

State of Hawaii 2013 Air Monitoring Network Plan

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Acronyms and Definitions

AQI	Air Quality Index
ASAS	State of Hawaii Department of Health Air Surveillance and Analysis Section
BAM	Beta-Attenuation Mass Monitor
CAB	State of Hawaii Department of Health Clean Air Branch
CBSA	Core-Based Statistical Areas
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DOH	Hawaii State Department of Health
DOT	Hawaii State Department of Transportation
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H ₂ S	Hydrogen Sulfide
IMPROVE	Integrated Monitoring of Protected Visual Environments
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
MWC	Municipal Waste Combustor
NAAQS	National Ambient Air Quality Standards
NCORE	National Core Multi-pollutant Monitoring Stations
NEI	National Emissions Inventory
NO ₂	Nitrogen Dioxide
O ₃	Ozone
Pb	Lead
PM _{2.5}	Particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM ₁₀	Particulate matter less than or equal to 10 microns in aerodynamic diameter
PQAO	Primary Quality Assurance Organization
PPM	Parts per million
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
SLAMS	State and Local Air Monitoring Stations
SO ₂	Sulfur Dioxide
SPMS	Special Purpose Monitoring Stations
STN	Speciation Trends Network
TPY	Tons per Year
TSP	Total suspended particulates
VOG	Haze due to volcanic emissions
WD	Wind direction
WS	Wind speed
µg/m ³	micrograms per cubic meter of air

Introduction

The State of Hawaii Department of Health (DOH) plans, operates and maintains the statewide ambient air quality monitoring network. Monitoring data is used for a variety of reasons including determining compliance with National Ambient Air Quality Standards (NAAQS), timely reporting of the U.S. Environmental Protection Agency's (EPA) Air Quality Index (AQI), tracking and characterizing air quality trends, evaluating emission control strategies, and supporting health studies.

The DOH manages all of the State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitoring Stations (SPMS), and the National Core Monitoring Station (NCore). Additionally, Hawaii has two Interagency Monitoring of Protected Visual Environments stations (IMPROVE) located at Haleakala National Park on Maui and Volcanoes National Park on the island of Hawaii. The IMPROVE stations are operated and maintained by the National Park Service through their federal land management agency.

This annual review evaluates the state's existing ambient air monitoring network to determine adequacy in meeting monitoring objectives, optimizes the network by closing, moving or adding stations, and ensures that air quality issues important to the state are being addressed. The review ensures that the network is providing adequate, quality assured and useful data to meet the needs of stakeholders. This plan encompasses the 18-month period from July 1, 2013 through December 31, 2014, however unplanned modifications may occur due to funding reductions, unanticipated site changes, or changes in EPA monitoring requirements. This plan is being submitted to the EPA Region IX according to the Code of Federal Regulations (CFR), Title 40, Part 58, Section 58.10.

Notification of the plan availability for public inspection was provided through public notices published on May 20, 2013 in the daily newspapers of all counties. The plan was available for review at all county District Health offices as well as on the Clean Air Branch website (<http://hawaii.gov/health/environmental/air/cab/index.html>) for 30 days from May 20, 2013 to June 20, 2013. Documentation of public notification is provided in **Appendix A** and comments to the plan are provided in **Appendix B**.

1.0 Network Purpose and Design

1.1 Overview

EPA established NAAQS for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), particulate matter 10 microns or less in aerodynamic diameter (PM₁₀), and particulate matter 2.5 microns or less in aerodynamic diameter (PM_{2.5}). Additionally, there is a state standard for hydrogen sulfide (H₂S) that was established primarily to monitor the ambient air effects of geothermal energy production activities on the island of Hawaii. In 2011 the state established the National Core multi-pollutant monitoring station (NCore) as required by 40 CFR 58. The NCore station monitors for PM_{2.5}, speciated PM_{2.5}, PM_{10-2.5}, O₃, SO₂, CO, Pb, nitrogen oxides (NO/NO₂/NO_y) and the meteorological parameters wind speed, wind direction, ambient temperature and relative humidity. Hawaii's air quality surveillance network consists of compliance stations monitoring for criteria pollutants as well as the NCore station and special purpose monitoring stations.

The annual review ensures that the state meets monitoring and siting requirements, the three basic monitoring objectives, addresses the six site types in 40 CFR 58 Appendix D, provides information for non-regulatory data goals and the requirements of 40 CFR 58 appendices A, C, D, and E as follows:

- *Appendix A: Quality Assurance Requirements for SLAMS, SPMSs and PSD Air Monitoring;*
- *Appendix C: Ambient Air Quality Monitoring Methodology*
- *Appendix D: Network Design Criteria for Ambient Air Quality Monitoring*
- *Appendix E: Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*

1.1.1 SLAMS

SLAMS are established primarily to demonstrate compliance with the NAAQS and to meet minimum monitoring requirements as required in 40 CFR 58 Appendix D. All SLAMS must meet quality assurance, methodology, and siting requirements of 40 CFR 58 Appendix A, C and E respectively. All data is submitted to EPA's Air Quality System (AQS) within 90 days at the end of each calendar quarter, as required in 40 CFR 58.16.

EPA mandated that each state establish a minimum of one National Core multi-pollutant monitoring station to support tracking of long-term trends of criteria and non-criteria pollutants, model evaluation, long-term health and ecosystem assessments, and other scientific and technological studies. Hawaii's NCore station became fully operational on January 1, 2011. The SLAMS network excludes SPMS but includes NCore and other stations that have not been specifically designated as SPMS.

1.1.2 SPMS

SPMS are operated for specific areas of interest to the state and do not count in meeting minimum monitoring requirements. Hawaii's SPM network is established

primarily to monitor air quality impacts of emissions from the ongoing Kilauea volcano eruption; hydrogen sulfide (H₂S) emissions from geothermal energy production; and impacts from cruise ships on the island of Kauai and cane burning on the island of Maui. The DOH utilizes FRM or FEM analyzers for all criteria SPMS, meets the quality assurance requirements of 40 CFR 58 Appendix A, and submits criteria pollutant data to AQS. All data from SPMS which have operated for more than 24 months is eligible for comparison to relevant NAAQS.

1.2 Network Design and Review Process

The network review determines if: modifications are needed to reduce or eliminate redundancy and low value monitoring; new NAAQS monitoring requirements or programs are met; sufficient data is being collected using the best technology and schedule that resources allow; and corrective actions are needed to ensure compliance with all siting and quality assurance requirements.

Modification decisions are made using a variety of tools including but not limited to: data trend analyses; performance and technical systems audits; regular site inspections; cost and value analyses; assessment of unfavorable site changes such as loss of lease or construction that adversely affect data collection; and, the need to address special studies or new regulatory as well as non-regulatory monitoring objectives.

1.2.1 Monitoring Objectives and Site Types

Ambient air monitoring networks must be designed to meet three basic objectives as stated in 40 CFR 58 Appendix D:

- 1) Provide air pollution data to the general public in a timely manner;
- 2) Support compliance with NAAQS and emissions strategy development; and
- 3) Support air pollution research studies.

The state's ambient air monitoring network achieves all three objectives as follows:

- 1) Air pollution data from all SLAMS and SPMS are exhibited near real-time on the DOH public web-site, additionally continuous PM_{2.5} and O₃ data is provided to EPA's AIRNow website for use in calculating the AQI;
- 2) Data from SLAMS are used to demonstrate compliance with the NAAQS and in development and tracking of emissions control strategies. Similarly, data from the state's NCore station will be used to track long-term trends of criteria and non-criteria pollutants as well as support emissions control strategies;
- 3) All SLAMS, SPMS, and NCore monitoring provide valuable information in support of air pollution, health, and other scientific studies.

In order for the network to support the three basic objectives outlined above, it must be designed with a variety of monitoring site types. The six general site types are:

- 1) Determine the highest pollutant concentrations expected in the network;
- 2) Measure typical concentrations in areas of high population density;
- 3) Determine the impact of significant sources or source categories on air quality;
- 4) Determine general background concentrations;
- 5) Determine the extent of regional pollutant transport between populated areas;

- 6) Measure pollution impacts on visibility, vegetation, crops, animals and buildings.

The site type for each station in the network is included in its detailed description in Section 3.0 of this document.

1.2.2 PM_{2.5} Network Changes

According to 40 CFR 58.10 (c), this network plan must document how the state will provide for a review of changes to a PM_{2.5} monitoring network that impact the location of a violating PM_{2.5} monitor or the creation or change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual PM_{2.5} NAAQS as set forth in Part 50 Appendix N. The agency must also document the process for obtaining public comment and include any comments received through the public notification process within the submitted plan.

The state does not have, nor is intending to create any community monitoring zones and does not utilize spatial averaging for comparison to the PM_{2.5} NAAQS. The state has in place a public notification procedure which includes posting notice in the newspapers of all counties and on the agency web site allowing for public viewing and comments of the changes that are in the annual network plan document.

1.3 Organizational Structure and Responsibilities

The DOH Air Surveillance and Analysis Section (ASAS) serves as the Primary Quality Assurance Organization (PQAO), operating and maintaining the stations and providing quality assured data to AQS. The ASAS also provides laboratory support for chemical and mass analyses of special or research air toxics monitoring as needed and PM_{2.5} co-located and Pb TSP filter samples.

The DOH Clean Air Branch (CAB) is the state agency responsible for planning, management, and regulatory activities associated with the state's air program. As an organizationally separate entity, the CAB conducts independent audits of the monitoring network and provides oversight of the PQAO.

2.0 Network Evaluation

There are minimum monitoring requirements for PM₁₀, PM_{2.5}, O₃, SO₂, and Pb for each Metropolitan Statistical Area (MSA) in the state as described in 40 CFR 58 Appendix D. The U.S. Census Bureau has designated *Honolulu as the only MSA in the state with a 2010 census population of 953,207*. There are five counties in the state: Kauai (islands of Niihau and Kauai); City & County of Honolulu (island of Oahu); Maui (islands of Maui, Molokai, Lanai, Kahoolawe), Kalawao (Kalaupapa Settlement on Molokai), and Hawaii (island of Hawaii).

2.1 PM₁₀ Network

The minimum number of required PM₁₀ monitoring stations for the MSA is dependent upon population and concentration measurements. High concentration areas are those for which the ambient PM₁₀ data show concentrations exceeding the PM₁₀ NAAQS by 20 percent or more. Medium concentration areas are those for which ambient PM₁₀ data show concentrations exceeding 80 percent of the NAAQS. Low concentration areas are those for which ambient PM₁₀ data show concentrations less than 80 percent of the NAAQS.

PM₁₀ data for 2012 showed the MSA to be a low concentration area (Table 2-1) and therefore is required to have one to two PM₁₀ monitors (Table 2-2). The state meets the minimum PM₁₀ monitoring requirements with three PM₁₀ stations in the MSA.

Table 2-1. PM₁₀ Network and Concentrations for the MSA

Site Name	AQS No.	2012 Maximum 24-Hr Value (µg/m ³)	Percent of 24-Hr NAAQS	Sampling Frequency
Honolulu	150031001	32	21	Continuous
Kapolei	150030010	40	27	Continuous
Pearl City	150032004	37	25	Continuous

Table 2-2. PM₁₀ Minimum Monitoring Requirements for the MSA

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-4)		High Concentration ≥120% of NAAQS (≥180 µg/m ³)	Medium Concentration >80% of NAAQS (>120 µg/m ³)	Low Concentration <80% of NAAQS (<120 µg/m ³)	
>1,000,000		6-10	4-8	2-4	
500,000-1,000,000		4-8	2-4	1-2	
250,000-500,000		3-4	1-2	0-1	
100,000-250,000		1-2	0-1	0	
MSA	2010 Census Population	Highest 24-hr Value (2012)	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Honolulu	953,207	40 µg/m ³	1-2	3	0

Figure 2-1 shows the map locations of the currently operating PM₁₀ sites in the state. All of the PM₁₀ stations are in the Honolulu MSA.

Figure 2-1. PM₁₀ Network



2.2 PM_{2.5} Network

The state must operate a minimum number of required PM_{2.5} monitors based on population in the MSA and the most recent 3-year design value for PM_{2.5}. The design value for the annual PM_{2.5} standard is the most current 3-year average annual mean for each site. The design value for the 24-hour PM_{2.5} standard is the most current 3-year average of annual 98th percentile 24-hour values recorded at each monitoring site. Table 2-3 shows the annual and daily design values for complete data years 2010 to 2012.

The most recent 3-year design values were less than 85% of any PM_{2.5} NAAQS. Table 2-4 shows that the state operates more than the minimum monitoring requirements for PM_{2.5} in the MSA. In addition to the four SLAMS PM_{2.5} sites in the Honolulu MSA, the state operates one SLAMS and one SPMS on the island of Maui, six SPMS on the island of Hawaii for volcanic emissions, and one SPM station on the island of Kauai to monitor cruise ship emissions. The IMPROVE monitoring station at Haleakala National Park operated by the National Park Service serves as the regional haze/background PM_{2.5} site for the state's network. All primary PM_{2.5} monitors operated by the state are continuous FEM. Figure 2-2 shows the map locations of all the PM_{2.5} stations in the state, including SPMS and the IMPROVE monitor.

Table 2-3. PM_{2.5} Network and Concentrations for the MSA

Site	AQS No.	Sampling Frequency	Annual Design Value (µg/m ³) 2010 – 2012	Percent of Annual NAAQS	Daily Design Value (µg/m ³) 2010-2012	Percent of 24-Hour NAAQS
Honolulu	150031001	Continuous	4.8	32	11	31
Kapolei	150030010	Continuous	5.5	37	13	37
Pearl City	150032004	Continuous	5.2	35	12	34
Sand Island	150031004	Continuous	8.4	56	17	49

NOTE: Haleakala IMPROVE (150090101) is the PM_{2.5} background site for Hawaii and is operated and maintained by the NPS

Table 2-4. PM_{2.5} Minimum Monitoring Requirements for the MSA

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-5)		Most recent 3-year Design Value ≥85% of any PM _{2.5} NAAQS (≥29.8 µg/m ³ for 24-hr standard; ≥12.8 µg/m ³ for annual standard)		Most recent 3-year Design Value <85% of any PM _{2.5} NAAQS (<29.8 µg/m ³ for 24-hour standard; <12.8 µg/m ³ for annual standard)		
>1,000,000		3		2		
500,000-1,000,000		2		1		
250,000-500,000		1		0		
MSA	2010 Census Population	Highest Annual Design Value 2010 – 2012	Highest Daily Design Value 2010-2012	Required No. of Monitors	Number of Active Monitors in the MSA	Number of Monitors Needed
Honolulu	953,207	8.4	17	1	4	0

Appendix A to 40 CFR 58 requires that 15 percent of each PM_{2.5} monitoring method be co-located. The state currently operates five SLAMS and eight SPMS FEM monitors. With a total of 13 stations, two co-located monitors are required. One FRM co-located monitor is currently operating at the core Kapolei station. The state plans to co-locate a PM_{2.5} FEM at the Kona station as detailed in Section 2.12, pending EPA approval. Table 2-5 summarizes the PM_{2.5} co-located network.

2.3 O₃ Network

The state must operate a minimum number of O₃ monitors depending upon MSA population and typical peak concentrations. NCore sites are intended to complement O₃ data collection but can be used to meet the minimum monitoring requirements.

The O₃ monitoring season for the state of Hawaii is 12-months from January to December. The O₃ design value is the 3-year average of the fourth-highest daily maximum 8-hour concentrations measured at each monitor.

The most recent design value concentration showed less than 85% of the O₃ NAAQS (Table 2-6) and therefore, as shown in Table 2-7, the state meets the minimum O₃ network monitoring requirements.

Table 2-6. O₃ Design Values for the MSA

Stations in the MSA	8-Hour Design Value 2010 – 2012	2010 MSA Census Population	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Sand Island (150031004)	45 ppb	953,207	1	2	0
Kapolei ¹ (150030010)	49 ppb				

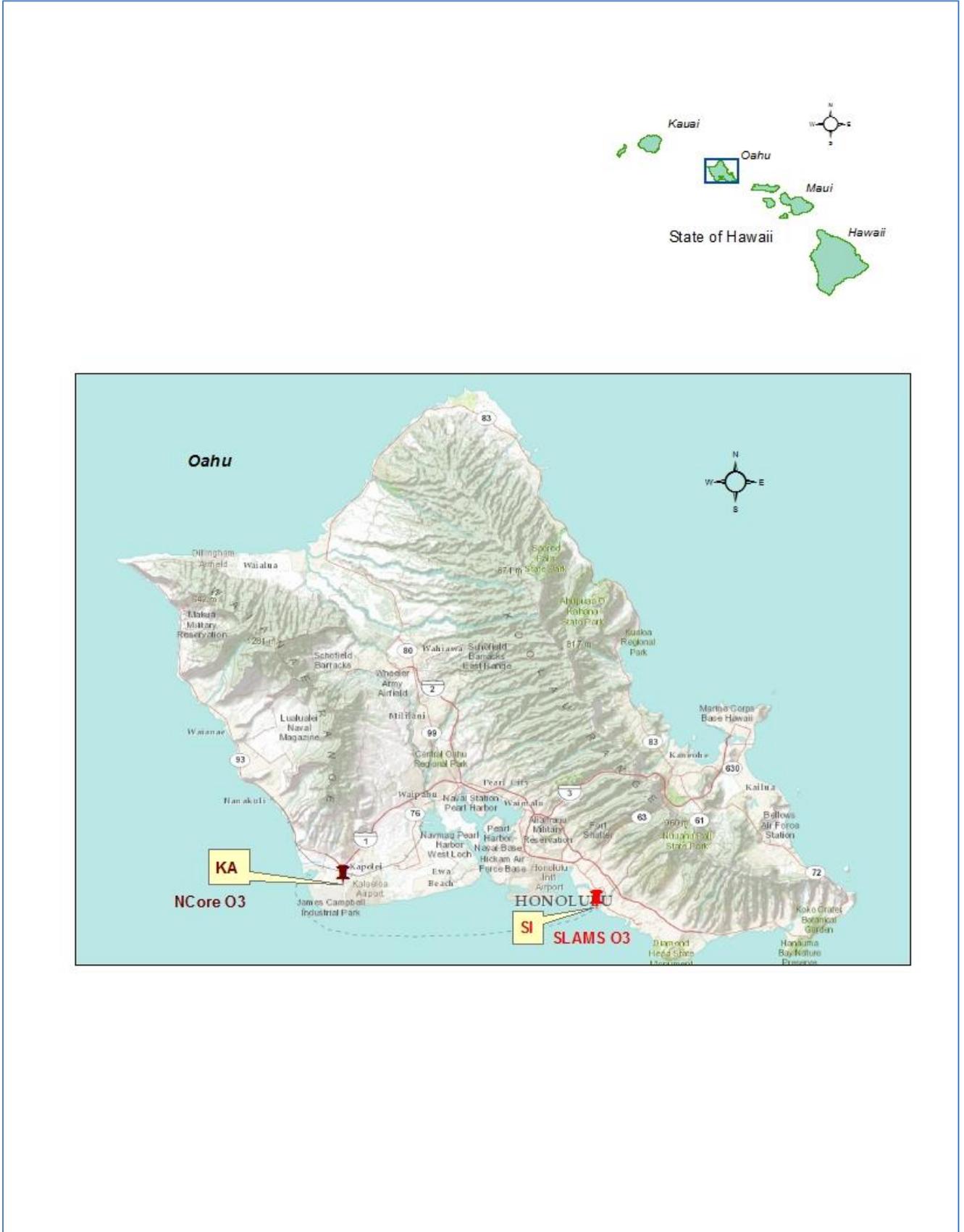
¹ Kapolei NCore O₃ began operating January 2011, incomplete design value

Table 2-7. O₃ Minimum Monitoring Requirements for the MSA

MSA Population Category (40 CFR 58 Appendix D Table D-2)	Most recent 3-year design value ≥85% of any O ₃ NAAQS (≥64 ppb, 8-hr standard)	Most recent 3-year design value <85% of any O ₃ NAAQS (<64 ppb, 8-hr standard)
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000	1	0

Figure 2-3 shows the map locations of the SLAM and NCore O₃ stations. Both stations are located in the Honolulu MSA.

Figure 2-3. O₃ Network



2.4 Pb Network

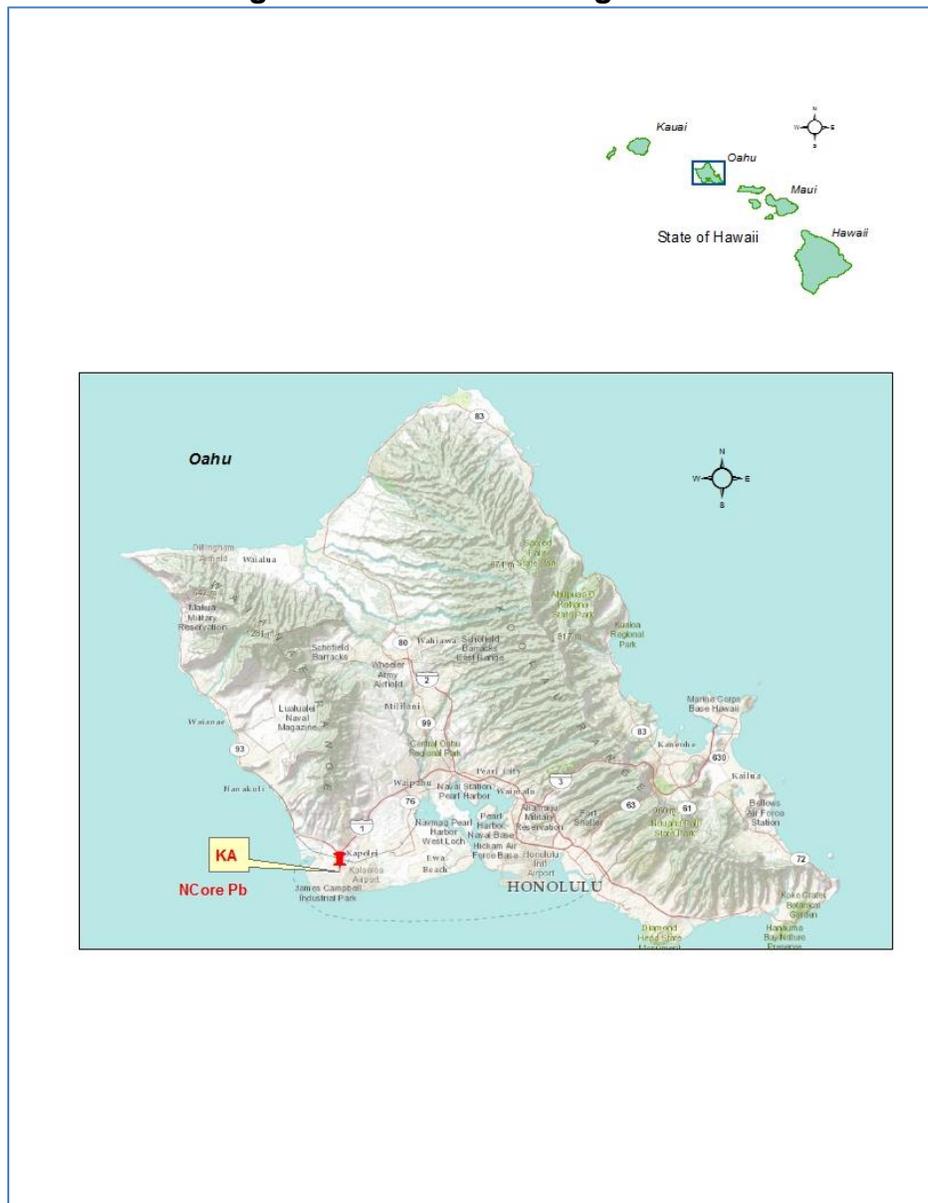
With a 2010 census population of 953,207 in the Honolulu MSA, the state is required to conduct non-source-oriented Pb monitoring at the Kapolei NCore site (Table 2-8). This NCore site began collecting Pb data on January 1, 2012. Figure 2-4 shows the location of the Pb monitoring site at the Kapolei NCore station.

Appendix D to Part 58 also requires source-oriented Pb monitoring for sources emitting 0.50 or more tons per year (TPY) according to the most recent emissions inventory. There are no sources in the state emitting 0.5 or more TPY of Pb.

Table 2-8. Minimum Pb Monitoring Requirement at NCore

NCore	AQS ID	CBSA	2010 Census Population	# Required Monitors	# Active Monitors	# Monitors Needed
KA	150030010	Honolulu	953,207	1	1	0

Figure 2-4. Pb Monitoring Station



2.5 CO Network

The state operates two SLAMS CO monitors in the Honolulu MSA and one SPMS on the island of Kauai. The SPM CO monitor on Kauai was shut-down on 4/25/13 due to low data values and the need to commit resources to other priorities (see section 2.12). Figure 2-5 shows the locations of the CO sites in the state. 40 CFR 58, Appendix D 4.2.2 requires one collocated CO monitor at near-road NO2 sites in CBSAs with populations $\geq 1,000,000$. The Honolulu MSA had a 2010 census population of 953,207 and therefore is not currently required to collocate a CO monitor.

Figure 2-5. CO Network



2.6 NO₂ Network

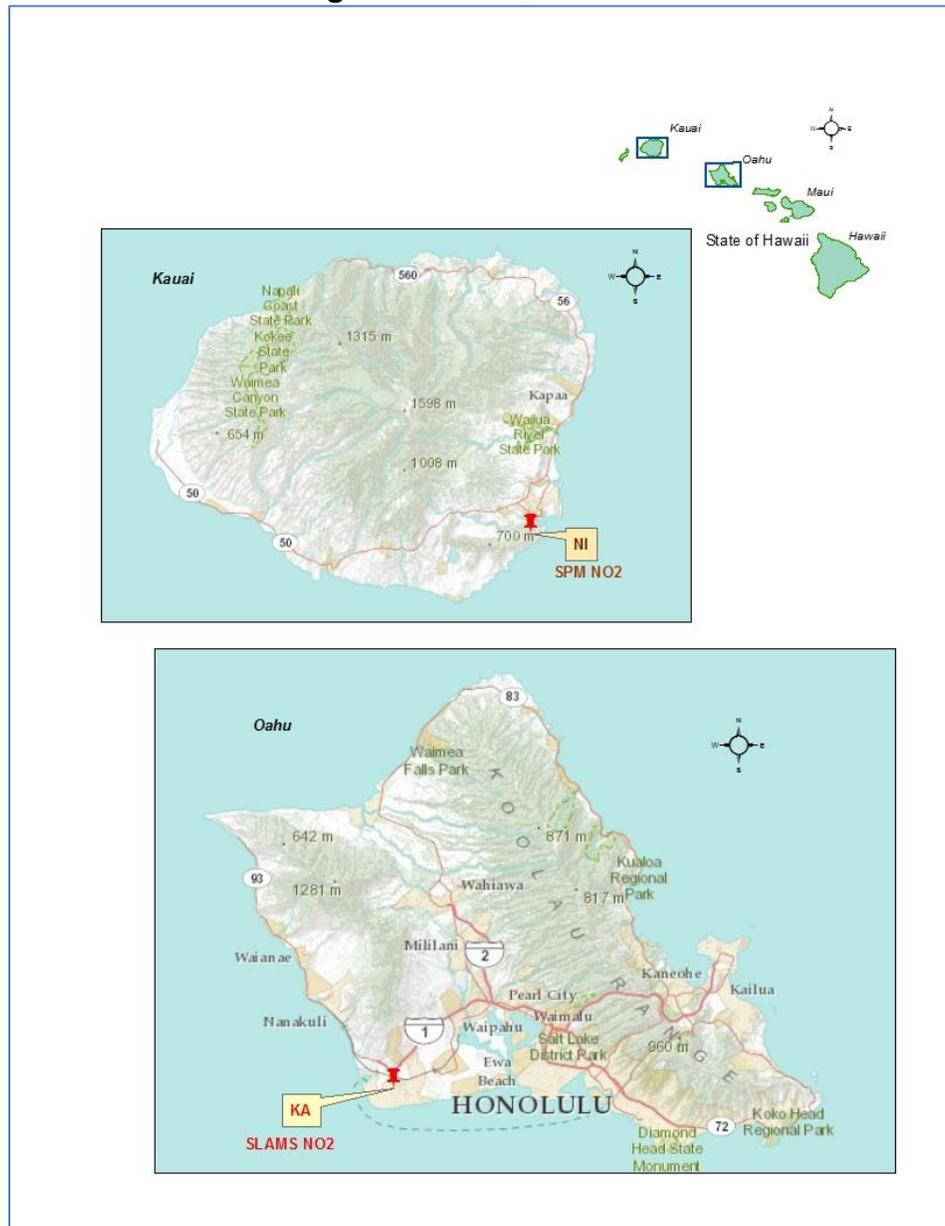
On March 7, 2013, EPA revised the near-road NO₂ monitoring requirement for CBSAs with a population of greater than 500,000 but less than one million. Near-road monitoring for these areas, which includes the Honolulu MSA, are now required to be operational by January 1, 2017 and included in the July 1, 2016 Network Plan. There are no other minimum NO₂ monitoring requirements. The state currently has one SLAMS NO₂ station in the MSA and one SPMS on the island of Kauai.

Table 2-9. Minimum Near-Road NO₂ Monitoring Requirements for the MSA

CBSA	2010 Census Population	Max AADT Counts (2010) ¹	# Required Monitors	# Monitors to be operational by 1/1/2017
Honolulu	953,207	236,000	1	1

¹ 2010 estimated average AADT provided by the State of Hawaii Department of Transportation

Figure 2-6. NO₂ Network



2.7 SO₂ Network

EPA has established the Population Weighted Emissions Index (PWEI) to determine required SO₂ monitoring. The PWEI is calculated by multiplying the population of each CBSA with the total amount of SO₂ in TPY emitted within the CBSA area and dividing the result by one million. According to this calculation, Hawaii is required to operate one SO₂ in the Honolulu area (Table 2-10). The state currently operates two SLAMS SO₂ monitors in the Honolulu MSA, and one at the NCore station in Kapolei and therefore meets the minimum number of required SO₂ stations. Figure 2-7 shows the locations of the SLAMS and SPMS SO₂ sites.

SO₂ continues to be one of the pollutants of concern in communities on the island of Hawaii with the ongoing eruption of the Kilauea volcano. There are seven stations monitoring for volcanic emissions, two of which are SLAM stations (Hilo and Kona). Three of the seven SO₂ monitoring stations (Mt. View, Pahala and Ocean View) are SPMS that use FEM and follow all the requirements of 40 CFR 58 Appendices A, D, and E, have been operating for more than 24 months and therefore are subject to NAAQS comparison. One station (Waikoloa) was established as a SPMS in July 2012, has been operating for less than 24 months and is not subject to comparison with the NAAQS. One station (Puna E) was established primarily to monitor H₂S emissions from geothermal energy production. The probe siting does not meet the requirements of 40 CFR 58 Appendix E and therefore is a non-regulatory SO₂ monitoring site.

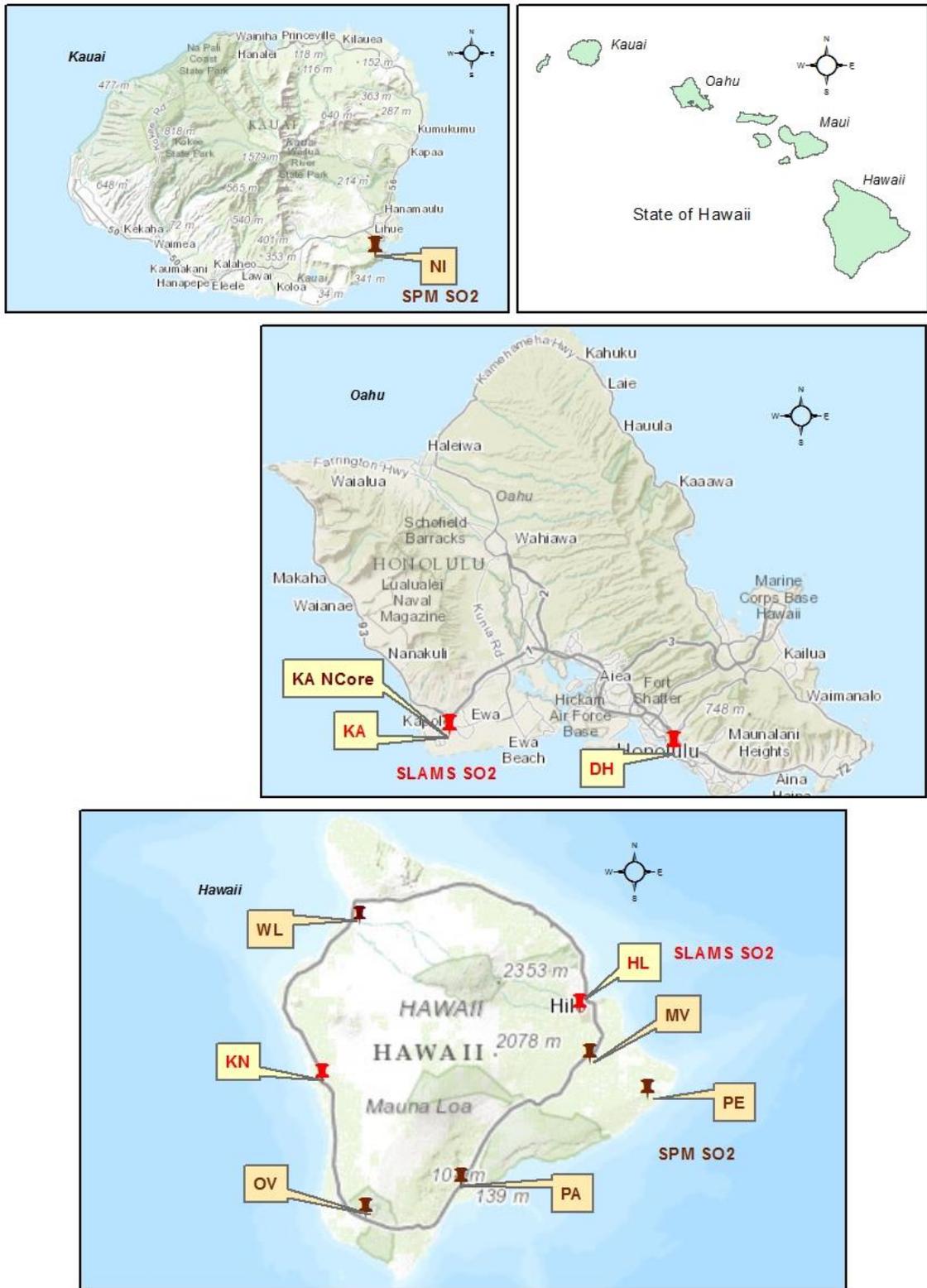
The state also established a station to monitor for cruise ship emissions on the island of Kauai. This is a SPM station which includes FEM monitoring for SO₂, follows all requirements of 40 CFR 58 Appendices A, D, and E, and as of April 2, 2013, has been operating for more than 24 months and is eligible for comparison with the NAAQS.

Table 2-10. Minimum SO₂ Monitoring Requirements

CBSA	County	2010 Census Population	Total SO ₂ (tons/year) 2008 NEI	PWEI ¹	# Required Monitors	# Active Monitors	# Monitors Needed
Honolulu	City & County of Honolulu	953,207	20,855	19,879	1	2	0

¹ According to 40 CFR 58 Appendix D, if the PWEI for a CBSA is ≥ 5,000 but < 100,000, a minimum of one SO₂ monitor is required.

Figure 2-7. SO₂ Network



2.8 NCore

The Kapolei NCore station is located in the rapidly-growing residential, commercial, and industrial community on the southwest side of Oahu. Kapolei is considered to be the “second city” next to Honolulu with county, state and federal agencies also establishing offices in the area. The NCore parameters are: NO/NO_y, SO₂, CO, O₃, PM_{10-2.5}, PM_{2.5} speciation, Pb and the meteorological parameters wind speed, wind direction, temperature and relative humidity.

By correspondence dated October 30, 2009, EPA approved Kapolei as the NCore station and it became fully operational on January 1, 2011 with Pb-TSP collection beginning January 1, 2012 as required in 40 CFR 58 Appendix D, paragraph 3(b).

2.9 H₂S Network

The state has a one-hour H₂S standard of 25 ppb established primarily to determine the effects of geothermal energy exploration and production on the island of Hawaii. Puna Geothermal Ventures (PGV) is a 41 MW geothermal power plant located in the lower east rift zone of the Kilauea volcano.

Although PGV is required by their non-covered source permit to maintain three air monitoring stations for H₂S, the state established a monitoring station in the downwind community of Leilani Estates to monitor ambient effects of geothermal exploration and operations. The station also monitors for SO₂ well as H₂S.

2.10 Site Closures

Planned: Waikoloa, Hawaii station (150012021)

To address community concerns about volcanic emissions, the Waikoloa station on the island of Hawaii was established as a SPMS on July 1, 2012 to monitor primarily for SO₂. However, in 10 months of operation, the maximum 1-hour SO₂ value detected was 35.5 ppb with approximately 95% of the values falling between 0 and 6.25 ppb.

Because of the low SO₂ values, budgetary concerns, and the need to reallocate resources to other programs and areas of concern, the DOH plans to discontinue this station by July 1, 2014.

2.11 Site Additions

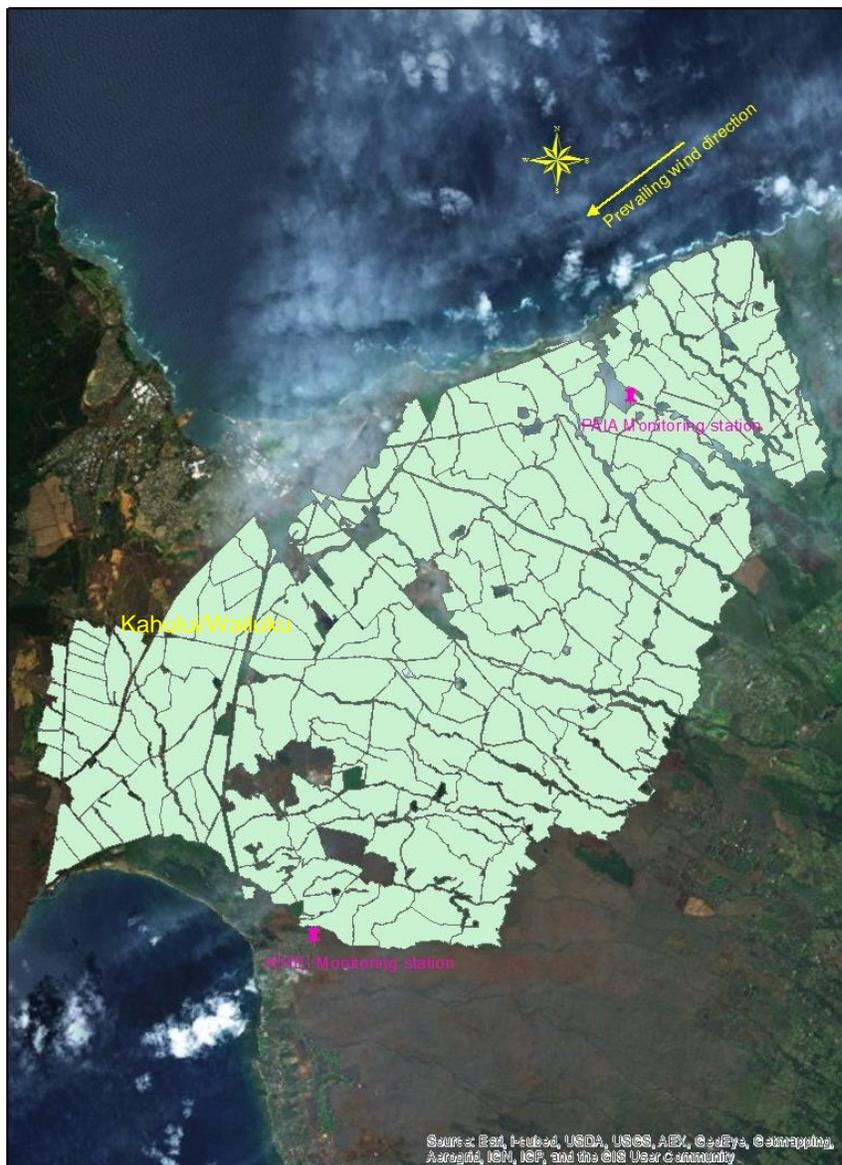
Paia (PI 150090024) PM_{2.5} SPM Station

Agricultural burning is allowed throughout the state and is regulated through the agriculture burning permit program administered by the DOH. The largest agriculture operation with a burn permit is the Hawaiian Commercial and Sugar Company (HC&S) on the island of Maui. HC&S annually conducts pre-harvest burning of sugar cane usually from March to November. The average number of acreage burned is about 70 per day at various locations. Communities located near sugar cane fields are concerned about the health effects that may be associated with the large amount of smoke produced when the cane fields are burned.

HC&S fields are located in Maui's central valley from Kahului and Paia on the north side to Kihei on the south side (Figure 2-8). Since 1999, the DOH has operated one station in Kihei to monitor cane burning, but there hasn't been an active monitor on the north end of the island since 2002. To ensure that cane burning is monitored in both areas, the DOH took action to establish PM_{2.5} monitoring in Paia prior to the start of the 2013 burn season. The Paia SPM station began operating on March 1, 2013.

Although Paia is a relatively small community with a 2010 census population of about 2,700, it is surrounded by sugar cane fields. Smoke impact in this community will provide useful information for the larger community of Kahului/Wailuku.

Figure 2-8 H C & S Sugar Cane Fields: Island of Maui



2.12 Modifications

PM_{2.5} co-located FEM monitor

Planned, pending EPA approval: Kona, Hawaii station (150011012)

The state's largest pollutant network is PM_{2.5} with five SLAM and eight SPM stations. According to the quality assurance requirements of 40 CFR Appendix A, 15 percent of the PM_{2.5} monitors must be co-located. With all 13 of the PM_{2.5} monitors being continuous FEM BAMS 1020, one co-located FRM and one co-located FEM are required. The co-located FRM monitor is located at the core Kapolei SLAM station. To meet the minimum co-location requirements, DOH plans to add one FEM co-located monitor at the Kona station. The Kona station is a SPMS, operating for more than 24 months and consistently records some of the highest PM_{2.5} values in the state due to volcanic emissions as shown in Table 2-11.

Table 2-11. PM_{2.5} Data to Support Co-location at the Kona Station

Site	Type	AQS No.	Sampling Frequency	Annual Design Value (µg/m ³) 2010 – 2012 ¹	Percent of Annual NAAQS	Daily Design Value (µg/m ³) 2010-2012	Percent of 24-Hour NAAQS
Honolulu	SLAMS	150031001	Continuous	4.8	32	11	33
Kapolei	SLAMS	150030010	Continuous	5.5	37	13	37
Pearl City	SLAMS	150032004	Continuous	5.2	35	12	35
Sand Island	SLAMS	150031004	Continuous	8.4	56	17	48
Kihei	SLAMS	150090006	Continuous	5.7	38	14	39
Hilo	SPMS	150011006	Continuous	4.9	33	18	52
KONA	SPMS	150011012	Continuous	15.5	103	28	80
Mt. View	SPMS	150012023	Continuous	5.1	34	14	41
Pahala	SPMS	150012016	Continuous	7.3	49	19	53
Ocean View	SPMS	150012020	Continuous	13.0	87	25	71

¹ Comparison is to the annual standard of 15 µg/m³

Discontinued CO monitoring at Niumalu (150070007)

The CO monitor at this site was shut-down after 4/25/13. As shown in Table 2-12, CO data collected at this site has been of very low data value and resources needed to be directed to other programs. Niumalu is a SPMS and the CO monitor has been operating for less than 24-months.

Table 2-12. CO Data for Niumalu (150070007) 2011-2013¹

	Max 1-hr CO ppm	% of 1-hr NAAQS	Max 8-hr CO ppm	% of 8-hr NAAQS
2011	0.7	2	0.7	8
2012	1.0	3	1.2	13
2013²	1.2	3	2.3	26

¹ CO monitor began operating 5/18/2011

² 2013 CO data is preliminary

2.13 Summary of Network and Changes

Table 2-13 summarizes the state's 2013 network monitors. Sections 2.10 to 2.12 detail station closures, additions and equipment or network modifications and summarized in Table 2-14.

As indicated in the table, the monitors used for all criteria pollutants are FRM or FEM and follow the requirements of 40 CFR 58 and Appendices A, C, D, E and G. Hawaii's air monitoring network meets or exceeds the minimum required monitoring for each parameter.

Table 2-13. Number of Monitors by Pollutant or Program

N/A = Not applicable

Pollutant/ Program	SLAMS	SPMS	NCore	No. of Co- located	Total in MSA	Total in State	Total Required in MSA ¹	Meets EPA Minimum Required?	Planned Additions	Planned Closures
CO (FRM)	2	0	1	N/A	3	3	N/A	N/A	0	0 ²
NO ₂ (FRM)	1	1	*1 *NO/NO _y	N/A	1	2	N/A	YES	0	0
SO ₂ (FEM)	4	6	1	N/A	3	11	1	YES	0	1 SPM
O ₃ (FRM)	1	0	1	N/A	2	2	1	YES	0	0
PM ₁₀ (FEM)	3	0	---	N/A	3	3	1-2	YES	0	0
PM _{2.5} (all are FEM)	5	8	---	1 FRM	4	13	1	YES	1 FEM co-located ³	1 SPM
Pb (FRM)	0	0	1	N/A	1	1	1 (NCore)	YES	0	0
PM _{2.5} Speciation	0	0	1	N/A	1	1	1 (NCore)	YES	0	0
PM _{10-2.5}	N/A	N/A	1	N/A	1	1	1 (NCore)	YES	0	0
H ₂ S	0	1	---	N/A	0	1	N/A	N/A	0	0

¹ As promulgated in 40 CFR 58 Appendix D, the minimum monitoring requirements apply to Metropolitan Statistical Areas (MSA). The City and County of Honolulu is the only MSA in the state.

² The Niumalu SPMS CO monitor was discontinued 4/25/13

³ Pending EPA approval

Table 2-14. Summary of Network Changes

Site	AQS ID	Site Type	Affected Parameters	Reason for Closure/Addition/Modification
Hawaii County (Island of Hawaii)				
Kona	150011012	SPMS	PM _{2.5} co-located FEM	Add PM_{2.5} FEM co-located monitor: To meet minimum co-location requirements, FEM to start after EPA approval is received.
Waikoloa	150012021	SPMS	SO ₂ , PM _{2.5}	Close station: Although established to monitor for volcanic emissions, SO ₂ has not been detected at any significant levels. Because there are six other SO ₂ monitors on the island and due to budget constraints, the DOH plans to discontinue this SPM station. This station began operating July 2012.
Maui County				
Paia	150090024	SPMS	PM _{2.5}	Station added: To monitor for cane-burning on the north side of the island. The station began operating March 1, 2013.
Kauai County				
Niumalu	050070007	SPMS	CO	Discontinued monitor: This monitor was discontinued after 4/25/13 due to low monitoring values and the need to commit resources to other priority programs. The CO monitor began operating on 5/18/11 and has been operating for less than 24 months.

3.0 Detailed Site Descriptions

Following are descriptions and photos of each station in the state's current ambient air monitoring network. The descriptions include area location, traffic, probe siting, monitor information and adherence to quality assurance.

DOH Air Surveillance and Analysis Section of the State Laboratories Division (ASAS) is the collecting and reporting agency for all stations and monitors operating in the state.

Table 3-1. State of Hawaii Ambient Air Monitoring Network

ID	AQS No.	Site Name	Basic Monitoring Objective(s) ¹	Parameters
DH	150031001	Honolulu	1,2	PM _{2.5} , PM ₁₀ , SO ₂
KA SLAMS	150030010	Kapolei	1,2,3	PM _{2.5} , PM _{2.5} co-located, PM ₁₀ , SO ₂ , NO ₂ , CO
KA NCore	150030010	Kapolei	1,3	PM _{10-2.5} , SO ₂ , NO/NO _y , CO, O ₃ , Pb, PM _{2.5} speciation WS, WD, RH, Temp
PC	150032004	Pearl City	1,2	PM _{2.5} , PM ₁₀
SI	150031004	Sand Island	1,2	PM _{2.5} , O ₃
KH	150090006	Kihei	1,2,3	PM _{2.5}
PI	150090024	Paia	1,3	PM _{2.5}
NI	150070007	Niuhala	1,3	PM _{2.5} , SO ₂ , NO ₂
HL SLAMS	150011006	Hilo	1,2,3	SO ₂
HL SPMS	150011006	Hilo	1,2,3	PM _{2.5}
KN SLAMS	150011012	Kona	1,2,3	SO ₂
KN SPMS	150011012	Kona	1,2,3	PM _{2.5}
MV	150012023	Mt. View	1,2,3	PM _{2.5} , SO ₂
OV	150012020	Ocean View	1,2,3	PM _{2.5} , SO ₂
PA	150012016	Pahala	1,2,3	PM _{2.5} , SO ₂
PE	150012010	Puna E	1,3	SO ₂ , H ₂ S
WL	150012021	Waikoloa	1,3	PM _{2.5} , SO ₂

¹ Basic Monitoring Objectives:

- 1) Public information
- 2) NAAQS compliance
- 3) Support research

(DH) HONOLULU			
AQS: 150031001	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1250 Punchbowl St., Honolulu, HI 96813			
Latitude: 21.30758	Longitude: -157.85542		Elevation: 20 m MSL
Location Description: This station is located on the roof of the state Department of Health building in downtown Honolulu. The surrounding streets are busy thoroughfares serving the downtown area. The area includes a major hospital (Queen's Medical Center), the state capitol, other state, county, commercial and business buildings as well as residential condominiums. This station has been operating since 1972.			



Type of Roadway	Punchbowl	S. Beretania	Vineyard
Freeway			
Major Street or Highway	X	X	X
Distance from air intake (m)	30	122	610
Direction from air inlet	E	S	N
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	5	6	6
Average daily traffic	35,844 ¹	53,046 ¹	48,445 ¹
Average vehicle speed (est. mph)	20	25	25
Traffic one way or two	2	1	2
Street parking?	No	No	No

¹ Source: State of Hawaii Department of Transportation 2006 count

Meteorology: WS, WD sensors attached to pole at rooftop						
DH MONITOR INFORMATION N/A = Not Applicable						
	PM _{2.5}	PM ₁₀	SO ₂	CO	WS	WD
POC/FRM or FEM	3/FEM	1/FEM	6/FEM	1/FRM	Info only	Info only
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS	N/A	N/A
AQS Parameter Code	88101	81102	42401	42101	Not entered	Not entered
Manufacturer	Met-One	Met-One	TECO	TECO	RM Young	RM Young
Model No.	BAM 1020	BAM 1020	43i	48	05103VP	05103VP
AQS Method Code	170	122	060	054	Not entered	Not entered
Monitoring start date	4/1/2009	7/1/2009	10/16/1992	1/1/1972	11/2003	11/2003
Frequency	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Probe material	N/A	N/A	Glass	Glass	N/A	N/A
Residence Time (sec)	N/A	N/A	12.48	12.48	N/A	N/A
Distance between co-located monitors	N/A	N/A	N/A	N/A	N/A	N/A

(DH) Honolulu continued

PROBE SITING			
(N/A = Not Applicable)	GASES (CO, SO₂)	PM_{2.5}	PM₁₀
Location of probe	Top of building	Top of building	Top of building
Building dimensions			
Height (m)	12	12	12
Width (m)	61	61	61
Depth (m)	15	15	15
Horizontal distance from supporting structure (m)	9	8	8
Vertical distance above supporting structure (m)	1.2	1.8	1.8
Height of probe above ground (m)	13.2	13.8	13.8
Distance (m) & direction from tree(s)	27 E	24 E	24 E
Horizontal distance from edge of nearest traffic lane (m)	30	27	27
Horizontal distance from nearest parking lot (m)	24	24	24
Distance and direction from obstructions on roof (m)	9N	11N	9N
Distance & direction from possible obstructions not on roof (m)	None	None	None
Height of nearest possible obstacle (m)	2.7	2.7	2.7
Distance & direction from furnace or incineration flues (m)	238 S/SW	234 S/SW	234 S/SW
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	Paved	Paved	Paved

SITE REPRESENTATIVENESS				
	CO	SO₂	PM_{2.5}	PM₁₀
Spatial scale	Middle	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	1-hr; 8-hr	1-hr; 3-hr; 24-hr, Annual	24-hr; Annual	24-hr; Annual
Sampling season	12-months	12-months	12-months	12-months
Site type ¹	1	2	2	2
Purpose of Monitor ²	1, 2	1, 2	1, 2	1, 2
Suitable for comparison against the annual PM _{2.5} NAAQS?			Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	12/9/12	Did not receive results from EPA
Last NPAP	12/16/10	Passed
Date of last annual independent performance audit (CAB)	10/29/12	No problems noted.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/3/12, 11/7/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None	
Changes planned in the next 18 months:	None	

(KA) KAPOLEI SLAMS			
AQS: 150030010	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 2052 Lauwiliwili St., Kapolei, HI 96707			
Latitude: 21.32374		Longitude: -158.08861	Elevation: 17.9 m MSL
Location Description: Located in the Kapolei Business Park, in the rapidly growing "second city" of Kapolei, the area is a mix of business, commercial, and government activities surrounded by an ever expanding residential community. The site is also approximately 1.25 km northeast (upwind) of the state's largest industrial park on the southwest coast of the island of Oahu. The station has been operating since 2002.			



TRAFFIC DESCRIPTION		
Type of Roadway	Kalaeloa Blvd.	Lauwiliwili St.
Freeway		
Major Street or Highway	X	
Local Street or Road		X
Distance from air intake (m)	379	167
Direction from air inlet	NW	W
Composition of roadway	asphalt	asphalt
Number of traffic lanes	4	2
Average daily traffic	18,255 ¹	² Estimated: <5,000
Average vehicle speed (est. mph)	35	30
Traffic one way or two	2	2
Street parking?	No	Yes
¹ Source: State of Hawaii Department of Transportation ² Estimate only, no data available, local road		

KA SLAMS Monitor Information	N/A = Not Applicable					
	PM_{2.5}	PM_{2.5} co-loc	PM₁₀	CO	SO₂	NO₂
POC/FRM or FEM	1/FEM	2/FRM	3/FEM	1/FRM	1/FEM	1/FRM
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
AQS Parameter Code	88101	88101	81102	42101	42401	42602
Manufacturer	Met One	Andersen	Met One	TECO	TECO	TECO
Model No.	BAM1020	RAAS2.5	BAM1020	48i	43A	42C
AQS Method Code	170	120	122	054	060	074
Monitoring start date	1/1/2009	1/1/2011	12/18/2008	7/29/2002	7/29/2002	7/29/2002
Frequency	Continuous	1/3	Continuous	Continuous	Continuous	Continuous
Probe material	N/A	N/A	N/A	Glass	Glass	Glass
Residence Time (sec)	N/A	N/A	N/A	13.22	13.22	13.22
Distance between co-located monitors	4 m	4 m	N/A	N/A	N/A	N/A
Analytical Laboratory	N/A	ASAS	N/A	N/A	N/A	N/A

(KA) Kapolei continued

PROBE SITING			
(N/A = Not Applicable)	GASES (CO, SO₂, NO₂)	PM_{2.5}	PM₁₀
Location of probe	Top of shelter	Top of shelter	Top of shelter
Shelter dimensions			
Height (m)	4	4	4
Width (m)	2.4	2.4	2.4
Depth (m)	5	5	5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1	1
Height of probe above ground (m)	5.1	5	5
Distance (m) & direction from tree(s)	19 N	17 N	17 N
Horizontal distance from edge of nearest traffic lane (m)	167	167	167
Horizontal distance from nearest parking lot (m)	87	87	87
Distance and direction from obstructions on roof (m)	None	None	None
Distance & direction from possible obstructions not on roof (m)	170 W	170 W	170 W
Height of nearest possible obstruction (m)	9	9	9
Distance & direction from furnace or incineration flues (m)	None	None	None
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	Vegetative	Vegetative	Vegetative

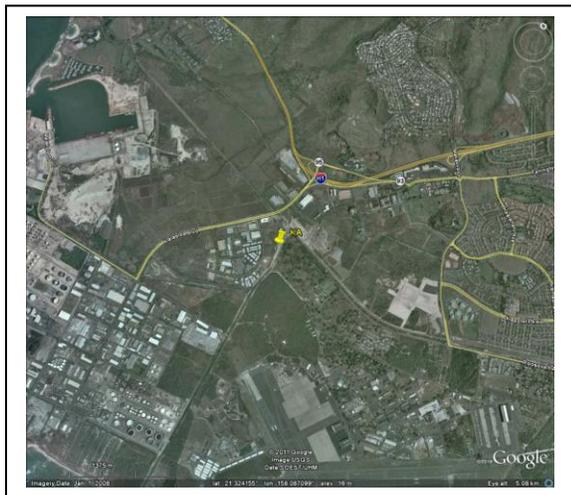
SITE REPRESENTATIVENESS					
	CO	SO₂	NO₂	PM_{2.5}	PM₁₀
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	1-hr; 8-hr	1-hr; 3-hr-24-hr; Annual	1-hr; Annual	24-hr; Annual	24-hr
Sampling season	12 months	12 months	12 months	12 months	12 months
Site type ¹	2	2	2	2	2
Purpose of Monitor ²	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
Suitable for comparison against the annual PM _{2.5} NAAQS?				Yes	

- ¹Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	12/5/12	Did not receive results from EPA
Last NPAP	12/15/10	Passed
Date of last annual independent performance audit (CAB)	9/5/12	BAMS PM _{2.5} ambient temperature difference was > ±2°C: Corrected 9/6/12, passed re-audit. BAMS PM ₁₀ flow difference was >±4%: Corrected on 9/6/12, passed re-audit.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/30/12, 11/8/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	SO ₂ 10/4-10/8 and 10/11-10/16/12: 67% Obs. Poor QA results NO ₂ 11/15-11/19 and 11/22-11/26/12: 71% Obs. Poor QA results and machine malfunction.	
Changes planned in the next 18 months:	None	

KAPOLEI NCore			
AQS: 150030010	Type: NCore	County: Honolulu	MSA: Honolulu
Address: 2052 Lauwiliwili St., Kapolei, HI 96707			
Latitude: 21.32374		Longitude: -158.08861	Elevation: 17.9 m MSL



NCore Pollutant Monitor Information N/A = Not Applicable							
NOTE: ¹ The SLAMS PM _{2.5} and PM ₁₀ monitors are used to calculate the NCore parameter PM _{10-2.5}							
	CO	SO ₂	NO/NO _y	O ₃	Pb-TSP	¹ PM _{10-2.5}	PM _{2.5} speciation
POC/FRM or FEM	2/FRM	2/FEM	1/FRM	1/FRM	1/FRM	See SLAMS	---
Type of Monitor	NCORE	NCORE	NCORE	NCORE	NCORE	NCORE	NCORE
AQS Parameter Code	42101	42401	42601/42600	44201	14129	86101	---
Manufacturer	API	API	Ecotech	Ecotech	Graseby	MetOne	Met-One URG
Model No.	M300EU	M100EU	9843	Serinus 10	2376105	BAM 1020	SASS/300N
AQS Method Code	593	600	591	187	191	185	810/136
Monitoring start date	1/1/2011	1/1/2011	1/1/2011	1/1/2011	1/1/2012	1/1/2011	10/1/2009
Frequency	Continuous	Continuous	Continuous	Continuous	1/6	Continuous	1/3
Probe material	Glass	Glass	Glass	Glass	N/A	N/A	N/A
Residence Time (sec)	14.60	14.60	14.60	14.60	N/A	N/A	N/A
Analytical Lab	N/A	N/A	N/A	N/A	ASAS	N/A	EPA contract Lab

NCore Meteorological Parameters				
	RH	WS	WD	AT
POC	1	1	1	1
AQS Parameter Code	62201	61103	61104	62101
Manufacturer	RM Young	RM Young	RM Young	RM Young
Model No.	05103VP	5103VP	5103VP	41342VC
AQS Method Code	014	020	020	020
Monitoring start date	1/1/2011	7/29/2002	7/29/2002	7/29/2002
Frequency	Continuous	Continuous	Continuous	Continuous

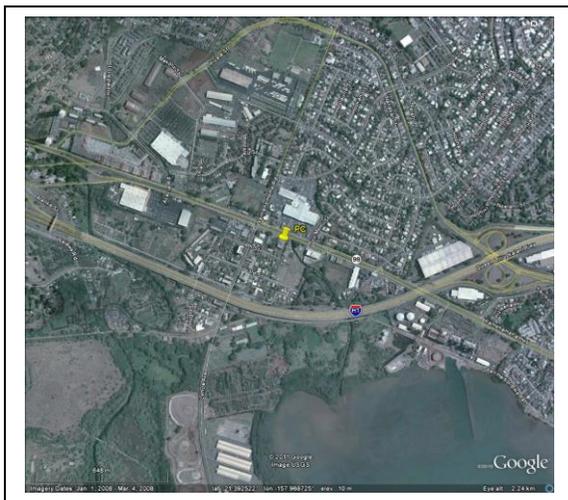
(KA) Kapolei NCore continued

PROBE SITING			
(N/A = Not Applicable)	GASES (CO, SO₂, NO_x, O₃)	PM_{2.5} speciation	
Location of probe	Top of shelter	Top of shelter	
Building dimensions		SASS	URG
Height (m)	4	4	4
Width (m)	2.4	2.4	2.4
Depth (m)	5	5	5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1	1.7	1.6
Height of probe above ground (m)	5	5.7	5.6
Distance (m) & direction from tree(s)	12 SE	13 SE	11 SE
Horizontal distance from edge of nearest traffic lane (m)	165	165	165
Horizontal distance from nearest parking lot (m)	85	85	85
Distance & direction from obstructions on roof (m)	None	None	None
Distance & direction from possible obstructions not on roof (m)	168 W	168 W	168 W
Height of nearest possible obstruction (m)	9	9	9
Distance & direction from furnace or incineration flues (m)	None	None	None
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative	vegetative

SITE REPRESENTATIVENESS						
	CO trace	SO₂ trace	NO/NO_y	O₃	PM_{10-2.5}	Pb
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sample duration	Hourly	Hourly	Hourly	Hourly	Hourly	1 in 6 days
Site type	Population	Population	Population	Population	Population	Population

DATA QUALITY		
	Date or Frequency	Result
Last PEP	12/5/12	Did not receive results from EPA
Last NPAP	12/5/12	Did not receive results from EPA
Date of last annual independent performance audit (CAB)	9/7/12 12/13/12	PM and Met audit: Passed Gas audit (No NO _y audit): Passed
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	6/28/12, 12/27/12	Passed, Passed
Frequency of one-point flow rate audit for Pb-TSP	Semi-Annual	
Dates of last two semi-annual flow rate audits (Pb)	None performed in 2012, flow rate standard out of calibration. ASAS now has a certified flow standard and will be performing the semi-annual audits in 2013.	
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	SO ₂ 6/1-6/13/12: 70% Obs. Aberrant data. NO 1/19-1/26/12: 69% Obs. Aberrant data. NO 1/27-1/31, 2/1-2/6, 2/8-2/14/12: 70% Obs. Aberrant data. WS 7/1-7/17/12: 47% Obs. Poor QA results. WD 7/1-7/19/12: 41% Obs. Poor QA results PM _{2.5} 11/13-11/19, 11/22-11/23/12: 70% Obs. Collection error.	
Changes planned in the next 18 months:	None.	

(PC) PEARL CITY			
AQS: 150032004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 860 4 th St., Pearl City, HI 96782			
Latitude: 21.39283		Longitude: -157.96913	Elevation: 23.1 m MSL
Location Description: This site is located on the roof of the Department of Health's Leeward Health Center in a commercial and highly populated residential area. The station is west of Hawaiian Electric Company's Waiuu Generating Station and is approximately 3 miles NW of the Pearl Harbor Naval Complex. This station has been operating since 1994.			



Type of Roadway	4 th St.	Lehua Ave.	Kam. Hwy.
Freeway			
Major Street or Highway		X	X
Local Street or Road	X		
Distance from air intake (m)	50	138	58
Direction from air inlet	S	W	N
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	2	4	6
Average daily traffic	² Estimated: <2,000	15,692 (2002) ¹	57,948 (2007) ¹
Average vehicle speed (est. mph)	20	30	35
Traffic one way or two	2	2	2
Street parking?	Yes	No	No

¹ Source: State of Hawaii Department of Transportation ² Estimate only, no data available, small side street used by a few local businesses and residences

Meteorology: WS, WD sensors attached to pole on the BAMS shelter				
PC Monitor Information	N/A = Not Applicable			
	PM _{2.5}	PM ₁₀	WS	WD
POC/FRM or FEM	4/FEM	3/FEM	Info only	Info only
Type of Monitor	SLAMS	SLAMS	N/A	N/A
AQS Parameter Code	88101	81102	Not entered	Not entered
Manufacturer	Met-One	Met-One	RM Young	RM Young
Model No.	BAM 1020	BAM 1020	05103VP	05103VP
AQS Method Code	170	122	Not entered	Not entered
Monitoring start date	1/10/2009	9/29/2007	11/2003	11/2003
Frequency	Continuous	Continuous	Continuous	Continuous
Probe material	N/A	N/A	N/A	N/A
Residence Time (sec)	N/A	N/A	N/A	N/A

(PC) Pearl City continued

N/A = Not applicable	PM_{2.5}	PM₁₀
Location of probe	Top of building	Top of building
Building dimensions		
Height (m)	12	12
Width (m)	N/A	N/A
Depth (m)	N/A	N/A
Horizontal distance from supporting structure (m)	14	14
Vertical distance above supporting structure (m)	2	2
Height of probe above ground (m)	14	14
Distance (m) & direction from tree(s)	20 W	20 W
Horizontal distance from edge of nearest traffic lane (m)	58	58
Horizontal distance from nearest parking lot (m)	N/A	N/A
Distance & direction from obstructions on roof (m)	14 S	14 S
Distance & direction from possible obstructions not on roof (m)	None	None
Height of nearest possible obstruction (m)	6	6
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	Paved	Paved

SITE REPRESENTATIVENESS		
	PM_{2.5}	PM₁₀
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; Annual	24-hr
Sampling season	12-months	12-months
Site type ¹	1	1
Purpose of Monitor ²	1, 2	1, 2
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	3/20/11	Did not receive results from EPA
Last NPAP	Not Applicable	No gas monitoring at this site
Date of last annual independent performance audit (CAB)	11/1/12	No problems noted.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/10/12, 12/26/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Not Applicable	No gas monitoring at this site
Frequency of multipoint gas calibration	Not Applicable	No gas monitoring at this site
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None.	
Changes planned in the next 18 months:	None.	

(SI) SAND ISLAND			
AQS: 150031004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1039 Sand Island Parkway, Honolulu, HI 96819			
Latitude: 21.30384	Longitude: -157.87117		Elevation: 5.3 m MSL
Location Description: Station is located in the University of Hawaii's Anuenue Fisheries near the entrance to the Sand Island Recreational Area. Sand Island is downwind of downtown Honolulu, across from Honolulu Harbor. This station has been operating since 1980.			



Type of Roadway	Sand Island Parkway
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	37
Direction from air inlet	W
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	1610 (2007) ¹
Average vehicle speed (est. mph)	30
Traffic one way or two	2
Street parking?	No
¹ Source: State of Hawaii Department of Transportation	

Meteorology: WS, WD, AT sensors attached to pole on roof of the shelter					
SI MONITOR INFORMATION N/A = Not Applicable					
	O₃	PM_{2.5}	WS	WD	AT
POC/FRM or FEM	2/FRM	2/FEM	Info only	Info only	Info only
Type of Monitor	SLAMS	SLAMS	N/A	N/A	N/A
AQS Parameter Code	44201	88101	Not entered	Not entered	Not entered
Manufacturer	TECO	Met One	RM Young	RM Young	RM Young
Model No.	49C	BAM 1020	05103VP	05103VP	41342VC
AQS Method Code	047	170	Not entered	Not entered	Not entered
Monitoring start date	1/1/1980	1/1/2009	--	--	--
Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Probe material	Glass	N/A	N/A	N/A	N/A
Residence Time (sec)	17.96	N/A	N/A	N/A	N/A

(SI) Sand Island continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	O₃
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2	2
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.1	2
Height of probe above ground (m)	4.1	5
Distance (m) & direction from tree(s)	20 E	20 E
Horizontal distance from edge of nearest traffic lane (m)	37	37
Horizontal distance from nearest parking lot (m)	40	40
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	14 N	14 N
Height of nearest possible obstruction (m)	5.5	5.5
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

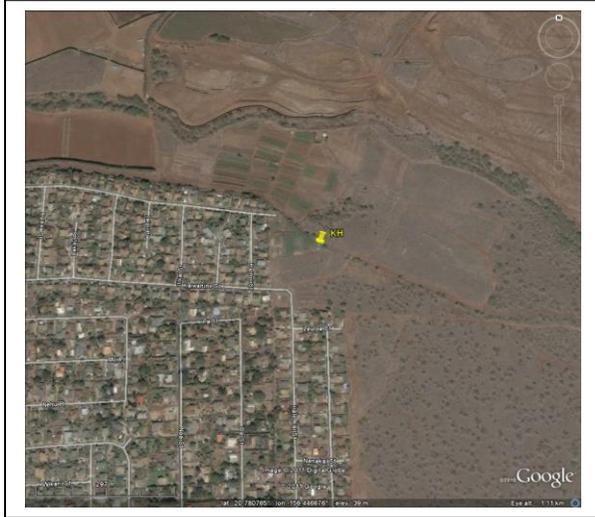
SITE REPRESENTATIVENESS		
	PM_{2.5}	O₃
Spatial scale	Neighborhood	Urban
Applicable NAAQS averaging times	24-hr; Annual	8-hr
Sampling season	12-months	12-months
Site type ¹	5	1
Purpose of Monitor ²	1, 2, 3	1, 2, 3
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	12/4/12	Did not receive results from EPA
Last NPAP	2/14/10	Passed
Date of last annual independent performance audit (CAB)	9/11/12	Passed with following note: O ₃ audit pt. 2: 2-7% difference (warning level)
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/8/12, 11/7/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	O ₃ 3/1-3/8/12: 65% Obs. Poor QA results O ₃ 3/27-3/30/12: 73% Obs. Poor QA results PM _{2.5} 10/18-10/22, 10/27-10/31/12: 73% Obs. Poor QA results	
Changes planned in the next 18 months:	None.	

(KH) KIHEI			
AQS: 150090006	Type: SLAMS	County: Maui	MSA: Not in a MSA
Address: TMK 2-3-9-4:28 Hale Piilani Park, Kihei, HI 96753			
Latitude: 20.780997	Longitude: -156.44637	Elevation: 46.5 m MSL	
Location Description: This station is located in the Hale Piilani subdivision's park in upper Kihei and surrounded primarily by agricultural land. The station was established to monitor the effects of sugar cane burning. This station has been operating since 1999.			



Type of Roadway	Kaiolohia	Kaiwahine
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	114	118
Direction from air inlet	NW	S
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	2
Average daily traffic	¹ Estimated <3,000	¹ Estimated <3,000
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	Yes	Yes
¹ Estimated only, no data available, roads are residential		

KH Monitor Information	N/A = Not Applicable		
	PM _{2.5}	WS	WD
POC/FRM or FEM	2/FEM	Info only	Info only
Type of Monitor	SLAMS	N/A	N/A
AQS Parameter Code	88101	Not entered	Not entered
Manufacturer	Met One	RM Young	RM Young
Model No.	BAM 1020	05103VP	05103VP
AQS Method Code	170	Not entered	Not entered
Monitoring start date	12/1/2008	--	--
Frequency	Continuous	Continuous	Continuous
Probe material	N/A	N/A	N/A
Residence Time (sec)	N/A	N/A	N/A

(KH) Kihei continued

(N/A = Not applicable)	PM _{2.5}
Location of probe	Top of shelter
Shelter dimensions	
Height (m)	4
Width (m)	2
Depth (m)	5
Horizontal distance from supporting structure (m)	N/A
Vertical distance above supporting structure (m)	1
Height of probe above ground (m)	5
Distance (m) & direction from tree(s)	19.2 N
Horizontal distance from edge of nearest traffic lane (m)	154.5
Horizontal distance from nearest parking lot (m)	105.2
Distance & direction from obstructions on roof (m)	None
Distance & direction from possible obstructions not on roof (m)	None
Height of nearest possible obstruction (m)	N/A
Distance & direction from furnace or incineration flues (m)	None
Unrestricted airflow	360°
Located in paved or vegetative ground?	vegetative

SITE REPRESENTATIVENESS	
	PM _{2.5}
Spatial scale	Neighborhood
Applicable NAAQS averaging times	24-hr; Annual
Sampling season	12-months
Site type ¹	3
Purpose of Monitor ²	1, 2, 3
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	12/11/12	Did not receive results from EPA
Last NPAP	Not Applicable	No gas monitoring at this site
Date of last annual independent performance audit (CAB)	10/8/12	No problems noted.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/18/12, 11/16/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Not Applicable	No gas monitoring at this site
Frequency of multipoint gas calibration	Not Applicable	No gas monitoring at this site
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	PM _{2.5} 5/15-5/17/12; 5/21-5/31/12: 56% Obs. Poor QA results.	
Changes planned in the next 18 months:	None.	

(PI) PAIA			
AQS: 150090024	Type: SPMS	County: Maui	MSA: Not in a MSA
Address: TMK 2-2-5-005-058			
Latitude: 20.902031	Longitude: -156.370344		Elevation: 80.8 m MSL
Location Description: The monitor is located within a fenced area that contains a County of Maui water supply tank. The area is surrounded by residential and agricultural land with sugar cane fields north of the monitor.			



Type of Roadway	Baldwin Ave.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	36
Direction from air inlet	WSW
Composition of roadway	Asphalt
Number of traffic lanes	2
Average daily traffic	6,662 ¹
Average vehicle speed (est. mph)	35
Traffic one way or two	2
Street parking?	No
¹ County of Maui Planning Dept. 2003 count	

PI Monitor Information	N/A = Not Applicable		
	PM _{2.5}	WS	WD
POC/FRM or FEM	1/FEM	Info only	Info only
Type of Monitor	SPM	N/A	N/A
Parameter Code	88101	Not entered	Not entered
Manufacturer	Met-One	RM Young	RM Young
Model No.	BAM1020	05103VP	05103VP
AQS Method Code	170	Not entered	Not entered
Monitoring start date	3/1/13	3/1/13	3/1/13
Frequency	continuous	continuous	continuous
Probe material	N/A	N/A	N/A
Residence Time (sec)	N/A	N/A	N/A

(PI) Paia continued

(N/A = Not applicable)	PM _{2.5}
Location of probe	
Shelter dimensions	
Height (m)	1.8
Width (m)	1.1
Depth (m)	0.6
Horizontal distance from supporting structure (m)	N/A
Vertical distance above supporting structure (m)	N/A
Height of probe above ground (m)	2.5
Distance (m) & direction from tree(s)	9 E
Horizontal distance from edge of nearest traffic lane (m)	36
Horizontal distance from nearest parking lot (m)	52.6
Distance & direction from obstructions on roof (m)	None
Distance & direction from possible obstructions not on roof (m)	18 N
Height of nearest possible obstruction (m)	9
Distance & direction from furnace or incineration flues (m)	None
Unrestricted airflow	360°
Located in paved or vegetative ground?	packed dirt

SITE REPRESENTATIVENESS	
	PM _{2.5}
Spatial scale	Neighborhood
Applicable NAAQS averaging times (informational only)	24-hr; annual
Sampling season	12-months
Site type ¹	3
Purpose of Monitor ²	1
Suitable for comparison against the annual PM _{2.5} NAAQS?	No. Monitor is a SPMS operating for less than 24 months

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	None	Station began operating 3/1/13
Last NPAP	Not Applicable	No gas monitoring at this site.
Date of last annual independent performance audit (CAB)	Not yet performed	Station began operating 3/1/13. Audit will be performed in 2013
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	None to date	
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Not Applicable	No gas monitoring at this site
Frequency of multipoint gas calibration	Not Applicable	No gas monitoring at this site
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None.	
Changes planned in the next 18 months:	None.	

(NI) NIUMALU			
AQS: 150070007	Type: SPMS	County: Kauai	MSA: Not in a MSA
Address: 2342 Hulemalu Rd., Lihue, HI 96766			
Latitude: 21.9495	Longitude: -159.365	Elevation: 11 m MSL	
Location Description: Located on a private residential property approximately 1 mile downwind of Nawiliwili Harbor, this station was established to monitor the impact of cruise ship emissions on nearby communities. This station began operating in April 2011.			



Type of Roadway	Hulemalu Rd.	Niumalu Rd.
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	44.4	309.7
Direction from air inlet	NW	NE
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	1
Average daily traffic	100 ¹	30 ¹
Average vehicle speed (est. mph)	15	20
Traffic one way or two	2	2
Street parking?	No	No
¹ Estimated only, no data available, roads are for local residential access		

NI MONITOR INFORMATION N/A = Not Applicable						
	SO₂	NO₂	PM_{2.5}	CO¹	WS	WD
POC/FRM or FEM	1/FEM	1/FRM	1/FEM	1/FRM	Info only	Info only
Type of Monitor	SPM	SPM	SPM	SPM	N/A	N/A
Parameter Code	42401	42602	88101	42101	Not entered	Not entered
Manufacturer	TECO	Teledyne API	Met One	TECO	RM Young	RM Young
Model No.	43i	200E	BAM1020	48C	05103VP	05103VP
AQS Method Code	060	099	170	054	Not entered	Not entered
Monitoring start date	4/1/2011	4/1/2011	4/1/2011	5/18/2011	4/1/2011	4/1/2011
Frequency	continuous	continuous	continuous	continuous	continuous	continuous
Probe material	Glass	Glass	N/A	Glass	N/A	N/A
Residence Time (sec)	16.58	16.58	N/A	16.58	N/A	N/A

¹ CO monitor permanently discontinued after 4/25/13

NI Niualalu continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	Gases (CO, SO₂, NO₂)
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	2.9	2.9
Width (m)	4.9	4.9
Depth (m)	2.4	2.4
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	4	4
Distance (m) & direction from tree(s)	5.2 ESE	5.2 ESE
Horizontal distance from edge of nearest traffic lane (m)	44.4	44.4
Horizontal distance from nearest parking lot (m)	N/A	N/A
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	14.6 W	14.6 W
Height of nearest possible obstacle (m)	7.2	7.2
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

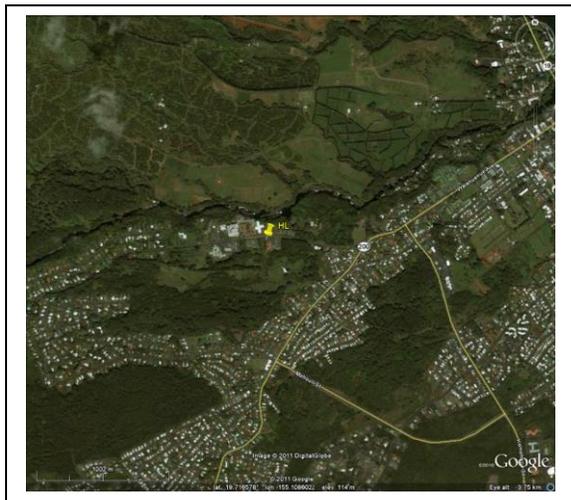
SITE REPRESENTATIVENESS				
	PM_{2.5}	SO₂	CO	NO₂
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr	1-hr; 3-hr; 24-hr; annual	1-hr; 8-hr	1-hr; annual
Sampling season	12-months	12-months	12-months	12-months
Site type ¹	3	3	3	3
Purpose of Monitor ²	1, 4	1, 4	1, 4	1, 4
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes			

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	2/3/12	Did not receive results from EPA
Last NPAP	2/2/12	Passed
Date of last annual independent performance audit (CAB)	10/18/12	Passed with following notes: SO ₂ audit pts. 6, 7, 9: >10% (warning level) NO ₂ audit pts. 6, 7: > 10% (warning level)
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/31/12, 11/21/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	CO 1/1-1/12/12: 59% Obs. Machine malfunction. CO 6/4-6/26/12: 23% Obs. Poor QA results. SO ₂ 6/4-6/26/12: 23% Obs. Poor QA results NO ₂ 1/1-1/12/12: 59% Obs. Machine malfunction. NO ₂ 6/4-6/26/12: 23% Obs. Poor QA results.	
Changes planned in the next 18 months:	None. CO monitor shut-down on 4/25/13.	

(HL) HILO			
AQS: 150011006	Type: SLAMS (SO ₂); SPMS (PM _{2.5})	County: Hawaii	MSA: Not in a MSA
Address: 1099 Waianuenue Ave., Hilo, HI 96720			
Latitude: 19.71756		Longitude: -155.11053	Elevation: 136.8 m MSL
Location Description: Located on the grounds of the Adult Rehabilitation Center of Hilo, near the Hilo Medical Center, this site was originally established to monitor volcanic emissions during non-prevalent wind conditions. This station has been operating since 1997.			



Type of Roadway	Waianuenue Ave.
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	20
Direction from air inlet	N
Composition of roadway	Asphalt
Number of traffic lanes	2
Average daily traffic	15,000 ¹
Average vehicle speed (est. mph)	35
Traffic one way or two	2
Street parking?	No

¹ Estimate only, no data available, based on observations

HL MONITOR INFORMATION	N/A = Not Applicable				
	PM _{2.5}	SO ₂	WS	WD	AT
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only	Info only
Type of Monitor	SPM	SLAMS	N/A	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young	RM Young
Model No.	BAM1020	43A	05103VP	05103VP	41342VC
AQS Method Code	170	060	Not entered	Not entered	Not entered
Monitoring start date	5/1/08	1/1/1997	--	--	--
Frequency	continuous	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A	N/A
Residence Time (sec)	N/A	18.11	N/A	N/A	N/A

HL Hilo continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.7	1
Height of probe above ground (m)	4.7	4
Distance (m) & direction from tree(s)	15 N	15 N
Horizontal distance from edge of nearest traffic lane (m)	20	20
Horizontal distance from nearest parking lot (m)	25	25
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	None	None
Height of nearest possible obstruction (m)	N/A	N/A
Distance & direction from furnace or incineration flues (m)	29 NNW	29 NNW
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1	1, 2
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	2/10/12	Did not receive results from EPA
Last NPAP	2/10/12	Passed.
Date of last annual independent performance audit (CAB)	9/20/12	PM _{2.5} and SO ₂ passed.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	6/26/12, 11/27/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	PM _{2.5} 4/20-4/30/12: 67% Obs. Collection error.	
Changes planned in the next 18 months:	None.	

(KN) KONA			
AQS: 150011012	Type: SLAMS (SO ₂) SPMS (PM _{2.5})	County: Hawaii	MSA: Not in a MSA
Address: 81-1043 Konawaena School Rd., Kona, HI 96750			
Latitude: 19.50978		Longitude: -155.91342	Elevation: 517.2 m MSL
Location Description: This station is located on the upper campus of Konawaena High School. It was established to measure impacts from volcanic emissions. The station has been operating at this site since 2005.			



Type of Roadway	Konawaena School Rd.	Mamalahoa Hwy.
Freeway		
Major Street or Highway		X
Local Street or Road	X	
Distance from air intake (m)	17	702
Direction from air inlet	N	W
Composition of roadway	asphalt	asphalt
Number of traffic lanes	1	2
Average daily traffic	500 ²	15,503 (2006) ¹
Average vehicle speed (est. mph)	10	55
Traffic one way or two	2	2
Street parking?	No	No

¹ Source: State of Hawaii Department of Transportation
² Estimated only, no data available. This is a road used for school access only and station is at the top of the road where there would be less ingress/egress.

KN MONITOR INFORMATION	N/A = Not Applicable				
	PM _{2.5}	SO ₂	WS	WD	AT
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only	Info only
Type of Monitor	SPM	SLAMS	N/A	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young	RM Young
Model No.	BAM1020	43C	05103VP	05103VP	41342VC
AQS Method Code	170	060	Not entered	Not entered	Not entered
Parameter start date	3/15/2008	9/13/2005	9/13/2005	9/13/2005	9/13/2005
Frequency	continuous	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A	N/A
Residence Time (sec)	N/A	17.55	N/A	N/A	N/A

KN Kona continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1.09
Height of probe above ground (m)	4	4
Distance (m) & direction from nearest tree(s)	38 NE	38 NE
Horizontal distance from edge of nearest traffic lane (m)	30 N	30 N
Horizontal distance from nearest parking lot (m)	N/A	N/A
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	21 SSW	21 SSW
Height of nearest possible obstacle (m)	9	9
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1, 4	1, 2, 4
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

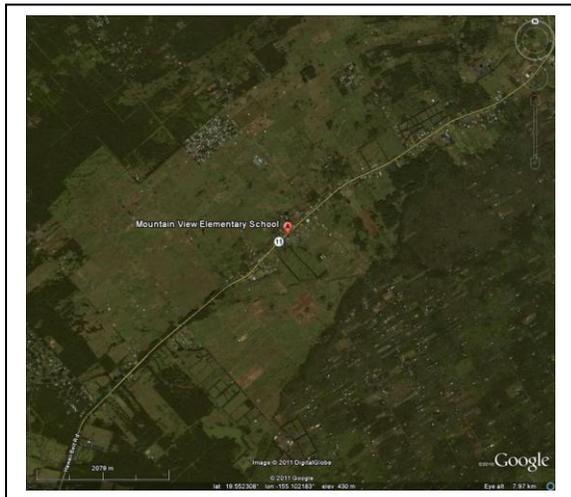
DATA QUALITY		
	Date or Frequency	Result
Last PEP	3/17/11	Did not receive results from EPA
Last NPAP	3/17/11	Did not receive results from EPA
Date of last annual independent performance audit (CAB)	9/25/13	PM _{2.5} and SO ₂ passed.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/9/12, 11/27/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	PM _{2.5} 11/9-11/16/12: 71% Obs. Maintenance/Routine repairs.	
Changes planned in the next 18 months:	Pending EPA approval, collocate a PM _{2.5} FEM	

(MV) MOUNTAIN VIEW

AQS: 150012023	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 17-1235 Volcano Rd., Mt. View, HI 96771			
Latitude: 19.57002		Longitude: -155.08046	
			Elevation: 436.5 m MSL

Location Description:

This station is located on the grounds of the Mt. View Elementary School. The original Mt. View station, which began in December 2007, was moved at the ending of 2010 approximately 1.8 miles southwest to this current location. Due to the proximity of this community to the Kilauea volcano, it was established to monitor volcanic emissions during non-trade wind days.



Type of Roadway	Volcano Rd.
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	30.5
Direction from air inlet	N
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	5,207 ¹ (2006)
Average vehicle speed (est. mph)	40
Traffic one way or two	2
Street parking?	No
¹ Source: State of Hawaii Department of Transportation	

MV MONITOR INFORMATION	N/A = Not Applicable			
	PM _{2.5}	SO ₂	WS	WD
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only
Type of Monitor	SPM	SPM	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young
Model No.	BAM1020	43i	05103VP	05103VP
AQS Method Code	170	060	Not entered	Not entered
Parameter start date	12/7/2010	12/8/2010	12/7/2010	12/7/2010
Frequency	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A
Residence Time (sec)	N/A	18.16	N/A	N/A

MV Mt. View continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	4	4
Distance (m) & direction from nearest tree(s)	18 W	18 W
Horizontal distance from edge of nearest traffic lane (m)	30.5	30.5
Horizontal distance from nearest parking lot (m)	46.5	46.5
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	None	None
Height of nearest possible obstruction (m)	N/A	N/A
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

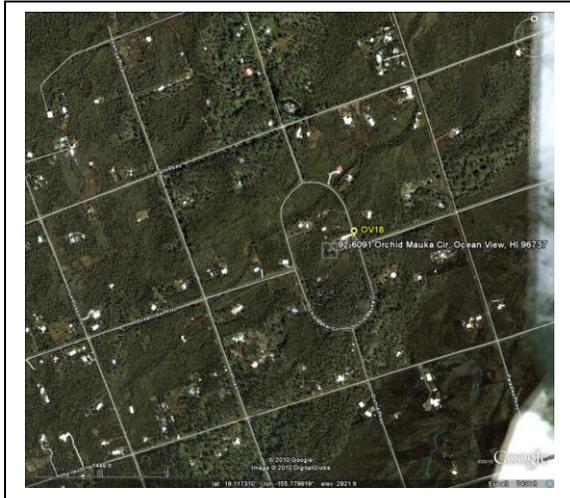
SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1	1
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	2/7/12	Did not receive results from EPA
Last NPAP	2/13/12	Passed
Date of last annual independent performance audit (CAB)	9/19/12	PM _{2.5} and SO ₂ passed.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/2/12, 11/1/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	PM _{2.5} 7/9-7/16/12, 7/19-7/30/12: 45% Obs. Poor QA results	
Changes planned in the next 18 months:	None.	

(OV) OCEAN VIEW			
AQS: 150012020	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 92-6091 Orchid Mauka Circle, Ocean View, HI 96737			
Latitude: 19.11756	Longitude: -155.77814	Elevation: 862.6 m MSL	
Location Description: This station established in 2010 is located on the grounds of the Ocean View Fire Station. During normal trade-winds, volcanic emissions are carried into this residential/agricultural community.			



Type of Roadway	Orchid Mauka Circ.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	13.6
Direction from air inlet	ENE
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	< 3,000 ¹
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	No
¹ Estimated only, local residential street, no data available	

OV MONITOR INFORMATION	N/A = Not Applicable			
	PM _{2.5}	SO ₂	WS	WD
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only
Type of Monitor	SPM	SPM	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young
Model No.	BAM1020	43i	05103VP	05103VP
AQS Method Code	170	060	Not entered	Not entered
Parameter start date	4/1/2010	4/1/2010	4/1/2010	4/1/2010
Frequency	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A
Residence Time (sec)	N/A	18.34	N/A	N/A

OV Ocean View continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1
Height of probe above ground (m)	4.1	4
Distance (m) & direction from nearest tree(s)	7 ENE	7 ENE
Horizontal distance from edge of nearest traffic lane (m)	13.6	13.6
Horizontal distance from nearest parking lot (m)	6.4	6.4
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	None	None
Height of nearest possible obstruction (m)	N/A	N/A
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Middle	Neighborhood
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3, 6	3, 6
Purpose of Monitor ²	1	1
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	2/9/12	Did not receive results from EPA
Last NPAP	2/9/12	Passed
Date of last annual independent performance audit (CAB)	9/19/12	Passed with the following note: SO ₂ audit pts. 2, 3, & 10: >10% (warning level)
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/9/12, 11/1/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None	
Changes planned in the next 18 months:	None	

(PA) PAHALA			
AQS: 150012016	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 96-3150 Pikake St., Pahala, HI 96777			
Latitude: 19.2039	Longitude: -155.48018		Elevation: 320 m MSL
Location Description: This station is located on the grounds of the Ka'u High/Pahala Elementary School. During normal trade-winds, volcanic emissions are carried into this rural community. The station began operating in 2007.			



Type of Roadway	Puahala	Pumeli
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	226	61
Direction from air inlet	E	N
Composition of roadway	Asphalt	Asphalt
Number of traffic lanes	2	2
Average daily traffic	< 3,000 ¹	< 3,000 ¹
Average vehicle speed (est. mph)	25 mph	25 mph
Traffic one way or two	2	2
Street parking?	No	No

¹ Estimated only, no data available. Local roads for a community with a 2010 population of about 1,400

PA MONITOR INFORMATION	N/A = Not Applicable			
	PM _{2.5}	SO ₂	WS	WD
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only
Type of Monitor	SPM	SPM	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young
Model No.	BAM1020	43i	05103VP	05103VP
AQS Method Code	170	060	Not entered	Not entered
Parameter start date	4/11/2008	8/10/2007	8/10/2007	8/10/2007
Frequency	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A
Residence Time (sec)	N/A	18.22	N/A	N/A

PA Pahala continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	2.4	2.4
Width (m)	2.4	2.4
Depth (m)	6	6
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	3.4	3.4
Distance (m) & direction from nearest tree(s)	11 N	11 N
Horizontal distance from edge of nearest traffic lane (m)	48 S	48 S
Horizontal distance from nearest parking lot (m)	73 S	73 S
Distance & direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	None	None
Height of nearest possible obstruction (m)	N/A	N/A
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

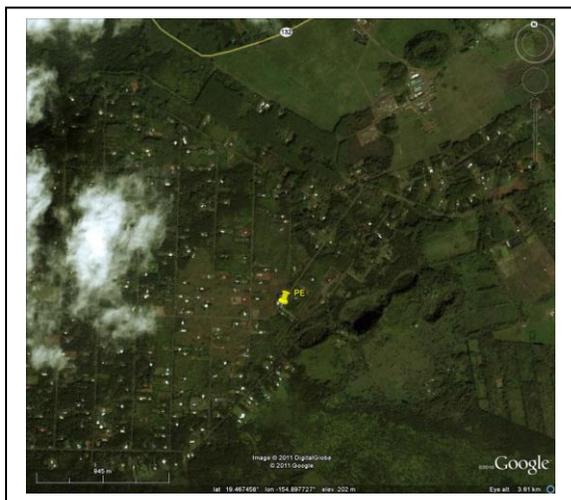
SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1, 4	1, 4
Suitable for comparison against the annual PM _{2.5} NAAQS?	Yes	

- ¹Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	3/17/11	Did not receive results from EPA
Last NPAP	7/29/08	Passed
Date of last annual independent performance audit (CAB)	9/20/12	PM _{2.5} and SO ₂ passed.
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	5/2/12, 11/1/12	Passed, Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None	
Changes planned in the next 18 months:	None	

(PE) PUNA E			
AQS: 150012010	Type: SPMS Non-regulatory	County: Hawaii	MSA: Not in a MSA
Address: 13-763 Leilani Ave., Pahoa, HI			
Latitude: 19.46399	Longitude: -154.89871	Elevation: 207.9 m MSL	
Location Description: Located on a residential property in Leilani Estates, this station is primarily to monitor emissions from the nearby geothermal energy facility. In 2005, an SO ₂ monitor was added to measure any effects from volcanic emissions. However, since this is primarily an H ₂ S site, the probe is at breathing height, below EPA requirements and is therefore non-regulatory for SO ₂ .			



Type of Roadway	Leilani Blvd.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	25.6
Direction from air inlet	NE
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	< 5,000 ¹
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	Yes
¹ Estimated, no data available, residential street	

PE MONITOR INFORMATION	N/A = Not Applicable			
	SO ₂	H ₂ S	WS	WD
POC/FRM or FEM	1/FEM	N/A	Info only	Info only
Type of Monitor	SPM non-regulatory	SPM	N/A	N/A
Parameter Code	42401	NA	Not entered	Not entered
Manufacturer	TECO	TECO	RM Young	RM Young
Model No.	43C	43C	05103VP	05103VP
AQS Method Code	060	Not entered	Not entered	Not entered
Parameter start date	2/16/2005	3/91	3/91	3/91
Frequency	continuous	continuous	continuous	continuous
Probe material	Teflon	Teflon	N/A	N/A
Residence Time (sec)	16.24	16.24	N/A	N/A

PE Puna E continued

PROBE SITING	
(N/A = Not applicable)	SO₂, H₂S
Location of probe	Protrudes from side of shelter
Shelter dimensions	
Height (m)	3
Width (m)	2.4
Depth (m)	5
Horizontal distance from supporting structure (m)	1.2
Vertical distance above supporting structure (m)	N/A, probe is on the side of trailer
Height of probe above ground (m)	1.8
Distance (m) & direction from nearest tree(s)	17 SW
Horizontal distance from edge of nearest traffic lane (m)	26
Horizontal distance from nearest parking lot (m)	N/A
Distance from obstructions on roof (m)	N/A
Distance & direction from possible obstructions not on roof (m)	1.2 NE from side of trailer
Height of nearest possible obstruction (m)	N/A
Distance & direction from furnace or incineration flues (m)	None
Unrestricted airflow	180°
Located in paved or vegetative ground?	vegetative

SITE REPRESENTATIVENESS		
	SO₂	H₂S
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	Cannot be compared to NAAQS (non-regulatory). Probe height does not meet 40 CFR 58 App. E, probe at breathing height for H ₂ S, less than the minimum of 2m	1-hr state standard of 25 ppb
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1	1, 3

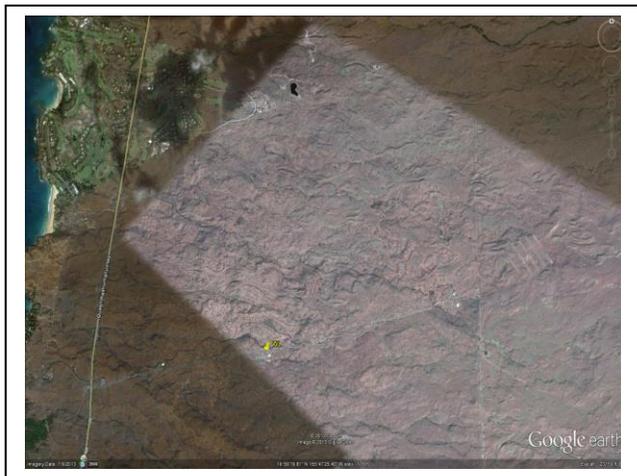
- ¹ Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	Not Applicable	
Last NPAP	2/14/12	Passed
Date of last annual independent performance audit (CAB)	9/26/12	SO ₂ and H ₂ S passed.
Frequency of flow rate audits (automated PM)	Not Applicable	No PM samplers at this site
Dates of last two semi-annual flow rate audits (PM)	Not Applicable	No PM samplers at this site
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted on:
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None	
Changes planned in the next 18 months:	None	

(WL) WAIKOLOA

AQS: 150012021	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: TMK 3-6-8-002-019			
Latitude: 19.977467		Longitude: -155.798067	
Elevation: 180.1 m MSL			
Location Description: The monitor is located within a fenced area that contains a County of Hawaii water tank and pump house, approximately 3 km northeast of Waikoloa. The area is undeveloped brush land.			



Type of Roadway	Queen Kaahumanu Hwy.	Waikoloa Rd.
Freeway		
Major Street or Highway	X	X
Local Street or Road		
Distance from air intake (m)	2,143	4,580
Direction from air inlet	W	N
Composition of roadway	Asphalt	Asphalt
Number of traffic lanes	2	2
Average daily traffic	22,100 ¹	6,000 ²
Average vehicle speed (est. mph)	55	55
Traffic one way or two	2	2
Street parking?	No	No
¹ 2010 State of Hawaii Data Book ² Estimated, no data available, estimate based on upper highway AADT		

WL MONITOR INFORMATION	N/A = Not Applicable			
	PM _{2.5}	SO ₂	WS	WD
POC/FRM or FEM	1/FEM	1/FEM	Info only	Info only
Type of Monitor	SPM	SPM	N/A	N/A
Parameter Code	88101	42401	Not entered	Not entered
Manufacturer	Met-One	TECO	RM Young	RM Young
Model No.	BAM1020	43i	05103VP	05103VP
AQS Method Code	170	060	Not entered	Not entered
Monitoring start date	7/1/12	7/1/12	7/1/12	7/1/12
Frequency	continuous	continuous	continuous	continuous
Probe material	N/A	Glass	N/A	N/A
Residence Time (sec)	N/A	18.19	N/A	N/A

WL Waikoloa continued

PROBE SITING		
(N/A = Not applicable)	PM_{2.5}	SO₂
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3.7	3.7
Width (m)	2.4	2.4
Depth (m)	6	6
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	4.7	4.7
Distance (m) & direction from nearest tree(s)	N/A (no trees, area is shrub-land)	N/A (no trees, area is shrub-land)
Horizontal distance from edge of nearest traffic lane (m)	14 to private service road; 2,143 to nearest traffic lane	14 to private service road; 2,143 to nearest traffic lane
Horizontal distance from nearest parking lot (m)	N/A	N/A
Distance and direction from obstructions on roof (m)	None	None
Distance & direction from possible obstructions not on roof (m)	46 ESE	46 ESE
Height of nearest possible obstacle (m)	6.7	6.7
Distance & direction from furnace or incineration flues (m)	None	None
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	gravel	gravel

SITE REPRESENTATIVENESS		
	PM_{2.5}	SO₂
Spatial scale	Urban	Neighborhood
Applicable NAAQS averaging times (informational only)	24-hr; annual	1-hr; 3-hr; 24-hr; annual
Sampling season	12-months	12-months
Site type ¹	3	3
Purpose of Monitor ²	1	1
Suitable for comparison against the annual PM _{2.5} NAAQS?	No. Monitor is a SPMS operating for less than 24 months	

- ¹Site Types:
- 1) located to determine the highest concentrations;
 - 2) located to measure typical concentrations in areas of high population density;
 - 3) located to determine the impact of significant sources or source categories on air quality;
 - 4) located to determine general background concentration levels;
 - 5) located to determine extent of regional pollutant transport among populated areas and in support of secondary standards;
 - 6) located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts

- ² Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
 - 2) Support compliance with ambient air quality standards;
 - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
 - 4) Support for air pollution research

DATA QUALITY		
	Date or Frequency	Result
Last PEP	None	
Last NPAP	None	
Date of last annual independent performance audit (CAB)	9/18/12	Passed with the following note: SO ₂ audit pt. 2: >10% (warning level)
Frequency of flow rate audits (automated PM)	Monthly	
Dates of last two semi-annual flow rate audits (PM)	7/17/12	Passed
Precision & Accuracy submitted to AQS	Quarterly	
Frequency of 1-pt. QC check for gases	Weekly	
Frequency of multipoint gas calibration	60 days	
Annual data certification submitted	Annually by 5/1	submitted
REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes		
Invalid or Missing Data (<75% data):	None	
Changes planned in the next 18 months:	Close this SPM station by July 2014.	