



OFFICE OF COUNTY MAYOR GLENN JACOBS

Knox County Health Department • 140 Dameron Avenue, Knoxville, TN 37917-6413

Brian Rivera, P.E.
Division Director
Air Quality
Knox County Health Department
140 Dameron Ave,
Knoxville, TN 37917-6413

April 1, 2020

Re: First Quarter Air Monitoring Audit

Dear Mr. Rivera:

On Mar 12, 2020 – Mar 18, 2020 internal quality assurance performance audits were performed on Air Quality's monitoring network. All of the monitors audited were within the acceptable range for critical criteria. The T640X continuous monitor was outside the 1-minute criteria for the clock, this was an updated criterion from the previous 5 minute, based upon guidance that continuous monitoring should follow the criteria outlined in 40 CFR part 50 appendix L. Audit calculations are included in the following audit report. Field notes are kept by the auditor and available for review if requested.

Each physical location was inspected, and a site evaluation was performed. The site evaluations are included in this audit report. The siting criteria was in compliance. The site operators were notified of the following recommendations; growing brush in wall near Rule site recommend cutting before taller than sampler, and East Knox downed limbs located in mowers path should be removed so mower will continue to keep area cleared. Additionally, the Burnside tree continues to get closer to noncompliance with the 10m dripline distance.

Logbooks were reviewed. Logbooks need improvement on documentation and availability. Some logbooks were found to have incomplete information, and others were not located with the instrument. The Program Manager was notified of the following logbook finding;

- T640X logbook was not located with the instrument, upon finding the logbook at the office, it appears as if information was left out and awaiting backfilling.
- SN4006 logbook had missing % difference calculations,
- Springhill site log did not contain any zero air maintenance information.
- Springhill 2025 logbook was found to be missing a date on the monthly activities, operator corrected onsite.

Logbooks shall be completed at the time of the activity; backfilling should be rare. Logbooks must be kept with the instrument, or in the site shelters.

The ozone concentration audits were completed and within the acceptable range. However, the following items should be addressed in the ozone network;

- The zero air system is not properly documented. The canister dating system has not been maintained. While the site log at East Knox indicated that the zero air system was maintained for the start of season, there was no log entry in any logbook found for Springhill system maintenance.



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- Additional interview with the operator indicated the charcoal was not changed according to the procedure in the SOP. The charcoal, filter, and silica were all changed, but the charcoal was not given time to blow out dust before changing the particulate filter.
- The AV trend onsite strip chart and back up data system is not believed to be collecting data at either site. The site computers have additional new log in options for the site operator that the auditor was unable to access to verify if working AV Trend is available under that username. The original user name at each site did not have working AVTrend.

The laboratory clean room was inspected. The filter preparation area was clean. The PM2.5 storage temperature log was reviewed. Storage temperatures have not exceed 4.1 °C when filters have been in storage. The Program Manager and Operator have increased defrosting and temperature checks.

If there are any questions regarding this audit please email Rebecca.Larocque@knoxcounty.org or call 865-215-5914

Rebecca Larocque
Environmental Specialist
Knox County Health Department

Ozone Audit Calculations

Date: 3/18/2020
 Site: Springhill

Audit SN: 179
 Analyzer SN: 4005

Date: 3/16/2020
 Site: East Knox

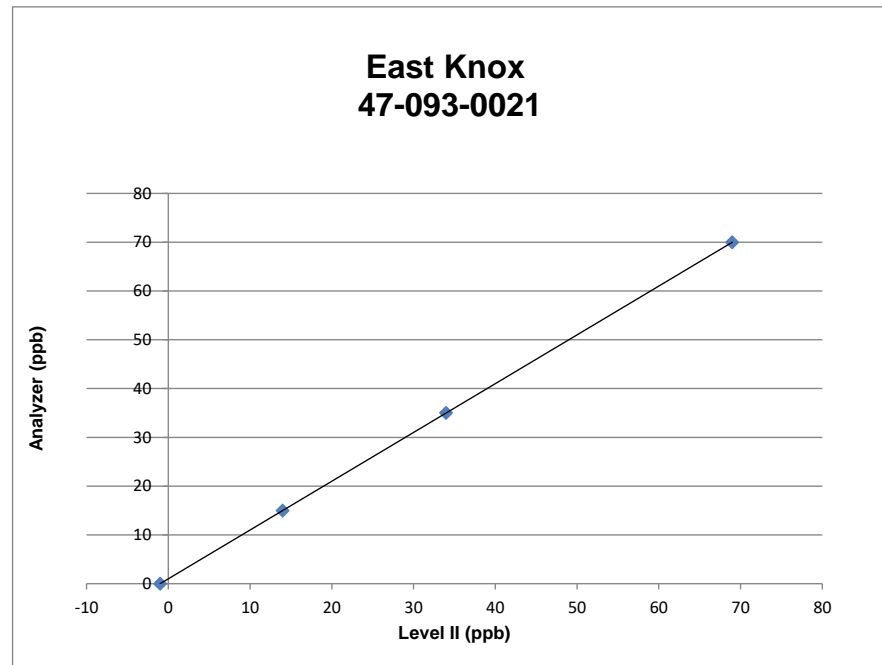
Audit SN: 179
 Analyzer SN: 4006

Collection Time	Target	Analyzer	Audit Standard	Difference	% Difference
est	ppb	ppb	ppb	ppb	%
8:23:00 AM	110	109	110	-1.0	-0.91
8:33:00 AM	70	69	70	-1.0	-1.43
8:44:00 AM	35	34	35.0	-1.0	-2.86
8:54:00 AM	15	15	15.0	0.0	0.00
9:04:00 AM	0	0	0.0	0.0	N/A

Collection Time	Target	Analyzer	Audit Standard	Difference	% Difference
est	ppb	ppb	ppb	ppb	%
8:57:00 AM	110	110	110	0.0	0.00
9:08:00 AM	70	69	70	-1.0	-1.43
9:20:00 AM	35	34	35.0	-1.0	-2.86
9:30:00 AM	15	14	15.0	-1.0	-6.67
9:40:00 AM	0	-1	0.0	-1.0	NA

Slope 0.990216 correlation 0.999971
 Intercept -0.15 R2 0.999942

Slope 1.008132 correlation 0.999983
 Intercept -1.17 R2 0.999965



Notes: ZAS not dated, or in logbook, AVTrend not working. Operator has separate computer login

Notes: Zero Air Canisters not dated, Logbook missing % differences, AVTrend not working, operator has separate computer login

PM 2.5 Audit Calculations

Reference device used for Audit: Streamline Pro

Serial number : HL170906

Date of Certification: 7/13/2019

Date: 3/12/2020

Site: Bearden

Monitor Serial number: 40606

	units	System Value	Reference Value	Difference (S-R)	%	Acceptance Criteria
Time	hh:mm:ss	9:23:36 AM	9:24:28 AM	0:00:52		+/- 1 Min.
Filter T	°C	15.8	15	0.8		+/- 2° C
Ambient T	°C	14	14.2	-0.2		+/- 2° C
Pressure	mmHg	735	733	2		+/- 10 mmHg
Flow Rate	lpm	16.69	16.71	-0.02	-0.1%	+/- 4%

Notes: LC Passed 7 mmHg

Date: 3/12/2020

Site: Bearden Collocated

Monitor Serial number: 30606

	units	System Value	Reference Value	Difference (S-A)	%	Acceptance Criteria
Time	hh:mm:ss	9:29:44 AM	9:30:26 AM	0:00:42		+/- 1 Min.
Filter T	°C	15.9	15.5	0.4		+/- 2° C
Ambient T	°C	14.8	14.7	0.1		+/- 2° C
Pressure	mmHg	735	734	1		+/- 10 mmHg
Flow Rate	lpm	16.61	16.6	0.01	0.1%	+/- 4%

Notes: LC Passed 10 mmHg

Date: 3/12/2020

Site: Rule

Monitor Serial number: 41005

	units	System Value	Reference Value	Difference (S-A)	%	Acceptance Criteria
Time	hh:mm:ss	10:11:01 AM	10:11:37 AM	0:00:36		+/- 1 Min.
Filter T	°C	17.1	16.9	0.2		+/- 2° C
Ambient T	°C	15.7	16	-0.3		+/- 2° C
Pressure	mmHg	729	731	-2		+/- 10 mmHg
Flow Rate	lpm	16.72	16.53	0.19	1.1%	+/- 4%

Notes: LC Passed 4 mmHg

Date: 3/12/2020

Site: Air Lab

Monitor Serial number: 60909

	units	System Value	Reference Value	Difference (S-A)	%	Acceptance Criteria
Time	hh:mm:ss	10:46:00 AM	10:46:59 AM	0:00:59		+/- 1 Min.
Filter T	°C	20.1	19.9	0.2		+/- 2° C
Ambient T	°C	18	17.9	0.1		+/- 2° C
Pressure	mmHg	731	734	-3		+/- 10 mmHg
Flow Rate	lpm	16.7	16.72	-0.02	-0.1%	+/- 4%

Notes: LC Passed 3mmHg

Date: 3/18/2020

Site: Springhill

Monitor Serial number: 20606

	units	System Value	Reference Value	Difference (S-A)	%	Acceptance Criteria
Time	hh:mm:ss	8:00:20 AM	8:00:27 AM	0:00:07		+/- 1 Min.
Filter T	°C	13.7	12.8	0.9		+/- 2° C
Ambient T	°C	13.1	12	1.1		+/- 2° C
Pressure	mmHg	738	739.5	-1.5		+/- 10 mmHg
Flow Rate	lpm	16.68	16.53	0.15	0.9%	+/- 4%

Notes: LC Passed 4mmHg

PM 2.5 Audit Calculations

Reference device used for Audit: Streamline Pro

Serial number : HL190706

Date of Certification: 7/13/2019

Date: 3/12/2020

Site: Air Lab

Monitor Serial number: SN192

T640 X

	Units	System	Reference	Difference	%	Criteria
Time	hh:mm:ss	11:02:49 AM	11:00:00 AM	0:02:49		+/- 1 Min.
Shelter T	°C	24	24	0		+/- 2° C
Amb T	°C	19.9	20.6	-0.7		+/- 2° C
Pressure	mmHg	734.9	733.5	1.4		+/- 10mmHg
Total Flow	lpm	16.71	16.7	0.01	0.05988024	+/- 4 %
MainFlow	lpm	4.91	4.89	0.02	0.408997955	+/- 4 %

Notes: Logbook not present onsite, Suggest posting Serial Numbers at visible location on front/top of instrument. See Logbook for warnings found LC PASSED 0.0/0.0

Date: _____

Site: _____

Monitor Serial number: _____

	Units	System	Reference	Difference	%	Criteria
Time	hh:mm:ss			0:00:00		+/- 1 Min.
Shelter T	°C			0		+/- 2° C
Amb T	°C			0		+/- 2° C
Pressure	mmHg			0		+/- 10mmHg
Flow Rate	lpm			0	#DIV/0!	+/- 4 %

Notes:

Date: _____

Site: _____

Monitor Serial number: _____

	Units	System	Reference	Difference	%	Criteria
Time	hh:mm:ss			0:00:00		+/- 1 Min.
Shelter T	°C			0		+/- 2° C
Amb T	°C			0		+/- 2° C
Pressure	mmHg			0		+/- 10mmHg
Flow Rate	lpm			0	#DIV/0!	+/- 4 %

Notes:

Date: _____

Site: _____

Monitor Serial number: _____

	Units	System	Reference	Difference	%	Criteria
Time	hh:mm:ss			0:00:00		+/- 1 Min.
Shelter T	°C			0		+/- 2° C
Amb T	°C			0		+/- 2° C
Pressure	mmHg			0		+/- 10mmHg
Flow Rate	lpm			0	#DIV/0!	+/- 4 %

Notes:

Date: _____

Site: _____

Monitor Serial number: _____

	Units	System	Reference	Difference	%	Criteria
Time	hh:mm:ss			0:00:00		+/- 1 Min.
Shelter T	°C			0		+/- 2° C
Amb T	°C			0		+/- 2° C
Pressure	mmHg			0		+/- 10mmHg
Flow Rate	lpm			0	#DIV/0!	+/- 4 %

Notes:

Lead Audit Calculations

Reference device used for Audit: Hi Vol Cal

Serial number : 96

Date of Certification: 5/2/2019

Date: 3/12/2020 Bar Press 733 mmHg
 Monitor ID: P-2875 Temp 20.7 °C
 Site: Burnside

Qa CFM

39.69	Stag Press: <u>22.3</u> inH2O
	Pa: <u>41.6564</u> mmHg
39.68	Po/Pa: <u>0.94317</u> unitless
39.73	Flow <u>1.133</u> (from table)
39.49	%D: <u>0.89%</u> {Flow- Qa/Qa}x 100
39.65	% D Design <u>-0.62%</u> {Qa - 1.13/1.13}
39.71	
39.64	
39.73	
39.65	

39.66 CFM
 1.123 m³/min

Date: 3/12/2020 Bar Press 733 mmHg
 Monitor ID: P-4302 Temp 20.2 °C
 Site: Burnside Collo

Qa CFM

39.9	Stag Press: <u>22.3</u> inH2O
	Pa: <u>41.6564</u> mmHg
39.9	Po/Pa: <u>0.94317</u> unitless
39.91	Flow <u>1.137</u> (from table)
39.84	%D: <u>0.66%</u> {Flow- Qa/Qa}x 100
39.93	% D Design <u>-0.04%</u> {Qa - 1.13/1.13}
39.85	
39.92	
39.91	
39.87	
39.88	

39.89 CFM
 1.130 m³/min

Date: 3/12/2020 Bar Press 732 mmHg
 Monitor ID: P4304 Temp 21.2 °C
 Site: Ameristeel

Qa CFM

40.13	Stag Press: <u>22.6</u> inH2O
	Pa: <u>42.2168</u> mmHg
40.01	Po/Pa: <u>0.942327</u> unitless
40.22	Flow <u>1.149</u> (from table)
40.24	%D: <u>0.98%</u> {Flow- Qa/Qa}x 100
40.25	% D Design <u>0.69%</u> {Qa - 1.13/1.13}
40.24	
40.17	
40.16	
40.23	
40.16	

40.18 CFM
 1.138 m³/min

Notes: All Timer clocks within ± 3 minutes

Speciation Audit Calculations

Reference device used for Audit: **SLP**

Serial number : HL190706

Date of Certification: 7/13/2019

Leak Test		
	Pass	Fail
URG 3000	224	
SASS Channel 1	0	
SASS Channel 2	0	

Pressure {Ambient}			
	System	Reference	Difference
URG 3000N	739.7	739.6	0.10
SASS	740	739.5	0.50

Flow Rate

	System	Reference	% Difference
URG 3000N	22.02	22.36	-1.52%
SASS channel 1	6.6	6.6	0.00%
SASS Channel 2	6.6	6.6	0.00%

Temperature

	System	Reference	Difference
URG 3000N Ambient	17.5	15.8	1.70
SASS ambient	12.8	13.3	-0.50
SASS filter channel 1	13.6	13.8	-0.20
SASSfilter Channel 2	13.8	14.4	-0.60

Site Name: Air Lab
 AQSNo: 47-093-1013
 Coordinate 35.980756, -83.925802

Date: 3/12/2020
 Site Address: 939 Stewart St
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
PM2.5 filter based	Middle	4.6	low	1.7	Pass	15.3	Pass
PM 2.5/10 continuous	Middle	4.8	low			15.8	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
Closest Tree (E)	15M	25M	Pass	17.5M	Pass

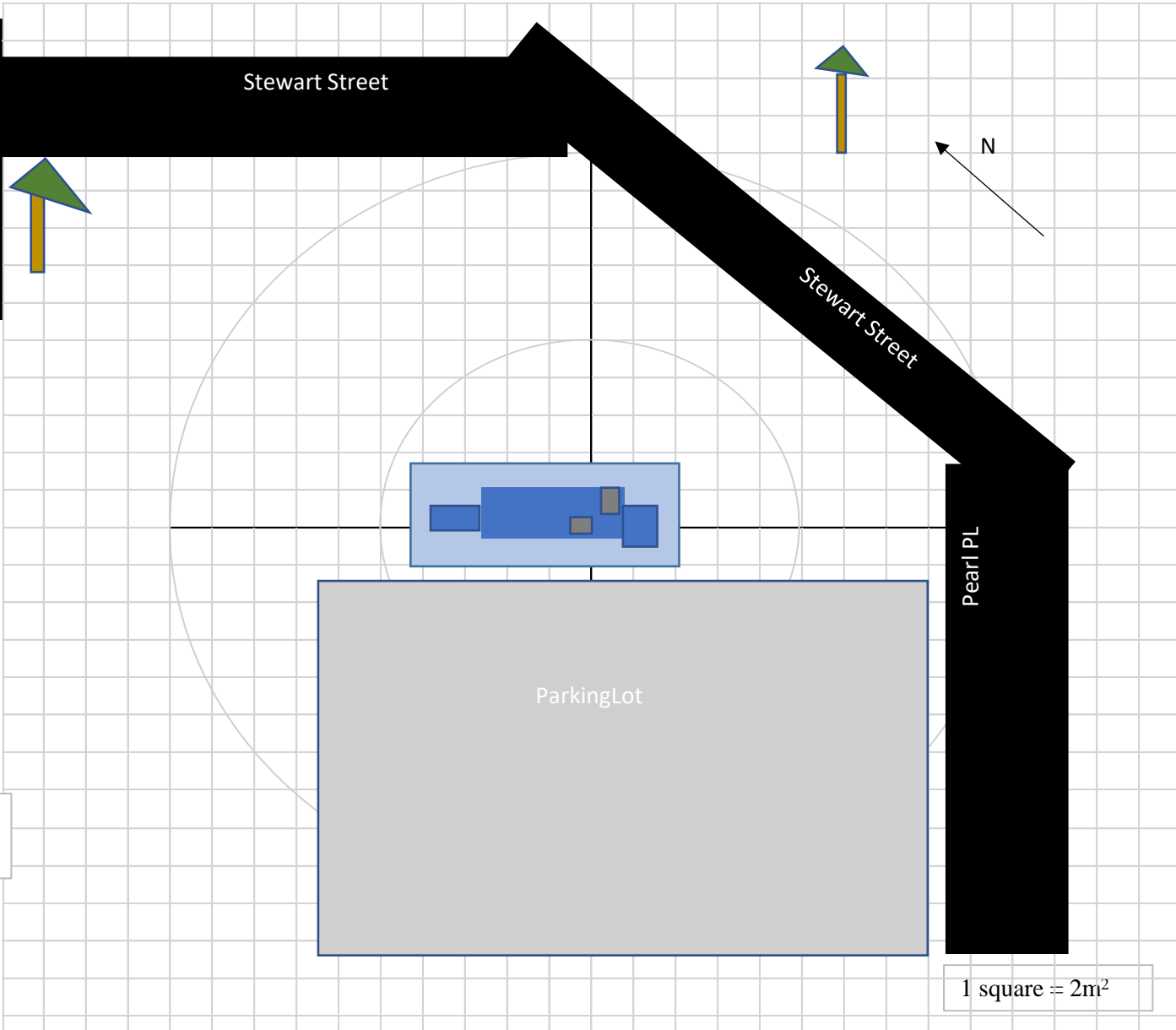
¹ All Measurements in meters
² Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 * (\text{Obst height} - \text{probe height})$
 Tree Dripline must be >10 m away, prefer >20 m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

- Indicate:
- North
 - Shelter
 - Probe Postion
 - Nearby trees
 - Roadways
 - Buildings
 - Other Obstructions
 - Source if Applicable



Primary Wind
Direction : 220° SSW

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: Ameristeel
 AQSNo: 47-093-0023
 Coordinates: 35.98102, -83.9544

Date: 3/12/2020
 Site Address: 1526 New York Ave
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
Lead	Microscale	4.8M	Hi	N/A		12.8M	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
Small trees NNE	4.8M	12.4M	Pass	11M	Pass
Large Tree SW	15.8M	34.4M	Pass	>20M	Pass

¹ All Measurements in meters

² Including vertical and horizontal separation from walls &/or parapets if applicable

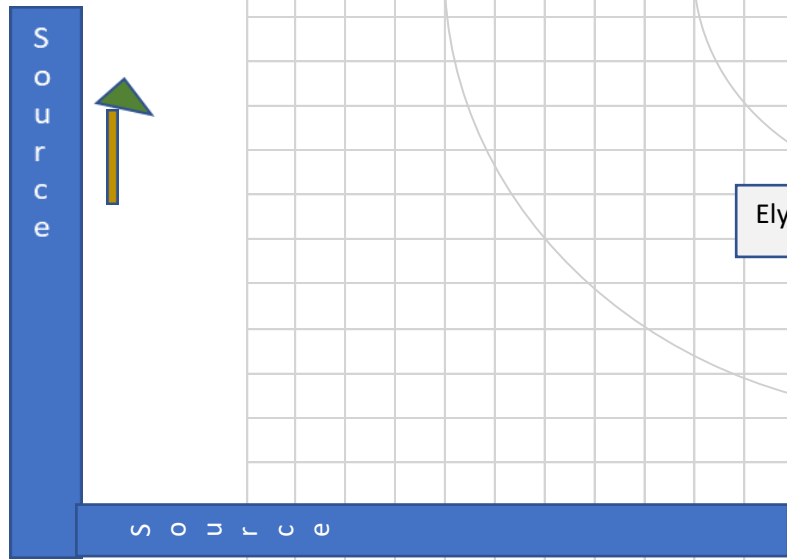
Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 \times$ (Obst height - probe height)
 Tree Dripline must be >10 m away, prefer >20m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

- Indicate:
- North
 - Shelter
 - Probe Postions
 - Nearby trees
 - Roadways
 - Buildings
 - Other Obstructions
 - Source if Applicable

Primary Wind
Direction : 220° SSW



Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: Burnside
 AQSNo: 47-093-0027
 Coordinate 35.98306, -83.9523

Date: 3/12/2020
 Site Address: 2522 Burnside St, 37921
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
Lead - Official	Neighborhood	2M	Hi	2.56M	Pass	24.0M	Pass
Lead Collocated	Neighborhood	2M	Hi	2.56M	Pass	23.8M	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
Tree SW quadrant	20	18		10.5	Pass
Firehouse	6.2	26.2	Pass		

¹ All Measurements in meters

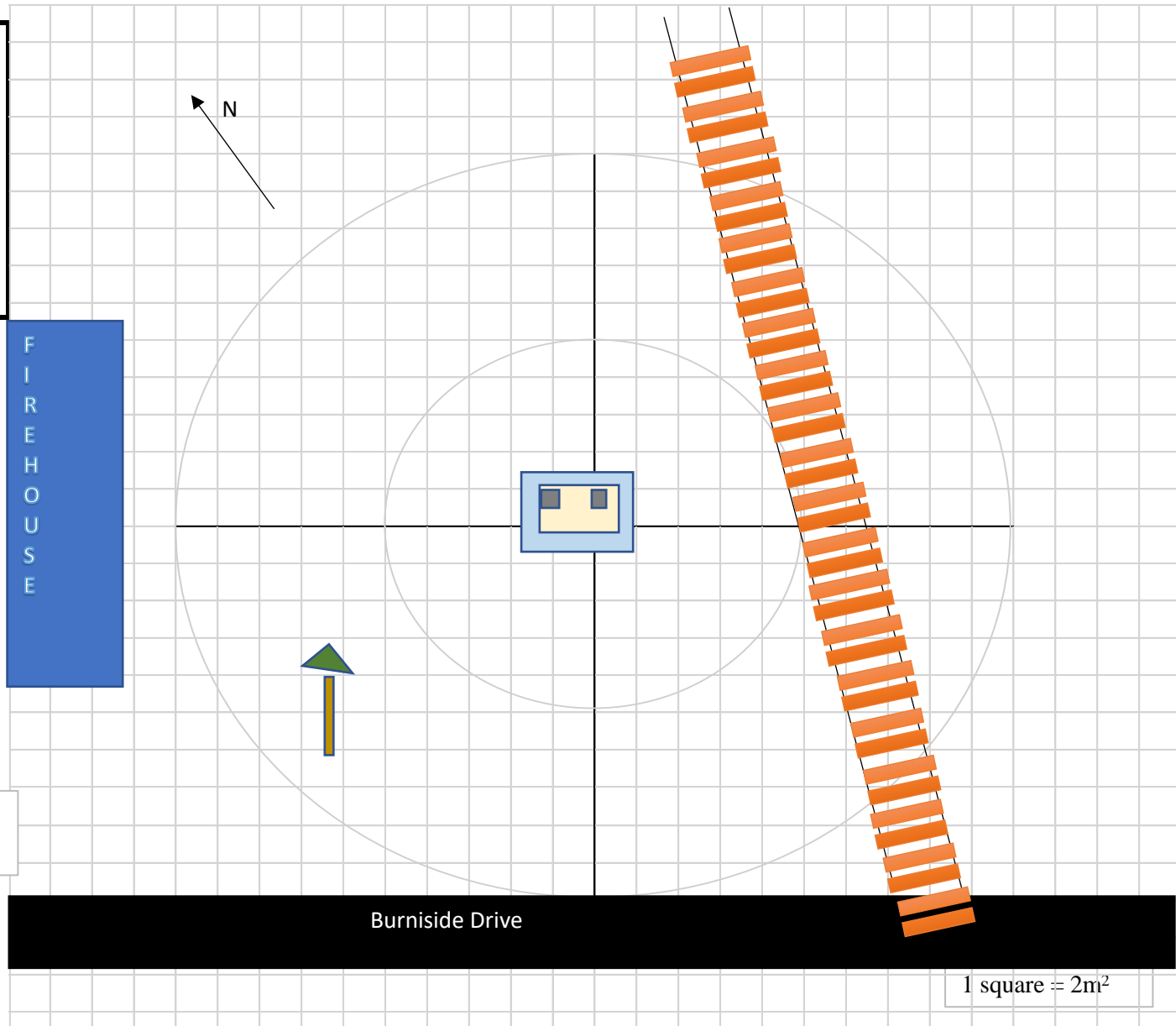
² Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 * (\text{Obst height} - \text{probe height})$
 Tree Dripline must be >10 m away, prefer >20 m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 270°

- Indicate:
- North
- Shelter
- Probe Postions
- Nearby trees
- Roadways
- Buildings
- Other Obstructions
- Source if Applicable



Primary Wind
Direction : 220° SSW

1 square = 2m²

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: Bearden
 AQSNo: 47-093-0028
 Coordinate 35.94195, -84.035

Date: 3/12/2020
 Site Address: 1000 Francis Street
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
PM2.5	Neighborhood	2.44	Low	2.5	Pass	39.6	Pass
PM2.5 collocate	Neighborhood	2.44	Low			41.5	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
Tallest Tree ENE	11.2M	20M	Pass	18M	Pass
Tallest Tree S	13.7M	26.4M	Pass	>20M	Pass
Tallest TreeSSW	16M	29M	Pass	>20M	Pass
Tallest Tree NNW	10M	18.4M	Pass	17.2M	Pass

¹ All Measurements in meters

² Including vertical and horizontal separation from walls &/or parapets if applicable

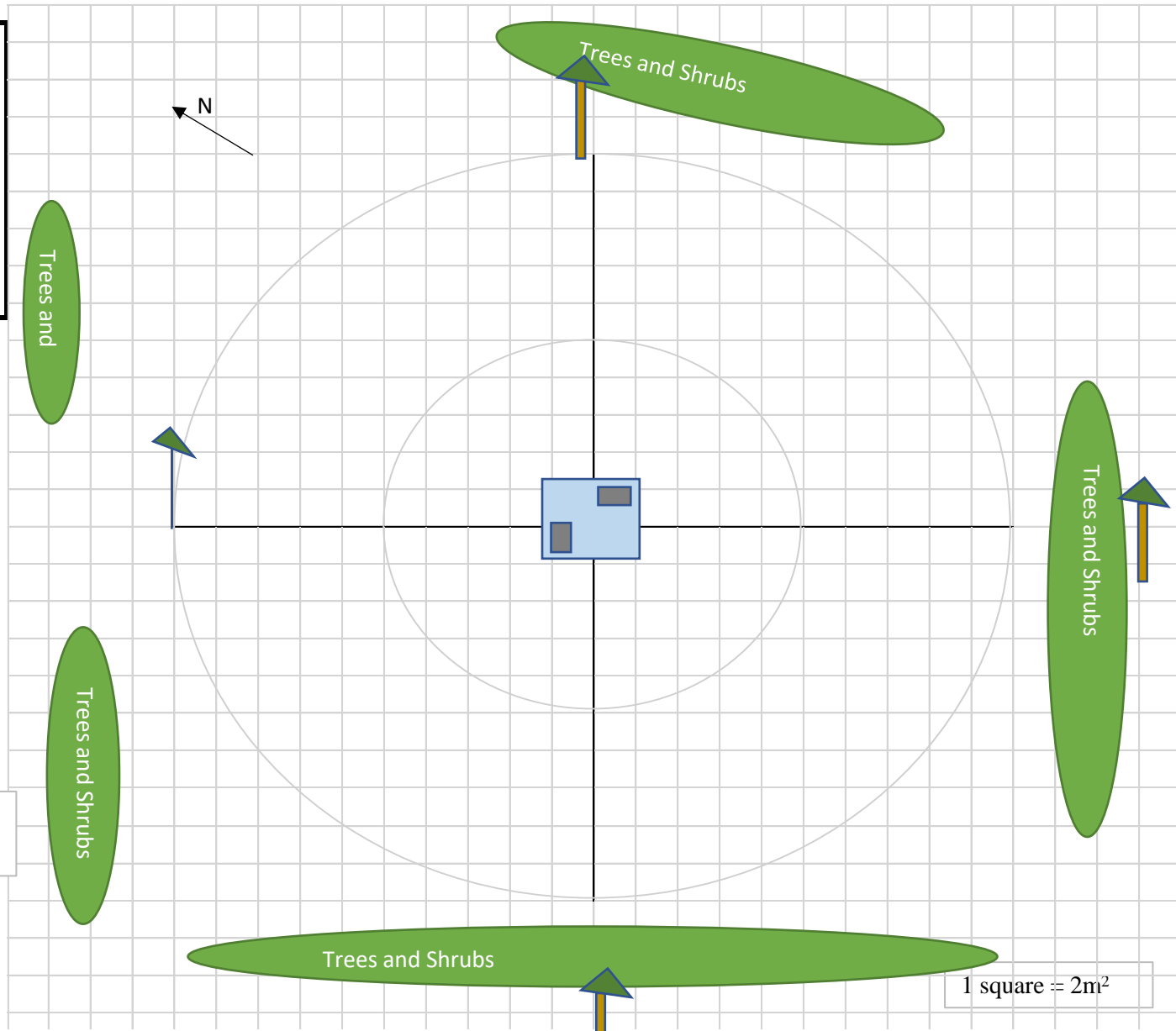
Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 * (\text{Obst height} - \text{probe height})$
 Tree Dripline must be >10 m away, prefer >20m
 Horizontal and vertical distance on rooftop 1m for O₃ gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

- Indicate:
- North
 - Shelter
 - Probe Postions
 - Nearby trees
 - Roadways
 - Buildings
 - Other Obstructions
 - Source if Applicable

Primary Wind
Direction : 220° SSW



-

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: East Knox
 AQSNo: 47-093-0021
 Coordinate 36.0855,-83.7649

Date: 3/16/2020
 Site Address: 9315 Rutledge Pike
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
Ozone	Urban	4M	Low	n/a		180M	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
Pine West	18.2M	34.4M	Pass	>20M	Pass
Tallest Pine WSW	18.4M	31M	Pass	>20 M	Pass
Smaller closer brush	5.8M	15M	Pass	13.4	Pass
This site should be monitored for tree growth carefully, keep smaller brush maintained					

¹ All Measurements in meters
² Including vertical and horizontal separation from walls &/or parapets if applicable

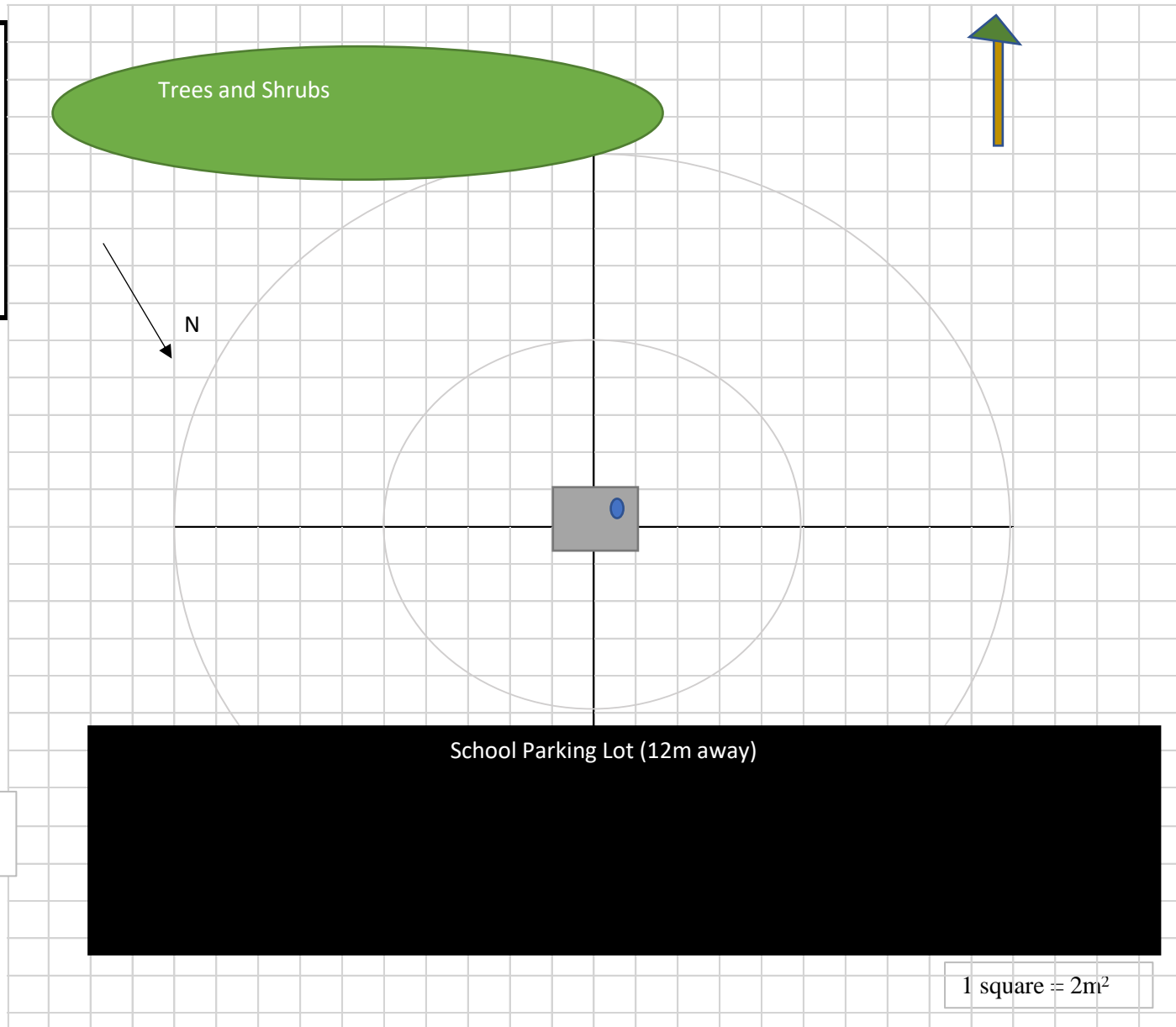
Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 * (\text{Obst height} - \text{probe height})$
 Tree Dripline must be >10 m away, prefer >20m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow:

310

- Indicate:
- North
 - Shelter
 - Probe Postions
 - Nearby trees
 - Roadways
 - Buildings
 - Other Obstructions
 - Source if Applicable



Primary Wind
 Direction : 220° SSW

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: Rule
 AQSNo: 47-093-1017
 Coordinate 35.97773, -83.9504

Date: 3/12/2020
 Site Address: 1613 vermont Ave
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
Pm2.5	Neighborhood	2.36M	Low	n/a		>42M	Pass

Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Tree	
				Dripline ¹	Pass/ Fail
WaterTower	23.4M	69.8M	Pass		
Tallest tree W	9.2M	32M	Pass	>20M	Pass

¹ All Measurements in meters

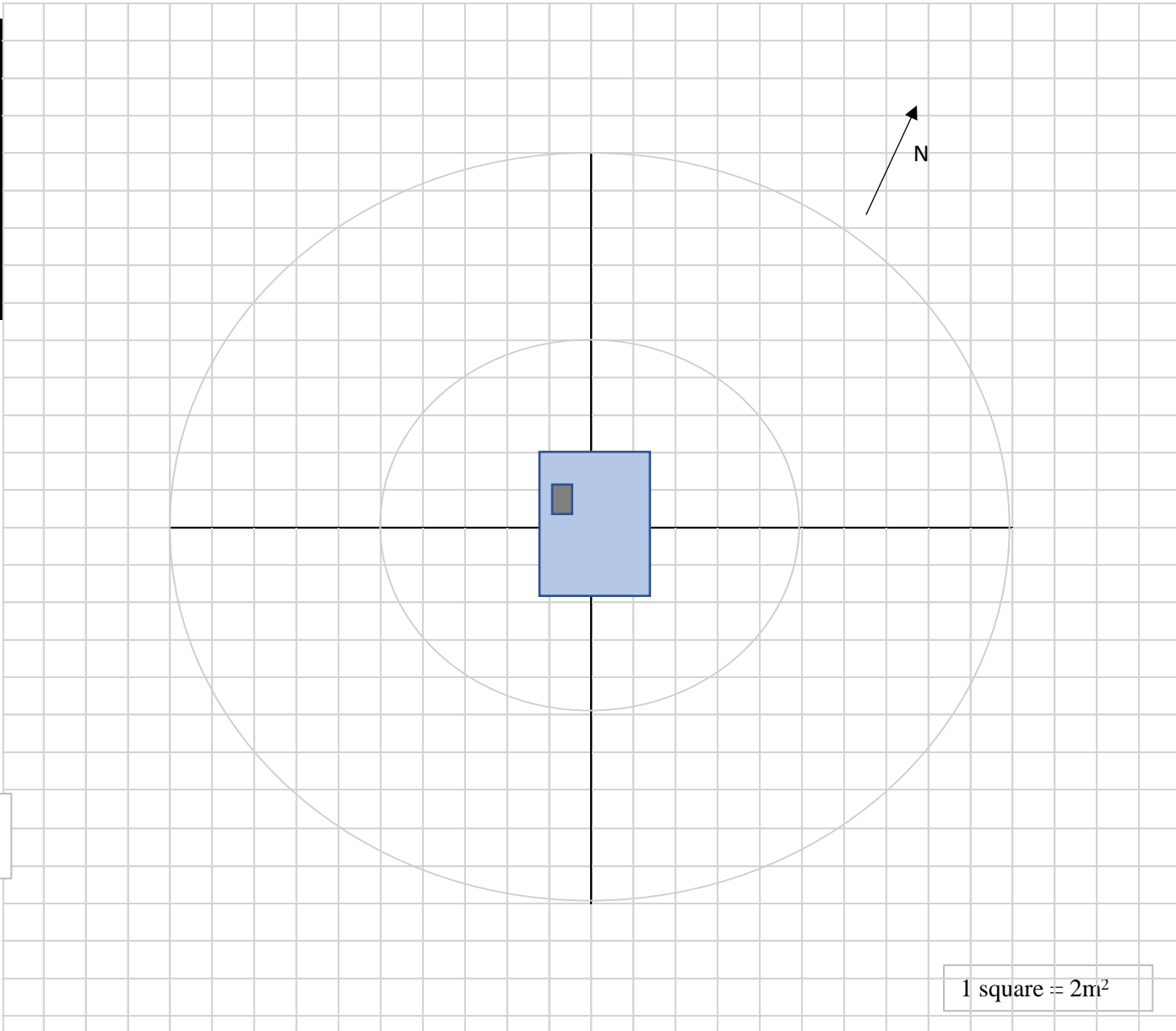
² Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2 * (\text{Obst height} - \text{probe height})$
 Tree Dripline must be >10 m away, prefer >20m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

- Indicate:
- North
- Shelter
- Probe Postions
- Nearby trees
- Roadways
- Buildings
- Other Obstructions
- Source if Applicable



Primary Wind
Direction : 220° SSW

1 square = 2m²

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West





Site Name: Springhill
 AQSNo: 47-093-1020
 Coordinate 36.0114, -83.8739

Date: 3/18/2020
 Site Address: 4711 Mildred Drive
 Inspected by: Rebecca Larocque

Pollutant	Scale	Probe Height ¹	Flow (hi or Low)	Separation from samplers ¹	Pass/Fail	Distance to Road ¹	Pass/Fail
Ozone	Neighborhood	4.3	Low	2.1	Pass	36.2	Pass
PM2.5	Neighborhood	4.6	Low	1.3	Pass	37.8	Pass
URG Speciation	Neighborhood	4.6	Low	1.3	Pass	36.2	Pass
SASS speciation	Neighborhood	4.4	Low	1.5	Pass	36.2	Pass

				Tree	
Obstruction type ²	Obst. Height ¹	Obst. Distance ^{1,2}	Pass/Fail	Dripline ¹	Pass/ Fail
Tree NE	16.4	24.6	Pass	19M	Pass
Tallest Pine E	21.6	28		19.4M	Pass

¹ All Measurements in meters

² Including vertical and horizontal separation from walls &/or parapets if applicable

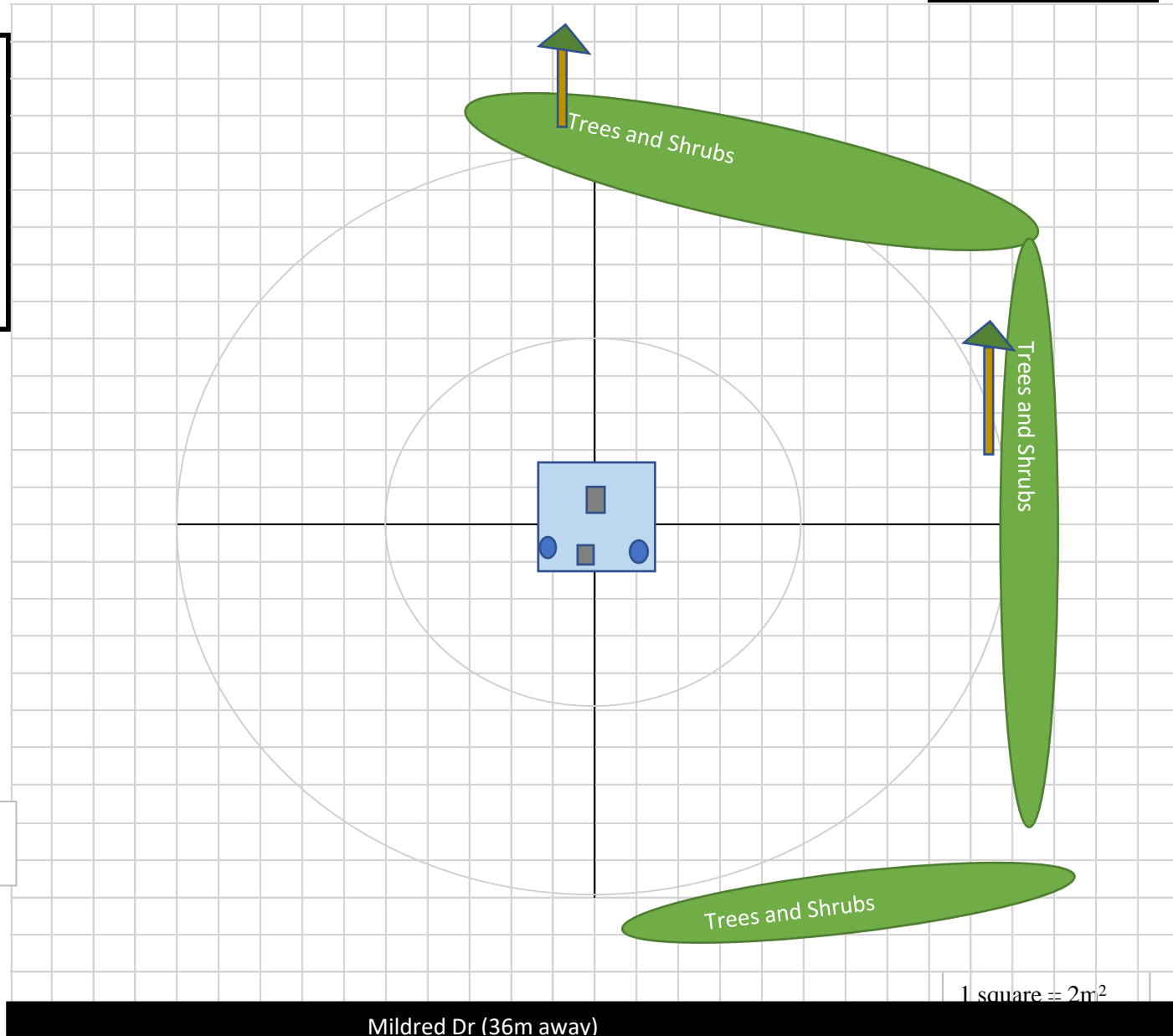
Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume
 Obstruction Distance must be $\geq 2*$ (Obst height - probe height)
 Tree Dripline must be >10 m away, prefer >20m
 Horizontal and vertical distance on rooftop 1m for O₃/gases - 2m for all others
 Unrestricted air flow must be $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 330°

- Indicate:
- North
 - Shelter
 - Probe Postions
 - Nearby trees
 - Roadways
 - Buildings
 - Other Obstructions
 - Source if Applicable

Primary Wind
Direction : 220° SSW



Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

North



South



East



West



