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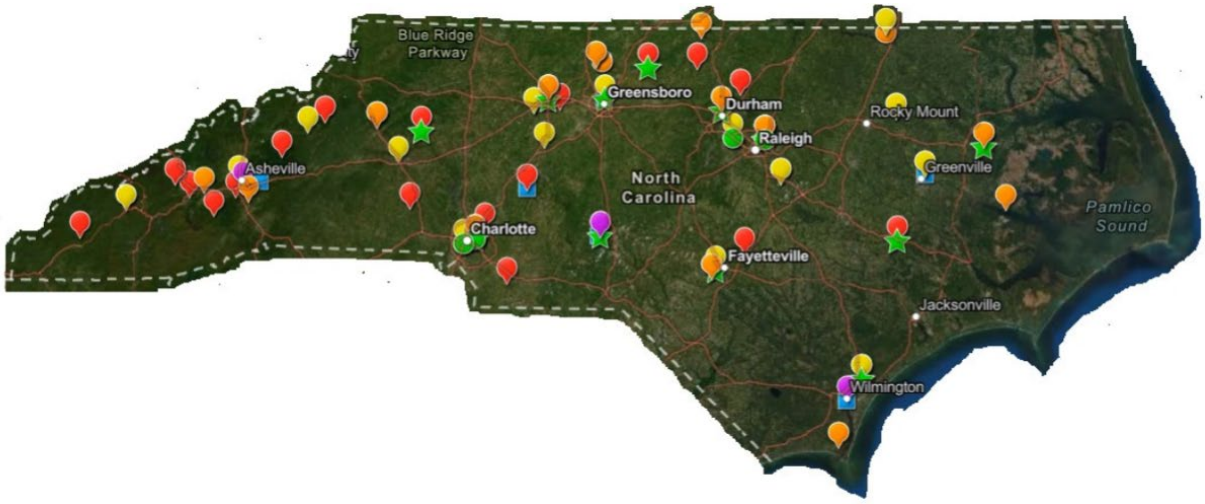
NORTH CAROLINA
Environmental Quality

2021-2022 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 1

Addendum 1



May 13, 2022

North Carolina Division of Air Quality
A Division of the North Carolina
Department of Environmental Quality
Mail Service Center 1641
Raleigh, North Carolina 27699-1641

NORTH CAROLINA
Department of Environmental Quality

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CERTIFICATION

By the signatures below, the North Carolina Division of Air Quality, DAQ, certifies that the information contained in this 2021-2022 Annual Monitoring Network Plan Addendum is complete and accurate at the time of submittal to the Environmental Protection Agency, EPA, Region 4. However, due to circumstances that may arise during the sampling year, some network information may change. A notification of change and a request for approval will be submitted to EPA Region 4 at that time.

Signature DocuSigned by: Patrick Butler 4290A7E2D2A0429... Date 5/12/2022

Patrick Butler
Ambient Monitoring Section Chief, DAQ

Signature DocuSigned by: Michael Pjetraj for Michael Abraczinskas D7CE45A225784E9... Date 5/12/2022

Michael Abraczinskas
Director, DAQ

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Addendum 1. Board of Education Information for Relocating the Fine Particle ($PM_{2.5}$) Monitors

Public Availability and Public Comments Received

This network plan addendum was made available on the Department of Environmental Quality Division of Air Quality (DAQ) website for public comment for 30 days from April 9 to May 10, 2022. In addition, notice of its availability was emailed to the DAQ Outside Involvement Committee and rulemaking stakeholders. No public comments were received.

Introduction

Ryan Brown, with the Air and Radiation Division (ARD) of the Environmental Protection Agency (EPA) Region 4, called the Asheville-Buncombe Air Quality Agency (ABAQA) to inform them about the availability of a collocation shelter for sensor studies for installation at the Board of Education site (37-021-0034) located in Asheville, North Carolina. Further conversations with Mr. Brown and the property owners at the Board of Education site indicated that for the collocation shelter to be properly installed and accessible to the public, the current monitoring site would need to be relocated from the roof of the building to the ground. As a result, ABAQA contacted the maintenance staff at the Board of Education Building to see if the rooftop monitors could be relocated on the ground approximately 168 meters east of the current location as shown in Figure 1. The Board of Education maintenance staff agreed to this location.

Figure 1. Locations of current and proposed monitoring stations

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The monitors affected by this relocation are 37-021-0034-88101-1 and 37-021-0034-88101-3. The ABAQA operates these monitors to ensure that the air in the Asheville area complies with the national ambient air quality standards. Both fine particle monitors are suitable for comparison to the annual fine particle national ambient air quality standard. Figure 2 shows a view of the proposed site. Views from the proposed site looking north, northeast, east, southeast, south, southwest, west, and northwest are shown in Figure 3 through Figure 10.

Figure 2. Proposed monitoring location

Figure 3. Looking north from proposed location

Figure 4. Looking northeast from proposed location

Figure 5. Looking northwest from proposed location

Figure 8. Looking east from the proposed location

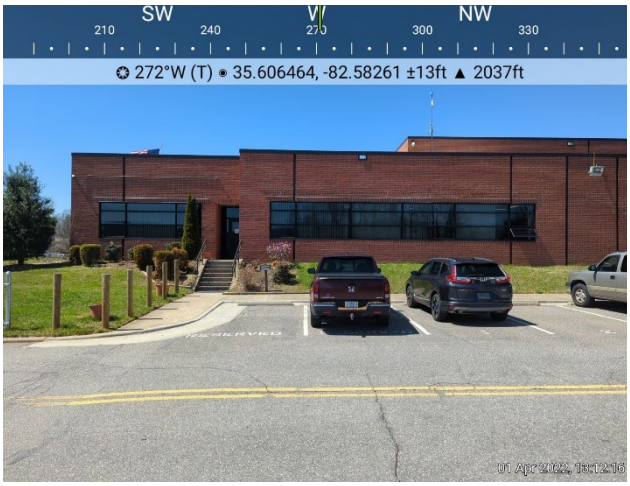

Figure 6. Looking west from the proposed location

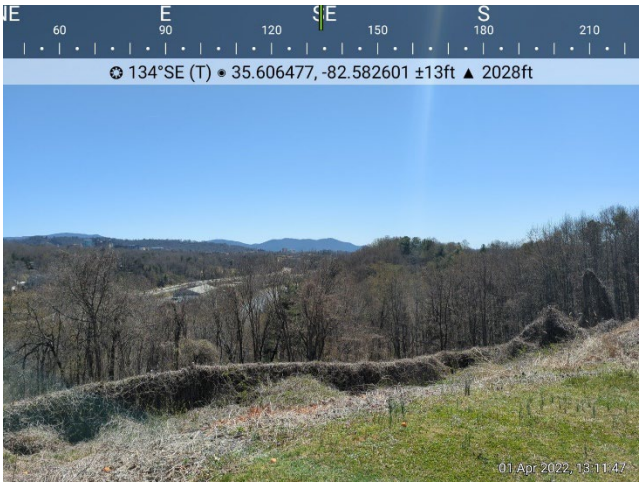

Figure 9. Looking southeast from the proposed location

Figure 7. Looking southwest from the proposed location

Figure 10. Looking south from the proposed location

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Detailed Siting Information on the Proposed Location

The closest tree (see Figure 4) is 28.8 meters east northeast of the proposed site. Its approximate height is 12 meters so this tree will not be an obstacle to air flow. Another large tree (see Figure 4) is 45.8 meters north northeast of the proposed site. Its approximate height is 21 meters so it too will not be an obstacle to air flow. There is a building that is 23.5 meters west of the proposed site. The building is 7 meters tall including the small hill it is on so it will also not be an obstacle to air flow. More precise measurements will be available after the monitors are located at the proposed location. The nearest road is Pearson Bridge Road, 273 meters north of the proposed site. Bingham Road is 296 meters west of the proposed site. Interstate 26 is 467 meters east of the proposed site. As shown in Figure 11, in 2020 the average annual daily traffic (AADT) count was 3,300 to the northwest of the proposed site on Pearson Bridge Road, 2,000 to the west southwest of the proposed site on Bingham Road, and 54,000 to the southeast of the proposed site on Interstate 26 . The inlet heights for the proposed monitoring location will be lower than the inlet heights for the current monitoring location, approximately 2.3 meters for the proposed site as opposed to 8 meters for the current site.

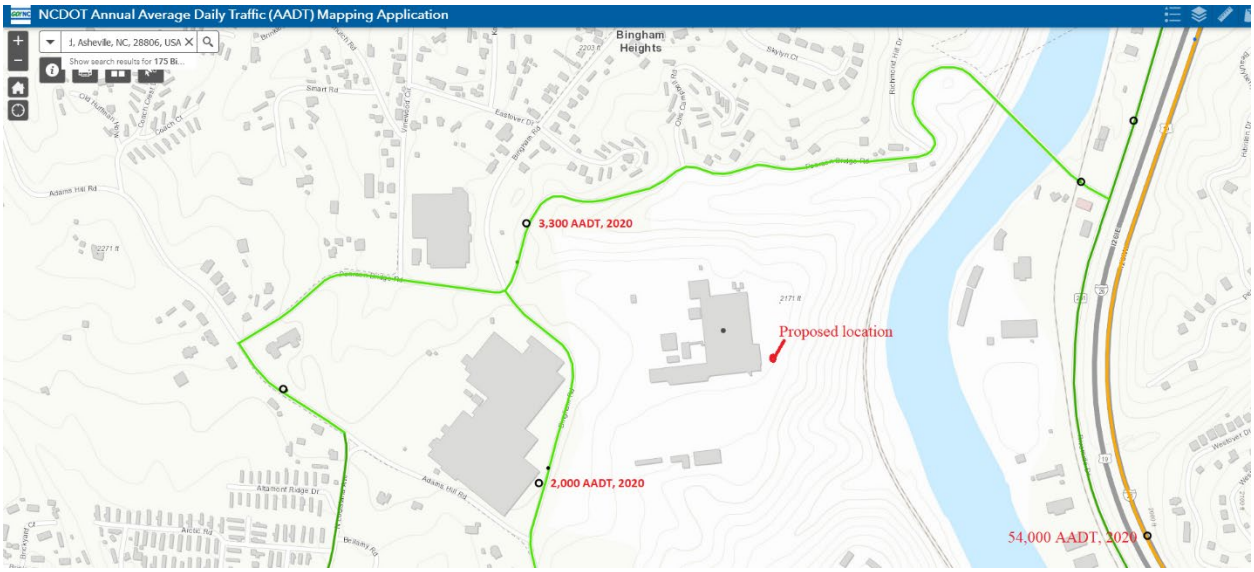

Figure 11. 2020 Traffic count map (from DOT)

The Air Quality System identification number and street address for the site will remain the same: 37-021-0034 and 175 Bingham Road, Asheville, North Carolina 28806. The new latitude and longitude will be 35.606448 and -82.582622 (subject to change slightly depending on the exact placement of the monitors). The sampling and analysis methods (AQS codes 145 for the FRM (POC 1) and 209 for the BAM 1022) and operating schedules (one-in-six day for the FRM and hourly for the BAM 1022) will remain the same. The monitoring objective for both monitors will continue to be population exposure. Figure 12 shows the location of the monitoring station relative to the population center of Asheville. Based on the wind roses in Figure 13 through Figure 17, the proposed monitoring station is located upwind of Asheville during springtime and summer when the $PM_{2.5}$ concentrations are the highest. The spatial scale of representativeness for both monitors will be urban based on the location of the roadways and the amount of traffic on those roads. (See Figure 18.)

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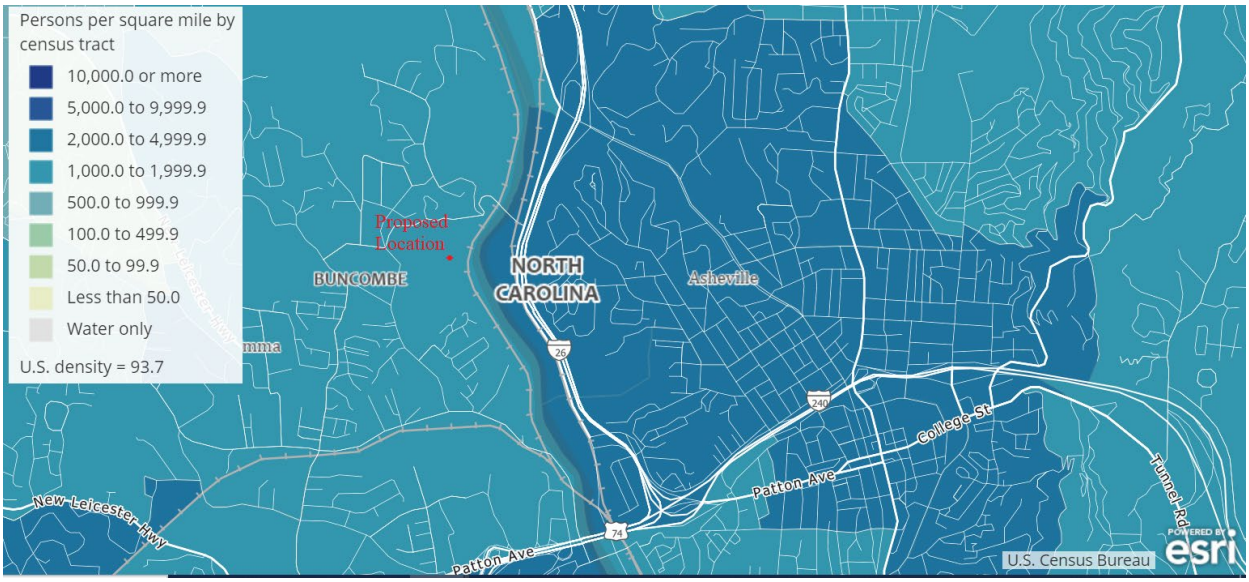

Figure 12. Location of the proposed monitoring station relative to the population of Asheville

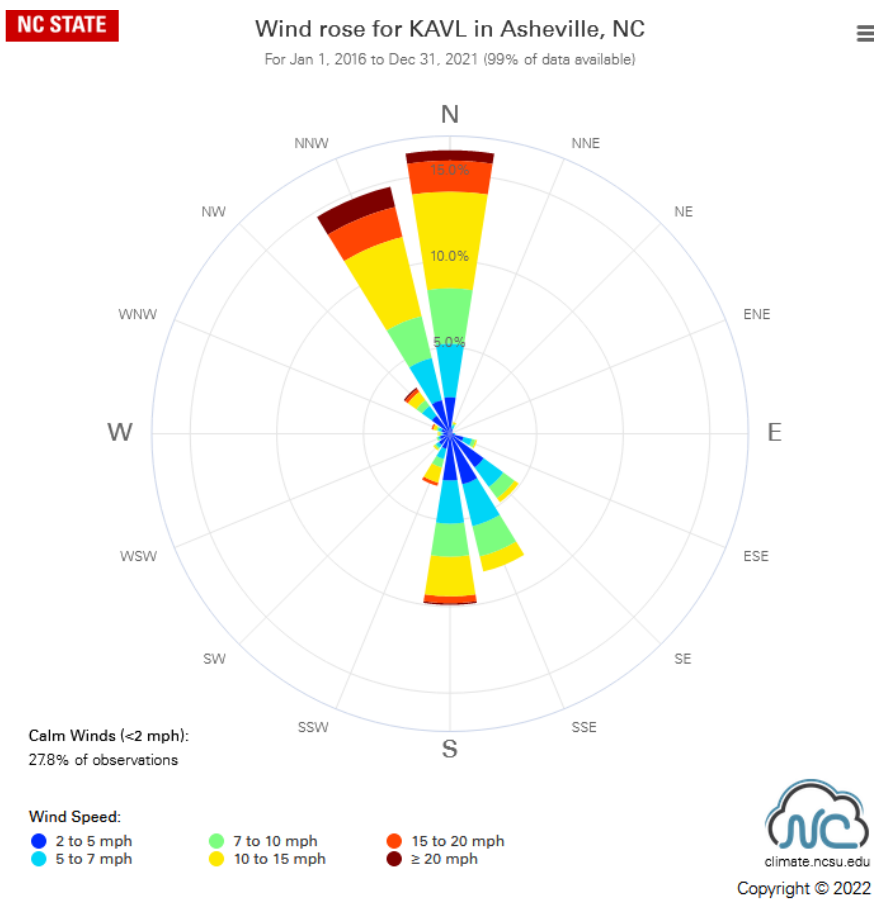

Figure 13. Wind rose for Asheville using last five years of data (from NC State Climate Office)

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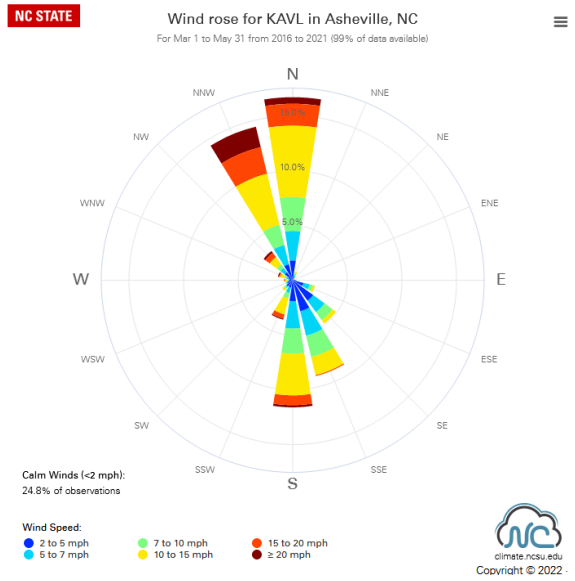

Figure 14. Asheville springtime wind rose (from NC State Climate Office)

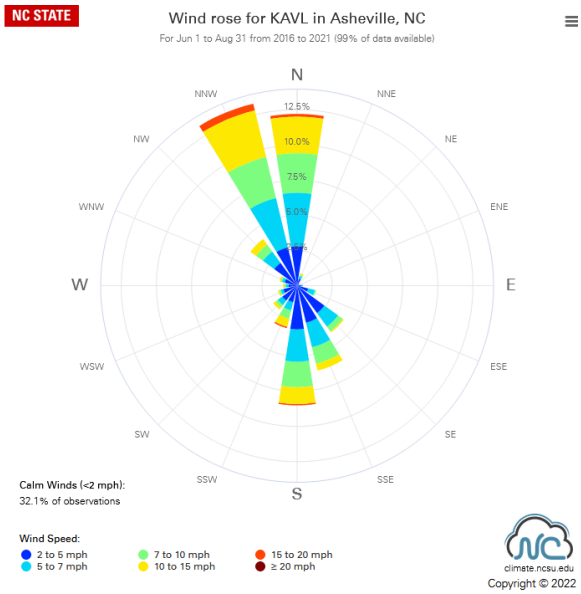

Figure 15. Asheville summertime wind rose (from NC State Climate Office)

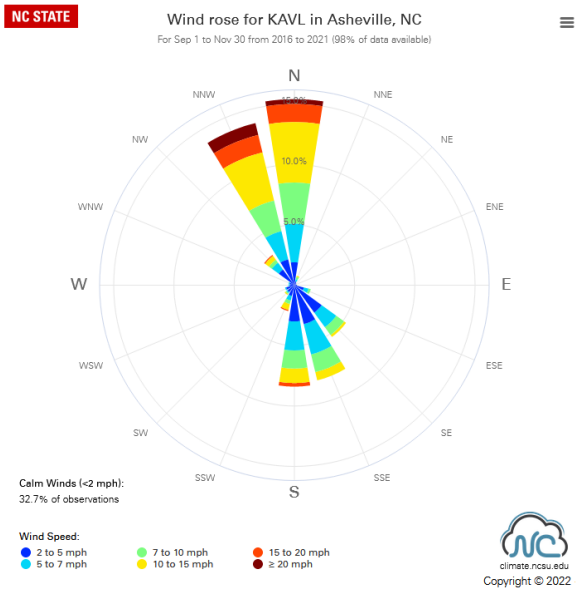

Figure 16. Asheville fall-time wind rose (from NC State Climate Office)

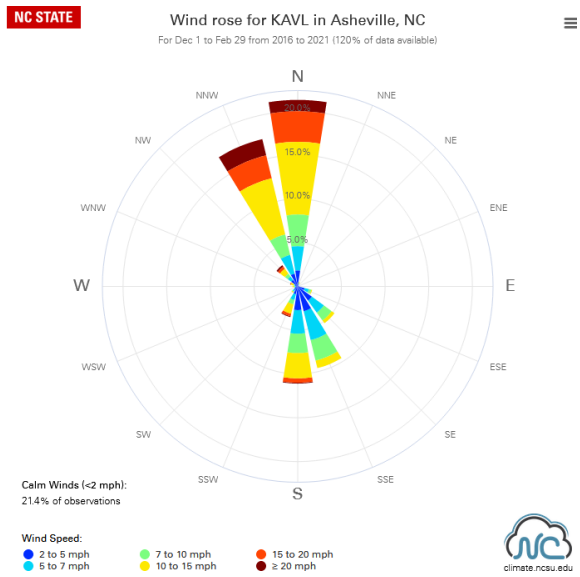

Figure 17. Asheville wintertime wind rose (from NC State Climate Office)

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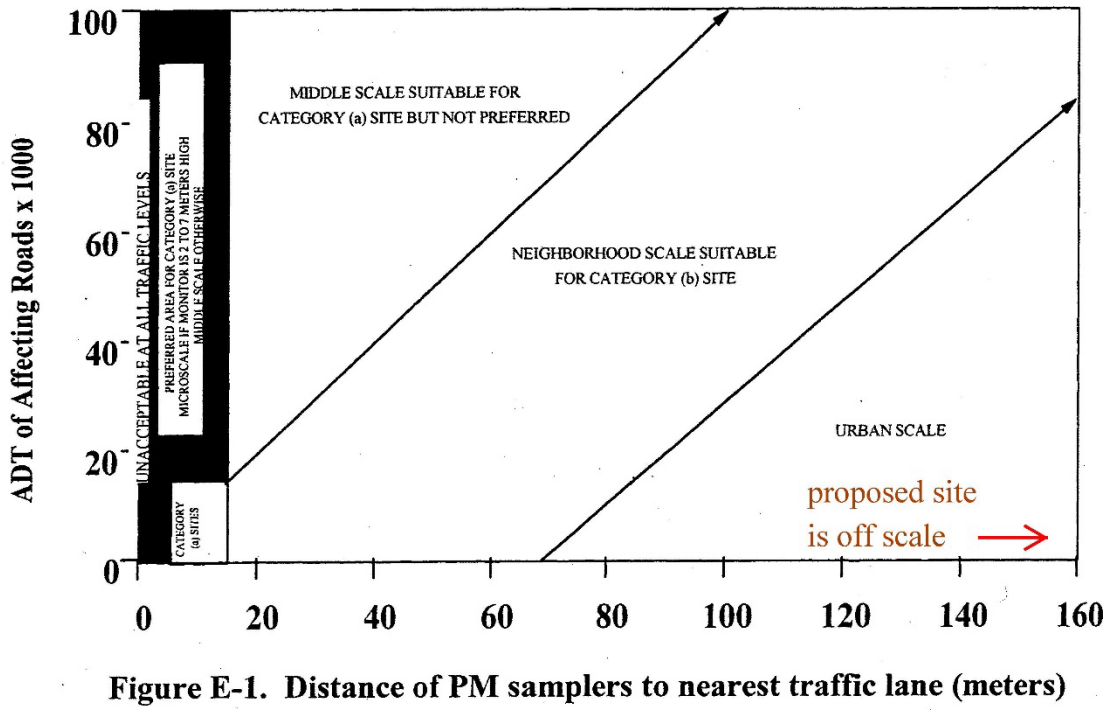

Figure 18. Figure E-1 from Appendix E used to determine spatial scale of representativeness for particle monitors

These two monitors are representative of air quality in the Asheville metropolitan statistical area.

Table 1 summarizes other factors ABAQA evaluated when choosing the proposed location for the monitoring station. Location of permitted facilities are shown in Figure 19.

Table 1. Other considerations in site selection

Factor	Evaluation
Long-term Site Commitment	The Board of Education is willing to provide ABAQA with a long-term lease agreement and does not plan to develop the current area any time in the near future
Sufficient Operating Space	50 meter diameter open area free of trees and buildings
Access and Security	Current monitors have not been vandalized while on the roof. The ground-based monitors will be inside a locked fence.
Safety	Appropriate electrical permits will be obtained.
Power	Power is readily accessible from the nearby parking lot or driveway.
Environmental Control	Both monitors are designed to operate in situ so no environmental control is required at this time.
Exposure	The monitoring station will be at least 20 meters from the driplines of trees and will not be near any trees or buildings that could be an obstacle to air flow.
Distance from Nearby Emitters	There are four facilities with air permits within 2 km of the proposed location.
Proximity to Other Measurements	The proposed monitoring station is located 19.6 kilometers north northwest from the Asheville Regional Airport.

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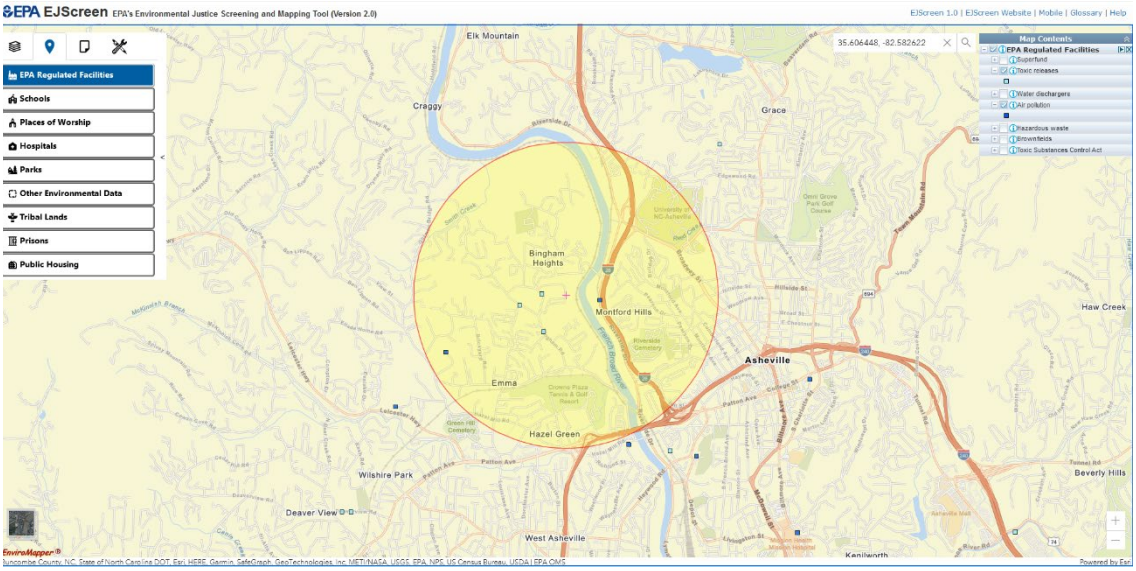

Figure 19. Location of proposed monitoring location relative to EPA regulated facilities (light blue squares indicate location of toxic releases, dark blue squares indicate location of facilities with air permits)

Summary

DAQ and ABAQA are requesting EPA's approval for relocating this site on the Board of Education property where the current site is located. This relocation will benefit ABAQA, DAQ, EPA and the local community by providing a location where the community can have access to evaluate their sensors and other particle monitoring devices with regulatory monitors in the Asheville area. Plus, the proposed location meets all the necessary siting criteria in Appendices A, D and E of 40 Code of Federal Regulations Part 58. Because the proposed location is remaining on the same property and will retain the same AQS identification number, there will be no impact on the ability to determine fine particle design values for the Asheville Metropolitan Statistical Area. Thus, there are no negative impacts expected based on relocation of the monitors and only positive impacts for the community and regulatory agencies involved.