DEPARTMENT OF
ECOLOGY
State of Washington

2014 Ambient Air Monitoring Network Report

Washington State Department of Ecology
300 Desmond Drive/PO Box 47600
Olympia, Washington 98504-7600

May 2014
Publication no. 14-02-009

Publication and Contact Information

For more information contact:

Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600

Phone: 360-407-6800

Washington State Department of Ecology - www.ecy.wa.gov

o	Headquarters, Olympia	360-407-6000
o	Northwest Regional Office, Bellevue	425-649-7000
o	Southwest Regional Office, Olympia	360-407-6300
o	Central Regional Office, Yakima	509-575-2490
o	Eastern Regional Office, Spokane	509-329-3400

For special accommodations or documents in alternate format, call (360) 407-6800, 711 (relay service), or 877-833-6341 (TTY).

2014 Ambient Air Monitoring Network Report

Prepared By
Michael Ragan
Statewide Ambient Air Monitoring Coordinator
Edited by Sarah Elledge

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

This page is purposely left blank

Table of Contents

List of Tables

Acronyms

AQS	EPA's Air Quality System database
BAM	Beta Attenuation Monitor
BCAA	Benton County Clean Air Agency
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CSA	Combined Statistical Area
CSN	Chemical Speciation Network
CO	Carbon Monoxide
DOE	Department of Ecology
DV	Design Value
FDMS	Filter Dynamic Measurement System
FEM	Federal Equivalent Method
FID	Flame Ionization Detector
FRM	Federal Reference Method
IMPROVE	Interagency Monitoring of Protected Visual Environments
MSA	Metropolitan Statistical Area
NAQQS	National Ambient Air Quality Standard
NATTS	National Air Toxics Trends Station
NCore	National Core multi-pollutant station
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NO_y	Total Reactive Nitrogen Dioxides
NWCAA	Northwest Clean Air Agency
O_3	Ozone
ORCAA	Olympic Region Clean Air Agency
Pb	Lead
$PM_{2.5}$	Particulate Matter equal to or less than 2.5 microns in diameter
PM_{10}	Particulate Matter equal to or less than 10 microns in diameter
$PM_{10-2.5}$	Particulate Matter equal to or less than 10 microns in diameter and equal to or greater than 2.5 microns
PPB	Parts per billion
PPM	Parts per million
PQAO	Primary Quality Assurance Organization
PSCAA	Puget Sound Clean Air Agency
PSD	Prevention of Significant Deterioration
QA	Quality Assurance
QA	Quality Control
SLAMS	State or Local Air Monitoring Station
SO_2	Sulfur Dioxide
SPMS	Special Purpose Monitoring Site
SRCAA	Spokane Region Clean Air Agency
SWCAA	Southwest Clean Air Agency

Acronyms Continued

STN	Speciation Trends Network
TEOM	Tapered Element Oscillating Microbalance
TSP	Total Suspended Particulate
$\mu g/m^3$	Micrograms per cubic meter
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
YRCAA	Yakima Region Clean Air Agency

Executive Summary

Purpose of the report

The Department of Ecology (Ecology) reviews its ambient air quality monitoring network each year to ensure that it collects adequate, representative, and useful air quality data on which to base policy decisions. This report summarizes the results of the 2013 review. These results include:

- Identifying modifications to Ecology's ambient air monitoring network since the 2013 annual network report
- Identifying proposed modifications to the network for the upcoming year
- Documenting Ecology's ambient air quality monitoring needs, goals, and priorities

Carbon Monoxide, (CO, 42101)

Recommendations/Modifications: Trace level CO monitoring was established at the new Seattle 10th & Weller near road site. Ecology and its monitoring partners have divested of traditional CO monitoring at all sites except Spokane 3rd & Washington.

Additional Monitors: None.

Ozone (O_3, 44201)

Recommendations/Modifications: None

Additional Monitors: None.

Nitrogen Dioxide (NO, 42600, 42601, 42612)

Recommendations/Modifications: Ecology monitors for the reactive nitrogen species (NOy) at NCore Seattle Beacon Hill which includes NO_2. Olympic Region Clean Air Agency (ORCAA) monitors for the reactive nitrogen species (NOy) at Rural NCore Cheeka Peak. It is assumed most, if not all the NOy measured at Beacon Hill and Cheeka Peak is composed of NO_2.

Additional Monitors: A second near-road NO_2 monitor is planned for 2015 in the Tacoma area, if leasing and permitting are allowed.

Sulfur Dioxide (SO_2, 42401)

Recommendations/Proposed Modifications: None

Additional Monitors: None

Particulate Matter 10 (PM_{10}, 81102)

Recommendations/Proposed Modifications: None

Additional Monitors: None. Continue all identified sites

Thurston County Maintenance Area (Lacey PM2.5)

The Lacey College Street $PM_{2.5}$ nephelometer site (530670013) is being used to assure continued compliance with the PM_{10} NAAQS as well as to confirm the Thurston County Maintenance Area (TCMA) continues to meet the qualification criteria of EPA's Limited Maintenance Plan (LMP) approach.

A 5-year NPM_{10} design value below 98µg/m^3 demonstrates the TCMA continues to qualify for the LMP approach. The Lacey-College Street nephelometer site (53670013) 5-year PM_{10} design value estimate for 2009-2013 was 45 µg/m^3. The PM_{10} design value estimate for 2011-2013 was 45 µg/m^3. This current design value estimates demonstrate the TCMA complies with the PM_{10} standard and continues to meet EPA's LMP qualification criteria.

Kent, Seattle, & Tacoma PM10 Maintenance Areas

Three year and five year design values for the Kent, Seattle, and Tacoma PM10 Maintenance Areas. Three and five year design values were calculated using the table look up method and the statistical fit method outlined in the LMP guidance document and the Kent, Seattle, and Tacoma PM10 Limited Maintenance Plan.

A 3-year PM_{10} design value of 150 µg/m^3 or below demonstrates continued compliance with the PM_{10} NAAQS. A 5-year design value below 98 µg/m^3 is required to qualify for the LMP approach. Design values calculated using the table look up method fall within the range of uncertainty of the statistical fit method. Because they are the most conservative values, only the statistical fit values are presented here.

The $PM_{2.5}$ FEM TEOM at James St and Central Ave (530332004) is used to assure continued compliance with the PM10 NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 47±4 µg/m^3 and the three year design value is 47±3 µg/m^3.

The $PM_{2.5}$ FEM TEOM at Seattle-Duwamish (530330057) is used to assure continued compliance with the PM10 NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 58±6 µg/m^3 and the three year design value is 59±8 µg/m^3.

The $PM_{2.5}$ Nephelometer at Tacoma – Alexander Ave (530530031) is used to assure continued compliance with the PM10 NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 64±12 µg/m^3 and the three year design value is 65±13 µg/m^3.

Particulate Matter 2.5 ($PM_{2.5}$, 88101, 88502)

Additional Monitors: None

Recommendations/Modifications: Vancouver site relocation (see Appendix C.), Seattle Duwamish site relocation due to lost lease, Seattle Olive Street will be relocated as a $PM_{2.5}$ FEM at the Seattle 10th & Weller near-road site and ORCAA is proposing relocation of the Port Angeles site based on access and a recent study (detail in $PM_{2.5}$).

Notes: Nephelometers are not EPA equivalent method compliance instruments and design values are estimates.

Ecology uses the Washington Air Quality Advisory (WAQA) for reporting $PM_{2.5}$ to inform and protect citizens of Washington. WAQA reporting is more protective of human health. Ecology's goal is to keep 24-hour concentrations below $20 \mu g/m$.

Certain monitors in areas of Washington are not intended to be solely NAAQS based. Such monitors are used for protection of human health by issuing burn bans when needed during home heating season, making daily decisions for agricultural burning and health information- reporting PM2.5-like values.

Meteorological Monitoring (Met. 61101, 61102, 62101)

Additional Monitors: None.

Recommendations/Modifications: Meteorological monitoring was established at the new Seattle 10th & Weller near road site.

Lead (Pb 14129)

Additional Monitors: None.

Recommendations/Modifications: None

Trace Gas Monitoring

Additional Monitors: None

Recommendations/Modifications: None.

NCore

Additional Monitors: None

Recommendations/Modifications: None.

Other – Contracted Sites Tribal/EPA

Additional Monitors: None

Recommendations/Modifications: *Monitoring was suspended at Taholah the fall of 2011. EPA continues to work with the Quinault Nation to determine the future of monitoring there. Ecology continues to work with the Quinault Tribe to site and install a monitor at Taholah. EPA has decided to discontinue the $PM_{2.5}$ and PM_{10} at Harrah monitoring during 2014.

Other – Contracted Sites USFS

Additional Monitors: None

Recommendations/Modifications: None

Other – Contracted Local Air Agencies

Additional Monitors: None

Recommendations/Modifications: None

Note: Ecology provides technical support for Anacortes, Cheeka Peak and Spokane Augusta ozone. Technical support can include repair and calibration, quality assurance, telemetry and data management.

Background information

The United States Environmental Protection Agency (EPA) ambient air quality surveillance regulations (Code of Federal Regulations, Title 40, Part 58 (40 CFR Part 58)) require states to establish air quality surveillance systems in their State Implementation Plans (SIPs). An air quality surveillance system consists of a network of State and Local Air Monitoring Stations (SLAMS). These stations measure ambient concentrations of those air pollutants for which 40 CFR Part 50 sets standards.

Monitoring network requirements

SLAMS must meet requirements of 40 CFR Part 58 contained in:

- Appendix A (Quality Assurance Requirements)
- Appendix C (Ambient Air Quality Monitoring Methodology)
- Appendix D (Network Design Criteria)
- Appendix E (Probe and Path Siting Criteria)

States determine if they conform to Appendices A and C in part through periodic systems and performance audits (per Section 2.4 of Appendix A). States conform to Appendices D and E by conducting an annual network review of their air quality surveillance systems (per 40 CFR 58.20(d)). The annual network review:

- Determines if an ambient air quality monitoring network is achieving its required air monitoring objectives
- Identifies changes to the network needed to enable an organization to meet its objectives

Using monitoring data

Ecology uses its air monitoring data to:

- Determine compliance with the National Ambient Air Quality Standards (NAAQS)
- Determine maximum pollutant concentrations
- Forecast air quality
- Evaluate the effectiveness of air pollution control programs
- Evaluate the effects of air pollution on public health
- Track the progress of SIPS
- Support dispersion models
- Determine air quality trends
- Develop responsible and cost-effective pollution control strategies
- Analyze pollution episodes
- Assist with permitting work

Introduction

The Code of Federal Regulations, Title 40, Part 58 (40 CFR Part 58) contains the federal Environmental Protection Agency's (EPA's) ambient air quality surveillance regulations. Section 58.20 requires states to establish air quality surveillance systems in their State Implementation Plans (SIPs). The air quality surveillance system consists of a network of designated State and Local Air Monitoring stations (SLAMS). These stations measure ambient concentrations of those air pollutants for which standards exist in 40 CFR Part 50 and Part 58, Appendices A (Quality Assurance Requirements), C (Ambient Air Quality Monitoring Methodology), D (Network Design Criteria) and E (Probe and Path Siting Criteria). States determine compliance with Appendices A and C in part through periodic systems and performance audits (per Section 2.4 of Appendix A). States comply with Appendices D and E by conducting an annual network review of their air quality surveillance systems (per 40 CFR 58.20(d)).

The annual network review determines if the network achieved its required air monitoring objectives and if it should be modified (e.g., termination, relocation or establishment of monitoring stations) to meet those objectives. The main purpose of this review is to ensure that an ambient air quality monitoring network collects adequate, representative, and useful air quality data on which to base policy decisions. The ambient air quality data from Ecology's network is used for a variety of purposes, including:

- Determining compliance with the National Ambient Air Quality Standards (NAAQS)
- Determining the location of maximum pollutant concentrations
- Determining the effectiveness of air pollution control programs
- Evaluating the effects of air pollution on public health
- Tracking the progress of SIPS
- Supporting dispersion models
- Developing responsible, cost-effective, control strategies
- Developing air quality trends
- Analyze pollution episodes
- Assist with permitting work

Regulatory Requirements & Other Data Needs

Appendix D Requirements

Appendix D of 40 CFR 58 describes concepts for designing the SLAMS network. It addresses monitoring objectives and the criteria for selecting the location and number of air monitoring stations. The concepts and guidance in Appendix D, as well as other non-regulatory EPA data needs, should be considered when evaluating the adequacy of the SLAMS network.

Monitoring Objectives and Spatial Scales

Appendix D calls for the design of SLAMS networks to meet a minimum of six basic objectives:

(1) Determine the highest pollutant concentrations expected in the area covered by the network
(2) Determine representative pollutant concentrations in areas of high population density
(3) Determine the impact of significant sources or source categories on pollutant concentrations in the ambient air
(4) Determine general background pollutant concentrations
(5) Determine the regional extent of pollutant transport between populated areas
(6) Determine the impacts (e.g., visibility impairment, vegetation effects) in more rural and remote areas on the secondary (i.e., welfare) standards

SLAMS networks are designed to provide data for meeting the monitoring objectives described above and to assist EPA and states in solving environmental problems.

Appendix D also provides guidance on spatial scales of representativeness for stations in a SLAMS network (Table 1). Ideally, the monitor is located so that its sample represents the air quality over the entire area that the monitoring station is intended to represent (Table 2).

Table 1: Relationship between Monitoring Objectives and Scale of Representativeness

Monitoring Objectives	Appropriate Siting Scales
Highest concentration	Micro, middle, neighborhood, urban
Population	Neighborhood, urban
Source impact	Micro, middle, neighborhood
General/Background	Neighborhood, urban, regional
Regional transport	Urban/regional
Welfare-related impacts	Urban/regional

Table 2: Summary of Spatial Scales for SLAMS

	Scales Applicable for SLAMS						
	SO_2	CO	O_3	NO_2	Pb	PM_{10}	$PM_{2.5}$
Micro.....	✓	✓			✓	✓	✓
Middle.....	✓	✓	✓	✓	✓	✓	✓
Neighborhood	✓	✓	✓	✓	✓	✓	✓
Urban.....	✓		✓	✓	✓	✓	✓
Regional.....	✓		✓		✓	✓	✓

Number of State and Local Air Monitoring Stations

Appendix D to 40 CFR Part 58 does not contain criteria for determining the total number of stations in the SLAMS network, except for requiring a minimum number of SLAMS lead, SO_2, and $PM_{2.5}$ sites. For lead, EPA requires state and local agencies to focus their network design efforts on establishing monitoring stations around lead stationary sources which generate or have the potential to generate exceedances of the quarterly lead NAAQS. Sources around which lead monitoring networks should be established are those emitting half ton or more per year. Other factors affect the number of stations in the network. SLAMS SO_2 monitoring requirements for counties not within the boundaries of any Consolidated Metropolitan Statistical Area/Metropolitan Statistical Area (CMSA/MSA) are based on the emissions of SO_2 in the airshed. A minimum number of SO_2 SLAMS sites are required for targeted sources of SO_2 emissions. Other than these requirements, the optimum size of a particular SLAMS network involves tradeoffs between data needs and available resources, which can best be resolved during the network design process.

Appendix E Requirements

Appendix E contains siting criteria to be applied to ambient air quality analyzers or samplers after the general site location has been selected based on the monitoring objectives and spatial scales of representativeness presented in Appendix D and summarized in Section 2.1 of this document. The siting criteria presented in Appendix E are summarized in Table 3.

Other Ambient Air Monitoring Data Needs

Washington uses special purpose monitors (SPMs) typically nephelometers, throughout Washington State. SPMs are used for a variety of purposes, including Washington's Air Quality Advisory program, ambient air quality assessment and special studies such as secondary aerosol and ozone precursor assessments. SPM nephelometer monitoring sites utilize Federal Reference Method (FRM) sampling equipment for correlations and are operated in accordance with CFR requirements for quality assurance and quality control. SPM designation for criteria pollutant monitoring sites allows Ecology to assess ambient particulate levels within regions of the State, while providing the flexibility to relocate the sites if it is determined there is no concern for NAAQS violations in the area, typically after three years of data collection. SPM sites may be added to Ecology's SLAMS network when a NAAQS exceedance has been recorded, or if elevated pollutant concentrations are consistently measured.

Table 3: Summary of Probe and Monitoring Path Siting Criteria

Pollutant	Scale [maximum Monitoring path length, meters]	Height from ground to probe or 80% of monitoring path (meters)	Horizontal and vertical distance from supporting structures to probe or 90% of monitoring path (meters)	Distance from trees to probe or 90% of monitoring path (meters)
SO_2	Middle [300m] Neighborhood Urban, and Regional [1km]	3-15	>1	>10
CO	Micro, Middle [300m] Neighborhood [1km]	3±0.5; 3-15	>1	>10
O_3	Middle [300m] Neighborhood Urban, and Regional [1km]	3-15	>1	>10
Ozone precursors	Neighborhood and urban [1km]	3-15	>1	>10
NO_2	Middle [300m] Neighborhood and Urban [1km]	3-15	>1	>10
PM_{10}	Micro; Middle, Neighborhood Urban and Regional	2-7 (Micro); 2-15 (All other scales)	>2 (All scales, horizontal distance only)	>10 (All scales)

Network Review Procedure

Network Review Team and Preparation

Network report participants include the Washington State Department of Ecology Air Quality staff. Sufficient information is provided to determine compliance of the network with regulatory network design and siting requirements specified in 40 CFR Part 58, Appendices D and E as to determine compliance of the network design and siting requirements specified for all special ambient air monitoring networks.

Network Modifications

Modifications to the SLAMS network are addressed in 40 CFR 58.25, 58.36, and 58.46, respectively. Under Section 58.25, States are required to annually develop and implement schedules to modify the SLAMS network to eliminate any unnecessary stations or to correct any inadequacies indicated by the annual network review required by 58.20(d). As part of the annual network review, evaluations of the special networks established as partnership agreements between EPA and Ecology should also be conducted. Modifications to these networks should be recommended as a result of this annual report.

An important objective of the network modification process is determining whether or not sufficient ambient air quality information and data are being provided by the regulatory and other special monitoring networks to satisfy the principal data needs. If sufficient air quality data are not being collected, the deficient area must be identified and corrective action taken to resolve the problem. Conversely, if it is determined that excessive data are being collected (e.g., there are redundant sites resulting in data that agree closely), then efforts need to be taken to determine where disinvestment should be made and on what schedule.

Network modifications may be initiated by EPA or proposed by Ecology and agreed to by EPA. Network modifications may result from revisions to the Part 58 regulations, systems audits, site visits, or performance evaluations; special studies/saturation sampling, population increases/decreases; air quality concentrations consistently recorded below the NAAQS. Loss of permission to use a site; demolition of a building which is used for monitoring; building construction; growth of trees; changes in roadways; change in neighborhood type of use, etc.

Determining Compliance with Appendix D and Special Monitoring Requirements

Ecology uses this review to determine whether it is meeting the number of monitors required by the Part 58 Appendix D design criteria requirements, and whether the monitors properly located based on the monitoring objectives and spatial scales of representativeness presented in Appendix D.

Number and Location of Monitors

For SLAMS, the number of monitors required and their locations are not specified in the regulations but rather are determined by EPA Region 10 and Ecology on a case-by-case basis. EPA and Ecology ensure that SLAMS meet the monitoring objectives specified in Appendix D. Adequacy of the network is being determined by using a variety of tools. Appropriate location of monitors can be determined on the basis of stated objectives.

Monitor locations are based on the objectives specified in Appendix D, Section 3. Most often, these locations are those that have high concentrations and large population exposure. Population information may be obtained from the latest census data and ambient monitoring data from AQS. If zip codes for various monitoring locations are obtained, use of electronic media census information and GIS-based information can be more easily combined with ambient monitoring data.

For special monitoring needs, program documents applicable to the network must be reviewed to determine the goals and specific siting criteria for the network. Compliance with monitoring objective determinations of the special network should be conducted using procedures similar to those used for Appendix D evaluations (are the number of monitors appropriate and are the monitors properly located).

Determining Compliance with Appendix E Requirements

Applicable siting criteria for SLAMS are specified in 40 CFR 58, Appendix E. The on-site visit itself consists of the physical measurements and observations needed to determine compliance with the Appendix E requirements, such as height above the ground level, distance from trees, paved or vegetative ground cover, etc.

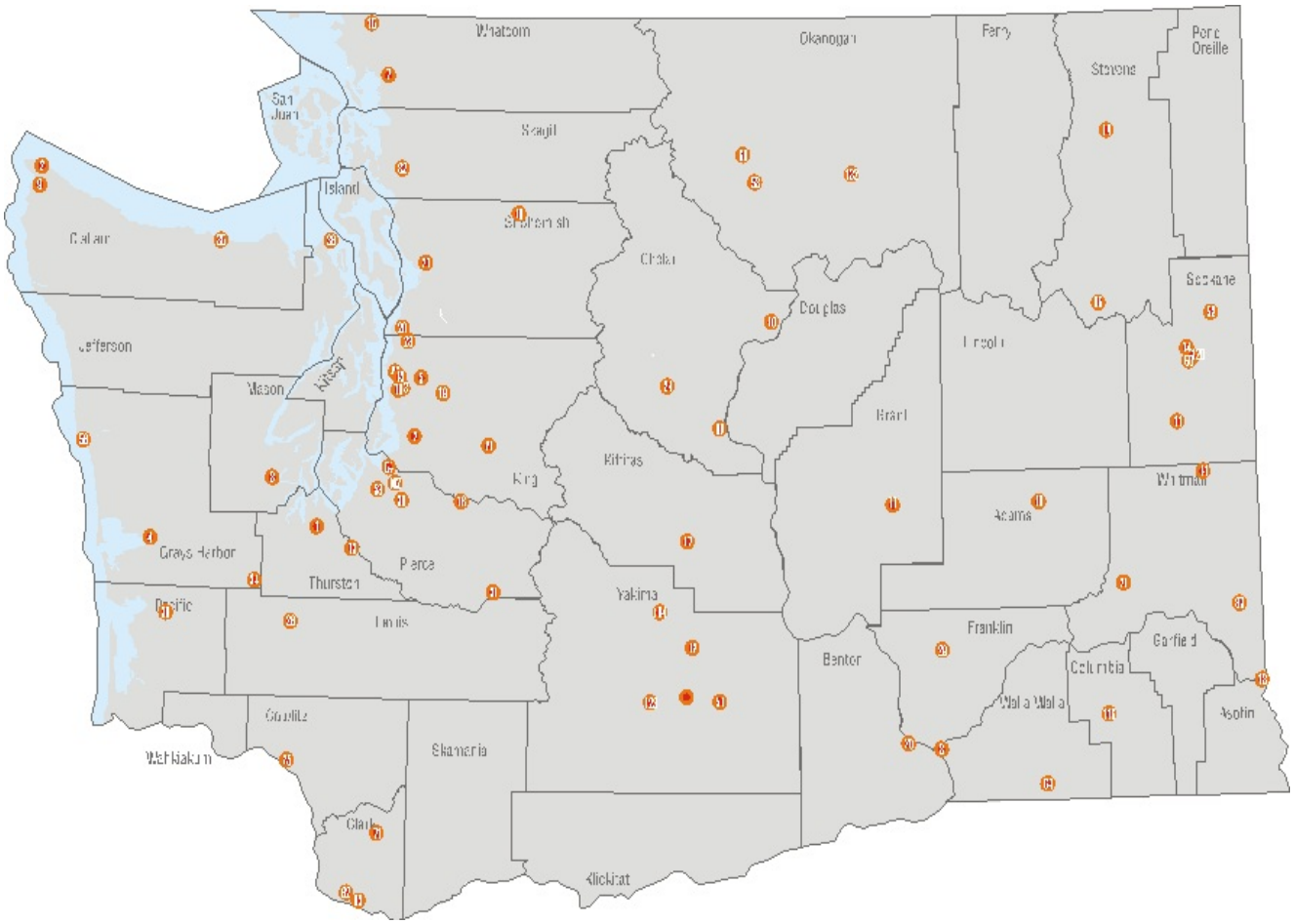


Figure 1: MAP of Washington State Monitoring (all sites)

Table 4: Carbon Monoxide, Parameter code 42101

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2014
530630049	Spokane, 3rd & Washington	1/9	SLAMS	Micro	Continuous	Continue*
530330080	Seattle Beacon Hill	3/0	NCore	Urban	Continuous	Continue
530330030	Seattle 10th & Weller	4/1	Near-road	Urban	Continuous	Continue
530090013	Cheeka Peak	5/0	Rural NCore	Regional	Continuous	Continue

Additional Monitors: A carbon monoxide monitor has been collocated with NO monitoring at Seattle 10th &Weller, a near-roadway site.

***Recommendations/Modifications:** None. Ecology and its partners have divested of traditional CO monitoring at all but one site, Spokane 3rd and Washington.

Map of Washington Carbon Monoxide sites

Spokane, 3rd & Washington

Site Name	Spokane, 3rd & Washington – SLAMS
AQS ID	530630049
GPS coordinates	LAT/LONG: 047 39' 13" / 117 25' 07"
Location	In a shelter near 3rd and Washington, Downtown Spokane
Address	3rd & Washington
County	Spokane
Distance to road from gaseous probe (meters)	1
Traffic count (AADT, year)	94,000 I-90 (2012 WSDOT)
Groundcover	Asphalt
Statistical Area	Spokane
Monitor Information Pollutant, POC	
Parameter code	42101
Basic monitoring objectives(s)	NAAQS comparison
Site type(s)	Highest Concentration
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 48 C
Method code	054
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	1/97
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	63.50
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the annual CO NAAQS?	Yes

Purpose: 3rd & Washington is a micro scale SLAMS site established in 1997. It is located in the downtown core of Spokane in a highly-traveled commercial area. The site is currently used for CO maintenance plan compliance. Spokane is a former CO nonattainment area.

Exceedences: This site has not exceeded the daily or annual standard for CO in **over 10 years**.

Seattle, Beacon Hill

Site Name	Seattle Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a trailer at a City of Seattle park/reservoir
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	12,700 (2012 WSDOT)
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	42101 (POC 2)
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Background
Monitor type(s)	NCore
Instrument manufacturer and model	Teledyne-API 300EU
Method code	593
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	6/79 established, 3/07 Trace level CO
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	4.65
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	15
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the annual CO NAAQS?	Yes

Purpose: Beacon Hill is an urban scale NCORE site located south of downtown Seattle, within a City of Seattle park/reservoir. In addition to ozone, Beacon Hill site is used for monitoring trace level CO, SO_2, NO_y, $PM_{2.5}$, air toxics and speciation. Seattle Beacon Hill is also a long-term trend and research site.

Seattle, 10th & Weller

Site Name	Seattle, 10th & Weller
AQS ID	530330030
GPS coordinates	LAT/LONG: 047 59' 72" / 122 31' 97"
Location	In a shelter adjacent to Interstate 5 in Downtown Seattle
Address	10th & Weller
County	King
Distance to road from gaseous probe (meters)	6
Traffic count (AADT, year)	146,000 I-5 (2012 WSDOT)
Groundcover	Concrete, Grass
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	42101 (POC 2)
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API Ultra 300E (Temporary loan)
Method code	593
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	4/14
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	3
Distance from supporting structure (meters)	3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	1.6
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the annual CO NAAQS?	Yes

Purpose: Seattle 10th & Weller is Washington's primary near-road monitoring site. Carbon Monoxide monitoring is EPA required at one near-road site.

Cheeka Peak - (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	In a shelter at Cheeka Peak
Address	Cheeka Peak
County	Clallam
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in a CBMSA

Monitor Information Pollutant, POC	
Parameter code	42101 (POC 2)
Basic monitoring objectives(s)	Research
Site type(s)	Background/Regional Transport
Monitor type(s)	Rural NCore
Instrument manufacturer and model	Teledyne-API 300EU
Method code	593
FRM/FEM/ARM/other	FEM
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	1.9
Changes within the next 18 months?	Instrument upgrade: Teledyne API T300M/T300L
Is it suitable for comparison against the annual CO NAAQS?	Yes

Purpose: Cheeka Peak is a rural NCore site located at the Northwestern tip of Washington State. It is recognized as a national transport site.

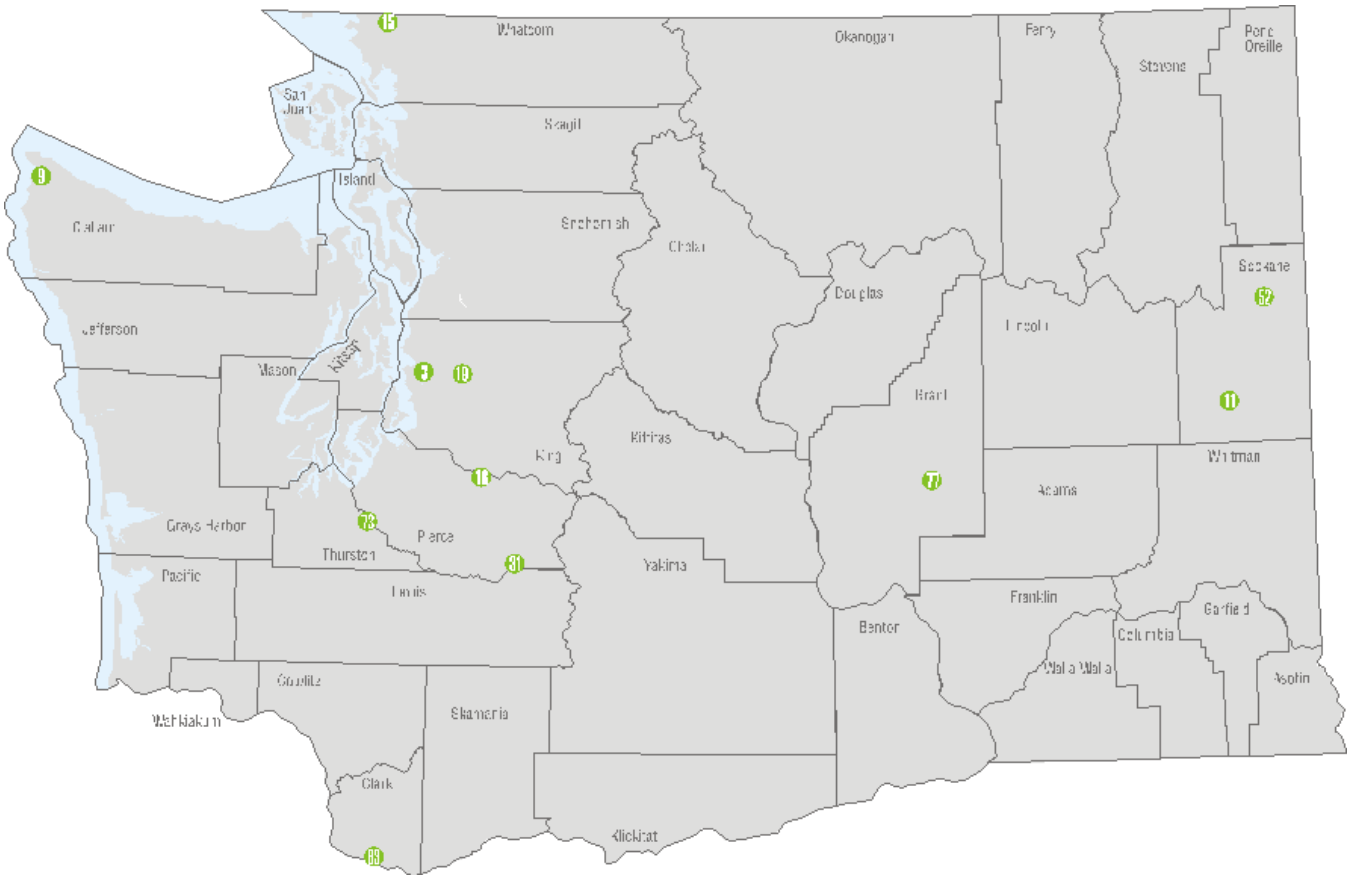
Table 5: Ozone, Parameter code 44201

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action For 2014
530009013	Cheeka Peak	5/06	Rural NCore	Regional	Continuous	Continue
530630001	Cheney, Turnbull	5/99	SLAMS	Urban	Continuous	Continue
530730005	Custer/Loomis	4/89	SLAMS	Urban	Continuous	Continue
530330023	Enumclaw, Mud Mtn.	7/98	SLAMS	Urban	Continuous	Continue
530330010	Issaquah, Lake Sam	12/755	SLAMS	Urban	Continuous	Continue
530530012	Mt. Rainier, Jackson Visitor Center	7/98	SLAMS	NPS supported	Continuous	Continue
530330017	North Bend, NB Way	6/98	SLAMS	Urban	Continuous	Continue
530330080	Seattle, Beacon Hill	4/97	NCore	Urban	Continuous	Continue
530630046	Spokane, Greenbluff	4/90	SLAMS	Urban	Continuous	Continue
530110011	Vancouver, Blairmont	5/88	SLAMS	Urban	Continuous	Continue
530670005	Yelm, Northern Pacific	5/06	SLAMS	Urban	Continuous	Continue

Additional Monitors: None.

Recommendations/Proposed Modifications: None

Note: Ecology provides technical support for ozone monitoring performed by local air agencies in Anacortes (NWCAA) and Spokane (SRCAA). See Other Agencies.



Map of Washington Ozone sites

Cheeka Peak - (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	Cheeka Peak
Address	Cheeka Peak
County	Clallam
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in a CBMSA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	Research
Site type(s)	Background/Regional Transport
Monitor type(s)	Rural NCore
Instrument manufacturer and model	Teledyne-API T400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	1.9
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.052

Purpose: Cheeka Peak is a rural NCore site located at the Northwestern tip of Washington State. It is recognized as a national transport site.

Exceedances: This site has not exceeded the 8-hour ozone standard in the past 3 years.

Cheney, Turnbull

Site Name	Cheney Turnbull
AQS ID	530630001
GPS coordinates	LAT/LONG: 047 24' 55" / 117 31' 49"
Location	In the Cheney National Wildlife Refuge
Address	S. 26010 Smith Road, Cheney
County	Spokane
Distance to road from gaseous probe (meters)	200
Traffic count (AADT, year)	5,200 (195 2012 WSDOT)
Groundcover	Grass
Statistical Area	Spokane, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	5/99
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	70
Distance from trees (meters)	100+
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	3.8
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.060

Purpose: Cheney Turnbull is a background/transport scale site located at the Turnbull Wildlife Refuge, south of Spokane. It is a high-concentration and background/transport site for the Spokane area. Cheney Turnbull is a CFR required site by population.

Exceedences: This site has not exceeded the 8-hour ozone standard in the past 3 years.

Custer/Loomis – (NWCAA)

Site Name	Custer/Loomis
AQS ID	530730005
GPS coordinates	LAT/LONG: 048 95’ 25 / -122 55’45
Location	In a shelter
Address	1330 Loomis Trail Road, Custer
County	Whatcom
Distance to road from gaseous probe (meters)	67
Traffic count (AADT, year)	21,000 (I-5 2012 WSDOT
Groundcover	Grass
Statistical Area	Bellingham, WA
Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Northwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	4/89
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	130
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	9
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.046

Purpose: Custer/Loomis site provides data from Canadian impacts as modeling information for the Puget Sound Ozone network.

Exceedences: This site has not exceeded the eight hour standard for Ozone in the past 3 years.

Enumclaw, Mud Mountain Dam

Site Name	Enumclaw, Mud Mountain Dam
AQS ID	530330023
GPS coordinates	LAT/LONG: 047 08' 28" / 121 56' 09"
Location	On Mud Mountain Dam property (Army Corp of Engineers)
Address	30525 SE Mud Mountain Road, Enumclaw
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	14,000 (410 2012 WSDOT)
Groundcover	Gravel & weeds
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	7/98
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	4.3
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	5.7
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.063

Purpose: Mud Mountain Dam is an urban scale State and Local Monitoring Site (SLAMS) established in 1998 located 30 miles East of Seattle, near Enumclaw at the end of the ozone transport zone.

Exceedences: This site has exceeded the 8-hour standard in the past 3 years (2012).

Issaquah, Lake Sammamish

Site Name	Issaquah, Lake Sammamish
AQS ID	530330010
GPS coordinates	LAT/LONG: 047 33' 07" / 122 02' 40"
Location	In a shelter within Lake Sammamish State Park
Address	20050 SE 56th (Lake Sammamish State Park), Issaquah
County	King
Distance to road from gaseous probe (meters)	440
Traffic count (AADT, year)	121,000 (I-90 2012 WSDOT)
Groundcover	Gravel, grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	12/75
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	3.5
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	2.8
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.054

Purpose: Lake Sammamish is an urban scale site established in 1975 located east of Seattle, within Lake Sammamish State Park. Lake Sammamish is a long-term ozone trends site.

Exceedences: This site has not exceeded the 8-hour standard in the past 3 years.

Mt. Rainier, Jackson Visitor Center

Site Name	Mt. Rainier, Jackson Visitor Center
AQS ID	530530012
GPS coordinates	LAT/LONG: 046 47' 07" / 121 43' 58"
Location	Mount Rainier National Park
Address	In a room at Jackson Visitors Center
County	King
Distance to road from gaseous probe (meters)	12
Traffic count (AADT, year)	506 (706, 2012 WSDOT)
Groundcover	Asphalt, rock, snow
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	General Background
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	7/98
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	6
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	1 Supporting structure
Distance from trees (meters)	35
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	180
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.059

Purpose: The Jackson Visitor Center site is a regional scale ozone site established in 1998.

Exceedences: This site has not exceeded the 8-hour ozone standard in the past 3 years.

North Bend, North Bend Way

Site Name	North Bend
AQS ID	530330017
GPS coordinates	LAT/LONG: 047 29' 23" / 121 46' 24"
Location	USDA Forest Service Offices
Address	42404 SE North Bend Way, North Bend
County	King
Distance to road from gaseous probe (meters)	180
Traffic count (AADT, year)	9,600 (202, 2012 WSDOT)
Groundcover	Grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Regional Transport/Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne -API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	6/98
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May-September)
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	2.8
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.056

Purpose: North Bend Way is an urban scale site established in 1998 located outside of North Bend, 25 miles East of Seattle. North Bend typically indicates some of the highest readings in the ozone network.

Exceedences: This site has exceeded the 8-hour ozone standard in the past 3 years (2012).

Seattle, Beacon Hill

Site Name	Seattle Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a trailer at a City of Seattle park/reservoir
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	12,700 (2012 SDOT)
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	General Background/Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	4/97
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	4.65
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Spacing from minor sources	No minor sources
Residence time for reactive gases (seconds)	15
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.045

Purpose: Beacon Hill is an urban scale NCORE site located south of downtown Seattle, within a City of Seattle park/reservoir. In addition to ozone, the site is used for monitoring trace level CO, SO_2, NO_y, $PM_{2.5}$, air toxics and speciation. Seattle Beacon Hill is also a long-term trend and research site.

Exceedences: This site has not exceeded the 8-hour standard in the past 3 years.

Spokane, Greenbluff

Site Name	Spokane, Greenbluff
AQS ID	530630046
GPS coordinates	LAT/LONG: 047 49' 37" / 117 16' 31"
Location	At a fire station in Chatteroy, WA
Address	E. 9814 Greenbluff Road, Spokane
County	Spokane
Distance to road from gaseous probe (meters)	50
Traffic count (AADT, year)	20,000 (2, 2012 WSDOT)
Groundcover	Grass, gravel
Statistical Area	Spokane, WA
Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	4/90
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal, (May – September)
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	5. 7
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.061

Purpose: Greenbluff is an urban scale site located near Spokane. Greenbluff is used with Cheney to identify ozone patterns for the Spokane area. Spokane Greenbluff is a CFR population required site.

Exceedences: This site has not exceeded the 8-hour ozone standard in the past 3 years.

Vancouver, Blairmont

Site Name	Vancouver, Blairmont
AQS ID	530110011
GPS coordinates	LAT/LONG: 045 36' 37" / 122 30' 59"
Location	In a shelter, at Blairmont High School in Vancouver
Address	1500 SE Blairmont Drive, Vancouver
County	Clark
Distance to road from gaseous probe (meters)	200
Traffic count (AADT, year)	72,000 (014, 2012 WSDOT)
Groundcover	Grass, asphalt
Statistical Area	Portland, OR – Vancouver, WA
Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	5/88
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal, (May – September)
Probe height (meters)	10
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	5 to small (5m fruit trees), 12 to tall (12 m conifers)
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	15
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.055

Purpose: Blairmont is an urban scale site near downtown Vancouver. The site represents the Portland/Vancouver air shed and part of the ozone maintenance planning effort of the Southwest Clean Air Agency (SWCAA).

Exceedences: This site has not exceeded the 8-hour ozone standard in the past 3 years.

Yelm, Northern Pacific

Site Name	Yelm – North Pacific
AQS ID	530670005
GPS coordinates	931 Northern Pacific Road, Yelm
Location	In a Trailer
Address	LAT/LONG: 046 57' 03" / 122 35' 43"
County	Thurston
Distance to road from gaseous probe (meters)	230
Traffic count (AADT, year)	17,000 (507 2012 WSDOT)
Groundcover	Gravel, grass
Statistical Area	Olympia, WA
Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal, (May – September)
Probe height (meters)	3
Distance from supporting structure (meters)	0.7
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	50
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4.4
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes
Design value	0.055

Purpose: Yelm is an urban scale site originally established in 1997 and relocated in 2006. The Yelm site is located in acommercial/residential area. Yelm represents ozone transport in the South Puget Sound area.

Exceedences: This site has exceeded the 8-hour ozone standard in the past 3 years (2012).

Table 6: Nitrogen Dioxide Parameter codes 42600 NOy, 42601 NO, 42612NOy - NO

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2014
530330080	Seattle Beacon Hill	3/07	NCore	Urban	Continuous	Continue
530090013	Cheeka Peak	5/06	Rural NCore	Regional	Continuous	Continue
530330030	Seattle 10th & Weller	4/14	SLAMS	Micro	Continuous	Continue
TBD	Tacoma	1/14-5	SLAMS	Micro	Continuous	Planning/ installation

Additional Monitors: A second near-road NO_2 monitor is planned for installation in 2015 as leasing and permitting are allowed.

Recommendations/Proposed Modifications: None

Purpose: Beacon Hill is an urban scale NCORE site located south of downtown Seattle, within a City of Seattle park/reservoir. In addition to ozone, the site is used for monitoring trace level CO, SO_2, NO_y, $PM_{2.5}$, air toxics and speciation. Seattle Beacon Hill is also a long-term trend and research site.

Map of Washington Nitrogen Dioxide sites

Seattle, Beacon Hill

Site Name	Seattle Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a trailer at a City of Seattle park/reservoir
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	12,700 (2012 WSDOT)
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	42600, 42601, 42612, 42601, 42602, 42603
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Background
Monitor type(s)	NCore
Instrument manufacturer and model	Teledyne-API T200U & Thermo 42C-Y
Method code	599, 574
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	2006 (NO) / 2013 (NO2) /2007 (NOy)
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	4
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20 (NO2) 10 (NOy)
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	3.7(NO2) 5.5 (NOy)
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NO2 NAAQS?	Yes

Purpose: Beacon Hill is an urban scale NCORE site located south of downtown Seattle, within a City of Seattle park/reservoir. Inaddition to ozone, the site is used for monitoring trace level CO, SO_2, NO_y, $PM_{2\,5}$, air toxics and speciation. Seattle Beacon Hill is also a long-term trend and research site.

Seattle, 10th & Weller

Site Name	Seattle, 10th & Weller
AQS ID	530330030
GPS coordinates	LAT/LONG: 047 59' 72" / 122 31' 97"
Location	In a shelter adjacent to Interstate 5 in Downtown Seattle
Address	10th & Weller
County	King
Distance to road from gaseous probe (meters)	8
Traffic count (AADT, year)	18,400 (2012 WSDOT)
Groundcover	Concrete, grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	42601, 42602, 42603
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 200EU
Method code	599
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	4/14
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	3.2
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NO2 NAAQS?	Yes

Purpose: Seattle 10th & Weller is an EPA required, near-road monitoring site.

Cheeka Peak (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	Cheeka Peak
Address	Cheeka Peak
County	Clallam
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in a CBMSA
Monitor Information Pollutant, POC	
Parameter code	42600, 42601, 42612
Basic monitoring objectives(s)	Research/
Site type(s)	Background/Rural Transport
Monitor type(s)	Rural NCore
Instrument manufacturer and model	Teledyne-API T200U
Method code	599
FRM/FEM/ARM/other	FEM
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	1.6
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NO2 NAAQS?	Yes

Purpose: Cheeka Peak is a rural NCore site located at the Northwestern tip of Washington State. It is recognized as a national transport site.

Table 7: Sulfur Dioxide Parameter code 42401

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2014
530330080	Seattle Beacon Hill	3/07	NCore	Urban	Continuous	Continue
530090013	Cheeka Peak	5/06	Rural NCore	Regional	Continuous	Continue

Additional Monitors: None

Recommendations/Proposed Modifications: None

Map of Washington Sulfur Dioxide sites

Seattle, Beacon Hill

Site Name	Seattle Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a trailer at a City of Seattle park/reservoir
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	12,700 (2012 WSDOT)
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	42401
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	NCore
Instrument manufacturer and model	Thermo 43C
Method code	560
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	2006
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Continuous, year-round
Probe height (meters)	4.65
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	15
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the SO2 NAAQS?	Yes

Purpose: Beacon Hill is an urban scale NCORE site located south of downtown Seattle, within a City of Seattle park/reservoir. In addition to ozone, the site is used for monitoring trace level CO, SO_2, NO_y, $PM_{2.5}$, air toxics and speciation. Seattle Beacon Hill is also a long-term trend and research site.

Cheeka Peak - (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	Cheeka Peak
Address	Cheeka Peak
County	Clallam
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in a CBMSA

Monitor Information Pollutant, POC	
Parameter code	42401
Basic monitoring objectives(s)	Research
Site type(s)	Background/Regional Transport
Monitor type(s)	Rural NCore
Instrument manufacturer and model	Teledyne-API T100U
Method code	600
FRM/FEM/ARM/other	FEM
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	5.8
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the SO2 NAAQS?	Yes

Purpose: Cheeka Peak is a rural NCore site located at the Northwestern tip of Washington State. It is recognized as a national transport site.

Table 8: Particulate Matter 10 PM_{10}, Parameter code 81102

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530650004	Colville, S Oak	11/96 3/07	SLAMS	Neighborhood	Continuous	Continue
530050002	Kennewick, Metaline Ave	10/94	SLAMS	Neighborhood	Continuous	Continue
530630021	Spokane, Augusta Ave.	3/09	SLAMS	Middle	1/6	Continue
530630021	Spokane, Augusta Ave.	3/09	Collocated	Middle	1/12	Continue
530770009	Yakima, S 4th	4/00	SLAMS	Neighborhood	1/6	Continue

Additional Monitors: None.

Recommendations/Proposed Modifications: None

Note:

Thurston County Maintenance Area (Lacey PM2.5)

The Lacey College Street $PM_{2.5}$ nephelometer site (530670013) is being used to assure continued compliance with the PM_{10} NAAQS as well as to confirm the Thurston County Maintenance Area (TCMA) continues to meet the qualification criteria of EPA's Limited Maintenance Plan (LMP) approach.

A 5-year NPM_{10} design value below 98µg/m^3 demonstrates the TCMA continues to qualify for the LMP approach. The Lacey-College Street nephelometer site (53670013) 5-year PM_{10} design value estimate for 2009-2013 was 45 µg/m^3. The PM_{10} design value estimate for 2011-2013 was 45 µg/m^3. This current design value estimates demonstrate the TCMA complies with the PM_{10} standard and continues to meet EPA's LMP qualification criteria.

Kent, Seattle, & Tacoma PM10 Maintenance Areas

Three year and five year design values for the Kent, Seattle, and Tacoma PM_{10} Maintenance Areas. Three and five year design values were calculated using the table look up method and the statistical fit method outlined in the LMP guidance document and the Kent, Seattle, and Tacoma PM_{10} Limited Maintenance Plan.

A 3-year PM_{10} design value of 150 µg/m^3 or below demonstrates continued compliance with the PM_{10} NAAQS. A 5-year design value below 98 µg/m^3 is required to qualify for the LMP approach. Design values calculated using the table look up method fall within the range of uncertainty of the statistical fit method. Because they are the most conservative values, only the statistical fit values are presented here.

The $PM_{2.5}$ FEM TEOM at James St and Central Ave (530332004) is used to assure continued compliance with the PM_{10} NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 47±4 µg/m^3 and the three year design value is 47±3 µg/m^3.

The $PM_{2.5}$ FEM TEOM at Seattle-Duwamish (530330057) is used to assure continued compliance with the PM_{10} NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 58±6 µg/m^3 and the three year design value is 59±8 µg/m^3.

The $PM_{2.5}$ Nephelometer at Tacoma – Alexander Ave (530530031) is used to assure continued compliance with the PM_{10} NAAQS and to confirm continued eligibility for the Limited Maintenance Plan approach. The five year design value is 64±12 µg/m^3 and the three year design value is 65±13 µg/m^3.

Map of Washington Particulate Matter 10 sites

Colville, S Oak

Site Name	Colville, S Oak
AQS ID	530650004
GPS coordinates	LAT/LONG: 048 32' 41" / 117 54' 13"
Location	On the roof of the Courthouse
Address	215 South Oak, Colville
County	Stevens
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, cement, grass
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	81102
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo TEOM
Method code	079
FRM/FEM/ARM/other	FEM
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/96
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	50+
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM10 NAAQS?	Yes
Design value	0.34

Purpose: Colville S. Oak is a neighborhood scale site for PM_{10} established in 1996, located in the commercial/residential area of Colville.

Exceedences: This site has exceeded the standard for PM_{10} in the past 3 years (2011).

Kennewick, Metaline Avenue – (BCAA)

Site Name	Kennewick, Metaline Avenue
AQS ID	530050002
GPS coordinates	LAT/LONG: 046 13' 06" / 119 12' 03"
Location	On the roof of the Kennewick Skills Center
Address	5929 West Metaline, Kennewick
County	Benton
Distance to road from gaseous probe (meters)	84
Traffic count (AADT, year)	N/A
Groundcover	Rooftop- asphalt, ground-grass & asphalt
Statistical Area	Richland-Kennewick-Pasco, WA

Kennewick, Metaline Avenue Monitor Information Pollutant, POC	
Parameter code	81102
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo TEOM
Method code	079
FRM/FEM/ARM/other	FEM
Collecting Agency	Benton County Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/94
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	7
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	18
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	66
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	6
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM10 NAAQS?	Yes
Design value	1.6 (0.4[1])

Purpose: Metaline is a neighborhood scale site for PM_{10} established in 1994 and located in the downtown Kennewick area. It is representative of Kennewick and the Kennewick area which is subject to windblown dust.

Exceedences: Kennewick had 3 exceedances of 24-hr PM10 standard in 2013 and Washington plans to pursue exceptional event status for them.

[1] Pending exceptional events demonstration for high winds on 9/15/2013, 10/28/2013 and 11/02/2013.

Spokane, Augusta Ave. – (SRCAA)

Site Name	Spokane, Augusta Avenue.
AQS ID	530630021
GPS coordinates	LAT/LONG: 047 39' 39" / 117 21' 26"
Location	On the roof of the Spokane Region Clean Air Agency
Address	3104 E. Augusta Ave., Spokane
County	Spokane
Distance to road from gaseous probe (meters)	27
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, asphalt
Statistical Area	Spokane, WA
Monitor Information Pollutant, POC	
Parameter code	81102
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS - Collocated
Instrument manufacturer and model	Thermo TEOM
Method code	079
FRM/FEM/ARM/other	FEM/FRM
Collecting Agency	Spokane Region Clean Air Agency
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Middle
Monitoring start date	3/09
Current sampling frequency	Continuous & 1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM10 NAAQS?	Yes
Design value	0.35

Purpose: Augusta Ave. is a middle scale site for PM_{10} located in a commercial area of Spokane. The site is representative of the Spokane area which is a past PM_{10} nonattainment area.

Exceedences: We had one exceedance of the 24-hour PM10 standard at Spokane. We have flagged this value, leaving open the possibility that we could submit an exceptional event demonstration to EPA in the future.

Yakima, S 4th – (YRCAA)

Site Name	Yakima, S 4th
AQS ID	530770009
GPS coordinates	LAT/LONG: 046 35' 42" / 120 30' 44"
Location	On the roof of Yakima Comprehensive Mental Health
Address	402 South 4th Avenue, Yakima
County	Yakima
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, cement
Statistical Area	Yakima, WA

Monitor Information Pollutant, POC	
Parameter code	81102
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Grasby Anderson
Method code	063
FRM/FEM/ARM/other	FRM
Collecting Agency	Yakima Region Clean Air Agency
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	4/00
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2 rooftop, 12 ground
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	7
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	34
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM10 NAAQS?	Yes
Design value	0

Purpose: S 4th is a neighborhood scale site for PM_{10} located in a commercial/residential area near downtown Yakima. The site is representative of the Yakima area, a past PM_{10} nonattainment area.

Exceedences: This site has not exceeded standard for PM_{10} in the past 3 years

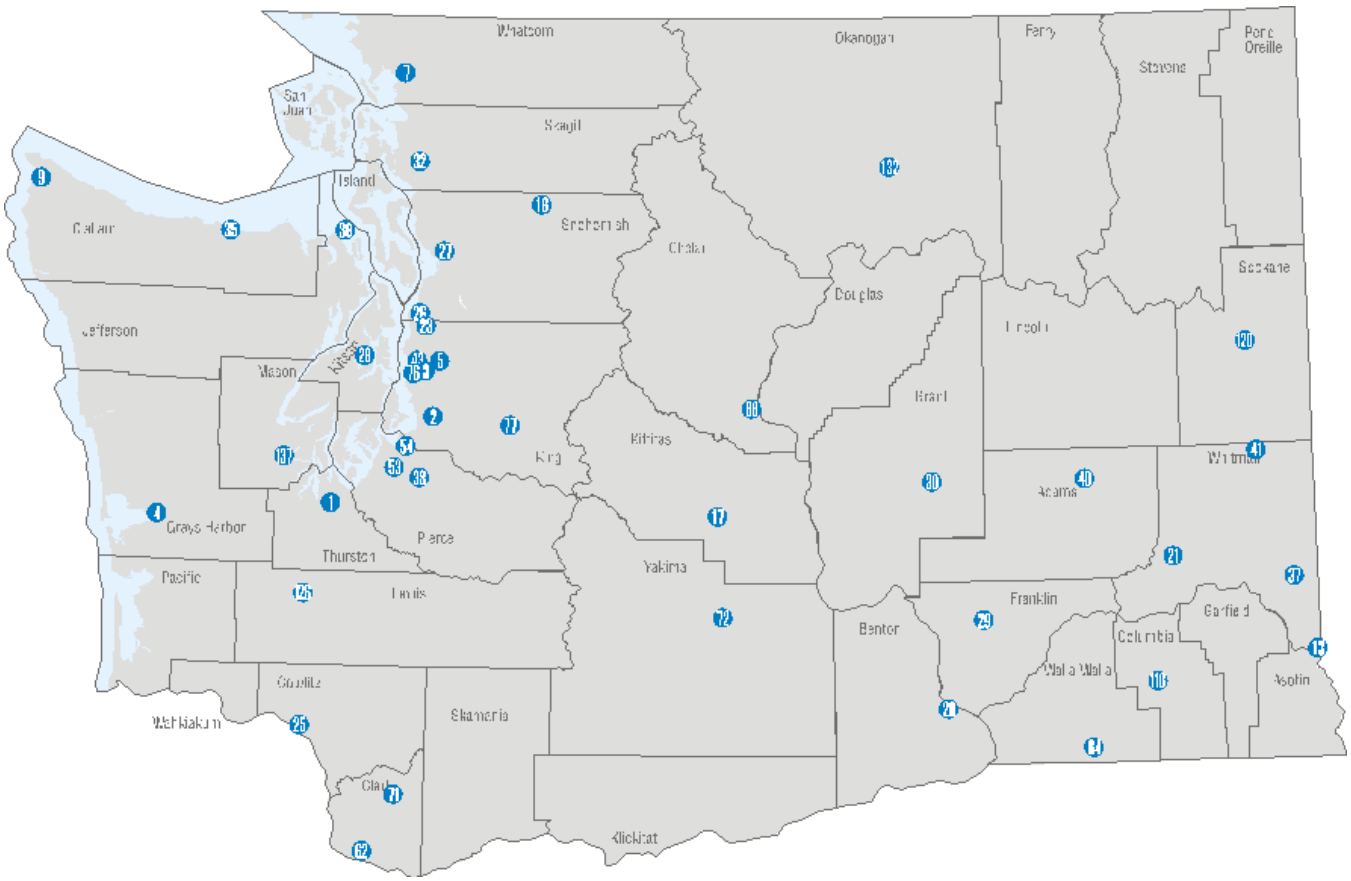
Table 9: Particulate Matter $PM_{2.5}$, Parameter codes 88101, 88502

AQS#	Site Name	Est.	Type	Sample Type	Sampling Frequency	Action for 2014
530272002	Aberdeen Division St	8/02	SPMS	Continuous	Continuous	Continue
530330037	Bellevue, Bellevue Way	4/02	SPMS	Continuous	Continuous	Continue
530730015	Bellingham, Yew Street	11/12	SLAMS	Continuous	Continuous	Continue
530350007	Bremerton Spruce	5/12	SPMS	Continuous	Continuous	Continue
530030004	Clarkston	3/07	SPMS	Continuous	Continuous	Continue
530410004	Chehalis	12/09	SPMS	Continuous	Continuous	Continue
530090013	Cheeka Peak	5/06	Rural NCore	Continuous	Continuous	Continue
530650004	Colville	1/02	SPMS	Continuous	Continuous	Continue
530610020	Darrington, Fir St	12/10	SLAMS	Continuous	Continuous	Continue
530130002	Dayton, W. Main	2/09	SPMS	Continuous	Continuous	Continue
530370002	Ellensburg	10/07	SPMS	Continuous	Continuous	Continue
530050002	Kennewick, Metaline Ave	8/04	SPMS	Continuous	Continuous	Continue
530332004	Kent, James & Central	12/10	SLAMS	Continuous	Continuous	Continue
530670013	Lacey, College St	1/02	SPMS	Continuous	Continuous	Continue
530750005	LaCrosse, Hill St	7/02	SPMS	Continuous	Continuous	Continue
530330024	Lake Forest Park, Ballinger Way	1/03	SLAMS	Continuous	Continuous	Continue
530150015	Longview, 30th Ave	3/03	SPMS	Continuous	Continuous	Continue
530610005	Lynnwood, 212th	1/11	SLAMS	Continuous	Continuous	Continue
530610005	Lynnwood, 212th	9/13	SLAMS	Collocated	Continuous	Continue
530611007	Marysville, 7th Ave	2/10	SLAMS	Continuous	Continuous	Continue
530611007	Marysville, 7th Ave	7/12	SLAMS	Collocated	Continuous	Continue
530210002	Mesa, Pepoit Way	1/03	SPMS	Continuous	Continuous	Continue
530251002	Moses Lake, Balsam St	1/03	SPMS	Continuous	Continuous	Continue
530570015	Mt. Vernon, S Second St	8/02	SPMS	Continuous	Continuous	Continue
530330017	North Bend, North Bend Way	3/03	SPMS	Continuous	Continuous	Continue
530090009	Port Angeles, W 14th St	11/99	SPMS	Continuous	Continuous	Continue
530310003	Port Townsend, San Juan Ave	02/01	SPMS	Continuous	Continuous	Continue
530750003	Pullman, Dexter Ave	3/01	SPMS	Continuous	Continuous	Continue
530531018	Puyallup, 128th St	1/03	SPMS	Continuous	Continuous	Continue
530010003	Ritzville, Alder St	3/01	SPMS	Continuous	Continuous	Continue
530750006	Rosalia, Josephine St	6/02	SPMS	Continuous	Continuous	Continue
530330080	Seattle, Beacon Hill	2/10	NCore	SEQ/Cont.	1/3	Continue
530330057	Seattle, E Marginal Way	12/09	SLAMS	Continuous	Continuous	Continue
530330048	Seattle, Olive St	3/03	SPMS	Continuous	Continuous	Continue
530450007	Shelton, W. Franklin	4/11	SPMS	Continuous	Continuous	Continue
530630021	Spokane, Augusta	3/09 1/13	SLAMS	SEQ/Cont.	1/6	Continue
530630047	Spokane, Monroe Street	7/03	SPMS	Continuous	Continuous	Continue
530530031	Tacoma, Alexander Ave	1/03	SPMS	Continuous	Continuous	Continue
530530029	Tacoma, S L Street	1/10	SLAMS	SEQ/Cont.	1/1	Continue
530530029	Tacoma, S L Street	4/12	Co-loc	SEQ/Cont.	1/12	Continue
530110023	Vancouver NE Van	8/13	SLAMS	FEM	Continuous	Continue
530710005	Walla Walla, 12th St	1/02	SPMS	Continuous	Continuous	Continue
530070011	Wenatchee Fifth St.	12/12	SPMS	Continuous	Continuous	Continue
530110022	Yacolt, Yacolt Rd.	6/07	SPMS	Continuous	Continue	Continue
530770009	Yakima, S 4th Ave	5/00 10/11	SLAMS	SEQ/Cont.	1/3	Continue

Notes: *Nephelometers are not EPA equivalent method compliance instruments and design values are estimates. Ecology uses the Washington Air Quality Advisory (WAQA) for reporting $PM_{2.5}$ to inform and protect citizens of Washington. WAQA reporting is more protective of human health. Ecology's goal is to keep 24-hour concentrations below 20µg/m^3. In addition, some monitors in areas of Washington are not intended to be solely NAAQS based. Certain monitors are used for protection of human health by calling burn bans during home heating season, making daily decisions for agricultural burning and health information- reporting PM2.5 values.*

Additional Monitors: None. See recommendations/modifications.

Recommendations/Modifications: Vancouver site relocation (see Appendix C.), Seattle Duwamish site relocation due to lost lease, Seattle Olive Street will be relocated as a $PM_{2.5}$ FEM at the Seattle 10th & Weller near-road site and ORCAA is proposing relocation of the Port Angeles site. The current Port Angeles air monitoring station, located at Stevens Middle School, should be relocated to the Port Angeles Fire Station. Data from a 2014 saturation study, conducted with a total of 4 locations, including Stevens, records increased PM2.5 levels at the Port Angeles Fire Department for most of the year. Moving to the fire station would decrease inlet tubing length by approximately 150 feet, to a total length of 10 feet. Stevens Middle School winter break often causes accessibility problems. The fire station is open 24/7, which guarantees the ability, and flexibility to maintain and repair equipment Relocation would not alter the current neighborhood scale or any other placement factors.



Map of Washington Particulate Matter 2.5 sites

Aberdeen, Division Street – (ORCAA)

Site Name	Aberdeen Division Street
AQS ID	530272002
GPS coordinates	LAT/LONG: 046 58' 21" / 123 49' 54"
Location	In a room at Harbor High School
Address	359 North Division, Aberdeen
County	Grays Harbor
Distance to road from gaseous probe (meters)	40 feet
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10 from ground 2 from roof
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: The Aberdeen site is neighborhood scale. The site represents impacts to the Aberdeen and Grays Harbor area from smoke related to home heating and mobile sources. It is used for curtailment calls during home heating season.

Bellevue, Bellevue Way

Site Name	Bellevue, Bellevue Way
AQS ID	530330037
GPS coordinates	LAT/LONG: 047 36' 47" / 122 12' 06"
Location	On the roof of Alvin Goldfarb Jewelers
Address	305 Bellevue Way, Bellevue
County	King
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Paved, asphalt & concrete
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	4/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	2
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	30
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	13.1

Purpose: The Bellevue Way site is neighborhood scale. It is representative of mobile source and smoke impacts in the area and used for curtailment calls during home heating season.

Bellingham, Yew Street – (NWCAA)

Site Name	Bellingham, Yew Street
AQS ID	530730025
GPS coordinates	LAT/LONG: 048 45' 46" / 122 26' 25"
Location	On the roof of a 7-11
Address	2412 Yew Street, Bellingham
County	Whatcom
Distance to road from gaseous probe (meters)	30
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, asphalt
Statistical Area	Bellingham, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 1405F
Method code	581
FRM/FEM/ARM/other	FEM
Collecting Agency	Northwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	9/88 established, 11/12 FEM installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	*

- Indicates insufficient data.

Purpose: Bellingham, Yew Street site is neighborhood scale. It is impacted by smoke related to home heating in the Bellingham/Whatcom County area and used for curtailment calls during home heating season.

Bremerton, Spruce – (PSCAA)

Site Name	Bremerton, Spruce
AQS ID	530350007
GPS coordinates	LAT/LONG: 047 59' 26" / 122 62' 73"
Location	In a shelter
Address	3250 Spruce Ave, Bremerton
County	Kitsap
Distance to road from gaseous probe (meters)	100
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Bremerton, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500C
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	5/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2.5
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	150
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	*

- Indicates insufficient data.

Purpose: Bremerton Spruce replaced Bremerton Meadowdale in 2012. Bremerton Spruce is a neighborhood scale residential site and provides air quality information to a population of 280,000 Kitsap County residents.

Cheeka Peak - (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	In a shelter
Address	Cheeka Peak, Clallam County
County	Clallam
Distance to road from gaseous probe (meters)	7
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Research
Site type(s)	Background/Regional Transport
Monitor type(s)	Rural NCore
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	5.2

Purpose: Cheeka Peak is an NCore, regional scale site established in 2006 as a national transport site. This site is <u>not</u> suitable for comparison to the $PM_{2.5}$ NAAQS.

Chehalis, Market Boulevard

Site Name	Chehalis, Market Boulevard
AQS ID	530410004
GPS coordinates	LAT/LONG: 046 66’40”/122 96’73”
Location	On a roof
Address	350 N. Market, Chehalis
County	Lewis
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	12
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	11
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	25
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	17.5

Purpose: Chehalis is a neighborhood scale site established in late 2009. It is located in a mixed/residential area of Chehalis. It is impacted by smoke from home heating and used for curtailment calls during home heating season.

Clarkston, STP

Site Name	Clarkston, STP
AQS ID	530030004
GPS coordinates	LAT/LONG: 046 25' 32"/ 117 3' 35"
Location	At a sewage treatment plant
Address	13th Street and Port Way, Clarkston
County	Asotin
Distance to road from gaseous probe (meters)	150
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	6/93 established, 3/07 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	29.7 (24.3[2])

Purpose: Clarkston is a neighborhood scale site established in 1993 as a PM_{10} site and converted to $PM_{2.5}$ in 2007, is located in a mixed/residential area of Clarkston at the sewage treatment plant.

[2] Excluding exceedances during wildfire events of September – October 2012

Colville

Site Name	Colville, South Oak
AQS ID	530650004
GPS coordinates	LAT/LONG: 048 32' 41" / 122 54' 13"
Location	On the roof of the Stevens County Courthouse
Address	215 S. Oak Street, Colville
County	Stevens
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, Cement, grass
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/96 est. 1/02 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	50+
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	24.2

Purpose: S Oak is a neighborhood scale site for PM2.5 originally established in 1996 as a PM_{10} site and converted to $PM_{2.5}$ in 2009, is located in the commercial/residential area of Colville.

Darrington, Fir St – (PSCAA)

Site Name	Darrington, Fir Street
AQS ID	530610020
GPS coordinates	LAT/LONG: 048 14' 49" / 121 36' 11"
Location	Shelter next to a building
Address	1085 Fir St, Darrington
County	Snohomish
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500C
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	6/07 established, 12/10 FEM installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2.5
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	25 - Building
Distance from trees (meters)	200
Distance to furnace or incinerator flue (meters)	200
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	28.1 FEM / 26.1 Nephelometer

Purpose: Darrington is neighborhood scale residential site impacted by smoke from home heating.

Dayton, 206 W. Main

Site Name	Dayton
AQS ID	530130002
GPS coordinates	LAT/LONG: 046.3180”/ 117.9850
Location	Shelter next to firehouse
Address	206 W. Main, Dayton
County	Columbia
Distance to road from gaseous probe (meters)	33
Traffic count (AADT, year)	N/A
Groundcover	Gravel, asphalt
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	2/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	6
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	15.7

Purpose: Dayton is a neighborhood scale small-community site located in Eastern Washington impacted by smoke from burning activities in the area. Data is used for curtailment calls and burn/no-burn calls during agricultural burning season.

Ellensburg, Ruby St

Site Name	Ellensburg, Ruby Street
AQS ID	530370002
GPS coordinates	LAT/LONG: 046 59' 37" / 120 32' 42"
Location	On the roof of Hal Holms Library
Address	201 North Ruby Street, Ellensburg
County	Kittitas
Distance to road from gaseous probe (meters)	33
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, cement
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/95 established, 10/07 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	39.4 (29.8[3])

Purpose: Ellensburg is a neighborhood scale site established in 1995 as a PM_{10} site and converted to $PM_{2.5}$ in 2006. It is located in a residential area of Ellensburg impacted by smoke from home heating devices and used for curtailment calls during home heating season.

[3] Excluding exceedances during wildfire events of September – October 2012

Kennewick, Metaline Avenue – (BCAA)

Site Name	Kennewick, Metaline Avenue
AQS ID	530050002
GPS coordinates	LAT/LONG: 046 13' 06" / 119 12' 03"
Location	On the roof of Kennewick Skills Center
Address	5929 W Metaline, Kennewick
County	Benton
Distance to road from gaseous probe (meters)	84
Traffic count (AADT, year)	N/A
Groundcover	Rooftop-asphalt, ground grass & asphalt
Statistical Area	Richland, Kennewick, and Pasco, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Benton Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/04
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	7
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	18
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	66
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	6
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	20.6

Purpose: Kennewick is neighborhood scale site. The site is impacted from smoke from home heating devices and agricultural sources and is geographically representative of the Tri-Cities area. Kennewick is used for curtailment calls during home heating season.

Kent, James & Central – (PSCAA)

Site Name	Kent, James & Central
AQS ID	530332004
GPS coordinates	LAT/LONG: 047 23' 10" / 122 13' 55"
Location	In a shelter
Address	614 N Railroad, Kent
County	King
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, landscaping
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88101(POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500c FEM
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	7/87 established, 12/10 FEM
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2.5
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	120
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	23.9 FEM / 21.3 Nephelometer

Purpose: Kent is neighborhood scale site in the South Puget Sound that is impacted from mobile sources, light industry and smoke from home heating devices. The site is representative of Kent and the Kent Valley area.

Lacey, College St – (ORCAA)

Site Name	Lacey, College Street
AQS ID	530670013
GPS coordinates	LAT/LONG: 047 01' 43" / 122 49' 15"
Location	In a shelter at a school
Address	1900 College St SE, Lacey
County	Thurston
Distance to road from gaseous probe (meters)	40
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Olympia, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Ecotech M90003/1000G
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10 from ground
Distance from supporting structure (meters)	2
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	25.5

Purpose: Lacey College Street is a neighborhood scale site impacted by smoke from home heating devices. The site is representative of the Olympia/Thurston County area. The monitor at this site is also used to determine compliance with the PM_{10} NAAQS as well as documenting the area continues to qualify for EPA's Limited Maintenance Plan (LMP) option.

LaCrosse, Hill Street

Site Name	LaCrosse, Hill Street
AQS ID	530750005
GPS coordinates	LAT/LONG: 046 48' 55" / 117 52' 26"
Location	On a roof
Address	100 Hill Street, LaCrosse
County	Whitman
Distance to road from gaseous probe (meters)	100
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	7/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	15.2

Purpose: LaCrosse is neighborhood scale small-community monitor in Eastern Washington impacted by smoke from burning. LaCrosse is used for agricultural burn/no-burn decisions and curtailment calls during home heating season .It also provides modeling and mapping information.

Lake Forest Park, Ballinger Way – (PSCAA)

Site Name	Lake Forest Park, Ballinger Way
AQS ID	530330024
GPS coordinates	LAT/LONG: 047 45' 18" / 122 16' 50"
Location	In a shelter, on the roof of a building
Address	17171 Bothell Way NE, Lake Forest Park
County	King
Distance to road from gaseous probe (meters)	200
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, asphalt
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Ecotech M9003/1000G
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/99 established, 1/03 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2.5 rooftop 35 from ground
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	40
Distance to furnace or incinerator flue (meters)	20
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	24.2

Purpose: Lake Forest Park is neighborhood scale site impacted by smoke from home heating devices and mobile sources from two adjacent arterials. It is used for curtailment calls during home heating season.

Longview, 30th Ave – (SWCAA)

Site Name	Longview, 30th Avenue
AQS ID	530150015
GPS coordinates	LAT/LONG: 046 08' 22" / 122 57' 43"
Location	Located in a room at Olympic Middle School
Address	1324 30th Ave, Longview
County	Cowlitz
Distance to road from gaseous probe (meters)	18
Traffic count (AADT, year)	N/A
Groundcover	Grass, asphalt
Statistical Area	Longview, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Southwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	17.4

Purpose: Longview is a neighborhood scale site impacted by smoke from home heating. It is representative of the Longview/Kelso area and is used for curtailment calls during home heating season.

Lynnwood, 212th – (PSCAA)

Site Name	Lynnwood, 212th
AQS ID	530610005
GPS coordinates	LAT/LONG: 047 48' 23" / 122 19' 00"
Location	In a trailer at a public utility district
Address	6120 212th SW, Lynnwood
County	Snohomish
Distance to road from gaseous probe (meters)	40
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & 4)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo & Thermo 8500c FEM
Method code	181 & 181
FRM/FEM/ARM/other	FEM & Collocated FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/11 FEM & 9/13 Collocated
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	4
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	1 rails
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	50
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	2
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	20.0 Nephelometer / * FEM

Purpose: Lynnwood is neighborhood scale site impacted by smoke during home heating season. Lynnwood is representative of Lynnwood and the south Snohomish County area.

Marysville, 7th Ave – (PSCAA)

Site Name	Marysville, 7th Avenue
AQS ID	530611007
GPS coordinates	LAT/LONG: 048 03' 18" / 122 10' 33"
Location	In a shelter at Marysville Junior High School
Address	1605 7th ST, Marysville
County	Snohomish
Distance to road from gaseous probe (meters)	15
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & 4)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo & Thermo 8500C
Method code	181 & 181
FRM/FEM/ARM/other	FEM & Collocated FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	9/91 established, 2/10 FEM, 7/12 FEM Collocated
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	75
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	2
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	24.3 FEM / 26.0 Nephelometer

Purpose: Marysville is a neighborhood scale site impacted by smoke during home heating season, mobile sources and light industry. Marysville is representative of the Marysville/North Snohomish County area.

Mesa, Pepoit Way

Site Name	Mesa, Pepoit Way
AQS ID	530210002
GPS coordinates	LAT/LONG: 046 34' 32" / 119 00' 25"
Location	On a roof
Address	200 Pepiot Way, Mesa
County	Franklin
Distance to road from gaseous probe (meters)	300
Traffic count (AADT, year)	N/A
Groundcover	Grass, scrub
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	6
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	33
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	19.5

Purpose: Mesa is a neighborhood scale small-community site in Eastern Washington impacted by agricultural sources and smoke from home heating. It is used for daily agricultural burn decisions and curtailment calls during home heating season.

Moses Lake, Balsam Street

Site Name	Moses Lake, Balsam Street
AQS ID	530251002
GPS coordinates	LAT/LONG: 047 07' 50" / 119 16' 22"
Location	On a roof
Address	412 S Balsam St, Moses Lake
County	Grant
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	6
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	2
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	25
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	19.4

Purpose: Moses Lake is a neighborhood scale small-community site in Eastern Washington impacted by agricultural sources and smoke from home heating sources. It is used for daily agricultural burn decisions and curtailment calls during home heating season.

Mt. Vernon, S Second St – (NWCAA)

Site Name	Mt. Vernon, S. Second Street
AQS ID	530570015
GPS coordinates	LAT/LONG: 048 24' 37" / 122 20' 16"
Location	In a room at NWCAA Offices
Address	1600 South Second Street, Mount Vernon
County	Skagit
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Northwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	7
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	10.0

Purpose: Mt. Vernon is a neighborhood scale small-community site impacted by home heating devices. Mt. Vernon is used for curtailment calls during home heating season.

North Bend, North Bend Way

Site Name	North Bend, North Bend Way
AQS ID	530330017
GPS coordinates	LAT/LONG: 047 29' 23" / 121 46' 24"
Location	In a shelter at USDA Forest Service Offices
Address	42404 SE North Bend Way, North Bend
County	King
Distance to road from gaseous probe (meters)	180
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Seattle-Bellevue-Everett, WA

Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	16.8

Purpose: North Bend is a neighborhood scale transport/background $PM_{2.5}$ site for the Puget Sound impacted by smoke from home heating devices. North Bend is used for curtailment calls during home heating season. North Bend is collocated with ozone and meteorological equipment.

Port Angeles, W 14th Street (ORCAA) Scheduled for Relocation by ORCAA in 2014

Site Name	Port Angeles, W. 14th Street
AQS ID	530090009
GPS coordinates	LAT/LONG: 048 06' 59" / 123 27' 52"
Location	In/on a school
Address	1139 W 14th St., Port Angeles
County	Clallam
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/99 established, 10/02 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	20 from ground 2 from roof
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Yes. ORCAA is recommending relocation based on access issues and a recent PM survey.
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: Port Angeles is a neighborhood scale site adjacent to Olympic National Park, a Class 1 Area and impacted by smoke from home heating sources. Port Angeles is used for curtailment calls during home heating season.

Port Townsend, San Juan Avenue (ORCAA)

Site Name	Port Townsend, San Juan Avenue
AQS ID	530310003
GPS coordinates	LAT/LONG: 048 07' 45" / 122 46' 46"
Location	In/on a school
Address	3939 San Juan Avenue, Port Townsend
County	Jefferson
Distance to road from gaseous probe (meters)	45
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	2/00 established, 2/01 nephelometer installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	30 from ground 2 from roof
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	13.5

Purpose: Port Townsend is neighborhood scale SLAMS site impacted by smoke from home heating devices. Port Townsend is used for curtailment calls during home heating season. It is representative of the east Jefferson County area.

Pullman, Dexter Avenue

Site Name	Pullman, Dexter Avenue
AQS ID	530750003
GPS coordinates	LAT/LONG: 046 43' 28" / 117 10' 46"
Location	In/on a school
Address	240 SE Dexter, Pullman
County	Whitman
Distance to road from gaseous probe (meters)	40
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, grass
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Ecotech M9003/1000G
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/01
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	20
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	18.1

Purpose: Pullman is a neighborhood scale site is in Eastern Washington impacted by smoke from burning. Pullman is used for daily agricultural burn/no-burn decisions and curtailment calls during home heating season.

Puyallup, 128th Street (PSCAA)

Site Name	Puyallup, 128th Street
AQS ID	530531018
GPS coordinates	LAT/LONG: 047 08' 24" / 122 18' 01"
Location	In a shelter
Address	9616 128th St E, Puyallup
County	Pierce
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Ecotech M9003/1000G
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/91 established, 1/03 nephelometer
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	80
Distance to furnace or incinerator flue (meters)	100
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	23.0

Purpose: Puyallup is a neighborhood scale site impacted by smoke from home heating devices in the Pierce County South Hill area.

Ritzville, Alder Street

Site Name	Ritzville, Alder Street
AQS ID	530010003
GPS coordinates	LAT/LONG: 047 07' 43" / 118 22' 55"
Location	Shelter next to building
Address	109 W Alder, Ritzville
County	Adams
Distance to road from gaseous probe (meters)	80
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, gravel
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/00 established, 3/01 nephelometer
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	8
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	15.4

Purpose: Ritzville is a neighborhood scale small-community located in Eastern Washington impacted by smoke from burning activities in the area. Ritzville is used for making daily agricultural burn/no-burn decisions and curtailment calls during home heating season.

Rosalia, Josephine Street

Site Name	Rosalia, Josephine Street
AQS ID	530750006
GPS coordinates	LAT/LONG: 047 13' 52" / 117 22' 08"
Location	In a building
Address	906 S Josephine Avenue, Rosalia
County	Whitman
Distance to road from gaseous probe (meters)	27
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 4)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	6/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	15 Furnace exhaust
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	13.8

Purpose: Rosalia is a neighborhood scale small-community site located in Eastern Washington impacted by smoke from burning in the area. Rosalia is used for making daily agricultural burning decisions and curtailment calls during home heating season.

Seattle, Beacon Hill

Site Name	Seattle, Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a shelter at Jefferson Park in Seattle
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & POC 1)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	NCore
Instrument manufacturer and model	Thermo 8500C FEM & Thermo 2025 FRM
Method code	181 & 118
FRM/FEM/ARM/other	Thermo 8500 FEM & 2025 FRM
Collecting Agency	Ecology
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	6/79 established, 2/10 FEM installed
Current sampling frequency	Continuous & 1/3
Calculated sampling frequency	N/A
Sampling season	Year Round
Probe height (meters)	6 FEM 3 FRM
Distance from supporting structure (meters)	2 FRM
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	2
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	15.5 FEM / 15.7 FRM

Purpose: Seattle, Beacon Hill is an urban scale NCORE site. Seattle Beacon Hill is collocated with an FEM, FRM, meteorological equipment as well as toxics and speciation monitoring. This site is FEM and FRM equipped.

Seattle/Duwamish – (PSCAA) Being RELOCATED

Site Name	Seattle, E. Marginal Way
AQS ID	530330057 (Former)
GPS coordinates	TBD, being relocated
Location	In a shelter
Address	Being relocated also on Marginal Way
County	King
Distance to road from gaseous probe (meters)	90
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500C FEM
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/71 established, 12/09 FEM installed
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Yes. Due to site loss of the site lease, PSCAA is relocating the site approximately 1 block South on E. Marginal Way.
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	23.4 FEM / 21.6 Nephelometer

Purpose: Seattle Duwamish is a neighborhood scale site located in the Duwamish River Valley impacted by mobile source diesel emissions and industrial sources.

Seattle, Olive St – (PSCAA) Being RELOCATED to Seattle 10th & Weller

Site Name	Seattle, Olive Street
AQS ID	530330048
GPS coordinates	LAT/LONG: 047 36' 55" / 122 19' 48"
Location	In a shelter
Address	1624 Boren Avenue, Seattle
County	King
Distance to road from gaseous probe (meters)	45
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof , grass, cement
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information to NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SPMS to SLAMS
Instrument manufacturer and model	Ecotech M9003/100G to FEM
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	1/03 (relocation date TBD in 2014)
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	9 base of ground
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	20 building
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Yes. Site is being discontinued and $PM_{2.5}$ FEM is being located at Seattle 10th and Weller (near-road)
Is it suitable for comparison against the PM2.5 NAAQS?	No currently, Yes when relocated.
Design value	16.7

Purpose: Seattle, Olive Street was established in 2003 as a micro scale $PM_{2.5}$ site adjacent to Interstate 5 designed to measure effects of mobile source diesel emissions. $PM_{2.5}$ monitoring is being relocated to Seattle 10th & Weller site.

Shelton, W. Franklin – (ORCAA)

Site Name	Shelton, W. Franklin
AQS ID	530450007
GPS coordinates	LAT/LONG: 047 213' 55" / 123 100' 81"
Location	In a shelter on the roof of the fire station
Address	122 W. Franklin, Shelton
County	Mason
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	Relocated 4/11
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	30 from ground 2 from roof
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	10
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	320
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: Shelton is a neighborhood scale site established in 2001 and relocated in April 2011. Shelton is impacted by smoke from home heating devices and used for curtailment calls during home heating season.

Spokane, Augusta - (SRCAA)

Site Name	Spokane, Augusta Avenue
AQS ID	530630021
GPS coordinates	LAT/LONG: 047 39' 39" / 117 21' 26"
Location	In a shelter on the roof of SRCAA Offices
Address	3104 E. Augusta Ave., Spokane
County	Spokane
Distance to road from gaseous probe (meters)	27
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, asphalt
Statistical Area	Spokane, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & 1)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500C FEM & Thermo 2025 FRM
Method code	181/118
FRM/FEM/ARM/other	FEM & FRM
Collecting Agency	Spokane Region Clean Air Agency
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/09 established, 9/13 FEM installed
Current sampling frequency	Continuous & 1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	25.7 FRM

Purpose: Spokane Augusta Ave. is a neighborhood scale site impacted by smoke from home heating devices and light industrial sources.

Spokane, Monroe Street

Site Name	Spokane Monroe
AQS ID	530630047
GPS coordinates	LAT/LONG: 047 42' 03" / 117 25' 30"
Location	On the roof of the Ecology Eastern Regional Office
Address	N. 4601 Monroe Street, Spokane
County	Spokane
Distance to road from gaseous probe (meters)	40
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	MSA: Spokane, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/89 established, 7/03 nephelometer
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	12
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	40
Distance to furnace or incinerator flue (meters)	20 (natural gas)
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	24.7

Purpose: Spokane, Monroe St. is a neighborhood scale site impacted by smoke from home heating devices and is representative of the area.

Tacoma, Alexander Ave – (PSCAA)

Site Name	Tacoma, Alexander Avenue
AQS ID	530530031
GPS coordinates	LAT/LONG: 047 15' 56" / 122 23' 09"
Location	In a shelter
Address	2301 Alexander Avenue, Tacoma
County	Pierce
Distance to road from gaseous probe (meters)	20
Traffic count (AADT, year)	N/A
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/87 established, 1/03 nephelometer
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	24.7

Purpose: Tacoma, Alexander Ave is a neighborhood scale site impacted by smoke from home heating devices and industrial point sources on the Tacoma Tide flats. The site is representative of the NE Tacoma/Fife area.

Tacoma, S L St – (PSCAA)

Site Name	Tacoma, L Street
AQS ID	530530029
GPS coordinates	LAT/LONG: 047 11' 11" / 122 27' 06"
Location	In a shelter
Address	7802 South L St., Tacoma
County	Pierce
Distance to road from gaseous probe (meters)	100
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & 1)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 8500C FEM & Thermo 2025 FRM
Method code	181 & 118
FRM/FEM/ARM/other	FEM & FRM
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/99 established, 1/10 FEM, 4/12 FRM
Current sampling frequency	Continuous & 1/1
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	60
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	2
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	28.9 FEM / 32.5 FRM

Purpose: Tacoma, L Street is a neighborhood scale site impacted by smoke from home heating devices.

Vancouver, NE Van

Site Name	Vancouver, NE Van Plaza
AQS ID	530110023
GPS coordinates	LAT/LONG: 045 64' 98" / 122 59' 01"
Location	In a shelter, in Centerpoint/Van Plaza park
Address	8121 NE Vancouver Plaza Dr, Vancouver
County	Clark
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Portland-Vancouver, OR-WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 1405F FEM
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Southwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/13
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	22
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Yes. This site is impacted by a single local source and will be relocated in 2014.
Is it suitable for comparison against the PM2.5 NAAQS?	Yes* See attachment for exclusion.
Design value	*

- Indicates insufficient data.

Purpose: Vancouver, NE Van is a neighborhood scale site impacted by smoke from home heating devices.

Walla Walla, 12th Street

Site Name	Walla Walla, 12th Street
AQS ID	530710005
GPS coordinates	LAT/LONG: 046 03' 32" / 118 21' 06"
Location	On a roof
Address	200 S 12th, Walla-Walla
County	Walla Walla
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Asphalt
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	5/89 established, 10/02 nephelometer
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	21.3

Purpose: Walla Walla is a neighborhood scale small-community site located in Eastern Washington impacted by smoke from burning activities in the area.

Wenatchee, Fifth Street

Site Name	Wenatchee 5th Street
AQS ID	530070011
GPS coordinates	LAT/LONG: 047 43’ 06” / 120 34’ 19”
Location	In a shelter at Wenatchee Valley College
Address	1300 Fifth Street
County	Chelan
Distance to road from gaseous probe (meters)	33
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo 1405F FEM
Method code	181
FRM/FEM/ARM/other	FEM
Collecting Agency	Wenatchee
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	70
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	*

- Indicates insufficient data.

Purpose: Wenatchee Fifth St. was established in late 2012 as a neighborhood scale site to replace Wenatchee Alaska Way. Wenatchee Fifth is located in a residential area and impacted by smoke from home heating and wildfires.

Yacolt, Yacolt Road – (SWCAA)

Site Name	Yacolt, Yacolt Road
AQS ID	530110022
GPS coordinates	LAT/LONG: 045 86' 63" / 122 40' 88"
Location	At a school
Address	406 W. Yacolt Road., Yacolt
County	Clark
Distance to road from gaseous probe (meters)	112
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, grass
Statistical Area	Vancouver, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Southwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	6/07
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	15 roof
Distance from supporting structure (meters)	0.5
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	21.2

Purpose: Yacolt is a neighborhood scale site impacted by smoke from home heating devices and is representative of the area.

Yakima, S 4th Ave – (YRCAA)

Site Name	Yakima S. 4th Avenue
AQS ID	530770009
GPS coordinates	LAT/LONG: 046 35' 42" / 120 30' 44"
Location	In a shelter on the roof of Yakima Comprehensive MH
Address	402 South 4th Avenue, Yakima
County	Yakima
Distance to road from gaseous probe (meters)	14
Traffic count (AADT, year)	N/A
Groundcover	Asphalt roof, grass & cement on the ground
Statistical Area	Yakima, WA

Monitor Information Pollutant, POC	
Parameter code	88101 (POC 3 & 1)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Thermo FEM & Thermo 2025
Method code	181 & 118
FRM/FEM/ARM/other	FEM & FRM
Collecting Agency	Yakima Region Clean Air Agency
Analytical Lab	Ecology
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	5/00 established, 10/11 FEM installed
Current sampling frequency	Continuous & 1/3
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	3 rooftop, 13 from ground
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	7
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	34
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	Yes
Design value	*

- Indicates insufficient data.

Purpose: Yakima is a neighborhood scale site impacted by smoke from burning sources in the area.

Other – Contracted Local Air Agencies

Table 10: Other - Contracted Local Air Agencies

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530570011	Anacortes	10/11	SLAMS	Urban	Continuous	Continue
530090013	Cheeka Peak	5/06	Rural NCore	Regional	Continuous	Continue
530630021	Spokane Augusta	5/10	SLAMS	Urban	Continuous	Continue

Additional Monitors: None

Note: Ecology provides technical support for Anacortes, Cheeka Peak and Spokane Augusta ozone. Technical support can include repair and calibration, quality assurance, telemetry and data management.

Anacortes, O Street – (NWCAA)

Site Name	Anacortes, O Street
AQS ID	530570011
GPS coordinates	LAT/LONG: 048 52’ 05” / 122 61’ 42”
Location	In a trailer
Address	202 O Street, Anacortes
County	Skagit
Distance to road from gaseous probe (meters)	15
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, gravel
Statistical Area	MSA: Not an Urban area
Monitor Information Pollutant, POC	
Parameter code	44201, 42401, 88101 (POC 3)
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturers and model	Teledyne-API 400, Teledyne-API T100U & Thermo 8500
Method code	087, 560, 181
FRM/FEM/ARM/other	FEM
Collecting Agency	Northwest Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/11
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Ozone seasonal (May-September), Year-round SO_2 and $PM_{2.5}$
Probe height (meters)	3
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	9.5 residence time needed
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes

Purpose: The Northwest Clean Air Agency (NWCAA) uses this site to collect ozone, SO_2 and $PM_{2.5}$ information in its jurisdiction. This site is suitable for comparison to the NAAQS.

Cheeka Peak (ORCAA)

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	LAT/LONG: 048 17’ 12”/ 124 37' 13”
Location	In a shelter
Address	Cheeka Peak,
County	Clallam
Distance to road from gaseous probe (meters)	7
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	MSA: Not in an MSA
Monitor Information Pollutant, POC	
Parameter code	42101, 42401, 42600+, 88502,
Basic monitoring objectives(s)	Research
Site type(s)	Background/Regional Transport
Monitor type(s)	NCore
Instrument manufacturer and model	Teledyne-API 400, RR M903,
Method code	087, 054, 560, 599, 771
FRM/FEM/ARM/other	FEM & Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5.5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	21
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	0.3 to 0.6
Unrestricted airflow (degrees)	175
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	See specific pollutant
Changes within the next 18 months?	Potential analyzer upgrades
Is it suitable for comparison against the PM2.5, Ozone, Trace gasses NAAQS?	PM2.5 – No, Ozone – Yes, Trace gases, Yes

Purpose: The Olympic Region Clean Air Agency (ORCAA) operates this Rural NCore site.

Spokane, Augusta (SRCAA)

Site Name	Spokane Augusta
AQS ID	530630021
GPS coordinates	LAT/LONG: 047 39' 39" / 117 21' 26"
Location	In a shelter on the roof of SRCAA Offices
Address	3104 E. Augusta Ave., Spokane
County	Spokane
Distance to road from gaseous probe (meters)	27
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, Asphalt,
Statistical Area	MSA: Spokane, WA

Monitor Information Pollutant, POC	
Parameter code	44201
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne-API 400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	Spokane Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal May through September
Probe height (meters)	2
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	2.8
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Ozone NAAQS?	Yes

Purpose: The Spokane Region Clean Air Agency (SRCAA) operates this site to collect ozone information in its jurisdiction. This site is suitable for comparison to the Ozone NAAQS.

Meteorological Monitoring (Met. 61101, 61102, 62101)

Table 11: Met Monitoring, Parameter codes, 61101, 61102, 62101

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530090013	Cheeka Peak	5/06	WS, WD, Ta	Regional	Continuous	Continue
530650004	Colville	3/11	WS, WD, Ta	Neighborhood	Continuous	Continue
530330023	Enumclaw Mud Mtn.	2/04	WS, WD, Ta	Urban	Continuous	Continue
530770017	Harrah		WS, WD, Ta	Neighborhood	Continuous	Discontinue
530050005	Kennewick	08/12	WS, WD, Ta	Neighborhood	Continuous	Continue
530330017	North Bend	1/00	WS, WD, Ta	Regional	Continuous	Continue
530270008	Oakville (Tribal)	10/09	WS, WD, Ta	Neighborhood	Continuous	Continue
530470013	Omak (Tribal)	10/10	WS, WD, Ta	Neighborhood	Continuous	Continue
530330080	Seattle Beacon Hill	6/79	WS, WD, Ta	Urban	Continuous	Continue
530330030	Seattle 10th & Weller	4/14	WS, WD, Ta	Micro	Continuous	Continue
530630021	Spokane Augusta Ave	7/09	WS, WD, Ta	Neighborhood	Continuous	Continue
530531016	Tacoma Tower	1/91	WS, WD, Ta	Micro	Continuous	Continue
530770015	Toppenish (Tribal)	6/09	WS, WD, Ta	Neighborhood	Continuous	Continue
530110011	Vancouver Blairmount	12/07	WS, WD, Ta	Neighborhood	Continuous	Continue
530070011	Wenatchee Fifth	11/12	WS, WD, Ta	Neighborhood	Continuous	Continue
530770016	White Swan (Tribal)	11/09	WS, WD, Ta	Neighborhood	Continuous	Continue

Additional Monitors: None.

Recommendations/Modifications: EPA is proposing the discontinuance of the Harrah Tribal site. Ecology is transitioning to RM Young ultrasonic measurements during 2014. RM Ultrasonic Method Codes: 050, 020, 040, 062 (062,ws/wd, 040 temp)

Cheeka Peak, Rural NCore

Site Name	Cheeka Peak
AQS ID	530090013
GPS coordinates	048 29’ 78”/124 62’ 49”
Location	In a shelter
Address	Cheeka Peak
County	Clallam
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Shrubs, grass and gravel/dirt
Statistical Area	Not in an MSA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Research
Site type(s)	National Transport
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 09305
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Olympic Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	5/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	40+
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the monitoring at the Rural NCore site.

Colville – SLAMS

Site Name	Colville
AQS ID	530650004
GPS coordinates	048 32' 41" / 122 54' 13"
Location	On the roof of the Stevens County Courthouse
Address	215 S. Oak Street
County	Stevens
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, cement, grass
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 09305
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/11
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	50+
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ and PM_{10} monitoring at Colville.

Enumclaw, Mud Mountain Dam - SLAMS

Site Name	Enumclaw, Mud Mountain
AQS ID	530330023
GPS coordinates	047 08' 28" / 121 56' 09"
Location	At Mud Mountain Dam
Address	30525 SE Mud Mountain Road, Enumclaw
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Gravel & weeds
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Regional Transport
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 85004
Method code	050, 020, 040, 62
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	2/04
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Seasonal (May – September)
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the seasonal ozone monitoring at Enumclaw.

Harrah, (Yakama Nation) <u>Proposed for discontinuance in 2014</u>

Site Name	Harrah
AQS ID	530770017
GPS coordinates	046 40’85’ / 120 54’ 39”
Location	
Address	3851 N Harrah Rd
County	Yakima
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	
Statistical Area	Not in an MSA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 09305
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	EPA is proposing the discontinuance of the Harrah site
Is it suitable for comparison against the NAAQS?	N/A

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ and PM_{10} monitoring at Harrah.

Kennewick, Metaline Avenue

Site Name	Kennewick, Metaline Avenue
AQS ID	530050002
GPS coordinates	046 13’ 06” / 119 12’ 03”
Location	On a roof
Address	5929 W Metaline, Kennewick
County	Benton
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Rooftop-asphalt, ground-grass & asphalt
Statistical Area	Richland, Kennewick and Pasco, WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 09305
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	18
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	66
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ and PM_{10} monitoring at Kennewick.

North Bend, North Bend Way

Site Name	North Bend, North Bend Way
AQS ID	530330017
GPS coordinates	047 29' 23" / 121 46' 24"
Location	At USDA Forest Service Offices
Address	42404 SE North Bend Way, North Bend
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 85004
Method code	050, 020, 040, 62
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Regional
Monitoring start date	1/00
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the seasonal ozone monitoring at North Bend.

Oakville, (Chehalis) - SLAMS

Site Name	Oakville, Chehalis Tribe
AQS ID	530270008
GPS coordinates	046 49' 23” / 123 09' 40"
Location	In a field
Address	252 Howanut Drive, Oakville
County	Grays Harbor
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an MSA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 09305
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/a
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	3
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ monitoring at Oakville.

Omak, Howanut Dr (Colville) - SPMS

Site Name	Omak, Howanut Drive (Colville Nation)
AQS ID	530470013
GPS coordinates	048. 39’99” / 119 518’' 96”
Location	In a mill yard
Address	8th Ave & Omak/Okanogan Road
County	Okanogan
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass, dirt
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 85004
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/10
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the PM2.5 monitoring at Omak.

Seattle, Beacon Hill - NCore

Site Name	Seattle, Beacon Hill
AQS ID	530330080
GPS coordinates	047 34' 58" / 122 18' 30"
Location	Next to the shelter at Jefferson Park in Seattle
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	NCore
Instrument manufacturer and model	RM Young 85004
Method code	050, 020, 040, 062
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	6/79
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the NCore, Toxics and Speciation monitoring at Seattle Beacon Hill.

Seattle, 10th & Weller – Near-road

Site Name	Seattle, 10th & Weller
AQS ID	530330030
GPS coordinates	047 59' 72" / 122 31' 97"
Location	On a pad next to Interstate 5
Address	10th & Weller, Seattle
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Cement, grass
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young 85004
Method code	050, 020, 040, 062
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	4/14
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the near-road monitoring at Seattle 10th & Weller.

Spokane, Augusta Ave. - SLAMS

Site Name	Spokane, Augusta Avenue
AQS ID	530630021
GPS coordinates	047 39' 39" / 117 21' 26"
Location	On the roof of the Spokane Regional Clean Air Agency
Address	3104 E. Augusta Ave., Spokane
County	Spokane
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Membrane roof, asphalt
Statistical Area	Spokane, WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Spokane Region Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	3/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$, PM_{10} and ozone monitoring at Spokane Augusta.

Tacoma, Tower Drive - SLAMS

Site Name	Tacoma, Tower Drive
AQS ID	530531016
GPS coordinates	47.30444”/ 122.4120
Location	At a reservoir
Address	5225 Tower Drive, Tacoma
County	Pierce
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Gravel
Statistical Area	Seattle-Bellevue, Everett, WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Micro
Monitoring start date	1/99
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of modeling in the Puget Sound.

Toppenish, Ward Rd (Yakama) - SPMS

Site Name	Toppenish Ward Road
AQS ID	530770015
GPS coordinates	046 23’ 07” / 120 18' 49”
Location	At Toppenish HS
Address	141 Ward Road, Toppenish
County	Yakima
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/08
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ monitoring at Wenatchee.

Vancouver, Blairmont - SLAMS

Site Name	Vancouver, Blairmont
AQS ID	530110011
GPS coordinates	045 36' 37" / 122 30' 59"
Location	At Blairmont HS
Address	1500 SE Blairmount Drive, Vancouver
County	Clark
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass, asphalt
Statistical Area	Portland-Vancouver, OR-WA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050, 020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/07
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the seasonal ozone monitoring at Blairmont.

Wenatchee, Fifth St. – SLAMS

Site Name	Wenatchee Fifth
AQS ID	530070011
GPS coordinates	047 43’ 06” / 120 34’ 19”
Location	At Wenatchee Valley College
Address	1300 Fifth St, Wenatchee
County	Chelan
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050,020,040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ monitoring at Wenatchee Fifth.

White Swan (Yakama) - SPMS

Site Name	White Swan
AQS ID	530770016
GPS coordinates	046.37’54”/120 72’ 93”
Location	At a school
Address	621 Signal Peak Rd, White Swan
County	Yakima
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Not in an MSA
Monitor Information Pollutant, POC	
Parameter code	61101, 61102, 62101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	RM Young
Method code	050,020, 040
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	10
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Collection of wind speed, wind direction and temperature in support of the $PM_{2.5}$ monitoring at White Swan.

Other – Contracted Local Air Agencies

Table 12: Other Contracted Sites USFS

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530070007	Chelan	12/02	SPMS	Neighborhood	Continuous	Continue
530070010	Leavenworth	2/05	SPMS	Neighborhood	Continuous	Continue
530770007	Naches	8/08	SPMS	Neighborhood	Continuous	Continue
530470009	Twisp	11/03	SPMS	Neighborhood	Continuous	Continue
530470010	Winthrop	11/03	SPMS	Neighborhood	Continuous	Continue

Additional Monitors: None

Recommendations/Modifications: None

Comment:* Nephelometers are not EPA equivalent method nor compliance instruments and design values are estimates.

Chelan, Woodin Ave – (USFS)

Site Name	Chelan, Woodin Avenue
AQS ID	530070007
GPS coordinates	LAT/LONG: 047 50' 18" / 120 01' 23"
Location	
Address	428 W. Woodin Avenue, Chelan
County	Chelan
Distance to road from gaseous probe (meters)	15
Traffic count (AADT, year)	N/A
Groundcover	
Statistical Area	MSA: Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	11203
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research Nephelometer
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	USDA Forest Service
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	9/02
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	7
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	10
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Correlation with an FRM is planned but not scheduled
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	N/A

Purpose: This sites primary purpose is for Prescribed Burning decision making by the US Forest Service.

Leavenworth, Evans St. – (USFS)

Site Name	Leavenworth, Evans Street
AQS ID	530070010
GPS coordinates	LAT/LONG: 047 35' 56" / 120 39' 53"
Location	In a school
Address	330 Evans Street, Leavenworth
County	Chelan
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Grass, asphalt
Statistical Area	MSA: Not in an urban area
Monitor Information Pollutant, POC	
Parameter code	88502 (POC3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	USDA Forest Service
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	2/05
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	12 (rooftop)
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	5
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	25
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	39.0 (23.2[4])

Purpose: This sites primary purpose is for Prescribed Burning decision making by the US Forest Service.

[4] Excluding exceedances during wildfire events of September-October 2012

Naches, Hwy 12 – (USFS)

Site Name	Naches, Highway 12
AQS ID	530770007
GPS coordinates	LAT/LONG: 046 43' 47" / 120 42' 13"
Location	In a building
Address	10237 Hwy 12, Naches
County	Yakima
Distance to road from gaseous probe (meters)	25
Traffic count (AADT, year)	N/A
Groundcover	Grass, asphalt
Statistical Area	MSA: Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	11203
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	USDA Forest Service
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	4/08
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	7
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	6
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Correlation with an FRM is planned, not scheduled
Is it suitable for comparison against the PM2.5 NAQAS?	No
Design value	N/A

Purpose: This sites primary purpose is for Prescribed Burning decision making by the US Forest Service.

Twisp, Glover St – (USFS)

Site Name	Twisp, Glover Street
AQS ID	530470009
GPS coordinates	LAT/LONG: 48° 21' 51" / 120 12' 40"
Location	In a building
Address	118 South Glover Street, Twisp
County	Okanogan
Distance to road from gaseous probe (meters)	2
Traffic count (AADT, year)	N/A
Groundcover	Concrete, asphalt
Statistical Area	MSA: Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	USDA Forest Service
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	25
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	30.4 (23.4[5])

Purpose: This sites primary purpose is for Prescribed Burning decision making by the US Forest Service. This site is <u>not</u> suitable for comparison to the $PM_{2.5}$ NAAQS.

[5] Excluding exceedances during wildfire events of September – October 2012

Winthrop, W Chewuch Rd. – (USFS)

Site Name	Winthrop, West Chewuch Road
AQS ID	530470010
GPS coordinates	LAT/LONG: 048 28' 38" / 120 11' 26"
Location	In a building
Address	24 West Chewuch Road, Winthrop
County	Okanogan
Distance to road from gaseous probe (meters)	15
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	MSA: Not in an urban area

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	USDA Forest Service
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	11/03
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	1
Distance from trees (meters)	7
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	25.7 (16.2[6])

Purpose: This sites primary purpose is for Prescribed Burning decision making by the US Forest Service.

[6] Excluding exceedances during wildfire events of September – October 2012

Other – Contracted Sites Tribal/EPA

Table 13: Other - Contracted Sites Tribal/EPA

AQS#	Site Name (Tribe)	Est.	Type	Scale	Sampling Type	Action for 2014
530770017	Harrah (Yakama)	12/12	SPMS	Neighborhood	Continuous	Discontinue
530090014	Neah Bay (Makah)	2/10	SPMS	Neighborhood	Continuous	Continue
530270008	Oakville (Chehalis)	1/06	SPMS	Neighborhood	Continuous	Continue
530470013	Omak (Colville)	10/10	SPMS	Neighborhood	Continuous	Continue
530530022	Puyallup (Puyallup)	1/08	SPMS	Neighborhood	Continuous	Continue
530270009	Taholah (Quinault)	TBD	SPMS	Neighborhood	Continuous	TBD*
530770015	Toppenish (Yakama)	8/08	SPMS	Neighborhood	Continuous	Continue
530610011	Tulalip (Tulalip)	12/11	SPMS	Neighborhood	Continuous	Continue
530650002	Wellpinit (Spokane)	10/08	SPMS	Neighborhood	Continuous	Continue
530770016	White Swan (Yakama)	1/09	SPMS	Neighborhood	Continuous	Continue

Additional Monitors: None.

Recommendations/Modifications: *Monitoring was suspended at Taholah the fall of 2011. Ecology continues to work with the Quinault operator to site and establish a monitor at Taholah. EPA is proposing discontinuance of the Harrah Tribal site.

Comment:* Nephelometers are not EPA equivalent method, nor compliance instruments and design values are estimates.

Harrah, (Yakama Nation) – Proposed for discontinuance

Site Name	Harrah, Yakama Nation
AQS ID	530770017
GPS coordinates	LAT/LONG: 046 40’85’ / 120 54’ 39”
Location	In a shelter
Address	3851 N Harrah Rd
County	Yakima
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Gravel, asphalt
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88101
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Thermo1400 TEOM’s
Method code	702/704/079
FRM/FEM/ARM/other	Other
Collecting Agency	Yakama Nation
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/12
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2.5
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	35
Distance from trees (meters)	35
Distance to furnace or incinerator flue (meters)	47
Distance between collocated monitors (meters)	1
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Yes, site scheduled for discontinuance in 2014
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: This site is used by the Yakama Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Neah Bay, (Makah) – (Makah Nation)

Site Name	Neah Bay, Makah Nation
AQS ID	530090014
GPS coordinates	LAT/LONG: 048 22' 19" / 124 35' 43"
Location	In a building
Address	159 Waada View, Neah Bay
County	Clallam
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Cement
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Makah Nation
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	2/10
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	9
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	270
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	8.5

Purpose: This site is used by the Makah Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Oakville – (Chehalis Tribe)

Site Name	Oakville, Chehalis Tribe
AQS ID	530270008
GPS coordinates	LAT/LONG: 046 49' 23” / 123 09' 40"
Location	In a shelter, in a field
Address	252 Howanut Drive, Oakville
County	Grays Harbor
Distance to road from gaseous probe (meters)	Not near a road
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Chehalis Tribe
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/06
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	5
Distance from supporting structure (meters)	0.3
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	160
Distance to furnace or incinerator flue (meters)	280
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: This site is used by the Chehalis Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Omak, Howanut Drive - (Colville Tribe)

Site Name	Omak, Howanut Drive Colville Tribe
AQS ID	530470013
GPS coordinates	LAT/LONG: 048. 39’99” / 119 518’' 96”
Location	In a shelter
Address	8th Ave & Omak/Okanogan Rd
County	Okanogan
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Rock, dirt
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Colville Tribe
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/10
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	1
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	100
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No

Design value	*

- Indicates insufficient data.

Purpose: This site is used by the Colville Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Puyallup, 66th Ave - (Puyallup Tribe)

Site Name	Puyallup, 66th Avenue, Puyallup Tribe
AQS ID	530530022
GPS coordinates	LAT/LONG: 047 12' 19" / 122 20' 19"
Location	In a shelter on Puyallup Tribal property
Address	5722 66th Avenue E., Puyallup
County	Pierce
Distance to road from gaseous probe (meters)	300+
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	MSA: Seattle-Bellevue-Everett, WA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Puyallup Tribe
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/08
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	22.9

Purpose: This site is used by the Puyallup Tribe for air quality information on the Tribal Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Taholah, TBD - (Quinault Tribe)

Site Name	Taholah, Quinault Tribe
AQS ID	TBD
GPS coordinates	TBD
Location	TBD
Address	TBD
County	Grays Harbor
Distance to road from gaseous probe (meters)	TBD
Traffic count (AADT, year)	N/A
Groundcover	
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Ecotech M90003/100G
Method code	812
FRM/FEM/ARM/other	Other
Collecting Agency	Quinault Tribe
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	TBD
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	TBD
Distance from supporting structure (meters)	TBD
Distance from obstructions on roof (meters)	TBD
Distance from obstructions not on roof (meters)	TBD
Distance from trees (meters)	TBD
Distance to furnace or incinerator flue (meters)	TBD
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	TBD
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Completion of site installation
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	N/A

Purpose: This site is used by the Quinault Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Toppenish, Ward Road - (Yakama Nation)

Site Name	Toppenish, Ward Road
AQS ID	530770015
GPS coordinates	LAT/LONG: 046 23’ 07” / 120 18' 49”
Location	In a shelter at Toppenish HS
Address	141 Ward Road, Toppenish
County	Yakima
Distance to road from gaseous probe (meters)	35
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Yakama Nation
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	8/08
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	Potentially. EPA is considering a PM2.5 FEM
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	41.2 (39.4[7])

Purpose: This site is used by the Yakama Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

[7] Excluding exceedances during wildfire events of September – October 2012

Tulalip, Reuben Shelton Drive (Tulalip Tribe)

Site Name	Tulalip, Reuben Shelton Drive - Tulalip
AQS ID	530610011
GPS coordinates	LAT/LONG: 047 06’90” / 122 27’ 50”
Location	In a shelter on Tribal property
Address	3107 Reuben Shelton Dr, Tulalip
County	Snohomish
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, grass
Statistical Area	MSA: Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Puget Sound Clean Air Agency
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	12/11
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	2
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	30
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	*

- Indicates insufficient data.

Purpose: This site is used by the Tulalip Tribe for air quality information on the Reservation. The air quality information is also usedby EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Wellpinit, Ford-Wellpinit Road - (Spokane Tribe)

Site Name	Wellpinit, Ford-Wellpinit Road
AQS ID	530650002
GPS coordinates	LAT/LONG: 047 53' 19" / 117 59' 19"
Location	On a roof
Address	5298 Ford-Wellpinit Road, Wellpinit
County	Stevens
Distance to road from gaseous probe (meters)	150
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	10/08
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	15.8

Purpose: This site is used by the Spokane Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

White Swan - (Yakama Nation)

Site Name	White Swan - Yakama
AQS ID	530770016
GPS coordinates	LAT/LONG: 046.37'54"/120 72' 93"
Location	In a shelter at White Swan HS
Address	621 Signal Peak Rd, White Swan
County	Yakima
Distance to road from gaseous probe (meters)	3
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	MSA: Not in an MSA

Monitor Information Pollutant, POC	
Parameter code	88502 (POC 3)
Basic monitoring objectives(s)	Public Information
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	Radiance Research M903
Method code	771
FRM/FEM/ARM/other	Other
Collecting Agency	Yakama Tribe
Analytical Lab	N/A
Reporting Agency	Ecology
Spatial scale	Neighborhood
Monitoring start date	1/09
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	2
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	Tygon
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the PM2.5 NAAQS?	No
Design value	23.5

Purpose: This site is used by the Yakama Tribe for air quality information on the Reservation. The air quality information is also used by EPA Region 10 to make burning curtailment calls in support of the Federal Rules for Reservations (FARR).

Lead (Pb 14129)

Table 14: Pb Lead, Parameter code 85129

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530330080	Seattle, Beacon Hill	1/13	NCore	Urban	1/6	Continue

Additional Monitors: None.

Recommendations/Modifications: None

Note: Ecology has EPA Region 10 approval to use the PM10 sampler which is part of the PM Course sampling for lead monitoring. ERG performs the analysis and submits the data to AQS. There is an SOP in Ecology's Quality Assurance Plan which covers this instrument.

Seattle, Beacon Hill

Site Name	Seattle Beacon Hill
AQS ID	530330080
GPS coordinates	LAT/LONG: 047 34' 58" / 122 18' 30"
Location	In a shelter at Jefferson Park, in Seattle
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	N/A
Traffic count (AADT, year)	N/A
Groundcover	Gravel, grass
Statistical Area	MSA: Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	85129
Basic monitoring objectives(s)	NAQQS Compliance
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	NCore
Method code	907
FRM/FEM/ARM/other	FRM
Collecting Agency	Ecology
Analytical Lab	ERG
Reporting Agency	ERG
Spatial scale	Urban
Monitoring start date	1/13
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the Pb NAAQS?	Yes

Purpose: The purpose of sampling at Seattle Beacon Hill is to meet EPA NAAQS minimum Pb requirements.

Trace Gas Monitoring

NCore – Precursor Gas & Multi-Pollutant Monitoring – From an emission source perspective, multiple pollutants and their precursors are released simultaneously (e.g., a combustion plume with nitrogen, carbon, hydrocarbon, mercury, sulfur gases, and particulate matter). Meteorological processes that shape pollutant movement, atmospheric transformations, and removal act on all pollutants. Numerous chemical and physical interactions underlie the dynamics of particle and ozone formation and the adherence of air toxics on surfaces of particles.

Overwhelming programmatic and scientific interactions across pollutants have demanded a movement toward integrated air quality management. Multi-pollutant air monitoring benefits health assessments and emissions strategy development. Health studies with access to multi-pollutant data will be better positioned to identify effects of different pollutants, particularly when concentration, composition, and population types are included. Air quality models and source attribution methods used for strategy development also benefit from the multi-pollutant approach. Modelers will be able to perform more robust evaluations by checking performance on several variables to ensure the model produces results for correct reasons and not through compensating errors. As emission sources are characterized by a multiplicity of pollutant releases, related source apportionment models yield more conclusive results from use of multi-pollutant measurements. Multi-pollutant measurements also streamline monitoring operations and offer increased diagnostic capabilities to improve instrument performance.

The multi-pollutant monitoring provided for these needs by starting to fill the measurement gaps that have accumulated over the years. The objective of this strategy is to provide for the following important needs:

- Improved data flow and timely reporting to the public
- Future NAAQS compliance determinations and revisions
- Support for development of emissions strategies
- Assess effectiveness of air pollution control programs
- Data for scientific and health-based studies

Table 15: Trace Gas Monitoring

AQS#	Site Name	Est	Type	Scale	Sampling Type	Action for 2014
530330080	Seattle Beacon Hill	4/9	NCore	Urban	Continuous	Continue
530090013	Cheeka Peak	5/0	Rural NCore	Regional	Continuous	Continue

Additional Monitors: None

Recommendations/Modifications: None.

Note: Details of trace gas monitoring are found in CO, NO, SO_2 sections.

Table 16: NCore Parameters Seattle Beacon Hill

Parameter	Parameter Code	Sampling /Analysis Method	Sampling schedule	Spatial Scale	Instrument Type	Action for 2013
Ozone	44201	Continuous		Urban	API 440 E	Continue
SO_2 trace	42401	Continuous		Urban	Thermo 42C	Continue
CO trace	42101	Continuous		Urban	API 300EU	Continue
NOy trace	42600	Continuous		Urban	Thermo 42C-Y	Continue
$PM_{2.5}$ mass	88101	Manual	1/3	Urban	Thermo 2025	Continue
$PM_{2.5}$ Continuous	88502	Continuous		Urban	Thermo FDMS TEOM	Continue
$PM_{2.5}$ Speciation	88502	Continuous & Manual	1/3	Urban	Met One SSAS & URG 3000N Carbon, Sunset Labs OCEC	Continue
$PM_{10\text{-}2.5}$	86101	Manual	1/3	Urban	Thermo 2025	Continue
$PM_{10\text{-}2.5}$ Speciation	**Not sampling**	**Not sampling**	**Not sampling**	Urban	None	TBD
WS & WD	61101/61102	Continuous		Urban	RM Young 85004	Continue
Ambient temperature	62101	Continuous		Urban	RM Young Platinum probe	Continue
Delta Temperature	62106	Continuous		Urban	RM Young	Continue
Ambient pressure	64101	Continuous		Urban	RM Young	Continue
Relative humidity	62201	Continuous		Urban	Rotronics	Continue

Purpose: Seattle Beacon Hill is an Urban scale site for trace level CO, SO_2, NO_2, $PM_{2.5}$, air toxics, speciation and other studies. Also measured at Seattle Beacon Hill: $PM_{2.5}$ chemical speciated particulate matter, volatile organic compounds, metals, carbonyls and semi-volatile (PAH). Data from this site also supports Particulate Research Center activities.

Table 17: NCore Parameters Cheeka Peak

Parameter	Parameter Code	Sampling /Analysis Method	Sampling schedule	Spatial Scale	Instrument Type	Action for 2013
Ozone	44201	Continuous	Continuous	Rural	API T400	Continue
SO_2 trace	42401	Continuous	Continuous	Rural	API T100U	Continue
CO trace	42101	Continuous	Continuous	Rural	API 300EU	Continue
NOy trace	42600	Continuous	Continuous	Rural	API T200U	Continue
$PM_{2.5}$ mass	88101	Manual	IMPROVE	Rural	IMPROVE	Continue
$PM_{2.5}$ Continuous	88502	Continuous	Continuous	Rural	Radiance Research M903 Nephelometer Correlated	Continue
Light Scatter	11203	Continuous	Continuous	Rural	" "	Continue
Visibility	63101	Continuous	Continuous	Rural	" "	Continue
$PM_{2.5}$ Speciation	88502	Manual	IMPROVE	Rural	IMPROVE	Continue
$PM_{10\text{-}2.5}$	**Not sampling**	**Not sampling**	**Not sampling**	Rural	None	TBD
$PM_{10\text{-}2.5}$ Speciation	**Not sampling**	**Not sampling**	**Not sampling**	Rural	None	TBD
WS, WD & sigma	61101/61102 /61106	Continuous	Continuous	Rural	RM Young PSD Quality	Continue
Ambient temperature	62101	Continuous	Continuous	Rural	RM Young Platinum probe	Continue
Ambient pressure	64101	Continuous	Continuous	Rural	RM Young	Continue
Relative humidity	62201	Continuous	Continuous	Rural	Rotronics	Continue

Purpose: Cheeka Peak is a Regional scale Rural NCore site in Clallam County. Parameters measured at Cheeka Peak are: $PM_{2\ 5}$, ozone, trace-level CO, SO_2, NO_y, $PM_{2\ 5}$, and meteorology.

Toxics

Collocated National Air Toxics Trend Site (NATTS) - In addition to the STN and NCore Precursor Gas Monitoring Programs, Beacon Hill is also a designated National Air Toxics Trend Site (NATTS). The primary objectives of Washington's National Air Toxics Trends Site Monitoring Program include but are not limited to:

- Provide long-term air toxic monitoring data in order to establish and track trends.
- Evaluate the air toxic program's progress by characterizing air toxics concentrations, and determining their spatial and temporal differences between cities and regions over time.
- Provide representative air toxic data to support exposure assessments (i.e. determine health risks).
- Determine where air toxics emissions come from (source apportionment).
- Provide air toxic data for evaluating modeling results that are used for exposure assessments.
- Assess the effectiveness of the air toxic program's emission reduction and control strategies.

Table 18: Toxics

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530330080	Seattle Beacon Hill	4/97	NCore	Urban	Manual	Continue

Additional Monitors: None

Recommendations/Modifications: Continue listed site as described.

Seattle, Beacon Hill - NCore

Site Name	Seattle, Beacon Hill
AQS ID	530330080
GPS coordinates	047 34' 58" / 122 18' 30"
Location	In a shelter at Jefferson Park in Seattle
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	
Traffic count (AADT, year)	
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	Unk.
Basic monitoring objectives(s)	Special Studies
Site type(s)	
Monitor type(s)	SPMS
Instrument manufacturer and model	Zontech (Zonteck) 910PC VOCs (cans), 925 Carbonyls (tubes)
Method code	Unk.
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	ERG
Reporting Agency	ERG
Spatial scale	Urban
Monitoring start date	4/97
Current sampling frequency	1/3
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	4.65
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Seattle Beacon Hill is a designated National Air Toxics Trends Site (NATTS). Seattle Beacon Hill monitoring station was nominated by the National Air Toxics Committee and chosen by EPA headquarters to represent urban scale air toxics in the Pacific Northwest. It is currently the only designated urban scale NATTS located in the Pacific Northwest.

Speciation

Chemical Speciation Trends Network (CSN) - The $PM_{2.5}$ Chemical Speciation Program continues to have a significant role in the new Monitoring Strategy. Washington's Speciation Trends Network (STN) site is located at Jefferson Park on Beacon Hill in Seattle. The primary goal of the $PM_{2.5}$ speciation monitoring is to:

- Provide long-term data in order to establish and track trends
- Determine the spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time
- Provide representative $PM_{2.5}$ speciation data to support exposure assessments (i.e. determine health risks)
- Determine where $PM_{2.5}$ emissions come from (source apportionment)
- Evaluate modeling results that are used for exposure assessments
- Assess the effectiveness of the program's emission reduction and control strategies

Table 19: Speciation

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2014
530330080	Seattle Beacon Hill	4/97	NCore	Urban	1/3	Continue
530611007	Marysville	2009	SPMS	Neighborhood	1/6	Continue
530530029	Tacoma L St	2008	SPMS	Neighborhood	1/6	Continue
530110023	Vancouver NE Van	2002	SPMS	Neighborhood	1/6	Continue*
530770009	Yakima	2002	SPMS	Neighborhood	1/6	Continue

Additional Monitors: None

Recommendations/Modifications: * The Vancouver Speciation site has been identified by EPA as one of the Sites to be "de-funded" in 2015. Although not final, it may be discontinued in 2015 as a result.

Speciation Parameter codes:

88102	Antimony	88126	Iron	88167	Zinc	88370	OC CSN Rev Unadjusted
88103	Arsenic	88128	Lead	88168	Strontium	88374	OC1 CSN Rev Unadjusted
88104	Aluminum	88131	Indium	88169	Sulfur	88375	OC2 CSN Rev Unadjusted
88107	Barium	88132	Manganese	88176	Rubidium	88376	OC3 CSN Rev Unadjusted
88109	Bromine	88136	Nickel	88180	Potassium	88377	OC4 CSN Rev Unadjusted
88110	Cadmium	88140	Magnesium	88184	Sodium	88378	OP CSN Rev Unadjusted
88111	Calcium	88152	Phosphorus	88185	Zirconium	88380	EC CSN Rev Unadjusted
88112	Chromium	88154	Selenium	88301	Ammonium Ion	88383	EC1 CSN Rev Unadjusted
88113	Cobalt	88160	Tin	88302	Sodium Ion	88384	EC2 CSN Rev Unadjusted
88114	Copper	88161	Titanium	88303	Potassium Ion	88385	EC3 CSN Rev Unadjusted
88115	Chlorine	88164	Vanadium	88306	Total Nitrate	88388	OP CSN Rev Unadjusted
88117	Cerium	88165	Silicon	88355	OC CSN Rev Unadj	88403	Sulfate
88118	Cesium	88166	Silver	88357	EC CSN Rev Unadj	88502	PM2.5 Speciation Mass

Seattle, Beacon Hill -NCore

Site Name	Seattle, Beacon Hill
AQS ID	530330080
GPS coordinates	047 34' 58" / 122 18' 30"
Location	In a shelter at Jefferson Park in Seattle
Address	4103 Beacon Avenue S., Seattle
County	King
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	12,700 (2012 WSDOT
Groundcover	Gravel, grass
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	See list above
Basic monitoring objectives(s)	Special Studies
Site type(s)	Population Exposure
Monitor type(s)	NCore
Instrument manufacturer and model	URG 3000N, Met One SASS (Super SASS)
Method code	
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	RTI
Reporting Agency	Ecology
Spatial scale	Urban
Monitoring start date	3/07
Current sampling frequency	1/3
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Provide long-term data to establish and track trends, determine spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time, provide representative $PM_{2.5}$ speciation data to support exposure assessments and determine where $PM_{2.5}$ emissions come from.

Supplemental Speciation Sites - In addition to the Seattle Beacon Hill speciation trends network site, the State operates four supplemental speciation sites. These supplemental sites are located at:

Marysville, 7th Ave – (PSCAA)

Site Name	Marysville 7th Ave.
AQS ID	530611007
GPS coordinates	048 03' 18" / 122 10' 33"
Location	In a shelter at Marysville Junior High School
Address	1605 7th ST, Marysville
County	Snohomish
Distance to road from gaseous probe (meters)	10
Traffic count (AADT, year)	N/A
Groundcover	Grass, gravel
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	See list above
Basic monitoring objectives(s)	Special Studies
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	URG 3000N, Met One SASS
Method code	
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	RTI
Reporting Agency	RTI
Spatial scale	Neighborhood
Monitoring start date	3/09
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Provide long-term data to establish and track trends, determine spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time, provide representative $PM_{2.5}$ speciation data to support exposure assessments and determine where $PM_{2.5}$ emissions come from.

Tacoma, L Street (PSCAA)

Site Name	Tacoma L Street
AQS ID	530530029
GPS coordinates	047 11' 11" / 122 27' 06"
Location	In/at a shelter
Address	7802 South L St., Tacoma
County	Pierce
Distance to road from gaseous probe (meters)	100
Traffic count (AADT, year)	N/A
Groundcover	Asphalt, grass
Statistical Area	Seattle-Bellevue-Everett, WA
Monitor Information Pollutant, POC	
Parameter code	See list above
Basic monitoring objectives(s)	Special Studies
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	URG 3000N, Met One SASS
Method code	
FRM/FEM/ARM/other	Other
Collecting Agency	Ecology
Analytical Lab	RTI
Reporting Agency	RTI
Spatial scale	Neighborhood
Monitoring start date	11/06
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Provide long-term data to establish and track trends, determine spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time, provide representative $PM_{2.5}$ speciation data to support exposure assessments and determine where $PM_{2.5}$ emissions come from.

Vancouver, NE Van (SWCAA) Listed as “defunded” by EPA in 2015

Site Name	Vancouver, NE Van (SWCAA)
AQS ID	530110023
GPS coordinates	045 64' 98" / 122 59' 01"
Location	In a shelter at Centerpoint/Van Plaza Park
Address	8121 NE Vancouver Plaza Dr, Vancouver
County	Clark
Distance to road from gaseous probe (meters)	120
Traffic count (AADT, year)	N/A
Groundcover	Grass
Statistical Area	Portland-Vancouver, OR-WA

Monitor Information Pollutant, POC	
Parameter code	See list above
Basic monitoring objectives(s)	Special Studies
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	URG 3000N, Met One SASS
Method code	
FRM/FEM/ARM/other	Other
Collecting Agency	Southwest Clean Air Agency
Analytical Lab	RTI
Reporting Agency	RTI
Spatial scale	Neighborhood
Monitoring start date	6/08 Pre-relocation
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	EPA has defunded this site starting 4/01/2015
Is it suitable for comparison against the NAAQS?	No

Purpose: Provide long-term data to establish and track trends, determine spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time, provide representative $PM_{2.5}$ speciation data to support exposure assessments and determine where $PM_{2.5}$ emissions come from.

Yakima, S 4th (YRCAA)

Site Name	Yakima S. 4th (YRCAA)
AQS ID	530770009
GPS coordinates	046 35' 42" / 120 30' 44"
Location	In a shelter
Address	402 South 4th Avenue, Yakima
County	Yakima
Distance to road from gaseous probe (meters)	14
Traffic count (AADT, year)	N/A
Groundcover	Asphalt roof, grass & cement on the ground
Statistical Area	Yakima, WA
Monitor Information Pollutant, POC	
Parameter code	See list above
Basic monitoring objectives(s)	Special Studies
Site type(s)	Population Exposure
Monitor type(s)	SPMS
Instrument manufacturer and model	URG 3000N, Met One SASS
Method code	
FRM/FEM/ARM/other	Other
Collecting Agency	Yakima Region Clean Air Agency
Analytical Lab	RTI
Reporting Agency	RTI
Spatial scale	Neighborhood
Monitoring start date	11/07
Current sampling frequency	1/6
Calculated sampling frequency	N/A
Sampling season	Year-round
Probe height (meters)	2
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters)	N/A
Distance from obstructions not on roof (meters)	N/A
Distance from trees (meters)	N/A
Distance to furnace or incinerator flue (meters)	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow (degrees)	360
Spacing from minor sources	No minor sources
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Changes within the next 18 months?	None anticipated
Is it suitable for comparison against the NAAQS?	No

Purpose: Provide long-term data to establish and track trends, determine spatial and temporal differences of $PM_{2.5}$ composition between cities and regions over time, provide representative $PM_{2.5}$ speciation data to support exposure assessments and determine where $PM_{2.5}$ emissions come from.

APPENDIX D SITE EVALUATION FORMS

PART 58 APPENDIX D SITE EVALUATION FORM FOR CARBON MONOXIDE (CO)

SITE NAME_____ SITE ADDRESS_____

AQS ID_____ EVALUATION DATE_____ EVALUATOR_____

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.		Y		
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.		N		

Comments: Present number of SLAMS CO sites does not include trace level monitors at Seattle Beacon Hill, Seattle 10th & Weller. There is also trace level CO monitoring at Cheeka Peak.

MSA Description[1]	CBSA population[2, 3]	Minimum required number of SLAMS CO sites	Present number of SLAMS CO sites in MSA
Seattle-Tacoma-Bellevue, WA	3,439,809	2	0
Spokane, WA	527, 753	1	1

[1]see http://www2.census.gov/econ/susb/data/msa_codes_2007_to_2011.txt

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

[3]Population based on latest available census figures.

PART 58 APPENDIX D SITE EVALUATION FORM FOR PM10

SITE NAME_____ SITE ADDRESS_____

AQS ID_____ EVALUATION DATE_____ EVALUATOR_____

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 to appropriate number of samplers.	Y*		

Comments: * PM2.5 monitors are used in three locations in the Seattle-Tacoma-Bellevue, WA MSA as surrogates for PM10.

MSA Description[1]	MSA population[2, 3]	Minimum required number of PM10 stations (from Table D-4)	Present number of PM10 stations in MSA
Seattle-Tacoma-Bellevue, WA	3,439,809	2-4	3 PM2.5 surrogates
Spokane, WA	527, 753	1-2	1
Kennewick, WA	253,340	1-2	1
Yakima, WA	243,231	1-2	1

[1]see http://www2.census.gov/econ/susb/data/msa_codes_2007_to_2011.txt

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

[3]Population based on latest available census figures.

Table D-4 of Appendix D to Part 58 – PM10 Minimum Monitoring Requirements

~~MSA population[1,2]~~	~~High concentration2~~	~~Medium concentration3~~	~~Low concentration4 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.

PART 58 APPENDIX D SITE EVALUATION FORM FOR NITROGEN DIOXIDE (NO2)				
SITE NAME_____ SITE ADDRESS_____				
AQS ID_____ EVALUATION DATE_____ EVALUATOR_____				
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 500,000 or more persons.	Y		
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.	Y		
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	Y		
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.	Y		
Comments:				

Table 1

CBSA Description[1]	CBSA population[2, 3]	Required number of Near-road NO2 sites	Present number of Near-road NO2 sites	Required number of Area-wide NO2 sites	Present number of Area-wide NO2 sites
Seattle-Tacoma-Bellevue, WA	3,439,809	2	1	1	1

[1]see http://www2.census.gov/econ/susb/data/msa_codes_2007_to_2011.txt
[2]Minimum monitoring requirements apply to the Core Based statistical area (CBSA). CBSA includes both metropolitan and micropolitan statistical areas.
[3]Population based on latest available census figures.

PART 58 APPENDIX D SITE EVALUATION FORM FOR PM2.5

STATE_____ AGENCY_____AQS AGENCY CODE_____

EVALUATION DATE_____ EVALUATOR_____

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.	Y		
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 represent many such locations throughout the MSA).	Y		
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).	Y		
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.	Y*		
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.			N/A
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.	Y		
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.	Y**		
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).	Y***		

Comments:

*A PM2.5 FEM is scheduled to begin operation on or before 01/01/2015 at the Seattle 10th & Weller site.

**Regional background site: Seattle Beacon Hill. Regional Transport site: North Bend.

***STN site: Seattle Beacon Hill

MSA Description[1]	MSA population[2,3]	Design Value for years 2011-2013	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
Seattle-Tacoma-Bellevue, WA	3,439,809	32.5	3	5	5	1
Spokane, WA	527,753	25.7	1	1	1	
Kennewick, WA	253,340	20.6	0	0	0	
Olympia-Tumwater, WA	252,264	25.5	0	0	0	
Bremerton-Silverdale, WA	251,133	*	0	0	1	
Yakima, WA	243,231	*	0	0	1	
Mt, Vernon-Anacortes, WA	116,001	10.0	0	0	0	

[1]see http://www2.census.gov/econ/susb/data/msa_codes_2007_to_2011.txt)

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

[3]Population based on latest available census figures.

*Insufficient data.

Table D-5 of Appendix D to Part 58 – PM2.5 Minimum Monitoring Requirements		
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.

PART 58 APPENDIX D SITE EVALUATION FORM FOR OZONE

STATE_____ AGENCY_____AQS AGENCY CODE_____

EVALUATION DATE_____ EVALUATOR_____

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).	Y		
4.1(c)	The appropriate spatial scales for O_3 sites are neighborhood, urban, and regional (note deviations in comment field).	Y		
4.1(f)	Confirm that the monitoring agency consulted with EPA R10 when siting the maximum O3 concentration site.		N	
4.1(i)	O3 is being monitored at SLAMS monitoring sites during the "ozone season" as specified in Table D-3 of Appendix D to Part 58.	Y		

Comments: Enumclaw, Mud Mountain is the max concentration site in Washington. Information regarding when Enumclaw was sited in July of 1998 and whether EPA was consulted at that time is not available. Enumclaw has been included in the Annual Network Plan since it was established.

MSA Description[a]	MSA population[1, 2]	Minimum required number of SLAMS O3 sites (from Table D-2)	Present number of SLAMS O3 sites in CBSA	
Seattle-Tacoma-Bellevue, WA	3,439,809	3	6	
Spokane, WA	527,733	2	2	

[a] see http://www2.census.gov/econ/susb/data/msa_codes_2007_to_2011.txt

Table D-2 of Appendix D to Part 58 - SLAMS O3 Monitoring Minimum Requirements

MSA population[1, 2]	Most recent 3-year design value concentrations ≥85% of any O3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O3 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 figures.

[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-3 of Appendix D to Part 58—Ozone Monitoring Season by State		
State	Begin month	End Month
Alaska	April	October
Idaho	May	September
Oregon	May	September
Washington	May	September

PART 58 APPENDIX D SITE EVALUATION FORM FOR SO2				
STATE_____ AGENCY_____AQS AGENCY CODE_____				
EVALUATION DATE_____ EVALUATOR_____				
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)	Y		
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?	Y		
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.		N	
4.4.5(a)	Is your agency counting an existing SO2 monitor at an NCore site in a CBSA with a minimum monitoring requirement?	Y		
Comments:				

Table 1.

CBSA Description[1]	CBSA population[1, 2]	total amount of SO2 in tons per year emitted within the CBSA (use 2008 NEI[4])	PWEI (population x total emissions ÷ 1,000,000)	Minimum required number of SO2 monitors in CBSA (see Table 2 below)	Present number of SO2 monitors in CBSA
Seattle-Tacoma-Bellevue, WA	3,439,809	13,671	47,026		

[1]see http://www.census.gov/population/metro/data/def html

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

[3]Population based on latest available census figures.

[4]Table 2 – Minimum SO2 Monitoring Requirements (Section 4.4.2 of App D to Part 58)

PWEI (Population weighted Emission Index) Value	Require number of SO2 monitors
>= 1,000,000	3
>= 100,000 but < 1,000,000	2
>= 5,000 but < 100,000	1

APPENDIX E SITE EVALUATION FORMS

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 VERTICLE 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.		Y		
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.		Y		
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).		Y		
	(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.		Y		
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.		Y		
	(c) No trees should be between source and probe inlet for microscale sites.		Y		
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.		Y		
	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
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex) for reactive gases.		Y		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.		Y		
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.				N	
Other Comments: Please see Carbon Monoxide section for detail on individual sites.					

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

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.

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 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.		Y		
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.		Y		
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.		Y		
	(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.		Y		
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.		Y		
	(c) No trees should be between source and probe inlet for microscale sites.		Y		
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.		Y		
Are there any changes that might compromise original siting criteria?				N	
Other Comments: Please see the $PM_{2.5}$, PM_{10}, $PM_{10-2.5}$ and Pb sections for individual detail.					

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 VERTICLE 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.		Y		
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.		Y		
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.		Y		
	(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.		Y		
	(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.		Y		
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.		Y		
	(c) No trees should be between source and probe inlet for microscale sites.		Y		
6. SPACING FROM ROADWAYS	See spacing requirements table below		Y		
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).		Y		
	(c) Sampling probes for reactive gas monitors at NCore and at NO_2 sites must have a sample residence time less than 20 seconds.		Y		
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.				N	
Other Comments: Please see the NO, NO_x, NO_2 and NO_y section for detail on individual sites.					

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

[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.

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 VERTICLE 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.		Y		
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.		Y		
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.		Y		
	(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.		Y		
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.		Y		
	(c) No trees should be between source and probe inlet for microscale sites.		Y		
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).		Y		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.		Y		
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.				N	
Other Comments: Please see the SO_2 section for detail on individual sites.					

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 VERTICLE 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.		Y		
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.		Y		
	(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.		Y		
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.		Y		
	(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.		Y		
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.		Y		
	(c) No trees should be between source and probe inlet for microscale sites.		Y		
6. SPACING FROM ROADWAYS	See spacing requirements table below		Y		
9. PROBE MATERIAL & RESIDENCE TIME	(a) Sampling train material must be FEP Teflon or borosilicate glass (e.g., Pyrex).		Y		
	(c) Sampling probes for reactive gas monitors at NCore must have a sample residence time less than 20 seconds.		Y		
Are there any changes that might compromise original siting criteria? If so, provide detail in comment section.				N	
Other Comments: Please see the Ozone section for detail on individual sites.					

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

[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.

Appendix C

Vancouver, WA $PM_{2.5}$ Site Relocation Assessment

The Southwest Clean Air Agency (SWCAA), in cooperation with the Department of Ecology (Ecology), operates one SLAMS fine particulate matter ($PM_{2.5}$) monitor in Vancouver, Washington. The purpose of this of this monitor is to provide population-oriented, neighborhood-scale, $PM_{2.5}$ pollution information for the greater Vancouver area. Data from this monitor are used to:

- Determine compliance with federal standards
- Provide near-real-time air quality information for the protection of public health
- Forecast air quality
- Make daily burn decisions and curtailment calls
- Assist with permitting activities
- Evaluate the effectiveness of air pollution control programs
- Evaluate the effects of air pollution on public health
- Determine air quality trends
- Identify and develop responsible and cost-effective pollution control strategies
- Evaluate air quality models

Due to a pending property foreclosure at the former site, the monitoring site was moved to its current location at 8121 NE Vancouver Plaza Dr. (530110023) on August 29, 2013. As shown in Figure 2, the current site is located approximately 200 meters northwest of the former site at 8205 NE 4th Plain Rd. (530110013). The $PM_{2.5}$ monitor in use for the last two years at both of these sites is a Thermo Scientific 1405F Federal Equivalent Monitor (FEM), which ran from 10/01/2011 – 8/27/2013 at the 4th Plain Rd. site and from 9/04/2013 – present at the current Vancouver Plaza Dr. site.

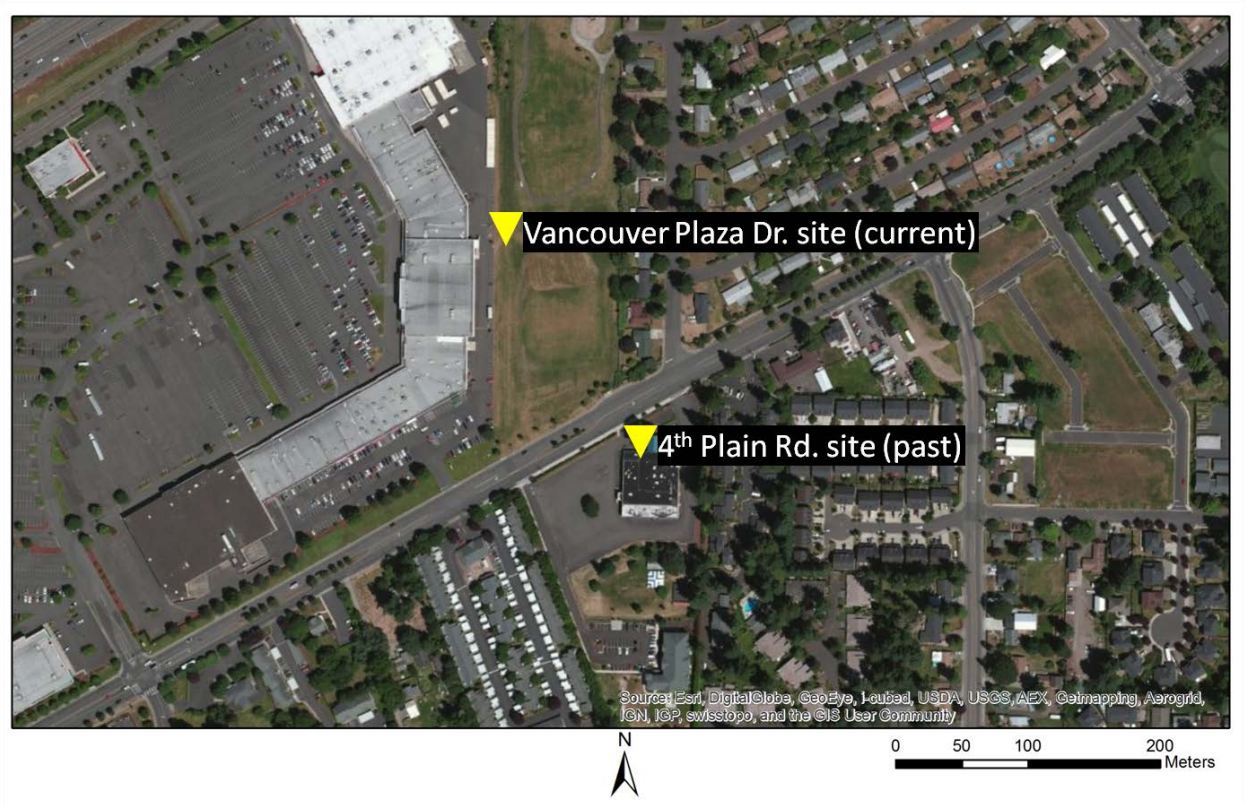


Figure 2. Vancouver, WA current and past SLAMS sites for $PM_{2.5}$ monitoring

During the months following the site relocation in late 2013, the FEM reported exceptionally high $PM_{2.5}$ concentrations that were inconsistent with both historical trends at the 4th Plain Rd. site and concurrent data from nearby monitoring sites. In fact, during the fall of 2013, the Vancouver, Plaza Dr. monitor recorded a higher average concentration and exceeded the standard more often than any other site in the state. On multiple occasions, SWCAA and Ecology staff has observed smoke from a nearby residential chimney following a path directly to the monitor inlet. Ecology has determined that the Vancouver Plaza Dr. site meets neither the monitoring objective nor neighborhood-scale siting criteria based on the following factors, described in further detail below:

a. discrepancies between $PM_{2.5}$ concentrations measured in 2013 at the current site and in 2011-2012 at the past site;
b. discrepancies between $PM_{2.5}$ concentrations measured at the Vancouver Plaza Dr. site and those at other neighborhood-scale monitoring sites in the metropolitan area;
c. direct observations of smoke impacts from nearby residential chimneys; and
d. results of a mobile monitoring campaign that showed the impact of local pollution sources at the Vancouver Plaza Dr. site.

In March 2014, the Vancouver Plaza Dr. $PM_{2.5}$ monitor was changed from neighborhood to microscale in AQS and collected data were flagged with a qualifier code of NS (Influenced By Nearby Source) to reflect the impact of local sources. Within the calendar year 2014, the state of Washington plans to move the Vancouver Plaza Dr. site to a location that meets neighborhood-scale siting criteria and satisfies the monitoring objective of providing population-oriented $PM_{2.5}$ pollution information for the wider Vancouver area.

A. Comparison to Historical Vancouver Data

During the 3-week period beginning November 23rd and ending December 12th, 2013 the Vancouver Plaza Dr. monitor recorded 13 exceedances of the federal 24-hour fine particle standard of 35 µg/m^3. In contrast, the 4th Plain Rd. site reported only two exceedances in all of 2011 and none in 2012. The boxplots in Figure 3 show the distribution of 24-hour $PM_{2.5}$ concentrations during the heating seasons of 2011, 2012 and 2013. These show not only a marked increase in the median and 75th percentile of the $PM_{2.5}$ data but also the large number of values greater than 35 µg/m^3 during the 2013 heating season. Given the short distance between the two sites, the most likely explanation for this rapid increase is the impact of local sources on the current monitoring site in late 2013.

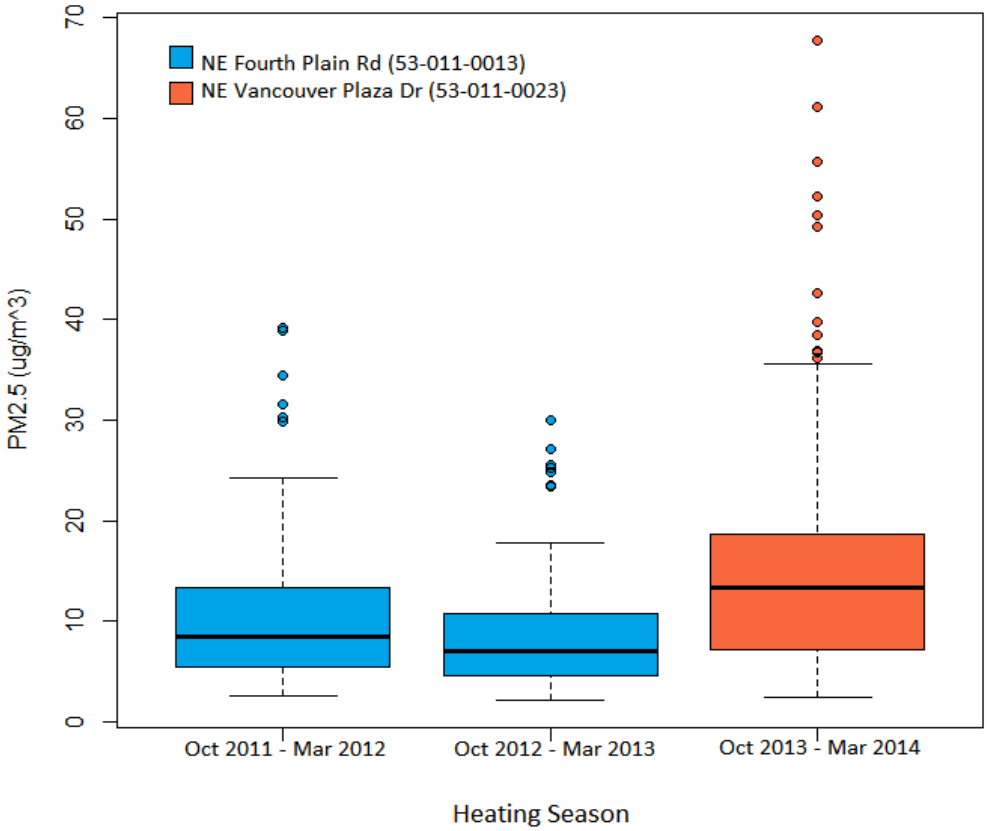


Figure 3. Vancouver, WA 24-hour $PM_{2.5}$ concentrations by heating season and location

B. Comparison to Nearby Monitoring Sites

Several other sites in the Portland-Vancouver-Beaverton, OR-WA metropolitan statistical area monitor $PM_{2.5}$. The two sites closest to Vancouver are the Portland SE Lafayette site approximately 10 miles south of Vancouver Plaza Dr. and the Beaverton Highland Park School site approximately 17 miles southwest. Both sites measure $PM_{2.5}$ using continuous nephelometers; the SE Lafayette site nephelometer is collocated with a filter-based Federal Reference Method (FRM) $PM_{2.5}$ sampler.

During the 3-week period in November and– of December 2013 in which the Vancouver Plaza Dr. site reported 13 exceedances of the federal 24-hour $PM_{2.5}$ standard, the SE Lafayette and Beaverton monitors reported 4 and 5 exceedances, respectively. Figure 4 shows a time-series graph of hourly $PM_{2.5}$ concentrations at the three monitors spanning the stagnation event across the area. While the three monitors showed generally good agreement, the Vancouver FEM reported a series of large spikes in quick succession that were not seen on the other two monitors. Though this may be partially explained by differences in instrument response between FEMs and nephelometers, the large magnitude of these spikes indicates that the Vancouver monitor was affected by local sources that did not impact the other two sites.

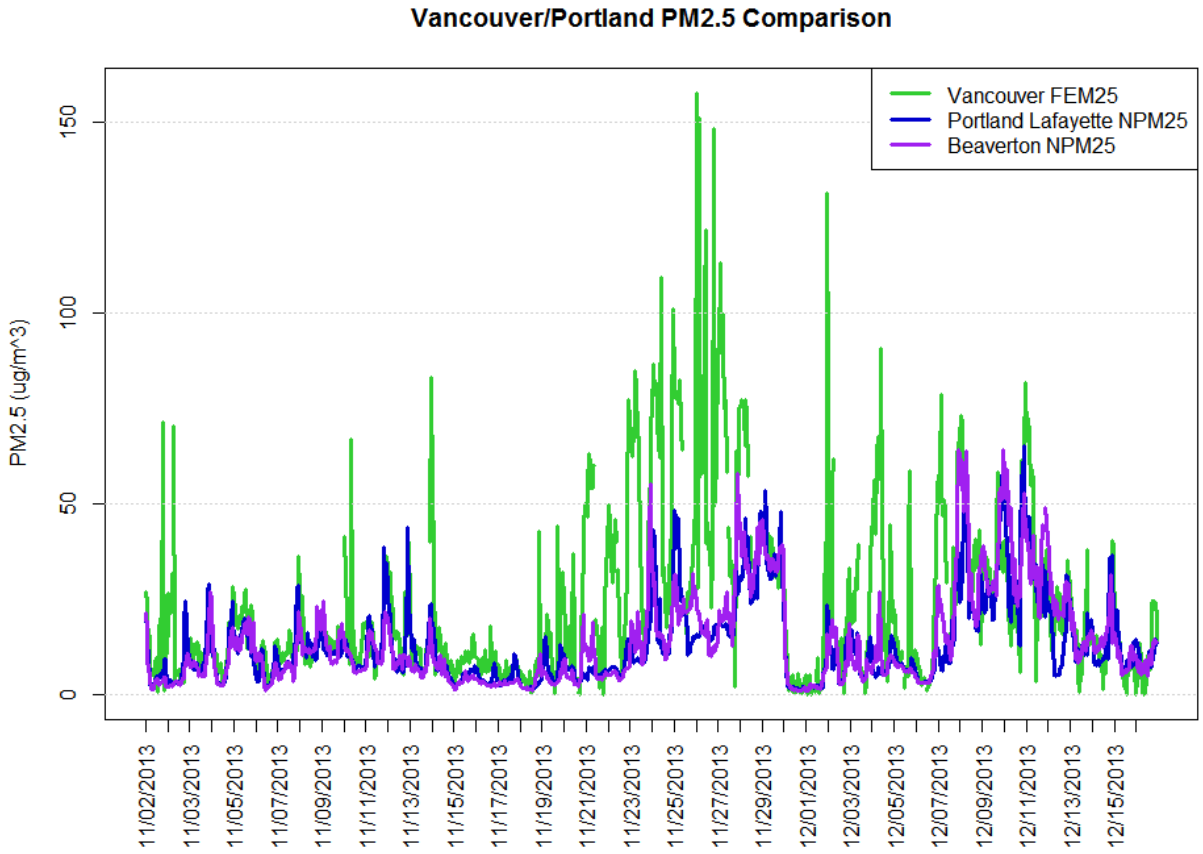


Figure 4. Time-series graph of Vancouver-area hourly $PM_{2.5}$ values during the fall 2013 stagnation event

C. Local Source Impacts

On multiple occasions during the 2013 heating season, staff observed smoke from a nearby chimney travel approximately 100 meters west across the adjoining field into the direct path of the FEM inlet, as shown in Figures 4, 5 and 6. Rapid increases in the FEM's reported concentration corresponded with these observations.

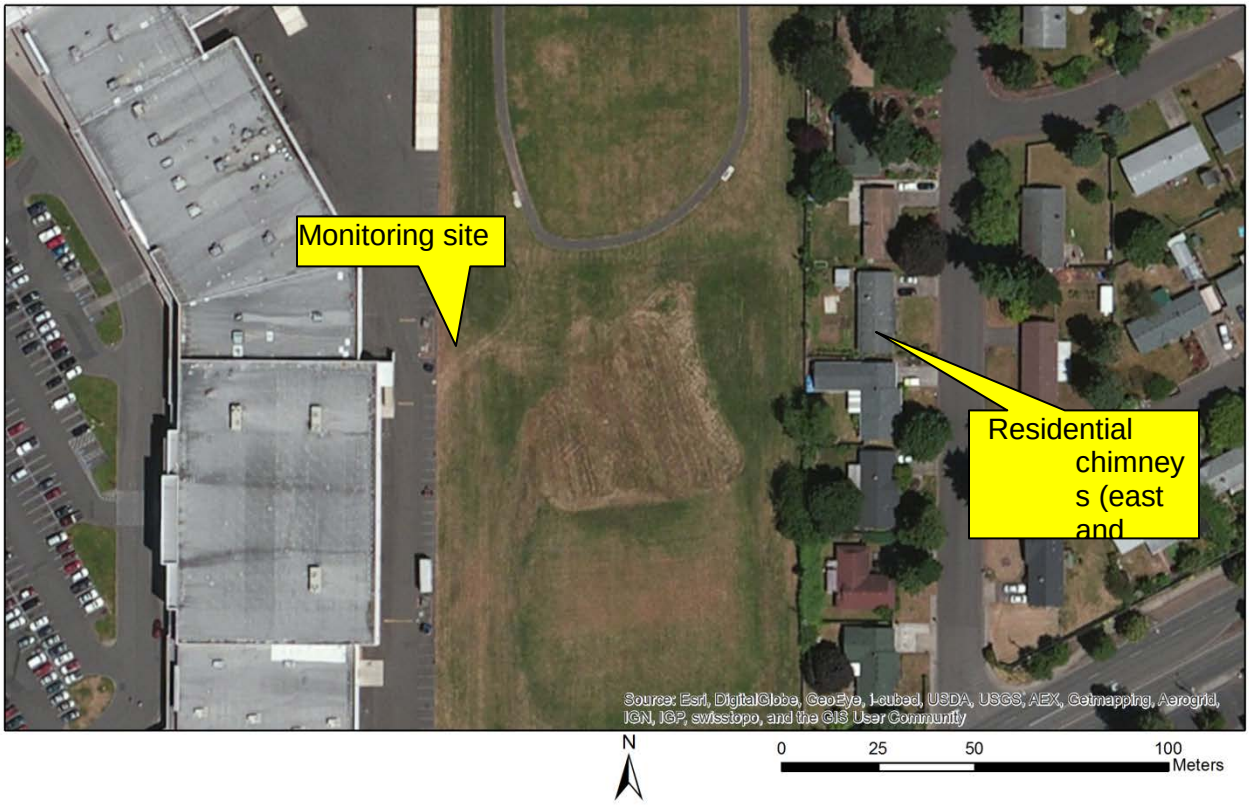


Figure 5. Close-up map of monitoring site and nearby chimneys

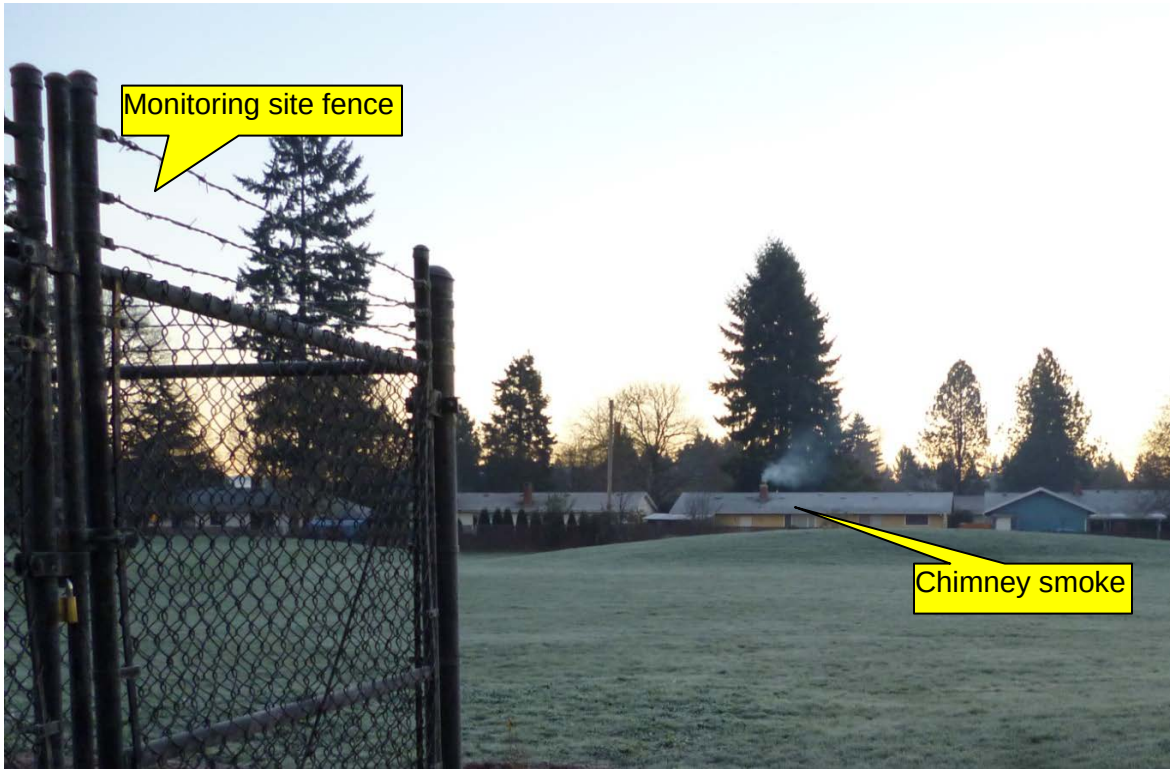


Figure 6. Nearby chimney smoke observation 1 looking east, 11/22/2013

Figure 7. Nearby chimney smoke observation 2 looking east, 12/05/2013

A temporary wind sensor was installed at the Vancouver Plaza Dr. site on January 10, 2014, to provide further information on the impacts of local meteorology on $PM_{2.5}$ concentrations. The pollution rose in Figure 8 shows wind direction data by $PM_{2.5}$ level for a period of elevated concentrations from January 18 – February 5, 2014. These results show that the predominant wind direction at the site was from the south. However, when $PM_{2.5}$ concentrations exceeded 35 $\mu g/m^3$, winds were most likely to originate in the east and southeast, from the direction of the nearby chimneys.

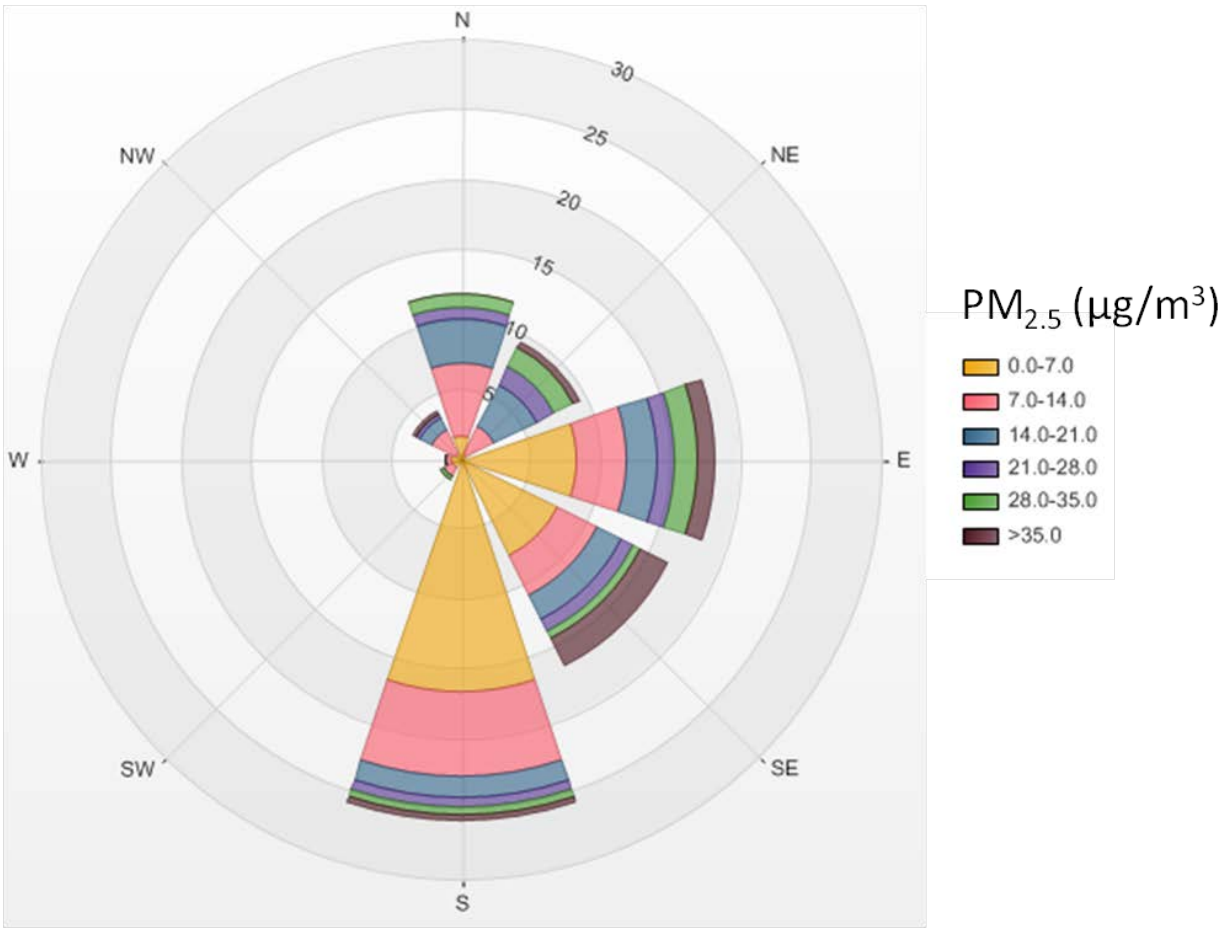


Figure 8. Vancouver Plaza Dr. $PM_{2.5}$ pollution rose, 1/18/14-2/05/14.

D. Mobile Monitoring Results

To evaluate whether the concentrations measured at the Vancouver Plaza Dr. site were representative of $PM_{2.5}$ levels across broader Vancouver, a mobile monitoring campaign was conducted during a brief stagnation event between 7pm on 1/21/14 and 8am on 1/22/14. A Radiance Research M903 nephelometer was positioned in the rear seat of a passenger vehicle with its inlet outside the rear window (see Figure 9). The vehicle was driven on an approximately 35-mile route through residential Vancouver and its northern suburbs. This route was repeated 3 times during the late evening and early morning. The nephelometer reported 2.5 σ_{sp} data points per second, which were later aggregated to 1-second intervals. A handheld Garmin GPS collected the geographic coordinates of the vehicle location once per second.

Figure 9. Mobile nephelometer setup

The σ_{sp} and geographic coordinates were paired using their common timestamps. The geometric means of σ_{sp} points within 300 meters were calculated for a grid of evenly spaced points 50 meters apart. The map in Figure 10 shows these aggregated $PM_{2.5}$ concentrations across the mobile monitoring route. Concentrations are represented in units of $\mu g/m^3$ based on a correlation developed at the 4th Plain Rd. site in 2011.

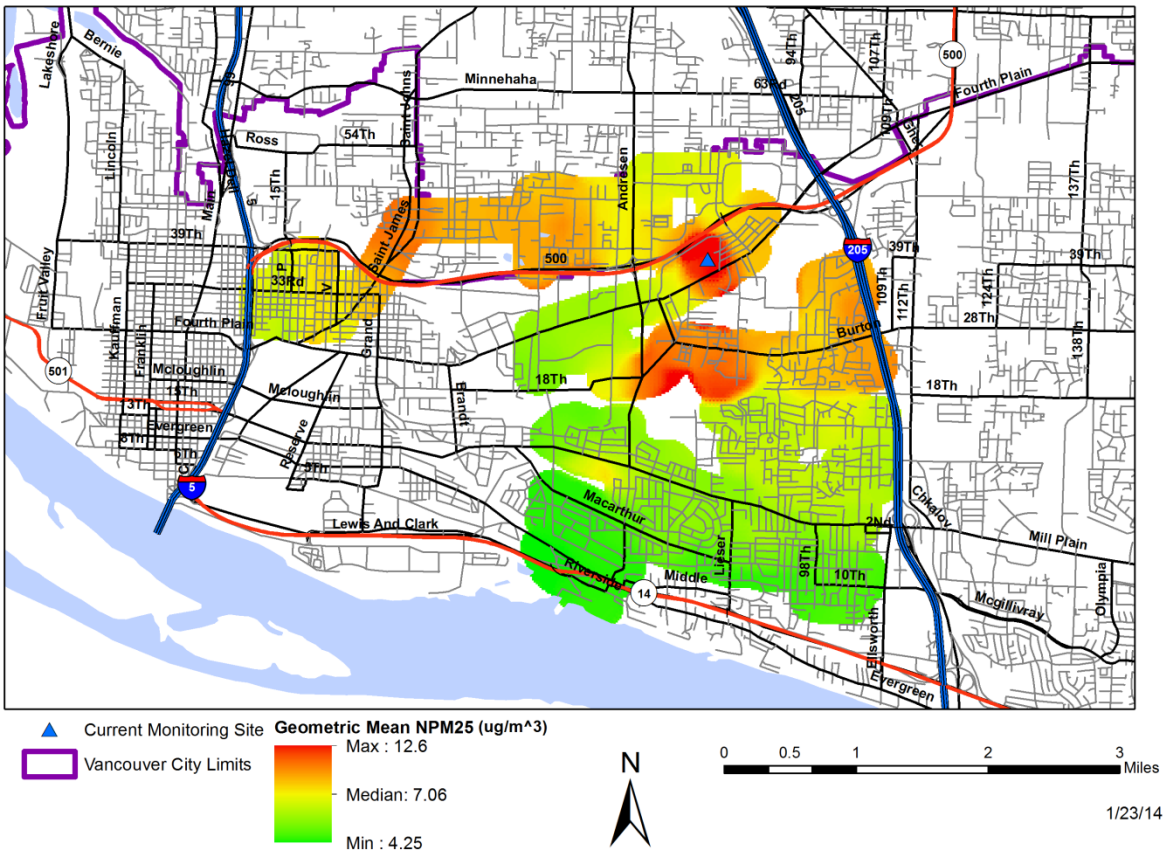


Figure 10. Vancouver mobile monitoring results, 1/21-1/22/14

The Vancouver Plaza Dr. site shown with the blue triangle is at the center of the area with the highest concentrations measured during the mobile monitoring campaign. The residential areas with similar terrain north of 18th St. are largely represented in yellow and orange. This area of elevated concentrations around the Vancouver Plaza Dr. monitor is only a few hundred meters wide, again indicating the influence of local sources instead of a neighborhood-wide trend.

Next Steps

In light of the large difference between $PM_{2.5}$ concentrations measured before and after the site relocation, the contrast between measured values in Vancouver and those at other nearby monitoring sites, and evidence of the impact of local sources, the state of Washington has updated the siting scale of the Vancouver SLAMS site to microscale, flagged the data in AQS, and is planning to relocate the monitor to an appropriate location for population oriented, neighborhood-scale monitoring by the end of 2014.

References

1. Code of Federal Regulations, Title 40, Part 58, Appendix A, B, C, D & E.

2. Code of Federal Regulations, Title 40, Part 50.

3. Code of Federal Regulations, Title 40, Part 53.

4. Code of Federal Regulations, Title 40, Part 58.

5. U.S. EPA Revised Requirements for Designation of Reference and Equivalent Methods for PM2.5 and Ambient Air Quality Surveillance for Particulate Matter -Final Rule. 40 CFR, Parts 53 and 58. Federal Register, 62 (138):38763-38853. July 18, 1997.

6. U.S. EPA Revisions to Ambient Air Monitoring Regulations – Final Rule. 40 CFR, Parts 53 and 58. Federal Register 7: 61236. October 17, 2006

7. U.S. EPA National Ambient Air Quality Standards for Particulate Matter – Final Rule. 40 CFR Parts 50, 51, 52, 53, and 58. January 15, 2013

8. Guidance for Network Design and Optimum Site Exposure for PM2.5 and PM10, EPA-454/R-99-022, December 15, 1997.

9. SLAMS/NAMS/PAMS Network Review Guidance, EPA-454/R-98-003, March 1998.

10. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987.

11. Guideline on Ozone Monitoring Site Selection, EPA-454/R-98-002, August 1998.