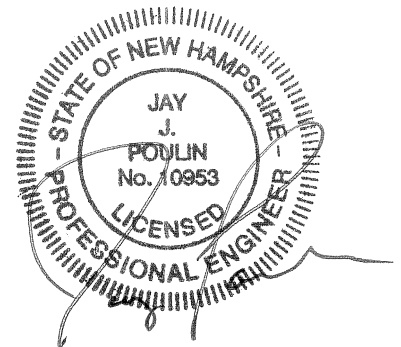


**DES Waste Management Division
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095**

**SPRING 2019 PFAS RECEPTOR SAMPLING REPORT
Tamworth Town Landfill
Durrell Road
Tamworth, NH 03886
NHDES Site #: 198704017
Project Type: GWP
Project Number: 135**

Prepared For:
Town of Tamworth
84 Main Street
Tamworth, NH 03886
Phone Number (603) 323-7525
RP Contact Name: Board of Selectmen
RP Contact Email: admin@tamworthnh.org

Prepared By:
HEB Engineers, Inc.
PO Box 440
North Conway, NH 03860
Phone Number: (603) 356-6936
Contact Name: Jay J. Poulin, PE
Contact Email: jpoulin@hebengineers.com



Date of Report: April 29, 2019

SPRING 2019 PFAS RECEPTOR SAMPLING REPORT

**TAMWORTH LANDFILL,
TAMWORTH, NEW HAMPSHIRE**

NHDES GWP#198704017-T-005

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III. RECOMMENDATIONS	3

APPENDIX A: Groundwater Monitoring Plan

APPENDIX B: Receptor Survey

APPENDIX C: Sampling Map

APPENDIX D: Eastern Analytical, Inc. Lab Reports

I. BACKGROUND INFORMATION

A Groundwater Management Permit (GMP) was originally issued for the Tamworth Landfill on March 13, 1998 and revised December 27, 1999. The permit was renewed on November 24, 2008 and revised July 6, 2012. The permit was last renewed on February 4, 2019. To ensure adequate monitoring of the flow paths, the following sampling sites have been established: one up-gradient monitoring well (MW-1A) and three down-gradient monitoring wells (MW-2A, MW-3 and MW-4). In addition, there is one down-gradient surface water monitoring site (SW-2). The proposed Groundwater Management Zone (GMZ) and the location of well and surface water sampling points are depicted on the site plan prepared by HEB Engineers, Inc. (HEB) included in Appendix A.

In May 2017, the New Hampshire Department of Environmental Services (NHDES) notified the Town of Tamworth that all landfills subject to groundwater monitoring requirements would be required to complete an initial screening for the presence of per- and/or polyfluoroalkyl substances (PFAS). This initial screening was completed at the Tamworth Landfill in the fall of 2018, and results were submitted to NHDES on January 10, 2019. Exceedances of Ambient Groundwater Quality Standards (AGQS) found within the initial screening results necessitated the creation of a receptor survey for the area surrounding the landfill. NHDES reviewed and approved of the receptor survey (Appendix B) and investigatory sampling plan (Appendix C). Subsequently, investigatory sampling was coordinated at five nearby drinking water wells to evaluate the potential for off-site PFAS contamination.

Sampling locations were prioritized based on property use, presence of potentially sensitize human subpopulations, proximity to the landfill, and topography (downgradient sites were considered high priority). While the Receptor Survey (Appendix B) marks four sites as locations of potentially sensitive human subpopulations, Lot 206-85 (Kenneth A. Brett School) and Lot 206-65 (Tamworth Pre-School) were not included in the investigatory sampling plan. According to NHDES,

"Tamworth Pre-school (Parcel ID: 206-65) was previously sampled by NHDES during the Initial Public Water System Test for PFOA and PFOS on December 13, 2016. Results from the Tamworth Pre-school did not detect PFOA or PFOS above laboratory detection limits, <2 ng/L and <4 ng/L, respectively. Based on these prior results, and the location of the pre-school in an area that does not appear to be directly downgradient from the landfill, we do not require re-sampling of this well at this time."

-Jarred Swiontek, Email Correspondence, Feb. 28, 2019

Based on topography and relative distance from the landfill site and at the discretion of Town of Tamworth officials, Lot 206-85 was not included in the investigatory sampling.

II. RESULTS DISCUSSION

HEB received results on April 4, 2019 for samples collected at sites in the vicinity of the closed Tamworth Landfill on March 14, 2019 by Eastern Analytical, Inc. A total of five samples were collected from three different properties:

- One sample was collected from the Tamworth Recreation Department property (Lot 415-92) well. Results for this sample were non-detect (ND) for the 9 compounds analyzed.
- One sample was collected from the well on a property owned by Gail & Anthony Marrone (Lot 415-96). Results for this sample were non-detect (ND) for the 9 compounds analyzed.
- Three samples were collected from the Public Water System that supplies the Tamworth Mobile Home Park (Lot 415-90). The three wells that serve this system were sampled individually. Results for these samples were non-detect (ND) for the 9 compounds analyzed.

In summary, no PFAS substances were detected through the analyses performed for these samples.

Analyses were performed by Vista Analytical Laboratory and reports were compiled by Eastern Analytical, Inc. Lab reports are included in Appendix D.

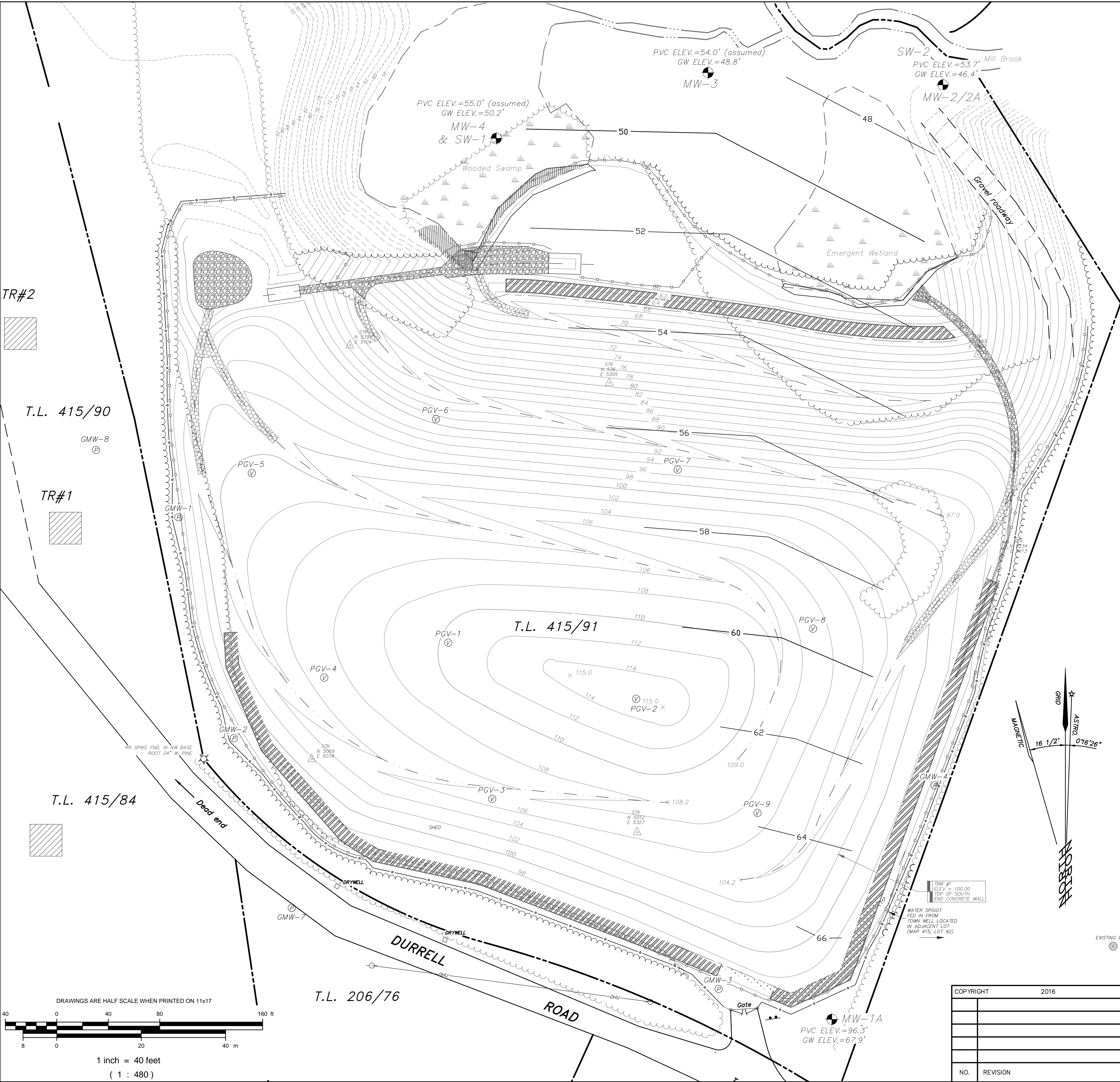
III. RECOMMENDATIONS

Based on the results described above, HEB has no further recommendations with regard to PFAS sampling at this time. At a minimum, routine groundwater monitoring should be continued in accordance with NHDES GWP#198704017-T-005. Additional sampling will be considered as required by NHDES. Should routine monitoring results display concerning concentrations or exceedances of AGQS, HEB will revise recommendations accordingly.

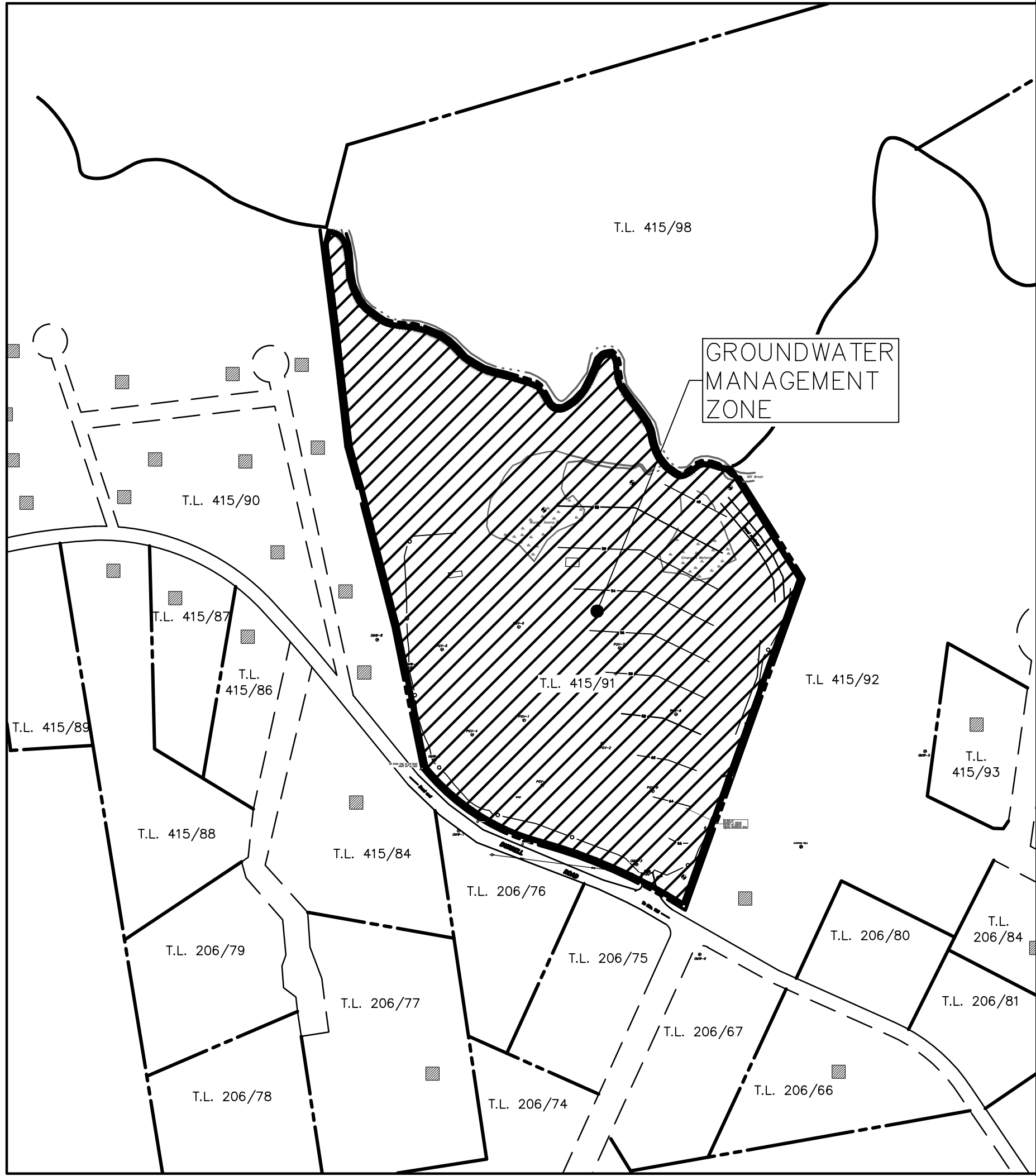
P:\Jobs\2000\2000-097 Tamworth Landfill\GROUNDWATER MONITORING\PFAS Testing\Data to Upload to NHDES 04-25-19\PFAS Receptor Survey Sampling Report 04-29-19.doc

APPENDIX A

Groundwater Monitoring Plan



- Legend**
- 98 TOPOGRAPHIC CONTOUR (2 FOOT INTERVAL)
 - 60 GROUNDWATER CONTOUR (2 FOOT INTERVAL)
 - MW-1 MONITORING WELL LOCATION
 - GW ELEV.=60.0' AVERAGE GROUNDWATER ELEV. IN FEET OBSERVED ON OCTOBER 4, 2016
 - GROUNDWATER MANAGEMENT ZONE



Groundwater Management Zone
Scale: 1"=200'

Groundwater Monitoring Plan of the Tamworth Landfill prepared for Town of Tamworth, New Hampshire		SURVEYED BY	PWG
		DESIGNED BY	EJG
 HEB Engineers CIVIL • STRUCTURAL • SURVEY		DRAWN BY	AH
		CHECKED BY	EJG
		FIELD BOOK	N/A
		SCALE	AS NOTED
		DATE	12/21/2016
 HEB Engineers, Inc. Post Office Box 440 2605 White Mountain Hwy. North Conway, NH 03860 www.hebengineers.com Office (603) 356-6936 Fax (603) 356-7715		2000-097	
		GW-1	
		SHEET 1 OF 1	

COPYRIGHT	2016	HEB ENGINEERS, INC.	
NO.	REVISION	DATE	BY

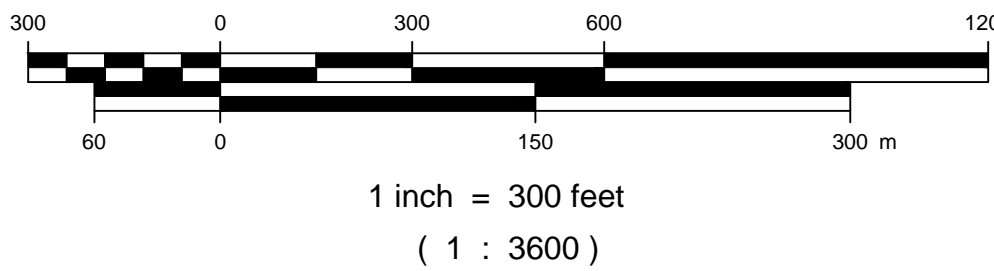
APPENDIX B

Receptor Survey

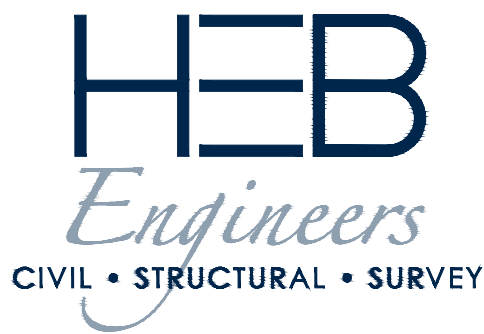
NOTE: NHDES HAS REQUESTED EXPEDITED SAMPLING ON ALL WATER SUPPLY WELLS IDENTIFIED WITHIN 500 FEET OF THE SITE. SITES WITHIN 500 FEET OF THE LANDFILL SITE ARE HIGHLIGHTED IN THE TABLE BELOW.

PROPERTIES WITHIN 1000-FOOT SITE OFFSET

PARCEL ID	MAP	LOT	OWNER 1	BOOK 1	PAGE 1	AREA	ST .	LOCATION	WATER WELL? (YES/NO)
206-59	206	59	SORBELLO, JOSEPH JR. - TRUSTEE	2759	962	1.41	62	BRYANT MILL ROAD	Y
206-60	206	60	VACHON, RONALD F. & CYNTHIA L.	1697	67	1.48	52	BRYANT MILL ROAD	Y
206-61	206	61	CONTI, ARTHUR J & JACQUELINE G.	2418	164	1.59	50	BRYANT MILL ROAD	Y
206-62	206	62	RAINVILLE, RAYMOND G. & PAULINE R.	2598	923	1.05	30	BRYANT MILL ROAD	Y
206-63	206	63	BOGUS, CYNTHIA R.	2458	1	1.01	18	BRYANT MILL ROAD	Y
206-64	206	64	LEBLANC, LIONEL P. & NANCY V.	2203	895	1.18	48	BRYANT MILL ROAD	Y
206-65	206	65	TAMWORTH PRE-SCHOOL, INC.	1041	467	5	27	DURRELL ROAD	Y
206-66	206	66	MASON, PRESTON & JULIE	1767	355	1.55		DURRELL ROAD	Y
206-67	206	67	VALEE, JOHN F. & BETH	2682	22	1.53	99	DURRELL ROAD	Y
206-68	206	68	CORRAO, ANTHONY L	3266	91	2.11	460	BRYANT MILL ROAD	Y
206-69	206	69	LANE, KEVIN J. & GARCIA, SALLY A.	2833	991	2.29	432	BRYANT MILL ROAD	Y
206-72	206	72	VENDRILLO, JUNE L., OKTAVEC, C.A.&M.J. - TRUSTEES	1958	900	3.078	403	BRYANT MILL ROAD	Y
206-73	206	73	THURSTON, ALAN W.	2205	946	1.62	415	BRYANT MILL ROAD	Y
206-74	206	74	WALKER, JAMES & SUSAN	1660	798	1.95		BRYANT MILL ROAD	N
206-75	206	75	STOCKBRIDGE, RICHARD C.	2849	340	1.36	499	BRYANT MILL ROAD	Y
206-76	206	76	COTTON, KELLY S.	2115	529	1.3	137	DURRELL ROAD	Y
206-77	206	77	WALKER, JAMES & SUSAN	809	393	3	77	WALKER LANE	Y
206-78	206	78	MARION, JON C. & PATRICIA - TRUSTEES	2507	125	2.1		DURRELL ROAD	N
206-79	206	79	HAMMOND, ROBERT M. - TRUSTEE	2320	759	2.1	64	WALKER LANE	Y
206-80	206	80	COOK, JOHN O. SR. - TRUSTEE	1623	583	1.02		DURRELL ROAD	N
206-81	206	81	CHEQUERS VILLA INC.	1547	127	1.02		DURRELL ROAD	N
206-82	206	82	WINNIPESAUKEE CAPITAL, LLC	3293	108	0.92	880	TAMWORTH ROAD	Y
206-83	206	83	CHEQUERS VILLA INC.	1547	127	0.96	870	TAMWORTH ROAD	Y
206-84	206	84	MARKEY CLAIRE M. & FRANCIS B.	2925	665	1	13	HALL WAY	Y
414-1	414	1	HARRY, DYLAN	3306	75	1.08	271	DURRELL ROAD	Y
414-2	414	2	HALL, ALLYSON T. & STEVEN D.	2729	943	1.03	285	DURRELL ROAD	Y
414-3	414	3	MONIER, SANDRA E.	2579	866	13.19		DURRELL ROAD	Y
414-26	414	26	BOWLES, BRUCE REVOCABLE TRUST OF 1998	1786	332	16.48	420	DURRELL ROAD	Y
414-27	414	27	SOCIETY FOR THE PROTECTION OF NH FOREST	1843	808	105.65		HOLLOW HILL ROAD	N
415-84	415	84	GRACE, ROBERT & JANET	907	499	2.57	167	DURRELL ROAD	Y
415-85	415	85	OWNERS OF LOTS OF GRACE SUBDIVISION			0.76		DURRELL ROAD	N
415-86	415	86	LAURINO, JOSEPH	2166	651	1	4	WALKER LANE	N
415-87	415	87	HAMMOND, ROBERT	3006	354	1.15	221	DURRELL ROAD	N
415-88	415	88	GRACE, LARRY L. & JUDY A. IRREV. TRUST	3076	902	2.83	239	DURRELL ROAD	Y
415-89	415	89	MONIER, SANDRA E.	2579	866	1.15		DURRELL ROAD	N
415-90	415	90	BOWLES, BRUCE REVOCABLE TRUST OF 1998	1786	332	27	320	DURRELL ROAD	Y, MULTIPLE
415-91	415	91	TAMWORTH, TOWN OF			13.3		DURRELL ROAD	N
415-92	415	92	TAMWORTH, TOWN OF			21		DURRELL ROAD	Y
415-93	415	93	MARTEL, JAMES R. & JENNIFER K.L.	1823	535	1	47	HALL WAY	Y
415-94	415	94	SCOLARO, RICKY A. & KARA H.	3373	124	0.875	14	HALL WAY	Y
415-95	415	95	MARRONE, ANTHONY & GAIL	2576	64	0.8		HALL WAY	N
415-96	415	96	MARRONE, GAIL & ANTHONY	940	292	2.7	784	TAMWORTH ROAD	Y
415-97	415	97	REMICK, RONALD C. JR. & RANDALL J. - TRUSTEES	2972	122	4.8	678	TAMWORTH ROAD	Y
415-98	415	98	TAMWORTH, TOWN OF	750	289	14.6		TAMWORTH ROAD	N
415-99	415	99	STAFFORD, CARROLL W. JR. ETAL - TRUSTEES	1609	974	27		TAMWORTH ROAD	Y



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NH Office (603) 356-6936
Post Office Box 440
North Conway, NH 03860
ME Office (207) 803-8265
Post Office Box 343
Bridgton, ME 04009

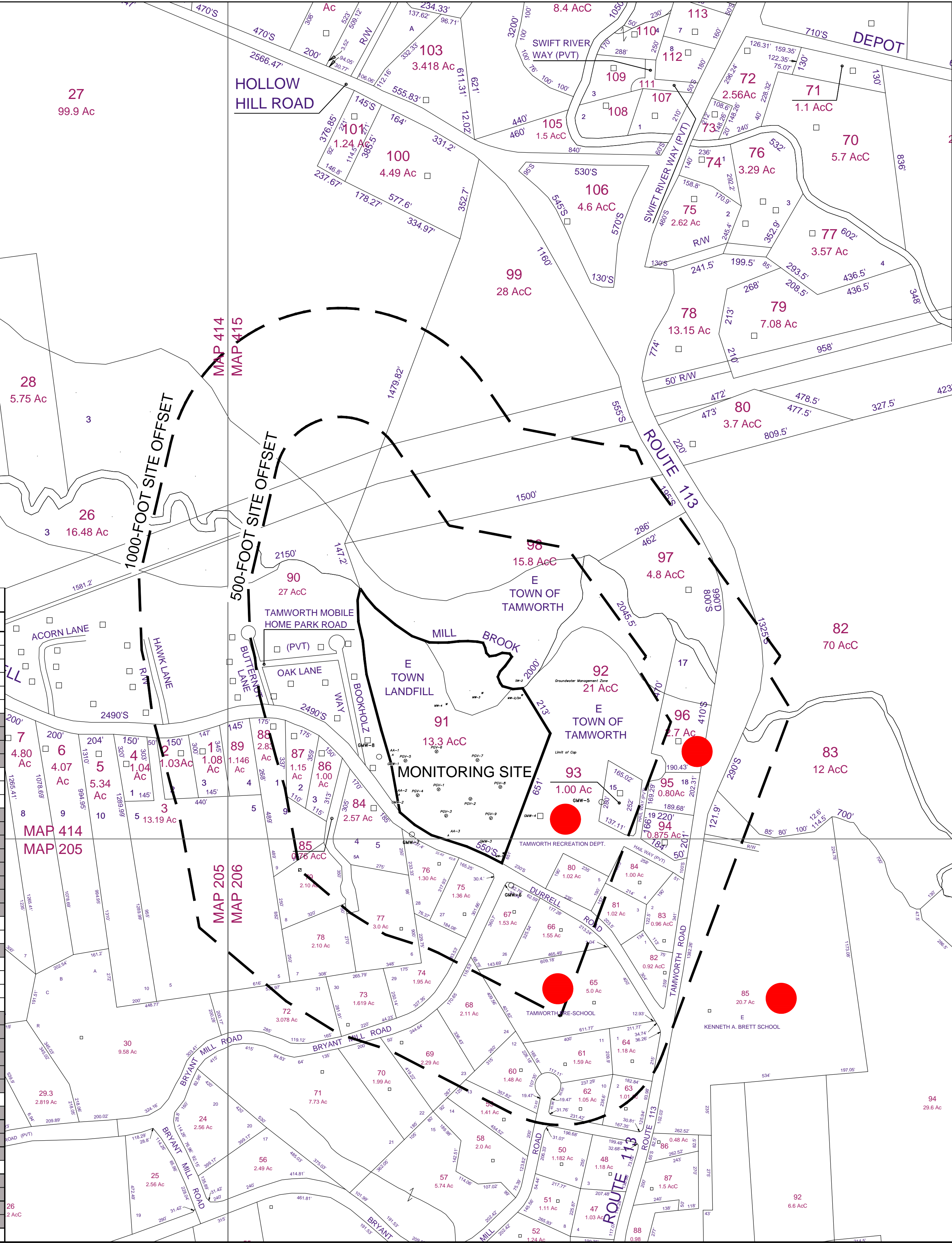
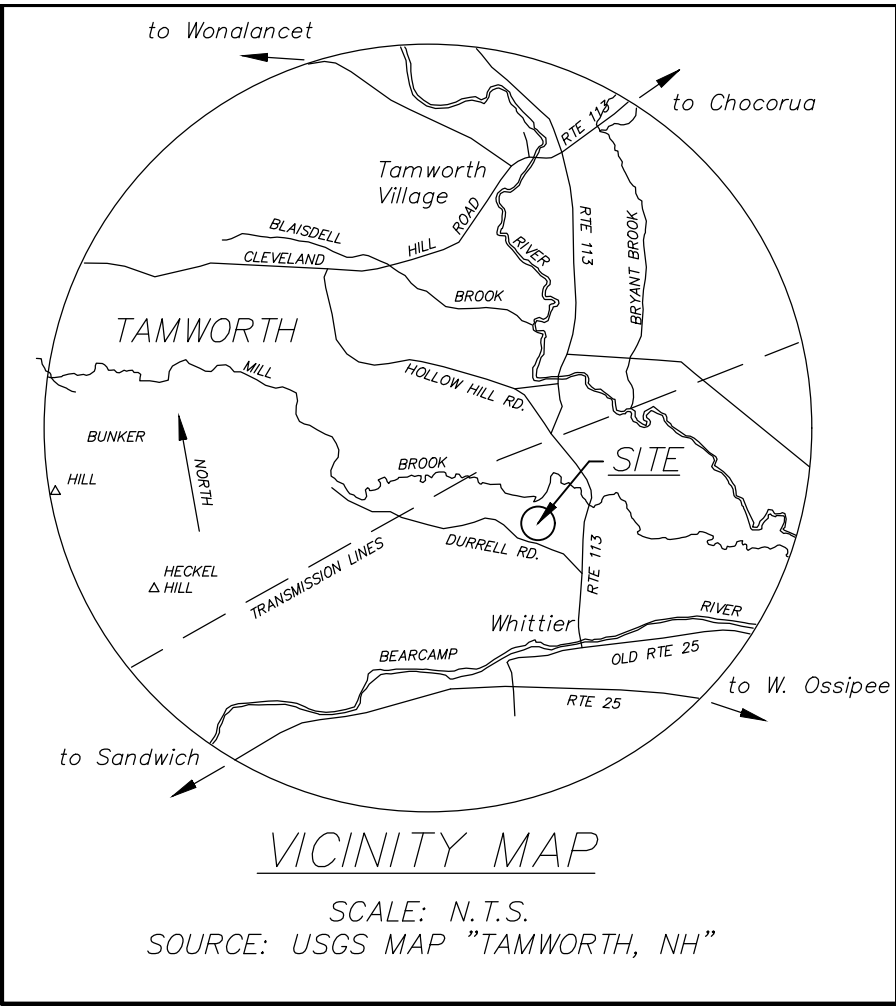
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CHECKED BY	JJP
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SCALE	1"=300'
DATE	02/20/2019

Receptor Survey
for the
Tamworth Town Landfill
located in and prepared for the
Town of Tamworth, New Hampshire

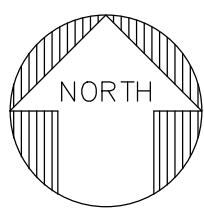
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SHEET 1 OF 1



Location of Potentially Sensitive Human Subpopulation

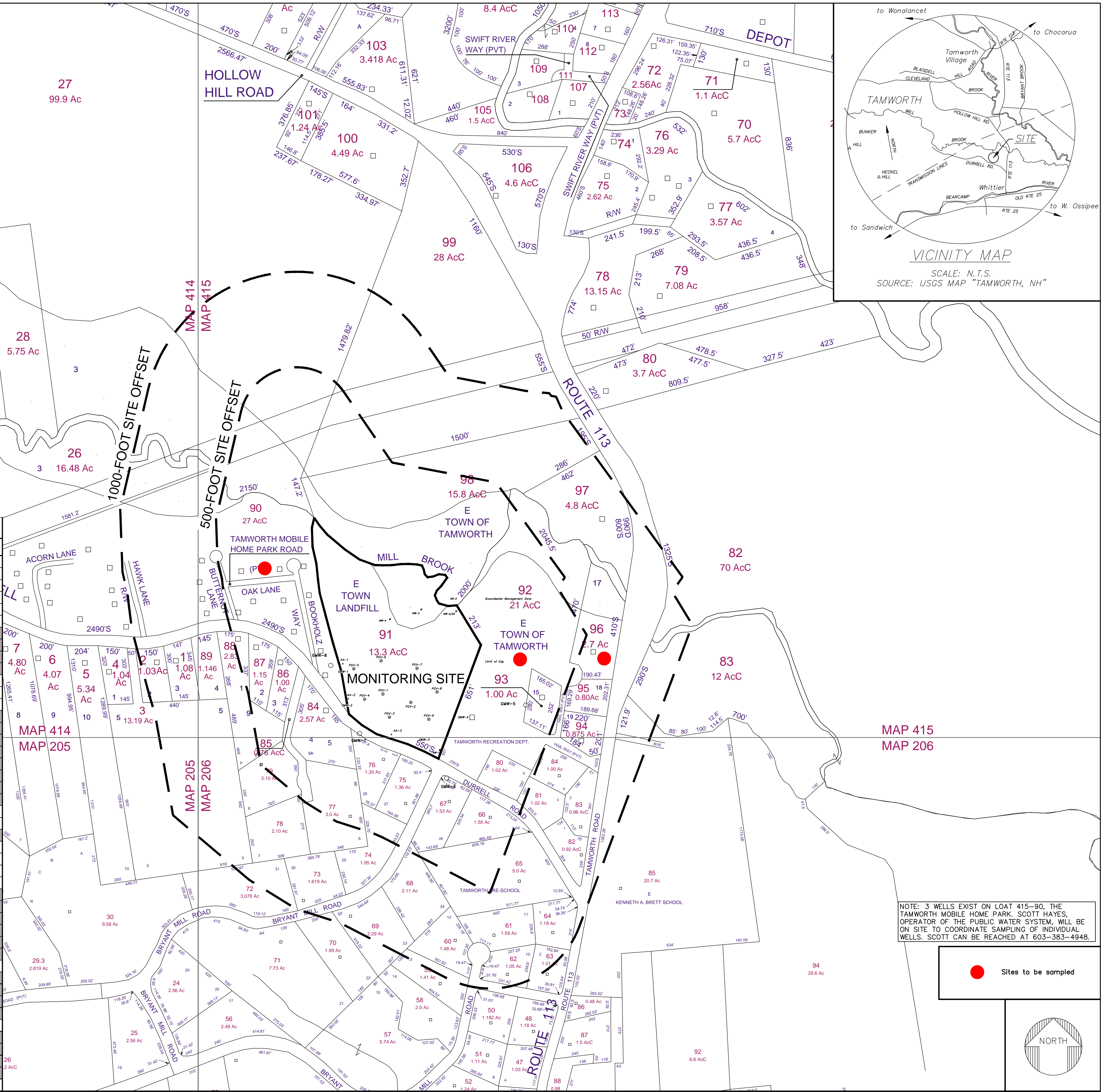


APPENDIX C

Sampling Map

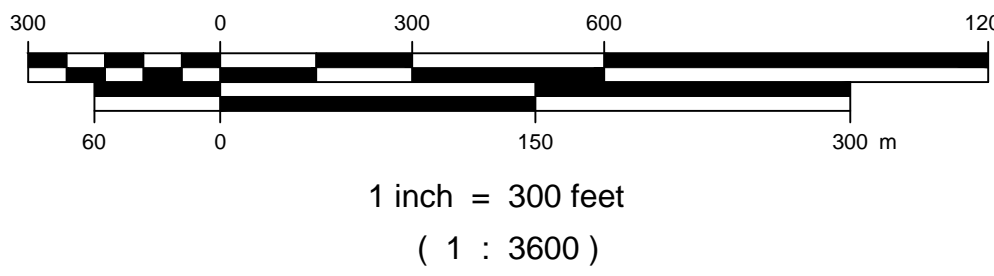
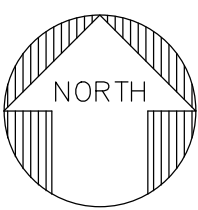
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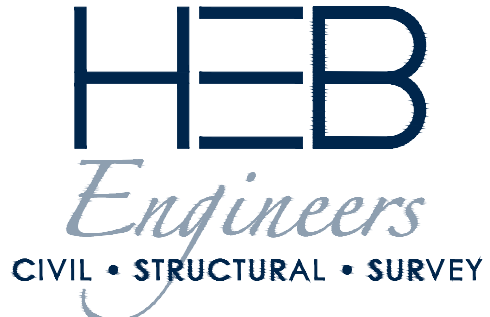


NOTE: 3 WELLS EXIST ON LOT 415-90, THE TAMWORTH MOBILE HOME PARK. SCOTT HAYES, OPERATOR OF THE PUBLIC WATER SYSTEM, WILL BE ON SITE TO COORDINATE SAMPLING OF INDIVIDUAL WELLS. SCOTT CAN BE REACHED AT 603-383-4948.

● Sites to be sampled



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SURVEYED BY	—
DESIGNED BY	—
DRAWN BY	JDS
CHECKED BY	JJP
FIELD BOOK	—
SCALE	1"=300'
DATE	02/20/2019

Sampling Map
for the
Tamworth Town Landfill
located in and prepared for the
Town of Tamworth, New Hampshire

2000-097
SK-1
SHEET 1 OF 1

APPENDIX D

Eastern Analytical, Inc. Lab Reports



Eastern Analytical, Inc.

professional laboratory and drilling services

Jeff Sires

HEB Engineers, Inc.

2605 White Mountain Highway, PO Box 440

North Conway , NH 03860



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 193015

Client Identification: Tamworth LF PFAS Monitoring

Date Received: 3/14/2019

Dear Mr. Sires :

Enclosed please find the report of analysis for the above identified project.
As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Perfluorinated Compounds EPA 537 (9
Compounds) Vista

Subcontractor Lab: Vista Analytical Laboratory

A complete copy of the report is attached. This report may not be reproduced except in full,
without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

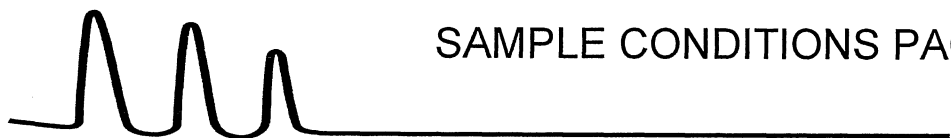
Lorraine Olashaw, Lab Director

4.4.19

Date

16

of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 193015

Client: HEB Engineers, Inc.

Client Designation: Tamworth LF PFAS Monitoring

Temperature upon receipt (°C): 3.6

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
193015.01	Rec Dept.	3/14/19	3/14/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis. Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



April 03, 2019

Vista Work Order No. 1900497

Ms. Jennifer Laramie
Eastern Analytical, Inc.
25 Chennell Drive
Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 20, 2019 under your Project Name '193015 NH'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

A handwritten signature in dark ink, appearing to read "Martha Maier", with a small "for" written below it.

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1900497**Case Narrative****Sample Condition on Receipt:**

One aqueous sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:**PFAS Isotope Dilution Method**

The sample was extracted and analyzed for a selected list of PFAS using Modified EPA Method 537. The results for PFHxS, PFOA and PFOS include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900497-01	Rec Dept.	14-Mar-19 11:45	20-Mar-19 11:18	HDPE Bottle, 125 mL HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data			Laboratory Data		
Name:	Eastern Analytical, Inc.	Matrix:	Lab Sample:	B9C0150-BLK1	Column:
Project:	193015 NH	Aqueous			BEH C18
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch
PFBA	375-22-4	ND	4.00	B9C0150	26-Mar-19
PFPeA	2706-90-3	ND	4.00	B9C0150	26-Mar-19
PFBS	375-73-5	ND	4.00	B9C0150	26-Mar-19
PFHxA	307-24-4	ND	4.00	B9C0150	26-Mar-19
PFHpA	375-85-9	ND	4.00	B9C0150	26-Mar-19
PFHxS	355-46-4	ND	4.00	B9C0150	26-Mar-19
PFOA	335-67-1	ND	4.00	B9C0150	26-Mar-19
PFNA	375-95-1	ND	4.00	B9C0150	26-Mar-19
PFOS	1763-23-1	ND	4.00	B9C0150	26-Mar-19
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch
13C3-PFBA	IS	93.6	60 - 130	B9C0150	26-Mar-19
13C3-PFPeA	IS	92.9	60 - 150	B9C0150	26-Mar-19
13C3-PFBS	IS	109	60 - 150	B9C0150	26-Mar-19
13C2-PFHxA	IS	96.9	70 - 130	B9C0150	26-Mar-19
13C4-PFHxA	IS	83.9	60 - 150	B9C0150	26-Mar-19
18O2-PFHxS	IS	85.6	60 - 130	B9C0150	26-Mar-19
13C2-PFOA	IS	82.0	60 - 130	B9C0150	26-Mar-19
13C5-PFNA	IS	80.1	50 - 130	B9C0150	26-Mar-19
13C8-PFOS	IS	88.7	60 - 130	B9C0150	26-Mar-19

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

RL - Reporting limit Results reported to RL.

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data				Laboratory Data							
Name: Eastern Analytical, Inc.		Matrix:	Aqueous	Lab Sample: B9C0150-BS1		Column: BEH C18					
Project: 193015 NH											
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	82.4	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFPeA	2706-90-3	86.3	80.0	108	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFBS	375-73-5	83.2	80.0	104	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxA	307-24-4	82.3	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHpA	375-85-9	79.1	80.0	98.9	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxS	355-46-4	85.0	80.0	106	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOA	335-67-1	76.9	80.0	96.1	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFNA	375-95-1	84.1	80.0	105	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOS	1763-23-1	59.6	80.0	74.6	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
Labeled Standards											
	Type			% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS			90.0	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C3-PFPeA	IS			85.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C3-PFBS	IS			100	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C2-PFHxA	IS			88.4	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C4-PFHpA	IS			77.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
18O2-PFHxS	IS			79.7	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C2-PFOA	IS			87.5	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C5-PFNA	IS			74.2	50 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C8-PFOS	IS			117	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1

Sample ID: Rec Dept.

PFAS Isotope Dilution Method

Client Data			Laboratory Data		
Name:	Eastern Analytical, Inc.	Matrix:	Lab Sample:	1900497-01	Column:
Project:	193015 NH	Date Collected:	Date Received:	20-Mar-19 11:18	BEH C18
Analyte	CAS Number	Conc (ng/L)	RL	Qualifiers	Batch
PFBA	375-22-4	ND	4.22		B9C0150
PFPeA	2706-90-3	ND	4.22		B9C0150
PFBS	375-73-5	ND	4.22		B9C0150
PFHxA	307-24-4	ND	4.22		B9C0150
PFHpA	375-85-9	ND	4.22		B9C0150
PFHxS	355-46-4	ND	4.22		B9C0150
PFOA	335-67-1	ND	4.22		B9C0150
PFNA	375-95-1	ND	4.22		B9C0150
PFOS	1763-23-1	ND	4.22		B9C0150
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch
13C3-PFBA	IS	96.0	60 - 130		B9C0150
13C3-PFPeA	IS	94.5	60 - 150		B9C0150
13C3-PFBS	IS	108	60 - 150		B9C0150
13C2-PFHxA	IS	97.3	70 - 130		B9C0150
13C4-PFHxA	IS	92.2	60 - 150		B9C0150
18O2-PFHxS	IS	98.5	60 - 130		B9C0150
13C2-PFOA	IS	86.1	60 - 130		B9C0150
13C5-PFNA	IS	84.7	50 - 130		B9C0150
13C8-PFOS	IS	94.1	60 - 130		B9C0150

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

CHAIN-OF-CUSTODY RECORD



Sample ID

Date Sampled

Matrix

1900497 00°C

EAID# 193015

Page 1

Rec Dept

3/14/2019
11:45

aqueous

Subcontract - Perfluorinated Compounds EPA Method 537 (9 Compounds)

Sample Notes

EAID# 193015

Project State: NH

Project ID:

Company Vista Analytical Laboratory

Address 1104 Windfield Way

Address El Dorado Hills, CA 95762

Account #

Phone # (916) 673-1520

Results Needed: Preferred Date: Standard

QC Deliverables

RUSH Due Date:

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ M/A MCP

Notes about project:

Email login confirmation, pdf of results and
invoice to customerservice@easternanalytical.com

PO #: 49736

EAID# 193015

Data Deliverable (circle)

Excel NH EMD EQUIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by:

Relinquished by:

Relinquished by:

Relinquished by:

Date/Time

Date/Time

Date/Time

Received by

Received by

Received by

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301

Phone: (603) 228-0525

1-800-287-0525

customerservice@easternanalytical.com

As a subcontract lab to EAI, you will defend, indemnify and hold Eastern Analytical, Inc., its officers, employees, and agents harmless from and against any and all liability, loss, expense or claims for injury or damages arising out of the performance against this chain of custody but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of you as a subcontract lab, your officers, agents or employees

Work Order 1900497

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 1900497

 TAT 14 days

Samples Arrival:	Date/Time <u>03/20/19 1118</u>	Initials: <u>WWS</u>	Location: <u>WR-2</u> Shelf/Rack: <u>N/A</u>
Logged In:	Date/Time <u>03/20/19 1257</u>	Initials: <u>WWS</u>	Location: <u>WR-2</u> Shelf/Rack: <u>2-3 F-6</u>
Delivered By:	FedEx <u>UPS</u> On Trac GSO DHL Hand Delivered Other		
Preservation:	<u>Ice</u> Blue Ice Dry Ice None		
Temp °C: <u>0.1</u> (uncorrected)	Probe used: Y / <u>N</u>		Thermometer ID: <u>IR-4</u>
Temp °C: <u>0.0</u> (corrected)			

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill <u> </u> Trk # <u>1Z 746 599 01 9259 7910</u>	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Preservation Documented: <u>Na₂S₂O₃</u> Trizma None Other	Yes	No	<u>NA</u>
Shipping Container	Vista	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:



Eastern Analytical, Inc.

CHAIN-OF-CUSTODY RECORD

193015

9

Date/Time

Composites need start
and stop dates/times

Matrix

Parameters and Sample Notes

of containers

Sample IDs

Rec Dept.

3/14/19

1145

aqueous
Grab or Comp

Aq Tox/PFCs9CmpdsSubVAL

8

☐ Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL HNO₃ H₂SO₄ NaOH MeOH Na₂S₂O₈ ICE

Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID

Project Name Tamworth LF PFAS Monitoring

State NH

Client (Pro Mgr) Jeff Sires

Customer HEB Engineers, Inc.

Address 2605 White Mountain Highway, PO

City North Conway NH 03860

Phone 356-6936 Fax 356-7715

Email: jsires@HEBEngineers.com

Direct 356-6936

Eastern Analytical, Inc.

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

Results Needed by: Preferred date _____
Notes:

Reporting Options

☒ HC ☐ NO FAX

☐ EDD PDF ☐ Partial FAX

☒ EDD email ☐ PDF Invoice

☒ PDF prelim, NO FAX ☐ EQUIS

☐ e-mail Login Confirmation

PO# verbal

Quote#: 1016294

Temp 36°C

Ice Y ☒ N ☐

Samples Collected by: J. Sires/EAI

3/14/19 1400

Relinquished by

Date/Time

Received by

QC deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Relinquished by

Date/Time

Received by



Eastern Analytical, Inc.

professional laboratory and drilling services

Jeff Sires

HEB Engineers, Inc.

2605 White Mountain Highway, PO Box 440

North Conway , NH 03860



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 193016

Client Identification: Tamworth LF PFAS Monitoring

Date Received: 3/14/2019

Dear Mr. Sires :

Enclosed please find the report of analysis for the above identified project.
As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Perfluorinated Compounds EPA 537 (9
Compounds) Vista

Subcontractor Lab: Vista Analytical Laboratory

A complete copy of the report is attached. This report may not be reproduced except in full,
without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

4.4.19

Date

16

of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 193016

Client: HEB Engineers, Inc.

Client Designation: Tamworth LF PFAS Monitoring

Temperature upon receipt (°C): 3.6

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date	Date	Sample	% Dry	Exceptions/Comments (other than thermal preservation)
		Received	Sampled	Matrix	Weight	
193016.01	Marrone Property	3/14/19	3/14/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



April 03, 2019

Vista Work Order No. 1900496

Ms. Jennifer Laramie
Eastern Analytical, Inc.
25 Chennell Drive
Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 20, 2019 under your Project Name '193016 NH'.

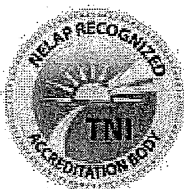
Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

A handwritten signature in dark ink, appearing to read "Martha Maier", with a small "for" written below it.

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1900496
Case Narrative

Sample Condition on Receipt:

One aqueous sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The sample was extracted and analyzed for a selected list of PFAS using Modified EPA Method 537. The results for PFHxS, PFOA and PFOS include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

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Sample Receipt.....	13

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900496-01	Marrone Property	14-Mar-19 10:13	20-Mar-19 11:18	HDPE Bottle, 125 mL HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data			Laboratory Data		
Name:	Eastern Analytical, Inc.	Matrix:	Lab Sample:	B9C0150-BLK1	Column:
Project:	193016 NH	Aqueous			BEH C18
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch
PFBA	375-22-4	ND	4.00		B9C0150
PFPeA	2706-90-3	ND	4.00		B9C0150
PFBS	375-73-5	ND	4.00		B9C0150
PFHxA	307-24-4	ND	4.00		B9C0150
PFHpA	375-85-9	ND	4.00		B9C0150
PFHxS	355-46-4	ND	4.00		B9C0150
PFOA	335-67-1	ND	4.00		B9C0150
PFNA	375-95-1	ND	4.00		B9C0150
PFOS	1763-23-1	ND	4.00		B9C0150
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch
13C3-PFBA	IS	93.6	60 - 130		B9C0150
13C3-PFPeA	IS	92.9	60 - 150		B9C0150
13C3-PFBS	IS	109	60 - 150		B9C0150
13C2-PFHxA	IS	96.9	70 - 130		B9C0150
13C4-PFHpA	IS	83.9	60 - 150		B9C0150
18O2-PFHxS	IS	85.6	60 - 130		B9C0150
13C2-PFOA	IS	82.0	60 - 130		B9C0150
13C5-PFNA	IS	80.1	50 - 130		B9C0150
13C8-PFOS	IS	88.7	60 - 130		B9C0150

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data			Laboratory Data								
Name:	Eastern Analytical, Inc.	Matrix:	Lab Sample:		B9C0150-BS1	Column:	BEH C18				
Project:	193016 NH	Aqueous									
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	82.4	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFPeA	2706-90-3	86.3	80.0	108	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFBS	375-73-5	83.2	80.0	104	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxA	307-24-4	82.3	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHpA	375-85-9	79.1	80.0	98.9	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxS	355-46-4	85.0	80.0	106	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOA	335-67-1	76.9	80.0	96.1	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFNA	375-95-1	84.1	80.0	105	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOS	1763-23-1	59.6	80.0	74.6	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
Labeled Standards											
	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
13C3-PFBA	IS	90.0	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C3-PFPeA	IS	85.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C3-PFBS	IS	100	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C2-PFHxA	IS	88.4	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C4-PFHpA	IS	77.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
18O2-PFHxS	IS	79.7	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C2-PFOA	IS	87.5	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C5-PFNA	IS	74.2	50 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		
13C8-PFOS	IS	117	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1		

Sample ID: Marrone Property

PFAS Isotope Dilution Method

Client Data			Laboratory Data		
Name:	Eastern Analytical, Inc.	Matrix:	Lab Sample:	1900496-01	Column:
Project:	193016 NH	Date Collected:	Date Received:	20-Mar-19 11:18	BEH C18
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch
PFBA	375-22-4	ND	4.00		B9C0150
PFPeA	2706-90-3	ND	4.00		B9C0150
PFBS	375-73-5	ND	4.00		B9C0150
PFHxA	307-24-4	ND	4.00		B9C0150
PFHpA	375-85-9	ND	4.00		B9C0150
PFHxS	355-46-4	ND	4.00		B9C0150
PFOA	335-67-1	ND	4.00		B9C0150
PFNA	375-95-1	ND	4.00		B9C0150
PFOS	1763-23-1	ND	4.00		B9C0150
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch
13C3-PFBA	IS	97.3	60 - 130		B9C0150
13C3-PFPeA	IS	91.6	60 - 150		B9C0150
13C3-PFBS	IS	104	60 - 150		B9C0150
13C2-PFHxA	IS	97.8	70 - 130		B9C0150
13C4-PFHxA	IS	89.5	60 - 150		B9C0150
18O2-PFHxS	IS	96.8	60 - 130		B9C0150
13C2-PFOA	IS	86.5	60 - 130		B9C0150
13C5-PFNA	IS	81.7	50 - 130		B9C0150
13C8-PFOS	IS	103	60 - 130		B9C0150

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

CHAIN-OF-CUSTODY RECORD



Eastern Analytical, Inc.
professional laboratory and drilling services

Sample ID _____ Date Sampled _____ Matrix _____ aParameters _____

1900496 0000

EAI ID# 193016

Page 1

Sample Notes _____

Marrone Property

3/14/2019 10:13

aqueous

Subcontract - Perfluorinated Compounds EPA Method 537 (9 Compounds)

EAI ID# 193016

Project State: NH

Project ID: _____

Company Vista Analytical Laboratory

Address 1104 Windfield Way

Address El Dorado Hills, CA 95762

Account # _____

Phone # (916) 673-1520

Results Needed: Preferred Date: Standard

RUSH Due Date: _____

QC Deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project: _____

Email/login confirmation, pdf of results and
invoice to customerservice@easternanalytical.com.

PO #: 49737

EAI ID# 193016

Data Deliverable (circle)

Excel NH EMD EQUIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: _____

Relinquished by _____

Date/Time

03/20/19 11:18

Received by _____

03/20/19 11:18

Relinquished by _____

Date/Time

Received by _____

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03304

Phone: (603) 228-0525

1-800-287-0525

customerservice@easternanalytical.com

As a subcontract lab to EAI, you will defend, indemnify and hold Eastern Analytical, Inc., its officers, employees, and agents harmless from and against any and all liability, loss, expense or claims for injury or damages arising out of the performance against this chain of custody but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omission of the subcontract lab, your officers, agents or employees

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 1900496

 TAT 14 days

Samples Arrival:	Date/Time <u>03/20/19 11:18</u>	Initials: <u>WDS</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>03/20/19 12:49</u>	Initials: <u>WDS</u>	Location: <u>WR-2</u>
Delivered By:	FedEx <u>UPS</u> On Trac GSO DHL Hand Delivered Other		
Preservation:	<u>Ice</u> Blue Ice Dry Ice None		
Temp °C: <u>0.1</u> (uncorrected)	Probe used: Y <u>/N</u>		Thermometer ID: <u>IR-4</u>
Temp °C: <u>0.0</u> (corrected)			

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	Trk # <u>1Z 246 599 01 9259 7910</u>	✓	
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Preservation Documented:	Na ₂ S ₂ O ₃ Trizma None	Yes	No <u>NA</u>
Shipping Container	Vista <u>Client</u> Retain <u>Return</u> Dispose		

Comments: sample label COC ID
Marrone (a, B bottles) Marrone Property
Does not affect sample integrity.



Eastern Analytical, Inc.

CHAIN-OF-CUSTODY RECORD

193016

91

Date/Time

Composites need start
and stop dates/times

Matrix

Parameters and Sample Notes

of containers

Sample IDs

Marrone Property

3/14/19

1013

aqueous
Grab or Comp

AqTot/PFCs9CmpdssSubVAL

2

☐ Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL, HNO₃, H₂SO₄, NaOH, MeOH, Na₂S₂O₈, ICE

Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID

Project Name Tamworth LF PFAS Monitoring

State NH

Client (Pro Mgr) Jeff Sires

Customer HEB Engineers, Inc.

Address 2605 White Mountain Highway, PO

City North Conway NH 03860

Phone 356-6936 Fax 356-7715

Email: jsires@HEBEngineers.com

Direct 356-6936

Eastern Analytical, Inc.

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

Results Needed by: Preferred date

Notes:

NHDES PFAS 9 compound list.

Tax Map/lot 415-96

Reporting Options

- ☒ HC ☐ NO FAX
☐ EDD PDF ☐ Partial FAX
☒ EDD email ☐ PDF Invoice
☒ PDF prelim, NO FAX ☐ EQUIS
☐ e-mail Login Confirmation

PO# verbal
Quote#: 1016294

Temp 36° C

Ice Y ☒ N ☐

Samples Collected by: J. Sires

3/14/19 1400

Relinquished by: [Signature]

Received by: [Signature]

QC deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Relinquished by

Date/Time

Received by



Eastern Analytical, Inc.

professional laboratory and drilling services

Jeff Sires

HEB Engineers, Inc.

2605 White Mountain Highway, PO Box 440

North Conway , NH 03860



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 193017

Client Identification: Tamworth LF PFAS Monitoring

Date Received: 3/14/2019

Dear Mr. Sires :

Enclosed please find the report of analysis for the above identified project.
As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Perfluorinated Compounds EPA 537 (9
Compounds) Vista

Subcontractor Lab: Vista Analytical Laboratory

A complete copy of the report is attached. This report may not be reproduced except in full,
without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

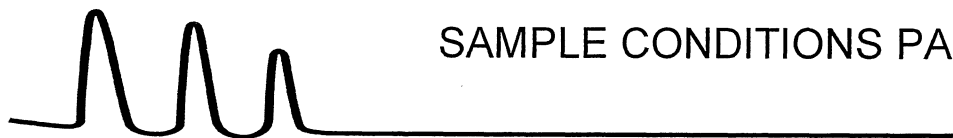
Lorraine Olashaw, Lab Director

4.4.19

Date

18

of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 193017

Client: HEB Engineers, Inc.

Client Designation: Tamworth LF PFAS Monitoring

Temperature upon receipt (°C): 3.6

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
193017.01	TMHP Well 1	3/14/19	3/14/19	aqueous		Adheres to Sample Acceptance Policy
193017.02	TMHP Well 2	3/14/19	3/14/19	aqueous		Adheres to Sample Acceptance Policy
193017.03	TMHP Well 3	3/14/19	3/14/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



April 03, 2019

Vista Work Order No. 1900495

Ms. Jennifer Laramie
Eastern Analytical, Inc.
25 Chennell Drive
Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 20, 2019 under your Project Name '193017 NH'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at [mmaier@vista-analytical.com](mailto:mmmaier@vista-analytical.com).

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Maier", with a horizontal line extending to the right.

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1900495**Case Narrative****Sample Condition on Receipt:**

Three aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:**PFAS Isotope Dilution Method**

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method. The results for PFHxS, PFOA and PFOS include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900495-01	TMHP Well 1	14-Mar-19 10:47	20-Mar-19 11:18	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1900495-02	TMHP Well 2	14-Mar-19 10:55	20-Mar-19 11:18	HDPE Bottle, 125 mL HDPE Bottle, 125 mL
1900495-03	TMHP Well 3	14-Mar-19 11:05	20-Mar-19 11:18	HDPE Bottle, 125 mL HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data				Laboratory Data					
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	B9C0150-BLK1	Column:	BEH C18		
Project:	193017 NH								
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFPeA	2706-90-3	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFBS	375-73-5	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFHxA	307-24-4	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFHpA	375-85-9	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFHxS	355-46-4	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFOA	335-67-1	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFNA	375-95-1	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
PFOS	1763-23-1	ND	4.00		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	93.6	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C3-PFPeA	IS	92.9	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C3-PFBS	IS	109	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C2-PFHxA	IS	96.9	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C4-PFHpA	IS	83.9	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
18O2-PFHxS	IS	85.6	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C2-PFOA	IS	82.0	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C5-PFNA	IS	80.1	50 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1
13C8-PFOS	IS	88.7	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:45	1

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR
PFAS Isotope Dilution Method

Client Data			Laboratory Data								
Name: Eastern Analytical, Inc. Project: 193017 NH		Matrix:	Aqueous		Lab Sample: B9C0150-BS1	Column: BEH C18					
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	82.4	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFPeA	2706-90-3	86.3	80.0	108	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFBS	375-73-5	83.2	80.0	104	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxA	307-24-4	82.3	80.0	103	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHpA	375-85-9	79.1	80.0	98.9	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFHxS	355-46-4	85.0	80.0	106	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOA	335-67-1	76.9	80.0	96.1	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFNA	375-95-1	84.1	80.0	105	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
PFOS	1763-23-1	59.6	80.0	74.6	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS		90.0	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C3-PFPeA		IS		85.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C3-PFBS		IS		100	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C2-PFHxA		IS		88.4	70 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C4-PFHpA		IS		77.6	60 - 150		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
18O2-PFHxS		IS		79.7	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C2-PFOA		IS		87.5	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C5-PFNA		IS		74.2	50 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1
13C8-PFOS		IS		117	60 - 130		B9C0150	26-Mar-19	0.125 L	28-Mar-19 17:34	1

Sample ID: TMHP Well 1

PFAS Isotope Dilution Method

Client Data				Laboratory Data					
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1900495-01	Column:	BEH C18		
Project:	193017 NH	Date Collected:	14-Mar-19 10:47	Date Received:	20-Mar-19 11:18				
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFPeA	2706-90-3	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFBS	375-73-5	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFHxA	307-24-4	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFHpA	375-85-9	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFHxS	355-46-4	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFOA	335-67-1	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFNA	375-95-1	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
PFOS	1763-23-1	ND	4.43		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.7	60 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C3-PEPeA	IS	91.7	60 - 150		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C3-PFBS	IS	97.8	60 - 150		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C2-PFHxA	IS	93.4	70 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C4-PFHpA	IS	86.0	60 - 150		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
18O2-PFHxS	IS	102	60 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C2-PFOA	IS	91.8	60 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C5-PFNA	IS	91.7	50 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1
13C8-PFOS	IS	91.2	60 - 130		B9C0150	26-Mar-19	0.113 L	28-Mar-19 17:55	1

RL - Reporting limit
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: TMHP Well 2

PFAS Isotope Dilution Method

Client Data				Laboratory Data								
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1900495-02	Column:	BEH C18					
Project:	193017 NH	Date Collected:	14-Mar-19 10:55	Date Received:	20-Mar-19 11:18							
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution			
PFBA	375-22-4	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFPeA	2706-90-3	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFBS	375-73-5	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFHxA	307-24-4	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFHpA	375-85-9	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFHxS	355-46-4	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFOA	335-67-1	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFNA	375-95-1	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
PFOS	1763-23-1	ND	4.40		B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1			
Labeled Standards				Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	92.3	60 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C3-PFPeA	IS	91.9	60 - 150					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C3-PFBS	IS	118	60 - 150					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C2-PFHxA	IS	96.3	70 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C4-PFHpA	IS	85.2	60 - 150					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
18O2-PFHxS	IS	101	60 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C2-PFOA	IS	84.9	60 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C5-PFNA	IS	85.1	50 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1
13C8-PFOS	IS	77.0	60 - 130					B9C0150	26-Mar-19	0.114 L	28-Mar-19 18:06	1

RL - Reporting limit Results reported to RL.
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: TMHP Well 3

PFAS Isotope Dilution Method

Client Data				Laboratory Data					
Name:	Eastern Analytical, Inc.			Matrix:	Aqueous				
Project:	193017 NH			Date Collected:	14-Mar-19 11:05				
				Lab Sample:	1900495-03				
				Date Received:	20-Mar-19 11:18				
				Column:	BEH C18				
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFPeA	2706-90-3	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFBS	375-73-5	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFHxA	307-24-4	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFHpA	375-85-9	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFHxS	355-46-4	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFOA	335-67-1	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFNA	375-95-1	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
PFOS	1763-23-1	ND	4.26		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.1	60 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C3-PFPeA	IS	95.2	60 - 150		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C3-PFBS	IS	131	60 - 150		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C2-PFHxA	IS	97.2	70 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C4-PFHpA	IS	87.4	60 - 150		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
18O2-PFHxS	IS	103	60 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C2-PFOA	IS	102	60 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C5-PFNA	IS	79.6	50 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1
13C8-PFOS	IS	76.9	60 - 130		B9C0150	26-Mar-19	0.117 L	28-Mar-19 18:16	1

RL - Reporting limit Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

CHAIN-OF-CUSTODY RECORD



Eastern Analytical, Inc.
professional laboratory and drilling services

Sample ID _____ Date Sampled _____ Matrix _____ Parameters _____

1900495 0.0°C

EAID# 193017

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Sample Notes

TMHP Well 1 | 3/14/2019 | 10:47 | aqueous | Subcontract - Perfluorinated Compounds: EPA Method 537 (9 Compounds)

TMHP Well 2 | 3/14/2019 | 10:55 | aqueous | Subcontract - Perfluorinated Compounds: EPA Method 537 (9 Compounds)

TMHP Well 3 | 3/14/2019 | 11:05 | aqueous | Subcontract - Perfluorinated Compounds: EPA Method 537 (9 Compounds)

EAID# 193017 Project State: NH

Project ID:

Results Needed: Preferred Date: Standard

RUSH Due Date:

QC Deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:

Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

Company Vista Analytical Laboratory
Address 1104 Windfield Way
Address El Dorado Hills, CA 95762
Account #
Phone # (916) 673-1520

PO #: 49738

EAID# 193017

Data Deliverable (circle)

Excel NH EMD EQUIS MIEGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by:

Relinquished by: Chen Huan 3/19/19 1500 WMS
Date/Time: 03/20/19 1118 WMS
Received by: WMS 03/20/19 1118

Relinquished by: _____ Date/Time: _____ Received by: _____

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301 Phone: (603) 228-0525 1-800-287-0525 customerservice@easternanalytical.com
As a subcontract lab to EAL, you will defend, indemnify and hold Eastern Analytical, Inc., its officers, employees, and agents harmless from and against any and all liability, loss, expense or claims for injury or damages arising out of the performance against this chain of custody but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of you as a subcontract lab, your officers, agents or employees

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 1900495

 TAT 14 days

Samples Arrival:	Date/Time <u>03/20/19 11:18</u>	Initials: <u>WWS</u>	Location: <u>WR-2</u> Shelf/Rack: <u>N/A</u>
Logged In:	Date/Time <u>03/20/19 12:40</u>	Initials: <u>WWS</u>	Location: <u>WR-2</u> Shelf/Rack: <u>8-3, F-6</u>
Delivered By:	FedEx <u>UPS</u> On Trac GSO DHL Hand Delivered Other		
Preservation:	<u>Ice</u> Blue Ice Dry Ice None		
Temp °C: <u>0.1</u> (uncorrected)	Probe used: Y / <u>N</u>		Thermometer ID: <u>IR-4</u>
Temp °C: <u>0.0</u> (corrected)			

	YES	NO	NA	
Adequate Sample Volume Received?	✓			
Holding Time Acceptable?	✓			
Shipping Container(s) Intact?	✓			
Shipping Custody Seals Intact?			✓	
Shipping Documentation Present?	✓			
Airbill <u>✓</u> Trk # <u>1Z 946 599 01 9259 7910</u>	✓			
Sample Container Intact?	✓			
Sample Custody Seals Intact?			✓	
Chain of Custody / Sample Documentation Present?	✓			
COC Anomaly/Sample Acceptance Form completed?		✓	✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓	
Preservation Documented:	Na ₂ S ₂ O ₃ Trizma None	Yes	No	<u>NA</u>
Shipping Container	Vista <u>Client</u> Retain <u>Return</u> Dispose			

Comments:



Sample IDs	Date/Time Composites need start and stop dates/times	Matrix	Parameters and Sample Notes	# of containers
TM/HP Well 1	3/14/19 1047	aqueous Grab or Comp	AqToI/PCs9CmpdssSubVAL Circle preservative/s: HCL, HNO ₃ , H ₂ SO ₄ , NaOH, MECH, Na ₂ S ₂ O ₈ , <input checked="" type="checkbox"/> TCE	<input checked="" type="checkbox"/> 2
<input type="checkbox"/> Sampler confirms ID and parameters are accurate			Dissolved Sample Field Filtered <input type="checkbox"/>	
TM/HP Well 2	3/14/19 1055	aqueous Grab or Comp	AqToI/PCs9CmpdssSubVAL Circle preservative/s: HCL, HNO ₃ , H ₂ SO ₄ , NaOH, MECH, Na ₂ S ₂ O ₈ , <input checked="" type="checkbox"/> TCE	<input checked="" type="checkbox"/> 2
<input type="checkbox"/> Sampler confirms ID and parameters are accurate			Dissolved Sample Field Filtered <input type="checkbox"/>	
TM/HP Well 3	3/14/19 1105	aqueous Grab or Comp	AqToI/PCs9CmpdssSubVAL Circle preservative/s: HCL, HNO ₃ , H ₂ SO ₄ , NaOH, MECH, Na ₂ S ₂ O ₈ , <input checked="" type="checkbox"/> TCE	<input checked="" type="checkbox"/> 2
<input type="checkbox"/> Sampler confirms ID and parameters are accurate			Dissolved Sample Field Filtered <input type="checkbox"/>	

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAL Project ID
Project Name Tamworth LF PFAS Monitoring

State NH
Client (Pro Mgr) Jeff Sires

Customer HEB Engineers, Inc.
Address 2605 White Mountain Highway, PO
City North Conway NH 03860

Phone 356-6936 Fax 356-7715

Email: jsires@HEBEngineers.com

Direct 356-6936

Results Needed by: Preferred date _____
Notes: _____

Tamworth Mobile Home Park

Reporting Options
☒ HC ☐ NO FAX
☐ EDD PDF ☐ Partial FAX
☒ EDD email ☐ PDF Invoice
☒ PDF prelim, NO FAX ☐ EQUIS
☐ e-mail Login Confirmation

Samples Collected by: J. Sires 3/14/19 1400
Relinquished by: [Signature] Date/Time: 3/14/19 1400
Received by: [Signature]

Temp 3.6°C
Ice Y ☒ N ☐

QC deliverables
☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP
Relinquished by _____ Date/Time _____ Received by _____