2021 – 3rd 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

Prepared for:

U. S. Environmental Protection Agency

Prepared by:

environmental engineering
& measurement services, inc.

4577E NW 6th St Ext.
Gainesville, FL 32609

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List of Acronyms and Abbreviations

% 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
ME DEP	Maine Department of Environmental Protection
MD DNR	Maryland Department of Natural Resources
MLM	Multilayer Model
MN PCA	Minnesota Pollution Control Agency
m/s	meters per second
mv	millivolt
NESCAUM	Northeast States for Coordinated Air Use Management
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
OH EPA	Ohio Environmental Protection Agency
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.

Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Precipitation	Response	10 manual tips	1 DAS count per tip
Precipitation	Accuracy	2 introductions of known amounts of water	≤ ±10.0% of input amount
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	≤ ±10.0% RH
Solar Radiation	Accuracy	Compared to WRR traceable standard	≤ ±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)	≤ ± 0.5° C
Temperature Difference	Accuracy	Comparison to station temperature sensor	≤ ± 0.50° C

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Shelter Temperature	Accuracy	Comparison to station temperature sensor	≤ ± 2.0° C
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	≤ ±5° from degrees true
Wind Direction	Linearity	Eight cardinal points on test fixture	≤ ±5° 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	≤ ±0.5 mps below 5.0 mps input; ≤ ±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	≤ ± 5.0% of designated rate
Ozone	Slope	Linear regression of multi-point test gas concentration as measured with a certified transfer standard	0.9000 ≤ m ≤ 1.1000
Ozone	Intercept		-5.0 ppb ≤ b ≤ 5.0 ppb
Ozone	Correlation Coefficient		0.9950 ≤ r
Ozone	Percent Difference	Comparison with Level 2 standard concentration	≤ ±15.1% of test gas concentration and ≤ ± 0.0015 ppm actual difference
DAS	Accuracy	Comparison with certified standard	≤ ± 0.003 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 Third Quarter 2021

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

Table 2. CASTNET Site Audit Visits

Site ID	Sponsor	Date	FSA	O3 PE	NOy	FLOW
WFM105	EPA	7/1/2021	**1**			**1**
HWF187	EPA	7/8/2021		**1**	**1**	
UND002	EPA	7/13/2021	**1**			**1**
PIN414	NPS	7/14/2021	**1**	**1**		**1**
YOS404	NPS	7/15/2021	**1**	**1**		**1**
CNT169	EPA	7/27/2021	**1**	**1**		**1**
NIC001	EPA	7/27/2021	**1**			**1**
CRM435	NPS	8/3/2021		**1**		
GLR468	NPS	8/5/2021	**1**	**1**		**1**
UMA009	EPA	8/9/2021		**1**		
VIN140	EPA	8/9/2021	**1**	**1**		**1**
NPT006	EPA	8/10/2021		**1**		
MAC426	NPS	8/11/2021	**1**	**1**	**1**	**1**

Site ID	Sponsor	Date	FSA	O3 PE	NOy	FLOW
UVL124	EPA	8/11/2021		**1**		
CDZ171	EPA	8/12/2021	**1**	**1**		**1**
CKT136	EPA	8/13/2021	**1**	**1**		**1**
HOX148	EPA	8/16/2021		**1**		
ROM206	EPA	8/17/2021	**1**	**1**	**1**	**1**
ANA115	EPA	8/18/2021		**1**		
PRK134	EPA	8/22/2021	**1**	**1**		**1**
GRB411	NPS	8/23/2021		**1**		
VOY413	NPS	8/25/2021	**1**	**1**		**1**
SND152	EPA	8/29/2021		**1**		
ACA416	NPS	9/27/2021	**1**			**1**
PET427	NPS	9/28/2021		**1**		
ASH135	EPA	9/29/2021		**1**		
GRC474	NPS	9/29/2021		**1**		
WST109	EPA	9/30/2021		**1**		

1.4 Audit Results

The observations and results of the systems, performance, and Ozone PE 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*.

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: https://java.epa.gov/castnet/reportPage.do

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 and their operation. 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 Third Quarter 2021

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

Table 3. NADP Site Survey Visits

Site ID	Sponsor	Date	NTN	MDN	AMoN
NY98	USGS	7/1/2021			**1**
OK29	USGS	7/1/2021	**1**		
NY20	NYSERDA	7/8/2021	**1**	**1**	**1**
VT99	USGS / EPA/ University of VT	7/13/2021	**1**	**1**	**1**
CA99	NPS	7/15/2021	**1**		**1**
NY06	NYDEC	7/20/2021	**1**	**1**	
NY99	USGS	7/20/2021	**1**		
NY94	NYSERDA	7/27/2021	**1**		**1**
WY95	EPA	7/27/2021			**1**
ID03	NPS	8/3/2021			**1**
MT05	NPS	8/4/2021	**1**		
IN22	LADCO	8/9/2021			**1**
WA04	EPA	8/9/2021			**1**
ID07	EPA	8/10/2021			**1**
MI51	EPA	8/11/2021			**1**
MT07	USGS	8/11/2021	**1**		
KY98	EPA	8/12/2021			**1**
KY29	EPA	8/13/2021			**1**
MI95	EPA	8/16/2021			**1**
CO88	NPS	8/17/2021			**1**
MI52	EPA	8/18/2021			**1**
OH52	OH EPA	8/19/2021		**1**	
WI35	EPA	8/22/2021			**1**

Site ID	Sponsor	Date	NTN	MDN	AMoN
MN16	USDA / USFS	8/23/2021	**1**	**1**	
MN28	MN PCA	8/23/2021	**1**		
MN18	EPA / MN PCA	8/24/2021	**1**	**1**	**1**
AL99	EPA	8/29/2021	**1**		**1**
NY08	Cornell University	9/8/2021	**1**		
MA98	Harvard University	9/16/2021	**1**		
MA22	Boston University	9/17/2021	**1**		
MA08	NESCAUM	9/20/2021	**1**		
NY68	USGS	9/21/2021	**1**	**1**	
CO97	USDA / USFS	9/21/2021	**1**	**1**	
ME00	ME DEP	9/28/2021	**1**	**1**	
AZ97	NPS	9/28/2021	**1**		
ME93	EPA	9/29/2021			**1**
NH02	EPA	9/30/2021			**1**

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
WFM105-Korey Devins-07/01/2021					
1 7/1/2021	DAS	Campbell	000803	CR850	23270
2 7/1/2021	elevation	Elevation	none	none	none
3 7/1/2021	Filter pack flow pump	Permotec	none	BL30EB	Illegible
4 7/1/2021	Flow Rate	Apex	000651	AXMC105LPMDPCV	illegible
5 7/1/2021	Infrastructure	Infrastructure	none	none	none
6 7/1/2021	Modem	Sierra wireless	06983	unknown	unknown
7 7/1/2021	siting criteria	Siting Criteria	none	none	None
8 7/1/2021	Temperature	RM Young	04683	41342VC	6697

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	23270	WFM105	Korey Devins	07/01/2021	DAS	Primary

Das Date:	7 /1 /2021	**Audit Date**	7 /1 /2021
Das Time:	07:27:00	**Audit Time**	07:27:00
Das Day:	182	**Audit Day**	182

Low Channel:		**High Channel:**	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	WFM105	Korey Devins	07/01/2021	Flow Rate	000651

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
0.30%	0.33%			**Cal Factor Full Scale**	0
				Rotometer Reading:	3.2

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	test pt 1	2.985	2.990	2.78	0.000	3.00	l/m	l/m	0.33%
primary	test pt 2	2.985	2.990	2.78	0.000	3.00	l/m	l/m	0.33%
primary	test pt 3	2.989	3.000	2.78	0.000	3.01	l/m	l/m	0.23%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	2.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	255 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	6697	WFM105	Korey Devins	07/01/2021	Temperature	04683

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.08	0.12		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.24	0.02	0.000	0.1	C	0.12
primary	Temp Mid Range	25.76	25.35	0.000	25.4	C	0.05
primary	Temp High Range	45.48	44.93	0.000	45.0	C	0.06

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	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**	75 m	**Status**	Fail
Sensor Component	Secondary road >100 vehicles/da	**Condition**		**Status**	pass
Sensor Component	Small parking lot	**Condition**	75 m	**Status**	Fail
Sensor Component	System Memo	**Condition**		**Status**	pass
Sensor Component	Large parking lot	**Condition**		**Status**	pass

Infrastructure Data For

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

Shelter Make	Shelter Model	Shelter Size

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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	Filter	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
Sensor Component	Shelter Roof	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
Sensor Component	Shelter walls	Condition	N/A	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	WFM105	Korey Devins	07/01/2021	Moisture Present	Apex	3810	☐	☐

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

Field Systems Comments

1 **Parameter:** DasComments

Single tower, with filter pack at 10 meters and temperature at 9 meters.

2 **Parameter:** SitingCriteriaCom

The site is located at the Atmospheric Science Research Center (ASRC) operated by the NY University (SUNY) system.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	WFM105	**Technician**	Korey Devins	**Site Visit Date**	07/01/2021

Site Sponsor (agency)	EPA	**USGS Map**	
Operating Group	SUNY	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type			
Air Pollutant Analyzer		**QAPP Latitude**	
Deposition Measurement	dry, wet	**QAPP Longitude**	
Land Use	Woodland - mixed	**QAPP Elevation Meters**	
Terrain	Complex	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	44.39322
Site Address 1		**Audit Longitude**	-73.85874
Site Address 2		**Audit Elevation**	608
County		**Audit Declination**	
City, State	Wilmington, NY		
Zip Code	12997	**Fire Extinguisher** (Present) ☑	
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** **Model** **Shelter Size**

Shelter Clean ☐ **Notes** Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

Site OK ☑ **Notes**

Driving Directions

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 Teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	N/A
8	Are there moisture traps in the sample lines?	☑	inline filter
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	

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-S6-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☐	N/A

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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:

Single tower, with filter pack at 10 meters and temperature at 9 meters.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☐	☑
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☐		☐
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
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?	☑	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-S8-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained onsite by AMEC personnel
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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	☑
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 complete sample train including all filters?	☑	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	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-S9-rev002

Site ID	WFM105	Technician	Korey Devins	Site Visit Date	07/01/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☑	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☑	Weekly	☑
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
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:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID WFM105 **Technician** Korey Devins **Site Visit Date** 07/01/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	23270	000803
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	Illegible	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000651
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	unknown	unknown	06983
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342VC	6697	04683

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HWF187-Korey Devins-07/08/2021						
1	7/8/2021	DAS	Campbell	000356	CR3000	2134
2	7/8/2021	Ozone	ThermoElectron Inc	000731	49i A1NAA	1105347309
3	7/8/2021	Ozone Standard	ThermoElectron Inc	000450	49i A3NAA	CM08200026
4	7/8/2021	Zero air pump	Werther International	06931	C 70/4	000836212

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347309	HWF187	Korey Devins	07/08/2021	Ozone	000731

Slope:	0.95611	**Slope:**	0.00000
Intercept	-0.22108	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.38	0.07	-0.19	ppb		-0.26
primary	2	14.66	14.28	13.43	ppb		-0.85
primary	3	35.30	34.81	33.00	ppb	-5.34	
primary	4	68.07	67.42	64.44	ppb	-4.52	
primary	5	112.91	112.04	106.80	ppb	-4.79	

Sensor Component	Condition	Status
Audit Pressure	717.5 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	290 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	1.075	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	97.4 kHz	pass
Cell A Noise	0.9 ppb	pass
Cell A Flow	0.72 lpm	pass
Cell A Pressure	701.5 mmHg	pass
Cell A Tmp.	37.6 C	pass
Cell B Freq.	95.8 kHz	pass
Cell B Noise	0.8 ppb	pass
Cell B Flow	0.65 lpm	pass
Cell B Pressure	702.1 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
UND002-Korey Devins-07/13/2021						
1	7/13/2021	DAS	Campbell	000802	CR850	23269
2	7/13/2021	elevation	Elevation	none	none	none
3	7/13/2021	Filter pack flow pump	Permotec	none	BL30EB	Illegible
4	7/13/2021	Flow Rate	Apex	000528	AXMC105LPMDPCV	48097
5	7/13/2021	Infrastructure	Infrastructure	none	none	none
6	7/13/2021	Modem	Sierra wireless	06982	unknown	unknown
7	7/13/2021	Sample Tower	Aluma Tower	000778	B	AT-212125X77
8	7/13/2021	siting criteria	Siting Criteria	none	none	None
9	7/13/2021	Temperature	RM Young	04688	41342	6702

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	23269	UND002	Korey Devins	07/13/2021	DAS	Primary

Das Date: 7 /13/2021
Das Time: 09:55:00
Das Day: 194

Audit Date 7 /13/2021
Audit Time 09:55:00
Audit Day 194

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	48097	UND002	Korey Devins	07/13/2021	Flow Rate	000528

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
1.13%	1.32%			**Cal Factor Full Scale**	0
				Rotometer Reading:	3

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	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	0.00	0.000	-0.10	l/m	l/m	
primary	test pt 1	2.945	2.950	2.91	0.000	2.99	l/m	l/m	1.32%
primary	test pt 2	2.954	2.960	2.90	0.000	2.99	l/m	l/m	1.08%
primary	test pt 3	2.948	2.960	2.91	0.000	2.99	l/m	l/m	0.98%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	165 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	6702	UND002	Korey Devins	07/13/2021	Temperature	04688

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.11	0.14		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.29	0.07	0.000	0.2	C	0.14
primary	Temp Mid Range	25.39	24.99	0.000	25.1	C	0.14
primary	Temp High Range	45.48	44.93	0.000	44.9	C	-0.05

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Siting Criteria Form

Sensor Component		Condition		Status	
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	32 m	Status	Fail
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	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

Shelter Make	Shelter Model	Shelter Size

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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	Filter	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
Sensor Component	Shelter Roof	Condition	N/A	Status	\
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
Sensor Component	Shelter walls	Condition	N/A	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	UND002	Korey Devins	07/13/2021	Moisture Present	Apex	3351	☐	☐

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

Field Systems Comments

1 **Parameter:** DasComments

Single tower with filer pack mounted at 10 meters and temperature mounted at 9 meters.

2 **Parameter:** DocumentationCo

Although there is no CASTNET logbook present onsite, the site operator records CASTNET information in the VT Monitoring Coop logbook.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	UND002	**Technician**	Korey Devins	**Site Visit Date**	07/13/2021

Site Sponsor (agency)	EPA	**USGS Map**	
Operating Group	VT Monitoring Coop	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type			
Air Pollutant Analyzer		**QAPP Latitude**	
Deposition Measurement	dry, wet	**QAPP Longitude**	
Land Use	Woodland - mixed	**QAPP Elevation Meters**	
Terrain	Complex	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	44.52843
Site Address 1		**Audit Longitude**	-72.86804
Site Address 2		**Audit Elevation**	402
County	Chittenden	**Audit Declination**	
City, State	Underhill Center, VT		
Zip Code	05489	**Fire Extinguisher** ☐	
Time Zone	Eastern	**First Aid Kit** ☐	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☐	
Primary Op. E-mail		**Climbing Belt** ☐	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☐	
Backup Op. E-mail		**Stable Entry Steps** ☐	

Shelter Working Room	☐	**Make**		**Model**		**Shelter Size**	
Shelter Clean	☐	**Notes**	Small footprint site with no shelter. Equipment housed in enclosure on sample tower.				
Site OK	☑	**Notes**					

Driving Directions

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 Teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	N/A
8	Are there moisture traps in the sample lines?	☑	inline filter
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	

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-S6-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	GFI circuit breaker trips frequently
8	Is the instrument shelter temperature controlled?	☑	N/A

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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:

Single tower with filer pack mounted at 10 meters and temperature mounted at 9 meters.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☐	☑
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☐		☐
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
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?	☑	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:

Although there is no CASTNET logbook present onsite, the site operator records CASTNET information in the VT Monitoring Coop logbook.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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	☑
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 complete sample train including all filters?	☑	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	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-S9-rev002

Site ID	UND002	Technician	Korey Devins	Site Visit Date	07/13/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☑	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☑	Weekly	☑
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
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:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID UND002 **Technician** Korey Devins **Site Visit Date** 07/13/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	23269	000802
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	Illegible	none
Flow Rate	Apex	AXMC105LPMDPC	48097	000528
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	unknown	unknown	06982
Sample Tower	Aluma Tower	B	AT-212125X77	000778
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	6702	04688

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PIN414-Martin Valvur-07/14/2021						
1	7/14/2021	Computer	Hewlett Packard	none	8460 elitebook	CNU136077G
2	7/14/2021	DAS	Environmental Sys Corp	90612	8816	2615
3	7/14/2021	Elevation	Elevation	None	1	None
4	7/14/2021	Filter pack flow pump	Thomas	none	107CAB18	00001528
5	7/14/2021	Flow Rate	Alicat	none	Unknown	Unknown
6	7/14/2021	Infrastructure	Infrastructure	none	none	none
7	7/14/2021	Modem	Hughesnet	none	Unknown	Unknown
8	7/14/2021	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477659
9	7/14/2021	Ozone Standard	ThermoElectron Inc	none	49C	0425208055
10	7/14/2021	Sample Tower	Aluma Tower	928348	B	AT-5381-F9-3
11	7/14/2021	Shelter Temperature	ARS	none	none	none
12	7/14/2021	Siting Criteria	Siting Criteria	None	1	None
13	7/14/2021	Temperature2meter	RM Young	none	41342VC	029459
14	7/14/2021	Zero air pump	Werther International	none	PC70/4	000665778

DAS Data Form

DAS Time Max Error: 0.4

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	2615	PIN414	Martin Valvur	07/14/2021	DAS	Primary

Das Date: 7 /14/2021
Das Time: 08:17:24
Das Day: 195

Audit Date 7 /14/2021
Audit Time 08:17:00
Audit Day 195

Low Channel:

Avg Diff:	Max Diff:
0.0000	0.0001

High Channel:

Avg Diff:	Max Diff:
0.0000	0.0001

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
9	0.0000	0.0003	0.0003	V	V	0.0000
9	0.1000	0.1002	0.1002	V	V	0.0000
9	0.3000	0.2999	0.3000	V	V	0.0001
9	0.5000	0.4997	0.4997	V	V	0.0000
9	0.7000	0.7000	0.7001	V	V	0.0001
9	0.9000	0.9005	0.9005	V	V	0.0000
9	1.0000	1.0000	1.0001	V	V	0.0001

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Alicat	Unknown	PIN414	Martin Valvur	07/14/2021	Flow Rate	none

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	148613	**Tfer Desc.**	BIOS 220-H
Tfer ID	01421		
Slope	1.00850	**Intercept**	0.00160
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	-0.072
0.32%	0.91%			**Cal Factor Full Scale**	5.115
				Rotometer Reading:	3.15

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	-0.01	0.0000	-0.03	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.0000	-0.02	l/m	l/m	
primary	test pt 1	2.996	2.970	2.96	0.0000	3.00	l/m	l/m	0.91%
primary	test pt 2	3.029	3.000	2.96	0.0000	3.00	l/m	l/m	0.03%
primary	test pt 3	3.026	3.000	2.96	0.0000	3.00	l/m	l/m	-0.03%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	270 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1201477659	PIN414	Martin Valvur	07/14/2021	Ozone	none

Slope:	1.02535	**Slope:**	0.00000
Intercept	-0.07108	**Intercept**	0.00000
CorrCoff:	0.99997	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.10	0.07	0.13	ppb		0.06
primary	2	14.80	14.68	15.04	ppb		0.36
primary	3	34.86	34.61	35.49	ppb	2.51	
primary	4	64.75	64.30	65.30	ppb	1.54	
primary	5	110.14	109.40	112.40	ppb	2.71	

Sensor Component	Condition	Status
Audit Pressure	737 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	85 m	Fail
ADT >100 vehicles further than 50	85 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.000	pass
Span	1.000	pass
Zero Voltage	0.000	pass
Fullscale Voltage	1.0009	pass
Cell A Freq.	105.1 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.70 lpm	pass
Cell A Pressure	719.5 mmHg	pass
Cell A Tmp.	29.7 C	pass
Cell B Freq.	83.0 kHz	pass
Cell B Noise	0.7 ppb	pass
Cell B Flow	0.71 lpm	pass
Cell B Pressure	718.9 mmHg	pass
System Memo		pass

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	029459	PIN414	Martin Valvur	07/14/2021	Temperature2meter	none

Mfg	Fluke	Parameter	Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.1	0.2		

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.02	0.03	0.0000	0.07	C	0.04
primary	Temp Mid Range	23.57	23.58	0.0000	23.38	C	-0.2
primary	Temp High Rang	46.50	46.52	0.0000	46.47	C	-0.05

Sensor Component	Shield	Condition	Clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	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	PIN414	Martin Valvur	07/14/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
1.36	1.93		

Mfg	Fluke	Parameter	Shelter Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	20.84	20.85	0.000	22.7	C	1.88
primary	Temp Mid Range	23.90	23.91	0.000	23.7	C	-0.26
primary	Temp Mid Range	21.90	21.91	0.000	23.8	C	1.93

Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

Sensor Component		Condition		Status	
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	85 m	Status	Fail
Sensor Component	Secondary road >100 vehicles/da	Condition	85 m	Status	Fail
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	Technician	Site Visit Date
PIN414	Martin Valvur	07/14/2021

Shelter Make	Shelter Model	Shelter Size
Alan pre-fab	s/n 861168 1808	512 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	Good	pass
Met Tower	Good	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Glass bottle and filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Good	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter walls	Good	pass
Excessive mold present	Good	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The site operator reviews data each week to ensure proper operation of sensors and instruments.

2 **Parameter:** ShelterCleanNotes

The lighting has been repaired. The shelter has been cleaned and organized.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	PIN414	**Technician**	Martin Valvur	**Site Visit Date**	07/14/2021

Site Sponsor (agency)	NPS	**USGS Map**	North Chalone Peak
Operating Group	NPS	**Map Scale**	
AQS #	06-069-0003	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMPROVE	**QAPP Latitude**	36.4850
Deposition Measurement	dry, wet	**QAPP Longitude**	-121.1556
Land Use	woodland - scrub	**QAPP Elevation Meters**	335
Terrain	complex	**QAPP Declination**	
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone	(831) 389-4586	**Audit Latitude**	36.483235
Site Address 1	5000 Hwy 146	**Audit Longitude**	-121.156876
Site Address 2		**Audit Elevation**	317
County	San Benito	**Audit Declination**	13.5
City, State	Paicines, CA		
Zip Code	95043	**Fire Extinguisher** ☑	Inspected June 2021
Time Zone	Pacific	**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** ☑	

Present

Shelter Working Room	☑	**Make**	Alan pre-fab	**Model**	s/n 861168 1808	**Shelter Size**	512 cuft
Shelter Clean	☑	**Notes**	The lighting has been repaired. The shelter has been cleaned and organized.				
Site OK	☑	**Notes**					

Driving Directions From Hollister proceed south on route 25 to highway 146 and the entrance to Pinnacles National Monument. Turn west on 146 and continue to the fee station. Less than 1/2 mile from the fee station the site will be visible 100 yards from the road on the right up a hill.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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-S6-rev002

Site ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID PIN414 **Technician** Martin Valvur **Site Visit Date** 07/14/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	DataView2	☑
SSRF	☑		☑
Site Ops Manual	☑		☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☑	Dataview checklists
2	Are the Site Status Report Forms being completed and current?	☑	Flow section only
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

F-02058-1500-S8-rev002

Site ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator, ARS provides updates semiannually
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	Every 2 weeks	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Alarm values only	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	Datalogger only

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 site operator reviews data each week to ensure proper operation of sensors and instruments.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	PIN414	Technician	Martin Valvur	Site Visit Date	07/14/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings 90%
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF and dataview checklists
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
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 contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC 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	☑	As needed	☑
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:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID PIN414 **Technician** Martin Valvur **Site Visit Date** 07/14/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8460 elitebook	CNU136077G	none
DAS	Environmental Sys Corp	8816	2615	90612
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	00001528	none
Flow Rate	Alicat	Unknown	Unknown	none
Infrastructure	Infrastructure	none	none	none
Modem	Hughesnet	Unknown	Unknown	none
Ozone	ThermoElectron Inc	49i A3NCA	1201477659	none
Ozone Standard	ThermoElectron Inc	49C	0425208055	none
Sample Tower	Aluma Tower	B	AT-5381-F9-3	928348
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	029459	none
Zero air pump	Werther International	PC70/4	000665778	none

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
YOS404-Martin Valvur-07/15/2021						
1	7/15/2021	DAS	Environmental Sys Corp	90645	8816	2558
2	7/15/2021	Elevation	Elevation	None	1	None
3	7/15/2021	Filter pack flow pump	Thomas	none	107CAB18	12000014455
4	7/15/2021	Flow Rate	Alicat	none	Unknown	150929
5	7/15/2021	Infrastructure	Infrastructure	none	none	none
6	7/15/2021	Met tower	unknown	none	unknown	none
7	7/15/2021	Modem	Sierra wireless	none	GX450	Unknown
8	7/15/2021	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477663
9	7/15/2021	Ozone Standard	ThermoElectron Inc	90524	49C	49C-58308-318
10	7/15/2021	Sample Tower	Aluma Tower	none	B	none
11	7/15/2021	Shelter Temperature	ARS	none	none	none
12	7/15/2021	Siting Criteria	Siting Criteria	None	1	None
13	7/15/2021	Temperature	RM Young	none	41342	031822
14	7/15/2021	Zero air pump	Werther International	none	PC70/4	531397

DAS Data Form

DAS Time Max Error: 1.55

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	2558	YOS404	Martin Valvur	07/15/2021	DAS	Primary

Das Date: 7 /15/2021
Das Time: 13:21:33
Das Day: 196

Audit Date 7 /15/2021
Audit Time 13:20:00
Audit Day 196

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
2	0.0000	0.0001	0.0000	V	V	-0.0001
2	0.1000	0.1000	0.0999	V	V	-0.0001
2	0.3000	0.2999	0.2995	V	V	-0.0004
2	0.5000	0.4998	0.4998	V	V	0.0000
2	0.7000	0.6997	0.6996	V	V	-0.0001
2	0.9000	0.8999	0.8997	V	V	-0.0002
2	1.0000	1.0005	1.0002	V	V	-0.0003

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Alicat	150929	YOS404	Martin Valvur	07/15/2021	Flow Rate	none

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	148613	**Tfer Desc.**	BIOS 220-H
Tfer ID	01421		
Slope	1.00850	**Intercept**	0.00160
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	-0.061
0.76%	1.38%			**Cal Factor Full Scale**	5.049
				Rotometer Reading:	3.3

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.07	0.0000	0.05	l/m	l/m	
primary	leak check	0.000	0.000	0.07	0.0000	0.01	l/m	l/m	
primary	test pt 1	3.016	2.990	3.90	0.0000	3.00	l/m	l/m	0.40%
primary	test pt 2	3.016	2.990	3.90	0.0000	3.01	l/m	l/m	0.50%
primary	test pt 3	3.073	3.050	3.89	0.0000	3.01	l/m	l/m	-1.38%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	225 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1201477663	YOS404	Martin Valvur	07/15/2021	Ozone	none

Slope:	1.01061	**Slope:**	0.00000
Intercept	0.92352	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.10	0.07	1.02	ppb		0.95
primary	2	14.90	14.78	16.02	ppb		1.24
primary	3	35.76	35.50	36.56	ppb	2.94	
primary	4	65.40	64.95	66.56	ppb	2.45	
primary	5	110.90	110.15	112.30	ppb	1.93	

Sensor Component	Audit Pressure	**Condition**	636 mmHg	**Status**	pass
Sensor Component	26.6 degree unobstructed rule	**Condition**	True	**Status**	pass
Sensor Component	Tree dewline >10m or below inlet	**Condition**	True	**Status**	pass
Sensor Component	ADT <100 vehicles further than 20	**Condition**	True	**Status**	pass
Sensor Component	ADT >100 vehicles further than 50	**Condition**	250 m	**Status**	Fail
Sensor Component	Sample Train	**Condition**	Good	**Status**	pass
Sensor Component	Inlet Filter Condition	**Condition**	Clean	**Status**	pass
Sensor Component	Offset	**Condition**	-0.9	**Status**	pass
Sensor Component	Span	**Condition**	1.017	**Status**	pass
Sensor Component	Zero Voltage	**Condition**	0.000	**Status**	pass
Sensor Component	Fullscale Voltage	**Condition**	1.0001	**Status**	pass
Sensor Component	Cell A Freq.	**Condition**	104.9 kHz	**Status**	pass
Sensor Component	Cell A Noise	**Condition**	0.9 ppb	**Status**	pass
Sensor Component	Cell A Flow	**Condition**	0.63 lpm	**Status**	pass
Sensor Component	Cell A Pressure	**Condition**	622.8 mmHg	**Status**	pass
Sensor Component	Cell A Tmp.	**Condition**	37.3 C	**Status**	pass
Sensor Component	Cell B Freq.	**Condition**	85.3 kHz	**Status**	pass
Sensor Component	Cell B Noise	**Condition**	0.6 ppb	**Status**	pass
Sensor Component	Cell B Flow	**Condition**	0.61 lpm	**Status**	pass
Sensor Component	Cell B Pressure	**Condition**	622.5 mmHg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	031822	YOS404	Martin Valvur	07/15/2021	Temperature	none

Mfg	Fluke	**Parameter**	Temperature
Serial Number	3275143	**Tfer Desc.**	RTD
Tfer ID	01229		
Slope	0.99975	**Intercept**	-0.00824
Cert Date	2/9/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.26	0.39		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.22	0.23	0.0000	0.3	C	0.08
primary	Temp Mid Range	22.29	22.30	0.0000	22.6	C	0.31
primary	Temp High Range	48.62	48.64	0.0000	49.0	C	0.39

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Properly Sited	**Condition**	See comments	**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	YOS404	Martin Valvur	07/15/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
1.93	2.53		

Mfg	Fluke	Parameter	Shelter Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.83	25.84	0.000	24.5	C	-1.31
primary	Temp Mid Range	26.38	26.39	0.000	24.4	C	-1.95
primary	Temp Mid Range	26.26	26.27	0.000	23.7	C	-2.53

Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

Sensor Component		Condition		Status	
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	250 m	Status	Fail
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	Technician	Site Visit Date
YOS404	Martin Valvur	07/15/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8812 (s/n 3515-2)	768 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	Good	pass
Met Tower	Good	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Good	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter walls	Good	pass
Excessive mold present	Good	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Temperature	YOS404	Martin Valvur	07/15/2021	Properly Sited	RM Young	4668	☐	☐

The temperature sensor is mounted directly above the shelter roof.

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The site is neat, clean, and well organized. The shelter roof is currently covered with tar paper.

Field Systems Data Form

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Site ID	YOS404	**Technician**	Martin Valvur	**Site Visit Date**	07/15/2021

Site Sponsor (agency)	NPS	**USGS Map**	El Capitan
Operating Group	NPS	**Map Scale**	
AQS #	06-043-0003	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, CO, NOx, IMPROVE	**QAPP Latitude**	37.7133
Deposition Measurement	dry	**QAPP Longitude**	-119.7061
Land Use	mountain top, woodland - evergreen	**QAPP Elevation Meters**	1605
Terrain	complex	**QAPP Declination**	
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone	(209) 372-4411	**Audit Latitude**	37.713251
Site Address 1	Turtleback Dome	**Audit Longitude**	-119.706196
Site Address 2		**Audit Elevation**	1599
County	Mariposa	**Audit Declination**	13.5
City, State	Yosemite National Park, CA		
Zip Code	95389	**Fire Extinguisher** ☐	Not present
Time Zone	Pacific	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☐	Not present
Primary Op. Phone #		**Safety Hard Hat** ☐	Not present
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Steps** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8812 (s/n 3515-2)	**Shelter Size**	768 cuft
Shelter Clean	☑	**Notes**	The site is neat, clean, and well organized. The shelter roof is currently covered with tar paper.				
Site OK	☑	**Notes**					

Driving Directions From Mariposa take route 140 into Yosemite. From the loop road, take route 41 toward Oakhurst. Continue uphill and through the tunnel. Approximately one mile past the tunnel look for a dirt road on the left. Continue approximately 1/2 mile past the gate to the communication station at the top of Turtleback Dome. The site is another 100 yards on the path behind the station.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☐	Above shelter
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☐	Above shelter
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 10 meters
4	Describe dry dep sample tube.		3/8 teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☐	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	DataView2	☑
SSRF	☑		☑
Site Ops Manual	☑		☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☑	Dataview
2	Are the Site Status Report Forms being completed and current?	☑	Flow section only
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

F-02058-1500-S8-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Alarm values only	☐
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	YOS404	Technician	Martin Valvur	Site Visit Date	07/15/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	Flow section only
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, dataview
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
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 contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☑	Weekly	☑
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Monthly	☑
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:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID YOS404 **Technician** Martin Valvur **Site Visit Date** 07/15/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2558	90645
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	12000014455	none
Flow Rate	Alicat	Unknown	150929	none
Infrastructure	Infrastructure	none	none	none
Met tower	unknown	unknown	none	none
Modem	Sierra wireless	GX450	Unknown	none
Ozone	ThermoElectron Inc	49i A3NCA	1201477663	none
Ozone Standard	ThermoElectron Inc	49C	49C-58308-318	90524
Sample Tower	Aluma Tower	B	none	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	031822	none
Zero air pump	Werther International	PC70/4	531397	none

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
NIC001-Korey Devins-07/27/2021						
1	7/27/2021	DAS	Campbell	000801	CR850	23268
2	7/27/2021	elevation	Elevation	none	none	none
3	7/27/2021	Filter pack flow pump	Permotec	none	BL30EB	Illegible
4	7/27/2021	Flow Rate	Apex	000597	AXMC105LPMDPCV	illegible
5	7/27/2021	Infrastructure	Infrastructure	none	none	none
6	7/27/2021	Modem	Sierra wireless	06989	GX440	Unknown
7	7/27/2021	Sample Tower	Aluma Tower	000785	B	AT-212125X73
8	7/27/2021	siting criteria	Siting Criteria	none	none	None
9	7/27/2021	Temperature	RM Young	04943	41342	none

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	23268	NIC001	Korey Devins	07/27/2021	DAS	Primary

Das Date:
Das Time:
Das Day: 0

Audit Date
Audit Time
Audit Day 0

Low Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

High Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	NIC001	Korey Devins	07/27/2021	Flow Rate	000597

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
0.04%	0.10%			**Cal Factor Full Scale**	0
				Rotometer Reading:	0

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	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	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	2.995	3.000	3.00	0.000	3.00	l/m	l/m	0.00%
primary	test pt 2	2.993	3.000	2.99	0.000	3.00	l/m	l/m	-0.10%
primary	test pt 3	2.995	3.000	3.00	0.000	3.00	l/m	l/m	-0.03%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	300 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	NIC001	Korey Devins	07/27/2021	Temperature	04943

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.12	0.26		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.51	0.29	0.000	0.6	C	0.26
primary	Temp Mid Range	25.73	25.33	0.000	25.4	C	0.05
primary	Temp High Range	45.79	45.24	0.000	45.2	C	-0.06

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Siting Criteria Form

Sensor Component		Condition		Status	
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	70 m	Status	Fail
Sensor Component	Secondary road >100 vehicles/da	Condition	365 m	Status	Fail
Sensor Component	Small parking lot	Condition	20 m	Status	Fail
Sensor Component	System Memo	Condition		Status	pass
Sensor Component	Large parking lot	Condition		Status	pass

Infrastructure Data For

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

Shelter Make	Shelter Model	Shelter Size

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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	Filter	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
Sensor Component	Shelter Roof	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
Sensor Component	Shelter walls	Condition	N/A	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	NIC001	Korey Devins	07/27/2021	Moisture Present	Apex	4305	☐	☐

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

Field Systems Comments

1 **Parameter:** DasComments

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters.

2 **Parameter:** DocumentationCo

There is no logbook onsite to record information regarding site status or filter information.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	NIC001	**Technician**	Korey Devins	**Site Visit Date**	07/27/2021

Site Sponsor (agency)	EPA	**USGS Map**	
Operating Group	NY DEC	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type			
Air Pollutant Analyzer		**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	Woodland - mixed	**QAPP Elevation Meters**	
Terrain	Complex	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	43.68596
Site Address 1		**Audit Longitude**	-74.9857
Site Address 2		**Audit Elevation**	526
County	Herkimer	**Audit Declination**	
City, State	Old Forge, NY		
Zip Code	13420	**Fire Extinguisher**	☑
Time Zone	Eastern	**First Aid Kit**	☑
Primary Operator		**Safety Glasses**	☑
Primary Op. Phone #		**Safety Hard Hat**	☐
Primary Op. E-mail		**Climbing Belt**	☐
Backup Operator		**Security Fence**	☑
Backup Op. Phone #		**Secure Shelter**	☑
Backup Op. E-mail		**Stable Entry Steps**	☑

Present

Shelter Working Room	☐	**Make**		**Model**		**Shelter Size**	
Shelter Clean	☐	**Notes**	Small footprint site with no shelter. Equipment housed in enclosure on sample tower.				
Site OK	☐	**Notes**					

Driving Directions

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		N/A
4	Describe dry dep sample tube.		3/8 Teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	N/A
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	N/A
8	Are there moisture traps in the sample lines?	☐	Flow line only (balston filter)
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	

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-S6-rev002

Site ID NIC001 **Technician** Korey Devins **Site Visit Date** 07/27/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	N/A

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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:

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☐	☑
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☐	☑	Shelter heater	☐	☐	☑
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☐	☑
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☐	No logbook	☐
SSRF	☑		☑
Site Ops Manual	☐		☐
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☐	No logbook
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?	☑	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:

There is no logbook onsite to record information regarding site status or filter information.

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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	☑
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 complete sample train including all filters?	☑	N/A
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	N/A
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	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-S9-rev002

Site ID	NIC001	Technician	Korey Devins	Site Visit Date	07/27/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☑	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are 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 contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☑	Weekly	☑
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
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:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID NIC001 **Technician** Korey Devins **Site Visit Date** 07/27/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	23268	000801
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	Illegible	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000597
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	GX440	Unknown	06989
Sample Tower	Aluma Tower	B	AT-212125X73	000785
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	none	04943

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CNT169-Martin Valvur-07/27/2021						
1	7/27/2021	Computer	Dell	07038	Inspiron 15	Unknown
2	7/27/2021	DAS	Campbell	000427	CR3000	2526
3	7/27/2021	Elevation	Elevation	None	1	None
4	7/27/2021	Filter pack flow pump	Thomas	06024	107CAB18	060400022662
5	7/27/2021	Flow Rate	Apex	000559	AXMC105LPMDPCV	illegible
6	7/27/2021	Infrastructure	Infrastructure	none	none	none
7	7/27/2021	Ozone	ThermoElectron Inc	000620	49i A1NAA	1009241793
8	7/27/2021	Ozone Standard	ThermoElectron Inc	000687	49i A3NAA	1030244809
9	7/27/2021	Sample Tower	Aluma Tower	000179	B	unknown
10	7/27/2021	Shelter Temperature	Campbell	none	107-L	none
11	7/27/2021	Siting Criteria	Siting Criteria	None	1	None
12	7/27/2021	Temperature	RM Young	06501	41342	14606
13	7/27/2021	Zero air pump	Werther International	06867	C 70/4	000814279

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2526	CNT169	Martin Valvur	07/27/2021	DAS	Primary

Das Date: 7 /27/2021
Das Time: 09:34:00
Das Day: 208

Audit Date 7 /27/2021
Audit Time 09:34:00
Audit Day 208

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0008	-0.0008	V	V	0.0000
7	0.1000	0.0993	0.0996	V	V	0.0003
7	0.3000	0.2997	0.2993	V	V	-0.0004
7	0.5000	0.4996	0.4995	V	V	-0.0001
7	0.7000	0.6998	0.6996	V	V	-0.0002
7	0.9000	0.8996	0.8996	V	V	0.0000
7	1.0000	1.0015	1.0016	V	V	0.0001

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	CNT169	Martin Valvur	07/27/2021	Flow Rate	000559

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	148613	**Tfer Desc.**	BIOS 220-H
Tfer ID	01421		
Slope	1.00850	**Intercept**	0.00160
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	-0.02
				Cal Factor Full Scale	0.99
0.55%	0.99%			**Rotometer Reading:**	4

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	-0.01	l/m	l/m	
primary	test pt 1	3.055	3.030	2.99	0.000	3.02	l/m	l/m	-0.33%
primary	test pt 2	3.055	3.030	2.99	0.000	3.00	l/m	l/m	-0.99%
primary	test pt 3	3.056	3.030	2.99	0.000	3.02	l/m	l/m	-0.33%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	20 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241793	CNT169	Martin Valvur	07/27/2021	Ozone	000620

Slope:	0.99810	**Slope:**	0.00000
Intercept	-0.65088	**Intercept**	0.00000
CorrCoff:	0.99975	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	-0.20	-0.22	0.05	ppb		0.27
primary	2	14.87	14.75	14.10	ppb		-0.65
primary	3	34.76	34.51	33.19	ppb	-3.9	
primary	4	65.38	64.93	62.85	ppb	-3.26	
primary	5	110.54	109.80	109.90	ppb	0.09	

Sensor Component	Condition	Status
Audit Pressure	530 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	193 m	Fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Not tested	pass
Offset	-0.3	pass
Span	1.011	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	95.2 kHz	pass
Cell A Noise	0.6 ppb	pass
Cell A Flow	0.56 lpm	pass
Cell A Pressure	510.7 mmHg	pass
Cell A Tmp.	37.7 C	pass
Cell B Freq.	99.8 kHz	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.55 lpm	pass
Cell B Pressure	510.4 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14606	CNT169	Martin Valvur	07/27/2021	Temperature	06501

Mfg	Fluke	Parameter	Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.07	0.11		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.12	0.13	0.000	0.0	C	-0.11
primary	Temp Mid Range	23.47	23.48	0.000	23.5	C	0.04
primary	Temp High Range	47.05	47.07	0.000	47.1	C	0.06

Sensor Component	Shield	Condition	Clean	Status	pass
Sensor Component	Blower	Condition	N/A	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	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	CNT169	Martin Valvur	07/27/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.70	1.04		

Mfg	Fluke	Parameter	Shelter Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.59	27.61	0.000	26.8	C	-0.77
primary	Temp Mid Range	26.79	26.81	0.000	27.1	C	0.28
primary	Temp Mid Range	26.02	26.03	0.000	27.1	C	1.04

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-19)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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	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	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

Siting Criteria Form

Sensor Component		Condition		Status	
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	193 m	Status	Fail
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

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is changed once each month.

2 **Parameter:** ShelterCleanNotes

The shelter is dirty. Many floor tiles are old and broken, the floor is deteriorating.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	CNT169	**Technician**	Martin Valvur	**Site Visit Date**	07/27/2021

Site Sponsor (agency)	EPA	**USGS Map**	Centennial
Operating Group	Forest Service	**Map Scale**	
AQS #	56-001-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	41.3722
Deposition Measurement	dry, wet	**QAPP Longitude**	-106.2422
Land Use	woodland - evergreen	**QAPP Elevation Meters**	3178
Terrain	complex	**QAPP Declination**	10.9
Conforms to MLM	Marginally	**QAPP Declination Date**	12/28/2004
Site Telephone	(307) 742-7229	**Audit Latitude**	41.364531
Site Address 1	Brooklyn Lake Guard Station	**Audit Longitude**	-106.24002
Site Address 2	Medicine Bow National Forest	**Audit Elevation**	3175
County	Albany	**Audit Declination**	9.5
City, State	Centennial, WY		
Zip Code	82055	**Fire Extinguisher** ☑	New in 2015
Time Zone	Mountain	**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** ☑	

Present

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2149-19)	**Shelter Size**	640 cuft
Shelter Clean	☐	**Notes**	The shelter is dirty. Many floor tiles are old and broken, the floor is deteriorating.				
Site OK	☑	**Notes**					

Driving Directions

From Laramie take route 130 west to Centennial. Continue through town and into the Medicine Bow National Forest. Turn right near the summit onto a dirt road at the sign for Brooklyn Lake Campground. Continue approximately 1.5 miles to Little Brooklyn Lake. There will be a small chapel on the right. Park at the chapel and walk approximately 200 meters up the hill past the chapel to the site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☐	Above shelter
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☐	Above shelter
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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-S6-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☐

11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑		☑
HASP	☑		☑
Field Ops Manual	☑		☑
Calibration Reports	☑		☑
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

F-02058-1500-S8-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	SSRF, call-in

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

The ozone inlet filter is changed once each month.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	CNT169	Technician	Martin Valvur	Site Visit Date	07/27/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	filter changed afternoons, 80% of the time
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☑

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-S10-rev002

Site ID CNT169 **Technician** Martin Valvur **Site Visit Date** 07/27/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07038
DAS	Campbell	CR3000	2526	000427
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022662	06024
Flow Rate	Apex	AXMC105LPMDPC	illegible	000559
Infrastructure	Infrastructure	none	none	none
Ozone	ThermoElectron Inc	49i A1NAA	1009241793	000620
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244809	000687
Sample Tower	Aluma Tower	B	unknown	000179
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14606	06501
Zero air pump	Werther International	C 70/4	000814279	06867

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CRM435-Martin Valvur-08/03/2021						
1	8/3/2021	DAS	Environmental Sys Corp	none	8816	3504
2	8/3/2021	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477662
3	8/3/2021	Ozone Standard	ThermoElectron Inc	90605	49C	49C-62025-333
4	8/3/2021	Zero air pump	Werther International	none	C 70/4	000847661

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1201477662	CRM435	Martin Valvur	08/03/2021	Ozone	none

Slope:	1.00903	**Slope:**	0.00000
Intercept	-0.42203	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.02	-0.04	-0.37	ppb		-0.33
primary	2	17.52	17.38	17.26	ppb		-0.12
primary	3	36.82	36.55	36.21	ppb	-0.93	
primary	4	65.76	65.31	65.36	ppb	0.08	
primary	5	112.04	111.29	112.00	ppb	0.64	

Sensor Component	Condition	Status
Audit Pressure	624 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	52 m	Fail
ADT >100 vehicles further than 50	52 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.7	pass
Span	1.012	pass
Zero Voltage	-0.0001	pass
Fullscale Voltage	1.0001	pass
Cell A Freq.	79.2 kHz	pass
Cell A Noise	0.9 ppb	pass
Cell A Flow	0.65 lpm	pass
Cell A Pressure	610.3 mmHg	pass
Cell A Tmp.	35.5 C	pass
Cell B Freq.	46.6 kHz	Fail
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.62 lpm	pass
Cell B Pressure	610.0 mmHg	pass
System Memo	See comments	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	CRM435	Martin Valvur	08/03/2021	Cell B Freq.	ThermoElectron	4670	☐	☐

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

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GLR468-Martin Valvur-08/05/2021						
1	8/5/2021	Computer	Hewlett Packard	ACAD	6730b	CNU9335F7W
2	8/5/2021	DAS	Environmental Sys Corp	None	8864	C2600
3	8/5/2021	Elevation	Elevation	None	1	None
4	8/5/2021	Filter pack flow pump	Thomas	none	107CAB18B	070000013426
5	8/5/2021	Flow Rate	Tylan	none	FC280	AW9710138
6	8/5/2021	Infrastructure	Infrastructure	none	none	none
7	8/5/2021	MFC power supply	Tylan	03944	RO-32	FP9605010
8	8/5/2021	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477661
9	8/5/2021	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	0733726104
10	8/5/2021	Sample Tower	Aluma Tower	none	B	none
11	8/5/2021	Shelter Temperature	ARS	77	none	none
12	8/5/2021	Siting Criteria	Siting Criteria	None	1	None
13	8/5/2021	Temperature2meter	RM Young	none	41342	17625
14	8/5/2021	Zero air pump	Werther International	none	PC70/4	000756725

DAS Data Form

DAS Time Max Error: 0.03

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	C2600	GLR468	Martin Valvur	08/05/2021	DAS	Primary

Das Date: 8 /5 /2021
Das Time: 08:04:58
Das Day: 217

Audit Date 8 /5 /2021
Audit Time 08:05:00
Audit Day 217

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0003	0.0007	0.0003	0.0007

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
15	0.0000	0.0001	0.0000	V	V	-0.0001
15	0.1000	0.0997	0.0997	V	V	0.0000
15	0.3000	0.2999	0.2999	V	V	0.0000
15	0.5000	0.4997	0.4994	V	V	-0.0003
15	0.7000	0.7000	0.6996	V	V	-0.0004
15	0.9000	0.8997	0.8993	V	V	-0.0004
15	1.0000	1.0003	0.9996	V	V	-0.0007

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Tylan	AW9710138	GLR468	Martin Valvur	08/05/2021	Flow Rate	none

Mfg	Tylan
SN/Owner ID	FP9605010 03944
Parameter:	MFC power supply

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	148613	**Tfer Desc.**	BIOS 220-H
Tfer ID	01421		
Slope	1.00850	**Intercept**	0.00160
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:		
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	
0.29%	0.54%			

Cal Factor Zero	0.039
Cal Factor Full Scale	5.483
Rotometer Reading:	3.2

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	-0.03	0.000	0.04	l/m	l/m	
primary	leak check	0.000	0.000	-0.04	0.000	0.03	l/m	l/m	
primary	test pt 1	3.002	2.980	2.71	0.000	3.00	l/m	l/m	0.54%
primary	test pt 2	3.012	2.990	2.71	0.000	3.00	l/m	l/m	0.20%
primary	test pt 3	3.029	3.000	2.71	0.000	3.00	l/m	l/m	-0.13%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	360 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1201477661	GLR468	Martin Valvur	08/05/2021	Ozone	none

Slope:	0.98037	**Slope:**	0.00000
Intercept	0.04967	**Intercept**	0.00000
CorrCoff:	0.99996	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	-0.02	-0.04	0.54	ppb		0.58
primary	2	15.42	15.29	14.65	ppb		-0.64
primary	3	33.40	33.16	32.41	ppb	-2.29	
primary	4	66.43	65.97	64.51	ppb	-2.24	
primary	5	112.99	112.23	110.30	ppb	-1.73	

Sensor Component	Condition	Status
Audit Pressure	681 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	50 m	Fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	0.999	pass
Zero Voltage	0.0005	pass
Fullscale Voltage	1.0008	pass
Cell A Freq.	95.4 kHz	pass
Cell A Noise	1.1 ppb	pass
Cell A Flow	0.65 lpm	pass
Cell A Pressure	669.3 mmHg	pass
Cell A Tmp.	34.1 C	pass
Cell B Freq.	65.2 kHz	pass
Cell B Noise	1.1 ppb	pass
Cell B Flow	0.67 lpm	pass
Cell B Pressure	668.7 mmHg	pass
System Memo		pass

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	17625	GLR468	Martin Valvur	08/05/2021	Temperature2meter	none

Mfg	Fluke	Parameter	Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.15	0.27		

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.17	0.18	0.000	0.06	C	-0.12
primary	Temp Mid Range	23.34	23.35	0.000	23.41	C	0.06
primary	Temp High Rang	48.39	48.41	0.000	48.14	C	-0.27

Sensor Component	Shield	Condition	Clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	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	GLR468	Martin Valvur	08/05/2021	Shelter Temperature	77

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.49	0.76		

Mfg	Fluke	Parameter	Shelter Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.82	23.83	0.000	24.0	C	0.18
primary	Temp Mid Range	23.62	23.63	0.000	24.2	C	0.52
primary	Temp Mid Range	25.68	25.69	0.000	26.5	C	0.76

Sensor Component	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**	20 km	**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	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-20)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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	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	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	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:** SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition. Evidence of repairs to roof leaks attempted. Some floor tiles are loose.

3 **Parameter:** PollAnalyzerCom

The desiccant for the zero air system is saturated.

4 **Parameter:** MetSensorComme

The recorded temperature data at this site is measured at approximately 2 meters above the ground.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	GLR468	**Technician**	Martin Valvur	**Site Visit Date**	08/05/2021

Site Sponsor (agency)	NPS	**USGS Map**	Lake McDonald West
Operating Group	NPS	**Map Scale**	
AQS #	30-029-8001	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, IMPROVE	**QAPP Latitude**	48.5103
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-113.9956
Land Use	woodland - mixed	**QAPP Elevation Meters**	976
Terrain	complex	**QAPP Declination**	18
Conforms to MLM	No	**QAPP Declination Date**	12/27/2004
Site Telephone	(406) 888-7983	**Audit Latitude**	48.510301
Site Address 1	Horse Stables	**Audit Longitude**	-113.996807
Site Address 2	Quarter Circle Bridge Rd	**Audit Elevation**	964
County	Flathead	**Audit Declination**	14.1
City, State	West Glacier, MT		**Present**
Zip Code	59936	**Fire Extinguisher**	☑ Inspected June 2011
Time Zone	Mountain	**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	**Model**	8810 (s/n 2149-20)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is in fair condition. Evidence of repairs to roof leaks attempted. Some floor tiles are loose.				
Site OK	☑	**Notes**					

Driving Directions

From Kalispell proceed north on route 2 to West Glacier. Turn left onto Going To The Sun Road into Glacier National Park. Proceed approximately 0.2 miles past the entrance and fee station, and turn left toward the horse stables. Bear right at the fork and continue through the gate past the stables. The site is visible in the clearing on the left.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	Temperature now at 2 meters
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☐	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 recorded temperature data at this site is measured at approximately 2 meters above the ground.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 Teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☐	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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 desiccant for the zero air system is saturated.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☑	☐	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	Dataview	☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2016	☑
HASP	☑	April 2004	☐
Field Ops Manual	☑	April 2004	☐
Calibration Reports	☑		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☑	Dataview
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

F-02058-1500-S8-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous site operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	Every 2 weeks	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Alarm values only	☐
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐		☐
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	GLR468	Technician	Martin Valvur	Site Visit Date	08/05/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed various times
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	Dataview
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
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 contamination during handling and shipping? How?	☑	One set of gloves only
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC 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	☑	As needed	☑
Sample Line Check for Dirt/Water	☐		☐

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-S10-rev002

Site ID GLR468 **Technician** Martin Valvur **Site Visit Date** 08/05/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6730b	CNU9335F7W	ACAD
DAS	Environmental Sys Corp	8864	C2600	None
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18B	070000013426	none
Flow Rate	Tylan	FC280	AW9710138	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP9605010	03944
Ozone	ThermoElectron Inc	49i A3NCA	1201477661	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	0733726104	none
Sample Tower	Aluma Tower	B	none	none
Shelter Temperature	ARS	none	none	77
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342	17625	none
Zero air pump	Werther International	PC70/4	000756725	none

Site Inventory by Site Visit

Site Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
UMA009-Martin Valvur-08/09/2021					
1 8/9/2021	DAS	Campbell	000883	CR6	13312
2 8/9/2021	Ozone	ThermoElectron Inc	000881	49i A1ZCA	1200706581
3 8/9/2021	Ozone Standard	ThermoElectron Inc	000882	49i A3NAA	1200706582
4 8/9/2021	Zero air pump	Werther International	06914	C 70/4	000829156

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1200706581	UMA009	Martin Valvur	08/09/2021	Ozone	000881

Slope:	1.02422	**Slope:**	0.00000
Intercept	-0.00247	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.04	0.01	0.18	ppb		0.17
primary	2	15.35	15.22	15.49	ppb		0.27
primary	3	36.93	36.66	37.47	ppb	2.19	
primary	4	65.77	65.32	66.81	ppb	2.26	
primary	5	114.24	113.27	116.10	ppb	2.47	

Sensor Component	Condition	Status
Audit Pressure	707.7 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	158 m	fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.1	pass
Span	1.026	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	104.3 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.70 lpm	pass
Cell A Pressure	691.9 mmHg	pass
Cell A Tmp.	31.1 C	pass
Cell B Freq.	93.2 kHz	pass
Cell B Noise	1.0 ppb	pass
Cell B Flow	0.68 lpm	pass
Cell B Pressure	691.3 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
VIN140-Korey Devins-08/09/2021						
1	8/9/2021	Computer	Dell	07040	Inspiron 15	6K2MC12
2	8/9/2021	DAS	Campbell	000358	CR3000	2136
3	8/9/2021	Elevation	Elevation	None	1	None
4	8/9/2021	Filter pack flow pump	Thomas	04920	107CAB18	060300019956
5	8/9/2021	Flow Rate	Apex	000465	AXMC105LPMDPCV	43974
6	8/9/2021	Infrastructure	Infrastructure	none	none	none
7	8/9/2021	Modem	Digi	07166	LR54	Illegible
8	8/9/2021	Ozone	ThermoElectron Inc	000740	49i A1NAA	1105347311
9	8/9/2021	Ozone Standard	ThermoElectron Inc	000546	49i A3NAA	0929938239
10	8/9/2021	Sample Tower	Aluma Tower	000137	B	none
11	8/9/2021	Shelter Temperature	Campbell	none	107-L	none
12	8/9/2021	Siting Criteria	Siting Criteria	None	1	None
13	8/9/2021	Temperature	RM Young	04685	41342VC	6699
14	8/9/2021	Zero air pump	Werther International	06906	C 70/4	000821908

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2136	VIN140	Korey Devins	08/09/2021	DAS	Primary

Das Date: 8 /9 /2021
Das Time: 14:32:45
Das Day: 221

Audit Date 8 /9 /2021
Audit Time 14:32:45
Audit Day 221

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2998	0.2998	V	V	0.0000
7	0.5000	0.4996	0.4996	V	V	0.0000
7	0.7000	0.6995	0.6995	V	V	0.0000
7	0.9000	0.8994	0.8994	V	V	0.0000
7	1.0000	0.9992	0.9992	V	V	0.0000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	43974	VIN140	Korey Devins	08/09/2021	Flow Rate	000465

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
0.67%	0.67%			**Cal Factor Full Scale**	0.98
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
primary	test pt 1	1.485	1.490	1.52	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.488	1.490	1.52	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.490	1.490	1.53	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	290 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347311	VIN140	Korey Devins	08/09/2021	Ozone	000740

Slope:	0.99932	**Slope:**	0.00000
Intercept	-0.05724	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.35	0.04	0.14	ppb		0.1
primary	2	14.82	14.43	14.25	ppb		-0.18
primary	3	34.51	34.02	33.92	ppb	-0.29	
primary	4	67.60	66.93	66.71	ppb	-0.33	
primary	5	110.67	109.77	109.73	ppb	-0.04	

Sensor Component	Condition	Status
Audit Pressure	748 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	365 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Moderately clean	pass
Offset	-0.2	pass
Span	1.015	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	98.5 kHz	pass
Cell A Noise	0.6 ppb	pass
Cell A Flow	0.69 lpm	pass
Cell A Pressure	704.1 mmHg	pass
Cell A Tmp.	37.0 C	pass
Cell B Freq.	87.1 kHz	pass
Cell B Noise	0.4 ppb	pass
Cell B Flow	0.69 lpm	pass
Cell B Pressure	704.7 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	6699	VIN140	Korey Devins	08/09/2021	Temperature	04685

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.12	0.26		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.19	-0.03	0.000	0.2	C	0.26
primary	Temp Mid Range	27.80	27.38	0.000	27.3	C	-0.05
primary	Temp High Range	46.98	46.42	0.000	46.4	C	-0.05

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**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	VIN140	Korey Devins	08/09/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.18	0.24		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	28.15	27.73	0.000	28.0	C	0.24
primary	Temp Mid Range	28.42	28.00	0.000	28.1	C	0.1
primary	Temp Mid Range	28.97	28.54	0.000	28.7	C	0.19

Sensor Component	System Memo	Condition		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**	200 m	**Status**	Fail
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	Technician	Site Visit Date
VIN140	Korey Devins	08/09/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-1)	640 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	N/A	pass
Met Tower	N/A	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Glass bottle and filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Fair	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Fair	pass
Shelter walls	Fair	pass
Excessive mold present	Fair	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	VIN140	Korey Devins	08/09/2021	Moisture Present	Apex	3203	☐	☐

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

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is in an agricultural research center with farm activities adjacent to the site. A train track is approximately 200 meters to the north.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition and well maintained, however rot is forming at the bottom of the walls.

3 **Parameter:** MetSensorComme

The temperature sensor is mounted on the sample tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	VIN140	**Technician**	Korey Devins	**Site Visit Date**	08/09/2021

Site Sponsor (agency)	EPA	**USGS Map**	Fritchton
Operating Group	Purdue University	**Map Scale**	
AQS #	18-083-9991	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	38.7406
Deposition Measurement	dry, wet	**QAPP Longitude**	-87.4844
Land Use	agriculture	**QAPP Elevation Meters**	134
Terrain	flat	**QAPP Declination**	4.25
Conforms to MLM	Yes	**QAPP Declination Date**	2/23/2006
Site Telephone		**Audit Latitude**	38.740792
Site Address 1	Southwest Purdue Agricultural Center	**Audit Longitude**	-87.484923
Site Address 2	4669 North Purdue Road	**Audit Elevation**	136
County	Knox	**Audit Declination**	-2.7
City, State	Vincennes, IN		**Present**
Zip Code	47591	**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**	Ekto	**Model**	8810 (s/n 2116-1)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is in fair condition and well maintained, however rot is forming at the bottom of the walls.				
Site OK	☑	**Notes**					

Driving Directions From Vincennes go approximately 3 miles north on route 41. Turn left at the sign for the Southwest Purdue Agricultural Center. The site is just over the hill on the dirt road to the right.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 18 meters
4	Describe dry dep sample tube.		3/8 teflon by 18 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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-S6-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑

11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☑	☐	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	May 2019	☑
HASP	☑	May 2019	☑
Field Ops Manual	☑	May 2019	☑
Calibration Reports	☐		☐
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

F-02058-1500-S8-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by the previous site operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 3 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	VIN140	Technician	Korey Devins	Site Visit Date	08/09/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☑

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-S10-rev002

Site ID VIN140 **Technician** Korey Devins **Site Visit Date** 08/09/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	6K2MC12	07040
DAS	Campbell	CR3000	2136	000358
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060300019956	04920
Flow Rate	Apex	AXMC105LPMDPC	43974	000465
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07166
Ozone	ThermoElectron Inc	49i A1NAA	1105347311	000740
Ozone Standard	ThermoElectron Inc	49i A3NAA	0929938239	000546
Sample Tower	Aluma Tower	B	none	000137
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	6699	04685
Zero air pump	Werther International	C 70/4	000821908	06906

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
NPT006-Martin Valvur-08/10/2021						
1	8/10/2021	DAS	Campbell	000836	CR850	32797
2	8/10/2021	Ozone	ThermoElectron Inc	000612	49i A1NAA	1009241779
3	8/10/2021	Ozone Standard	ThermoElectron Inc	000448	49i A3NAA	CM08200024
4	8/10/2021	Zero air pump	Werther International	000626	PC 70/4	000815300

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241779	NPT006	Martin Valvur	08/10/2021	Ozone	000612

Slope:	1.00445	**Slope:**	0.00000
Intercept	-0.06069	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.10	0.07	0.35	ppb		0.28
primary	2	15.36	15.23	15.07	ppb		-0.16
primary	3	33.52	33.28	33.17	ppb	-0.33	
primary	4	65.17	64.72	64.82	ppb	0.15	
primary	5	115.37	114.60	115.20	ppb	0.52	

Sensor Component	Audit Pressure	**Condition**	684 mmHg	**Status**	pass
Sensor Component	26.6 degree unobstructed rule	**Condition**	False	**Status**	Fail
Sensor Component	Tree dewline >10m or below inlet	**Condition**	True	**Status**	pass
Sensor Component	ADT <100 vehicles further than 20	**Condition**	True	**Status**	pass
Sensor Component	ADT >100 vehicles further than 50	**Condition**	True	**Status**	pass
Sensor Component	Sample Train	**Condition**	Good	**Status**	pass
Sensor Component	Inlet Filter Condition	**Condition**	Clean	**Status**	pass
Sensor Component	Offset	**Condition**	0.000	**Status**	pass
Sensor Component	Span	**Condition**	1.058	**Status**	pass
Sensor Component	Zero Voltage	**Condition**	N/A	**Status**	pass
Sensor Component	Fullscale Voltage	**Condition**	N/A	**Status**	pass
Sensor Component	Cell A Freq.	**Condition**	89.7 kHz	**Status**	pass
Sensor Component	Cell A Noise	**Condition**	0.5 ppb	**Status**	pass
Sensor Component	Cell A Flow	**Condition**	0.69 lpm	**Status**	pass
Sensor Component	Cell A Pressure	**Condition**	658.4 mmHg	**Status**	pass
Sensor Component	Cell A Tmp.	**Condition**	33.2 C	**Status**	pass
Sensor Component	Cell B Freq.	**Condition**	89.6 kHz	**Status**	pass
Sensor Component	Cell B Noise	**Condition**	0.8 ppb	**Status**	pass
Sensor Component	Cell B Flow	**Condition**	0.73 lpm	**Status**	pass
Sensor Component	Cell B Pressure	**Condition**	657.8 mmHg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
UVL124-Eric Hebert-08/11/2021						
1	8/11/2021	DAS	Campbell	000347	CR3000	2126
2	8/11/2021	Ozone	ThermoElectron Inc	000680	49i A1NAA	1030244792
3	8/11/2021	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
4	8/11/2021	Zero air pump	Werther International	06936	C 70/4	000829169

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244792	UVL124	Eric Hebert	08/11/2021	Ozone	000680

Slope:	0.99714	**Slope:**	0.00000
Intercept	-1.32013	**Intercept**	0.00000
CorrCoff:	0.99988	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180930075	**Tfer Desc.**	Ozone primary stan
Tfer ID	01115		
Slope	1.00560	**Intercept**	0.14070
Cert Date	4/7/2021	**CorrCoff**	0.99990

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.05	-0.08	-0.41	ppb		-0.33
primary	2	17.33	16.87	14.74	ppb		-2.13
primary	3	36.76	35.94	34.07	ppb	-5.34	
primary	4	68.99	67.57	65.94	ppb	-2.44	
primary	5	112.22	110.00	108.70	ppb	-1.19	

Sensor Component	Condition	Status
Audit Pressure	738.6 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	205 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Moderately clean	pass
Offset	0.60	pass
Span	1.028	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	100.8 kHz	pass
Cell A Noise	0.6 ppb	pass
Cell A Flow	0.43 lpm	pass
Cell A Pressure	721.2 mmHg	pass
Cell A Tmp.	38.0 C	pass
Cell B Freq.	90.4 kHz	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.69 lpm	pass
Cell B Pressure	721.8 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
MAC426-Korey Devins-08/11/2021						
1	8/11/2021	Computer	Hewlett Packard	none	6560 b	5CB1520H70
2	8/11/2021	DAS	Environmental Sys Corp	none	8832	unknown4
3	8/11/2021	Elevation	Elevation	None	1	None
4	8/11/2021	Filter pack flow pump	Thomas	none	107CAB18B	070000012920
5	8/11/2021	Flow Rate	Tylan	none	FC280	AW02213005
6	8/11/2021	Infrastructure	Infrastructure	none	none	none
7	8/11/2021	Met tower	Climatronics	none	illegible	illegible
8	8/11/2021	MFC power supply	Tylan	03677	RO-32	illegible
9	8/11/2021	Ozone	ThermoElectron Inc	none	49i A3NAA	1030745085
10	8/11/2021	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1015543061
11	8/11/2021	Sample Tower	Aluma Tower	none	B	none
12	8/11/2021	Shelter Temperature	ARS	60	none	none
13	8/11/2021	Siting Criteria	Siting Criteria	None	1	None
14	8/11/2021	Temperature2meter	RM Young	none	41342	15104
15	8/11/2021	Zero air pump	Teledyne	none	701H	394

DAS Data Form

DAS Time Max Error: 0.17

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	unknown4	MAC426	Korey Devins	08/11/2021	DAS	Primary

Das Date: 8 /11/2021
Das Time: 10:05:50
Das Day: 223

Audit Date 8 /11/2021
Audit Time 10:06:00
Audit Day 223

Low Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

High Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
4	0.0000	0.0000	0.0000	V	V	0.0000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Tylan	AW02213005	MAC426	Korey Devins	08/11/2021	Flow Rate	none

Mfg	Tylan		
SN/Owner ID	illegible	03677	
Parameter:	MFC power supply		

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
2.44%	3.02%			**Cal Factor Full Scale**	0
				Rotometer Reading:	0

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	-0.20	0.0000	-0.08	l/m	l/m	
primary	leak check	0.000	0.000	-0.16	0.0000	-0.04	l/m	l/m	
primary	test pt 1	1.569	1.570	1.30	0.0000	1.54	l/m	l/m	-1.78%
primary	test pt 2	1.577	1.580	1.30	0.0000	1.54	l/m	l/m	-2.53%
primary	test pt 3	1.586	1.590	1.30	0.0000	1.54	l/m	l/m	-3.02%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Poor	**Status**	Fail
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	-3.0 cm	**Status**	Fail
Sensor Component	Filter Azimuth	**Condition**	255 deg	**Status**	pass
Sensor Component	System Memo	**Condition**	See comments	**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030745085	MAC426	Korey Devins	08/11/2021	Ozone	none

Slope:	0.98950	**Slope:**	0.00000
Intercept	0.55881	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.33	0.02	0.76	ppb		0.74
primary	2	14.87	14.48	14.81	ppb		0.33
primary	3	34.43	33.94	34.02	ppb	0.24	
primary	4	67.37	66.70	66.48	ppb	-0.33	
primary	5	109.94	109.05	108.56	ppb	-0.45	

Sensor Component	Audit Pressure	**Condition**	744.6 mmHg	**Status**	pass
Sensor Component	26.6 degree unobstructed rule	**Condition**	True	**Status**	pass
Sensor Component	Tree dewline >10m or below inlet	**Condition**	True	**Status**	pass
Sensor Component	ADT <100 vehicles further than 20	**Condition**	True	**Status**	pass
Sensor Component	ADT >100 vehicles further than 50	**Condition**	True	**Status**	pass
Sensor Component	Sample Train	**Condition**	Good	**Status**	pass
Sensor Component	Inlet Filter Condition	**Condition**	Clean	**Status**	pass
Sensor Component	Offset	**Condition**	-0.7	**Status**	pass
Sensor Component	Span	**Condition**	1.000	**Status**	pass
Sensor Component	Zero Voltage	**Condition**	N/A	**Status**	pass
Sensor Component	Fullscale Voltage	**Condition**	N/A	**Status**	pass
Sensor Component	Cell A Freq.	**Condition**	98.1 kHz	**Status**	pass
Sensor Component	Cell A Noise	**Condition**	0.6 ppb	**Status**	pass
Sensor Component	Cell A Flow	**Condition**	0.71 lpm	**Status**	pass
Sensor Component	Cell A Pressure	**Condition**	733.6 mmHg	**Status**	pass
Sensor Component	Cell A Tmp.	**Condition**	36.4 C	**Status**	pass
Sensor Component	Cell B Freq.	**Condition**	104.3 kHz	**Status**	pass
Sensor Component	Cell B Noise	**Condition**	0.6 ppb	**Status**	pass
Sensor Component	Cell B Flow	**Condition**	0.71 lpm	**Status**	pass
Sensor Component	Cell B Pressure	**Condition**	734.2 mmHg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	15104	MAC426	Korey Devins	08/11/2021	Temperature2meter	none

Mfg	Extech	Parameter	Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.16	0.42		

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.29	0.07	0.0000	0.49	C	0.42
primary	Temp Mid Range	29.32	28.89	0.0000	28.90	C	0.01
primary	Temp High Rang	47.77	47.20	0.0000	47.25	C	0.05

Sensor Component	Shield	Condition	Clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	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	MAC426	Korey Devins	08/11/2021	Shelter Temperature	60

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.41	0.76		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.90	26.49	0.000	25.7	C	-0.76
primary	Temp Mid Range	26.09	25.68	0.000	25.6	C	-0.1
primary	Temp Mid Range	26.50	26.09	0.000	25.7	C	-0.38

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
MAC426	Korey Devins	08/11/2021

Shelter Make	Shelter Model	Shelter Size
custom	N/A	1536 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	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	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

Siting Criteria Form

Sensor Component		Condition		Status	
Sensor Component	Limited agriculture operations	Condition	10 m	Status	Fail
Sensor Component	City > 50,000	Condition	35 km	Status	Fail
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

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	MAC426	Korey Devins	08/11/2021	Filter Depth	Tylan	4410	☐	☐

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

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator is very knowledgeable with air quality monitoring. He is doing a very good job with site activities and filter handling.

2 **Parameter:** SitingCriteriaCom

Bowling Green is within 40 km of the site. The site is in a hay field which is harvested twice per year. The area to the west and south is comprised of livestock farms including cattle and poultry.

3 **Parameter:** ShelterCleanNotes

The shelter is well maintained, clean, neat, and well organized.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	MAC426	**Technician**	Korey Devins	**Site Visit Date**	08/11/2021

Site Sponsor (agency)	NPS	**USGS Map**	Rhoda
Operating Group	NPS	**Map Scale**	
AQS #	21-061-0501	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, SO2, NOy, Hg, IMPROVE, PM	**QAPP Latitude**	37.2806
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-86.2639
Land Use	agriculture, woodland - mixed	**QAPP Elevation Meters**	236
Terrain	rolling	**QAPP Declination**	3
Conforms to MLM	Marginally	**QAPP Declination Date**	12/27/2004
Site Telephone	(270) 758-2136	**Audit Latitude**	37.131794
Site Address 1	Alfred Cook Road	**Audit Longitude**	-86.142953
Site Address 2		**Audit Elevation**	230
County	Edmonson	**Audit Declination**	-4.0
City, State	Smiths Grove, KY		**Present**
Zip Code	42171	**Fire Extinguisher**	☑ inspected March 2011
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**	custom	**Model**	N/A	**Shelter Size**	1536 cuft
Shelter Clean	☑	**Notes**	The shelter is well maintained, clean, neat, and well organized.				
Site OK	☑	**Notes**					

Driving Directions

From Bowling Green go east on 31W. Turn left (north) on 442 toward Pig. At the stop sign in Pig, turn right on route 259, or Brownsville Road. Continue approximately 1 mile, just past two churches (one on each side of the road). Take the 2nd left past the church on the left onto Chaumount Road. Then take the first left onto Doyle Road. Continue straight onto Alfred Cook Road. The site will be on the left approximately 0.6 miles.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 10 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☑	☐	☐	Data logger	☑	☐	☐
Wind direction sensor	☑	☐	☐	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☑	☐	Computer	☐	☑	☐
Solar radiation sensor	☑	☐	☐	Modem	☐	☑	☐
Surface wetness sensor	☐	☑	☐	Printer	☐	☑	☐
Wind sensor translator	☑	☐	☐	Zero air pump	☐	☑	☐
Temperature translator	☐	☑	☐	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☑	☐	☐	UPS	☐	☐	☑
Tipping bucket rain gauge	☑	☐	☐	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☑	☐	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	DataView2	☑
SSRF	☑		☑
Site Ops Manual	☑		☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☑	DataView
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

F-02058-1500-S8-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Receives training every 6 months during calibration visits
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Receives training every 6 months during calibration visits
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	Monthly	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	N/A	☑
Analyzer Diagnostics Tests	☑	Alarm values only	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	MAC426	Technician	Korey Devins	Site Visit Date	08/11/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed various times
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
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 contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC 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	☑	every 2 to 3 weeks	☑
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:

The site operator is very knowledgeable with air quality monitoring. He is doing a very good job with site activities and filter handling.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID MAC426 **Technician** Korey Devins **Site Visit Date** 08/11/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6560 b	5CB1520H70	none
DAS	Environmental Sys Corp	8832	unknown4	none
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18B	070000012920	none
Flow Rate	Tylan	FC280	AW02213005	none
Infrastructure	Infrastructure	none	none	none
Met tower	Climatronics	illegible	illegible	none
MFC power supply	Tylan	RO-32	illegible	03677
Ozone	ThermoElectron Inc	49i A3NAA	1030745085	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1015543061	none
Sample Tower	Aluma Tower	B	none	none
Shelter Temperature	ARS	none	none	60
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342	15104	none
Zero air pump	Teledyne	701H	394	none

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CDZ171-Korey Devins-08/12/2021						
1	8/12/2021	Computer	Dell	07063	Inspiron 15	HX4MC12
2	8/12/2021	DAS	Campbell	000355	CR3000	2133
3	8/12/2021	Elevation	Elevation	None	1	None
4	8/12/2021	Filter pack flow pump	Thomas	06020	107CAB18D	060400022646
5	8/12/2021	Flow Rate	Apex	000604	AXMC105LPMDPCV	unknown
6	8/12/2021	Infrastructure	Infrastructure	none	none	none
7	8/12/2021	Modem	Digi	07118	LR54	Illegible
8	8/12/2021	Ozone	ThermoElectron Inc	000727	49i A1NAA	1105347320
9	8/12/2021	Ozone Standard	ThermoElectron Inc	000220	49i A3NAA	0622717868
10	8/12/2021	Sample Tower	Aluma Tower	000125	B	none
11	8/12/2021	Shelter Temperature	Campbell	none	107-L	none
12	8/12/2021	Siting Criteria	Siting Criteria	None	1	None
13	8/12/2021	Temperature	RM Young	06403	41342VC	14036
14	8/12/2021	Zero air pump	Werther International	06879	C 70/4	000814275

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2133	CDZ171	Korey Devins	08/12/2021	DAS	Primary

Das Date: 8 /12/2021
Das Time: 14:06:30
Das Day: 224

Audit Date 8 /12/2021
Audit Time 14:06:30
Audit Day 224

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0001	0.0001	0.0001

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2997	0.2998	V	V	0.0001
7	0.5000	0.4996	0.4995	V	V	-0.0001
7	0.7000	0.6994	0.6994	V	V	0.0000
7	0.9000	0.8994	0.8993	V	V	-0.0001
7	1.0000	0.9992	0.9991	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	unknown	CDZ171	Korey Devins	08/12/2021	Flow Rate	000604

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0.003
				Cal Factor Full Scale	0.971
2.38%	2.60%			**Rotometer Reading:**	1.5

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.00	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	1.537	1.540	1.55	0.000	1.50	l/m	l/m	-2.60%
primary	test pt 2	1.537	1.540	1.55	0.000	1.51	l/m	l/m	-1.95%
primary	test pt 3	1.544	1.550	1.55	0.000	1.51	l/m	l/m	-2.58%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	90 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347320	CDZ171	Korey Devins	08/12/2021	Ozone	000727

Slope:	0.99944	**Slope:**	0.00000
Intercept	-0.15444	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.36	0.05	0.22	ppb		0.17
primary	2	15.25	14.86	14.53	ppb		-0.33
primary	3	35.44	34.94	34.48	ppb	-1.33	
primary	4	68.76	68.09	67.94	ppb	-0.22	
primary	5	111.73	110.83	110.70	ppb	-0.12	

Sensor Component	Condition	Status
Audit Pressure	746.2 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.1	pass
Span	1.019	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	90.7 kHz	pass
Cell A Noise	0.7 ppb	pass
Cell A Flow	0.78 lpm	pass
Cell A Pressure	703.4 mmHg	pass
Cell A Tmp.	36.7 C	pass
Cell B Freq.	94.3 mmHg	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.86 lpm	pass
Cell B Pressure	704.0 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14036	CDZ171	Korey Devins	08/12/2021	Temperature	06403

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.34	0.58		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.29	0.07	0.000	0.2	C	0.1
primary	Temp Mid Range	25.41	25.01	0.000	24.7	C	-0.35
primary	Temp High Range	45.48	44.93	0.000	44.4	C	-0.58

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**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	CDZ171	Korey Devins	08/12/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.39	0.90		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	31.01	30.57	0.000	30.3	C	-0.28
primary	Temp Mid Range	30.67	30.23	0.000	30.2	C	0
primary	Temp Mid Range	26.55	26.14	0.000	27.0	C	0.9

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
CDZ171	Korey Devins	08/12/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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 and 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	Good	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Shelter walls	Condition	Fair	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

Siting Criteria Form

Sensor Component	Limited agriculture operations	**Condition**	15 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

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is in a corn field with limited agricultural operations within 15 meters.

2 **Parameter:** ShelterCleanNotes

The shelter floor has been repaired.

3 **Parameter:** MetSensorComme

The temperature sensor has been installed in a naturally aspirated shield on the north side of the sample tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

Site Sponsor (agency)	EPA	USGS Map	Cadiz
Operating Group	private, TVA	Map Scale	
AQS #	21-221-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, SO2, NOy, PM2.5, IMPROVE	QAPP Latitude	36.7841
Deposition Measurement	dry	QAPP Longitude	-87.8500
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	189
Terrain	gently rolling	QAPP Declination	-2.01
Conforms to MLM	Yes	QAPP Declination Date	2/23/2006
Site Telephone	(270) 522-9373	Audit Latitude	36.784053
Site Address 1	4560 Old Dover Road	Audit Longitude	-87.85015
Site Address 2	route 1175	Audit Elevation	190
County	Trigg	Audit Declination	-2.7
City, State	Cadiz, KY		
Zip Code	42211	Present 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	Ekto	Model	8810	Shelter Size	640 cuft
Shelter Clean	☑	Notes	The shelter floor has been repaired.				
Site OK	☑	Notes					

Driving Directions

From route 68 in Cadiz turn south on 1175 and continue approximately 4.7 miles. The site will be visible in the field on the right. Turn onto the gravel road just past the site operator's house at 4560 Old Dover Road, which is on the left.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 has been installed in a naturally aspirated shield on the north side of the sample tower.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 18 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?	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 Systems Data Form

F-02058-1500-S7-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☑	☐	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	May 2019	☑
HASP	☑	May 2019	☑
Field Ops Manual	☑	May 2019	☑
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

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

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

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous opertor
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	no backup operator
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☐		☐
Zero Air Desiccant Check	☑	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?	☑	Call-in only

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-S9-rev002

Site ID	CDZ171	Technician	Korey Devins	Site Visit Date	08/12/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons (90% of the time)
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☐		☐

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-S10-rev002

Site ID CDZ171 **Technician** Korey Devins **Site Visit Date** 08/12/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	HX4MC12	07063
DAS	Campbell	CR3000	2133	000355
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18D	060400022646	06020
Flow Rate	Apex	AXMC105LPMDPC	unknown	000604
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07118
Ozone	ThermoElectron Inc	49i A1NAA	1105347320	000727
Ozone Standard	ThermoElectron Inc	49i A3NAA	0622717868	000220
Sample Tower	Aluma Tower	B	none	000125
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	14036	06403
Zero air pump	Werther International	C 70/4	000814275	06879

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CKT136-Korey Devins-08/13/2021						
1	8/13/2021	Computer	Dell	07050	Inspiron 15	Unknown
2	8/13/2021	DAS	Campbell	000336	CR3000	2115
3	8/13/2021	Elevation	Elevation	None	1	None
4	8/13/2021	Filter pack flow pump	Thomas	03635	107CA18	049400004430
5	8/13/2021	Flow Rate	Apex	000873	AXMC105LPMDPCV	illegible
6	8/13/2021	Infrastructure	Infrastructure	none	none	none
7	8/13/2021	Modem	Digi	07190	LR54	unknown
8	8/13/2021	Ozone	ThermoElectron Inc	000744	49i A1NAA	1105347324
9	8/13/2021	Ozone Standard	ThermoElectron Inc	000200	49i A3NAA	0607315738
10	8/13/2021	Sample Tower	Aluma Tower	000822	B	none
11	8/13/2021	Shelter Temperature	Campbell	none	107-L	none
12	8/13/2021	Siting Criteria	Siting Criteria	None	1	None
13	8/13/2021	Temperature	RM Young	04689	41342VO	6703
14	8/13/2021	Zero air pump	Werther International	06878	C 70/4	000815254

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2115	CKT136	Korey Devins	08/13/2021	DAS	Primary

Das Date: 8 /13/2021
Das Time: 16:48:35
Das Day: 225

Audit Date 8 /13/2021
Audit Time 16:48:35
Audit Day 225

Low Channel:

Avg Diff:	Max Diff:
0.0000	0.0001

High Channel:

Avg Diff:	Max Diff:
0.0000	0.0001

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2997	0.2997	V	V	0.0000
7	0.5000	0.4996	0.4995	V	V	-0.0001
7	0.7000	0.6995	0.6994	V	V	-0.0001
7	0.9000	0.8993	0.8993	V	V	0.0000
7	1.0000	0.9992	0.9991	V	V	-0.0001

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	CKT136	Korey Devins	08/13/2021	Flow Rate	000873

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
0.88%	1.32%			**Cal Factor Full Scale**	0
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	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	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.507	1.510	1.53	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 2	1.510	1.510	1.53	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.511	1.520	1.53	0.000	1.50	l/m	l/m	-1.32%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	260 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347324	CKT136	Korey Devins	08/13/2021	Ozone	000744

Slope:	1.00365	**Slope:**	0.00000
Intercept	-0.76982	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.46	0.15	-0.62	ppb		-0.77
primary	2	15.06	14.67	13.97	ppb		-0.7
primary	3	35.79	35.29	34.59	ppb	-2	
primary	4	67.56	66.89	66.43	ppb	-0.69	
primary	5	114.09	113.18	112.80	ppb	-0.34	

Sensor Component	Condition	Status
Audit Pressure	730.5 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	440 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.1	pass
Span	1.008	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	90.9 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.73 lpm	pass
Cell A Pressure	700.5 mmHg	pass
Cell A Tmp.	38.7 C	pass
Cell B Freq.	94.0 kHz	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.69 lpm	pass
Cell B Pressure	701.4 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	6703	CKT136	Korey Devins	08/13/2021	Temperature	04689

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.11	0.21		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.32	0.10	0.000	0.3	C	0.21
primary	Temp Mid Range	26.19	25.78	0.000	25.9	C	0.07
primary	Temp High Range	45.23	44.68	0.000	44.7	C	0.06

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**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	CKT136	Korey Devins	08/13/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.22	0.28		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.67	27.25	0.000	27.5	C	0.28
primary	Temp Mid Range	28.35	27.93	0.000	28.0	C	0.11
primary	Temp Mid Range	28.09	27.67	0.000	28.0	C	0.28

Sensor Component	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

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-2)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	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 and 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	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter walls	Condition	Fair	Status	pass
Sensor Component	Excessive mold present	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	CKT136	Korey Devins	08/13/2021	Moisture Present	Apex	4675	☐	☐

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

Field Systems Comments

1 **Parameter:** SiteOKNotes

The road to the site is in need of repair.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition. The shelter walls adjacent to the air conditioner have been repaired.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	CKT136	**Technician**	Korey Devins	**Site Visit Date**	08/13/2021

Site Sponsor (agency)	EPA	**USGS Map**	Dingus
Operating Group	private	**Map Scale**	
AQS #	21-175-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	37.9211
Deposition Measurement	dry	**QAPP Longitude**	-83.0658
Land Use	woodland - mixed	**QAPP Elevation Meters**	455
Terrain	rolling	**QAPP Declination**	5.9
Conforms to MLM	Yes	**QAPP Declination Date**	2/22/2006
Site Telephone	(606) 522-3560	**Audit Latitude**	37.92146
Site Address 1	7687 Highway 437	**Audit Longitude**	-83.066295
Site Address 2		**Audit Elevation**	376
County	Morgan	**Audit Declination**	-6.1
City, State	West Liberty, KY		
Zip Code	41472	**Fire Extinguisher** (Present) ☑	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	**Model**	8810 (s/n 2116-2)	**Shelter Size**	640 cuft
Shelter Clean	☐	**Notes**	The shelter is in fair condition. The shelter walls adjacent to the air conditioner have been repaired.				
Site OK	☑	**Notes**	The road to the site is in need of repair.				

Driving Directions

From I-64 in Morehead go south on route 519 to West Liberty. At the first traffic light in West Liberty, turn left (east) onto route 460. Continue approximately 1 mile and turn left onto route 172. continue approximately 8 miles and then turn right onto route 437. Continue approximately 8 miles staying on 437. The road will climb a hill, turn left onto a dirt road at the top of the hill before the closed gas station). There is a sign for "KY Ridgerunners". The site is approximately 1/2 mile on the left.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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-S6-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?	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 Systems Data Form

F-02058-1500-S7-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☑	☐	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☑	☐	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	May 2019	☑
HASP	☑	May 2019	☑
Field Ops Manual	☑	May 2019	☑
Calibration Reports	☑	Electronic copy	☑
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

F-02058-1500-S8-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	Logbook and 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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	CKT136	Technician	Korey Devins	Site Visit Date	08/13/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed usually about noon
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☑

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-S10-rev002

Site ID CKT136 **Technician** Korey Devins **Site Visit Date** 08/13/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07050
DAS	Campbell	CR3000	2115	000336
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	049400004430	03635
Flow Rate	Apex	AXMC105LPMDPC	illegible	000873
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07190
Ozone	ThermoElectron Inc	49i A1NAA	1105347324	000744
Ozone Standard	ThermoElectron Inc	49i A3NAA	0607315738	000200
Sample Tower	Aluma Tower	B	none	000822
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	6703	04689
Zero air pump	Werther International	C 70/4	000815254	06878

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HOX148-Korey Devins-08/16/2021						
1	8/16/2021	DAS	Campbell	000426	CR3000	2533
2	8/16/2021	Ozone	ThermoElectron Inc	000614	49i A1NAA	1009241794
3	8/16/2021	Ozone Standard	ThermoElectron Inc	000495	49i A3NAA	0622717849
4	8/16/2021	Zero air pump	Werther International	06938	C 70/4	000829164

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241794	HOX148	Korey Devins	08/16/2021	Ozone	000614

Slope:	0.95865	**Slope:**	0.00000
Intercept	-0.11849	**Intercept**	0.00000
CorrCoff:	0.99998	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.36	0.05	0.34	ppb		0.29
primary	2	15.07	14.68	13.71	ppb		-0.97
primary	3	35.48	34.98	33.27	ppb	-5.01	
primary	4	67.58	66.91	63.78	ppb	-4.79	
primary	5	112.76	111.85	107.33	ppb	-4.12	

Sensor Component	Condition	Status
Audit Pressure	738.3 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	55 m	Fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Moderately clean	pass
Offset	-0.2	pass
Span	1.012	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	100.0 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.73 lpm	pass
Cell A Pressure	705.5 mmHg	pass
Cell A Tmp.	37.1 C	pass
Cell B Freq.	92.7 kHz	pass
Cell B Noise	0.5 ppb	pass
Cell B Flow	0.73 lpm	pass
Cell B Pressure	706.1 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ANA115-Korey Devins-08/18/2021						
1	8/18/2021	DAS	Campbell	000339	CR3000	2118
2	8/18/2021	Ozone	ThermoElectron Inc	000699	49i A1NAA	1030244804
3	8/18/2021	Ozone Standard	ThermoElectron Inc	000686	49i A3NAA	1030244818
4	8/18/2021	Zero air pump	Werther International	06933	C 70/4	000836202

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244804	ANA115	Korey Devins	08/18/2021	Ozone	000699

Slope:	1.03324	**Slope:**	0.00000
Intercept	-0.28739	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.41	0.10	0.07	ppb		-0.03
primary	2	15.45	15.06	15.15	ppb		0.09
primary	3	35.08	34.59	35.28	ppb	1.98	
primary	4	67.68	67.01	68.87	ppb	2.74	
primary	5	109.06	108.17	111.60	ppb	3.12	

Sensor Component	Condition	Status
Audit Pressure	741.2 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	85 m	Fail
ADT >100 vehicles further than 50	325 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.000	pass
Span	1.052	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	92.4 kHz	pass
Cell A Noise	0.9 ppb	pass
Cell A Flow	0.72 lpm	pass
Cell A Pressure	703.8 mmHg	pass
Cell A Tmp.	37.8 C	pass
Cell B Freq.	93.5 kHz	pass
Cell B Noise	0.9 ppb	pass
Cell B Flow	0.68 lpm	pass
Cell B Pressure	704.1 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PRK134-Korey Devins-08/22/2021						
1	8/22/2021	Computer	Dell	07021	Inspiron 15	2884848822
2	8/22/2021	DAS	Campbell	000411	CR3000	2509
3	8/22/2021	Elevation	Elevation	None	1	None
4	8/22/2021	Filter pack flow pump	Thomas	04918	107CAB18	060300019989
5	8/22/2021	Flow Rate	Apex	000656	AXMC105LPMDPCV	illegible
6	8/22/2021	Infrastructure	Infrastructure	none	none	none
7	8/22/2021	Modem	Digi	07198	LR54	unknown
8	8/22/2021	Ozone	ThermoElectron Inc	000693	49i A1NAA	1030244806
9	8/22/2021	Ozone Standard	ThermoElectron Inc	000440	49i A3NAA	CM08200016
10	8/22/2021	Sample Tower	Aluma Tower	000930	B	AT214072-Z-7-2
11	8/22/2021	Shelter Temperature	Campbell	none	107-L	unknown
12	8/22/2021	Siting Criteria	Siting Criteria	None	1	None
13	8/22/2021	Temperature	RM Young	06306	41342VC	12545
14	8/22/2021	Zero air pump	Werther International	06905	C 70/4	000821907

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2509	PRK134	Korey Devins	08/22/2021	DAS	Primary

Das Date: 8 /22/2021
Das Time: 12:57:00
Das Day: 234

Audit Date 8 /22/2021
Audit Time 12:57:00
Audit Day 234

Low Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

High Channel:

Avg Diff:	Max Diff:
0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2997	0.2997	V	V	0.0000
7	0.5000	0.4996	0.4996	V	V	0.0000
7	0.7000	0.6995	0.6995	V	V	0.0000
7	0.9000	0.8993	0.8993	V	V	0.0000
7	1.0000	0.9992	0.9992	V	V	0.0000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	PRK134	Korey Devins	08/22/2021	Flow Rate	000656

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
0.67%	0.67%			**Cal Factor Full Scale**	0.98
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.490	1.490	1.54	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.488	1.490	1.54	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.486	1.490	1.53	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	60 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244806	PRK134	Korey Devins	08/22/2021	Ozone	000693

Slope:	0.97941	**Slope:**	0.00000
Intercept	-0.87249	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.41	0.10	-0.52	ppb		-0.62
primary	2	15.75	15.36	14.07	ppb		-1.29
primary	3	35.40	34.90	33.06	ppb	-5.41	
primary	4	66.59	65.93	63.70	ppb	-3.44	
primary	5	107.86	106.98	104.00	ppb	-2.82	

Sensor Component	Condition	Status
Audit Pressure	724.2 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	160 m	Fail
ADT >100 vehicles further than 50	160 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.000	pass
Span	1.008	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	93.2 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.69 lpm	pass
Cell A Pressure	703.5 mmHg	pass
Cell A Tmp.	36.0 C	pass
Cell B Freq.	94.7 kHz	pass
Cell B Noise	0.9 ppb	pass
Cell B Flow	0.60 lpm	pass
Cell B Pressure	704.4 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	12545	PRK134	Korey Devins	08/22/2021	Temperature	06306

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00743	**Intercept**	0.21666
Cert Date	2/18/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.20	0.30		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.19	-0.03	0.000	0.3	C	0.3
primary	Temp Mid Range	25.79	25.38	0.000	25.3	C	-0.04
primary	Temp High Range	45.52	44.97	0.000	44.7	C	-0.25

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**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	unknown	PRK134	Korey Devins	08/22/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.52	0.93		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.95	27.53	0.000	28.0	C	0.5
primary	Temp Mid Range	26.31	25.90	0.000	26.8	C	0.93
primary	Temp Mid Range	26.22	25.81	0.000	26.0	C	0.14

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
PRK134	Korey Devins	08/22/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2116-11)	640 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	N/A	pass
Met Tower	N/A	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Glass bottle and filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Good	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter walls	Good	pass
Excessive mold present	Good	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Siting Criteria Form

Sensor Component		Condition		Status	
Sensor Component	Limited agriculture operations	Condition	20 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

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

Clover and Barley have been planted for hay within 20m of the site starting in 2008.

2 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, and well organized.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	PRK134	**Technician**	Korey Devins	**Site Visit Date**	08/22/2021

Site Sponsor (agency)	EPA	**USGS Map**	Perkinstown
Operating Group	Private	**Map Scale**	
AQS #	55-119-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, PM2.5	**QAPP Latitude**	45.2066
Deposition Measurement	dry, wet	**QAPP Longitude**	-90.5972
Land Use	woodland - mixed	**QAPP Elevation Meters**	472
Terrain	gently rolling	**QAPP Declination**	1.6
Conforms to MLM	Yes	**QAPP Declination Date**	2/22/2006
Site Telephone		**Audit Latitude**	45.206525
Site Address 1	W 10776 CTH M	**Audit Longitude**	-90.597209
Site Address 2		**Audit Elevation**	462
County	Taylor	**Audit Declination**	-1.3
City, State	Medford, WI		
Zip Code	54451		
Time Zone	Central		
Primary Operator			
Primary Op. Phone #			
Primary Op. E-mail			
Backup Operator			
Backup Op. Phone #			
Backup Op. E-mail			

	Present	
Fire Extinguisher	☑	new in 2015
First Aid Kit	☑	
Safety Glasses	☐	
Safety Hard Hat	☑	
Climbing Belt	☐	
Security Fence	☐	
Secure Shelter	☑	
Stable Entry Steps	☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2116-11)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean, neat, and well organized.				
Site OK	☑	**Notes**					

Driving Directions From Medford continue north on 13 approximately 4.5 miles and turn left (west) onto county route M. Continue approximately 13 miles. Before reaching Perkinstown, and just after crossing a small creek and two sharp curves, the site will be visible behind the landowners house on the right.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	Mounted to sample tower
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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-S6-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☐
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	May 2019	☑
HASP	☑	May 2019	☑
Field Ops Manual	☑	May 2019	☑
Calibration Reports	☑		☑
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

F-02058-1500-S8-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	PRK134	Technician	Korey Devins	Site Visit Date	08/22/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☑

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-S10-rev002

Site ID PRK134 **Technician** Korey Devins **Site Visit Date** 08/22/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	2884848822	07021
DAS	Campbell	CR3000	2509	000411
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060300019989	04918
Flow Rate	Apex	AXMC105LPMDPC	illegible	000656
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07198
Ozone	ThermoElectron Inc	49i A1NAA	1030244806	000693
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200016	000440
Sample Tower	Aluma Tower	B	AT214072-Z-7-2	000930
Shelter Temperature	Campbell	107-L	unknown	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	12545	06306
Zero air pump	Werther International	C 70/4	000821907	06905

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GRB411-Martin Valvur-08/23/2021						
1	8/23/2021	DAS	Environmental Sys Corp	90635	8816	2507
2	8/23/2021	Ozone	ThermoElectron Inc	none	49i A3NAA	1200666539
3	8/23/2021	Ozone Standard	ThermoElectron Inc	none	49C	0330302753
4	8/23/2021	Zero air pump	Werther International	90722	TT70/4E	507782

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1200666539	GRB411	Martin Valvur	08/23/2021	Ozone	none

Slope:	0.96480	**Slope:**	0.00000
Intercept	0.22309	**Intercept**	0.00000
CorrCoff:	0.99994	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.14	0.11	0.98	ppb		0.87
primary	2	16.99	16.85	16.19	ppb		-0.66
primary	3	36.25	35.99	34.54	ppb	-4.11	
primary	4	67.77	67.30	64.85	ppb	-3.71	
primary	5	115.02	114.25	110.80	ppb	-3.07	

Sensor Component	Condition	Status
Audit Pressure	598 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	145 m	Fail
ADT >100 vehicles further than 50	145 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.1	pass
Span	0.998	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	86.8 kHz	pass
Cell A Noise	0.4 ppb	pass
Cell A Flow	0.64 lpm	pass
Cell A Pressure	579.6 mmHg	pass
Cell A Tmp.	32.4 C	pass
Cell B Freq.	72.3 kHz	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.63 lpm	pass
Cell B Pressure	579.3 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
VOY413-Eric Hebert-08/25/2021						
1	8/25/2021	DAS	Environmental Sys Corp	90632	8816	2505
2	8/25/2021	Elevation	Elevation	None	1	None
3	8/25/2021	Filter pack flow pump	Thomas	none	107CAB18	081700057764
4	8/25/2021	Flow Rate	Alicat	none	MC-10SLPM-D-PCV	Unknown
5	8/25/2021	Infrastructure	Infrastructure	none	none	none
6	8/25/2021	Ozone	ThermoElectron Inc	90714	49C	49C-66828-354
7	8/25/2021	Ozone Standard	ThermoElectron Inc	90569	49C	49C-59260-322
8	8/25/2021	Sample Tower	Aluma Tower	none	B	AT-51159-11-G
9	8/25/2021	Shelter Temperature	ARS	none	none	none
10	8/25/2021	Siting Criteria	Siting Criteria	None	1	None
11	8/25/2021	Temperature2meter	RM Young	none	41342VC	029199
12	8/25/2021	Zero air pump	Twin Tower Engineering	90719	TT70/E4	526294

DAS Data Form

DAS Time Max Error: 0.25

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	2505	VOY413	Eric Hebert	08/25/2021	DAS	Primary

Das Date:	8 /26/2021	**Audit Date**	8 /26/2021
Das Time:	10:59:45	**Audit Time**	11:00:00
Das Day:	238	**Audit Day**	238

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	Datel	**Parameter**	DAS
Serial Number	4000392	**Tfer Desc.**	Source generator (D
Tfer ID	01321		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2015	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Alicat	Unknown	VOY413	Eric Hebert	08/25/2021	Flow Rate	none

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number		**Tfer Desc.**	BIOS 530-H
Tfer ID	01414		
Slope	1.00185	**Intercept**	0.02453
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	-0.008
0.78%	1.01%			**Cal Factor Full Scale**	5.02
				Rotometer Reading:	3.15

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.0000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.0000	0.01	l/m	l/m	
primary	test pt 1	3.004	2.970	2.99	0.0000	3.00	l/m	l/m	1.01%
primary	test pt 2	3.006	2.980	2.99	0.0000	3.00	l/m	l/m	0.67%
primary	test pt 3	3.007	2.980	2.99	0.0000	3.00	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	49C-66828-354	VOY413	Eric Hebert	08/25/2021	Ozone	90714

Slope:	1.00433	**Slope:**	0.00000
Intercept	0.49412	**Intercept**	0.00000
CorrCoff:	0.99998	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180930075	**Tfer Desc.**	Ozone primary stan
Tfer ID	01115		
Slope	1.00560	**Intercept**	0.14070
Cert Date	4/7/2021	**CorrCoff**	0.99990

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	-0.01	-0.14	0.11	ppb		0.25
primary	2	14.43	14.02	14.68	ppb		0.66
primary	3	35.60	34.80	35.44	ppb	1.82	
primary	4	68.25	66.84	68.03	ppb	1.76	
primary	5	110.49	108.30	109.00	ppb	0.64	

Sensor Component	Condition	Status
Audit Pressure	Not tested	pass
26.6 degree unobstructed rule	False	Fail
Tree dewline >10m or below inlet	8.5 m	Fail
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	1.002	pass
Zero Voltage	-0.0001	pass
Fullscale Voltage	1.0000	pass
Cell A Freq.	104.8 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.71 lpm	pass
Cell A Pressure	718.6 mmHg	pass
Cell A Tmp.	37.8 C	pass
Cell B Freq.	85.9 kHz	pass
Cell B Noise	0.5 ppb	pass
Cell B Flow	0.73 lpm	pass
Cell B Pressure	718.1 mmHg	pass
System Memo		pass

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	029199	VOY413	Eric Hebert	08/25/2021	Temperature2meter	none

Mfg	Extech	Parameter	Temperature
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00751	Intercept	0.16174
Cert Date	2/18/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.2	0.34		

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.45	0.29	0.0000	0.63	C	0.34
primary	Temp Mid Range	24.91	24.56	0.0000	24.80	C	0.24
primary	Temp High Rang	47.76	47.24	0.0000	47.27	C	0.03

Sensor Component	Shield	Condition	Moderately clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	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	VOY413	Eric Hebert	08/25/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
1.70	2.03		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00751	Intercept	0.16174
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	24.02	23.68	0.000	24.9	C	1.24
primary	Temp Mid Range	23.30	22.97	0.000	24.8	C	1.83
primary	Temp Mid Range	22.71	22.38	0.000	24.4	C	2.03

Sensor Component	System Memo	Condition		Status	pass

Infrastructure Data For

Site ID	Technician	Site Visit Date
VOY413	Eric Hebert	08/25/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2880-2)	640 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	Good	pass
Met Tower	Good	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Fair	pass
Shelter Door	Good	pass
Shelter Roof	Fair	pass
Shelter Floor	Fair	pass
Shelter walls	Fair	pass
Excessive mold present	Good	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		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

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator uses the filter bag to handle the dry deposition filter during installation and removal.

2 **Parameter:** DasComments

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may have been repaired, it is dry at this time.

3 **Parameter:** SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height, but within 10 m of the inlet.

4 **Parameter:** ShelterCleanNotes

The shelter is in fair condition, and is neat and well organized.

5 **Parameter:** PollAnalyzerCom

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above the 22.5 degree threshold.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	VOY413	**Technician**	Eric Hebert	**Site Visit Date**	08/25/2021

Site Sponsor (agency)	NPS	**USGS Map**	Ash River NE
Operating Group	NPS	**Map Scale**	
AQS #	27-137-0034	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMPROVE	**QAPP Latitude**	48.4128
Deposition Measurement	dry, wet	**QAPP Longitude**	-92.8292
Land Use	woodland - mixed	**QAPP Elevation Meters**	429
Terrain	rolling	**QAPP Declination**	
Conforms to MLM	Marginally	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	48.412518
Site Address 1	CR 129	**Audit Longitude**	-92.829225
Site Address 2	Ash River Visitor Center Rd.	**Audit Elevation**	427
County	St. Louis	**Audit Declination**	0.5
City, State	Orr, MN		**Present**
Zip Code	55771	**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	**Model**	8810 (s/n 2880-2)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is in fair condition, and is neat and well organized.				
Site OK	☑	**Notes**					

Driving Directions

From Duluth take route 53 north towards International Falls. Approximately 20 miles south of International Falls and just north of Orr, turn right (east) on County Road 129. Continue approximately 9.5 miles and turn left toward the Ash River Visitor Center. Continue approximately 1.5 miles and look for a closed gate on the right. The site is approximately 1 mile up the trail from the road.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☐	Trees within 8.5 meters

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 9 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☐	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above the 22.5 degree threshold.

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID VOY413 **Technician** Eric Hebert **Site Visit Date** 08/25/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☐
11	Tower 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:

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may have been repaired, it is dry at this time.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☑	☐	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☑	☐
Wind sensor translator	☐	☐	☐	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	Dataview	☑
SSRF	☑		☑
Site Ops Manual	☑	Jan 2006	☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☐		☐

1	Is the station log properly completed during every site visit?	☑	Dataview
2	Are the Site Status Report Forms being completed and current?	☑	Flow section only
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

F-02058-1500-S8-rev002

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by ARS
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐	Weekly	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	Weekly	☐
Analyzer Diagnostics Tests	☑	Alarm values only	☑
In-line Filter Replacement (at inlet)	☑	Every 3 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	08/25/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed various times
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are 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 contamination during handling and shipping? How?	☑	
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC 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	☑	As needed	☑
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:

The site operator uses the filter bag to handle the dry deposition filter during installation and removal.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID VOY413 **Technician** Eric Hebert **Site Visit Date** 08/25/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2505	90632
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	081700057764	none
Flow Rate	Alicat	MC-10SLPM-D-PCV	Unknown	none
Infrastructure	Infrastructure	none	none	none
Ozone	ThermoElectron Inc	49C	49C-66828-354	90714
Ozone Standard	ThermoElectron Inc	49C	49C-59260-322	90569
Sample Tower	Aluma Tower	B	AT-51159-11-G	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	029199	none
Zero air pump	Twin Tower Engineering	TT70/E4	526294	90719

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
SND152-Eric Hebert-08/29/2021						
1	8/29/2021	DAS	Campbell	000357	CR3000	2135
2	8/29/2021	Ozone	ThermoElectron Inc	000743	49i A1NAA	1105347321
3	8/29/2021	Ozone Standard	ThermoElectron Inc	000704	49i A3NAA	1030244816
4	8/29/2021	Zero air pump	Werther International	06907	C 70/4	000829179

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347321	SND152	Eric Hebert	08/29/2021	Ozone	000743

Slope:	1.00921	**Slope:**	0.00000
Intercept	0.52639	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180930075	**Tfer Desc.**	Ozone primary stan
Tfer ID	01115		
Slope	1.00560	**Intercept**	0.14070
Cert Date	4/7/2021	**CorrCoff**	0.99990

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.13	-0.01	0.69	ppb		0.7
primary	2	14.26	13.85	14.39	ppb		0.54
primary	3	31.30	30.58	31.34	ppb	2.45	
primary	4	68.49	67.08	68.12	ppb	1.54	
primary	5	110.98	108.78	110.40	ppb	1.48	

Sensor Component	Condition	Status
Audit Pressure	733.3 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	170 m	Fail
ADT >100 vehicles further than 50	170 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Moderately clean	pass
Offset	-0.50	pass
Span	1.013	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	104.9 kHz	pass
Cell A Noise	0.9 ppb	pass
Cell A Flow	0.61 lpm	pass
Cell A Pressure	700.0 mmHg	pass
Cell A Tmp.	34.5 C	pass
Cell B Freq.	99.7 kHz	pass
Cell B Noise	0.8 ppb	pass
Cell B Flow	0.69 lpm	pass
Cell B Pressure	700.7 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ROM206-Martin Valvur-09/23/2021						
1	9/23/2021	Computer	Dell	07068	Inspiron 15	552MC12
2	9/23/2021	DAS	Campbell	000419	CR3000	2527
3	9/23/2021	Dilution system	Teledyne	000790	T700U	110
4	9/23/2021	Elevation	Elevation	None	1	None
5	9/23/2021	Filter pack flow pump	Thomas	01339	107CAB18	00002630587
6	9/23/2021	Flow Rate	Apex	000598	AXMC105LPMDPCV	unknown
7	9/23/2021	Infrastructure	Infrastructure	none	none	none
8	9/23/2021	Modem	Digi	07127	LR54	Illegible
9	9/23/2021	Noy	Teledyne	000798	T200U	103
10	9/23/2021	Ozone	ThermoElectron Inc	000683	49i A1NAA	1030244798
11	9/23/2021	Ozone Standard	ThermoElectron Inc	000464	49i A3NAA	0622717858
12	9/23/2021	Sample Tower	Aluma Tower	000810	C	Unknowm
13	9/23/2021	Shelter Temperature	Campbell	none	107-L	none
14	9/23/2021	Siting Criteria	Siting Criteria	None	1	None
15	9/23/2021	Temperature	RM Young	06309	41342	12534
16	9/23/2021	Zero air pump	Werther International	06917	PC70/4	000829166
17	9/23/2021	Zero air system	Teledyne	000777	701H	607

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2527	ROM206	Martin Valvur	09/23/2021	DAS	Primary

Das Date: 9 /23/2021
Das Time: 08:31:00
Das Day: 266

Audit Date 9 /23/2021
Audit Time 08:31:00
Audit Day 266

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0007	0.0002	0.0007

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0005	-0.0006	V	V	-0.0001
7	0.1000	0.0995	0.0998	V	V	0.0003
7	0.3000	0.2995	0.2996	V	V	0.0001
7	0.5000	0.4994	0.4993	V	V	-0.0001
7	0.7000	0.7008	0.7001	V	V	-0.0007
7	0.9000	0.8996	0.8996	V	V	0.0000
7	1.0000	0.9993	0.9994	V	V	0.0001

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	unknown	ROM206	Martin Valvur	09/23/2021	Flow Rate	000598

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	148613	**Tfer Desc.**	BIOS 220-H
Tfer ID	01421		
Slope	1.00850	**Intercept**	0.00160
Cert Date	2/10/2021	**CorrCoff**	0.99999

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	-0.01
0.33%	0.67%			**Cal Factor Full Scale**	0.97
				Rotometer Reading:	3.8

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	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	0.00	0.000	-0.01	l/m	l/m	
primary	test pt 1	3.040	3.010	3.07	0.000	3.00	l/m	l/m	-0.33%
primary	test pt 2	3.030	3.000	3.07	0.000	3.00	l/m	l/m	0.00%
primary	test pt 3	3.020	2.990	3.07	0.000	3.01	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	5.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	225 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244798	ROM206	Martin Valvur	09/23/2021	Ozone	000683

Slope:	1.00892	**Slope:**	0.00000
Intercept	-0.36857	**Intercept**	0.00000
CorrCoff:	0.99995	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.04	0.01	0.24	ppb		0.23
primary	2	16.35	16.27	15.85	ppb		-0.42
primary	3	36.72	36.58	36.15	ppb	-1.18	
primary	4	65.48	65.25	65.10	ppb	-0.23	
primary	5	118.16	117.77	118.80	ppb	0.87	

Sensor Component	Condition	Status
Audit Pressure	555 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	70 m	Fail
ADT >100 vehicles further than 50	270 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	1.031	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	92.4 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.60 lpm	pass
Cell A Pressure	526.9 mmHg	pass
Cell A Tmp.	37.8 C	pass
Cell B Freq.	92.8 kHz	pass
Cell B Noise	0.7 ppb	pass
Cell B Flow	0.61 lpm	pass
Cell B Pressure	526.3 mmHg	pass
System Memo		pass

Temperature Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	12534	ROM206	Martin Valvur	09/23/2021	Temperature	06309

Mfg	Fluke	**Parameter**	Temperature
Serial Number	3275143	**Tfer Desc.**	RTD
Tfer ID	01229		
Slope	0.99975	**Intercept**	-0.00824
Cert Date	2/9/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Err**	**Abs Avg Err**	**Abs Max Err**
0.14	0.20		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.04	0.05	0.000	0.1	C	0.08
primary	Temp Mid Range	22.93	22.94	0.000	22.8	C	-0.15
primary	Temp High Range	48.92	48.94	0.000	49.1	C	0.2

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**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	ROM206	Martin Valvur	09/23/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.33	0.51		

Mfg	Fluke	Parameter	Shelter Temperature
Serial Number	3275143	Tfer Desc.	RTD
Tfer ID	01229		
Slope	0.99975	Intercept	-0.00824
Cert Date	2/9/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.05	26.06	0.000	26.1	C	0.01
primary	Temp Mid Range	24.77	24.78	0.000	25.3	C	0.48
primary	Temp Mid Range	25.05	25.06	0.000	25.6	C	0.51

Sensor Component	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

Site ID	Technician	Site Visit Date
ROM206	Martin Valvur	09/23/2021

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2182-1)	640 cuft

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	Good	pass
Met Tower	N/A	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Glass bottle and filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Good	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter walls	Good	pass
Excessive mold present	Good	pass
Signal Cable	3/8 teflon	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, and well organized. There are signs of previous roof leaks, but they have been repaired. The floor and counter top have been replaced.

2 **Parameter:** MetSensorComme

The temperature sensor has been removed from the met tower and mounted in a naturally aspirated shield on the sample tower, facing south and over the shelter roof.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ROM206	**Technician**	Martin Valvur	**Site Visit Date**	09/23/2021

Site Sponsor (agency)	EPA	**USGS Map**	Longs Peak
Operating Group	private	**Map Scale**	
AQS #	08-069-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, IMPROVE	**QAPP Latitude**	40.2778
Deposition Measurement	dry	**QAPP Longitude**	-105.5453
Land Use	woodland - mixed	**QAPP Elevation Meters**	2743
Terrain	complex	**QAPP Declination**	10.3
Conforms to MLM	Marginally	**QAPP Declination Date**	2/22/2006
Site Telephone	(970) 586-2598	**Audit Latitude**	40.278129
Site Address 1	High Peak Camp	**Audit Longitude**	-105.545635
Site Address 2	Route 7	**Audit Elevation**	2742
County	Larimer	**Audit Declination**	9.0
City, State	Estes Park, CO		**Present**
Zip Code	80517	**Fire Extinguisher**	☑ New in 2015
Time Zone	Mountain	**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	**Model**	8810 (s/n 2182-1)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean, neat, and well organized. There are signs of previous roof leaks, but they have been repaired. The floor and counter top have been replaced.				
Site OK	☑	**Notes**					

Driving Directions From Estes Park take route 7 south approximately 8.5 miles. Turn right onto Preservation Road (dirt road) at the sign for High Peak Camp operated by the Salvation Army. The site is approximately 100 meters on the left.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☐	South
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 has been removed from the met tower and mounted in a naturally aspirated shield on the sample tower, facing south and over the shelter roof.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Feb 2014	☑
HASP	☑	Feb 2014	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
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

F-02058-1500-S8-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	Trained by site operator
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
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?	☑	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:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	ROM206	Technician	Martin Valvur	Site Visit Date	09/23/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed evenings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	one set of gloves only
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC 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	☑

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-S10-rev002

Site ID ROM206 **Technician** Martin Valvur **Site Visit Date** 09/23/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	552MC12	07068
DAS	Campbell	CR3000	2527	000419
Dilution system	Teledyne	T700U	110	000790
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	00002630587	01339
Flow Rate	Apex	AXMC105LPMDPC	unknown	000598
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07127
Noy	Teledyne	T200U	103	000798
Ozone	ThermoElectron Inc	49i A1NAA	1030244798	000683
Ozone Standard	ThermoElectron Inc	49i A3NAA	0622717858	000464
Sample Tower	Aluma Tower	C	Unknowm	000810
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	12534	06309
Zero air pump	Werther International	PC70/4	000829166	06917
Zero air system	Teledyne	701H	607	000777

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ACA416-Korey Devins-09/27/2021						
1	9/27/2021	Computer	Hewlett Packard	none	8460p	CNU20941M6
2	9/27/2021	DAS	Environmental Sys Corp	none	8832	A3506K
3	9/27/2021	Elevation	Elevation	None	1	None
4	9/27/2021	Flow Rate	Alicat	none	MC-10SLPM-D-PCV	Illgeible
5	9/27/2021	Infrastructure	Infrastructure	none	none	none
6	9/27/2021	Met tower	Climatronics	none	unknown	illegible
7	9/27/2021	Ozone	ThermoElectron Inc	90744	49C	49C-74536-376
8	9/27/2021	Ozone Standard	T-API	none	T-703V	71
9	9/27/2021	Sample Tower	Aluma Tower	none	B	AT-71103-7I-3
10	9/27/2021	Shelter Temperature	Agilaire	none	Unknown	None
11	9/27/2021	Shield (2 meter)	Climatronics	none	100325	illegible
12	9/27/2021	Siting Criteria	Siting Criteria	None	1	None
13	9/27/2021	Temperature2meter	Climatronics	none	100093	missing
14	9/27/2021	Zero air pump	ThermoElectron Inc	none	111	111-30215-237

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	A3506K	ACA416	Korey Devins	09/27/2021	DAS	Primary

Das Date:	9 /27/2021	**Audit Date**	9 /27/2021
Das Time:	09:21:35	**Audit Time**	09:22:00
Das Day:	270	**Audit Day**	270

Low Channel:		**High Channel:**	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0000	0.0000	0.0000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/11/2021	**CorrCoff**	1.00000

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Flow Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Alicat	Illgeible	ACA416	Korey Devins	09/27/2021	Flow Rate	none

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	0.99756	**Intercept**	-0.00058
Cert Date	2/10/2021	**CorrCoff**	0.99993

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**	**Cal Factor Zero**	0
1.90%	2.15%			**Cal Factor Full Scale**	0
				Rotometer Reading:	1.8

Desc.	Test type	Input l/m	Input Corr	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalU	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.04	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.04	l/m	l/m	
primary	test pt 1	1.486	1.490	1.50	0.000	1.52	l/m	l/m	2.08%
primary	test pt 2	1.488	1.490	1.50	0.000	1.52	l/m	l/m	2.15%
primary	test pt 3	1.492	1.500	1.50	0.000	1.52	l/m	l/m	1.47%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	135 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

2 Meter Temperature Data Form

Calc. Difference

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	missing	ACA416	Korey Devins	09/27/2021	Temperature2meter	none

Mfg	Extech	Parameter	Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.34	0.81		

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.24	0.02	0.000	0.08	C	0.06
primary	Temp Mid Range	25.99	25.58	0.000	25.43	C	-0.15
primary	Temp High Rang	46.61	46.05	0.000	45.24	C	-0.81

Sensor Component	Shield	Condition	Moderately clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	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
Agilaire	None	ACA416	Korey Devins	09/27/2021	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Err	Abs Avg Err	Abs Max Err
0.13	0.23		

Mfg	Extech	Parameter	Shelter Temperature
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00743	Intercept	0.21666
Cert Date	2/18/2021	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.53	25.13	0.000	25.1	C	-0.01
primary	Temp Mid Range	25.63	25.23	0.000	25.1	C	-0.15
primary	Temp Mid Range	25.72	25.32	0.000	25.1	C	-0.23

Sensor Component	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

Site ID	Technician	Site Visit Date
ACA416	Korey Devins	09/27/2021

Shelter Make	Shelter Model	Shelter Size
Custom	Unknown	Unknown

Sensor Component	Condition	Status
Sample Tower Type	Type B	pass
Conduit	Good	pass
Met Tower	Good	pass
Moisture Trap	Installed	pass
Moisture Trap Type	Glass bottle and filter	pass
Power Cables	Good	pass
Shelter Temp Control	Functioning	pass
Rotometer	Installed	pass
Sample Tower	Good	pass
Shelter Condition	Good	pass
Shelter Door	Good	pass
Shelter Roof	Good	pass
Shelter Floor	Good	pass
Shelter walls	Good	pass
Excessive mold present	Good	pass
Signal Cable	Good	pass
Tubing Type	3/8 teflon	pass
Sample Train	Good	pass
System Memo		pass

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

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

2 **Parameter:** SiteOpsProcedures

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

3 **Parameter:** ShelterCleanNotes

The shelter is new, clean and well organized.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ACA416	**Technician**	Korey Devins	**Site Visit Date**	09/27/2021

Site Sponsor (agency)	NPS/EPA	**USGS Map**	Salsbury Cove
Operating Group	NPS/MEDEP	**Map Scale**	
AQS #	23-009-0103	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, SO2, NOx, NOy, PM, VOC	**QAPP Latitude**	44.3770
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-68.2610
Land Use	Costal, woodland - mixed	**QAPP Elevation Meters**	158
Terrain	rolling	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone	(432) 288-9322	**Audit Latitude**	44.377086
Site Address 1	Route 233	**Audit Longitude**	-68.2608
Site Address 2		**Audit Elevation**	153
County	Hancock	**Audit Declination**	-16.4
City, State	Bar Harbor, ME		
Zip Code	04609	**Fire Extinguisher** ☑	Inspected Aug 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** ☑	

Present

Shelter Working Room ☑	**Make**	Custom	**Model**	Unknown	**Shelter Size**	Unknown
Shelter Clean ☑	**Notes**	The shelter is new, clean and well organized.				
Site OK ☑	**Notes**					

Driving Directions From Bangor go east on 1A to Ellsworth. From Ellsworth take route 3 east to Bar Harbor. At the west edge of town, take Eagle Lake Rd (route 233) west toward Acadia National Park. The site is through a gate, at the end of a gravel road, across from the Park Headquarters.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

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 ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

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

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

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		3/8 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

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

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
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 DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower 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 Data Form

F-02058-1500-S7-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☑	☐	Data logger	☑	☐	☐
Wind direction sensor	☐	☑	☐	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☑	☐	☐
Relative humidity sensor	☐	☑	☐	Computer	☐	☑	☐
Solar radiation sensor	☑	☐	☐	Modem	☐	☑	☐
Surface wetness sensor	☐	☑	☐	Printer	☐	☑	☐
Wind sensor translator	☐	☑	☐	Zero air pump	☐	☑	☐
Temperature translator	☑	☐	☐	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☑	☐	Surge protector	☐	☑	☐
Solar radiation translator	☑	☐	☐	UPS	☐	☑	☐
Tipping bucket rain gauge	☑	☐	☐	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	Dataview	☑
SSRF	☑		☑
Site Ops Manual	☑	June 2000	☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedule	☑		☑

1	Is the station log properly completed during every site visit?	☑	Dataview
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

F-02058-1500-S8-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained on-site by ARS during site installation
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	Operator procedures are very good for filter replacement
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

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

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually by MEDEP	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☑	N/A	☐
Manual Rain Gauge Test	☑	Monthly	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	Not performed	☑

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Monthly	☑
Automatic Zero/Span Tests	☑	Weekly	☑
Manual Zero/Span Tests	☑	Weekly	☑
Automatic Precision Level Tests	☑	Weekly	☑
Manual Precision Level Test	☑	Weekly	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	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?	☑	Results are recorded weekly on a checklist

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

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

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID	ACA416	Technician	Korey Devins	Site Visit Date	09/27/2021

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings, 90%
2	Are the Site Status Report Forms being completed and filed correctly?	☑	Flow and general observation sections only
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are 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 contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐	Not performed	☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
Sample Line Check for Dirt/Water	☐	Not performed	☐

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:

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

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID ACA416 **Technician** Korey Devins **Site Visit Date** 09/27/2021

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8460p	CNU20941M6	none
DAS	Environmental Sys Corp	8832	A3506K	none
Elevation	Elevation	1	None	None
Flow Rate	Alicat	MC-10SLPM-D-PCV	Illgeible	none
Infrastructure	Infrastructure	none	none	none
Met tower	Climatronics	unknown	illegible	none
Ozone	ThermoElectron Inc	49C	49C-74536-376	90744
Ozone Standard	T-API	T-703V	71	none
Sample Tower	Aluma Tower	B	AT-71103-7I-3	none
Shelter Temperature	Agilaire	Unknown	None	none
Shield (2 meter)	Climatronics	100325	illegible	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	Climatronics	100093	missing	none
Zero air pump	ThermoElectron Inc	111	111-30215-237	none

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PET427-Martin Valvur-09/28/2021						
1	9/28/2021	DAS	Environmental Sys Corp	90641	8816	2526
2	9/28/2021	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943901
3	9/28/2021	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1211052489
4	9/28/2021	Zero air pump	Werther International	none	PC 70/4	531382

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943901	PET427	Martin Valvur	09/28/2021	Ozone	none

Slope:	0.97712	Slope:	0.00000
Intercept	-0.12746	Intercept	0.00000
CorrCoff:	0.99990	CorrCoff:	0.00000

Mfg	ThermoElectron Inc	Parameter	ozone
Serial Number	49CPS-70008-364	Tfer Desc.	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	Intercept	0.02230
Cert Date	1/20/2021	CorrCoff	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	A Max % Dif	A Avg %Diff	A Max % Dif
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.02	0.00	0.20	ppb		0.2
primary	2	16.80	16.72	16.27	ppb		-0.45
primary	3	37.56	37.42	36.43	ppb	-2.68	
primary	4	67.65	67.41	64.77	ppb	-3.99	
primary	5	110.12	109.75	107.70	ppb	-1.89	

Sensor Component	Condition	Status
Audit Pressure	623.9 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	True	pass
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	0.000	pass
Span	1.000	pass
Zero Voltage	0.0001	pass
Fullscale Voltage	1.0003	pass
Cell A Freq.	77.6 kHz	pass
Cell A Noise	0.6 ppb	pass
Cell A Flow	0.52 lpm	pass
Cell A Pressure	608.6 mmHg	pass
Cell A Tmp.	29.7 C	pass
Cell B Freq.	77.6 kHz	pass
Cell B Noise	0.8 ppb	pass
Cell B Flow	0.51 lpm	pass
Cell B Pressure	608.0 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ASH135-Korey Devins-09/29/2021						
1	9/29/2021	DAS	Campbell	000847	CR3000	11444
2	9/29/2021	Ozone	ThermoElectron Inc	000730	49i A1NAA	1105347325
3	9/29/2021	Ozone Standard	ThermoElectron Inc	000362	49i A3NAA	0726124686
4	9/29/2021	Zero air pump	Werther International	06923	C 70/4	000836208

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347325	ASH135	Korey Devins	09/29/2021	Ozone	000730

Slope:	0.99647	**Slope:**	0.00000
Intercept	-1.43850	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.44	0.13	-1.27	ppb		-1.4
primary	2	14.89	14.50	12.89	ppb		-1.61
primary	3	35.39	34.89	33.48	ppb	-4.12	
primary	4	67.25	66.58	64.81	ppb	-2.69	
primary	5	110.70	109.80	108.00	ppb	-1.65	

Sensor Component	Condition	Status
Audit Pressure	738.5 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	105 m	Fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	1.018	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	94.5 kHz	pass
Cell A Noise	0.7 ppb	pass
Cell A Flow	0.72 lpm	pass
Cell A Pressure	731.5 mmHg	pass
Cell A Tmp.	33.9 C	pass
Cell B Freq.	98.4 kHz	pass
Cell B Noise	0.6 ppb	pass
Cell B Flow	0.71 lpm	pass
Cell B Pressure	732.4 mmHg	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GRC474-Martin Valvur-09/29/2021						
1	9/29/2021	DAS	Environmental Sys Corp	90602	8816	2270
2	9/29/2021	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943902
3	9/29/2021	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450191
4	9/29/2021	Zero air pump	Werther International	none	PC70/4	531380

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943902	GRC474	Martin Valvur	09/29/2021	Ozone	none

Slope:	0.97373	**Slope:**	0.00000
Intercept	-0.17870	**Intercept**	0.00000
CorrCoff:	0.99999	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00340	**Intercept**	0.02230
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.06	0.03	0.13	ppb		0.1
primary	2	15.32	15.25	14.35	ppb		-0.9
primary	3	36.85	36.71	35.53	ppb	-3.27	
primary	4	66.77	66.54	64.67	ppb	-2.85	
primary	5	114.33	113.95	110.80	ppb	-2.8	

Sensor Component	Condition	Status
Audit Pressure	597.7 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	199 m	Fail
ADT >100 vehicles further than 50	199 m	Fail
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.1	pass
Span	1.002	pass
Zero Voltage	0.0002	pass
Fullscale Voltage	1.0000	pass
Cell A Freq.	80.6 kHz	pass
Cell A Noise	0.5 ppb	pass
Cell A Flow	0.69 lpm	pass
Cell A Pressure	592.4 mmHg	pass
Cell A Tmp.	34.5 C	pass
Cell B Freq.	75.3 kHz	pass
Cell B Noise	0.4 ppb	pass
Cell B Flow	0.70 lpm	pass
Cell B Pressure	592.1 kHz	pass
System Memo		pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
WST109-Korey Devins-09/30/2021						
1	9/30/2021	DAS	Campbell	000354	CR3000	2132
2	9/30/2021	Ozone	ThermoElectron Inc	000611	49i A1NAA	1009241795
3	9/30/2021	Ozone Standard	ThermoElectron Inc	000514	49i A3NAA	0922236892
4	9/30/2021	Zero air pump	Werther International	06934	P 70/4	000821881

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241795	WST109	Korey Devins	09/30/2021	Ozone	000611

Slope:	0.99984	**Slope:**	0.00000
Intercept	-0.51271	**Intercept**	0.00000
CorrCoff:	1.00000	**CorrCoff:**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	1180030022	**Tfer Desc.**	Ozone primary stan
Tfer ID	01114		
Slope	1.00030	**Intercept**	0.30550
Cert Date	1/20/2021	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Dif**	**A Avg %Diff**	**A Max % Dif**
0.0%	0.0%		

UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.37	0.06	-0.48	ppb		-0.54
primary	2	14.92	14.53	14.10	ppb		-0.43
primary	3	35.02	34.53	33.93	ppb	-1.75	
primary	4	66.32	65.66	65.16	ppb	-0.76	
primary	5	109.42	108.53	108.00	ppb	-0.49	

Sensor Component	Condition	Status
Audit Pressure	738.9 mmHg	pass
26.6 degree unobstructed rule	True	pass
Tree dewline >10m or below inlet	True	pass
ADT <100 vehicles further than 20	45 m	Fail
ADT >100 vehicles further than 50	True	pass
Sample Train	Good	pass
Inlet Filter Condition	Clean	pass
Offset	-0.2	pass
Span	1.011	pass
Zero Voltage	N/A	pass
Fullscale Voltage	N/A	pass
Cell A Freq.	99.2 kHz	pass
Cell A Noise	0.8 ppb	pass
Cell A Flow	0.70 lpm	pass
Cell A Pressure	715.2 mmHg	pass
Cell A Tmp.	31.5 C	pass
Cell B Freq.	100.0 kHz	pass
Cell B Noise	0.8 ppb	pass
Cell B Flow	0.71 lpm	pass
Cell B Pressure	716.1 mmHg	pass
System Memo		pass

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled: 12/28/2021 16:16:50

SiteVisitDate	Site	Technician
09/27/2021	ACA416	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.34	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.81	c	**Fail**
3	Flow Rate average % difference	P	10	5	3	1.9	%	**P**
4	Flow Rate max % difference	P	10	5	3	2.15	%	**P**
5	Shelter Temperature average error	P	5	2	12	0.13	c	**P**
6	Shelter Temperature max error	P	5	2	12	0.23	c	**P**

SiteVisitDate	Site	Technician
09/27/2021	ACA416	Korey Devins

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

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

2 **Parameter:** SiteOpsProcedures

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

3 **Parameter:** ShelterCleanNotes

The shelter is new, clean and well organized.

EEMS Spot Report

Data Compiled: 12/27/2021 20:25:30

SiteVisitDate	Site	Technician
08/18/2021	ANA115	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.03324	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.28739	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.1	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-0.03	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	0.09	ppb	**P**

EEMS Spot Report

Data Compiled: 12/28/2021 12:47:08

SiteVisitDate	Site	Technician
09/29/2021	ASH135	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99647	unitless	**P**
2	Ozone Intercept	P	0	5	4	-1.4385	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	4.9	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-1.4	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.61	ppb	**Fail**

EEMS Spot Report

Data Compiled: 12/28/2021 17:42:08

SiteVisitDate	Site	Technician
08/12/2021	CDZ171	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.34	c	**P**
2	Temperature max error	P	4	0.5	18	0.58	c	**Fail**
3	Ozone Slope	P	0	1.1	4	0.99944	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.15444	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.0	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.17	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.33	ppb	**P**
9	Flow Rate average % difference	P	10	5	8	2.38	%	**P**
10	Flow Rate max % difference	P	10	5	8	2.6	%	**P**
11	DAS Voltage average error	P	7	0.003	21	0.0001	V	**P**
12	Shelter Temperature average error	P	5	2	15	0.39	c	**P**
13	Shelter Temperature max error	P	5	2	15	0.90	c	**P**

SiteVisitDate	Site	Technician
08/12/2021	CDZ171	Korey Devins

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is in a corn field with limited agricultural operations within 15 meters.

2 **Parameter:** ShelterCleanNotes

The shelter floor has been repaired.

3 **Parameter:** MetSensorComme

The temperature sensor has been installed in a naturally aspirated shield on the north side of the sample tower.

EEMS Spot Report

Data Compiled: 12/28/2021 18:06:33

SiteVisitDate	Site	Technician
08/13/2021	CKT136	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	15	0.11	c	**P**
2	Temperature max error	P	4	0.5	15	0.21	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00365	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.76982	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.9	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	-0.77	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.7	ppb	**P**
9	Flow Rate average % difference	P	10	5	2	0.88	%	**P**
10	Flow Rate max % difference	P	10	5	2	1.32	%	**P**
11	DAS Voltage average error	P	7	0.003	28	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.22	c	**P**
13	Shelter Temperature max error	P	5	2	21	0.28	c	**P**

SiteVisitDate	Site	Technician
08/13/2021	CKT136	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:** SiteOKNotes

The road to the site is in need of repair.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition. The shelter walls adjacent to the air conditioner have been repaired.

EEMS Spot Report

Data Compiled: 8/8/2021 17:52:21

SiteVisitDate	Site	Technician
07/27/2021	CNT169	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.07	c	**P**
2	Temperature max error	P	4	0.5	12	0.11	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99810	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.65088	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99975	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.9	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.27	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.65	ppb	**P**
9	Flow Rate average % difference	P	10	5	9	0.55	%	**P**
10	Flow Rate max % difference	P	10	5	9	0.99	%	**P**
11	DAS Voltage average error	P	7	0.003	77	0.0002	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.70	c	**P**
13	Shelter Temperature max error	P	5	2	21	1.04	c	**P**

SiteVisitDate	Site	Technician
07/27/2021	CNT169	Martin Valvur

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is changed once each month.

2 **Parameter:** ShelterCleanNotes

The shelter is dirty. Many floor tiles are old and broken, the floor is deteriorating.

EEMS Spot Report

Data Compiled: 9/14/2021 15:51:30

SiteVisitDate	Site	Technician
08/03/2021	CRM435	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00903	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.42203	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.6	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-0.33	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.12	ppb	**P**

Field Performance Comments

1 **Parameter:** Ozone **SensorComponent:** Cell B Freq. **CommentCode:** 99

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

EEMS Spot Report

Data Compiled: 9/14/2021 16:45:22

SiteVisitDate	Site	Technician
08/05/2021	GLR468	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.15	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.27	c	**P**
3	Ozone Slope	P	0	1.1	4	0.98037	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.04967	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99996	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.6	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.58	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.64	ppb	**P**
9	Flow Rate average % difference	P	10	5	6	0.29	%	**P**
10	Flow Rate max % difference	P	10	5	6	0.54	%	**P**
11	DAS Voltage average error	P	15	0.003	14	0.0003	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.49	c	**P**
13	Shelter Temperature max error	P	5	2	21	0.76	c	**P**

SiteVisitDate	Site	Technician
08/05/2021	GLR468	Martin Valvur

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition. Evidence of repairs to roof leaks attempted. Some floor tiles are loose.

3 **Parameter:** PollAnalyzerCom

The desiccant for the zero air system is saturated.

4 **Parameter:** MetSensorComme

The recorded temperature data at this site is measured at approximately 2 meters above the ground.

EEMS Spot Report

Data Compiled: 12/28/2021 08:18:09

SiteVisitDate	Site	Technician
08/23/2021	GRB411	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.96480	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.22309	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99994	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.7	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.87	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.66	ppb	**P**

EEMS Spot Report

Data Compiled: 12/28/2021 13:37:37

SiteVisitDate	Site	Technician
09/29/2021	GRC474	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97373	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.1787	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	3.7	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.10	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.9	ppb	**P**

EEMS Spot Report

Data Compiled: 12/27/2021 18:28:17

SiteVisitDate	Site	Technician
08/16/2021	HOX148	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95865	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.11849	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	5.1	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.29	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.97	ppb	**P**

EEMS Spot Report

Data Compiled: 8/4/2021 16:37:12

SiteVisitDate	Site	Technician
07/08/2021	HWF187	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95611	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.22108	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	5.1	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-0.26	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.85	ppb	**P**

EEMS Spot Report

Data Compiled: 12/28/2021 17:15:07

SiteVisitDate	Site	Technician
08/11/2021	MAC426	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.16	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.42	c	**P**
3	Ozone Slope	P	0	1.1	4	0.98950	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.55881	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.8	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.74	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	0.33	ppb	**P**
9	Flow Rate average % difference	P	10	5	4	2.44	%	**P**
10	Flow Rate max % difference	P	10	5	4	3.02	%	**P**
11	DAS Voltage average error	P	4	0.003	6	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	18	0.41	c	**P**
13	Shelter Temperature max error	P	5	2	18	0.76	c	**P**

SiteVisitDate	Site	Technician
08/11/2021	MAC426	Korey Devins

Field Performance Comments

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

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

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator is very knowledgeable with air quality monitoring. He is doing a very good job with site activities and filter handling.

2 **Parameter:** SitingCriteriaCom

Bowling Green is within 40 km of the site. The site is in a hay field which is harvested twice per year. The area to the west and south is comprised of livestock farms including cattle and poultry.

3 **Parameter:** ShelterCleanNotes

The shelter is well maintained, clean, neat, and well organized.

EEMS Spot Report

Data Compiled: 8/8/2021 18:15:16

SiteVisitDate	Site	Technician
07/27/2021	NIC001	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	15	0.12	c	**P**
2	Temperature max error	P	4	0.5	15	0.26	c	**P**
3	Flow Rate average % difference	P	10	5	6	0.04	%	**P**
4	Flow Rate max % difference	P	10	5	6	0.10	%	**P**

SiteVisitDate	Site	Technician
07/27/2021	NIC001	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:** DasComments

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters.

2 **Parameter:** DocumentationCo

There is no logbook onsite to record information regarding site status or filter information.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

EEMS Spot Report

Data Compiled: 12/27/2021 17:00:51

SiteVisitDate	Site	Technician
08/10/2021	NPT006	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00445	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.06069	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.5	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.28	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.16	ppb	**P**

EEMS Spot Report

Data Compiled: 12/28/2021 11:51:47

SiteVisitDate	Site	Technician
09/28/2021	PET427	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97712	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.12746	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99990	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.8	%	**P**
5	Ozone Absolute Difference g2	P	7	1.5	1	-0.45	ppb	**P**

EEMS Spot Report

Data Compiled: 8/8/2021 16:46:22

SiteVisitDate	Site	Technician
07/14/2021	PIN414	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.10	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.20	c	**P**
3	Ozone Slope	P	0	1.1	4	1.02535	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.07108	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.3	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.06	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	0.36	ppb	**P**
9	Flow Rate average % difference	P	10	5	4	0.33	%	**P**
10	Flow Rate max % difference	P	10	5	4	0.91	%	**P**
11	DAS Voltage average error	P	9	0.003	70	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	21	1.36	c	**P**
13	Shelter Temperature max error	P	5	2	21	1.93	c	**P**

SiteVisitDate	Site	Technician
07/14/2021	PIN414	Martin Valvur

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The site operator reviews data each week to ensure proper operation of sensors and instruments.

2 **Parameter:** ShelterCleanNotes

The lighting has been repaired. The shelter has been cleaned and organized.

EEMS Spot Report

Data Compiled: 12/28/2021 19:03:02

SiteVisitDate	Site	Technician
08/22/2021	PRK134	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	15	0.20	c	**P**
2	Temperature max error	P	4	0.5	15	0.30	c	**P**
3	Ozone Slope	P	0	1.1	4	0.97941	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.87249	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	5.0	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	-0.62	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.29	ppb	**P**
9	Flow Rate average % difference	P	10	5	6	0.67	%	**P**
10	Flow Rate max % difference	P	10	5	6	0.67	%	**P**
11	DAS Voltage average error	P	7	0.003	84	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.52	c	**P**
13	Shelter Temperature max error	P	5	2	21	0.93	c	**P**

SiteVisitDate	Site	Technician
08/22/2021	PRK134	Korey Devins

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

Clover and Barley have been planted for hay within 20m of the site starting in 2008.

2 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, and well organized.

EEMS Spot Report

Data Compiled: 12/28/2021 19:44:28

SiteVisitDate	Site	Technician
09/23/2021	ROM206	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.14	c	**P**
2	Temperature max error	P	4	0.5	6	0.20	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00892	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.36857	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
6	Ozone % difference avg	P	7	10	4	1.2	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.23	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.42	ppb	**P**
9	Flow Rate average % difference	P	10	5	10	0.33	%	**P**
10	Flow Rate max % difference	P	10	5	10	0.67	%	**P**
11	DAS Voltage average error	P	7	0.003	63	0.0002	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.33	c	**P**
13	Shelter Temperature max error	P	5	2	21	0.51	c	**P**

SiteVisitDate	Site	Technician
09/23/2021	ROM206	Martin Valvur

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The shelter is clean, neat, and well organized. There are signs of previous roof leaks, but they have been repaired. The floor and counter top have been replaced.

2 **Parameter:** MetSensorComme

The temperature sensor has been removed from the met tower and mounted in a naturally aspirated shield on the sample tower, facing south and over the shelter roof.

EEMS Spot Report

Data Compiled: 12/28/2021 09:31:27

SiteVisitDate	Site	Technician
08/29/2021	SND152	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00921	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.52639	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.4	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.70	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	0.54	ppb	**P**

EEMS Spot Report

Data Compiled: 12/27/2021 16:13:13

SiteVisitDate	Site	Technician
08/09/2021	UMA009	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.02422	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.00247	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.2	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	0.17	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	0.27	ppb	**P**

EEMS Spot Report

Data Compiled: 8/4/2021 17:26:16

SiteVisitDate	Site	Technician
07/13/2021	UND002	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.11	c	**P**
2	Temperature max error	P	4	0.5	9	0.14	c	**P**
3	Flow Rate average % difference	P	10	5	8	1.13	%	**P**
4	Flow Rate max % difference	P	10	5	8	1.32	%	**P**

SiteVisitDate	Site	Technician
07/13/2021	UND002	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:** DasComments

Single tower with filer pack mounted at 10 meters and temperature mounted at 9 meters.

2 **Parameter:** DocumentationCo

Although there is no CASTNET logbook present onsite, the site operator records CASTNET information in the VT Monitoring Coop logbook.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

EEMS Spot Report

Data Compiled: 12/27/2021 17:16:13

SiteVisitDate	Site	Technician
08/11/2021	UVL124	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99714	unitless	**P**
2	Ozone Intercept	P	0	5	4	-1.32013	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99988	unitless	**P**
4	Ozone % difference avg	P	7	10	4	5.4	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-0.33	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-2.13	ppb	**Fail**

EEMS Spot Report

Data Compiled: 12/28/2021 16:47:33

SiteVisitDate	Site	Technician
08/09/2021	VIN140	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.12	c	**P**
2	Temperature max error	P	4	0.5	6	0.26	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99932	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.05724	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.5	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.10	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.18	ppb	**P**
9	Flow Rate average % difference	P	10	5	9	0.67	%	**P**
10	Flow Rate max % difference	P	10	5	9	0.67	%	**P**
11	DAS Voltage average error	P	7	0.003	84	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	21	0.18	c	**P**
13	Shelter Temperature max error	P	5	2	21	0.24	c	**P**

SiteVisitDate	Site	Technician
08/09/2021	VIN140	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 site is in an agricultural research center with farm activities adjacent to the site. A train track is approximately 200 meters to the north.

2 **Parameter:** ShelterCleanNotes

The shelter is in fair condition and well maintained, however rot is forming at the bottom of the walls.

3 **Parameter:** MetSensorComme

The temperature sensor is mounted on the sample tower.

EEMS Spot Report

Data Compiled: 12/28/2021 19:24:03

SiteVisitDate	Site	Technician
08/25/2021	VOY413	Eric Hebert

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.20	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.34	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00433	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.49412	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.2	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.25	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	0.66	ppb	**P**
9	Flow Rate average % difference	P	10	5	3	0.78	%	**P**
10	Flow Rate max % difference	P	10	5	3	1.01	%	**P**
11	DAS Voltage average error	P	7	0.003	11	0.0000	V	**P**
12	Shelter Temperature average error	P	5	2	24	1.7	c	**P**
13	Shelter Temperature max error	P	5	2	24	2.03	c	**Fail**

SiteVisitDate	Site	Technician
08/25/2021	VOY413	Eric Hebert

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator uses the filter bag to handle the dry deposition filter during installation and removal.

2 **Parameter:** DasComments

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may have been repaired, it is dry at this time.

3 **Parameter:** SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height, but within 10 m of the inlet.

4 **Parameter:** ShelterCleanNotes

The shelter is in fair condition, and is neat and well organized.

5 **Parameter:** PollAnalyzerCom

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above the 22.5 degree threshold.

EEMS Spot Report

Data Compiled: 8/4/2021 16:18:07

SiteVisitDate	Site	Technician
07/01/2021	WFM105	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.08	c	**P**
2	Temperature max error	P	4	0.5	18	0.12	c	**P**
3	Flow Rate average % difference	P	10	5	6	0.30	%	**P**
4	Flow Rate max % difference	P	10	5	6	0.33	%	**P**

SiteVisitDate	Site	Technician
07/01/2021	WFM105	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:** DasComments

Single tower, with filter pack at 10 meters and temperature at 9 meters.

2 **Parameter:** SitingCriteriaCom

The site is located at the Atmospheric Science Research Center (ASRC) operated by the NY University (SUNY) system.

3 **Parameter:** ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

EEMS Spot Report

Data Compiled: 12/28/2021 13:49:02

SiteVisitDate	Site	Technician
09/30/2021	WST109	Korey Devins

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99984	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.51271	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.5	%	**P**
5	Ozone Absolute Difference g1	P	7	3	1	-0.54	ppb	**P**
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.43	ppb	**P**

EEMS Spot Report

Data Compiled: 8/8/2021 17:20:16

SiteVisitDate	Site	Technician
07/15/2021	YOS404	Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.26	c	**P**
2	Temperature max error	P	4	0.5	3	0.39	c	**P**
3	Ozone Slope	P	0	1.1	4	1.01061	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.92352	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
6	Ozone % difference avg	P	7	10	4	4.0	%	**P**
7	Ozone Absolute Difference g1	P	7	3	1	0.95	ppb	**P**
8	Ozone Absolute Difference g2	P	7	1.5	1	1.24	ppb	**P**
9	Flow Rate average % difference	P	10	5	3	0.76	%	**P**
10	Flow Rate max % difference	P	10	5	3	1.38	%	**P**
11	DAS Voltage average error	P	2	0.003	56	0.0002	V	**P**
12	Shelter Temperature average error	P	5	2	21	1.93	c	**P**
13	Shelter Temperature max error	P	5	2	21	2.53	c	**Fail**

SiteVisitDate	Site	Technician
07/15/2021	YOS404	Martin Valvur

Field Performance Comments

1 **Parameter:** Temperature **SensorComponent:** Properly Sited **CommentCode:** 141

The temperature sensor is mounted directly above the shelter roof.

Field Systems Comments

1 **Parameter:** ShelterCleanNotes

The site is neat, clean, and well organized. The shelter roof is currently covered with tar paper.