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2025 Annual Air Quality Monitoring Network Plan

Alaska Department of Environmental Conservation

Public Comment Draft

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LIST OF ACRONYMS

AMQA	Air Monitoring and Quality Assurance Program
ANP	annual network plan
AQI	air quality index
AQS	Air Quality Systems
ARP	The American Rescue Plan
CAA	Clean Air Act
CASTNET	Clean Air Status and Trends Network
CBJ	City & Borough of Juneau
CBSA	Core Base Statistical Area
Census	the Census Bureau
CFR	Code of Federal Regulations
CO	carbon monoxide
CSN	Chemical Speciation Network
DEC	Alaska Department of Environmental Conservation
DV	design value
EEWR	exceptional event waiver request
EPA	U.S. Environmental Protection Agency
FEM	Federal Equivalent Method
FNSB	Fairbanks North Star Borough
FRM	Federal Reference Method
HVAC	heating and ventilation air conditioning system
IMPROVE	Interagency Monitoring of Protected Visual Environments
LC	local (actual) conditions of temperature and pressure
LMP	limited maintenance plan
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multi-Polluant Monitoring Stations
NO	nitric oxide
NO_2	nitrogen dioxide
NOy	reactive nitrogen compounds
NWS	National Weather Service
m^3	cubic meter
Mat-Su	Matanuska Susitna
MFC	mass flow controller
MOA	Municipality of Anchorage
MSA	metropolitan statistical area
µg	micrograms
µSA	micropolitan areas
O_3	ozone
OMB	U.S. Office of Management and Budget
Pb	lead

Pb-TSP	lead total suspended particulate
PM	particulate matter
PMC	Plant Material Center
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than 10 micrometers
POC	parameter occurrence code
ppb	parts per billion
ppm	parts per million
RadNet	Radiation Monitoring Network
RH	relative humidity
S	scalar
SCC	sharp cut cyclone
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SO_2	sulfur dioxide
SPM	special purpose monitor
STD	standard conditions of temperature and pressure
V	vector
VPD	vehicles per day
VSCC	very sharp cut cyclone
WD	wind direction
WGS	World Geodetic System
WS	wind speed

EXECUTIVE SUMMARY

The 2025 Annual Network Plan (ANP) for the Alaska Department of Environmental Conservation (DEC) outlines the state's air quality monitoring strategy, ensuring compliance with 40 CFR Part 58 and protecting public health and the environment. DEC is committed to ensuring that all Alaskans, regardless of location, have access to clean air and information about air quality.

Overview:

DEC's air quality monitoring efforts focus on population centers and areas with historical air quality concerns, measuring criteria pollutants as mandated by the EPA. Due to ongoing budget constraints, the network is maintained at a minimum regulatory level, with no expansion planned in the near future. However, DEC is innovating to address Alaska's unique challenges, such as its vast geography and rural communities, through targeted initiatives.

Key Updates in 2024/25:

NCore Site (Fairbanks): Upgraded the Met One BAM 1020 continuous PM2.5 instrument to Federal Equivalent Method (FEM) status by replacing the Sharp Cut Cyclone (SSC) with a Very Sharp Cut Cyclone (VSCC) on January 2, 2025. This upgrade enhances data reliability for Air Quality Index (AQI) reporting and supports local air quality management.

A-Street Site (Fairbanks): Converted the BAM 1020 PM2.5 instrument to FEM status on January 2, 2024, and replaced the monitoring shelter in Q3 2024 to improve durability.

Hurst Road (North Pole): Replaced the aging SO_2 analyzer in mid-2024 with a Teledyne T100U for better data reliability, supporting studies on sulfur/sulfate ratios and biomass fuel impacts.

Proposed Changes for 2025:

Garden Site (Anchorage): DEC will discontinue Carbon Monoxide (CO) monitoring due to consistently low levels over the past 20 years. This change has been approved pending EPA approval of a State Implementation Plan (SIP) modification that removes the monitoring requirement. This will conclude the second 10-year Limited Maintenance Plan period.

Low-Cost Sensor Network: Deployment of up to 55 QuantAQ Modulair™ sensor pods to establish a community sensor network, enhancing monitoring in rural and outlying communities. Currently, 5 pods are at regulatory sites, and 36 are in rural areas, with more to be deployed.

Innovation and Community Engagement

DEC's low-cost sensor network represents significant innovation, addressing Alaska's vast geography. By providing real-time data to rural communities, DEC empowers residents to protect their health and engage in air quality improvement efforts. This aligns with national trends in community-scale monitoring.

Public Health

DEC is dedicated to protecting public health by ensuring accurate air quality data informs policy and public actions. Underserved and rural communities are included in DEC's efforts to improve air quality statewide.

Stakeholder Engagement

DEC values public input and encourages participation in the ANP development process. The plan is open for public comment, and air quality data is accessible online, fostering transparency and community involvement. DEC collaborates with the EPA and stakeholders to meet regulatory requirements and address community needs.

Conclusion

As Alaska moves forward, DEC remains committed to advancing its air monitoring capabilities, leveraging technology and collaboration to safeguard public health and the environment for all Alaskans.

1 INTRODUCTION

This document is the 2025 Annual Monitoring Network Plan submitted by the Alaska Department of Environmental Conservation (DEC) to fulfill the requirements of 40 CFR 58.10. Federal regulations mandate that each state establish and maintain an air quality surveillance system, including State and Local Air Monitoring Stations (SLAMS), National Core Multi-Monitoring (NCore) stations, PM2.5 Chemical Speciation Network (CSN) stations, and Special Purpose Monitoring (SPM) stations.

This plan describes Alaska's current air quality monitoring network, ensures compliance with federal regulations, and outlines anticipated changes, including proposals to remove or move monitoring stations within 18 months following plan submittal. All required monitoring stations must be operational by January 1, 2025, and the plan is due to the EPA Regional Administrator by July 1, 2025.

The plan provides detailed information for each existing and proposed monitoring site, such as Air Quality System (AQS) site identification numbers, locations, sampling methods, and operating schedules, as outlined in subsequent sections.

This plan was made available for public inspection and comment for at least 30 days prior to submission to the EPA, as required by 40 CFR 58.10, via the DEC website. All comments received have been reviewed and addressed as appropriate.

Alaska's vast geography and remote communities present unique challenges for air quality monitoring. This plan addresses these through innovative strategies, such as expanding low-cost sensor networks in rural areas.

The DEC is committed to maintaining a robust air quality monitoring network that meets or exceeds EPA standards, protecting public health and the environment through regulatory compliance and stakeholder engagement.

2 AIR QUALITY MONITORING REQUIREMENTS

2.1 REGULATORY FRAMEWORK

The Alaska Department of Environmental Conservation (DEC) is required by 40 CFR 58.10 to establish and maintain an air quality surveillance system, including State and Local Air Monitoring Stations (SLAMS), National Core Multi-Monitoring (NCore) stations, PM2.5 Chemical Speciation Network (CSN) stations, and Special Purpose Monitoring (SPM) stations. This plan ensures compliance with federal regulations, including 40 CFR 58, Appendices A, C, D, and E, which cover data quality assurance, monitoring methods, network design criteria, and specific location criteria. DEC's monitoring network is designed to meet these requirements while addressing Alaska's unique environmental and geographic challenges.

2.2 MONITORING PRIORITIES AND STRATEGY

DEC prioritizes monitoring the six criteria pollutants regulated under the National Ambient Air Quality Standards (NAAQS): particulate matter ($PM_{2.5}$ and PM_{10}), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), and lead (Pb). Monitoring efforts are focused on population centers such as Anchorage, Fairbanks, and Juneau, as well as rural and remote areas where unique sources like wildland fires, road dust, and biomass burning significantly influence air quality. DEC collaborates with local governments and tribal villages to ensure comprehensive coverage, particularly for PM_{10} in rural communities and $PM_{2.5}$ during wildfire seasons. This strategy aligns with federal requirements while addressing Alaska's distinct air quality challenges.

2.3 CURRENT MONITORING NETWORK

As of May 2024, Alaska's ambient air monitoring network includes the following sites, strategically located to meet minimum monitoring requirements for Alaskan Core-Based Statistical Areas (CBSAs).

Table 2-1. DEC Regulatory Monitoring Sites

Region	Site	AQS ID	Location	Pollutants Monitored	Station Type
Anchorage MSA	Garden	02-020-0018	3000 East 16th Ave., Anchorage, AK	PM_{10} $PM_{2.5}$ CO	SLAMS
	Laurel	02-020-0045	4335 Laurel St., Anchorage, AK	PM_{10}	SLAMS
	Parkgate	02-020-1004	11723 Old Glenn Hwy., Eagle River, AK	PM_{10}	SLAMS
	Plant Materials Center	02-170-0010	5310 Bodenburg Spur Rd., Palmer, AK	PM_{10} $PM_{2.5}$,	SLAMS
Fairbanks MSA	A Street	02-090-0040	397 Hamilton Ave., Fairbanks, AK	$PM_{2.5}$	SLAMS
	NCore	02-090-0034	907 Terminal St., Fairbanks, AK	PM_{10} $PM_{2.5}$ $PM_{10-2.5}$ CO SO_2 O_3 NO NOy Speciation	NCore
	Hurst Road	02-090-0035	3288 Hurst Rd., North Pole, AK	$PM_{2.5}$ SO_2 Speciation	SPM
Juneau µSA	Floyd Dryden	02-110-0004	3800 Mendenhall Loop Rd., Juneau, AK	PM_{10} $PM_{2.5}$	SLAMS

Detailed information for each site, including sampling methods, operating schedules, and compliance with siting criteria, is provided in Section 3 of this plan. The network exceeds minimum requirements in several areas, particularly for $PM_{2.5}$ and PM_{10}, ensuring robust data collection for public health protection.

2.4 Compliance with Federal Standards

DEC ensures compliance with federal standards through:

- **Network Evaluation Forms:** Completed for each criteria pollutant under 40 CFR 58, Appendix D, confirming that the network meets design and minimum monitoring requirements.

- **Siting Evaluation Forms:** Completed under 40 CFR 58, Appendix E, ensuring proper siting of all monitors.
- **Data Quality Assurance:** Adherence to 40 CFR 58, Appendix A for SLAMS and SPM monitors.
- **Monitoring Methods:** Compliance with 40 CFR 58, Appendix C for approved monitoring methods.
- **Waivers:** Any waivers requested or granted by the EPA Regional Administrator are detailed in Appendix C.

2.5 PLANNED ENHANCEMENTS

To enhance monitoring capabilities, DEC is expanding its low-cost sensor network, currently consisting of 55 QuantAQ Modular™ sensor pods. These sensors provide real-time data in rural and outlying communities, improving coverage and enabling quicker responses to air quality events. As of May 2025:

- **Regulatory Sites:** 5 pods are operational at NCore (Fairbanks), Garden (Anchorage), and Floyd Dryden (Juneau).
- **Rural Communities:** 36 pods are deployed across Alaska, including Big Lake, Cordova, Denali National Park, and others.
- **Future Expansion:** Research into WiFi-enabled sensors is underway to expand coverage in areas with limited cellular service.

Additionally, DEC plans to discontinue CO monitoring at the Garden site, pending EPA approval of a State Implementation Plan (SIP) modification, to optimize resources while maintaining compliance.

2.6 PUBLIC ENGAGEMENT

This plan was made available for public inspection and comment for at least 30 days prior to submission to the EPA, as required by 40 CFR §58.10. The plan is accessible via the DEC website. All comments received have been reviewed and addressed as appropriate in this final version. DEC values public input and encourages continued engagement to ensure transparency and stakeholder involvement.

3 STATE OF ALASKA AMBIENT AIR MONITORING NETWORK

The State of Alaska Ambient Air Monitoring Network, managed by the Alaska Department of Environmental Conservation (DEC), plays a vital role in safeguarding public health and the environment by monitoring air quality across Alaska's diverse landscapes. The network complies with federal regulations under 40 CFR 58.10, collecting precise data on criteria pollutants, including particulate matter ($PM_{2.5}$ and PM_{10}) carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). The network consists of State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitors (SPMs), and a National Core (NCore) site, designed to address Alaska's unique geographic and climatic challenges, such as extreme weather and sparse population distribution.

3.1 MINIMUM MONITORING REQUIREMENTS

3.1.1 FEDERAL REGULATORY FRAMEWORK

Federal regulations under 40 CFR 58.10 requires states to establish and maintain air monitoring networks based on population sizes within Core Based Statistical Areas (CBSAs), as defined by the U.S. Office of Management and Budget (OMB) and the Census Bureau. Alaska's network monitors four CBSAs: Anchorage Metropolitan Statistical Area (MSA), Fairbanks MSA, Juneau Micropolitan Statistical Area (μSA), and Ketchikan μSA. These requirements ensure adequate coverage of pollutants affecting public health and compliance with National Ambient Air Quality Standards (NAAQS).

3.1.2 CORE-BASED STATISTICAL AREAS (CBSAS)

Table 3-1 details Alaska's CBSAs and their 2020 Census populations.

Table 3-1: Alaska's Core Based Statistical Areas

Core Based Statistical Areas	Population[1]
Anchorage MSA	401,314
Municipality of Anchorage	289,600
Matanuska-Susitna Borough	117,613
Fairbanks MSA	94,951
Fairbanks North Star Borough	
Juneau µSA	31,572
City and Borough of Juneau	
Ketchikan µSA	13,677
Ketchikan Gateway Borough	

3.1.3 Pollutant Monitoring Requirements

The DEC ensures compliance with minimum monitoring requirements for criteria pollutants across CBSAs, as outlined in Tables 3-2 and 3-3. No monitoring is required for Ketchikan µSA due to low population and pollutant levels. Anchorage, Fairbanks, and Juneau meet or exceed requirements for PM, CO, and ozone, with specific waivers noted in Section 3.5.

[1] based on population estimates for July 1, 2024, obtained from the United States Census Bureau https://www.census.gov/quickfacts/fact/table/ketchikangatewayboroughalaska,juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

Table 3-2. Summary of Monitoring Network Compliance by CBSA and Pollutant

CBSA	Pollutant	Required	Actual	Compliance Status
Anchorage MSA	PM2.5	1	1	Meets Requirements
Anchorage MSA	PM10	1	1	Meets Requirements
Anchorage MSA	CO	1	1	Meets Requirements (Waiver Pending)
Fairbanks MSA	PM2.5	1	1	Meets Requirements
Fairbanks MSA	PM10	1	1	Meets Requirements
Fairbanks MSA	CO	1	1	Meets Requirements
Fairbanks MSA	SO2	0	1	Exceeds Requirements
Fairbanks MSA	NO2	0	1	Exceeds Requirements
Juneau µSA	PM2.5	0	1	Exceeds Requirements
Juneau µSA	PM10	0	1	Exceeds Requirements
Ketchikan µSA	All	0	0	Meets Requirements

Table 3-3: Minimum SLAMS Monitoring Site Requirements for Alaskan CBSAs

Criteria Pollutant	Comments	Anchorage MSA	Fairbanks MSA	Juneau µSA	Ketchikan µSA
$PM_{2.5}$	Most recent 3-year design value ≥ 85% of NAAQS	0	1	0	0
$PM_{2.5}$	Most recent 3-year design value < 85% of NAAQS	0	0	0	0
PM_{10}	Two monitoring sites based on PM_{10} Limited Maintenance Plans (Juneau and Eagle River).	0-1	0	0	0

Pb	Waiver for source-oriented monitoring - see section 3.1.1	0	0	0	0
CO	Two monitoring sites based on CO Limited Maintenance Plans (Fairbanks and Anchorage); Fairbanks also meets NCore requirement	0	0	0	0
O_3	Most recent 3-year design value ≥ 85% of NAAQS	0[2]	0	0	0
SO_2	NCore site requirement	0	0	0	0
NO_2	Requirement based on population numbers. Alaska does not meet the threshold requirement	0	0	0	0

3.1.4 Lead

Alaska does not meet the population thresholds for lead monitoring and no lead monitoring is currently conducted. However, DEC received a waiver from the EPA in 2021 for source-oriented lead monitoring at the Red Dog Mine, as per 40 CFR 58 Appendix D. This waiver is contingent upon the submission of additional data-supported justifications and updated dispersion modeling to ensure the continued representativeness of the underlying lead demonstration. For more details, see the waiver for source-oriented monitoring at Red Dog Mine (Section 3.5.2).

3.1.5 Appendix D & E Siting Forms

EPA Region 10 provided evaluation forms in 2014, updated by DEC in 2024, to ensure compliance with siting criteria in 40 CFR 58, Appendices D and E. These forms are included in Appendix E.

[2] EPA 5-Year Ozone NAAQS Monitoring Requirement Waiver (see or Appendix C, Waiver C-1)

3.2 *CURRENT MONITORING SITES*

The DEC operates and maintains a network of regulatory monitoring sites to ensure compliance with the NAAQS. Table 3-4 provides the site name, address, geographic coordinates, and identification number for all air monitoring sites submitting data to the EPA Air Quality System (AQS) database as of May 2025.

The parameters measured at the NCore site include PM_{10}, $PM_{2.5}$, $PM_{10-2.5}$ (coarse fraction), CO, O_3, SO_2, NOy, NO, $PM_{2.5}$ chemical speciation, and meteorological parameters.

There are three collocated sites: Garden ($PM_{2.5}$ and PM_{10}), Hurst Road ($PM_{2.5}$), and A Street ($PM_{2.5}$), which are described further in Table 3-21. All the primary and secondary monitors at these locations are situated within one to four meters of each other to ensure data comparability. A full list of parameters measured at each site is described in Table 3-4.

Table 3-4: Alaska Regulatory Monitoring Sites as of May 2024

Site Name	AQS ID	Location (Address, Lat/Long)	CBSA	Parameters Monitored	Monitoring Objectives	Spatial Scale	Compliance Notes
Garden	02-020-0018	3000 East 16th Ave. Anchorage, AK 61.205861 N 149.824602 W	Anchorage MSA	PM2.5 PM10 CO	NAAQS Comparison, Public Info	Neighborhood	Waiver for CO monitoring pending
Laurel	02-020-0045	4335 Laurel St. Anchorage, AK 61.181117 N 149.834003 W	Anchorage MSA	PM2.5 PM10	NAAQS Comparison	Neighborhood	Meets Requirements
Parkgate	02-020-1004	11723 Old Glenn Hwy. Eagle River, AK 61.326700 N 149.569707 W	Anchorage MSA	PM2.5 PM10	NAAQS Comparison	Neighborhood	Meets Requirements
Plant Material Center	02-170-0010	5310 Bodenburg Spur Rd. Palmer, AK 61.522780 N 149.083714 W	Anchorage MSA	PM2.5	Public Info	Neighborhood	Meets Requirements

A Street	02-090-0040	397 Hamilton Ave Fairbanks, AK 64.84593 N 147.69327 W	Fairbanks MSA	PM2.5	NAAQS Comparison	Microscale	Siting waiver granted
NCore	02-090-0034	907 Terminal St.[3] Fairbanks, AK 64.845307 N 147.72552 W	Fairbanks MSA	PM2.5 PM10 CO SO2 NO2 O3 NOy Met	NAAQS Comparison, Research	Neighborhood	Meets Requirements
Hurst Road[4]	02-090-0035	3288 Hurst Rd. North Pole, AK 64.762973 N 147.310297 W	Fairbanks MSA	PM2.5 SO2 Met	NAAQS Comparison	Neighborhood	Meets Requirements
Floyd Dryden	02-110-0004	3800 Mendenhall Loop Road Juneau, AK 58.388889 N 134.565556 W	Juneau µSA	PM2.5 PM10	Public Info	Neighborhood	Meets Requirements

[3] The NCore site address has been updated, but the location has not changed.

[4] Hurst Road is the new name for the North Pole Fire Station #3 site. It was changed in 2018 at Fairbanks North Star Borough's request.

3.3 SITING CRITERIA

The DEC ensures that its eight ambient air monitoring sites comply with siting criteria outlined in 40 CFR Part 58, Appendix E. These criteria guarantee accurate and representative air quality data, critical for public health and regulatory compliance.

In 2014, EPA Region 10 provided site evaluation forms to assess compliance with the probe and monitoring path siting criteria specified in 40 CFR Part 58, Appendix E. These forms were distributed to the individual site operators for completion. Summaries of the completed site evaluation forms are organized into three tables – PM, CO and all other gaseous pollutants – and are presented in **Appendix E** of this report.

Monitoring site photos and location maps can be found at: https://dec.alaska.gov/air/air-monitoring/instruments-sites/.

The operation of each monitoring site complies with the requirements outlined in 40 CFR Part 58, Appendix A. Furthermore, all SPM sites are operated following the same protocols as SLAMS, thereby ensuring full compliance with these requirements.

3.3.1 CARBON MONOXIDE SITES

Carbon monoxide (CO) monitoring sites adhere to the siting criteria outlined in 40 CFR 58, Appendix C, ensuring accurate measurement of CO concentrations. Key requirements include:

- **Probe Inlets:** Positioned at least 1 meter from structures to avoid interference.
- **Probe Heights:** 2.5-3.5 meters for micro-scale or 3-15 meters for other scales.
- **Airflow:** Unobstructed for at least 270 degrees (or 180 degrees for building-side probes).
- **Obstructions:** At least twice the height of dominant CO sources to minimize local influences.

CO monitoring occurs at Garden (AQS ID: 02-020-0018) and NCore (AQS ID: 02-090-0034). Table 3-5 lists the CO monitoring sites in Anchorage and Fairbanks.

In the 2024 ANP, EPA R10 provisionally approved the discontinuation of the CO monitor at the Anchorage Garden site (AQS ID: 02-020-0018), contingent upon approval of a State Implementation Plan (SIP) modification wherein the monitor is not required. This approval was based on the monitor showing attainment during the previous five years and having a probability of less than 10% of exceeding 80% of the CO NAAQS over the next three years.

Table 3-5: CO Monitoring Sites in Anchorage and Fairbanks as of May 2025

Site Name	Monitoring Scale	Probe Distance from Wall (meters)	Height (meters)	Unrestricted Air Flow	Spacing from Roadway (meters)	Trees
Garden 02-020-0018	Neighborhood	1	3	180 degrees unobstructed	7.6	Yes[5]
NCore 02-090-0034	Neighborhood	Not applicable	3	360 degrees unobstructed	70	10 m

3.3.2 PARTICULATE MATTER (PM_{10} AND $PM_{2.5}$) SITES

Particulate matter (PM10 and PM2.5) monitoring sites comply with 40 CFR 58, Appendix D, ensuring representative data for population exposure and NAAQS compliance. Key requirements include:

- **Probe Heights:** 2-7 meters for micro-scale or 2-15 meters for other scales.
- **Separation from Walls:** Minimum 2 meters to avoid airflow restrictions.
- **Airflow:** Unobstructed for at least 270 degrees (or 180 degrees for street canyon sites).
- **Roadway spacing:** 2-10 meters for street canyon sites, 5-15 meters for traffic corridors, or based on traffic volume for other scales.
- **Traffic and Trees:** Traffic volume typically <10,000 vehicles per day (VPD); no trees within 10 meters to prevent particle interference.

PM monitoring occurs at Garden, Laurel, Parkgate, Plant Material Center, A-Street. Hurst Road, NCore, and Floyd Dryden. A-Street operates under a siting waiver due to its proximity to a roadway (Appendix C, Waiver C-2).

Table 3-6 lists all PM monitoring sites in Alaska and summarizes their compliance with the siting criteria specific in Appendix E of 40 CFR Part 58 (see also **Appendix E**).

[5] One spruce tree 7.6 m tall and 1.3 m from the building. It is roughly 2.3 m to the northeast of the CO probe

Table 3-6: PM Monitoring Sites in Alaska as of May 2025

Site Name AQS Codes	Monitoring Scale PM_{10}	Monitoring Scale $PM_{2.5}$	Height (meters)	Spacing from Obstructions (meters)	Spacing from Roadway (meters)	Traffic (VPD)[6]	Trees within 10 meters?
Garden 02-020-0018	Neighborhood	Neighborhood	11.2	No Obstructions	14	770 Sunrise Dr 1,280 Airport Heights Dr.	No
Laurel 02-020-0045	Microscale	-	6.4	No Obstructions	11	29,500 Tudor Rd[7]	No
Parkgate 02-020-1004	Neighborhood	Neighborhood	10.4	No Obstructions	44	13,300 Old Glenn Hwy[8]	No
Plant Material Center 02-170-0010	Neighborhood	Neighborhood	4.4	No Obstructions	180	60 5310 Bodenburg Spur Rd	No
A-Street 02-090-0040	-	Neighborhood	4.3	No Obstructions	5.8[9]	1,300[3] Hamilton Ave 3,770 Farewell Ave	No
NCore 02-090-0034	Neighborhood	Neighborhood	4.5	No Obstructions	70	5,250 Phillips Field Rd 850 Driveway St	No

[6] Average annual traffic count 2023 traffic data accessed at: https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp

[7] Tudor Road between Piper St. & Thorne Pl.

[8] Old Glenn Hwy between Easy St. & Hanson Dr.

[9] Site is <10m from adjacent A-Street, a paved, low traffic neighborhood street, remainder of site grass covered.

[17] Traffic count is listed for Hamilton Ave and Farewell Ave (ADOTPF Site ID #31280070) to be consistent with prior ANP reporting. However, the streets to the north and south of A-Street, Craig Ave and Eureka Ave respectively, have traffic counts of 90 and 100. See Section 3.5.4.

Hurst Road 02-090-0035	-	Neighborhood	4.7	No Obstructions	21	3,400 Hurst Rd	No
Floyd Dryden 02-110-0004	Neighborhood	Neighborhood	10	No Obstructions	100	16,000 Mio-Mendenhall Loop Road	No

3.3.3 NCORE SITE

The NCore site in Fairbanks (AQS ID: 02-090-0034), part of the National Core multi-pollutant monitoring network, measures $PM_{2.5}$, PM_{10}, CO, SO_2, O_3, NO, NOy, and meteorological parameters at a neighborhood scale. It adheres to the siting criteria for each parameter, as specified in 40 CFR 58, Appendices C, D, and E, ensuring comprehensive data for research and compliance.

Table 3-7 summarizes siting compliance for all Alaska monitoring sites.

Table 3-7: NCore Gaseous[10] Monitoring and Meteorological Monitoring as of May 2025 in Alaska

Parameter Name	Monitoring Scale	Height (meters)	Spacing from Obstructions (meters)	Spacing from Roadway (meters)	Traffic (VPD)	Trees < 10 m?
NOy, NO & DIF	Neighborhood	3[11]	No Obstructions	70	5,250[12]	None
O_3	Neighborhood	3	No Obstructions	70	5,250	None
SO_2 (1 hr & 5 min)	Neighborhood	3	No Obstructions	70	5,250	None
T_{amb}, WS, & WD	Neighborhood	3	No Obstructions	70	5,250	None
T_{amb}, WS, & WD	Neighborhood	10	No Obstructions	70	5,250	None
Relative Humidity	Neighborhood	3	No Obstructions	70	5,250	None

[10] Excluding CO. For CO see Table 3-4.
[11] Probe height is 3 meters rather than the 10 meters recommended to remain below the unusually low winter inversion layer.
[12] 2023 Philips Field Rd traffic data accessed at: https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp

3.3.4. COMPLIANCE SUMMARY

All sites comply with 40 CFR Part 58, Appendix E, as verified by 2024 site evaluation forms (Appendix E). Waivers are noted for Garden (CO) and A Street (siting). Table 3-8 summarizes site compliance.

Table 3-8: DEC Monitoring Site Compliance Summary

Site Name (AQS ID)	Compliance Status	Siting Criteria Met	Waivers/ Exemptions
Garden 02-020-0018	Compliant; Pending CO waiver	Yes	Pending CO waiver (Appendix C, Waiver C-1)
Laurel 02-020-0045	Fully Compliant	Yes	None
Parkgate 02-020-1004	Fully Compliant	Yes	None
Plant Material Center 02-170-0010	Fully Compliant	Yes	None
A Street 02-090-0040	Compliant; Siting waiver granted	Yes	Siting waiver for roadway proximity (Appendix C, Waiver C-2)
NCore 02-090-0034	Fully Compliant	Yes	None
Hurst Road 02-090-0035	Fully Compliant	Yes	None
Floyd Dryden 02-110-0004	Fully Compliant	Yes	None

3.4 MONITORING METHODS, DESIGNATION, AND SAMPLING FREQUENCY

The Alaska Department of Environmental Conservation (DEC) operates an ambient air monitoring network to measure air quality across eight sites in Alaska. This section details the monitoring methods, designations, and sampling frequencies used to collect data on pollutants such as particulate matter ($PM_{2.5}$, PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), reactive nitrogen compounds (NOy), and meteorological parameters. These methods ensure compliance with federal regulations under 40 CFR Part 58, providing accurate data for public health protection, regulatory compliance, and research. Detailed data for each site, including pollutant parameters, AQS codes, and equipment, is presented in Tables 3-8 through 3-15, with summaries provided below.

Monitoring Methods and Designations

Monitoring methods are the techniques used to measure air pollutants, designated as reference or equivalent by the U.S. Environmental Protection Agency (EPA). Reference methods are federally approved standards, while equivalent methods meet specific performance criteria. Designations indicate the purpose of the data collected, categorized as:

- **SLAMS (State and Local Air Monitoring Stations)**
  - Demonstrate compliance with National Ambient Air Quality Standards (NAAQS).
- **SPM (Special Purpose Monitors)**
  - Conduct general air quality assessments, such as research and trend analysis.
- **CSN (Chemical Speciation Network)**
  - Evaluate atmospheric chemistry to understand pollution sources.

The EPA's Air Quality System (AQS) database uses specific codes to standardize data:

- **Parameter Codes**
  - 5-digit codes identifying pollutants (e.g. PM_{10}, SO_2, wind speed).

- **Parameter Occurrence Codes (POCs)**
  - 1-digit codes indicating the sampler's role:
    - 1: Primary data source
    - 2: Secondary (collocated) source
    - 3: Continuous measurement

- **Method Codes**
  - Describe analytical techniques (e.g. chemiluminescence for nitric oxide, gravimetric analysis for particulate matter).

Sampling Frequency

Sampling frequency indicates how often pollutant concentrations are measured, determined by federal regulations to ensure sufficient data for NAAQS compliance and public health monitoring. Frequencies are tailored to each pollutant and site, based on 40 CFR Part 58, Appendix D for particulate matter and Appendix C for gaseous pollutants.

Common notations include:

- **1/6**
  - One sample every sixth day, following EPA's national monitoring schedule[13].

- **Continuous**
  - Real-time or near-real-time measurements (e.g. 1-minute SO_2 readings, 1-hour $PM_{2.5}$ readings via BAM).

Equipment and Additional Monitoring

Each monitoring site uses specific equipment tailored to the pollutants measured, listed in Tables 3-8 through 3-16 with corresponding AQS parameter codes. The DEC also operates additional sites for rural road dust and wildland fire monitoring, which are not submitted to the AQS database; details are in Appendix F. Alaska participates in the Interagency Monitoring of Protected Environments (IMPROVE) network, focusing on scenic visibility in National Parks and wilderness areas, described in Appendix G. A Summary of pollutant concentration data (NAAQS design values, maxima, averages) is provided in Appendix A.

Compliance Summary

The DEC's monitoring methods, designations, and sampling frequencies meet or exceed federal standards, ensuring reliable air quality data across Alaska. By adhering to 40 CFR Part 58, the network supports public health, regulatory compliance, and research. Detailed information is available in Appendices A, E, F, and G, and on the DEC's Air Monitoring Website.

[13] https://www.epa.gov/amtic/sampling-schedule-calendar

Table 3-9: Anchorage MSA Monitors

Site Name/ Location/ AQS ID	Pollutant Parameter [14]	Monitor Designation	Monitor Starting Date	AQS Parameter/ Occurrence Code	AQS Method Codes	Sample Frequency	Equipment
Garden/ Anchorage 02-020-0018	PM_{10STD}/ PM_{10LC}	SLAMS	1/1/2009 STD 1/1/2015 LC	81102-3/ 85101-3	122	Continuous	Met One BAM 1020 - FEM
Garden/ Anchorage 02-020-0018	PM_{10STD}/ PM_{10LC}	SLAMS	2/24/2022	81102-2/ 85101-2	126	1/6	Thermo Scientific Partisol 2000i - FRM
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$	SLAMS	1/1/2009	88101-3	170	Continuous	Met One BAM 1020 (VSCC) FEM
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$	SLAMS	2/22/2022	88101-2	143	1/6	Thermo Scientific Partisol 2000i (VSCC) - FRM
Garden/ Anchorage 02-020-0018	CO	SLAMS	1/1/1979	42101-1	554	Continuous	Thermo Scientific Model 48i-TLE - FRM
Laurel/ Anchorage 02-020-0045	$PM_{10STD/}$ PM_{10LC}	SPM	5/28/2015	81102-3/ 85101-3	122	Continuous	Met One BAM 1020 - FEM
Parkgate/ Eagle River 02-020-1004	PM_{10STD}/ PM_{10LC}	SLAMS	1/1/2009 STD 1/1/2015 LC	81102-3/ 85101-3	122	Continuous	Met One BAM 1020 - FEM
Plant Material Center/	PM_{10STD}/ PM_{10LC}	SLAMS	10/26/2023	81102-3/ 85101-3	122	Continuous	Met One BAM 1020 - FEM

[14] STD = standard conditions of temperature and pressure; LC = local (actual) conditions of temperature and pressure

Matanuska-Susitna Valley 02-170-0010	$PM_{2.5LC}$	SLAMS	10/26/2023	88101-3	170	Continuous	Met One BAM 1020 (VSCC) - FEM
Matanuska-Susitna Valley 02-170-0010	WD (V) 10 m	SLAMS	10/8/2024	61104-1	065	Continuous	RM Young Anemometer
Matanuska-Susitna Valley 02-170-0010	WD (V) 3 m	SLAMS	6/5/2024	61104-2	065	Continuous	RM Young Anemometer
Matanuska-Susitna Valley 02-170-0010	WS (V) 10 m	SLAMS	10/8/2024	61103-1	065	Continuous	RM Young Anemometer
Matanuska-Susitna Valley 02-170-0010	WS (V) 3 m	SLAMS	6/5/2024	61103-2	065	Continuous	RM Young Anemometer
Matanuska-Susitna Valley 02-170-0010	Ambient Temp 3 m	SLAMS	5/31/2024	62101-2	040	Continuous	Met One T-200 RTD Sensor
Matanuska-Susitna Valley 02-170-0010	Ambient Temp 10 m	SLAMS	10/1/2024	62101-1	040	Continuous	Met One T-200 RTD Sensor

Table 3-10: Fairbanks MSA - NCore Monitors

Pollutant Parameter	Monitor Designation	AQS Monitor Starting Date	AQS Parameter - Occurrence Code	AQS Method Codes	Sample Frequency	Equipment
PM_{10STD}/ PM_{10LC}	NCORE	2/15/2011	81102-3/ 85101-3	122	Continuous	Met One BAM 1020 FEM
$PM_{2.5LC}$	SPM	2/15/2011	88101-3	731	Continuous	Met One BAM 1020 (VSCC) FEM

$PM_{2.5LC}$	NCORE	11/4/2009	88101-1	145	1/1	Thermo Scientific Sequential Partisol 2025i (VSCC)-FRM
PM_{10LC} - $PM_{2.5LC}$	NCORE	2/15/2011	86101-1	185	1/3	Paired Met One BAM 1020 FEM
CO	NCORE	8/1/2011	42101-1	593	Continuous	Teledyne T300U-FRM
SO_2 (1-hr)/ SO_2 (5-min)	NCORE	8/1/2011/ 8/18/2011	42401-1/ 42401-2	560	Continuous	Thermo Scientific 43iQ-TL-FEM
NO_Y	NCORE	10/5/2012	42600-1	699	Continuous	Teledyne T-200U-NOy
NO	NCORE	10/5/2012	42601-2	699	Continuous	Teledyne T-200U-NOy
NO_Y-NO	NCORE	10/5/2012	42612-1	699	Continuous	Teledyne T-200U-NOy
O_3	NCORE	8/1/2011	44201-1	047	Continuous	Thermo Scientific 49iQ-TL-FEM
WD**(V) 10 m	NCORE	4/5/2011	61104-1	068	Continuous	RM Young Ultrasonic Anemometer
WD (V) 3 m	NCORE	4/5/2011	61104-2	068	Continuous	RM Young Ultrasonic Anemometer
WS (V) 10 m	NCORE	4/5/2011	61103-1	068	Continuous	RM Young Ultrasonic Anemometer
WS (V) 3 m	NCORE	4/5/2011	61103-2	068	Continuous	RM Young Ultrasonic Anemometer
RH	NCORE	11/4/2013	62201-1	061	Continuous	Met One Relative Humidity Sensor
Ambient Temp 3 m	NCORE	4/1/2011	62101-2	040	Continuous	Met One T-200 RTD Sensor

Ambient Temp 10 m	NCORE	4/1/2011	62101-1	040	Continuous	Met One T-200 RTD Sensor
$PM_{2.5LC}$ Speciation	NCORE/CSN	1/1/2015	Multiple[1]	Multiple[1]	1/3	URG 3000N
$PM_{2.5LC}$ Speciation	NCORE/CSN	1/1/2015	Multiple[1]	Multiple[1]	1/3	Met One Super SASS

Table 3-11: Fairbanks MSA – A-Street Monitors

Pollutant Parameter	Monitor Designation	AQS Monitor Starting Date	AQS Parameter - Occurrence Code	AQS Method Codes	Sample Frequency	Equipment
$PM_{2.5LC}$	SLAMS	7/15/2019	88101-1	145	1/1	Thermo Scientific Sequential Partisol 2025i (VSCC)-FRM
$PM_{2.5LC}$	SPM	1/2/2024	88101-3	170	Continuous	Met One BAM 1020 (VSCC) FEM
Ambient Temp 3 m	SPM	10/1/2019	62101-2	040	Continuous	Met One T-200 RTD Sensor
Ambient Temp 10 m	SPM	10/1/2019	62101-1	040	Continuous	Met One T-200 RTD Sensor
WD (V) 3 m	SPM	10/1/2019	61104-2	068	Continuous	RM Young Ultrasonic Anemometer
WS (V) 3 m	SPM	10/1/2019	61103-2	068	Continuous	RM Young Ultrasonic Anemometer

WD (V) 10 m	SPM	10/1/2019	61104-1	068	Continuous	RM Young Ultrasonic Anemometer
WS (V) 10 m	SPM	10/1/2019	61103-1	068	Continuous	RM Young Ultrasonic Anemometer

Table 3-12: Fairbanks MSA – Hurst Road Monitors

Pollutant Parameter	Monitor Designation	AQS Monitor Starting Date	AQS Parameter - Occurrence Code	AQS Method Codes	Sample Frequency	Equipment
$PM_{2.5LC}$	SLAMS	3/1/2012	88101-1	145	1/1	Thermo Scientific Sequential Partisol 2025i (VSCC)-FRM
$PM_{2.5LC}$ collocate	SLAMS	7/18/2019	88101-2	145	1/3	Thermo Scientific Sequential Partisol 2025i (VSCC)
SO_2 (1-hr)/ SO_2 (5-min)	SPM	3/10/2022/ 3/10/2022	42401-1/ 42401-2	560	Continuous	Thermo Scientific 43i TL-FEM
$PM_{2.5LC}$	SPM	3/1/2012	88501-3 88502-3	731	Continuous	Met One BAM 1020 (SCC) non-FEM
$PM_{2.5LC}$ Speciation	CSN	8/1/2019	Multiple[1]	Multiple[1]	1/3	URG 3000N
$PM_{2.5LC}$ Speciation	CSN	8/1/2019	Multiple[1]	Multiple[1]	1/3	Met One Super SASS

Ambient Temp 23 m	SPM	9/24/2019	62101-3	040	Continuous	Met One T-200 RTD Sensor
Ambient Temp 10 m	SPM	9/24/2019	62101-1	040	Continuous	Met One T-200 RTD Sensor
Ambient Temp 3 m	SPM	9/24/2019	62101-2	040	Continuous	Met One T-200 RTD Sensor
WD[15] (V) 23 m	SPM	9/24/2019	61104-3	068	Continuous	Met One Ultrasonic Anemometer
WS (V) 23 m	SPM	9/24/2019	61103-3	068	Continuous	Met One Ultrasonic Anemometer
WD (V) 10 m	SPM	9/24/2019	61104-1	068	Continuous	Met One Ultrasonic Anemometer
WS (V) 10 m	SPM	9/24/2019	61103-1	068	Continuous	Met One Ultrasonic Anemometer
WD (V) 3 m	SPM	9/24/2019	61104-2	068	Continuous	Met One Ultrasonic Anemometer
WS (V) 3 m	SPM	9/24/2019	61103-2	068	Continuous	Met One Ultrasonic Anemometer
RH	SPM	3/29/2024	62201-1	061	Continuous	Campbell Scientific Relative Humidity Sensor

Table 3-13: Juneau µSA: Floyd Dryden Monitors

Pollutant Parameter	Monitor Designation	Monitor Starting Date		AQS Method	Sample Frequency	Equipment

[15] Meteorological parameters (WS and WD) also measured in scalar.

			AQS Parameter and Occurrence Code[16]	Codes		
$PM_{2.5LC}$	SPM	6/23/2021	88502-3	238	Continuous	Teledyne T640X – non-FEM
$PM_{2.5LC}$	SPM	2/18/2024	88101-2	145	1/3	Thermo Scientific Partisol 2025i (VSCC) - FRM
PM_{10STD}/ PM_{10LC}	SPM	6/23/2021	81102-3/ 85101-3	239	Continuous	Teledyne T640X - FEM
Ambient Temp 3 m	SPM	1/1/2024	62101-2	040	Continuous	Teledyne T640X - FEM
WD (V) 3 m[17]	SPM	1/1/2022	61104-1	065	Continuous	RM Young Ultrasonic Anemometer
WS (V) 3 m	SPM	1/1/2022	61103-1	065	Continuous	RM Young Ultrasonic Anemometer

Table 3-2: Site Level Monitoring Objectives

Site Name	AQS ID	Pollutant(s)	Monitoring Objectives 40 CFR Part 58 App D 1.1.1
Garden	02-020-0018	$PM_{10}/PM_{2.5}$/CO	(b) Typical concentrations (population density based) (d) General background concentration levels

[16] Multiple AQS codes are used to identify individual chemical species.
[17] Meteorological parameters (WS and WD) also measured in scalar.

Laurel	02-020-0045	PM_{10}	(a) Highest concentrations expected in area (c) Impact of significant sources/source categories
Parkgate	02-020-1004	PM_{10}	(b) Typical concentrations (population density based) (d) General background concentration levels
NCore	02-090-0034	$PM_{10}/PM_{2.5}/PM_{10\text{-}2.5}$/CO/ SO_2/O_3/ NO/NOy/Speciation	(b) Typical concentrations (population density based) (d) General background concentration levels
Hurst Road	02-090-0035	$PM_{2.5}$/ SO_2/Speciation	(a) Highest concentrations expected in area (c) Impact of significant sources/source categories
A Street	02-090-0040	$PM_{2.5}$	(a) Highest concentrations expected in area (c) Impact of significant sources/source categories
Plant Material Center	02-170-0010	$PM_{10}/PM_{2.5}$	(a) Highest concentrations expected in area (c) Impact of significant sources/source categories
Floyd Dryden Middle School	02-110-0004	$PM_{10}/PM_{2.5}$	(b) Typical concentrations (population density based) (d) General background concentration levels

Table 3-3: Anchorage MSA Instrument-Level Monitoring Purposes and AQS Monitoring Objective

Site Name/ Location/ AQS ID	Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
Garden/ Anchorage 02-020-0018	PM_{10STD}/PM_{10LC}	81102-3/85101-3	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance
Garden/ Anchorage 02-020-0018	PM_{10STD}/ PM_{10LC} collocated	81102-2/85101-2	Population exposure	-Determine ambient air quality standard compliance
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$	88101-3	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$ collocated	88101-2	Population exposure	-Determine ambient air quality standard compliance
Garden/ Anchorage 02-020-0018	CO	42101-1	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance
Laurel/ Anchorage 02-020-0045	PM_{10STD}/PM_{10LC}	81102-3/85101-3	Source Oriented Highest Concentration	-Provide timely air pollution information -Determine ambient air quality standard compliance
Parkgate/ Eagle River 02-020-1004	PM_{10STD}/PM_{10LC}	81102-3/85101-3	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance
Plant Material Center/ Mat-Su Valley 02-170-0010	PM_{10STD}/PM_{10LC}	81102-3/85101-3	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance
Plant Material Center/	$PM_{2.5LC}$	88101-3	Population exposure Highest Concentration	-Provide timely air pollution information -Determine ambient air quality standard compliance

Table 3-4: FNSB NCore: Instrument-Level Monitoring Purposes and AQS Monitoring Objective

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
PM_{10STD}/ PM_{10LC}	81102-3	Population exposure	-Provide timely air pollution information - Determine ambient air quality standard compliance -Support air pollution research studies
$PM_{2.5LC}$	88101-3	Population exposure	-Provide timely air pollution information -Support air pollution research studies
$PM_{2.5LC}$	88101-1	Population exposure	-Determine ambient air quality standard compliance -Support air pollution research studies
PM_{10LC} - $PM_{2.5LC}$	86101-1	Population exposure	-Determine ambient air quality standard compliance -Support air pollution research studies
CO	42101-1	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance -Support air pollution research studies
SO_2 (1-hr)	42401-1	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance -Support air pollution research studies

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
SO_2 (5-min)	42401-2	Population exposure	-Determine ambient air quality standard compliance -Support air pollution research studies
NO_Y	42600-1	Population exposure	-Support air pollution research studies
NO	42601-2	Population exposure	-Support air pollution research studies
NO_Y-NO	42612-1	Population exposure	-Support air pollution research studies
O_3	44201-1	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance -Support air pollution research studies
WD	61104-1	Population exposure	-Provide timely air pollution information -Support air pollution research studies
WS	61103-1	Population exposure	-Provide timely air pollution information -Support air pollution research studies
BP	64101-1	Population exposure	-Provide timely air pollution information. -Support air pollution research studies

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
RH	62201-1	Population exposure	-Provide timely air pollution information. -Support air pollution research studies
Ambient Temp 3 m	62101-2	Population exposure	-Provide timely air pollution information. -Support air pollution research studies
Ambient Temp 10 m	62101-1	Population exposure	-Provide timely air pollution information. -Support air pollution research studies
$PM_{2.5LC}$ Speciation	Multiple*	Population exposure	-Support air pollution research studies -part of CSN

Table 3-5: FNSB A Street: Instrument-Level Monitoring Purposes and AQS Monitoring Objective

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
$PM_{2.5LC}$	88101-1	Population exposure Highest Concentration	-Determine ambient air quality standard compliance
$PM_{2.5LC}$	88101-3	Population exposure	-Provide timely air pollution information
Ambient Temp 3 & 10 m	62101-2,1	Population exposure	-Provide timely air pollution information
WD 3 & 10 m	61104-2,1	Population exposure	-Provide timely air pollution information

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
WS 3 & 10 m	61103-2,1	Population exposure	-Provide timely air pollution information

Table 3-18: FNSB Hurst Road: Instrument-Level Monitoring Purposes and AQS Monitoring Objective

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
$PM_{2.5LC}$	88101-1	Population exposure Highest Concentration	-Determine ambient air quality standard compliance
$PM_{2.5LC}$	88501-3/88502-3	Population exposure	-Provide timely air pollution information
$PM_{2.5LC}$ collocated	88101-2	Population exposure	-Determine ambient air quality standard compliance
$PM_{2.5LC}$ Speciation	Multiple*	Population exposure	-Support air pollution research studies -part of CSN
SO_2 (1-hr)	42401-1	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance -Support air pollution research studies
SO_2 (5-min)	42401-2	Population exposure	-Determine ambient air quality standard compliance -Support air pollution research studies
Ambient Temp 3, 10, & 23 m	62101-2,1,3	Population exposure	-Provide timely air pollution information

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
WD 3, 10, & 23 m	61104-2,1,3	Population exposure	-Provide timely air pollution information
WS 3, 10, & 23 m	61103-2,1,3	Population exposure	-Provide timely air pollution information

Table 3-19: Juneau: Instrument-Level Monitoring Purposes and AQS Monitoring Objective

Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Monitoring Objective	Monitoring Purpose(s)
PM_{10STD}/PM_{10LC}	81102-3/ 85101-3	Population exposure	-Provide timely air pollution information -Determine ambient air quality standard compliance -Support air pollution research studies
$PM_{2.5LC}$	88101-1	Population exposure	-Determine ambient air quality standard compliance
$PM_{2.5LC}$	88502-3	Population exposure	-Provide timely air pollution information

Table 3-20: Monitors required by Nonattainment Area (NAA) or Limited Maintenance Plan (LMP)

MSA or µMSA	Site Name/ Location/	AQS ID	Pollutant Parameter	AQS Parameter/ Occurrence Code	Required by NAA or LMP?
Fairbanks MSA	Hurst Road/North Pole	02-090-0035	$PM_{2.5LC}$	88101-1	Fairbanks $PM_{2.5}$ NAA
	NCore/Fairbanks	02-090-0034	CO	42101-1	Fairbanks CO LMP
Anchorage MSA	Garden/Anchorage	02-020-0018	CO	42101-1	Anchorage CO LMP
	Parkgate/Eagle River	02-020-1004	PM_{10STD}	81102-3	Eagle River PM_{10} LMP
Juneau µMSA	Floyd Dryden Middle School/Juneau	02-110-0004	PM_{10STD}	81102-3	Juneau PM_{10} LMP

Table 3-21: 2025 Collocations

Site Name/Location AQS ID	Pollutant Parameter	AQS Parameter/ Occurrence Code	AQS Method Code	Equipment	Primary or Secondary
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$	88101-3	170	Met-One BAM 1020	Primary
Garden/ Anchorage 02-020-0018	$PM_{2.5LC}$ collocate	88101-2	143	Thermo Scientific Partisol 2000i	Secondary
Garden/ Anchorage 02-020-0018	PM_{10STD}	81102-3/ 85101-3	122	Met-One BAM 1020	Primary
Garden/ Anchorage 02-020-0018	PM_{10STD} collocate	81102-2/ 85101-2	126	Thermo Scientific Partisol 2000i	Secondary
Hurst Road/North Pole 02-090-0035	$PM_{2.5LC}$	88101-1	145	Thermo Scientific Partisol 2025i	Primary
Hurst Road/North Pole 02-090-0035	$PM_{2.5LC}$ collocate	88101-2	145	Thermo Scientific Partisol 2025i	Secondary
A Street/Fairbanks 02-090-0040	$PM_{2.5LC}$	88101-1	145	Thermo Scientific Partisol 2025i	Primary
A Street/Fairbanks 02-090-0040	$PM_{2.5LC}$ collocate	88101-3	170	Met-One BAM 1020	Secondary

3.5 MONITORING WAIVERS

3.5.1 ANCHORAGE MSA OZONE MONITORING

On October 15th, 2018, EPA granted a waiver of the ozone monitoring requirement for the Anchorage MSA. The MSA's population triggered a monitoring obligation, but historical ozone measurements throughout the area consistently showed concentrations well below 80% of the NAAQS. This waiver was valid through 2023.

Following a request from DEC in the 2023 ANP, EPA approved a five-year extension of the waiver on October 30th, 2023, pursuant to 40 CFR Part 58, Appendix D, Section 4.1(b). EPA concurred with the DEC's assessment that ozone levels in the Anchorage MSA remain well below 80% of the NAAQS, with a continued low likelihood of exceedances. The current waiver is effective through October 2028.

The waiver extension is included in the *2023 Alaska ANP Approval Letter* and can be found on the DEC's ANP website (Air Monitoring Network Plans (alaska.gov)).

3.5.2 LEAD SOURCE ORIENTED MONITORING

To address source-oriented lead monitoring requirements at the Red Dog Mine, DEC consulted with EPA and pursued a modeling demonstration to show compliance with the lead NAAQS at the ambient boundary. On August 11, 2016, the EPA approved Alaska's initial waiver request for lead monitoring at the Red Dog Mine based on dispersion modeling results, which demonstrated that the maximum 3-month rolling average lead concentration at the mine boundary did not exceed 50% of the lead NAAQS. Pursuant to 40 CFR Part 58, Appendix D, Section 4.5(a)(ii), this waiver must be renewed every five years as part of the Alaska 5-year Air Monitoring Network Assessment.

The DEC submitted an updated waiver request to the EPA on June 12, 2020, which included a new modeling analysis performed by Teck Alaska Inc., the mine operator, and reviewed by the DEC. The EPA approved the renewed waiver on December 7, 2021. The DEC is currently working with the EPA and Teck Alaska Inc. on the next waiver renewal in conjunction with the 2025 5-year Air Monitoring Network Assessment.

During the most recent review, Teck Alaska's preliminary report indicated an increase in overall emissions. Because previous modeling showed that the Red Dog Mine emissions were near the waiver threshold, the EPA requested updated emission rates and new modeling runs. The updated modeling results will inform the current renewal process.

The EPA approval letters for the lead monitoring waivers are included in **Appendix C** (Waiver C-3) and are also available on the DEC's website[8].

3.5.3 A-Street Siting Waiver Request

The A-Street SLAMS station is located in a residential neighborhood on the east side of Fairbanks, adjacent to Nordale Elementary School. This site was selected due to its proximity to homes with moderate levels of solid fuel heating and its status as a $PM_{2.5}$ hotspot, making it an ideal maximum impact site for the Fairbanks Air Quality Zone. Placement on school district property provides long-term site stability and ensures monitoring of a sensitive population.

To minimize disruption to school activities while being close enough to homes to be representative of neighborhood conditions, the monitoring station was sited less than the recommended 15 meters away from the A Street roadway – specifically, 3 meters from the sidewalk and the start of the paved shoulder. While this distance is below the standard specified in 40 CFR Part 58, Appendix E, the roadway experiences minimal traffic and is often snow- or ice-covered for much of the year, reducing the potential for direct roadway PM impacts. The primary monitoring objective is to quantify emissions from residential solid fuel burning; thus, roadway contributions to measured $PM_{2.5}$ concentrations are expected to be negligible.

On October 30th, 2023, the EPA approved a waiver for the proximity-to-roadway siting criteria at the A Street site, pursuant to 40 CFR Part 58, Appendix E, Figure E-1. EPA concurred that the site is sufficiently representative of neighborhood-scale air quality for the intended monitoring objectives. Documentation of waiver approval is included in the *2023 Alaska ANP Approval Letter* in **Appendix C** (Waiver C-2).

4 Network Modifications Completed in 2025

4.1 Anchorage Garden Site CO monitoring

Over the past two decades, carbon monoxide (CO) concentrations in Anchorage have declined significantly, with no exceedances of the NAAQS reported. For the past three years, 8-hour maximum CO values have remained below 30% of the NAAQS and have not exceeded 41% in the last 10 years.

Given these sustained low concentrations, the DEC will seek a State Implementation Plan (SIP) modification to conclude the second 10-year Limited Maintenance Plan period. The DEC plans to continue CO monitoring as long as the instrument remains operational until the modification is approved. If the monitor fails and is not repairable, DEC has a sensor pod at the station with a collocation history with the regulatory monitor and may inform DEC of any need for contingency measures, until the SIP modification is approved.

4.2National Core Multipollutant Site

In 2025, the BAM 1020 PM2.5 monitor was upgraded to FEM status, by replacing a sharp cut cyclone (SSC) with a very sharp cut cyclone (VSCC).

5 PLANNED NETWORK MODIFICATIONS FOR 2025

5.1 REGULATORY MONITORING STATIONS

At this time, the DEC does not anticipate any changes to the regulatory ambient air monitoring network for 2026.

5.2 LOW-COST SENSOR NETWORK

While the existing long-term regulatory monitoring network meets federal requirements for the number of stations and pollutants monitored, it is primarily limited to Alaska's population centers and does not adequately characterize conditions in outlying and rural communities.

Recent advances in sensor technology have enabled the development and commercial availability of smaller, portable, and more affordable air quality sensors. This new generation of low-cost sensor technology provides the DEC with the opportunity to expand air quality monitoring into areas that were previously cost-prohibitive to reach.

Beginning in 2023, the DEC launched the Community-Based Air Monitoring project, deploying QuantAQ MODULAIR™ low-cost sensor pods across the state. The sensor network is designed to provide real-time air quality data and trend information, empowering community members to better understand baseline air quality in their areas. While the data collected are non-regulatory, they are available to the public upon request and are displayed in real time on the DEC's website[18].

The QuantAQ MODULAIR™ sensors measure particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), nitric oxide (NO), nitrogen dioxide (NO_2), ozone (O_3), temperature, and relative humidity. As of 2025, the DEC operates 55 Quant AQ Modulair™ sensor pods statewide.

These sensor pods are deployed in a wide range of communities, including: Anchorage (Campbell Creek Science Center), Big Lake, Cordova, Delta Junction, Denali National Park, Fairbanks (2 sites: Goldstream and Badger Road), Galena, Glennallen, Haines, Homer, Hoonah, Juneau (2 sites: 5th Street and the State Museum), Kenai, Ketchikan, Kodiak, Kotzebue, Napaskiak, Nenana, Ninilchik, Nome, Palmer, Seward, Sitka, Skagway, Soldotna, Sutton-Alpine, Talkeenta, Tok, Tyonek, Valdez, Wasilla, Willow, Wrangell, and Yakutat. Additionally, six quality assurance sensor pods are collocated at regulatory monitoring sites: Fairbanks NCore (3), Anchorage Garden (2), and the Juneau Floyd Dryden (1).

[18] https://dec.alaska.gov/air/air-monitoring/responsibilities/database-management/alaska-air-quality-real-time-data/

During the initial rollout, the DEC identified that cellular network coverage in some Alaskan communities was incompatible with the communication systems of the primary sensor pod manufacturers. To address this, the DEC is actively researching alternative WiFi-enabled sensors to further expand the network in areas where cellular service is limited or unavailable.

Appendix A
NAAQS Summary Tables

Table A-1: PM2.5 DV Under Local/Actual Conditions (µg/m^3)

$PM_{2.5}$ Monitoring Sites	AQS Site ID	2024 98th Percentile	2023 98th Percentile	2022 98th Percentile	2024 Weighted Annual Mean	2023 Weighted Annual Mean	2022 Weighted Annual Mean	2024 24-hour Design Value	2024 Annual Design Value
Garden/ Anchorage	02-020-0018	16.8	14.2	24.0	5.0	4.2	4.9	18	4.7
Butte/ Matanuska-Susitna Valley	02-170-0008	n/a	17.5	21.2	n/a	4.1	4.4 †	n/a	n/a
Plant Materials Center/ Matanuska Susitna Valley	02-170-0010	16.2	n/a	n/a	3.8	n/a	n/a	n/a	n/a
NCore Site/ Fairbanks	02-090-0034	24.0 (35.8)	20.0 (30.7)	29.1 (76.3)	6.7 (8.5)	6.4 (8.4)	6.7 (11.3)	24 (48)	6.6 (9.4)
Hurst Rd/ North Pole	02-090-0035	54.0 (57.3)	51.9 (62.5)	51.2 (72.5)	10.3 (12.5)	9.5 (11.7)	8.1 (12.7)	52 (64)	9.3 (12.3)
A Street/ Fairbanks	02-090-0040	25.4 (35.9)	27.8 (34.4)	25.3 (84.2)	7.1 (8.5)	7.0 (8.5)	6.6 (11.1)	26 (52)	6.9 (9.4)
Floyd Dryden/ Juneau	02-110-0004	16.9	15.9	22.1	4.4	4.7	4.8	18	4.6

Note: Exceedance exceptional event values not included. Some values in this table have been calculated by DEC to exclude exceptional events. Values in the parentheses exclude only EPA concurred exceptional events. There is no valid design value for Butte in 2024 as the site closed in 2023 and was replaced by the Plant Materials Center monitoring site. The Plant Materials Center began operations in 2024 and will not have a valid design value calculation until three years of complete data have been captured at the site.

†Value did not meet data completeness criteria. This value is preliminary and subject to the maximum value substitution test as outlined in 40 CFR Part 50 Appendix N. Quarters 1-3 (Q1-Q3) for 2022 at the Butte site met the completeness criteria with percent completeness of 96% or greater; however, Butte's Q4 did not meet the 75% criteria with only 61% completeness. Using the maximum value substitution test (PM2.5 24-hour standard: 40 CFR Part 50 Appendix N, §4.2 (c) (i), and PM2.5 annual standard 40 CFR Part 50 Part 50 Appendix N, § 4.1 (c) (ii)), the max value of Q4 (29.6 µg/m^3) for all days with <75% daily data capture.

Table A-2: DV Ozone (O_3) (ppm)

O_3 Monitoring Sites	Site ID	2024 Valid Days	2024 Percent Complete	2024 4th Max	2023 Valid Days	2023 Percent Complete	2023 4th Max	2022 Valid Days	2022 Percent Complete	2022 4th Max	3-Year Percent Complete	3-Year Design Value
NCore/ Fairbanks	02-090-0034	361	99	0.052	350	96	0.050	350	96	0.055	97	0.052

*Does not meet data completeness criteria

Table A-3: DV Sulfur Dioxide (SO_2) (ppb)

SO_2 Monitoring Sites	Site ID	2024 99th Percentile	2024 Completed Quarters	2023 99th Percentile	2023 Completed Quarters	2022 99th Percentile	2022 Completed Quarters	3-Year Design Value
NCore/ Fairbanks	02-090-0034	11.1	4	14.7	4	32.8	4	20
Hurst Rd/ Fairbanks	02-090-0035	4.9	4	5.6	4	8.1*	3	6*

* Does not meet data completeness criteria

Table A-4: DV Carbon Monoxide (CO) (ppm)

SO_2 Monitoring Sites	Site ID	2024 Exceedances	2024 1st Max 8-hour	2024 2nd Max 8-hour	2023 Exceedances	2023 1st Max 8-hour	2023 2nd Max 8-hour	2023 Exceedances	2023 1st Max 8-hour	2023 2nd Max 8-hour
NCore/ Fairbanks	02-090-0034	0	3.2	1.9	0	2.3	1.9	0	2.8	2.5
Garden/ Anchorage	02-090-0018	0	3.1	2.7	0	2.6	2.4	0	2.5	2.4

* Does not meet data completeness criteria

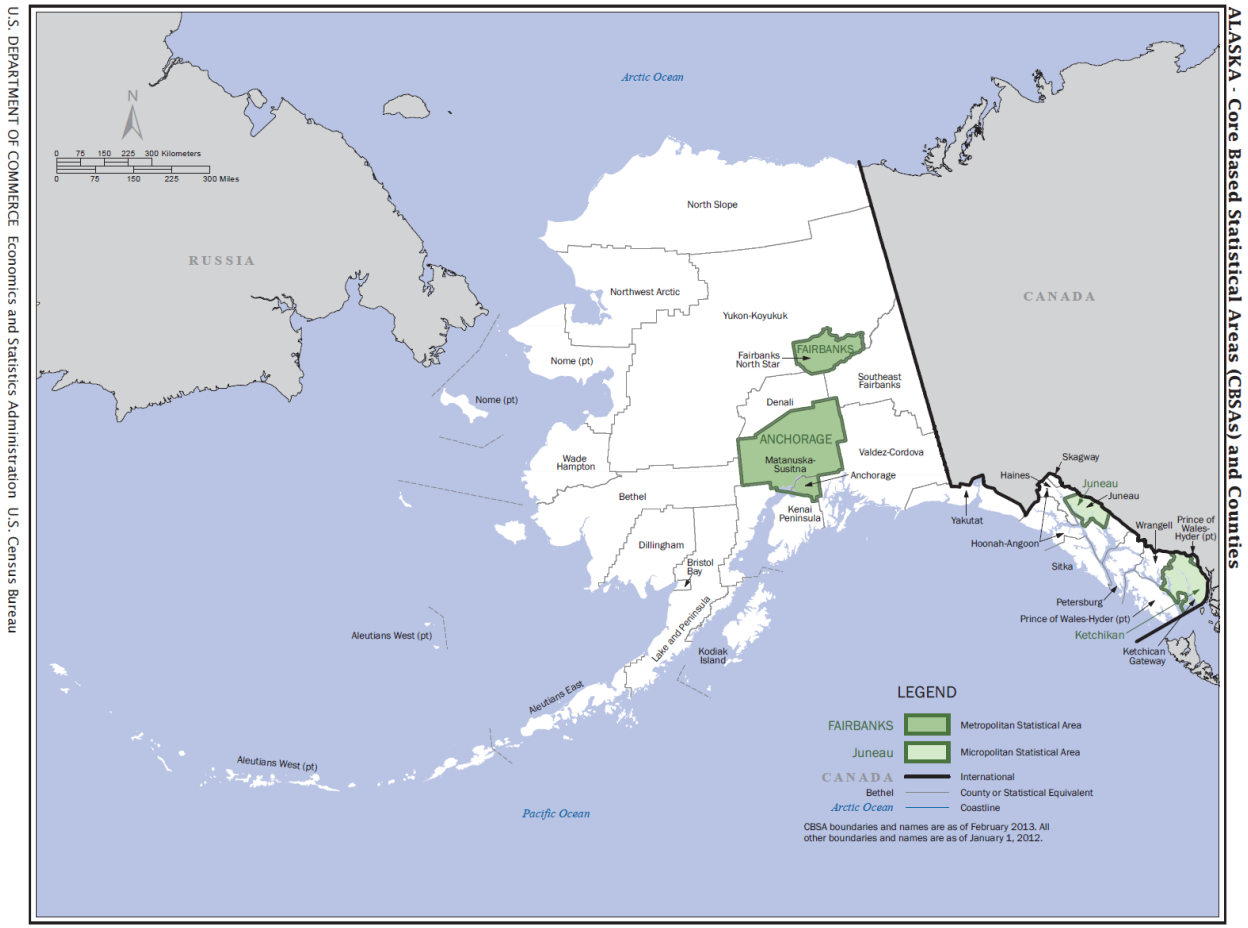
Table A-5: PM_{10} DV Under Standard Conditions (µg/m^3)

PM_{10} Monitoring Sites	Site ID	2024 Exceedances	2024 1st Max 24-hr	2024 2nd Max 24-hr	2023 Exceedances	2023 1st Max 24-hr	2023 2nd Max 24-hr	2022 Exceedances	2022 1st Max 24-hr	2022 2nd Max 24-hr
Garden/ Anchorage	02-020-0018	0	63	57	0	59	53	0	57	52
Laurel/ Anchorage	02-020-0045	0	134	106	0	95	88	0	103	101
Parkgate/ Anchorage	02-020-1004	0	54	52	0	59	59	0	77	65
NCore/ Fairbanks	02-090-0034	0	113	90	1	170	138	2	243	171
Butte/ Matanuska-Susitna Valley	02-170-0008	n/a	n/a	n/a	0	132	130	0	90	76
Plant Materials Center/ Matanuska-Susitna Valley	02-170-0010	0	118	78	n/a	n/a	n/a	n/a	n/a	n/a
Floyd Dryden Middle School/ Juneau	02-110-0004	0	32	29	0	44	36	0	38	38

*Exceedance exceptional event values not included.

Appendix B
Map of Alaska's Core Based Statistical Areas (CBSA)

Figure 1. Alaska 2020 Core Based Statistical Areas and Counties



U.S. Census Bureau

Appendix C
Waivers

Waiver C-1: EPA 5-Year Ozone NAAQS Monitoring Requirement Waiver

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
AIR AND WASTE

OCT 15 2018

ADEC AIR QUALITY
RECEIVED
OCT 18 2018
ANCHORAGE

Ms. Barbara Trost
Air Quality Division
Air Monitoring & Quality Assurance Program
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501-2617

Dear Ms. Trost:

In our August 2, 2018 response to your 2017 Annual Monitoring Network Plan, Region 10 indicated approval of a waiver to discontinue ozone monitoring in the Anchorage Metropolitan Statistical Area and stated a formal approval would follow in a separate correspondence. This correspondence is our formal approval for waiving ozone monitoring requirements for the Anchorage MSA for five years (2019 through 2023). For future Annual Monitoring Network Plans, please enclose a copy of this waiver as an appendix to the ANP.

In considering your waiver request, Region 10 examined the available historic monitoring data produced by ADEC for the Anchorage MSA as well as factoring in the resources constraints you have identified. Region 10 examined the data available in AQS and past Annual Network Plans and found that Alaska has monitored in four separate areas in the Anchorage MSA since ozone monitoring commenced in 2010 (Anchorage, Eagle River, Wasilla, and Palmer). There have been no exceedances of the ozone standard. Additionally, we did not observe any concentrations at or above 80 percent of the NAAQS. Given ADEC's resource constraints and a low likelihood of ozone exceedances in the Anchorage MSA, we are supporting your waiver request.

If ADEC would like to continue to not operate an ozone monitor in the Anchorage MSA after 2023, ADEC should resubmit a request for renewal of the waiver. The EPA reserves the right to reinstate ozone monitoring requirements in the MSA sooner than five years should a future need arise (e.g., changes in air quality, monitor regulation changes, or revisions to the NAAQS).

If you have any questions regarding this correspondence, please contact me at (206) 553-2970 or Doug Jager at (206) 553-2961.

Sincerely,

Gina Bonifacino
Acting Manager, Air Planning Unit

Waiver C-2: EPA 2024 Alaska ANP Approval Letter

REGION 10
SEATTLE, WA 98101

February 27, 2025

Ms. Barbara Trost
Division of Air Quality
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501

Dear Ms. Trost:

The U.S. Environmental Protection Agency (EPA) evaluated the Alaska Department of Environmental Conservation's (ADEC) 2024 Annual Monitoring Network Plan (ANP) dated June 27, 2024, and the Amendment to the 2024 ANP dated November 19, 2024 (November Amendment, see Enclosure 1). By this letter, EPA documents its findings from the review and approves the State of Alaska's 2024 ANP.

We appreciate all the hard work ADEC staff have put into maintaining and improving Alaska's air quality monitoring network despite facing fiscal restraints. Specifically, we appreciate the careful evaluation and ultimate adoption of fine particulate matter ($PM_{2.5}$) continuous Federal Equivalent Method (FEM) instruments at the Fairbanks A-Street and NCore sites in addition to the $PM_{2.5}$ Federal Reference Method (FRM) instruments. We also appreciate the addition of non-regulatory sulfur dioxide monitoring at the North Pole Hurst Road site to better understand particulate matter precursor chemistry. The successful relocation of the Butte PM monitoring site after years of preparation is also commendable. We also want to highlight ADEC's continued work on establishing a network of sensor pods in rural communities to extend the spatial coverage of the air quality monitoring network.

ADEC is also making excellent use of the infusion of one-time funds to improve air quality monitoring networks via the American Rescue Plan (ARP). Thank you for including status updates on the ARP-funded work in the ANP, notably replacing Chemical Speciation Network samplers at the NCore site, procuring and installing new shelters for the relocated Butte Plant Material Center site and the Juneau Floyd Dryden site, and procuring a primary flow standard for in-house mass flow controller calibrations.

Thank you for including information on ADEC's current waivers for certain monitoring requirements in the ANP Appendix C. These include ozone monitoring in the Anchorage area, lead source-oriented monitoring for Red Dog Mine, and the distance from the roadway at the A-Street site. We remind ADEC that these waivers will need to be revisited every five years and appreciate that ADEC has initiated planning for the renewal of the source-oriented lead monitoring waiver, which will be due concurrently with the 5-year network assessment and ANP on July 1, 2025.

We approve the following network modifications described in the 2024 ANP and November Amendment:

1. Redesignation of the continuous $PM_{2.5}$ monitor at the NCore Site (AQS ID: 02-090-0034) from non-FEM to FEM on January 1, 2025. DEC plans to replace the Sharp Cut Cyclone (SCC) with a Very Sharp Cut Cyclone (VSCC), which complies with the requirements for the monitor to be run as an FEM. The $PM_{2.5}$ FRM at the site will remain the primary monitor.
   EPA R10 approved a similar request for ADEC's A-Street site in the 2023 network response letter. We appreciate the inclusion of this request in the ANP as changes to FEM monitors at SLAMS sites have implications on meeting the minimum monitoring requirements for collocation (40 C.F.R. Part 58 Appendix A, Section 3.2.3), and documentation of these changes is required by 40 C.F.R. § 58.14(b).

2. Changes in coarse PM ($PM_{10-2.5}$) sampling equipment at the Fairbanks NCore Site. With the addition of the $PM_{2.5}$ FEM monitor at this site, coarse PM can be calculated by comparing the PM_{10} and $PM_{2.5}$ measurements from the two respective BAM1020 instruments. This meets the requirement for NCore coarse PM methods set out in 40 CFR Part 58 Appendix C 3.1. We approve the discontinuation and removal of the PM_{10} FRM Partisol 2025i sampler from operation at this site.

We provisionally approve the following network modification:

1. Discontinuation of the carbon monoxide (CO) monitor at the Anchorage, Garden site (AQS-ID: 02-020-0018), contingent upon approval of a State Implementation Plan (SIP) modification wherein the monitor is not required. This is allowable under 40 C.F.R. § 58.14(c)(1): the monitor has shown attainment during the previous five years, and it has a probability of less than 10% of exceeding 80% of the CO NAAQS over the next three years[1]. Monitoring is required under the second ten year limited maintenance plan (LMP) for the Anchorage CO maintenance area, which EPA approved on March 3, 2014 (79 FR 11707). We understand that ADEC plans to submit a SIP revision to remove any monitoring requirements and contingency measures from the LMP. Once this SIP revision has been approved, the CO monitor may be discontinued.

We do not approve the following network modification requested in the 2024 ANP:

1. Reduction of the NCore $PM_{2.5}$ FRM monitor sampling frequency from 1-in-1 to 1-in-3 on January 1, 2025. ADEC amended this request in the November 19, 2024 letter (see Enclosure 1). ADEC originally requested this change in 2023, but agreed to defer on the change until January 1, 2025 to avoid any data issues affecting the 2024 $PM_{2.5}$ NAAQS designations (see Enclosure 2). ADEC plans to continue operating the FRM monitor at the NCore site on a 1-in-1 sampling frequency for further evaluation of the correlation between the FRM and FEM.

Thank you for including details on the following network modifications completed in Alaska in the period between ANP reports (July 2023 – July 2024) that were previously approved:

1. Changes in $PM_{2.5}$ and PM_{10} monitoring at the Juneau Floyd Dryden site (AQS ID: 02-110-0004). Thank you for documenting the January 1, 2024 designation of the Teledyne T640X as the primary PM_{10} monitor and the FRM as the primary $PM_{2.5}$ monitor at the site. The T640X monitor will continue to measure $PM_{2.5}$ for AQI data, public information, and to inform burn ban decisions. These changes were approved in the 2023 ANP response letter. Thank you for also documenting the swap from a Thermo Scientific Partisol 2000i FRM to a Thermo Scientific 2025i FRM on February 18, 2024, which was approved outside of the ANP response via a letter dated December 19, 2023. R10's approval letter was linked in ADEC's 2024 ANP and is attached to this response letter (Enclosure 2).

[1] Tested using method described here: https://www3.epa.gov/ttnamti1/files/ambient/pm25/datamang/network-assessment-guidance.pdf

2. Relocation of the Butte Harrison Court monitoring site (AQS ID: 02-170-0008) to the Plant Materials Center (PMC, AQS ID: 02-170-0010). This site relocation was approved in the 2023 ANP response letter. Thank you for documenting that the PMC site became operational on October 26th, 2023, and the Harrison Court site was discontinued on December 30, 2023. The ANP includes documentation that the site meets criteria set out in 40 C.F.R. Part 58 Appendix E in ANP Tables 3-3, 3-5, and 3-7.

3. Redesignation of the continuous $PM_{2.5}$ monitor at A-Street (AQS ID: 02-090-0040) from non-FEM to FEM: Thank you for documenting that the sharp-cut cyclone (SCC) was replaced with a very sharp cut cyclone (VSCC) on January 2, 2024. This change means the monitor is being operated as an FEM. This change was approved in the 2023 ANP response letter.

4. Changes in coarse PM ($PM_{10-2.5}$) sampling equipment at the Fairbanks NCore Site. Thank you for documenting that you discontinued and removed the two Thermo Scientific Partisol 2000i instruments on December 22, 2023, and replaced them with one Thermo Scientific Partisol 2025i. The replacement instrument will measure PM_{10}, and the $PM_{10-2.5}$ fraction determined by comparison against the site's existing $PM_{2.5}$ FRM. This change was approved outside of the ANP response via a letter dated December 19, 2023 (Enclosure 2).

Thank you for including details on the following network modifications planned for the next 18 months, none of which would require Region 10 approval:

1. Replacing the A-Street site particulate matter sampling shelter during the third quarter of 2024. We understand from subsequent communication with ADEC that the shelter was successfully replaced by the date of this letter, and that there was minimal data loss.

2. Upgrading the sulfur dioxide (SO_2) instrument at the North Pole Hurst Road site. On March 10, 2022, ADEC added a Thermo Scientific 43i (Method Code: 560) SO_2 monitor to the North Pole Hurst Rd site. ADEC plans to replace this instrument with a Teledyne T100U SO_2 trace level analyzer (Method Code 100) during the third quarter of 2024.

3. Expansion of the Low-Cost Sensor Network: ADEC has purchased 55 QuantAQ sensor pods. These sensor pods are capable of measuring baseline air quality data, including particulate matter, sulfur dioxide, nitric oxide, nitrogen dioxide, and carbon monoxide. As of the ANP submittal, ADEC had deployed 27 sensors in rural communities across the state, with a goal of deploying in roughly 40 communities. The remaining sensors will be used for QA purposes. While these sensor pods are not approved as FEM and cannot be used for regulatory purposes, they provide important information on air quality outside of population centers. ADEC does not report the low-cost sensor data to AQS or AirNow but makes the measurements available on their own sensor network website.

The enclosed Annual Monitoring Network Plan Checklist is the checklist EPA used to review your plan for overall items that are required to be included in the ANP along with our assessment of whether the plan submitted by your agency addresses those requirements.

All comments conveyed via this letter and the enclosed checklist should be addressed in next year's annual monitoring network plan via corrections or addition of information to the plan. Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information, as described,

does not meet the requirements as specified in 40 C.F.R. § 58.10 and the associated appendices. EPA Region 10 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices.

EPA approves the State of Alaska's 2024 ANP. We appreciate the timeliness of the ANP submission and all the work ADEC does to protect the quality of Alaska's air, especially your proactive work to establish low-cost sensor hub sites. We look forward to our continued collaboration. If you have any questions about our approval of the ANP, please contact me at (206) 553-0985 or Sarah Waldo at (206) 553-1504.

Sincerely,

DEBRA SUZUKI

Digitally signed by DEBRA SUZUKI
Date: 2025.02.27 17:55:38 -08'00'

Debra Suzuki, Manager
Air Planning and State/Tribal Coordination Branch

Enclosures:

1. November 19, 2024 Amendment to the 2024 Alaska ANP
2. December 19, 2023 letter approving monitoring network modifications
3. Region 10 Annual Air Monitoring Network Plan Checklist

Waiver C-3: Red Dog Mine Lead Monitoring Waiver

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

AIR & RADIATION DIVISION

December 7, 2021

Alice Edwards, Director
Division of Air Quality
Alaska Department of Environmental Conservation
P.O. Box 111800
Juneau, AK 99811

Dear Ms. Edwards,

In your letter dated November 4, 2021, Alaska Department of Environmental Conservation (ADEC) Air Quality Division provided an updated request for a waiver of the lead (Pb) monitoring requirements at the Red Dog Mine. By this letter, Region 10 approves a waiver for lead monitoring at the Red Dog Mine. ADEC's waiver request was based on the results of dispersion modeling conducted by Teck Alaska Inc. (Teck), which were reviewed and approved by ADEC. The request was an update to the initial waiver request submitted June 12, 2020. The Red Dog Mine is a source of lead emissions exceeding 0.5 tons per year, which requires lead monitoring as specified in 40 C.F.R. Part 58, Appendix D, section 4.5(a). The lead emissions from Red Dog Mine were reported as 1.2 tons in the 2017 National Emissions Inventory, and 10.1 tons in the 2014 National Emissions Inventory.

According to 40 C.F.R. Part 58, Appendix D, section 4.5(a)(ii), the Regional Administrator may waive the requirement for lead source monitoring if the state can demonstrate that the source will not contribute to a maximum lead concentration in ambient air in excess of 50 percent of the lead National Ambient Air Quality Standards (NAAQS). A 5-year waiver for the lead monitoring requirement for Red Dog Mine was approved on August 11, 2016. The current waiver renewal request was timed to be in sync with the 5-year Air Monitoring Network Assessment, but the approval was delayed. The modeling approach and protocol for the Red Dog Mine conducted by Teck were consistent with the EPA's guidance, and were approved by the EPA. The results of this modeling demonstrates that the maximum ambient 3-month rolling average lead concentration at the mine does not exceed 50 percent of the lead NAAQS. This satisfies the requirement of remaining below 50 percent of the NAAQS, and, therefore, I approve a waiver for lead monitoring at the Red Dog Mine.

Pursuant to 40 C.F.R. Part 58, Appendix D, section 4.5(a)(ii), this waiver must be renewed every 5 years as part of the Alaska 5-year Air Monitoring Network Assessment. Therefore, if ADEC elects to renew the lead source-monitoring waiver, a formal written request to renew the lead source-monitoring waiver must demonstrate that the site conditions for which the previous modeling was conducted are still applicable. If site conditions have changed such that the previous modeling is no longer appropriate, then ADEC must update the modeling based on the current conditions.

This approval and existence of this lead source-monitoring waiver for the Red Dog Mine should be identified in the next ADEC Annual Ambient Air Monitoring Network Plan submitted to the EPA, after public review and comment, and shall be identified in all future Alaska Annual Ambient Air Monitoring Network Plans and the Alaska 5-year Air Monitoring Network Assessment Reports submitted to the EPA.

If you have any questions on the subject, please have your staff contact Sarah Waldo at (206) 553-1949 or waldo.sarah@epa.gov.

Sincerely,

DEBRA SUZUKI
Digitally signed by DEBRA SUZUKI
Date: 2021.12.07 20:20:32 -08'00'

Debra Suzuki, Manager
Air Planning, State/Tribal Coordination Branch

Appendix D
Network Evaluation Forms

Table D-1: $PM_{2.5}$ Network Evaluation Form

PART 58 APPENDIX D NETWORK EVALUATION FORM FOR PM2.5				
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE**: 4/15/2024 **EVALUATOR:** Rochele Rodman				
APPLICABLE SECTION	REQUIREMENT	CRITERIA MET?		
		YES	NO	N/A
4.7.1(a)	States, and where applicable local agencies must operate the minimum number of required $PM_{2.5}$ SLAMS sites listed in Table D-5 of this appendix. Use the form below and Table D-5 to verify if each of your MSAs have the appropriate number of SLAMS FRM/FEM/ARM samplers.	✓		
4.7.1(b)	Each required SLAMS FRM/FEM/ARM monitoring stations or sites must be sited to represent area-wide air quality in the given MSA (typically neighborhood or urban spatial scale, though micro-or middle-scale okay if it represents many such locations throughout the MSA).	✓		
4.7.1(b)(1)	At least one SLAMS FRM/FEM/ARM monitoring station is to be sited at neighborhood or larger scale in an area of expected maximum concentration for each MSA where monitoring is required by 4.7.1(a).	✓		
4.7.1(b)(2)	For CBSAs with a population of 1,000,000 or more persons, at least one FRM/FEM/ARM $PM_{2.5}$ monitor is to be collocated at a near-road NO_2 station.			✓
4.7.1(b)(3)	For MSAs with additional required SLAMS sites, a FRM/FEM/ARM monitoring station is to be sited in an area of poor air quality.	✓		
4.7.2	Each State must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor, in which case no collocation requirement applies.	✓		
4.7.3	Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport (note locations in comment field). Non-reference PM2.5 monitors such as IMPROVE can be used to meet this requirement.	✓		
4.7.4	Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network (STN).	✓		
Comments:				

Table D-2: PM_{10} Network Evaluation Form

MSA population[1, 2]	Most recent 3-year design value ≥ 85% of any PM2.5 NAAQS[3]	Most recent 3-year design value < 85% of any PM2.5 NAAQS[3, 4]
>1 million	3	2
500K to 1 million	2	1
50K to <500K[5]	1	0

[1] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2] Population based on latest available census figures. https://www.census.gov/
[3] The $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4] These minimum monitoring requirements apply in the absence of a design value.
[5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table D-3: PM2.5 Minimum Monitoring Requirements

MSA Description[1]	MSA population [2,3]	Design Value for years 2021-2023 24-hr/Annual Avg. µg/m³	Minimum required number of PM2.5 SLAMS FRM/FEM/ARM sites (from Table D-5)	Present number of PM2.5 SLAMS FRM/FEM/ARM sites in MSA	Present number of continuous PM2.5 FEM/ARM analyzers in MSA	Present number of continuous PM2.5 STN analyzers in MSA
Anchorage MSA	407,213					
Municipality of Anchorage	289,600		0	1	1	0
Garden Site		19/5.1	SLAMS/FRM & FEM	1	1	0
Matanuska-Susitna Valley Borough	117,613		1	0	1	0
Butte Site		23**/5.0**	SLAMS/FEM	0	1	0
Fairbanks North Star Borough MSA	94,951		1	5	3	2 speciation
A Street		38***/11.5***	SPM/FRM	1	1	0
NCore Site		26/7.3	NCore/FRM	1	1*	1 speciation
Hurst Rd		56/9.9	SPM/FRM	2	1*	1 speciation
City and Borough of Juneau µSA	31,572		0	1	1	0
Floyd Dryden Site		19/5.1	SLAMS/FEM & FRM	1	1	0

[1] see https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

[2] Minimum monitoring requirements apply to the metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.

[3] Population based on population estimates for July 1, 2023 obtained from the United States Census Bureau, https://www.census.gov/quickfacts/fact/table/juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

* MetOne BAM w/ SCC; per discussion with EPA VSCC cyclone removed

** Maximum value substitutions applied due to data completeness criteria not being met. Substitutions were performed according to the procedures outlined in 40 CFR Part 50 Appendix N, §4.2 (c) (i) and 40 CFR Part 50 Part 50 Appendix N, § 4.1 (c) (ii)).

*** Annual values did not meet data completeness criteria. This value is preliminary and subject to the maximum value substitution test as outlined in 40 CFR Part 50 Appendix N. A Street DVs cannot be officially calculated until 2024 monitoring data has been collected and verified.

Table D-4: PM_{10} Network Evaluation Form

PART 58 APPENDIX D NETWORK EVALUATION FORM FOR PM10				
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE**: 4/12/2024 **EVALUATOR:** Rochele Rodman				
APPLICABLE SECTION	REQUIREMENT	CRITERIA MET?		
		YES	NO	N/A
4.6(a)	Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM10 air quality trends and geographical patterns. Use the form below and Table D-4 to verify if your PM10 network has the appropriate number of samplers.	✓		
Comments: All of the site locations are based on historical agreements among the EPA, DEC and (where applicable) local agencies. One exceedance on May 7, 2019 at the Butte site caused the entire Anchorage MSA to be categorized as high concentration. DEC qualified the exceedance day data as RJ (high winds). These one day could be the basis for a 2019 EEWR should EPA request DEC or EPA start another PM_{10} designation process. Thus DEC assumes that medium concentration is applicable when these exceptional events are excluded from the compliance calculations (**Appendix A**, Table A-5 with assumed EEWRs).				

Table D-5:

MSA Description[1]	MSA population[2, 3]	Minimum required number of PM_{10} stations (from Table D-4)	Present number of PM_{10} stations in MSA
Municipality of Anchorage & Matanuska-Susitna Valley Borough (MSA) (combined)	407,213	3-4 (high conc)/ 1-2 (med conc; high winds EE exceedances removed)	3 SLAMS (1 Collocate)
Fairbanks North Star Borough MSA	94,951	0 (low conc)	1 (NCore, collocated)
City and Borough of Juneau □SA	31,572	0 (low conc)	1 (SLAMS)

[1] see https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

[2] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.

[3] Population based on population estimates for July 1, 2024 obtained from the United States Census Bureau, https://www.census.gov/quickfacts/fact/table/juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

Table D-6: PM10 Minimum Monitoring Requirements

MSA population[1, 2]	High concentration[2]	Medium concentration[3]	Low concentration[4 5]
>1 million	6-10	4-8	2-4
500K to 1 million	4-8	2-4	1-2
250K to 500K	3-4	1-2	0-1
100K to 250K	1-2	0-1	0

[1]Selection of urban areas and actual numbers of stations per area will be jointly determined by EPA and the State agency.

[2]High concentration areas are those for which ambient PM10 data show ambient concentrations exceeding the PM10 NAAQS by 20 percent or more.

[3]Medium concentration areas are those for which ambient PM10 data show ambient concentrations exceeding 80 percent of the PM10 NAAQS.

[4]Low concentration areas are those for which ambient PM10 data show ambient concentrations less than 80 percent of the PM10 NAAQS.

[5]These minimum monitoring requirements apply in the absence of a design value.

Table D-7: CO Site Evaluation Form

PART 58 APPENDIX D SITE EVALUATION FORM FOR CARBON MONOXIDE (CO)					
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE**: 4/12/2024 **EVALUATOR:** Rochele Rodman					
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
4.2.1(a)	One CO monitor is required to operate collocated with one required near-road NO_2 monitor in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO_2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 monitor within that CBSA.				✓
4.2.2(a)	Has the EPA Regional Administrator required additional CO monitoring stations above the minimum number of monitors required in 4.2.1? If so, note location in comment field.		✓		
Comments: The State of Alaska has no CBSA with a population of 1,000,000. Therefore, there are no near-road collocated sites for CO and NO_2. The Garden Site (AQS ID 02-020-0018) is the single CO site currently operating in the Municipality of Anchorage for Limited Maintenance Plan compliance. A single CO SLAMS monitor operated for Limited Maintenance Plan compliance in the Fairbanks North Star Borough at the Old Post Office Building site (AQS 02-090-0002) until 4/30/2014. Since then the Fairbanks North Star Borough multi-pollutant NCore site (02-090-0034) currently is the single CO site for compliance with NCore requirements and for Limited Maintenance Plan compliance in Fairbanks.					

Table D-8:

MSA Description[1]	CBSA population[2, 3]	Minimum required number of SLAMS CO sites	Present number of SLAMS CO sites in MSA
Municipality of Anchorage & Matanuska-Susitna Valley Borough (MSA) (combined)	407,213	0	1*
Fairbanks North Star Borough	94,951	0	1*

[1] see https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

[2] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.

[3] Population based on population estimates for July 1, 2024 obtained from the United States Census Bureau, https://www.census.gov/quickfacts/fact/table/juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

* Monitoring sites in both MSAs satisfy their respective CO Limited Maintenance Plans requirements.

Table D-9: O_3 Network Evaluation Form

PART 58 APPENDIX D NETWORK EVALUATION FORM FOR OZONE (O_3)				
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE**: 4/12/2024 **EVALUATOR:** Rochele Rodman				
APPLICABLE SECTION	REQUIREMENT	CRITERIA MET?		
		YES	NO	N/A
4.1(b)	At least one O_3 site for each MSA, or CSA if multiple MSAs are involved, must be designed to record the maximum concentration (note location in comment field).	✓		
4.1(c)	The appropriate spatial scales for O_3 sites are neighborhood, urban, and regional (note deviations in comment field).	✓		
4.1(f)	Confirm that the monitoring agency consulted with EPA R10 when siting the maximum O3 concentration site.	✓		
4.1(i)	O_3 is being monitored at SLAMS monitoring sites during the "ozone season" as specified in Table D-3 of Appendix D to Part 58.	✓		
Comments: DEC received an EPA 5-Year Ozone NAAQS Monitoring Requirement Waiver for the Anchorage MSA (**Appendix C**, Waiver C-1). This waiver was extended to 2028 (**Appendix C,** Waiver C-2). Palmer O_3 was discontinued at the end of ozone season 2018. An ozone monitoring site was established in the Fairbanks North Star Borough at the multi-pollutant NCore site (AQS 02-090-0034) in August 2011 and has been operated year-round since then.				

Table D-10:

MSA Description[1]	MSA population [2,3]	Minimum required number of SLAMS O_3 sites (from Table D-2)	Present number of SLAMS O_3 sites in CBSA	
Municipality of Anchorage & Matanuska-Susitna Valley Borough (MSA) (combined)	407,213	1	0	See EPA ozone waiver link*
Fairbanks North Star Borough	94,951	0	1**	NCore Site

[1] see https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

[2] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.

[3] Population based on population estimates for July 1, 2024 obtained from the United States Census Bureau, https://www.census.gov/quickfacts/fact/table/juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

* DEC received an EPA 5-Year Ozone NAAQS Monitoring Requirement Waiver for the Anchorage MSA (**Appendix C**, Waiver C-1), which was extended until 2028 (**Appendix C**, Waiver C-2).

** Fulfills State of Alaska NCore requirement

Table D-11: SLAMS O3 Monitoring Minimum Requirements

MSA population[1, 2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3, 4]
> 10 million	4	2
4-10 million	3	1
350,000 - < 4 million	2	1
50,000 - < 350,000[5]	1	0

[1]Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.
[2]Population based on latest available census estimates.
[3]The ozone (O3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4]These minimum monitoring requirements apply in the absence of a design value.
[5]Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table D-12: Ozone Monitoring Season by State

State	Begin month	End Month
Alaska	April	October
Idaho	May	September
Oregon	May	September
Washington	May	September

Table D-13: SO_2 Network Evaluation Form

PART 58 APPENDIX D NETWORK EVALUATION FORM FOR SULFUR DIOXIDE (SO_2)				
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE:** 4/12/2024 **EVALUATOR:** Rochele Rodman				
APPLICABLE SECTION	REQUIREMENT	CRITERIA MET?		
		YES	NO	N/A
4.4.1	State and, where appropriate, local agencies must operate a minimum number of required SO_2 monitoring sites (based on PWEI calculation specified in 4.4.2 – use Table 1 and 2 below to determine minimum requirement for each CBSA)	✓		
4.4.2(a)(1)	Is the monitor sited within the boundaries of the parent CBSA and is it one of the following site types: population exposure, highest concentration, source impacts, general background, or regional transport?			✓
4.4.3(a)	Has the EPA Regional Administrator required additional SO_2 monitoring stations above the minimum number of monitors required in 4.4.2? If so, note location in comment field.		✓	
4.4.5(a)	Is your agency counting an existing SO2 monitor at an NCore site in a CBSA with a minimum monitoring requirement?			✓
Comments: As evident from the calculations shown below, the State of Alaska has no CBSAs which require SO_2 monitoring. One of the operating SO_2 monitors is located at the multi-pollutant NCore site in the Fairbanks North Star Borough operated for compliance with NCore site requirements. The other SO_2 analyzer was added to the Hurst Road site in 2021. This data will be helpful for interpreting the sulfate information gained from the speciation monitor at this site.				

Table D-14:

CBSA Description[1]	CBSA population[2, 3]	Total amount of SO_2 in tons per year emitted within the CBSA (from 2017 NEI[4])	PWEI (population x total emissions ÷ 1,000,000)	Minimum required number of SO_2 monitors in CBSA (see Table 2 below)	Present number of SO_2 monitors in CBSA
Anchorage Municipality	289,600	262.0	74.9	0	0
Matanuska-Susitna Borough	117,613	326.4	37.6	0	0
Fairbanks North Star Borough	94,951	6,904.6	654.8	0	2*
Juneau City and Borough	31,572	71.7	2.3	0	0
Ketchikan Gateway Borough	13,677	37.5	0.5	0	0

[1] See https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html
[2] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.
[3] Based on population estimates for July 1, 2024 obtained from the United States Census Bureau, U.S. Census Bureau QuickFacts: Juneau City and Borough (County), Alaska; Fairbanks North Star Borough, Alaska; Matanuska-Susitna Borough, Alaska; Anchorage Municipality (County), Alaska; Alaska
[4] see 2020 National Emissions Inventory (NEI) Data | US EPA
* One monitor present to satisfy NCore requirement.

Table D-15: Minimum SO2 Monitoring Requirements

PWEI (Population weighted Emission Index) Value	Required number of SO_2 monitors
>= 1,000,000	3
>= 100,000 but < 1,000,000	2
>= 5,000 but < 100,000	1

Table D-162: NO_2 Network Evaluation Form

PART 58 APPENDIX D NETWORK EVALUATION FORM FOR NITROGEN DIOXIDE (NO_2)				
STATE: ALASKA **AGENCY:** DEPARTMENT OF ENVIRONMENTAL CONSERVATION **AQS AGENCY CODE:** 02 **EVALUATION DATE**: 4/15/2024 **EVALUATOR:** Rochele Rodman				
APPLICABLE SECTION	REQUIREMENT	CRITERIA MET?		
		YES	NO	N/A
4.3.2(a)	Near-road NO2 Monitors: One microscale near-road NO_2 monitoring station in each CBSA with a population of 1,000,000 or more persons.			✓
4.3.2(a)	Near-road NO2 Monitors: An additional near-road NO_2monitoring station is required for any CBSA with a population of 2,500,000 persons, or in any CBSA with a population of 500,000 or more persons that has one or more roadway segments with 250,000 or greater AADT count.			✓
4.3.2(b)	Near-road NO2 Monitors: Measurements at required near-road NO_2 monitor sites utilizing chemiluminescence FRMs must include at a minimum: NO, NO_2, and NO_X			✓
4.3.3(a)	Area-wide NO2 Monitoring: One monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales.			✓
Comments: The State of Alaska has no CBSA with a population of 1,000,000. The Fairbanks North Star Borough is currently analyzing for NO, NOy, and Difference, which satisfies the NCore requirement for NO2.				

Table D-17:

CBSA Description[1]	CBSA population[2, 3]	Required number of Near-road NO_2 sites	Present number of Near-road NO_2 sites	Required number of Area-wide NO_2 sites	Present number of Area-wide NO_2 sites
Municipality of Anchorage & Matanuska-Susitna Valley Borough (MSA) (combined)	407,213	0	0	0	0
Fairbanks North Star Borough (MSA)	94,951	0	0	0	0*
City and Borough of Juneau (□SA)	31,572	0	0	0	0

[1] see https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

[2] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA). CBSA includes both MSAs and micropolitan statistical areas.

[3] Population based on population estimates for July 1, 2023 obtained from the United States Census Bureau, https://www.census.gov/quickfacts/fact/table/juneaucityandboroughcountyalaska,fairbanksnorthstarboroughalaska,matanuskasusitnaboroughalaska,anchoragemunicipalitycountyalaska,AK/PST045222

* NCore site requirement is satisfied with NOy monitoring

Appendix E
Summary of Monitoring Path & Siting Criteria Evaluation Forms

Table E-1: Summary of Appendix E Forms: $PM_{2.5}$, PM_{10}, & $PM_{10-2.5}$

	Garden	Parkgate	Laurel[19]	PMC	Hurst Road	A Street	NCore	Floyd Dryden
Parameter(s)	$PM_{2.5}$ & PM_{10}	PM_{10}	PM_{10}	$PM_{2.5}$ & PM_{10}	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$, PM_{10} & $PM_{10-2.5}$	$PM_{2.5}$ & PM_{10}
Address	3000 E 16th Ave, Anchorage	11723 Old Glenn Hwy, Eagle River	4335 Laurel St, Anchorage	5310 Bodenburg Spur Rd., Palmer	3288 Hurst Rd, North Pole	397 Hamilton Ave, Fairbanks	907 Terminal St., Fairbanks	3800 Mendenhall Loop Rd., Juneau
AQS ID	02-020-0018	02-020-1004	02-020-0045	02-170-0010	02-090-0035	02-090-0040	02-090-0034	02-110-0004
2. HORIZONTAL AND VERTICAL PLACEMENT	Criteria met, 11 m	Criteria met, 10 m	Criteria met, 6 m	Criteria met, 4.3 m	Criteria met, 4 m	Criteria met, 4 m	Criteria met, 4 m	Criteria met, 7 m
3. SPACING FROM MINOR SOURCES (a)	Criteria met, chimney 3.8 m away	Criteria met, paved parking lot >10 m away	Criteria met, max impact site, winter graveled streets	Criteria met, 17 m from gravel road	Criteria met	Criteria met, near a school and a neighborhood	Criteria met, ~ 260 m to Aurora Wood Processing[20], ~400 m to power plant[21]	Criteria met, ~15 to kitchen vent, ~20 m to furnace flue
4. SPACING FROM OBSTRUCTIONS (a)	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted
4. SPACING FROM OBSTRUCTIONS (b)	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, >20 m to nearest building	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, unrestricted	Criteria met, ~8 m to Hi-Vol RadNet Monitor
5. SPACING FROM TREES (a)	Criteria met, >10 m	Criteria met, >10 m	Criteria met, >20 m	Criteria met, >40 m	Criteria met, >10 m	Criteria met, >10 m	Criteria met, >10 m	Criteria met, >20 m
5. SPACING FROM TREES (c)*	NA	NA	Criteria met	NA	NA	NA	NA	NA
6. SPACING FROM ROADWAYS	Criteria met, >10 m to road	Criteria met, >25 m to paved roads	Criteria met, 11 m to road, maximum exposure site	Criteria met, >10 m to road	Criteria met, >20 m to road	Criteria **not** met, <10 m to road[+]	Criteria met, 10 m to road	Criteria met, ~100 m to road
Changes that might compromise siting?[22]	No	No	No	No	No	No	No	No

[+]This site is located on a low-volume roadway that is paved and covered with snow and ice for six months of the year.

[19] Laurel is the only microscale site in Alaska's PM network

[20] Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.

[21] Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.

[22] All sites are in compliance with groundcover criteria.


DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE OF ALASKA

Table E-2: Summary of Appendix E Forms: CO

	Garden	NCore
Parameter(s)	CO	CO
Address	3000 E 16th Ave, Anchorage	907 Terminal St., Fairbanks
AQS ID	02-020-0018	02-090-0034
2. HORIZONTAL AND VERTICAL PLACEMENT	Criteria met, 2.6 m	Criteria met, 3 m
3. SPACING FROM MINOR SOURCES	Criteria met, residential	Criteria met, ~260 m to Aurora Wood Processing[23], ~400 m to coal power plant[24]
4. SPACING FROM OBSTRUCTIONS (a)	Criteria met, no obstacles	Criteria met, no obstacles
4. SPACING FROM OBSTRUCTIONS (b)	Criteria met, 180°	Criteria met, unrestricted
5. SPACING FROM TREES (a)	Criteria met, although there is a tree 2.7 m NE of probe, but airflow is still available around and through the tree	Criteria met
5. SPACING FROM TREES (c)	NA	NA
6. SPACING FROM ROADWAYS	NA, Neighborhood scale but 7.6 m from roadway[25]	NA, Neighborhood scale but 85 m from roadway
9. PROBE MATERIAL & RESIDENCE TIME (a)	FEP Teflon	Glass w/ FEP sample lines
9. PROBE MATERIAL & RESIDENCE TIME (c)	Criteria met, < 20 seconds	Criteria met, < 20 seconds
Changes that might compromise siting?[26]	No	No

[23] Aurora Energy Solutions is a wood processing and kiln drying operation which began in approximately 2020.
[24] Coal power plant stack emits emissions above and outside of ground-surface monitoring.
[25] This site was originally set up as a microscale site by the Municipality of Anchorage which would
[26] All sites are in compliance with groundcover criteria.

Table E-3: Summary of Appendix E Forms: O_3, SO_2, NO, Diff, and NO_y

	NCore			Hurst Road
Parameter(s)	O_3	SO_2	NO, Diff, & NO_y	SO_2
AQS ID	02-090-0034			02-090-0035
Address	907 Terminal St., Fairbanks			3288 Hurst Rd, North Pole
2. HORIZONTAL AND VERTICAL PLACEMENT	Criteria met, 3 m	Criteria met, 3 m	Criteria met, 3 m	Criteria met, 3 m
3. SPACING FROM MINOR SOURCES	Criteria met, ~ 260 m to Aurora Wood Processing[27], ~400 m to power plant[2]	Criteria met, ~ 260 m to Aurora Wood Processing[28], ~400 m to power plant[2]	Criteria met, ~ 260 m to Aurora Wood Processing[1], ~400 m to power plant[2]	Criteria met
3. SPACING FROM MINOR SOURCES (b)	Criteria met, no furnaces/flues			
4. SPACING FROM OBSTRUCTIONS (a)	Criteria met, no obstacles	Criteria met, no obstacles	Criteria met, no obstacles	Criteria met, no obstacles
4. SPACING FROM OBSTRUCTIONS (b)	Criteria met, unrestricted 360° airflow	Criteria met, unrestricted 360° airflow	Criteria met, unrestricted 360° airflow	Criteria met, unrestricted 360° airflow
4. SPACING FROM OBSTRUCTIONS (d)			NA	
5. SPACING FROM TREES (a)	Criteria met, >10 m	Criteria met, > 10 m	Criteria met, >10 m	Criteria met, >10 m
5. SPACING FROM TREES (c)	NA	NA	NA	NA
6. SPACING FROM ROADWAYS	Criteria met, >10 m to road	NA	Criteria met, >10 m to road	
9. PROBE MATERIAL & RESIDENCE TIME (a)	Borosilicate glass w/ FEP Teflon sample lines	Borosilicate glass w/ FEP Teflon sample lines	Borosilicate glass w/ FEP Teflon sample lines	FEP Teflon sample lines
9. PROBE MATERIAL & RESIDENCE TIME (c)	< 5 seconds	< 5 seconds	< 20 seconds	Not an NCore site, < 20 seconds
Changes that might compromise siting?[29]	No	No	No	No

[27] Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.
[28] Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.
[29] All sites are in compliance with groundcover criteria.

Table E-4: Blank Part 58 Appendix E Form for PM

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5, and Pb					
SITE NAME:	SITE ADDRESS:				
AQS ID:	EVALUATION DATE:	EVALUATOR:			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	.			
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year-round.				
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.				
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.				
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.				
	(c) No trees should be between source and probe inlet for microscale sites.				
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.				
Are there any changes that might compromise original siting criteria?					
Other Comments:					

Table E-5: Blank Part 58 Appendix E Form for CO

PART 58 APPENDIX E SITE EVALUATION FORM FOR CO					
SITE NAME:	SITE ADDRESS:				
AQS ID:	EVALUATION DATE:	EVALUATOR:			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	For neighborhood or larger spatial scale sites the probe must be located 2-15 meters above ground level and must be at least 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.				
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.				
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet (exception is street canyon or source-oriented sites where buildings and other structures are unavoidable).				
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.				
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.				
	(c) No trees should be between source and probe inlet for microscale sites.				
6. SPACING FROM ROADWAYS	2. (b) Microscale CO monitor probes in downtown areas or urban street canyon locations shall be located a minimum distance of 2 meters and a maximum distance of 10 meters from the edge of the nearest traffic lane.				
	2. (c) Microscale CO monitor inlet probes in downtown areas or urban street canyon locations shall be located at least 10 meters from an intersection and preferably at a midblock location.				
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex) for reactive gases.				
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.				
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.					
Other Comments:					

[1] Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

Table E-6: Blank Part 58 Appendix E Form for O_3

PART 58 APPENDIX E SITE EVALUATION FORM FOR O3					
SITE NAME:	SITE ADDRESS:				
AQS ID:	EVALUATION DATE:	EVALUATOR:			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.				
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.				
	(b) To minimize scavenging effects, the probe inlet must be away from furnace or incineration flues or other minor sources of SO_2 or NO.				
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.				
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.				
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.				
	(c) No trees should be between source and probe inlet for microscale sites.				
6. SPACING FROM ROADWAYS	See spacing requirements table below				
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).				
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.				
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.					
Other Comments:					

[1]Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

[2]Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

Table E-7: Blank Part 58 Appendix E Form for SO_2

PART 58 APPENDIX E SITE EVALUATION FORM FOR SO2					
SITE NAME:	SITE ADDRESS:				
AQS ID:	EVALUATION DATE:	EVALUATOR:			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.				
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.				
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.				
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.				
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.				
	(c) No trees should be between source and probe inlet for microscale sites.				
6. SPACING FROM ROADWAYS	There are no roadway spacing requirements for SO2.				
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).				
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.				
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.					
Other Comments:					

Table E-8: Blank Part 58 Appendix E Form for NO, NOx, NO_2, and NO_y

PART 58 APPENDIX E SITE EVALUATION FORM FOR NO, NOx, NO2, and NOy					
SITE NAME:	SITE ADDRESS:				
AQS ID:	EVALUATION DATE:	EVALUATOR:			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	For neighborhood or larger spatial scale sites the probe must be located 2-15 meters above ground level and must be at least 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. Microscale near-road NO_2 monitoring sites are required to have sampler inlets between 2 and 7 meters above ground level. If located near the side of a building or wall, then locate the sampler probe on the windward side relative to the prevailing wind direction during the season of highest concentration potential.				
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale and larger avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.				
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.				
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.				
	(d) For near-road NO_2 monitoring stations, the monitor probe shall have an unobstructed air flow, where no obstacles exist at or above the height of the monitor probe, between the monitor probe and the outside nearest edge of the traffic lanes of the target road segment.				
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.				
	(c) No trees should be between source and probe inlet for microscale sites.				
6. SPACING FROM ROADWAYS	See spacing requirements table below				
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).				
	(c) Sampling probes for reactive gas monitors at NCore and at NO_2 sites must have a sample residence time less than 20 seconds.				
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.					
Other Comments:					

Table E-9: Roadway ADT for CO, O_3, SO_2, and NO suite Part 58 Appendix E Forms

Roadway average daily traffic, vehicles per day	Minimum distance[1] (meters)
≤10,000	10
15,000	25
20,000	45
30,000	80
40,000	115
50,000	135
≥60,000	150

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5, and Pb					
SITE NAME: A Street	SITE ADDRESS: 397 Hamilton Ave Fairbanks				
AQS ID_ 02-090-0040	EVALUATION DATE: 3/20/2025	EVALUATOR: Mark Carpenter			
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	4.3 m above the ground	x		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	Near a school and a neighborhood	x		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	Currently two inlets	x		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	360 degrees of unrestricted airflow	x		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	>10 meters away from trees	x		
	(c) No trees should be between source and probe inlet for microscale sites.				x
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	<1000 AADT (2023), and about 5.8 meters from road (10m is requested)		x	
Are there any changes that might compromise original siting criteria?				x	
Other Comments: While the site is located less than 10 m from roadway, it is located on a seldom traveled road that is paved and covered with snow/ice for six months of the year. The shelter is surrounded on 3 sides by grass on a large school playground.					

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5,and Pb					
SITE NAME: Floyd Dryden SITE ADDRESS: Mendenhall Valley, Juneau AQS ID: 02-110-0004 EVALUATION DATE: 3/25/25 EVALUATOR: Sarah Novell-Lane					
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	Site ~ 10m from ground level. Nearest penthouse wall >15m	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	On roof of school there is a kitchen vent ~ 15m from site and furnace flue ~ 20m away	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	No obstacles	X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	High-volume RadNet monitor located ~ 8m from site	X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	>20m to drip line.	X		
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	Site located on roof of middle school on the opposite side of parking lot. Nearest small residential road ~ 100m (paved) and ~ 300m from larger commuter road (paved).	X		
Are there any changes that might compromise original siting criteria?				X	

Other Comments: Instruments on site are: Partisol 2025i PM2.5 sampler, T640x continuous PM monitor, RadNet, and a Windbird. There's also a Partisol 2000i PM2.5 sampler on site that's currently shut down, which serves as a backup in the event the Partisol 2025i goes down. Monitor inlet heads are spaced >1.5m from other inlet heads.

Instruments are mounted on a wooden platform. Rubber roofing material surrounds the site.

PART 58 APPENDIX E SITE EVALUATION FORM FOR CO

SITE NAME: Garden | SITE ADDRESS: 3000 E 16th Ave. Anchorage, AK 99508

AQS ID: 02-020-0018 | EVALUATION DATE: 3/24/2025 | EVALUATOR: Skyler Dean

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	For neighborhood or larger spatial scale sites the probe must be located 2-15 meters above ground level and must be at least 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	2.8 meters above ground 1.1 meters from wall	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.		X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet (exception is street canyon or source-oriented sites where buildings and other structures are unavoidable).		X		
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.		X		
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.	1 spruce tree 2.3m from probe inlet		X	
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	2. (b) Microscale CO monitor probes in downtown areas or urban street canyon locations shall be located a minimum distance of 2 meters and a maximum distance of 10 meters from the edge of the nearest traffic lane.	7.6m			X
	2. (c) Microscale CO monitor inlet probes in downtown areas or urban street canyon locations shall be located at least 10 meters from an intersection and preferably at a midblock location.				X
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex) for reactive gases.	FEP Teflon	X		
	(c) Sampling probes for reactive gas monitors at Garden must have a sample residence time less than 20 seconds.	CO: 20 seconds	X		
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.				X	

Other Comments: The QA officer determined the single spruce tree would not result in scavenging or interfere with sampling.

DOT AADT 2023 1,280 for Airport Heights Drive

Roadway average daily traffic, vehicles per day	Minimum distance[1] (meters)
≤10,000	10
15,000	25
20,000	45
30,000	80
40,000	115
50,000	135
≥60,000	150

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5,and Pb					
SITE NAME: Garden		SITE ADDRESS: 3000 E 16th Ave, Anchorage AK 99508			
AQS ID: 02-020-0018		EVALUATION DATE: 3/24/2025		EVALUATOR: Skyler Dean	
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	11.2 meters	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	Chimney 3.8 meters away	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.		X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.		X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	>10 meters	X		
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.		X		
Are there any changes that might compromise original siting criteria?				X	

Other Comments:

DOT 2023 AADT 1,280 for Airport Heights Drive

Monitors are on a wooden platform atop a black tar roof

Chimney is not in use

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5, and Pb

SITE NAME: Hurst Road SITE ADDRESS: 3288 Hurst Road, North Pole, Alaska

AQS ID: 02-090-0035 EVALUATION DATE: 3/20/2025 EVALUATOR: Mark Carpenter

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 4.7 meters for FRM ~ 4.0 meters for BAM	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year-round.	Adjacent gravel parking lot with relatively low traffic load.	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	No obstacles	X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	Unrestricted	X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	> 10 meters	X		
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	~ 21 meters. AADT count for 2023 3400/day	X		
Are there any changes that might compromise original siting criteria?				X	

Other Comments: Ground cover surrounding the Connex monitoring shelter most of the year is snow. When thawed, grass surrounds the shelter from East, North and West sides. South side is a graveled parking lot. Between the road and shelter fence is a motorized/non-motorized narrow paved path. Instruments are mounted above 3 meters either on the roof of the shelter or on a 72-foot tower.

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5,and Pb

SITE NAME: Laurel | SITE ADDRESS: 4335 Laurel St., Anchorage AK 99508

AQS ID: 02-020-0045 | EVALUATION DATE: 3/24/2025 | EVALUATOR: Skyler Dean

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	6.4 meters	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	Maximum impact site, winter graveled streets	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.		X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.		X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	>27 meters	X		
	(c) No trees should be between source and probe inlet for microscale sites.		X		
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	11 meters to Tudor Rd			X
Are there any changes that might compromise original siting criteria?				X	

Other Comments:

DOT 2023 AADT 29,500 for Airport Heights Drive. Suggested spacing from roadways is >30m. Due to it being microscale, distance is not required. Laurel is a Special Purpose Monitoring site and is used to determine PM10 impacts from significant sources in the area.

Monitor is on a wooden platform atop a black tar roof

PART 58 APPENDIX E SITE EVALUATION FORM FOR CO

SITE NAME: FNSB NCore SITE ADDRESS: 809 Pioneer Road/907 Terminal St. Fairbanks, Alaska

AQS ID: 02-090-0034 EVALUATION DATE: 4/1/2025 EVALUATOR: Scott Hummel

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	For neighborhood or larger spatial scale sites the probe must be located 2-15 meters above ground level and must be at least 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 3m above ground surface and 1m spacing for FRMs. No building obstructions.	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.	~260m to Aurora Wood Processing † ~400m to coal power plant *	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet (exception is street canyon or source-oriented sites where buildings and other structures are unavoidable).	Airflow is unrestricted and no obstacles present.	X		
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.	Inlets have 360-degree airflow availability.	X		
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.	Woody vegetation does not exceed height of sample inlets and nearest dripline is ~10m from site shelter.	X		
	(c) No trees should be between source and probe inlet for microscale sites.	N/A, not a micro-scale site.			N/A
6. SPACING FROM ROADWAYS	2. (b) Microscale CO monitor probes in downtown areas or urban street canyon locations shall be located a minimum distance of 2m and a maximum distance of 10m from the edge of the nearest traffic lane.	N/A, not a micro-scale site.			N/A
	2. (c) Microscale CO monitor inlet probes in downtown areas or urban street canyon locations shall be located at least 10 meters from an intersection and preferably at a midblock location.	N/A, not a micro-scale site.			N/A
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex) for reactive gases.	Yes, glass and FEP, meets criteria.	X		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.	Observed response in ~13 seconds on 3/19/24.	X		
Are there any changes that might compromise original siting criteria? If so, provide details in the comment section. No siting criteria changes between 2024 and 2025. The shelter is built on a washed gravel pad and surrounded by privacy fencing. The site is surrounded by an area with summer vegetative cover or winter snow cover.					

PART 58 APPENDIX E SITE EVALUATION FORM FOR NO, NOx, NO2, and NOy

SITE NAME: FNSB NCORE SITE ADDRESS: 809 Pioneer Road/907 Terminal St. Fairbanks, Alaska

AQS ID: 02-090-0034 EVALUATION DATE: 4/1/2025 EVALUATOR: Scott Hummel

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	For neighborhood or larger spatial scale sites the probe must be located 2-15 meters above ground level and must be at least 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. Microscale near-road NO_2 monitoring sites are required to have sampler inlets between 2 and 7 meters above ground level. If located near the side of a building or wall, then locate the sampler probe on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 3m above ground surface and 1m spacing for FRMs. Not a micro-scale site. No building obstructions.	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale and larger avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.	~260m to Aurora Wood Processing † ~400m to coal power plant *	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	Airflow is unrestricted and no obstacles present.	X		
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.	Inlets have 360-degree airflow availability.	X		
	(d) For near-road NO_2 monitoring stations, the monitor probe shall have an unobstructed air flow, where no obstacles exist at or above the height of the monitor probe, between the monitor probe and the outside nearest edge of the traffic lanes of the target road segment.	~85m to ~4k ADT roadway, ~240m to ~10k ADT roadway, latest data available from 2023. ‡ Minimum distance[1] met, 10m			N/A
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.	Woody vegetation does not exceed height of sample inlets and nearest dripline is ~10m from site shelter.	X		
	(c) No trees should be between source and probe inlet for microscale sites.	N/A, not a micro-scale site.			N/A
6. SPACING FROM ROADWAYS	See spacing requirements table below	Minimum distance[1] met, 10m. ‡	X		
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).	Yes, glass and FEP, meets criteria.	X		
	(c) Sampling probes for reactive gas monitors at NCore and at NO_2 sites must have a sample residence time less than 20 seconds.	Observed response in <20 seconds on 3/22/24.	X		
Are there any changes that might compromise original siting criteria? If so, provide details in the comment section. No siting criteria changes between 2024 and 2025. The shelter is built on a washed gravel pad and surrounded by privacy fencing. The site is surrounded by an area with summer vegetative cover or winter snow cover.				X	

Other Comments: Fairbanks NCore site monitors for NOy, NO, and NOy-NO.

* Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.

† Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.

‡ Traffic data from https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp. Referenced 4/1/2025.

[1]Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

Roadway average daily traffic, vehicles per day	Minimum distance[1] (meters)	Minimum distance[1, 2] (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

PART 58 APPENDIX E SITE EVALUATION FORM FOR O3

SITE NAME: FNSB NCORE SITE ADDRESS: 809 Pioneer Road/907 Terminal St. Fairbanks, Alaska

AQS ID: 02-090-0034 EVALUATION DATE: 4/1/2025 EVALUATOR: Scott Hummel

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 3m above ground surface and 1m spacing for FRMs. No building obstructions.	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.	~260m to Aurora Wood Processing † ~400m to coal power plant *	X		
	(b) To minimize scavenging effects, the probe inlet must be away from furnace or incineration flues or other minor sources of SO_2 or NO.	No combustion furnace/flues located within 50m of Site.	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	Airflow is unrestricted and no obstacles present.	X		
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.	Inlets have 360-degree airflow availability.	X		
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.	Woody vegetation does not exceed height of sample inlets and nearest dripline is ~10m from site shelter.	X		
	(c) No trees should be between source and probe inlet for microscale sites.	N/A, not a micro-scale site.			NA
6. SPACING FROM ROADWAYS	See spacing requirements table below	Minimum distance[1] met, 10m. ‡	X		
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).	Yes, glass and FEP, meets criteria.	X		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.	Observed response in ~5 seconds on 3/19/24.	X		
Are there any changes that might compromise original siting criteria? If so, provide details in the comment section. No siting criteria changes between 2024 and 2025. The shelter is built on a washed gravel pad and surrounded by privacy fencing. The site is surrounded by an area with summer vegetative cover or winter snow cover.				X	

Other Comments:

* Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.

† Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.

‡ Traffic data from https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp. Referenced 5/9/2024.

[1] Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

Roadway average daily traffic, vehicles per day	Minimum distance[1] (meters)
≤10,000	10
15,000	25
20,000	45
30,000	80
40,000	115
50,000	135
≥60,000	150

PART 58 APPENDIX E SITE EVALUATION FORM FOR: PM2.5, PM10, PM10-2.5, and Pb

SITE NAME: FNSB NCORE SITE ADDRESS: 809 Pioneer Road/907 Terminal St. Fairbanks, Alaska

AQS ID: 02-090-0034 EVALUATION DATE: 4/1/2025 EVALUATOR: Scott Hummel

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sites. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 4.5m above ground surface and 1m spacing for FRM & FEMs. No building obstructions.	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter monitoring sites should not be located in an unpaved area unless there is vegetative ground cover year-round.	~260m to Aurora Wood Processing † ~400m to coal power plant *	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	Airflow is unrestricted and no obstacles present.	X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	Inlets have 360-degree airflow availability.	X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	Woody vegetation does not exceed height of sample inlets and nearest dripline is ~10m from site shelter.	X		
	(c) No trees should be between source and probe inlet for microscale sites.	N/A, not a micro-scale site.			N/A
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	~85m to ~4k ADT roadway, ~240m to ~10k ADT roadway, using latest data available from 2023. ‡ Minimum distance[1] met, 10m.	X		
Are there any changes that might compromise the original siting criteria? If so, provide details in the comment section. No siting criteria changes between 2024 and 2025. *Note: ADEC has transitioned PMCoarse from Partisol 2025i FRMs in 2024 to BAM1020 FEMs in 2025.* The shelter is built on a washed gravel pad and surrounded by privacy fencing. The site is surrounded by an area with summer vegetative cover or winter snow cover.				X	

Other Comments:

* Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.

† Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.

‡ Traffic data from https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp. Referenced 4/1/2025.

[1] Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

Roadway average daily traffic, vehicles per day	Minimum distance[1] (meters)
≤10,000	10
15,000	25
20,000	45
30,000	80
40,000	115
50,000	135
≥60,000	150

PART 58 APPENDIX E SITE EVALUATION FORM FOR SO2

SITE NAME: FNSB NCORE SITE ADDRESS: 809 Pioneer Road/907 Terminal St. Fairbanks, Alaska

AQS ID: 02-090-0034 EVALUATION DATE: 4/1/2025 EVALUATOR: Scott Hummel

APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICAL PLACEMENT	2-15 meters above ground level. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	~ 3m above ground surface and 1m spacing for FRMs. No building obstructions.	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood scale avoid placing the monitor probe inlet near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site.	~260m to Aurora Wood Processing † ~400m to coal power plant *	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the probe inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.	Airflow is unrestricted and no obstacles present.	X		
	(b) The probe inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.	Inlets have 360-degree airflow availability.			N/A
5. SPACING FROM TREES	(a) To reduce possible interference the probe inlet must be at least 10 meters or further from the drip line of trees.	Woody vegetation does not exceed height of sample inlets and nearest dripline is ~10m from site shelter.	X		
	(c) No trees should be between source and probe inlet for microscale sites.	N/A, not a micro-scale site.			N/A
6. SPACING FROM ROADWAYS	There are no roadway spacing requirements for SO2.	N/A			N/A
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).	Yes, glass and FEP, meets criteria.	X		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.	Observed response in ~5 seconds on 3/19/24.	X		
Are there any changes that might compromise original siting criteria? If so, provide details in the comment section. No siting criteria changes between 2024 and 2025. The shelter is built on a washed gravel pad and surrounded by privacy fencing. The site is surrounded by an area with summer vegetative cover or winter snow cover.				X	

Other Comments:

* Coal power plant stack emits emissions above and outside of ground-surface monitoring. No observed bias upon the collection of Air Quality data.

† Aurora Energy Solutions is a wood processing and kiln drying operation which began approximately in 2020.

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5,and Pb					
SITE NAME: Parkgate		SITE ADDRESS: 11723 Old Glenn Highway, Eagle River, AK 99577			
AQS ID: 02-020-1004		EVALUATION DATE: 3/24/2025		EVALUATOR: Skyler Dean	
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	10.4 meters	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	Paved parking lot >10 meter Paved road >25 meter	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.		X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	>7.8 meters away from side of the building	X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	Nearest tree >45 meters away	X		
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	>25 meters	X		
Are there any changes that might compromise original siting criteria?				X	

Other Comments:

DOT 2023 AADT 13,300 for Old Glenn Highway.

Monitor is on a wooden platform atop a silicone roof

PART 58 APPENDIX E SITE EVALUATION FORM FOR PM2.5, PM10, PM10-2.5,and Pb					
SITE NAME: PMC		SITE ADDRESS: 5310 Bodenburg Spur Rd., Palmer AK, 99645			
AQS ID: 02-170-0010		EVALUATION DATE: 3/24/2025			EVALUATOR: Skyler Dean
APPLICABLE SECTION	REQUIREMENT	OBSERVED	CRITERIA MET?		
			YES	NO	N/A
2. HORIZONTAL AND VERTICLE PLACEMENT	2-15 meters above ground level for neighborhood or larger spatial scale, 2-7 meters for microscale spatial scale sites and middle spatial scale $PM_{10-2.5}$ sties. 1 meter vertically or horizontally away from any supporting structure, walls, *etc.,* and away from dusty or dirty areas. If located near the side of a building or wall, then locate on the windward side relative to the prevailing wind direction during the season of highest concentration potential.	4.4 meters	X		
3. SPACING FROM MINOR SOURCES	(a) For neighborhood or larger spatial scales avoid placing the monitor near local, minor sources. The source plume should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round.	17 meters from gravel access road only used by PMC employees	X		
4. SPACING FROM OBSTRUCTIONS	(a) To avoid scavenging, the inlet must have unrestricted airflow and be located away from obstacles. The separation distance must be at least twice the height that the obstacle protrudes above the probe inlet.		X		
	(b) The inlet must have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential. For particle sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.	>20 meters away from nearest building	X		
5. SPACING FROM TREES	(a) To reduce possible interference the inlet must be at least 10 meters or further from the drip line of trees.	Nearest tree >40 meters away	X		
	(c) No trees should be between source and probe inlet for microscale sites.				X
6. SPACING FROM ROADWAYS	Spacing from roadways is dependent on the spatial scale and ADT count. See section 6.3(b) and figure E-1 for specific requirements.	>10 meters	X		
Are there any changes that might compromise original siting criteria?				X	

Other Comments:

DOT 2023 AADT 60 for Bodenburg Spur Rd. Distance from site to Bodenburg Spur Rd: ~180m.

Monitors are located on a metal grate platform

Appendix F
Additional Monitoring Projects

SMOKE MONITORING FOR AIR QUALITY ADVISORIES

Wildland fire smoke is a recurring and significant air quality concern in Alaska, often impacting both nearby and distant communities during the summer months. Large wildfires can degrade air quality to unhealthy or hazardous levels, posing a risk to public health – especially for sensitive groups such as children, the elderly, and individuals with respiratory or heart conditions.

The DEC collaborates closely with the Alaska Fire Service, the Alaska Wildland Fire Coordinating Group, and other partners to assess and communicate air quality impacts from wildland fires. Air quality advisories are issued statewide using two primary methods:

- **Continuous monitoring data** from regulatory and low-cost sensor networks (where available)
- **Visibility assessments** in areas lacking real-time monitoring coverage.

During the 2025 wildfire season, the DEC will continue to partner with other agencies to expand the deployment of low-cost sensors in affected areas as needed. The DEC meteorologist or air quality staff, with support from the National Weather Service (NWS), use meteorological models and air monitoring data to forecast smoke movement and predict areas at risk for poor air quality. Real-time air quality data, advisories, and forecasts are made available to the public through DEC's website and partner platforms.

In addition to wildfire response, prescribed burns are conducted in collaboration with the Alaska Division of Forestry & Fire Protection and the Alaska Department of Fish & Game to manage fuels and enhance wildlife habitat. Air quality is monitored before and during these operations to minimize impacts on residents and sensitive areas. Public notices are issued if smoke is expected to affect communities, and air quality monitors are strategically placed to track particulate levels and support timely community notifications.

VOLCANIC ASH MONITORING

Alaska's active volcanoes can produce ash clouds that impact air quality and public health. In the event of a volcanic eruption, the DEC coordinates with the Alaska Volcano Observatory to monitor ash concentrations. A PM_{10} Met One E-BAM equipped with an AIRSIS communication system is deployed to provide near real-time data, enabling the DEC meteorologist to issue timely air quality advisories for affected regions.

RADIATION MONITORING

The DEC operates three RadNet radiation monitoring sites in Anchorage, Fairbanks, and Juneau as part of the national network. In August 2021, the Anchorage RadNet monitor was relocated from the Alaska State Public Health Laboratory (5455 Doctor MLK Jr. Avenue) to the Garden site (3000 E 16th Avenue), and operational responsibility was transferred to the DEC Air Quality Division. The DEC now manages RadNet equipment at all three sites, ensuring continuous monitoring for radiological events that could impact Alaskan communities.

Appendix G
Improve Network

The Alaska Regional Haze State Implementation Plan (SIP) includes a comprehensive monitoring strategy to measure, estimate, and characterize air quality and visibility impairment at Alaska's four federally designated Class I areas: Denali National Park and Preserve, Tuxedni Wilderness Area, Simeonof Wilderness Area, and the Bering Sea Wilderness Area. These areas, established under the 1977 Clean Air Act Amendments, are protected for their exceptional natural visibility and air quality.

To support the SIP and meet the requirements of the federal Regional Haze Rule, Alaska participates in the national IMPROVE (Interagency Monitoring of Protected Visual Environments) network. The IMPROVE program provides long-term, speciated particulate monitoring to assess visibility impairment and track progress toward natural visibility conditions. Alaska currently operates four IMPROVE monitoring stations, representing three of the four Class I areas. Monitors are deployed at Denali National Park and Preserve, Tuxedni Wilderness Area, and Simeonof Wilderness Area specifically to meet Regional Haze Rule requirements. Due to its extreme remoteness, there is no air monitoring at the Bering Sea Wilderness Area.

Data from these IMPROVE sites are critical for evaluating visibility trends, identifying pollutant sources, and demonstrating progress toward the SIP's goals. Alaska's SIP requires showing improvement in visibility on the 20% most impaired days, while ensuring no degradation on the 20% clearest days, as part of the long-term national goal to restore natural visibility conditions by 2064.

Monitoring site details and additional information about Alaska's Regional Haze program are available on the DEC's Regional Haze website (http://dec.alaska.gov/air/anpms/regional-haze). IMPROVE monitoring data and site information can also be accessed through the EPA's IMPROVE program portal website (http://vista.cira.colostate.edu/improve).