DEPARTMENT OF
ECOLOGY
State of Washington

2012 Ambient Air Monitoring Network Report

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

May 2012
Publication no. 12-02-008

Publication and Contact Information

This report is available on the Department of Ecology's website at
www.ecy.wa.gov/biblio/1102017.html

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

2012 Ambient Air Monitoring Network Report

by
Mike Ragan

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

This page is purposely left blank

Table of Contents

List of Tables

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 2012 review. These results include:

- Identifying modifications to Ecology's ambient air monitoring network since the 2011 annual network report
- Identifying proposed modifications to the network for the upcoming year
- Documenting Ecology's ambient air quality monitoring needs, goals, and priorities

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 and 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 has used special purpose monitors (SPMs) throughout the State. They 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 monitoring sites often utilize Federal Reference Method (FRM) sampling equipment, 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 at the site.

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 be 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.

Network Evaluation and Recommendations/Modifications

Carbon Monoxide (CO, 42101)

National Ambient Air Quality Standard (NAAQS):

- 1-hour average concentration not to exceed 35 ppm, on more than one occasion in a calendar year, measured at any monitoring site.
- 8-hour average concentration not to exceed 9 ppm for any 8-hour period, on more than one occasion in a calendar year, measured at any monitoring site.

Washington's carbon monoxide monitoring network is comprised of one site statewide.

Table 4: Carbon Monoxide, 42101

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2012
530630049	Spokane, 3rd & Washington	1/1/97	SLAMS	Micro	Continuous	Continue*

Additional Monitors: Trace level carbon monoxide is monitored at the Seattle Beacon Hill and Cheeka Peak NCore sites. One carbon monoxide monitor is scheduled to be collocated with NO_2 monitoring at the Seattle area near-roadway site in 2013.

***Recommendations/Modifications:** Ecology and its partners have divested of traditional CO monitoring and believe continuing to do so is the best use of state resources. Ecology plans to monitor for near-roadway CO as described in the revised CO rule starting in 2013.

Spokane, 3rd & Washington – SLAMS
AQS # 530630049 Method code: 054
Address: W. 408 3rd Avenue, Spokane LAT/LONG: 047 39' 13" / 117 25' 07"
Monitoring objective: Highest Concentration MSA: Spokane, WA
Comments
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 maintenance plan purposes. Spokane is a former CO nonattainment area.
Exceedences
This site has not exceeded the daily or annual standard for CO in **more than 10 years**.

Ozone (O_3, 44201)

National Ambient Air Quality Standards (NAAQS):

- 8-hour average of the 4th highest measured O_3 concentration averaged over three consecutive years, not to exceed 0.075 ppm at any given monitoring site.

Washington's ozone monitoring network is comprised of ten sites statewide.

Table 5: Ozone, 44201

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	DV (2012)	Action For 2012
530630001	Cheney, Turnbull	4/1/99	SLAMS	Urban	Continuous	0.057	Continue
530730005	Custer/Loomis	5/89	SLAMS	Urban	Continuous	0.045	Continue
530330023	Enumclaw, Mud Mtn.	7/8/98	SLAMS	Urban	Continuous	0.067	Continue
530330010	Issaquah, Lake Sam	12/1/75	SLAMS	Urban	Continuous	0.057	Continue
530530012	Mt. Rainier, Jackson Visitor Center	7/13/98	SLAMS	NPS supported	Continuous	0.053	Continue
530330017	North Bend, NB Way	6/1/98	SLAMS	Urban	Continuous	0.059	Continue
530330080	Seattle, Beacon Hill	4/1/97	NCore	Urban	Continuous	0.045	Continue
530630046	Spokane, Greenbluff	4/1/90	SLAMS	Urban	Continuous	0.057	Continue
530110011	Vancouver, Blairmont	4/1/90	SLAMS	Neighborhood	Continuous	0.057	Continue
530670005	Yelm, Northern Pacific	5/1/06	SLAMS	Urban	Continuous	0.056	Continue

Additional Monitors: None. Ecology provides support for ozone monitoring performed by local air agencies in Anacortes and Spokane.

Recommendations/Proposed Modifications: None

Ozone

Cheney, Turnbull - SLAMS
AQS # 530630001 Method code: 056
Address: S. 26010 Smith Road, Cheney LAT/LONG: 047 24' 55" / 117 31' 49"
Monitoring objective: Population Exposure MSA: Spokane, WA
Comments
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. A CFR required site by population.
Exceedences
This site has not exceeded the 8-hour ozone standard in the past 3 years.

Custer/Loomis - SLAMS
AIRS # 530730005 Method code: 056
Address: 1330 Loomis Trail Road, Custer LAT/LONG: 048 95' 25 / -122 55'45
Monitoring objective: Transport MSA: Bellingham, WA

Adequacy
FCC Loomis is an urban scale Special Purpose Monitoring Site (SPMS) for Ozone established in 1989. It is located outside of Custer, 20 miles south of the US/Canadian border.

Comments
Custer/Loomis site provides data from Canadian impacts as modeling information for the Puget Sound Ozone network.
Exceedences
This site has not exceeded the one or eight hour standard for Ozone in the past 3 years.

Enumclaw, Mud Mountain Dam - SLAMS
AQS # 530330023 Method code: 056
Address: 30525 SE Mud Mountain Road, Enumclaw LAT/LONG: 047 08' 28" / 121 56' 09"
Monitoring objective: Regional Transport MSA: Seattle-Bellevue-Everett, WA
Comments
Mud Mountain Dam is an urban scale State and Local Monitoring Site (SLAMS) established in 1998 located 30 miles East of Seattle, near Enumclaw. Mud Mountain is at the end of the ozone transport zone near the Cascade Mountains. Mud Mountain has been the highest reading site in the ozone network.
Exceedences
This site has exceeded the 8-hour standard in the past 3 years.

Issaquah, Lake Sammamish - SLAMS
AQS # 530330010 Method code: 056
Address: 20050 SE 56th (Lk. Sammamish SP), Issaquah LAT/LONG: 047 33' 07" / 122 02' 40"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
Lake Sammamish is an urban scale site established in 1975 located east of Seattle, within Lake Sammamish State Park. The Lake Sammamish site is a long-term trends site.
Exceedences
This site has exceeded the 8-hour standard in the past 3 years.

Mt. Rainier, Jackson Visitor Center - SLAMS
AQS # 530530012 Method code: 056
Address: Jackson Visitor Center, Mount Rainier LAT/LONG: 046 47' 07" / 121 43' 58"
Monitoring objective: Background MSA: Tacoma, WA
Comments
The Jackson Visitor Center site is a regional scale 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 - SLAMS
AQS # 530330017 Method code: 056
Address: 42404 SE North Bend Way, North Bend LAT/LONG: 047 29' 23" / 121 46' 24"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
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.

Seattle, Beacon Hill – NCore

AQS # 530330080 Method code: 056
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

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_2, $PM_{2.5}$, air toxics, speciation and other studies. Seattle Beacon Hill is also a long-term trend and research site.

Exceedences

This site has not exceeded the 8-hour standard.

Spokane, Greenbluff - SLAMS

AQS # 530630046 Method code: 056
Address: E. 9814 Greenbluff Road, Spokane LAT/LONG: 047 49' 37" / 117 16' 31"
Monitoring objective: Population Exposure MSA: Spokane, WA

Comments

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

Exceedences

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

Vancouver, Blairmont - SLAMS

AQS # 530110011 Method code: 056
Address: 1500 SE Blairmount Drive, Vancouver LAT/LONG: 045 36' 37" / 122 30' 59"
Monitoring objective: Population Exposure MSA: Portland-Vancouver, OR-WA

Comments

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

Exceedences

This site has exceeded the 8-hour ozone standard in the past 3 years.

Yelm, Northern Pacific - SLAMS

AQS # 530670005 Method code: 056
Address: NEW - 931 Northern Pacific Road, Yelm LAT/LONG: 046 57' 03" / 122 35' 43"
Monitoring objective: Population Exposure MSA: Olympia, WA

Comments

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

Exceedences

This site has exceeded the 8-hour ozone standard in the past 3 years.

Nitrogen Dioxide (NO_2, 42602)

National Ambient Air Quality Standards (NAAQS):

- Annual arithmetic average concentration not to exceed 0.053 ppm at any monitoring site.
- New 1-hour NO2 standard at the level of 100 parts per billion (ppb).

Washington's nitrogen dioxide monitoring network is comprised of three sites statewide. Two NO_y monitors are located at NCore sites. One NO_2 monitor will be sited in 2013 as part of the near-roadway network.

Table 6: Nitrogen Dioxide 42602

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2012
530330080	Seattle Beacon Hill	4/1997	NCore	Urban	Continuous	Continue
TBD	Seattle/10th & Weller	1/2013	SLAMS	Micro	Continuous	Planning
TBD	Tacoma	1/2014	SLAMS	Micro	Continuous	Planning

Additional Monitors: None

Recommendations/Proposed 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 NCore Cheeka Peak.
It is assumed most if not all the NOy measured at Beacon Hill and Cheeka Peak is composed of NO_2.

Comment: One NO_2 monitor will be sited in 2013 as part of the EPA near-road network as funding and permitting are allowed. A second near-road NO_2 monitor is planned for 2014.

Seattle, Beacon Hill - NCore
AQS #530330080 Method code: 118/181
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
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.

NEAR-ROAD NO_2 MONITORS

- At least one monitor would be required near a major roadway in any urban area with a population greater than or equal to 350,000 people
- A second monitor would be required near a major road in areas with either
    - A population greater than 2.5 million people, or
    - One or more road segments with an annual average daily traffic count greater than or equal to 250,000 vehicles
    - NO_2 monitors area to be located within 20-50 meters of major roadways
- Potential impact on Washington
    - 2 monitors in the Seattle-Tacoma-Bellevue, WA MSA
    - 1 monitor in the Portland-Vancouver Beaverton, OR-WA MSA (ODEQ)

AREA-WIDE NO_2 MONITORING

- One monitor in each MSA with 1,000,000 or more population to monitor the location of expected highest NO_2 concentrations representing neighborhood or larger spatial scales
- Some flexibility for the use of an existing monitor
- Potential impact on Washington
    - 1 monitor in the Seattle-Tacoma-Bellevue, WA MSA (Seattle Beacon Hill)
    - Total of 1 monitor in the bi-state Portland-Vancouver Beaverton, OR-WA MSA (ODEQ)

Sulfur Dioxide (SO_2, 42401)

National Ambient Air Quality Standards (NAAQS)

- Annual arithmetic average concentration not to exceed 0.03 ppm at any monitoring site.
- New one hour primary standard of 75ppb

Table 7: Sulfur Dioxide 42401

AQS #	Site Name	Est.	Type	Scale	Sampling Frequency	Action for 2012
530330080	Seattle Beacon Hill	4/1997	NCore	Urban	Continuous	Continue

Additional Monitors: None

Recommendations/Proposed Modifications: Ecology monitors for trace level SO_2 at Seattle Beacon Hill.

Comment: Based on the Primary NAAQS for Sulfur Dioxide, Washington will be required to site and operate a new SO_2 monitor January 1, 2013. SO_2 monitoring is based on CBSA's, the Population Weighted Emissions Index (PWEI) and the national emissions inventory (NEI). SO_2 monitors will be proposed in the 2012 network plan and implemented in 2013.

Seattle, Beacon Hill - NCore
AQS #530330080 Method code: 118/181
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
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.

Population Weighted Emissions Index (PWEI) / national emissions inventory (NEI)

- Potential impact on Washington
  - 1 monitor in the Seattle-Tacoma-Bellevue, WA MSA (PWEI, 45,728)
  - 1 monitor in the bi-state Portland-Vancouver Beaverton, OR-WA MSA (ODEQ) (PWEI, 27,863)

Particulate Matter 10 (PM_{10}, 81102)

National Ambient Air Quality Standard (NAAQS), 1987:

- Twenty-four hour average PM_{10} concentration not to exceed 150 $\mu g/m^3$ on more than one occasion per year when averaged over three years.
- Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the EPA revoked the annual PM_{10} standard in 2006 (effective December 17, 2006).

Washington's PM_{10} monitoring network consists of 4 sites statewide, including one collocated site.

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

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2012
530650004	Colville, S Oak	11/96	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

PM_{10}

Colville, S Oak - SLAMS
AQS # 530650004 — Method code: 079
Address: 215 South Oak, Colville — LAT/LONG: 048 32' 41" / 117 54' 13"
Monitoring objective: Population Exposure — MSA: Not in an urban area
Comments
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.

Kennewick, Metaline Ave - SLAMS
AQS # 530050002 — Method code: 079
Address: 5929 West Metaline, Kennewick — LAT/LONG: 046 13' 06" / 119 12' 03"
Monitoring objective: Population Exposure — MSA: Richland-Kennewick-Pasco, WA
Comments
Metaline is a neighborhood scale site for PM_{10} established in 1994 and located in the downtown Kennewick area. It is representative of Kennewick which is subject to windblown dust.
Exceedences
This site has not exceeded the standard for PM_{10} in the past 3 years.

Spokane, Augusta Ave. - SLAMS

AQS # 530630021 Method code: 079/063
Address: 3104 E. Augusta Ave., Spokane LAT/LONG: 047 39' 39" / 117 21' 26"
Monitoring objective: Population Exposure MSA: Spokane, WA

Comments

Augusta Ave. is a middle scale site for PM_{10} established in 1972, located in a commercial area of Spokane. The site is representative of the Spokane area which is a past PM_{10} nonattainment area.

Exceedences

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

Yakima, S 4th – SLAMS

AQS # 530770009 Method code: 079/063
Address: 402 South 4^{th} Avenue, Yakima LAT/LONG: 046 35' 42" / 120 30' 44"
Monitoring objective: Population Exposure MSA: Yakima, WA

Comments

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 which was a past PM_{10} nonattainment area.

Exceedences

This site has not exceeded the daily or annual standard for PM_{10} in the past 3 years.

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

National Ambient Air Quality Standard (NAAQS):

- 3-year average of the 98th percentile 24-hour concentration not to exceed 35ug/m^3 at any population-oriented monitoring site in a monitoring area.
- Three-year annual average $PM_{2.5}$ concentration not to exceed 15 µg/m^3 from a single community-oriented monitoring site or the spatial average of eligible community-oriented sites in a monitoring area.

Washington's $PM_{2.5}$ monitoring network consists of forty sites, plus one collocated site.

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

AQS#	Site Name	Type	Sample Type	Sampling Frequency	Design Value 2012	Action for 2012
530272002	Aberdeen Division St	SLAMS	Continuous	Continuous	11	Continue
530330037	Bellevue, Bellevue Way	SLAMS	Continuous	Continuous	12.5	Continue
530730015	Bellingham, Yew Street	SLAMS	Continuous	Continuous	15.1	Continue
530350007	Bremerton Spruce*NEW	SPMS	Continuous	Continuous	N/A	Continue
530030004	Clarkston	SLAMS	Continuous	Continuous	20.3	Continue
530410004	Chehalis	SLAMS	Continuous	Continuous	*	Continue
530650004	Colville	SLAMS	Continuous	Continuous	24.2	Continue
530610020	Darrington, Fir St	SLAMS	Continuous	Continuous	32.2 FRM	Continue
530130002	Dayton, W. Main	SLAMS	Continuous	Continuous	13.2	Continue
530370002	Ellensburg	SLAMS	Continuous	Continuous	27.2	Continue
530050002	Kennewick, Metaline Ave	SLAMS	Continuous	Continuous	17.5	Continue
530332004	Kent, James & Central	SPMS	Continuous	Continuous	22.1	Continue
530670013	Lacey, College St	SLAMS	Continuous	Continuous	20.5	Continue
530750005	LaCrosse, Hill St	SLAMS	Continuous	Continuous	11	Continue
530330024	Lake Forest Park, Ballinger Way	SLAMS	Continuous	Continuous	22.6	Continue
530150015	Longview, 30th Ave	SLAMS	Continuous	Continuous	15.8	Continue
530610005	Lynnwood, 212th	SPMS	Continuous	Continuous	20	Continue
530611007	Marysville, 7th Ave	SLAMS	Continuous	Continuous	30.2 FRM	Continue
530351005	Meadowdale, Blackbird Dr	SPMS	Continuous	Continuous	24.5	Discontinued
530210002	Mesa, Pepoit Way	SLAMS	Continuous	Continuous	15.7	Continue
530251002	Moses Lake, Balsam St	SLAMS	Continuous	Continuous	16.2	Continue
530570015	Mt. Vernon, S Second St	SLAMS	Continuous	Continuous	11	Continue
530330017	North Bend, North Bend Way	SLAMS	Continuous	Continuous	13.9	Continue
530090009	Port Angeles, W 14th St	SLAMS	Continuous	Continuous	16.1	Continue
530310003	Port Townsend, San Juan Ave	SLAMS	Continuous	Continuous	14.7	Continue
530750003	Pullman, Dexter Ave	SLAMS	Continuous	Continuous	13.4	Continue
530531018	Puyallup, 128th St	SLAMS	Continuous	Continuous	22.3	Continue
530010003	Ritzville, Alder St	SLAMS	Continuous	Continuous	12.9	Continue
530750006	Rosalia, Josephine St	SLAMS	Continuous	Continuous	11.5	Continue
530330080	Seattle, Beacon Hill	NCore	SEQ/Continuous	1/3	15 FRM	Continue
530330057	Seattle, E Marginal Way	SPMS	Continuous	Continuous	22.2	Continue
530330048	Seattle, Olive St	SLAMS	Continuous	Continuous	15.3	Continue
530450007	Shelton, W. Franklin	SLAMS	Continuous	Continuous	18.4	Continue
530630021	Spokane, Augusta	SLAMS	SEQ/Continuous	1/6	24.5 FRM	Continue
530630021	Spokane, Augusta	Co-loc	SEQ	1/12	24.5 FRM	Relocated
530630047	Spokane, Monroe Street	SLAMS	Continuous	Continuous	19.7	Continue
530530031	Tacoma, Alexander Ave	SLAMS	Continuous	Continuous	22	Continue

AQS#	Site Name	Type	Sample Type	Sampling Frequency	Design Value 2012	Action for 2012
530530029	Tacoma, S L Street	SLAMS	SEQ/Continuous	1/1	34.9 FRM	Continue
530530029	Tacoma, S L Street	Co-loc	SEQ/Continuous	1/12	Begin 4/12	Begin 4/12
530110013	Vancouver, 4th Plain	SLAMS	SEQ/Continuous	1/3	29.9 FRM	Continue
530710005	Walla Walla, 12th St	SLAMS	Continuous	Continuous	18	Continue
530070006	Wenatchee	SLAMS	Continuous	Continuous	29.7	Continue
530110022	Yacolt, Yacolt Rd.	SLAMS	Continuous	Continue	16	Continue
530770009	Yakima, S 4th Ave	SLAMS	SEQ/Continuous	1/3	34.8 FRM	Continue

Asterisk * denotes sites with less than 3 years data.

Note: *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 ug/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 $PM_{2.5}$ values.

Additional Monitors: None

Recommendations/Modifications: Bremerton Meadowdale site has been relocated to Bremerton Spruce to meet EPA siting criteria. Continue all other sites as described.

$PM_{2.5}$

Aberdeen, Division St - SLAMS
AQS #530272002 Method code: 771
Address: 359 North Division, Aberdeen LAT/LONG: 046 58' 21" / 123 49' 54"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an MSA
Comments
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 and is used for curtailment calls during the home heating season.

Bellevue, Bellevue Way - SLAMS
AQS #530330037 Method code: 771
Address: 305 Bellevue Way, Bellevue LAT/LONG: 047 36' 47" / 122 12' 06"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
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 the home heating season.

Bellingham, Yew Street - SLAMS

AQS #530730015 Method code: 771
Address: 2420 Yew Street, Bellingham LAT/LONG: 048 45' 46" / 122 26' 25"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Bellingham, WA

Comments

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 the home heating season.

Bremerton, Spruce - SPMS * NEW

AQS # 530350007 Method code: 771/181
Address: 3250 Spruce Ave, Bremerton LAT/LONG: 047 59' 26" / 122 62' 73"
Sampling: Nephelometer & FEM continuous
Monitoring objective: Population Exposure MSA: Bremerton, WA

Comments

Bremerton Spruce replaced Bremerton Meadowdale in 2012. Bremerton Spruce is a neighborhood scale residential site which meets EPA siting criteria. It provides air quality information to a population of 280,000 Kitsap residents.

Chehalis, Market Blvd – SLAMS

AQS # 530410004 Method code: 771
Address: 350 N. Market, Chehalis LAT/LONG: 046 66'40"/122 96'73"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

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 the home heating season.

Clarkston, STP – SLAMS

AQS # 530030004 Method code: 771
Address: 13th Street and Port Way, Clarkston LAT/LONG: 046 25' 32"/ 117 3' 35"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

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.

Colville – SLAMS

AQS # 530650004 Method code: 771
Address: 215 S. Oak Street, Colville LAT/LONG: 048 32' 41" / 122 54' 13"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

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 – SLAMS/SPMS
AQS #530610020 Method code: 118/181
Address: 1085 Fir St, Darrington LAT/LONG: 048 14' 49" / 121 36' 11"
Sampling: FRM 1/3 & FEM continuous
Monitoring objective: Population Exposure MSA: Not in an urban area
Comments
Darrington is neighborhood scale residential site impacted by smoke from home heating. This site has an FRM and is suitable for comparison to the $PM_{2.5}$ NAAQS.

Dayton, 206 W. Main - SLAMS
AQS # 530130002 Method code: 771
Address: 206 W. Main, Dayton LAT/LONG: 046.3180"/ 117.9850
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area
Comments
Dayton is a neighborhood scale small-community site located in Eastern Washington impacted by smoke from burning activities in the area.

Ellensburg, Ruby St - SLAMS
AQS # 530370002 Method code: 771
Address: 201 North Ruby Street, Ellensburg LAT/LONG: 046 59' 37" / 120 32' 42"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an urban area
Comments
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 the home heating season.

Kennewick, Metaline Ave - SLAMS
AQS #530050002 Method code: 771
Address: 5929 W Metaline, Kennewick LAT/LONG: 046 13' 06" / 119 12' 03"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Richland, Kennewick, and Pasco, WA
Comments
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 the home heating season.

Kent, James & Central – SPMS
AQS #530332004 Method code: 181
ADDRESS: 614 N Railroad, Kent LAT/LONG: 047 23' 10" / 122 13' 55"
Sampling: FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
Kent is neighborhood scale site in the South Puget Sound that is impacted from mobile sources, light industry, smoke from home heating devices. The site is representative of the Kent Valley area.

Lacey, College St - SLAMS
AQS #530670013 Method code: 771
Address: 1900 College St SE, Lacey LAT/LONG: 047 01' 43" / 122 49' 15"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Olympia, WA
Comments
Lacey, College St is a neighborhood scale site impacted by smoke from home heating devices. The site is representative of the Olympia/Thurston County area.

LaCrosse, Hill St - SLAMS
AQS #530750005 Method code: 771
Address: 100 Hill Street, LaCrosse LAT/LONG: 046 48' 55" / 117 52' 26"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an urban area
Comments
LaCrosse is neighborhood scale small-community monitor in Eastern Washington impacted by smoke from burning. LaCrosse is used for daily agricultural burn decisions and curtailment calls during the home heating season .It also provides modeling and mapping information.

Lake Forest Park, Ballinger Way - SLAMS
AQS #530330024 Method code: 702/704
Address: 17171 Bothell Way NE, Lake Forest Park LAT/LONG: 047 45' 18" / 122 16' 50"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
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 the home heating season.

Longview, 30th Ave - SLAMS
AQS #530150015 Method code: 771
Address: 1324 30th Ave, Longview LAT/LONG: 046 08' 22" / 122 57' 43"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Longview, WA
Comments
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 the home heating season.

Lynnwood, 212th - SPMS
AQS #530610005 Method code: 181
Address: 6120 212th SW, Lynnwood LAT/LONG: 047 48' 23" / 122 19' 00"
Sampling: FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
Lynnwood is neighborhood scale site impacted by smoke during the home heating season. Lynnwood is representative of south Snohomish County.

Marysville, 7th Ave – SLAMS/SPMS*

AQS #530611007 Method code: 118/181
Address: 1605 7th ST, Marysville LAT/LONG: 048 03' 18" / 122 10' 33"
Sampling: FRM 1/3 & FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

Marysville is a neighborhood scale site impacted by smoke during the home heating season, mobile sources, and light industry. It is representative of the Marysville/North Snohomish County area. The site has an FEM & FRM and is suitable for comparison to the $PM_{2.5}$ NAAQS.

Mesa, Pepoit Way - SLAMS

AQS #530210002 Method code: 771
Address: 200 Pepiot Way, Mesa LAT/LONG: 046 34' 32" / 119 00' 25"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an urban area

Comments

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 the home heating season.

Moses Lake, Balsam St - SLAMS

AQS #530251002 Method code: 771
Address: 412 S Balsam St, Moses Lake LAT/LONG: 047 07' 50" / 119 16' 22"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an urban area

Comments

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 the home heating season.

Mt. Vernon, S Second St - SLAMS

AQS #530570015 Method code: 771
Address: 1600 South Second St, Mount Vernon LAT/LONG: 048 24' 37" / 122 20' 16"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an urban area

Comments

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

North Bend, North Bend Way - SLAMS

AQS #530330017 Method code: 771
Address: 42404 SE North Bend Way, North Bend LAT/LONG: 047 29' 23" / 121 46' 24"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

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 the home heating season. North Bend is collocated with ozone and meteorological equipment.

Port Angeles, W 14th St - SLAMS
AQS #530090009 Method code: 771
Address: 1139 W 14th St., Port Angeles LAT/LONG: 048 06' 59" / 123 27' 52"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an MSA
Comments
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 the home heating season.

Port Townsend, San Juan Ave - SLAMS
AQS #530310003 Method code: 771
Address: 3939 San Juan Avenue, Port Townsend LAT/LONG: 048 07' 45" / 122 46' 46"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an MSA
Comments
Port Townsend is neighborhood scale SLAMS site impacted by smoke from home heating devices. Port Townsend is used for curtailment calls during the home heating season. It is representative of the east Jefferson County area.

Pullman, Dexter Ave - SLAMS
AQS #530750003 Method code: 771
Address: 240 SE Dexter, Pullman LAT/LONG: 046 43' 28" / 117 10' 46"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an MSA
Comments
Pullman is a neighborhood scale site is in Eastern Washington impacted by smoke from burning. Pullman is used for daily agricultural burn decisions and curtailment calls during the home heating season.

Puyallup, 128th St - SLAMS
AQS #530531018 Method code: 771
Address: 9616 128th St E, Puyallup LAT/LONG: 047 08' 24" / 122 18' 01"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA
Comments
Puyallup is a neighborhood scale site impacted by smoke from home heating devices in the Pierce County South Hill area.

Ritzville, Alder St - SLAMS
AQS #530010003 Method code: 771
Address: 109 W Alder, Ritzville LAT/LONG: 047 07' 43" / 118 22' 55"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area
Comments
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 decisions and curtailment calls during the home heating season.

Rosalia, Josephine St - SLAMS

AQS #530750006 Method code: 771
Address: 906 S Josephine Avenue, Rosalia LAT/LONG: 047 13' 52" / 117 22' 08"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

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 the home heating season.

Seattle, Beacon Hill - NCore

AQS #530330080 Method code: 118/181
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Sampling: FRM 1/3 & FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

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.

Seattle/Duwamish - SPMS

AQS #530330057 Method code: 181
Address: 4401 E Marginal Way S., Seattle LAT/LONG: 047 56' 32" / 122 34' 05"
Sampling: FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

Seattle, E Marginal Way is a neighborhood scale site located in the Duwamish River Valley impacted by mobile source diesel emissions and industrial sources. This site is equipped with an FEM and suitable for comparison to the $PM_{2.5}$ NAAQS.

Seattle, Olive St - SLAMS

AQS #530330048 Method code: 771
Address: 1624 Boren Avenue, Seattle LAT/LONG: 047 36' 55" / 122 19' 48"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

Seattle, Olive Street was established in 2002 as a micro scale $PM_{2.5}$ site adjacent to Interstate 5 designed to measure effects of mobile source diesel emissions. This site is <u>not</u> suitable for comparison to the $PM_{2.5}$ NAAQS.

Shelton, W. Franklin - SLAMS

AQS #530450007 Method code: 771
Address: 122 W. Franklin, Shelton LAT/LONG: 047 213' 55" / 123 100' 81"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Not in an MSA

Comments

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

Spokane, Augusta - SLAMS

AQS #530630021 Method code: 118/702/704
Address: 3104 E. Augusta Ave., Spokane LAT/LONG: 047 39' 39" / 117 21' 26"
Sampling: FRM 1/3 & continuous
Monitoring objective: Population Exposure MSA: Spokane, WA

Comments

Spokane Augusta Ave. is a neighborhood scale site impacted by smoke from home heating devices and light industrial sources. The site is equipped with an FRM and suitable for comparison to the $PM_{2.5}$ NAAQS.

Spokane, Monroe Street - SLAMS

AQS #530630047 Method code: 771
Address: N 4601 Monroe St., Spokane LAT/LONG: 047 42' 03" / 117 25' 30"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Spokane, WA

Comments

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

Tacoma, Alexander Ave - SLAMS

AQS #530530031 Method code: 771
Address: 2301 Alexander Avenue, Tacoma LAT/LONG: 047 15' 56" / 122 23' 09"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

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 - SLAMS/SPMS

AQS #530530029 Method code: 118/181
Address: 7802 South L St., Tacoma LAT/LONG: 047 11' 11" / 122 27' 06"
Sampling: FRM 1/1 & FEM continuous
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Comments

Tacoma, L Street is a neighborhood scale site impacted by smoke from home heating devices. The site is equipped with an FEM & FRM and suitable for comparison to the $PM_{2.5}$ NAAQS.

Vancouver, 4th Plain – SLAMS/SPMS

AQS #530110013 Method code: 118/771
Address: 8205 E 4th Plain Boulevard, Vancouver LAT/LONG: 045 38' 55" / 122 35' 16"
Sampling: FRM 1/3 & continuous – FEM in 2011
Monitoring objective: Population Exposure MSA: Portland-Vancouver, OR-WA

Comments

Vancouver, 4th Plain is a neighborhood scale site impacted by smoke from home heating devices. The site is equipped with an FRM and suitable for comparison to the $PM_{2.5}$ NAAQS.

Walla Walla, 12th St - SLAMS

AQS #530710005 Method code: 771
Address: 200 S 12th, Walla-Walla LAT/LONG: 046 03' 32" / 118 21' 06"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

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

Wenatchee, Alaska Way - SLAMS

AQS # 530070006 Method code: 771
Address: 600 Alaska Street, Wenatchee LAT/LONG: 047 25' 06" / 120 19' 14"
Sampling: Continuous
Monitoring objective: Population Exposure UA: Not in an urban area

Comments

Wenatchee, Alaska Way is a neighborhood scale site established in 1994 as a PM_{10} site and converted to $PM_{2.5}$ in 2006. It is located in a residential area of Wenatchee impacted by smoke from multiple sources including home heating devices and wildfires.

Yacolt, Yacolt Rd. – SLAMS

AQS #530110022 Method code: 771
Address: 406 W. Yacolt Rd., Yacolt LAT/LONG: 045 86' 63" / 122 40' 88"
Sampling: Continuous
Monitoring objective: Population Exposure MSA: Vancouver, WA

Comments

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

Yakima, S 4th Ave – SLAMS/SPMS

AQS #530770009 Method code: 118/771
Address: 402 South 4th Avenue, Yakima LAT/LONG: 046 35' 42" / 120 30' 44"
Sampling: FRM 1/3 & continuous - FEM in 2011
Monitoring objective: Population Exposure MSA: Yakima, WA

Comments

Yakima is a neighborhood scale site impacted by smoke from burning sources in the area. The site is equipped with an FRM and suitable for comparison to the $PM_{2.5}$ NAAQS.

Other – Contracted Sites USFS

Table 10: Other Contracted Sites USFS

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Design Value 2012	Action for 2012
530070007	Chelan	2002	SLAMS	Neighborhood	Continuous	N/A	Continue
530070010	Leavenworth	2002	SLAMS	Neighborhood	Continuous	17.2	Continue
530770007	Naches	2008	SLAMS	Neighborhood	Continuous	N/A	Continue
530470009	Twisp	2002	SLAMS	Neighborhood	Continuous	22.7	Continue
530470010	Winthrop	2002	SLAMS	Neighborhood	Continuous	19.7	Continue

Additional Monitors: None
Recommendations/Modifications: Continue all listed sites.

Chelan, Woodin Ave - SLAMS
AQS#530070007- USFS — Method code: 771
Address: 428 W. Woodin Avenue, Chelan — LAT/LONG: 047 50' 18" / 120 01' 23"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Not in an urban area

Leavenworth, Evans St. - SLAMS
AQS#530070010- USFS — Method code: 771
Address: 330 Evans Street, Leavenworth — LAT/LONG: 047 35' 56" / 120 39' 53"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Not in an urban area

Naches, Hwy 12 - SPMS
AQS#530770007- USFS — Method code: 771
Address: 10237 Hwy 12, Naches — LAT/LONG: 046 43' 47" / 120 42' 13"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Not in an urban area

Twisp, Glover St - SLAMS
AQS#530470009- USFS — Method code: 771
Address: 118 South Glover Street, Twisp — LAT/LONG: 48° 21' 51" / 120 12' 40"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Not in an urban area

Winthrop, W Chewuch Rd. - SLAMS
AQS#530470010-FS — Method code: 771
Address: 24 West Chewuch Road, Winthrop — LAT/LONG: 048 28' 38" / 120 11' 26"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Not in an urban area

Other – Contracted Sites Tribal/EPA

Table 11: Other - Contracted Sites Tribal/EPA

AQS#	Site Name (Tribe)	Est.	Type	Scale	Sampling Type	Design Values 2012	Action for 2012
530090014	Neah Bay (Makah)	2008	SLAMS	Neighborhood	Continuous	8.8	Continue
530270008	Oakville (Chehalis)	2006	SLAMS	Neighborhood	Continuous	13.6	Continue
530470013	Omak (Colville)	2010	SLAMS	Neighborhood	Continuous	24.2	Continue
530530022	Puyallup (Puyallup)	2008	SLAMS	Neighborhood	Continuous	20.1	Continue
530270009	Taholah (Quinault)	2004	SLAMS	Neighborhood	Continuous	10	TBD*
530770015	Toppenish (Yakama)	2006	SLAMS	Neighborhood	Continuous	29.3	Continue
530610011	Tulalip (Tulalip)	2011	SLAMS	Neighborhood	Continuous	*6 mo data	Continue
530650002	Wellpinit (Spokane)	2006	SLAMS	Neighborhood	Continuous	12.6	Continue
530770016	White Swan (Yakama)	2009	SLAMS	Neighborhood	Continuous	?	Continue

Additional Monitors: None

Recommendations/Modifications: *Monitoring was suspended at Taholah in the fall of 2011. EPA is working with the Quinault Nation to determine the future of monitoring there.

Neah Bay, (Makah) - SLAMS
AQS#530090014 — Method code: 771
Address: 159 Waada View, Neah Bay — LAT/LONG: 048 22' 19" / 124 35' 43"
Sampling: Continuous $PM_{2.5}$ — Monitoring objective: Population Exposure

Oakville, (Chehalis) - SLAMS
AQS#530270008 — Method code: 771
Address: 252 Howanut Drive, Oakville — LAT/LONG: 046 49' 23" / 123 09' 40"
Sampling: Continuous $PM_{2.5}$ & meteorology — Monitoring objective: Population Exposure

Omak, Howanut Dr (Colville) - SLAMS
AQS#530470013 — Method code: 771
Address: 8th Ave & Omak/Okanogan Rd — LAT/LONG: 048. 39'99" / 119 518'' 96"
Sampling: Continuous $PM_{2.5}$ & meteorology — Monitoring objective: Population Exposure

Puyallup, 66th Ave (Puyallup) - SLAMS
AQS#530530022 — Method code: 771
Address: 5722 66th Avenue E. Puyallup — LAT/LONG: 047 12' 19" / 122 20' 19"
Sampling: Continuous $PM_{2.5}$ — Monitoring objective: Population Exposure

Taholah, Chitwhin Dr (Quinault) - SLAMS
AQS#530270009 — Method code: 771
Address: 600 Chitwin Drive, Taholah — LAT/LONG: 047 20' 37" / 124 17' 13"
Sampling: Continuous $PM_{2.5}$ — Monitoring objective: Population Exposure

Toppenish, Ward Rd (Yakama) - SLAMS
AQS#530770015 — Method code: 771
Address: 141 Ward Road, Toppenish — LAT/LONG: 046 23' 07" / 120 18' 49"
Sampling: Continuous $PM_{2.5}$ & meteorology — Monitoring objective: Population Exposure

Tulalip, Reuben Shelton Dr. (Tulalip) - SLAMS
AQS#530610011 Method code: 771
Address: 3107 Reuben Shelton Dr, Tulalip LAT/LONG: 047 06’90” / 122 27’ 50”
Sampling: Continuous $PM_{2.5}$ Monitoring objective: Population Exposure

Wellpinit, Ford-Wellpinit Rd (Spokane) - SLAMS
AQS#530650002 Method code: 771
Address: 5298 Ford-Wellpinit Road, Wellpinit LAT/LONG: 047 53' 19” / 117 59' 19”
Sampling: Continuous $PM_{2.5}$ Monitoring objective: Population Exposure

White Swan (Yakama) - SLAMS
AQS#530770016 Method code: 771
Address: 621 Signal Peak Rd, White Swan LAT/LONG: 046.37’54”/120 72’ 93”
Sampling: Continuous $PM_{2.5}$ & meteorology Monitoring objective: Population Exposure

Other – Contracted Local Air Agencies

Table 12: Other - Contracted Local Air Agencies

AQS#	Site Name	Est.	Type	Scale	Sampling Type	DV(2012) Continuous	Action for 2012
530570011	Anacortes	2012	SLAMS	Urban	Continuous	NEW	Continue
530090013	Cheeka Peak	2006	Rural NCore	Regional	Continuous	0.055 O_3	Continue
530630021	Spokane Augusta	2010	SLAMS	Urban	Continuous	Less than 3yrs data	Continue

Additional Monitors: None

Recommendations/Modifications: 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 – SLAMS -NEW
Ozone
AQS # 530570011 — Method code: 056
Address: 202 O Street, Anacortes — LAT/LONG: 048 52’ 05” / 122 61’ 42”
Sampling: Continuous
Monitoring objective: Population exposure — MSA: Not in an Urban area

Cheeka Peak (ORCAA) NCore
Nephelometer, ozone, trace gas and meteorological support
AQS#530090013 — Method code: 771, 056,
Address: Cheeka Peak, Clallam County — LAT/LONG: 048 17’ 12”/ 124 37' 13”
Sampling: Continuous
Monitoring objective: Rural NCore — MSA: Not in an MSA

Spokane, Augusta - SLAMS
Ozone
AQS #530630021 — Method code: 056
Address: 3104 E. Augusta Ave., Spokane — LAT/LONG: 047 39' 39" / 117 21' 26"
Sampling: Continuous
Monitoring objective: Population Exposure — MSA: Spokane, WA

Meteorological Monitoring

Table 13: Meteorological Monitoring

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2012
530170006	Burbank	11/05/02	WS, WD, Ta	Middle	Continuous	Relocate
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.	7/08/98	WS, WD, Ta	Urban	Continuous	Continue
530050005	Kennewick	00/00/12	WS, WD, Ta	Middle	Continuous	Continue
530330017	North Bend	6/1/98	WS, WD, Ta	Regional	Continuous	Continue
530330080	Seattle Beacon Hill	6/4/79	WS, WD, Ta	Urban	Continuous	Continue
530630021	Spokane Augusta Ave.	3/09	WS, WD, Ta	Neighborhood	Continuous	Continue
530531016	Tacoma Tower	1/1/91	WS, WD, Ta	Urban	Continuous	Continue
530110011	Vancouver Blairmount	12/19/07	WS, WD, Ta	Neighborhood	Continuous	Continue

Additional Monitors: None.

Recommendations/Modifications: The former Burbank meteorological site is being moved to the Kennewick site. Continue all other listed sites as described.

Burbank, Maple St – SLAMS – Relocation to Kennewick in 2012 (See below)
AQS#530710006 Method code: 61101, 61102, 621101
Address: 755 Maple Street, Burbank LAT/LONG: 046 12' 00" / 119 00' 30"
Monitoring objective: Population Exposure MSA: Not in an urban area

Cheeka Peak, Rural NCore
AQS #530090013 Method code: 61101, 61102, 621101
Address: Cheeka Peak LAT/LONG: 048 29’ 78”/124 62’ 49”
Monitoring objective: Special Studies MSA: Not in an MSA

Colville – SLAMS
AQS # 530650004 Method code: 61101, 61102, 621101
Address: 215 S. Oak Street LAT/LONG: 048 32' 41" / 122 54' 13"
Monitoring objective: Population Exposure UA: Not in an urban area

Enumclaw, Mud Mountain Dam - SLAMS
AQS # 530330023 Method code: 61101, 61102, 621101
Address: 30525 SE Mud Mountain Road, Enumclaw LAT/LONG: 047 08' 28" / 121 56' 09"
Monitoring objective: Regional Transport MSA: Seattle-Bellevue-Everett, WA

Kennewick, Metaline Ave - SLAMS
AQS#530050002 Method code: 61101, 61102, 621101
Address: 5929 W Metaline, Kennewick LAT/LONG: 046 13’ 06” / 119 12’ 03”
Monitoring objective: Population Exposure MSA: Richland, Kennewick and Pasco, WA

North Bend, North Bend Way - SLAMS
AQS #530330017 — Method code: 61101, 61102, 621101
Address: 42404 SE North Bend Way, North Bend — LAT/LONG: 047 29' 23" / 121 46' 24"
Monitoring objective: Population Exposure — MSA: Seattle-Bellevue-Everett, WA

Seattle, Beacon Hill - NCore
AQS # 530330080 — Method code: 61101, 61102, 621101
Address: 4103 Beacon Avenue S., Seattle — LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure — MSA: Seattle-Bellevue-Everett, WA

Spokane, Augusta Ave. - SLAMS
AQS #530630021 — Method code: 61101, 61102, 621101
Address: 3104 E. Augusta Ave., Spokane — LAT/LONG: 047 39' 39" / 117 21' 26"
Monitoring objective: Population Exposure — MSA: Spokane, WA

Tacoma, Tower Drive - SLAMS
AQS #530531016 — Method code: 61101, 61102, 621101
Address: Tower Drive, Tacoma — LAT/LONG: 47.30444”/ 122.4120
Monitoring objective: Population exposure — MSA: Seattle-Bellevue, Everett, WA

Vancouver, Blairmount - SLAMS
AQS # 530110011 — Method code: 61101, 61102, 621101
Address: 1500 SE Blairmount Drive, Vancouver — LAT/LONG: 045 36' 37" / 122 30' 59"
Monitoring objective: Population Exposure — MSA: Portland-Vancouver, OR-WA

Lead (Pb 11351)

Table 14: Pb Lead 11351

AQS#	Site Name	Est.	Type	Scale	Sampling Type	Action for 2012
530330080	Seattle, Beacon Hill	2010	NCore	Urban	1/6	Continue
530330029	Auburn, Municipal AF	12/11	Special Studies	Urban	1/6	End 2012*
530330029	Auburn, Collocated	12/11	Special Studies	Urban	1/12	End 2012*
530610013	Snohomish, Harvey Field	12/11	Special Studies	Urban	1/6	End 2012*

Additional Monitors: None.

Recommendations/Modifications: The Auburn Municipal and Harvey Field Airport Pb monitoring are scheduled to conclude in December 2012 if no high values are sampled.

Seattle, Beacon Hill - NCore
AQS #530330080 Method code: 085
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Auburn Municipal – Special Studies
AQS #530330029 Method code: 085
Address: 400 23rd St., Auburn LAT/LONG: 047. 32’ 23”/-122 22’ 60”
Monitoring objective: Special Studies MSA: Seattle-Bellevue-Everett, WA

Harvey Field – Special Studies
AQS #530610013 Method code: 085
Address: 9900 Airport Way, Snohomish LAT/LONG: 047. 90’ 23”/-122 10’03”
Monitoring objective: Special Studies MSA: Seattle-Bellevue-Everett, WA

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 2012
530330080	Seattle Beacon Hill	4/1997	NCore	Urban	Continuous	Continue
530090013	Cheeka Peak	5/2006	Rural NCore	Regional	Continuous	Continue

Additional Monitors: None

Recommendations/Modifications: Continue listed sites as described.

Table 16: NCore Parameters Seattle Beacon Hill

Parameter	Parameter Code	Sampling/ Analysis Method	Sampling schedule	Spatial Scale	Instrument Type	Action for 2012
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	R&P 2025	Continue
$PM_{2.5}$ Continuous	88502	Continuous		Urban	R&P FDMS TEOM	Continue
$PM_{2.5}$ Speciation	88502	Continuous & Manual	1/3	Urban	Met One SSAS & URG 3000N Carbon , Sunset Labs OCEC	Continue
$PM_{10-2.5}$	86101	Manual	1/3	Urban	R&P 2025	Continue
$PM_{10-2.5}$ Speciation			**Not sampling**		None	TBD
WS & WD	61101/61102	Continuous		Urban	RM Young 05305	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

Seattle, Beacon Hill - NCore
AQS #530330080
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Special Studies MSA: Seattle-Bellevue-Everett, WA
Comments
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. Seattle Beacon Hill also measures $PM_{2.5}$ chemical speciated particulate matter, volatile organic compounds, metals, carbonyls and semi-volatile (PAH). Data from this site 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 2012
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
$PM_{10-2.5}$			IMPROVE	Rural	IMPROVE	Continue
$PM_{10-2.5}$ Speciation			IMPROVE	Rural	IMPROVE	Continue
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

Cheeka Peak, Rural NCore
AQS #530090013
Address: Cheeka Peak LAT/LONG: 048 29' 78"/124 62' 49"
Monitoring objective: Special Studies MSA: Not in an MSA
Comments
Cheeka Peak is a Regional scale Rural NCore site in Clallam County. Cheeka Peak measures $PM_{2.5}$, ozone, trace level CO, SO_2, NO_2, $PM_{2.5}$, and meteorology.

Toxics

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 2012
530330080	Seattle Beacon Hill	4/1997	NCore	Urban	Manual	Continue

Additional Monitors: None

Recommendations/Modifications: Continue listed site as described.

Seattle, Beacon Hill - NCore

AQS #530330080
Address: 4103 Beacon Avenue S., Seattle
Monitoring objective: Special Studies
Method code: 593/560/574
LAT/LONG: 047 34' 58" / 122 18' 30"
MSA: Seattle-Bellevue-Everett, WA

Comments

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 2012
530330080	Seattle Beacon Hill	4/1997	NCore	Urban	1/3	Continue
530611007	Marysville	2009	SLAMS	Neighborhood	1/6	Continue
530530029	Tacoma L St	2008	SLAMS	Neighborhood	1/6	Continue
530110013	Vancouver	2002	SLAMS	Neighborhood	1/6	Continue
530770009	Yakima	2002	SLAMs	Neighborhood	1/6	Continue

Additional Monitors: None

Recommendations/Modifications: None

Seattle, Beacon Hill -NCore
AQS #530330080 Method code:
Address: 4103 Beacon Avenue S., Seattle LAT/LONG: 047 34' 58" / 122 18' 30"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

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)
AQS #530611007 Method code:
Address: 1605 7th ST, Marysville LAT/LONG: 048 03' 18" / 122 10' 33"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Tacoma, L Street (PSCAA)
AQS #530530029 Method code:
Address: 7802 South L St., Tacoma LAT/LONG: 047 11' 11" / 122 27' 06"
Monitoring objective: Population Exposure MSA: Seattle-Bellevue-Everett, WA

Vancouver, 4th Plain (SWCAA)

AQS #530110013 Method code:
Address: 8205 NE 4th Plain Boulevard, Vancouver LAT/LONG: 045 38' 55" / 122 35' 16"
Monitoring objective: Population Exposure MSA: Portland-Vancouver, OR-WA

Yakima, S 4th (YRCAA)

AQS #530770009 Method code:
Address: 402 South 4th Avenue, Yakima LAT/LONG: 046 35' 42" / 120 30' 44"
Monitoring objective: Population Exposure MSA: Yakima, WA

References

1. Code of Federal Regulations, Title 40, Part 58, Appendix A,B,C,D,E, U.S. Government Printing Office, 1999.

2. Code of Federal Regulations, Title 40, Part 50, U.S. Government Printing Office, 1999.

3. Code of Federal Regulations, Title 40, Part 53, U.S. Government Printing Office, 1999.

4. Code of Federal Regulations, Title 40, Part 58, U.S. Government Printing Office, 1999.

5. U.S. EPA Revised Requirements for Designation of Reference and Equivalent Methods for $PM_{2.5}$ 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. Guidance for Network Design and Optimum Site Exposure for $PM_{2.5}$ and PM_{10}, J.G. Watson, et. Al., U.S. EPA/OAQPS, December 15, 1997.

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

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

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