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

AIR & RADIATION DIVISION

October 30, 2023

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) 2023 Annual Monitoring Network Plan (ANP) dated June 30, 2023. By this letter, EPA documents its findings from the review and approves the State of Alaska's 2023 ANP.

We appreciate all the hard work ADEC staff have put into maintaining and improving Alaska's air quality monitoring network. One especially notable change is the inclusion of a Thermo Scientific 43i Sulfur Dioxide (SO_2) monitor at the North Pole Hurst Rd site (AQS ID: 02-090-0035). The Hurst Road site is the maximum impact $PM_{2.5}$ monitoring site in the Fairbanks nonattainment area and houses a Chemical Speciation Network (CSN) site. The SO_2 data will be helpful for interpreting the sulfate information gained from the speciation monitor. We also appreciate ADEC's continued work on establishing a network of sensor pods to extend the spatial coverage of the air quality monitoring network.

We approve the following network modifications described in the 2023 ANP:

1. Changing the primary $PM_{2.5}$ monitor at the Juneau Floyd Dryden site (AQS ID: 02-110-0004) and redesignating the continuous $PM_{2.5}$ monitor at the site as a non-FEM Special Purpose Monitor (SPM). ADEC will designate the $PM_{2.5}$ Federal Reference Method (FRM) monitor as the State and Local Air Monitoring Station (SLAMS) primary monitor in January 2024. This FRM monitor will operate on a 1-in-3 day schedule, which meets the operating frequency requirements set out in 40 C.F.R. § 58.12(d). This change in the primary monitor is in response to the performance concerns of the current Teledyne T640X $PM_{2.5}$ Federal Equivalent Method (FEM) monitor. Collocation of a T640X $PM_{2.5}$ monitor with an FRM is no longer required (40 C.F.R Part 58 Appendix A, § 3.2.3), as this was the only $PM_{2.5}$ T640X FEM in the ADEC monitoring network. Documenting this modification to the primary monitor fulfills the requirement to provide written communication to EPA describing network changes per 40 C.F.R. § 58.14(b).
   The T640X monitor will continue to measure $PM_{2.5}$ for AQI data, public information, and to inform burn ban decisions. The T640X will continue to be used as the primary FEM PM_{10} monitor, as there is little risk of high pollution events based on past data.
2. Running the continuous $PM_{2.5}$ monitor at A-Street (AQS ID: 02-090-0040) as an FEM: The primary $PM_{2.5}$ monitor at the A-Street site is a filter-based FRM (Thermo Scientific

Sequential Partisol 2025i). ADEC has historically also operated a continuous Met-One BAM 1020 $PM_{2.5}$ analyzer at the site, but that monitor has not been eligible to be designated as an FEM because it uses a Sharp Cut Cyclone (SCC) rather than a Very Sharp Cut Cyclone (VSCC). In January 2024, ADEC plans to replace the SCC with a VSCC, and has requested that the EPA approve designation of this monitor as an FEM. The EPA is approving this network change.

We provisionally approve the following network modification, pending further documentation:

1. Relocation of the Butte Harrison Court monitoring site (AQS ID: 02-170-0008). ADEC performed a saturation study in the Butte area to identify a suitable substitute site location during the winter of 2021/22. The study was initiated in response to planned construction in the area that may impact data collection at the current Butte site and in response to complaints from the neighboring property owners. After a year-long comparison between the three locations, ADEC selected the Plant Material Center (PMC) as the best substitution location. ADEC will provide documentation that the site meets criteria set out in 40 C.F.R. Part 58 Appendix E to EPA for approval before the site is finalized in the fall. ADEC plans to begin sampling at the location in time for an official January 1, 2024 sampling start date for both continuous $PM_{2.5}$ and PM_{10} monitoring.

Thank you for including documentation of the following network modifications approved since the 2022 ANP approval:

1. Floyd Dryden Site PM_{10} collocation: On January 21, 2022, a PM_{10} collocation using a Thermo Scientific Inc. Partisol 2000i was added to the Floyd Dryden SLAMS site as a federal reference method (FRM). This was approved by EPA in the 2022 ANP response letter.
2. Trinity Church (Garden) Site (AQS ID: 02-020-0018) $PM_{2.5}$ and PM_{10} collocations: On February 22, 2022, the $PM_{2.5}$ collocation monitor for the Met One BAM 1020 network was moved from the Harrison Ct (Butte) site to the Garden site. The PM_{10} FRM for the BAM 1020 network was moved from the Eagle River Parkgate site to the Anchorage Garden site on February 24, 2022. The first scheduled sample date for the $PM_{2.5}$ and PM_{10} Partisols were February 25th, 2022, and March 6th, 2022, respectively. This was approved by EPA Region 10 in the 2022 ANP response letter.

Thank you for including details on the following network modifications completed in Alaska in the period between ANP reports (July 2022 – July 2023) that do not require EPA approval:

1. Sulfur dioxide sampling at Hurst Road Site: On March 10, 2022, ADEC added a Thermo Scientific 43i Sulfur Dioxide monitor to the North Pole Hurst Rd site. The Hurst Road site is the maximum impact $PM_{2.5}$ monitoring site in the Fairbanks nonattainment area and houses a Chemical Speciation Network (CSN) site. The SO_2 data will be helpful for interpreting the sulfate information gained from the speciation monitor.
2. Monitoring site improvements funded by the American Rescue Plan (ARP). The 2023 ANP provided updates on the replacement of aging CSN samplers at the NCore site, an upgrade funded via ADEC's ARP Monitoring direct award. The URG instrument was delivered, and the SASS is expected prior to July 2023. Both will be installed in the summer of 2023.

Thank you for including details on the following network modifications planned for the next 18 months which may require approval in a future ANP:

1. Upgrade the heating and ventilation air conditioning system for the A-Street site particulate matter sampling shelter.
2. Purchase a replacement particulate matter sampling shelter for the new Butte sampling site.
3. Purchase a replacement particulate matter sampling shelter for the Teledyne T640X sampler at the Juneau Mendenhall Valley sampling site.
4. Purchase a Primary Flow Standard for mass flow controller calibrations.
5. Expansion of the Low-Cost Sensor Network: ADEC currently owns 18 AQMesh sensor pods. These sensor pods will collect baseline air quality data, including particulate matter, sulfur dioxide, nitric oxide, nitrogen dioxide, and carbon monoxide. ADEC selected 17 communities based on location, interest, and population density. The current proposed communities include Anchorage, Fairbanks, Homer, Juneau, Ketchikan, Kodiak, Kotzebue, Nome, Seward, Sitka, Skagway, Soldotna, and Unalaska/Dutch Harbor. Under the ARP direct grant and competitive grant awards from the EPA, ADEC received funds for 20 additional sensor pods. DEC is currently in the process of procuring additional low-cost sensors with the goal of installing all additional sensors by the end of October 2023.

We approve the following waiver requests:

1. Extension of the Anchorage MSA ozone monitoring waiver. The population of the MSA triggers the requirement for one ozone (O_3) monitoring site per 40 C.F.R. Part 58 Appendix D Table D-2. Based on resource constraints and the low likelihood of O_3 exceedances in the MSA, EPA approved a waiver of the O_3 monitoring requirements for the Anchorage MSA in the October 2, 2018 approval of ADEC's 2017 ANP. That waiver is valid through 2023.
   In their 2023 ANP, ADEC requested a 5-year extension of the waiver.
   Historically, O_3 values have been both consistently lower in the Anchorage MSA than in other areas of the state and consistently lower than 80% of the NAAQS. DEC explains in the waiver renewal request that there is a continued low likelihood of O_3 exceedances in the Anchorage MSA. Additionally, monitoring of O_3 at the Denali CASTNET site and the Fairbanks NCore site from 2018-2022 indicate O_3 levels continue to be below 80% of the NAAQS, which EPA believes suggest continued low levels within the Anchorage MSA.
   Because the same conditions underlying EPA's 2018 waiver approval remain, EPA is formally approving this 5-year extension of O_3 monitoring in the Anchorage MSA thru October 2028 pursuant to 40 C.F.R. Part 58, Appendix D, Section 4.1(b).
2. Proximity to roadway waiver for the A-Street site. Pursuant to 40 C.F.R. Part 58 Appendix E, Figure E-1, PM samplers must generally be located more than 15 meters from roadways unless EPA has approved a waiver of the siting requirement under Appendix E, Section 10. The A-Street SLAMS station is sited in a neighborhood community primarily due to its proximity to a residential neighborhood with solid fuel home heating and its identity as the area of expected maximum $PM_{2.5}$ concentrations. With the objective of placing the monitoring station as close as possible to the residential area and not negatively impacting schoolyard activities, the site was placed at less than the 15-meter recommended siting distance from the A-Street roadway.
   As the site is primarily concerned with quantifying the impacts of emissions from solid fuel burning, PM from the roadway is not expected to have significant impact as traffic at the site is minimal. The Alaska Department of Transportation traffic data for the streets to the north

and south of the monitoring station indicate daily traffic counts of 100 or less. For these reasons, EPA believes this site is as representative of the monitoring area in its current location as it would be if the siting criteria were met. Accordingly, EPA has determined the site eligible for a waiver for the proximity to a roadway per 40 CRF Appendix E Section 10, and EPA formally approves this waiver.

We greatly appreciate the information provided by these requests, but these activities do not require formal waivers:

1. NCore NO_y 10-meter inlet height. A 10-meter inlet height is recommended at NCore sites in the NCore Technical Assistance Document, but not is not required. 40 C.F.R. Part 58 Appendix E, Section 2 requires the monitor inlet to be placed at a height of 2 to 15 meters above ground level. Based on the information provided in the 2023 ANP waiver request, EPA agrees that a 4-meter inlet height is appropriate given the characteristics at the site, in particular the boundary layer height.
2. NCore NO_y requirement. In the 2023 ANP, ADEC requested to substitute the NO_y monitoring requirement for NO_x monitoring. According to 40 C.F.R. Part 58 Appendix D, section 3(b), NCore sites must measure NO_y, but there is no requirement to measure NO_x. Thus, it is not necessary for ADEC to seek a waiver to use NO_y as a substitute for NO_x data.

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 2023 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: 2023.10.30 21:22:54 -07'00'

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

Region 10 ANNUAL AIR MONITORING NETWORK PLAN CHECKLIST

Year: **2023**
Agency: **Alaska Department of Environmental Conservation (ADEC)**

40 CFR § 58.10(a)(1) requires that each Annual Network Plan (ANP) include information regarding the following types of monitors: State and Local Air Monitoring Stations (SLAMS) including Federal Reference Method (FRM), Federal Equivalent Method (FEM), and Approved Regional Method (ARM) monitors that are part of SLAMS, NCore stations, Chemical Speciation Network (CSN), Photochemical Assessment Monitoring Stations (PAMS), and Special Purpose Monitor (SPM) stations.

40 CFR § 58.10(a)(1) further directs that, The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. On this basis, review of the ANPs is based on the requirements listed in 40 CFR § 58.10 along with those in Appendices A, C, D, and E.

EPA Region 10 will not take action to approve or disapprove any item for which Part 58 grants approval authority to the Administrator rather than the Regional Administrators, but we will do a check to see if the required information is included and correct. The items requiring approval by the Administrator are: PAMS, NCore, and Speciation (STN/CSN).

Please note that this checklist summarizes many of the requirements of 40 CFR Part 58, but does not substitute for those requirements, nor do its contents provide a binding determination of compliance with those requirements. The checklist is subject to revision in the future and we welcome comments on its contents and structure.

Highlight Color:	**Meaning:**

White/no highlight		meets the requirement			
Yellow		requirement is not met, or information is insufficient to make a determination. Action requested in next year's plan or outside the ANP process.			
Turquoise		item requires attention to improve next year's plan			
	ANP requirement	**Citation within 40 CFR 58**	**Was the information submitted?[2] If yes, section or page #s.**	**Does the information provided[3] meet the requirement?[4]**	**Notes**
GENERAL PLAN REQUIREMENTS					
1.	Submit plan by July 1st	58.10 (a)(1)	Y	Y	Submitted to RA Sixkiller on June 30, 2023
2.	30-day public comment / inspection period	58.10 (a)(1); 58.10 (c)	Y	Y	No public comments submitted.
3.	Statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E, where applicable	58.10 (a)(1)	Y	Y	
4.	Modifications to SLAMS network – case when we are not approving system modifications	58.10 (a)(2); 58.10 (b)(5); 58.10 (e); 58.14	Y, pg. 8-10 (executive summary), pg. 42-48 (Sections 4 & 5)	Y	"1. Replace aging Chemical Speciation Network samplers at the NCore site, specifically the Met One Super SASS and URG 3000n. 2. Upgrade the heating and ventilation air conditioning system (HVAC) for the A-Street site particulate matter sampling shelter. 3. Purchase a replacement particulate matter sampling shelter for the new Butte sampling site.

					4.Purchase a replacement particulate matter sampling shelter for the Teledyne T640x sampler at the Juneau Mendenhall Valley sampling site. 5. Purchase a Primary Flow Standard for mass flow controller (MFC) calibrations. 6. 20 additional low-cost sensor pods to provide AQI information to underserved communities."
5.	Modifications to SLAMS network – case when we are approving system modifications per 58.14	58.10 (a)(2); 58.10 (b)(5); 58.10 (e); 58.14	Y, pg. 8-10 (executive summary), pg. 42-48 (Sections 4 & 5) 5: Planned Modifications for 2023	Y	1. Harrison Ct. (Butte) $PM_{2.5}$ SLAMS relocation to Plant Material Center (Butte) (provisionally approved pending submission of documentation demonstrating compliance with 40 CFR Part 58, Appendix E requirements. 2. Juneau Floyd Dryden SLAMS $PM_{2.5}$ primary sampler will change to an FRM starting January 2024. The previous primary monitor, T640x, will continue to provide data for AQI use. 3. A-St. BAM 1020 continuous analyzer changing from non-FEM SCC to FEM VSCC in order to fill in data during cold periods when the FRM encounters errors (Q1 and Q4) beginning January 2024.
6.	Does plan include documentation (e.g., attached approval letter) for system modifications that have been approved since last ANP approval?	N/A	N/A	N/A	

7.	Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal	58.10 (b)(5)	Y, pg. 8-10 (executive summary), pg. 42-48 (Sections 4 & 5)	Y	Harrison Ct. (Butte) $PM_{2.5}$ SLAMS relocation to Plant Material Center (Butte).
8.	Statement that SPMs operating an FRM/FEM/ARM that meet Appendix E also meet either Appendix A or an approved alternative. Documentation for any Appendix A approved alternative should be included.	58.11 (a)(2)	Y, Section 3.3: Siting Criteria	Y	
9.	SPMs operating FRM/FEM/ARM monitors for over 24 months are listed as comparable to the NAAQS or the agency provided documentation that requirements from Appendices A, C, or E were not met.	58.20 (c)	Y, Table E-1	Y	Hurst Rd SO_2 SPM; Juneau Mendenhall T640X will be an SPM starting in 01/2024; Table 3-7 lists all SPM sites
10.	For agencies that share monitoring responsibilities in an MSA/CSA: this agency meets full monitoring requirements or an agreement between the affected agencies and the EPA Regional Administrator is in place	App D 2(e)	N/A		ADEC does not share monitoring responsibilities
GENERAL PARTICULATE MONITORING REQUIREMENTS (PM_{10}, $PM_{2.5}$, Pb-TSP, Pb-PM_{10})					
11.	Designation of a primary monitor if there is more than	App. A 3.2.3	Y; Table 3-15	Y	

	one monitor for a pollutant at a site.				
12.	Distance between QA collocated monitors. For low volume PM instruments (flow rate < 200 liters/minute) > 1 m. For high volume PM instruments (flow rate > 200 liters/minute) > 2m.	App. A 3.2.3.4 (c) and 3.3.4.2 (c)	Y, Section 3.2	Y	
$PM_{2.5}$ –SPECIFIC MONITORING REQUIREMENTS					
13.	Document how states and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor.	58.10 (c)	N/A		
14.	Identification of any $PM_{2.5}$ FEMs and/or ARMs not eligible to be compared to the NAAQS due to poor comparability to FRM(s) [Note 1: must include required data assessment.] [Note 2: Required SLAMS must monitor $PM_{2.5}$ with NAAQS-comparable monitor at the required sample frequency.]	58.10 (b)(13) 58.11 (e)	Y, Section 5.2	Y	Juneau is changing the T640X from a primary sampler to a secondary SPM sampler
15.	Minimum # of monitoring **sites** for $PM_{2.5}$ [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites]	App. D 4.7.1(a) and Table D-5	Yes, Section 3.1: Minimum monitoring requirements; Table 3-2, Table A-1.	Y	

	[Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]				
16.	Requirements for continuous $PM_{2.5}$ monitoring (number of monitors and collocation)	App. D 4.7.2	Y; Table 3-15, Table D-1	Y	
17.	FRM/FEM/ARM $PM_{2.5}$ QA collocation	App. A 3.2.3	Y, Table 3-15	Y	
18.	$PM_{2.5}$ Chemical Speciation requirements for official STN sites	App. D 4.7.4	Y, Table D-1	Y	
19.	Identification of sites suitable and sites not suitable for comparison to the annual $PM_{2.5}$ NAAQS as described in Part 58.30	58.10 (b)(7)	Y, Table 3-5, Table D-1	Y	
20.	Required $PM_{2.5}$ sites represent area-wide air quality	App. D 4.7.1(b)	Y, Table 3-5	Y	
21.	For $PM_{2.5}$, within each MSA, at least one site at neighborhood or larger scale in an area of expected maximum concentration	App. D 4.7.1(b)(1)	Y, Table 3-5	Y	
22.	If additional SLAMS $PM_{2.5}$ is required, there is a site in an area of poor air quality	App. D 4.7.1(b)(3)	N/A	N/A	
23.	States must have at least one $PM_{2.5}$ regional background and one $PM_{2.5}$ regional transport site.	App. D 4.7.3	Y; Table 3-10 under Monitoring Objectives	Y	
24.	Sampling schedule for $PM_{2.5}$ - applies to year-round and seasonal sampling schedules	58.10 (b)(4); 58.12(d); App. D 4.7	Y; Table 3-8	Y	

	(note: date of waiver approval must be included if the sampling season deviates from requirement)				
PM_{10} –SPECIFIC MONITORING REQUIREMENTS					
25.	Minimum # of monitoring sites for PM_{10} [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App. D, 4.6 (a) and Table D-4	Y: Tables 3-2; 3-7,8,9,10,11; Table D-2	More info needed	The Anchorage MSA requires 3-4 PM10 monitors, but only 2 are listed as SLAMS in Table 3-7. R10 understands that the Butte PM10 monitor will be redesignated as SLAMS after it is relocated. Please specify this in next year's ANP.
26.	Manual PM_{10} method collocation (note: continuous PM_{10} does not have this requirement)	App. A 3.3.4	Y, Table 3-15	Y	
27.	Sampling schedule for PM_{10}	58.10 (b)(4); 58.12(e); App. D 4.6	Y; tables 3-7, 3-8, 3-9	Y	All primary PM_{10} monitors are continuous
Pb –SPECIFIC MONITORING REQUIREMENTS					
28.	Minimum # of monitors for non-NCore Pb [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.5	Y; Section 3.1.1, Section 3.5.3, Waiver C-3	Y	
29.	Pb collocation: for non-NCore sites	App A 3.4.4 and 3.4.5	N/A	N/A	
30.	Any source-oriented Pb site for which a waiver has been granted by EPA Regional Administrator	58.10 (b)(10)	Y, App C, C-3	Y	Source-oriented Pb monitoring waiver for Red Dog Mine: current 5-year waiver was issued on December 7, 2021 and expires on December 7, 2026.
31.	Any Pb monitor for which a waiver has been requested or	58.10 (b)(11)	N/A		N/A.

	granted by EPA Regional Administrator for use of Pb-PM_{10} in lieu of Pb-TSP				
32.	Designation of any Pb monitors as either source-oriented or non-source-oriented	58.10 (b)(9)	N/A		N/A.
33.	Sampling schedule for Pb	58.10 (b)(4); 58.12(b); App A 3.4.4.2 (c) and 3.4.5.3 (c)	N/A		N/A
O_3 –SPECIFIC MONITORING REQUIREMENTS					
34.	Minimum # of monitoring sites for O_3 [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites] [Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.] [Note 3: monitors that do not meet traffic count/distance requirements to be neighborhood or urban scale (40 CFR Appendix E, Table E-1) cannot be counted towards meeting minimum monitoring requirements]	App D 4.1(a) and Table D-2	Y; Table 3-2, 3-6	Y	O3 monitoring waiver for Anchorage: waiver expires at the end of 2023. ADEC requested the waiver be renewed in this year's ANP. EPA is approving a 5-year waiver renewal.
35.	Identification of maximum concentration O_3 site(s)	App D 4.1 (b)	N/A		AK only monitors ozone at the NCore site.
36.	Sampling season for O_3 (Note: Waivers must be renewed	58.10 (b)(4); App D 4.1(i)	Y, Table D-4	Y	

	annually. EPA expects agencies to submit re-evaluations of the relevant data each year with the ANP. EPA will then respond as part of the ANP response.)				
37.	An Enhanced Monitoring Plan for O_3, if applicable, no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O_3 nonattainment, whichever is later.	58.10 (a)(11); App D 5 (h)	N/A	N/A	
NO_2 –SPECIFIC MONITORING REQUIREMENTS					
38.	Minimum monitoring requirements for area-wide NO_2 monitor in location of expected highest NO_2 concentrations representing neighborhood or larger scale	App D 4.3.3	N/A		This requirement does not apply to Alaska, as the state does not have any CBSAs with populations >1,000,000
39.	Minimum monitoring requirements for susceptible and vulnerable populations monitoring (aka RA40) NO_2	App D 4.3.4	N/A		
NEAR ROADWAY – SPECIFIC MONITORING REQUIREMENTS					
In CBSAs ≥ 2.5 million, the following near-roadway minimum monitoring requirements apply:					
40.	Two NO_2 monitors	App. D 4.3.2(a); 58.13(c)(3) and (4)	N/A		AK does not have any CBSAs with populations >2.5M
41.	One CO monitor	App. D 4.2.1(a); 58.13(e)(2)	N/A		

42.	One $PM_{2.5}$ monitor	App. D 4.7.1(b)(2); 58.13(f)(2)	N/A		
In CBSAs ≥ 1 million and AADT ≥ 250K, the following near-roadway minimum monitoring requirements apply:					
43.	Two NO_2 monitors	App. D 4.3.2(a); 58.13(c)(3) and (4)	N/A		
44.	One CO monitor	App. D 4.2.1(a); 58.13(e)(2)	N/A		
45.	One $PM_{2.5}$ monitor	App. D 4.7.1(b)(2); 58.13(f)(2)	N/A		
In CBSAs ≥ 1 million and ≤ 2.5 million **AND** AADT < 250K, the following near-roadway minimum monitoring requirements apply:					
46.	One NO_2 monitor	App. D 4.3.2(a); 58.13(c)(3)	N/A		
47.	One CO monitor	App. D 4.2.1(a); 58.13(e)(2)	N/A		
48.	One $PM_{2.5}$ monitor	App. D 4.7.1(b)(2); 58.13(f)(2)	N/A		
SO_2 -SPECIFIC MONITORING REQUIREMENTS					
49.	Minimum monitoring requirements for SO_2 based on PWEI and/or RA required monitors under Appendix D 4.4.3 [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting	App D 4.4	Y; Table D-5	Y	Table has been updated with census population and 2017 NEI SO_2 values

	minimum monitoring requirements.]				
NCORE –SPECIFIC MONITORING REQUIREMENTS					
50.	NCore site and all required parameters operational: year-round O_3, SO_2, CO, NO_y, NO, $PM_{2.5}$ mass, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, $PM_{10-2.5}$ mass, resultant wind speed at 10m, resultant wind direction at 10m, ambient temperature, relative humidity. NOy waiver, if applicable.	App. D 3(b)	Y; Table 3-8	Y	
51.	A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable. The plan shall provide for the required PAMS measurements to begin by June 1, 2021.	58.10 (a)(10); 58.13 (h)	N/A		AK is not required to have a PAMS site since the State does not have any CSBAs with Pop greater than or equal to 1,000,000.
SITE OR MONITOR - SPECIFIC REQUIREMENTS (OFTEN INCLUDED IN DETAILED SITE INFORMATION TABLES)					
52.	AQS site identification number for each site	58.10 (b)(1)	Y; table 3-3	Y	
53.	Location of each site: street address and geographic coordinates	58.10 (b)(2)	Y; table 3-3	Y	
54.	MSA, CBSA, CSA or other area represented by the monitor	58.10 (b)(8)	Y, Table 3-2	Y	
55.	Parameter occurrence code (POC) for each monitor	Needed to determine if	Y, Tables 3-7, 3-8, 3-9	Y	

		other requirements (e.g., min # and collocation) are met			
56.	Basic monitoring objective for each monitor	App D 1.1; 58.10 (b)(6)	Y, Table 3-10, 3-11, 3-12, 3-13	Y	
57.	Site type (designation) for each monitor (e.g. SLAMS, SPM)	App D 1.1.1	Y, Tables 3-7, 3-8, 3-9	Y	
58.	Monitor type for each monitor, and Network Affiliation(s) as appropriate	Needed to determine if other requirements (e.g., min # and collocation) are met	Y; Table 3-10, 3-11, 3-12, 3-13	Y	
59.	Scale of representativeness for each monitor as defined in Appendix D	58.10(b)(6); App D	Y; Tables 3-4 (CO), 3-5 (PM), 3-6 (NCore)	Y	
60.	Parameter code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Y; Tables 3-7, 3-8, 3-9, 3-11	Y	
61.	Method code and description (e.g., manufacturer & model) for each monitor	58.10 (b)(3); App C 2.4.1.2	Y; Tables 3-7, 3-8, 3-9	Y	

62.	Sampling start date for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Y, Tables 3-7, 3-8, 3-9	Y	
SITE OR MONITOR - SPECIFIC REQUIREMENTS FOR NEW OR MODIFIED SITES (as of 2022)					
63.	Distance of monitor from nearest road	App E 6	Y, Tables 3-4, 3-5, 3-6	Y	3.5.4 waiver request for A-St siting near road approved
64.	Traffic count of nearest road	App E	Y, Table 3-5, 3-6	Y	
65.	Groundcover	App E 3(a)	N	N	Missing from Tables E-1, E-2, E-3
66.	Probe height	App E 2	Y, Tables E-1, E-2, E3	Y	
67.	Distance from supporting structure (vertical and horizontal, if applicable, should be provided)	App E 2	Y, Tables E-1, E-2, E3	Y	
68.	Distance from obstructions on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(b)	Y, Tables E-1, E-2, E3	Y	
69.	Distance from obstructions not on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(a)	Y, Tables E-1, E-2, E3	Y	

70.	Distance from the drip line of closest tree(s)	App E 5	Y, Tables E-1, E-2, E3	Y	Butte does not meet groundcover or spacing from trees, but it is in the process of getting relocated
71.	Distance to furnace or incinerator flue	App E 3(b)	Y, Tables E-1, E-2, E3	Y	
72.	Unrestricted airflow (expressed as degrees around probe/inlet or percentage of monitoring path)	App E, 4(a) and 4(b)	Y, Tables E-1, E-2, E3	Y	
73.	Probe material ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Y, Tables E-1, E-2, E3	Y	
74.	Residence time ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Y, Tables E-1, E-2, E3	Y	

CFR Definitions:

- **Monitoring Objective** can be one of three things: 1) Provide air pollution data to the general public in a timely manner; 2) Support compliance with ambient air quality standard and emission strategy development; or 3) Support air pollution research studies
- **Monitoring Site Types** are for the purpose of supporting the monitoring objectives, and there are six general types: 1) highest concentration; 2) typical concentrations in areas of high population density (aka population exposure); 3) source oriented; 4) background; 5) transport; 6) visibility/welfare
- **Spatial Scale:** Neighborhood, medium, micro, etc
- **Monitor designation:** can refer to *both* whether a monitor is FRM/FEM, and whether it is SLAMS or SPM. Further confusion: NCore, PAMS, and CSN are types of SLAMS