

QUALITY ASSURANCE AUDIT REPORT

North Texas Commission Ambient Air and Meteorological Monitoring

Prepared for:

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EXECUTIVE SUMMARY

On November 28th through December 1st, 2016, an audit team from the AECOM ambient air group in Austin, Texas conducted performance and technical system audits of the North Texas Commission (NTC) ambient air monitoring network, providing an independent assessment of the monitoring program.

The monitoring program at NTC consists of continuous gas chromatographs (GC), volatile organic compound (VOC) canister collection systems, and meteorological sensors including wind speed, wind direction, temperature, and barometric pressure.

The performance audit results indicate acceptable responses for measurement systems with the exception summarized below.

Out of the 48 compounds being analyzed, seven compounds (propylene, 1,2,3-trimethylbenzene, acetylene, styrene, ethylene, isoprene, and n-undecane) were found to be outside of the audit objective of 70% - 130% recovery at several sites. In addition, the following sites had GC compound recoveries outside of the audit specification:

Locations	Compounds
Benbrook	1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, n-decane, n-propylbenzene and m&p-xylene.
Dish	1,3,5-trimethylbenzene
Decatur	n-decane
Flower Mound	1,2,4-trimethylbenzene
Mansfield	ethane

These audit results are comparable historically to other AECOM auto-GC audits. CVS recoveries surrounding these compounds were within their criteria during the time period that the audits were performed. No problems were identified in the quality control procedures at any of these sites that would indicate a persistent measurement error.

Technical systems audit results indicated one issue with an expired calibration gas standard at the Mansfield site. The operations and data validation staff were notified of this discovery. Otherwise, technical systems audit results demonstrate satisfactory operational procedures for collecting valid data.

Below are the audit standard results for all network GCs:

Compound Name	Audit Conc (ppbc)	Benbrook		Decatur		Dish		Eagle Mountain	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.6	6.9	79.8%	6.5	74.7%	6.5	74.8%	6.7	77.8%
Ethylene	8.6	5.7	65.9%	4.9	57.2%	4.8	55.6%	4.7	54.8%
Propane	12.2	10.8	88.0%	11.6	95.0%	10.7	87.6%	10.7	87.2%
Propylene	12.6	8.0	63.6%	7.4	58.4%	6.8	54.2%	7.3	57.8%
Iso-Butane	16.2	15.5	96.0%	16.1	99.5%	14.9	92.5%	16.4	101.3%
N-Butane	16.2	15.9	98.5%	16.4	101.6%	15.2	93.8%	16.3	101.2%
Acetylene	8.6	5.7	65.5%	6.5	75.6%	5.8	67.7%	7.0	80.8%
Trans-2-Butene	16.0	15.3	95.4%	16.4	102.3%	15.0	93.9%	16.1	100.8%
1-Butene	16.2	15.7	96.9%	16.3	101.1%	14.8	91.3%	16.2	100.3%
Cis-2-Butene	17.3	16.3	94.3%	17.2	99.4%	15.9	91.8%	16.9	97.8%
Cyclopentane	20.6	19.7	95.4%	20.8	101.1%	19.1	92.8%	21.4	103.9%
Iso-Pentane	21.4	20.8	97.3%	21.9	102.5%	20.0	93.5%	21.5	100.4%
N-Pentane	20.4	20.1	98.6%	21.2	103.9%	19.4	94.9%	20.9	102.7%
1,3-Butadiene	16.8	16.5	97.9%	16.5	98.0%	14.0	83.4%	16.4	97.7%
Trans-2-Pentene	21.2	19.4	91.5%	19.8	93.5%	17.6	83.2%	19.8	93.2%
1-Pentene	20.6	18.3	89.0%	17.7	86.1%	15.4	74.7%	17.0	82.7%
Cis-2-Pentene	22.0	19.7	89.5%	19.0	86.3%	17.4	78.9%	18.3	83.0%
2,2-Dimethylbutane	25.2	22.6	89.7%	24.6	97.4%	22.2	88.1%	24.3	96.4%
2-Methylpentane	24.5	23.8	97.2%	24.9	101.9%	22.7	92.8%	24.6	100.6%
Isoprene	20.8	15.3	73.5%	14.6	70.3%	13.9	66.7%	14.4	69.3%
n-Hexane	25.2	25.4	100.9%	23.5	93.2%	22.8	90.3%	24.7	98.0%
Methylcyclopentane	25.4	20.5	80.7%	22.1	86.8%	20.6	80.8%	21.6	84.9%
2,4-Dimethylpentane	29.7	26.0	87.6%	30.7	103.3%	30.0	100.9%	30.5	102.7%
Benzene	25.0	20.0	80.3%	23.7	94.9%	22.2	88.8%	21.1	84.4%
Cyclohexane	25.0	21.5	86.0%	23.6	94.4%	22.3	89.3%	23.2	92.8%
2-Methylhexane	25.7	22.8	88.6%	24.4	95.0%	21.9	85.2%	23.1	89.8%
2,3-Dimethylpentane	30.0	26.5	88.5%	30.7	102.4%	31.1	103.8%	31.8	106.3%
3-Methylhexane	29.4	24.7	84.1%	26.5	90.1%	26.2	89.2%	27.2	92.5%
2,2,4-Trimethylpentane	33.6	27.3	81.3%	31.3	93.2%	29.9	89.1%	31.4	93.3%
n-Heptane	29.4	23.9	81.4%	28.7	97.7%	26.2	89.2%	26.8	91.2%
Methylcyclohexane	29.4	24.3	82.8%	26.8	91.2%	26.4	89.6%	27.6	94.0%
2,3,4-Trimethylpentane	33.0	26.2	79.6%	30.1	91.4%	28.9	87.8%	30.5	92.5%
Toluene	29.1	21.2	72.9%	25.3	86.8%	25.3	87.0%	26.8	92.2%
2-Methylheptane	33.3	25.9	77.8%	30.3	91.0%	29.0	87.1%	30.2	90.7%
3-Methylheptane	33.3	27.0	81.0%	31.8	95.6%	29.5	88.7%	30.4	91.3%
n-Octane	33.0	25.5	77.3%	30.8	93.5%	29.2	88.5%	30.4	92.4%
Ethylbenzene	33.3	23.3	70.1%	28.6	86.0%	26.3	78.9%	27.4	82.4%
M&P-Xylene	66.6	45.1	67.7%	58.3	87.6%	51.2	76.9%	53.6	80.6%
Styrene	32.6	21.0	64.3%	24.4	74.8%	23.1	70.7%	23.4	71.8%
O-Xylene	32.6	23.9	73.1%	28.7	88.1%	25.7	78.6%	28.3	86.8%
N-Nonane	36.7	27.0	73.5%	32.2	87.6%	30.0	81.6%	32.3	88.0%
Isopropylbenzene	35.6	25.5	71.5%	30.7	86.3%	27.9	78.3%	30.6	85.7%
n-Propylbenzene	35.6	24.4	68.5%	29.6	83.0%	27.5	77.0%	29.4	82.4%
1,3,5-Trimethylbenzene	36.7	24.4	66.3%	29.8	81.1%	23.9	65.2%	29.1	79.3%
1,2,4-Trimethylbenzene	36.4	23.8	65.3%	27.5	75.5%	26.7	73.4%	27.5	75.7%
n-Decane	41.2	26.0	63.0%	28.6	69.4%	29.8	72.3%	29.5	71.7%
1,2,3-Trimethylbenzene	35.3	20.5	58.1%	24.3	68.9%	22.8	64.7%	24.1	68.3%
n-Undecane	43.6	23.8	54.6%	27.3	62.6%	26.6	61.1%	26.3	60.3%

Compound Name	Audit Conc (ppbc)	Elm Fork		Everman		Flower Mound		Godley	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.6	7.4	85.4%	7.1	82.2%	6.2	71.4%	7.5	87.0%
Ethylene	8.6	6.4	73.8%	6.1	71.1%	4.7	54.8%	5.3	61.1%
Propane	12.2	11.5	94.3%	11.5	94.0%	10.9	88.7%	11.5	93.9%
Propylene	12.6	8.6	68.2%	9.2	72.8%	7.5	59.2%	7.6	60.4%
Iso-Butane	16.2	16.4	101.5%	17.1	105.9%	15.1	93.5%	16.5	102.3%
N-Butane	16.2	16.5	101.8%	17.4	107.9%	15.4	95.4%	16.6	102.6%
Acetylene	8.6	6.8	78.4%	5.7	65.8%	6.0	69.9%	6.0	69.8%
Trans-2-Butene	16.0	16.1	100.8%	17.2	107.6%	15.2	94.9%	16.3	101.6%
1-Butene	16.2	16.0	99.2%	17.0	105.4%	15.0	92.6%	15.9	98.1%
Cis-2-Butene	17.3	17.0	98.3%	18.1	104.8%	16.0	92.4%	17.1	99.2%
Cyclopentane	20.6	20.8	101.2%	22.2	107.8%	18.9	91.6%	20.9	101.4%
Iso-Pentane	21.4	21.8	101.8%	22.8	106.4%	20.3	94.9%	22.1	103.4%
N-Pentane	20.4	21.0	103.1%	22.3	109.2%	19.6	95.9%	21.1	103.5%
1,3-Butadiene	16.8	16.9	100.7%	17.5	104.4%	15.2	90.3%	16.8	99.7%
Trans-2-Pentene	21.2	20.7	97.6%	21.3	100.2%	18.8	88.9%	20.6	97.1%
1-Pentene	20.6	19.8	96.3%	18.9	91.6%	17.2	83.3%	19.9	96.5%
Cis-2-Pentene	22.0	20.9	95.2%	20.8	94.4%	18.8	85.3%	21.2	96.2%
2,2-Dimethylbutane	25.2	24.8	98.6%	25.1	99.8%	23.8	94.6%	25.7	101.8%
2-Methylpentane	24.5	25.0	102.1%	25.4	103.9%	23.5	95.9%	24.9	101.7%
Isoprene	20.8	16.9	81.1%	16.7	80.4%	12.1	58.2%	17.0	81.9%
n-Hexane	25.2	24.4	96.9%	27.8	110.5%	22.2	88.3%	27.8	110.5%
Methylcyclopentane	25.4	23.5	92.4%	24.4	95.7%	19.6	77.0%	21.7	85.2%
2,4-Dimethylpentane	29.7	30.8	103.8%	29.9	100.7%	29.7	100.0%	31.9	107.3%
Benzene	25.0	23.3	93.5%	23.0	92.2%	21.8	87.2%	23.5	94.3%
Cyclohexane	25.0	24.5	98.4%	25.8	103.5%	22.7	90.8%	25.1	100.5%
2-Methylhexane	25.7	26.6	103.6%	23.6	91.8%	21.1	82.1%	23.1	90.0%
2,3-Dimethylpentane	30.0	31.6	105.4%	34.0	113.5%	30.9	103.1%	35.2	117.6%
3-Methylhexane	29.4	28.8	98.1%	29.1	99.0%	25.6	87.0%	29.5	100.2%
2,2,4-Trimethylpentane	33.6	32.7	97.4%	31.7	94.5%	29.0	86.3%	32.2	95.8%
n-Heptane	29.4	28.9	98.2%	27.2	92.7%	24.3	82.6%	27.8	94.5%
Methylcyclohexane	29.4	28.4	96.6%	29.1	99.0%	24.8	84.5%	28.1	95.7%
2,3,4-Trimethylpentane	33.0	32.0	97.2%	30.3	91.9%	27.8	84.4%	31.0	94.0%
Toluene	29.1	27.5	94.4%	23.2	79.6%	23.5	80.6%	26.7	91.8%
2-Methylheptane	33.3	32.1	96.3%	29.9	90.0%	27.9	83.9%	31.7	95.4%
3-Methylheptane	33.3	32.1	96.4%	30.5	91.8%	29.4	88.4%	33.1	99.4%
n-Octane	33.0	32.8	99.4%	30.2	91.7%	28.0	84.9%	31.0	94.1%
Ethylbenzene	33.3	29.5	88.6%	27.8	83.6%	25.0	75.1%	27.8	83.5%
M&P-Xylene	66.6	56.8	85.3%	57.3	86.0%	49.4	74.2%	54.7	82.1%
Styrene	32.6	25.3	77.5%	21.7	66.6%	20.7	63.4%	23.8	73.1%
O-Xylene	32.6	28.4	87.0%	30.1	92.3%	25.2	77.3%	28.7	87.9%
N-Nonane	36.7	33.4	90.9%	32.3	87.9%	28.4	77.3%	32.4	88.4%
Isopropylbenzene	35.6	32.0	89.9%	31.4	88.1%	26.4	74.0%	30.7	86.2%
n-Propylbenzene	35.6	30.8	86.4%	28.7	80.5%	26.4	73.9%	29.6	83.0%
1,3,5-Trimethylbenzene	36.7	29.8	81.2%	31.4	85.4%	27.5	75.0%	30.1	82.0%
1,2,4-Trimethylbenzene	36.4	29.9	82.1%	27.6	76.0%	24.2	66.7%	28.8	79.3%
n-Decane	41.2	32.6	79.1%	29.6	71.8%	29.5	71.5%	32.0	77.8%
1,2,3-Trimethylbenzene	35.3	26.5	75.2%	26.7	75.7%	21.3	60.3%	25.0	70.9%
n-Undecane	43.6	30.4	69.8%	31.9	73.2%	31.1	71.4%	27.2	62.6%

Compound Name	Audit Conc (ppbc)	Kennedale		Mansfield		Rhome		Rushing		UTA Campus	
		GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec	GC Response ppbc	%Rec
Ethane	8.6	7.2	82.9%	5.5	63.9%	7.0	81.1%	7.6	87.6%	7.2	83.6%
Ethylene	8.6	4.6	52.8%	3.6	41.9%	6.1	70.6%	6.2	72.0%	5.3	61.0%
Propane	12.2	11.5	94.2%	11.8	96.4%	11.5	93.9%	11.3	92.1%	11.1	91.0%
Propylene	12.6	8.5	67.3%	8.1	64.4%	8.0	63.5%	8.2	65.4%	8.3	65.6%
Iso-Butane	16.2	16.3	101.1%	17.5	108.1%	15.9	98.4%	16.3	101.2%	16.7	103.1%
N-Butane	16.2	16.6	102.4%	17.8	110.4%	16.0	98.9%	16.7	103.1%	17.1	105.9%
Acetylene	8.6	6.0	69.1%	6.4	74.2%	5.6	65.0%	5.0	58.4%	3.5	40.7%
Trans-2-Butene	16.0	15.9	99.4%	17.1	106.8%	15.6	97.6%	16.0	99.7%	16.9	105.7%
1-Butene	16.2	15.8	97.8%	17.1	105.5%	15.8	97.6%	16.2	100.5%	17.0	105.0%
Cis-2-Butene	17.3	16.8	97.5%	18.4	106.4%	16.6	96.0%	17.1	99.0%	17.9	103.4%
Cyclopentane	20.6	20.5	99.3%	22.3	108.2%	19.5	94.9%	20.8	100.9%	21.4	104.1%
Iso-Pentane	21.4	21.4	100.1%	23.3	109.1%	21.1	98.8%	22.0	102.8%	22.6	105.7%
N-Pentane	20.4	20.9	102.3%	22.7	111.1%	20.5	100.3%	21.1	103.6%	21.7	106.1%
1,3-Butadiene	16.8	16.5	98.3%	17.6	104.5%	16.0	95.5%	16.7	99.3%	17.9	106.3%
Trans-2-Pentene	21.2	19.9	93.7%	21.1	99.7%	19.6	92.3%	20.1	95.0%	21.3	100.7%
1-Pentene	20.6	19.2	93.2%	19.1	92.9%	18.7	90.6%	19.5	94.5%	21.0	102.0%
Cis-2-Pentene	22.0	20.5	93.0%	21.3	96.8%	20.3	92.1%	20.6	93.6%	22.3	101.5%
2,2-Dimethylbutane	25.2	25.2	100.0%	26.7	105.9%	24.7	98.0%	24.2	95.8%	26.0	103.3%
2-Methylpentane	24.5	24.5	100.0%	26.2	107.0%	23.7	96.9%	23.7	96.8%	25.3	103.3%
Isoprene	20.8	16.4	78.9%	17.1	82.4%	15.8	76.0%	16.5	79.1%	18.4	88.4%
n-Hexane	25.2	23.3	92.5%	24.8	98.4%	22.7	89.9%	23.3	92.3%	22.8	90.3%
Methylcyclopentane	25.4	20.1	78.8%	22.6	88.8%	21.5	84.6%	22.0	86.5%	22.1	86.7%
2,4-Dimethylpentane	29.7	32.5	109.6%	31.7	106.7%	30.4	102.6%	30.7	103.4%	30.3	102.0%
Benzene	25.0	22.2	89.0%	23.3	93.2%	22.2	89.0%	21.4	85.8%	22.1	88.4%
Cyclohexane	25.0	23.4	93.8%	24.4	97.8%	24.8	99.4%	23.7	94.8%	23.4	93.6%
2-Methylhexane	25.7	21.8	84.8%	25.5	99.4%	23.4	91.3%	22.3	86.8%	24.2	94.3%
2,3-Dimethylpentane	30.0	32.7	109.2%	31.7	105.9%	32.0	106.9%	33.0	110.3%	29.7	99.0%
3-Methylhexane	29.4	27.6	93.8%	28.1	95.5%	29.4	100.1%	27.5	93.6%	26.9	91.4%
2,2,4-Trimethylpentane	33.6	30.7	91.3%	32.3	96.2%	30.3	90.3%	31.4	93.5%	30.3	90.1%
n-Heptane	29.4	26.4	89.7%	27.8	94.6%	25.9	88.2%	26.5	90.0%	27.0	91.8%
Methylcyclohexane	29.4	28.0	95.1%	28.2	95.8%	28.0	95.2%	27.5	93.6%	27.0	91.9%
2,3,4-Trimethylpentane	33.0	29.9	90.8%	31.0	94.1%	29.3	88.8%	30.6	92.7%	30.0	91.0%
Toluene	29.1	28.9	99.1%	26.2	90.0%	22.8	78.4%	26.1	89.7%	26.1	89.8%
2-Methylheptane	33.3	31.4	94.2%	31.1	93.6%	28.8	86.4%	30.2	90.9%	29.6	89.0%
3-Methylheptane	33.3	33.3	100.1%	31.3	94.2%	30.2	90.7%	32.1	96.5%	29.7	89.1%
n-Octane	33.0	30.8	93.4%	30.8	93.6%	28.2	85.6%	30.4	92.1%	29.2	88.6%
Ethylbenzene	33.3	26.5	79.6%	28.7	86.2%	25.8	77.6%	27.6	83.0%	28.1	84.3%
M&P-Xylene	66.6	49.6	74.6%	55.5	83.4%	51.4	77.3%	53.3	80.0%	54.4	81.8%
Styrene	32.6	22.6	69.2%	25.3	77.6%	21.2	65.0%	21.3	65.4%	24.6	75.4%
O-Xylene	32.6	28.7	87.9%	28.9	88.4%	27.2	83.3%	29.9	91.7%	28.2	86.5%
N-Nonane	36.7	31.9	86.9%	32.2	87.7%	30.5	83.1%	33.3	90.7%	31.8	86.6%
Isopropylbenzene	35.6	29.0	81.4%	31.2	87.5%	28.2	79.2%	32.1	90.0%	31.3	87.9%
n-Propylbenzene	35.6	27.8	78.1%	29.6	83.0%	27.4	76.8%	30.5	85.5%	30.3	85.1%
1,3,5-Trimethylbenzene	36.7	29.5	80.3%	28.5	77.6%	28.1	76.6%	32.3	87.9%	30.0	81.7%
1,2,4-Trimethylbenzene	36.4	29.2	80.3%	28.6	78.7%	27.3	75.1%	30.9	84.9%	29.3	80.5%
n-Decane	41.2	29.9	72.6%	32.1	77.9%	29.8	72.2%	35.3	85.6%	32.2	78.2%
1,2,3-Trimethylbenzene	35.3	21.3	60.3%	24.0	68.0%	24.4	69.2%	26.5	75.1%	26.5	75.1%
n-Undecane	43.6	27.9	64.0%	27.7	63.5%	27.8	63.8%	29.1	66.8%	29.0	66.6%