2016 – 4th Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

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List of Acronyms and Abbreviations

% diff	percent difference
A/D	analog to digital converter
ARS	Air Resource Specialist, Inc.
ASTM	American Society for Testing and Materials
CASTNET	Clean Air Status and Trends Network
DAS	data acquisition system
DC	direct current
deg	degree
DVM	digital voltmeter
EEMS	Environmental, Engineering & Measurement Services, Inc.
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FSAD	Field Site Audit Database
GPS	geographical positioning system
lpm	liters per minute
MLM	Multilayer Model
m/s	meters per second
mv	milivolt
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
QAPP	Quality Assurance Project Plan
SOP	standard operating procedure
TEI	Thermo Environmental Instruments
USNO	United States Naval Observatory
V	volts
WRR	World Radiation Reference

1.0 CASTNET Quarterly Report

1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program developed under mandate of the 1990 Clean Air Act Amendments. Each site in the network measures acidic gases and particles and other forms of atmospheric pollution using a continuous collection filter aggregated over a one week period. Hourly averages of surface ozone concentrations and selected meteorological variables are also measured.

Site measurements are used to estimate deposition rates of the various pollutants with the objective of determining relationships between emissions, air quality, deposition, and ecological effects. In conjunction with other national monitoring networks, CASTNET data are used to determine the effectiveness of national emissions control programs and to assess temporal trends and spatial deposition patterns in atmospheric pollutants. CASTNET data are also used for long-range transport model evaluations and effects research.

CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and model-estimated deposition velocities. Currently, the National Oceanic and Atmospheric Administration's multilayer inferential model (NOAA-MLM) described by Meyers et al. [1998] is used to derive deposition velocity estimates.

As of January 2017, the network is comprised of 95 active rural sampling sites across the Untied States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Environment Canada, Bureau of Land Management (BLM) and several independent partners. AMEC Foster Wheeler (AMEC) is responsible for operating the EPA and Environment Canada sponsored sites, and Air Resource Specialist, Inc. (ARS) is responsible for operating the NPS and BLM sponsored sites.

1.2 Project Objectives

The objectives of this project are to establish an independent and unbiased program of performance and systems audits for all CASTNET sampling sites. Ongoing Quality Assurance (QA) programs are an essential part of any long-term monitoring network.

Performance audits verify that all evaluated variables are consistent with the accuracy goals as defined in the CASTNET Quality Assurance Project Plan (QAPP). The parameter specific accuracy goals are presented in Table 1. Only four EPA sponsored sites that are operated by AMEC continue to operate meteorological sensors. Those sites are BEL116, BVL30, CHE185,

and PAL190. Five new sites in WY sponsored by EPA and operated by the BLM/ARS also operate meteorological sensors and are BAS601, NEC602, BUF603, FOR604, and SHE604. The meteorological sensors at site BEL116 were audited during the station audit performed in fourth quarter 2016.

Some or all of the additional monitored variables, NOy, CO, and SO₂ have been added to the EPA sponsored sites BVL130, HWF187, PND165, PNF126, GRS420, MAC426, ROM206, and BEL116. Those variables were audited at the HWF187, BEL116, GRS420, MAC426 and PNF126 stations during fourth quarter 2016. All of the trace gas results for those audits were found to be within acceptance criteria. The preliminary reports of those results were delivered following the audits and are not included in this report.

Sensor	Parameter	Audit Challenge	Acceptance Criteria	
Precipitation	Response	10 manual tips	1 DAS count per tip	
Precipitation	recipitation Accuracy 2 introductions of amounts of wat		$\leq \pm 10.0\%$ of input amount	
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	\leq ±10.0% RH	
Solar Radiation	Accuracy	Compared to WRR traceable standard	$\leq \pm 10.0\%$ of daytime average	
Surface Wetness	Response	Distilled water spray mist	Positive response	
Surface Wetness	Sensitivity	1% decade resistance	N/A	
Temperature	emperature Accuracy Comparison to 3 NIST measured baths (~ 0° C, ambient, ~ full-scale)		$\leq \pm 0.5^{\circ} \mathrm{C}$	
Temperature Difference	Accuracy	Comparison to station temperature sensor	$\leq \pm 0.50^{\circ} \mathrm{C}$	
Shelter Temperature	Accuracy	Comparison to station temperature sensor	$\leq \pm 2.0^{\circ} \mathrm{C}$	
Wind DirectionOrientation AccuracyParallel to alignment rod/crossarm, or sighted to distant point		$\leq \pm 5^{\circ}$ from degrees true		
Wind Direction			≤±5° mean absolute error	
WindResponseStarting torque tested withDirectionThresholdtorque gauge		<10 g-cm Climatronics; <20 g-cm R.M. Young		

 Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Sensor Parameter Audit Challenge		Acceptance Criteria
Wind Speed	Accuracy	Shaft rotational speed generated and measured with certified synchronous motor	$\leq \pm 0.5$ mps below 5.0 mps input; $\leq \pm 5.0\%$ of input at or above 5.0 mps
Wind Speed	Starting Threshold	Starting torque tested with torque gauge	< 0.5 g-cm
Mass Flow Controller	Flow Rate	Comparison with Primary Standard	$\leq \pm 5.0\%$ of designated rate
Ozone	Slope	Linear regression of multi-	$0.9000 \le m \le 1.1000$
Ozone	Intercept	point test gas concentration as measured with a certified	$-5.0 \text{ ppb} \le b \le 5.0 \text{ ppb}$
Ozone	Correlation Coefficient	transfer standard	$0.9950 \le r$
DAS	Accuracy	Comparison with certified standard	$\leq \pm 0.003 \text{ VDC}$

Performance audits are conducted using standards that are traceable to the National Institute of Standards and Technology (NIST), or another authoritative organization, and certified as current.

Site systems audits are intended to provide a qualitative appraisal of the total measurement system. Site planning, organization, and operation are evaluated to ensure that good Quality Assurance/Quality Control (QA/QC) practices are being applied. At a minimum the following audit issues were addressed at each site systems audit:

- Site locations and configurations match those provided in the CASTNET QAPP.
- Meteorological instruments are in good physical and operational condition and are sited to meet EPA ambient monitoring guidelines (EPA-600/4-82-060).
- Sites are accessible, orderly, and if applicable, compliant with OSHA safety standards.
- Sampling lines are free of leaks, kinks, visible contamination, weathering, and moisture.
- Site shelters provide adequate temperature control.
- All ambient air quality instruments are functional, being operated in the appropriate range, and the zero air supply desiccant is unsaturated.
- All instruments are in current calibration.
- Site documentation (maintenance schedules, on-site SOPs, etc.) is current and log book records are complete.
- All maintenance and on-site SOPs are performed on schedule.
- Corrective actions are documented and appropriate for required maintenance/repair activity.

• Site operators demonstrate an adequate knowledge and ability to perform required site activities, including documentation and maintenance activities.

1.3 CASTNET Sites Visited Fourth Quarter 2016

This report consists of the systems and performance and other audit results from the CASTNET sites visited during the fourth quarter (October through December) of 2016. The locations and dates of the site visits for complete audits are presented in Table 2.

<u>Side ID</u>	<u>Audit Type</u>	<u>Sponsor</u>	<u>Site Visit Date</u>	Station Name	
HWF187	Without met	EPA	10/1/2016	Huntington Wildlife Forest	
ACA416	Without met	NPS / Maine	10/05/2016	Acadia National Park	
HOW191	Without met	EPA	10/10/2016	Howland Ameriflux	
ASH135	Without met	EPA	10/11/2016	Ashland	
CAT175	Flow	EPA	10/14/2016	Claryville	
CTH110	Without met	EPA	10/15/2016	Connecticut Hill	
ARE128	Without met	EPA	10/17/2016	Arendtsville	
NPT006	Without met	EPA	10/20/2016	Nez Perce Tribe	
DIN431	Without met	NPS	10/25/2016	Dinosaur NM	
BEL116	With met	EPA	11/22/2016	Beltsville	
PNF126	Without met	EPA	11/26/2016	Cranberry	

 Table 2. Site Audit Visits

In addition to the sites listed in Table 2 that were visited for complete audits, the sites listed in Table 3 were visited to conduct Through-The-Probe (TTP) pollutant Performance Evaluations (PE).

<u>Side ID</u>	<u>PE Audit Type</u>	<u>Sponsor</u>	<u>Site Visit Date</u>	Station Name
HWF187	NOy	EPA	10/2/2016	Huntington Wildlife Forest
VPI120	Ozone	EPA	10/17/2016	Horton Station
CND125	Ozone	EPA	10/17/2016	Candor
PAR107	Ozone	EPA	10/18/2016	Parsons
CDR119	Ozone	EPA	10/18/2016	Cedar Creek
ARE128	Ozone	EPA	10/19/2016	Arendtsville
PED108	Ozone	EPA	10/21/2016	Prince Edward
SHN418	Ozone	NPS	10/21/2016	Shenandoah NP - Big Meadows
GRS420	Ozone	NPS	10/27/2016	Great Smoky NP - Look Rock
GRS420	NOy	NPS	10/27/2016	Great Smoky NP - Look Rock
WSP144	Ozone	EPA	11/7/2016	Washington Crossing State Park
BWR139	Ozone	EPA	11/8/2016	Blackwater NWR
YEL408	Ozone	NPS	11/8/2016	Yellowstone NP
BFT142	Ozone	EPA	11/10/2016	Beaufort
BEL116	SO_2	EPA	11/14/2016	Beltsville
PNF126	NOy	EPA	11/26/2016	Cranberry
MAC426	NOy	NPS	11/28/2016	Mammoth Cave NP

 Table 3.
 TTP Pollutant PE Visits

1.4 Audit Results

The observations and results of the systems and performance audits are included in Appendix A, *CASTNET Audit Report Forms* by site, arranged by audit date.

Photographs of site conditions are included within each systems report where necessary.

Copies of the spot reports that were sent immediately following the audit of each site are included as Appendix B, *CASTNET Site Spot Report Forms*.

The Ozone PE results and observations are included in Appendix C, CASTNET Ozone Performance Evaluation Forms.

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 250 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 6 sites. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from more than 120 stations. The MDN began operation in 1996 and includes sites throughout the US and Canada. The Atmospheric Mercury Network (AMNet) and the Ammonia Monitoring Network (AMoN) measure ambient concentrations of mercury and ammonia, respectively.

The NADP and other long-term monitoring networks provide critical information to the EPA regarding evaluating the effectiveness of emission reduction control programs from the power industry.

The NADP Program Office operates and administers the three precipitation chemistry networks (NTN, MDN and AIRMON), two atmospheric concentration networks (AMNet and AMON), two analytical laboratories (the Central Analytical Laboratory (CAL) located at the University of Illinois/Illinois State Water Survey and the Mercury Analytical Laboratory (HAL) located at Frontier Global Sciences), and the network equipment depot (NED).

2.2 **Project Objectives**

The objective of this project is to perform independent and unbiased evaluations of the sites along with its operations. These evaluations provide quality assurance pertaining to siting, sample collection and handling, equipment operation and maintenance, record keeping and field laboratory procedures.

More specifically, the surveys determine and report findings based on an established methodology consisting of completing a site questionnaire, testing the equipment and documenting with photographs the location, siting criteria, existing equipment, and any issues encountered that require such documentation.

2.3 Sites Visited Fourth Quarter 2016

This report covers the results from the NADP sites surveyed during the fourth quarter (October through December) of 2016. The station names and dates of the audits are presented in Table 4.

<u>Side ID</u>	<u>Network</u>	Visit Date	Station Name	
AK01	NTN	7/11/2016	Poker Creek	
AK03	NTN	7/7/2016	Denali National Park-Mt. McKinley	
AK97	NTN	7/5/2016	Katmai National Park-King Salmon	
CO93	NTN	7/26/2016	Dry Lake	
IL46	NTN/AMoN	7/21/2016	Alhambra	
IL73	AMoN	7/20/2016	Stockton	
IN20	NTN	7/19/2016	Roush Lake	
IN22	NTN	7/22/2016	Southwest Purdue Agriculture Center	
IN41	NTN	7/19/2016	Agronomy Center for Research and Extension	
ID02	NTN	8/5/2016	Priest River Experimental Forest	
ID03	NTN/AMoN	8/2/2016	Craters of the Moon National Monument	
ID11	NTN	8/3/2016	Reynolds Creek	
MI52	MDN/NTN/AMoN	8/15/2016	Ann Arbor	
MI99	NTN	8/22/2016	Chassell	
MN23	MDN/NTN	8/30/2016	Camp Ripley	
MN28	NTN	8/31/2016	Grindstone Lake	
MN32	NTN	8/29/2016	Voyageurs National Park-Sullivan Bay	
ND00	NTN	8/23/2016	Theodore Roosevelt National Park-Painted Canyon	
OR09	NTN	8/11/2016	Silver Lake Ranger Station	
OR10	NTN	8/9/2016	H. J. Andrews Experimental Forest	

 Table 4. Sites Surveyed – Fourth Quarter 2016

<u>Side ID</u>	<u>Network</u>	<u>Visit Date</u>	Station Name	
GA40	MDN/AMoN	10/25/2016	Yorkville	
GA99	NTN	10/25/2016	Chula	
ME04	MDN/NTN	10/4/2016	Carrabassett Valley	
NY67	AMoN	10/15/2016	Connecticut Hill	
PA00	MDN/NTN	10/17/2016	Arendtsville	
SC05	MDN/NTN/AMoN	10/27/2016	Cape Romain National Wildlife Refuge	
SC19	MDN	10/26/2016	Congaree Swamp	
TN12	MDN	10/27/2016	Great Smoky Mountains National Park-Clingmans Dome	
UT97	MDN/AMoN	10/24/2016	Salt Lake City	
GA09	MDN/NTN	11/05/2016	Okefenokee National Wildlife Refuge	
GA33	MDN/NTN	11/29/2016	Sapelo Island	
MD00	MDN	11/15/2016	Smithsonian Environmental Research Center	
NC06	NTN/AMoN	11/10/2016	Beaufort	
NC29	NTN	11/09/2016	Hofmann Forest	
NC35	NTN	11/09/2016	Clinton Crops Research Station	
NC36	NTN	11/08/2016	Jordan Creek	
SC06	NTN	11/21/2016	Santee National Wildlife Refuge	
WY08	MDN/NTN	11/08/2016	Yellowstone National Park-Tower Falls	

2.4 Survey Results

Site survey results are entered into a relational database. The database in turn generates Site Spot Reports which are distributed among the interested parties as soon as all the site data has been entered. Database tables with all the data collected and reviewed are then sent to the NADP Program Office and to the U.S. EPA Project Officers. Other items gathered during the surveys (i.e., photographs, Belfort charts, etc.) are uploaded to EEMS' server where the NADP PO and the U.S. EPA POs can access them and download them as needed by login into the server site.

Given the volume of data generated, and the fact that data is distributed and/or is available through EEMS' server, no survey results are included in this report.

APPENDIX A

CASTNET Audit Report Forms

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
HW	HWF187-Eric Hebert-10/01/2016								
1	10/1/2016	Computer	Dell	07034	Inspiron 15	Unknown			
2	10/1/2016	DAS	Campbell	000356	CR3000	2134			
3	10/1/2016	Elevation	Elevation	None	1	None			
4	10/1/2016	Filter pack flow pump	Thomas	02358	illegible	illegible			
5	10/1/2016	Flow Rate	Apex	000592	AXMC105LPMDPCV	illegible			
6	10/1/2016	Infrastructure	Infrastructure	none	none	none			
7	10/1/2016	Modem	Raven	06807	H4223-C	0934393748			
8	10/1/2016	Ozone	ThermoElectron Inc	000700	49i A1NAA	1030244793			
9	10/1/2016	Ozone Standard	ThermoElectron Inc	000445	49i A3NAA	CM08200021			
10	10/1/2016	Sample Tower	Aluma Tower	illegible	В	AT-5107-E-4-12			
11	10/1/2016	Shelter Temperature	Campbell	none	107-L	unknown			
12	10/1/2016	Siting Criteria	Siting Criteria	None	1	None			
13	10/1/2016	Temperature	RM Young	06401	41342VO	14034			
14	10/1/2016	Zero air pump	Werther International	06931	C 70/4	000836212			
15	10/1/2016	Zero air pump	Teledyne	000772	701H	608			

DAS Data Form

DAS Time Max Error: 0.33

Mfg	Serial Nu	ımber Site		Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2134	HW	/F187	Eric Hebert	10/01/2016	DAS	Primary
Das Date:	10/1 /2016	Audit Date	10/1 /2016	Mfg	Datel	Parameter	DAS
Das Time:	10:00:20	Audit Time	10:00:00	Serial Number	4000392	The Design	Source generator (D
Das Day:	275	Audit Day	275	Serial Number	4000392	Tier Desc.	Source generator (D
Low Channel	l:	High Channe	el:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.0000	0.0001	0.000	0 0.0001				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	D Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input D	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000)	V	0.0000	
7	0.1000	0.1000	0.0999) V	V	-0.0001	
7	0.3000	0.3000	0.3000) V	V	0.0000	
7	0.5000	0.5000	0.5000) V	V	0.0000	
7	0.7000	0.7000	0.7000) V	V	0.0000	
7	0.9000	0.9000	0.9000		V	0.0000	
7	1.0000	1.0000	1.0000) V	V	0.0000	

Flow Data Form

Mfg	Serial Nu	mber Ta	Site	Тес	Technician		Date Paran	neter	Owner ID	
Арех	illegible		HWF187	Eri	Eric Hebert		6 Flow F	Rate	000592	
					MfgBSerial Number1Tfer ID0			Parameter Flo		
					Slope	1.	00309 Int	ercept	-0.00231	
					Cert Date	4/2	1/2016 Co	rrCoff	1.00000	
DAS 1: A Avg % Diff: 1.12%	A Max % Di 1.35%	DAS 2: A Avg %	Dif A Max	« % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale		01 98 1.5		
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	PctDifference	
primary	pump off	0.000	0.000	0.01	0.000	0.00	l/m	l/m		
primary	leak check	0.000	0.000	0.02	0.000	0.01	l/m	l/m		
primary	test pt 1	1.483	1.480	1.52	0.000	1.50	l/m	l/m	1.35%	
primary	test pt 2	1.484	1.480	1.52	0.000	1.50	l/m	l/m	1.35%	
primary	test pt 3	1.490	1.490	1.52	0.000	1.50	l/m	l/m	0.67%	
Sensor Comp	onent Leak Te	st		Conditio	n	Statu	Status pass			
Sensor Comp	onent Tubing	Condition		Conditio	n Good		Statu	Status pass		
Sensor Comp	onent Filter Po	sition		Conditio	n Good		Statu	s pass		
Sensor Comp	onent Rotome	ter Conditic	on	Conditio	Clean and dry		Statu	Status pass		
Sensor Comp	onent Moisture	e Present		Conditio	n See comments	3	Statu	s pass		
Sensor Comp	onent Filter Di	stance		Conditio	n 7.0 cm		Statu	Status pass		
Sensor Comp	onent Filter De	pth		Conditio	n 2.5 cm		Statu	Status pass		
Sensor Comp	onent Filter Az	imuth		Conditio	n 225 deg		Statu	Status pass		
Sensor Comp	onent System	Memo		Conditio	n		Statu	s pass		

Ozone Data Form

Mfg S	erial Number Ta	Site	Tec	hnician		Site Visit I	Date Param	eter Owner ID
ThermoElectron Inc 1	1030244793	HWF187	Eri	c Hebert		10/01/201	6 Ozone	000700
Intercept -0.2	98859Slope:21053Intercept99999CorrCoff	0.00000)	Mfg Serial N Tfer ID	umber	ThermoEle 051711216 01113		arameter ozone
DAS 1: A Avg % Diff: A Ma 1.5%	DAS 2: x % Di A Avg % 1.8%	Dif A Max	% Di	Slope Cert Da	te		00500 Inte 8/2016 Cor	rcept -0.28841 rCoff 1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer (Corr	Si	te	Site Unit	PctDifference
primary	1	0.21	0.4		0.			
primary	2	27.38	27.5	53	27	ĺ.		-1.82%
primary	3	49.77	49.8		49	.16 pp	b	-1.29%
primary	4	74.95	74.8		74	11		-1.12%
primary	5	104.07	103.		102	2.20 pp	b	-1.57%
Sensor Component	Sample Train		Conditio	n Good			Status	pass
Sensor Component	22.5 degree rule		Conditio	n			Status	pass
Sensor Component	Inlet Filter Conditio	n	Conditio	n Clean			Status	pass
Sensor Component	Battery Backup		Conditio	n N/A			Status	pass
Sensor Component	Offset		Conditio	n 0.10			Status	pass
Sensor Component	Span		Conditio	n 1.011			Status	pass
Sensor Component	Zero Voltage		Conditio	tion N/A			Status	pass
Sensor Component	Fullscale Voltage		Conditio	dition N/A			Status	pass
Sensor Component	Cell A Freq.		Conditio	ion 93.7 kHz St			Status	pass
Sensor Component	Cell A Noise		Conditio	ion 0.6 ppb			Status	pass
Sensor Component	Cell A Flow		Conditio	n 1.38 lj	om		Status	pass
Sensor Component	Cell A Pressure		Conditio	n 707.1	mmHg		Status	pass
Sensor Component	Cell A Tmp.		Conditio	n 34.3 (;		Status	pass
Sensor Component	Cell B Freq.		Conditio	n 89.8 k	Hz		Status	pass
Sensor Component	Cell B Noise	Conditio	n 0.6 pp	b		Status	pass	
Sensor Component	Cell B Flow	Conditio	n 0.71 l	om		Status	pass	
Sensor Component	Cell B Pressure	Conditio	n 706.5	mmHg		Status	pass	
Sensor Component	Cell B Tmp.	Conditio				Status	pass	
Sensor Component	Line Loss		Conditio	n Not te	sted		Status	pass
Sensor Component	System Memo		Conditio	n			Status	pass

Temperature Data Form

Mfg	Serial Number	Га Site		Technician		Site V	isit Date	Param	eter	Owner ID	
RM Young	14034	HWF187		Eric Hebert		10/01	1/2016	Temper	ature	06401	
				Mf	g	Extec	h	Pa	arameter Te	emperature	
				Ser	rial Number	H232	679	Tf	er Desc. R	ſD	
				Tfe	er ID	01228	3				
DAS 1:	DAS	2:		Slo	ре		1.0076	0 Inte	rcept	-0.05710	С
Abs Avg Err A			Max Er	Cert Date		2/28/2016 Corr		rCoff 1.00000		C	
0.26	0.33										
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Ten	np Low Range	0.01	0.07	7	0.000		0.3	3	C	0.27	
primary Ten	np Mid Range	30.96	30.7	8	0.000		30.	6	С	-0.17	
primary Ten	np High Range	46.17	45.8	8	0.000		45.	6	С	-0.33	
Sensor Compon	ent Shield		Cond	dition Clean				Status	pass		
Sensor Component Blower			Cond	Condition N/A				Status	pass		
Sensor Component Blower Status Switch				Condition N/A				Status	s pass		
Sensor Compon	ent System Memo		Cond	Condition Status pass							

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	unknown	HWF187	Eric Hebert	10/01/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	elter Temperatur
Abs Avg ErrAb0.46	os Max Er Abs Avg 0.74	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTI)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.93	23.81	0.000	23.6	С	-0.17
primary	Temp Mid Range	21.96	21.85	0.000	22.6	С	0.74
Sensor Con	nponent System Memo	1	Condition	Status pass			

Infrastructure Data For

Site ID	HWF187	Technician Eric H	ebert Site Visit Date 10/01/2016
Shelter 1	Make	Shelter Model	Shelter Size
ESF		none	1630 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID HWF187	Technician Eric Hebert	Site Visit Date 10/0	1/2016						
Site Sponsor (agency)	EPA	USGS Map	Newcomb						
Operating Group	SUNY/ESF	Map Scale							
AQS #	36-031-9991	Map Date							
Meteorological Type	R.M. Young								
Air Pollutant Analyzer	Ozone, Hg	QAPP Latitude	43.9732						
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-74.2232						
Land Use	woodland - mixed		502						
		~							
Terrain	complex	QAPP Declination	14.5						
Conforms to MLM	No	QAPP Declination Date	6/17/2004						
Site Telephone	(518) 582-4800	Audit Latitude	43.97304						
Site Address 1	Adirondack Ecological Center	Audit Longitude	-74.223317						
Site Address 2		Audit Elevation	497						
County	Essex	Audit Declination	-14						
City, State	Newcomb, NY	Present							
Zip Code	12852	Fire Extinguisher 🔽	new in 2015						
Time Zone	Eastern	First Aid Kit							
Primary Operator		Safety Glasses							
Primary Op. Phone #		Safety Hard Hat							
Primary Op. E-mail		Climbing Belt							
Backup Operator		Security Fence							
Backup Op. Phone #		Secure Shelter							
Backup Op. E-mail		Stable Entry Step 🔽							
Shelter Working Room ✓	Make ESF Mo	odel none	Shelter Size 1630 cuft						
	Notes The shelter is in good condition).							
	Notes								
Driving Directions From I-87 take exit 29 west to Newcomb. Continue through Newcomb (about 6 miles). Just west of town, turn right (north) at the Adirondack Ecological Center. Continue past the building on the dirt road to the site.									

Field Systems Data Form

HWF187

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/01/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		\checkmark
Tree line	50 m	20 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

Fi	eld Sy	stems Data F	orm		F-02058-1500-S3-rev002				
Site	e ID	HWF187	Technician E	ic Hebert	Site Visit Date 10/01/2016				
1		d speed and direction fluenced by obstructi		s to avoid 🗹	N/A				
2	(i.e. win horizon	d sensors mounted so d sensors should be n tally extended boom > nto the prevailing wind	ounted atop the to 2x the max diame	ower or on a	N/A				
3	Are the	tower and sensors plu	ımb?		N/A				
4		temperature shields p adiated heat sources s	· · · · · · · · · · · · · · · · · · ·						
5	conditio surface	perature and RH sen ons? (i.e. ground belov and not steeply sloped g water should be avo	v sensors should be I. Ridges, hollows,	e natural					
6	Is the so	blar radiation sensor p	lumb?		N/A				
7	Is it site light?	d to avoid shading, or	any artificial or r	eflected 🗸	N/A				
8	Is the ra	ain gauge plumb?		\checkmark	N/A				
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?				N/A				
10	Is the su facing n	urface wetness sensor orth?	sited with the grid	surface 🗸	N/A				
11	Is it inc	lined approximately 3	30 degrees?		N/A				

natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site	ID	HWF187	Technician	Eric Hebert		Site Visit Date 10/01/2016
1		e meterological sensor , and well maintained		intact, in good		Temperature only
2	2 Are all the meteorological sensors operational online, and reporting data?					Temperature only
3	Are the shields for the temperature and RH sensors clean?					
4	Are the a	spirated motors worl	king?			N/A
5	Is the solar radiation sensor's lens clean and free of scratches?			ree of	✓	N/A
6	Is the sur	face wetness sensor g	rid clean and u	ndamaged?	✓	N/A
7		ensor signal and pow , and well maintained		, in good		
8		ensor signal and pow elements and well ma		tions protected		

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002				
Site	e ID	HWF187	Technician	Eric Hebert		Site Visit Date 10/01/2016				
	Siting C	criteria: Are the pollut	ant analyzers a	nd deposition eq	uipr	nent sited in accordance with 40 CFR 58, Appendix E				
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?									
2	Are the sample inlets 3 - 15 meters above the ground?									
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?									
	<u>Pollutar</u>	nt analyzers and deposit	ition equipmen	t operations and	mai	intenance				
1		analyzers and equipme on and well maintained		in good	✓					
2		analyzers and monitor ng data?	rs operational, o	on-line, and						
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters				
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters				
5		ine filters used in the o location)	zone sample lin	e? (if yes		At inlet only				
6	Are san obstruc	ple lines clean, free of tions?	kinks, moisture	e, and	✓	Moisture in tubing only				
7	Is the ze	ero air supply desiccan	t unsaturated?		✓					
8	Are the	re moisture traps in the	e sample lines?		✓	Flow line only				
9	Is there clean?	a rotometer in the dry	deposition filte	er line, and is it		Clean and dry				

Fi	eld Sy	stems Data Fo	orm				F-0 2	2058-15	00-S6-rev002
Site	e ID	HWF187	Technician	Eric Hebert		Site Visit Date	e 10/01/201	6	
DAS, sensor translators, and peripheral equipment operations		ns ai	<u>nd maintenance</u>						
1		DAS instruments appeantained?	ar to be in good	l condition and	✓				
2		he components of the l backup, etc)	DAS operation	al? (printers,	✓				
3		nalyzer and sensor sig g protection circuitry?		through	✓	Met sensors only			
4		signal connections pro intained?	tected from the	e weather and	✓				
5	Are the	signal leads connected	to the correct	DAS channel?	✓				
6	Are the grounde	DAS, sensor translator d?	rs, and shelter	properly	✓				
7	Does the	e instrument shelter ha	we a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	erature control	lled?					
9	Is the m	et tower stable and gro	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower c	omments?				Met Tower remove	ed		1

Fiel	d Systems Data	a Foi	rm			F-02	058-	1500-S7-rev002
Site II	D HWF187		Techr	<mark>iician</mark> Eric ⊢	lebert Site Visit Date 1	0/01/2016		
Doc	cumentation							
Doe	es the site have the requi	ired in	strume	nt and equip	<u>ment manuals?</u>			
	speed sensor direction sensor	Yes	No	N/A ✓ ✓	Data logger Data logger	Yes	No ✓	N/A □ ✓
	erature sensor				Strip chart recorder			
-	ve humidity sensor				Computer			
	radiation sensor				Modem			
Surfac	e wetness sensor				Printer			
Wind	sensor translator			\checkmark	Zero air pump		\checkmark	
Tempe	erature translator			\checkmark	Filter flow pump		\checkmark	
Humic	dity sensor translator			\checkmark	Surge protector			
Solar i	radiation translator			\checkmark	UPS		\checkmark	
Tippin	ng bucket rain gauge			\checkmark	Lightning protection device		\checkmark	
Ozone	analyzer	\checkmark			Shelter heater			
Filter	pack flow controller	\checkmark			Shelter air conditioner		\checkmark	
Filter	pack MFC power suppl	ly 🗌		\checkmark				
De	oes the site have the req	uired a	nd mos	st recent QC	documents and report forms?			
		Pres	ent			Curre	nt	
Statio	n Log	[\checkmark		
SSRF		[
Site O	ps Manual	[✓ (Oct 2001				
HASP		[lov 2009				
Field (Ops Manual	[
Calibr	ation Reports	[✓			\checkmark		
Ozone	z/s/p Control Charts	[
Prever	ntive maintenance sched	lul [
1 Is	s the station log properly	y comp	leted d	uring every	site visit? 🔽			
	re the Site Status Reporturent?	rt Forn	ns beiną	g completed	and 🔽			
3 A	re the chain-of-custody	forms	proper	ly used to do	ocument 🗸			

4 Are ozone z/s/p control charts properly completed and current?

sample transfer to and from lab?

Control charts not used

Field Systems Data Form

HWF187 Technician Eric Hebert Site Visit Date 10/01/2016 Site ID Site operation procedures Trained during site installation by ESE employee Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check I	Performed
------------	-----------

Frequency

Multipoint Calibrations	\checkmark	Semiannually	
Visual Inspections	\checkmark	Weekly	
Translator Zero/Span Tests (climatronics)		N/A	
Manual Rain Gauge Test	\checkmark	N/A	
Confirm Reasonableness of Current Values	\checkmark	Weekly	
Test Surface Wetness Response	\checkmark	N/A	

Are regular operational QA/QC checks performed on the ozone analyzer?

OC	Check	Performed
\mathbf{v}	Chiech	I UIIUI muu

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

Frequency	•
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
N/A	
Weekly	
Weekly	

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

3	Are the automatic and manual z/s/p checks monitored and
	reported? If yes, how?

	Unknown	
✓		
✓	SSRF, call-in	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Г

The ozone inlet filter is replaced and the sample train is leak tested every other week.

Compliant

Compliant

F-02058-1500-S8-rev002

Fi	Field Systems Data Form						F-02058	-1500-S9-rev002
Sit	e ID	HWF187	Technicia	n Eric Hebert		Site Visit Date	10/01/2016	
	<u>Site ope</u>	ration procedures						
1	Is the fi	lter pack being changed	every Tues	day as scheduled	?⊻	Filter changed mori	nings	
2	Are the correctl	Site Status Report Forn y?	ns being cor	npleted and filed				
3	Are dat schedul	a downloads and backup ed?	os being per	formed as		No longer required		
4	Are gen	eral observations being	made and r	ecorded? How?	✓	SSRF		
5	Are site fashion	supplies on-hand and ro?	eplenished i	n a timely	✓			
6	Are san	nple flow rates recorded	? How?		✓	SSRF, call-in		
7	Are san fashion	nples sent to the lab on a ?	regular scł	nedule in a timely				
8		ers protected from conta pping? How?	mination d	uring handling	✓	Clean gloves on and	d off	
9		site conditions reported ons manager or staff?	regularly t	o the field				
QC	Check P	erformed	Fr	requency			Compliant	
I	Multi-poi	nt MFC Calibrations	✓ Se	miannually			\checkmark	
J	Flow Syst	em Leak Checks	V W	eekly			\checkmark	
		k Inspection						
Flow Rate Setting Checks				\checkmark				
٦	Visual Ch	eck of Flow Rate Rotom	eter 🗹 😡	eekly			\checkmark	
]	In-line Fil	ter Inspection/Replacem	ent 🗹 Se	miannually			\checkmark	
5	Sample L	ine Check for Dirt/Wate	r 🗹 We	eekly			\checkmark	
D	do onv	ditional ambanation (n	hotograph	on chotch if poor		a) nogonding conditi	ong listed above	an any other features

Field Systems Data Form

HWF187

F-02058-1500-S10-rev002

Technician Eric Hebert

Site Visit Date 10/01/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07034
DAS	Campbell	CR3000	2134	000356
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	02358
Flow Rate	Арех	AXMC105LPMDPC	illegible	000592
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4223-C	0934393748	06807
Ozone	ThermoElectron Inc	49i A1NAA	1030244793	000700
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200021	000445
Sample Tower	Aluma Tower	В	AT-5107-E-4-12	illegible
Shelter Temperature	Campbell	107-L	unknown	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14034	06401
Zero air pump	Teledyne	701H	608	000772
Zero air pump	Werther International	C 70/4	000836212	06931

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ACA	416-Eric H	lebert-10/05/2016				
1	10/5/2016	Computer	Hewlett Packard	none	8460p	CNU20941M6
2	10/5/2016	DAS	Environmental Sys Corp	ACADIA1	8832	unknown2
3	10/5/2016	Elevation	Elevation	None	1	None
4	10/5/2016	Filter pack flow pump	Thomas	none	107CAB11	10950000040
5	10/5/2016	Flow Rate	Tylan	none	FC260	AW02213003
6	10/5/2016	Infrastructure	Infrastructure	none	none	none
7	10/5/2016	Mainframe	Climatronics	01342	100081	1288
8	10/5/2016	Met tower	Climatronics	none	unknown	illegible
9	10/5/2016	MFC power supply	Tylan	none	RO-32	none
10	10/5/2016	Modem	US Robotics	none	33.6 fax modem	unknown
11	10/5/2016	Ozone	ThermoElectron Inc	90744	49C	49C-74536-376
12	10/5/2016	Ozone Standard	ThermoElectron Inc	none	49CPS	49CPS-70752-366
13	10/5/2016	Printer	Hewlett Packard	none	842C	unknown
14	10/5/2016	Relative Humidity	Vaisala	none	missing	missing
15	10/5/2016	Sample Tower	Aluma Tower	none	В	AT-71103-7I-3
16	10/5/2016	Shelter Temperature	unknown	none	none	none
17	10/5/2016	Shield (2 meter)	Climatronics	none	100325	illegible
18	10/5/2016	Siting Criteria	Siting Criteria	None	1	None
19	10/5/2016	Solar Radiation	Licor	none	LI-200	PY16746
20	10/5/2016	Solar Radiation Translator	Climatronics	none	100144	309
21	10/5/2016	Temperature Translator	Climatronics	03630	100088-2	401
22	10/5/2016	Temperature2meter	Climatronics	none	100093	missing
23	10/5/2016	Zero air pump	ThermoElectron Inc	none	111	111-30215-237

DAS Time Max Error:

1.00000

12/23/2015

Intercept

CorrCoff

0

0.00000

1.00000

DAS Data Form

Mfg	Serial Number Site T		Technician	Site Visit Date	Parameter	Use Desc.	
Environmental Sys	unknown2	ACA416	Eric Hebert	10/05/2016	DAS	Primary	
Das Time: 12 Das Day: Low Channel:	5/2016 Audit D 1:00:00 Audit T 279 Audit D High Ch High Ch ax Diff: Avg Diff 0.0000 0.	ime 14:00:35 ay 279 annel:	Mfg Serial Number Tfer ID	Datel 4000392 01321	Parameter Tfer Desc.	DAS Source generator (D	
			Mfg Serial Number Tfer ID	Fluke 86590148 01310	Parameter Tfer Desc.		

Slope

Cert Date

Flow Data Form

Mfg	Serial	Number Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	ter Owner ID		
Tylan	AW02	02213003 ACA416		Eri	ic Hebert	10/05/2016	6 Flow R	ate	none		
Mfg	Tylan	an			Mfg	BIOS		arameter Flo			
SN/Owner ID	none	e none			Serial Number	148613	T	fer Desc. BIOS 220-H			
Parameter	MFC powe	r supply			Tfer ID	01421					
					Slope	1.	00309 Intercept		-0.00231		
					Cert Date	4/21	1/2016 Co	rrCoff	1.00000		
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.0				
A Avg % Diff:	A Max %	Di A Avg %	6Dif A Max	x % Di	% Di Cal Factor Full Scale			15.05			
8.00%	8.0	0%			Rotometer R	eading:	1.6	65			
Desc.	Test typ	e Input l/r	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall PctDifference			
primary	pump off	0.000	0.000	-0.04	0.0000	0.03	l/m	l/m			
primary	leak check	0.000	0.000	-0.04	0.0000	0.03	l/m	l/m			
primary	test pt 1	1.504	1.500	0.89	0.0000	1.38	l/m	l/m	-8.00%		
primary	test pt 2	1.503	1.500	0.89	0.0000	1.38	l/m	l/m	-8.00%		
primary	test pt 3	1.500	1.500	0.89	0.0000	1.38	l/m	l/m	-8.00%		
Sensor Component Leak Test				Conditio	n	Status	pass				
Sensor Comp	onent Tubi	ng Condition		Conditio	n Good		Status	pass			
Sensor Comp	onent Filte	Position		Conditio	n Fair		Status	pass			
Sensor Component Rotometer Condition			Conditio	n Clean and dry		Status	pass				
Sensor Component Moisture Present			Conditio	n See comments	6	Status	pass				
Sensor Component Filter Distance			Conditio	n 5.5 cm		Status	Status pass				
Sensor Component Filter Depth			Conditio	n 0.0 cm		Status	Status pass				
Sensor Component Filter Azimuth				n 90 deg		Status	Status pass				
Sensor Component System Memo				Conditio	n See comments	6	Status	Status pass			

Ozone Data Form

Mfg	Se	Serial Number Ta		Site T		echnician		Site Visit Date		Parame	eter	er Owner ID	
ThermoElectron Inc 49C-74536-376		ACA416 E		ric Hebert		10/05/2016		Ozone		90744			
Slope: Intercept CorrCoff	0.3	.02779 Slope:		0.00000		Mfg Serial Number		ThermoElectron In 0517112167				ozone Ozone primary stan	
DAS 1: A Avg % D 3.2	Diff: A Ma 2%	x % D 3.6°		Dif A Max	% Di	Tfer ID Slope Cert Da		L	1.0050 /28/201		•	-0.28841 1.00000	
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site	e Unit	Pct	Difference	
prin	nary		1	-0.22	0.0)6	0.	53 ppb					
prin	nary		2	28.13	28.	27	29	.28 1	ppb			3.57%	
	nary		3	51.39					ppb			3.19%	
-	nary		4	77.23	77.							2.84%	
	nary		5	104.88	104			3.10 j	ppb			3.31%	
Sensor C	omponent	Samp	le Train		Conditio	tion Good				Status	pass		
Sensor Co	omponent	22.5 c	legree rule		Conditio	on				Status	pass		
Sensor Co	omponent	Inlet F	ilter Conditio	n	Conditio	on Clean				Status	pass		
Sensor Co	omponent	Battery Backup			Condition N/A					Status	IS pass		
Sensor Co	omponent	t Offset			Condition 0.2					Status	s pass		
Sensor Co	omponent	t Span			Conditio	Condition 1.086				Status	pass		
Sensor C	omponent	t Zero Voltage			Condition 0.0004					Status	pass		
Sensor C	omponent	t Fullscale Voltage			Condition 9.9994					Status	pass		
Sensor C	omponent	Cell A Freq.			Conditio	Condition 78.3 kHz				Status	pass		
Sensor C	omponent	Cell A Noise			Conditio	Condition 0.6 ppb				Status	s pass		
Sensor C	omponent	Cell A	Flow		Conditio	Condition 0.73 lpm				Status	s pass		
Sensor C	omponent	Cell A	Pressure		Conditio	Condition 759.4 mmHg				Status	s pass		
Sensor Co	omponent	Cell A	Tmp.		Conditio	Condition 32.2 C				Status	us pass		
Sensor C	omponent	Cell B Freq.			Conditio	lition 76.0 kHz				Status	s pass		
Sensor Co	omponent	Cell B Noise			Conditio	dition 0.5 ppb				Status	; pass		
Sensor C	omponent	Cell B Flow		Conditio	ion 0.73 lpm				Status	s pass			
Sensor C	omponent	Cell B Pressure			Conditio	ion 760.0 mmHg				Status	us pass		
Sensor C	omponent	Cell B Tmp.			Conditio	on				Status	s pass		
Sensor C	omponent	Line Loss			Conditio	ion Not tested				Status	us pass		
Sensor C	omponent	t System Memo			Conditio	ondition				Status pass			

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Numbe	er Ta Site		Technicia	n	Site Visit Date		Paramet	er	Owner ID	
Climatronics	missing	missing ACA416		Eric Hebert		10/05/2016 Temp		Temperat	ure2meter	none	
Mfg	Climatronics			Mfg		Extech Pa			arameter Temperature		
SN/Owner ID	401	03630			Serial Number		H232679 Ti		fer Desc. RTD		
Parameter	Temperature Tran	perature Translator			Tfer ID		01228				
DAS 1:	AS 1: DAS 2:			Slope		1.00760 Intere		-0.05710			
Abs Avg Err	vg Err Abs Max Er Abs Avg Err Abs I			Er Cert Date		2/28/2016 Corr		6 CorrC	Coff	1.00000	
0.12	0.16										
UseDescription	Test type	InputTmpRaw	InputTmpC	orrected	OutputTm	pSignal	OutputS	ignalEng	OSE Unit	Difference	
primary	Temp Low Rang	-0.03		0.03		0.0000		0.18	-	0.15	
primary	Temp Mid Rang	23.21		23.09		0.0000			С	-0.16	
primary	Temp High Rang	46.86		46.56		0.0000 46.5		46.50	С	-0.06	
Sensor Compo	nent Properly Site	ed	Cond	ition Prop	perly sited			Status P	ass		
Sensor Compo	nent Shield		Cond	ition Clea	an			Status P	ass		
Sensor Component Blower			Cond	Condition Functioning				Status P	ass		
Sensor Component Blower Status Switch			Cond	Condition N/A			Status pass				
Sensor Component System Memo			Cond	Condition Status				Status P	pass		

Humidity Data Form

Mfg	Serial Nun	nber Ta S	ite	Т	Technician		Site V	isit Date	Para	meter	Owner ID
Vaisala	missing	/	ACA416	E	Eric Hebert		10/05	10/05/2016		ive Humidity	none
					Mfg Rotron		Rotronic Parameter R		Parameter Rel	ative Humidity	
					Serial Number		12443	124432		Tfer Desc. Hy	groclip
					Tfer ID		01225				
					Slope			0.9783	0 In	tercept	0.84460
	DAS 1: DAS 2:			Cert Date			12/24/201	5 C o	orrCoff	0.99980	
Low Range High Range Low Range				ige]	High Range	е					
Abs Avg Err	2.8										
Abs Max Er	6.8										
UseDesc.	Test type	Device	Input RI	H C	GTL Raw	RH (Corr.	DAS V	olts	DAS %RH	Difference
primary	RH Low Range	Hygrocli	ip 32.8		33.0	32	2.8	0.000	0	33.2	0.4
primary	RH Low Range	Hygrocli	ip 52.9		53.5	52	2.9	0.000	0	54.2	1.3
primary	RH Low Range	Hygrocli	ip 75.3		74.9	75	5.3	0.000	0	68.5	-6.8
Sensor Com	ponent RH Filter			Condit	ion Clean				Statu	Is pass	
Sensor Com	ponent Shield			Condit	ion Modera	tely cle	an		Statu	IS pass	
Sensor Component Blower				Condit	ion N/A				Statu	Is pass	
Sensor Com	Sensor Component Blower Status Switch			Condition N/A				Status pass			
Sensor Com	ponent System N	/lemo		Condit	ion				Statu	ıs pass	

Solar Radiation Data Form

Mfg	Serial Numbe	er Ta Site	Т	echni	cian	Site Visit Date	Param	eter O	wner ID	
Licor	PY16746	ACA4	16 E	Eric He	ebert	10/05/2016	Solar R	adiation	one	
Mfg SN/Owner ID	Climatronics 309	none		Mfg Ser	g ial Number	Eppley 10765	I	arameter solar ra fer Desc. SR tran		
Parameter	Solar Radiation Tr			Tfe	r ID	01246				
DAS 1: % Diff of Avg	AS 1: DAS 2: Diff of Avg %Diff of Max %Diff of Avg %Diff of		%Diff of Max		Slope 1.00000 Inter Cert Date 12/29/2015 Corr		- <u> </u>	0.00000		
				Mf		Eppley		arameter solar ra		
					ial Number r ID	34341F3 01245		fer Desc. SR tran	sfer sensor	
8.7%	9.1%	0.0%	0.0%							
UseDescription	Measure Date	MeasureTin	ne Tfer Ray	w	Tfer Corr	DAS w/	′m2	PctDifference		
primary	10/6/2016	9:00	571		571	517		-9.4%	-)	
primary	10/6/2016	10:00	645		645	584		-9.4%	- -	
primary	10/6/2016	11:00	662		662	602		-9.1%	-	
primary	10/6/2016	12:00	626		626	570		-8.9%	-	
primary	10/6/2016	13:00	530		530	489		-7.8%		
primary	10/6/2016	14:00	391		391	365		-6.6%		
Sensor Compo	Sensor Component Sensor Clean		Condit	ion C	lean		Status	pass		
Sensor Compo	Sensor Component Sensor Level		Condit			Status		pass		
	Sensor Component Properly Sited			Condition Properly sited				tus pass		
Sensor Compo	onent System Mer	mo	Condit	ion			Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
unknown	none	ACA416	Eric Hebert	10/05/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab			Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference		
primary	Temp Mid Range	23.18	23.06	0.000	23.0	С	-0.02		
primary	Temp Mid Range	24.25	24.12	0.000	23.1	С	-1.06		
Sensor Component System Memo Condition Status pass									

Infrastructure Data For

Site ID	ACA416	Technician Eric Heb	Site Visit Date 10/05/2016
Shelter 1	Make	Shelter Model	Shelter Size
Ekto		8818 (s/n 2920-1)	1152 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	Fail
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

F-02058-1500-S1-rev002

Site ID	ACA416	Technician Eric Hebert		bert		Site Visit Date	10/05	6/2016		
							F			
Site Sponsor	(agency)	NPS/EPA	A		USC	SS Map		Salsbury Cove		
Operating Gr	roup	NPS/MEI	DEP		Maj	Scale				
AQS #		23-009-0	103		Maj) Date				
Meteorologica	al Type	Climatron	nics							
Air Pollutant	Analyzer	Ozone, S	02, NOx, NOy, PM, V	C	QAPP Latitude 44.3770					
Deposition M	leasurement	dry, wet,	Hg		QAPP Longitude -68.2610					
Land Use		Costal, woodland - mixed			QA	PP Elevation Mete	ers	158		
Terrain		rolling			QA	PP Declination				
Conforms to 3	MLM	No				PP Declination Da	te			
Site Telephon	ie	(432) 288-9322			Audit Latitude			44.377086		
Site Address	1	Route 23	3		Aud	it Longitude				-68.2608
Site Address	2				Aud	it Elevation				153
County		Hancock			Aud	it Declination		-16.4		
City, State		Bar Harb	or, ME	Present			ent			
Zip Code		04609			Fire	Extinguisher		Inspected Aug 2	016	
Time Zone		Eastern			First Aid Kit					
Primary Ope	rator				Safe	Safety Glasses				
Primary Op.	Phone #				Safe	ty Hard Hat 🛛	[
Primary Op.	E-mail				Clin	nbing Belt				
Backup Oper	ator				Secu	irity Fence	[
Backup Op.	Phone #				Secu	ire Shelter				
Backup Op.	p. E-mail			Stat	ole Entry Step 🔽	[
Shelter Work	Iter Working Room Make Ekto		Μ	odel	8818 (s/n 2920-1)		Shelter Size	1152 cuft		
Shelter Clean		Notes	The shelter is clean ar	nd well c	organiz	ed.				
Site OK	\checkmark	✓ Notes								
Driving Directions From Bangor go east on 1A to Ellsworth. From take Eagle Lake Rd (route 233) west toward A road, across from the Park Headquarters.										

ACA416

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/05/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		\checkmark
Major highway, airport or rail yard	2 km		\checkmark
Secondary road, heavily traveled	500 m		\checkmark
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		
Tree line	50 m	25 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

Fi	eld Sy	stems Data F	orm		F-02058-1500-S3-rev						
Site	e ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/05/2016]		
1		d speed and direction fluenced by obstructi) as to avoid							
 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) 											
3		tower and sensors plu	·								
4		temperature shields j adiated heat sources s									
5	conditions surface	perature and RH sen ons? (i.e. ground below and not steeply sloped g water should be avo	l be natural								
6	Is the so	blar radiation sensor p	plumb?								
7	Is it site light?	d to avoid shading, or	any artificial o	r reflected							
8	Is the ra	ain gauge plumb?									
9	Is it site towers,	d to avoid sheltering o etc?	effects from bui	ldings, trees,		45 degree rule viola	ation				
10	Is the su facing n	urface wetness sensor orth?	sited with the g	rid surface							
11 Is it inclined approximately 30 degrees?											
D			n (nh stoons - h			· · · · · · · · · · · · · · · · · · ·	(i.a			C - 4	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

F-02058-1500-S4-rev002

Site	e ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/05/2016	
1 2 3	condition Are all th reporting	e meterological sensor 1, and well maintained he meteorological sens g data? shields for the tempera	1?	online, and				
4	Are the a	aspirated motors worl	king?					
5	Is the sol scratches	ar radiation sensor's s?	lens clean and f	ree of				
6	Is the su	rface wetness sensor g	rid clean and u	ndamaged?				
7		sensor signal and pow 1, and well maintained		in good				
8		ensor signal and pow elements and well ma		tions protected				

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The sensor signal cables are beginning to show signs of wear. At the request of the site operator, the meteorological tower was not lowered and the wind sensors were not audited as the site is scheduled for a new shelter and major restructure. Ambient temperature is currently being measured at 2 meters above ground.

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	ACA416 Technician Eric Hebert		Site Visit Date 10/05/2016
	Siting Criteria: Are the pollutant analyzers and deposition e	quip	<u>ment sited in accordance with 40 CFR 58, Appendix E</u>
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	✓	
2	Are the sample inlets 3 - 15 meters above the ground?	✓	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	✓	
	Pollutant analyzers and deposition equipment operations and	d ma	intenance
1	Do the analyzers and equipment appear to be in good condition and well maintained?	✓	
2	Are the analyzers and monitors operational, on-line, and reporting data?	✓	
3	Describe ozone sample tube.		3/8 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓	
7	Is the zero air supply desiccant unsaturated?		
8	Are there moisture traps in the sample lines?		No moisture traps present
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The flow rate was measured to be 1.50 lpm, however the recorded flow rate on the DAS was 1.38 lpm.

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev002						
Site	e ID	ACA416	Technician	Eric Hebert		Site Visi	t Date 10)/05/2016	;			
	DAS, se	nsor translators, and g	eripheral equi	<u>pment operatio</u>	ns and	l maintena	<u>nce</u>					
1	Do the I well mai	DAS instruments appea intained?	ar to be in good	l condition and								
2		he components of the backup, etc)	DAS operation	al? (printers,								
3		nalyzer and sensor sig g protection circuitry?	through									
4	4 Are the signal connections protected from the weather and well maintained?											
5	Are the	signal leads connected	to the correct	DAS channel?								
6	Are the grounde	DAS, sensor translatored?	rs, and shelter _]	properly								
7	Does the	e instrument shelter ha	we a stable pow	ver source?								
8	Is the in	strument shelter temp	erature control	lled?								
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded			
10	Is the sa	mple tower stable and	grounded?			>						
11	Tower c	omments?				V						

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The accuracy of the DAS was not tested due to poor wiring conditions at the logger and lack of wiring documentation. It was decided that it was safer not to disturb the signal connections.

Field Sy	ystems Data F	'orn	1				F-02)58-1	500-S7-rev002
Site ID	ACA416	Т	echnician	Eric Hebert		Site Visit Date	10/05/2016		
Documen	<u>tation</u>								
Does the	site have the required	instru	ument and	<u>equipment</u>	manuals?				
Wind speed Wind direct Temperatur Relative hur Solar radiat Surface weth Wind senson Temperatur Humidity se Solar radiat Tipping buc Ozone analy Filter pack f	sensor ion sensor re sensor midity sensor ion sensor ness sensor r translator r translator ion translator ion translator ket rain gauge vzer flow controller				Data logger Data logger Strip chart Computer Modem Printer Zero air pu Filter flow Surge proto UPS Lightning F Shelter hea	r recorder Imp pump ector protection devic	Yes ✓ □ □ □ □ □ □ □ □ □ □ □ □ □	No No V V V V V V V V V V V V V	N/A □ ✓
-	1 11 5								
Does the	e site have the require			<u>nt QC docu</u>	ments and	<u>report forms?</u>			
	P	resent	t				Curren	t	
Station Log			Datavie	W					
SSRF	_								
Site Ops Ma	nual		June 20	00					
HASP	r 1								
Field Ops M									
Calibration	•								
-	Control Charts								
	naintenance schedul			•		ataview			
1 Is the s	tation log properly co	mpiet	ea auring o	every site vi					
2 Are the current	e Site Status Report F t?	orms	being comp	leted and					
	e chain-of-custody for transfer to and from		operly used	l to docume	ent 🔽				
4 Are ozo current	one z/s/p control chart t?	ts proj	perly comp	leted and	Co	ontrol charts not	used		
	additional explanational explanation					regarding condi	tions listed a	bove, or	any other features,

Site	ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/05/2016	
1	Has the	<u>ration procedures</u> site operator attende If yes, when and who		TNET training				
2		backup operator atte course? If yes, when			✓	Trained on-site by A	RS during site installat	on
	Is the site schedule	e visited regularly on ?	the required Tu	iesday	✓			
		standard CASTNET (by the site operator?	· ·	cedures being	✓	Operator procedures	s are very good for filte	rreplacement
		e operator(s) knowled ired site activities? (ir						

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed

Frequency

✓	Semiannually by MEDEP	\checkmark
✓	Weekly	✓
\checkmark	Semiannually	\checkmark
\checkmark	Monthly	✓
\checkmark	Weekly	✓
	Not performed	
		V Weekly V Semiannually V Monthly V Weekly

Are regular operational QA/QC checks performed on the ozone analyzer?

00	Chook	Donf	bommod
VU	Спеск	Peri	ormed

Multi-point Calibrations
Automatic Zero/Span Tests
Manual Zero/Span Tests
Automatic Precision Level Tests
Manual Precision Level Test
Analyzer Diagnostics Tests
In-line Filter Replacement (at inlet)
In-line Filter Replacement (at analyz
Sample Line Check for Dirt/Water
Zero Air Desiccant Check

Frequency	Co
Monthly	
Weekly	
Monthly	
N/A	
Weekly	
Weekly	

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

✓	Results are recorded weekly on a checklist

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

✓

✓

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

mpliant

Compliant

F-02058-1500-S8-rev002

Field Systems Data Form F-02058-1500-S9-rev002 ACA416 Technician Eric Hebert Site Visit Date 10/05/2016 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed morinings, 90% 1 Flow and general observation sections only Are the Site Status Report Forms being completed and filed 2 correctly? No longer required 3 Are data downloads and backups being performed as scheduled? \checkmark SSRF Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF Are sample flow rates recorded? How? 6 \checkmark Are samples sent to the lab on a regular schedule in a timely 🗹 7 fashion? \checkmark Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? Are the site conditions reported regularly to the field 9 operations manager or staff? Compliant **QC Check Performed** Frequency \checkmark Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks** Not performed **Filter Pack Inspection** ✓ Weekly \checkmark **Flow Rate Setting Checks** ✓ Weekly \checkmark Visual Check of Flow Rate Rotometer

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

 \checkmark

 \square

✓ As needed

Not performed

In-line Filter Inspection/Replacement

Sample Line Check for Dirt/Water

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

ACA416

F-02058-1500-S10-rev002

Site ID

Techni

Technician Eric Hebert

Site Visit Date 10/05/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8460p	CNU20941M6	none
DAS	Environmental Sys Corp	8832	unknown2	ACADIA1
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB11	10950000040	none
Flow Rate	Tylan	FC260	AW02213003	none
Infrastructure	Infrastructure	none	none	none
Mainframe	Climatronics	100081	1288	01342
Met tower	Climatronics	unknown	illegible	none
MFC power supply	Tylan	RO-32	none	none
Modem	US Robotics	33.6 fax modem	unknown	none
Ozone	ThermoElectron Inc	49C	49C-74536-376	90744
Ozone Standard	ThermoElectron Inc	49CPS	49CPS-70752-366	none
Printer	Hewlett Packard	842C	unknown	none
Relative Humidity	Vaisala	missing	missing	none
Sample Tower	Aluma Tower	В	AT-71103-7I-3	none
Shelter Temperature	unknown	none	none	none
Shield (2 meter)	Climatronics	100325	illegible	none
Siting Criteria	Siting Criteria	1	None	None
Solar Radiation	Licor	LI-200	PY16746	none
Solar Radiation Translator	Climatronics	100144	309	none
Temperature Translator	Climatronics	100088-2	401	03630
Temperature2meter	Climatronics	100093	missing	none
Zero air pump	ThermoElectron Inc	111	111-30215-237	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HO	W191-Eric I	Hebert-10/10/2016				
1	10/10/2016	DAS	Campbell	000419	CR3000	2527
2	10/10/2016	elevation	Elevation	none	none	none
3	10/10/2016	Filter pack flow pump	Thomas	04859	107CAB18	060300019999
4	10/10/2016	Flow Rate	Apex	000645	AXMC105LPMDPCV	illegible
5	10/10/2016	Infrastructure	Infrastructure	none	none	none
6	10/10/2016	Modem	Raven	06470	H4222-C	0808311250
7	10/10/2016	Ozone	ThermoElectron Inc	000616	49i A1NAA	1009241781
8	10/10/2016	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
9	10/10/2016	Shelter Temperature	Campbell	none	107-L	none
10	10/10/2016	siting criteria	Siting Criteria	none	none	None
11	10/10/2016	Temperature	RM Young	missing	41342	missing
12	10/10/2016	Zero air pump	Werther International	06908	C 70/4	000821900

DAS Data Form

DAS Time Max Error: 0.22

Mfg	Serial	Number Si	te	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2527	Η	OW191	Eric Hebert	10/10/2016	DAS	Primary
Das Date: [Das Time: [Das Day: [Low Channe Avg Diff:	Max Diff:		e 9:20:00 284 nel: Max Diff:	Mfg Serial Number Tfer ID	Datel 4000392 01321	Parameter Tfer Desc.	DAS Source generator (D
0.000	0 0.0	000 0.00	00 0.0000				
				Mfg Serial Number	Fluke 86590148	Parameter Tfer Desc.	
				Tfer ID	01310		
				Slope	1.0000		0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
4	0.0000	0.0000	0.000	0 V	V	0.0000	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	illegible		HOW191	Eri	c Hebert	10/10/2016	6 Flow R	late	000645
					Mfg Serial Number Tfer ID	BIOS 148613 01421		arameter Flo	
					Slope	1.	00309 Int	ercept	-0.00231
					Cert Date	4/2	1/2016 Co i	rrCoff	1.00000
DAS 1: A Avg % Diff: 0.67%	A Max % Di 0.67%	DAS 2: A Avg %	Dif A Max	x % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	-0.()1 1 0	
Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifference
primary	pump off	0.000	0.000	0.01	0.000	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
primary	test pt 1	1.492	1.490	1.49	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.496	1.490	1.49	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.493	1.490	1.49	0.000	1.50	l/m	l/m	0.67%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	Status pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status pass		
Sensor Comp	onent Rotomete	er Conditio	n	Conditio	n Not installed		Status	Fail	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	n 3.5 cm		Status pass		
Sensor Comp	onent Filter Dep	oth		Conditio	n 1.5 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 45 deg		Status	pass	
Sensor Comp	onent System M	Nemo		Conditio	n See comments	3	Status	pass	

Ozone Data Form

Mfg	Se	erial N	lumber Ta	Site	Te	chnician		Site Visit I	Date Para	ımet	er	Owner I	D
ThermoElec	ctron Inc 1	00924	1781	HOW191	Er	ic Hebert		10/10/201	6 Ozoi	ne		000616	
Slope: Intercept CorrCoff	-0.7	0.98950 Slope: 0.0000 0.77461 Intercept 0.0000 0.99995 CorrCoff 0.0000		D	Serial Number					ameter r Desc.	ozone Ozone primary	y stan	
	<u></u>				_	Tfer ID		01113					
DAS 1: A Avg % I)iff. A May	₽ 0∕ D	DAS 2: i A Avg %	Dif A Max	0/ D;	Slope		1.	.00500	ntero	ept	-0.28	3841
	0%	5.3				Cert Da	te	1/2	8/2016 C	orr(Coff	1.00	0000
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site Uni	t	PctI	Difference	
prir	nary		1	0.11	0.3	39	0.	13 pp	ob				
prir	nary		2	29.03	29.	.17	27	.63 pp	b			-5.28%	
prir	nary		3	49.46	49.	.50	47	.95 pp	ob			-3.13%	
prir	nary		4	76.66	76.	.56	74	.81 pp	ob			-2.29%	
prir	nary		5	106.27	106	.02	104	.50 pp	ob			-1.43%	
Sensor C	omponent	Samp	le Train		Conditio	on Good			Stat	us F	bass		
Sensor C	omponent	22.5 c	legree rule		Conditio	on			Stat	us F	bass		
Sensor C	omponent	Inlet F	ilter Conditio	n	Condition Clean			Stat	us pass				
Sensor C	omponent	Batter	y Backup		Condition N/A			Stat	us F	bass			
Sensor C	omponent	Offset	t			Condition 0.20			Stat	us F	bass		
Sensor C	omponent	Span				condition 1.007			Stat	us F	bass		
	omponent				Condition N/A				Stat	us F	bass		
	_		ale Voltage		Condition N/A				us F				
	omponent				Condition 83.7 kHz				us F				
	omponent				Conditio				Stat				
	omponent					Condition 0.57 lpm				us [
	omponent					on 704.7				us F			
	omponent					on 32.6 C on 98.9 k				us F Tus F	bass		
	omponent omponent					on 0.6 pp				us F			
	omponent					on 0.72 l				us F			
	omponent					on Not te					Dass		
	omponent				Conditio					_			
	omponent					n Not te	sted			Status pass Status pass			
	omponent				Conditio					us F			
	mponent	-,			Conutin				Ju				

Temperature Data Form

Mfg	Serial Number Ta	Site	,	Techni	ician	Site V	Visit Date Parame		eter	Owner ID	
RM Young	missing	HOW191		Eric H	ebert	10/10)/2016	Temper	ature	missing	
			Mf	`g	Extec	h	Pa	arameter Temperature			
			Serial Number		H232679		Tfer Desc. R		٢D		
				Tfer ID		01228	3				
DAS 1: DAS 2:				Slo	pe	1.00760 Inte		ercept -0.05710			
		Max Er	ax Er Cert Date			2/28/201	6 Cor	rCoff	1.00000		
0.08	0.16										
UseDesc.	Test type Ir	nputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	l OutputSignalEng		OSE Unit	Difference	
primary Temp	Low Range	-0.02	0.04	ļ	0.000		0.1	1	C	0.07	
primary Temp	Mid Range	29.98	29.8	1	0.000		29.	8	С	0	
primary Temp	High Range	49.54	49.2	2	0.000		49.	1	С	-0.16	
Sensor Compone	nt Shield		Cond	ition N	Moderately clea	an		Status	pass		
Sensor Component Blower				Condition N/A				Status	pass		
Sensor Component Blower Status Switch				Condition N/A				Status	s pass		
Sensor Compone	nt System Memo		Cond	Condition See comments				Status	Is pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOW191	Eric Hebert	10/10/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab	os Max Er Abs Avg 0.89	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTE)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.36	23.24	0.000	23.8	С	0.6
primary	Temp Mid Range	19.80	19.71	0.000	20.6	С	0.89
primary	Temp Mid Range	21.11	21.01	0.000	21.3	С	0.3
Sensor Con	nponent System Memo	•	Condition		pass		

Infrastructure Data For

Site ID	HOW191	Technician Eric Hebe	rt Site Visit Date 10/10/2016
Shelter	Make	Shelter Model	Shelter Size
custom		custom	800 cuft

Sensor Component	Sample Tower Type	Condition	Above canopy	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	1/4 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID HOW191	Technician Eric Hebert	Site Visit Date 10/1	10/2016		
Site Sponsor (agency)	EPA	USGS Map	Howland		
Operating Group	University of ME	Map Scale			
AQS #		Map Date			
Meteorological Type	R.M. Young				
Air Pollutant Analyzer	Ozone	QAPP Latitude			
Deposition Measurement	dry	QAPP Longitude			
Land Use	Woodland - mixed	QAPP Elevation Meters			
Terrain	flat, gently rolling	QAPP Declination			
Conforms to MLM	Yes	QAPP Declination Date			
Site Telephone		Audit Latitude	45.203963		
Site Address 1		Audit Longitude	-68.740041		
Site Address 2		Audit Elevation	68		
County	Penobscot	Audit Declination	-17		
City, State	Howland, ME	Present			
Zip Code		Fire Extinguisher 🗹			
Time Zone	Eastern	First Aid Kit			
Primary Operator		Safety Glasses			
Primary Op. Phone #		Safety Hard Hat 🗹			
Primary Op. E-mail		Climbing Belt			
Backup Operator		Security Fence			
Backup Op. Phone #	ackup Op. Phone #				
Backup Op. E-mail		Stable Entry Step 🗹			
Shelter Working Room ✓	Make custom M	odel custom	Shelter Size 800 cuft		
	Notes The custom built shelter is clear	an and organized.			
Site OK	Notes				
Driving Directions Arrange	ge for site visit and access with the site or	perator.			

HOW191

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/10/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		\checkmark
Feedlot operations	500 m		\checkmark
Intensive agricultural ops (including aerial spraying)	500 m		\checkmark
Limited agricultural operations	200 m		\checkmark
Large parking lot	200 m		\checkmark
Small parking lot	100 m		
Tree line	50 m		
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

Fie	eld Sy	stems Data Fo	orm		F-02058-1500-S3-rev0				
Site	e ID	HOW191	Technician	Eric Hebert		Site Visit Date 10/10/2016			
1		d speed and direction s fluenced by obstructio		as to avoid	✓	N/A			
2	(i.e. wind horizont	d sensors mounted so a d sensors should be mo tally extended boom >2 to the prevailing wind	ounted atop the 2x the max diar	e tower or on a		N/A			
3	Are the	tower and sensors plu	mb?		✓	N/A			
4		temperature shields po diated heat sources su		positioned to	✓				
5									
6	Is the so	lar radiation sensor pl	umb?		✓	N/A			
7	Is it site light?	d to avoid shading, or a	any artificial o	r reflected	✓	N/A			
8	Is the ra	in gauge plumb?			✓	N/A			
9	Is it site towers,	d to avoid sheltering ef etc?	fects from buil	dings, trees,	✓	N/A			
10	Is the su facing n	urface wetness sensor s orth?	ited with the g	rid surface	✓	N/A			
11	Is it inc	lined approximately 3	0 degrees?		✓	N/A			
Pro	vide anv	additional explanation	n (nhotograph)	or sketch if neces	sar	v) regarding conditions listed above, or any other features,			

natural or man-made, that may affect the monitoring parameters:

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

F-02058-1500-S4-rev002

Site	e ID	HOW191	Technician	Eric Hebert		Site Visit Date 10/10/2016	
1		e meterological senso n, and well maintained		intact, in good	✓	N/A	
2	Are all the reporting	he meteorological sens g data?	sors operationa	l online, and	✓	N/A	
3	Are the s	shields for the temper	ature and RH s	ensors clean?	✓		
4	Are the a	aspirated motors wor	king?		✓	N/A	
5	Is the sol scratches	lar radiation sensor's s?	lens clean and f	ree of	✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A	
7		sensor signal and pow n, and well maintained		, in good	✓		
8		sensor signal and pow elements and well ma		tions protected	✓		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S5-rev					
Site	e ID	HOW191	Technician	Eric Hebert		Site Visit Date	10/10/2016			
	Siting C	criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipı</u>	nent sited in accord	lance with 40 Cl	FR 58, Appendix E		
1		cample inlets have at le	east a 270 degre	e arc of						
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓					
3		sample inlets > 1 mete meters from trees?	er from any maj	or obstruction,		Above canopy				
	<u>Pollutar</u>	nt analyzers and depos	sition equipmen	t operations and	ma	intenance				
1		analyzers and equipme on and well maintained		in good	✓					
2	Are the reportin	analyzers and monito ng data?	rs operational, o	on-line, and	✓					
3	Describe	e ozone sample tube.				1/4 teflon by 40 met	ers			
4	Describe	e dry dep sample tube	•			1/4 teflon by 40 met	ers			
5		ine filters used in the o location)	ozone sample lir	ne? (if yes		At inlet only				
6	Are sam obstruct	ple lines clean, free of tions?	f kinks, moistur	e, and	✓					
7	Is the ze	ero air supply desiccan	nt unsaturated?		✓					
8	Are the	re moisture traps in th	e sample lines?							
9	Is there clean?	a rotometer in the dry	y deposition filte	er line, and is it						

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev002					
Site	e ID	HOW191	Technician	Eric Hebert		Site Visi	it Date 1	0/10/2016	3		
	<u>DAS, se</u>	nsor translators, and p	peripheral equi	pment operation	ns and	d maintena	<u>nce</u>				
1	Do the I well ma	DAS instruments appeaintained?	ar to be in good	condition and							
2		the components of the backup, etc)	al? (printers,								
3		nalyzer and sensor sig g protection circuitry?	hrough								
4		signal connections pro intained?	e weather and								
5	Are the	signal leads connected	DAS channel?								
6	Are the grounde	DAS, sensor translato ed?	rs, and shelter j	properly							
7	Does the	e instrument shelter ha	ave a stable pov	ver source?							
8	Is the in	strument shelter temp	led?								
9	Is the m	et tower stable and gr	ounded?			Stable			Grounded		
10	Is the sa	mple tower stable and	grounded?								
11	Tower o	omments?			4	✓ 24 meter wa	lk-up towe	er			

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

There were no spare channels configured on the DAS to allow for accuracy testing with the audit system.

Field Sy	vstems Data I	For	·m					F-02	2058-	1500-S7-rev002
Site ID	HOW191		Technicia	n Eric	Hebert	Site Visit	Date 10	/10/2016	6	
Documen	<u>tation</u>									
Does the	site have the require	d ins	trument a	nd equi	pment manuals	<u>s?</u>				
		Zes		N/A				Yes	No	N/A
Wind speed	sensor			✓	Data log	ger			\checkmark	
Wind direct	ion sensor			✓	Data log	ger				
Temperatur	e sensor				Strip cha	art recorder				
Relative hur	nidity sensor			\checkmark	Compute	er				
Solar radiat	ion sensor			\checkmark	Modem				\checkmark	
Surface wet	ness sensor			\checkmark	Printer					
Wind sensor	translator			\checkmark	Zero air	pump				
Temperatur	e translator			\checkmark	Filter flo	ow pump				
Humidity se	nsor translator			\checkmark	Surge pr	otector				\checkmark
Solar radiat	ion translator				UPS					\checkmark
Tipping buc	ket rain gauge			\checkmark	Lightnin	g protection d	levice			\checkmark
Ozone analy	zer		\checkmark		Shelter h	neater			\checkmark	
Filter pack f	low controller		\checkmark		Shelter a	ir conditioner	•		\checkmark	
Filter pack I	MFC power supply			\checkmark						
Does the	e site have the requir	ed a	nd most re	ecent QC	C documents ar	nd report form	<u>ns?</u>			
]	Pres	ent					Curre	ent	
Station Log										
SSRF										
Site Ops Ma	nual	_								
HASP										
Field Ops M	anual	[
Calibration		[_							
	Control Charts									
-	naintenance schedul									
1 Is the s	tation log properly c	omp	leted duri	ng every	site visit? 🗸					
2 Are the current	Site Status Report I ?	Form	ns being co	mpleted	and 🗸					
	chain-of-custody for transfer to and from			sed to d	ocument 🗸					
4 Are ozo current	one z/s/p control char ?	rts p	roperly co	mpleted	and	Control charts	not used			
	additional explanati an-made, that may a					y) regarding co	ondition	s listed	above, o	or any other features,

Site ID HOW191 Technician Eric Hebert Site Visit Date 10/10/2016 Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

	Frequency	Compliant
\checkmark	Semiannually	\checkmark
\checkmark	Weekly	\checkmark
	N/A	\checkmark
\checkmark	N/A	\checkmark
\checkmark	Weekly	\checkmark
\checkmark	N/A	\checkmark
		 ✓ Semiannually ✓ Weekly N/A ✓ N/A ✓ Weekly ✓ Weekly

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant						
Multi-point Calibrations		Semiannually							
Automatic Zero/Span Tests	\checkmark	Daily	\checkmark						
Manual Zero/Span Tests									
Automatic Precision Level Tests	\checkmark	Daily	\checkmark						
Manual Precision Level Test									
Analyzer Diagnostics Tests	\checkmark	Weekly	\checkmark						
In-line Filter Replacement (at inlet)	\checkmark	Monthly	\checkmark						
In-line Filter Replacement (at analyze		N/A							
Sample Line Check for Dirt/Water	\checkmark	Weekly							
Zero Air Desiccant Check	✓	Weekly							
1 Do multi-point calibration gases go through the complete									

- sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

	Unknown	
✓		
✓	SSRF, call-in	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

F-02058-1500-S8-rev002

Fi	eld Sy	stems Data Form					-1500-S9-rev002				
Sit	e ID	HOW191 Te	chnician	Eric Hebert		Site Visit Date	10/10/2016				
	<u>Site ope</u>	eration procedures									
1	Is the fi	lter pack being changed eve	ry Tuesda	ay as scheduled	? ✓	Filter changed vario	us times				
2	Are the correct	Site Status Report Forms b ly?	eing comj	pleted and filed							
3	Are dat schedul	a downloads and backups b ed?	eing perfo	ormed as		No longer required					
4	Are ger	neral observations being mad	le and reo	corded? How?	✓	SSRF					
5	Are site fashion	e supplies on-hand and reple ?	nished in	a timely	✓						
6	Are san	nple flow rates recorded? Ho	ow?		✓	SSRF					
7	Are san fashion	nples sent to the lab on a reg ?	ular sche	dule in a timely	✓						
8		ers protected from contamin pping? How?	ation du	ring handling	✓	Clean gloves on and	d off				
9		site conditions reported reg ons manager or staff?	ularly to	the field	✓						
QC	Check P	erformed	Free	quency			Compliant				
]	Multi-poi	nt MFC Calibrations	✓ Sem	niannually							
]	Flow Syst	em Leak Checks	Mon	thly							
]	Filter Pac	k Inspection									
]	Flow Rate	e Setting Checks	✓ Wee	ekly			\checkmark				
	Visual Ch	neck of Flow Rate Rotometer	• 🗹 Wee	ekly							
]	In-line Fi	lter Inspection/Replacement	Sem Sem	niannually							
1	Sample L	ine Check for Dirt/Water	✓ Wee	ekly							
Pro	vide any a	additional explanation (phot	ograph o	r sketch if neces	sary) regarding conditi	ons listed above,	or any other features,			

natural or man-made, that may affect the monitoring parameters:

The site operator reported that gloves are not consistently used to handle the filter pack.

Field S	ystems Data Fo	orm		F-02058-150	0-S10-rev002	
Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/10/2016	

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR3000	2527	000419
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	107CAB18	060300019999	04859
Flow Rate	Apex	AXMC105LPMDPC	illegible	000645
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311250	06470
Ozone	ThermoElectron Inc	49i A1NAA	1009241781	000616
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200011	000435
Shelter Temperature	Campbell	107-L	none	none
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	missing	missing
Zero air pump	Werther International	C 70/4	000821900	06908

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ASH	135-Eric H	ebert-10/11/2016				
1	10/11/2016	Computer	Dell	07070	Inspiron 15	Unknown
2	10/11/2016	DAS	Campbell	000634	CR3000	4933
3	10/11/2016	Elevation	Elevation	None	1	None
4	10/11/2016	Filter pack flow pump	Thomas	01449	107CA110	118700000595
5	10/11/2016	Flow Rate	Apex	000648	AXMC105LPMDPCV	54777
6	10/11/2016	Infrastructure	Infrastructure	none	none	none
7	10/11/2016	Modem	Raven	06471	H4222-C	0808311148
8	10/11/2016	Ozone	ThermoElectron Inc	000620	49i A1NAA	1009241793
9	10/11/2016	Ozone Standard	ThermoElectron Inc	000442	49i A3NAA	CM08200018
10	10/11/2016	Sample Tower	Aluma Tower	03536	A	none
11	10/11/2016	Shelter Temperature	Campbell	none	107-L	none
12	10/11/2016	Siting Criteria	Siting Criteria	None	1	None
13	10/11/2016	Temperature	RM Young	06389	41342	13994
14	10/11/2016	Zero air pump	Werther International	06923	C 70/4	000836208

DAS Data Form

DAS Time Max Error: 0.08

Mfg	Serial N	umber Site	Т	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	4933	ASH	H135 I	Eric Hebert	10/11/2016	DAS	Primary
Das Date:	10/11/2016	Audit Date	10/11/2016	Mfg	Datel	Parameter	DAS
Das Time: Das Day:	11:00:55 285	Audit Time ₌ Audit Day	11:01:00 285	Serial Number	4000392	Tfer Desc.	Source generator (D
• –		• -		Tfer ID	01321		
Low Channe		High Channe				I	
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.000	1 0.000	0.0001	0.0001				
					·	1	
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	D Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3001		V	0.0001	
7	0.5000	0.5000	0.5001		V	0.0001	
7	0.7000	0.7000	0.7001		V	0.0001	
7	0.9000	0.9001	0.9002		V	0.0001	
7	1.0000	1.0001	1.0002	V	V	0.0001	

Flow Data Form

Mfg	Serial Nur	nber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	54777		ASH135	Eri	ic Hebert	Hebert 10/11/2016		Rate	000648
					Mfg Serial Number Tfer ID	BIOS 148613 01421		arameter Flo	
					Slope	1.	00309 Int	ercept	-0.00231
					Cert Date	4/2	1/2016 Co	rrCoff	1.00000
DAS 1: DAS 2: A Avg % Diff: A Max % Di A Avg %Dif 1.35% 1.35%					Cal Factor Z Cal Factor F Rotometer R	ull Scale	1.	.1 11 35	
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifference
primary	pump off	0.000	0.000	-0.08	0.000	0.02	l/m	l/m	
primary	leak check	0.000	0.000	-0.03	0.000	0.08	l/m	l/m	
primary	test pt 1	1.481	1.480	1.38	0.000	1.50	l/m	l/m	1.35%
primary	test pt 2	1.481	1.480	1.38	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.486	1.480	1.38	0.000	1.50	l/m	l/m	1.35%
Sensor Comp	onent Leak Te	st		Conditio	n		Statu	s pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good	Good		Status pass	
Sensor Comp	onent Filter Po	sition		Conditio	n Good	Good		pass	
Sensor Comp	onent Rotomet	er Conditic	on	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	See comments	3	Status	pass	
Sensor Comp	onent Filter Dis	stance		Conditio	n 6.0 cm		Status	pass	
Sensor Comp	Filter De	pth		Conditio	n 3.5 cm		Statu	pass	
Sensor Comp	Filter Az	imuth		Conditio	225 deg		Statu	pass	
Sensor Comp	onent System	Memo		Conditio	n		Statu	s pass	

Ozone Data Form

Mfg	Se	erial N	umber Ta	Site	Te	Technician S		Site Visit I	ate Paran	neter	Owner ID		
ThermoElec	tron Inc 1	00924 ⁻	1793	ASH135 Er		ric Hebert		10/11/2016	6 Ozone		000620		
Slope: Intercept CorrCoff	-1.8	34488 Slope: 0.0000 38979 Intercept 0.0000 99996 CorrCoff 0.0000		D	Serial Number				Parameter ozone				
DAS 1: DAS 2: A Avg % Diff: A Max % Di A Avg % 19.4% 23.2%			bDif A Max % Di		Tfer ID0111SlopeCert Date		L	1.00500 Intercept 1/28/2016 CorrCoff		-0.28841 1.00000			
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site Unit	Pct	Difference		
	nary		1	0.36	0.0			25 pp					
prin	nary		2	28.17	28.	.31	21				-23.24%		
prin	nary		3	49.40	49.	.44	39	.78 pp	b		-19.54%		
-	nary		4	77.24	77.			.84 pp	b		-17.24%		
prin	nary		5	115.99	115	5.69	95	.60 pp	b		-17.37%		
Sensor Co	omponent	Sampl	e Train		Conditio	on Good			Statu	s pass			
Sensor C	omponent	22.5 d	egree rule		Conditio	on			Statu	s pass			
Sensor C	ensor Component Inlet Filter Condition			n	Conditio	on Dirty			Statu	, Fail			
Sensor Co	omponent	ponent Battery Backup			Conditio	on N/A			Statu	s pass			
Sensor Co	omponent	Offset			Condition -0.20				Statu	s pass			
Sensor C	omponent	Span			Condition 1.011				Statu	s pass	pass		
Sensor C	omponent	Zero V	/oltage		Condition N/A			Statu	s pass				
Sensor C	omponent	Fullsca	ale Voltage		Condition N/A				Statu	itus pass			
Sensor C	omponent	Cell A	Freq.		Condition 94.1 kHz				Statu	s pass			
Sensor C	omponent	Cell A	Noise		Condition 0.9 ppb			Statu	s pass				
Sensor C	omponent	Cell A	Flow		Conditio	on 0.25 l	om		Statu	s Fail			
Sensor C	omponent	Cell A	Pressure		Conditio	Condition 744.4 mmHg			Statu	s pass			
Sensor C	omponent	Cell A	Tmp.		Conditio	on 35.0 ()		Statu	s pass			
Sensor C	omponent	Cell B	Freq.		Conditio	on 99.8 k	Hz		Statu	s pass			
Sensor C	omponent	Cell B	Noise		Conditio	on 0.9 pp	b		Statu	s pass			
Sensor C	omponent	Cell B	Flow		Conditio	on 0.0 lp	m		Statu	s Fail	Fail		
Sensor C	omponent	Cell B	Pressure		Conditio	on Not te	sted		Statu	s pass			
Sensor C	omponent	Cell B	Tmp.		Conditio	on			Statu	s pass	pass		
Sensor C	omponent	Line L	oss		Conditio	ion 8 %			Statu	atus Fail			
Sensor C	omponent	Syster	n Memo		Conditio	on See c	omments	i	Statu	s pass			

Temperature Data Form

Mfg	Serial Number 7	la Site	1	Technician		Site V	isit Date	Param	eter	Owner ID	
RM Young	13994	ASH135		Eric Hebert		10/11	1/2016	Temper	ature	06389	
				Mfg		Extec	Extech Pa		arameter Temperature		
				Ser	rial Number	H232	H232679 Tf		er Desc. R	D	
				Tfer ID		01228	3				
DAS 1:		Slo	pe	1.00760 Inte		ercept -0.05710		0			
DAS 1:DAS 2:Abs Avg ErrAbs Max ErAbs Avg ErrAbs Max				ax Er Cert Date		2/28/2016 Cor		rCoff 1.00000		C	
0.10	0.20										
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	-0.03	0.03	0.03 0.000		0.2		C	0.2		
primary Ten	p Mid Range	24.42	24.2	9	0.000		24.3		C	-0.01	
primary Ten	p High Range	49.43	49.1	1	0.000		49.	0	С	-0.08	
Sensor Compon	ent Shield		Cond	ition N	Moderately clea	an		Status	pass		
Sensor Component Blower			Cond	Condition N/A				Status	pass		
Sensor Component Blower Status Switch				Condition N/A				Status	tatus pass		
Sensor Compon	ent System Memo		Cond	Condition				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ASH135	Eric Hebert	10/11/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	elter Temperatur
Abs Avg Err Ab	s Max Er Abs Avg 0.83	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTI	D
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	22.25	22.14	0.000	22.9	С	0.71	
primary	Temp Mid Range	22.48	22.37	0.000	23.2	С	0.83	
Sensor Component System Memo Condition Status pass								

Infrastructure Data For

Site ID	ASH135	Technician Eric Hebe	ert Site Visit Date 10/11/2016
Shelter M	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-17)	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре А	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

F-02058-1500-S1-rev002

Site ID ASH135	Technician Eric Hebert	Site Visit Date 10/1	1/2016		
Site Spanger (agener)	EPA	USGS Map	Squa Pan		
Site Sponsor (agency)		Map Scale			
Operating Group	private	•			
AQS #	23-003-9991	Map Date			
Meteorological Type	R.M. Young				
Air Pollutant Analyzer	Ozone	QAPP Latitude	46.6039		
Deposition Measurement	dry	QAPP Longitude	-68.4142		
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	235		
Terrain	gently rolling	QAPP Declination	18.7		
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006		
Site Telephone	(207) 435-6482	Audit Latitude	46.603832		
Site Address 1	Radar Road	Audit Longitude	-68.413227		
Site Address 2		Audit Elevation	231		
County	Aroostook	Audit Declination	-18.2		
City, State	Ashland, ME	Present			
Zip Code	04732	Fire Extinguisher 🗹	New in 2015		
Time Zone	Eastern	First Aid Kit			
Primary Operator		Safety Glasses			
Primary Op. Phone #		Safety Hard Hat 🔽			
Primary Op. E-mail		Climbing Belt			
Backup Operator		Security Fence			
Backup Op. Phone #		Secure Shelter			
Backup Op. E-mail		Stable Entry Step 🔽			
Shelter Working Room	Make Ekto M	odel 8810 (s/n 2149-17)	Shelter Size 640 cuft		
Shelter Clean	Notes The shelter is in fair condition, walls and floor.	clean, and very well organized	. Rot is beginning at the bottom of the		
Site OK	Notes				
towar	I-95 take exit #286 which is route 212. Ta d Ashland. Approximately 2 miles south o proximately 1.5 miles straight on Goding R	of Ashland turn left (west) on Ge	oding Road at the DEP sign. The site		

ASH135

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 10/11/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m		
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The evergreen plantation previously 20 meters south of the site has been harvested.

Fi	eld Sy	stems Data	Form		F-02058-1500-S3-rev002			
Site	e ID	ASH135	Technician	Eric Hebert		Site Visit Date 10/11/2016		
1		d speed and directi fluenced by obstru		as to avoid	✓	N/A		
2	(i.e. win horizon	d sensors mounted d sensors should bo tally extended boor to the prevailing w	e mounted atop the n >2x the max dia	e tower or on a		N/A		
3	3 Are the tower and sensors plumb?					N/A		
4		temperature shield idiated heat source		positioned to	✓			
5	conditio surface	perature and RH s ns? (i.e. ground be and not steeply slo g water should be a	low sensors should ped. Ridges, hollov	be natural				
6	Is the so	lar radiation senso	r plumb?	[✓	N/A		
7	Is it site light?	d to avoid shading,	or any artificial o	r reflected	✓	N/A		
8	Is the ra	in gauge plumb?		[✓	N/A		
9	Is it site towers,	d to avoid shelterin etc?	ng effects from buil	ldings, trees,	✓	N/A		
10	Is the su facing n	urface wetness sense orth?	or sited with the g	rid surface	✓	N/A		
11	C	lined approximate	y 30 degrees?	ŀ	✓	N/A		

natural or man-made, that may affect the monitoring parameters:

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Site	e ID	ASH135	Technician	Eric Hebert		Site Visit Date 10/11/2016	
1		e meterological senso n, and well maintained		intact, in good	✓	N/A	
2	Are all t reportin	he meteorological sens g data?	sors operationa	l online, and	✓	N/A	
3	Are the s	shields for the temper	ature and RH s	ensors clean?	✓		
4	Are the aspirated motors working?					N/A	
5	5 Is the solar radiation sensor's lens clean and free of scratches?				✓	N/A	
6	Is the su	rface wetness sensor g	grid clean and u	indamaged?	✓	N/A	
7		sensor signal and pow n, and well maintained		, in good	✓		
8		sensor signal and pow elements and well ma		ctions protected	✓		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fi	eld Sy	stems Data Fo	rm		F-02058-1500-S5-rev002				
Site	e ID	ASH135	Technician Eric	Hebert	Site Visit Date 10/11/2016				
	Siting C	Criteria: Are the polluta	ant analyzers and d	eposition equip	ment sited in accordance with 40 CFR 58, Appendix E				
1		sample inlets have at le icted airflow?	ast a 270 degree arc	c of ✓					
2	Are the	sample inlets 3 - 15 me	ters above the grou	und? ✓					
3		sample inlets > 1 meter meters from trees?	r from any major o	bstruction, 🔽					
	<u>Pollutar</u>	nt analyzers and deposi	tion equipment ope	erations and ma	<u>iintenance</u>				
1		analyzers and equipme on and well maintained		ood 🗸					
2	Are the reportin	analyzers and monitor 1g data?	s operational, on-li	ne, and 🗹					
3	Describ	e ozone sample tube.			1/4 teflon by 12 meters				
4	Describ	e dry dep sample tube.			3/8 teflon by 12 meters				
5		ine filters used in the o location)	zone sample line? (i	if yes 🗸	At inlet only				
6	Are sam obstruct	nple lines clean, free of tions?	kinks, moisture, aı	nd 🗸					
7	Is the ze	ero air supply desiccan	t unsaturated?						
8	Are the	re moisture traps in the	e sample lines?	\checkmark	Flow line only				
9	Is there clean?	a rotometer in the dry	deposition filter lin	ne, and is it ⊻	Clean and dry				

Fi	eld Sy	stems Data Fo	orm					F-02	058-15	00-S6-rev002
Site	ID	ASH135	Technician	Eric Hebert		Site Visit I	Date 10	0/11/2016		
	DAS, ser	nsor translators, and j	peripheral equij	pment operation	ns ai	nd maintenance	<u>e</u>			
1		OAS instruments appe intained?	condition and							
2 Are all the components of the DAS operational? (printers, modem, backup, etc)										
3 Do the analyzer and sensor signal leads pass through lightning protection circuitry?						Met sensors on	nly			
4	Are the signal connections protected from the weather and well maintained?									
5	Are the signal leads connected to the correct DAS channel?				✓					
6	Are the grounde	DAS, sensor translato d?	ors, and shelter j	properly						
7	Does the	e instrument shelter h	ave a stable pow	ver source?	✓					
8	Is the in	strument shelter temp	oerature control	led?						
9	Is the m	et tower stable and gr	ounded?			Stable		(Grounded	
10	Is the sa	mple tower stable and	l grounded?							
11	Tower c	omments?								

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

Field Sy	ystems Data	a Fo	rm			F-02058-1500-S7-rev002					002
Site ID	ASH135		Technician Eric Heber		Eric Hebert	Site Visit Date 10)/11/2016				
Documen	<u>itation</u>										
Does the	site have the requ	ired in	strumen	t and	equipment manuals?						
		Yes	No	N/A	A		Yes	No	N/A		
Wind speed	sensor			✓	Data logger			\checkmark			
Wind direct	ion sensor			✓	Data logger				\checkmark		
Temperatur	e sensor	\checkmark			Strip chart	recorder			\checkmark		
Relative hur	nidity sensor				Computer		\checkmark				
Solar radiat	ion sensor				Modem		\checkmark				
Surface wet	ness sensor				Printer				\checkmark		
Wind sensor	r translator				Zero air pu	mp		\checkmark			
Temperatur	e translator				Filter flow F	oump		\checkmark			
Humidity se	ensor translator				Surge prote	ctor			\checkmark		
Solar radiat	ion translator				UPS			\checkmark			
Tipping buc	ket rain gauge				Lightning p	rotection device		\checkmark			
Ozone analy	zer	\checkmark			Shelter heat	ter		\checkmark			
Filter pack f	flow controller				Shelter air o	conditioner		\checkmark			
-	MFC power supp	ly 🗆		✓							
Does the	<u>e site have the req</u>	uired a	and most	t recei	nt QC documents and 1	<u>report forms?</u>					
		Pres	sent				Curre	nt			

Station Log	\checkmark		\checkmark
SSRF	\checkmark		\checkmark
Site Ops Manual		June 2007	\checkmark
HASP	\checkmark	Oct 2015	\checkmark
Field Ops Manual			
Calibration Reports	\checkmark		\checkmark
Ozone z/s/p Control Charts			
Preventive maintenance schedul	\checkmark		\checkmark

1	Is the station log properly completed during every site visit?	
2	Are the Site Status Report Forms being completed and current?	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	
4	Are ozone z/s/p control charts properly completed and current?	Control charts not used

ASH135 Technician Eric Hebert Site Visit Date 10/11/2016 Site ID Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Com
Multipoint Calibrations	\checkmark	N/A	\checkmark
Visual Inspections	\checkmark	Weekly	✓
Translator Zero/Span Tests (climatronics)		N/A	✓
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

 \checkmark

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed
Multi-point Calibrations
Automatic Zero/Span Tests
Manual Zero/Span Tests

Multi-point Calibrations	\checkmark	Semiannually
Automatic Zero/Span Tests	\checkmark	Daily
Manual Zero/Span Tests		
Automatic Precision Level Tests	\checkmark	Daily
Manual Precision Level Test		
Analyzer Diagnostics Tests	\checkmark	Weekly
In-line Filter Replacement (at inlet)	\checkmark	Monthly
In-line Filter Replacement (at analyze	\checkmark	N/A
Sample Line Check for Dirt/Water	\checkmark	Weekly
Zero Air Desiccant Check	\checkmark	Weekly

Frequency

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- 2 Do automatic and manual z/s/p gasses go through the complete sample train including all filters?

3	Are the automatic and manual z/s/p checks monitored and	
	reported? If yes, how?	

	Unknown	
✓	SSRF, call-in	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is replaced and the sample train is leak tested once each month.

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

pliant

F-02058-1500-S8-rev002

Compliant

Fi	eld Sy	stems Data Forr	n				F-02058 -	1500-S9-rev002
Sit	e ID	ASH135	[<mark>echnicia</mark>	n Eric Hebert		Site Visit Date	10/11/2016	
	<u>Site ope</u>	eration procedures						
1	Is the fi	lter pack being changed ev	very Tues	day as scheduled	? ✓	Filter changed mori	nings	
2	Are the correctl	Site Status Report Forms ly?	being cor	npleted and filed	✓			
3	Are dat schedul	a downloads and backups ed?	being per	formed as		No longer required		
4	Are gen	neral observations being m	ade and r	ecorded? How?	✓	SSRF		
5	Are site fashion	e supplies on-hand and rep ?	lenished i	n a timely	✓			
6	Are san	nple flow rates recorded? I	How?		✓	SSRF, call-in		
7	Are san fashion	nples sent to the lab on a ro?	egular sch	edule in a timely	✓			
8		ers protected from contam pping? How?	ination d	uring handling	✓	Clean gloves on an	d off	
9		site conditions reported re ons manager or staff?	egularly t	o the field				
QC	Check P	erformed	Fr	requency			Compliant	
I	Multi-poi	nt MFC Calibrations	🗹 Se	miannually				
J	Flow Syst	em Leak Checks	✓ we	eekly				
J	Filter Pac	k Inspection						
]	Flow Rate	e Setting Checks	✓ W	eekly			\checkmark	
	Visual Ch	eck of Flow Rate Rotomet	er 🗹 😡	eekly			\checkmark	
1	n-line Fil	Iter Inspection/Replacement	nt 🗹 Se	miannually			\checkmark	
5	Sample L	ine Check for Dirt/Water	✓ w	eekly			\checkmark	
Duca	do on-	ditional ambandian (nh	otognork	on alrotah if raasa		a) maganding age 114	ong listed above a	n one other feetunes

T10 1 1	0 1	D	
Field	Systems	Data	Form

ASH135

F-02058-1500-S10-rev002

Technician Eric Hebert

Site Visit Date 10/11/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07070
DAS	Campbell	CR3000	4933	000634
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	118700000595	01449
Flow Rate	Арех	AXMC105LPMDPC	54777	000648
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311148	06471
Ozone	ThermoElectron Inc	49i A1NAA	1009241793	000620
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200018	000442
Sample Tower	Aluma Tower	A	none	03536
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	13994	06389
Zero air pump	Werther International	C 70/4	000836208	06923

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAT175-Eric Hebert-10/14/2016						
1	10/14/2016	Computer	Dell	07043	Inspiron 15	Unknown
2	10/14/2016	DAS	Campbell	000412	CR3000	2532
3	10/14/2016	Elevation	Elevation	None	1	None
4	10/14/2016	Filter pack flow pump	Brailsford	none	TD-4X2N	none
5	10/14/2016	Flow Rate	Apex	000644	AXMC105LPMDPCV	illegible
6	10/14/2016	Infrastructure	Infrastructure	none	none	none
7	10/14/2016	Modem	Raven	06660	V4221-V	0918425101
8	10/14/2016	Sample Tower	Aluma Tower	666359	В	none
9	10/14/2016	Shield (10 meter)	RM Young	none	41003	none
10	10/14/2016	Siting Criteria	Siting Criteria	None	1	None
11	10/14/2016	Temperature	RM Young	06409	41342VO	14042
12	10/14/2016	UPS	ProSine	04576	1000w	unknown

DAS Data Form

DAS Time Max Error: 0.08

Mfg	Serial N	umber Site	T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2532	CAT	Г175 I	Eric Hebert	10/14/2016	DAS	Primary
Das Date:	10/14/2016	Audit Date	10/14/2016	Mfg	Datel	Parameter	DAS
Das Time:	10:09:55	Audit Time	10:10:00		4000000		
Das Day:	288	Audit Day	288	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	4:	High Channe	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.000	1 0.000	0.0001	0.0001				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	D Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3001	V	V	0.0001	
7	0.5000	0.5000	0.5001	V	V	0.0001	
7	0.7000	0.7001	0.7002	V	V	0.0001	
7	0.9000	0.9002	0.9002	V	V	0.0000	
7	1.0000	1.0002	1.0003	V	V	0.0001	

Flow Data Form

Mfg	Serial Nur	nber Ta	Site	Тес	Technician S		Date Paran	neter	Owner ID
Apex	illegible		CAT175	Eri	Eric Hebert		6 Flow F	Rate	000644
					MfgESerial Number1Tfer ID0			arameter Flo	
					Slope	1.	00309 Int	ercept	-0.00231
					Cert Date	4/2	1/2016 Co	rrCoff	1.00000
DAS 1: A Avg % Diff: 1.12%	A Max % Di 1.35%	DAS 2: A Avg %	Dif A Max	« % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale		02 03 .4	
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.495	1.490	1.47	0.000	1.51	l/m	l/m	1.34%
primary	test pt 2	1.487	1.480	1.47	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.501	1.500	1.47	0.000	1.51	l/m	l/m	0.67%
Sensor Comp	onent Leak Te	st		Conditio	n		Statu	pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good		Statu	pass	
Sensor Comp	onent Filter Po	sition		Conditio	Poor		Statu	Fail	
Sensor Comp	onent Rotomet	er Conditic	on	Conditio	n Clean and dry		Statu	pass	
Sensor Comp	onent Moisture	Present		Conditio	See comments	3	Statu	pass	
Sensor Comp	onent Filter Dis	stance		Conditio	n 5.0 cm		Statu	pass	
	Filter De				n -1.0 cm		Statu	Fail	
	onent Filter Az			Conditio	n 180 deg		Status	pass	
Sensor Comp	onent System I	Memo		Conditio	n		Statu	s pass	

Temperature Data Form

Mfg	Serial Number T	a Site	Site		Technician		isit Date	Param	eter	Owner ID	
RM Young	14042	CAT175		Eric Hebert		10/14	l/2016	Temper	ature	06409	
				Mf	g	Extec	h	Pa	rameter Te	emperature	
				Ser	rial Number	H2326	679	Tf	er Desc. R	٢D	
				Tfe	er ID	01228	}				
DAS 1:	DAS	2:		Slo	pe		1.0076	0 Inte	rcept	-0.0571	0
Abs Avg Err Abs Max Er Abs Avg Err Abs Max			Max Er	ax Er Cert Date			2/28/2016 CorrCoff 1.00000		0		
0.07	0.16										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	-0.04	0.02	0.02 0.000		0.2		C	0.16		
primary Tem	p Mid Range	17.66	17.5	8	0.000	17.6		С	-0.02		
primary Tem	p High Range	42.60	42.34	4	0.000		42.	3	С	-0.03	
Sensor Compone	ent Shield		Condi	ition N	Moderately clea	an		Status	pass		
Sensor Compone	ent Blower		Condi	ition 🕨	N/A			Status	pass		
Sensor Compone	ent Blower Status S	Switch	Condi	Condition N/A				Status	pass		
Sensor Compone	ent System Memo		Condi	ition				Status	pass		

Infrastructure Data For

Site ID	CAT175	Technician Eric Hebe	ert Site Visit Date 10/14/2016
Shelter N	lake	Shelter Model	Shelter Size
Ekto		8810 (s/n 1977-1)	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Poor	Status	Fail
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID CAT175	Technician Eric Hebert	Site Visit Date 10/1	4/2016
Site Sponsor (agency)	EPA	USGS Map	Claryville
Operating Group	private	Map Scale	
AQS #		Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	41.9423
Deposition Measurement	dry	QAPP Longitude	-74.5519
Land Use	woodland - mixed	QAPP Elevation Meters	765
Terrain	complex	QAPP Declination	13.5
Conforms to MLM	No	QAPP Declination Date	2/22/2006
Site Telephone	(845) 798-0947	Audit Latitude	41.942325
Site Address 1	Wildcat Mt. Road	Audit Longitude	-74.551999
Site Address 2		Audit Elevation	754
County	Ulster	Audit Declination	-13.2
City, State	Claryville, NY	Present	
Zip Code	12725	Fire Extinguisher 🔽	New in 2015
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat 🔽	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room ✓	Make Ekto M	lodel 8810 (s/n 1977-1)	Shelter Size 640 cuft
Shelter Clean		batteries stored in the shelter.	floor and walls. There are many The vegetation has been allowed to
Site OK	Notes		
Road	Liberty, NY go west on route 52 toward 0 19 to Claryville. Stay on 19 through Clar e at the far end of town. Bear right and fo rk and turn left at the first house on the left.	yville and turn left on Wildcat M llow the semi-paved road for ab	t Road immediately after crossing the pout 0.7 miles to the fork. Go right at

CAT175

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Site ID

Technician Eric Hebert

Site Visit Date 10/14/2016

Pass = **Potential Interferent Minimum Distance From** Distance Checked **Measurement Apparatus V** Large Point Source of SO2 or NOx 20 to 40 km \checkmark Major industrial complex 10 to 20 km \checkmark City > 50,000 population 40 km ✓ City 10,000 to 50,000 population 10 km ✓ City 1,000 to 10,000 population 5 km \checkmark Major highway, airport or rail yard 2 km \checkmark Secondary road, heavily traveled 500 m ✓ Secondary road, lightly traveled 200 m ✓ Feedlot operations 500 m ✓ Intensive agricultural ops (including aerial spraying) 500 m ✓ Limited agricultural operations 200 m ✓ Large parking lot 200 m ✓ Small parking lot 100 m Tree line 50 m ✓ Obstacles to wind 10 times obstacle height

Siting Distances OK

Siting Criteria Comment

Fi	eld Systems Data Form		F-02058-1500-S3-rev00				
Sit	e ID CAT175 Technician Eric Hebert		Site Visit Date 10/14/2016				
1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	✓	N/A				
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)		N/A				
3	Are the tower and sensors plumb?	✓	N/A				
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	✓					
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)						
6	Is the solar radiation sensor plumb?	✓	N/A				
7	Is it sited to avoid shading, or any artificial or reflected light?	✓	N/A				
8	Is the rain gauge plumb?	✓	N/A				
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	✓	N/A				
10	Is the surface wetness sensor sited with the grid surface facing north?	✓	N/A				
11	Is it inclined approximately 30 degrees?	✓	N/A				
	ovide any additional explanation (photograph or sketch if nece tural or man-made, that may affect the monitoring parameters		y) regarding conditions listed above, or any other features,				

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 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? 2 Are all the meteorological sensors operational online, and reporting data? 3 Are the shields for the temperature and RH sensors clean? 4 Are the aspirated motors working? 7 Temperature only 8 Natural aspiration 	
4 Are the aspirated motors working? Image: Constraint of the second se	
5 Is the solar radiation sensor's lens clean and free of scratches? N/A N/A	
6 Is the surface wetness sensor grid clean and undamaged? ✓ N/A	
7 Are the sensor signal and power cables intact, in good condition, and well maintained?	
8 Are the sensor signal and power cable connections protected from the elements and well maintained?	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	CAT175	Technician Er	ic Hebert		Site Visit Date 10/14/2016
	Siting C	riteria: Are the pollut	ant analyzers and	deposition equi	<u>ipn</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		ample inlets have at le cted airflow?	east a 270 degree a	nrc of		
2	Are the	sample inlets 3 - 15 m	eters above the gro	ound?		
3 Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?						
	<u>Pollutar</u>	nt analyzers and depos	ition equipment o	perations and n	nai	ntenance
1		nalyzers and equipme n and well maintained		l good		Ozone not measured
2	Are the reportin	analyzers and moniton ng data?	rs operational, on-	line, and		
3	Describ	e ozone sample tube.				N/A
4	Describ	e dry dep sample tube.				3/8 teflon by 18 meters
5		ine filters used in the o location)	ozone sample line?	' (if yes		N/A
6	Are sam	ple lines clean, free of tions?	' kinks, moisture,	and		
7	Is the ze	ero air supply desiccan	t unsaturated?			N/A
8	Are the	re moisture traps in th	e sample lines?	C		
9	Is there clean?	a rotometer in the dry	v deposition filter	line, and is it		Clean and dry

Ozone monitoring is no longer being conducted at the site.

Fie	eld Sy	stems Data Fo		F-02058-1500-S6-rev002					
Site	e ID	CAT175	Technician	Eric Hebert		Site Visit Da	te 10/14/201	6	
	DAS, sei	nsor translators, and j	peripheral equij	pment operation	ns ai	nd maintenance			
1		AS instruments appe ntained?	ar to be in good	condition and					
2		he components of the backup, etc)	DAS operation	al? (printers,					
3		nalyzer and sensor sig g protection circuitry?	-	hrough	✓	Met sensors only			
4		signal connections pro ntained?	otected from the	e weather and					
5	Are the	signal leads connected	l to the correct l	DAS channel?	✓				
6	Are the grounde	DAS, sensor translato d?	rs, and shelter j	properly					
7	Does the	instrument shelter ha	ave a stable pow	ver source?		Solar power			
8	Is the in	strument shelter temp	erature control	led?		Shelter not tempe	erature contro	lled	
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower c	omments?				Met tower remove	ed		

The shelter is not temperature controlled. The site is solar and DC battery powered. The met tower has been removed and the temperature is being measured from the sample tower at 10 meters above ground.

Field	Systems Data	Fo	rm				F-0 2	2058-	-1500-S	7-rev002
Site ID	CAT175		Tech	nician E	ric Hebert	Site Visit Da	10/14/201	6		
Docur	<u>nentation</u>									
	the site have the requi	red in	strume	nt and eq	uipment mar	uals?				
2005		Yes	No	N/A			Yes	No	N/A	
Wind sp	eed sensor				Data	logger				
Wind dia	rection sensor				Data	logger				
Tempera	ature sensor	✓			Strip	chart recorder				
Relative	humidity sensor				Com	puter		\checkmark		
Solar rad	diation sensor				Mod	em		\checkmark		
Surface	wetness sensor			\checkmark	Prin	ter			\checkmark	
Wind ser	nsor translator			\checkmark	Zero	air pump				
Tempera	ature translator				Filte	r flow pump		\checkmark		
Humidit	y sensor translator				Surg	e protector			\checkmark	
Solar rad	diation translator				UPS		\checkmark			
Tipping	bucket rain gauge				Ligh	tning protection dev	rice	\checkmark		
Ozone ai	nalyzer				Shel	ter heater				
Filter pa	ck flow controller		\checkmark		Shel	ter air conditioner				
Filter pa	ck MFC power supply	y 🗌								
Does	s the site have the requ	iired a	und mo	st recent	QC documen	ts and report forms?				
		Pres	sent				Curr	ent		
Station I	Jog		✓							
SSRF	0		✓							
Site Ops	Manual		[Oct 2001				1		
HASP				Oct 2015						
Field Op	s Manual									
Calibrat	ion Reports									
Ozone z/	s/p Control Charts			N/A						
Preventi	ve maintenance sched	ul								
1 Is tl	he station log properly	v comp	oleted d	luring evo	ery site visit?					
	the Site Status Repor rent?	t Forr	ns bein	g comple	ted and					
	the chain-of-custody ple transfer to and fro			rly used to	o document					
	ozone z/s/p control ch rent?	narts p	roperl	y complet	ted and	N/A				
Provide	any additional explana	ation (photog	raph or s	sketch if neces	sary) regarding con	ditions listed	above.	or any othe	er features.

natural or man-made, that may affect the monitoring parameters:

Site ID CAT175 Technician Eric Hebert Site Visit Date 10/14/2016 Site operation procedures Trained by previous operator Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? ✓ Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	\checkmark	Semiannually	\checkmark
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed	Frequency	Compliant
Multi-point Calibrations	N/A	
Automatic Zero/Span Tests	N/A	\checkmark
Manual Zero/Span Tests	N/A	
Automatic Precision Level Tests	N/A	
Manual Precision Level Test	N/A	
Analyzer Diagnostics Tests	N/A	
In-line Filter Replacement (at inlet)	N/A	
In-line Filter Replacement (at analyze	N/A	
Sample Line Check for Dirt/Water	N/A	
Zero Air Desiccant Check	N/A	
 Do multi-point calibration gases go through the sample train including all filters? Do automatic and manual z/s/p gasses go thro complete sample train including all filters? 		

reported? If yes, how?

Are the automatic and manual z/s/p checks monitored and

3

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

□ N/A

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Fi	eld Sy	stems Data Form		F-02058-1500-S9-rev002					
Site	e ID	CAT175 Te	chnician Eric Hebert		Site Visit Date	10/14/2016]		
	<u>Site ope</u>	eration procedures							
1	Is the fi	lter pack being changed even	y Tuesday as scheduled	? ✓	Filter changed more	nings 95% of the time			
2	Are the correct	Site Status Report Forms bo ly?	ing completed and filed	✓					
3	Are dat schedul	a downloads and backups be ed?	eing performed as		No longer required				
4	Are gen	eral observations being mad	e and recorded? How?						
5	Are site supplies on-hand and replenished in a timely fashion?								
6	Are san	nple flow rates recorded? Ho	w?	✓	SSRF, logbook				
7	Are san fashion	nples sent to the lab on a reg ?	ular schedule in a timely	✓					
8		ers protected from contamin pping? How?	ation during handling	✓	Clean gloves on and off				
9		site conditions reported reg ons manager or staff?	ularly to the field	✓					
QC	Check P	erformed	Frequency			Compliant			
N	Multi-poi	nt MFC Calibrations	Semiannually			\checkmark			
F	Flow Syst	em Leak Checks	✓ Weekly			\checkmark			
F	Filter Pack Inspection								
F	Flow Rate Setting Checks					\checkmark			
۲	Visual Check of Flow Rate Rotometer Veekly					\checkmark			
Ι	In-line Filter Inspection/Replacement Semiannually					\checkmark			
S	Sample Line Check for Dirt/Water Weekly					\checkmark			
Prov	vide any a	additional explanation (phot	ograph or sketch if neces	sary	y) regarding conditi	ions listed above, or a	ny other features,		

New site operators from the Frost Valley YMCA camp are now operating the site.

Field Systems Data Form	F-02

CAT175

Technician Eric Hebert

Site Visit Date 10/14/2016

Site Visit Sensors

Site ID

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07043
DAS	Campbell	CR3000	2532	000412
Elevation	Elevation	1	None	None
Filter pack flow pump	Brailsford	TD-4X2N	none	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000644
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0918425101	06660
Sample Tower	Aluma Tower	В	none	666359
Shield (10 meter)	RM Young	41003	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14042	06409
UPS	ProSine	1000w	unknown	04576

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Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CTI	H110-Eric H	lebert-10/15/2016				
1	10/15/2016	Computer	Dell	07044	Inspiron 15	Unknown
2	10/15/2016	DAS	Campbell	000415	CR3000	2510
3	10/15/2016	Elevation	Elevation	None	1	None
4	10/15/2016	Filter pack flow pump	Thomas	02664	107CA18	1092135217
5	10/15/2016	Flow Rate	Арех	000557	AXMC105LPMDPCV	unknown
6	10/15/2016	Infrastructure	Infrastructure	none	none	none
7	10/15/2016	Modem	Raven	06599	V4221-V	0844349892
8	10/15/2016	Ozone	ThermoElectron Inc	000735	49i A1NAA	1105347308
9	10/15/2016	Ozone Standard	ThermoElectron Inc	000447	49i A3NAA	CM08200023
10	10/15/2016	Sample Tower	Aluma Tower	666363	В	AT-5107-E-4-10
11	10/15/2016	Shelter Temperature	Campbell	none	107-L	none
12	10/15/2016	Shield (10 meter)	RM Young	none	unknown	none
13	10/15/2016	Siting Criteria	Siting Criteria	None	1	None
14	10/15/2016	Temperature	RM Young	06301	41342	12540
15	10/15/2016	Zero air pump	Werther International	06864	PC70/4	000815261

DAS Data Form

DAS Time Max Error: 0.2

Mfg	Serial Nu	mber Site	ſ	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2510	СТН	1110	Eric Hebert	10/15/2016	DAS	Primary
Das Date:	10/15/2016	Audit Date	10/15/2016	Mfg	Datel	Parameter	DAS
Das Time:	289	Audit Time Audit Day	289	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe		High Channe		Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.0000	0.0000	0.0000	0.0000				
				Mfg	Fluke	Parameter	DAS
				U U			
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3000		V	0.0000	
7	0.5000	0.5000	0.5000		V	0.0000	
7	0.7000	0.7000	0.7000		V	0.0000	
7	0.9000	0.9000	0.9000		V	0.0000	
7	1.0000	1.0000	1.0000	V	V	0.0000	

Flow Data Form

Mfg	Serial Nu	mber Ta	Site	Те	chnician	nnician Site Visit Date		neter	Owner ID
Арех	unknown		CTH110	Eri	ic Hebert	10/15/2010	6 Flow F	Rate	000557
					Mfg Serial Number	BIOS 148613		Parameter Flo	
					Tfer ID Slope			ercept	-0.00231
DAS 1: A Avg % Diff: 1.35%	A Max % Di 1.35%		Dif A Max	x % Di	Cert Date Cal Factor Z Cal Factor F Rotometer R	ero	0.	rrCoff 02 95 1.5	1.00000
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	IPctDifference
primary	pump off	0.000	0.000	-0.02	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.04	0.000	0.06	l/m	l/m	
primary	test pt 1	1.481	1.480	1.59	0.000	1.50	l/m	l/m	1.35%
primary	test pt 2	1.481	1.480	1.59	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.481	1.480	1.59	0.000	1.50	l/m	l/m	1.35%
Sensor Comp	onent Leak Te	est		Conditio	n		Statu	s pass	
Sensor Comp	onent Tubing	Condition		Conditio	Good		Statu	s pass	
Sensor Comp	onent Filter P	osition		Conditio	n Good		Statu	s pass	
Sensor Comp	onent Rotome	ter Conditio	n	Conditio	Clean and dry		Statu	s pass	
	onent Moistur				n See comments	8	Statu	s pass	
	onent Filter D				2.5 cm		Statu	s pass	
	onent Filter D				n 3.5 cm			s pass	
	Filter A				Not tested			s pass	
Sensor Comp	onent System	Memo		Conditio	n		Statu	s pass	

Ozone Data Form

Mfg S	erial Number Ta	Site	Tec	hnician		Site Visit	t Date	Parame	ter	Owner ID
ThermoElectron Inc 1	105347308	CTH110	Eri	c Hebert		10/15/20)16	Ozone		000735
Intercept -0.5	8214Slope:50545Intercept99997CorrCoff	0.00000 0.00000 0.00000))	Mfg Serial N Tfer ID		ThermoE 0517112 ⁻ 01113			rameter	ozone Ozone primary stan
DAS 1: A Avg % Diff: A Ma 2.7%	DAS 2: x % Di A Avg % 4.1%	Dif A Max (% Di	Slope Cert Da	te		1.00500 /28/2016) Inter	•	-0.28841 1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer (Corr	Si	te	Site	Unit	PctI	Difference
primary	1	0.34	0.6				ppb			
primary	2	28.00	28.1	14	27		ppb			-4.05%
primary	3	48.44	48.4	48	47	.69 j	ppb			-1.63%
primary	4	76.28	76.1	18	74	.13 1	ppb			-2.69%
primary	5	112.99	112.	71	110).10 j	ppb			-2.32%
Sensor Component	Sample Train		Conditio	n Good				Status	pass	
Sensor Component	22.5 degree rule		Conditio	n				Status	pass	
Sensor Component	Inlet Filter Conditio	n	Conditio	n Clean				Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A				Status	pass	
Sensor Component	Offset		Conditio	n 0.40				Status	pass	
Sensor Component	Span		Conditio	n 1.014				Status	pass	
Sensor Component	Zero Voltage		Condition N/A				Status	pass		
Sensor Component	Fullscale Voltage		Conditio	Condition N/A				Status	pass	
Sensor Component	Cell A Freq.			Condition 89.6 kHz				Status	pass	
Sensor Component	Cell A Noise		Conditio					Status		
Sensor Component	Cell A Flow		Conditio	<mark>n</mark> 0.59 lj	om			Status	pass	
Sensor Component	Cell A Pressure		Conditio	n 705.2	mmHg			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	n 32.1 C	;			Status	pass	
Sensor Component	Cell B Freq.		Conditio	<mark>n</mark> 98.1 k	Hz			Status	pass	
Sensor Component	Cell B Noise		Conditio	n 1.4 pp	b			Status	pass	
Sensor Component	Cell B Flow		Conditio	<mark>n</mark> 0.52 lj	om			Status	pass	
Sensor Component	Cell B Pressure		Conditio	n 704.9	mmHg			Status	pass	
Sensor Component	Cell B Tmp.	Conditio	ion				Status	pass		
Sensor Component	Line Loss	Conditio	Not tested				Status	pass		
Sensor Component	System Memo		Conditio	n				Status	pass	

Temperature Data Form

Mfg	Serial Number T	'a Site	,	Techn i	ician	Site V	isit Date	Param	eter	Owner ID	
RM Young	12540	CTH110		Eric H	ebert	10/15	5/2016	Temper	ature	06301	
				Mf	g	Extec	h	Pa	arameter Te	emperature	
				Ser	rial Number	H2326	679	Tf	er Desc. R	ſD	
				Tfe	er ID	01228	3				
DAS 1:	DAS	2:		Slo	ope		1.0076	0 Inte	rcept	-0.0571	10
Abs Avg Err Ab	Abs Avg Err Abs Max Er Abs Avg Err Abs Ma				ax Er Cert Date		2/28/2016 Corr		rCoff	1.0000	00
0.08	0.21										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	-0.11	-0.05	5	0.000		0.2	2	С	0.21	
primary Tem	p Mid Range	22.79	22.6	7	0.000		22.	7	С	-0.01	
primary Tem	p High Range	49.26	48.9	5	0.000		49.	0	С	0.03	
Sensor Compone	nt Shield		Condi	ition C	Clean			Status	pass		
Sensor Component Blower				Condition N/A				Status	pass		
Sensor Component Blower Status Switch				Condition N/A				Status	pass		
Sensor Compone	ent System Memo		Condi	ition				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	CTH110	Eric Hebert	10/15/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab	os Max Er Abs Avg 0.15	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.40	23.28	0.000	23.3	С	-0.01
primary	Temp Mid Range	23.93	23.81	0.000	23.7	С	-0.15
primary	Temp Mid Range	23.34	23.22	0.000	23.4	С	0.15
Sensor Con	nponent System Memo)	Condition	Status pass			

Infrastructure Data For

Site ID	CTH110	Technician Eric Het	Site Visit Date 10/15/2016
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2116-6)	640 cuft
100 Crack Barring St			

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID CTH110	Technician Eric Hebert	Site Visit Date 10/1	5/2016		
Site Sponsor (agency)	EPA	USGS Map	Mecklenburg		
Operating Group	IES	Map Scale			
AQS #	36-109-9991	Map Date			
Meteorological Type	R.M. Young				
Air Pollutant Analyzer	Ozone, ammonia	QAPP Latitude	42.4010		
Deposition Measurement	dry, wet	QAPP Longitude	-76.6535		
Land Use	woodland - mixed	QAPP Elevation Meters	515		
Terrain	rolling	QAPP Declination	12.3		
Conforms to MLM	No	QAPP Declination Date	12/28/2004		
Site Telephone	(607) 564-7622	Audit Latitude	42.400875		
Site Address 1	CR 136 (Connecticut Hill Road)	Audit Longitude	-76.653516		
Site Address 2		Audit Elevation	511		
County	Tompkins	Audit Declination	-12.0		
City, State	Newfield, NY	Present			
Zip Code	14867	Fire Extinguisher 🗹	New in 2015		
Time Zone	Eastern	First Aid Kit			
Primary Operator		Safety Glasses			
Primary Op. Phone #		Safety Hard Hat 🔽			
Primary Op. E-mail		Climbing Belt			
Backup Operator		Security Fence			
Backup Op. Phone #		Secure Shelter			
Backup Op. E-mail		Stable Entry Step 🔽			
Shelter Working Room ✓	Make Ekto M	odel 8810 (s/n 2116-6)	Shelter Size 640 cuft		
Shelter Clean	Notes The condition of the shelter flow	or is beginning to deteriorate.			
	Notes				
Driving Directions From Ithaca take route 13 south to hwy 327. Bear right onto hwy 327 and go past both the lower and upper entrances for Robert Treman St Park. Turn left at the second left past the upper entrance to the park onto Trumbell Corners Road. Continue on Trumbell Corners Rd for approximately one mile to the stop sign. Turn right at the stop onto Connecticut Hill Road and continue for approximately 1/4 mile where it veers to the right. The site is up the hill on the left just after the turn in the road.					

CTH110

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Site ID

Technician Eric Hebert

Site Visit Date 10/15/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m	30 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions.

Fi	eld Systems Data Form		F-02058-1500-S3-rev002			
Sit	e ID CTH110 Technician Eric Hebert		Site Visit Date 10/15/2016			
1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	✓	N/A			
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)		N/A			
3	Are the tower and sensors plumb?	✓	N/A			
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	✓				
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)					
6	Is the solar radiation sensor plumb?	✓	N/A			
7	Is it sited to avoid shading, or any artificial or reflected light?	✓	N/A			
8	Is the rain gauge plumb?	✓	N/A			
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	✓	N/A			
10	Is the surface wetness sensor sited with the grid surface facing north?	✓	N/A			
11	Is it inclined approximately 30 degrees?	✓	N/A			
	ovide any additional explanation (photograph or sketch if nece tural or man-made, that may affect the monitoring parameters		y) regarding conditions listed above, or any other features,			

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 Do all the meterological sensors appear to be intact, in good			
2 Are all the meteorological sensors operational online, and reporting data?	¹ Temperature only		
3 Are the shields for the temperature and RH sensors clean?			
4 Are the aspirated motors working?			
5 Is the solar radiation sensor's lens clean and free of scratches?			
6 Is the surface wetness sensor grid clean and undamaged?			
7 Are the sensor signal and power cables intact, in good condition, and well maintained?			
8 Are the sensor signal and power cable connections protected from the elements and well maintained?			

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Sit	e ID CTH110 Technician Eric Hebert		Site Visit Date 10/15/2016
	Siting Criteria: Are the pollutant analyzers and deposition e	equip:	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	✓	
2	Are the sample inlets 3 - 15 meters above the ground?	✓	
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?	, ⊻	
	Pollutant analyzers and deposition equipment operations an	id ma	<u>intenance</u>
1	Do the analyzers and equipment appear to be in good condition and well maintained?	✓	
2	Are the analyzers and monitors operational, on-line, and reporting data?	✓	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	4 Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓	
7	Is the zero air supply desiccant unsaturated?	✓	
8	Are there moisture traps in the sample lines?	✓	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	ł	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fi	eld Sy	stems Data Fo	orm				F-02	058-15	500-S6-rev002	
Site	e ID	CTH110	Technician	Eric Hebert		Site Visit	Date	10/15/2016	;	
	DAS, sei	nsor translators, and p	eripheral equi	pment operatio	ns ai	nd maintenan	<u>nce</u>			
1		OAS instruments appeantained?	ar to be in good	l condition and						
2		he components of the I backup, etc)	DAS operation	al? (printers,	✓					
3		nalyzer and sensor sig g protection circuitry?		through	✓	Met sensors o	only			
4		signal connections prot ntained?	tected from the	e weather and	✓					
5	Are the	signal leads connected	to the correct	DAS channel?	✓					
6	Are the grounde	DAS, sensor translator d?	rs, and shelter	properly						
7	Does the	instrument shelter ha	ve a stable pov	ver source?	✓					
8	Is the in	strument shelter tempo	erature control	lled?						
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?				Met tower ren	noved		•	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological tower has been removed and the temperature sensor has been moved to the sample tower at 10 meters above the ground. The shield has been changed from aspirated to naturally aspirated.

Field Sy	ystems Data	For	·m				F-02	058-	1500-S	7-rev00
Site ID	CTH110		Technic	ian	Eric Hebert	Site Visit Date	10/15/2016			
Documer	<u>ntation</u>									
Does the	<u>site have the requir</u>	ed ins	trument	and	<u>equipment manuals?</u>					
Wind speed Wind direct Temperatur	tion sensor	Yes	No	N/.	A Data logger Data logger Strip chart 1	ecorder	Yes	No V	N/A □ ✓ ✓	
_	midity sensor				Computer Modem					
Surface wet Wind sensor					Printer Zero air pur Filter flow p	•		✓		
Humidity se Solar radiat	ensor translator tion translator			✓ ✓	Surge protec UPS	ctor				
Ozone analy Filter pack	flow controller				Shelter heat Shelter air c					
-	MFC power supply <u>e site have the requ</u>		nd most		nt QC documents and r	eport forms?	Curre	nt		
Station Log		L.								

2

Station Log	\checkmark		\checkmark
SSRF			
Site Ops Manual	\checkmark	Oct 2001	
HASP	\checkmark	Oct 2015	
Field Ops Manual	\checkmark	Oct 2015	
Calibration Reports	\checkmark		
Ozone z/s/p Control Charts			
Preventive maintenance schedul			
			i .

1	Is the station log properly completed during every site visit?	✓	Minimal information
---	--	---	---------------------

- 2 Are the Site Status Report Forms being completed and current?
- 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?
- 4 Are ozone z/s/p control charts properly completed and current?

Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

✓

CTH110 Technician Eric Hebert Site Visit Date 10/15/2016 Site ID Site operation procedures Trained at ESE in 1987 Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check	Performed
----------	-----------

Frequency

Multipoint Calibrations	\checkmark	Semiannually	\checkmark
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)	\checkmark	N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

Are regular operational QA/QC checks performed on the ozone analyzer?

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

Frequency	Compliant
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
N/A	\checkmark
Weekly	\checkmark
Weekly	\checkmark

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

3	Are the automatic and	manual z/s/p	checks monitored and	
	reported? If yes, how?			

Unknown
SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is changed and the sample train is leak tested every two weeks.

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Compliant

Fi	eld Sy	stems Data Form					ired n and off Compliant	
Sit	e ID	CTH110 Tee	chnician	Eric Hebert		Site Visit Date	10/15/2016	
	<u>Site ope</u>	eration procedures						
1	Is the fi	lter pack being changed ever	y Tuesda	ay as scheduled?		Filter changed after	noons	
2	Are the correctl	Site Status Report Forms be ly?	eing com	pleted and filed	✓			
3	Are dat schedul	a downloads and backups be ed?	ing perfo	ormed as		No longer required		
4	Are gen	eral observations being mad	e and red	corded? How?	✓	SSRF		
5	Are site fashion	supplies on-hand and repler ?	nished in	a timely				
6	Are san	nple flow rates recorded? Ho	w?		✓	SSRF, call-in		
7	Are san fashion	nples sent to the lab on a reg ?	ular sche	dule in a timely				
8		ers protected from contamin pping? How?	ation du	ring handling	✓	Clean gloves on an	d off	
9		site conditions reported regrons manager or staff?	ularly to	the field				
QC	Check P	erformed	Free	quency			Compliant	
I	Multi-poi	nt MFC Calibrations	✓ Sem	niannually				
I	Flow Syst	em Leak Checks	✓ Wee	ekly			\checkmark	
I	Filter Pac	k Inspection						
I	Flow Rate	e Setting Checks	✓ Wee	ekly			\checkmark	
	Visual Ch	eck of Flow Rate Rotometer	✓ Wee	ekly			\checkmark	
I	n-line Fil	ter Inspection/Replacement	✓ Sem	niannually			\checkmark	
5	Sample L	ine Check for Dirt/Water	✓ Wee	ekly			\checkmark	
Dros	ido ony c	ditional automation (nhot	aronh a	n skotoh if nooos	CONT) recording conditi	iona listed above a	n any other features

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Sys	stems Data Fo	orm		
Site ID	CTH110	Technician	Eric Hebert	Site

Site Visit Date 10/15/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07044
DAS	Campbell	CR3000	2510	000415
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	1092135217	02664
Flow Rate	Арех	AXMC105LPMDPC	unknown	000557
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0844349892	06599
Ozone	ThermoElectron Inc	49i A1NAA	1105347308	000735
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200023	000447
Sample Tower	Aluma Tower	В	AT-5107-E-4-10	666363
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	unknown	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	12540	06301
Zero air pump	Werther International	PC70/4	000815261	06864

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Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ARI	E128-Eric H	ebert-10/16/2016				
1	10/16/2016	Computer	Dell	07045	Inspiron 15	Unknown
2	10/16/2016	DAS	Campbell	000400	CR3000	2524
3	10/16/2016	Elevation	Elevation	None	1	None
4	10/16/2016	Filter pack flow pump	Thomas	02661	107CA110	000012187C
5	10/16/2016	Flow Rate	Арех	000462	AXMC105LPMDPCV	42228
6	10/16/2016	Infrastructure	Infrastructure	none	none	none
7	10/16/2016	Modem	Raven	06809	V4221-V	093644408
8	10/16/2016	Ozone	ThermoElectron Inc	000621	49i A1NAA	1009241798
9	10/16/2016	Ozone Standard	ThermoElectron Inc	000199	49i A3NAA	0607315737
10	10/16/2016	Sample Tower	Aluma Tower	666361	В	none
11	10/16/2016	Shelter Temperature	Campbell	none	107-L	none
12	10/16/2016	Shield (10 meter)	RM Young	none	unknown	none
13	10/16/2016	Siting Criteria	Siting Criteria	None	1	None
14	10/16/2016	Temperature	Climatronics	06678	100093	missing
15	10/16/2016	Zero air pump	Werther International	06866	PC70/4	000815262

DAS Data Form

DAS Time Max Error: 0.08

Mfg	Serial Nu	mber Site]	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2524	ARE	128	Eric Hebert	10/16/2016	DAS	Primary
Das Date:	10/16/2016	Audit Date Audit Time	10/16/2016	Mfg	Datel	Parameter	DAS
Das Day:	290	Audit Day	290	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel		High Channel		Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.0001	1 0.0001	0.0001	0.0001				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	O Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.0999	0.1000) V	V	0.0001	
7	0.3000	0.3000	0.2999		V	-0.0001	
7	0.5000	0.4999	0.4999		V	0.0000	
7	0.7000	0.6999	0.6998		V	-0.0001	
7	0.9000	0.8998	0.8997		V	-0.0001	
7	1.0000	0.9998	0.9998	8 V	V	0.0000	

Flow Data Form

Mfg	Serial Nur	nber Ta	Site	Te	chnician	Site Visit I	Date Paran	neter	Owner ID
Apex	42228		ARE128	Er	ic Hebert	10/16/2016	6 Flow F	Rate	000462
					Mfg Serial Number Tfer ID	BIOS 148613 01421		arameter Flo Ter Desc. Bl	
					Slope	1.	00309 Int	ercept	-0.00231
					Cert Date	4/2	1/2016 Co	rrCoff	1.00000
DAS 1: A Avg % Diff: 0.88%	A Max % Di 1.32%	DAS 2: A Avg %	Dif A Max	x % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.0 1.0 1	=	
Desc.	Test type	Input 1/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	ll PctDifference
primary	pump off	0.000	0.000	-0.07	0.000	-0.03	l/m	l/m	
primary	leak check	0.000	0.000	-0.02	0.000	0.01	l/m	l/m	
primary	test pt 1	1.527	1.520	1.50	0.000	1.50	l/m	l/m	-1.32%
primary	test pt 2	1.516	1.510	1.50	0.000	1.51	l/m	l/m	0.00%
primary	test pt 3	1.520	1.520	1.50	0.000	1.50	l/m	l/m	-1.32%
Sensor Comp	onent Leak Tes	st		Conditio	on		Status	s pass	
Sensor Comp	onent Tubing C	Condition		Conditio	Good		Status	Status pass	
Sensor Comp	onent Filter Pos	sition		Conditio	Good		Status	pass	
Sensor Comp	onent Rotomet	er Conditio	n	Conditio	Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	See comments	3	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	2.5 cm		Status	pass	
Sensor Comp	onent Filter De	pth		Conditio	3.5 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	270 deg		Status	pass	
Sensor Comp	onent System M	Nemo		Conditio	n		Status	pass	

Ozone Data Form

Mfg S	erial Number Ta	Site	Tec	hnician		Site Visit	t Date	Parame	ter	Owner ID
ThermoElectron Inc 1	009241798	ARE128	Eri	c Hebert		10/16/20)16	Ozone		000621
Intercept -0.6	99462Slope:37845Intercept99999CorrCoff	0.00000)	Mfg Serial N Tfer ID		ThermoE 0517112 ⁻ 01113			rameter[er Desc. [ozone Ozone primary stan
DAS 1: A Avg % Diff: A Ma 1.9%	DAS 2: x % Di A Avg % 3.3%	Dif A Max (% Di	Slope Cert Da	te		1.00500 /28/2016) Inter	•	-0.28841
UseDescription	ConcGroup	Tfer Raw	Tfer (Corr	Si	te	Site	Unit	PctI	Difference
primary	1	0.24	0.5				ppb			
primary	2	28.07	28.2	21	27		ppb			-3.30%
primary	3	49.45	49.4	49	48	.63]	ppb			-1.74%
primary	4	77.50	77.4		76		ppb			-1.02%
primary	5	108.35	108.	09	106	5.60 j	ppb			-1.38%
Sensor Component	Sample Train		Conditio	n Good				Status	pass	
Sensor Component	22.5 degree rule		Conditio	n				Status	pass	
Sensor Component	Inlet Filter Conditio	n	Conditio	n Clean				Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A				Status	pass	
Sensor Component	Offset		Conditio	n 0.10				Status	pass	
Sensor Component	Span		Conditio	n 1.011				Status	pass	
Sensor Component	Zero Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Cell A Freq.		Conditio					Status	pass	
Sensor Component			Conditio				Status			
Sensor Component	Cell A Flow		Conditio	n 0.70 lj	om			Status	pass	
Sensor Component	Cell A Pressure		Conditio	n 710.8	mmHg			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	n 36.9 0)			Status	pass	
Sensor Component	Cell B Freq.		Conditio	n 85.9 k	Hz			Status	pass	
Sensor Component	Cell B Noise		Conditio	n 0.9 pp	b			Status	pass	
Sensor Component	Cell B Flow		Conditio	n 0.70 lj	om			Status	pass	
Sensor Component	Cell B Pressure		Conditio	n Not te	sted			Status	pass	
Sensor Component	Cell B Tmp.		Conditio	n				Status	pass	
Sensor Component	Line Loss		Conditio	n Not te	sted			Status	pass	
Sensor Component	System Memo		Conditio	n				Status	pass	

Temperature Data Form

Mfg	Serial Number 7	la Site	1	Techni	ician	Site V	isit Date	Param	eter	Owner ID
Climatronics	missing	ARE128		Eric H	ebert	10/16	6/2016	Temper	rature	06678
				Mf	g	Extec	h	Ра	arameter Te	emperature
				Ser	rial Number	H2326	679	Tf	fer Desc. R	٢D
				Tfe	er ID	01228	}			
DAS 1:	DAS	2:		Slo	pe		1.0076	0 Inte	rcept	-0.05710
Abs Avg Err Al	bs Max Er Abs A	Avg Err Abs	Max Er	Ce	rt Date		2/28/201	6 Cor	rCoff	1.00000
0.21	0.26									
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference
primary Ten	np Low Range	-0.01	0.05	5	0.000		0.3	3	С	0.26
primary Ten	np Mid Range	28.17	28.0	1	0.000		27.	9	С	-0.12
primary Ten	np High Range	48.89	48.5	8	0.000		48.	3	С	-0.25
Sensor Compon	ent Shield		Cond	ition N	Noderately clea	an		Status	pass	
Sensor Compon	ent Blower		Cond	ition 🕨	I/A			Status	pass	
Sensor Compon	ent Blower Status S	Switch	Cond	ition 🛚	I/A			Status	pass	
Sensor Compon	ent System Memo		Cond	ition				Status	pass	

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ARE128	Eric Hebert	10/16/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab	s Max Er Abs Avg 1.79	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.21	27.06	0.000	28.9	С	1.79
primary	Temp Mid Range	28.32	28.16	0.000	29.1	С	0.94
primary	Temp Mid Range	26.29	26.15	0.000	27.7	С	1.55
Sensor Component System Memo			Condition		Status	pass	

Infrastructure Data For

Site ID	ARE128	Technician Eric Heb	ert Site Visit Date 10/16/2016
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2116-7)	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID ARE128	Technician Eric Hebert	Site Visit Date 10/10	6/2016
Site Sponsor (agency)	EPA	USGS Map	Arendtsville
Operating Group	PSU/private	Map Scale	
		Map Date	
AQS #	42-001-9991	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMROVE	QAPP Latitude	39.9231
Deposition Measurement	dry, wet, Hg, PM	QAPP Longitude	-77.3078
Land Use	agriculture	QAPP Elevation Meters	269
Terrain	complex - rolling	QAPP Declination	10.9
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006
Site Telephone	(717) 677-9866	Audit Latitude	39.923241
Site Address 1	PSU Fruit Research Orchard	Audit Longitude	-77.307863
Site Address 2	Winding Road	Audit Elevation	266
County	Adams	Audit Declination	-11
City, State	Arendtsville, PA	Present	
Zip Code	17307	Fire Extinguisher 🔽	New in 2015
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat 🔽	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room ✓	Make Ekto M	odel 8810 (s/n 2116-7)	Shelter Size 640 cuft
Shelter Clean	Notes		
Site OK	Notes		
Contin onto C	Gettysburg take route 34 north to Biglervi nue into the town of Arendtsville. At the si Chambersburg Street. Continue approxim Nursery & Orchard. The site will be visib	top sign next to the gas station, nately 0.4 miles and turn right o	turn left and immediately turn right, nto Winding Road. There is a sign for

ARE128

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Site ID

Technician Eric Hebert

Site Visit Date 10/16/2016

Potential Interferent Minimum Distance From Distance Pass = **Measurement Apparatus** Checked ✓ Large Point Source of SO2 or NOx 20 to 40 km \checkmark Major industrial complex 10 to 20 km ✓ City > 50,000 population 40 km ✓ City 10,000 to 50,000 population 10 km ✓ 5 km City 1,000 to 10,000 population ✓ Major highway, airport or rail yard 2 km \checkmark Secondary road, heavily traveled 500 m ✓ Secondary road, lightly traveled 200 m ✓ Feedlot operations 500 m Intensive agricultural ops (including aerial spraying) 500 m 20 m Limited agricultural operations 200 m 20 m ✓ Large parking lot 200 m \checkmark Small parking lot 100 m \checkmark Tree line 50 m ✓ Obstacles to wind 10 times obstacle height

Siting Distances OK

Siting Criteria Comment

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

Fi	eld Sy	stems Data	Form		F-02058-1500-S3-rev002			
Sit	e ID	ARE128	Technician	Eric Hebert	Site Vis	sit Date 10/16/2016		
1		d speed and direc fluenced by obstru	tion sensors sited so actions?	as to avoid] N/A			
2	(i.e. win horizon	d sensors should b	d so as to minimize be mounted atop the m >2x the max dian wind)	e tower or on a	N/A			
3	Are the	tower and sensors	plumb?	V	N/A			
4			ds pointed north or es such as buildings]			
5	conditio surface	ons? (i.e. ground b	sensors sited to avo elow sensors should oped. Ridges, hollov avoided)	be natural				
6	Is the so	lar radiation sens	or plumb?	V	N/A			
7	Is it site light?	d to avoid shading	, or any artificial o	r reflected	N/A			
8	Is the ra	ain gauge plumb?		V	N/A			
9	Is it site towers,		ng effects from bui	ldings, trees,	N/A			
10	Is the su facing n		sor sited with the g	rid surface	N/A			
11	Is it inc	lined approximate	ely 30 degrees?	V	N/A			

natural or man-made, that may affect the monitoring parameters:

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Site	e ID	ARE128	Technician	Eric Hebert		Site Visit Date	10/16/2016	
1		e meterological senso 1, and well maintained		intact, in good	✓	Temperature only		
2 Are all the meteorological sensors operational online, and reporting data?						Temperature only		
3	Are the s	hields for the tempera	ature and RH s	ensors clean?				
4	4 Are the aspirated motors working?				✓	N/A		
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of		N/A		
6	Is the sur	face wetness sensor g	rid clean and u	ndamaged?	✓	N/A		
7		ensor signal and pow a, and well maintained		, in good				
8		ensor signal and pow elements and well ma		tions protected				

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The 10-meter temperature sensor has been moved to a naturally aspirated shield on the sample tower.

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	ARE128	Technician	Eric Hebert		Site Visit Date 10/16/2016
	Siting C	criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	ment sited in accordance with 40 CFR 58, Appendix E
1		cample inlets have at le	ast a 270 degre	e arc of	✓	
2	Are the	sample inlets 3 - 15 mo	eters above the	ground?	✓	
3		sample inlets > 1 mete meters from trees?	r from any maj	or obstruction,		
	<u>Pollutar</u>	nt analyzers and depos	ition equipmen	t operations and	mai	<u>intenance</u>
1		analyzers and equipme on and well maintained		in good		
2	Are the reportir	analyzers and monitor ng data?	rs operational, o	on-line, and	✓	
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters
5		ine filters used in the o location)	zone sample lir	ne? (if yes	✓	At inlet only
6	Are san obstruc	ple lines clean, free of tions?	kinks, moistur	e, and	✓	Moisture in tubing only
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?		✓	Flow line only
9	Is there clean?	a rotometer in the dry	deposition filt	er line, and is it		Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Fie	eld Sy	stems Data Fo				F-02	058-15	00-S6-rev002	
Site	e ID	ARE128	Technician	Eric Hebert		Site Visit Date	10/16/2016	;	
	DAS, ser	nsor translators, and j	peripheral equi	pment operation	ns ai	nd maintenance			
1	Do the I well mai	AS instruments appe ntained?	ar to be in good	l condition and	✓				
2		he components of the backup, etc)	DAS operation	al? (printers,					
3		nalyzer and sensor sig g protection circuitry?		through	✓	Met sensors only			
4		signal connections pro ntained?	otected from the	e weather and	✓				
5	Are the	signal leads connected	l to the correct	DAS channel?	✓				
6	Are the grounde	DAS, sensor translato d?	ors, and shelter	properly	✓				
7	Does the	instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	perature control	lled?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower c	omments?				Met tower removed			

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological tower has been removed.

Field Systems Data	For	rm			F-02)58-	1500-S7-rev002
Site ID ARE128		Techn	ician	ric Hebert Site Visit Date 1	10/16/2016		
Documentation							
Does the site have the requi	red ins	strumer	nt and e	quipment manuals?			
Wind speed sensor Wind direction sensor Temperature sensor Relative humidity sensor Solar radiation sensor Surface wetness sensor Wind sensor translator Temperature translator Humidity sensor translator Solar radiation translator Tipping bucket rain gauge Ozone analyzer	Yes		N/A V V V V V V V V V V V	Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection device Shelter heater	Yes □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □		N/A □ ✓ · · · · · · · · · · · · ·
Filter pack flow controller Filter pack MFC power supply	7			Shelter air conditioner			
		nd mos		OC documents and report forms?	Curren	t	
Station Log SSRF Site Ops Manual HASP Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schede	6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		Oct 2010 Oct 2015 Oct 2015		 ↓ ↓		

- 1 Is the station log properly completed during every site visit? 🔽
- 2 Are the Site Status Report Forms being completed and current?
- 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?
- 4 Are ozone z/s/p control charts properly completed and current?

Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

 \checkmark

ARE128 Technician Eric Hebert Site Visit Date 10/16/2016 Site ID Site operation procedures Refresher training by Lavery and Howell, July 2006 Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET Refresher training by Lavery and Howell, July 2006 \checkmark training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark 4 Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	\checkmark	Semiannually	\checkmark
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test		N/A	\checkmark
Confirm Reasonableness of Current Values	✓	Weekly	\checkmark
Test Surface Wetness Response		N/A	\checkmark

Frequency

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed	
---------------------------	--

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

	requency	Cu
✓	Semiannually	\checkmark
✓	Daily	\checkmark
✓	Daily	\checkmark
✓	Weekly	\checkmark
✓	Every 2 weeks	✓
✓	N/A	✓
✓	Weekly	✓
\checkmark	Weekly	\checkmark

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

Unknown
SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Compliant

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Fi	eld Sy	stems Data Form	1				F-02058-1	500-S9-rev002				
Site	e ID	ARE128	echnician	Eric Hebert		Site Visit Date	10/16/2016					
	<u>Site ope</u>	eration procedures										
1	Is the fi	lter pack being changed eve	ery Tuesda	ay as scheduled?		Filter changed mornings						
2	Are the correctl	Site Status Report Forms b y?	eing comj	pleted and filed								
3	Are dat schedul	a downloads and backups b ed?	eing perfo	ormed as		No longer required						
4	Are gen	eral observations being ma	de and rec	corded? How?	✓	SSRF, logbook						
5	Are site supplies on-hand and replenished in a timely fashion?											
6	Are san	nple flow rates recorded? H	low?		✓	SSRF, call-in						
7	Are san fashion	nples sent to the lab on a reg ?	gular sche	dule in a timely								
8		ers protected from contami pping? How?	nation dur	ring handling		Gloves not consiste	ntly used					
9		site conditions reported reg ons manager or staff?	gularly to	the field								
QC	Check P	erformed	Free	quency			Compliant					
I	Multi-poi	nt MFC Calibrations	✓ Sem	iannually								
	-	em Leak Checks	✓ Wee	kly								
I	Filter Pac	k Inspection										
I	Flow Rate	e Setting Checks	✓ Wee	ekly								
Ţ	Visual Check of Flow Rate Rotometer Veekly						\checkmark					
I	In-line Filter Inspection/Replacement Semiannually						\checkmark					
5	Sample L	ine Check for Dirt/Water	✓ Wee	kly			\checkmark					
Prov	vide any a	additional explanation (pho	tograph o	r sketch if neces	sarv) regarding conditi	ons listed above, or a	nny other features,				

natural or man-made, that may affect the monitoring parameters:

The site operator handles the filter caps with bare hands but handles the filter pack using the Ziploc filter bag.

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Technician Eric Hebert

Site Visit Date 10/16/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07045
DAS	Campbell	CR3000	2524	000400
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	000012187C	02661
Flow Rate	Арех	AXMC105LPMDPC	42228	000462
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	093644408	06809
Ozone	ThermoElectron Inc	49i A1NAA	1009241798	000621
Ozone Standard	ThermoElectron Inc	49i A3NAA	0607315737	000199
Sample Tower	Aluma Tower	В	none	666361
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	unknown	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	missing	06678
Zero air pump	Werther International	PC70/4	000815262	06866

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BEL	.116-Eric H	ebert-11/14/2016				
1	11/14/2016	Computer	Dell	07005	Inspiron 15	Unknown
2	11/14/2016	DAS	Campbell	000341	CR3000	2120
3	11/14/2016	Elevation	Elevation	None	1	None
4	11/14/2016	Filter pack flow pump	Thomas	02755	107CAB18	1192001881
5	11/14/2016	Flow Rate	Apex	000596	AXMC105LPMDPCV	illegible
6	11/14/2016	Infrastructure	Infrastructure	none	none	none
7	11/14/2016	Met tower	Universal Tower	06484	unknown	none
8	11/14/2016	Modem	Raven	06475	H4222-C	0808311155
9	11/14/2016	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795
10	11/14/2016	Ozone Standard	ThermoElectron Inc	000373	49i A3NAA	0726124685
11	11/14/2016	Precipitation	Texas Electronics	06332	TR-525i-HT	43527-807
12	11/14/2016	Relative Humidity	Vaisala	06752	HMP50UA	missing
13	11/14/2016	Sample Tower	Aluma Tower	000127	В	none
14	11/14/2016	Shelter Temperature	Campbell	none	107-L	44281
15	11/14/2016	Shield (10 meter)	RM Young	05042	Aspirated 43408	none
16	11/14/2016	Shield (2 meter)	RM Young	05041	Aspirated 43408	none
17	11/14/2016	Siting Criteria	Siting Criteria	None	1	None
18	11/14/2016	Solar Radiation	Licor	04935	LI-200	PY47675
19	11/14/2016	Solar Radiation Translator	RM Young	04888	70101-X	none
20	11/14/2016	Surface Wetness	RM Young	04608	58101	none
21	11/14/2016	Temperature	RM Young	06308	41342VO	12533
22	11/14/2016	Temperature2meter	RM Young	06309	41342VO	12534
23	11/14/2016	Wind Direction	RM Young	03190	AQ05305	15461wdr
24	11/14/2016	Wind Speed	RM Young	03190	AQ05305	15461wsp
25	11/14/2016	Zero air pump	Werther International	06913	C 70/4	000829178
26	11/14/2016	Zero air pump	Teledyne	000776	701H	606

DAS Data Form

DAS Time Max Error:

0

Mfg	Mfg Serial Nu		1	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2120	BEL1	116	Eric Hebert	11/14/2016	DAS	Primary
Das Date:	11/22/2016 11:52:30	Audit Date Audit Time	11/22/2016	Mfg	Datel	Parameter	DAS
Das Day: 327		Audit Day	327	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	el:	High Channel:	:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.000	0.0001	0.0000	0.0001				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.00000	Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input D	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3000	V	V	0.0000	
7	7 0.5000		0.5001		V	0.0000	
7	0.7000	0.7001	0.7001		V	0.0000	
7		0.9001	0.9002		V	0.0001	
7	1.0000	1.0001	1.0002	2 V	V	0.0001	

Flow Data Form

Mfg	Serial Nur	nber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	illegible		BEL116	Eri	Eric Hebert		6 Flow F	Rate	000596
					Mfg Serial Number Tfer ID	BIOS 148613 01421	1	arameter Flo	
					Slope	1.	00309 Int	ercept	-0.00231
						4/2	1/2016 Co	rrCoff	1.00000
DAS 1: DAS 2: A Avg % Diff: A Max % Di A Avg % Dif 0.22% 0.66%					Cal Factor Z Cal Factor F Rotometer R	ull Scale		01 99 55	
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	test pt 1	1.504	1.500	1.51	0.000	1.50	l/m	l/m	0.00%
primary	test pt 2	1.507	1.500	1.51	0.000	1.50	l/m	l/m	0.00%
primary	test pt 3	1.509	1.510	1.51	0.000	1.50	l/m	l/m	-0.66%
Sensor Comp	onent Leak Te	st		Conditio	n		Statu	s pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good	Good		pass	
Sensor Comp	onent Filter Po	sition		Conditio	n Good		Statu	pass	
Sensor Comp	onent Rotomet	er Conditio	n	Conditio	n Clean and dry		Status pass		
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status pass		
Sensor Comp	onent Filter Dis	stance		Conditio	n 5.5 cm		Statu	pass	
Sensor Comp	onent Filter De	pth		Conditio	n 1.5 cm		Statu	pass	
Sensor Component Filter Azimuth		imuth		Conditio	n 180 deg		Statu	pass	
Sensor Component Syste		Memo		Conditio	n		Statu	pass	

Ozone Data Form

Mfg	Se	erial Number Ta	Site	Te	chnician		Site Visit D	ate Param	eter Owner ID		
ThermoElectron Inc 1030244795 BEL1			BEL116	E	ric Hebert		11/14/2016	Ozone	000684		
Slope: Intercept CorrCoff	-0.8	17281 Slope: 10589 Intercept 199999 CorrCoff	0.0000	0	Mfg Serial Number		ThermoElec 0517112167		fer Desc. Ozone primary stan		
correon	0.0		0.0000	Tfer ID			01113				
DAS 1:	DAS 1: DAS 2:				Slope		1.0	0500 Inte	rcept -0.28841		
_	A Avg % Diff: A Max % Di A Avg %Dif A Max				Cert Da	ite	1/28	/2016 Cor	rCoff 1.00000		
5.1% 8.0%											
	scription	ConcGroup	Tfer Raw		Corr	Si		Site Unit	PctDifference		
-	nary	1	-0.14		14		86 ppb				
-	nary	2	13.03		.25		.19 ppt		-8.00%		
	nary	3	28.56		.70	27			-5.19%		
-	nary	4	75.58		.49	72	11		-3.66%		
	nary	5	104.80		4.56		0.80 ppt		-3.60%		
Sensor C	omponent	Sample Train		Conditi	on Good			Status	pass		
Sensor C	omponent	22.5 degree rule		Conditi	on			Status	pass		
Sensor C	omponent	Inlet Filter Condition	on	Conditi	on Clean			Status	pass		
Sensor C	omponent	Battery Backup		Conditi	on N/A			Status	pass		
Sensor C	omponent	Offset		Conditi	on -0.10			Status	pass		
Sensor C	omponent	Span		Conditi	on 0.997			Status	pass		
Sensor C	omponent	Zero Voltage		Conditi	ition N/A		Status	pass			
Sensor C	omponent	Fullscale Voltage		Condition				Status	pass		
Sensor C	omponent	Cell A Freq.		Conditi	on 96.1 k	κHz	Status		pass		
Sensor C	omponent	Cell A Noise		Conditi	on Not te	sted	Statu		pass		
Sensor C	omponent	Cell A Flow		Conditi	on 0.71 l	on 0.71 lpm		Status	pass		
Sensor C	omponent	Cell A Pressure			on 733.5			Status	pass		
Sensor C	omponent	Cell A Tmp.			on 34.3 (Status	pass		
Sensor C	omponent	Cell B Freq.			on 89.5 k			Status			
Sensor C	omponent	Cell B Noise		Conditi	on Not te	sted		Status	pass		
Sensor C	omponent	Cell B Flow		Conditi	on 0.53 l	pm		Status	pass		
Sensor C	omponent	Cell B Pressure		Conditi	on 733.2			Status	pass		
Sensor C	Sensor Component Cell B Tmp.			Conditi	ndition			Status	s pass		
Sensor C	omponent	Line Loss		Condition Not tested				Status	us pass		
Sensor C	omponent	System Memo		Conditi	on			Status	pass		

Wind Speed Data Form

Mfg	Serial Number Ta	Site	Tech	nician	Site Visit Date	Paramete	er Owi	ner ID
RM Young	15461wsp	BEL116	Eric	Hebert	11/14/2016	Wind Spee	ed 0319	90
				Mfg Serial Number	RM Young CA4353		meter wind spee Desc. wind spee	
			1	fer ID	01457			
Prop or Cups SN	65736		S	Slope	1.0000	0 Interce	ept	0.00000
Prop or Cups Torq Prop Correction Fa			0.4	Cert Date	3/7/201	l6 CorrC	off	1.00000
DASLowAbs Avg ErrAbs Max Er	RangeHigh Ra0.05C	DAS 2: nge Low Ra .05%		gh Range				
UseDescription: 1	Input Device Inp	ut RPM In	nput m/s	Out V	DAS m/s	Diff/ %Diff	f Diff	WsM
primary	none	0	0.20	0.0	0.0			0.18
primary	01457	200	1.02	0.0	1.0			0.00
primary	01457	400	2.05	0.0	2.1			0.00
primary	01457	800	4.10	0.0	4.1			0.00
primary	01457	1200	6.14	0.0	6.1	0.0	0%	
primary	01457	2400	12.29	0.0	12.3	0.0	0%	
primary	01457	4000	20.48	0.0	20.5	0.0	0%	
primary	01457	9400	48.13	0.0	48.0	-0.2	1%	
Sensor Componen	t Condition		Condition	Good		Status pa	ass	
Sensor Componen	t Prop or Cups Con	dition	Condition	Good		Status pa	ass	
Sensor Componen	t Sensor Heater		Condition	N/A		Status pa	ass	
Sensor Componen	t Torque		Condition			Status pa	ass	
Sensor Componen	t Sensor Plumb		Condition	Plumb		Status pa	ass	
Sensor Componen	t System Memo		Condition			Status pa	ass	

Wind Direction Data Form

Mfg	Serial Number Ta Site Technician		Site Visit Date	Parameter	Owner ID	
RM Young	15461wdr	BEL116	Eric Hebert	11/14/2016	Wind Direction	03190
			Mfg	RM Young	Parameter wir	
			Serial Number	None	Tfer Desc. wir	nd direction wheel
			Tfer ID	01252		
Vane SN: N/	AC. A	A. Align. deg. true:	Slope	1.0000	0 Intercept	0.00000
VaneTorque	20 to 25	180	Cert Date	4/26/201	3 CorrCoff	1.00000
			Mfg	Ushikata	Parameter wir	nd direction
			Serial Number	191832	Tfer Desc. trai	nsit
			Tfer ID	01272		
			Slope	1.0000	0 Intercept	0.00000
			Cert Date	12/9/201	5 CorrCoff	1.00000
I	DAS 1:	DAS 2:				
(Drientation Linearit	ty: Orientation	Linearity:			
Abs Avg Err	2.0	1.5				

Abs Avg Err	2.0	1.5								
Abs Max Er	3	4								
UseDescription	TferID	Input Raw	Linearity	Output V	Output Deg.	Difference	Change	Error		
primary	01252	0	\checkmark	0.000	0	0	43	-2		
primary	01252	45	\checkmark	0.000	44	1	44	-1		
primary	01252	90	\checkmark	0.000	87	3	43	-2		
primary	01252	135	\checkmark	0.000	132	3	45	0		
primary	01252	180	\checkmark	0.000	178	2	46	1		
primary	01252	225	\checkmark	0.000	224	1	46	1		
primary	01252	270	\checkmark	0.000	273	3	49	4		
primary	01252	315	\checkmark	0.000	317	2	44	-1		
primary	01272	0		0.000	0	0		0		
primary	01272	90		0.000	87	3		3		
primary	01272	180		0.000	178	2		2		
primary	01272	270		0.000	.000 273			3		
Sensor Compor	ent Condition		Condi	ition Good		Status	pass			
Sensor Compor	nent Mast		Condi	ition Good	Good Stat			Is pass		
Sensor Compor	ent Sensor Heat	er	Condi	ition N/A		Status	s pass			
Sensor Compor	ent Sensor Plum	b	Condi	Condition Plumb			pass			
Sensor Compor	Torque		Condi	Condition			pass			
Sensor Compor	tent Vane Conditi	ion	Condi	ition Good		Status	pass			
Sensor Compor	ent System Mem	10	Condi	ition		Status	pass			

Temperature Data Form

Mfg	Serial Number	Fa Site	1	Techni	echnician		isit Date	Param	eter	Owner ID	
RM Young	M Young 12533 BEL116			Eric Hebert		11/14	4/2016 Temper		ature	06308	
				Mf	èg	Extec	h	Pa	rameter Temperature		
				Ser	rial Number	H232	H232679 TI		er Desc. R	٢D	
				Tfer ID		01228					
DAS 1:	DAS	2:		Slo	pe		1.0076	0 Inte	rcept	-0.0571	0
Abs Avg Err Abs Max Er Abs Avg Err Abs Ma			Max Er	ax Er Cert Date		2/28/2016 Cor		rCoff	1.0000	0	
0.07	0.15			<u></u>							
UseDesc.	Test type	InputTmpRaw	InputTmpCorr.		OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Ten	np Low Range	-0.08	-0.02	2	0.000	0.13		3	C	0.15	
primary Ten	np Mid Range	21.84	21.7	3	0.000		21.69		C	-0.04	
primary Ten	np High Range	50.03	49.7	1	0.000		49.7	70	С	-0.01	
Sensor Compon	ent Shield		Cond	ition N	Moderately clea	an		Status	pass		
Sensor Compon	Cond	ition F	Functioning			Status	pass				
Sensor Compon	Cond	ition 🛚	N/A	Status		s pass					
Sensor Compon	Cond	Condition				Status	s pass				

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number	Ta Site	1	Fechniciar	1	Site Visit	t Date I	Paramete	r	Owner ID
RM Young	12534	BEL116		Eric Hebei	rt	11/14/2016		6 Temperature2meter		06309
			Mfg		Extech		Parameter Tem		perature	
			Serial 1	Number	H232679		Tfer Desc. RTD)	
				Tfer II)	01228				
DAS 1:	DAS	S 2:		Slope			1.00760	Interce	pt	-0.05710
Abs Avg Err A	Abs Max Er Abs	Avg Err Abs	Max Er	Cert D	ate	2	/28/2016	CorrCo	off	1.00000
0.19	0.19			<u></u>						
UseDescription	Test type	InputTmpRaw	InputTmpC	Corrected	OutputTr	npSignal	OutputS	ignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.08		-0.02		0.000		0.17	С	0.19
primary	Temp Mid Range	21.84		21.73		0.000		21.91	С	0.18
primary	Temp High Range	50.03		49.71		0.000		49.90	С	0.19
Sensor Compo	nent Properly Sited		Condi	tion Prop	erly sited			Status pa	SS	
Sensor Compo	nent Shield		Condi	tion Mode	erately clea	an Stat		Status pa	SS	
Sensor Component Blower			Condi	tion Func	tioning	Status		Status pa	SS	
Sensor Component Blower Status Switch				Condition N/A			Status pass		SS	
Sensor Component System Memo				Condition				Status pass		

Humidity Data Form

Mfg	Serial Num	ıber Ta Si	ite	Т	echnician		Site V	isit Date	Para	meter	Owner ID
Vaisala	missing	В	BEL116		Eric Hebert		11/14/2016		Relative Humidity		06752
					Mfg		Rotron	nic		Parameter Re	lative Humidity
					Serial Nu	mber	12443	2		Tfer Desc. Hy	groclip
					Tfer ID		01225				
					Slope			0.9783	0 In	tercept	0.84460
	DAS 1:		DAS 2:		Cert Date			12/24/2015		orrCoff	0.99980
	Low Range	High Range	e Low Rar	nge l	High Range	е					
Abs Avg Err	4.4										
Abs Max Er	7.2										
UseDesc.	Test type	Device	Input R	H C	GTL Raw	RH (Corr.	DAS V	olts	DAS %RH	Difference
primary	RH Low Range	Hygrocli	p 32.8		34.0	32	2.8	0.000)	34.4	1.6
primary	RH Low Range	Hygrocli	p 52.9		56.8	52	2.9	0.000)	60.1	7.2
primary	RH Low Range	Hygrocli	p 75.3		71.7	75	5.3	0.00)	71.0	-4.3
Sensor Component RH Filter				Condition Clean					Status pass		
Sensor Component Shield				Condition Moderately clean					Status pass		
Sensor Component Blower				Condition N/A					Status pass		
Sensor Component Blower Status Switch				Condition N/A					Status pass		
Sensor Con		Condition					Status pass				

Solar Radiation Data Form

Mfg	Serial Number	Ta Site	Те	echnician	Site Visit Date	Parame	eter	Owner ID	
Licor	PY47675	BEL116	Er	ric Hebert	11/14/2016	Solar Ra	adiation	04935	
8	RM Young			Mfg			arameter solar radiation		
SN/Owner ID	none 04888			Serial Number	10765		fer Desc. SR transfer translat		
Parameter	Parameter Solar Radiation Translator			Tfer ID	01246				
DAS 1:	DA	S 2:		Slope	1.0000	0 Inter	rcept	0.00000	
	%Diff of Max %I		Diff of Max	Cert Date	12/29/201	5 Corr	rCoff	1.00000	
				Mfg	Eppley	Pa	rameter solar	radiation	
				Serial Number	34341F3 T		fer Desc. SR transfer sensor		
				Tfer ID	01245	7			
8.5%	7.9%	0.0%	0.0%						
UseDescription	Measure Date	MeasureTime	Tfer Raw	v Tfer Corr	DAS w/	′m2	PctDifference	2	
primary	11/22/2016	10:00	481	481	524		8.9		
primary	11/22/2016	11:00	531	531		573		%	
primary	11/22/2016	12:00 510		510	552		8.3		
primary	11/22/2016	13:00	454	454	495		9.1	%	
Sensor Compo	nent Sensor Clear	۱	Conditio	on Clean		Status	pass		
Sensor Component Sensor Level				on Level		Status	pass		
Sensor Component Properly Sited				on Properly sited		Status	IS pass		
Sensor Compo	nent System Mem	0	Conditio	on		Status	pass		

Precipitation Data Form

Mfg	Ser	ial Number Ta	Site	Те	echnician	5	Site Visit I	Date Parai	neter	Owner ID	
Texas Electron	ics 43	527-807	BEL116	E	ric Hebert		11/14/201	B Precip	oitation	06332	
	Mfg PMP]	Parameter Precipitation						
DAS 1: DAS 2:					Serial Number EW-06134-50			50	Tfer Desc. 250ml graduate		
A Avg % Diff 4.0%	Tfer ID 01250										
					Slope 1.000			00000 In	00 Intercept 0.00000		
					Cert Date		9/	5/2005 Co	rrCoff	1.00000	
UseDesc.	Test typ	pe TferVolume	Iteration	TimePerTip	Eq.Ht	DAS e	eng Eq.Ht	Unit OSE	Unit TferUr	nits PctDifference	
1 0	tip check		1	2 sec	0.10	0.10		in	ml		
primary	test 1	231.5	1	10 sec	0.50	0.48	8 in	in	ml	-4.0%	
Sensor Component Properly Sited Co			Conditi	on 45 degre	e rule		Statu	Status pass			
Sensor Component Gauge Drain Screen		Conditi	on Installed			Statu	s pass				
Sensor Component Funnel Clean		unnel Clean		Conditi	on Clean			Statu	s pass		
Sensor Component Condition			Conditi	on Good			Statu	us pass			
Sensor Component Gauge Screen			Conditi	on Installed			Statu	tus pass			
Sensor Component Gauge Clean			Conditi	on Clean			Statu	s pass			
Sensor Component Level (Conditi	on Level			Statu	tus pass			
Sensor Component Sensor Heater			Conditi	on Functioni	ing		Statu	us pass			
Sensor Com	Sensor Component System Memo			Conditi	on			Statu	Status pass		

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID	
RM Young	none	BEL116	Eric Hebert	11/14/2016	Surface Wetness	04608	
			Mfg	Ohmite	Parameter su	Irface wetness	
			Serial Number	296-1200	Tfer Desc. de	ecade box	
			Tfer ID	01210			
			Slope	1.0000	0 Intercept	0.00000	
			Cert Date	1/4/201	1 CorrCoff	1.00000	

Manual Test Pass

UseDescription	Test Type	Tfer kOhms	OutputSignal	DAS eng	OutputSignalEngUni	TferUnits	OutputSignalUnit	
primary	dry	N/A	0.000	0.01 V		N/A	V	
primary	wet	N/A	0.000	1.02	V	N/A	V	
				L				
Sensor Compone	ent Properly Sited	k	Condition	Condition Properly sited		tus pass		
Sensor Compone	ent Grid Clean		Condition	Clean	Stat	tus pass		
Sensor Compone	ent Grid Angle		Condition	about 45 deg	Stat	Status pass		
Sensor Compone	ent Grid Orientati	on	Condition	North	Stat	Status pass		
Sensor Compone	Sensor Component Grid Condition		Condition	ndition Fair		Status pass		
Sensor Component Grid Type			Condition	Condition Grid without holes		tus pass		
		System Memo						

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	44281	BEL116	Eric Hebert	11/14/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab			Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.37	26.23	0.000	26.1	С	-0.14
primary	Temp Mid Range	26.24	26.10	0.000	26.4	С	0.29
primary	Temp Mid Range	20.01	19.92	0.000	22.1	С	2.18
Sensor Con	ponent System Memo	1	Condition	Condition Status			

Infrastructure Data For

Site ID	BEL116	Technician Eric He	ebert Site Visit Date 11/14/2016
Shelter	Make	Shelter Model	Shelter Size
Unknow	'n	Unknown	Unknown

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID BEL116	Technician Eric Hebert	Site Visit Date 11/14	4/2016					
Site Sponsor (agency)	EPA	USGS Map	Laurel					
Operating Group	BARC/private	Map Scale						
AQS #	24-033-9991	Map Date						
Meteorological Type	R.M. Young							
Air Pollutant Analyzer	Ozone, SO2, NOy, NOx, CO, Hg	QAPP Latitude	39.0283					
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-76.8175					
Land Use	urban - agriculture	QAPP Elevation Meters	46					
Terrain	flat	QAPP Declination	11.25					
Conforms to MLM	No	QAPP Declination Date	2/23/2006					
Site Telephone	(301) 474-3019	Audit Latitude	39.028177					
Site Address 1	BARC old airport	Audit Longitude	-76.817127					
Site Address 2	Springfield Road	Audit Elevation	47					
County	Prince George's	Audit Declination	-11					
City, State	Laurel, MD	Present						
Zip Code	20708	Fire Extinguisher 🔽	New in 2015					
Time Zone	Eastern	First Aid Kit						
Primary Operator		Safety Glasses						
Primary Op. Phone #		Safety Hard Hat						
Primary Op. E-mail		Climbing Belt						
Backup Operator		Security Fence						
Backup Op. Phone #		Secure Shelter						
Backup Op. E-mail		Stable Entry Step 🔽						
Shelter Working Room ✓	Make Unknown Me	Unknown	Shelter Size Unknown					
	Notes							
Site OK	Notes							
0.5 mi	Driving Directions From the Baltimore - Washington Parkway (route 295) take exit 11(Powder Mill Road). Go east for approximately 0.5 miles and turn right (south) onto Springfield Road. Continue approximately 0.8 miles and look for a gate on the left. The site is on the right of the dirt road approximately 1 mile through the two gates.							

BEL116

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 11/14/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km	25 km	
City 10,000 to 50,000 population	10 km		\checkmark
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m		
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

eld Sy	stems Data Fo	orm				F-0205	58-15	500-S3-	-rev002
ID	BEL116	Technician	Eric Hebert		Site Visit Date	11/14/2016]	
			as to avoid						
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)									
Are the	tower and sensors plu	mb?							
Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?									
conditio	ns? (i.e. ground below and not steeply sloped	v sensors should I. Ridges, hollov	be natural						
Is the so	lar radiation sensor p	lumb?							
Is it site light?	l to avoid shading, or	any artificial o	r reflected						
Is the ra	in gauge plumb?								
		ffects from bui	dings, trees,						
		sited with the g	rid surface						
Is it inc	lined approximately 3	0 degrees?			About 45 degrees				
	Are wind being inf Are wind (i.e. wind horizont tower in Are the f avoid ra Are the f avoid ra Are tem condition surface a standing Is the so Is it sited light? Is the ra Is it sited towers, o Is the su	IDBEL116Are wind speed and direction being influenced by obstruction Are wind sensors mounted so (i.e. wind sensors should be m horizontally extended boom > tower into the prevailing wind Are the tower and sensors plut Are the temperature shields p avoid radiated heat sources su Are temperature and RH sense conditions? (i.e. ground below surface and not steeply sloped standing water should be avoid Is the solar radiation sensor p Is it sited to avoid shading, or light? Is the rain gauge plumb?Is it sited to avoid sheltering e towers, etc?Is the surface wetness sensor s facing north?	Are wind speed and direction sensors sited so being influenced by obstructions? Are wind sensors mounted so as to minimize (i.e. wind sensors should be mounted atop the horizontally extended boom >2x the max dian tower into the prevailing wind) Are the tower and sensors plumb? Are the temperature shields pointed north or avoid radiated heat sources such as buildings Are temperature and RH sensors sited to avo conditions? (i.e. ground below sensors should surface and not steeply sloped. Ridges, hollow standing water should be avoided) Is the solar radiation sensor plumb? Is it sited to avoid shading, or any artificial of light? Is the rain gauge plumb? Is it sited to avoid sheltering effects from built towers, etc? Is the surface wetness sensor sited with the gr	ID BEL116 Technician Eric Hebert Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Are the tower and sensors plumb? Are the tower and sensors sited north or positioned to avoid radiated heat sources such as buildings, walls, etc? Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Is the solar radiation sensor plumb? Is the sufficient of avoid shading, or any artificial or reflected light? Is it sited to avoid shading, or any artificial or reflected light? Is it sited to avoid sheltering effects from buildings, trees, towers, etc? Is the surface wetness sensor sited with the grid surface facing north?	ID BEL116 Technician Eric Hebert Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Image: Comparison of the town of	ID BEL116 Technician Eric Hebert Site Visit Date Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Image: Construction of the sensors mounted so as to minimize tower effects? Image: Construction of the sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Are the tower and sensors plumb? Image: Construction of the sensors should be not nor positioned to avoid radiated heat sources such as buildings, walls, etc? Image: Construction of the sensor should be natural sourface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Image: Construction of the sensor should be natural sourface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Image: Construction of the sensor should be natural sourface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Is the solar radiation sensor plumb? Image: Construction of the sensor should be natural sources are should be avoided) Image: Construction of the sensor should be natural sources of standing water should be avoided) Is it sited to avoid shading, or any artificial or reflected light? Image: Construction of the sensor should be sensor of the sensor should be sensor should be sensor should be sensor sensor should be sensor sensecon sensor sensor sensor sensor sensor senso	ID BEL116 Technician Eric Hebert Site Visit Date 11/14/2016 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Image: Construction of the sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Image: Construction of the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Image: Construction of the tower and sensors plumb? Image: Construction of the tower and sensors plumb? Image: Construction of the tower and sensors should be north or positioned to avoid radiated heat sources such as buildings, walls, etc? Image: Construction of the tower and sensors should be natural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Image: Construction of the tower of the tower and sensor plumb? Is it sited to avoid shading, or any artificial or reflected light? Image: Construction of the tower of the tower sensor should be noted to avoid shading, or any artificial or reflected light? Image: Construction of the tower sensor s	ID BEL116 Technician Eric Hebert Site Visit Date 11/14/2016 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Are the tower and sensors plumb? Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Is the site to avoid shading, or any artificial or reflected light? Is the rain gauge plumb? Is it sited to avoid sheltering effects from buildings, trees, towers, etc? Is the surface wetness sensor sited with the grid surface facing north?	ID BEL116 Technician Eric Hebert Site Visit Date 11/14/2016 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Are the tower and sensors plumb? Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? Are the temperature and RH sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Is the solar radiation sensor plumb? Is the surface wetness sensor sited with the grid surface facing north?

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Site	ID	BEL116	Technician Eric Hebert	Site Visit Date 11/14/2016
1		e meterological sensor n, and well maintained	s appear to be intact, in good ?	
2	Are all t reportin		ors operational online, and	
3	Are the	shields for the tempera	ture and RH sensors clean?	
4	Are the	aspirated motors work	ing?	
5	Is the so scratche	lar radiation sensor's l s?	ens clean and free of	
6	Is the su	rface wetness sensor g	rid clean and undamaged?	
7		sensor signal and powe n, and well maintained	r cables intact, in good ?	Signs of wear
8		sensor signal and powe e elements and well ma	r cable connections protected intained?	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The outer insulation of both temperature sensor signal cables is broken.

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	BEL116 Technician Eric Hebert		Site Visit Date 11/14/2016
	Siting Criteria: Are the pollutant analyzers and deposition ec	uip	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	✓	
2	Are the sample inlets 3 - 15 meters above the ground?	✓	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?		
	Pollutant analyzers and deposition equipment operations and	l ma	<u>intenance</u>
1	Do the analyzers and equipment appear to be in good condition and well maintained?	✓	
2	Are the analyzers and monitors operational, on-line, and reporting data?	✓	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓	
7	Is the zero air supply desiccant unsaturated?	✓	
8	Are there moisture traps in the sample lines?	✓	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?		Clean and dry

Fi	Field Systems Data Form							F-02	058-15	500-S6-rev002
Site	Site ID BEL116 Technician Eric Hebert		Eric Hebert		Site Visit	t Date	11/14/2016	3]	
	DAS, ser	nsor translators, and p	eripheral equi	pment operation	ns ai	nd maintenar	<u>ıce</u>			
1	1 Do the DAS instruments appear to be in good condition and well maintained?									
2 Are all the components of the DAS operational? (printers, modem, backup, etc) ✓										
3 Do the analyzer and sensor signal leads pass through lightning protection circuitry?						Met sensors	only			
4	4 Are the signal connections protected from the weather and well maintained?				✓					
5	5 Are the signal leads connected to the correct DAS channel?				✓					
6	Are the grounde	DAS, sensor translator d?	rs, and shelter	properly	✓					
7	Does the	instrument shelter ha	ive a stable pov	ver source?	✓					
8	8 Is the instrument shelter temperature controlled?									
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?								

Field Sys	stems Data	n Fo	rm			F-0 2	2058-	1500-8	57-rev002
Site ID	BEL116		Techni	cian	Eric Hebert Site Visit Date	11/14/2016	6		
Document	ation								
Does the si	<u>te have the requi</u>	ired in	strument	t and	equipment manuals?				
Solar radiatio Tipping buck Ozone analyz	on sensor sensor idity sensor on sensor ess sensor translator translator sor translator on translator et rain gauge er		Nº Y Y Y Y Y Y Y Y		A Data logger Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection device Shelter heater Shelter air conditioner	Yes □ □ □ □ □ □ □ □ □ □ □ □ □			
Filter pack flow controllerIFilter pack MFC power supplyI		v 🗌			Sheller all conditioner				
					nt QC documents and report forms?	Curre	ent		

			Cull
Station Log	\checkmark		\checkmark
SSRF	\checkmark		\checkmark
Site Ops Manual		Feb 2014	\checkmark
HASP	\checkmark	Oct 2015	\checkmark
Field Ops Manual	\checkmark	Oct 2015	\checkmark
Calibration Reports	\checkmark		\checkmark
Ozone z/s/p Control Charts			
Preventive maintenance schedul			

1	Is the station log properly completed during every site visit?	✓	
2	Are the Site Status Report Forms being completed and current?		
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?		
4	Are ozone z/s/p control charts properly completed and current?		Control charts not used

BEL116 Technician Eric Hebert Site Visit Date 11/14/2016 Site ID Site operation procedures Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC	Check	Perf	formed
----	-------	------	--------

Frequency

Frequency

Multipoint Calibrations	\checkmark	Semiannually	✓
Visual Inspections	\checkmark	Weekly	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	Weekly	\checkmark
Confirm Reasonableness of Current Values	\checkmark	Weekly	\checkmark
Test Surface Wetness Response	\checkmark	Weekly	\checkmark

Are regular operational QA/QC checks performed on the ozone analyzer?

OC	Check	Perf	formed
VΥ	Chicch	1	ormeu

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

	requency	Cu
✓	Semiannually	\checkmark
✓	Daily	✓
✓	Daily	✓
✓	Weekly	✓
✓	Every 2 weeks	✓
	N/A	✓
✓	Weekly	✓
\checkmark	Weekly	\checkmark

- Do multi-point calibration gases go through the complete 1 sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

	-	-		0			
3	Are the	automatic	and manua	l z/s/p	checks	monitored a	and
	reporte	d? If yes, h	ow?				

	Unknown	
✓		
	SSRF, call-in	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Compliant

Compliant

F-02058-1500-S8-rev002

Fi	eld Sy	stems Data Form					F-02058	-1500-S9-rev002
Sit	e ID	BEL116 Te	chnician	Eric Hebert		Site Visit Date	11/14/2016	
	<u>Site ope</u>	eration procedures						
1	Is the fi	lter pack being changed eve	ry Tuesd	ay as scheduled?		Filter changed morr	nings	
2	Are the correctl	Site Status Report Forms b y?	eing com	pleted and filed				
3	Are dat schedul	a downloads and backups b ed?	eing perf	ormed as		No longer required		
4	Are gen	eral observations being mad	le and re	corded? How?	✓	SSRF		
5	Are site fashion	supplies on-hand and reple ?	nished in	a timely				
6	Are san	nple flow rates recorded? He	ow?		✓	SSRF, call-in		
7	Are san fashion	nples sent to the lab on a reg ?	ular scho	edule in a timely				
8		ers protected from contamin pping? How?	ation du	ring handling	✓	Clean glove on and	off	
9		site conditions reported reg ons manager or staff?	ularly to	the field				
QC	Check P	erformed	Fre	quency			Compliant	
I	Multi-poi	nt MFC Calibrations	✓ Ser	niannually				
1	Flow Syst	em Leak Checks	✔ We	ekly				
I	Filter Pac	k Inspection						
1	Flow Rate	e Setting Checks	✓ We	ekly				
	visual Ch	eck of Flow Rate Rotometer	We	ekly				
I	n-line Fil	ter Inspection/Replacement	✓ Ser	niannually			\checkmark	
5	Sample Li	ine Check for Dirt/Water	✓ We	ekly			\checkmark	
Duc	ido opre e	ditional avalanation (nhat	ograph a	n alzatah if nasaa) maganding agenditi	iona listed above	on any other features

F-02058-1500-S10-rev002

Site ID

Techni

Technician Eric Hebert

Site Visit Date 11/14/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07005
DAS	Campbell	CR3000	2120	000341
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	1192001881	02755
Flow Rate	Apex	AXMC105LPMDPC	illegible	000596
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06484
Modem	Raven	H4222-C	0808311155	06475
Ozone	ThermoElectron Inc	49i A1NAA	1030244795	000684
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124685	000373
Precipitation	Texas Electronics	TR-525i-HT	43527-807	06332
Relative Humidity	Vaisala	HMP50UA	missing	06752
Sample Tower	Aluma Tower	В	none	000127
Shelter Temperature	Campbell	107-L	44281	none
Shield (10 meter)	RM Young	Aspirated 43408	none	05042
Shield (2 meter)	RM Young	Aspirated 43408	none	05041
Siting Criteria	Siting Criteria	1	None	None
Solar Radiation	Licor	LI-200	PY47675	04935
Solar Radiation Translator	RM Young	70101-X	none	04888
Surface Wetness	RM Young	58101	none	04608
Temperature	RM Young	41342VO	12533	06308
Temperature2meter	RM Young	41342VO	12534	06309
Wind Direction	RM Young	AQ05305	15461wdr	03190
Wind Speed	RM Young	AQ05305	15461wsp	03190
Zero air pump	Teledyne	701H	606	000776
Zero air pump	Werther International	C 70/4	000829178	06913

BEL116

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
PNI	PNF126-Eric Hebert-11/26/2016								
1	11/26/2016	Computer	Dell	07069	Inspiron 15	Unknown			
2	11/26/2016	DAS	Campbell	000346	CR3000	2125			
3	11/26/2016	Elevation	Elevation	None	1	None			
4	11/26/2016	Filter pack flow pump	Thomas	06030	107CAB18	060400022677			
5	11/26/2016	Flow Rate	Apex	000655	AXMC105LPMDPCV	illegible			
6	11/26/2016	Infrastructure	Infrastructure	none	none	none			
7	11/26/2016	Modem	Raven	06597	V4221-V	0844349884			
8	11/26/2016	Ozone	ThermoElectron Inc	000695	49i A1NAA	1030244801			
9	11/26/2016	Ozone Standard	ThermoElectron Inc	000437	49i A3NAA	CM08200013			
10	11/26/2016	Sample Tower	Aluma Tower	000178	В	none			
11	11/26/2016	Shelter Temperature	Campbell	none	107-L	none			
12	11/26/2016	Siting Criteria	Siting Criteria	None	1	None			
13	11/26/2016	Temperature	RM Young	06536	41342	14797			
14	11/26/2016	Zero air pump	Werther International	06885	C 70/4	000814270			
15	11/26/2016	Zero air pump	Teledyne	000774	701H	610			

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial I	Number Site]	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2125	PN	-126	Eric Hebert	11/26/2016	DAS	Primary
Das Date: Das Time:	11/26/2016 11:34:00	Audit Date Audit Time	11/26/2016 11:34:00	Mfg	Datel	Parameter	
Das Day:	331	Audit Day	331	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	el:	High Channe	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.000	0.00	01 0.0000	0.0001				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/23/201	5 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.1000	0.1000) V	V	0.0000	
7	0.3000	0.3000	0.3000) V	V	0.0000	
7	0.5000	0.5000	0.5001		V	0.0001	
7	0.7000	0.7000	0.7001		V	0.0001	
7	0.9000	0.9001	0.9001		V	0.0000	
7	1.0000	1.0001	1.0001	l V	V	0.0000	

Flow Data Form

Mfg	Serial Nu	mber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID	
Арех	illegible		PNF126	Eri	ic Hebert	11/26/2010	6 Flow F	Rate	000655	
					MfgBlSerial Number14Tfer ID01			Parameter Flo		
					Slope	1.	00309 Int	ercept	-0.00231	
					Cert Date	4/2	1/2016 Co	rrCoff	1.00000	
DAS 1: A Avg % Diff: 1.32%	A Max % Di 1.32%	DAS 2: A Avg %	bDif A Max	« % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	-0. 0.9 1			
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifference	
primary	pump off	0.000	0.000	0.02	0.000	-0.01	l/m	l/m		
primary	leak check	0.000	0.000	0.01	0.000	-0.02	l/m	l/m		
primary	test pt 1	1.526	1.520	1.52	0.000	1.50	l/m	l/m	-1.32%	
primary	test pt 2	1.527	1.520	1.52	0.000	1.50	l/m	l/m	-1.32%	
primary	test pt 3	1.526	1.520	1.52	0.000	1.50	l/m	l/m	-1.32%	
Sensor Comp	onent Leak Te	st		Conditio	n		Statu	s pass		
Sensor Comp	onent Tubing (Condition		Conditio	n Good	Status pa		s pass	pass	
Sensor Comp	onent Filter Po	sition		Conditio	n Good		Status pass			
Sensor Comp	onent Rotomet	er Conditio	on	Conditio	n Clean and dry		Statu	s pass		
Sensor Comp	onent Moisture	Present		Conditio	n See comments	3	Statu	s pass		
Sensor Component Filter Distance			Conditio	n 5.0 cm		Statu	Status pass			
Sensor Comp	onent Filter De	pth		Conditio	n 2.0 cm		Statu	Status pass		
Sensor Comp	onent Filter Az	imuth		Conditio	n 90 deg		Statu	Status pass		
Sensor Comp	onent System	Memo		Conditio	n		Statu	s pass		

Ozone Data Form

Mfg	Se	erial Num	ber Ta	Site	Te	chnician		Site Visit	Date	Parame	ter	Owner ID	
ThermoElec	tron Inc 1	03024480′	1	PNF126	Er	ic Hebert		11/26/20 ⁻	16	Ozone		000695	
Slope: Intercept CorrCoff	1.04350 Slope: 0.00000 -0.27084 Intercept 0.00000 0.99971 CorrCoff 0.00000			ס	Mfg Serial N	umber	ThermoEl 05171121			rameter o er Desc. C	zone Dzone primary sta	an	
					_	Tfer ID		01113		_			
DAS 1:	DAS 1: DAS 2: A Avg % Diff: A Max % Di A Avg %Dif A Max				24 Di	-			1.00500) Inter	cept	-0.2884	1
_	1%	5.3%				Cert Da	te	1/2	28/2016	6 Corr	Coff	1.00000	0
UseDes	cription	ConcC	Group	Tfer Raw	Tfer	Corr	Si	te	Site	Unit	PctDi	fference	
prin	nary	1		-0.36	-0.	07	0.	12 p	pb				
prin	nary	2	2	11.29	11.	52	11	.97 p	pb			3.91%	
prin	•	3		28.42	28.		29.	*	pb			2.42%	
prin	•	4		74.31	74.		75.		pb			1.72%	
prin	nary	5	i	102.19	101	.96	107	'.40 p	pb			5.34%	
	omponent				Conditio	on Good				Status	pass		
	omponent				Conditio					Status			
	omponent			n		n Clean				Status			
Sensor Co	omponent	Battery Ba	ackup		Conditio					Status	pass		
Sensor Co	omponent	Offset			Conditio					Status	pass		
Sensor Co	omponent	Span				n 1.029				Status	pass		
	omponent				Condition N/A					Status	pass		
Sensor Co	omponent	Fullscale \	Voltage		Condition N/A					Status	pass		
	omponent				Condition 96.5 kHz					Status			
	omponent				Conditio	Condition 0.9 ppb				Status			
Sensor Co	omponent	Cell A Flov	W)n 0.61 lj				Status	pass		
Sensor Co	omponent	Cell A Pre	essure			on 622.5				Status	pass		
	omponent				Conditio					Status	pass		
	omponent				Conditio					Status			
Sensor Co	omponent	ent Cell B Noise			Conditio	ition 0.9 ppb				Status	pass		
Sensor Co	omponent	nent Cell B Flow				lition 0.55 lpm				Status			
	ensor Component Cell B Pressure				Conditio	ition 623.0 mmHg				Status	us pass		
	_	nt Cell B Tmp.			Conditio					Status			
Sensor Co	omponent	Line Loss			Conditio	ion Not tested				Status			
Sensor Co	omponent	System M	emo		Conditio	on				Status	pass		

Temperature Data Form

Mfg	Serial Number T	'a Site	7	Techn	ician	Site V	isit Date	Param	eter	Owner ID	
RM Young	14797	PNF126		Eric H	ebert	11/26	6/2016	Temper	ature	06536	
				Mf	g	Extec	h	Pa	rameter Te	mperature	
				Sei	rial Number	H2326	679	Tf	er Desc. R	D	
				Tfe	er ID	01228	3				
DAS 1:	DAS	2:		Slo	pe		1.0076	0 Inte	rcept	-0.05710)
Abs Avg Err Abs Max Er Abs Avg Err Abs Max			Max Er	x Er Cert Date			2/28/201	6 Cor	rCoff	1.00000)
0.22	0.26										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal OutputSi		gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	0.04	0.10		0.000	0.4		С	0.26		
primary Tem	p Mid Range	20.65	20.5	5	0.000		20.7		С	0.15	
primary Tem	p High Range	49.58	49.20	5	0.000		49.5		С	0.26	
Sensor Compone	ent Shield		Condi	ition N	Moderately clea	an		Status	pass		
Sensor Component Blower			Condi	Condition N/A				Status	s pass		
Sensor Compone	ent Blower Status S	Switch	Condi	Condition N/A			Status		pass		
Sensor Compone	ent System Memo		Condi	Condition				Status	s pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	PNF126	Eric Hebert	11/26/2016	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Ab	s Max Er Abs Avg 1.27	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0076	0 Intercept	-0.05710
			Cert Date	2/28/201	6 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.84	26.69	0.000	25.4	С	-1.27
primary	Temp Mid Range	28.76	28.60	0.000	27.4	С	-1.25
primary	Temp Mid Range	27.99	27.84	0.000	27.2	С	-0.69
Sensor Con	nponent System Memo)	Condition		Status	pass	

Infrastructure Data For

Site ID	PNF126	Technician Eric He	bert Site Visit Date 11/26/2016
Shelter I	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

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Site ID	PNF126	Technician Eric Hebert	Site Visit Date 11/2	6/2016					
Site Sponsor	(agency)	EPA	USGS Map	Carvers Gap					
-			Map Scale						
Operating G	roup	USFS/private							
AQS #		37-011-9991	Map Date						
Meteorologic	al Type	R.M. Young							
Air Pollutant Analyzer Ozone			QAPP Latitude						
Deposition M	leasurement	dry	QAPP Longitude						
Land Use		woodland - mixed	QAPP Elevation Meters						
Terrain		complex	QAPP Declination						
Conforms to	MLM	No	QAPP Declination Date						
Site Telephor	ıe	8287331643	Audit Latitude	36.105435					
Site Address	1	end of paved road	Audit Longitude	-82.045015					
Site Address	2	Roaring Creek Road	Audit Elevation	1216					
County		Avery	Audit Declination	-6.3					
City, State		, NC	Present						
Zip Code		28657	Fire Extinguisher 🔽	New in 2015					
Time Zone		Eastern	First Aid Kit						
Primary Ope	rator		Safety Glasses						
Primary Op.	Phone #		Safety Hard Hat						
Primary Op.	E-mail		Climbing Belt						
Backup Oper	ator		Security Fence						
Backup Op.	Phone #		Secure Shelter						
Backup Op.	E-mail		Stable Entry Step 🗹						
Shelter Work	xing Room ✓	Make Ekto Mo	odel 8810	Shelter Size640 cuft					
Shelter Clean		Notes The shelter is in fair condition,	however the floor is beginning	to deteriorate.					
Site OK	\checkmark	Notes							
Driving Direc	Driving Directions From Hwy 19E north of Plumb tree, turn west onto Roaring Creek Road. Follow the road to end of pavement always bearing right, and continue 200 meters. Site is off dirt road in the field on the right.								

PNF126

F-02058-1500-S2-rev002

Site ID

Technician Eric Hebert

Site Visit Date 11/26/2016

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m	5 m	
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m		
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

Fi	eld Sy	stems Data	Form	F-02058-1500-S3-rev002				
Site	e ID	PNF126	Technician Eric Hebert		Site Visit Date 11/26/2016			
1		d speed and direct fluenced by obstru	ion sensors sited so as to avoid actions?	✓	N/A			
2	(i.e. wind horizont	d sensors should b	l so as to minimize tower effects? e mounted atop the tower or on a m >2x the max diameter of the vind)		N/A			
3	Are the	tower and sensors	plumb?	✓	N/A			
4			ds pointed north or positioned to es such as buildings, walls, etc?	✓				
5	conditio surface	ns? (i.e. ground be	sensors sited to avoid unnatural clow sensors should be natural ped. Ridges, hollows, and areas of avoided)					
6	Is the so	lar radiation sens	or plumb?	✓	N/A			
7	Is it site light?	d to avoid shading	, or any artificial or reflected	✓	N/A			
8	Is the ra	in gauge plumb?		✓	N/A			
9	Is it site towers,		ng effects from buildings, trees,	✓	N/A			
10	Is the su facing n		sor sited with the grid surface	✓	N/A			
11	Is it inc	lined approximate	ly 30 degrees?	✓	N/A			

natural or man-made, that may affect the monitoring parameters:

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Site	e ID	PNF126	Technician	Eric Hebert		Site Visit Date 11/26/2016
1	1 Do all the meterological sensors appear to be intact, in good condition, and well maintained?					Temperature only
2	2 Are all the meteorological sensors operational online, and reporting data?					Temperature only
3	Are the s	hields for the tempera	ature and RH s	ensors clean?	✓	
4	Are the aspirated motors working?				✓	N/A
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of		N/A
6	Is the sur	face wetness sensor g	rid clean and u	ndamaged?		N/A
7		ensor signal and pow a, and well maintained		, in good		
8		ensor signal and pow elements and well ma		tions protected		

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	PNF126 Technician Eric Hebert		Site Visit Date 11/26/2016
	Siting Criteria: Are the pollutant analyzers and deposition ed	quip	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	✓	
2	Are the sample inlets 3 - 15 meters above the ground?	✓	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	✓	
	Pollutant analyzers and deposition equipment operations and	d ma	intenance
1	Do the analyzers and equipment appear to be in good condition and well maintained?	✓	
2	Are the analyzers and monitors operational, on-line, and reporting data?	✓	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓	
7	Is the zero air supply desiccant unsaturated?	✓	
8	Are there moisture traps in the sample lines?	✓	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	Clean and dry

Fie	eld Sy	stems Data Fo	orm					F-02	2058-15	00-S6-rev002
Site	e ID	PNF126	Technician	Eric Hebert		Site Visi	t Date	11/26/201	6	
	DAS, ser	nsor translators, and p	eripheral equi	<u>pment operatio</u>	<u>ns an</u>	<u>id maintenai</u>	nce			
1	Do the I well mai	DAS instruments appea intained?	ar to be in good	condition and						
2		he components of the l backup, etc)	DAS operation	al? (printers,						
3		nalyzer and sensor sig g protection circuitry?	· · · · ·	hrough						
4		signal connections pro intained?	tected from the	e weather and						
5	Are the	signal leads connected	to the correct	DAS channel?						
6	Are the grounde	DAS, sensor translator d?	rs, and shelter j	properly						
7	Does the	e instrument shelter ha	ve a stable pov	ver source?						
8	Is the in	strument shelter temp	erature control	led?						
9	Is the m	et tower stable and gro	ounded?			Stable			Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?				Met tower re	moved			

The sample towers are not grounded.

Field Sys	stems Data		F-02058-1500-S7-rev002					
Site ID	PNF126		Techni	cian [Eric Hebert Site Visit Date	11/26/2016		
Documenta	<u>tion</u>							
Does the sit	<u>e have the requir</u>	ed ins	strument	t and e	equipment manuals?			
		Yes	No	N/A		Yes	No	N/A
Wind speed se	ensor			\checkmark	Data logger		\checkmark	
Wind directio	n sensor			\checkmark	Data logger			\checkmark
Temperature	sensor				Strip chart recorder			\checkmark
Relative humi	dity sensor			\checkmark	Computer	\checkmark		
Solar radiatio	n sensor			\checkmark	Modem		\checkmark	
Surface wetne	ss sensor				Printer			\checkmark
Wind sensor t	ranslator				Zero air pump	\checkmark		
Temperature	translator				Filter flow pump		\checkmark	
Humidity sens					Surge protector			
Solar radiatio					UPS		\checkmark	
Tipping buck					Lightning protection device			
Ozone analyze					Shelter heater			
Filter pack flo					Shelter air conditioner			
-					Sheller an conditioner			
	FC power supply							
Does the s	ite have the requ	ired a	nd most	recent	t QC documents and report forms?			
		Pres	ent			Curre	nt	

Station Log	\checkmark		V
SSRF	\checkmark		V
Site Ops Manual	\checkmark	Oct 2001	
HASP	\checkmark	Oct 2015	\checkmark
Field Ops Manual	\checkmark	Oct 2015	\checkmark
Calibration Reports			
Ozone z/s/p Control Charts			
Preventive maintenance schedul			

1	Is the station log properly completed during every site visit?	✓	Minimal information
---	--	---	---------------------

- 2 Are the Site Status Report Forms being completed and current?
- 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?
- 4 Are ozone z/s/p control charts properly completed and current?

✓

PNF126 Technician Eric Hebert Site Visit Date 11/26/2016 Site ID Site operation procedures Trained in Gainesville in 1987 Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? \checkmark Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

Are regular operational QA/QC checks performed on meteorological instruments?

QC	Check P	erformed

Frequency

Multipoint Calibrations	\checkmark	Semiannually	✓
Visual Inspections	\checkmark	Weekly	✓
Translator Zero/Span Tests (climatronics)		N/A	✓
Manual Rain Gauge Test	\checkmark	N/A	✓
Confirm Reasonableness of Current Values	\checkmark	Weekly	
Test Surface Wetness Response	\checkmark	N/A	✓

Are regular operational QA/QC checks performed on the ozone analyzer?

OC	Check	Perf	ormed	
VV.	CHUCK	I UII	uncu	

Multi-point Calibrations Automatic Zero/Span Tests Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet) In-line Filter Replacement (at analyze** Sample Line Check for Dirt/Water **Zero Air Desiccant Check**

Frequency	Con
Semiannually	
Daily	
Daily	
Weekly	
Monthly	
N/A	
Weekly	
Weekly	

- 1 Do multi-point calibration gases go through the complete sample train including all filters?
- Do automatic and manual z/s/p gasses go through the 2 complete sample train including all filters?

3	Are the automatic and manual z/s/p checks monitored and	
	reported? If yes, how?	

	Unknown
✓	
✓	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

opliant

Compliant

F-02058-1500-S8-rev002

Fi	eld Sy	stems Data Form					F-02058	-1500-S9-rev002			
Sit	e ID	PNF126 Tec	chnician	Eric Hebert		Site Visit Dat	te 11/26/2016				
	<u>Site ope</u>	ration procedures									
1	Is the filter pack being changed every Tuesday as scheduled					Filter changed afternoons					
2	2 Are the Site Status Report Forms being completed and filed correctly?										
3	Are data downloads and backups being performed as scheduled?					No longer required					
4	Are general observations being made and recorded? How?				✓	SSRF					
5	Are site supplies on-hand and replenished in a timely fashion?										
6	Are san	ple flow rates recorded? Ho	w?		✓	SSRF, call-in					
7	Are san fashion	pples sent to the lab on a regu	ular sch	edule in a timely	✓						
8		ers protected from contamination pring? How?	ation du	iring handling	✓	One set of gloves only					
9		site conditions reported regu ons manager or staff?	ularly to) the field							
QC	Check P	erformed	Fre	equency			Compliant				
I	Multi-poi	nt MFC Calibrations	✓ Sei	miannually							
Flow System Leak Checks											
Filter Pack Inspection											
Flow Rate Setting Checks				\checkmark							
Visual Check of Flow Rate Rotometer Visual Check Visual Check of Flow Rate Rotometer		ekly			\checkmark						
1	In-line Fil	ter Inspection/Replacement	Sei	miannually			\checkmark				
5	Sample Li	ne Check for Dirt/Water	🖌 We	ekly			\checkmark				
Dura	de energe	dittoral analogotion (abote		an alaatah if maaaa) waaandina aandi	tionalistad above	an ann ath an faatanaa			

PNF126

F-02058-1500-S10-rev002

Site ID	
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Technician Eric Hebert

Site Visit Date 11/26/2016

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07069
DAS	Campbell	CR3000	2125	000346
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022677	06030
Flow Rate	Арех	AXMC105LPMDPC	illegible	000655
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0844349884	06597
Ozone	ThermoElectron Inc	49i A1NAA	1030244801	000695
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200013	000437
Sample Tower	Aluma Tower	В	none	000178
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14797	06536
Zero air pump	Teledyne	701H	610	000774
Zero air pump	Werther International	C 70/4	000814270	06885

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled: 2/25/2017 10:50:33 AM

SiteVisitDate Site Technician

10/05/2016 ACA416 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.12	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.16	с	Р
3	Relative Humidity average below 85%	Р	6	10	3	2.8	%	Р
4	Relative Humidity max below 85%	Р	6	10	3	6.8	%	Р
5	Solar Radiation % diff of avg	Р	9	10	12	8.67	%	Р
6	Solar Radiation % diff of max STD value	Р	9	10	12	9.1	%	Р
7	Ozone Slope	Р	0	1.1	4	1.02779	unitless	Р
8	Ozone Intercept	Р	0	5	4	0.30046	ppb	Р
9	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
10	Ozone % difference avg	Р	7	10	4	3.2	%	Р
11	Ozone % difference max	Р	7	10	4	3.6	%	Р
12	Flow Rate average % difference	Р	10	5	3	8.00	%	Fail
13	Flow Rate max % difference	Р	10	5	3	8.00	%	Fail
14	Shelter Temperature average error	Р	5	2	6	0.54	с	Р
15	Shelter Temperature max error	Р	5	2	6	1.06	с	Р

Records without valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Shelter Temperature standard deviation		5	0	6			
2	Temperature2meter Standard Deviation		5	0	3			

416

10/05/2016 ACA416

Field Performance Comments

1Parameter:Flow RateSensorComponent:System MemoCommentCode:199

The DAS calibration factors are not scaled correctly for the installed instrument measuring this parameter.

2 Parameter: Flow Rate SensorComponent: Moisture Present CommentCode: 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: SiteOpsProcComm

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

2 Parameter: DasComments

The accuracy of the DAS was not tested due to poor wiring conditions at the logger and lack of wiring documentation. It was decided that it was safer not to disturb the signal connections.

3 Parameter: SiteOpsProcedures

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: PollAnalyzerCom

The flow rate was measured to be 1.50 lpm, however the recorded flow rate on the DAS was 1.38 lpm.

6 Parameter: MetOpMaintCom

The sensor signal cables are beginning to show signs of wear. At the request of the site operator, the meteorological tower was not lowered and the wind sensors were not audited as the site is scheduled for a new shelter and major restructure. Ambient temperature is currently being measured at 2 meters above ground.

EEMS Spot Report

Data Compiled: 2/25/2017 4:45:16 PM

SiteVisitDate Site Technician

10/16/2016 ARE128 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.21	с	Р
2	Temperature max error	Р	4	0.5	12	0.26	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99462	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.67845	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.9	%	Р
7	Ozone % difference max	Р	7	10	4	3.3	%	Р
8	Flow Rate average % difference	Р	10	5	6	0.88	%	Р
9	Flow Rate max % difference	Р	10	5	6	1.32	%	Р
10	DAS Time maximum error	Р	0	5	1	0.08	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	12	1.43	с	Р
13	Shelter Temperature max error	Р	5	2	12	1.79	с	Р

Records without valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	49			
2	Shelter Temperature standard deviation		5	0	12			
3	Temperature standard deviation		4	0	12			

10/16/2016 ARE128

Eric Hebert

Field Performance Comments

 1
 Parameter:
 Flow Rate
 SensorComponent:
 Moisture Present
 CommentCode:
 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator handles the filter caps with bare hands but handles the filter pack using the Ziploc filter bag.

2 Parameter: DasComments

The meteorological tower has been removed.

3 Parameter: SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor has been moved to a naturally aspirated shield on the sample tower.

EEMS Spot Report

Data Compiled: 2/26/2017 11:41:58 AM

SiteVisitDate	Site	Technician			
10/19/2016	ARE128	Sandy Grenville			

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98280	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.27955	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.6	%	Р
5	Ozone % difference max	Р	7	10	4	3.8	%	Р

Records without valid pass/fail criteria

Data Compiled: 2/25/2017 12:03:08 PM

SiteVisitDate Site Technician

10/11/2016 ASH135 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	15	0.10	с	Р
2	Temperature max error	Р	4	0.5	15	0.20	с	Р
3	Ozone Slope	Р	0	1.1	4	0.84488	unitless	Fail
4	Ozone Intercept	Р	0	5	4	-1.88979	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99996	unitless	Р
6	Ozone % difference avg	Р	7	10	4	19.3	%	Fail
7	Ozone % difference max	Р	7	10	4	23.2	%	Fail
8	Flow Rate average % difference	Р	10	5	4	1.35	%	Р
9	Flow Rate max % difference	Р	10	5	4	1.35	%	Р
10	DAS Time maximum error	Р	0	5	1	0.08	min	Р
11	DAS Voltage average error	Р	7	0.003	14	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	10	0.77	с	Р
13	Shelter Temperature max error	Р	5	2	10	0.83	с	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	14			
2	Shelter Temperature standard deviation		5	0	10			
3	Temperature standard deviation		4	0	15			

Technician

10/11/2016 ASH135

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	Moisture Present	CommentCode:	72
	The filter samp	ple tubing has drops of m	oisture in low sections ou	tside the shelter.		
2	Parameter:	Ozone	SensorComponent:	Cell B Flow	CommentCode:	99
	This analyzer	diagnostic check is outsid	le the manufacturer's reco	mmended value.		
3	Parameter:	Ozone	SensorComponent:	Cell A Flow	CommentCode:	99
3			SensorComponent: le the manufacturer's reco		CommentCode:	99
3 4			•	mmended value.	CommentCode:	

Field Systems Comments

Parameter: DasComments 1

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested once each month.

Parameter: SitingCriteriaCom 3

The evergreen plantation previously 20 meters south of the site has been harvested.

Parameter: ShelterCleanNotes 4

The shelter is in fair condition, clean, and very well organized. Rot is beginning at the bottom of the walls and floor.

Data Compiled: 2/25/2017 7:14:59 PM

SiteVisitDate Site Technician

11/14/2016 BEL116 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.19	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.19	с	Р
3	Wind Speed average error below 5m/s in m/s	Р	3	0.5	8	0.05	m/s	Р
4	Wind Speed max error below 5m/s in m/s	Р	3	0.5	8	0.18	m/s	Р
5	Wind Speed average % difference above 5 m/s $$	Р	3	5	8	0.1	%	Р
6	Wind Speed max % difference above 5 m/s	Р	3	5	8	0.2	%	Р
7	Wind Speed Torque average error	Р	3	0.5	1	0.35	g-cm	Р
8	Wind Speed Torque max error	Р	3	0.5	1	0.4	g-cm	Р
9	Wind Direction Input Deg True average error (de	Р	2	5	8	2.0	degrees	Р
10	Wind Direction Input Deg True max error (deg)	Р	2	5	8	3	degrees	Р
11	Wind Direction Linearity average error (deg)	Р	2	5	16	1.5	degrees	Р
12	Wind Direction Linearity max error (deg)	Р	2	5	16	4	degrees	Р
13	Wind Direction Torque average error	Р	2	30	1	22	g-cm	Р
14	Wind Direction Torque max error	Р	2	30	1	25	g-cm	Р
15	Temperature average error	Р	4	0.5	15	0.07	с	Р
16	Temperature max error	Р	4	0.5	15	0.15	с	Р
17	Relative Humidity average below 85%	Р	6	10	3	4.4	%	Р
18	Relative Humidity max below 85%	Р	6	10	3	7.2	%	Р
19	Solar Radiation % diff of avg	Р	9	10	20	8.52	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	20	7.9	%	Р
21	Precipitation average % difference	Р	1	10	1	4.0	%	Р
22	Precipitation max % difference	Р	1	10	1	4.0	%	Р
23	Ozone Slope	Р	0	1.1	4	0.97281	unitless	Р
24	Ozone Intercept	Р	0	5	4	-0.80589	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
26	Ozone % difference avg	Р	7	10	4	5.1	%	Р
27	Ozone % difference max	Р	7	10	4	8.0	%	Р
28	Flow Rate average % difference	Р	10	5	3	0.22	%	Р
29	Flow Rate max % difference	Р	10	5	3	0.66	%	Р
30	DAS Time maximum error	Р	0	5	1	0.00	min	Р
31	DAS Voltage average error	Р	7	0.003	56	0.0000	V	Р
32	Surface Wetness Response	Р	12	0.5	1	1.02		Р
33	Shelter Temperature average error	Р	5	2	15	0.87	с	Р

SiteV	isitDate	Site	Technician						
11/14/2	2016	BEL116	Eric Hebert						
34	Shelter 7	Femperature max error	Р	5	2	15	2.18	с	Fail
Reco	rds with	out valid pass/fail criteria							
Line	Audite	d Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Surface	Wetness Manual Test Pass Fail		12	0	1			
2	DAS Vo	ltage maximum error		7	0	56			
3	Tempera	ature2meter Standard Deviation		5	0	3			
4	Shelter 7	Femperature standard deviation		5	0	15			
5	Tempera	ature standard deviation		4	0	15			
6	Precipita	ation total of % diff		1	0	1			
7	Precipita	ation total of abs diff mm or in		1	0	1			
8	Precipita	ation total of DAS mm or in		1	0	1			
9	Precipita	ation total of equivalent mm or in		1	0	1			

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

2 Parameter: MetOpMaintCom

The outer insulation of both temperature sensor signal cables is broken.

Data Compiled: 2/26/2017 10:32:22 PM

SiteVisitDate	Site	Technician
11/10/2016	BFT142	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98367	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.03766	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.0	%	Р
5	Ozone % difference max	Р	7	10	4	2.4	%	Р

Data Compiled: 2/26/2017 12:18:22 PM

SiteVisitDate	Site	Technician
11/08/2016	BWR139	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99546	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.32609	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.9	%	Р
5	Ozone % difference max	Р	7	10	4	1.5	%	Р

Data Compiled: 2/25/2017 12:52:09 PM

SiteVisitDateSiteTechnician10/14/2016CAT175Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	15	0.07	с	Р
2	Temperature max error	Р	4	0.5	15	0.16	с	Р
3	Flow Rate average % difference	Р	10	5	3	1.12	%	Р
4	Flow Rate max % difference	Р	10	5	3	1.35	%	Р
5	DAS Time maximum error	Р	0	5	1	0.08	min	Р
6	DAS Voltage average error	Р	7	0.003	21	0.0001	V	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	21			
2	Temperature standard deviation		4	0	15			

10/14/2016 CAT175

Eric Hebert

Field Performance Comments

1 Parameter: Flow Rate **SensorComponent:** Filter Position **CommentCode:** 71

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

2 Parameter: Flow Rate SensorComponent: Moisture Present

CommentCode: 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: SiteOpsProcComm

New site operators from the Frost Valley YMCA camp are now operating the site.

2 **Parameter:** DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered. The met tower has been removed and the temperature is being measured from the sample tower at 10 meters above ground.

3 Parameter: ShelterCleanNotes

The shelter is beginning to show signs of deterioration to the floor and walls. There are many unused and possibly depleted batteries stored in the shelter. The vegetation has been allowed to grow. The shelter roof has been repaired.

4 Parameter: PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

Data Compiled: 2/26/2017 11:14:02 AM

SiteVisitDate	Site	Technician
10/18/2016	CDR119	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97008	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.20393	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99996	unitless	Р
4	Ozone % difference avg	Р	7	10	4	3.7	%	Р
5	Ozone % difference max	Р	7	10	4	4.7	%	Р

Data Compiled: 2/26/2017 10:53:40 AM

SiteVisitDate	Site	Technician
10/17/2016	CND125	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98222	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.21269	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.1	%	Р
5	Ozone % difference max	Р	7	10	4	2.3	%	Р

Records without valid pass/fail criteria

Field Performance Comments

1 Parameter: Ozone

SensorComponent: Cell B Flow

CommentCode: 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Data Compiled: 2/25/2017 1:30:38 PM

SiteVisitDate Site Technician

10/15/2016 CTH110 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.08	с	Р
2	Temperature max error	Р	4	0.5	3	0.21	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98214	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.50545	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.7	%	Р
7	Ozone % difference max	Р	7	10	4	4.1	%	Р
8	Flow Rate average % difference	Р	10	5	3	1.35	%	Р
9	Flow Rate max % difference	Р	10	5	3	1.35	%	Р
10	DAS Time maximum error	Р	0	5	1	0.20	min	Р
11	DAS Voltage average error	Р	7	0.003	42	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	12	0.10	с	Р
13	Shelter Temperature max error	Р	5	2	12	0.15	с	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	42			
2	Shelter Temperature standard deviation		5	0	12			
3	Temperature standard deviation		4	0	3			

10/15/2016 CTH110

Technician

Eric Hebert

Field Performance Comments

1 Parameter: Flow Rate SensorComponent: Moisture Present

CommentCode: 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed and the temperature sensor has been moved to the sample tower at 10 meters above the ground. The shield has been changed from aspirated to naturally aspirated.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and the sample train is leak tested every two weeks.

3 Parameter: SitingCriteriaCom

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions.

4 Parameter: ShelterCleanNotes

The condition of the shelter floor is beginning to deteriorate.

Data Compiled: 2/26/2017 12:01:27 PM

SiteVisitDate	Site	Technician
10/27/2016	GRS420	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98817	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.69307	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.8	%	Р
5	Ozone % difference max	Р	7	10	4	5.7	%	Р

Data Compiled: 2/25/2017 11:13:35 AM

SiteVisitDate Site Technician

10/10/2016 HOW191 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.08	c	Р
2	Temperature max error	Р	4	0.5	3	0.16	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98950	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.77461	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.0	%	Р
7	Ozone % difference max	Р	7	10	4	5.3	%	Р
8	Flow Rate average % difference	Р	10	5	4	0.67	%	Р
9	Flow Rate max % difference	Р	10	5	4	0.67	%	Р
10	Shelter Temperature average error	Р	5	2	9	0.60	с	Р
11	Shelter Temperature max error	Р	5	2	9	0.89	с	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Shelter Temperature standard deviation		5	0	9			
2	Temperature standard deviation		4	0	3			

10/10/2016 HOW191

Eric Hebert

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	System Memo	CommentCode:	209
	This paramete	r is being measured at 23	.5 meters from the ground	and above a tree canopy.		
2	Parameter:	Ozone	SensorComponent:	System Memo	CommentCode:	209
	This parameter	r is being measured at 23	.5 meters from the ground	and above a tree canopy.		
3	Parameter:	Temperature	SensorComponent:	System Memo	CommentCode:	209

This parameter is being measured at 23.5 meters from the ground and above a tree canopy.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that gloves are not consistently used to handle the filter pack.

2 Parameter: DasComments

There were no spare channels configured on the DAS to allow for accuracy testing with the audit system.

3 Parameter: SitingCriteriaCom

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

4 Parameter: ShelterCleanNotes

The custom built shelter is clean and organized.

5 Parameter: MetSensorComme

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Data Compiled: 2/24/2017 5:26:10 PM

SiteVisitDate Site Technician

10/01/2016 HWF187 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	15	0.26	с	Р
2	Temperature max error	Р	4	0.5	15	0.33	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98859	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.21053	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.4	%	Р
7	Ozone % difference max	Р	7	10	4	1.8	%	Р
8	Flow Rate average % difference	Р	10	5	3	1.12	%	Р
9	Flow Rate max % difference	Р	10	5	3	1.35	%	Р
10	DAS Time maximum error	Р	0	5	1	0.33	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	10	0.45	с	Р
13	Shelter Temperature max error	Р	5	2	10	0.74	с	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	49			
2	Shelter Temperature standard deviation		5	0	10			
3	Temperature standard deviation		4	0	15			

10/01/2016 HWF187

Eric Hebert

Field Performance Comments

 1
 Parameter:
 Flow Rate
 SensorComponent:
 Moisture Present

CommentCode: 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested every other week.

2 Parameter: ShelterCleanNotes

The shelter is in good condition.

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SiteVisitDate	Site	Technician
10/18/2016	PAR107	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98764	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.36289	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.5	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

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SiteVisitDate	Site	Technician
10/21/2016	PED108	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99524	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.38233	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.3	%	Р
5	Ozone % difference max	Р	7	10	4	2.2	%	Р

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SiteVisitDate Site Technician

11/26/2016 PNF126 Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.22	с	Р
2	Temperature max error	Р	4	0.5	3	0.26	с	Р
3	Ozone Slope	Р	0	1.1	4	1.0435	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.27084	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99971	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.3	%	Р
7	Ozone % difference max	Р	7	10	4	5.3	%	Р
8	Flow Rate average % difference	Р	10	5	3	1.32	%	Р
9	Flow Rate max % difference	Р	10	5	3	1.32	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	12	1.07	с	Р
13	Shelter Temperature max error	Р	5	2	12	1.27	с	Р

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	DAS Voltage maximum error		7	0	49			
2	Shelter Temperature standard deviation		5	0	12			
3	Temperature standard deviation		4	0	3			

11/26/2016 PNF126

Eric Hebert

Field Performance Comments

 1
 Parameter:
 Flow Rate
 SensorComponent:
 Moisture Present

CommentCode: 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 Parameter: DasComments

The sample towers are not grounded.

2 Parameter: SitingCriteriaCom

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition, however the floor is beginning to deteriorate.

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SiteVisitDate	Site	Technician
10/21/2016	SHN418	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98889	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.10568	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.7	%	Р
5	Ozone % difference max	Р	7	10	4	1.5	%	Р

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SiteVisitDate	Site	Technician
10/17/2016	VPI120	Sandy Grenville

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98939	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.26083	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.7	%	Р
5	Ozone % difference max	Р	7	10	4	2.4	%	Р

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SiteVisitDate	Site	Technician
11/07/2016	WSP144	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.96686	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.67538	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99988	unitless	Р
4	Ozone % difference avg	Р	7	10	4	3.8	%	Р
5	Ozone % difference max	Р	7	10	4	4.3	%	Р

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VPI.	120-Sandy	Grenville-10/17/2016				
1	10/17/2016	DAS	Campbell	000402	CR3000	2514
2	10/17/2016	Ozone	ThermoElectron Inc	000628	49i A1NAA	1009241786
3	10/17/2016	Ozone Standard	ThermoElectron Inc	000443	49i A3NAA	CM08200019
4	10/17/2016	Zero air pump	Werther International	06879	C 70/4	000814275

Ozone Data Form

Mfg	1	Serial Numl	ber Ta	Site	Te	chnician		Site Visit	t Date	Parame	eter	Owner I	D
ThermoElec	ctron Inc	1009241786	6	VPI120	Sa	andy Grer	ville	10/17/20	16	Ozone		000628	
Slope: Intercept CorrCoff	-0	26083 Int	ope: tercept orrCoff	0.00000	D	Mfg Serial N Tfer ID	umber	ThermoE 04196069 01112			rameter ozo er Desc. Oz		/ stan
)iff: A M 7%	I ax % Di A 2.4%	DAS 2: A Avg %	bDif A Max	% Di	Slope Cert Da	te		0.99524 /28/201		- L	-0.33 1.00	
prin prin prin prin	scription nary nary nary nary nary nary	ConcG 1 2 3 4 5		Tfer Raw 0.04 29.99 50.06 80.00 110.04	Tfer 0.1 30. 50. 80. 110	37 .46 .63 .71	0. 29 49 79	.74 I .58 I .60 I	Site ppb ppb ppb ppb ppb	e Unit	PctDiff	Ference -2.36% -2.07% -1.38% -1.16%	
Sensor Component Sample Train		ain		Conditio	on Good				Status	pass			
Sensor C	omponen	t 22.5 degre	ee rule		Conditio	on				Status	pass		
Sensor C	omponen	t Inlet Filter	Conditio	n	Conditio	on Clean				Status	pass		
Sensor C	omponen	t Battery Ba	ackup		Conditio	on Not fu	nctioning]		Status	Fail		7
Sensor C	omponen	t Offset			Conditio	on 0.6				Status	pass		7
Sensor C	omponen	t Span				on 1.007				Status	pass		
	•	t Zero Volta	ige		Conditio					Status			
	_	t Fullscale \			Conditio					Status			
	_	t Cell A Free				on 89.0 k	Hz			Status			
	•	t Cell A Nois				on 0.7 pp				Status			
	-	t Cell A Flov				on 0.69 l				Status			
	_												
	•	t Cell A Pres				on 660.5				Status			
	_	t Cell A Tmp				on 36.4 0				Status			
	•	t Cell B Free				on 93.5 k				Status			
Sensor C	omponen	t Cell B Nois	se			on 0.7 pp				Status	pass		
Sensor C	omponen	t Cell B Flow	N		Conditio	0.69 l	om			Status	pass		
Sensor C	omponen	t Cell B Pre	ssure		Conditio	on 660.8	mmHg			Status	pass		
Sensor C	omponen	t Cell B Tm	р.		Conditio	on				Status	pass		
Sensor C	omponen	t Line Loss			Conditio	on Not te	sted			Status	pass		
Sensor C	omponen	t System Me	emo		Conditio	on				Status	pass		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CNL	0125-Sandy	Grenville-10/17/2016				
1	10/17/2016	DAS	Campbell	000499	CR3000	3816
2	10/17/2016	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803
3	10/17/2016	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
4	10/17/2016	Zero air pump	Werther International	06868	C 70/4	000814284

Ozone Data Form

Mfg	Se	erial N	umber Ta	Site	Te	chnician		Site Visit D	ate Param	eter	Owner ID
ThermoElec	tron Inc 1	03024	4803	CND125	Sa	andy Grei	nville	10/17/2016	Ozone		000692
Slope: Intercept	-0.2	8222 1269	Slope: Intercept	0.00000	D	Mfg Serial N	umber	ThermoElec		arameter fer Desc.	ozone Ozone primary stan
CorrCoff	0.9	9999	CorrCoff	0.00000	D	Tfer ID		01112			
DAS 1: A Avg % D 2.1	Diff: A Ma	x % D 2.3		bDif A Max (% Di	Slope Cert Da	ıte	L		rcept rCoff	-0.33070 1.00000
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site Unit	Pct	Difference
prin	nary		1	0.03	0.3	36	0.	13 ppł)		
prin	primary 2		2	30.04	30.	.51	29	.83 ppł)		-2.23%
prin	nary		3	49.98	50.		49	**	0		-2.14%
prin	•		4	79.92	80.			.76 ppł)		-2.32%
prin	nary		5	109.70	110	0.55	108	8.50 ppł)		-1.85%
Sensor Co	omponent	Samp	le Train		Conditio	on Good			Status	pass	
Sensor Co	omponent	22.5 c	legree rule		Conditio	on			Status	pass	
Sensor Co	omponent	Inlet F	ilter Conditio	n	Conditio	Condition Clean			Status	pass	
Sensor Co	omponent	Batter	y Backup		Conditio	on N/A			Status	pass	
Sensor Co	omponent	Offset	:		Conditio	on -0.20			Status	pass	
Sensor Co	omponent	Span			Conditio	Condition 1.003			Status	pass	
Sensor Co	omponent	Zero \	/oltage		Conditio	Condition N/A			Status	pass	
Sensor Co	omponent	Fullsc	ale Voltage		Conditio	on N/A			Status	pass	
Sensor Co	omponent	Cell A	Freq.		Conditio	on 99.0 k	Hz		Status	pass	
Sensor Co	omponent	Cell A	Noise		Conditio	on 0.3 pp	b		Status	pass	
Sensor Co	omponent	Cell A	Flow		Conditio	on 0.69 l	om		Status	pass	
Sensor Co	omponent	Cell A	Pressure		Conditio	on 726.8	mmHg		Status	pass	
Sensor Co	omponent	Cell A	Tmp.		Conditio	on 39.1 ()		Status	pass	
Sensor Co	omponent	Cell B	Freq.		Conditio	on 103.9	kHz		Status	pass	
Sensor Co	omponent	Cell B	Noise		Conditio	on 0.9 kH	łz		Status	pass	
Sensor Co	omponent	Cell B	Flow		Conditio	on 0.0 lp	m		Status	Fail	
Sensor Co	omponent	Cell B	Pressure		Conditio	on 726.8	mmHg		Status	pass	
Sensor Co	omponent	Cell B	Tmp.		Conditio	on			Status	pass	
Sensor Co	Sensor Component Line Loss			Conditio	ondition Not tested			Status	pass		
Sensor Co	omponent	Syste	m Memo		Conditio	on See c	omments	;	Status	pass	

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	CND125	Sandy Grenville		Cell B Flow	ThermoElectron	3493		
This analyzer diagnostic	check is outside	the manufacturer's	recommended v	value.				

Site Inventory by Site Visit

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number			
PAR107-Sandy Grenville-10/18/2016									
1	10/18/2016	DAS	Campbell	000333	CR3000	2112			
2	10/18/2016	Ozone	ThermoElectron Inc	000689	49i A1NAA	1030244802			
3	10/18/2016	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012			
4	10/18/2016	Zero air pump	Werther International	06932	C 70/4	000829174			

Ozone Data Form

Mfg	Se	erial N	umber Ta	Site	Те	chnician		Site Visit	Date	Parame	ter	Owner ID
ThermoElec	ctron Inc 1	03024	4802	PAR107	Sa	andy Grer	nville	10/18/20	16	Ozone		000689
Slope: Intercept CorrCoff	-0.3	8764 6289 9995	Slope: Intercept CorrCoff	0.00000	0	Mfg Serial N	umber	ThermoEl 04196069			rameter er Desc.	ozone Ozone primary stan
Correon	0.0	0000	Correon	0.0000	<u> </u>	Tfer ID		01112]		
DAS 1:			DAS 2:			Slope		(0.99524	Inter	cept	-0.33070
A Avg % E				Dif A Max	% Di	Cert Da	ite	1/2	28/2016	Corr	- Coff	1.00000
1.	5%	2.0	%									
UseDes	scription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site	Unit	Pct	Difference
-	nary		1	0.06	0.3				pb			
	nary		2	30.04	30.		30		pb			-1.47%
	nary		3	50.02	50.		49		pb			-1.46%
-	nary		4	79.95	80.		79	1	pb			-1.25%
prin	nary		5	110.03	110	.88	108	8.70 p	pb			-1.97%
Sensor C	omponent	Samp	le Train		Conditio	on Good				Status	pass	
Sensor C	omponent	22.5 c	legree rule		Conditio	on				Status	pass	
Sensor C	omponent	Inlet F	ilter Conditio	n	Conditio	Condition Clean				Status	pass	
Sensor C	omponent	Batter	y Backup		Conditio	on N/A				Status	pass	
Sensor C	omponent	Offset			Conditio	on 0.10				Status	pass	
Sensor C	omponent	Span			Conditio	Condition 1.009				Status	pass	
Sensor C	omponent	Zero \	/oltage		Conditio	ndition N/A				Status	pass	
Sensor C	omponent	Fullsc	ale Voltage		Conditio	on N/A				Status	pass	
Sensor C	omponent	Cell A	Freq.			on 84.5 k				Status	pass	
Sensor C	omponent	Cell A	Noise		Conditio	on 0.7 pp	b			Status		
	omponent				Conditio	on 0.69 l	om			Status	pass	
Sensor C	omponent	Cell A	Pressure			on 687.8				Status		
Sensor C	omponent	Cell A	Tmp.			on 35.4 C				Status		
	omponent					on 82.0 k				Status		
	omponent					on 0.7 pp				Status	[
	omponent					on 0.57 lj				Status		
	omponent					on 687.8	mmHg			Status		
Sensor C	omponent	Cell B	Tmp.		Conditio	on				Status	pass	
Sensor C	Sensor Component Line Loss			Conditio	dition Not tested				Status	pass		
Sensor C	omponent	Syste	m Memo		Conditio	on				Status	pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDK	R119-Sandy	Grenville-10/18/2016				
1	10/18/2016	DAS	Campbell	000339	CR3000	2118
2	10/18/2016	Ozone	ThermoElectron Inc	000623	49i A1NAA	1009241790
3	10/18/2016	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
4	10/18/2016	Zero air pump	Werther International	06903	C 70/4	000899159

Ozone Data Form

Mfg	Se	erial N	umber Ta	Site	Te	chnician		Site Visit D	ate Param	eter	Owner ID
ThermoElec	tron Inc 1	00924	1790	CDR119	Sa	andy Grer	nville	10/18/2016	Ozone		000623
Slope: Intercept CorrCoff	-0.2	7008 0393 9996	Slope: Intercept CorrCoff	0.00000	D	Mfg Serial N	umber	ThermoElec 0419606966		arameter fer Desc.	Ozone
	L					Tfer ID		01112			
DAS 1:			DAS 2:			Slope		0.9	9524 Inte	rcept	-0.33070
A Avg % D	Diff: A Max 7%	x % D 4.79		Dif A Max	% Di	Cert Da	te	1/28	2016 Cor	rCoff	1.00000
5.7	70	4.7	70								· · ·
	cription	Co	oncGroup	Tfer Raw	Tfer		Si		Site Unit	Pct	Difference
-	nary		1	-0.08	0.2		0.	11			1.5.104
-	nary		2	30.11	30.		29	11			-4.74%
	nary		3	49.84	50.		48				-3.67%
-	nary		4 5	79.99 109.57	80. 80.			.76 ppb 7.30 ppb		_	-3.64%
	nary		-	109.57			107	7.30 ppb			-2.83%
Sensor Co	omponent	Samp	le Train		Conditio	on Good			Status	pass	
Sensor Co	omponent	22.5 c	legree rule		Conditio	on			Status	pass	
Sensor Co	omponent	Inlet F	ilter Conditio	n	Conditio	Condition Clean			Status	pass	
Sensor Co	omponent	Batter	y Backup		Conditio	N/A			Status	pass	
Sensor Co	omponent	Offset	:		Conditio	on 0.30			Status	pass	
Sensor Co	omponent	Span			Conditio	Condition 0.993			Status	pass	
Sensor Co	omponent	Zero \	/oltage		Conditio	ondition N/A			Status	pass	
Sensor Co	omponent	Fullsc	ale Voltage		Conditio	n N/A			Status	pass	
Sensor Co	omponent	Cell A	Freq.		Conditio	on 85.5 k	Hz		Status	pass	
Sensor Co	omponent	Cell A	Noise		Conditio	on 0.6 pp	b		Status	pass	
Sensor Co	omponent	Cell A	Flow		Conditio	on 0.69 l	om		Status	pass	
Sensor Co	omponent	Cell A	Pressure		Conditio	on 710.4	mmHg		Status	pass	
Sensor Co	omponent	Cell A	Tmp.		Conditio	on 37.4 ()		Status	pass	
Sensor Co	omponent	Cell B	Freq.		Conditio	on 87.2 k	Hz		Status	pass	
Sensor Co	omponent	Cell B	Noise		Conditio	on 0.7 pp	b		Status	pass	
Sensor Co	omponent	Cell B	Flow			on 0.70 l			Status	pass	
	omponent				Conditio	on 710.7	mmHg		Status		
Sensor Co	omponent	Cell B	Tmp.		Conditio	on			Status	pass	
Sensor Co	Sensor Component Line Loss			Conditio	ondition Not tested			Status	pass		
Sensor Co	omponent	Syste	m Memo		Conditio	on			Status	pass	

Site Inventory by Site Visit

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number
AREI	28-Sandy	Grenville-10/19/2016				
1	10/19/2016	DAS	Campbell	000400	CR3000	2524
2	10/19/2016	Ozone	ThermoElectron Inc	000621	49i A1NAA	1009241798
3	10/19/2016	Ozone Standard	ThermoElectron Inc	000199	49i A3NAA	0607315737
4	10/19/2016	Zero air pump	Werther International	06866	PC70/4	000815262

Ozone Data Form

Mfg S	erial Number Ta	Site	Тес	chnician		Site Visit	Date Paran	neter	Owner ID
ThermoElectron Inc 1	009241798	ARE128	Sa	andy Grer	nville	10/19/201	6 Ozone		000621
Intercept -0.2	08280Slope:27955Intercept09998CorrCoff	0.00000	0 0	Serial Number		ThermoEle 041960696 01112		Parameter Tfer Desc.	Ozone
DAS 1: A Avg % Diff: A Ma 2.6%	DAS 2: x % Di A Avg % 3.8%	Dif A Max	% Di	Slope Cert Da			.99524 Inte 8/2016 Co	ercept rrCoff	-0.33070 1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer	Corr	Si	te	Site Unit	Pct	Difference
primary	1	0.04	0.3		0.				
primary	2	29.90	30.	37	29		ob		-3.79%
primary			50.2		49		ob		-2.58%
primary	4	80.26	80.		79				-2.19%
primary	5	110.10	110.		109	0.00 pr	ob		-1.76%
Sensor Component	Sensor Component Sample Train		Conditio	n Good			Statu	s pass	
Sensor Component	22.5 degree rule		Conditio	on			Status	s pass	
Sensor Component	Inlet Filter Conditio	n	Condition Clean				Statu	pass	
Sensor Component	Battery Backup		Conditio	N/A			Statu	s pass	
Sensor Component	Offset		Conditio	n 0.10			Status	s pass	
Sensor Component	Span		Conditio	Condition 1.011			Status	s pass	
Sensor Component	Zero Voltage		Conditio	Condition N/A			Status	s pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A			Statu	s pass	
Sensor Component	Cell A Freq.		Conditio				Statu	s pass	
Sensor Component	Cell A Noise		Conditio	Not te	sted		Statu	s pass	
Sensor Component	Cell A Flow		Conditio				Status	s pass	
Sensor Component	Cell A Pressure		Conditio				Status	s pass	
Sensor Component	Cell A Tmp.		Conditio					s pass	
Sensor Component			Conditio					s pass	
Sensor Component			Conditio	Not te	sted		Status	s pass	
Sensor Component	Cell B Flow		Conditio				Status	s pass	
Sensor Component	Cell B Pressure		Conditio	Not te	sted			s pass	
Sensor Component	Cell B Tmp.		Conditio					s pass	
Sensor Component			Conditio	Not te	sted		Status	s pass	
Sensor Component	System Memo		Conditio	n			Statu	s pass	

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number		
PED108-Sandy Grenville-10/21/2016								
1	10/21/2016	DAS	Campbell	000406	CR3000	2511		
2	10/21/2016	Ozone	ThermoElectron Inc	000732	49i A1NAA	1105347319		
3	10/21/2016	Ozone Standard	ThermoElectron Inc	000214	49i A3NAA	0622717855		
4	10/21/2016	Zero air pump	Werther International	06883	C 70/4	000815257		

Mfg	Se	erial N	umber Ta	Site	Те	chnician		Site Visit I	ate Paran	neter	Owner ID
ThermoElec	ctron Inc 1	10534	7319	PED108	Sa	andy Grer	nville	10/21/2016	6 Ozone	1	000732
Slope: Intercept	-0.3	9524 8233	Slope: Intercept	0.00000	ס	Mfg Serial N	umber	ThermoElec		'aramete 'fer Desc.	r ozone Ozone primary stan
CorrCoff	1.0	0000	CorrCoff	0.00000	J	Tfer ID		01112			
DAS 1: A Avg % D	Diff: A Max 3%	x % D 2.2°		bDif A Max (% Di	Slope Cert Da	te	L		ercept rrCoff	-0.33070 1.00000
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	ite	Site Unit	Pct	Difference
prin	nary		1	0.01	0.3	34	0.	02 pp	b		
prin	nary		2	30.02	30.	.49	29	.81 pp	b		-2.23%
	nary		3	50.04	50.		49				-1.23%
-	nary		4	79.99	80.			.10 pp			-0.74%
prin	nary		5	109.84	110		109	0.70 pp	b		-0.89%
Sensor Co	omponent	Samp	le Train		Conditio	on Good			Statu	s pass	
Sensor C	omponent	22.5 c	legree rule		Conditio	on			Statu	s pass	
Sensor Co	omponent	Inlet F	ilter Conditio	n	Conditio	ondition Clean		Status F		s pass	
Sensor Co	omponent	Batter	y Backup		Conditio	Condition N/A			Statu	s pass	
Sensor C	omponent	Offset			Conditio	on -0.10			Statu	s pass	
Sensor Co	omponent	Span			Conditio	dition 1.023			Statu	pass	
Sensor Co	omponent	Zero \	/oltage		Conditio	Condition N/A			Statu	s pass	
Sensor Co	omponent	Fullsc	ale Voltage		Condition N/A			Statu	s pass		
Sensor Co	omponent	Cell A	Freq.		Conditio	on 96.2 k	Hz		Statu	s pass	
Sensor C	omponent	Cell A	Noise		Conditio	on Not te	sted		Statu	s pass	
Sensor C	omponent	Cell A	Flow		Conditio	on 0.66 l	om		Statu	s pass	
Sensor C	omponent	Cell A	Pressure		Conditio	on 713.6	mmHg		Statu	s pass	
Sensor C	omponent	Cell A	Tmp.		Conditio	on 32.5 C)		Statu	s pass	
Sensor C	omponent	Cell B	Freq.		Conditio	on 108.4	kHz		Statu	s pass	
Sensor Co	omponent	Cell B	Noise		Conditio	on Not te	sted		Statu	s pass	
Sensor C	omponent	Cell B	Flow		Conditio	on 0.73 l	om		Statu	s pass	
Sensor C	omponent	Cell B	Pressure		Conditio	on 713.6	mmHg		Statu	s pass	
Sensor C	omponent	Cell B	Tmp.		Conditio	on			Statu	s pass	
Sensor C	Sensor Component Line Loss		Conditio	Not tested			Statu	s pass			
Sensor C	Sensor Component System Memo			Conditio	dition			Statu	s pass		

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SHN	418-Eric H	lebert-10/21/2016				
1	10/21/2016	DAS	Environmental Sys Corp	90603	8816	2272
2	10/21/2016	Ozone	ThermoElectron Inc	none	49i A3NAA	0903334535
3	10/21/2016	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460009
4	10/21/2016	Zero air pump	Werther International	none	C 70/4	000855578

Mfg	Se	erial N	umber Ta	Site	Te	chnician		Site Vis	sit Date	Parame	eter	Owner ID
ThermoElec	ctron Inc 0	90333	4535	SHN418	Er	ric Hebert		10/21/2	2016	Ozone		none
Slope: Intercept CorrCoff	0.1	8889 0568 9993	Slope: Intercept CorrCoff	0.00000 0.00000 0.00000		Mfg Serial N		0517112	Electron 2167		rameter (er Desc. (ozone Dzone primary sta
DAS 1: A Avg % E)iff: A Ma	x % D 1.5°		Dif A Max	Tfer ID Slope Cert Date			01113	1.00261 Intercept 9/14/2016 CorrCoff		•	-0.15202
UseDes	cription	C	oncGroup	Tfer Raw	Tfer	Corr	Si	ite	Sit	e Unit	PctD	ifference
-	nary		1	0.01	0.			05	ppb	e ente	Teth	
-	primary 2		27.14	27.	.22	27	.21	ppb			-0.04%	
prin	nary		3	48.13	48.		47	.49	ppb			-1.37%
-	nary		4	74.98	74.			.93	ppb		_	0.00%
prin	nary		5	103.33	103			.70	ppb			-1.46%
Sensor C	omponent	Samp	le Train		Conditio	on Good				Status	pass	
Sensor C	omponent	22.5 d	legree rule		Condition				Status	pass		
Sensor C	omponent	Inlet F	ilter Conditio	n	Condition Clean		Status Pa					
Sensor C	omponent	Batter	y Backup		Conditio	on N/A				Status	pass	
Sensor C	omponent	Offset			Condition 0.40				Status	pass		
	omponent				Condition					Status		
	omponent					ion 0.0017			Status	pass		
Sensor C	omponent	Fullsc	ale Voltage		Condition					Status		
	omponent					on 74.3 k				Status		
	omponent					on 1.5 pp				Status		
	omponent				Conditio	on 0.64 l	om			Status	pass	
Sensor C	omponent	Cell A	Pressure			on 651.8				Status	pass	
	omponent				Conditio	on 33.3 ()			Status	pass	
	omponent					on 79.9 k				Status		
Sensor C	omponent	Cell B	Noise		Conditio	on 1.4 pp	b			Status	pass	
Sensor C	omponent	Cell B	Flow			on 0.65 l				Status	pass	
Sensor C	omponent	Cell B	Pressure		Conditio	on 652.4	mmHg			Status	pass	
Sensor C	omponent	Cell B	Tmp.		Conditio					Status		
	omponent				Conditio	on Not te	sted			Status	pass	
Sensor C	Sensor Component System Memo			Conditio	on				Status	pass		

Site Vi	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRS42	20-Eric H	lebert-10/27/2016				
1 1	0/27/2016	DAS	Environmental Sys Corp	none	8832	A4115K
2 1	0/27/2016	Ozone	ThermoElectron Inc	90607	49C	49C-61985-333
3 1	0/27/2016	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450193
4 1	0/27/2016	Zero air pump	Werther International	none	PC70/4	531385

Mfg So	erial Number Ta	Site	Te	chnician		Site Visit I	Date Param	eter Owner ID
ThermoElectron Inc 4	9C-61985-333	GRS420	Er	ic Hebert		10/27/2016	S Ozone	90607
Intercept 0.6	88817Slope:\$9307Intercept\$9999CorrCoff	0.00000)	Mfg Serial N Tfer ID		· · · · · · · · · · · · · · · · · · ·		Trameter ozone
DAS 1: A Avg % Diff: A Ma 1.8%	DAS 2: x % Di A Avg % 5.7%	bDif A Max (% Di	Slope Cert Da	ıte	L		rcept -0.15202 rCoff 1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer	Corr	Si	te	Site Unit	PctDifference
primary	1	0.09	0.2		0.			
primary	2	12.78	12.	.89	13	.63 рр	b	5.74%
primary	· ·		27.		27	11	b	0.58%
primary			75.		75	.33 pp	b	-0.12%
primary	5	102.69	102	.57	102	2.00 pp	b	-0.56%
Sensor Component		Conditio	on Good			Status	pass	
Sensor Component	22.5 degree rule		Conditio	on			Status	pass
Sensor Component	Inlet Filter Conditio	n	Condition Clean		Status F		pass	
Sensor Component	Battery Backup		Conditio	on N/A			Status	pass
Sensor Component	Offset		Conditio	on 0.000			Status	pass
Sensor Component	Span		Condition 1.028				Status	pass
Sensor Component	Zero Voltage		Condition 0.0022				Status	pass
Sensor Component	Fullscale Voltage		Conditio	on 1.001	5		Status	pass
Sensor Component	Cell A Freq.		Conditio	on 73.3 k	κHz		Status	pass
Sensor Component	Cell A Noise		Conditio	on 0.7 pp	b		Status	pass
Sensor Component	Cell A Flow		Conditio	on 0.68 l	pm		Status	pass
Sensor Component	Cell A Pressure		Conditio	on 688.0	mmHg		Status	pass
Sensor Component	Cell A Tmp.		Conditio	on 32.0 ()		Status	pass
Sensor Component	Cell B Freq.		Conditio	on 83.6 k	κHz		Status	pass
Sensor Component	Cell B Noise		Conditio	on 0.6 pp	b		Status	pass
Sensor Component	Cell B Flow		Conditio	on 0.69 l	pm		Status	pass
Sensor Component	Cell B Pressure		Conditio	on 688.6	mmHg		Status	pass
Sensor Component	Sensor Component Cell B Tmp.		Conditio	ion			Status	pass
Sensor Component Line Loss		Conditio	tion Not tested			Status	pass	
Sensor Component	Sensor Component System Memo		Conditio	on			Status	pass

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number		
WSP144-Eric Hebert-11/07/2016								
1	11/7/2016	DAS	Campbell	000430	CR3000	2525		
2	11/7/2016	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317		
3	11/7/2016	Ozone Standard	ThermoElectron Inc	000543	49i A3NAA	0929938240		
4	11/7/2016	Zero air pump	Werther International	06880	C 70/4	000814273		

Mfg	Se	erial Number 7	'a Site	Те	chnician		Site Visit Date	Paramo	eter Owner ID
ThermoElec	ctron Inc 1	105347317	WSP144	E	ric Hebert		11/07/2016	Ozone	000734
Slope: Intercept CorrCoff	-0.6	6686 Slope: 7538 Interce 9988 CorrCo		00	Mfg Serial N		ThermoElectro		er Desc. Ozone primary stan
DAS 1: A Avg % I	Diff: A Max 8%	DAS x % Di A Av 4.3%	2: g %Dif A Max	% Di	Tfer ID Slope Cert Da		01113		rcept -0.15202 rCoff 1.00000
UseDes	scription	ConcGroup	Tfer Raw	Tfer	Corr	Si	te S	te Unit	PctDifference
	nary	1	-0.28	-0	.12	-1.	.62 ppb		
prir	nary	2	24.04	24	.12	23	.45 ppb		-2.78%
prir	nary	3	44.69	44	.72	42	.86 ppb		-4.16%
prir	nary	4	70.91		.87		.94 ppb		-4.13%
prir	nary	5	107.43	107	7.30	102	2.70 ppb		-4.29%
Sensor C	Sensor Component Sample Train			Conditi	on Good			Status	pass
Sensor C	Sensor Component 22.5 degree rule		e	Conditi	on			Status	pass
Sensor C	Sensor Component Inlet Filter Condition		dition	Condition Clean			Status	pass	
Sensor C	omponent	Battery Backup		Conditi	on N/A			Status	pass
Sensor C	omponent	Offset		Conditi	on 0.40			Status	pass
Sensor C	omponent	Span		Conditi	Condition 0.997			Status	pass
Sensor C	omponent	Zero Voltage		Condition N/A				Status	pass
Sensor C	omponent	Fullscale Volta	je	Conditi	on N/A			Status	pass
Sensor C	omponent	Cell A Freq.		Conditi	on 95.5 k	κHz		Status	pass
Sensor C	omponent	Cell A Noise		Conditi	<mark>on</mark> 0.8 pp	b		Status	pass
Sensor C	omponent	Cell A Flow		Conditi	on 0.71 l	pm		Status	pass
Sensor C	omponent	Cell A Pressure)	Conditi	on 739.6	mmHg		Status	pass
Sensor C	omponent	Cell A Tmp.		Conditi	on 36.0 ()		Status	pass
Sensor C	omponent	Cell B Freq.		Conditi	on 93.1 k	κHz		Status	pass
Sensor C	omponent	Cell B Noise		Conditi	<mark>on</mark> 0.6 pp	b		Status	pass
Sensor C	omponent	Cell B Flow		Conditi	on 0.68 l	pm		Status	pass
Sensor C	omponent	Cell B Pressure)	Conditi	on 740.0	mmHg		Status	pass
Sensor C	omponent	Cell B Tmp.		Conditi				Status	pass
Sensor C	omponent	Line Loss		Conditi	on Not te	sted		Status	pass
Sensor C	Sensor Component System Memo			Conditi	on			Status	pass

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number		
BWR139-Eric Hebert-11/08/2016								
1	11/8/2016	DAS	Campbell	000431	CR3000	2536		
2	11/8/2016	Ozone	ThermoElectron Inc	000618	49i A1NAA	1009241789		
3	11/8/2016	Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814		
4	11/8/2016	Zero air pump	Werther International	06877	C 70/4	000815258		

Mfg	Se	erial N	umber Ta	Site	Te	chnician		Site Visit I	Date Par	amet	er Owner ID	
ThermoElec	ctron Inc 1	00924	1789	BWR139	Er	ric Hebert		11/08/2016	6 Ozo	ne	000618	
Slope: Intercept CorrCoff	-0.3	9546 2609 9998	Slope: Intercept CorrCoff	0.00000	D	Mfg Serial N Tfer ID		ThermoEler 051711216 01113			ameter ozone r Desc. Ozone primary st	tan
DAS 1: A Avg % E	Diff: A Max 9%	x % D 1.59		Dif A Max	Slope		1.	1.00261 Intercept 9/14/2016 CorrCoff				
UseDes	scription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	ite	Site Uni	it	PctDifference	
prin	nary		1	-0.16	0.0	00	-0.	.57 pp	b			
prin	primary 2		26.66	26.	.74	26	.34 pp	b		-1.50%		
	nary		3	46.93	46.			.69 pp			-0.55%	
-	nary		4	73.50	73.			.99 pp			-0.64%	
prin	nary		5	104.09	103			2.90 pp	b		-1.03%	
Sensor C	omponent	Samp	le Train		Conditio	on Good			Sta	tus [bass	
Sensor C	omponent	22.5 d	legree rule		Conditio	on			Sta	tus [Dass	
Sensor C	omponent	Inlet F	ilter Conditio	n	Condition Clean			Status		tus [pass	
Sensor C	omponent	Batter	y Backup		Conditio	N/A		Sta	tus [Dass		
Sensor C	omponent	Offset			Conditio	on -0.70			Sta	tus [bass	
Sensor C	omponent	Span			Condition				Sta	tus [Dass	
Sensor C	omponent	Zero \	/oltage		Conditio	ition N/A		Sta	tus [Dass		
Sensor C	omponent	Fullsc	ale Voltage		Conditio	ition N/A			Sta	tus [Dass	
Sensor C	omponent	Cell A	Freq.		Conditio	on 94.6 k	Hz	Statu		tus [Dass	
Sensor C	omponent	Cell A	Noise		Conditio	<mark>on</mark> 0.6 pp	b		Sta	tus [Dass	
Sensor C	omponent	Cell A	Flow		Conditio	on 0.73 l	om		Sta	tus [Dass	
Sensor C	omponent	Cell A	Pressure		Conditio	on 747.3	mmHg		Sta	tus [Dass	
Sensor C	omponent	Cell A	Tmp.		Conditio	on 36.4 ()		Sta	tus [Dass	
Sensor C	omponent	Cell B	Freq.		Conditio	on 93.7 k	Hz		Sta	tus [Dass	
Sensor C	omponent	Cell B	Noise		Conditio	<mark>on</mark> 0.9 pp	b		Sta	tus [Dass	
Sensor C	omponent	Cell B	Flow		Conditio	on 0.72 l	om		Sta	tus [Dass	
Sensor C	omponent	Cell B	Pressure		Conditio	on 748.5	mmHg		Sta	tus [Dass	
Sensor C	omponent	Cell B	Tmp.		Conditio	on			Sta	tus [Dass	
Sensor C	omponent	Line L	.oss		Conditio	on Not te	sted		Sta	tus [Dass	
Sensor C	Sensor Component System Memo			Conditio	on			Sta	tus [Dass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BFT	142-Sandy	Grenville-11/10/2016				
1	11/10/2016	DAS	Campbell	000498	CR3000	3815
2	11/10/2016	Ozone	ThermoElectron Inc	000685	49i A1NAA	1030244789
3	11/10/2016	Ozone Standard	ThermoElectron Inc	000453	49i A3NAA	CM08200027
4	11/10/2016	Zero air pump	Werther International	06897	C 70/4	000821893

Mfg	Se	erial N	umber Ta	Site	Те	chnician		Site Visit D	ate Param	eter	Owner ID
ThermoElec	tron Inc 1	03024	4789	BFT142	Sa	andy Grei	ville	11/10/2016	Ozone		000685
Slope: Intercept	-0.0	8367 3766	Slope: Intercept	0.00000	ס	Mfg Serial N	umber	ThermoElec		arameter fer Desc.	ozone Ozone primary stan
CorrCoff	0.9	9998	CorrCoff	0.00000	J	Tfer ID		01112			
DAS 1: A Avg % D 2.0	Diff: A Ma	x % D 2.4		Dif A Max (% Di	Slope Cert Da	te	L		ercept rCoff	-0.33070 1.00000
UseDes	cription	Co	oncGroup	Tfer Raw	Tfer	Corr	Si	te	Site Unit	Pct	Difference
	nary		1	0.07	0.4	40	0.	62 ppł	,		
prin	nary		2	30.06	30.	.53	29	.79 ppł)		-2.42%
prin	nary		3	50.04	50.		49	**)		-2.33%
prin	•		4	80.07	80.		79	11)		-1.42%
prin	nary		5	110.05	110	.90	109	0.10 ppł)		-1.62%
Sensor Co	omponent	Samp	le Train		Conditio	on Good			Status	pass	
Sensor Co	omponent	22.5 c	legree rule		Conditio	on			Status	pass	
Sensor Co	omponent	Inlet F	ilter Conditio	n	Conditio	ondition Clean		Status P		pass	
Sensor Co	omponent	Batter	y Backup		Conditio	on N/A			Status	pass	
Sensor Co	omponent	Offset	:		Conditio	on -0.10			Status	pass	
Sensor Co	omponent	Span			Conditio	Condition 0.999			Status	pass	
Sensor Co	omponent	Zero \	/oltage		Conditio	Condition N/A			Status	pass	
Sensor Co	omponent	Fullsc	ale Voltage		Conditio	Condition N/A			Status	pass	
Sensor Co	omponent	Cell A	Freq.		Conditio	on 96.4 k	Hz		Status	pass	
Sensor Co	omponent	Cell A	Noise		Conditio	on 1.0 pp	b		Status	pass	
Sensor Co	omponent	Cell A	Flow		Conditio	on 0.73 l	om		Status	pass	
Sensor Co	omponent	Cell A	Pressure		Conditio	on 733.9	mmHg		Status	pass	
Sensor Co	omponent	Cell A	Tmp.		Conditio	on 34.9 (;		Status	pass	
Sensor Co	omponent	Cell B	Freq.		Conditio	on 97.6 k	Hz		Status	pass	
Sensor Co	omponent	Cell B	Noise		Conditio	on 1.0 pp	b		Status	pass	
Sensor Co	omponent	Cell B	Flow		Conditio	on 0.73 l	om		Status	pass	
Sensor Co	omponent	Cell B	Pressure		Conditio	on 733.9	mmHg		Status	pass	
Sensor Co	omponent	Cell B	Tmp.		Conditio	on			Status	pass	
Sensor Co	Sensor Component Line Loss		Conditio	tion Not tested			Status	pass			
Sensor Co	Sensor Component System Memo			Conditio	on			Status	pass		