



April 9, 2021

Ron Drumeller, Director
Chattanooga-Hamilton County Air Pollution Control
6215 Preservation Drive
Chattanooga, TN 37416-3638

Reference: First Quarter 2021 TDEC /Performance Audits

Dear Mr. Drumeller:

This report contains the results of performance audits conducted by personnel from Tennessee's Air Quality Assurance Program on March 18th and 19th, 2021. The audits were performed on various instruments at multiple monitoring locations throughout the Hamilton County monitoring network, including gaseous analyzers for ozone and low volume particle samplers for PM 2.5. Sites audited include East Ridge, Eastside Utilities, Siskin Drive and Soddy Daisy.

During the Quality Assurance Performance Audits (QAPAs) on March 18th and 19th, Tennessee Air Quality Assurance personnel audited the flow rate of each low volume particle sampler against a specified design flow rate and a transfer standard. QA personnel also audited each ozone analyzer with a level three standard (Teledyne 750 multi-gas calibrator) to determine the accuracy of the analyzer against a certified standard. These audits were conducted to ensure that each air monitor within the Hamilton County network was operating within accepted criteria established by federal regulations and guidance documents. Acceptable limits of these performance audits are published in 40 Code of Federal Regulations (CFR) Part 58 and QA Handbook Volume II, which establish federal standards for Quality Assurance and Quality Control practices for ambient air monitoring. These acceptable limits should be considered in conjunction with your Quality Assurance Plan.

Results from the first quarter, 2021 QAPAs, demonstrate that the Hamilton County air monitoring network was operating within acceptable limits of federal regulations and quality assurance guidelines. All QAPA results were noted in the instrument logbooks and summarized in the following pages of this report.

If we can be of any further assistance or should there be questions regarding this audit, please email me at Ben.Hartsfield@tn.gov or call (615) 532-0597.

Sincerely,

A handwritten signature in blue ink that reads "Ben Hartsfield".

Ben Hartsfield
Environmental Consultant
Quality Assurance Section

Reviewed by Michelle Oakes

A handwritten signature in blue ink that reads "Michelle Oakes".
Michelle Oakes (Apr 11, 2021 21:20 CDT)

cc: A, Pratt, APC; M. Oakes, APC; K. Jones, Hamilton County.

Site: Soddy Daisy
Audit Quarter: 1Q 2021
AQS #: 47-065-1011
Pollutant: O3
Auditor: Ben Hartsfield

Instrument Model	<i>Thermo 49i</i>	O₃		Audit Equipment	Serial #
Serial Number	<i>1435663748</i>			<i>Teledyne 750U</i>	<i>#71</i>
Data Logger Model	<i>ESC 8872</i>			<i>Teledyne 751H</i>	<i>#183</i>
Data Logger Serial Number	<i>0799</i>			<i>Streamline Pro</i>	<i>#150306</i>
Audit Date	<i>3/18/2021</i>			Time	<i>www.time.gov</i>
Ozone Set Point	Audit Value (ppb)	Monitor Response (ppb)	Difference	Acceptable Range	Audit Level
Zero	0	0	0		Zero
85 ppb	85	85	0.0%	<+ 15.1%	5
65 ppb	65	65	0/0%	<+ 15.1%	4
35 ppb	35	35	0.0%	<+ 15.1%	3
15 ppb	15	15	0.0%	<+ 15.1%	2
Zero	0	0	0		Zero
Data Logger Time	09:20:02	09:20:00	-00:00:02		
Data Logger Temperature	24.0	23.8	-0.2		

Remarks:

1. The monitor audited showed satisfactory correlation with our audit standard.
2. All measured parameters were within acceptable limits.
3. The audit results were also noted in the instrument log books.
4. The data logger acceptable time range of < ± one minute is a State recommendation. *
5. 49i (S/N 1435663748) response - 0, 85, 65, 35, 15, 0.
6. 8816 (S/N 1904) response - 0, 85, 65, 35, 15, 0.

Recommendations:

1. None.

Site: Eastside Utility
Audit Quarter: 1Q 2021
AQS #: 47-065-4003
Pollutant: O3
Auditor: Ben Hartsfield

Instrument Model	<i>Thermo 49C</i>	O₃		Audit Equipment	Serial #
Serial Number	<i>57404-313</i>			<i>Teledyne 750U</i>	<i>#71</i>
Data Logger Model	<i>ESC 8872</i>			<i>Teledyne 751H</i>	<i>#183</i>
Data Logger Serial Number	<i>0642</i>			<i>Streamline Pro</i>	<i>#150306</i>
Audit Date	<i>3/19/2021</i>			Time	<i>www.time.gov</i>
Ozone Set Point	Audit Value (ppb)	Monitor Response (ppb)	Difference	Acceptable Range	Audit Level
Zero	0	0	0		Zero
85 ppb	85	86	1.2 %	<± 15.1%	5
65 ppb	65	66	1.5 %	<± 15.1%	4
35 ppb	35	35	0.0%	<± 15.1%	3
15 ppb	15	16	6.7 %	<± 15.1%	2
Zero	0	0	0		Zero
Data Logger Time	09:36:14	09:36:30	-00:00:16		
Data Logger Temperature	25.2	24.6	0.6		

Remarks:

1. The monitor audited showed satisfactory correlation with our audit standard.
2. All measured parameters were within acceptable limits.
3. The audit results were noted in the instrument logbook and listed above.
4. The data logger acceptable time range of < ± one minute is a State recommendation*
5. 49C response (S/N 49C-57404-313) - 0, 86, 66, 35, 16, 0
6. 8816 response (S/N 1905) - 0, 86, 66, 36, 16, 0.

Recommendations:

1. None.

Site: Siskin
Audit Quarter: 1Q 2021
AQS #: 47-065-4002
Pollutant: PM 2.5
Auditor: Ben Hartsfield

Instrument Model	<i>Thermo 2025i</i>	PM 2.5	Audit Equipment	Serial Number
Serial Number	<i>21084/POC #1</i>		<i>Streamline Pro</i>	<i>#150306</i>
Audit Date	<i>3/18/2021</i>		Time	<i>www.time.gov</i>
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Standard Flow	16.45	16.67	1.3 %	<± 4.1%
Design Flow	16.67	16.67	0.0 %	< ± 5.1%
Barometric Pressure	732.9	732	-0.9	<± 10.0 mm
Ambient Temperature:	19.1	18.5	-0.6	< + 2.1°C
Filter Temperature	19.4	19.7	0.3	< + 2.1°C
External Leak Check	AF – 5 mmHg	AL – 5 mmHg	Pass	≤ 25 mmHg/min.
Clock Time	11:06:06	11:06:00	-00:00:06	< ± 00:01:00 minute

Instrument Model	<i>Thermo 2025i</i>	PM 2.5	Audit Equipment	Serial Number
Serial Number	<i>21131/POC #2</i>		<i>Streamline Pro</i>	<i>#150306</i>
Audit Date	<i>3/18/2021</i>		Time	<i>www.time.gov</i>
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Standard Flow	16.65	16.67	0.1%	<± 4.1%
Design Flow	16.67	16.67	0.0%	< ± 5.1%
Barometric Pressure	732.9	733	0.1	<± 10.0 mm
Ambient Temperature:	19.2	19.1	-0.1	< + 2.1°C
Filter Temperature	20.3	19.7	-0.6	< ± 2.1°C
External Leak Check	AF – 5 mmHg	AL – 4 mmHg	Pass	≤ 25 mmHg/min.
Clock Time	10:53:00	10:52:54	-00:00:06	< ± 00:01:00 minute

Instrument Model	<i>Teledyne T640</i>	PM 2.5	Audit Equipment	Serial Number
Serial Number	83		<i>BGI TriCal</i>	162
Audit Date	<i>3/18/2021</i>		Time	<i>www.time.gov</i>
Measured Parameter	<i>Audit Value</i>	<i>Monitor Response</i>	<i>Difference</i>	<i>Acceptable Range</i>
Transfer Standard Flow	4.99	4.99	0.0 %	< ± 5.1%
Design Flow	5.00	5.00	0.0 %	< ± 0.15 LPM
Barometric Pressure	732.0	731.2	-0.8	< ± 5.0%
Ambient Temperature	18.7	18.2	-0.5	< ± 2.1°C
Leak Check	AF: 0.0 lpm	AL: 0.0 lpm	Pass	<±0.25LPM
Data Logger 8832 #A0994K Time:	12:23:03	12:23:00	00:00:03	*< ± 00:01:00 minute

Remarks:

1. The instruments audited showed satisfactory correlation with our audit standards.
2. The PM 10 inlets and PM 2.5 cyclones were clean.
3. The audit results were noted in the instrument log books.
4. The data logger acceptable time range of < ± one minute is a State recommendation. *

Recommendations:

1. None.



Site: East Ridge
AQS #: 47-065-0031
Audit Quarter: 1Q 2021
Pollutant: PM 2.5
Auditor: Ben Hartsfield

Instrument Model	Thermo 2025	PM 2.5	Audit Equipment	Serial Number
Serial Number	22109		Streamline Pro	#150306
Audit Date	3/18/2021		Time	www.time.gov
<u>Measured Parameter</u>	<u>Audit Value</u>	<u>Monitor Response</u>	<u>Difference</u>	<u>Acceptable Range</u>
Transfer Standard Flow	16.90	16.70	-1.2 %	<+ 4.1%
Design Flow	16.67	16.67	0.0 %	<+ 5.1%
Barometric Pressure	732.9	732	-0.9	<+ 10.1 mm
Ambient Temperature	19.9	19.5	-0.4	<+ 2.1°C
Filter Temperature	21.1	21.5	0.4	<+ 2.1°C
Compartment Temp.	22.5	22.3	-0.2	<+ 2.1°C
External Leak Check	AF: 6 mm Hg/min	AL: 6 mm Hg/min	Pass	< 25 mm Hg/min
Clock Time	13:01:10	13:01:00	00:00:10	<+ 00:01:00 minute

Remarks:

1. The monitor audited showed satisfactory correlation with our audit standard.
2. PM 10 inlet and PM 2.5 cyclone were clean.
3. The results were noted in the instrument logbook.

Recommendations:

1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 532-0597 or Ben.Hartsfield@tn.gov.

Sincerely,

Ben Hartsfield
Environmental Consultant
Quality Assurance Section

Reviewed by Michelle Oakes

Report Date: 4/9/2021

To: R. Drumeller, Hamilton Co.
cc: K. Jones, Hamilton Co.; A. Pratt, APC; M. Oakes, APC.