2021 – 1st Quarter Report Support for Conducting Systems & Performance Audits of Clean Air Status and Trends Network (CASTNET) Sites and National Atmospheric Deposition Program (NADP) Monitoring Stations - II EPA Contract No. EP-W-18-005

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List of Acronyms and Abbreviations

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% diff	percent difference
A/D	analog to digital converter
ARS	Air Resource Specialists, Inc.
ASTM	American Society for Testing and Materials
BLM	Bureau of Land Management
BLM-WSO	Bureau of Land Management – Wyoming State Office
CAL	Central Analytical Laboratory
CASTNET	Clean Air Status and Trends Network
CMAQ	Community Multiscale Air Quality
DAS	data acquisition system
deg	degree
DVM	digital voltmeter
ECCC	Environment and Climate Change Canada
EEMS	Environmental, Engineering & Measurement Services, Inc.
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FSA	Field Systems Audit
FSAD	Field Site Audit Database
GPS	geographical positioning system
HAL	Mercury Analytical Laboratory
LADCO	Lake Michigan Air Directors Consortium
lpm	liters per minute
MD DNR	Maryland Department of Natural Resources
MLM	Multilayer Model
MN PCA	Minnesota Pollution Control Agency
m/s	meters per second
mv	millivolt
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NYDEC	New York Department of Conservation
NYSERDA	New York State Energy Research and Development Authority
PE	Performance Evaluation
QAPP	Quality Assurance Project Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SFWMD	South Florida Water Management District
SOP	standard operating procedure
TDEP	Total Deposition
TEI	Thermo Environmental Instruments
USDA-FS	United States Department of Agriculture – Forest Service
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNO	United States Naval Observatory

VDC	volts direct current
WDEQ	Wyoming Department of Environmental Quality
WDNR	Wisconsin Department of Natural Resources
WRR	World Radiation Reference
WSLH	Wisconsin State Laboratory of Hygiene

1.0 CASTNET Quarterly Report

1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program established in 1988 by the US EPA. Nearly all CASTNET sites measures weekly concentrations of acidic gases and particles to provide accountability for EPA's emission reduction programs. Most sites measure ground-level ozone as well as supplemental measurements such as meteorology and/or other trace gas concentrations.

Ambient concentrations 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 critical loads research.

Historically, CASTNET pollutant flux measurements have been reported as the aggregate product of weekly measured concentrations and model-estimated deposition velocities. The Multi-layer Model (MLM) was used to derive deposition velocity estimates from on-site meteorological parameters, land use types, and site characteristics. In 2011, EPA discontinued meteorological measurements at most EPA-sponsored CASTNET sites.

Currently, CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and gridded model-estimated deposition velocities. Total deposition is assessed using the NADP's Total Deposition Hybrid Method (TDEP; EPA, 2015c; Schwede and Lear, 2014), which combines data from established ambient monitoring networks and chemical-transport models. To estimate dry deposition, ambient measurement data from CASTNET and other networks were merged with dry deposition rates and flux output from the Community Multiscale Air Quality (CMAQ) modeling system.

Since 2011 nearly all CASTNET ozone monitors have adhered to the requirements for State or Local Air Monitoring Stations (SLAMS) as specified by the EPA in 40 CFR Part 58. As such, the ozone data collected must meet the requirements in 40 CFR Part 58 Appendix A, which defines the quality assurance (QA) requirements for gaseous pollutant ambient air monitoring. The audits performed by EEMS under this contract fulfilled the requirement for annual performance evaluation audits of pollutant monitors in the network. The QA requirements can be found at: https://www.epa.gov/amtic/regulations-guidance-and-monitoring-plans

Currently 87 CASTNET sites at 85 distinct locations measure ground-level ozone concentrations. Annual performance evaluation (PE), ozone audit data are submitted to the Air Quality System (AQS) database.

As of December 2020, the network is comprised of 97 active rural sampling sites across the United States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Bureau of Land Management – Wyoming State Office (BLM-WSO) and several independent partners. Wood Environment and Infrastructure Solutions (Wood) is responsible for operating the EPA sponsored sites, and Air Resource Specialists, Inc. (ARS) is responsible for operating the NPS and BLM-WSO 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 reported 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.

Sensor	Parameter Audit Challenge Acceptar		Acceptance Criteria
Precipitation	Response	10 manual tips	1 DAS count per tip
Precipitation	Accuracy	2 introductions of known amounts of water	$\leq \pm 10.0\%$ of input amount
Relative Humidity	Accuracy	Compared to reference $\leq \pm 10.0\%$ RH instrument or standard solution	
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	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 $\leq \pm 0.50^{\circ} \text{ C}$	

 Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter Audit Challenge		Acceptance Criteria
Shelter Temperature	Accuracy	Comparison to station temperature sensor	$\leq \pm 2.0^{\circ} \mathrm{C}$
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	$\leq \pm 5^{\circ}$ from degrees true
Wind Direction	Linearity	Eight cardinal points on test fixture	$\leq \pm 5^{\circ}$ mean absolute error
Wind Direction	Response Threshold	Starting torque tested with torque gauge	< 10 g-cm Climatronics; < 20 g-cm R.M. Young
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	-5.0 ppb ≤ b ≤ 5.0 ppb
Ozone	Correlation Coefficient	measured with a certified transfer standard	$0.9950 \le r$
Ozone	Percent Difference	Comparison with Level 2 standard concentration	$\leq \pm 15.1\%$ of test gas concentration and $\leq \pm 0.0015$ ppm actual difference
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, at least annually.

Field site systems audits (FSA) 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 First Quarter 2021

This report consists of the systems and performance, and other audit results from the CASTNET sites visited during the first quarter (January through March) of 2021. The site locations, sponsor, visit dates, and parameters audited are included in Table 2.

Site ID	Sponsor	Date	FSA	O3 PE	FLOW
ALC188	EPA	2/23/2021	1	1	1
BBE401	NPS	3/1/2021	1	1	1
SUM156	EPA	3/4/2021		1	
IRL141	EPA	3/5/2021		1	
BWR139	EPA	3/16/2021	1	1	1
BEL116	EPA	3/18/2021		1	
CND125	EPA	3/21/2021	1	1	1
EVE419	NPS	3/29/2021	1		1

Table 2. CASTNET Site Audit 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 system report where necessary. Copies of the spot reports that were sent 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*.

Results of the PE audits of the gaseous pollutant monitors other than ozone, were submitted immediately following the PE and are not included in this report. All TTP PE results of gaseous pollutant monitors are uploaded to AQS and are available there. All audit data and reports are available from the EPA CASTNET website: <u>https://java.epa.gov/castnet/reportPage.do</u>

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates two 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 precipitation event-based Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992, and as of July 2019 is no longer in operation. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from approximately 90 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 networks of the NADP are sponsored by several federal, state, and local agencies as well as private organizations.

The NADP Program Office (PO) operates and administers the two precipitation chemistry networks (NTN and MDN), two atmospheric concentration networks (AMNet and AMoN), and two analytical laboratories (CAL and HAL), from the Wisconsin State Lab of Hygiene (WSLH) at the University of Wisconsin in Madison. The network equipment depot (NED) is also located at the WSLH.

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 NADP Sites Visited First Quarter 2021

This report presents the NADP sites surveyed during the first quarter (January through March) of 2021. The station locations, sponsors, network. and dates of the surveys are presented in Table 3.

Site ID	Sponsor	Date	NTN	MDN	AMON
LA30	USGS	2/22/2021	1		
TX41	EPA	2/23/2021			1
TX10	USGS	2/24/2021	1		
TX03	USGS	2/25/2021	1		
TX16	USGS	2/26/2021	1		
TX04	NPS	3/1/2021			1
NM08	USGS	3/2/2021	1		
AZ06	NPS	3/3/2021	1		
FL23	EPA	3/4/2021			1
FL19	EPA	3/5/2021			1
CA42	USDA-FS	3/8/2021	1		
CA94	USDA-FS	3/9/2021	1	1	
MD06	EPA	3/16/2021			1
MD99	MD DNR	3/18/2021			1
NC26	EPA	3/21/2021			1
NC36	USGS	3/23/2021	1		
NC35	NC State	3/24/2021	1		
SC06	USGS	3/25/2021	1		
FL11	NPS	3/29/2021	1	1	1
CO15	BLM	3/30/2021	1		
FL95	SFWMD	3/31/2021		1	
FL97	SFWMD	3/31/2021		1	

Table 3. NADP Site Survey Visits

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 the EPA OneDrive account where the NADP PO and the U.S. EPA POs can access them and download them as needed.

Given the volume of data generated, and the fact that data is distributed and/or is available via the internet, 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
ALC	188-Martin	Valvur-02/23/2021				
1	2/23/2021	Computer	Dell	07006	Inspiron 15	373MC12
2	2/23/2021	DAS	Campbell	000422	CR3000	2523
3	2/23/2021	Elevation	Elevation	None	1	None
4	2/23/2021	Filter pack flow pump	Thomas	02976	107CAB18	0493002475
5	2/23/2021	Flow Rate	Арех	000683	AXMC105LPMDPCV	illegible
6	2/23/2021	Infrastructure	Infrastructure	none	none	none
7	2/23/2021	Modem	Digi	07202	LR54	Illegible
8	2/23/2021	Ozone	ThermoElectron Inc	000629	49i A1NAA	1009241784
9	2/23/2021	Ozone Standard	ThermoElectron Inc	000694	49i A3NAA	1030244815
10	2/23/2021	Sample Tower	Aluma Tower	000136	В	none
11	2/23/2021	Shelter Temperature	Campbell	none	107-L	none
12	2/23/2021	Siting Criteria	Siting Criteria	None	1	None
13	2/23/2021	Temperature	RM Young	07282	41342VC	031773
14	2/23/2021	Zero air pump	Werther International	06886	C 70/4	000815259

DAS Data Form

DAS Time Max Error: 0.25

Mfg	Serial Nur	mber Site	Т	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2523	ALC1	188	Martin Valvur	02/23/2021	DAS	Primary
Das Date:	2 /23/2021	Audit Date	2 /23/2021	Mfg	HY	Parameter	DAS
Das Time:	09:30:15	Audit Time	09:30:00	Serial Number	12010039329	Tfer Desc.	Source generator (D
Das Day:	54	Audit Day	54		04222]	
Low Channel:		High Channel:		Tfer ID	01322		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	D Intercept	0.00000
0.0002	0.0008	0.0002	0.0008	Cert Date	6/15/201	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740243	Tfer Desc.	DVM
				Tfer ID	01312		
				Slope	1.0000	O Intercept	0.00000
				Cert Date	2/11/202	1 CorrCoff	1.00000
Channel	Input D'	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0002	0.0005		V	0.0003	
7	0.1000	0.0999	0.0999		V	0.0000	
7	0.3000	0.2999	0.2991		V	-0.0008	
7	0.5000	0.5000	0.5001		V	0.0001	
7	0.7000	0.7000	0.6999		V	-0.0001	
7	0.9000	0.9000	0.9001		V	0.0001	
7	1.0000	1.0004	1.0002	V	V	-0.0002	

Flow Data Form

Mfg	Serial Nu	mber Tag	Site	Te	chnician	Site Visit	Date Paran	neter	Owner ID
Apex	illegible		ALC188	M	artin Valvur	02/23/20	21 Flow F	Rate	000683
					Mfg Serial Number	BIOS 148613	I	Parameter F	
					Tfer ID	01421			103 220-11
					Slope		1.00850 Int	ercept	0.00160
					Cert Date	2	/10/2021 Co	rrCoff	0.99999
DAS 1:		DAS 2:			Cal Factor Z	lero	-0.0	06	
	A Max % Dif	A Avg %	Diff A Max	x % Dif	Cal Factor F	ull Scale	0.9		
0.89%	2.00%				Rotometer R	eading:		1.5	
Desc.	Test type	Input l/m	Input Corr	MfcDisp	. OutputSignal	Output S	E InputUnit	OutputSigna	III PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.10	0.000	0.06	l/m	l/m	
primary	test pt 1	1.510	1.500	1.52	0.000	1.53	l/m	l/m	2.00%
primary	test pt 2	1.510	1.500	1.53	0.000	1.50	l/m	l/m	0.00%
primary	test pt 3	1.510	1.500	1.53	0.000	1.49	l/m	l/m	-0.67%
Sensor Com	<mark>ponent</mark> Leak Te	st		Conditio	on		Statu	s pass	
Sensor Com	ponent Tubing (Condition		Conditio	on Good		Statu	s pass	
Sensor Com	ponent Filter Po	sition		Condition	on Good		Statu	s pass	
Sensor Com	ponent Rotomet	er Condition	า	Conditio	on Clean and dry		Statu	s pass	
Sensor Com	ponent Moisture	Present		Conditio	on No moisture p	resent	Statu	s pass	
Sensor Com	ponent Filter Dis	stance		Conditio	<mark>on</mark> 4.0 cm		Statu	s pass	
	ponent Filter De				0n 4.5 cm	Statu	Status pass		
	ponent Filter Az			Conditio	Not tested	Statu	Status pass		
Sensor Com	ponent System	Memo		Condition	on		Statu	s pass	

Ozone Data Form

Mfg	Serial Numbe	r Tag Site	ag Site Technician		Site Visit Date	Paramete	r Owner ID	
ThermoElectron Inc	1009241784	ALC188	Μ	lartin Valvur	02/23/2021	Ozone	000629	
Slope: Intercept CorrCoff: DAS 1:	0.999999 Cor i	rcept C).00000).00000).00000	Mfg Serial Number Tfer ID Slope	ThermoElectron 49CPS-70008-3 01110 1.0034	64 Tfer	Desc. Ozone primary stan pept 0.02230	
A Avg % Diff: A		Avg %Diff A	Max % Dif	Cert Date	1/20/202	21 CorrC	off 1.00000	
	0.0%							
UseDescription primary	ConcGroup 1	Tfer Raw 0.09	Tfer Corr 0.06	Site -0.23	Site Unit ppb	RelPerDi	if AbsDif -0.29	
primary	2	15.86	15.69	15.35	ppb		-0.34	
primary primary	3	36.02 63.55	35.67 62.96	34.63 61.54	ppb ppb		2.96	
primary	5	111.42	110.40	108.50	ppb		1.74	
Sensor Compon	ent Audit Pressu			ion 758.5 mmHg		Status pa		
Sensor Compon	ent 26.6 degree	unobstructed ru	le Condit	ion True		Status pa	ass	
Sensor Compon	ent Tree dewline	e >10m or below	inlet Condit	ion True		Status pa	ass	
Sensor Compon	Sensor Component ADT <100 vehicles further than 20					Status Fail		
Sensor Compon	ent ADT >100 v	ehicles further th	an 50 Condit	ion True		Status pa	ass	
Sensor Compon	ent Sample Trai	n	Condit	ion Good		Status pa	ass	
Sensor Compon	ent Inlet Filter C	ondition	Condit	ion Clean		Status pa	ass	
Sensor Compon	ent Offset		Condit	ion 0.2		Status pass		
Sensor Compon	ent Span		Condit	ion 1.010		Status pa	ass	
Sensor Compon	ent Zero Voltage	9	Condit	ion N/A		Status pa	ass	
Sensor Compon	ent Fullscale Vo	ltage	Condit	ion N/A		Status pa	ass	
Sensor Compon	ent Cell A Freq.		Condit	ion 89.1 kHz		Status pa	ass	
Sensor Compon	ent Cell A Noise	,	Condit	ion 0.7 ppb		Status pa	ass	
Sensor Compon	ent Cell A Flow		Condit	ion 0.74 lpm		Status pa	ass	
Sensor Compon	ent Cell A Press	sure	Condit	ion 713.7 mmHg		Status pa	ass	
Sensor Compon	ent Cell A Tmp.		Condit	ion 32.8 C		Status pa	ass	
Sensor Compon	Sensor Component Cell B Freq.		Condit	ion 94.8 kHz		Status pa	ass	
Sensor Compon	Sensor Component Cell B Noise			ion 0.6 ppb		Status pa	ass	
Sensor Compon	ent Cell B Flow		Condit	ion 0.73 lpm		Status pa	ass	
Sensor Compon			Condit	ion 713.4 mmHg		Status pa		
Sensor Compon	ent System Mer	no	Condit	ion		Status pa	ass	

Temperature Data Form

Mfg	Serial Number	Tag Site	Т	echni	ician	Site V	isit Date	Param	eter	Owner ID	
RM Young	031773	ALC188	I	Martin Valvur		02/23	/2021	Temper	ature	07282	
				Mf	g	Fluke		Pa	rameter Te	mperature	
				Ser	ial Number	32751	43	Tf	er Desc. R	D	
				Tfe	er ID	01229	1	7			
DAS 1:	DAS	5 2:		Slo	ре	0.99975 Interce		rcept -0.00824			
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma			Max Err	x Err Cert Date			2/9/2021 CorrCoff		rCoff	1.00000	
0.54	0.63										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.13	0.14		0.000		0.5	5	С	0.37	
primary	Temp Mid Range	24.73	24.74		0.000		25.	4	С	0.63	
primary	Temp High Range	47.82	47.84		0.000		48.	5	С	0.63	
Sensor Con	ponent Shield		Condi	tion C	Clean			Status	pass		
Sensor Component Blower				Condition N/A				Status	s pass		
Sensor Component Properly Sited				Condition Not properly sited				Status	<mark>ıs</mark> Fail		
Sensor Con	ponent System Memory)	Condi	Condition				Status	us pass		

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ALC188	Martin Valvur	02/23/2021	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg Err Ab	os Max Err Abs Avg 1.43	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD)
			Tfer ID	01229		
			Slope	0.9997	5 Intercept	-0.00824
			Cert Date	2/9/202	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.32	22.33	0.000	23.6	С	1.27
primary	Temp Mid Range	22.95	22.96	0.000	24.3	С	1.3
primary	Temp Mid Range	24.55	24.56	0.000	26.0	С	1.43
Sensor Cor	nponent System Memo	•	Condition	Status pa			

Siting Criteria Form

Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass

Infrastructure Data For

Site ID	ALC188	Technician Martin	Valvur Site Visit Date 02/23/2021
Shelter	Make	Shelter Model	Shelter Size
Shelter (Dne	8128-2311	1024 cuft
AND AND A TANK			

Sensor Component Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component Conduit	Condition	Good	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	Good	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	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

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem	
Flow Rate	ALC188	Martin Valvur	02/23/2021	System Memo	Apex	4301			
The flow rate signal audit device, only th			in constant durir	ng the audit. There	was no oscillatio	on of the actual flo	w rate dete	cted by the	
Temperature	ALC188	Martin Valvur	02/23/2021	System Memo	RM Young	4623			
This sensor is not me	ounted as stated in	the QAPP with resp	ect to orientatior	1.					

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is well located with respect to CASTNET siting criteria, however there is a small campground 0.5 km to the northwest which may be a source of smoke.

2 Parameter: ShelterCleanNotes

The site is clean and neat.

3 Parameter: PollAnalyzerCom

There is a moisture trap in both the flow and ozone sample lines.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID ALC188	Technician Martin Valvur	Site Visit Date 02/2	3/2021							
		UCCOM	Dallardsville							
Site Sponsor (agency)	EPA	USGS Map								
Operating Group	Alabama-Coushatta Environmental Gr	Map Scale								
AQS #	48-373-9991	Map Date								
Meteorological Type	R.M. Young									
Air Pollutant Analyzer	Ozone	QAPP Latitude	30.4210							
Deposition Measurement	dry	QAPP Longitude	-94.4045							
Land Use	woodland - mixed	QAPP Elevation Meters	101							
Terrain	gently rolling	QAPP Declination	3.8							
Conforms to MLM	Yes	QAPP Declination Date	9/16/2005							
Site Telephone	(936) 563-2973	Audit Latitude	30.701577							
Site Address 1	Poncho Rd.	Audit Longitude	-94.674011							
Site Address 2	571 Park Rd. 56	Audit Elevation	105							
County	Polk	Audit Declination	2.5							
City, State	Livingston, TX	Present								
Zip Code	77351	Fire Extinguisher 🔽	New in 2015							
Time Zone	Central	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 Steps ✓								
Shelter Working Room	Make Shelter One Make	odel 8128-2311	Shelter Size 1024 cuft							
Shelter Clean	Notes The site is clean and neat.									
Site OK	Notes									
for Ala the lef										

Fie	eld Sy	stems Data Fo	orm		F-02058-1500-S3-rev002			
Site	e ID	ALC188	Technician	Martin Valvur		Site Visit Date 02/23/2021		
1		d speed and direction fluenced by obstructio		as to avoid	✓	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 plu	mb?			N/A		
4		temperature shields p idiated heat sources su				Temperature sensor facing west		
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	sensors should . Ridges, hollow	be natural				
6	Is the so	lar radiation sensor p	lumb?		✓	N/A		
7	Is it site	d to avoid shading, or	any artificial or	• reflected light?	✓	N/A		
8	Is the ra	in gauge plumb?				N/A		
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A		
10	Is the su facing n	urface wetness sensor s orth?	sited with the gr	id surface		N/A		
11	Is it inc	lined approximately 3	0 degrees?			N/A		

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 Systems Data Form

F-02058-1500-S4-rev002

Site	e ID	ALC188	Technician	Martin Valvur		Site Visit Date	02/23/2021	
1 2	condition, and well maintained?					Temperature only Temperature only		
3		hields for the tempera	ature and RH s	ensors clean?	✓			
4	Are the a	spirated motors worl	king?		✓	N/A		
5	Is the sol scratches	ar radiation sensor's	lens clean and f	free of	✓	N/A		
6	Is the su	rface wetness sensor g	rid clean and u	indamaged?	✓	N/A		
7		ensor 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:

Fi	eld Sy	stems Data Fo	orm			F-0 2	2058-1	500-S5-rev002
Sit	e ID	ALC188	Technician	Martin Valvur		Site Visit Date 02/23/2027	1]
	<u>Siting C</u>	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipn</u>	nent sited in accordance with	1 40 CFR 5	<u>8, Appendix E</u>
1		ample inlets have at lo cted airflow?	east a 270 degree	e arc of				
2	Are the	sample inlets 3 - 15 m	eters above the	ground?				
3		sample inlets > 1 meten neters from trees?	er from any maj	or obstruction,				
	<u>Pollutan</u>	it analyzers and depos	sition equipment	t operations and	mai	ntenance		
1		nalyzers and equipme n and well maintained		in good				
2	Are the reportin	analyzers and monito ig data?	rs operational, o	on-line, and				
3	Describe	e ozone sample tube.				1/4 teflon by 12 meters		
4	Describe	e dry dep sample tube				3/8 teflon by 12 meters		
5		ine filters used in the o location)	ozone sample lin	e? (if yes		At inlet		
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moisture	e, and	✓			
7	Is the ze	ero air supply desiccan	it unsaturated?		✓			
8	Are the	re moisture traps in th	e sample lines?					
9	Is there clean?	a rotometer in the dry	v deposition filte	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:

There is a moisture trap in both the flow and ozone sample lines.

Fi	eld Sy	stems Data Fo	orm				F-02	2058-15	00-S6-rev002
Site	e ID	ALC188	Technician	Martin Valvur		Site Visit Date	02/23/2021		
	DAS, se	nsor translators, and p	eripheral equi	pment operation	<u>15 ai</u>	nd maintenance			
1		OAS instruments appeant appeart ap	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?	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 contro	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 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:

Field System	ns Data Fo	rm			F-0 2	2058-	1500-S7-rev002
Site ID ALC1	88	Tech	nician	Martin Valvur Site Visit	t Date 02/23/2021		
Documentation							
Does the site hav	ve the required in	istrume	ent and e	equipment manuals?			
Wind speed sensor Wind direction sen Temperature senso Relative humidity a Solar radiation sen Surface wetness sen Wind sensor transl Temperature trans Humidity sensor tr Solar radiation tra Tipping bucket rai Ozone analyzer Filter pack flow co	sor sensor sor sor sor sor sor sor sor			Data logger Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection Shelter heater Shelter air conditione		No No No No No No No No No No	N/A □ ✓ ✓ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Filter pack MFC p		and mo	✓ st recen	t QC documents and report for	me?		
Does the site in			<u>strucu</u>			nt	
Station Log SSRF Site Ops Manual	Pre	sent	Oct 2011	1	Curre V V	шı	

Site Ops Manual		Oct 2011
HASP	\checkmark	Oct 2014
Field Ops Manual		
Calibration Reports		
Ozone z/s/p Control Charts		
Preventive maintenance schedule		

Current ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

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	\checkmark
	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:

Field Systems Data Form

ALC188 Technician Martin Valvur Site Visit Date 02/23/2021 Site ID Site operation procedures Trained by previous site 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? \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
✓	Weekly	\checkmark
\checkmark	N/A	\checkmark
		 ✓ Semiannually ✓ Weekly N/A ✓ N/A ✓ Weekly

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

00	Chook	Performed
VU.	Спеск	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**

	rrequency	CO
✓	Semiannually	
✓	Daily	
	As needed	
\checkmark	Daily	
	As needed	
\checkmark	Weekly	
\checkmark	Every 2 weeks	
\checkmark	N/A	
\checkmark	Weekly	
\checkmark	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 a	nd
	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

Compliant

Field Systems Data Form F-02058-1500-S9-rev002 ALC188 Technician Martin Valvur Site Visit Date 02/23/2021 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed afternoons 1 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? ✓ SSRF Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, call-in Are sample flow rates recorded? How? 6 \checkmark Are samples sent to the lab on a regular schedule in a timely 🗹 7 fashion? ✓ 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? **QC Check Performed** Compliant Frequency \checkmark Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks Filter Pack Inspection** \checkmark ✓ Weekly **Flow Rate Setting Checks** \checkmark ✓ Weekly 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

 \checkmark

Semiannually

✓ Weekly

In-line Filter Inspection/Replacement

Sample Line Check for Dirt/Water

Field Systems Data Form

ALC188

F-02058-1500-S10-rev002

Site	ID	
Ditt		

Techn

Technician Martin Valvur

Site Visit Date 02/23/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	373MC12	07006
DAS	Campbell	CR3000	2523	000422
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002475	02976
Flow Rate	Apex	AXMC105LPMDPC	illegible	000683
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07202
Ozone	ThermoElectron Inc	49i A1NAA	1009241784	000629
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244815	000694
Sample Tower	Aluma Tower	В	none	000136
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	031773	07282
Zero air pump	Werther International	C 70/4	000815259	06886

Site Inventory by Site Visit

Site V	ïsit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
BBE401-Martin Valvur-03/01/2021									
1	3/1/2021	Computer	Hewlett Packard	none	EliteBook	CNV347CS41			
2	3/1/2021	DAS	Environmental Sys Corp	90767	8816	4592			
3	3/1/2021	Elevation	Elevation	None	1	None			
4	3/1/2021	Filter pack flow pump	Thomas	none	107CA18	illegible			
5	3/1/2021	Flow Rate	Alicat	none	Unknown	Unknown			
6	3/1/2021	Infrastructure	Infrastructure	none	none	none			
7	3/1/2021	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477660			
8	3/1/2021	Ozone Standard	ThermoElectron Inc	90831	49C	0520012325			
9	3/1/2021	Printer	Hewlett Packard	none	842C	unknown			
10	3/1/2021	Sample Tower	Aluma Tower	none	В	AT-5381-F9-1			
11	3/1/2021	Shelter Temperature	ARS	none	none	none			
12	3/1/2021	Siting Criteria	Siting Criteria	None	1	None			
13	3/1/2021	Temperature2meter	RM Young	none	41342VC	14961			
14	3/1/2021	Zero air pump	Twin Tower Engineering	none	TT70/4E	526293			

DAS Data Form

DAS Time Max Error: 0.37

Mfg	Serial Nu	mber Site	T	Fechnician	Site Visit Date	Parameter	Use Desc.
Environmental Sy	/s 4592	BBE	401	Martin Valvur	03/01/2021	DAS	Primary
Das Date:	3 /1 /2021 09:17:52	Audit Date	3 /1 /2021 09:17:30	Mfg	HY	Parameter	DAS
Das Day:	60	Audit Day	60	Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channel:		High Channel	:	Tfer ID	01322		
0	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.0003	0.0001	0.0003	Cert Date	6/15/201	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740243	Tfer Desc.	DVM
				Tfer ID	01312		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/11/202	1 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
10	0.0000	-0.0004	-0.0003		V	0.0001	
10	0.1000	0.1000	0.1001		V	0.0001	
10	0.3000	0.3002	0.3000		V	-0.0002	
10	0.5000	0.4997	0.4999		V	0.0002	
10	0.7000	0.7001	0.7001		V	0.0000	
10	0.9000	0.8993	0.8996		V	0.0003	
10	1.0000	1.0000	1.0001	l V	V	0.0001	

Flow Data Form

Mfg	Serial Num	iber Tag	Site	Tee	chnician	Site Vis	sit Date	Param	ieter	Owner ID
Alicat	Unknown		BBE401	Ма	artin Valvur	03/01/2	2021	Flow R	ate	none
					Mfg	BIOS		P	arameter Flo	w Rate
					Serial Number	148613		Т	fer Desc. BIC	DS 220-H
					Tfer ID	01421				
					Slope		1.008	50 Inte	ercept	0.00160
					Cert Date		2/10/20	21 Cor	rCoff	0.99999
DAS 1:		DAS 2:		L	Cal Factor Z	ero		0.00	07	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	x % Dif	Cal Factor F	ull Scale		4.98	35	
0.94%	1.06%				Rotometer R	eading:		3.2	25	
Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S	S E Inp	utUnit	OutputSignal	PctDifference
primary	pump off	0.000	0.000	-0.03	0.000	0.01		l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.01		l/m	l/m	
primary	test pt 1	3.056	3.030	3.01	0.000	3.00		l/m	l/m	-1.02%
primary	test pt 2	3.058	3.030	3.00	0.000	3.00		l/m	l/m	-1.06%
primary	test pt 3	3.050	3.020	3.01	0.000	3.00		l/m	l/m	-0.73%
Sensor Comp	oonent Leak Tes	t		Conditio	on			Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	on Good	Status pass				
Sensor Component Filter Position			Conditio	on Good	d Stat			Is pass		
Sensor Component Rotometer Condition			Conditio	Clean and dry	Clean and dry			Status pass		
Sensor Component Moisture Present			Conditio	n No moisture present			Status pass			
Sensor Component Filter Distance			Conditio	<mark>n</mark> 5.0 cm			Status pass			
Sensor Component Filter Depth			Conditio	<mark>n</mark> 0.7 cm			Status			
Sensor Component Filter Azimuth			Conditio	n 190 deg			Status	tus pass		
Sensor Comp	oonent System M	lemo		Conditio	on			Status	pass	

Ozone Data Form

ThermoElectron Inc 1201477680 BBE401 Martin Valvur 0301/2021 Dzone none Slope: 1.01419 Slope: 0.00000 0.00000 String Martin Valvur 0301/2021 Dzone none Slope: 0.10806 Intercept 0.00000 Srial Number 962PS-70008-364 Ther Desc. Dzone primary stan Avg % Diff: A Max % Diff A Arg %Diff A Max % Diff Avg %Diff: A Max %Diff A Max %D Diff Stope 1.00340 Intercept 0.02230 UseDescription ConeGroup Ther Raw Ther Corr Size Size Size 0.0230 UseDescription ConeGroup Ther Raw Ther Corr Size Size Corr Coff 1.00000 UseDescription ConeGroup Ther Raw Ther Corr Size Size Corr Coff 1.00000 UseDescription ConeGroup Ther Raw Ther Corr Size Size Corr Coff 1.00000 UseDescription ConeGroup Ther Raw Ther Corr Size Size Corr Coff 1.00000 UseDescription ConeGroup Ther Raw Ther Corr Size Size Corr Coff 1.00000 UseDescription ConeGroup Ther Raw The	Mfg		Serial Numbe	r Tag Site	e	Те	chnician	Site Visit Date	Parame	eter	Owner ID	
Suppe: 1.0.1906 Intercept 0.00000 CorrCoff: 0.99999 CorrCoff: 0.00000 Serial Number 4QCPS-70006-364 Ter Desc. Ozone primary stan DAS I: DAS 2: A Ayg % Diff: A Max % Dif A Max % Dif 0.02230 UseDescription ConcGroup Ter Raw Tfer Corr Site Site Unit RelPerDif Abbif primary 1 0.18 0.15 0.54.4 ppb 0.039 primary 3 38.41 37.77 38.41 ppb 1.05 0.44.4 primary 5 109.08 108.09 1.05 54.4 0.35 primary 5 109.08 108.09 1.05 54.4 ppb 1.05 Sensor Component 26 degree unobstructed rule Condition True Status pass Sensor Component 2100 orbicles further than 50 Condition True Status pass Sensor Component ADT >100 ve	ThermoElec	tron Inc	1201477660	BB	3E401	Ma	artin Valvur	03/01/2021	Ozone		none	
DAS 1: DAS 2: Stope 1.00340 Intercept 0.02230 A ng % Diff: A Max % Dif A Nay % Diff A Max % Dif Cert Date 1.2002021 CorrCoff 1.00000 UseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDif primary 1 0.18 0.15 0.54 ppb 0.39 primary 2 17.73 17.55 17.91 ppb 0.36 primary 3 38.14 37.77 38.41 ppb 1.68 0.6 primary 5 109.08 108.09 110.00 ppb 1.75 1.75 Sensor Component 2.6 degree unobstructed rule Condition True Status pass Status pass Sensor Component ADT >100 vehicles further than 20 Condition True Status pass Sensor Component Status pass Sensor Component ADT >100 vehicles further than 20 Condition True Status pass Sensor Component Status pass Sensor Component Status pass Sensor Component Status pass	Intercept 0.18086 Intercept			rcept	0.00000	D	Serial Number	49CPS-70008-3				
UseDescriptionConcGroupTfer RawTfer CorrSiteSite UnitRelPerDifAbsDifprimary217.7317.5517.91ppb0.36primary338.1437.7738.41ppb1.68primary338.1437.7738.41ppb1.68primary467.1766.5567.42ppb1.3primary5109.08108.09110.00ppb1.75Sensor Component26.6 degree unobstructed ruleConditionTrueStatuspassSensor Component7ree dewline >10m or below inletConditionTrueStatuspassSensor ComponentADT <100 vehicles further than 20		oiff: A N			f A Max %	% Dif	Slope	1.0034		•		
primary10.180.150.54ppb0.39primary217.7317.5517.91ppb0.36primary338.1437.7738.41ppb1.68primary467.1766.5567.42ppb1.3primary5109.08108.09110.00ppb1.75Sensor Component 26.6 degree unobstructed ruleCondition668 mmHgStatuspassSensor Component Tree dewline >10m or below inletConditionTrueStatuspassSensor Component ADT <100 vehicles further than 20	0.0	0%	0.0%				Cert Date	1/20/202	21 Corr	Coff	1.00000	
primary467.1766.5567.42ppb1.3primary5109.08108.09110.00ppb1.75Sensor Component Audit PressureCondition 668 mmHgStatus passSensor Component 26.6 degree unobstructed ruleCondition TrueStatus passSensor Component Tree dewline >10m or below inletCondition TrueStatus passSensor Component ADT <100 vehicles further than 20	priman priman	ry ry	1 2	0.18 17.73	1	0.15 17.55	0.54 17.91	ppb ppb	RelPer		0.39	
Sensor Component Audit PressureCondition 668 mmHgStatus passSensor Component Sensor Component26.6 degree unobstructed rule ConditionTrueStatus passSensor Component ADT <100 vehicles further than 20 ConditionConditionTrueStatus passSensor Component ADT >100 vehicles further than 20 ConditionConditionTrueStatus passSensor Component ADT >100 vehicles further than 50 Sensor Component Sensor ComponentADT >100 vehicles further than 50 ConditionTrueStatus passSensor Component Sensor Component 	-											
Sensor Component26.6 degree unobstructed ruleConditionTrueStatuspassSensor ComponentTree dewline >10m or below inletConditionTrueStatuspassSensor ComponentADT <100 vehicles further than 20	prima	ry	5	109.08	8 1			ppb		1.75		
Sensor ComponentTree dewline >10m or below inletConditionTrueStatuspassSensor ComponentADT <100 vehicles further than 20	Sensor C	ompone	nt Audit Pressu	ure		Conditio	on 668 mmHg		Status	pass		
Sensor ComponentADT <100 vehicles further than 20ConditionTrueStatuspassSensor ComponentADT >100 vehicles further than 50ConditionTrueStatuspassSensor ComponentSample TrainConditionGoodStatuspassSensor ComponentInlet Filter ConditionConditionCleanStatuspassSensor ComponentOffsetCondition0.6StatuspassSensor ComponentSpanCondition1.008StatuspassSensor ComponentEero VoltageCondition0.0001StatuspassSensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition0.6 pbbStatuspassSensor ComponentCell A Freq.Condition0.6 pbbStatuspassSensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition0.65 lpmStatuspassSensor ComponentCell A Freq.Condition0.65 lpmStatuspassSensor ComponentCell B Freq.Condition0.8 pbbStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt 26.6 degree	unobstruct	ted rule	Conditio	n True		Status	pass		
Sensor ComponentADT >100 vehicles further than 50ConditionTrueStatuspassSensor ComponentSample TrainConditionGoodStatuspassSensor ComponentInlet Filter ConditionConditionCleanStatuspassSensor ComponentOffsetCondition0.6StatuspassSensor ComponentSpanCondition1.008StatuspassSensor ComponentSpanCondition0.0001StatuspassSensor ComponentZero VoltageCondition1.0007StatuspassSensor ComponentFullscale VoltageCondition9.0 kHzStatuspassSensor ComponentCell A Freq.Condition0.6 httpStatuspassSensor ComponentCell A Freq.Condition0.6 httpStatuspassSensor ComponentCell A Freq.Condition0.6 httpStatuspassSensor ComponentCell A Freq.Condition0.65 hpmStatuspassSensor ComponentCell A Freq.Condition667.0 mmHgStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 hpmStatuspass	Sensor C	ompone	nt Tree dewline	e >10m or l	below inlet	Conditio		Status	s pass			
Sensor ComponentSample TrainConditionGoodStatuspassSensor ComponentInlet Filter ConditionConditionCleanStatuspassSensor ComponentOffsetCondition-0.6StatuspassSensor ComponentSpanCondition1.008StatuspassSensor ComponentZero VoltageCondition-0.0001StatuspassSensor ComponentZero VoltageCondition1.0007StatuspassSensor ComponentFullscale VoltageCondition10.007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A Freq.Condition0.6 ppbStatuspassSensor ComponentCell A NoiseCondition0.65 lpmStatuspassSensor ComponentCell A FlowCondition667.0 mmHgStatuspassSensor ComponentCell A Trap.Condition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.8 ppbStatuspass	Sensor C	ompone	nt ADT <100 v	ehicles furt	her than 20	Conditio	n True		Status	atus pass		
Sensor ComponentInlet Filter ConditionConditionCleanStatuspassSensor ComponentOffsetCondition0.6StatuspassSensor ComponentSpanCondition1.008StatuspassSensor ComponentZero VoltageCondition0.0001StatuspassSensor ComponentZero VoltageCondition1.0007StatuspassSensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A Freq.Condition0.65 lpmStatuspassSensor ComponentCell A Freq.Condition0.65 lpmStatuspassSensor ComponentCell A Freq.Condition667.0 mmHgStatuspassSensor ComponentCell A Tmp.Condition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	Sensor Component ADT >100 vehicles further than 50		her than 50	Condition True			Status	us pass			
Sensor ComponentOffsetCondition0.6StatuspassSensor ComponentSpanCondition1.008StatuspassSensor ComponentZero VoltageCondition0.0001StatuspassSensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A Freq.Condition0.6 ppbStatuspassSensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Sample Trai	n		Conditio	on Good		Status	atus pass		
Sensor ComponentSpanCondition1.008StatuspassSensor ComponentZero VoltageCondition-0.0001StatuspassSensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A NoiseCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A PressureCondition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.6 ppbStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.6 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Inlet Filter C	ondition		Conditio	on Clean		Status	pass		
Sensor ComponentZero VoltageCondition-0.0001StatuspassSensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A NoiseCondition0.65 lpmStatuspassSensor ComponentCell A FlowCondition667.0 mmHgStatuspassSensor ComponentCell A PressureCondition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.65 lpmStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Offset			Condition -0.6			Status	pass		
Sensor ComponentFullscale VoltageCondition1.0007StatuspassSensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A PressureCondition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Span			Conditio	n 1.008		Status	pass		
Sensor ComponentCell A Freq.Condition90.0 kHzStatuspassSensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A PressureCondition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.65 lpmStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Zero Voltage	e		Conditio	on -0.0001		Status	pass		
Sensor ComponentCell A NoiseCondition0.6 ppbStatuspassSensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A Tmp.Condition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.65 lpmStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.65 lpmStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Fullscale Vo	ltage		Conditio	n 1.0007		Status	pass		
Sensor ComponentCell A FlowCondition0.65 lpmStatuspassSensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A Tmp.Condition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B Freq.Condition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor C	ompone	nt Cell A Freq.			Conditio	90.0 kHz		Status	pass		
Sensor ComponentCell A PressureCondition667.0 mmHgStatuspassSensor ComponentCell A Tmp.Condition32.1 CStatuspassSensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B NoiseCondition0.65 lpmStatuspass	Sensor C	ompone	nt Cell A Noise	•		Conditio	on 0.6 ppb		Status	pass		
Sensor ComponentCell A Tmp.Condition32.1 CStatus passSensor ComponentCell B Freq.Condition108.8 kHzStatus passSensor ComponentCell B NoiseCondition0.8 ppbStatus passSensor ComponentCell B FlowCondition0.65 lpmStatus pass	Sensor C	Sensor Component Cell A Flow				Conditio	on 0.65 lpm		Status	pass		
Sensor ComponentCell B Freq.Condition108.8 kHzStatuspassSensor ComponentCell B NoiseCondition0.8 ppbStatuspassSensor ComponentCell B FlowCondition0.65 lpmStatuspass	Sensor Component Cell A Pressure		ure	Con		ition 667.0 mmHg		Status pass				
Sensor ComponentCell B NoiseCondition0.8 ppbStatus passSensor ComponentCell B FlowCondition0.65 lpmStatus pass	Sensor Component Cell A Tmp.			Con		ion 32.1 C		Status pass				
Sensor Component Cell B Flow Condition 0.65 lpm Status pass	Sensor C	Sensor Component Cell B Freq.				Conditio	on 108.8 kHz		Status	pass		
	Sensor C	Sensor Component Cell B Noise		;		Conditio	0.8 ppb		Status	pass		
Sensor Component Cell B Pressure Condition 666.9 mmHg Status pass	Sensor Component Cell B Flow				Conditio	on 0.65 lpm		Status	pass			
	Sensor C	Sensor Component Cell B Pressure		sure		Conditio	on 666.9 mmHg		Status	pass		
Sensor Component System Memo Condition Status pass	Sensor C	ompone	nt System Mer	no		Conditio	on		Status	pass		

2 Meter Temperature Data Form

0 1		D		20						
1 9	0		T	н.	01	r 1	01	n	^	Δ
Cal	U .				CI.					c

Mfg	Serial Number	Tag Site]	Fechnician	Site Vis	sit Date P	Paramete	r	Owner ID		
RM Young	14961	BBE401		Martin Valvur	03/01/2	2021 T	emperatu	ure2meter	none		
			Mfg	Fluke		Para	meter Tem	perature			
				Serial Num	ber 327514	3	Tfer	Desc. RTD			
				Tfer ID	Tfer ID 01229						
DAS 1: DAS 2:				Slope		0.99975 Intercept		ept	-0.00824		
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma			s Max Err	Cert Date		2/9/2021	CorrC	off	1.00000		
0.31	0.33										
UseDescription	Test type	InputTmpRaw	InputTmpC	orrected Outpu	utTmpSignal	OutputSig	gnalEng	OSE Unit	Difference		
	Temp Low Rang	0.04		0.05	0.000	0.38C			0.33		
	Temp Mid Range	24.09		24.10	0.000		24.38		0.28		
primary	Temp High Rang	46.61		46.63	0.000		46.94	C	0.31		
Sensor Compor	nent Shield		Condi	ition Clean		5	Status pa	ass			
Sensor Component Properly Sited			Condi	Condition Properly sited			Status pass				
Sensor Component Blower			Condi	ition Functionin	g	Status pass					
Sensor Component System Memo				Condition				Status pass			

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	BBE401	Martin Valvur	03/01/2021	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 0.19	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD)
			Tfer ID	01229		
			Slope	0.9997	5 Intercept	-0.00824
			Cert Date	2/9/202	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.14	21.15	0.000	21.0	С	-0.19
primary	Temp Mid Range	22.45	22.46	0.000	22.5	С	0.08
primary	Temp Mid Range	20.95	20.96	0.000	21.1	С	0.12
Sensor Cor	nponent System Memo)	Condition	n Status pass			

Siting Criteria Form

Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Large point source of So2 or Nox	Condition	Status pass

Infrastructure Data For

Site ID	BBE401	Technician Ma	artin Valvur	Site Visit Date	03/01/2021	
Shelter M	lake	Shelter Model	Shelt	er Size		
Ekto		8814	896 c	uft		
and the second s				552929292345782636378263829		

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	Good	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	Status	pass
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	1/2 teflon	Status	pass
Sensor Component Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample line is leak tested every two weeks when the inlet filter is replaced.

2 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized.

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Site ID BBE401	Technician Martin Valvur	Site Visit Date 03/0	1/2021						
		NGCO M	Doubton lunction						
Site Sponsor (agency)	NPS/EPA	USGS Map	Panther Junction						
Operating Group	NPS	Map Scale							
AQS #	48-043-0101	Map Date							
Meteorological Type	Climatronics								
Air Pollutant Analyzer	Ozone, IMPROVE, PM2.5	QAPP Latitude	29.3022						
Deposition Measurement	dry, wet	QAPP Longitude	-103.1772						
Land Use	desert	QAPP Elevation Meters	1052						
Terrain	complex	QAPP Declination							
Conforms to MLM	Marginally	QAPP Declination Date							
Site Telephone	(432) 477-2258	Audit Latitude	29.302651						
Site Address 1	K-Bar Ranch	Audit Longitude	-103.177813						
Site Address 2	Big Bend National Park	Audit Elevation	1057						
County	Brewster	Audit Declination	7.0						
City, State	Big Bend National Park, TX	Present							
Zip Code	79834	Fire Extinguisher 🗌							
Time Zone	Central	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 Steps							
Shelter Working Room 🔽	Make Ekto Mo	odel 8814	Shelter Size 896 cuft						
Shelter Clean	Notes The shelter is clean, neat, and	well organized.							
Site OK	Notes								
Driving Directions From interstate 10 in Fort Stockton, turn south on highway 385 and drive approximately 120 miles to Big Bend National Park. Continue on the park road past the entrance station 26 miles to the stop sign at Panther Junction near the visitor center. Turn left (east) and continue approximately 2.5 miles. Turn left on the dirt road marked K-Bar and continue approximately 0.5 miles. Turn right on the service road just past the Chihuahuan Desert Research Station (old house) on the right. The site is 400 meters at the end of the road.									

Fi	eld Sy	stems Data Fo	orm				F-02058	8-15	500-S3	8-rev002
Site	e ID	BBE401	Technician	Martin Valvur		Site Visit Date	03/01/2021			
1	being in	d speed and direction fluenced by obstructio	ns?			N/A				
2	(i.e. wind horizont	d sensors mounted so l sensors should be m ally extended boom > to the prevailing wind	ounted atop the 2x the max dia	e tower or on a	V	N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields p diated heat sources su								
5	conditio surface a	perature and RH sens ns? (i.e. ground below and not steeply sloped water should be avoi	sensors should . Ridges, hollow	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it sited	l to avoid shading, or	any artificial o	r reflected light?	✓	N/A				
8	Is the ra	in gauge plumb?				N/A				
9	Is it sited towers, o	l to avoid sheltering e etc?	ffects from bui	ldings, trees,		N/A				
10	Is the su facing n	rface wetness sensor s orth?	ited with the g	rid surface		N/A				
11	Is it incl	ined approximately 3	0 degrees?			N/A				

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Site	e ID	BBE401	Technician	Martin Valvur		Site Visit Date 03/01/2021	
1		e meterological senso 1, and well maintained		intact, in good		Temperature only	
2	Are all the reporting	he meteorological sens g data?	sors operational	l online, and	✓	Temperature only	
3	Are the s	hields for the temper	ature and RH s	ensors clean?	✓	Temperature only	
4	Are the aspirated motors working?						
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	ndamaged?	✓	N/A	
7	condition	ensor signal and pow 1, and well maintained ensor signal and pow	1?				
-	from the	elements and well ma	aintained?				

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	BBE401	Technician M	lartin Valvur		Site Visit Date 03/01/2021
	<u>Siting C</u>	Criteria: Are the pollut	ant analyzers and	l deposition equ	<u>iipn</u>	oment sited in accordance with 40 CFR 58, Appendix E
1		sample inlets have at le icted airflow?	east a 270 degree	arc of	✓	
2	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 depos	ition equipment of	operations and	mai	aintenance
1		analyzers and equipme on and well maintained		n good	✓	
2	Are the reportin	analyzers and monitoning data?	rs operational, on	l-line, and	✓	
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				1/2 teflon by 12 meters
5		ine filters used in the o location)	zone sample line	? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moisture,	and		
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?			
9	Is there clean?	a rotometer in the dry	deposition filter	line, and is it	✓	Clean and dry

Fi	eld Sy	stems Data Fo	orm				F -(02058-15	00-S6-rev002
Site	e ID	BBE401	Technician	Martin Valvur		Site Visit	Date 03/01/20)21	
	<u>DAS, se</u>	ensor translators, and j	<u>peripheral equi</u>	pment operation	<u>15 ar</u>	id maintenand	<u>ce</u>		
1		DAS instruments appe intained?	ear to be in good	l condition and					
2		the components of the , backup, etc)	DAS operation	al? (printers,					
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?					Met sensors o	nly		
4	Are the signal connections protected from the weather and well maintained?				✓				
5	Are the	signal leads connected	l to the correct	DAS channel?	✓				
6	Are the ground	DAS, sensor translato ed?	ors, and shelter	properly	✓				
7	Does th	e instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the in	nstrument shelter temp	oerature contro	lled?					
9	Is the m	iet tower stable and gr	ounded?			Stable ✓		Grounded	
10	Is the sa	ample tower stable and	l grounded?						
11	Tower of	comments?							

Fie	eld Sy	stems Data	Foi	m					F-02	058-	1500-	-S7-rev002
Site	ID	BBE401		Tech	nician	Martin Valvu	ır	Site Visit Date	03/01/2021			
D	ocument	ation										
D	oes the s	ite have the require	ed ins	<u>strum</u>	<u>ent and</u>	equipment i	<u>manuals?</u>					
			Yes	No					Yes	No	N/A	
	d speed s						Data logge					
		on sensor					Data logge				✓	
	perature	e sensor udity sensor					Strip chart	recorder				
		on sensor					Computer Modem					
		ess sensor					Printer					
		translator					Lero air pu	ump		\checkmark		
		e translator					Filter flow	-				
	-	isor translator					Surge prot					
	-	on translator					JPS					
		ket rain gauge						protection device				
	ne analyz						Shelter hea			\checkmark		
		ow controller						conditioner		\checkmark		
	-	IFC power supply			\checkmark							
		site have the requi	ired a	nd m	ost rece	nt OC docur	nents and	report forms?				
-			Pres					<u> </u>	Currei	nt		
Stati	ion Log		[✓	Datavie	W			\checkmark			
SSR	F		[✓								
Site	Ops Mai	nual	[✓					\checkmark			
HAS	SP		[
Field	d Ops Ma	anual	[
Calil	bration I	Reports	[✓	Electror	nic copy						
Ozoi	ne z/s/p (Control Charts	[
Prev	ventive m	aintenance schedu	le [
1	Is the st	ation log properly	comp	leted	during	every site vis	sit? 🔽 Da	ataview				
2	Are the current	Site Status Report ?	Forn	ns bei	ng comp	pleted and	✓ Find the second s	ow section only				
3		chain-of-custody fo transfer to and from			erly used	d to docume	nt 🗸					
4	Are ozo current	ne z/s/p control cha ?	arts p	roper	ly comp	oleted and		ontrol charts not u	sed			
		additional explana an-made, that may						regarding condit	ions listed a	bove,	or any ot	her features,
		•										

BBE401 Site Visit Date 03/01/2021 Site ID Technician Martin Valvur 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? ✓ 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
Multipoint Calibrations
Visual Inspections
Translator Zero/Span Tests (climatronics)

Confirm Reasonableness of Current Values

	Frequency	Comp
\checkmark	Semiannually	\checkmark
\checkmark	Weekly	\checkmark
\checkmark	N/A	\checkmark
\checkmark	N/A	\checkmark
\checkmark	Weekly	\checkmark
\checkmark	N/A	\checkmark

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

00	Check	Perf	ormed
V V	CHECK	I CI I	ormeu

Manual Rain Gauge Test

Test Surface Wetness Response

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	
Monthly	
Daily	
Monthly	
Alarm values only	
Every 2 weeks	
N/A	
Weekly	
Weekly	

- 1 Do multi-point calibration gases go through the complete 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	
✓		
	Dataview	

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 sample line is leak tested every two weeks when the inlet filter is replaced.

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pliant

Compliant

stems Data Fo	orm		F-02058-1500-S9-rev00			
BBE401	Technician	Martin Valvur	Site Visit Date 03/01/2021			

Field Sys

Site ID

	Site operation procedures				
1	Is the filter pack being changed every	Tuesday as scheduled?		Filter changed mor	nings
2	Are the Site Status Report Forms bei correctly?	ng completed and filed			
3	Are data downloads and backups bei scheduled?	ng performed as		No longer required	
4	Are general observations being made	and recorded? How?	✓	SSRF	
5	Are site supplies on-hand and replen fashion?	ished in a timely			
6	Are sample flow rates recorded? How?			SSRF	
7	Are samples sent to the lab on a regular schedule in a timely fashion?				
8	Are filters protected from contamina and shipping? How?	tion during handling	✓	Clean gloves on an	d off
9	Are the site conditions reported reguloperations manager or staff?	larly to the field			
Q	C Check Performed	Frequency			Compliant
	Multi-point MFC Calibrations	Semiannually			
	Flow System Leak Checks	✓ Weekly	Weekly		
	Filter Pack Inspection				
	Flow Rate Setting Checks Veekly				
	Visual Check of Flow Rate Rotometer	Veekly			
	In-line Filter Inspection/Replacement	Semiannually			
	Sample Line Check for Dirt/Water	✓ Weekly			

BBE401

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Site ID

Techn

Technician Martin Valvur

Site Visit Date 03/01/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	EliteBook	CNV347CS41	none
DAS	Environmental Sys Corp	8816	4592	90767
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	illegible	none
Flow Rate	Alicat	Unknown	Unknown	none
Infrastructure	Infrastructure	none	none	none
Ozone	ThermoElectron Inc	49i A3NCA	1201477660	none
Ozone Standard	ThermoElectron Inc	49C	0520012325	90831
Printer	Hewlett Packard	842C	unknown	none
Sample Tower	Aluma Tower	B	AT-5381-F9-1	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	14961	none
Zero air pump	Twin Tower Engineering	TT70/4E	526293	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BWR	139-Korey	Devins-03/16/2021				
1	3/16/2021	Computer	Dell	07009	Inspiron 15	Unknown
2	3/16/2021	DAS	Campbell	000431	CR3000	2536
3	3/16/2021	Elevation	Elevation	None	1	None
4	3/16/2021	Filter pack flow pump	Thomas	06031	107CAB18	608102A
5	3/16/2021	Flow Rate	Apex	000670	AXMC105LPMDPCV	54758
6	3/16/2021	Infrastructure	Infrastructure	none	none	none
7	3/16/2021	Modem	Digi	07186	LR54	Illegible
8	3/16/2021	Ozone	ThermoElectron Inc	000618	49i A1NAA	1009241789
9	3/16/2021	Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814
10	3/16/2021	Sample Tower	Aluma Tower	missing	В	none
11	3/16/2021	Shelter Temperature	Campbell	none	107-L	none
12	3/16/2021	Siting Criteria	Siting Criteria	None	1	None
13	3/16/2021	Temperature	RM Young	04315	41342	4012
14	3/16/2021	Zero air pump	Werther International	06877	C 70/4	000815258

DAS Data Form

7

1.0000

0.9991

DAS Time Max Error:

0

0.0000

V

Mfg	Serial	Number Site	ſ	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2536	BW	/R139	Korey Devins	03/16/2021	DAS	Primary
Das Date: Das Time: Das Day: Construction Channel: Avg Diff: 0.0000	3 /16/2021 12:09:35 75 Max Diff:	Audit Date Audit Time Audit Day High Channe Avg Diff: 001 0.000	3 /16/2021 12:09:35 75	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope	Fluke 95740135 01311 1.0000 2/11/202 Datel 15510194 01320 1.0000	Parameter Tfer Desc. Intercept CorrCoff Parameter Tfer Desc.	DAS DVM 0.00000 1.00000
				Cert Date	2/13/201	2 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0001	-0.0001	l V	V	0.0000	
7	0.1000	0.0997	0.0998		V	0.0001	
7	0.3000	0.2996	0.2997		V	0.0001	
7	0.5000	0.4994	0.4995		V	0.0001	
7	0.7000	0.6994	0.6994		V	0.0000	
7	0.9000	0.8992	0.8992		V	0.0000	

0.9991

V

Flow Data Form

Mfg	Serial Nun	iber Tag	Site	Te	chnician Site Visit Date		it Date	Paran	neter	Owner ID
Apex	54758		BWR139	Ko	prey Devins	03/16/2	021	Flow F	Rate	000670
					Mfg	BIOS		P	arameter Flo	w Rate
					Serial Number	131818		Γ	fer Desc. Blo	DS 220-H
					Tfer ID	01417				
					Slope		0.9975	i6 Int	ercept	-0.00058
	Cert Date 2/10/2						2/10/202	21 Co	rrCoff	0.99993
DAS 1:		DAS 2:		l	Cal Factor Z	ero		-0.	02	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	x % Dif	Cal Factor F	ull Scale		0.98		
1.10%	1.32%				Rotometer R	Rotometer Reading:			.6	
Desc.	Test type	Input l/m	n Input Corr	MfcDisp.	OutputSignal	Output S	E Inp	utUnit	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	0.00	0.000	-0.03]	l/m	l/m	
primary	test pt 1	1.516	1.520	1.51	0.000	1.50]	l/m	l/m	-1.32%
primary	test pt 2	1.514	1.520	1.52	0.000	1.50]	l/m	l/m	-1.32%
primary	test pt 3	1.508	1.510	1.52	0.000	1.50		l/m	l/m	-0.66%
Sensor Com	<mark>ponent</mark> Leak Tes	t		Conditio	ndition			Status pass		
Sensor Com	ponent Tubing C	ondition		Conditio	on Good			Status pass		
Sensor Com	ponent Filter Pos	ition		Conditio	on Good			Statu	s pass	
Sensor Com	ponent Rotomete	er Conditio	n	Conditio	Clean and dry			Statu	s pass	
Sensor Com	ponent Moisture	Present		Conditio	n No moisture p	resent		Statu	s pass	
Sensor Component Filter Distance				Conditio	lition 4.5 cm			Status pass		
Sensor Component Filter Depth					ion 2.5 cm			Status pass		
Sensor Component Filter Azimuth					tion 60 deg			Status pass		
Sensor Com	ponent System M	1emo		Conditio	on			Statu	s pass	

Ozone Data Form

Mfg	Serial Numbe	al Number Tag Site Technician Site V		Site Visit Date	Parameter	Owner ID		
ThermoElectron Inc	1009241789	BWR139	9 k	Korey Devins	03/16/2021	Ozone	000618	
Slope: Intercept CorrCoff: DAS 1:	1.00000 Corr	rcept C rCoff: C	0.00000 0.00000 0.00000	Mfg Serial Number Tfer ID Slope	ThermoElectron 1180030022 01114 1.0003	Tfer I	neter ozone Desc. Ozone primary stan ot 0.30550	
A Avg % Diff: A M	Max % Dif A . 0.0%	Avg %Diff A	Max % Dif	Cert Date	1/20/202	21 CorrCo	ff 1.00000	
UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif		
primary primary	2	0.37	0.06	0.32	ppb ppb		0.26	
primary	3	35.01	34.53	35.06	ppb	1	.52	
primary	4	68.02	67.37	67.97	ppb		.89	
primary	5	110.78	109.92	111.10	ppb		.07	
Sensor Compone	ent Audit Pressu	ure	Condit	tion 766.2 mmHg		Status pas	SS	
Sensor Compone	ent 26.6 degree	unobstructed ru	le Condit	t <mark>ion</mark> True		Status pas	SS	
Sensor Compone	ent Tree dewline	e >10m or below	inlet Condit	tion True		Status pas	SS	
Sensor Compone	ent ADT <100 v	ehicles further th	an 20 Condit	tion True		Status pas	SS	
Sensor Compone	ent ADT >100 v	ehicles further th	an 50 Condi t	tion False		Status Fai	il	
Sensor Compone	ent Sample Trai	n	Condit	tion Good		Status pas	55	
Sensor Compone	ent Inlet Filter C	ondition	Condit	t <mark>ion</mark> Clean		Status pas	SS	
Sensor Compone	ent Offset		Condit	tion -0.3		Status pass		
Sensor Compone	ent Span		Condit	tion 1.023		Status pas	SS	
Sensor Compone	ent Zero Voltage	9	Condit	tion N/A		Status pas	SS	
Sensor Compone	ent Fullscale Vo	ltage	Condit	tion N/A		Status pas	SS	
Sensor Compone	ent Cell A Freq.		Condit	tion 92.7 kHz		Status pas	SS	
Sensor Compone	ent Cell A Noise)	Condit	tion 0.3 ppb		Status pas	SS	
Sensor Compone	ent Cell A Flow		Condit	tion 0.73 lpm		Status pas	55	
Sensor Compone	ent Cell A Press	sure	Condit	tion 733.7 mmHg		Status pas	SS	
Sensor Compone	ent Cell A Tmp.		Condit	tion 34.7 C		Status pas	55	
Sensor Compone	Sensor Component Cell B Freq.			tion 106.6 kHz		Status pas	55	
Sensor Compone	ent Cell B Noise	;	Condit	tion 0.6 ppb		Status pas	55	
Sensor Compone	ent Cell B Flow		Condit	tion 0.73 lpm		Status pas	55	
Sensor Compone	ent Cell B Press	sure	Condit	tion 734.6 mmHg		Status pas	SS	
Sensor Compone	ent System Men	no	Condit	tion		Status pas	SS	

Temperature Data Form

Mfg	Serial Number	Fag Site	1	Technician S		Site V	isit Date	Param	eter	Owner ID	
RM Young	4012	BWR139		Korey	Devins	03/16	/2021	Temper	ature	04315	
				Mfg		Extech	1	Pa	rameter Te	mperature	
				Serial Number		H2327	H232734 Tf		fer Desc. RTD		
				Tfe	er ID	01227					
DAS 1:	DAS 1: DAS 2:					1.00743 Intercept		rcept	0.21666		
Abs Avg Err Abs Max Err Abs Avg Err Abs M			Max Err	x Err Cert Date			2/18/202	1 Cor	rCoff	1.00000	1
0.22	0.34										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Tem	p Low Range	0.12	-0.10)	0.000		0.1	l	С	0.23	
primary Tem	p Mid Range	25.48	25.08	3	0.000		25.	0	С	-0.09	
primary Tem	p High Range	44.77	44.22	2	0.000		43.	9	С	-0.34	
Sensor Compone	ent Shield		Condi	tion N	/loderately clea	an		Status	pass		
Sensor Component Blower				Condition N/A				Status	Status pass		
Sensor Component Properly Sited				Condition Properly sited				Status	Status pass		
Sensor Component System Memo				Condition					Status pass		

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	BWR139	Korey Devins	03/16/2021	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab	Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err 0.13 0.17			H232734	Tfer Desc. RTD)
			Tfer ID	01227		
			Slope	1.0074	3 Intercept	0.21666
			Cert Date	2/18/202	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.75	25.35	0.000	25.2	С	-0.17
primary	Temp Mid Range	26.15	25.74	0.000	25.7	С	-0.05
primary	Temp Mid Range	25.60	25.20	0.000	25.4	С	0.16
Sensor Cor	nponent System Memo	1	Condition	n Status pass			

Siting Criteria Form

Sensor Component Limited agriculture operations	Condition 10 m	Status Fail
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass
Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass

Infrastructure Data For

Site ID	BWR139	Technician Korey Dev	ins Site Visit Date 03/16/2021
Shelter M	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 Moisture Trap Type	Condition	Glass bottle	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	Good	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	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
Sensor Component System Memo	Condition		Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train is leak checked every two weeks following the inlet filter change.

2 Parameter: SitingCriteriaCom

Very light agriculture activities near site, not harvested, just to provide food for wildlife.

3 Parameter: ShelterCleanNotes

The shelter has been repaired since the previous site audit visit.

4 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

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Site ID BWR139	Technician Korey Devins	Site Visit Date 03/16	/2021						
		USCS Mon							
Site Sponsor (agency)	EPA	USGS Map							
Operating Group	BNWR/private	Map Scale							
AQS #	24-019-9991	Map Date							
Meteorological Type	R.M. Young								
Air Pollutant Analyzer	Ozone	QAPP Latitude							
Deposition Measurement	dry	QAPP Longitude							
Land Use	woodlands - mixed, wetlands	QAPP Elevation Meters							
Terrain	flat	QAPP Declination							
Conforms to MLM	Yes	QAPP Declination Date							
Site Telephone		Audit Latitude	38.444971						
Site Address 1	Blackwater Nat Wildlife Refuge	Audit Longitude	-76.111274						
Site Address 2	2145 Key Wallace Dr.	Audit Elevation	1						
County	Dorchester	Audit Declination	-11.2						
City, State	Cambridge, MD	Present							
Zip Code	21613	Fire Extinguisher 🔽	dated 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 Steps ✓							
Shelter Working Room	Make Ekto Mo	odel 8810	Shelter Size 640 cuft						
Shelter Clean	Notes The shelter has been repaired	since the previous site audit visi	it.						
Site OK	Notes								
Driving Directions From I95 take route 50 east to Cambridge, MD. At mile marker 81 turn right on Woods Rd. Continue approximately 1 mile to the stop sign, turn right onto SR 16 west. Continue approximately 1.7 miles, past the school, and turn left onto Egypt Road. Continue approximately 7.1 miles to the stop sign. Turn right onto Key Wallace Drive towards the visitors center. Continue approximately 0.8 mile to the gate on the left. The site will be visible.									

Fie	eld Sy	stems Data Fo	orm				F-020	58-1	500-S.	3-rev002
Site	e ID	BWR139	Technician	Korey Devins		Site Visit Date	03/16/2021			
1	being in	l speed and direction fluenced by obstructio	ons?			N/A				
2	(i.e. wind horizont	d sensors mounted so l sensors should be m ally extended boom > to the prevailing wind	ounted atop the 2x the max dian	e tower or on a		N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields p diated heat sources su								
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped water should be avoi	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	l to avoid shading, or	any artificial o	r reflected light?		N/A				
8	Is the ra	in gauge plumb?				N/A				
9	Is it site towers, o	l to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A				
10	Is the su facing n	rface wetness sensor s orth?	sited with the g	rid surface	✓	N/A				
11	Is it inc	ined approximately 3	0 degrees?		✓	N/A				
						L]

F-02058-1500-S4-rev002

Site	e ID	BWR139	Technician	Korey Devins		Site Visit Date 03/16/2021
1 2 3	condition Are all th reporting	e meterological senso 1, and well maintained he meteorological sens g data? shields for the temper	d?	l online, and	> >	Temperature only
4	Are the a	aspirated motors wor	king?		✓	N/A
5	Is the sol scratches	ar 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	condition	ensor signal and pow 1, and well maintaine ensor signal and pow	d?			
Ŭ	from the	elements and well ma	aintained?			

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S5-rev00				
Site	e ID	BWR139	Technician	Korey Devins		Site Visit Date 03/16/2021			
	<u>Siting C</u>	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipn</u>	nent sited in accordance with 40 CFR 58	<u>, Appendix E</u>		
1		ample inlets have at le cted airflow?	east a 270 degre	e arc of					
2	Are the	sample inlets 3 - 15 m	eters 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 a								
	<u>Pollutan</u>	nt analyzers and depos	ition equipmen	t operations and	mai	ntenance			
1		nalyzers and equipme n and well maintained		in good	✓				
2	Are the reportin	analyzers and monitor og data?	rs operational, o	on-line, and	✓				
3	Describe	e ozone sample tube.				1/4 teflon by 12 meters			
4	Describe	e dry dep sample tube				3/8 teflon by 12 meters			
5		ine filters used in the o location)	ozone sample lin	ie? (if yes		At inlet only			
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moistur	e, and	✓				
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	v deposition filte	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:

Ozone sample train has inline dryer.

Fie	eld Sy	stems Data Fo	orm				F-02	2058-15	00-S6-rev002
Site	e ID	BWR139	Technician	Korey Devins		Site Visit Date	03/16/2021	I	
	DAS, se	ensor translators, and	peripheral equi	pment operation	<u>15 ar</u>	<u>id maintenance</u>			
1		DAS instruments appe intained?	ar to be in good	l condition and	✓				
2		the components of the , backup, etc)	DAS operation	al? (printers,	✓				
3		analyzer and sensor sign protection circuitry		through	✓	Temperature only			
4		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	l to the correct	DAS channel?	✓				
6	Are the ground	DAS, sensor translato ed?	ors, and shelter	properly	✓				
7	Does th	e instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the ir	nstrument shelter temp	perature control	lled?					
9	Is the m	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	l grounded?						
11	Tower	comments?				Met tower removed	I	Ľ	

Field Systems Data	a Foi	·m			F-0 2	2058-	-1500-S7-rev002
Site ID BWR139		Tech	nician Korey I	Devins Site Visit Date 0	3/16/202	1	
Documentation							
Does the site have the requ	ired ins	strume	ent and equipn	nent 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			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 V		
Filter pack flow controller	_			Shelter air conditioner			
Filter pack MFC power supp Does the site have the req			✓ ost recent QC o	locuments and report forms?	Curr	ent	
Station Log SSRF Site Ops Manual	[V V]	
HASP	[<	March 2015]	
Field Ops Manual	[<	March 2015]	
Calibration Reports	[<			\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

Ozone z/s/p Control Charts

Preventive maintenance schedule

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Site	e ID	BWR139	Technician	Korey Devins	Site Visit Date 03/16/20	21	
	Site ope	ration procedures					
1		site operator attended If yes, when and who		TNET training			
2		backup operator atte course? If yes, when					
3	Is the sit schedule	e visited regularly on ?	the required Tu	iesday			
4		standard CASTNET o I by the site operator?	• •	cedures being			
5		e operator(s) knowled ired site activities? (in					

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

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	\checkmark	N/A	\checkmark
Visual Inspections	\checkmark	N/A	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	✓	N/A	\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	\checkmark	Semiannually	\checkmark
Automatic Zero/Span Tests	\checkmark	Daily	\checkmark
Manual Zero/Span Tests			\checkmark
Automatic Precision Level Tests	\checkmark	Daily	\checkmark
Manual Precision Level Test			\checkmark
Analyzer Diagnostics Tests	\checkmark	Weekly	\checkmark
In-line Filter Replacement (at inlet)	\checkmark	Every 2 weeks	\checkmark
In-line Filter Replacement (at analyze		N/A	\checkmark
Sample Line Check for Dirt/Water		Weekly	\checkmark
Zero Air Desiccant Check	\checkmark	Weekly	\checkmark

- **1** Do multi-point calibration gases go through the complete 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, 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:

The ozone sample train is leak checked every two weeks following the inlet filter change.

Field Sy	stems Data Fo	rm	F-02058-1500-S9-rev002
Site ID	BWR139	Technician Korey Devins	Site Visit Date 03/16/2021

	Site operation procedures			
1	Is the filter pack being changed every	Tuesday as scheduled?		Filter changed afternoons
2	Are the Site Status Report Forms bei correctly?	ng completed and filed	✓]
3	Are data downloads and backups bei scheduled?	ng performed as		No longer required
4	Are general observations being made	and recorded? How?	✓	SSRF, logbook
5	Are site supplies on-hand and replent fashion?	ished in a timely	✓	
6	Are sample flow rates recorded? How	v?	✓	SSRF, logbook, call-in
7	Are samples sent to the lab on a regu fashion?	lar schedule in a timely	✓	
8	Are filters protected from contamina and shipping? How?	tion during handling	✓	Clean gloves on and off
9	Are the site conditions reported regu operations manager or staff?	larly to the field	✓	
Q	C Check Performed	Frequency		Compliant
	Multi-point MFC Calibrations	Semiannually		
	Flow System Leak Checks	✓ Weekly		
	Filter Pack Inspection			
	Flow Rate Setting Checks	✓ Weekly		
	Visual Check of Flow Rate Rotometer	✓ Weekly		
	In-line Filter Inspection/Replacement	Semiannually		
	Sample Line Check for Dirt/Water	✓ Weekly		

BWR139

F-02058-1500-S10-rev002

Site ID	
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Techni

Technician Korey Devins

Site Visit Date 03/16/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07009
DAS	Campbell	CR3000	2536	000431
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	608102A	06031
Flow Rate	Apex	AXMC105LPMDPC	54758	000670
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07186
Ozone	ThermoElectron Inc	49i A1NAA	1009241789	000618
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244814	000697
Sample Tower	Aluma Tower	B	none	missing
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4012	04315
Zero air pump	Werther International	C 70/4	000815258	06877

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
CND125-Korey Devins-03/21/2021											
1	3/21/2021	Computer	Dell	07015	Inspiron 15	BQ3MC12					
2	3/21/2021	DAS	Campbell	000499	CR3000	3816					
3	3/21/2021	Elevation	Elevation	None	1	None					
4	3/21/2021	Filter pack flow pump	Thomas	01235	107CA18	illegible					
5	3/21/2021	Flow Rate	Арех	000638	AXMC105LPMDPCV	illegible					
6	3/21/2021	Infrastructure	Infrastructure	none	none	none					
7	3/21/2021	Modem	Digi	07122	LR54	Illegible					
8	3/21/2021	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803					
9	3/21/2021	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693					
10	3/21/2021	Sample Tower	Aluma Tower	03495	A	none					
11	3/21/2021	Shelter Temperature	Campbell	none	107-L	none					
12	3/21/2021	Siting Criteria	Siting Criteria	None	1	None					
13	3/21/2021	Temperature	RM Young	06402	41342VC	14035					
14	3/21/2021	Zero air pump	Werther International	06868	C 70/4	000814284					

DAS Data Form

DAS Time Max Error: 0.15

Das Time: 12:52:50 Audit Time 12:52:59 Das Day: 80 Audit Day 80 Serial Number 95740135 Low Channel: High Channel: Tfer ID 01311 Avg Diff: Max Diff: Avg Diff: Max Diff: Slope 1.00000 In 0.0001 0.0002 0.0001 0.0002 0.0002 In	Primary Parameter DAS Tfer Desc. DVM ntercept 0.00000
Das Time: 12:52:50 Audit Time 12:52:59 Das Day: 80 Audit Day 80 Low Channel: High Channel: Tfer ID 01311 Avg Diff: Max Diff: Avg Diff: Max Diff: Slope 1.00000 0.0001 0.0002 0.0001 0.0002 0.0002 0.0002	Tfer Desc. DVM
Low Channel:High Channel:Avg Diff:Max Diff:Max Diff:0.00010.00020.00010.0002	itercept 0.00000
	orrCoff 1.00000 Parameter DAS Tfer Desc. Source generator (D
	ntercept 0.00000 orrCoff 1.00000
7 0.0000 -0.0001 0.0000 V V 7 0.1000 0.0998 0.0999 V V	ference 0.0001 0.0001
7 0.3000 0.2996 0.2997 V V 7 0.5000 0.4994 0.4996 V V 7 0.7000 0.6994 0.6994 V V 7 0.9000 0.8992 0.8993 V V 7 1.0000 0.9991 0.9992 V V	0.0001 0.0002 0.0000 0.0001 0.0001

Flow Data Form

Mfg	Serial Num	ıber Tag	Site	Тес	chnician	Site Vis	it Date	Paran	neter	Owner ID	
Apex	illegible		CND125	Ko	rey Devins	03/21/2	2021	Flow F	late	000638	
					Mfg	BIOS		P	arameter Flow	w Rate	
					Serial Number	131818		T	fer Desc. BIO	S 220-H	
					Tfer ID	01417					
					Slope		0.9975	6 Int	ercept	-0.00058	
					Cert Date		2/10/202	21 Co	rrCoff	0.99993	
DAS 1:		DAS 2:		L	Cal Factor Z	ero		-0.	01		
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	x % Dif	Cal Factor F	Cal Factor Full Scale			0.99		
5.06%	5.06%				Rotometer R	eading:		1	.5		
Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S	SE Inp	utUnit	OutputSignalI	PctDifference	
primary	pump off	0.000	0.000	-0.04	0.000	-0.05	1	/m	l/m		
primary	leak check	0.000	0.000	-0.05	0.000	-0.09	1	/m	l/m		
primary	test pt 1	1.573	1.580	1.51	0.000	1.50	1	/m	l/m	-5.06%	
primary	test pt 2	1.574	1.580	1.51	0.000	1.50	1	/m	l/m	-5.06%	
primary	test pt 3	1.572	1.580	1.51	0.000	1.50	1	/m	l/m	-5.06%	
Sensor Component Leak Test				Condition				Status pass			
Sensor Component Tubing Condition				Conditio	n Good			Status pass			
Sensor Component Filter Position				Conditio	n Good			Status pass			
Sensor Component Rotometer Condition				Conditio	Clean and dry			Status pass			
Sensor Component Moisture Present				Conditio	n See comments			Status pass			
Sensor Component Filter Distance				Conditio	9n 4.5 cm			Status pass			
Sensor Component Filter Depth				Conditio	n 1.5 cm			Status pass			
Sensor Component Filter Azimuth				Conditio	n 150 deg			Status pass			
Sensor Com	ponent System M	lemo		Conditio	n			Statu	s pass		

Ozone Data Form

Mfg		Serial Numbe	r Tag Site		Technician	Site Visit Date	Parameter	Owner ID	
ThermoElect	ron Inc	1030244803	CND125	5	Korey Devins	03/21/2021	Ozone	000692	
Slope: [Intercept [CorrCoff: [DAS 1:	-0	1.00000 Cori	rcept ().00000).00000).00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114	Tfer D	Desc. Ozone primary stan	
	iff: A M		Avg %Diff A	Max % Dif	Slope	1.000			
0.0		0.0%			Cert Date	1/20/20	21 CorrCof	ff 1.00000	
UseDescrip primar primar primar primar	y y y	ConcGroup 1 2 3 4	Tfer Raw 0.49 15.41 35.09 66.79	Tfer Cor 0.18 15.02 34.61 66.15	-0.38 14.64 34.45 66.47	Site Unit ppb ppb ppb ppb	RelPerDif -0. 0.	48	
primar		5	112.22	111.35	112.40	ppb		94	
Sensor Co	omponei		unobstructed ru	le Cond	lition 753.7 mmHg		Status pas Status pas	pass	
				lition True		Status pass			
Sensor Component ADT <100 vehicles further than 20			an 20 Cond	lition True		Status pass			
Sensor Component ADT >100 vehicles further than 50			an 50 Cond	lition True		Status pass			
Sensor Component Sample Train			Cond	lition Good		Status pass			
Sensor Component Inlet Filter Condition			Cond	lition Moderately cle	an	Status pass			
Sensor Component Offset			Cond	lition 0.4		Status pass			
Sensor Co	omponei	nt Span		Cond	Condition 1.033		Status pas	s	
Sensor Co	omponer	nt Zero Voltage	9	Cond	Condition N/A		Status pas	s	
Sensor Co	omponei	nt Fullscale Vo	ltage	Cond	Condition N/A		Status pas	s	
Sensor Co	Sensor Component Cell A Freq.			Cond	lition 96.9 kHz	ion 96.9 kHz		S	
Sensor Co	omponer	nt Cell A Noise			lition 0.3 ppb		Status pas		
Sensor Co	omponer	nt Cell A Flow		Cond	lition 0.72 lpm		Status pas	s	
Sensor Co	omponer	nt Cell A Press	ure	Cond	lition 721.4 mmHg		Status pas	s	
·			Cond	ition 34.5 C		Status pas			
				lition 101.5 kHz		Status pas	S		
Sensor Co	Sensor Component Cell B Noise		Cond	tion 0.4 ppb		Status pas			
	Sensor Component Cell B Flow			lition 0.80 lpm		Status pas			
	Sensor Component Cell B Pressure			lition 722.0 mmHg		Status pas			
	•	nt System Men		Cond			Status pas		
	1						· · · ·		

Temperature Data Form

Mfg	Serial Number	Tag Site	Т	echni	echnician		visit Date Parame		eter	Owner II)
RM Young	14035	CND125	K	Corey	Devins	03/21	/2021	Temper	rature	06402	
				Mf	g	Extec	h	Pa	arameter Temperature		
					Serial Number		734	Tf	fer Desc. RTD		
				Tfe	er ID	01227	,				
DAS 1:	DAS	S 2:		Slo	ре		1.0074	3 Inte	rcept	0.216	666
	Abs Max Err Abs	Max Err	ax Err Cert Date			2/18/202	21 Cor	rCoff	1.000	000	
0.1	5 0.41										
UseDesc.	Test type	InputTmpRaw	InputTmpC	Corr.	OutputTmp	Signal	OutputSi	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.13	-0.09		0.000		0.3		С	0.41	
primary	Temp Mid Range	25.57	25.17		0.000		25.	2	С	0.03	
primary	Temp High Range	45.72	45.17		0.000		45.	2	С	-0.01	
Sensor Con	nponent Shield		Condit	ion N	loderately cle	an		Status	pass]
Sensor Component Blower			Condit	ion N	I/A			Status	pass]
Sensor Component Properly Sited			Condit	ion F	Properly sited			Status	pass]
Sensor Con	nponent System Memo)	Condit	Condition				Status pass]

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	CND125	Korey Devins	03/21/2021	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 0.37	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD)
			Tfer ID	01227		
			Slope	1.0074	3 Intercept	0.21666
			Cert Date	2/18/202	1 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.00	24.60	0.000	25.0	С	0.37
primary	Temp Mid Range	25.78	25.37	0.000	25.7	С	0.34
primary	Temp Mid Range	26.26	25.85	0.000	26.2	С	0.32
Sensor Cor	nponent System Memo)	Condition		Status	pass	

Siting Criteria Form

Sensor Component Limited agriculture operations	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass
Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass

Infrastructure Data For

CND125

Site ID

Technician Korey Devins

Site Visit Date 03/21/2021

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	Moisture Trap Type	Condition	Glass bottle	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	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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	Condition	Good	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
Sensor Component	System Memo	Condition		Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem		
Flow Rate	CND125	Korey Devins	03/21/2021	Moisture Present	Apex	4628				
The filter sample tubing has drops of moisture in low sections outside the shelter.										

Field Systems Comments

1 Parameter: SitingCriteriaCom

The land owner maintains a pine tree forest on the property within 50 meters of the site. The trees were planted just before the site was installed in 1990 and may or may not be harvested in the future.

2 Parameter: ShelterCleanNotes

The shelter is well clean and well organized. There are signs of insect infestation on floor.

3 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

4 Parameter: MetOpMaintCom

The temperature sensor is mounted on the sample tower in a naturally aspirated shield.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID CND125	Technician Korey Devins	Site Visit Date 03/2	1/2021			
		USCS Man				
Site Sponsor (agency)	EPA	USGS Map				
Operating Group	private	Map Scale				
AQS #	37-123-9991	Map Date				
Meteorological Type	Claytronic					
Air Pollutant Analyzer	Ozone	QAPP Latitude				
Deposition Measurement	dry, Hg, PM2.5, PM10	QAPP Longitude				
Land Use	woodland	QAPP Elevation Meters				
Terrain	rolling	QAPP Declination				
Conforms to MLM	Marginally	QAPP Declination Date				
Site Telephone		Audit Latitude	35.26333			
Site Address 1	136 Perry Drive	Audit Longitude	-79.83754			
Site Address 2		Audit Elevation	172			
County	Montgomery	Audit Declination	-8			
City, State	Candor, NC	Present				
Zip Code	27229	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 Steps ✓				
Shelter Working Room	Make Ekto M	odel 8810	Shelter Size 640 cuft			
Shelter Clean	Notes The shelter is well clean and v	vell organized. There are signs	of insect infestation on floor.			
Site OK	Notes					
(south onto 7 interse	Greensboro take Hwy 220 (future I-73) s) onto 220 south and 731 west. Continu 31 west at the split. Take an immediate action). Continue approximately 5.4 mile it to the end. The site is behind the hous	e approximately 1.3 miles which right onto McCallum Rd. (there s to Perry Drive which is on the	will take you out of town. Bear right is a sign for E-KU-SUMEE at the left. Turn left onto the gravel road and			

Fi	eld Sy	stems Data Fo	orm				F-020 :	58-1:	500-83	-rev002
Site	e ID	CND125	Technician	Korey Devins		Site Visit Date	03/21/2021]	
1		d speed and direction fluenced by obstructio		as to avoid	✓	N/A				
2	(i.e. wind horizont	d sensors mounted so d sensors should be mo ally extended boom > to the prevailing wind	ounted atop the 2x the max dia	e tower or on a		N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields p diated heat sources su								
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped swater should be avoi	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	l to avoid shading, or	any artificial o	r reflected light?		N/A				
8	Is the ra	in gauge plumb?			✓	N/A				
9	Is it site towers, o	l to avoid sheltering e etc?	ffects from bui	ldings, trees,		N/A				
10	Is the su facing n	rface wetness sensor s orth?	ited with the g	rid surface	✓	N/A				
11	Is it inc	lined approximately 3	0 degrees?			N/A				

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 Systems Data Form

F-02058-1500-S4-rev002

Site	e ID	CND125	Technician	Korey Devins		Site Visit Date	3/21/2021	
1		e meterological sensor n, and well maintained		intact, in good				
2	Are all t reportin	he meteorological sens g data?	ors operationa	l online, and	✓			
3	Are the s	shields for the tempera	ature and RH s	ensors clean?	✓			
4	Are the	aspirated motors work	king?		✓	N/A		
5	Is the sol scratche	ar radiation sensor's l	lens clean and f	free of	✓	N/A		
6	Is the su	rface wetness sensor g	rid clean and u	indamaged?	✓	N/A		
7		sensor signal and powe		, in good	✓	N/A		
8		sensor signal and powers elements and well ma		ctions protected		N/A		

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 temperature sensor is mounted on the sample tower in a naturally aspirated shield.

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	CND125	Technician 🕨	Korey Devins		Site Visit Date 03/21/2021
	<u>Siting C</u>	riteria: Are the pollut	ant analyzers an	d deposition eq	<u>uipn</u>	<u>ent sited in accordance with 40 CFR 58, Appendix E</u>
1		ample inlets have at le icted airflow?	east a 270 degree	arc of		
2	Are the	sample inlets 3 - 15 m	eters above the g	round?	✓	
3		sample inlets > 1 mete neters from trees?	er from any majo	or obstruction,		
	<u>Pollutar</u>	it analyzers and depos	ition equipment	operations and	mai	<u>ntenance</u>
1		nalyzers and equipme n and well maintained		in good	✓	
2	Are the reportin	analyzers and monitoning data?	rs operational, or	n-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)	ozone sample line	e? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moisture,	, 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 filter	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:

Ozone sample train has inline dryer.

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev002						
Site	e ID	CND125	Technician	Korey Devins		Site Visit Date	03/21/2021					
	DAS, se	nsor translators, and	peripheral equi	pment operatio	ns ai	<u>id maintenance</u>						
1		DAS instruments appe intained?	ear to be in good	l condition and								
2		the components of the backup, etc)	DAS operation	al? (printers,	✓							
3 Do the analyzer and sensor signal leads pass through lightning protection circuitry?						Temperature only						
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 ed?	ors, and shelter	properly	✓							
7	Does the	e instrument shelter h	ave a stable pov	ver source?	✓							
8	Is the in	strument shelter temp	perature contro	lled?								
9	Is the m	et tower stable and gr	ounded?			Stable	Ground	ded				
10	Is the sa	mple tower stable and	l grounded?									
11	Tower o	comments?										

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 Systems Dat	a Foi	rm				F-0 2	2058-	1500-	S7-rev	v 002
Site ID CND125			ician	Korey Devins S	ite Visit Date)3/21/202	1			
Documentation										
Does the site have the requ	ired in	strumer	nt and	<u>equipment manuals?</u>						
	Yes	No	N/A	L Contraction of the second seco		Yes	No	N/A		
Wind speed sensor			✓	Data logger						
Wind direction sensor			✓	Data logger				\checkmark		
Temperature sensor	\checkmark			Strip chart re	corder			\checkmark		
Relative humidity sensor			\checkmark	Computer		\checkmark				
Solar radiation sensor			\checkmark	Modem			\checkmark			
Surface wetness sensor				Printer				\checkmark		
Wind sensor translator				Zero air pumj	р		\checkmark			
Temperature translator				Filter flow put	mp	\checkmark				
Humidity sensor translator			\checkmark	Surge protect	or			\checkmark		
Solar radiation translator			\checkmark	UPS				\checkmark		
Tipping bucket rain gauge				Lightning pro	tection device			\checkmark		
Ozone analyzer	\checkmark			Shelter heater			\checkmark			
Filter pack flow controller	\checkmark			Shelter air coi	nditioner		\checkmark			
Filter pack MFC power supp	ly 🗆		\checkmark							
Does the site have the rec	uired a	ind mos	t recer	nt QC documents and reg	oort forms?					
	Pres	ent				Curr	ent			
Station Log		✓								
SSRF						\checkmark				

Station Log	\checkmark		
SSRF			
Site Ops Manual	\checkmark	May 2019	
HASP		May 2019	
Field Ops Manual		May 2019	
Calibration Reports	\checkmark		
Ozone z/s/p Control Charts			
Preventive maintenance schedule			

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:

Field Systems Data Form

CND125 Technician Korey Devins Site Visit Date 03/21/2021 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 Performed		Frequency	Compliant
Multipoint Calibrations	\checkmark	N/A	
Visual Inspections	\checkmark	N/A	\checkmark
Translator Zero/Span Tests (climatronics)	\checkmark	N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	✓	N/A	\checkmark
Test Surface Wetness Response	\checkmark	N/A	\checkmark

Frequency

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**

	riequency	CO
✓	Semiannually	
✓	Daily	
✓	As needed	
✓	Daily	
✓	As needed	
✓	Weekly	
✓	Every 2 weeks	
	N/A	
✓	Weekly	
\checkmark	Weekly	

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

Unknown ✓ \checkmark 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

F-02058-1500-S8-rev002

Field Systems Data Form F-02058-1500-S9-rev002 CND125 Technician Korey Devins Site Visit Date 03/21/2021 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed mornings 1 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? SSRF, logbook Are general observations being made and recorded? How? 4 \checkmark Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, logbook, call-in Are sample flow rates recorded? How? 6 \checkmark Are samples sent to the lab on a regular schedule in a timely 🗹 7 fashion? ✓ 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? **QC Check Performed** Compliant Frequency \checkmark Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks Filter Pack Inspection**

Sample Line Check for Dirt/Water Weekly 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:

✓ Weekly

✓ Weekly

Semiannually

Flow Rate Setting Checks

Visual Check of Flow Rate Rotometer

In-line Filter Inspection/Replacement

 \checkmark

 \checkmark

 \checkmark

Field Systems Data Form

CND125

F-02058-1500-S10-rev002

Site ID	
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Techni

Technician Korey Devins

Site Visit Date 03/21/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	BQ3MC12	07015
DAS	Campbell	CR3000	3816	000499
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	illegible	01235
Flow Rate	Apex	AXMC105LPMDPC	illegible	000638
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07122
Ozone	ThermoElectron Inc	49i A1NAA	1030244803	000692
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124693	000376
Sample Tower	Aluma Tower	A	none	03495
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	14035	06402
Zero air pump	Werther International	C 70/4	000814284	06868

Site Inventory by Site Visit

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
EVE4	419-Eric H	ebert-03/29/2021				
1	3/29/2021	DAS	Environmental Sys Corp	90642	8816	2527
2	3/29/2021	Elevation	Elevation	None	1	None
3	3/29/2021	Filter pack flow pump	Thomas	none	107CAB18	081000036784
4	3/29/2021	Flow Rate	Alicat	none	MC-10SLPM-D-PCV	150340
5	3/29/2021	Infrastructure	Infrastructure	none	none	none
6	3/29/2021	Modem	US Robotics	none	56k	unknown
7	3/29/2021	Sample Tower	Aluma Tower	none	В	illegible
8	3/29/2021	Siting Criteria	Siting Criteria	None	1	None
9	3/29/2021	Temperature2meter	Vaisala	none	E3-05XX-ACT-01	20218168

DAS Data Form

DAS Time Max Error: 0.33

Mfg	Serial	Number Site	. <u>]</u>	Fechnician	Site Visit Date	Parameter	Use Desc.
Environmental	Sys 2527	EV	E419	Eric Hebert	03/29/2021	DAS	Primary
Das Date:	3 /29/2021 08:44:00	Audit Date Audit Time	3 /29/2021 08:43:40	Mfg	Fluke	Parameter	
Das Day:	88	Audit Day	88	Serial Number	95740135	Tfer Desc.	DVM
Low Channel	l:	High Channe	el:	Tfer ID	01311		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.00	0.000	1 0.0002	Cert Date	2/11/202	1 CorrCoff	1.00000
				Mfg	Datel	Parameter	DAS
				Serial Number	15510194	Tfer Desc.	Source generator (D
				Tfer ID	01320		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/13/201	2 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	0 V	V	0.0000	
7	0.1000	0.0999	0.1000		V	0.0001	
7	0.3000	0.2997	0.2999		V	0.0002	
7	0.5000	0.4996	0.4995		V	-0.0001	
7	0.7000	0.6995	0.6993		V	-0.0002	
7	0.9000	0.8993	0.8992		V	-0.0001	
7	1.0000	0.9992	0.9990	0 V	V	-0.0002	

Flow Data Form

Mfg	Serial Nu	nber Tag 🖇	Site	Te	chnician	Site Visi	Site Visit Date Parameter		eter	Owner ID
Alicat	150340		EVE419	Er	ic Hebert	03/29/2021		Flow Ra	ate	none
					Mfg	BIOS		Pa	arameter Flo	w Rate
					Serial Number	131818		Ti	fer Desc. BIC	S 220-H
					Tfer ID	01417]		
					Slope		0.99756	Inte	rcept	-0.00058
					Cert Date	2	2/10/2021	l Cor	rCoff	0.99993
DAS 1:		DAS 2:			Cal Factor Z	ero		0.01	2	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	w M Dif	Cal Factor F	ull Scale		5.03	5	
2.28%	2.40%				Rotometer R	eading:		2.9	5	
Desc.	Test type	Input l/m	Input Corr	MfcDisp.	. OutputSignal	Output S	E Inpu	tUnit (DutputSignall	PctDifference
primary	pump off	0.000	0.000	0.02	0.000	0.07	1/	m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.06	1/	m	l/m	
primary	test pt 1	2.918	2.930	2.96	0.000	2.99	1/	m	l/m	2.05%
primary	test pt 2	2.917	2.920	2.96	0.000	2.99	1/	m	l/m	2.40%
primary	test pt 3	2.915	2.920	2.96	0.000	2.99	1/	m	l/m	2.40%
Sensor Com	ponent Leak Te	st		Conditio	on			Status	pass	
Sensor Com	ponent Tubing C	Condition		Conditio	Condition Good			Status	pass	
Sensor Com	ponent Filter Po	sition		Conditio	Condition Good			Status	pass	
Sensor Com	ponent Rotomet	er Conditior	n	Conditio	on Clean and dry			Status	pass	
Sensor Com	<mark>ponent</mark> Moisture	Present		Conditio	on See comments	S		Status	pass	
Sensor Component Filter Distance		Conditio	dition 5.0 cm			Status	pass			
Sensor Component Filter Depth			Conditio	tion 0.5 cm			Status pass			
	ponent Filter Az			Conditio	ndition 360 deg			Status pass		
Sensor Com	ponent System	Memo		Conditio	on			Status	pass	

2 Meter Temperature Data Form

0 1		D		20						
1 9	0		T	н.	01	r 1	01	n	^	Δ
Cal	U .				CI.					c

Mfg	Serial Number	Tag Site	Те	echnician	Site Visit Date	Parameter	Owner ID	
Vaisala	20218168	EVE419	E	ric Hebert	03/29/2021	Temperature2m	eter none	
				Mfg Serial Number Tfer ID	Extech H232734 01227	Parameter Tfer Desc.	r Temperature	
DAS 1:DAS 2:Abs Avg ErrAbs Max ErrAbs Avg ErrAbs Max Err			x Err	Slope Cert Date	1.0074 2/18/202		0.21666	
0.09	0.09							
UseDescription	Test type I	· · · ·	tTmpCoi	rrected OutputTm		0 0		
				25.95 0.000 Condition Moderately clean Condition Properly sited		26.04C 0.09 Status pass Status pass		
Sensor Component Blower			Condition N/A		Status pass			
Sensor Component System Memo				ion		Status pass		

Siting Criteria Form

Sensor Component Limited agriculture operations	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass
Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition 50 m	Status Fail
Sensor Component System Memo	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass

Infrastructure Data For

Site ID	EVE419	Technician Eric He	ebert Site Visit Date 03/29/2021
Shelter N	Aake	Shelter Model	Shelter Size
Ekto		8810	640 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	Installed	Status	pass
Sensor Component	Moisture Trap Type	Condition	Filter	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	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	Shelter walls	Condition	Poor	Status	Fail
Sensor Component	Excessive mold present	Condition	Good	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
Sensor Component	System Memo	Condition		Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Serial No. Hazard	
Flow Rate	EVE419	Eric Hebert	03/29/2021	Moisture Present	Alicat	4630		
Flow Rate $EVE419$ Eric Hebert $03/29/2021$ Moisture Present Alicat 4630 \Box \Box								
Temperature2meter	EVE419	Eric Hebert	03/29/2021	System Memo	Vaisala	4631		
Temperature and relativ	e humidity are b	eing measured using	g a combination	sensor which canno	t be submerged i	n a water bath for	r audits.	

Field Systems Comments

1 Parameter: SiteOpsProcComm

Gloves were not used when changing the filter.

2 Parameter: SiteOpsProcedures

The inline filter upstream of the flow controller has not been replaced since 2005.

3 Parameter: DocumentationCo

Electronic checklists within Dataview for the dry deposition filter procedures are being completed.

4 Parameter: SitingCriteriaCom

Small parking lot for park employees and fire fighting equipment is within 100 meters of the site.

5 Parameter: ShelterCleanNotes

The shelter is very clean, neat and well organized. The shelter floor and walls have excessive rot present.

6 Parameter: PollAnalyzerCom

The dry deposition flow controller was recently replaced by the site operator. It has not been calibrated onsite.

7 Parameter: MetSensorComme

The 10 meter temperature sensor has been removed and temperature is now being measured using a combination RH/temperature sensor mounted in a naturally aspirated shield at approximately 2 meters above the ground. The temperature measurement system was challenged with a one point comparison at ambient conditions using an RTD.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID EVE419	Technician Eric Hebert	Site Visit Date 03/29	9/2021
Site Sponsor (agency)	NPS/EPA	USGS Map	Long Pine Key
Operating Group	NPS	Map Scale	
AQS #		Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer		QAPP Latitude	
Deposition Measurement	dry, wet, Hg, IMPROVE	QAPP Longitude	
Land Use	wetlands	QAPP Elevation Meters	
Terrain	flat	QAPP Declination	
Conforms to MLM	Yes	QAPP Declination Date	
Site Telephone	(305) 242-7838	Audit Latitude	25.391223
Site Address 1	Everglades National Park	Audit Longitude	-80.680819
Site Address 2	40001 State Road 9336	Audit Elevation	1
County	Dade	Audit Declination	-5.1
City, State	Homestead, FL	Present	
Zip Code	33034	Fire Extinguisher 🔽	Inspected July 2017
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 Steps	
Shelter Working Room ☑	Make Ekto M	odel 8810	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is very clean, near present.	and well organized. The shelte	er floor and walls have excessive rot
Site OK	Notes		
	the Florida Turnpike (Rat 821) south to th		
Check	intersection of East Palm Drive (Rat 933 k-in at the guard station. Take the Main F ue to the research facility. The site is on	Park Road to Long Pine Key Roa	

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S3-rev002					
Site	e ID	EVE419	Technician	Eric Hebert		Site Visit Date 0	3/29/2021			
1		d speed and direction a fluenced by obstructio) as to avoid		N/A				
2	(i.e. win horizon	d sensors mounted so a d sensors should be mo cally extended boom >2 to the prevailing wind	ounted atop the 2x the max dia	e tower or on a		N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields pe diated heat sources su		positionea to	✓					
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped gwater should be avoid	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor pl	lumb?		✓	N/A				
7	Is it site	d to avoid shading, or	any artificial o	r reflected light?	✓	N/A				
8	Is the ra	in gauge plumb?		l	✓	N/A				
9	Is it site towers,	d to avoid sheltering efetc?	ffects from bui	ldings, trees,		N/A				
10	Is the su facing n	rface wetness sensor s orth?	ited with the g	rid surface	✓	N/A				
11	Is it inc	lined approximately 3	0 degrees?			N/A				

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 removed and temperature is now being measured using a combination RH/temperature sensor mounted in a naturally aspirated shield at approximately 2 meters above the ground. The temperature measurement system was challenged with a one point comparison at ambient conditions using an RTD.

Field Systems Data Form

F-02058-1500-S4-rev002

Site	e ID	EVE419	Technician	Eric Hebert		Site Visit Date	03/29/2021	
1		e meterological sensor n, and well maintained		intact, in good	✓			
2	Are all t reportin	he meteorological sens g data?	ors operationa	l online, and	✓			
3	Are the s	shields for the tempera	ture and RH s	ensors clean?	✓			
4	Are the	aspirated motors work	ing?		✓	N/A		
5	Is the sol scratche	lar radiation sensor's l s?	ens clean and f	ree of	✓	N/A		
6	Is the su	rface wetness sensor g	rid clean and u	ndamaged?		N/A		
7		sensor signal and powe		, in good	✓	N/A		
8		sensor signal and powe elements and well ma		tions protected	✓	N/A		

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-02058-1500-85-rev002
Sit	e ID	EVE419	Technician	Eric Hebert		Site Visit Date 03/29/2021
	<u>Siting C</u>	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		ample inlets have at le cted airflow?	east a 270 degre	e arc of	✓	
2	2 Are the sample inlets 3 - 15 meters above the ground?					
3		sample inlets > 1 mete neters 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		nalyzers and equipme on and well maintained		in good	✓	
2	Are the reportin	analyzers and moniton ng data?	rs operational, o	on-line, and	✓	
3	Describ	e ozone sample tube.				N/A
4	Describ	e dry dep sample tube.				3/8 teflon by 9 meters
5		ine filters used in the o location)	zone sample lin	ne? (if yes		N/A
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moistur	e, and	✓	Moisture in tubing only
7	Is the ze	ero air supply desiccan	t unsaturated?			N/A
8	Are the	re moisture traps in th	e sample lines?		✓	Filter moisture trap installed
9	Is there clean?	a rotometer in the dry	deposition filte	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:

The dry deposition flow controller was recently replaced by the site operator. It has not been calibrated onsite.

Fi	eld Sy	stems Data Fo	orm				F-	02058-15	500-S6-rev002
Site	e ID	EVE419	Technician	Eric Hebert		Site Visi	it Date 03/29/2	021]
	<u>DAS, se</u>	nsor translators, and p	eripheral equij	pment operation	<u>is ar</u>	<u>ıd maintena</u>	nce		
1		DAS instruments appea intained?	ar to be in good	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	only		
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 translator d?	rs, and shelter j	properly					
7	Does the	e instrument shelter ha	ive a stable pow	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?							

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 Systems Data Fo	orm		F-02)58-1500-S7-rev002
Site ID EVE419	Technician Eric Heber	t Site Visit Date 03	3/29/2021	
Documentation				
Does the site have the required	instrument and equipment	<u>t manuals?</u>		
Wind direction sensorWind direction sensorTemperature sensorRelative humidity sensorSolar radiation sensorSurface wetness sensorWind sensor translatorTemperature translatorHumidity sensor translatorSolar radiation translator		Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS	Yes ✓ □ □ ✓ □ □ □ □ □ □ □ □ □ □ □ □ □	No N/A Image: State of the st
Tipping bucket rain gauge Ozone analyzer Filter pack flow controller Filter pack MFC power supply Does the site have the required		Lightning protection device Shelter heater Shelter air conditioner <u>uments and report forms?</u>		
Pr Station Log SSRF Site Ops Manual HASP Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedule	Image: Second state st		Curren	t
1 Is the station log properly cor	mpleted during every site v	visit? 🔽 Dataview		
2 Are the Site Status Report Fo current?	orms being completed and			
3 Are the chain-of-custody form sample transfer to and from l		ent 🔽		
4 Are ozone z/s/p control charts current?	s properly completed and	□ N/A		
Provide any additional explanation natural or man-made, that may af	fect the monitoring param	eters:	ns listed al	oove, or any other features,
Floctronic checklists within Dataviow				

Electronic checklists within Dataview for the dry deposition filter procedures are being completed.

Field Systems Data Form

F-02058-1500-S8-rev002

Site	e ID	EVE419	Technician	Eric Hebert		Site Visit Date 03/29/2021		
	Site op	eration procedures						
1		e site operator attended? If yes, when and who		TNET training		Γrained by ARS		
2		e backup operator atte g course? If yes, when						
3	Is the si schedul	te visited regularly on e?	the required Tu	iesday				
4		standard CASTNET o d by the site operator?	• •	cedures being				
5		te operator(s) knowled iired site activities? (in						
	Are regular operational QA/QC checks performed on meteorological instruments?							
QC	Check F	Performed		Frequency		Compliant		

QU Check Performed		Frequency	Com
Multipoint Calibrations	\checkmark	N/A	\checkmark
Visual Inspections	\checkmark	N/A	\checkmark
Translator Zero/Span Tests (climatronics)		N/A	\checkmark
Manual Rain Gauge Test	\checkmark	N/A	\checkmark
Confirm Reasonableness of Current Values	\checkmark	N/A	\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	
1 Do multi-point calibration gases go through the 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?

 N/A

 N/A

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 inline filter upstream of the flow controller has not been replaced since 2005.

Field Systems Data Form F-02058-1500-S9-rev002 EVE419 Technician Eric Hebert Site Visit Date 03/29/2021 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? 🗹 Filter changed morinings 1 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? ✓ 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? 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? **QC Check Performed** Compliant Frequency \checkmark Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks Filter Pack Inspection** \checkmark ✓ Weekly **Flow Rate Setting Checks** \checkmark ✓ Weekly Visual Check of Flow Rate Rotometer **In-line Filter Inspection/Replacement** Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or 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:

Gloves were not used when changing the filter.

Field Systems Data Form				F-02058-1500-S10-rev002				
Site ID	EVE419	Technician	Eric Hebert	Site Visit Date	03/29/2021			

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2527	90642
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	081000036784	none
Flow Rate	Alicat	MC-10SLPM-D-PCV	150340	none
Infrastructure	Infrastructure	none	none	none
Modem	US Robotics	56k	unknown	none
Sample Tower	Aluma Tower	В	illegible	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	Vaisala	E3-05XX-ACT-01	20218168	none

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled: 3/1

3/10/2021 16:27:28

SiteVisitDate Site Technician

02/23/2021 ALC188 Martin Valvur

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	0.54	c	Fail
2	Temperature max error	Р	4	0.5	3	0.63	с	Fail
3	Ozone Slope	Р	0	1.1	4	0.98450	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.30108	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.3	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.29	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.34	ppb	Р
9	Flow Rate average % difference	Р	10	5	4	0.89	%	Р
10	Flow Rate max % difference	Р	10	5	4	2.00	%	Р
11	DAS Voltage average error	Р	7	0.003	84	0.0002	V	Р
12	Shelter Temperature average error	Р	5	2	15	1.33	с	Р
13	Shelter Temperature max error	Р	5	2	15	1.43	c	Р

Technician

02/23/2021 ALC188

Martin Valvur

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	System Memo	CommentCode: 74
					There was no oscillation of the actual flow rate
	detected by the	e audit device, only the	signal from the flow contro	oller.	

2 Parameter: Temperature SensorComponent: System Memo

CommentCode: 190

This sensor is not mounted as stated in the QAPP with respect to orientation.

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is well located with respect to CASTNET siting criteria, however there is a small campground 0.5 km to the northwest which may be a source of smoke.

2 Parameter: ShelterCleanNotes

The site is clean and neat.

3 Parameter: PollAnalyzerCom

There is a moisture trap in both the flow and ozone sample lines.

EEMS Spot Report

Data Compiled: 3/28/2021 18:46:11

SiteVisitDate Site Technician

03/01/2021 BBE401 Martin Valvur

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	0.31	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.33	с	Р
3	Ozone Slope	Р	0	1.1	4	1.01419	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.18086	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.7	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.39	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.36	ppb	Р
9	Flow Rate average % difference	Р	10	5	4	0.94	%	Р
10	Flow Rate max % difference	Р	10	5	4	1.06	%	Р
11	DAS Voltage average error	Р	10	0.003	42	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	18	0.13	с	Р
13	Shelter Temperature max error	Р	5	2	18	0.19	c	Р

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample line is leak tested every two weeks when the inlet filter is replaced.

2 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized.

Data Compiled: 4/11/2021 11:57:05

SiteVisitDateSiteTechnician03/18/2021BEL116Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00006	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.45332	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 Absolute Difference g1	Р	7	3	1	0.49	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	0.40	ppb	Р

Data Compiled: 4/

: 4/11/2021 11:40:29

SiteVisitDate Site Technician

03/16/2021 BWR139 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	18	0.22	c	Р
2	Temperature max error	Р	4	0.5	18	0.34	с	Р
3	Ozone Slope	Р	0	1.1	4	1.00786	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.22991	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.5	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.26	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.36	ppb	Р
9	Flow Rate average % difference	Р	10	5	8	1.1	%	Р
10	Flow Rate max % difference	Р	10	5	8	1.32	%	Р
11	DAS Voltage average error	Р	7	0.003	84	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	21	0.13	с	Р
13	Shelter Temperature max error	Р	5	2	21	0.17	c	Р

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train is leak checked every two weeks following the inlet filter change.

2 Parameter: SitingCriteriaCom

Very light agriculture activities near site, not harvested, just to provide food for wildlife.

3 Parameter: ShelterCleanNotes

The shelter has been repaired since the previous site audit visit.

4 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

Data Compiled: 4/1

d: 4/11/2021 12:43:40

SiteVisitDate Site Technician

03/21/2021 CND125 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	15	0.15	с	Р
2	Temperature max error	Р	4	0.5	15	0.41	с	Р
3	Ozone Slope	Р	0	1.1	4	1.01456	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.60771	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.1	%	Р
7	Ozone Absolute Difference gl	Р	7	3	1	-0.56	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.38	ppb	Р
9	Flow Rate average % difference	Р	10	5	2	5.06	%	Fail
10	Flow Rate max % difference	Р	10	5	2	5.06	%	Fail
11	DAS Voltage average error	Р	7	0.003	84	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	21	0.34	с	Р
13	Shelter Temperature max error	Р	5	2	21	0.37	с	Р

03/21/2021 CND125

Technician

Korey Devins

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: SitingCriteriaCom

The land owner maintains a pine tree forest on the property within 50 meters of the site. The trees were planted just before the site was installed in 1990 and may or may not be harvested in the future.

2 Parameter: ShelterCleanNotes

The shelter is well clean and well organized. There are signs of insect infestation on floor.

3 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

4 Parameter: MetOpMaintCom

The temperature sensor is mounted on the sample tower in a naturally aspirated shield.

Data Compiled: 4/11/2021 13:33:44

SiteVisitDateSiteTechnician03/29/2021EVE419Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	1	0.09	с	Р
2	Temperature2meter max error	Р	5	0.5	1	0.09	с	Р
3	Flow Rate average % difference	Р	10	5	2	2.28	%	Р
4	Flow Rate max % difference	Р	10	5	2	2.4	%	Р
5	DAS Voltage average error	Р	7	0.003	49	0.0001	V	Р

Parameter: Flow Rate

03/29/2021 EVE419

1

2

Technician Eric Hebert

CommentCode: 72

Parameter: Temperature2meter SensorComponent: System Memo CommentCode: 217

Temperature and relative humidity are being measured using a combination sensor which cannot be submerged in a water bath for audits.

SensorComponent: Moisture Present

Field Systems Comments

Field Performance Comments

1 Parameter: SiteOpsProcComm

Gloves were not used when changing the filter.

2 **Parameter:** SiteOpsProcedures

The inline filter upstream of the flow controller has not been replaced since 2005.

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

3 Parameter: DocumentationCo

Electronic checklists within Dataview for the dry deposition filter procedures are being completed.

4 Parameter: SitingCriteriaCom

Small parking lot for park employees and fire fighting equipment is within 100 meters of the site.

5 Parameter: ShelterCleanNotes

The shelter is very clean, neat and well organized. The shelter floor and walls have excessive rot present.

6 Parameter: MetSensorComme

The 10 meter temperature sensor has been removed and temperature is now being measured using a combination RH/temperature sensor mounted in a naturally aspirated shield at approximately 2 meters above the ground. The temperature measurement system was challenged with a one point comparison at ambient conditions using an RTD.

7 Parameter: PollAnalyzerCom

The dry deposition flow controller was recently replaced by the site operator. It has not been calibrated onsite.

Data Compiled: 3/21/2021 14:17:03

SiteVisitDateSiteTechnician03/05/2021IRL141Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99183	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.29117	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.7	%	Р
5	Ozone Absolute Difference g2	Р	7	1.5	1	-0.15	ppb	Р

Data Compiled: 3/21/2021 13:54:40

SiteVisitDate Site Technician 03/04/2021 SUM156 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01109	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.55187	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99991	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.1	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.27	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-1.02	ppb	Р

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

Ozone Data Form

Mfg	S	erial Numbe	r Tag Site		Тес	hnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectro	on Inc	1030244795	BEL11	6	Ko	rey Devins	03/18/2021	Ozone		000684
Slope: Intercept CorrCoff:	0.		e: rcept ·Coff:	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			ozone Ozone primary stan
		x % Dif A	AS 2: Avg %Diff A	A Max % Dif	f	Slope Cert Date	1.0003		rcept cCoff	0.30550
0.0%		0.0%								
UseDescripti primary primary	ion (ConcGroup 1 2	Tfer Raw 0.39 14.98	Tfer Co 0.08 14.60		Site 0.57 15.00	Site Unit ppb ppb	RelPer	Dif	AbsDif 0.49 0.4
primary primary		3 4	35.45 66.04	34.96 65.40		35.47 65.79	ppb ppb		1.45 0.59	
primary		5	109.47	108.61		109.10	ppb	~	0.45	
	-	t Audit Pressu				n 751.6 mmHg		Status		
	-		unobstructed r			True		Status		
	-		e >10m or belov			n True		Status		
Sensor Con	iponent	t ADT <100 v	ehicles further t	han 20 Con	ditio	n True		Status	pass	
Sensor Com	ponent	ADT >100 v	ehicles further t	han 50 Con	ditio	n True		Status	pass	
Sensor Con	iponent	t Sample Trai	n	Con	ditio	n Good		Status	pass	
Sensor Com	iponen	t Inlet Filter C	ondition	Con	ditio	n Clean		Status	pass	
Sensor Com	iponen	t Offset		Con	ditio	n -0.6		Status	pass	
Sensor Com	iponen	t Span		Con	ditio	n 1.017		Status	pass	
Sensor Com	iponen	t Zero Voltage	e	Con	ditio	n N/A		Status	pass	
Sensor Com	iponent	Fullscale Vo	Itage	Con	ditio	n N/A		Status	pass	
Sensor Com	iponen	t Cell A Freq.		Con	ditio	n 104.1 kHz		Status	pass	
Sensor Com	iponent	t Cell A Noise	•	Con	ditio	n 0.5 ppb		Status	pass	
Sensor Com	iponent	Cell A Flow		Con	ditio	n 0.60 lpm		Status	pass	
Sensor Com	iponent	t Cell A Press	sure	Con	ditio	n 710.9 mmHg		Status	pass	
Sensor Com	iponent	t Cell A Tmp.		Con	ditio	n 36.1 C		Status	pass	
Sensor Com	iponen	t Cell B Freq.		Con	ditio	on 94.5 kHz		Status	pass	
Sensor Com	iponent	t Cell B Noise	;	Con	ditio	on 0.6 ppb		Status	pass	
Sensor Com	iponent	t Cell B Flow		Con	ditio	n 0.55 lpm		Status	pass	
Sensor Com	iponent	t Cell B Press	sure	Con	ditio	n 711.8 mmHg		Status	pass	
Sensor Com	ponen	t System Men	no	Con	ditio	on		Status	pass	

Ozone Data Form

Mfg	Serial Number	r Tag Site	1	ſechnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241782	IRL141		Eric Hebert	03/05/2021	Ozone	000609
Intercept	0.99183 Slope 0.29117 Inter 0.99997 Corr	cept 0	0.00000 0.00000 0.00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114		ter ozone sc. Ozone primary stan
DAS 1: A Avg % Diff: A N 0.0%		Avg %Diff A	Max % Dif	Slope Cert Date	1.0003		0.30550
UseDescriptionprimaryprimaryprimaryprimaryprimaryprimarySensor Compone	ConcGroup 1 2 3 4 5 nt Audit Pressu	Tfer Raw 0.31 16.37 37.57 69.78 110.99	Tfer Corr 0.00 15.97 37.05 69.08 110.06 Condi	Site 0.77 15.82 36.71 68.82 109.60 760.6 mmHg	Site Unit ppb ppb ppb ppb ppb	RelPerDif -0.92 -0.38 -0.42 Status pass	3
Sensor Compone Sensor Compone Sensor Compone Sensor Compone	nt Tree dewline nt ADT <100 ve	>10m or below	inlet Condi an 20 Condi	ition True ition True ition True ition True		StatuspassStatuspassStatuspassStatuspass	
Sensor Compone Sensor Compone Sensor Compone	nt Inlet Filter Co		Condi	ition Good ition Clean ition -0.60		Status pass Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	nt Zero Voltage		Condi	ition 1.013 ition N/A ition N/A		Status pass Status pass Status pass	
Sensor Compone Sensor Compone	nt Cell A Freq. nt Cell A Noise		Condi	ition 92.4 kHz		Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	nt Cell A Pressi	ure	Condi	ition 0.74 lpm ition 720.0 mmHg ition 33.4 C		Status pass Status pass Status pass	
Sensor Compone Sensor Compone	nt Cell B Freq. nt Cell B Noise		Condi	ition 99.8 kHz		Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	nt Cell B Press			ition 0.74 lpm ition 719.4 mmHg		Status pass Status pass Status pass	

Ozone Data Form

Mfg	Serial Numbe	er Tag Site	Т	echnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Ir	c 1009241791	SUM156	i E	Fric Hebert	03/04/2021	Ozone	000619
Slope: Intercept CorrCoff: DAS 1: A Avg % Diff: A	0.99991 Corr	rcept C rCoff: C	0.00000 0.00000 0.00000 Max % Dif	Mfg Serial Number Tfer ID Slope	ThermoElectron 1180030022 01114 1.000	Tfer D	
0.0%	0.0%			Cert Date	1/20/20	21 CorrCof	f 1.00000
UseDescription primary primary primary primary primary	ConcGroup 1 2 3 4 5	Tfer Raw 0.41 17.37 36.99 68.93 105.37	Tfer Corr 0.10 16.96 36.47 68.24 104.47	Site 0.37 15.94 35.99 68.29 105.40	Site Unit ppb ppb ppb ppb ppb	RelPerDif -1.3 0.0	07
Sensor Compo	nent Audit Press	ure	Condit	ion 761.0 mmHg		Status pass	S
Sensor Compo	nent 26.6 degree	unobstructed ru	le Condit	ion True		Status pass	s
Sensor Compo	nent Tree dewline	e >10m or below	inlet Condit	ion True		Status pass	s
Sensor Compo	nent ADT <100 v	ehicles further th	an 20 Condit	ion True		Status pass	s
-	nent ADT >100 v					Status Fail	
Sensor Compo	nent Sample Trai	in	Condit	ion Good		Status pass	s
Sensor Compo	nent Inlet Filter C	condition	Condit	ion Clean		Status pass	S
Sensor Compo	nent Offset		Condit	ion 0.000		Status pass	s
Sensor Compo	<mark>nent</mark> Span		Condit	ion 1.048		Status pass	s
Sensor Compo	nent Zero Voltago	e	Condit	ion N/A		Status pass	s
Sensor Compo	nent Fullscale Vo	ltage	Condit	ion N/A		Status pass	S
Sensor Compo	nent Cell A Freq.		Condit	ion 93.3 kHz		Status pass	s
Sensor Compo	nent Cell A Noise	;	Condit	ion 0.9 ppb		Status pass	s
Sensor Compo	nent Cell A Flow		Condit	ion 0.71 lpm		Status pass	s
Sensor Compo	nent Cell A Press	sure	Condit	ion 725.5 mmHg		Status pass	s
Sensor Compo	nent Cell A Tmp.		Condit	ion 37.1 C		Status pass	s
Sensor Compo	nent Cell B Freq.		Condit	ion 90.8 kHz		Status pass	S
Sensor Compo	nent Cell B Noise	;	Condit	ion 0.9 ppb		Status pass	S
Sensor Compo	nent Cell B Flow		Condit	ion 0.72 lpm		Status pass	s
Sensor Compo	nent Cell B Press	sure	Condit	ion 725.8 mmHg		Status pass	s
Sensor Compo	nent System Mer	no	Condit	ion		Status pass	s