0.0055	<0.0055	0.020	0.0055	4574913
N-ethylperfluorooctane sulfonamide	ug/L	<0.28 (1)	0.80	0.28	4570773	<0.0053	<0.0053	0.020	0.0053	4574913
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29 (1)	0.80	0.29	4570773	<0.0049	<0.0049	0.020	0.0049	4574913
N-methylperfluorooctane sulfonamide	ug/L	<0.15 (1)	0.80	0.15	4570773	<0.0040	<0.0040	0.020	0.0040	4574913
N-methylperfluorooctanesulfonamidol	ug/L	<0.30 (1)	0.80	0.30	4570773	<0.0061	<0.0061	0.020	0.0061	4574913
Perfluorobutane Sulfonate (PFBS)	ug/L	0.30 (1)	0.80	0.23	4570773	0.0076	0.0076	0.020	0.0019	4574913
Perfluorobutanoic acid	ug/L	<0.20 (1)	0.80	0.20	4570773	0.0074	<0.0066	0.020	0.0066	4574913
Perfluorodecane Sulfonate	ug/L	<0.22 (1)	0.80	0.22	4570773	<0.0043	<0.0043	0.020	0.0043	4574913
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20 (1)	0.80	0.20	4570773	<0.0066	<0.0066	0.020	0.0066	4574913
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16 (1)	0.80	0.16	4570773	<0.0057	<0.0057	0.020	0.0057	4574913
Perfluoroheptane sulfonate	ug/L	<0.27 (1)	0.80	0.27	4570773	<0.0036	<0.0036	0.020	0.0036	4574913
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.27 (1)	0.80	0.27	4570773	<0.0047	<0.0047	0.020	0.0047	4574913
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.7 (1)	0.80	0.16	4570773	0.0055	0.0053	0.020	0.0040	4574913
Perfluorohexanoic Acid (PFHxA)	ug/L	0.47 (1)	0.80	0.17	4570773	0.0063	0.0054	0.020	0.0046	4574913
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.27 (1)	0.80	0.20	4570773	<0.0053	<0.0053	0.020	0.0053	4574913
Perfluorononanoic Acid (PFNA)	ug/L	<0.19 (1)	0.80	0.19	4570773	<0.0046	<0.0046	0.020	0.0046	4574913
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23 (1)	0.80	0.23	4570773	<0.0058	<0.0058	0.020	0.0058	4574913
Perfluorooctane Sulfonate (PFOS)	ug/L	7.6 (1)	0.80	0.14	4570773	0.010	0.0070	0.020	0.0033	4574913
Perfluoropentanoic Acid (PFPeA)	ug/L	0.32 (1)	0.80	0.21	4570773	0.0069	0.0067	0.020	0.0036	4574913
Perfluorotetradecanoic Acid	ug/L	<0.20 (1)	0.80	0.20	4570773	<0.0052	0.0059	0.020	0.0052	4574913
Perfluorotridecanoic Acid	ug/L	<0.30 (1)	0.80	0.30	4570773	<0.0032	<0.0032	0.020	0.0032	4574913
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14 (1)	0.80	0.14	4570773	<0.0037	<0.0037	0.020	0.0037	4574913
Surrogate Recovery (%)										
13C4-Perfluorooctanesulfonate	%	91	N/A	N/A	4570773	96	90	N/A	N/A	4574913
13C4-Perfluorooctanoic acid	%	96	N/A	N/A	4570773	106	97	N/A	N/A	4574913
13C8-Perfluorooctanesulfonamide	%	96	N/A	N/A	4570773	91	86	N/A	N/A	4574913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentrations of the target analytes, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B6E0135
Report Date: 2016/07/13

Cape Cod Comission

RESULTS OF ANALYSES OF WATER

Maxxam ID		CQY661	CQY662	CQY663			
Sampling Date		2016/07/06 09:45	2016/07/06 11:50	2016/07/06 12:20			
COC Number		528190-01-01	528190-01-01	528190-01-01			
	UNITS	**HW-1D**	**HW-2S**	**HW-2D**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters							
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	<0.0065	<0.0065	0.020	0.0065	4574913
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	<0.0055	<0.0055	0.020	0.0055	4574913
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	<0.0053	0.020	0.0053	4574913
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	<0.0049	0.020	0.0049	4574913
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	<0.0040	0.020	0.0040	4574913
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	<0.0061	0.020	0.0061	4574913
Perfluorobutane Sulfonate (PFBS)	ug/L	0.0088	0.012	0.0083	0.020	0.0019	4574913
Perfluorobutanoic acid	ug/L	0.0098	0.0079	<0.0066	0.020	0.0066	4574913
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	<0.0043	0.020	0.0043	4574913
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	<0.0066	<0.0066	0.020	0.0066	4574913
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	<0.0057	0.020	0.0057	4574913
Perfluoroheptane sulfonate	ug/L	<0.0036	0.0063	<0.0036	0.020	0.0036	4574913
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.0055	0.0078	<0.0047	0.020	0.0047	4574913
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.016	0.030	0.012	0.020	0.0040	4574913
Perfluorohexanoic Acid (PFHxA)	ug/L	0.012	0.011	0.0048	0.020	0.0046	4574913
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.0098	0.0059	<0.0053	0.020	0.0053	4574913
Perfluorononanoic Acid (PFNA)	ug/L	0.0047	0.014	<0.0046	0.020	0.0046	4574913
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	<0.0058	<0.0058	0.020	0.0058	4574913
Perfluorooctane Sulfonate (PFOS)	ug/L	0.041	0.17	0.0095	0.020	0.0033	4574913
Perfluoropentanoic Acid (PFPeA)	ug/L	0.015	0.012	<0.0036	0.020	0.0036	4574913
Perfluorotetradecanoic Acid	ug/L	0.0067	<0.0052	0.0055	0.020	0.0052	4574913
Perfluorotridecanoic Acid	ug/L	0.0063	<0.0032	<0.0032	0.020	0.0032	4574913
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	<0.0037	<0.0037	0.020	0.0037	4574913
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	88	84	83	N/A	N/A	4574913
13C4-Perfluorooctanoic acid	%	93	97	83	N/A	N/A	4574913
13C8-Perfluorooctanesulfonamide	%	79	87	75	N/A	N/A	4574913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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TEST SUMMARY

Maxxam ID: CQY656 **Collected:** 2016/07/06
Sample ID: POND MD **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

Maxxam ID: CQY657 **Collected:** 2016/07/06
Sample ID: POND FR **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

Maxxam ID: CQY658 **Collected:** 2016/07/06
Sample ID: PRW-4 **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4570773	2016/07/08	2016/07/11	Colm McNamara

Maxxam ID: CQY659 **Collected:** 2016/07/06
Sample ID: EFFLUENT **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

Maxxam ID: CQY660 **Collected:** 2016/07/06
Sample ID: HW-1S **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

Maxxam ID: CQY661 **Collected:** 2016/07/06
Sample ID: HW-1D **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

Maxxam ID: CQY662 **Collected:** 2016/07/06
Sample ID: HW-2S **Shipped:**
Matrix: Water **Received:** 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

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TEST SUMMARY

Maxxam ID: CQY663
Sample ID: HW-2D
Matrix: Water

Collected: 2016/07/06
Shipped:
Received: 2016/07/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4574913	2016/07/12	2016/07/13	Colm McNamara

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GENERAL COMMENTS

Sample CQY657, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4570773	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/07/11		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/11		94	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/11		89	%	60 - 120
4570773	CM5	Matrix Spike(CQY656)	6:2 Fluorotelomer sulfonate	2016/07/11		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/11		105	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/11		100	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/11		100	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/11		103	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/11		104	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/11		100	%	70 - 130
			Perfluorobutanoic acid	2016/07/11		108	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/11		101	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/11		99	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/11		104	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/11		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/11		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/11		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/11		115	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/11		98	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/11		109	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/11		114	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/11		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/11		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/11		114	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/11		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/11		100	%	70 - 130
4570773	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/07/11		97	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/11		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/11		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/11		106	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/11		99	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/11		104	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/11		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/11		107	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/11		107	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/11		113	%	70 - 130
			Perfluorobutanoic acid	2016/07/11		113	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/11		104	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/11		102	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/11		108	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/11		111	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/11		113	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/11		119	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/11		111	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/11		109	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/11		109	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/11		111	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/11		112	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/11		111	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/11		115	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/11		111	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/11		102	%	70 - 130
4570773	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/07/11		94	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/11		100	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/07/11		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/11	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/07/11	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/07/11	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/07/11	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/07/11	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/07/11	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/07/11	<0.23		ug/L	
			Perfluorobutanoic acid	2016/07/11	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/07/11	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/07/11	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/07/11	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/07/11	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/07/11	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/07/11	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/11	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/07/11	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/07/11	0.22, RDL=0.80		ug/L	
			Perfluorotridecanoic Acid	2016/07/11	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/07/11	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/07/11	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/07/11	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/11	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/07/11	<0.14		ug/L	
4574913	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/07/13		84	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/13		93	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/13		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/13		111	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/13		109	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/13		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/13		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/13		115	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/13		105	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/13		107	%	70 - 130
			Perfluorobutanoic acid	2016/07/13		110	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/13		99	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/13		103	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/13		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/13		108	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/13		108	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/13		115	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/13		110	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/13		105	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/13		105	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/13		108	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/13		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/13		102	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/13		117	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/13		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/13		104	%	70 - 130
4574913	CM5	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/07/13		91	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/13		97	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/13		84	%	60 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			6:2 Fluorotelomer sulfonate	2016/07/13		109	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/13		103	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/13		107	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/13		96	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/13		99	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/13		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/13		99	%	70 - 130
			Perfluorobutanoic acid	2016/07/13		107	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/13		111	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/13		102	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/13		107	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/13		103	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/13		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/13		113	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/13		106	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/13		110	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/13		101	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/13		99	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/13		103	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/13		115	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/13		111	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/13		110	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/13		112	%	70 - 130
4574913	CM5	RPD	6:2 Fluorotelomer sulfonate	2016/07/13	1.6		%	30
			8:2 Fluorotelomer sulfonate	2016/07/13	5.5		%	30
			N-ethylperfluorooctane sulfonamide	2016/07/13	7.4		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/07/13	6.1		%	30
			N-methylperfluorooctane sulfonamide	2016/07/13	15		%	30
			N-methylperfluorooctanesulfonamidol	2016/07/13	2.7		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/07/13	8.2		%	30
			Perfluorobutanoic acid	2016/07/13	2.2		%	30
			Perfluorodecane Sulfonate	2016/07/13	11		%	30
			Perfluoroheptane sulfonate	2016/07/13	0.78		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/07/13	0.37		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/07/13	4.7		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/07/13	0.93		%	30
			Perfluorononanoic Acid (PFNA)	2016/07/13	1.8		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/13	3.3		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/07/13	5.4		%	30
			Perfluorotetradecanoic Acid	2016/07/13	3.7		%	30
			Perfluorotridecanoic Acid	2016/07/13	9.1		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/07/13	3.1		%	30
			Perfluorodecanoic Acid (PFDA)	2016/07/13	12		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/07/13	5.6		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/13	2.6		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/07/13	6.8		%	30
4574913	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/07/13		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/13		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/13		88	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/13	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/07/13	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/07/13	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/07/13	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/07/13	<0.0040		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctanesulfonamidol	2016/07/13	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/07/13	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/07/13	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/07/13	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/07/13	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/07/13	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/07/13	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/07/13	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/07/13	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/13	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/07/13	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/07/13	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/07/13	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/07/13	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/07/13	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/07/13	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/13	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/07/13	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

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INVOICE TO:	REPORT TO:	PROJECT INFORMATION:
Company Name: #29803 Cape Cod Comission	Company Name: SAME	Quotation #:
Attention: Tom Cambareri	Attention:	P.O. #:
Address: 3225 Main Street, Barnstable MA 02630	Address:	Project:
Tel: (508) 362-3828 x1234 Fax:	Tel: Fax:	Project Name:
Email: tcambareri@capecodcommission.org	Email:	Site #:
		Sampled By:

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	528190
COC #:	Project Manager:
C#528190-01-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 PFC's	# of Bottles	Comments
1		POND MD	7/6/16	11:00	water		537 PFC's	1	
2		POND FR	↓	12:40	↓		↓	↓	
3		PRW-4		12:35					
4		Effluent		12:35					
5		HW-1S		9:10					
6		HW-1D		9:45					
7		HW-2S		11:50					
8		HW-2D		12:20					
9									
10									

07-Jul-16 14:13
Melissa DiGrazia
B6E0135
SD3 ENV-1161

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	7/6/2016	4:30	[signature]	7/6/16	5 pm	
			Aileen Sukdeo / AIHEDA SUKDEO	2016/07/07	14:13	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	14.5/12.5/11.2	Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:(800) 563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:	SAME	Quotation #:		Maxxam Job #:	Bottle Order #: 528190
Attention:	Tom Cambareri	Attention:		P.O. #:			
Address:	3225 Main Street	Address:		Project:		COC #: C#528190-01-01	Project Manager: Melissa DiGrazia
	Barnstable MA 02630			Project Name:			
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:			
Email:	tcambareri@capecodcommission.org	Email:		Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
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Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	537 PFCs									# of Bottles	Comments
1		POND MD	7/6/16	11:00	water		537 PFCs									1	
2		POND FR	↓	12:40	↓		↓									↓	
3		PRW-4		12:35													
4		Effluent		12:35													
5		HW-1S		9:10													
6		HW-1D		9:45													
7		HW-2S		11:50													
8		HW-2D	↓	12:20	↓		↓									↓	
9																	
10																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Monica M Mi[illegible]	7/6/2016	4:30					Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
									Present		
									Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam
A Bureau Veritas Group Company

Your Project #: PFC
Site Location: BFTA
Your C.O.C. #: 558437-02-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/07/27
Report #: R4083744
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6F2381
Received: 2016/07/21, 13:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	3	2016/07/25	2016/07/26	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CTA455				CTA456			
Sampling Date		2016/07/20 09:50				2016/07/20 09:50			
COC Number		558437-02-01				558437-02-01			
	UNITS	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**	**MID POINT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.59 (1)	0.80	0.21	4592622	0.28	0.020	0.0065	4592373
8:2 Fluorotelomer sulfonate	ug/L	<0.28 (1)	0.80	0.28	4592622	0.061	0.020	0.0055	4592373
N-ethylperfluorooctane sulfonamide	ug/L	<0.28 (1)	0.80	0.28	4592622	<0.0053	0.020	0.0053	4592373
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29 (1)	0.80	0.29	4592622	<0.0049	0.020	0.0049	4592373
N-methylperfluorooctane sulfonamide	ug/L	<0.15 (1)	0.80	0.15	4592622	<0.0040	0.020	0.0040	4592373
N-methylperfluorooctanesulfonamidol	ug/L	<0.30 (1)	0.80	0.30	4592622	<0.0061	0.020	0.0061	4592373
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.23 (1)	0.80	0.23	4592622	0.054	0.020	0.0019	4592373
Perfluorobutanoic acid	ug/L	<0.20 (1)	0.80	0.20	4592622	0.087	0.020	0.0066	4592373
Perfluorodecane Sulfonate	ug/L	<0.22 (1)	0.80	0.22	4592622	<0.0043	0.020	0.0043	4592373
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20 (1)	0.80	0.20	4592622	<0.0066	0.020	0.0066	4592373
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16 (1)	0.80	0.16	4592622	<0.0057	0.020	0.0057	4592373
Perfluoroheptane sulfonate	ug/L	<0.27 (1)	0.80	0.27	4592622	0.070	0.020	0.0036	4592373
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.27 (1)	0.80	0.27	4592622	0.084	0.020	0.0047	4592373
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.7 (1)	0.80	0.16	4592622	0.67	0.020	0.0040	4592373
Perfluorohexanoic Acid (PFHxA)	ug/L	0.36 (1)	0.80	0.17	4592622	0.30	0.020	0.0046	4592373
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.20 (1)	0.80	0.20	4592622	0.097	0.020	0.0053	4592373
Perfluorononanoic Acid (PFNA)	ug/L	<0.19 (1)	0.80	0.19	4592622	0.028	0.020	0.0046	4592373
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23 (1)	0.80	0.23	4592622	<0.0058	0.020	0.0058	4592373
Perfluorooctane Sulfonate (PFOS)	ug/L	12 (1)	0.80	0.14	4592622	2.7 (2)	0.10	0.17	4592373
Perfluoropentanoic Acid (PFPeA)	ug/L	0.28 (1)	0.80	0.21	4592622	0.21	0.020	0.0036	4592373
Perfluorotetradecanoic Acid	ug/L	<0.20 (1)	0.80	0.20	4592622	<0.0052	0.020	0.0052	4592373
Perfluorotridecanoic Acid	ug/L	<0.30 (1)	0.80	0.30	4592622	<0.0032	0.020	0.0032	4592373
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.14 (1)	0.80	0.14	4592622	0.026	0.020	0.0037	4592373
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	104	N/A	N/A	4592622	87	N/A	N/A	4592373
13C4-Perfluorooctanoic acid	%	103	N/A	N/A	4592622	97	N/A	N/A	4592373
13C8-Perfluorooctanesulfonamide	%	102	N/A	N/A	4592622	93	N/A	N/A	4592373

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentrations of the target analytes, sample required high level analysis. Detection limit was adjusted accordingly.
(2) Due to high concentration of the target analyte, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CTA457			
Sampling Date		2016/07/20 09:50			
COC Number		558437-02-01			
	UNITS	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters					
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.020	0.0065	4592373
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4592373
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4592373
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4592373
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4592373
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4592373
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	0.020	0.0019	4592373
Perfluorobutanoic acid	ug/L	<0.0066	0.020	0.0066	4592373
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4592373
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4592373
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4592373
Perfluoroheptane sulfonate	ug/L	<0.0036	0.020	0.0036	4592373
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	0.020	0.0047	4592373
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0040	0.020	0.0040	4592373
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0046	0.020	0.0046	4592373
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	0.020	0.0053	4592373
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4592373
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4592373
Perfluorooctane Sulfonate (PFOS)	ug/L	0.0062	0.020	0.0033	4592373
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0036	0.020	0.0036	4592373
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4592373
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4592373
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4592373
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4592373
13C4-Perfluorooctanoic acid	%	98	N/A	N/A	4592373
13C8-Perfluorooctanesulfonamide	%	94	N/A	N/A	4592373

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

TEST SUMMARY

Maxxam ID: CTA455
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2016/07/20
Shipped:
Received: 2016/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4592622	2016/07/25	2016/07/26	Colm McNamara

Maxxam ID: CTA456
Sample ID: MID POINT
Matrix: Water

Collected: 2016/07/20
Shipped:
Received: 2016/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4592373	2016/07/25	2016/07/26	Colm McNamara

Maxxam ID: CTA457
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/07/20
Shipped:
Received: 2016/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4592373	2016/07/25	2016/07/26	Colm McNamara

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4592373	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/07/26		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		98	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		83	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/26		103	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/26		121	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/26		111	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/26		114	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/26		122	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/26		122	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/26		114	%	70 - 130
			Perfluorobutanoic acid	2016/07/26		110	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/26		105	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/26		107	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26		108	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/26		112	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/26		118	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26		121	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/26		114	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/26		110	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/26		104	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26		114	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/26		112	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/26		116	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26		110	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/26		115	%	70 - 130
4592373	CM5	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/07/26		99	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		96	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		89	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/26		95	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/26		104	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/26		106	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/26		106	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/26		113	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/26		113	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/26		113	%	70 - 130
			Perfluorobutanoic acid	2016/07/26		110	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/26		106	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/26		105	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26		105	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26		109	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/26		107	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/26		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26		116	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/26		103	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/26		108	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/26		107	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26		106	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/26		112	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/26		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26		106	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/26		105	%	70 - 130
4592373	CM5	RPD	6:2 Fluorotelomer sulfonate	2016/07/26	7.3		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2016/07/26	15		%	30
			N-ethylperfluorooctane sulfonamide	2016/07/26	4.6		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/07/26	6.9		%	30
			N-methylperfluorooctane sulfonamide	2016/07/26	8.0		%	30
			N-methylperfluorooctanesulfonamidol	2016/07/26	8.0		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/07/26	0.18		%	30
			Perfluorobutanoic acid	2016/07/26	0.36		%	30
			Perfluorodecane Sulfonate	2016/07/26	1.5		%	30
			Perfluoroheptane sulfonate	2016/07/26	1.9		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26	0.57		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26	0.74		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/07/26	4.6		%	30
			Perfluorononanoic Acid (PFNA)	2016/07/26	7.0		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26	4.2		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/07/26	11		%	30
			Perfluorotetradecanoic Acid	2016/07/26	1.5		%	30
			Perfluorotridecanoic Acid	2016/07/26	3.4		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26	6.9		%	30
			Perfluorodecanoic Acid (PFDA)	2016/07/26	0		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/07/26	7.9		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26	3.9		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/07/26	8.7		%	30
4592373	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/07/26		95	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		90	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/26	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/07/26	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/07/26	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/07/26	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/07/26	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/07/26	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/07/26	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/07/26	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/07/26	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/07/26	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/07/26	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/07/26	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/07/26	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/07/26	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/07/26	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/07/26	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/07/26	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/07/26	<0.0033		ug/L	
4592622	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/07/26		98	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		102	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		103	%	60 - 120
4592622	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/07/26		99	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		101	%	70 - 130

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C8-Perfluorooctanesulfonamide	2016/07/26		99	%	60 - 120
4592622	CM5	Matrix Spike(CTA455)	6:2 Fluorotelomer sulfonate	2016/07/26		91	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/26		89	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/26		96	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/26		98	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/26		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/26		100	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/26		105	%	70 - 130
			Perfluorobutanoic acid	2016/07/26		105	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/26		103	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/26		101	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/26		103	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/26		97	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/26		101	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/26		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/26		111	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26		96	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/26		99	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/26		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26		96	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/26		107	%	70 - 130
4592622	CM5	Matrix Spike DUP(CTA455)	6:2 Fluorotelomer sulfonate	2016/07/26		78	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/26		92	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/26		95	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/26		91	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/26		96	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/26		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/26		103	%	70 - 130
			Perfluorobutanoic acid	2016/07/26		101	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/26		101	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/26		100	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26		99	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26		92	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/26		106	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/26		93	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26		99	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/26		94	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/26		103	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/26		123	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26		94	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/26		101	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/26		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26		94	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/26		98	%	70 - 130
4592622	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/07/26	16		%	30
			8:2 Fluorotelomer sulfonate	2016/07/26	3.2		%	30
			N-ethylperfluorooctane sulfonamide	2016/07/26	0.75		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/07/26	6.8		%	30
			N-methylperfluorooctane sulfonamide	2016/07/26	3.4		%	30
			N-methylperfluorooctanesulfonamidol	2016/07/26	3.3		%	30

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/07/26	2.1		%	30
			Perfluorobutanoic acid	2016/07/26	3.8		%	30
			Perfluorodecane Sulfonate	2016/07/26	1.1		%	30
			Perfluoroheptane sulfonate	2016/07/26	0.36		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26	2.5		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26	2.3		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/07/26	2.7		%	30
			Perfluorononanoic Acid (PFNA)	2016/07/26	4.9		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26	4.4		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/07/26	7.7		%	30
			Perfluorotetradecanoic Acid	2016/07/26	0		%	30
			Perfluorotridecanoic Acid	2016/07/26	10		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26	2.3		%	30
			Perfluorodecanoic Acid (PFDA)	2016/07/26	1.8		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/07/26	6.7		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26	1.5		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/07/26	9.1		%	30
4592622	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/07/26		101	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		99	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		106	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/26		87	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/07/26		99	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/07/26		97	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/07/26		98	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/07/26		99	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/07/26		106	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/07/26		106	%	70 - 130
			Perfluorobutanoic acid	2016/07/26		99	%	70 - 130
			Perfluorodecane Sulfonate	2016/07/26		96	%	70 - 130
			Perfluoroheptane sulfonate	2016/07/26		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/07/26		100	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/07/26		101	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/07/26		101	%	70 - 130
			Perfluorotetradecanoic Acid	2016/07/26		107	%	70 - 130
			Perfluorotridecanoic Acid	2016/07/26		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26		100	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/07/26		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/07/26		110	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/07/26		104	%	70 - 130
4592622	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/07/26		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/07/26		104	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/07/26		102	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/07/26	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/07/26	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/07/26	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/07/26	<0.29		ug/L	
			N-methylperfluorooctane sulfonamide	2016/07/26	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/07/26	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/07/26	<0.23		ug/L	

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutanoic acid	2016/07/26	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/07/26	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/07/26	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/07/26	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/07/26	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/07/26	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/07/26	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/07/26	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/07/26	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/07/26	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/07/26	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/07/26	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/07/26	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/07/26	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/07/26	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/07/26	<0.14		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Maxxam Job #: B6F2381
Report Date: 2016/07/27

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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RUSH

AIR

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information		Report To:		Project Information:		Laboratory Use Only:	
Company Name	#29803 Cape Cod Comission	Company Name	Same	Quotation #		Maxxam Job #:	Bottle Order #:
Attention	Scott Michaud	Attention	Tom Cambareri	P.O. #			558437
Address	3225 Main Street	Address	Same	Project	PFC	COC #:	Project Manager:
	Barnstable MA 02630			Project Name	BFTA	C#558437-02-01	Melissa DiGrazia
Tel	(508) 362-3828 x1234 Fax:	Tel	Fax	Site #			
Email	smichaud@capecodcommission.org	Email		Sampled By	Scott Michaud		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: 7/21/16 Time Required: CB ☑
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle)	Metals / Hg / Cr VI	537 (PFAS)	# of Bottles	Comments
1		INFLUENT PRW-4	7/20/16	0950	H_2O			✓	1	
2		MIDPOINT	↓	↓	↓			✓	1	
3		EFFLUENT	↓	↓	↓			✓	1	
4										
5										
6										
7										
8										
9										
10										

21-Jul-16 13:30
Melissa DiGrazia
B6F2381
HGR ENV-662

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	7/20/16	1600	[signature] JOSEPH URAH	2016/07/21	13:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.7/3.1/3.4°C	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: BFTA
Your C.O.C. #: 558437-03-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/08/26
Report #: R4136300
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6H1063
Received: 2016/08/12, 14:28

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	6	2016/08/15	2016/08/19	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	1	2016/08/25	2016/08/23	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CWM907				CWM908			
Sampling Date		2016/08/11 08:00				2016/08/11 08:00			
COC Number		558437-03-01				558437-03-01			
	UNITS	EFFLUENT	RDL	MDL	QC Batch	MIDPOINT	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	0.020	0.0065	4627078	0.15	0.020	0.0065	4627078
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	0.020	0.0055	4627078	0.033	0.020	0.0055	4627078
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4627078	<0.0053	0.020	0.0053	4627078
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4627078	<0.0049	0.020	0.0049	4627078
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4627078	<0.0040	0.020	0.0040	4627078
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4627078	<0.0061	0.020	0.0061	4627078
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	0.020	0.0019	4627078	0.038	0.020	0.0019	4627078
Perfluorobutanoic acid	ug/L	0.0075	0.020	0.0066	4627078	0.075	0.020	0.0066	4627078
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4627078	<0.0043	0.020	0.0043	4627078
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	0.020	0.0066	4627078	<0.0066	0.020	0.0066	4627078
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4627078	<0.0057	0.020	0.0057	4627078
Perfluoroheptane sulfonate	ug/L	<0.0036	0.020	0.0036	4627078	0.039	0.020	0.0036	4627078
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	0.020	0.0047	4627078	0.049	0.020	0.0047	4627078
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0040	0.020	0.0040	4627078	0.32	0.020	0.0040	4627078
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0046	0.020	0.0046	4627078	0.19	0.020	0.0046	4627078
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	0.020	0.0053	4627078	0.054	0.020	0.0053	4627078
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	0.020	0.0046	4627078	0.016	0.020	0.0046	4627078
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4627078	<0.0058	0.020	0.0058	4627078
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.0033	0.020	0.0033	4627078	1.6 (1)	0.80	0.14	4619879
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0036	0.020	0.0036	4627078	0.14	0.020	0.0036	4627078
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4627078	<0.0052	0.020	0.0052	4627078
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4627078	<0.0032	0.020	0.0032	4627078
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	0.020	0.0037	4627078	0.019	0.020	0.0037	4627078
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	103	N/A	N/A	4627078	110	N/A	N/A	4619879
13C4-Perfluorooctanoic acid	%	106	N/A	N/A	4627078	106	N/A	N/A	4627078
13C8-Perfluorooctanesulfonamide	%	94	N/A	N/A	4627078	94	N/A	N/A	4627078

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CWM909				CWM910		CWM911			
Sampling Date		2016/08/11 08:00				2016/08/11 10:40		2016/08/11 10:00			
COC Number		558437-03-01				558437-03-01		558437-03-01			
	UNITS	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**	**HS-1**	**RDL**	**HS-6**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters											
6:2 Fluorotelomer sulfonate	ug/L	0.67	0.10	0.033	4627078	0.70	0.80	1.7	0.80	0.21	4619879
8:2 Fluorotelomer sulfonate	ug/L	0.22	0.10	0.028	4627078	2.5	0.80	2.5	0.80	0.28	4619879
N-ethylperfluorooctane sulfonamide	ug/L	<0.027	0.10	0.027	4627078	<0.28	0.80	<0.28	0.80	0.28	4619879
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.025	0.10	0.025	4627078	<0.29	0.80	<0.29	0.80	0.29	4619879
N-methylperfluorooctane sulfonamide	ug/L	<0.020	0.10	0.020	4627078	<0.15	0.80	<0.15	0.80	0.15	4619879
N-methylperfluorooctanesulfonamidol	ug/L	<0.031	0.10	0.031	4627078	<0.30	0.80	<0.30	0.80	0.30	4619879
Perfluorobutane Sulfonate (PFBS)	ug/L	0.091	0.10	0.0095	4627078	0.34	0.80	0.32	0.80	0.23	4619879
Perfluorobutanoic acid	ug/L	0.075	0.10	0.033	4627078	0.27	0.80	0.43	0.80	0.20	4619879
Perfluorodecane Sulfonate	ug/L	<0.022	0.10	0.022	4627078	<0.22	0.80	<0.22	0.80	0.22	4619879
Perfluorodecanoic Acid (PFDA)	ug/L	<0.033	0.10	0.033	4627078	<0.20	0.80	<0.20	0.80	0.20	4619879
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.029	0.10	0.029	4627078	<0.16	0.80	<0.16	0.80	0.16	4619879
Perfluoroheptane sulfonate	ug/L	0.17	0.10	0.018	4627078	0.38	0.80	<0.27	0.80	0.27	4619879
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.12	0.10	0.024	4627078	0.33	0.80	0.42	0.80	0.27	4619879
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.4 (1)	0.80	0.16	4619879	2.2	0.80	2.3	0.80	0.16	4619879
Perfluorohexanoic Acid (PFHxA)	ug/L	0.36	0.10	0.023	4627078	0.84	0.80	1.4	0.80	0.17	4619879
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.16	0.10	0.027	4627078	0.46	0.80	0.45	0.80	0.20	4619879
Perfluorononanoic Acid (PFNA)	ug/L	0.047	0.10	0.023	4627078	0.39	0.80	<0.19	0.80	0.19	4619879
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.029	0.10	0.029	4627078	<0.23	0.80	<0.23	0.80	0.23	4619879
Perfluorooctane Sulfonate (PFOS)	ug/L	13 (1)	0.80	0.14	4619879	56 (2)	8.0	41	0.80	0.14	4619879
Perfluoropentanoic Acid (PFPeA)	ug/L	0.21	0.10	0.018	4627078	0.41	0.80	0.73	0.80	0.21	4619879
Perfluorotetradecanoic Acid	ug/L	<0.026	0.10	0.026	4627078	<0.20	0.80	<0.20	0.80	0.20	4619879
Perfluorotridecanoic Acid	ug/L	<0.016	0.10	0.016	4627078	<0.30	0.80	<0.30	0.80	0.30	4619879
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.077	0.10	0.019	4627078	1.2	0.80	0.49	0.80	0.14	4619879
Surrogate Recovery (%)											
13C4-Perfluorooctanesulfonate	%	106	N/A	N/A	4619879	123	N/A	103	N/A	N/A	4619879
13C4-Perfluorooctanoic acid	%	111	N/A	N/A	4627078	111	N/A	103	N/A	N/A	4619879
13C8-Perfluorooctanesulfonamide	%	95	N/A	N/A	4627078	104	N/A	101	N/A	N/A	4619879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.
(2) Due to high concentration of the target analyte, sample required high level analysis with an additional 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CWM912				CWM913			
Sampling Date		2016/08/11 10:35				2016/08/11 11:05			
COC Number		558437-03-01				558437-03-01			
	UNITS	PFW-1	RDL	MDL	QC Batch	PFW-2	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.54	0.020	0.0065	4627078	1.1	0.80	0.21	4619879
8:2 Fluorotelomer sulfonate	ug/L	0.53	0.020	0.0055	4627078	3.8	0.80	0.28	4619879
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4627078	<0.28	0.80	0.28	4619879
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4627078	<0.29	0.80	0.29	4619879
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4627078	<0.15	0.80	0.15	4619879
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4627078	<0.30	0.80	0.30	4619879
Perfluorobutane Sulfonate (PFBS)	ug/L	0.015	0.020	0.0019	4627078	0.41	0.80	0.23	4619879
Perfluorobutanoic acid	ug/L	0.038	0.020	0.0066	4627078	0.39	0.80	0.20	4619879
Perfluorodecane Sulfonate	ug/L	0.0085	0.020	0.0043	4627078	<0.22	0.80	0.22	4619879
Perfluorodecanoic Acid (PFDA)	ug/L	0.036	0.020	0.0066	4627078	0.24	0.80	0.20	4619879
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4627078	<0.16	0.80	0.16	4619879
Perfluoroheptane sulfonate	ug/L	0.022	0.020	0.0036	4627078	0.50	0.80	0.27	4619879
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.096	0.020	0.0047	4627078	0.36	0.80	0.27	4619879
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.36	0.020	0.0040	4627078	3.2	0.80	0.16	4619879
Perfluorohexanoic Acid (PFHxA)	ug/L	0.18	0.020	0.0046	4627078	0.96	0.80	0.17	4619879
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.11	0.020	0.0053	4627078	0.59	0.80	0.20	4619879
Perfluorononanoic Acid (PFNA)	ug/L	0.42	0.020	0.0046	4627078	0.26	0.80	0.19	4619879
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.031	0.020	0.0058	4627078	<0.23	0.80	0.23	4619879
Perfluorooctane Sulfonate (PFOS)	ug/L	3.5	0.80	0.14	4619879	65 (1)	8.0	0.14	4619879
Perfluoropentanoic Acid (PFPeA)	ug/L	0.13	0.020	0.0036	4627078	0.43	0.80	0.21	4619879
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4627078	<0.20	0.80	0.20	4619879
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4627078	<0.30	0.80	0.30	4619879
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.053	0.020	0.0037	4627078	0.81	0.80	0.14	4619879
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	104	N/A	N/A	4619879	121	N/A	N/A	4619879
13C4-Perfluorooctanoic acid	%	104	N/A	N/A	4627078	107	N/A	N/A	4619879
13C8-Perfluorooctanesulfonamide	%	100	N/A	N/A	4627078	101	N/A	N/A	4619879

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, sample required high level analysis with an additional 10x dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

TEST SUMMARY

Maxxam ID: CWM907
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4627078	2016/08/25	2016/08/23	Colm McNamara

Maxxam ID: CWM908
Sample ID: MIDPOINT
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4627078	2016/08/25	2016/08/23	Colm McNamara

Maxxam ID: CWM909
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4627078	2016/08/25	2016/08/23	Colm McNamara

Maxxam ID: CWM910
Sample ID: HS-1
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4619879	2016/08/15	2016/08/19	Colm McNamara

Maxxam ID: CWM911
Sample ID: HS-6
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4619879	2016/08/15	2016/08/19	Colm McNamara

Maxxam ID: CWM912
Sample ID: PFW-1
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4627078	2016/08/25	2016/08/23	Colm McNamara

Maxxam ID: CWM913
Sample ID: PFW-2
Matrix: Water

Collected: 2016/08/11
Shipped:
Received: 2016/08/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4619879	2016/08/15	2016/08/19	Colm McNamara

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Cape Cod Comission
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GENERAL COMMENTS

Sample CWM909-01 : Perfluorinated Compounds (PFCs): Due to high concentrations of the target analytes, sample required a 5x dilution. Detection limits were adjusted accordingly.

Sample CWM910-01 : Perfluorinated Compounds (PFCs): Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

Sample CWM911-01 : Perfluorinated Compounds (PFCs): Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

Sample CWM913-01 : Perfluorinated Compounds (PFCs): Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

Sample CWM908, PFOS and PFOA in water: Test repeated.
Sample CWM909, PFOS and PFOA in water: Test repeated.
Sample CWM912, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4619879	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/08/19		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/19		104	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/19		102	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/19		94	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/19		93	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/19		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/19		91	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/19		91	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/19		96	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/08/19		89	%	70 - 130
			Perfluorobutanoic acid	2016/08/19		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/19		95	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/19		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/19		95	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/19		86	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/19		96	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/19		95	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/19		94	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/19		96	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/19		91	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/19		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/19		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/19		96	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/19		89	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/19		96	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/19		89	%	70 - 130
4619879	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/08/19		102	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/19		107	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/19		99	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/19		93	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/19		90	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/19		95	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/19		93	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/19		91	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/19		100	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/08/19		95	%	70 - 130
			Perfluorobutanoic acid	2016/08/19		95	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/19		99	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/19		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/19		95	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/19		93	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/19		96	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/19		90	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/19		97	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/19		95	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/19		94	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/19		98	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/19		97	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/19		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/19		94	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/19		93	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/19		93	%	70 - 130
4619879	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/08/19	1.9		%	30
			8:2 Fluorotelomer sulfonate	2016/08/19	3.5		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2016/08/19	1.1		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/08/19	2.3		%	30
			N-methylperfluorooctane sulfonamide	2016/08/19	0.47		%	30
			N-methylperfluorooctanesulfonamidol	2016/08/19	4.4		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/08/19	6.6		%	30
			Perfluorobutanoic acid	2016/08/19	0		%	30
			Perfluorodecane Sulfonate	2016/08/19	4.4		%	30
			Perfluoroheptane sulfonate	2016/08/19	1.9		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/08/19	0.75		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/08/19	7.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/08/19	0		%	30
			Perfluorononanoic Acid (PFNA)	2016/08/19	5.4		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/19	3.0		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/08/19	0.75		%	30
			Perfluorotetradecanoic Acid	2016/08/19	2.3		%	30
			Perfluorotridecanoic Acid	2016/08/19	5.3		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/08/19	4.0		%	30
			Perfluorodecanoic Acid (PFDA)	2016/08/19	2.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/08/19	5.1		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/19	2.6		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/08/19	4.3		%	30
4619879	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/08/19		107	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/19		109	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/19		107	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/19		89	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/19		97	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/19		99	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/19		95	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/19		93	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/19		97	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/08/19		98	%	70 - 130
			Perfluorobutanoic acid	2016/08/19		96	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/19		97	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/19		95	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/19		95	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/19		96	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/19		94	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/19		92	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/19		95	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/19		97	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/19		96	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/19		90	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/19		95	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/19		98	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/19		95	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/19		94	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/19		94	%	70 - 130
4619879	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/08/19		109	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/19		105	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/19		100	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/19	<0.21		ug/L	
			8:2 Fluorotelomer sulfonate	2016/08/19	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/08/19	<0.28		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/08/19	<0.29		ug/L	

Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctane sulfonamide	2016/08/19	<0.15		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/08/19	<0.30		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/08/19	<0.23		ug/L	
			Perfluorobutanoic acid	2016/08/19	<0.20		ug/L	
			Perfluorodecane Sulfonate	2016/08/19	<0.22		ug/L	
			Perfluoroheptane sulfonate	2016/08/19	<0.27		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/08/19	<0.27		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/08/19	<0.16		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/08/19	<0.17		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/08/19	<0.19		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/19	<0.23		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/08/19	<0.21		ug/L	
			Perfluorotetradecanoic Acid	2016/08/19	<0.20		ug/L	
			Perfluorotridecanoic Acid	2016/08/19	<0.30		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/08/19	<0.14		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/08/19	<0.20		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/08/19	<0.16		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/19	<0.20		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/08/19	<0.14		ug/L	
4627078	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/08/23		111	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/23		115	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/23		96	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/23		83	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/23		87	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/23		83	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/23		79	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/23		79	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/23		83	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/08/23		85	%	70 - 130
			Perfluorobutanoic acid	2016/08/23		80	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/23		73	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/23		81	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/23		86	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/23		82	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/23		85	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/23		83	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/23		87	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/23		83	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/23		94	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/23		110	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/23		81	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/23		84	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/23		90	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/23		85	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/23		83	%	70 - 130
4627078	CM5	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/08/23		118	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/23		115	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/23		102	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/23		80	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/23		85	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/23		85	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/23		80	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/23		87	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/23		86	%	70 - 130

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A Bureau Veritas Group Company

Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2016/08/23		87	%	70 - 130
			Perfluorobutanoic acid	2016/08/23		83	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/23		74	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/23		83	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/23		86	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/23		85	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/23		88	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/23		89	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/23		87	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/23		86	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/23		88	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/23		103	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/23		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/23		85	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/23		91	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/23		88	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/23		85	%	70 - 130
4627078	CM5	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/08/23	3.7		%	30
			8:2 Fluorotelomer sulfonate	2016/08/23	2.1		%	30
			N-ethylperfluorooctane sulfonamide	2016/08/23	3.3		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/08/23	0.76		%	30
			N-methylperfluorooctane sulfonamide	2016/08/23	8.7		%	30
			N-methylperfluorooctanesulfonamidol	2016/08/23	3.3		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/08/23	1.9		%	30
			Perfluorobutanoic acid	2016/08/23	3.9		%	30
			Perfluorodecane Sulfonate	2016/08/23	1.4		%	30
			Perfluoroheptane sulfonate	2016/08/23	2.0		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/08/23	0.23		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/08/23	3.3		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/08/23	3.5		%	30
			Perfluorononanoic Acid (PFNA)	2016/08/23	6.9		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/23	0.46		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/08/23	3.8		%	30
			Perfluorotetradecanoic Acid	2016/08/23	6.4		%	30
			Perfluorotridecanoic Acid	2016/08/23	6.5		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/08/23	8.5		%	30
			Perfluorodecanoic Acid (PFDA)	2016/08/23	1.7		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/08/23	1.1		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/23	3.5		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/08/23	2.2		%	30
4627078	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/08/23		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/23		106	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/23		94	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/23		80	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/08/23		84	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/08/23		87	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/08/23		90	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/08/23		83	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/08/23		86	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/08/23		81	%	70 - 130
			Perfluorobutanoic acid	2016/08/23		87	%	70 - 130
			Perfluorodecane Sulfonate	2016/08/23		79	%	70 - 130
			Perfluoroheptane sulfonate	2016/08/23		89	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/08/23		96	%	70 - 130

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Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorohexane Sulfonate (PFHxS)	2016/08/23		81	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/08/23		96	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/08/23		94	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/23		93	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/08/23		93	%	70 - 130
			Perfluorotetradecanoic Acid	2016/08/23		87	%	70 - 130
			Perfluorotridecanoic Acid	2016/08/23		92	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/08/23		88	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/08/23		95	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/08/23		90	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/23		94	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/23		88	%	70 - 130
4627078	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/08/23		105	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/08/23		100	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/08/23		89	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/08/23	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/08/23	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/08/23	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/08/23	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/08/23	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/08/23	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/08/23	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/08/23	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/08/23	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2016/08/23	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/08/23	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/08/23	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/08/23	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/08/23	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/08/23	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/08/23	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/08/23	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/08/23	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/08/23	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/08/23	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/08/23	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/08/23	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/08/23	<0.0033		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

Maxxam Job #: B6H1063
Report Date: 2016/08/26

Cape Cod Comission
Client Project #: BFTA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#29803 Cape Cod Comission	Company Name:		Quotation #:		Maxxam Job #:	Bottle Order #: 558437
Attention:	Scott Michaud	Attention:	Tom Cambareri	P.O. #:			
Address:	3225 Main Street	Address:	same	Project:	PFC	COC #:	Project Manager:
	Barnstable MA 02630			Project Name:	BFTA	C#558437-03-01	Melissa DiGrazia
Tel:	(508) 362-3828 x1234 Fax:	Tel:	Fax:	Site #:			
Email:	smichaud@capecodcommission.org	Email:	tcambareri@capecodcommission.org	Sampled By:	tcam		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___ ; Res/Park / Ind/Comm / Agri/Other ; Medium/Fine / Coarse / For RSC

Other Regulations: CCME / Reg 558 / MISA / PWQO / Other ; Sanitary Sewer Bylaw / Storm Sewer Bylaw / Municipality ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI ; 537 (PFAS)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	537 (PFAS)	# of Bottles	Comments
1		EFFLUENT	8/11/16	0800	H_2O		✓		
2		MIDPOINT	↓	↓	↓		✓		
3		INFLUENT PRW-4		↓	↓		✓		
4		HS-1		1040	GW		✓		
5	HS-6	~~HS-2~~ fun		1000			✓		
6	PFW-1	~~FSW-1~~ fun		1035			✓		
7	PFW-2	~~FSW-2~~ fun	↓	1105	↓		✓		
8									
9									
10									

12-Aug-16 14:28
Melissa DiGrazia
B6H1063
GK1 ENV-246

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	8/11/16	1300	DANY MARGASY	16/08/12	14:28			6.0/5.9/5.9	Present	✓	
									Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: PFC
Site Location: BFTA
Your C.O.C. #: 558437-04-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2016/09/02
Report #: R4153620
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6H7199
Received: 2016/08/19, 13:55

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	3	2016/08/23	2016/08/24	CAM SOP-00894	EPA 537 m
PFOS and PFOA in water	4	2016/08/30	2016/09/01	CAM SOP-00894	EPA 537 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
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Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CXQ492				CXQ493			
Sampling Date		2016/08/18 11:00				2016/08/18 11:45			
COC Number		558437-04-01				558437-04-01			
	UNITS	**MW-3I**	**RDL**	**MDL**	**QC Batch**	**MW-3D**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.068	0.020	0.0065	4640754	<0.0065	0.020	0.0065	4640754
8:2 Fluorotelomer sulfonate	ug/L	0.016	0.020	0.0055	4640754	<0.0055	0.020	0.0055	4640754
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4640754	<0.0053	0.020	0.0053	4640754
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4640754	<0.0049	0.020	0.0049	4640754
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4640754	<0.0040	0.020	0.0040	4640754
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4640754	<0.0061	0.020	0.0061	4640754
Perfluorobutane Sulfonate (PFBS)	ug/L	0.11	0.020	0.0019	4640754	0.011	0.020	0.0019	4640754
Perfluorobutanoic acid	ug/L	0.096	0.020	0.0066	4640754	0.010	0.020	0.0066	4640754
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4640754	<0.0043	0.020	0.0043	4640754
Perfluorodecanoic Acid (PFDA)	ug/L	0.014	0.020	0.0066	4640754	<0.0066	0.020	0.0066	4640754
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4640754	<0.0057	0.020	0.0057	4640754
Perfluoroheptane sulfonate	ug/L	0.075	0.020	0.0036	4640754	<0.0036	0.020	0.0036	4640754
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.20	0.020	0.0047	4640754	0.020	0.020	0.0047	4640754
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.92	0.020	0.0040	4640754	0.083	0.020	0.0040	4640754
Perfluorohexanoic Acid (PFHxA)	ug/L	0.55	0.020	0.0046	4640754	0.045	0.020	0.0046	4640754
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.17	0.020	0.0053	4640754	0.010	0.020	0.0053	4640754
Perfluorononanoic Acid (PFNA)	ug/L	0.18	0.020	0.0046	4640754	<0.0046	0.020	0.0046	4640754
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	0.020	0.0058	4640754	<0.0058	0.020	0.0058	4640754
Perfluorooctane Sulfonate (PFOS)	ug/L	3.2 (1)	0.80	0.14	4630984	0.098	0.020	0.0033	4640754
Perfluoropentanoic Acid (PFPeA)	ug/L	0.33	0.020	0.0036	4640754	0.037	0.020	0.0036	4640754
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4640754	<0.0052	0.020	0.0052	4640754
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4640754	<0.0032	0.020	0.0032	4640754
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.044	0.020	0.0037	4640754	<0.0037	0.020	0.0037	4640754
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4630984	102	N/A	N/A	4640754
13C4-Perfluorooctanoic acid	%	101	N/A	N/A	4640754	106	N/A	N/A	4640754
13C8-Perfluorooctanesulfonamide	%	75	N/A	N/A	4640754	77	N/A	N/A	4640754

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

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Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CXQ494				CXQ495			
Sampling Date		2016/08/18 12:00				2016/08/18 12:20			
COC Number		558437-04-01				558437-04-01			
	UNITS	MW-3S	RDL	MDL	QC Batch	INFLUENT PRW-4	RDL	MDL	QC Batch
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.088	0.020	0.0065	4640754	1.1 (1)	0.80	0.21	4630984
8:2 Fluorotelomer sulfonate	ug/L	0.0077	0.020	0.0055	4640754	0.27	0.020	0.0055	4640754
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	4640754	<0.0053	0.020	0.0053	4640754
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	4640754	<0.0049	0.020	0.0049	4640754
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	4640754	<0.0040	0.020	0.0040	4640754
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	4640754	<0.0061	0.020	0.0061	4640754
Perfluorobutane Sulfonate (PFBS)	ug/L	0.057	0.020	0.0019	4640754	0.093	0.020	0.0019	4640754
Perfluorobutanoic acid	ug/L	0.16	0.020	0.0066	4640754	0.087	0.020	0.0066	4640754
Perfluorodecane Sulfonate	ug/L	<0.0043	0.020	0.0043	4640754	0.0052	0.020	0.0043	4640754
Perfluorodecanoic Acid (PFDA)	ug/L	0.0093	0.020	0.0066	4640754	0.014	0.020	0.0066	4640754
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	4640754	<0.0057	0.020	0.0057	4640754
Perfluoroheptane sulfonate	ug/L	0.040	0.020	0.0036	4640754	0.22	0.020	0.0036	4640754
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.26	0.020	0.0047	4640754	0.17	0.020	0.0047	4640754
Perfluorohexane Sulfonate (PFHxS)	ug/L	1.9 (1)	0.80	0.16	4630984	1.5 (1)	0.80	0.16	4630984
Perfluorohexanoic Acid (PFHxA)	ug/L	0.39	0.020	0.0046	4640754	0.48	0.020	0.0046	4640754
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.69	0.020	0.0053	4640754	0.21	0.020	0.0053	4640754
Perfluorononanoic Acid (PFNA)	ug/L	0.064	0.020	0.0046	4640754	0.082	0.020	0.0046	4640754
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.025	0.020	0.0058	4640754	0.012	0.020	0.0058	4640754
Perfluorooctane Sulfonate (PFOS)	ug/L	1.9 (1)	0.80	0.14	4630984	9.5 (1)	0.80	0.14	4630984
Perfluoropentanoic Acid (PFPeA)	ug/L	0.26	0.020	0.0036	4640754	0.29	0.020	0.0036	4640754
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	4640754	<0.0052	0.020	0.0052	4640754
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	4640754	<0.0032	0.020	0.0032	4640754
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.0060	0.020	0.0037	4640754	0.11	0.020	0.0037	4640754
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	95	N/A	N/A	4630984	101	N/A	N/A	4630984
13C4-Perfluorooctanoic acid	%	84	N/A	N/A	4640754	93	N/A	N/A	4640754
13C8-Perfluorooctanesulfonamide	%	74	N/A	N/A	4640754	82	N/A	N/A	4640754

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required high level analysis. Detection limit was adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF WATER

Maxxam ID		CXQ496	CXQ497	CXQ498			
Sampling Date		2016/08/18 12:20	2016/08/18 12:20	2016/08/18 13:15			
COC Number		558437-04-01	558437-04-01	558437-04-01			
	UNITS	EFFLUENT	MID.POINT	HW-2S	RDL	MDL	QC Batch
Miscellaneous Parameters							
6:2 Fluorotelomer sulfonate	ug/L	<0.0065	<0.0065	<0.0065	0.020	0.0065	4640754
8:2 Fluorotelomer sulfonate	ug/L	<0.0055	<0.0055	<0.0055	0.020	0.0055	4640754
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	<0.0053	<0.0053	0.020	0.0053	4640754
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	<0.0049	<0.0049	0.020	0.0049	4640754
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	<0.0040	<0.0040	0.020	0.0040	4640754
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	<0.0061	<0.0061	0.020	0.0061	4640754
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0019	<0.0019	0.0051	0.020	0.0019	4640754
Perfluorobutanoic acid	ug/L	<0.0066	<0.0066	<0.0066	0.020	0.0066	4640754
Perfluorodecane Sulfonate	ug/L	<0.0043	<0.0043	<0.0043	0.020	0.0043	4640754
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0066	<0.0066	<0.0066	0.020	0.0066	4640754
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	<0.0057	<0.0057	0.020	0.0057	4640754
Perfluoroheptane sulfonate	ug/L	<0.0036	<0.0036	<0.0036	0.020	0.0036	4640754
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0047	<0.0047	<0.0047	0.020	0.0047	4640754
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0040	<0.0040	0.024	0.020	0.0040	4640754
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0046	<0.0046	0.014	0.020	0.0046	4640754
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0053	<0.0053	<0.0053	0.020	0.0053	4640754
Perfluorononanoic Acid (PFNA)	ug/L	<0.0046	<0.0046	0.017	0.020	0.0046	4640754
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0058	<0.0058	<0.0058	0.020	0.0058	4640754
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.0033	<0.0033	0.30	0.020	0.0033	4640754
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0036	<0.0036	0.0097	0.020	0.0036	4640754
Perfluorotetradecanoic Acid	ug/L	<0.0052	<0.0052	<0.0052	0.020	0.0052	4640754
Perfluorotridecanoic Acid	ug/L	<0.0032	<0.0032	<0.0032	0.020	0.0032	4640754
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0037	<0.0037	<0.0037	0.020	0.0037	4640754
Surrogate Recovery (%)							
13C4-Perfluorooctanesulfonate	%	85	91	81	N/A	N/A	4640754
13C4-Perfluorooctanoic acid	%	89	86	85	N/A	N/A	4640754
13C8-Perfluorooctanesulfonamide	%	77	79	90	N/A	N/A	4640754

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

TEST SUMMARY

Maxxam ID: CXQ492
Sample ID: MW-3I
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

Maxxam ID: CXQ493
Sample ID: MW-3D
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

Maxxam ID: CXQ494
Sample ID: MW-3S
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

Maxxam ID: CXQ495
Sample ID: INFLUENT PRW-4
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4630984	2016/08/23	2016/08/24	Sin Chii Chia

Maxxam ID: CXQ496
Sample ID: EFFLUENT
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

Maxxam ID: CXQ497
Sample ID: MID.POINT
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

Maxxam ID: CXQ498
Sample ID: HW-2S
Matrix: Water

Collected: 2016/08/18
Shipped:
Received: 2016/08/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4640754	2016/08/30	2016/09/01	Colm McNamara

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GENERAL COMMENTS

Sample CXQ492, PFOS and PFOA in water: Test repeated.
Sample CXQ494, PFOS and PFOA in water: Test repeated.
Sample CXQ495, PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

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Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4630984	SCH	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/08/24		108	%	70 - 130
4630984	SCH	Matrix Spike DUP	13C4-Perfluorooctanesulfonate	2016/08/24		99	%	70 - 130
4630984	SCH	Matrix Spike(CXQ492)	6:2 Fluorotelomer sulfonate	2016/08/24		106	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/24		108	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/24		103	%	70 - 130
4630984	SCH	Matrix Spike DUP(CXQ492)	6:2 Fluorotelomer sulfonate	2016/08/24		92	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/24		99	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/24		106	%	70 - 130
4630984	SCH	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2016/08/24	14		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/08/24	8.3		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/08/24	3.1		%	30
4630984	SCH	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/08/24		105	%	70 - 130
			6:2 Fluorotelomer sulfonate	2016/08/24		100	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/08/24		104	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/08/24		105	%	70 - 130
4630984	SCH	Method Blank	13C4-Perfluorooctanesulfonate	2016/08/24		107	%	70 - 130
			6:2 Fluorotelomer sulfonate	2016/08/24	<0.21		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/08/24	<0.16		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/08/24	<0.14		ug/L	
4640754	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/09/01		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/09/01		108	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/09/01		91	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/09/01		85	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/09/01		98	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/09/01		110	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/09/01		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/09/01		105	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2016/09/01		102	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/09/01		96	%	70 - 130
			Perfluorobutanoic acid	2016/09/01		115	%	70 - 130
			Perfluorodecane Sulfonate	2016/09/01		84	%	70 - 130
			Perfluoroheptane sulfonate	2016/09/01		104	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/09/01		108	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/09/01		101	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/09/01		103	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/09/01		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/09/01		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/09/01		105	%	70 - 130
			Perfluorotetradecanoic Acid	2016/09/01		99	%	70 - 130
			Perfluorotridecanoic Acid	2016/09/01		108	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/09/01		101	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/09/01		89	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/09/01		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/09/01		90	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/09/01		102	%	70 - 130
4640754	CM5	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2016/09/01		89	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/09/01		96	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/09/01		89	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/09/01		107	%	70 - 130
			8:2 Fluorotelomer sulfonate	2016/09/01		103	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2016/09/01		103	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2016/09/01		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2016/09/01		96	%	70 - 130

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Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-methylperfluorooctanesulfonamidol	2016/09/01		116	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/09/01		93	%	70 - 130
			Perfluorobutanoic acid	2016/09/01		98	%	70 - 130
			Perfluorodecane Sulfonate	2016/09/01		105	%	70 - 130
			Perfluoroheptane sulfonate	2016/09/01		108	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/09/01		116	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/09/01		99	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2016/09/01		101	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/09/01		106	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2016/09/01		94	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2016/09/01		108	%	70 - 130
			Perfluorotetradecanoic Acid	2016/09/01		95	%	70 - 130
			Perfluorotridecanoic Acid	2016/09/01		101	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2016/09/01		111	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2016/09/01		105	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2016/09/01		106	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/09/01		102	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/09/01		101	%	70 - 130
4640754	CM5	RPD	6:2 Fluorotelomer sulfonate	2016/09/01	23		%	30
			8:2 Fluorotelomer sulfonate	2016/09/01	5.2		%	30
			N-ethylperfluorooctane sulfonamide	2016/09/01	6.6		%	30
			N-ethylperfluorooctane sulfonamidoe	2016/09/01	4.6		%	30
			N-methylperfluorooctane sulfonamide	2016/09/01	8.7		%	30
			N-methylperfluorooctanesulfonamidol	2016/09/01	13		%	30
			Perfluorobutane Sulfonate (PFBS)	2016/09/01	3.2		%	30
			Perfluorobutanoic acid	2016/09/01	16		%	30
			Perfluorodecane Sulfonate	2016/09/01	23		%	30
			Perfluoroheptane sulfonate	2016/09/01	3.8		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/09/01	7.3		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/09/01	1.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2016/09/01	2.0		%	30
			Perfluorononanoic Acid (PFNA)	2016/09/01	7.3		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2016/09/01	10		%	30
			Perfluoropentanoic Acid (PFPeA)	2016/09/01	2.6		%	30
			Perfluorotetradecanoic Acid	2016/09/01	4.5		%	30
			Perfluorotridecanoic Acid	2016/09/01	5.9		%	30
			Perfluoroundecanoic Acid (PFUnA)	2016/09/01	9.4		%	30
			Perfluorodecanoic Acid (PFDA)	2016/09/01	16		%	30
			Perfluorododecanoic Acid (PFDoA)	2016/09/01	3.6		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/09/01	13		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/09/01	0.59		%	30
4640754	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/09/01		106	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/09/01		102	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/09/01		76	%	60 - 120
			6:2 Fluorotelomer sulfonate	2016/09/01	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2016/09/01	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2016/09/01	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2016/09/01	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2016/09/01	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2016/09/01	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2016/09/01	<0.0019		ug/L	
			Perfluorobutanoic acid	2016/09/01	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2016/09/01	<0.0043		ug/L	

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6H7199
Report Date: 2016/09/02

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoroheptane sulfonate	2016/09/01	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/09/01	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/09/01	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2016/09/01	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2016/09/01	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2016/09/01	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2016/09/01	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2016/09/01	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2016/09/01	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2016/09/01	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2016/09/01	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2016/09/01	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/09/01	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2016/09/01	<0.0033		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#29803 Cape Cod Comission	Company Name		Quotation #	
Attention	Scott Michaud	Attention	Tom Cambareri	P.O. #	
Address	3225 Main Street	Address	Same	Project	PFC
	Barnstable MA 02630			Project Name	BFTA
Tel	(508) 362-3828 x1234 Fax	Tel	Fax	Site #	
Email	smichaud@capecodcommission.org	Email	tcambareri@capecodcommission.org	Sampled By	

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	558437
COC #:	Project Manager:
C#558437-04-01	Melissa DiGrazia

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Res/Park, Medium/Fine, Table 2, Ind/Comm, Coarse, Table 3, Agri/Other, For RSC, Table ___

Other Regulations: CCME, Sanitary Sewer Bylaw, Reg 558, Storm Sewer Bylaw, MISA, Municipality ___, PWQO, Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): PFAS

19-Aug-16 13:55
Melissa DiGrazia
B6H7199
DM2 ENV-1212

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	PFAS	# of Bottles	Comments
1		MW-3i	8/18/16	1100	gw	✓	1	
2		MW-3d	↓	1145	↓	✓	1	
3		MW-3s	↓	1200	↓	✓	1	
4		Influent PRW-4	↓	1220	h2o	✓	1	
5		Effluent	↓	↓	↓	✓	1	
6		Mid-point	↓	↓	↓	✓	1	
7		HW-2s	↓	1315	gw	✓	1	
8								
9								
10								

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	8/18/16	1500	Tanvir Singh TANVIR SINGH	2016/08/19	13:55	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3.7/3.7/3.7	Present	✓	
		Intact	✓	

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

MW # 344671

Appendix VI

Groundwater Field Sheets

2015 Sampling Field Sheet
March-April

Well Series	Well No.	Sampling Scheduled for PFCs 2014	Sampling Scheduled for PFCs 2015	Well Measurements Depth to Bottom	Depth to Water	~~3x Water~~ Volume ~~(gallons)~~	Date Sample Collected	# Bottles	
Pond			x						
PFW	1		x	20	12	4.5	4.1.15	2	2:50
PFW	2		x	20	12	4.5	4.1.15	2	2:30P
PFW	3		x	20	12	5.0	4-1-15	2	3:05P
PFW	4		x	20	12	4.5	4.1.15	2	1:50P
PFW	5		x	20	12	5	3.31.15	2	3PM
	6			20	12	4.5	4.1.15	2	3:30
MD	3		dioxane						
OW	2	x							
OW	8a	x							
FS	1		x						
SBV	3	x							
MW	3s	x							
MW	1?	x							
MW	10	x		[illegible]	[illegible]	[illegible]			
MW	7	x							
MW	6		x			5	4.1.15	2	4:05
MW	28s		x	19	11	4	4-1-15	2	4:00
MW	12	x	x	19.7	13.7	3	4-1-15	2	4:20
MW	19s	x							
MW	11?		x						
MW	31?		x	20.8	15.8	2.4	~~4.1.15~~	2	
MW	15		x	50.00	15	35	4-2-15	350	352
MW	37 d		x	34	17	17	4.2.15	320	3:35
MW	991		x	47	20	27	4.6.15	2	11:20
MW	3[illegible]	x d	x d	59	23.5	17	4.6.15	2	12:40
MW	30			18	15	1.5	~~4.1.15~~ 5m	2	~~4:50~~ pm
PC	1	x							
PC	2								
PC	3	x							
PC	4								
PC	5								
PC	6								
PC	7		x	49.5	29.0	20.5		2	104[illegible]
PC	8								
PC	9		x	38	16	22			
PC	10			45	23	11 gallons	4/6/15	2	1420
PC	11		x	~~44.5~~	26.5	18.5		2	1120
PC	12								
PC	13								
PC	14	x							
PC	15		x	44	25.5		4.2.15		140
PC	16 d		x	49.7	29.7	15.00			1230
PC	17/6S	x		35.3	29				No sample
PC	18								
PC	19		x	44.5	26.2	18.3	4.2.15	2	1200
PC	20								
PC	21								
PC	22		x	45.5	22	23.00	4.2.15		2:20
PC	23								
PC	24		x						
PC	25								
PC	26								
Totals		14	25						

PRW-1 4.1.15 2 1020 25 min
PRW-4 4.1.15 2 11:00 25 min
RW-2 4.1.15 2 11:10 50 min

PC-0 39 29 5 4.2.15 2 9:50

POND 4-2-15 2 344

MW 22 20.5 13.5 3.5 gallons 4-6-15 2 1445

Example Purge Volumes

2 " dia wells

ft water	3x Water Volume (gallons)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.4
6	2.9
7	3.4
8	3.9
9	4.4
10	4.9
11	5.4
12	5.9
13	6.4
14	6.9
15	7.3

4 " dia wells

ft water	3x Water Volume (gallons)
1	2.0
2	3.9
3	5.9
4	7.8
5	9.8
6	11.8
7	13.7
8	15.7
9	17.6
10	19.6
11	21.5
12	23.5
13	25.5
14	27.4
15	29.4

6 " dia wells

ft water	3x Water Volume (gallons)
1	4.4
2	8.8
3	13.2
4	17.6
5	22.0
6	26.4
7	30.8
8	35.3
9	39.7
10	44.1
11	48.5
12	52.9
13	57:3
14	61.7
15	66.1

Well Series	No.	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	# Bottles	
Pond							
PFW	2	19.95	11.81	3.9	6/18	2	10:00 AM
PC	1	38.8	27.90	[illegible]	6/17/15	2	10:40 AM
PC	2	34.9	24.28	5	6/17	2	11:00 AM
PC	3	34.9	24.70	5	6/17	2	11:20 AM
PC	4	22.10	14.81	7	6/17	2	9:40 AM
PC	6	NA	—	—	—	—	
PC	7	44.5	30.69	7.5	6/17	2	14:20
PC	~~8~~ 12	15	27.95		6/17	2	14:20
PC	~~12~~ 8	45.0	30.5	15	6/17	2	15:35
PC	13	31.5	21.94	5	6/17	2	11:35
PC	18	50.2	29.57	10	6/17	2	15:15
PC	23D	34.5	14.89	20	6/17	2	16:10
PC	25	39.2	15.19	15 ft	6/17	2	16:00
PC	26	~~32.25~~ 48.30	31.24	8.3	6/17	2	10:20 AM
BFD	2	4 hours	run time	15 m	6/16/15	2	9:50 AM
BFD	5	"	"	30 m	6/16/15	2	10:00 AM
8-90		63.5	7.63	56 ft	6/10/15	2	11:00 AM
		S 20.5	D 14.89				

2½

Example Purge Volumes

2 " dia wells

ft water	3x Water Volume (gallons)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.4
6	2.9
7	3.4
8	3.9
9	4.4
10	4.9
11	5.4
12	5.9
13	6.4
14	6.9
15	7.3

POND S1 - [illegible] — 6/18 12:00PM

POND D1 - [illegible] — 6/18 12:00PM

~~POND S2~~

~~POND D2~~

POND 1S — 6/18 along south ~~east~~ shoreline (see map) ~~[illegible]~~ ~~11:30~~ AM 11:00

POND 1D — 6/18 ~~[illegible]~~ ~~11:30~~ AM 11:00

POND 2S — along northeast shoreline (see map) 6/18 ~~11:00~~ AM 11:30

POND 2D — 6/18 ~~11:00 AM~~ 11:30

POND #3 — 3 FD ~~50~~ 6/18 ple 11:40 AM

10/7/15

need foot valve

need tubing + foot valve

Series	Well No.	Sampling Scheduled for PFCs 2014	2015	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	# Bottles
Pond			x					
PFW	1		x	70	16.74	1.75		
PFW	2		x					
PFW	3		x					
PFW	4		x					
PFW	5		x					
MD	3		dioxane					
OW	2	x						
OW	8a	x						
FS	1		x					
SBV	3	x						
MW	3s	x						
MW	1?	x						
MW	10	x						
MW	7	x						
MW	6		x					
MW	28s		x					
MW	12	x	x					
MW	19s	x						
MW	11?		x					
MW	?		x					
MW	15		x					
MW	37		x					
MW	991		x					
MW	36	x	x					
Pc	0			39	34.01	2.5 gal		
PC	1	x		~~38~~.3	31	3.4	10/7/15	1 ?
PC	2							
PC	3	x						
PC	4							
PC	5							
PC	6							
PC	7		x	45.3	34.10	5.4 gal	10/7/15	1
PC	8			44.78	33.50	5.4 gal	~~[illegible]~~	~~1~~ ~~PC 8~~ sampled 10/8/15
PC	9		x			11 gal	10/7/15	1
PC	10							
PC	11		x					
PC	12							
PC	13							
PC	14	x						
PC	15		x					
PC	16 d		x	49.7	33.32	~~[illegible]~~ 8 gal	10/7	1
PC	17	x	49.5	~~[illegible]~~	32.27	8.3 gal	10/8	1
PC	18			49.5	32.68	8.3	10/7/15	1
PC	19		x					
PC	20							
PC	21							
PC	22		x					
PC	23							
PC	24		x					
PC	25							
PC	26			49.5	34.1	15.4 / 7.5 gallons	10/8/15	1
Totals		14	25					

Example Purge Volumes

2 " dia wells

ft water	3x Water Volume (gallons)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.4
6	2.9
7	3.4
8	3.9
9	4.4
10	4.9
11	5.4
12	5.9
13	6.4
14	6.9
15	7.3

4 " dia wells

ft water	3x Water Volume (gallons)
1	2.0
2	3.9
3	5.9
4	7.8
5	9.8
6	11.8
7	13.7
8	15.7
9	17.6
10	19.6
11	21.5
12	23.5
13	25.5
14	27.4
15	29.4

6 " dia wells

ft water	3x Water Volume (gallons)
1	4.4
2	8.8
3	13.2
4	17.6
5	22.0
6	26.4
7	30.8
8	35.3
9	39.7
10	44.1
11	48.5
12	52.9
13	57.3
14	61.7
15	66.1

March 2016

Series	Well No.	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	# Bottles	TIME
System	Effluent	—	—	—	3/8	1	9:15
System	Mid	—	—	—	3/8	1	9:15
✓PRW	4	—	—	—	3/8	1	9:15
Pond							
PFW	1 ✓	19.7	13.1	3.2	3/8	1	1150
PC	4 ✓	22.1	14.05	3.9	3/8	1	12:00
PC	7 ✓	44.5	29.9	6.9	3/8	1	10:45
PC	8 ✓	44.61	29.79	7.3	3/8	1	11:00
PC	9 ✓	38	17.02	10	3/9	1	
PC	14 ✓			9.7	3/30	1	15:20
PC	19 D✓			8.8	3/30	1	~~13:00~~
PC	24 ✓			12	3/30	1	10:15
PC	26 ✓	49.3	30.49	8.3	3/8	1	11:35
PC	28 ✓	39	—	13	3/9	1	13:30
PC	29 ✓	34	—	—	3/9	1	13:50
PC	30 ✓	49.05	30.25	9.3	3/9	1	11:15
PC	31 ✓	49.05	32.03	8.0	3/8	1	10:15
PC	33 ✓	49	28.84	9.7	3/30	1	12:40
~~PC~~	33 ~~34~~ ✓	49.2	28.68	10.2	3/30	1	12:10
PC	20d ✓	44.9		—	3/9	1	
PC	21d ✓	49.7	28.34	—	3/9	1	14:30
PC	6a ✓	47		—	3/9	1	
PFW	— 6 ✓	[illegible]	11.88	8 (39)	3/8		11:00
PC	9				3/30	1	11:30

21 wells
+ 4
23 ~~wells~~ samples

Need to retrieve w/hook

PC 1 — 5.4 gallons — 3/30 1 16:00

DO (3/30) ~~16:00~~

PC-24 4.14 mg/L in bucket

PC-14 8.5 mg/L in well

PC-9 1.4 mg/L in well

PC-19 -0.04 mg/L in well (<1)

PC-1 (<1) mg/L in well

49.2
28.7
20.5
20.16

- Foot valves
- Cutter
- Gloves
- Bucket
- Cresent wrench
- Tape
- Bottles
- Cooler (small vs large)
- Sharpies / Pencils

Example Purge Volumes

2 " dia wells

ft water	3x Water Volume (gallons)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.4
6	2.9
7	3.4
8	3.9
9	4.4
10	4.9
11	5.4
12	5.9
13	6.4
14	6.9
15	7.3

16
17
19

4 " dia wells

ft water	3x Water Volume (gallons)
1	2.0
2	3.9
3	5.9
4	7.8
5	9.8
6	11.8
7	13.7
8	15.7
9	17.6
10	19.6
11	21.5
12	23.5
13	25.5
14	27.4
15	29.4

6 " dia wells

ft water	3x Water Volume (gallons)
1	4.4
2	8.8
3	13.2
4	17.6
5	22.0
6	26.4
7	30.8
8	35.3
9	39.7
10	44.1
11	48.5
12	52.9
13	57.3
14	61.7
15	66.1

4/14/16

Well Measurements

Series	Well No.	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	Time	# Bottles	DO mg/L	Temp °C
PC	34S	8	15	3.5	4/14/16	10:30	1	2.25	9.4
PC	34D	8	28	10		10:15	1	0.26	9.8
PC	35S	8	15	3.5		11:15	1	1.55	7.8
PC	35D	8	28	10		10:50	1	0.16	10.0
PC	36S	24	16	4		11:45	1	10.05	9.96
PC	36D	36	16	10		12:10	1	0.02	10.5
OW2D		44.3	7.91	19		13:00	1	4.91	12.3
OW2S		20.7	8.33	6		13:40	1	3.51	10.7
POND									

Example Purge Volumes

Diameter:	2.0	4.0	6.0
ft^2 (πr^2):	0.02182	0.08727	0.19635
ft water	3x Water Volume (gallons)	3x Water Volume (gallons)	3x Water Volume (gallons)
1	0.5	2.0	4.4
2	1.0	3.9	8.8
3	1.5	5.9	13.2
4	2.0	7.8	17.6
5	2.4	9.8	22.0
6	2.9	11.8	26.4
7	3.4	13.7	30.8
8	3.9	15.7	35.3
9	4.4	17.6	39.7
10	4.9	19.6	44.1
11	5.4	21.5	48.5
12	5.9	23.5	52.9
13	6.4	25.5	57.3
14	6.9	27.4	61.7
15	7.3	29.4	66.1

PC-36
10.05
9.96

0

$= \pi \left(\frac{1}{12}\right)^2 = 3.14 \left(\frac{1}{144}\right)$ ____

ft^3 = ____ ft^3

$= gal$ ____ $\times 7.481$ gal

$= gal$

ft^3 to gal $\rightarrow$ 1 ft^3 = 7.481 gal

PC - 11

Depth to water : 26.96
Depth to BTM : 43.8
Column H_2O : 17 ft $\rightarrow$ 3x H_2O vol = 8.3 gallons
Time : 12:10 pm

PC - 12

Depth to H_2O : 25.93
Depth to BTM : 44.9
Column : 19 ft $\rightarrow$ 9.3 gal
Time: 12:30

Well Measurements

Well Series	Well No.	Depth to Bottom	Depth to Water	3x Water Volume (gallons)	Date Sample Collected	Time	# Bottles	DO
HW - 1S		12.9	4.90	3.9	7/6	9:10	1	
-1D near pond →		46.31	4.91 ~~[illegible]~~	20	7/6	9:45	1	

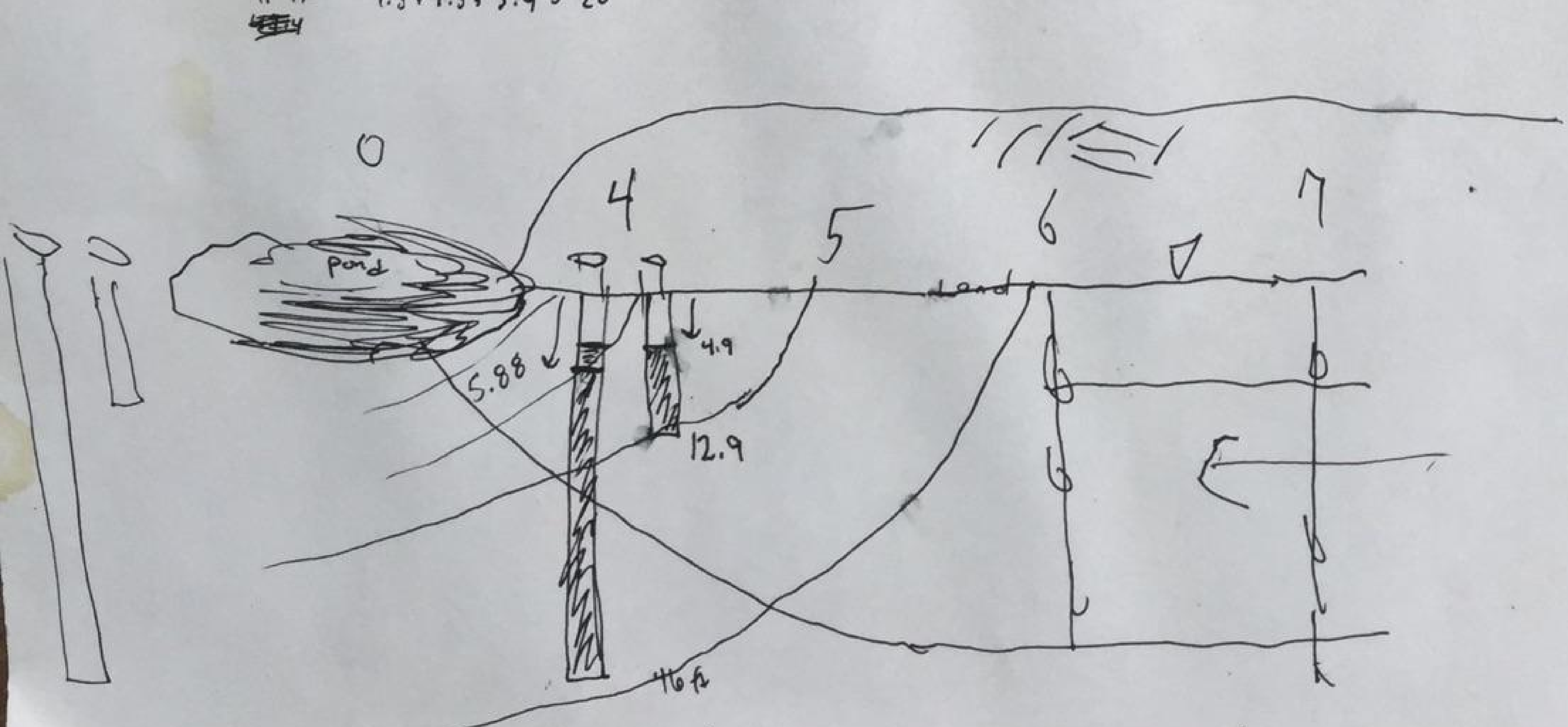
Example Purge Volumes

Diameter:	2.0	4.0	6.0
ft^2 (πr^2):	0.02182	0.08727	0.19635
ft water	3x Water Volume (gallons)	3x Water Volume (gallons)	3x Water Volume (gallons)
1	0.5	2.0	4.4
2	1.0	3.9	8.8
3	1.5	5.9	13.2
4	2.0	7.8	17.6
5	2.4	9.8	22.0
6	2.9	11.8	26.4
7	3.4	13.7	30.8
8	3.9	15.7	35.3
9	4.4	17.6	39.7
10	4.9	19.6	44.1
11	5.4	21.5	48.5
12	5.9	23.5	52.9
13	6.4	25.5	57.3
14	6.9	27.4	61.7
15	7.3	29.4	66.1

41 ft ~~[illegible]~~ 7.3 + 7.3 + 5.4 = 20

CONDUCTIVITY

HW - 1S	80 µMHOS	9:00 AM	Beginning of pumping
	~85	9:10 Am	end of pumping
HW - 1D	~180 µMHOS	9:15	Beg. of pumping
			# buckets: ~~卌~~ 11
	200 µMHOS	9:46	end of pumping



	Bottom	DTW	Difference	Conductivity Beg.	Cond. end	3 x vol 4 gal	Time
HW 2S	- 17.12	8.87	8.25 ft	80			卌 II
				110 ; 85 ; 85			
MW - 2D	N/A	N/A					

$r = \frac{1}{12}$

$\text{Volume} = \pi \left(\frac{1}{12}\right)^2$

One vol. = 0.17989 ft^3

= 0.53968

$\frac{7.481 \text{ gal}}{ft^3}$

Well Measurements

Well Series	Well No.	Depth to Bottom		Depth to Water	3x Water Volume (gallons)	Date Sample Collected	Time	# Bottles	DO	Temp
PFW	1	19.92		15.54	2.0	8/11/16	10:35	1		
PFW	2	20.20		13.49	3.2	8/11/16	11:05	1		
HS	i	nm		nm	~ ~~1/4~~ 4	8/11/16				
HS	6	nm		nm	~ ~~1/4~~ 4	8/11/16				
MW-3	s	23.6		17.05	3 gal					
	i	33.2		17.27	8 gal	8/18/16				
	d	41.1		17.18	12 gal					
HW-2s		[illegible]	pvc	11.07	4 gal	8/18/16				
			box	11.38						

Example Purge Volumes

Diameter:	2.0	4.0	6.0
ft^2 (πr^2):	0.02182	0.08727	0.19635
ft water	3x Water Volume (gallons)	3x Water Volume (gallons)	3x Water Volume (gallons)
1	0.5	2.0	4.4
2	1.0	3.9	8.8
3	1.5	5.9	13.2
4	2.0	7.8	17.6
5	2.4	9.8	22.0
6	2.9	11.8	26.4
7	3.4	13.7	30.8
8	3.9	15.7	35.3
9	4.4	17.6	39.7
10	4.9	19.6	44.1
11	5.4	21.5	48.5
12	5.9	23.5	52.9
13	6.4	25.5	57.3
14	6.9	27.4	61.7
15	7.3	29.4	66.1

19.92 − 15.54 = 4.38
20.20 − 13.49 = 6.71

23.9

Appendix VII

RemBind Product Overview

RemBind™

Product Overview

Tersus Environmental

For every zone of your plume, we've got you covered!

Chemical Fixation of Organic & Inorganic Contaminants

(US Patent 8,940,958)

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RemBind™

Features and Benefits

Tersus is the exclusive North American distributor for *RemBind™ (US Patent 8,940,958)*, a powdered reagent manufactured by Ziltek Pty Ltd that binds up and immobilizes contaminants in soil. *RemBind™* is typically added at less than 5% by weight using conventional soil blending equipment and binding occurs within 24hrs.

The *RemBind™* family of products are designed to treat a range of organic contaminants including TPH, PAH, PFOS, PCBs, PCPs, and various pesticides. It can also bind up heavy metals such as arsenic, chromium and mercury.

RemBind™ was used to successfully treat more than 2,000 tons of coal tar soil in Australia and the project team was awarded a National Civil Contractors Federation (CCF) Earth Award for environmental excellence.

Tersus can also perform laboratory treatability studies and provide post-treatment validation testing and reporting where required.

Benefits

- Avoid landfill costs by leaving soil on-site
- Fast, low risk alternative to bioremediation
- Reclassify soil to a cheaper disposal category

Features

- High performance – meets stringent global standards
- Product inventory located in Chicago for short delivery times to most cities
- Easy to apply using conventional equipment
- Developed in collaboration with Australia's national science agency, Commonwealth Scientific and Industrial Research Organization (CSIRO)

Applications

- Contaminated soil treatment
- Odor control
- Wastewater treatment
- Sediment remediation

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RemBind™

Tersus Environmental
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Frequently Asked Questions

What is *Rembind*™?

RemBind™ is a proprietary mix of activated carbon, aluminum hydroxide and other adsorption agents. Its structure has a large surface area with mixed charges that bind chemical contaminants via adsorption, ionic bonding and other physical and chemical interactions. *RemBind*™ stops contaminant leaching from soils, mitigating health and environmental risks.

What contaminants can *RemBind*™ immobilize?

RemBind™ will immobilize any organic contaminant that activated carbon will immobilize. These include PCBs, PAHs, TPH, PCP, PFASs, etc. In fact, the product binds certain shorter chain organic molecules with a higher affinity than activated carbon (i.e., 6:2 FtS – Fluorotelomer sulfonate - a precursor chemical that can break down to PFOA). *RemBind*™ is also designed to immobilize amphoteric metals including chromium and arsenic.

Will *RemBind*™ work for my project? How much do I need?

Tersus is available to help evaluate the feasibility of using our technologies at your site. To take advantage of this service, we suggest you complete our online form at www.tersusenv.com/support and send related documentation such as plume map, groundwater elevation map, cross sections and boring logs and groundwater biogeochemical characterization and analytical data.

RemBind™ addition rates of 2% to 10% by weight are typically adequate. For quality control and assurance, Tersus performs *RemBind*™ treatability and performance studies to provide an optimal site-specific mixing formulation. To undertake a study, we require approximately 25 pounds of soil and two weeks to complete. In addition, Tersus can provide post-treatment validation testing and reporting upon request.

Which *RemBind*™ grade is adequate for my project?

Standard RemBind™ is adequate for PAHs, TPHs and most applications. For emerging contaminants with relatively low regulatory threshold values, such as PFCs, *RemBind*™ PLUS might be more suitable since it has a stronger binding capacity. Our treatability study will help determine the right product and concentration for your situation.

How do I add the product in the field?

Mix *RemBind*™ with soil at the pre-determined addition rate and mix thoroughly. Mix in enough water to achieve an "apple crumble" consistency (quantity determined by the treatability study). The mixture with a roughly 40% moisture content should be left to fix for 48 hours before collecting validation samples. A loader or backhoe could be used for small projects. Purpose-built soil blending equipment can process 350 cubic yards of soil per day.

What is the availability of the product?

RemBind™ and *RemBind*™ PLUS are available in 850 Kg and 700 Kg Super Sacks, respectively. Expect standard shipping times from Chicago. Delivery times for orders over two truckloads are available upon request.

Why wouldn't I use activated carbon?

While activated carbon will bind a range of organic contaminants, it is relatively expensive and does not bind some shorter chain compounds with the same affinity as *RemBind*™ does. Addressing some of these smaller compounds (i.e., perfluorinated compounds, 6:2 FtS, etc.) can be critical from a regulatory perspective due to their high mobility in groundwater and because they may be precursors to other regulated compounds.

How long does the binding last?

Soil stabilization using *RemBind*™ can pass the most stringent leachability test available. This test follows the Multiple Extraction Procedure (EPA Method 1320), which simulates 1,000 years of acid rain in an improperly designed sanitary landfill.

What are the mechanisms for binding?

The activated carbon component binds to organic compounds through adsorption, where the organic molecules adhere to the surface of the activated carbon through physical attraction forces. The exact mechanism of action depends on the type of molecule in question, but the adsorption process mainly involves van der Waals forces but can also involve covalent bonding and/or electrostatic attraction. Due to its relatively large internal surface area, activated carbon is the most widely used adsorbent in the world.

The aluminum hydroxide component of RemBind is in an amorphous form which means it lacks a rigid crystalline structure. This results in an irregular, charged, and relatively large internal surface area which renders it suitable for binding a range of compounds, particularly the amphoteric metals.

How does the aluminum in *RemBind*™ affect?

Aluminum content might increase in soils by less than 1% after mixing with *RemBind*™*,* but these levels are not considered toxic. In addition, there will be insignificant leaching of aluminum at pH levels within 4-7. Although some jurisdictions may have aluminum thresholds, these are relatively high.

Can *RemBind*™ treat soils with both organic and inorganic co-contaminants, such as heavy metals?

Specific amendments can be added to *RemBind*™ to tailor a solution for many constituents of concern. For example, to treat lead, a phosphate-based amendment is added to *RemBind*™ during manufacturing.

Does *RemBind*™ also treat water?

RemBind™ can effectively remove contaminants in water using pump-and-treat systems, bed filters, slurry reactors or permeable reactive barriers. *RemBind*™ is particularly effective in removing PFASs aqueous media and groundwater.

RemBind™
Case Study

Firefighting Foam Contaminants (PFOS & PFOA)

RemBind™ Treats Firefighting Foam Contaminants

Project Highlights

- Study demonstrated that *RemBind*™ is an effective amendment to treat firefighting foam contaminants.
- Study demonstrated that *RemBind*™ PLUS reduced PFOS leachability by >99.2% to below the Minnesota drinking water guidelines of 0.3µg/L.

Problem Definition

Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) are man-made chemicals that are extremely persistent in the environment. In 2009, PFOS was listed as a chemical of concern by the Stockholm Convention on persistent organic pollutants.

These chemicals are common in Aqueous Film Forming Foams (AFFF) used for firefighting and their manufacture has been restricted or banned in several countries.

Solution

Bench-scale testing was performed on behalf of an airport authority to validate the effectiveness of *RemBind*™ and *RemBind*™ PLUS to treat Aqueous Film Forming Foam (AFFF) contaminants in soil which include PFOS. The laboratory treatability study was independently supervised and audited by the environmental consulting company SEMF. This included sealing sample containers, doorways and fume cupboards at the end of each day to maintain integrity of the process.

Methodology

PFOS contaminated soil was collected from two different commercial airport sites in Australia and sent to Ziltek's laboratories in South Australia for processing (designated Soil 1 and 2).

Soils were air-dried, thoroughly mixed and screened in preparation for the treatment with RemBind™, exclusively distributed in North America by Tersus Environmental. RemBind™ or RemBind™ PLUS was added to the soils at various rates and, after moisture adjustment, treatments were left to cure for 48 hours.

Treated samples (and untreated controls) were sent to a commercial NATA-accredited laboratory for leachability testing using ASLP (Australian Standard Leaching Procedure (ASLP), based on US EPA Method 1311). Selected samples were subjected to the more rigorous Multiple Extraction Procedure (MEP; US EPA Method 1320) to test for longevity of binding.

Notable Results

Treatability testing results indicate that PFOS was reduced by more than 98.5% for soil from both sites. PFOA reductions followed a similar trend. For both soils, *RemBind*™ PLUS reduced PFOS leachability to below the stringent Minnesota Department of Health drinking water guidelines of 0.3µg/L.

MEP results show that Soil 1 treated with 5% *RemBind*™ PLUS passed the stringent MEP test which simulates 1,000 years of acid rain in an improperly designed sanitary landfill. A summary of the results is presented in Tables 1 to 3 below.

Table 1: Leachability Reduction of PFOS & PFOA for Soil 1

Site 1	ASLP Analysis			
	PFOS µg/L	%	PFOA µg/L	%
Untreated Soil	34.15	-	0.65	-
RemBind™	0.50	98.5	0.04	93.8
RemBind™ PLUS	0.29	99.2	<0.02	>96.9

Table 2: Leachability reduction of PFOS & PFOA for Soil 2

Site 2	ASLP Analysis			
	PFOS µg/L	%	PFOA µg/L	%
Untreated Soil	376	-	5.51	-
RemBind™	1.76	99.5	0.27	95.1
RemBind™ PLUS	0.10	99.9	<0.02	>99.6

Table 3: Multiple Extraction Procedure results for Soil 1 treated with *RemBind*™ PLUS

Leach	EP	1	2	3	4	5	6	8	9
PFOS µg/L	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Conclusions

Soils amended with *RemBind*™ PLUS reduced PFOS leachability by >99.2% to below the Minnesota drinking water guidelines of 0.3µg/L and that this binding was stable long term as determined by the most stringent soil leachability test available (US EPA Method 1320).

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RemBind™
Case Study

Comparing RemBind™ & GAC Adsorption of PFASs

RemBind™ Outperforms GAC in Adsorption of Dissolved Perfluorinated Substances in Water

Sensatec GmbH, an independent laboratory based in Germany, conducted a column study to compare the abilities of *RemBind*™ PLUS and granular activated carbon to remove perfluorinated substances from groundwater.

Methodology

Sensatec packed a column with a mixture of 10% quartz sand and 90% *RemBind*™ PLUS by weight. A second column contained GAC. Applying sodium chloride as a tracer, Sensatec determined hydraulic breakthrough rates and the column pore volumes. Thereafter, Sensatec ran a water solution with a total PFAS concentration of 1.85 mg/L (510 µg/L PFOS) through the columns with continuous flow to determine breakthrough rates. Sensatec collected samples from the column outlet at the following pore volume exchanges: 1, 5, 10, 20, 30, 50, and 100. Analytes included perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), potassium perfluorobutane sulfonate (PFBS) and perfluorobutyric acid (PFBA).

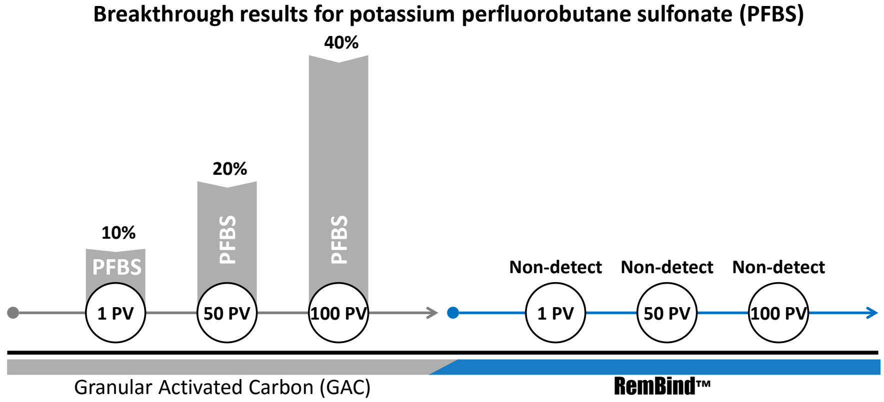
Results

The tracer study determined that a flow rate of 3.1 mL per minute would exchange a pore volume at 54 minutes. Results in figure below shows that there was minimal breakthrough of all tested compounds after 100 pore volumes had passed through the *RemBind*™ PLUS column. The GAC column had breakthrough of the smaller PFAS compounds, PFBS and PFBA, after 1 pore volume.

Conclusion

The adsorption capacity of RemBind Plus for the smaller chain perfluorinated substances PFBA and PFBS is vastly superior to that of GAC. This is likely due to the presence of the non-carbon components of RemBind Plus creating unique physical chemical interactions with the smaller chain PFAS compounds.

Breakthrough results for potassium perfluorobutane sulfonate (PFBS)



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RemBind™
Case Study

Chemical Fixation of PAH Impacted Soils at MGP Site

RemBind™ Treats PAH Impacted Soils

Project Highlights

- Treatment of 2000 tons of PAH impacted soils with 5% *RemBind™*.
- Treated soils passed the Multiple Extraction Procedure test that simulates 100 years of acid rain in an unlined sanitary landfill.
- Project selected for 2011 Civil Contractors Federation Earth Awards.

Problem Definition

A former MGP site located at Mead St, Birkenhead in South Australia, contained approximately 2,000 tons of PAH-contaminated soils that required off-site treatment and disposal.

Methodology

The treatment process involved adding RemBind and a solidification agent at 5% by weight. A single pass reduced the leachability of the PAHs and BaP to below the landfill criteria for Low Level Contaminated Waste (LLCW) to allow the safe disposal of the treated soil.

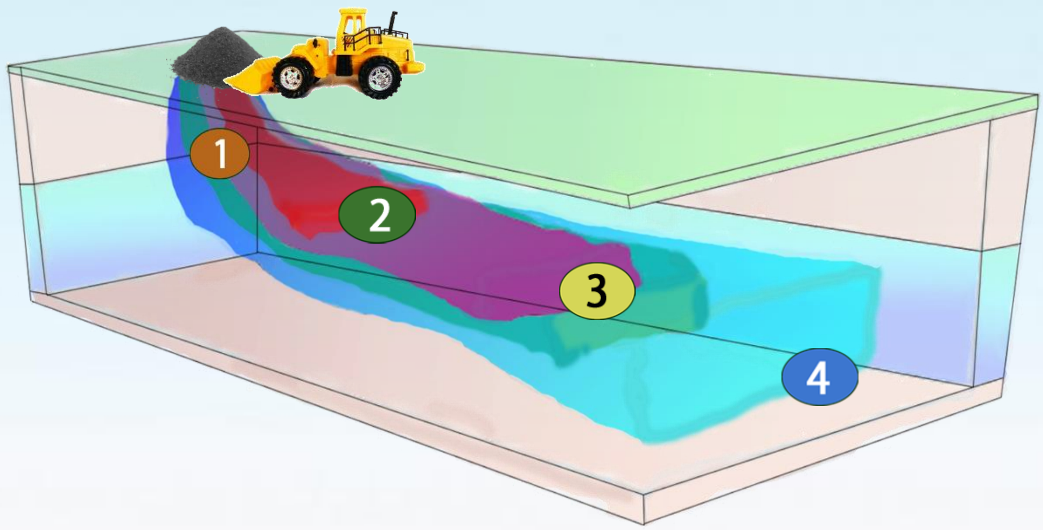
Notable Results

Chemical Constituent	Leachability (mg/L TCLP)	
	Before Treatment	After Treatment (5% w/w)
B(a)P	0.0083	0.0013
Total PAH	4.435	0.0351

In addition, the treated soil passed the Multiple Extraction Procedure (MEP) which is recognized as one of the world's most stringent soil leachability test. The test simulates the worst case leaching scenario - the leaching that a waste will undergo from repetitive precipitation of acid rain on an improperly designed sanitary landfill. The repetitive extractions are design reveal the highest concentration of each constituent that is likely to leach in a natural environment. While the TCLP and SPLP were designed, to simulate 100 years' exposure in a landfill, the more stringent MEP was designed to simulate 1,000 years in a landfill.

RemBind™

Chemical Fixation of Organic & Inorganic Contaminants



1 **Vadose Zone Remediation**

2 **Saturated Zone Source Area Remediation**

3 **Dissolved Contaminant *In Situ* Sorption**

4 **Permeable Reactive Barriers**

plus **Point-of-Entry (POE) / Point-of-Use (POU) Systems**

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Appendix VIII

Remediation of an Emerging Contaminant, Perfluoroalkyl Substances (PFAS), with OxyZone Processes

July, 2016

Remediation of an Emerging Contaminant, Perfluoroalkyl Substances (PFAS), with OxyZone® Processes

ABSTRACT

The results of an Air Force funded pilot test at Joint Base Langley-Eustis (JBLE) and laboratory studies performed by EnChem Engineering, Inc. presented in this white paper demonstrate the ability of OxyZone® and OxyZone®XC to remediate and destroy traditional petroleum hydrocarbon and chlorinated organic contaminants, and emerging contaminants such as PFAS. This white paper foucses on remediation of PFAS.

The field pilot test shows the efficacy of OxyZone® in reducing PFAS concentrations in subsurface soil and groundwater with emphasis on two regulated compounds; perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). These compounds have USEPA Health Advisory concentrations in drinking water of 0.07 microgram per liter (ug/l) or 70 parts per trillion for each individual compound or the total of the two. The subsequent confirmatory laboratory bench scale testing showed a 99.9% decrease of aqueous PFOS and PFOA concentrations and up to 87% de-fluorination of known PFAS to fluoride ion.

INTRODUCTION

PFAS consists of a chain of carbon atoms with fluorine bonded to the carbon, along with other atoms such as oxygen and sulfur. Due to the strong nature of the carbon-fluorine bond, PFAS are the most difficult and recalcitrant class of emerging contaminants to remediate. PFAS includes PFOA and PFOS. These compounds have been identified by the USEPA to have possible lifetime health risks for vulnerable populations, resulting in very low EPA Lifetime Health Advisories levels of 70 parts per trillion in drinking waters for each individual compound or the total of the two USEPA May, 2016 EPA 800-F-16-003.

There is also a concern in the regulatory community that the longer chain PFAS may act as a precursor to shorter chain PFAS compounds. Since the toxicity of these shorter chain compounds is not known, these compounds may represent a future contaminant issue for stake holders and potential responsible parties. The identification of PFAS as an emerging contaminant has resulted in the reopening of sites that were previously closed or approaching closure, and in at least one case has caused a site to be placed back into the Superfund program. This is an unfortunate outcome for a stake holder or potential responsible party after having spent as much as several million dollars on a remedy.

PFAS are a persistent class of contaminants and will persist in the environment for many years, typically several decades or more. In addition, the PFAS are expected to sorb to soils and the aquifer matrix to some degree. When using a pump and treat system for the remedy, this will likely result in the need for long term operation.

INTRODUCTION cont-

At this time, the typical approach to remediation of PFAS at a site includes ex-situ treatment of PFAS impacted groundwater that is extracted using a recovery well or wells and the water produced is treated using media transfer such as granular activated carbon (GAC) adsorption/filtration or in some cases an expensive ion exchange resin filter. It has been determined over many years that pump and treat systems can be very effective at maintaining hydraulic control to manage the down gradient migration of the dissolved phase contaminants, but it is not very effective at removing contaminants sorbed to the subsurface soils and aquifer materials at a site (Ref. EPA Groundwater Issue, EPA/540/4-89/005).

This limitation leads to very long operating time and results in high operation and maintenance costs. Frequently, federal and state regulators require a pump and treat system to prevent the continued migration of PFAS from the site to sensitive receptors such as private and public water supplies. This is necessary to protect the health and welfare of the community where the site is located, but will not provide a remedial solution that will meet the regulatory goal of source control in a reasonable time frame.

The ideal remedial approach would provide for control of the migration of the contaminants; and cost-effective destruction of the PFAS in groundwater and the aquifer matrix at the same time.

Unfortunately, media transfer methods of ex-situ treatment require that the adsorbent media be regenerated. The regeneration process results in the release of the PFAS from the adsorbent media and requires ultimate disposal.

There is only one process available that can destroy PFAS both ex-situ and in-situ. It is accepted knowledge that in-situ treatment of groundwater contaminants and sorbed contaminants in the aquifer materials results in a much shorter cleanup time and a commensurate reduction in the cleanup cost. The remedy uses OxyZone® and OxyZone®XC and has been demonstrated at the fire training area of Joint Base Langley-Eustis (JBLE), which contained a mixture of contaminants including PFAS, petroleum hydrocarbons and chlorinated solvents.

The results of the field pilot test and subsequent laboratory bench scale testing has confirmed that OxyZone® destroys PFAS in the presence of other contaminants and destroys the shorter chain length PFAS.

OxyZone® is a patented oxidant mixture previously shown to destroy difficult to treat compounds like trichloroethanes. Thus, it was decided to investigate the impact on PFAS as well as the traditional volatile organic compounds (VOCs) and semi-VOCs (SVOCs) at the site. OxyZone®XC contains a unique biodegradable carbohydrate (XC™ solution) to enhance contact between the oxidants and contaminant while also increasing contaminant solubility and oxidation.

The following section presents a brief discussion of the field pilot test conducted at the fire training area at JBLE as well as bench scale laboratory testing from JBLE and another fire training site in New England.

OxyZone®
Field Pilot Test

OxyZone®
Generation Process

Bench Scale Laboratory
Treatability Testing

OxyZone® Field Pilot Test

The Air Force Civil Engineer Center (AFCEC) seeks to fund better, faster, and more sustainable environmental solutions for the Air Force and selected EnChem Engineering, Inc. to perform a field pilot demonstration test from 2012 to 2014 titled "Chemical Oxidation and Inclusion Technology for Expedited Soil and Groundwater Remediation". The objective of the study was to assess the efficacy of OxyZone® and OxyZone®XC to treat mixed organic contaminants at a fire training area where waste solvent chemicals and fuels were burned to practice extinguishing fires with Aqueous Film-Forming Foam concentrates (AFFF).

As a result, the soil and groundwater in this fire training area are highly contaminated with various petroleum hydrocarbons characterized as benzene, toluene, ethylbenzene, and xylene (BTEX), 1,4-dioxane, chlorinated VOCs such as trichloroethane, trichloroethane, and tetrachloroethylene and SVOCs (dichlorobenzene, phenolics, polynuclear aromatics). Select soil borings were advanced at the site and a monitoring well network was installed. A membrane interface probe (MIP) investigation was also used to characterize the contamination levels in the subsurface and delineated a highly contaminated source area of approximately 29 feet by 22 feet and about 20 feet deep. During this base line testing for traditional contaminants, the emerging contaminant, PFAS, which were not previously analyzed on the site, were discovered at maximum concentrations of 160 micrograms per liter total PFAS in groundwater. These PFAS concentrations were typical of other PFAS sites, and they were much lower than the concentration of traditional contaminants found at the site.

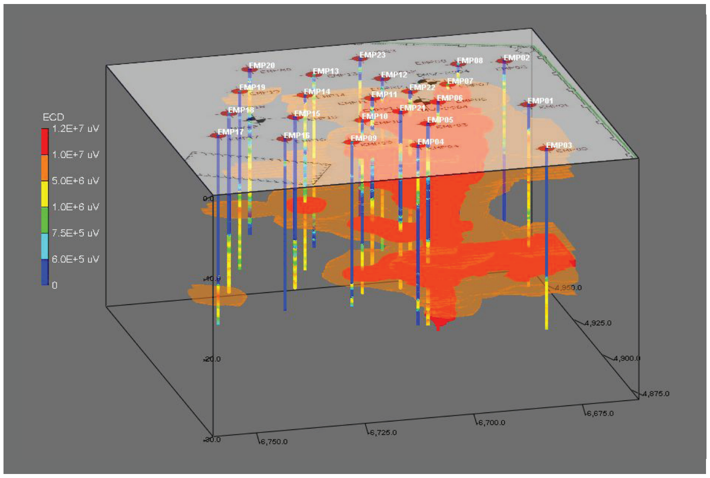
The JBLE fire training area has unique hydrogeological and geologic challenges. It is situated between the James River (to the west) and a salt marsh (to the east) where groundwater under tidal influence is less than two feet below the ground surface. The site lithology consists of 2-10 feet of discontinuous, interbedded low permeability silty sands and organic silts in the shallow zone overlying 10-19 feet of permeable sands in the deep zone and a deeper clay unit which defines the base of the permeable sand unit.

OxyZone® Generation Process

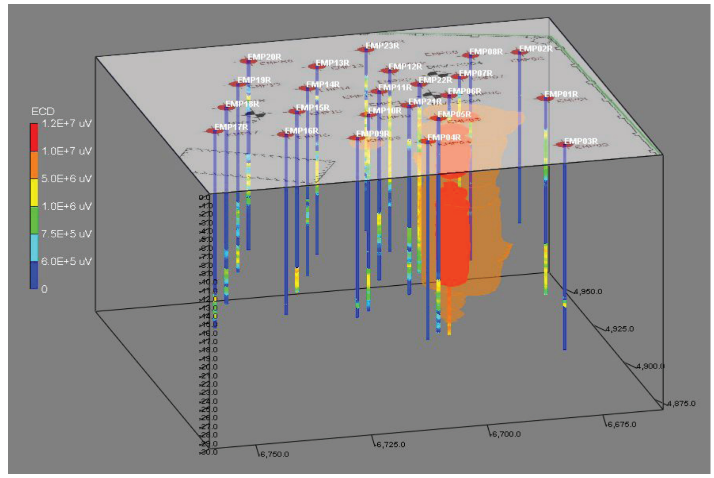
Pre-injection bench scale testing in the laboratory was done to determine the quantities of OxyZone® and XC™ solution needed to treat the VOCs and SVOCs. The field injection tests were performed using with a fully enclosed treatment trailer designed and manufactured by EnChem Engineering, Inc. The trailer is placed on-site and connected to fresh water, and an electrical power supply. It then produces the OxyZone® chemistry, which is injected into the aquifer. To test different formulations and sequences of OxyZone® and OxyZone®XC, the source area was divided into three Test Cells and three different injection events were completed at the site.

OxyZone® Mobile Treatment Trailer

The pre and post OxyZone® and XC™ solution injection results were evaluated using a MIP investigation to evaluate the impact on the traditional contaminants of chlorinated solvents and petroleum hydrocarbons. A comparison of the pre and post injection MIP investigation results indicated that there was a significant change observed in the data as shown in the three dimensional images below.



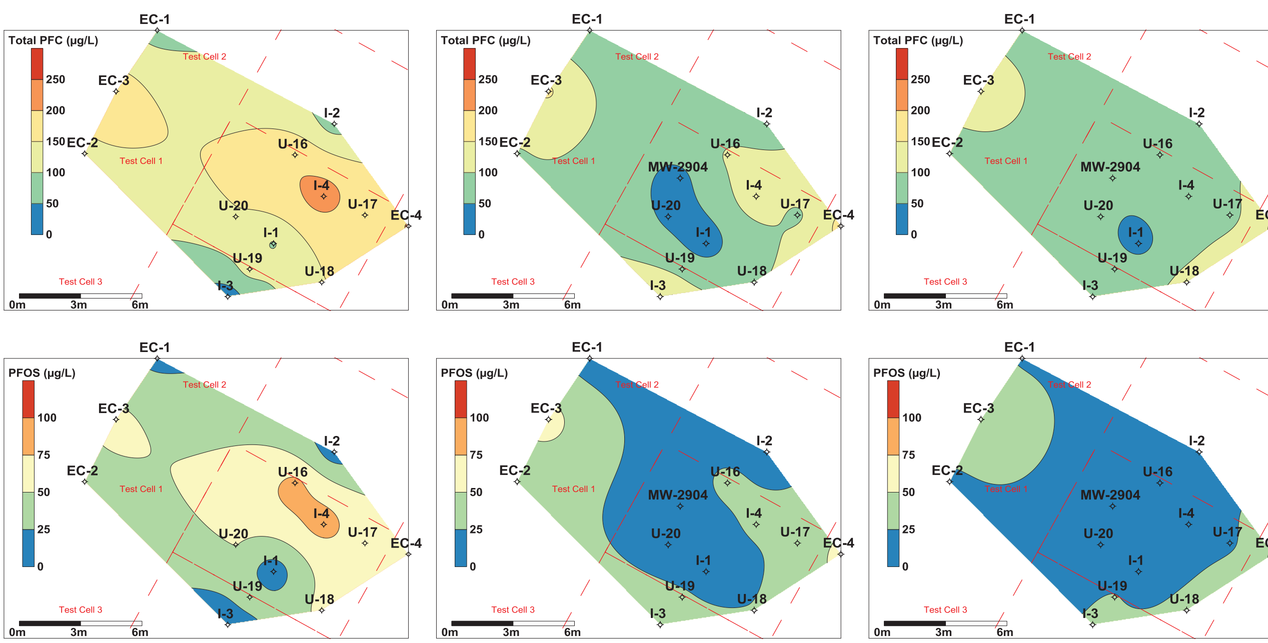
Pre-OxyZone® Injection



Post-OxyZone® Injection

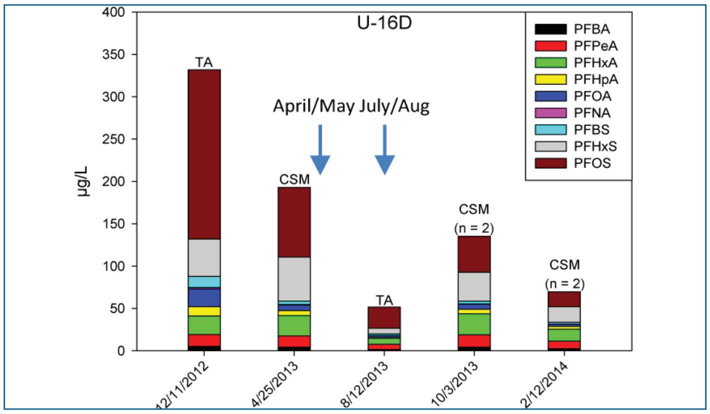
The MIP investigation tool does not detect PFAS and cannot be used to represent PFAS concentrations in the aquifer. Based on laboratory analysis, the PFAS concentration in groundwater was shown to decrease after OxyZone® injections. The spatial PFAS concentration was plotted as iso-concentration contours and presented below as total PFCs (top row) and as PFOS (bottom row), which is the predominant PFAS. The warmer the color, the higher the PFAS concentrations.

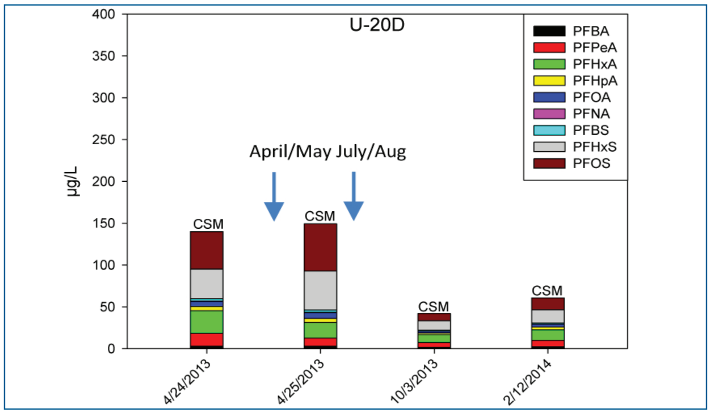
April 2013 | October 2013 | Febuary 2014

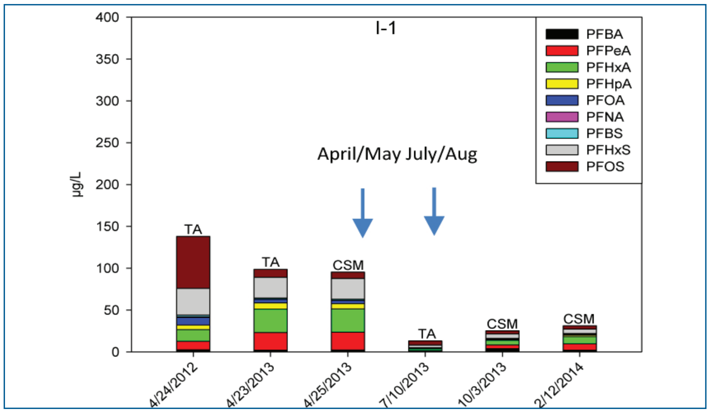


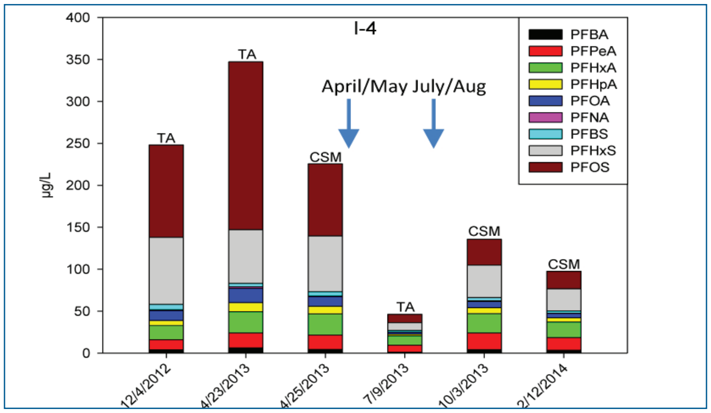
This shows that PFC concentrations decreased and did not rebound within the subsequent six month post-injection period. The groundwater data was also represented as shown in the bar graphs on the following page showing individual PFAS concentrations in four monitoring wells within the injection Test Cell where injections took place. The injection dates are indicated with down facing arrows.

A general decrease in the concentration of PFAS, especially PFOS, can be observed after the injections occurred. The same evaluation with bar graphs of groundwater PFAS concentrations in wells outside









the injection Test Cell area showed minimal concentration decrease over the period that OxyZone® injections occurred. A statistical analysis comparing the PFAS concentrations in wells within the injection Test Cell to those outside the injection Test Cell showed a statistically significant decrease in PFAS concentrations within the test cell, but not outside the test cell. Additionally, groundwater concentration of the conservative tracer, chloride, showed no overall dilution impact from the injections. Since there was a decrease in the PFAS concentrations and not a decrease in chloride in the test area, this indicated there was no or minimal dilution of PFAS.

Bench Scale Laboratory Treatability Testing

Based on the apparent impact of OxyZone® on PFAS during field pilot testing, numerous bench scale treatability tests of OxyZone® on PFAS were done in two to five liter capacity reactors in EnChem Engineering, Inc.'s treatability laboratory. Tests have been performed on:

1. Contaminated groundwater from the Fire Training Area at Joint Base Langley-Eustis (JBLE)

2. Distilled water and deionized water spiked with PFOA & PFOS

3. Contaminated groundwater from a AFFF contaminated Site in the Northeastern US

Results in the table on the next page show the concentrations in spiked de-ionized water where, after only two hours of OxyZone® treatment, three out of four spiked PFAS decreased 99%. The last compound, PFHxA, appears to have not been reduced within the time of the test.

Spiked Deionized Water (after 2 hours OxyZone® treatment)			
Specific PFC	**Initial concentration**	**Final concentration**	**Net Change**
PFOS: (8 carbon sulfonate)	93 ppb	< 1 ppb	99% decrease
PFOA: (8 carbon acid)	83 ppb	< 1 ppb	99% decrease
PFHpS (7 carbon sulfonate)	4 ppb	< 0.4 ppb	99% decrease
PFHxA (6 carbon acid)	6 ppb	6 ppb	no change

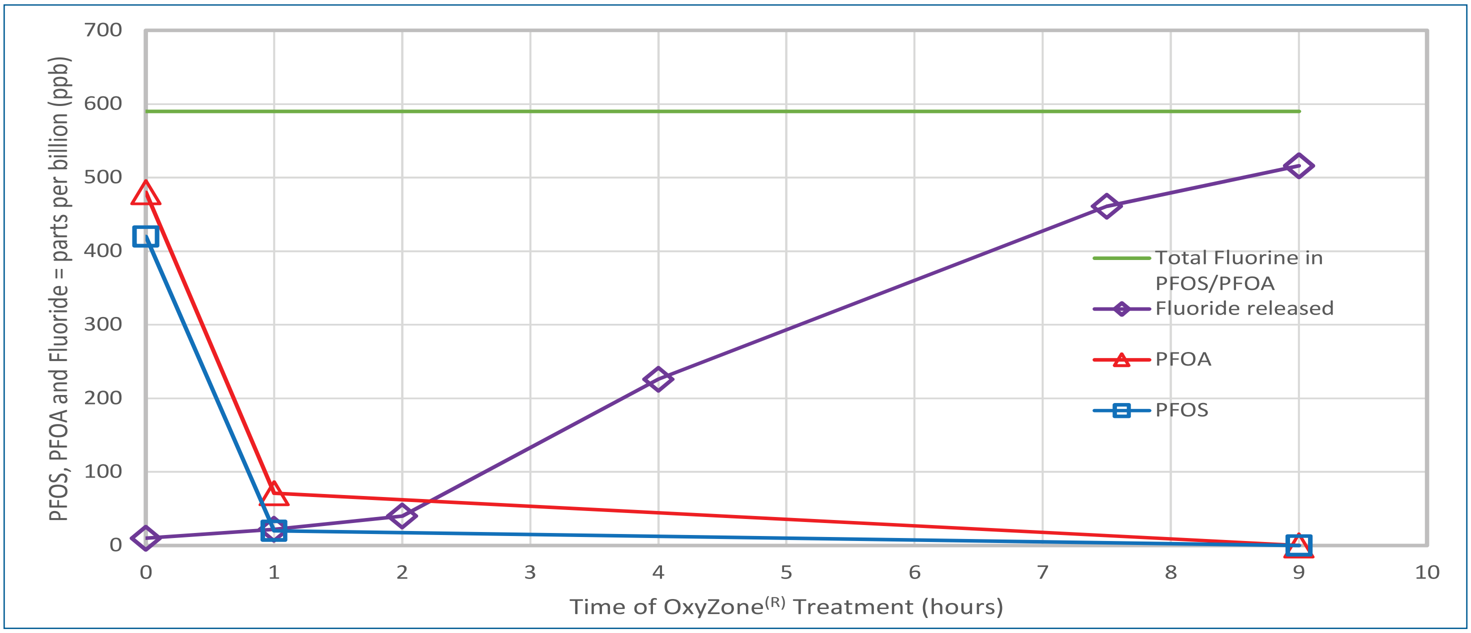
The test results in the table below are from actual site groundwater contaminated with AFFF used for fire suppression as well as high concentrations of many other contaminants exerting oxidant demand. This contaminated ground water was spiked with nine PFAS including PFOS and PFOA (to insure high enough concentrations). Analytical results after three hours and six hours show that the longer 8-carbon chain PFAS, in particular the PFOS and PFOA, are substantially reduced in concentration – 95% or better. Shorter chained compounds showed varying results. The PFHxS (6 carbon sulfonate) showed an increase in concentration during the first three hours, and then a net decrease of 79% after six hours of OxyZone® treatment. Others such as the PFHxA (6 carbon acid), PFBS (4 carbon sulfonate) and PFBA (4 carbon acid) also showed an increase in concentration after three hours in testing and a net increase at the end of the test period. The most plausible explanation for this observation is that longer chained PFAS molecules are being broken down by the OxyZone® chemistry into shorter PFAS molecules, which are also subsequently oxidized. A longer test period would likely show a net reduction in all of the PFAS compounds.

Spiked Contaminated Groundwater (during 6 hours of OxyZone® treatment)						
Specific PFAS	**Initial concentration**	**Conc. change**	**Intermediate** (3 hrs.) **concentration**	**Conc. change**	**Final** (6 hrs.) **Concentration**	**Net Change**
PFOS: (8 carbon sulfonate)	138 ppb	↓	25 ppb	↓	3 ppb	95% decrease
PFOA: (8 carbon acid)	33 ppb	↓	22 ppb	↓	6 ppb	97% decrease
PFHpS (7 carbon sulfonate)	7 ppb	↓	4 ppb	↓	0.4 ppb	97% decrease
PFHpA (7 carbon acid)	6 ppb	↓	< 0.4 ppb	=	< 0.4 ppb	67% decrease
PFHxA (6 carbon acid)	15 ppb	↑	43 ppb	↓	30 ppb	net increase
PFHxS (6 carbon sulfonate)	68 ppb	↑	99 ppb	↓	14 ppb	79% decrease
PFPeA (5 carbon acid)	11 ppb	↓	< 2 ppb	=	< 2 ppb	91% decrease
PFBS (4 carbon sulfonate)	9 ppb	↑	14 ppb	↓	10 ppb	no change
PFBA (4 carbon acid)	3 ppb	↑	6 ppb	=	5 ppb	small increase

Subsequent to this bench scale testing, EnChem Engineering, Inc. has performed additional PFOA and PFOS spiked distilled water experiments while measuring fluoride concentration as well as monitoring PFAS concentrations. Release of fluoride is proof of PFAS compound degradation as the strong carbon-fluorine bond is broken and fluoride is released.

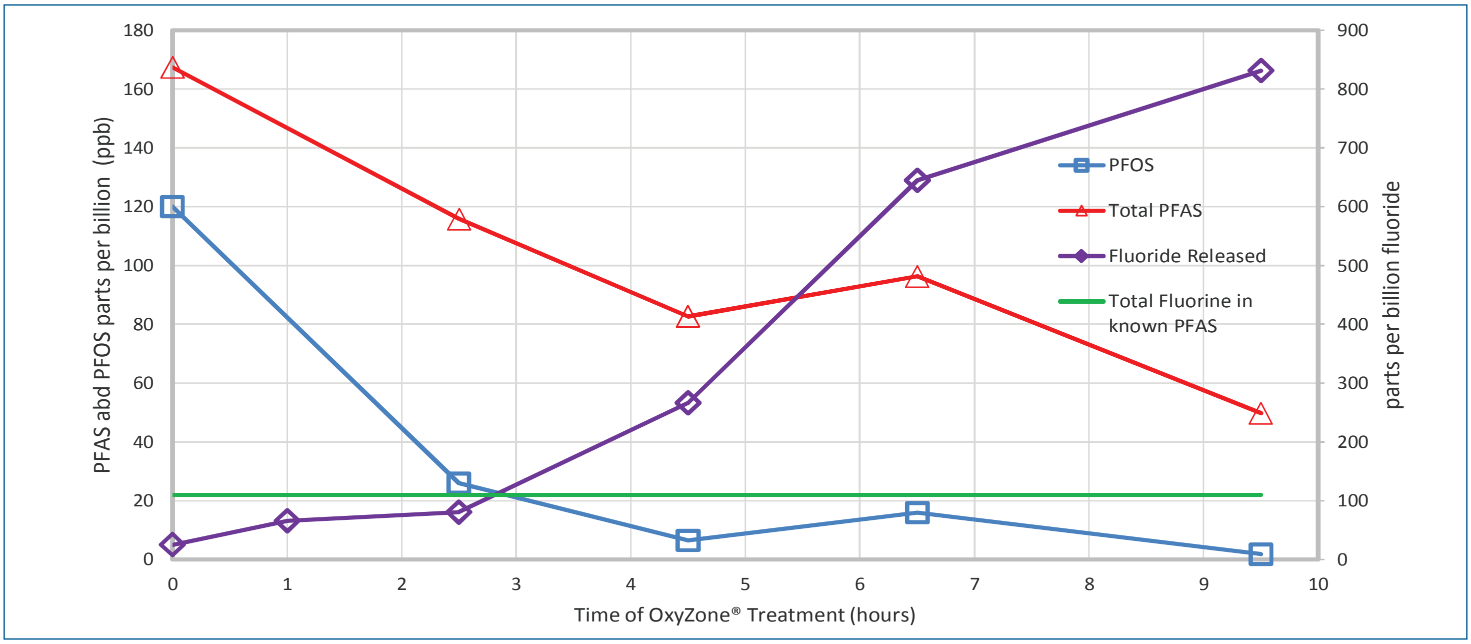
It is also expected that de-fluorination would be the first step in full degradation as the de-fluorinated compounds should be more amenable to future oxidation.

The graph below shows the results of OxyZone® treatment of distilled water spiked with relatively high concentrations of PFOS and PFOA (900 ppb, more than typically seen at contaminated AFFF sites). The straight green line in this graph represents the total theoretical amount of fluorine present within the PFOS and PFOA compounds in the test mixture. In this graph the PFOA (red line with triangular data points) and PFOS (blue line with square data points) concentrations were substantially reduced while the amount of fluoride released (purple line with diamond data points) is almost 90% of the total fluorine content of PFOS and PFOA.



OxyZone® Treatment of Distilled water spiked
with 900 ppb total PFOS & PFOA

The bench scale lab results of groundwater from a AFFF-contaminated site with significant amounts of non-identified PFAS (and 15 different detected PFAS totaling 170 ppb) are illustrated in the graph below. Due to the oxidant demand of the non-identified PFAS, the removal rate of PFOS and other PFAS was significantly slower than in the previous distilled water test. Another significant difference is that instead of de-fluorinating about 90% of the PFAS, the amount of fluoride released was almost eight times the amount of fluorine contained in the identified PFAS.



OxyZone® Treatment of AFFF
Contaminated Groundwater

This can be explained by the presence of un-identified PFAS compounds associated with the AFFF in this groundwater sample that were destroyed to produce fluorine.

CONCLUSION

Based on bench scale treatability and field pilot test studies, EnChem Engineering, Inc. has demonstrated that OxyZone® processes can destroy a broad range of short and long chain poly and perfluoroalkyl compounds in PFAS. The data presented in this white paper demonstrate that OxyZone® processes can effectively destroy PFAS in both in-situ and ex-situ applications. The process is scalable to handle larger sites and can be an alternative or complementary remedy to pump and treat with media transfer.

The use of OxyZone® as an in-situ process can greatly decrease the time required to meet regulatory standards or goals by destroying the highly recalcitrant PFAS in the groundwater and the sorbed fraction in the aquifer matrix. The ability to remove PFAS from the groundwater and the soil with in-situ treatment results in a significant decrease in remediation time and associated costs.

ABOUT EnCHEM ENGINEERING INC.

Since 2004, EnChem Engineering, Inc. (EnChem) has been providing a broad range of environmental consulting services and technology development including the patented in-situ and ex-situ chemical oxidation (ISCO) processes OxyZone® and OxyZone®XC. These are, respectively, a unique blend of oxidants and a biodegradable carbohydrate (XC™ solution) to enhance contact between the oxidants and contaminant while also increasing contaminant solubility and oxidation.

Already proven to be effective for in-situ treatment of more common organic contaminants (such as petroleum hydrocarbons, chlorinated VOCs and SVOCs), this white paper illustrates EnChem Engineering, Inc.'s highly effective ISCO technology solution for emerging contaminants such as PFOS and PFOA, two commonly detected PFAS (perfluoroalkyl substances).EnChem Engineering, Inc.'s staff are available to discuss site-specific remedies using OxyZone® processes and related environmental services in greater detail.

EnChem Engineering, Inc.

Please contact us at
Dr. Raymond Ball P.E.
617-795-0058
rball@en-chem.com

Appendix IX

Bench-scale Treatability Study Report for Groundwater at BCFRTA, EnChem, Engineering, Inc.

EnChem
Engineering, Inc.

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BENCH-SCALE TREATABILITY STUDY REPORT FOR GROUNDWATER

BARNSTABLE FIRE TRAINING AREA
155 SOUTH FLINT ROCK ROAD
BARNSTABLE, MA

June 1, 2016

Prepared For:

Thomas Cambareri L.S.P., CGWP
Water Resources Program Manager
Cape Cod Commission
3225 Main Street, P.O. Box 226
Barnstable, MA 02630

Prepared By:

EnChem Engineering, Inc.
151B California Street
Newton, Massachusetts 02458

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May 31, 2016

Mr. Thomas Cambareri, L.S.P., CGWP
Water Resources Program Manager
Cape Cod Commission
3225 Main Street, P.O. Box 226
Barnstable, MA 02630

Re: Bench-Scale Treatability Study Report for Groundwater
Barnstable Fire Training Area
155 South Flint Rock Road
Barnstable, MA

Dear Mr. Cambareri:

EnChem Engineering, Inc. (EnChem) is pleased to present the following Bench-Scale Treatability Study Report for Groundwater at the Barnstable Fire Training Area, 155 South Flint Rock Road, Barnstable, Massachusetts to the Cape Cod Commission (the Client). Based on the results presented in this report, it is our conclusion that OxyZone® is capable of destroying the recalcitrant poly and per fluoroalkyl compounds (PFAS) resulting from aqueous film forming foam (AFFF) constituents found in groundwater at the above-referenced Site. EnChem recommends that an in-situ pilot test be performed to develop design criteria and further evaluate those parameters that may affect the design of a full-scale remediation system; and that a bench-scale treatability test on soil be considered to evaluate OxyZone® treatment of unsaturated zone soil for destruction of PFAS.

Sincerely,

Alan Moore

Raymond G. Ball

Alan Moore, M.S.
Senior Engineer/Chemist

Raymond G. Ball, Ph.D., P.E., L.S.P.
Principal Engineer

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EnChem Engineering, Inc.

BENCH-SCALE TREATABILITY STUDY REPORT

1.0 INTRODUCTION

EnChem Engineering, Inc. (EnChem) performed this bench-scale treatability study to evaluate in-situ chemical oxidation using OxyZone® for destruction of poly and perfluoroalkyl compounds (PFAS) in groundwater resulting from the release of aqueous fire fighting foam (AFFF) to the ground surface within the Barnstable Fire Training Area (BFTA) shown in **Figure 1** and **Figure 2**.

Two groundwater samples from existing wells PFW-2 and HSW-6 within the source area at the BFTA site were collected by the Client and were shipped to EnChem for treatability testing. These samples are believed to contain PFAS concentrations that are representative of those within the source area of the BFTA site. The PFAS concentrations in these groundwater samples is expected to be some of the highest concentrations likely to be encountered within the existing plume. Based on existing analytical data not included here, the PFAS concentration in groundwater hydraulically downgradient of the source area is substantially diluted, although still exceeding the May 2016 USEPA Health Advisory concentrations for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) of 0.07 ppb in drinking water.

OxyZone® is a multi-oxidant blend developed and patented by EnChem for the purpose of destruction of a wide variety of organic contaminants that includes petroleum hydrocarbons and halogenated organic compounds. The technology blends several oxidants that include ozone, hydrogen peroxide, and buffered persulfate and can be applied in-situ or ex-situ to treat contaminants in both soil and water. Past experience at another fire training area site has shown that OxyZone® is capable of in-situ PFAS destruction. Depending on the method of applying OxyZone®, a secondary removal process also occurs for the surfactant-like compounds of the PFAS.

1.1 Objectives

The objectives of this bench-scale test were to: 1) characterize the site groundwater to identify any aspects that might affect the performance of OxyZone®, 2) evaluate the effectiveness of OxyZone® for treatment of site-specific PFAS in groundwater, and 3) evaluate OxyZone® for an in-situ pilot test of PFAS treatment at the Barnstable Fire Training Area.

2.0 EXPERIMENTAL METHODOLOGY

EnChem Engineering, Inc. (EnChem) performed a bench-scale treatability test on two different groundwater samples representative of groundwater within the source area at the site. Upon receipt, the groundwater samples collected from the site were refrigerated at the EnChem treatability laboratory until ready for bench-scale testing.

2.1 Initial Groundwater Sample Characterization

Prior to bench scale testing, each of the two groundwater samples were characterized by EnChem for its pH, oxidation-reduction potential (ORP), fluoride concentration. Quality control samples for fluoride analysis and all analyses of PFAS samples were performed by Maxxam

Analytics in Mississauga, Ontario. The fluoride concentration was analyzed by EPA Method 340.2, and the PFAS in groundwater was analyzed by a modified EPA Method 537. When the groundwater samples were collected by the Client, it was observed that the groundwater sample from PFW-2 was more "cloudy" than the sample from HSW-6 most likely due to fine particulate matter.

2.2 Bench Testing Methodology

A batch test of OxyZone® treatment of the PFAS containing groundwater with continuous ozonation was performed. The batch test for each groundwater sample was conducted in a 3 inch diameter plastic column reactor that was filled with 2.7 - 5 liters of groundwater and OxyZone® amendments. The sample was continuously ozonated from a sparger located at the bottom of the reactor, which continued for the duration of the test. Throughout the test, samples of the treated groundwater were collected and submitted to Maxxam Analytics for analysis of PFAS. Samples of fluoride were also collected and analyzed in-house with some quality control samples also analyzed by Maxxam Analytics. The pH and ORP were measured throughout each groundwater test and the pH was maintained with a range of 8 to 10 by addition of small volumes of sodium hydroxide.

2.2.1 Sample PFW-2

The initial total concentration of known PFAS compounds in the reactor was 168 ppb and fluoride was 25 ppb. The initial pH and ORP of the groundwater from PFW-2 was measured to be pH 5.8 and 316 mv, respectively. The OxyZone solution was added to the reactor and the pH was again measured at pH 8.9. The pH was maintained by the addition of sodium hydroxide throughout the test in the range of pH 8 to pH 9.5. The ORP was measured throughout the test and ranged from 610 mv to 740 mv. During the OxyZone testing, the off-gas was passed through a trap to collect any PFAS or fluoride in the off-gas. Samples of the trap contents were analyzed for PFAS and fluoride. The reactor ground water was also sampled and analyzed for PFAS and fluoride during the test.

2.2.2 Sample HSW-6

The initial total concentration of known PFAS compounds in the reactor was 320 ppb and fluoride was 61 ppb. The initial pH and ORP of the groundwater from HSW-6 was measured to be pH 6.0 and 337 mv, respectively. The OxyZone solution was added to the reactor and the pH was again measured at pH 9.6. The pH was maintained by the addition of sodium hydroxide throughout the test in the range of pH 8.8 to pH 10.1. The ORP was measured throughout the test and ranged from 660 mv to 832 mv. During the OxyZone testing, the off-gas was passed through a trap to collect any PFAS or fluoride in the off-gas. Samples of the trap contents were analyzed for PFAS and fluoride. The reactor ground water was also sampled and analyzed for PFAS and fluoride during the test.

3.0 RESULTS

3.1 Initial Groundwater PFAS Characterization Results

The pH of the natural groundwater was typical for New England and ranged from pH 5.8 to 6.0, and the ORP was indicative of oxidative conditions with a range of 316 to 337 millivolt (mv). The fluoride concentration was relatively low as would be expected and ranged from 25 to 61 ppb. PFOS was the predominant PFAS in both groundwater samples of the twenty three individual PFASs analyzed with a concentration of 120 ppb in sample PFW-2 and 320 ppb in sample HSW-6. Thirteen individual PFAS were detected above the detection limit in groundwater sample PFW-2 and fifteen in groundwater sample HSW-6. The analytical detection limits vary significantly depending on the specific PFAS and the level of other detectable and non-detectable PFAS but were as low as 0.005 ppb. The total PFAS in sample PFW-2 was 168 ppb and the total PFAS in HSW-6 was 380 ppb. These results are presented in **Table 1.**

3.2 Bench Test Results

3.2.1 Sample PFW-2

The concentration of PFAS and fluoride in the reactor during the OxyZone® treatment is presented in **Figure 3**. The PFAS and fluoride concentration in the reactor are shown in **Tables 2** and **3,** respectively; and the concentration of PFAS and fluoride in the off-gas trap are presented in **Table 4**. The analytical reports from Maxxam Analytics are included in **Appendix A.**

3.2.2 Sample HSW-6

The concentration of PFAS and fluoride in the reactor during the OxyZone® treatment is presented in **Figure 4**. The PFAS and fluoride concentration in the reactor are shown in **Tables 5** and **6,** respectively; and the concentration of PFAS and fluoride in the off-gas trap are presented in **Table 7**. The analytical reports from Maxxam Analytics are included in **Appendix A.**

Table 8 present the QA/QC duplicate results (in addition to Maxxam's QA/QC data in the reports).

4.0 DISCUSSION

The two bench tests performed for this study were of duration 10.5 hours and 19 hours. A longer duration bench test of OxyZone could be performed to evaluate the lowest possible concentration of each PFAS that can be achieved.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results presented in this report, the following conclusions are drawn:

1. OxyZone will destroy typical PFAS compounds resulting from AFFF as evidenced by both a reduction in the concentration of individual PFAS compounds to a relatively low concentration and an increase in fluoride anion.
2. The modified EPA Method 537 used for the PFAS analyses identifies 23 individual compounds of which OxyZone destroyed (to below detection limits) six compounds during treatment of sample PFW-2 and seven compounds during treatment of sample HSW-6.
3. While total destruction of some individual PFAS compounds occurs, there is the potential for formation of some PFAS compounds until all PFAS including the “dark matter” or unidentified compounds are destroyed.
4. The initial characterization results for the two groundwater samples are comparable to PFAS results previously detected within the BFTA.

The following recommendations are made:

1. An OxyZone pilot test for treatment of PFAS compounds in groundwater should be performed using a recirculation zone with chemical amendments as needed.
2. The volume and amount of chemical to be recirculated so as to achieve the lowest acceptable PFAS concentration should be evaluated under field conditions.
3. Total Oxidizable Precursor (TOP) assay should be considered in future work to evaluate the amount of unidentifiable PFAS present.

EnChem Engineering, Inc.

FIGURES

EnChem Engineering, Inc.

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DATE: 5-26-16	PROJECT MANAGER: R. BALL
DRAWING NAME: Site Locus	CHECKED BY: R. BALL
PROJECT NUMBER: EN16-04	DRAWN BY: B. Karpes

Satellite View Site Map

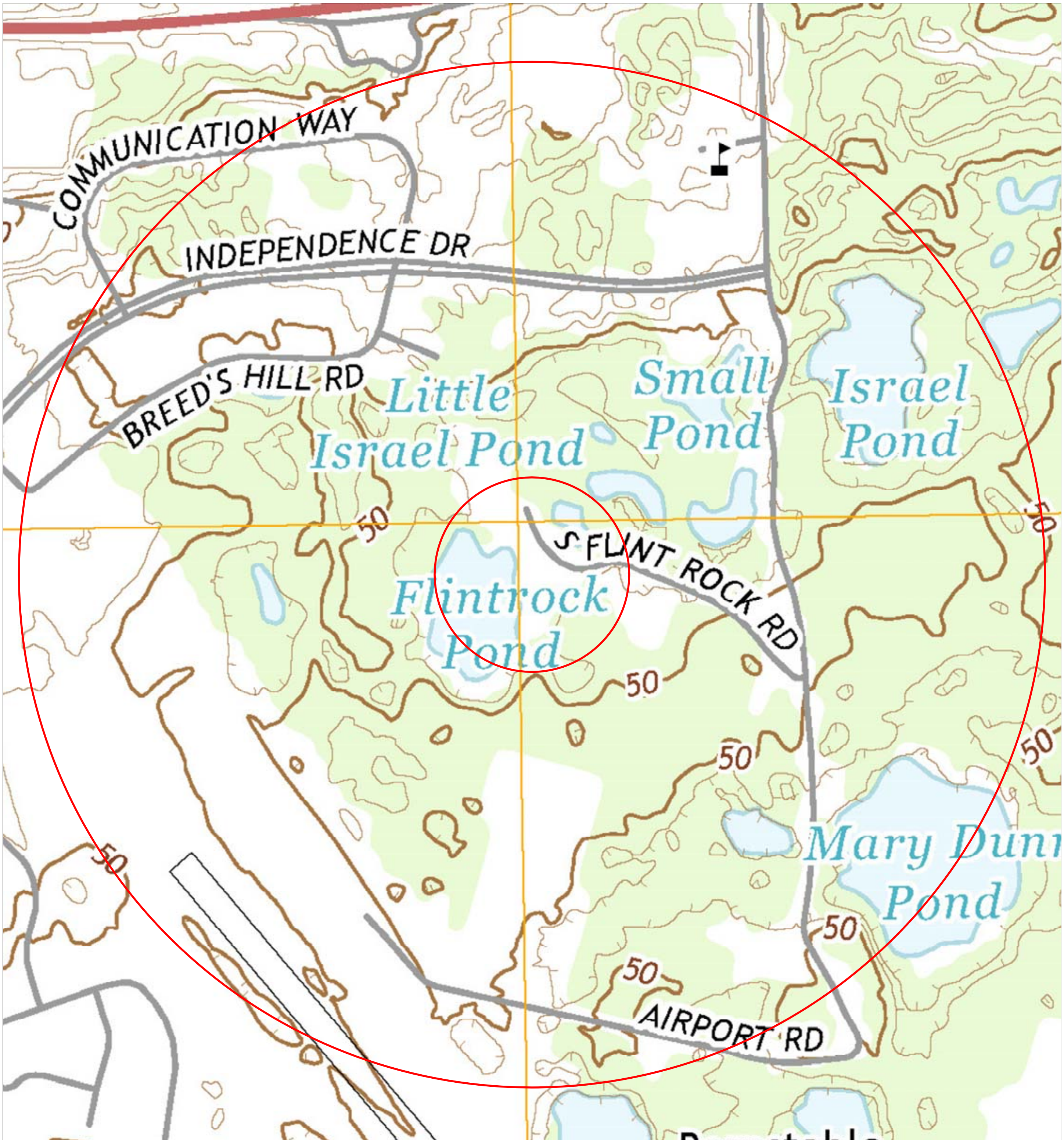
155 S FLINT ROCK RD.
BARNSTABLE, MA 02601

FIGURE 1

N
W E
S

0 300

Approximate scale in feet
Map Source: Google Earth Pro



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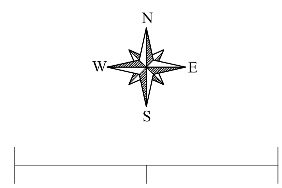
DATE: 5-26-16	PROJECT MANAGER: R. BALL
DRAWING NAME: Site Locus	CHECKED BY: R. BALL
PROJECT NUMBER: EN16-04	DRAWN BY: B. Karpes

Site Locus

155 S FLINT ROCK RD.
BARNSTABLE, MA 02601

FIGURE 2



Approximate scale in feet

Map Source: USGS Newton Quadrangle, 7.5 Minute Series, metric, (1987)

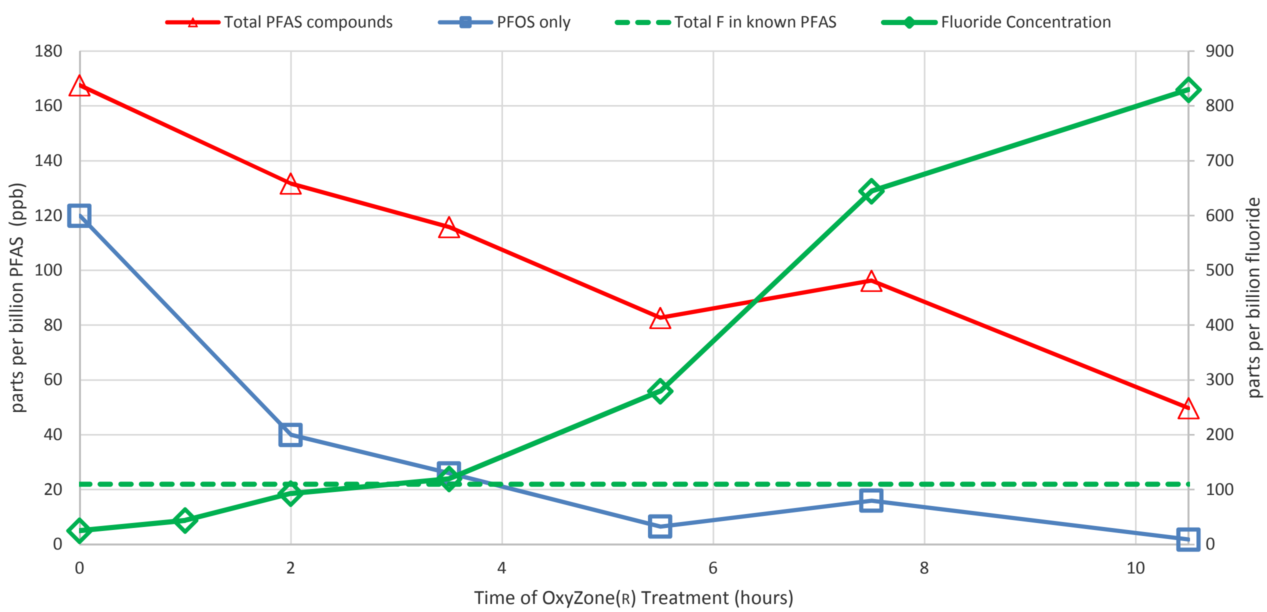


Figure 3: PFAS and Fluoride Treatment Results for PFW-2 Groundwater with Time

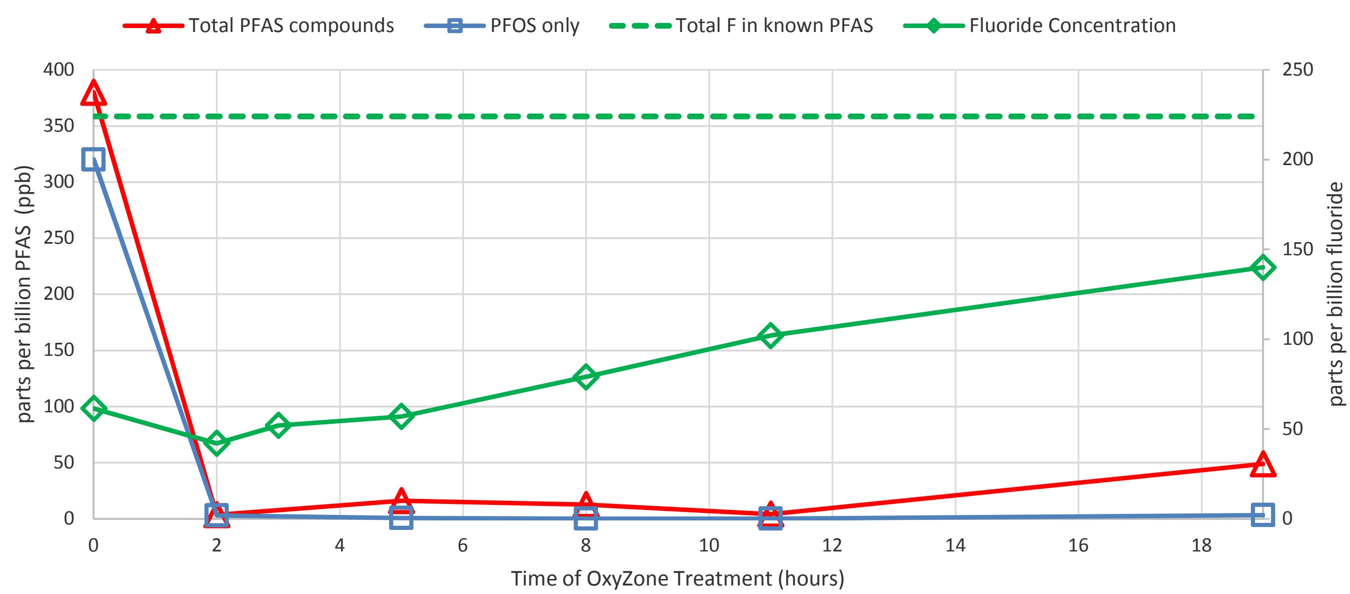


Figure 4: PFAS & FluorideTreatment Results for HSW-6 Groundwater with Time

EnChem
Engineering, Inc.

TABLES

TABLE 1. Initial Groundwater Sample Characterization Results

Sample	pH	ORP (mv)	PFOS (ppb)	Total PFAS of the 23 Compounds Analyzed (ppb)	Fluoride (ppb)
PFW-2	5.8	316	120	168 (13 individual compounds identified)	25
HSW-6	6.0	337	320	380 (15 individual compounds identified)	61

Table 2 - PFAS Treatment Results for PFW-2 Groundwater with Time

		Treatment Time						Specific PFAS removal > 10.5 hours
Parameters/Sample Name	UNITS	Start	2 hours	3.5 hours	5.5 hours	7.5 hours	10.5 hours	
PFAS that appear to be created by OxyZone								% removal
Perfluorobutane Sulfonate (PFBS)	ug/L	0.38	3.0	3.1	3.3	2.9	2.4	-532%
Perfluoroheptane sulfonate	ug/L	2.3	1.8	1.2	0.61	1.1	0.45	80%
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.47	4.4	8.5	11	14	6.2	-1233%
Perfluorohexane Sulfonate (PFHxS)	ug/L	13	24	26	18	18	5.0	62%
Perfluorohexanoic Acid (PFHxA)	ug/L	2.3	26	30	32	32	25	-987%
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	2.1	5.9	6.1	4.2	4.7	1.6	22%
Perfluorononanoic Acid (PFNA)	ug/L	0.79	0.62	0.62	0.34	1.0	0.21	73%
Perfluorooctane Sulfonate (PFOS)	**ug/L**	**120**	**40**	**26**	**6.5**	**16**	**1.8**	**99%**
Perfluoropentanoic Acid (PFPeA)	ug/L	1.3	4.8	5.8	6.1	6.4	7.1	-468%
PFAS treated by OxyZone to ND levels in Reactor								
Perfluorodecane Sulfonate	ug/L	0.24	<0.22	<0.22	<0.22	<0.22	<0.22	> 54%
Perfluorodecanoic Acid (PFDA)	ug/L	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	> 53%
6:2 Fluorotelomer sulfonate	ug/L	16.5	20	8.5	0.67	<0.21	<0.21	> 99%
8:2 Fluorotelomer sulfonate	ug/L	5.3	0.92	<0.28	<0.28	<0.28	<0.28	> 97%
Perfluorobutanoic acid	ug/L	0.40	<200 (1)	<200 (1)	<200 (1)	<200 (2)	<200 (2)	unknown
Perfluoroundecanoic Acid (PFUnA)	ug/L	2.5	0.185	<0.14	<0.14	0.17	<0.14	> 97%
PFAS Never Detected in Groundwater								
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.23	<0.20	<0.20	<0.20	<0.20	
Perfluorotridecanoic Acid	ug/L	<0.30	<0.23	<0.30	<0.30	<0.30	<0.30	
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	
SUM OF all detected PFAS (concentration)	**ug/l**	**168**	**132**	**116**	**83**	**96**	**50**	
% removal - concentration	**%**	**-**	**22%**	**31%**	**51%**	**43%**	**70%**	
Mass of detected PFAS (ug)	**ug**	**838**	**658**	**576**	**409**	**474**	**244**	
Sum of PFAS not created by OxyZone	**ug/l**	**25**	**21**	**9**	**1.1**	**0.6**	**0.6**	
% removal - concentration	**%**	**-**	**> 15%**	**> 64%**	**> 96%**	**> 98%**	**> 98%**	

Table 3 - Fluoride Results for PFW-2 Groundwater with Time

Sampling Date		March 30, 2016	April 12, 2016	April 12, 2016	April 13, 2016	April 15, 2016	April 18, 2016	April 25, 2016
Parameters/Sample Name	Units	Start	1 hour	2 hours	3.5 hours	5.5 hours	7.5 hours	10.5 hours
Time	hours	0	1	2	3.5	5.5	7.5	10
Fluorine in known PFAS	ug/l	110	110	110	110	110	110	110
	ug	297	297	297	297	297	297	297
Fluoride concentration	ug/L	25	44	93	120	280	645	830
Mass of Fluoride in Reactor	ug	68	119	251	324	756	1742	2241
				Increase due to defluorination				
% of known PFAS Fluorine released			17%	62%	86%	232%	564%	732%

Table 4 - PFAS and Fluoride Trap Results for PFW-2 Groundwater with Time

Parameters/Sample Name	UNITS	TRAP from 0-1 hours	TRAP > from 1 to 2 hours	TRAP from 2-3.5 Hours	TRAP from 3.5-5.5 hours	TRAP from 5.5-7.5 hours	TRAP from 7.5-10.5 hr. of OxyZone
PFAS that appear to be created by OxyZone							
Perfluorobutane Sulfonate (PFBS)	ug/L			<0.23	0.4		
Perfluoroheptane sulfonate	ug/L			0.4	2.4		
Perfluoroheptanoic Acid (PFHpA)	ug/L			2.1	9.6		
Perfluorohexane Sulfonate (PFHxS)	ug/L			3.3	25.0		
Perfluorohexanoic Acid (PFHxA)	ug/L			3.7	8.8		
Perfluoro-n-Octanoic Acid (PFOA)	ug/L			1.9	11.0		
Perfluorononanoic Acid (PFNA)	ug/L			0.4	3.3		
Perfluorooctane Sulfonate (PFOS)	**ug/L**			**15.0**	**87.0**		
Perfluoropentanoic Acid (PFPeA)	ug/L			0.6	0.8		
PFAS treated by OxyZone to ND levels in Reactor							
Perfluorodecane Sulfonate	ug/L			<0.22	0.24		
Perfluorodecanoic Acid (PFDA)	ug/L			<0.20	0.4		
6:2 Fluorotelomer sulfonate	ug/L			3.60	7.8		
8:2 Fluorotelomer sulfonate	ug/L			0.30	1.50		
Perfluorobutanoic acid	ug/L			0.26	0.22		
Perfluoroundecanoic Acid (PFUnA)	ug/L			<0.14	1.0		
PFAS Never Detected in Groundwater							
N-ethylperfluorooctane sulfonamide	ug/L			<0.28	<0.28		
N-ethylperfluorooctane sulfonamidoe	ug/L			<0.29	<0.29		
N-methylperfluorooctane sulfonamide	ug/L			<0.15	<0.15		
N-methylperfluorooctanesulfonamidol	ug/L			<0.30	<0.30		
Perfluorotetradecanoic Acid	ug/L			<0.20	<0.20		
Perfluorotridecanoic Acid	ug/L			<0.30	<0.30		
Perfluorooctane Sulfonamide (PFOSA)	ug/L			<0.23	<0.23		
Perfluorododecanoic Acid (PFDoA)	ug/L			<0.16	<0.16		
SUM OF all detected PFAS (concentration)	**ug/l**			**31.1**	**157**		
Mass of detected PFAS (ug)	**ug**			**6.2**	**31**		
Fluoride	**ug/L**	**480**	**20**	**< 20**	**15**	**17**	**19**
Fluoride in Trap	**ug**	**96**	**4.0**	**< 4**	**3.0**	**3.4**	**3.8**

Table 5 - PFAS Treatment Results for HSW-6 Groundwater with Time

Parameters/Sample Name	UNITS	Treatment Time						Specific PFAS removal > 19 hours
		Start	2 hours	5 hours	8 hours	11 hours	19 hours	
PFAS due to precursor transformation								
Perfluorobutane Sulfonate (PFBS)	ug/L	0.29	0.0048	2.2	2.0	1.5	2.8	-866%
Perfluoroheptane sulfonate	ug/L	5.4	0.027	0.073	0.018	<0.0090 (3)	0.32	94%
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.40	<0.012 (3)	1.3	0.93	0.074	8.1	-1925%
Perfluorohexane Sulfonate (PFHxS)	ug/L	17	0.081	3.9	1.6	0.052	13	24%
Perfluorohexanoic Acid (PFHxA)	ug/L	1.7	0.017	5.3	5.2	2.8	17.0	-900%
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	2.8	0.023	0.12	0.053	0.013	0.50	82%
Perfluorooctane Sulfonate (PFOS)	**ug/L**	**320**	**3.0**	**0.68**	**0.16**	**0.071**	**3.2**	99%
Perfluoropentanoic Acid (PFPeA)	ug/L	0.76	0.073	1.8	2.5	2.5	3.6	-374%
PFAS treated by OxyZone to ND levels								
Perfluorodecane Sulfonate	ug/L	0.53	0.011	<0.011 (3)	<0.011 (3)	<0.011 (3)	<0.22	81%
Perfluorodecanoic Acid (PFDA)	ug/L	0.45	<0.017 (3)	<0.017 (3)	<0.017 (3)	<0.017 (3)	<0.20	78%
6:2 Fluorotelomer sulfonate	ug/L	12	0.090	0.53	0.044	<0.016 (3)	<0.21	99%
8:2 Fluorotelomer sulfonate	ug/L	12	0.16	0.039	0.014	<0.014 (3)	<0.28	99%
Perfluorobutanoic acid	ug/L	0.30	0.0066	<0.0066 (2)	<0.0066 (2)	<0.0066 (2)	<2.0 (1)	67%
Perfluorononanoic Acid (PFNA)	ug/L	0.75	0.017	0.039	0.026	0.014	<0.19	87%
Perfluoroundecanoic Acid (PFUnA)	ug/L	5.6	0.066	0.025	0.023	<0.0093 (3)	<0.14	99%
PFAS Never Detected in Groundwater								
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.013 (3)	<0.013 (3)	<0.013 (3)	<0.013 (3)	<0.28	
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.012 (3)	<0.012 (3)	<0.012 (3)	<0.012 (3)	<0.29	
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.010 (3)	<0.010 (3)	<0.010 (3)	<0.010 (3)	<0.15	
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.015 (3)	<0.015 (3)	<0.015 (3)	<0.015 (3)	<0.30	
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.013 (3)	<0.013 (3)	<0.013 (3)	<0.013 (3)	<0.20	
Perfluorotridecanoic Acid	ug/L	<0.30	<0.0080 (3)	<0.0080 (3)	<0.0080 (3)	<0.0080 (3)	<0.30	
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.015 (3)	<0.015 (3)	<0.015 (3)	<0.015 (3)	<0.23	
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.014 (3)	<0.014 (3)	<0.014 (3)	<0.014 (3)	<0.16	
SUM OF all detected PFAS (concentration)	**ug/l**	**380**	**3.6**	**16**	**13**	**7.0**	**49**	
% removal - concentration	**%**	**-**	**99.1%**	**95.8%**	**96.7%**	**98.2%**	**87.2%**	
Mass of detected PFAS (ug)	**ug**	**1900**	**18**	**79**	**74**	**34**	**237**	
Sum of PFAS not created by OxyZone	**ug/l**	**32**	**0.36**	**0.65**	**1.1**	**0.05**	**0.05**	
% removal - concentration	**%**	**-**	**98.9%**	**97.9%**	**96.4%**	**99.8%**	**99.8%**	

Table 6 - Fluoride Results for HSW-6 Groundwater with Time

Sampling Date		March 30, 2016	April 27, 2016	April 27, 2016	April 28, 2016	April 28, 2016	April 28, 2016	April 29, 2016
Parameters/Sample Name	UNITS	Start	2 hours	3 hours	5 hours	8 hours	11 hours	19 hours
Time	hrs.	0	2	3	5	8	11	19
Fluorine in known PFAS	ug/l	246	246	246	246	246	246	246
	ug	1230	1230	1224	1218	1212	1205	1199
Fluoride concentration	ug/L	62	42	52	57	79	102	140
Mass of Fluoride in Reactor	ug	308	210	259	282	389	500	683
		Flouride decrease to due to off-gas transfer to trap		Increase due to defluorination				
		% of PFAS Fluorine released		4%	6%	15%	24%	39%

Table 7 - PFAS and Fluoride Trap Results for HSW-6 Groundwater over Time

	UNITS	Trap from 0-1 hour	Trap 1 hr. to 2 hrs.	Trap after 3 hrs.	Trap after 5 hrs.	Trap after 8 hrs.	Trap after 11 hrs.	Trap after 3 hrs.
PFAS that appear to be created by OxyZone								
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.80	0.31				0.85	
Perfluoroheptane sulfonate	ug/L	76	1.1				2.5	
Perfluoroheptanoic Acid (PFHpA)	ug/L	4.6	0.57				14	
Perfluorohexane Sulfonate (PFHxS)	ug/L	81	3.5				47	
Perfluorohexanoic Acid (PFHxA)	ug/L	210	1.7				15	
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	190	5.9				6.7	
Perfluorooctane Sulfonate (PFOS)	**ug/L**	3900	**39**				**60**	
Perfluoropentanoic Acid (PFPeA)	ug/L	13	0.36				4.2	
PFAS treated by OxyZone to ND levels								
Perfluorodecane Sulfonate	ug/L	2.5	0.34				0.41	
Perfluorodecanoic Acid (PFDA)	ug/L	5.8	0.23				0.50	
6:2 Fluorotelomer sulfonate	ug/L	170	2.5				11	
8:2 Fluorotelomer sulfonate	ug/L	160	1.5				1.7	
Perfluorobutanoic acid	ug/L	3.2	<20				1.5	
Perfluorononanoic Acid (PFNA)	ug/L	10	0.33				3.3	
Perfluoroundecanoic Acid (PFUnA)	ug/L	25	0.48				1.3	
PFAS Never Detected in Groundwater								
N-ethylperfluorooctane sulfonamide	ug/L	<0.80	<0.28 (1)				<0.28 (1)	
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.80	<0.29 (1)				<0.29 (1)	
N-methylperfluorooctane sulfonamide	ug/L	<0.80	<0.15 (1)				<0.15 (1)	
N-methylperfluorooctanesulfonamidol	ug/L	<0.80	<0.30 (1)				<0.30 (1)	
Perfluorotetradecanoic Acid	ug/L	<0.80	<0.20 (1)				<0.20 (1)	
Perfluorotridecanoic Acid	ug/L	<0.80	<0.30 (1)				<0.30 (1)	
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.97	<0.23 (1)				<0.23 (1)	
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.80	<0.16 (1)				<0.16 (1)	
SUM OF detected PFCs (concentration)	**ug/l**	**369**	**4.8**				**19**	
Mass of detected PFAS (ug)	**ug**	**74**	**1.4**				**5.2**	
Fluoride	**ug/L**	**184**	**< 20 ppb**	**< 20 ppb**	**37**	**55**	**103**	**131**
Mass of Fluoride in Trap	**ug**	**37**	**3**	**3**	**10**	**14**	**23**	**26**
				cummulative amount of F released to trap after initial 2 hours				

Table 8 - QA/QC Analytical Data

RESULTS OF ANALYSES OF WATER		PFAS duplicate analysis results			
Maxxam ID		CEW115	CEW115	CDO880	CDO880
Sampling Date		4/13/2016	4/13/2016	3/30/2016	3/30/2016
COC Number		na	na	na	na
	UNITS	**>1 HR. OXYZONE**	**>1 HR. OXYZONE Lab-Dup**	**PFW-2 T=0**	**PFW-2 T=0 Lab-Dup**
Miscellaneous Parameters					
6:2 Fluorotelomer sulfonate	ug/L	20	20	16	17
8:2 Fluorotelomer sulfonate	ug/L	0.95	0.89	5.5	5.1
N-ethylperfluorooctane sulfonamide	ug/L	<0.28	<0.28	<0.28	<0.28
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.29	<0.29	<0.29	<0.29
N-methylperfluorooctane sulfonamide	ug/L	<0.15	<0.15	<0.15	<0.15
N-methylperfluorooctanesulfonamidol	ug/L	<0.30	<0.30	<0.30	<0.30
Perfluorobutane Sulfonate (PFBS)	ug/L	3.0	3.3	0.36	0.40
Perfluorobutanoic acid	ug/L	<200 (1)	<200 (1)	0.39	0.41
Perfluorodecane Sulfonate	ug/L	<0.22	<0.22	0.24	0.24
Perfluorodecanoic Acid (PFDA)	ug/L	<0.20	<0.20	0.23	0.20
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.16	<0.16	<0.16	<0.16
Perfluoroheptane sulfonate	ug/L	1.6	1.9	2.3	2.2
Perfluoroheptanoic Acid (PFHpA)	ug/L	4.3	4.5	0.46	0.47
Perfluorohexane Sulfonate (PFHxS)	ug/L	23	25	13	13
Perfluorohexanoic Acid (PFHxA)	ug/L	25	27	2.3	2.3
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	5.9	5.9	2.1	2.0
Perfluorononanoic Acid (PFNA)	ug/L	0.61	0.62	0.83	0.74
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.23	<0.23	<0.23	<0.23
Perfluorooctane Sulfonate (PFOS)	ug/L	40	40	120 (1)	120 (1)
Perfluoropentanoic Acid (PFPeA)	ug/L	4.6	5.0	1.3	1.2
Perfluorotetradecanoic Acid	ug/L	<0.20	<0.23	<0.20	<0.20
Perfluorotridecanoic Acid	ug/L	<0.30	<0.23	<0.30	<0.30
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.19	0.18	2.5	2.5
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	109	144 (2)	109	108
13C4-Perfluorooctanoic acid	%	112	127	107	107
13C8-Perfluorooctanesulfonamide	%	97	110	102	111

NOTE: see Maxxam analytical reports for their other QA/QC data: surrogate recoveries, etc.

Fluoride Duplicate Sample Data		
PFW-2 after 5.5 hrs.OxyZone		
Maxxam	EnChem	
320	240	
PFW-2 after 7.5 hrs.OxyZone		
Maxxam	EnChem	
590	700	
HSW-6 after 8 hrs.OxyZone		
Maxxam	EnChem	
100	78	
HSW-6 after 11 hrs.OxyZone		
Maxxam	EnChem	EnChem
100	94	110
HSW-6 after 18 hrs.OxyZone		
EnChem	EnChem	
134	147	

Appendix X

DEP Water Management Act Permits of 2007 and Draft 2015

/ .PK

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-946-2700

COPY

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Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

ARLEEN O'DONNELL
Commissioner

April 12, 2007

John Klimm, Town Administrator
367 Main Street
Hyannis, Massachusetts 02601

RE: TOWN: Barnstable
PWS Name: Hyannis Water System
PWS ID#: 4020004
PROGRAM: WMA
ACTION: BRP WM-01, Transmittal # W 062812 – Transfer of WMA Permit # 9P-4-22-020.~~05~~ 4 and Registration # 42202013 from the Barnstable Water Company to the Town of Barnstable
ACTION: 5 Year Review and Permit Modification

Dear Mr. Klimm:

Please find the attached documents:

- Findings of Fact in Support of the Modified Permit Decision; and
- Water Management Act Modified Permit 9P-4-22-020.~~05~~ 4 (Cape Cod Basin) issued to the Hyannis Water System.

If you have any questions regarding the permit, please contact Patti Kellogg at (508) 771-6098.

Sincerely,

Richard J. Rondeau, Chief
Drinking Water Program
Bureau of Resource Protection

R/PK/cb
Y:\DWP Archive\SERO\Barnstable-Hyannis Water System-9P-4-22-020.~~05~~ 4-WMA-2007-4-12
Enclosures
cc: Hans Keijser, Supervisor, Barnstable DPW- Water Supply Division, 47 Old Yarmouth Road, Hyannis, Massachusetts 02601

ecc: Duane LeVangie, WMA Manager, MassDEP- Boston
Gary Moran, Regional Director, MassDEP- SERO
Jonathan Hobill, Deputy Regional Director, MassDEP- SERO- BRP

Communication for Non-English Speaking Parties (310 CMR 1.03(5)(a))

English

This document is important and should be translated immediately.

Spanish

Este documento es importante y se debe traducir inmediatamente.

Portuguese

Este original é importante e deve ser traduzido imediatamente.

Italian

Questo documento è importante e dovrebbe essere tradotto immediatamente.

Greek

Αυτό το έγγραφο είναι σημαντικό και πρέπει να μεταφραστεί αμέσως.

French

Ce document est important et devrait être traduit immédiatement.

Chinese (traditional)

這 個 文件 重要 和 應該 立刻 被翻譯 。
这个文件重要 和应该立刻被翻译。

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508 946 2700

Findings of Fact in Support of the Transfer and Modified Permit Decision
Water Management Permit 9P-4-22-020.05
Town of Barnstable

The Massachusetts Department of Environmental Protection ("the Department") has completed its 5 Year Review of the Hyannis Water System's permit in the Cape Cod Basin pursuant to the Water Management Act ("WMA"), M.G.L. ch. 21G. This compliance review is conducted to insure that the terms of the permit and the goals of the Water Management program are being met. To further these goals, promote the reasonable and appropriate use of water, and to protect the environmental resources of the Commonwealth of Massachusetts, the Department was given the authority to modify permits at any time when it determined that such action is necessary for the promotion of the purposes of the Act, 310 CMR 36.29(2).

After having completed the regulatory review, the Department hereby issues the attached modified permit for withdrawals from the Cape Cod Basin, permit # 9P-4-22-020.05.

The Department makes the following Findings of Fact in support of the attached permit, and includes herewith its reasons for approving the permit and for conditions of approval imposed, as required by MGL c 21G, s 11 and 310 CMR 36.00.

Hyannis Water System's Water Withdrawal History

The permit and registration was originally issued to the Barnstable Water Company. On May 19, 2005, the Department conditionally approved the transfer of the permit and registration from the Barnstable Water Company to the Town of Barnstable pending a determination of the necessity for legislative approval through Article 97. The Town of Barnstable responded satisfactorily evidencing sufficient authorization contained in Section 12 of Chapter 286 of the Acts of 1911.

Hyannis Water System operates 12 groundwater withdrawal points and is registered for an average annual daily withdrawal volume of 2.71 million gallons per day (mgd) and a permitted average annual daily withdrawal volume of 0.71 mgd for a total authorized average annual daily withdrawal volume of 3.42 and total authorized withdrawal volume of 1,248.30 mgy. In 2005, Hyannis Water System's total withdrawal was 1,005 mgy and average daily withdrawal was 2.75 mgd.

The original WMA permit was issued to the Barnstable Water Company on November 15, 1992, amended on May 7, 1997 to modify seasonal restrictions and monitoring requirements at the Maher Wells and to amend pumping rates. The permit was subsequently amended on April 12, 1999 to add

Straightway Well #2 as an authorized withdrawal point and amended on March 16, 2004 to modify requirements for wetlands vegetation monitoring, water level monitoring and odonate monitoring.

In January 2007 Mary Dunn Well #2 was taken off-line and will remain closed for the duration of the clean up of a contaminated plume emanating from the Barnstable County Fire and Rescue Training Facility.

After reviewing the information that Hyannis Water System has provided, the Department hereby approves the Water Management Act Permit 9P-4-22-020.05 (the Permit) in accordance with the Act. The Department makes the following Findings of Fact in support of the attached Permit Transfer and Modification, and includes herewith its reasons for approving the Permit and for conditions of approval imposed, as required by MGL c 21G, s 11 and 310 CMR 36.00.

The Water Management Act

The Act requires that the Department issue permits that balance a variety of factors including:

- Reasonable protection of existing water uses, land values, investments and enterprises;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

To better achieve the balance of competing water uses mandated by the Act, the Department has adopted the "Water Management Policy For Permit and Permit Amendment Applications and 5-Year Review, Effective Date: April 2, 2004" and the "Guidance Document for Water Management Act Permitting Policy, Effective Date: January 17, 2006". The Policy, WMA Policy BRP/ DWM/DW/P04-1, and Guidance, Guidance BRP/DWM/DW/G05-01, can be found on the Department's web site at http://www.mass.gov/dep/water/laws/policies.htm#wmgt. The Policy and Guidance identify specific performance standards and conditions to be applied to new Water Management permits and to existing permits at the time they are amended, during 5-year permit review or permit renewal. The Department has applied these performance standards and conditions in Hyannis Water System's permit.

Finding of Fact for the Performance Standards in Hyannis Water System's Water Management Permit

As required by MGL c 21G, s 11 and 310 CMR 36.00, the Department makes the following Findings of Fact in support of the Permit, and includes herewith its reasons for approving the Permit and for imposing the conditions of approval.

In determining the performance standards in Water Management permits, the Department relies primarily upon the stressed basin determinations contained in the Water Resources Commission's (WRC) Stressed Basins Report approved December 13, 2001, and upon future revisions to these stressed basin determinations by the WRC. The Department also conducts reviews of other available research and reports by the United States Geological Survey, the Department's Watershed Water Quality Assessment Reports and any other pertinent reports available for specific river basins.

Hyannis Water System's sources are located in the **Cape Cod Basin**, which is identified as an **unassessed** basin by the WRC's Stressed Basins Report. The map of stressed basins can be reviewed at the following link: http://www.mass.gov/dep/water/laws/policies.htm#wmgt under "Water Management

Policies", Flow Stress Map. The Policy and Guidance establish the following performance standards for all Hyannis Water Systems that withdraw water from low stress or unassessed river basins:

1. Residential gallons per capita day water use (RGPCD) of 80 gallons or less;
2. Unaccounted for water (UAW) of 15% or less;

The standards set forth above shall hereinafter be referred to collectively as the "Basin Performance Standards." The reporting requirements added in the Permit are intended to standardize the information submitted to the Department to assess compliance with the Permit and the Basin Performance Standards. The Permit contains a requirement that these performance standards be met within two years following issuance of the permit. Failure to meet these standards in the future will require implementation of additional water conservation measures, and may result in enforcement by the Department.

The Performance Standards of 80 gallons per day or less for residential per capita daily water use and 15% or less for unaccounted for water are reasonable standards as reflected by the fact that average values in 2005 for Massachusetts were 71 RGPCD, and 11% UAW. Because of the large variation in summer versus winter population in the Hyannis system, it is difficult to accurately calculate yours and other Cape public water suppliers' RGPCD values. The Department will continue to work with Public Water Suppliers and others to standardize the methodology for calculating that value. Hyannis Water System's unaccounted-for water was documented at 9% in 2005. While these Performance Standards represent minimum standards required for compliance, the Department believes that the cumulative effect of complying with all the terms and conditions of its Permit will enable the Hyannis Water System to meet the Performance Standards.

The Guidance, as revised on January 17, 2006, provides implementation and enforcement guidelines for permitting. It establishes:

- timelines for compliance with the performance standards;
- procedures and requirements for Hyannis Water Systems that fail to document compliance with the performance standards within those timelines.

Finding of Fact for Special Permit Conditions

In issuing permits, the Department looks primarily at site-specific impacts and other issues specific to the system, such as impacts to nearby streams, wetlands, or other water users, justification of long-term demand projections and the capacity of permitted withdrawal points. The conditions are intended to ensure the efficient use of water and to mitigate the potential impact of withdrawals.

Special Conditions 1, Maximum Authorized Annual Average Withdrawal Volume, reflects the registered withdrawal volume of 2.71 mgd and an increased permitted withdrawal to 0.71 mgd for a total authorized withdrawal of 3.42 mgd through November 30, 2010. The authorized withdrawal volume is based on water use projections prepared by the Department of Conservation and Recreation, Office of Water Resources (formerly DEM) and reflects no change from your previously allocated volumes.

Special Condition 2, Maximum Authorized Daily Withdrawals from each Withdrawal Point, reflects groundwater withdrawal rates by source, according to the Department approved Zone II rates. **Special Condition 3, Authorized Seasonal Withdrawal Rates,** reflects the combined seasonal authorized withdrawal rate of 1.85 mgd for certain wells between June 1 and August 31.

Special Condition 4, Zone of Contribution Delineations, requirement has been met and no further delineations are required as a condition of this permit.

Special Condition 5, Wellhead Protection, requirements have been met and no further action is required as a condition of this permit.

Special Condition 6, Water Level Monitoring, continues the ground and surface level monitoring of Mary Dunn and Israel Ponds.

Special Condition 7, Floral and Faunal Monitoring, continues to require the evaluation of both the rare plant community and the state-listed dragonfly (Odonate) populations to Hyannis Water System's permitted and registered withdrawals. Monitoring is also intended to examine the longer-term effects of withdrawal on the local hydrologic regime.

Special Condition 8, Recreational Use of Pond Shore Area, continues the requirement to eliminate the use of recreational vehicles on the trails around Mary Dunn Pond.

Special Condition 9, Performance Standard for Residential Gallons Per Capita Day Water Use, discussed previously. As reported in the 2005 Annual Statistical Report, the RGPCD for Hyannis Water System was 74 gallons.

Special Condition 10, Performance Standard for Unaccounted for Water, discussed previously. As reported in the 2005 Annual Statistical Report, the UAW for Hyannis Water System was 9 %.

Special Condition 11, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2006.

Special Condition 12, Requirement to Report Raw and Finished Water Volumes, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

The summary of permit conditions above as part of the Department's findings of fact is not intended to, and should not be construed as, modifying any of the Permit conditions. In the event of any ambiguity between the summary and the actual permit conditions, the Permit language shall be controlling.

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ARLEEN O'DONNELL
Commissioner

This permit is modified pursuant to the Massachusetts Water Management Act ("the Act") for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This modified permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

PERMIT NUMBER: 9P-4-22-020.05U **RIVER BASIN:** Cape Cod

HYANNIS WATER SYSTEM: Hyannis Water System
47 Old Yarmouth Road
Hyannis, MA 02601

ISSUANCE DATE: November 15, 1992
MODIFICATION DATE: April 12, 2007
EXPIRATION DATE: November 30, 2010

NUMBER OF WITHDRAWAL POINTS: **12**

Groundwater: **12** Surface Water: **0**

USE: Public Water Supply

DAYS OF OPERATION: 365

LOCATION(S): **Table 1: Withdrawal Point Identification**

Well Name	PWS Source ID Code
Straightway #1	4020004-01G
Straightway #2	4020004-12G
Maher Well #1	4020004-07G
Maher Well #2	4020004-02G
Maher Well #3	4020004-11G
Mary Dunn #1	4020004-04G
Mary Dunn #2	4020004-05G
Mary Dunn #3	4020004-08G
Mary Dunn #4	4020004-09G
Airport #1	4020004-10G
Hyannisport	4020004-03G
Simmons Pond	4020004-06G

SPECIAL PERMIT CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit authorizes the Hyannis Water System to withdraw water from the Cape Cod Basin at the rate described below in Table 2. The volume reflected by this rate is in addition to the 2.71 million gallons per day previously authorized to Hyannis Water System under Water Management Act Registration #42202013 for withdrawal from the Cape Cod Basin. The permitted volume is expressed both as an annual average daily withdrawal rate (million gallons per day or mgd), and as a total annual withdrawal volume (million gallons per year or mgy) for each five-year period of the permit term.

The Department of Environmental Protection (the Department) bases these withdrawal volumes on the raw water withdrawn from the authorized withdrawal points, and will use the raw water amount to assess compliance with the registered and permitted withdrawal volumes.

Table 2: Maximum Authorized Withdrawal Volumes

5-Year Periods		Total Raw Water Withdrawal Volumes			
		Permit		Permit + Registration	
		Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
Period One Years 1-5	10/30/92 to 11/30/1995	0.54	197.10	3.25	1,186.25
Period Two Years 6-10	12/1/1995 to 11/30/2000	0.68	248.20	3.39	1,237.35
Period Three Years 11-15	12/1/2000 to 11/30/2005	0.70	255.50	3.41	1,244.65
Period Four Years 16-20	12/1/2005 to 11/30/2010	0.71	259.15	3.42	1,248.30

2. Maximum Authorized Daily Withdrawals from each Withdrawal Point

Withdrawals from individual withdrawal points are not to exceed the approved maximum daily volumes listed below without specific advance written approval from the Department. The authorized maximum daily volume is the approved rate of each source. In no event shall the combined withdrawals from the individual withdrawal points exceed the withdrawal volumes authorized above in Special Condition 1.

Table 3: Maximum Daily Withdrawal Volumes

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD)
Straightway #1	4020004-01G	0.72
Straightway #2	4020004-12G	1.58
Maher Well #1	4020004-07G	1.00
Maher Well #2	4020004-02G	1.00
Maher Well #3	4020004-11G	1.00

Table 3: Maximum Daily Withdrawal Volumes		
Mary Dunn #1	4020004-04G	0.72
Mary Dunn #2	4020004-05G	1.00
Mary Dunn #3	4020004-08G	0.72
Mary Dunn #4	4020004-09G	0.72
Airport #1	4020004-10G	1.44
Hyannisport	4020004-03G	0.72
Simmons Pond	4020004-06G	1.00

3. Authorized Seasonal Withdrawal Rates

Within the limits authorized by Condition #1 above, combined withdrawals from the withdrawal points listed below are not to exceed the average daily volume of 1.85 MGD from June 1st to August 31st. If the Hyannis Water System exceeds this seasonal cap, the Department may require the Hyannis Water System to implement more stringent restrictions on nonessential outside water.

Source	Source Code	June 1 through August 31	September 1 through May 31
Mary Dunn #1	4020004-04G		
Mary Dunn #2	4020004-05G		
Mary Dunn #3	4020004-08G	(combined total of 1.85 MGD)	(combined total of 0.50 MGD)
Mary Dunn #4	4020004-09G		
Airport #1	4020004-10G		

4. Zone of Contribution Delineations

Department records show that the Town of Barnstable town-wide Zone II delineation has been submitted and approved by the Department. Therefore, no further Zone II work is required as a condition of this permit.

5. Wellhead Protection

Department records indicate that Hyannis Water System's sources meet the requirements of 310 CMR 22.21(2), therefore, no further wellhead protection work is required.

6. Water Level Monitoring

Within the Hyannis Ponds complex, which includes Mary Dunn, Lewis, Israel and Flintrock Ponds, monitoring of groundwater and surface water levels is required as specified below. Modifications in the monitoring procedures require the specific advance written approval of the Department.

a. Pond Level Monitoring – Continue the pond stage monitoring program for Mary Dunn and Israel ponds to evaluate pumping schedule impacts on pond levels. The use of permanent measuring devices, (staff gages or other specified instruments), validated annually during the months of March or April, placed within the inundated portions of each pond is required. Pond level measurements shall be recorded, compiled and verified monthly according to the method outlined in Attachment C, and shall be analyzed annually and submitted to the Department at the time of the filing of the annual withdrawal statistics forms.

b. Aquifer Level Monitoring –Continue the aquifer water-level monitoring program near the ponds for assessment and evaluation of the effectiveness of the permitted withdrawal schedules in maintaining pond levels, and to provide data for analysis of perched conditions in Mary Dunn Pond. Aquifer level measurements shall be recorded, compiled and verified monthly according to the method outlined in Attachment C, and shall be analyzed annually and submitted to the Department at the time of the filing of the annual withdrawal statistics forms.

c. Statistical Analysis -Daily pumpage records from Mary Dunn Wells 1, 2, 3, and 4 and Airport Well 1 shall be entered into computer files on a monthly basis. Hyannis Water System shall conduct statistical analysis (linear regression) of the pumping records with pond and groundwater level data annually. The analysis shall be submitted to the Department at the time of the filing of the annual withdrawal statistics forms.

The monitoring data and analysis outlined above will be used to determine the degree to which Mary Dunn Pond is perched and/or is affected by well water withdrawals. The results of this determination will be used by the Department as guidance in modification and future design of well pumping schedules to achieve water supply and resource protection goals.

7. **Floral and Faunal Monitoring**

Monitoring of the flora and fauna at Mary Dunn Pond is required as specified below. The objectives of the monitoring plans are to evaluate, if possible, the response of both the rare plant community and the state-listed dragonfly (Odonate) populations to Hyannis Water System permitted and registered withdrawals. Monitoring is also intended to examine the longer-term effects of withdrawal on the local hydrologic regime.

The Department will consider requests to modify the monitoring plan that are likely to further the objectives outlined above. Modifications in the monitoring procedures require the specific advance written approval of the Department, in consultation with a technical advisory committee established by the Department.

Hyannis Water System will evaluate the monitoring plan to assess its ability to measure, in a statistically and biologically meaningful way, the changes to the flora and fauna. If the monitoring plan as presented in this permit does not meet the stated objectives, Hyannis Water System shall propose modifications to address these deficiencies.

7.1. Annual Floral Monitoring: Floral monitoring shall be conducted by a trained and qualified professional. Establish permanent vegetation monitoring macroplots selected for their representations of rare plants, natural community subtypes, upland plant occurrences and pond shore elevation.

Within each macroplot, conduct annual random placement of transects perpendicular to the pond shore perimeter. Along these transects place nested quadrats, elongated in shape as necessary so as to maximize the probability of encountering rare and common species. Within these quadrats, record species density and frequency, water depth, soil saturation, and bare ground. The lower end of the macroplots will in some years be inundated at the time of sampling but shall be sampled to record submersed vegetation. After preliminary field work is completed and analyzed, the modification of quadrat number and size will be required, as necessary, to insure greater precision in data collection.

Macroplot Contour Surveying: Survey and map the topography to 0.5 foot contours within all selected macroplots. At the time of annual resurveying elevation of the pond monitoring reference markers, as described under section 7.1 of this permit, Pond Level Monitoring, the pond shoreline of one macroplot will be resurveyed and compared to the contour map. If more than 5 percent of the surveyed shoreline length differs by more than 0.5 feet, the macroplot contour map will be resurveyed. If this one macroplot must be resurveyed, then the others will be tested in the same manner, and all macroplots that fail the test will also be resurveyed.

Statistical Analysis: Hyannis Water System shall conduct statistical analyses, which test the validity of the sampling procedure, which shall include analysis of the correlation of plant population change, commencing at the end of the second year and in subsequent years, with variables to include water depth, timing and frequency of inundation, and exposure. The analysis shall be submitted to the Department at the time of the filing of the annual withdrawal statistics forms.

7.2. Annual Faunal Monitoring

Document the presence and relative abundance of odonate species and preferred habitat in and around Mary Dunn Pond. Odonate monitoring shall occur every five (5) years, timed to occur approximately one year before the next five-year review of the permit. Monitoring shall be conducted over several days during the odonate flight season (June - September), during optimal weather conditions and by a qualified professional. The monitoring shall concentrate on the presence or absence of state listed odonate species and the relative, qualitative abundance of each. In addition the qualitative and relative abundance and location of one of the preferred habitat plants (Juncus militaris) shall be documented. The Division of Fish and Wildlife (DFW) shall supply a list of qualified professionals to perform the survey for the Hyannis Water System and their consultants. Hyannis Water System shall use its best efforts to retain a qualified professional from that list to conduct said odonate monitoring. In the event such an individual is not available, Hyannis Water System shall, at a minimum, document preferred habitat abundance and location. A scope of work will be developed by the selected professional and approved by DFW. The results of the odonate monitoring shall be submitted to the department at the time of the filing of the withdrawal statistics forms. Results will be compared with withdrawal volumes, pond levels, and climatic conditions to the extent possible. Those two rounds of monitoring data will be evaluated at the next five-year review period to determine the periodicity of odonate monitoring (that periodicity could range from the complete removal of the condition to a periodicity as frequent as annual) that shall to be required as a future permit condition

The monitoring data and analysis outlined above will be used to determine the degree to which pumpage induced water level changes in Mary Dunn Pond result in population change to any federal or state listed rare and endangered species within the pond shore community. The data will be used by the Department to guide the modification and future design of well pumping schedules to achieve water supply and resource protection goals.

The monitoring required herein will be subject to refinement based upon the experience in implementation. Any changes require the express written advance approval of the Department. Hyannis Water System shall submit, for the review and approval of the Department, the proposed scope of work for the contracts to complete the monitoring required in this permit.

8. Recreational Use of the Pond Shore Area

Hyannis Water System shall eliminate the use of recreational vehicles on the trails around Mary Dunn Pond by any and all feasible means including, but not limited to posting "No Vehicle Access" signs at trail entry points; coordination with the local Conservation Commission and police department to educate the public about the environmental sensitivity of the area and to deter entry; and, constructing log barriers, a wooden "stockade" fence, and/or hedge plantings across and around trail entry points as necessary to deter recreational vehicle use.

Hyannis Water System shall evaluate the Mary Dunn Pond shore area annually for impacts resulting from foot traffic. If foot trails or other significant impacts are found, the Hyannis Water System shall restrict foot access to the pond shore area.

9. Performance Standard for Residential Gallons Per Capita Day Water Use

Hyannis Water System's performance standard for residential gallons per capita day (RGPCD) is 80 gallons. Hyannis Water System shall be in compliance with the performance standard by December 31, 2009. Hyannis Water System shall report its RGPCD water use annually in its Annual Statistical Report (ASR) and document compliance with this performance standard in its ASR for 2009 and each year thereafter.

Hyannis Water System shall report its RGPCD and the calculation used to derive that figure as part of its ASR including, without limitation, the source of the data used to establish the service population and the year in which this data was developed.

See Appendix A for additional information on the requirements if the performance standard for RGPCD is not met.

10. Performance Standard for Unaccounted for Water

Hyannis Water System's performance standard for unaccounted for water (UAW) is 15% of overall water withdrawal. Hyannis Water System shall be in compliance with the performance standard by December 31, 2009 Hyannis Water System shall report its UAW annually in its Annual Statistical Report (ASR) and document compliance with this performance standard in its ASR for 2009 and each year thereafter.

Hyannis Water System shall report its UAW and the calculation used to derive that figure as part of its ASR.

See Appendix B for additional information on requirements if the performance standard for UAW is not met.

11. Water Conservation Requirements

At a minimum, Hyannis Water System shall implement the following conservation measures forthwith and shall be in compliance with these measures on or before November 30, 2010. The Department recognizes that Hyannis Water System is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to the Department upon request or by November 30, 2010, the date of the next Review/Renewal of the permit, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements	
System Water Audits and Leak Detection	
1.	At a minimum, conduct a full leak detection survey every three years. The first full leak detection survey shall be completed no later than June 30, 2007.
2.	Perform a leak detection survey of the entire distribution system within one year whenever the percentage of unaccounted for water increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, Hyannis Water System shall submit to the Department for its review a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3.	Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4.	Hyannis Water System shall have repair reports available for inspection by the Department. Hyannis Water System shall establish a schedule for repairing leaks that is at least as stringent as the following: - Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection. - Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible. - Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway. Leaks shall be repaired in accordance with Hyannis Water System's priority schedule including leaks up to the property line, curb stop or service meter, as applicable. Hyannis Water System shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.
Metering	
1.	Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2.	Hyannis Water System reports its system is 100% metered. All water distribution system users shall

Table 5: Minimum Water Conservation Requirements	
	have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in AWWA Manual M6 – Water Meters, by November 30, 2010.
3.	Hyannis Water System shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in Hyannis Water System's annual water budget to calibrate, repair, or replace meters as necessary.
Pricing	
1.	Establish a water pricing structure that includes the full cost of operating the water supply system by November 30, 2010. Evaluate rates every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices.
2.	Hyannis Water System shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40 Section 39L.
Residential and Public Sector Conservation	
1.	Hyannis Water System shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2.	Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3.	Municipal buildings • By January 1, 2008, submit to the Department a status report detailing which municipally owned public buildings in the Hyannis Water System's service area have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets) and which of those buildings have yet to be retrofitted, along with a schedule to complete the retrofitting by January 1, 2012 • On or before January 1, 2012, Hyannis Water System shall ensure that all municipally owned public buildings in the service area are retrofitted in accordance with the schedule provided above. Note municipally owned public buildings that may be scheduled for rehab or demolition after the January 1, 2012 deadline for completing the retrofits, may with the Department's approval, be exempted from this condition based on the schedule of work. Status report required above should identify those buildings and schedule for repairs/demolition.
Industrial and Commercial Water Conservation	
1.	Hyannis Water System shall review the use records for its industrial, commercial and institutional water users and develop an inventory of the largest water users. Hyannis Water System shall develop and implement an outreach program designed to inform and (where appropriate) work with its largest industrial, commercial and institutional water users on ways to reduce their water use by November 30, 2010. Such outreach plans can include, but are not limited to: information on water audits, meter sizing, water reuse, low-flow plumbing fixtures, mandatory outdoor water use restrictions, suggestions for contacting trade associations for process specific information on water use reductions, and information on contacting the Executive Office of Environmental Affairs Office of Technical Assistance for Toxics Use Reduction (OTA) which offers a range of assistance and information to help facilities improve water use efficiency and reduce wastewater discharge. OTA can be contacted at (617) 626-1060 or at www.mass.gov/envir/ota.
2.	Upon request by the Department, Hyannis Water System shall report on industrial, commercial and institutional water conservation including the results of its review of water use records for industrial, commercial and institutional water users, the inventory of the largest water users, copies of any outreach materials distributed to industrial, commercial and institutional water users, and to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, the Department will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring Hyannis Water System to take additional actions to reduce industrial, commercial and institutional water use.
Lawn and Landscape	
1.	Adopt a water use restriction bylaw, ordinance or regulation by May 31, 2008, to provide authority to

Table 5: Minimum Water Conservation Requirements	
	implement and enforce water use restrictions.
Public Education and Outreach	
1.	Develop and implement a Water Conservation Education Plan. Hyannis Water System's Water Conservation Education Plan shall be designed to educate Hyannis Water System's water customers of ways to conserve water. Without limitation, Hyannis Water System's plan may include the following actions: • Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings; • Public space advertising/media stories on successes (and failures); • Conservation information centers perhaps run jointly with electric or gas company; • Speakers for community organizations; • Public service announcements; radio/T.V./audio-visual presentations; • Joint advertising with hardware stores to promote conservation devices; • Use of civic and professional organization resources; • Special events such as Conservation Fairs; • Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and • Make multilingual materials available as needed.
2.	Upon request of the Department, Hyannis Water System shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

12. Requirement to Report Raw and Finished Water Volumes

Hyannis Water System does not currently have a filtration treatment system. Should treatment be added to the system, Hyannis Water System shall report annually on its ASR the raw water volumes and finished water volumes for the entire water system and the raw water volumes for individual water withdrawal points.

13. Section 61 Finding

The Department, in issuing this permit, has required that the applicant has used or will use all feasible means or measures to avoid or minimize adverse environmental impacts. Measures that the Department deems necessary to mitigate or prevent harm to the environment are included in the conditions, if any, of this approval. The Department has made its permitting decision under applicable law on a balancing, where appropriate, of environmental and socioeconomic objectives, as mandated by 301 CMR 11.00.

GENERAL PERMIT CONDITIONS (applicable to all Hyannis Water System)

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date the Department has received a renewal permit application pursuant to 310 CMR 36.00.

1. **Duty to Comply** The Hyannis Water System shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.

2. **Operation and Maintenance** The Hyannis Water System shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw water so as not to impair the purposes and interests of the Act.

3. **Entry and Inspections** The Hyannis Water System or the Hyannis Water System's agent shall allow personnel or authorized agents or employees of the Department to enter and examine any property for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.

4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by the Department pursuant to MGL c 21G ss 15-17, MGL c 150 ss 111, or any other enabling authority.

5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.

6. **Duty to Report** The Hyannis Water System shall complete and submit annually, on a form provided by the Department, all of the information required by said form including, without limitation, a certified statement of the withdrawal. Such report shall be received by the Department by the date specified on the form each year. Such report must be mailed or hand delivered to:

   Department of Environmental Protection
   Drinking Water Program
   Water Management Program
   One Winter Street
   Boston, MA 02108

7. **Duty to Maintain Records** The Hyannis Water System shall maintain withdrawal records and other information in sufficient detail to demonstrate compliance with this permit.

8. **Metering** All withdrawal points included within the permit shall be metered within one year of the date of issuance of the permit. Meters shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of the Department. Any person aggrieved by this decision may request an adjudicatory hearing under the provisions of MGL c 30A. Any such request must be made in writing, by certified mail and received by the Department within twenty-one (21) days of the date of receipt of this permit. No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail or delivered by hand to the local water resources management official in the city or town in which the withdrawal point(s) is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to the Department.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of the Department is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of this permit.

FILING FEE AND ADDRESS

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

The filing fee is not required if the appellant is a city or town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department that the fee will create an undue financial hardship. A person, seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts, which support the claim of undue hardship.

Appendix A – Residential Gallons Per Capita Day

I. Compliance Plan Requirement

If Hyannis Water System fails to document compliance with the RGPCD performance standard in its 2009 ASR, or in any ASR thereafter, then Hyannis Water System must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall:

a. meet the requirement set forth below in Section II;
b. include measures to be implemented to meet the performance standard; and
c. include the schedule for implementing such measures.

The filing of a RGPCD Plan shall not constitute a return to compliance, nor shall it affect the Department's authority to take action in response to Hyannis Water System's failure to meet the performance standard.

If a RGPCD Plan is required, Hyannis Water System must:

a. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD Plan annually at the time it files its ASR; and
b. continue to implement the RGPCD Plan until it complies with the performance standard and such compliance is documented in Hyannis Water System's ASR for the calendar year in which the standard is met.

II. Contents of a Residential Gallons Per Capita Day Compliance Plan

At a minimum, all RGPCD Compliance Plans must include a detailed:

a. description of the actions taken during the prior calendar year to meet the performance standard;
b. analysis of the cause of the failure to meet the performance standard;
c. description and schedule of the actions that will be taken to meet the performance standard; and
d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

RGPCD Plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD Plans must include the information set forth in paragraph above.

At a minimum, all RGPCD Plans for failure to meet the RGPCD performance standard must include implementation of at least one of the following residential conservation programs:

a. a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
b. a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets); or
c. the adoption and enforcement of an ordinance, bylaw or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems.

If Hyannis Water System is already implementing one or more of these programs, it must include in its RGPCD Plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

Without limitation, RGPCD Plans for failure to meet the RGPCD performance standard may include the following actions in addition to those outlined in the paragraph above:

a. the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
b. a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
c. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction include water saving devices and low water use appliances;
d. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
e. the implementation of a program to encourage the use of cisterns or rain barrels for outside watering; and
f. the implementation of monthly or quarterly billing.

Appendix B – Unaccounted for Water

UAW is defined as the residual resulting from the total amount of water supplied to a distribution system as measured by master meters, minus the sum of all amounts of water measured by consumption meters in the distribution systems, and minus confidently estimated and documented amounts used for certain necessary purposes.

Examples of UAW include, but are not limited to: leakage, meter inaccuracies (unless they fall under the category of adjustment per results of source meter calibration described in the ASR), errors in estimation of stopped meters, unauthorized hydrant openings, illegal connections, data processing errors, and undocumented fire fighting uses.

Examples of uses that can be confidently estimated and documented in writing include storage tank overflow and drainage; water main flushing and flow testing; fire fighting; bleeding or blow-offs; sewer and stormwater system flushing; and cleaning and street cleaning. Generally, leakage is considered to be UAW, however, individual water main breaks can be discounted on a case-by-case basis. Any adjustment in the calculation of UAW made as a result of confidently estimated uses shall be documented as required in the ASR.

I. Compliance Plan Requirement

If Hyannis Water System fails to document compliance with the UAW performance standard in its 2009 ASR, or in any ASR thereafter, then Hyannis Water System must file with that ASR an Unaccounted for Water Compliance Plan (UAW Plan) which shall:

a. meet the requirements set forth below in Section II;
b. include measures to be implemented to meet the performance standard; and
c. include the schedule for implementing such measures.

The filing of a UAW Plan shall not constitute a return to compliance, nor shall if affect the Department's authority to take action in response to Hyannis Water System's failure to meet the performance standard.

If a UAW Plan is required, Hyannis Water System must:

a. submit information and supporting documentation sufficient to demonstrate compliance with its UAW Plan annually at the time it files its ASR; and
b. continue to implement the UAW Plan until it complies with the performance standard and such compliance is documented in Hyannis Water System's ASR for the calendar year in which the standard is met.

II. Contents of an Unaccounted for Water Compliance Plan

Hyannis Water System has the choice to file a UAW Plan with measures tailored to the specific needs of its water supply system (Individualized UAW Plan) or a UAW Plan that includes Best Management Practices (BMP UAW Plan).

At a minimum, all UAW Plans must include a detailed:

a. description of the actions taken during the prior calendar year to meet the applicable performance standard;
b. analysis of the cause of the failure to meet the performance standard;
c. description and schedule of the actions that will be taken to meet the performance standard; and

d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

UAW Plans may be amended to revise the actions that will be taken to meet the performance standard. Amended UAW Plans must include the information set forth in the paragraph above.

Individualized UAW Compliance Plan

Without limitation, Individualized UAW Compliance Plans for failure to meet the UAW performance standard may include any of the actions set forth in the BMP UAW Compliance Plan below.

BMP UAW Compliance Plan

At a minimum, all BMP UAW Plans for failure to meet the UAW performance standard must include all of the following actions:

a. within one year of filing the UAW Plan, complete a water audit and leak detection survey of the entire system and submit completed audit and survey to the Department;
   within one year of completing the audit and leak detection survey, conduct sufficient repairs to reduce by 75% (by water volume) all leaks detected in the survey; and
   within one year of completing such repairs, conduct additional repairs of leaks detected in the survey as may be necessary to reduce Hyannis Water System's UAW to 10% or less;
b. implementation of a program that ensures the inspection and evaluation of all water meters and, as appropriate, the repair, replacement and calibration of water meters in accordance with the following schedule:
   Large Meters (2" or greater) - within one year of filing the BMP UAW Plan
   Medium Meters (1" or greater and less than 2") - within two years of filing the BMP UAW Plan
   Small Meters (less than 1") – within three years of filing the BMP UAW Plan
c. implementation of monthly or quarterly billing within three years of filing the BMP UAW Plan; and
d. within one year of filing the UAW Plan, implementation of a water pricing structure that achieves sufficient revenues to pay the full cost of operating the system including, without limitation, the costs of repairs under paragraph a., the costs of meter repairs, replacements and calibrations under paragraph b., the costs of employees and equipment, and ongoing maintenance and capital costs.

Attachment C

Conduct verified pond level measurements at monitoring stations and observation wells that shall be verified monthly. Each of the pond monitoring stations and the piezometers (observation wells) shall be measured within five working days of the end of every month. They shall be measured in feet, tenths of feet and hundredths of feet, so far as possible, given the wave effects on the ponds and possible formation of ice. Forms (example in Figure 10) shall be established on which to record the measurements in the field and they shall be retained as original records in a file at the Hyannis Water System office. All measurements and calculations shall be recorded. For example, if the wetted tape method is employed, both the length of tape suspended below the measuring point and the length of wet tape shall be recorded and the results of subtraction shown, the elevation of measuring point shall also be recorded and the final calculation of water elevation recorded. Pumping conditions for all wells within 1,000 feet of the monitoring site shall also be recorded. Notes indicating that the well water was frozen or the pond level is so low that next month it may be dry at the monitoring site shall also be recorded.

Each measurement must be duplicated in the field with a check measurement, and if the results are not reasonably consistent, additional measurements shall be made to resolve the discrepancies. The measurements shall be entered and the entries verified monthly to computer storage for future use and for automatic scan for error.

MassDEP

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

April 15, 2015

Hyannis Water System
Attn: Henricus Keijser
P.O. Box 326
Hyannis, MA 02601

Town: Hyannis
PWS ID: 4020004
Program: Water Management Act
WMA Permit #: Permit 9P-4-22-020.04
Action: Permit Renewal Order to Complete

Dear Mr. Keijser,

The Massachusetts Department of Environmental Protection (MassDEP) has completed its review of Hyannis Water System's (Hyannis's) response to MassDEP's Order to Complete (OTC) received March 2012. MassDEP's review reveals that some of the response requires clarification. Additionally, the Water Needs Forecast prepared by the Department of Conservation and Recreation was revised in 2015. MassDEP intends to renew the WMA permit based on the new forecast and your review is requested in this second OTC. Additional information is also provided in this OTC for the new conditions proposed as a result of the WMA Regulations promulgated in 2014.

WMA permit renewal applications are not complete until all relevant public comment and other required technical elements are addressed to the satisfaction of MassDEP. Without submission of the required information, the application is incomplete. MassDEP requires you to submit a response to these questions within 90 days of issuance of this OTC. MassDEP may, at its option, allow more time to submit this information if a written request for additional time is submitted before the deadline. If you fail to submit the additional information within the timeframe above, your application may be deemed withdrawn. Nothing contained in this OTC should be interpreted to preclude MassDEP from requiring additional information that is determined necessary to evaluate the application.

Following completion of the review of your response to this OTC MassDEP will prepare a draft of the renewed permit for review and comment.

MassDEP looks forward to working with you as we begin to finalize the review of your Water Management Act permit renewal application. Please note that during this file review MassDEP became aware that all previous permits issued to Hyannis (or Barnstable Water Company) referenced an incorrect permit number that ended in ".05". The correct permit number is 9P-4-22-020.04. Use this number in all future correspondence. Please submit the following requested information and documentation as depicted in bold text to MassDEP, Attn: Susan Connors, 1 Winter Street, Boston, MA 02108.

EXISTING PERMIT CONDITIONS:

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume

Hyannis holds a WMA registration statement for 2.71 million gallons per day (MGD) (or 989.15 MGY) in the Cape Cod Basin. Hyannis is permitted to withdraw an additional 0.71 MGD from all of its sources. From 2010 through 2014 Hyannis reported withdrawal volumes less than the registered volume. The Straightway Well 2 (-12G) is a permitted only source.

Hyannis Water	2014	2013	2012	2011	2010
Actual (MGD)	2.32	2.18	2.32	2.21	2.39
Authorized (MGD)	3.42	3.42	3.42	3.42	3.42

The Massachusetts Department of Conservation and Recreation (DCR) developed a water needs forecast for Hyannis in 2010 based on a methodology adopted by Massachusetts Water Resources Commission. The forecast was updated in 2015 due to more current population information that warranted a revised forecast. The new forecast is presented below and offers a 5% buffer of 0.16 MGD in the final permit period (2026-2030) to accommodate for growth that was not anticipated in the water needs forecast. The volumes presented are the combined (registered and permitted) annual average withdrawal volume. The buffer will be available to permittees at MassDEP's discretion.

In the Permit Renewal Application, Hyannis requested the withdrawal volumes presented in the DCR forecast from 2010. MassDEP proposes to renew the permit with the total authorized volumes listed in the table below (MassDEP Renewal). **Please indicate if those volumes are acceptable to Hyannis for the permit renewal. If not acceptable provide a detailed description of the demand projections and methodology Hyannis used to develop its alternative projections.** The total authorized volume proposed for 2026 through 2030 cannot exceed the volume noticed in the Environmental Monitor of the Massachusetts Environmental Policy Act office (3.25 MGD). If Hyannis would like to renew the last permit block at 3.30 MGD plus a buffer of 0.12 MGD, please notify MassDEP so that we can place another notice in the Environmental Monitor. Note the buffer would be limited to 0.12 MGD because the maximum renewal volume cannot exceed the existing total authorized withdrawal volume of 3.42 MGD. To request more than 3.42 MGD would require the filing of a new permit application (BRP WM03) which includes completing additional public notice requirements.

Hyannis Water	Renewal - 2020	2021 - 2025	2026 - 2030
Permit Application (MGD):	3.03	3.14	3.25
DCR 2015 Forecast (MGD):	3.18	3.23	3.30 + 0.16 buffer
MassDEP Renewal (MGD):	3.18	3.23	3.25*

*Maximum allowable due to MEPA notice limitations.

Special Condition 2, Maximum Daily Withdrawal Rate

This condition specifies the maximum daily volume that Hyannis is authorized to withdraw from its permitted wells. Hyannis has exceeded the maximum daily volume at a few of its wells infrequently and sporadically over the years. Further review of the monthly withdrawal volumes indicates that the exceedances were likely not prolonged and the reported volumes for 2014 were compliant. However, Hyannis should be aware of the authorized maximum daily withdrawal volumes for all of its sources and continue to demonstrate compliance with those volumes in the future.

In a letter dated March 6, 2012 from Hyannis to MassDEP, Hyannis requested an increase in the maximum daily withdrawal rates to Maher Wells 1, 2, and 3 and the Hyannisport Well. This request requires completion of a minimum five day pumping test and submittal and approval of the appropropriate permit applications including at a minimum, a BRP WS19 pumping test permit application and a BRP WM02 WMA permit amendment application. For more information on the Source Approval process contact Kermit Studley at 508-946-2803.

Special Condition 3, Authorized Seasonal Withdrawal Rate

At the request of Hyannis and in consultation with the Natural Heritage and Endangered Species Program (NHESP), the limitations on seasonal withdrawal rates will be removed in the renewed permit. Hyannis should continue to comply with the existing permit until all public comment periods are completed, the final permit is issued, and the appeal period has been exhausted.

Special Conditions 4 and 5, Zone II Delineation and Wellhead Protection

All of Hyannis' wells have approved Zone II delineations. The Zone II areas for Maher Wells 1, 2, and 3 extend into the Town of Yarmouth.

The Town of Barnstable maintains multiple protection districts within its Zoning Ordinance. Only the Groundwater Protection Overlay District meets MassDEP's requirements for ground water supply protection. In February 2014, the map was updated so that the Groundwater Protection Overlay District covers all Zone II areas within the Town of Barnstable, including Hyannis' Zone II areas.

Special Condition 6, Water Level Monitoring

At the request of Hyannis and in consultation with NHESP, the requirement to collect water level data will be removed in the renewed permit. Hyannis should continue to comply with the existing permit until all public comment periods are completed, the final permit is issued, and the appeal period has been exhausted.

Special Condition 7, Floral and Faunal Monitoring

At the request of Hyannis and in consultation with the NHESP, the requirement to collect fauna monitoring data is hereby removed and no further monitoring is required.

The flora monitoring requirement will continue, but will be changed to include monitoring for only plant species protected by MESA during years when pond shore exposure allows germination and reproduction to occur. Identifying appropriate years will be done in consultation with NHESP and reports will be submitted to NHESP in the form of field forms or electronically using the VPRS system available through the NHESP website

Special Condition 8, Recreational Use of Pond Shore Area

Provide a summary of findings from the annual evaluations of the Mary Dunn Pond shore area. The summary should include a description of tools implemented to eliminate vehicle access on the trails and their success.

Special Conditions 9 and 10, Performance Standards for Residential Gallons per Capita Day (RGPCD) and Unaccounted for Water (UAW)

Hyannis was required to meet the Performance Standards of 80 RGPCD and 15% UAW by calendar year 2010. From 2010 through 2014 Hyannis's RGPCD ranged from 50 to 56 and UAW ranged from 5% to 10%. The 2014 UAW calculations will be reviewed by MassDEP later this year. The RGPCD requirement will be removed from Hyannis' renewed permit due to recognition of the challenges with calculating an RGPCD for the communities on Cape Cod. Hyannis' WMA permit will be modified to include a requirement to meet 10% UAW within two years of the date of issuance of the permit.

Special Condition 11, Water Conservation Requirements

System Water Audits and Leak Detection

Hyannis reports on its Annual Statistical Reports that leak detection surveys are completed every two years on the entire system. To date all leaks found have been repaired in accordance with the permit.

Metering

Master meter calibration is required annually. Hyannis reports master meter calibration dates in compliance with the permit. Hyannis reports that 99% of service connections are metered. **Submit a list of unmetered service connections and a schedule to install meters within one year of issuance of the final permit.**

Pricing

Hyannis reports the water department utilizes an Enterprise Account. The residential water rates are an increasing block rate structure and the commercial accounts are billed at a flat rate. Hyannis allows the use of a second meter for a sewer deduction for outside water use.

Residential and Public Sector Conservation

Hyannis submits estimates of flushing water use with the Annual Statistical Reports as required in the permit.

Hyannis reported in March 2012 that all municipal buildings within their service area have not been retrofitted with water saving devices. **Submit a list detailing which municipally owned public buildings in Hyannis's service area have not been retrofitted with water saving devices (e.g. faucet aerators, low flow shower heads, and low flow toilets).** All municipal buildings within Hyannis's service area were required to be retrofitted by January 1, 2012. **Provide a schedule to complete the retrofitting.** The renewed permit will be issued to the Town of Barnstable as opposed to the Hyannis Water System since conditions of the renewed permit will require municipal cooperation.

Industrial and Commercial Water Conservation

Submit a list of the large (greater than 50,000 GPD) industrial, commercial, and institutional customers and include a brief description of any education/outreach performed to these customers.

Lawn and Landscape

The Rules and Regulations for the Hyannis Water System contain language for enforcement of an officially declared water ban. **Submit a copy of the bylaw or regulation that gives Hyannis the authority to declare a water ban.**

Public Education and Outreach

Hyannis submitted information on its water conservation public education program in the permit renewal application. The program includes water conservation information available to customers, speakers for schools, special events, and community organizations. **Please submit a selection of some of the materials available.**

Special Condition 12, Requirement to Report Raw and Finished Water Volumes

Hyannis reports on its Annual Statistical Reports that the raw and finished water volumes for their system are the same.

Special Condition 13, Section 61 Findings

No additional Special Conditions were required as a result of the final Environmental Impact Report.

MODIFIED PERMIT CONDITIONS:

MassDEP expects to modify Hyannis's Water Management permit to include conditions consistent with the new WMA regulations. The renewed permit will include restrictions on nonessential outdoor water use and a condition that requires mitigation of withdrawals over a baseline volume, if feasible, if future withdrawals exceed the assigned baseline volume. Those conditions are explained below.

Seasonal Limits on Nonessential Outdoor Water Use

All renewed permits will require restrictions on nonessential outdoor water use from May 1st through September 30th. Restrictions for public water systems on Cape Cod will be triggered when:

- groundwater levels fall to the monthly 25th percentile in an assigned groundwater monitoring well; or
- Drought Advisory or greater is declared for the Cape and Islands Region by the Massachusetts Drought Management Task Force.

Hyannis's nonessential outdoor water use restriction will likely be triggered by groundwater levels at USGS Monitoring Well 413930070190901 (A1W-306) in Barnstable, MA. The restrictions are required to be implemented when water level (measured as depth to water) in the USGS well declines to or below the groundwater trigger for 60 consecutive days and can be lifted when the water level recovers to less than the trigger for 30 days. Hyannis will be required to restrict nonessential outdoor water use to no more than two (2) days per week before 9 am and after 5 pm. The water levels at the assigned USGS well that will appear in the permit are outlined below.

USGS Monitoring Well 413930070190901 (A1W-306) in Barnstable, MA							
Monthly 25th Percentile Trigger Values							
Month	March	April	May	June	July	August	Sept
Depth to water level, feet below land surface	25.77	25.36	25.33	25.47	25.91	25.95	26.37

Please be aware that the USGS is attempting to gain access from the landowner to install monitoring equipment in their Well A1W-306. If access is not granted, then MassDEP will assign another location and notify you of the change as soon as possible.

Water Withdrawals that Exceed Baseline Withdrawal Volumes

Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater provided that:

(a) baseline cannot be less than a permittee's registered volume;
(b) baseline cannot be greater than the permittee's authorized volume for 2005; and
(c) if, during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

The calculated baseline withdrawal volume for Hyannis is 1055.3 MGY or 2.89 MGD, the 2005 volume plus 5%. Hyannis' proposed renewal (3.25 MGD) is greater than the baseline; therefore a mitigation plan is required for the difference between the renewal request and the baseline (i.e. 0.36 MGD). The completion of mitigation projects is required prior to exceeding the baseline volume. Hyannis' recent withdrawal volumes have been less than the baseline volume and therefore continued demand management will delay mitigation implementation.

For systems with wastewater that is returned to the ground within the same major basin as the withdrawal, an 85% adjustment can be applied against the volume required to be mitigated. Hyannis reported on the permit renewal application that all wastewater is disposed of through on-site sewage disposal systems therefore the adjustment is available to Hyannis. Hyannis reported on the permit renewal application that wastewater is disposed of through the groundwater discharge at the Town of Barnstable Water Pollution Control Facility and through on-site sewage disposal systems. This adjustment results in a mitigation volume of 54,000 gallons per day. **Submit a mitigation plan.** A fact sheet on mitigation planning is enclosed. Projects completed since 2005 may be submitted for review.

MassDEP is available to discuss potential mitigation projects at the District's request. If you have any questions concerning this Order to Complete, please contact Susan Connors at 617-292-5560 and susan.connors@state.ma.us or me at 617-292-5706 and duane.levangie@state.ma.us.

Sincerely,

Duane LeVangie

Duane LeVangie, Chief
Water Management Program

Cc: Thomas K. Lynch, Barnstable Town Manager, 367 Main Street, Hyannis, MA 02601

Ecc: Tom Cambareri, Cape Cod Commission
Jennifer Pedersen, MWWA
Michele Drury, DCR
Patti Kellogg, MassDEP-SERO
Tim Simmons, DFG
Rich McHorney, Marine Biological Laboratory

Enclosure: Mitigation Fact Sheet

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