

# **State of Hawaii 2019 Air Monitoring Network Plan**

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## Acronyms and Definitions

AADT	Annual Average Daily Traffic
AQI	Air Quality Index
AQMS	Hawaii Department of Health Air Quality Monitoring Section
AQS	Environmental Protection Agency Air Quality System
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
DRR	Data Requirements Rule
DWS	Hawaii County Department of Water Supply
ECA	(North American) Emissions Control Area (Maritime)
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H <sub>2</sub> S	Hydrogen Sulfide
HECO	Hawaiian Electric Company
IMPROVE	Integrated Monitoring of Protected Visual Environments
LERZ	Kilauea Volcano Lower East Rift Zone
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 <sub>2</sub>	Nitrogen Dioxide
O <sub>3</sub>	Ozone
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PGV	Puna Geothermal Ventures
PM <sub>2.5</sub>	Particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM <sub>10</sub>	Particulate matter less than or equal to 10 microns in aerodynamic diameter
PM <sub>10-2.5</sub>	Particulate matter coarse
PQAO	Primary Quality Assurance Organization
PPB	Parts per billion
PPM	Parts per million
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
QC	Quality Control
SLAMS	State and Local Air Monitoring Stations
SLD	State Laboratories Division
SO <sub>2</sub>	Sulfur Dioxide
SPM(S)	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 <sup>3</sup>	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 Multi-pollutant Monitoring Station (NCore). Additionally, Hawaii has two Interagency Monitoring of Protected Visual Environments (IMPROVE) stations 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. DOH is also overseeing two ambient air stations on the island of Oahu that are operated by Hawaiian Electric Company (HECO) to meet the Data Requirements Rule (DRR).

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.

Due to the major eruption at the Lower East Rift Zone (LERZ) of the Kilauea volcano that occurred in 2018, DOH decided to add six additional SPMS sites in communities on Hawaii Island that currently do not have monitoring in place. Three sites were selected on the west side of the island to monitor for PM<sub>2.5</sub> and three sites were selected on the east side of the island to monitor for SO<sub>2</sub> and PM<sub>2.5</sub>.

This plan encompasses the 18-month period from July 1, 2019 through December 31, 2020. 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 9 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 23, 2019 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://health.hawaii.gov/cab>, for 30 days from May 23, 2019 to June 22, 2019. Documentation of public notification is provided in **Appendix A**. No comments were received.

# 1.0 Network Purpose and Design

## 1.1 Overview

EPA established NAAQS for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter 10 microns or less in aerodynamic diameter (PM<sub>10</sub>) and particulate matter 2.5 microns or less in aerodynamic diameter (PM<sub>2.5</sub>). Additionally, there is a state standard for hydrogen sulfide (H<sub>2</sub>S) 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 NCore station as required by 40 CFR 58. The NCore station monitors for PM<sub>2.5</sub>, speciated PM<sub>2.5</sub>, particulate matter coarse (PM<sub>10-2.5</sub>), O<sub>3</sub>, SO<sub>2</sub>, CO, Pb, nitrogen oxides (NO/NO<sub>2</sub>/NO<sub>y</sub>) 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 NCore 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 (H<sub>2</sub>S) emissions from geothermal energy production and impacts from cruise ships on the island of Kauai. The DOH utilizes Federal Reference Method (FRM) or Federal Equivalent Method (FEM) analyzers for all criteria SPMS, meets the quality assurance requirements of 40 CFR 58 Appendix A and E, 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<sub>2.5</sub> and O<sub>3</sub> 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 NCore station is used to demonstrate compliance with the NAAQS and 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<sub>2.5</sub> 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<sub>2.5</sub> monitoring network that impact the location of a violating PM<sub>2.5</sub> 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<sub>2.5</sub> 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<sub>2.5</sub> 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 Clean Air Branch (CAB) is the state agency responsible for planning, management, and regulatory activities associated with the state's air program. The HDOH serves as the Primary Quality Assurance Organization (PQAO) with two separate branches within the DOH responsible for quality assurance oversight and data collection.

The CAB is responsible for the overall quality assurance management of the ambient air monitoring program, is organizationally independent of data generation activities and provides quality assurance oversight of the Air Quality Monitoring Section (AQMS) of the State Laboratories Division (SLD). The AQMS is responsible for all data generation activities including operating and maintaining the stations and providing quality assured data to AQS. AQMS contracts out laboratory support for co-located PM<sub>2.5</sub> mass analyses.

## 2.0 Network Evaluation

There are minimum monitoring requirements for PM<sub>10</sub>, PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, and Pb for each Metropolitan Statistical Area (MSA) in the state as described in 40 CFR 58 Appendix D. In 2013, the U.S. Office of Management and Budget designated two MSAs in the State of Hawaii, Urban Honolulu and Kahului-Wailuku-Lahaina (Maui County, excluding Kalawao County). The 2018 census population was estimated at 980,080 for the Urban Honolulu MSA (hereafter called Honolulu) and 167,207 for the Kahului-Wailuku-Lahaina MSA (hereafter called Maui). 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, excluding Kalawao County); Kalawao (Kalaupapa Settlement on Molokai) and Hawaii (island of Hawaii).

### 2.1 PM<sub>10</sub> Network

The minimum number of required PM<sub>10</sub> monitoring stations for the MSA is dependent upon population and concentration measurements. High concentration areas are those for which the ambient PM<sub>10</sub> data show concentrations exceeding the PM<sub>10</sub> NAAQS by 20 percent or more. Medium concentration areas are those for which ambient PM<sub>10</sub> data show concentrations exceeding 80 percent of the NAAQS. Low concentration areas are those for which ambient PM<sub>10</sub> data show concentrations less than 80 percent of the NAAQS.

PM<sub>10</sub> data for 2018 showed the Honolulu MSA to be a low concentration area (Table 2-1) and, therefore, is required to have one to two PM<sub>10</sub> monitors (Table 2-2). In the absence of a PM<sub>10</sub> design value for the newly designated Maui MSA and with a population <250,000, no PM<sub>10</sub> monitoring is required in that MSA. The state meets the minimum PM<sub>10</sub> monitoring requirements with three PM<sub>10</sub> stations in the Honolulu MSA.

**Table 2-1. PM<sub>10</sub> Network and Concentrations for the Honolulu MSA<sup>1</sup>**

Site Name	AQS No.	2018 Maximum 24-Hr Value (µg/m <sup>3</sup> )	Percent of 24-Hr NAAQS	Sampling Frequency
Honolulu	150031001	29	19	Continuous
Kapolei	150030010	29	19	Continuous
Pearl City	150032004	34	23	Continuous

<sup>1</sup> There is currently no PM<sub>10</sub> monitor operating in the Maui MSA

**Table 2-2. PM<sub>10</sub> Minimum Monitoring Requirements for Each MSA**

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-4)		High Concentration ≥120% of NAAQS (≥180 µg/m <sup>3</sup> )	Medium Concentration >80% of NAAQS (>120 µg/m <sup>3</sup> )	Low Concentration <80% of NAAQS (<120 µg/m <sup>3</sup> ) <sup>1</sup>	
>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	2018 Census Population	Highest 24-hr Value (2018)	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Honolulu	980,080	34 µg/m <sup>3</sup>	1-2	3	0
Maui	167,207	No data available	0 <sup>1</sup>	0	0

<sup>1</sup> 40 CFR Part 58 Appendix D Section 4.6 Table D-4 states that in the absence of a design value, these minimum monitoring requirements apply.

Figure 2-1 is a map of the current PM<sub>10</sub> sites in the state. All of the PM<sub>10</sub> stations are in the Honolulu MSA.

**Figure 2-1. PM<sub>10</sub> Network**



## 2.2 PM<sub>2.5</sub> Network

The state must operate a minimum number of required PM<sub>2.5</sub> monitors based on population and the most recent 3-year design value in each MSA. There are four PM<sub>2.5</sub> SLAMS in the Honolulu MSA and one SLAMS in the Maui MSA with complete design values. The design value for the annual PM<sub>2.5</sub> standard is the most current 3-year average annual mean for each site. The design value for the 24-hour PM<sub>2.5</sub> standard is the most current 3-year average of annual 98<sup>th</sup> percentile 24-hour values recorded at each monitoring site. Table 2-3 shows the annual and daily design values for complete data years 2016 to 2018.

The most recent 3-year design values in the Honolulu and Maui MSAs were less than 85% of any PM<sub>2.5</sub> NAAQS. Table 2-4 shows that the state operates more than the minimum monitoring requirements for PM<sub>2.5</sub> in each MSA. Additionally, in 2018, the state operated one SPMS in the Maui MSA and five SPMS on the island of Hawaii for volcanic emissions, and one SPMS on the island of Kauai to monitor cruise ship emissions.

Due to the eruption at the LERZ of Kilauea volcano that began on May 3, 2018, DOH decided to supplement the existing PM<sub>2.5</sub> network with additional SPMS sites on Hawaii island. Six new SPMS sites were identified. In response to air quality issues due to the eruption, temporary monitors were set up in communities around the island.

At the time of plan publication, the monitors were still operating at the temporary locations, and will be relocated to the SPMS/long-term sites when appropriate. See Section 2.11 for discussion on site additions and Section 3.0 for detailed location information.

The IMPROVE monitoring station (HACR1) at Haleakala National Park on Maui, operated by the National Park Service, serves as the background/transport PM<sub>2.5</sub> site for the state's network. All primary PM<sub>2.5</sub> monitors operated by the state are continuous FEM. Figure 2-2 shows the map locations of all the PM<sub>2.5</sub> stations in the state, including the IMPROVE monitor and SPMS (existing stations as well as the six new stations being established).

**Table 2-3. PM<sub>2.5</sub> Network and Concentrations for Each MSA**

Site	AQS No.	Sampling Frequency	Annual Design Value (µg/m <sup>3</sup> ) 2016 – 2018	Percent of Annual NAAQS (12µg/m <sup>3</sup> )	Daily Design Value (µg/m <sup>3</sup> ) 2016-2018	Percent of 24-Hour NAAQS (35 µg/m <sup>3</sup> )
<b>Honolulu MSA</b>						
Honolulu	150031001	Continuous	3.0	25	9	26
Kapolei	150030010	Continuous	<b>3.6</b>	<b>30</b>	<b>10</b>	29
Pearl City	150032004	Continuous	3.3	28	<b>12</b>	<b>34</b>
Sand Island	150031004	Continuous	3.6	30	10	29
<b>Maui MSA</b>						
Kihei	150090006	Continuous	<b>4.1</b>	<b>34</b>	<b>11</b>	<b>31</b>

NOTE: Haleakala IMPROVE (150099001) is the PM<sub>2.5</sub> background/transport site for Hawaii and is operated and maintained by the NPS

**Table 2-4. PM<sub>2.5</sub> Minimum Monitoring Requirements for Each MSA**

MSA Population Category (2010 Census) (40 CFR 58 Appendix D Table D-5)		Most recent 3-year Design Value ≥85% of any PM <sub>2.5</sub> NAAQS (≥29.75 µg/m <sup>3</sup> for 24-hr standard; ≥10.2 µg/m <sup>3</sup> for annual standard)		Most recent 3-year Design Value <85% of any PM <sub>2.5</sub> NAAQS (<29.75 µg/m <sup>3</sup> for 24-hour standard; <10.2 µg/m <sup>3</sup> for annual standard)		
>1,000,000		3		2		
500,000-1,000,000		2		1		
50,000-<500,000		1		0		
MSA	2018 Census Population (estimated)	Highest Annual Design Value 2016 – 2018	Highest Daily Design Value 2016-2018	Required No. of Monitors	Number of Active Monitors in the MSA	Number of Monitors Needed
Honolulu	980,080	3.6	12	1	4	0
Maui	167,207	4.1	11	0	1 SLAMS/ 1 SPMS	0

Appendix A to 40 CFR 58 requires that 15 percent of each PM<sub>2.5</sub> monitoring method be co-located. The state currently operates four SLAMS, one NCore and seven SPMS FEM monitors, two of which are using Method 170 and ten using Method 209.

One co-located monitor is required for the two stations using Method 170. One FRM co-located monitor is operating at the Kapolei NCore station.

Two co-located monitors are currently required for the ten stations using Method 209. One FRM co-located monitor is operating at the Hilo station and a PM<sub>2.5</sub> FEM is co-located at the Kona station.

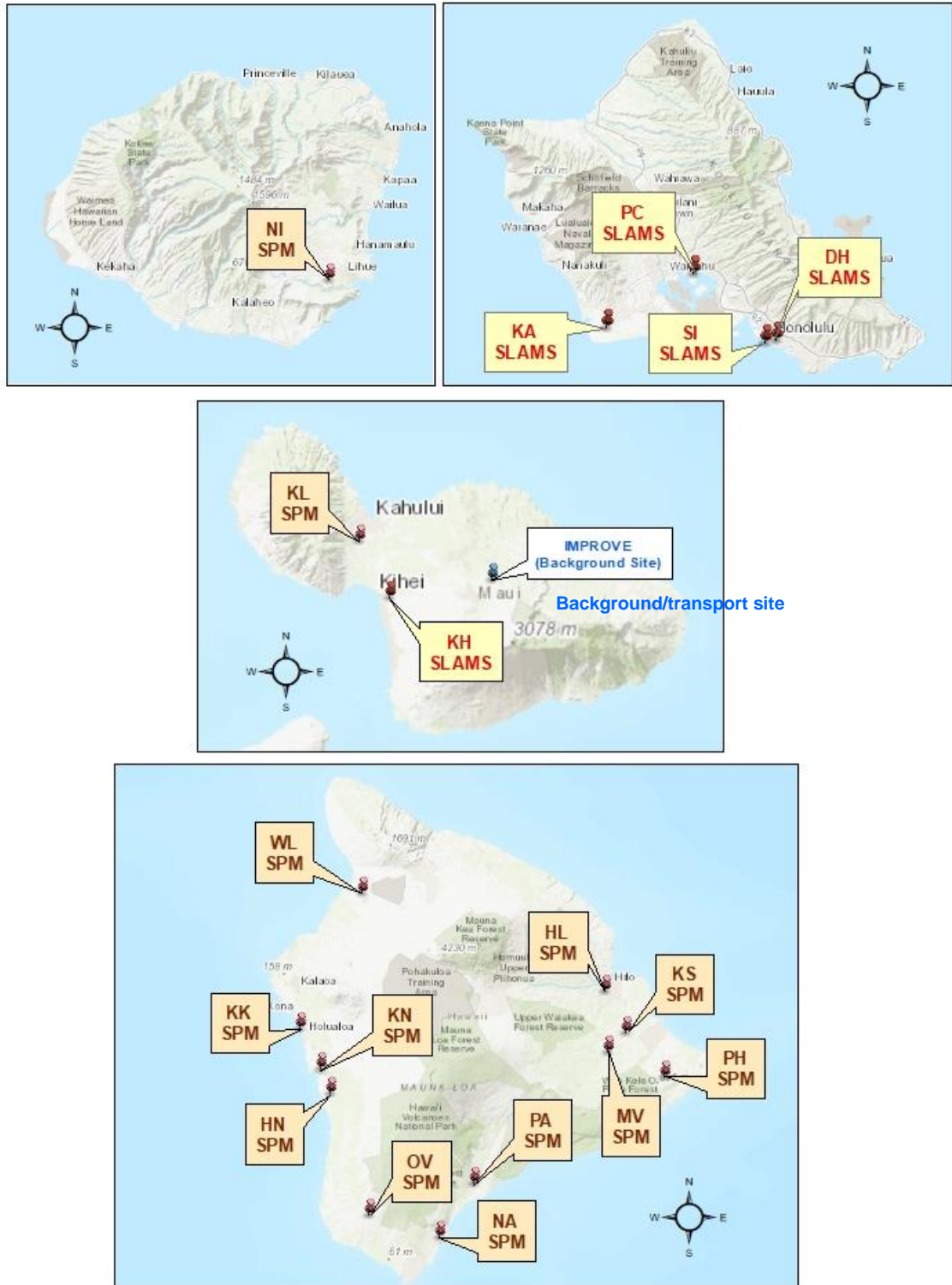
Table 2-5 summarizes the PM<sub>2.5</sub> co-located network at the time of plan publication.

**Table 2-5. PM<sub>2.5</sub> Co-located Network**

Method Code	# Primary Monitors	# Required Co-located	# Active Co-located FRM	# Active Co-located FEM (same method designation as primary)
170	3*	1	1	0
209	14*	2	1	1

\* At the time of plan publication

Figure 2-2. PM<sub>2.5</sub> Network



## 2.3 O<sub>3</sub> Network

The state must operate a minimum number of O<sub>3</sub> monitors depending upon MSA population and typical peak concentrations. NCore sites are intended to complement O<sub>3</sub> data collection but can be used to meet the minimum monitoring requirements.

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

The most recent O<sub>3</sub> design value concentrations at the Sand Island and Kapolei NCore stations in the Honolulu MSA showed less than 85% of the O<sub>3</sub> NAAQS (Table 2-6). The Maui MSA does not have any O<sub>3</sub> monitoring. However, with a 2018 census population estimated at 167,207, according to 40 CFR Part 58 Appendix D Table D-2 and, as shown in Table 2-7 below, in the absence of a design value, no O<sub>3</sub> monitor is required in that MSA. The state meets the minimum O<sub>3</sub> network monitoring requirements.

**Table 2-6. O<sub>3</sub> Design Values for the Honolulu MSA**

Stations in the MSA	8-Hour Design Value 2016 – 2018	2018 MSA Census Population	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Sand Island (150031004)	0.046	980,080 (estimated)	1	2	0
Kapolei (150030010)	0.048				
There is no O <sub>3</sub> monitor in the Maui MSA		167,207 (estimated)	0	0	0

**Table 2-7. O<sub>3</sub> Minimum Monitoring Requirements for Each MSA**

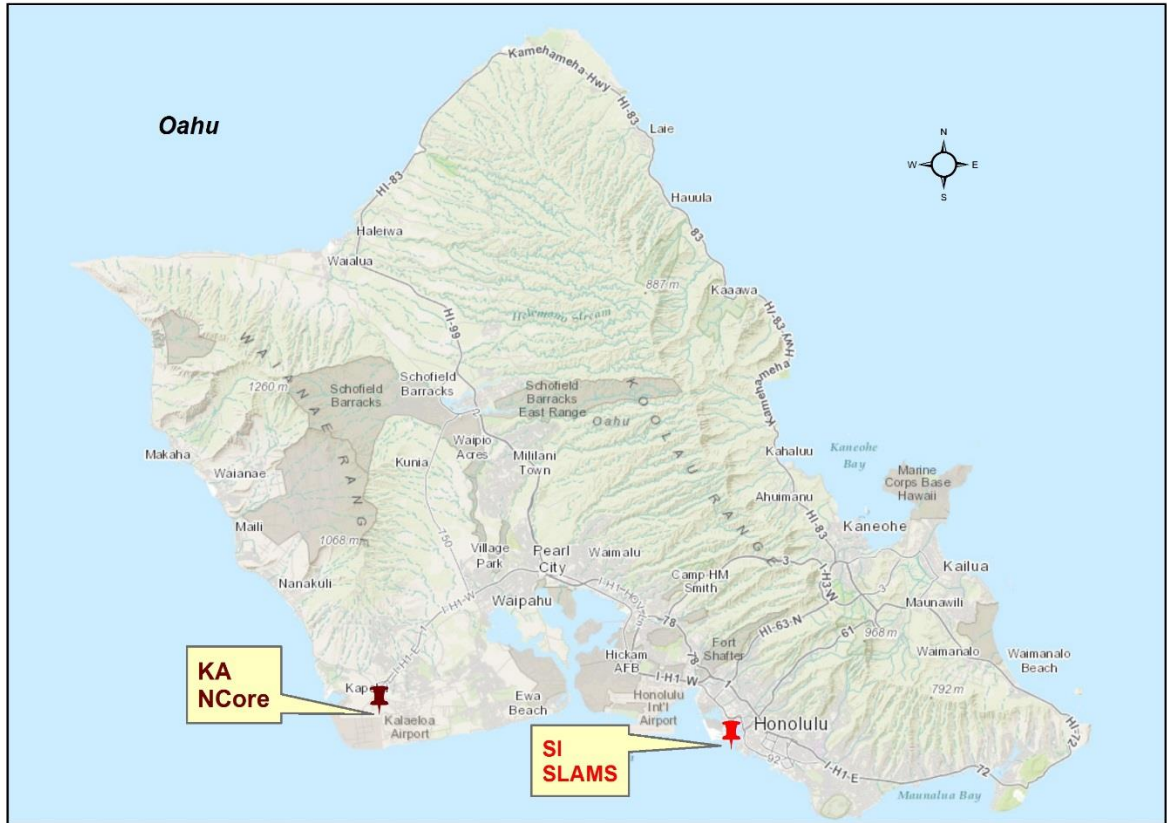
MSA Population Category (40 CFR 58 Appendix D Table D-2)	Most recent 3-year design value ≥85% of any O <sub>3</sub> NAAQS (≥.064 ppm, 8-hr standard)	Most recent 3-year design value <85% of any O <sub>3</sub> NAAQS (<.064 ppm, 8-hr standard) <sup>1</sup>
>10 million	4	2
4-10 million	3	1
<b>350,000-&lt;4 million</b>	2	<b>1</b>
50,000-<350,000	1	0

<sup>1</sup> According to 40 CFR part 58 Appendix D, Table D-2, these minimum monitoring requirements apply in the absence of a design value.

Figure 2-3 shows the map locations of the SLAM and NCore O<sub>3</sub> stations. Both stations are located in the Honolulu MSA.



Figure 2-3. O<sub>3</sub> Network



## 2.4 Pb Network

With a 2010 census population of 953,207 in the Honolulu MSA, the state was previously 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. Appendix D to 40 CFR 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. No Pb monitoring is required in the Maui MSA.

Since the beginning, the station recorded concentrations of Pb well below the standard, at approximately one to two percent of the standard. Per a letter dated October 29, 2018, EPA approved the discontinuation of the Pb monitoring at the Kapolei NCore station (attached as Appendix B). Pb monitoring was discontinued on December 31, 2018.

**Table 2-8. Minimum Pb Monitoring Requirement at NCore**

NCore	AQS ID	CBSA	2018 Census Population	# Required Monitors	# Active Monitors	# Monitors Needed
KA	150030010	Honolulu	980,080	*0	*0	0

- Per EPA letter dated October 29, 2018, the Pb monitoring at Kapolei NCore was approved to be discontinued

## 2.5 CO Network

The state operates two SLAMS and one SLAMS/NCore CO monitors in the Honolulu MSA. Figure 2-4 shows the locations of the CO sites in the state. 40 CFR Part 58, Appendix D Section 4.2.2 requires one co-located CO monitor at near-road NO<sub>2</sub> sites in Core-based Statistical Areas (CBSA) with populations  $\geq 1,000,000$ . The Honolulu MSA had a 2018 census population estimated at 980,080 and therefore is not currently required to co-locate a CO monitor. No CO monitoring is required in the Maui MSA.

**Figure 2-4. CO Network**



## 2.6 NO<sub>2</sub> Network

Near-road NO<sub>2</sub> monitoring requirement for CBSAs with a population of greater than 500,000 but less than one million, which includes the Honolulu MSA, has been removed by EPA as of December 22, 2016. The population and Annual Average Daily Traffic (AADT) for the Honolulu CBSA will be monitored, and in the event they hit the minimum threshold in the future, the near-road monitoring will be implemented.

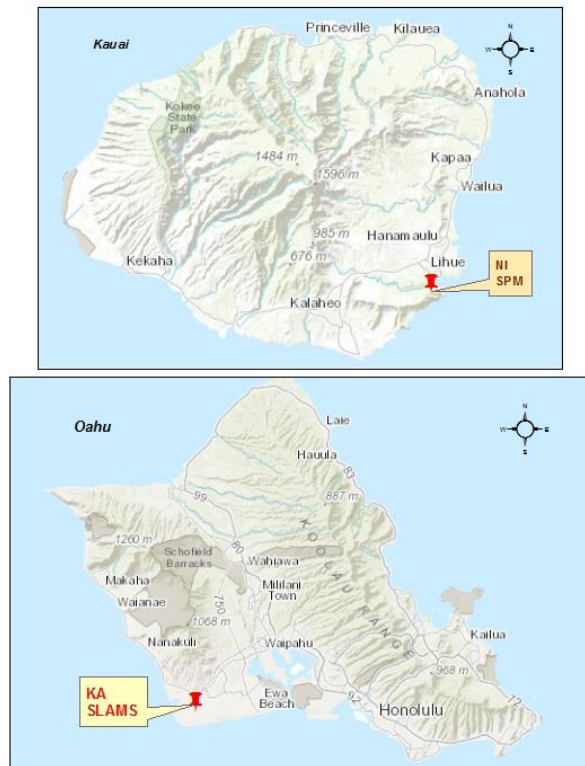
40 CFR Part 58, Appendix D Section 4.3.3 requires area-wide NO<sub>2</sub> monitoring in the location of highest expected concentration in a CBSA with a population  $\geq 1,000,000$ . The Honolulu MSA had a 2018 census population estimated at 980,080 and therefore is not currently required to have area-wide monitoring. DOH will continue to work with EPA to determine the appropriate timeline associated with this requirement. The state currently has one SLAMS NO<sub>2</sub> station in the MSA which measures typical concentration in areas of high population density but would also be the location of highest expected concentration, making it suitable as the area-wide monitoring location. There is one SPMS on the island of Kauai and no NO<sub>2</sub> monitoring is required in the Maui MSA.

**Table 2-9. Minimum Near-Road NO<sub>2</sub> Monitoring Requirements for the MSA**

CBSA	2018 Census Population	Max AADT Counts (2017) <sup>1</sup>	# Required Monitors	# Monitors to be operational by 1/1/2017
Honolulu	980,080	247,000	0	0

<sup>1</sup> 2017 estimated average AADT provided by the State of Hawaii Department of Transportation

**Figure 2-5. NO<sub>2</sub> Network**



## 2.7 SO<sub>2</sub> Network

EPA has established the Population Weighted Emissions Index (PWEI) to determine required SO<sub>2</sub> monitoring. The PWEI is calculated by multiplying the population of each CBSA with the total amount of SO<sub>2</sub> in TPY emitted within the CBSA area and dividing the result by one million. According to this calculation, Hawaii is required to operate one SO<sub>2</sub> monitor in the Honolulu MSA and none in the Maui MSA (Table 2-10). The state currently operates two SLAMS SO<sub>2</sub> monitors in the Honolulu MSA, and one at the NCore station in Kapolei; it therefore meets the minimum number of required SO<sub>2</sub> stations. There are no requirements for a SO<sub>2</sub> monitor in the Maui MSA. Figure 2-6 shows the locations of the SLAMS and SPMS (existing stations as well as the three new stations being established).

The state also has a station on the island of Kauai that monitors for cruise ship emissions. This is a SPM station which includes FEM monitoring for SO<sub>2</sub>, 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.

SO<sub>2</sub> continues to be one of the pollutants of concern in communities on the island of Hawaii due to volcanic emissions. There are currently five stations monitoring for SO<sub>2</sub> in volcanic emissions, two of which are SLAM stations (Hilo and Kona). Three of the five SO<sub>2</sub> monitoring stations (Mountain View, Pahala and Ocean View) are SPMS that use FEM monitors and follow all the requirements of 40 CFR 58 Appendices A, D, and E. The three stations have been operating for more than 24 months and therefore are subject to NAAQS comparison.

Due to the LERZ eruption at the Kilauea volcano that began on May 3, 2018, DOH decided to supplement the existing SO<sub>2</sub> network with additional SO<sub>2</sub> SPMS sites on Hawaii island. Three new SO<sub>2</sub> SPMS sites were identified on the east side of the island. In response to air quality issues due to the eruption, temporary monitors were set up in communities on the east side of the island.

At the time of plan publication, the monitors were still operating at the temporary locations, and will be relocated to the SPMS/long-term sites when appropriate. See Section 2.11 for discussion on site additions and Section 3.0 for detailed location information.

The state is also required by 40 CFR Part 51, Subpart BB, Data Requirements Rule, to characterize maximum 1-hour ambient concentrations of SO<sub>2</sub> through either ambient air quality monitoring or air quality modeling analysis. The state has two air stations, Kahe and Waiau, to monitor four sources that has been identified as having SO<sub>2</sub> emissions data of 2,000 tons or more (see detailed site description for more information). The stations began collecting data in the middle of December 2016 and will have completed the required 3 years of data collection by the end of 2019. Pending EPA approval, these sites will be closed sometime in 2020.

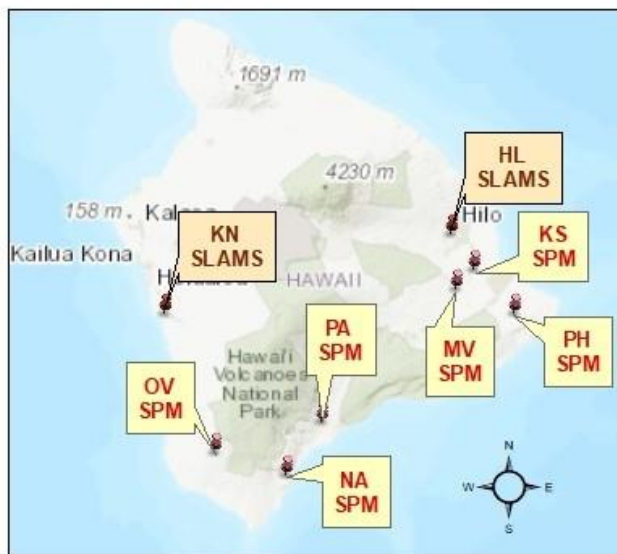
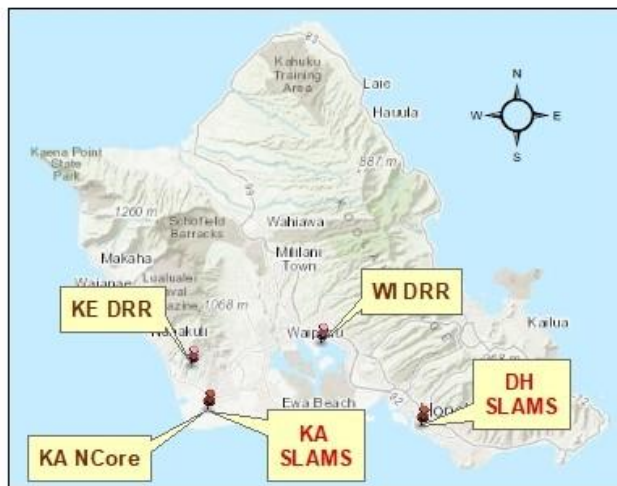
**Table 2-10. Minimum SO<sub>2</sub> Monitoring Requirements**

<b>CBSA</b>	<b>County</b>	<b>2018 Census Population (estimated)</b>	<b>Total SO<sub>2</sub> (tons/year) 2011 NEI</b>	<b>PWEI<sup>1</sup></b>	<b>DRR<sup>2</sup> Sources Using Monitoring</b>	<b># Required Monitors</b>	<b># Active Monitors</b>	<b># Monitors Needed</b>
Honolulu	City & County of Honolulu	980,080	18,600	17,730	4	1	2 SLAMS 1 SLAMS/ NCore	0
Maui	Maui	167,207	4,097	634	0	0	0	0

<sup>1</sup> According to 40 CFR 58 Appendix D, if the PWEI for a CBSA is  $\geq 5,000$  but  $< 100,000$ , a minimum of one SO<sub>2</sub> monitor is required.

<sup>2</sup> Data Requirements Rule for the 2010 1-Hour SO<sub>2</sub> Primary NAAQS.

**Figure 2-6. SO<sub>2</sub> Network**



## 2.8 NCore

The Kapolei NCore station is located in the residential, commercial, and industrial community on the southwest side of Oahu. Kapolei is the “second city” next to Honolulu with county, state and federal agencies having established offices in the area. The NCore parameters are: NO/NO<sub>y</sub>, trace-level SO<sub>2</sub>, trace-level CO, O<sub>3</sub>, PM<sub>10-2.5</sub>, PM<sub>2.5</sub> 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). As mentioned previously in the plan, since the beginning, the station has recorded concentrations of Pb well below the standard, at approximately one to two percent of the standard. Per a letter dated October 29, 2018, EPA approved the discontinuation of the Pb monitoring at the Kapolei NCore station. Pb monitoring was discontinued on December 31, 2018.

40 CFR Part 58, Appendix D Section 5 (a) requires the state to collect and report Photochemical Assessment Monitoring Station (PAMS) measurements at each NCore site located in a CBSA with a population ≥1,000,000. The Honolulu MSA had a 2018 census population estimated at 980,080 and therefore is not currently required to operate a PAMS. DOH will continue to work with EPA to determine the appropriate timeline associated with this requirement.

## 2.9 H<sub>2</sub>S Network

The state has a one-hour H<sub>2</sub>S standard of 25 parts per billion (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 megawatt geothermal power plant located in the lower east rift zone of the Kilauea volcano.

The DOH had established an air station in the community of Leilani Estates, downwind of the plant, to monitor ambient levels of H<sub>2</sub>S due to geothermal exploration and operations. Unfortunately, that station, along with all three of PGV's stations, were destroyed by the LERZ eruption and covered by lava (detailed description removed from Appendix A). Access to what once was our station in Leilani Estates, as well as power to the station, has been cut off. Although the future of this station remains uncertain at this time, DOH is exploring options for re-establishing H<sub>2</sub>S monitoring.

## 2.10 Site Closure

### **Kahe (150034001) and Waiau (150034100) DRR sites, Oahu, Hawaii Parameters: SO<sub>2</sub>**

The Kahe and Waiau stations began collecting data on December 16, 2016 and December 14, 2016, respectively, and will have completed the required 3 years of data collection by the end of 2019. Pending EPA data review and approval, these sites will be closed by July 2020.



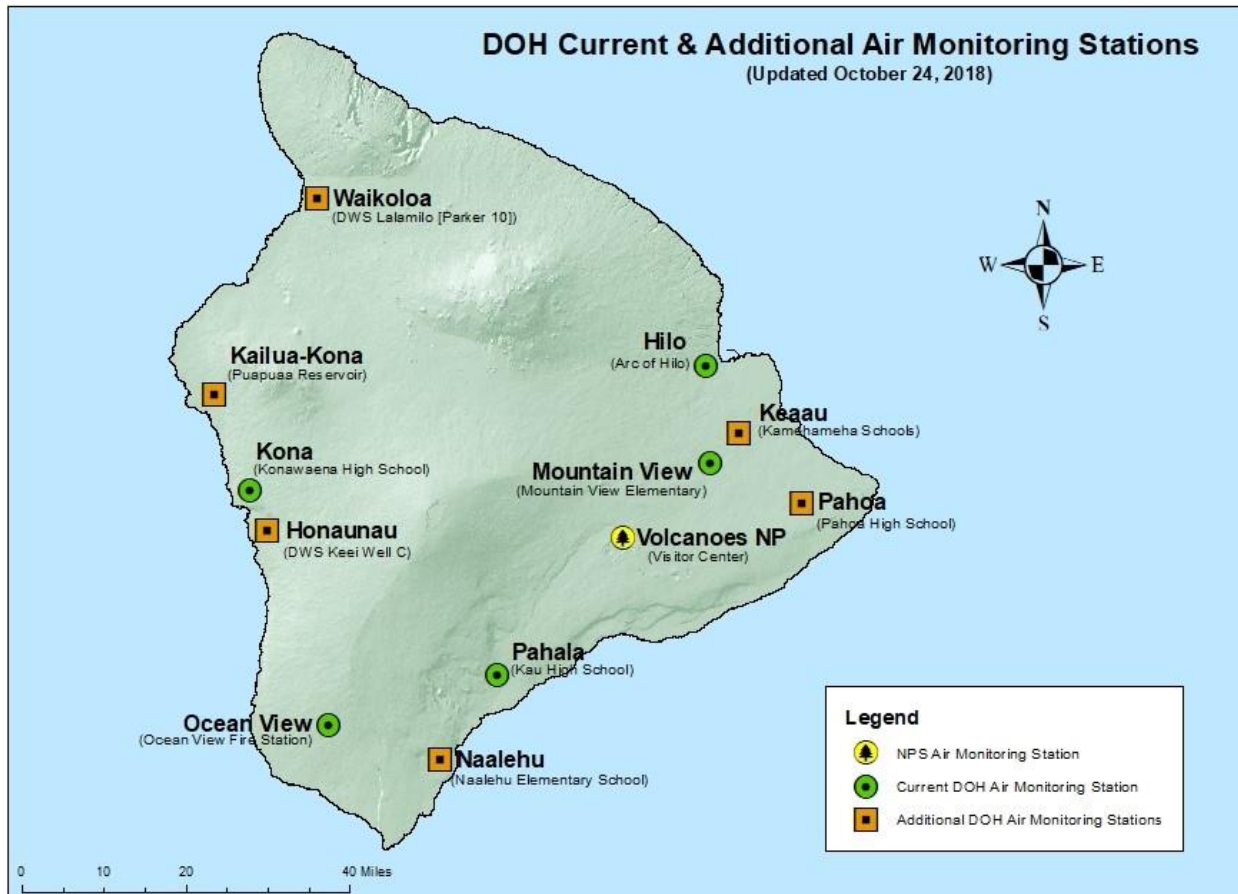
## 2.11 Site Additions

Due to the severity and duration of last summer's eruption at the LERZ of the Kilauea volcano that began in May 2018, the state realized the need for useful, accessible and reliable data for residents affected by the air emissions from the eruption. Six additional monitoring stations are planned in communities on Hawaii Island that currently do not have monitoring in place. Figure 2-7 shows the current stations on Hawaii Island as well as the six new additional SPMS sites.

During the eruption, the west side of the island experienced extremely high levels of PM<sub>2.5</sub>, often recording AQI in the reds. Therefore, three sites were selected on the west side of the island to monitor for PM<sub>2.5</sub>. Three sites were also selected on the east side of the island to monitor for both SO<sub>2</sub> and PM<sub>2.5</sub>, as they are located near the emission source.

Although long-term locations have been selected for these new sites, currently the monitors are set up at temporary locations. Some of these locations do not meet siting guidelines, which is one of the reasons they will be re-located. Detailed site descriptions are included for five of the six temporary stations. Pahoa was taken offline due to construction activities.

**Figure 2-7 DOH Air Monitoring Stations on Hawaii Island**

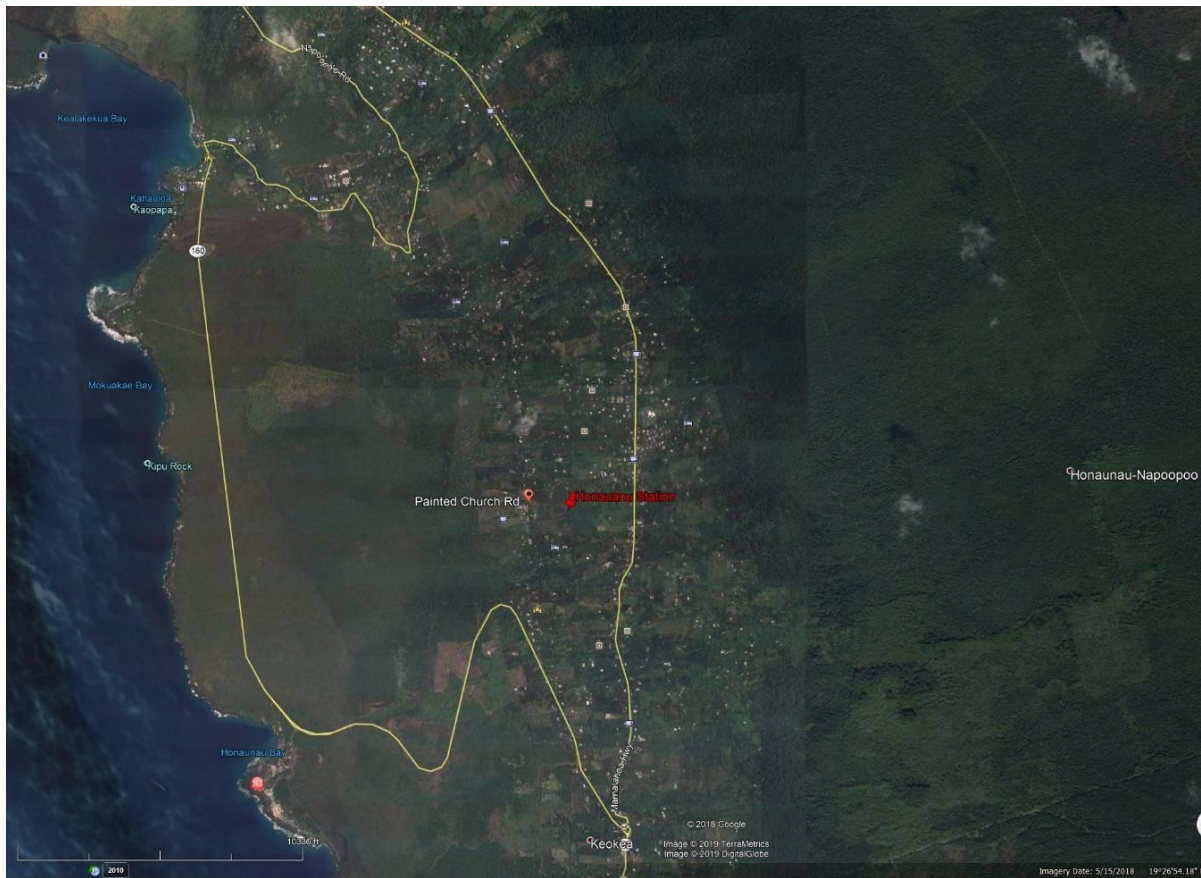


**2.11.1 Honaunau (AQS 150013032)**  
**Department of Water Supply (DWS) Keel Well C, Honaunau, Hawaii**  
**Parameters: PM<sub>2.5</sub>**

This station on the west side of Hawaii island is located within a fenced area that contains a water tank and pump house. As shown in Figure 2-8, the well is located to the east of Painted Church Road, on a hillside surrounded by a mix of a residential subdivision and agricultural lands. The station is approximately 22.3 miles south southeast of the Kona Airport and 39.5 miles west from the summit of Kilauea.

This site will provide data coverage for South Kona, the area between the current Kona and Ocean View stations. It has been monitoring for PM<sub>2.5</sub> since August 16, 2018 at this location as a non-regulatory temporary station. According to AQMS, the long-term station may not be completed until the summer of 2019 due to electrical work and site improvements; any movement of the sampler will be within the same fenced in property.

**Figure 2-8 New Honaunau SPMS Site Location**

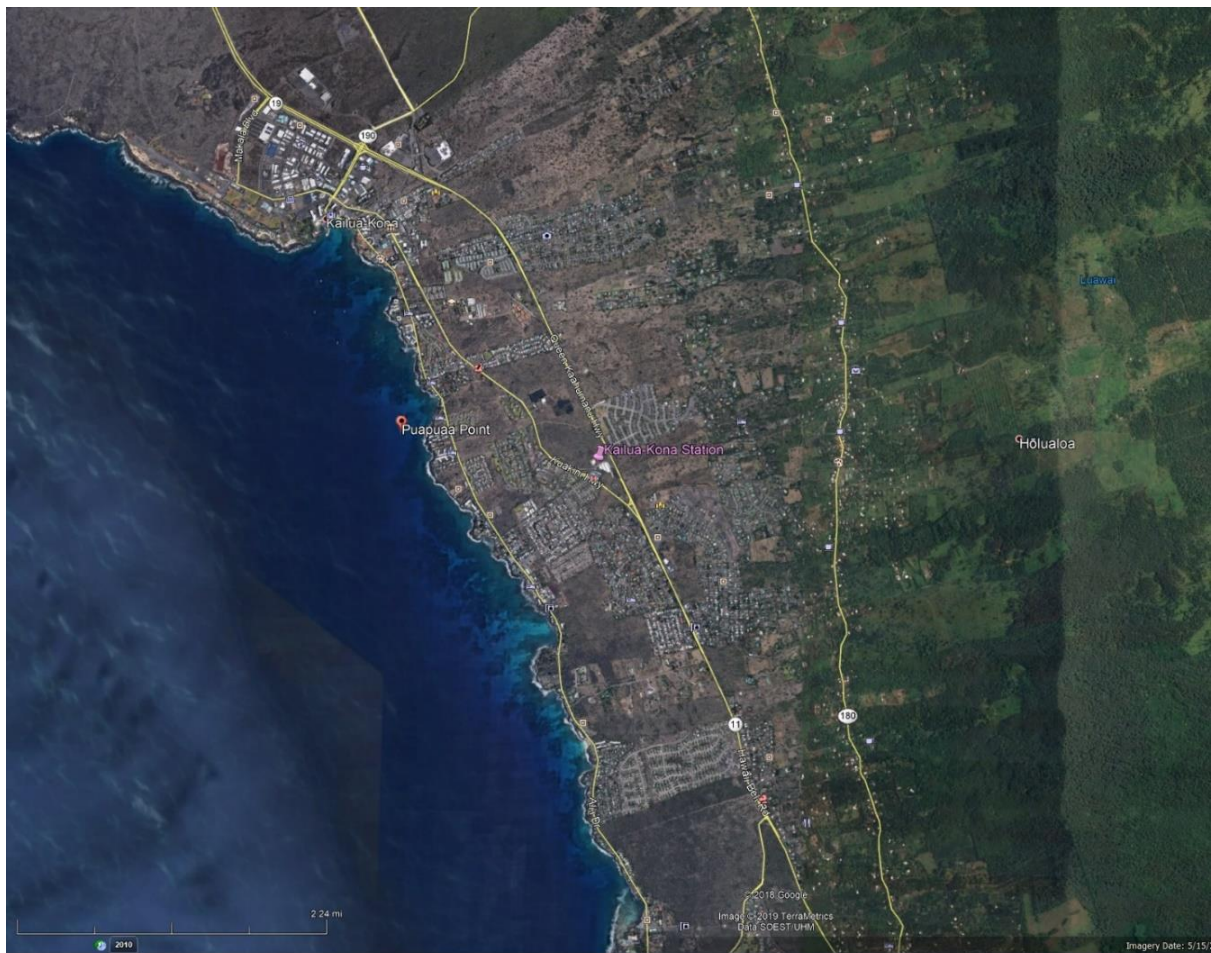


**2.11.2 Kailua-Kona (AQS 150013034)  
DWS Puapuaa Reservoir #1, Walua Road, Kailua-Kona, Hawaii  
Parameters: PM<sub>2.5</sub>**

This station on the west side of Hawaii island is located within a fenced area that contains a water reservoir and pump house. As shown in Figure 2-9, the reservoir is located in between Kuakini and Queen Kaahumanu Highways in the middle of Kailua-Kona town, surrounded by residential subdivisions and commercial properties, and approximately 8.5 miles south southeast of the Kona Airport and 47 miles west from the summit of Kilauea.

The sampler was previously located at Kealahou High School during the response to the eruption and moved to the current location after approval to use the site was obtained from DWS. It has been monitoring for PM<sub>2.5</sub> at this location since November 15, 2018 as a non-regulatory temporary station. According to AQMS, the long-term station may not be completed until the summer of 2019 due to electrical work and site improvements; any movement of the sampler will be within the same fenced in property.

**Figure 2-9 New Kailua-Kona SPMS Site Location**



**2.11.3 Keaau (Temporary - AQS 150013027; Long-term – AQS TBD)  
Kamehameha Schools Hawaii, 16-714 Volcano Road, Keaau, Hawaii  
Parameters: PM<sub>2.5</sub> and SO<sub>2</sub>**

This station on the east side of Hawaii island was selected to be sited in an open area near the Switch Gear Building on the school campus. As shown in Figure 2-10, the site is located approximately 100 feet to the west of Mamalahoa Highway (also known as Volcano Road) and is surrounded by a mix of residential, commercial and agricultural lands. It is 7.5 miles south of the Hilo airport and 12 miles north of the LERZ and will provide data coverage for the area between the current Hilo and Mountain View stations and the new Pahoia Station.

AQMS had set up a temporary monitoring station elsewhere on campus in response to the LERZ emergency, approximately 650 meters to the northwest of where the long-term station is to be placed. It has been monitoring for PM<sub>2.5</sub> and SO<sub>2</sub> as a non-regulatory temporary station since June 14, 2018. AQMS will need to relocate the monitoring equipment to the final selected long-term site once it is prepped and the procurement and set up of the monitoring shelter is completed. Relocation is to be done in the summer of 2019.

**Figure 2-10 New Keaau SPMS Site Location**



**2.11.4 Naalehu (PM<sub>2.5</sub> AQS 150013028; SO<sub>2</sub> AQS 150013033)  
Naalehu Elementary School, 95-5545 Mamalahoa Highway, Keaau, HI  
Parameters: PM<sub>2.5</sub> and SO<sub>2</sub>**

This station on the southern end of Hawaii island was selected to be located at the United States Geographical Survey Seismograph Building on the school campus. As shown in Figure 2-11, the site is located approximately 570 feet to the south of Mamalahoa Highway and is surrounded by a rural community and mostly undeveloped hillside and grasslands. It is 31.1 miles southwest from the summit of Kilauea and will provide data coverage for the area between the current Pahala and Ocean View stations.

At the time of plan publication, the SO<sub>2</sub> monitor had already been set up inside the building and has been monitoring for SO<sub>2</sub> since September 9, 2018 as a non-regulatory temporary station. AQMS had also set up a PM<sub>2.5</sub> monitor at the Naalehu Volunteer Fire Station during the 2018 LERZ eruption as a non-regulatory temporary station; monitoring began June 19, 2018 and is still ongoing at this temporary location. AQMS will need to relocate the PM<sub>2.5</sub> and SO<sub>2</sub> monitors to the final selected long-term site once it is prepped and the procurement and set up of the monitoring shelter is completed. According to AQMS, relocation is to be completed in the summer of 2019.

**Figure 2-11 New Naalehu SPMS Site Location**

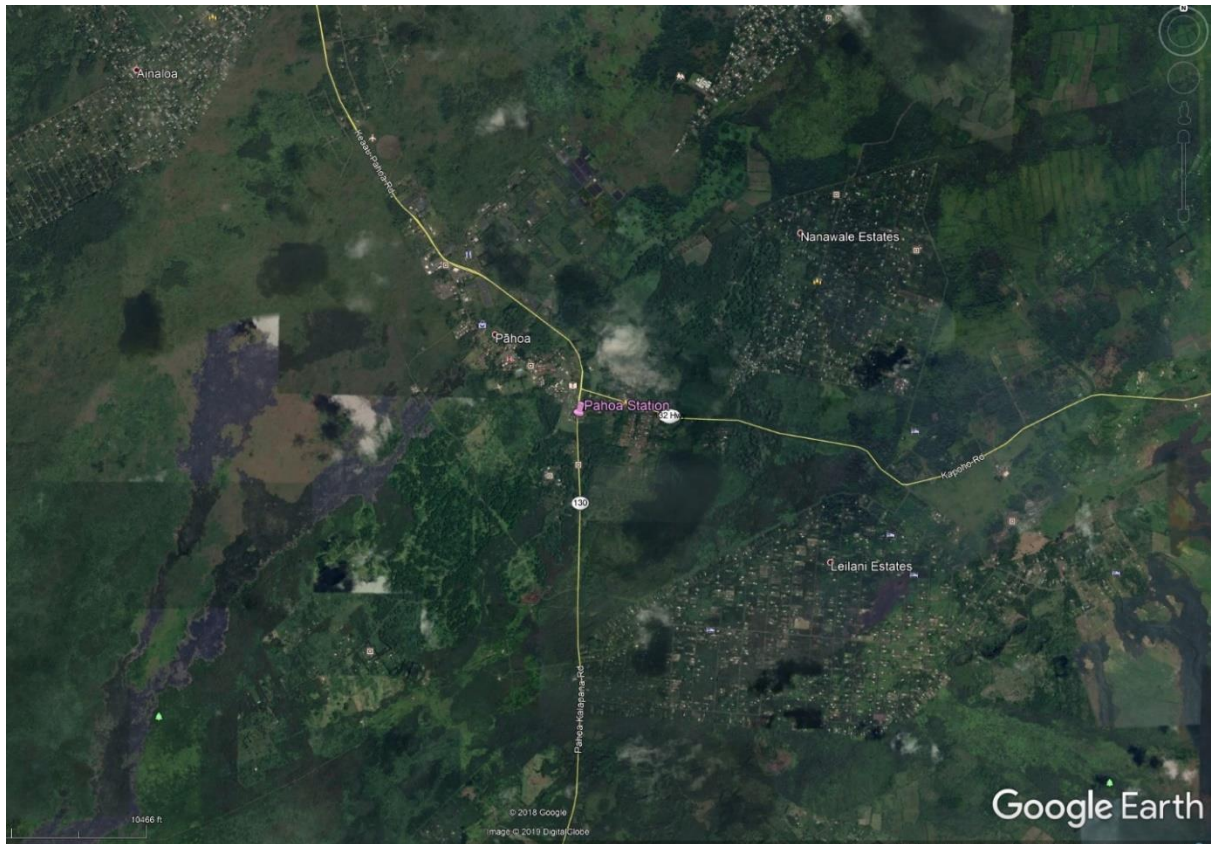


**2.11.5 Pahoa (AQS TBD)  
Pahoa High School, 15-3038 Pahoa Village Road, Pahoa, Hawaii  
Parameters: PM<sub>2.5</sub>, SO<sub>2</sub>, and H<sub>2</sub>S**

This station was selected to be sited in an open area behind the school gymnasium. As shown in Figure 2-11, the site is approximately 20 feet to the east of Pahoa Kalapana Road on the east side of Hawaii island and is surrounded by a mix of residential subdivisions and undeveloped brush and grasslands. It is 2.7 miles northwest of fissure 8 in the LERZ and 13 miles northeast of the Pu'u O'o vent and will provide data coverage for the area nearest to the LERZ.

AQMS had set up a temporary station elsewhere on campus during the 2018 LERZ eruption. It monitored for PM<sub>2.5</sub>, SO<sub>2</sub> and H<sub>2</sub>S as a non-regulatory temporary station from May 17, 2018 until December 20, 2018. AQMS will locate the monitors to the selected long-term site once the area is prepped and secured, and procurement and set up of the monitoring shelter is completed. Currently, there is no monitoring due to construction activities. According to AQMS, relocation is to be done in the summer of 2019.

**Figure 2-12 New Pahoa SPMS Site Location**



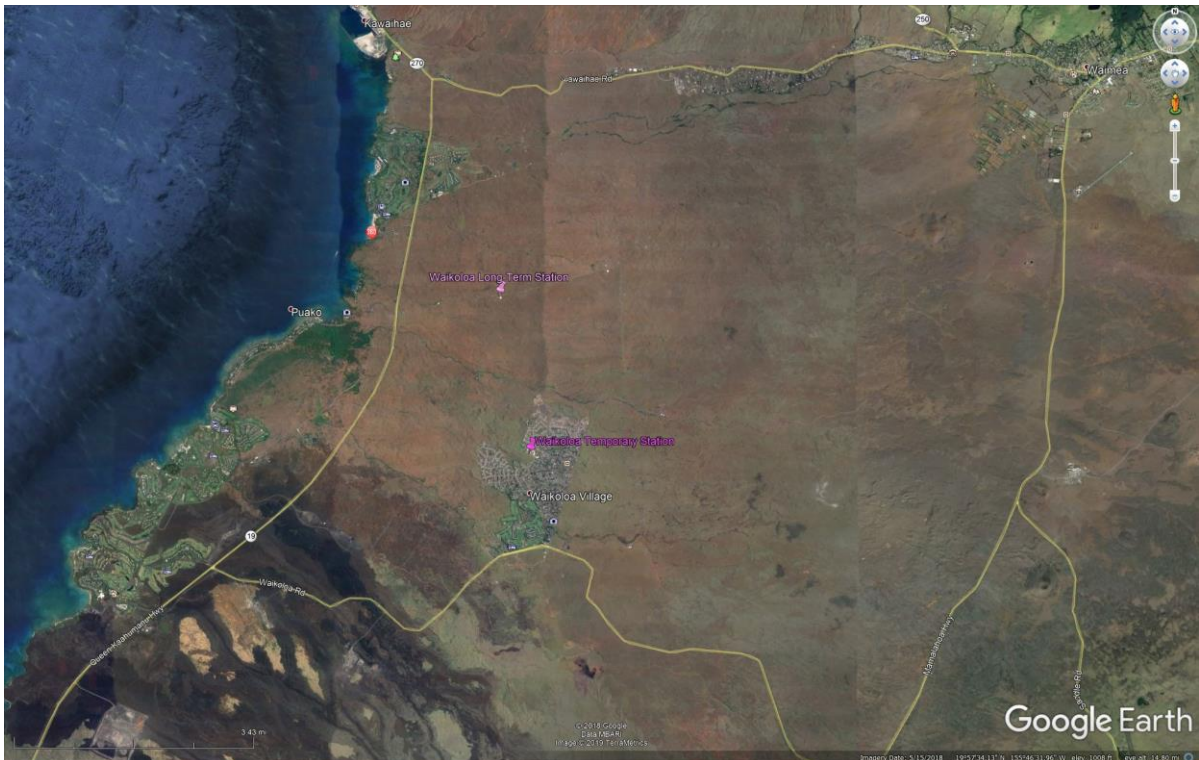
**2.11.6 Waikoloa (Temporary AQS 150013030; Long-term – AQS TBD)  
DWS Lalamilo (Parker 610), TMK 3-6-8-002-019, Waikoloa, Hawaii  
Parameters: PM<sub>2.5</sub>**

This station on the northwest side of Hawaii island was selected to be sited within a fenced area that contains a water tank and pump house; this is the same exact site that DOH had operated a station (15012021) from 2012-14. As shown in Figure 2-12, the site is approximately 1.7 miles north of Waikoloa and surrounded by undeveloped brushlands, and approximately 21.7 miles northeast of the Kona Airport. This site will provide data coverage for the North Kohala area.

AQMS had set up a non-regulatory temporary station at the Waikoloa Elementary School during the 2018 LERZ eruption; it has been monitoring for PM<sub>2.5</sub> at the school since June 29, 2018 as a non-regulatory temporary station. The school administration informed DOH that a construction of new 2-story classroom building was to begin in the fall of 2018 which could affect data being collected. Site visits by CAB staff have confirmed construction activity right adjacent to the temporary monitor.

This permanent site was selected by CAB in August 2018 and a final request was made to AQMS in October 2018 to relocate the sampler as the new site is already prepped and secured for a PM<sub>2.5</sub> sampler to be immediately deployed. At the time of plan publication, the temporary monitor has not been relocated to its long-term location. AQMS has not provided a timeline to when the relocation will be completed.

**Figure 2-13 New Waikoloa SPMS Site Location**



## 2.12 Site Modifications

### 2.12.1 SLAMS/NCore (150030010) Kapolei, Oahu, Hawaii Parameters: Pb

As stated previously in Section 2.4, the Pb monitoring at NCore was discontinued on December 31, 2018 with EPA approval. In addition, the current site, which belongs to the City and County of Honolulu Board of Water Supply (BWS), will be undergoing future site renovations and construction to be transformed into a baseyard. With the support of EPA Region 9, the station will need to be relocated to an area on the same property approximately 50 feet to the south of the current location. Per Region 9, no formal relocation request is needed since this site is being moved a short distance.

### 2.12.2 Puna E (150012010) SPMS Leilani Estates, Puna, Hawaii Parameters: H<sub>2</sub>S (non-criteria)

As stated previously in Section 2.9, this station was destroyed by the LERZ eruption and covered by lava. Access to what once was our station in Leilani Estates, as well as power to the station, has been cut off at this time. The future of this station remains uncertain.

### 2.12.3 Honolulu (150031001) SLAMS, Pearl City (150032004) SLAMS, Sand Island (150031004) SLAMS, Kihei (150090006) SLAMS, Kahului (150090025) SPMS, Hilo (150011006) SPMS, Kona (150011012) SPMS, Mountain View (150012023) SPMS Ocean View (150012020) SPMS, and Pahala (150012016). Various Locations, State of Hawaii Parameters: PM<sub>2.5</sub>

The BAM 1020 samplers at these ten sites have been or will be replaced with BAM 1022 samplers. Table 2-11 lists the respective dates of the switch.

**Table 2-11. PM<sub>2.5</sub> BAM 1020 to BAM 1022 Monitor Replacement Dates**

Monitoring Station	Date Monitor Replaced
Honolulu	4/9/18
Pearl City	2/13/19
Sand Island	2/13/19
Kihei	2/11/19
Kahului	2/11/19
Hilo	1/1/18
Kona (both primary and co-located)	3/5/19
Mountain View	To be replaced in May/June 2019
Ocean View	5/1/19
Pahala	2/26/19



## 2.12.4 Hilo (150011006) SPMS Parameters: PM<sub>2.5</sub> co-located

An FRM sampler was also added to the site on January 1, 2018.

The state is also planning on adding SO<sub>2</sub> monitoring at the existing Kihei station. There are no plans to modify any of the other current sites in the next 18 months.

## 2.13 Summary of Network and Changes

Table 2-12 summarizes the state's 2019 network monitors and planned changes. Since it has been determined that no criteria monitors are currently required in the Maui MSA, only monitors required for the Honolulu MSA are addressed in the table. Sections 2.10 to 2.12 detail station closures, additions and equipment or network modifications, and is summarized in Table 2-13.

As indicated in table 2-12, 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 2-12. Number of Monitors by Pollutant or Program**

N/A = Not applicable

Pollutant/ Program	SLAMS Only	SPMS	SLAMS/NCore	No. of Co- located	Total in MSA <sup>1,2</sup>	Total in State <sup>2</sup>	Total Required in MSA <sup>1</sup>	Meets EPA Required Minimum?	Planned Additions	Planned Closures
CO (FRM)	2	0	1	N/A	3	3	N/A	N/A	0	0
NO <sub>2</sub> (FRM)	1	1	---	N/A	1	2	N/A	N/A	0	0
SO <sub>2</sub> (FEM)	6	6	1	N/A	3	11	1	YES	3	0
O <sub>3</sub> (FEM)	1	0	1	N/A	2	2	1	YES	0	0
NO/NO <sub>y</sub>	N/A	N/A	1 (NCore)	N/A	1	1	1	YES	0	0
PM <sub>10</sub> (FEM)	2	0	1	N/A	3	3	1-2	YES	0	0
PM <sub>2.5</sub> (all are FEM)	4	12	1	2 FRM 1 FEM	4	17 <sup>3</sup>	1	YES	1	0
Pb (FRM) <sup>4</sup>	0	0	0 (NCore)	0	0	0	0 (NCore)	YES	0	0
PM <sub>2.5</sub> Speciation	0	0	1 (NCore/ Supplemental Speciation)	N/A	1	1	1 (NCore)	YES	0	0
PM <sub>10-2.5</sub>	N/A	N/A	1 (NCore)	N/A	1	1	1 (NCore)	YES	0	0
H <sub>2</sub> S	N/A	0 <sup>5</sup>	N/A	N/A	0	0	N/A	N/A	1 <sup>5</sup>	0

<sup>1</sup> As promulgated in 40 CFR 58 Appendix D, the minimum monitoring requirements apply to Metropolitan Statistical Areas (MSA). Currently, only the Honolulu MSA has requirements for minimum criteria pollutant monitoring.

<sup>2</sup> Total refers to the number of primary monitors only and does not count co-located monitors.

<sup>3</sup> Three of the seventeen are using Method 170 and fourteen are using Method 209.

<sup>4</sup> Per a letter dated October 29, 2018, EPA approved the discontinuation of the Pb monitoring at the Kapolei NCore station. Pb monitoring was discontinued on December 31, 2018.

<sup>5</sup> The H<sub>2</sub>S monitor at Puna E was lost due to being covered by lava; a new monitor is to be placed in Paho.

**Table 2-13. Summary of Network Changes**

Site	AQS ID	Site Type	Affected Parameters	Reason for Closure/Addition/Modification
<b>City and County of Honolulu</b>				
Kahe & Waiau	150034001 & 150034100	DRR/SLAMs	SO <sub>2</sub>	<b>Stations to be closed:</b> These two stations began collecting data on December 16, 2016 and December 14, 2016, respectively, to address the data requirements rule and will have completed the required 3 years of data collection by the end of 2019. Pending EPA data review and approval, these sites will be closed sometime in 2020.
Kapolei/NCORE	150030010	NCORE	Pb	<b>Site Modification - Parameter Discontinued:</b> Since the beginning, the station recorded concentrations of Pb well below the standard, at approximately one to two percent of the standard. Per a letter dated October 29, 2018, EPA approved the discontinuation of Pb monitoring. Pb was discontinued on December 31, 2018.
Kapolei/NCORE	150030010	SLAMS/NCORE	All	<b>Site Modification:</b> The current site, which belongs to BWS, will be undergoing future site renovations and construction to be transformed into a baseyard. The station will need to be relocated to an area on the same property approximately 50 feet to the south of the current location.  Per Region 9, no formal relocation request is needed since this site is being moved a short distance.
Honolulu, Pearl City & Sand Island	150031001 150032004 & 150031004	SLAMS	PM <sub>2.5</sub>	<b>Site Modifications:</b> The BAM 1020 PM <sub>2.5</sub> samplers at these stations were replaced with BAM 1022 PM <sub>2.5</sub> samplers on the following dates: Honolulu – January 1, 2018; Pearl City – February 13, 2019; and Sand Island – February 13, 2019.
Site	AQS ID	Site Type	Affected Parameters	Reason for Closure/Addition/Modification
<b>Hawaii County</b>				
Honaunau, Kailua-Kona & Waikoloa	TBD	SPMS	PM <sub>2.5</sub>	<b>Stations to be added:</b> Due to the 2018 LERZ eruption, the state determined that additional stations were needed. As particles are the main concern in these communities on the western side of Hawaii island, three temporary stations in these communities were set up to monitor for PM <sub>2.5</sub> using stand-alone shelters.  These long-term site selections were finalized in 2018 and AQMS had been directed to complete set up of these SPMS stations as these sites were already prepped and secured for immediate deployment.  At the time of plan publication, these temporary monitors have not been relocated to their long-term locations. According to AQMS, the long-

				term stations may not be completed until the summer of 2019 due to electrical work and site improvements.
Keaau, Naalehu & Pahoa	TBD	SPMS	SO <sub>2</sub> , PM <sub>2.5</sub> , H <sub>2</sub> S (Pahoa only)	<p><b>Stations to be added:</b> As volcanic gases and particles are the concerns on the eastern side of Hawaii, with its proximity to the volcanic activities, these three communities were determined to have needs for additional monitoring. Temporary monitors are currently operating in these communities as non-regulatory stations.</p> <p>AQMS is to set up all three stations at their final long-term locations once the areas are prepped and secured, and AQMS completes procurement and set up of the monitoring shelters.</p>
Hilo, Kona, Mtn. View Ocean View & Pahala	150011006, 150011012, 150012023, 150012020 & 150012016	SPMS	PM <sub>2.5</sub>	<p><b>Site Modifications:</b> The BAM 1020 PM<sub>2.5</sub> samplers at these stations were replaced with BAM 1022 PM<sub>2.5</sub> samplers on the following dates: Hilo – January 1, 2018; Kona (primary &amp; co-located) – February 1, 2019; Ocean View – May 1, 2019; and Pahala – February 26, 2019.</p> <p>Mountain View to be replaced in May/June 2019.</p> <p>The FRM co-located sampler at Hilo will be replaced with a sequential instrument.</p> <p>In addition, all shelters are scheduled to be replaced by December 2020.</p>
Puna E	150012010	SPMS	H <sub>2</sub> S	<p><b>Site Modification:</b> This station was destroyed by the 2018 LERZ eruption and covered by lava. Access to what once was our station in Leilani Estates, as well as power to the station, has been cut off. The future of this station remains uncertain.</p>

### 3.0 Detailed Site Descriptions

Following are descriptions and photos of each station in the state’s current ambient air monitoring network, including temporary and proposed SPMS long-term stations. The descriptions include area location, traffic, probe siting, monitor information and adherence to quality assurance.

DOH Air Quality Monitoring Section of the State Laboratories Division (AQMS) 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) <sup>1</sup>	Parameters
DH	150031001	Honolulu	1,2	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub>
KA SLAMS/ NCore	150030010	Kapolei	1,2,3	PM <sub>2.5</sub> , PM <sub>2.5</sub> co-located, PM <sub>10</sub> , (PM <sub>10-2.5</sub> ), trace SO <sub>2</sub> , SO <sub>2</sub> , NO <sub>2</sub> , NO/NO <sub>y</sub> , trace CO, CO, O <sub>3</sub> , Pb, Pb co-located, PM <sub>2.5</sub> speciation, WS, WD, RH, Ambient Temperature
PC	150032004	Pearl City	1,2	PM <sub>2.5</sub> , PM <sub>10</sub>
SI	150031004	Sand Island	1,2	PM <sub>2.5</sub> , O <sub>3</sub>
KH	150090006	Kihei	1,2,3	PM <sub>2.5</sub>
KL	150090025	Kahului	1, 2	PM <sub>2.5</sub>
NI	150070007	Niualu	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub>
HL SLAMS	150011006	Hilo	1,2,3	SO <sub>2</sub>
HL SPMS	150011006	Hilo	1,2,3	PM <sub>2.5</sub>
KN SLAMS	150011012	Kona	1,2,3	SO <sub>2</sub>
KN SPMS	150011012	Kona	1,2,3	PM <sub>2.5</sub> , PM <sub>2.5</sub> co-located FEM
MV	150012023	Mt. View	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub>
OV	150012020	Ocean View	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub>
PA	150012016	Pahala	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub>
PE	150012010	Puna E	1,3	None currently
HN	150013032	Honaunau	1,2,3	PM <sub>2.5</sub>
KK	150013034	Kailua-Kona	1,2,3	PM <sub>2.5</sub>
KS-T	150013027	Keaau-temporary	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub>
KS-LT	TBD	Keaau-Long-term	1,2,3	PM <sub>2.5</sub> , SO <sub>2</sub>
NA-TP	150013028	Naalehu-temp PM <sub>2.5</sub>	1,2,3	PM <sub>2.5</sub>
NA-TS	150013033	Naalehu-temp SO <sub>2</sub>	1,2,3	SO <sub>2</sub>
WL-T	150013030	Waikoloa-temporary	1,2,3	PM <sub>2.5</sub>
WL-LT	TBD	Waikoloa-Long-term	1,2,3	PM <sub>2.5</sub>
KE	150034001	Kahe	1,2,3	SO <sub>2</sub>
WI	150034100	Waiau	1,2,3	SO <sub>2</sub>

<sup>1</sup> Basic Monitoring Objectives:

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

<b>(DH) HONOLULU</b>			
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
<b>Location Description:</b> 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.			



<b>DH TRAFFIC DESCRIPTION</b>			
<b>Type of Roadway</b>	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	19,800 <sup>1</sup>	20,100 <sup>1</sup>	34,800 <sup>1</sup>
Average vehicle speed (est. mph)	20	25	25
Traffic one way or two	2	1	2
Street parking?	No	No	No

<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)

For "Site Representativeness" in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

## (DH) Honolulu continued

<b>DH MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	<b>CO</b>
POC/FRM or FEM	1/FEM	3/FEM	6/FEM	1/FRM
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS
AQS parameter code	81102	88101	42401	42101
Manufacturer	Met One	Met One	TECO	TECO
Model No.	BAM1020	BAM 1022	43i	48i
AQS method code	122	209	060	054
Monitoring start date	7/1/2009	4/9/2018	10/16/1992	1/1/1972
Monitoring frequency	Continuous	Continuous	Continuous	Continuous
Probe material	N/A	N/A	Glass	Glass
Residence time (sec)	N/A	N/A	17.0	17.0
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	N/A	N/A	N/A
Location of probe	building roof	building roof	building roof	building roof
Building dimensions (H) (m)	12	12	12	12
Horizontal distance from supporting structure (m)	9	11	9	9
Vertical distance above supporting structure (m)	1.8	2.1	1.2	1.2
Height of probe above ground (m)	13.8	14.1	13.2	13.2
Distance (m) & direction from drip line of tree(s)	24 E	24 E	27 E	27 E
Horizontal distance from edge of nearest traffic lane (m)	27	27	30	30
Horizontal distance from nearest parking lot (m)	24	24	24	24
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	9 ESE, 2.7	12 ESE, 2.7	9 ESE, 2.7	9 ESE 2.7
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from furnace or incineration flues	234 S/SW	234 S/SW	238 S/SW	238 S/SW
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	P	P	P	P
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Middle
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual	1-hr, 3-hr, annual	1-hr, 8-hr
Sampling season	12 months	12 months	12 months	12 months
Site type <sup>1</sup>	2	2	2	1
Purpose of Monitor <sup>2</sup>	1, 2	1, 2	1, 2	1, 2
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	Yes	N/A	N/A
<b>DATA QUALITY</b>				
Last PEP	N/A	6/26/18	N/A	N/A
Last NPAP (2017 NPAP done for O <sub>3</sub> only in SI site)	N/A	N/A	12/11/13	12/11/13
Date of last annual independent performance audit (AQMS)	N/A	N/A	11/5/18	11/5/18
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	N/A
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (PM)	2/13/19; 10/9/18	2/13/19; 10/9/18	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	Quarterly
Frequency of 1-pt. QC check (gases)	N/A	N/A	Weekly	Weekly
Frequency of multi-point gas calibration	N/A	N/A	60 days	60 days
Annual data certification submitted	5/1/19	5/1/19	5/1/19	5/1/19
Changes in the next 18 months?	None	None	None	None

<b>(KA) KAPOLEI SLAMS and NCORE</b>			
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
<b>Location Description:</b> Located in the Kapolei Business Park in the 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 Oahu. The station has been operating as a SLAMS station since 2002. On October 30, 2009, EPA approved the Kapolei station as the state's NCore site and in addition to the SLAMS parameters, the station began collecting the required NCore parameters on January 1, 2011 and Pb on January 1, 2012. Pb monitoring was discontinued December 2018. The station shelters will be replaced with new ones and relocated due to construction of a new baseyard at the current site.			



<b>KA TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Kalaeloa Blvd.</b>	<b>Lauwiliwili St.</b>
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	36,607 <sup>1</sup>	<sup>2</sup> Estimated: <5,000
Average vehicle speed (est. mph)	35	30
Traffic one way or two	2	2
Street parking?	No	Yes
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)		
<sup>2</sup> Estimate only, no data available, local road		

**For "Site Representativeness" in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(KA) Kapolei SLAMS and NCore continued**

<b>KA MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub> Primary</b>	<b>PM<sub>2.5</sub> Co-loc</b>	<b>PM<sub>10-2.5</sub></b>
POC/FRM or FEM	3/FEM	1/FEM	2/FRM	uses PM <sub>2.5</sub> /PM <sub>10</sub>
Type of Monitor	SLAMS/NCore	SLAMS/NCore	SLAMS/NCore	NCore
AQS parameter code	81102	88101	88101	86101
Manufacturer	Met One	Met One	BGI	
Model No.	BAM1020	BAM 1020	PQ200/VSCC	
AQS method code	122	170	142	
Monitoring start date	12/18/2008	1/1/2009	1/1/2011	
Monitoring frequency	Continuous	Continuous	1/3 days	
Probe material	N/A	N/A	N/A	
Residence time (sec)	N/A	N/A	N/A	
Manual PM instrument flow rate (liters per minute)	N/A	N/A	16.7	
Distance between co-located monitors	N/A	4 m	4 m	
Analytical laboratory	N/A	N/A	Intermountain	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	1	1.7	1.7 (>2)	
Height of probe above ground (m)	5	5.7	5.7	
Distance (m) & direction from drip line of tree(s)	17 N	17 N	13 N	
Horizontal distance from edge of nearest traffic lane (m)	167	165	169	
Horizontal distance from nearest parking lot (m)	87	83	87	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	170 E, 9	170 E, 9	170 E, 9	
Distance (m) & direction from furnace or incineration flues	None	N/A	None	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual	24-hr, annual	N/A
Sampling season	12 months	12 months	12 months	12 months
Site type <sup>1</sup>	2	2	QC	2
Purpose of Monitor <sup>2</sup>	1, 2	1, 2	QC	4
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	Yes	Yes	N/A
<b>DATA QUALITY</b>				
Last PEP	N/A	6/22/18	N/A	
Last NPAP	N/A	N/A	N/A	
Date of last annual independent performance audit (AQMS)	N/A	N/A	N/A	
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	Monthly	
Dates of last 2 semi-annual flow rate audits (PM)	10/28/18, 3/31/18	3/6/19, 10/28/18	11/27/18, 5/31/18	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	N/A	N/A	
Frequency of multi-point gas calibration	N/A	N/A	N/A	
Annual data certification submitted	5/1/19	5/1/19	5/1/19	
Changes in the next 18 months?	Site move	Site move	Site move; replace w/ a MetOne ESEQ FRM	Site move



**(KA) Kapolei SLAMS and NCore continued**

<b>KA MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>	<b>O<sub>3</sub></b>
POC/FRM or FEM	1/FRM	1/FEM	1/FRM	1/FRM
Type of Monitor	SLAMS	SLAMS	SLAMS	SLAMS/NCore
AQS parameter code	42101	42401	42602	44201
Manufacturer	TAPI	TECO	TAPI	TECO
Model No.	T300	43i	T500U	49i
AQS method code	093	060	212	047
Monitoring start date	7/29/2002	7/29/2002	7/29/2002	1/1/2011
Monitoring frequency	Continuous	Continuous	Continuous	Continuous
Probe material	Glass	Glass	Glass	Glass
Residence time (sec)	16.2	16.2	16.2	12.8
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	N/A	N/A	N/A
Location of probe	shelter roof	shelter roof	shelter roof	shelter roof
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1.1	1.1	1
Height of probe above ground (m)	5.1	5.1	5.1	5
Distance (m) & direction from drip line of tree(s)	19 N	19 N	19 N	12 N
Horizontal distance from edge of nearest traffic lane (m)	167	167	167	162
Horizontal distance from nearest parking lot (m)	87	87	87	82
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	170 E, 9	170 E, 9	170 E, 9	165 E, 9
Distance (m) & direction from furnace or incineration flues	None	None	None	None
Unrestricted airflow	360°	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	V	V	V	V
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging time(s)	1-hr; 8-hr	1-hr; 3-hr; annual	1-hr, annual	8-hr
Sampling season	12 months	12 months	12 months	12 months
Site type <sup>1</sup>	2	2	2	2
Purpose of Monitor <sup>2</sup>	1, 2	1, 2	1, 2	1,2
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	N/A	N/A	N/A
<b>DATA QUALITY</b>				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	6/24/15	6/24/15	6/24/15	6/24/15
Date of last annual independent performance audit (AQMS)	2/6/19, 10/29/18	2/05/19	2/06/19	2/22/18
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (PM)	N/A	N/A	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	Quarterly
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	Weekly	Weekly
Frequency of multi-point gas calibration	60 days	60 days	60 days	60 days
Annual data certification submitted	5/1/19	5/1/19	5/1/19	5/1/19
Changes in the next 18 months?	Site move	Site move	Site move	Site move

**(KA) Kapolei SLAMS and NCore continued**

<b>KA MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>Trace CO</b>	<b>Trace SO<sub>2</sub></b>	<b>NO/NO<sub>y</sub></b>	<b>Pb-TSP</b>
POC/FRM or FEM	2/FRM	2/FEM	1/FRM	N/A
Type of Monitor	SLAMS/NCore	SLAMS/NCore	NCore	N/A
AQS parameter code	42101	42401	42601/42600	N/A
Manufacturer	API	API	API	N/A
Model No.	M300EU	M100EU	T200U	N/A
AQS method code	093	600	099	N/A
Monitoring start date	1/1/2011	1/1/2011	1/1/2011	N/A
Monitoring frequency	Continuous	Continuous	Continuous	Discontinued
Probe material	Glass	Glass	Glass	N/A
Residence time (sec)	12.8	12.8	12.8	N/A
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	N/A	N/A	N/A
Location of probe	shelter roof	shelter roof	shelter roof	N/A
Shelter dimensions (H x W x D) (m)	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5	N/A
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1	1	1	N/A
Height of probe above ground (m)	5	5	5	N/A
Distance (m) & direction from drip line of tree(s)	12 N	12 N	12 N	N/A
Horizontal distance from edge of nearest traffic lane (m)	162	162	162	N/A
Horizontal distance from nearest parking lot (m)	82	82	82	N/A
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	165 E, 9	165 E, 9	165 E, 9	N/A
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	N/A
Located in paved (P) or vegetative (V) ground?	V	V	V	N/A
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	N/A
Applicable NAAQS averaging time(s)	1-hr; 8-hr	1-hr; 3-hr; annual	N/A	N/A
Sampling season	12 months	12 months	12 months	N/A
Site type <sup>1</sup>	2	2	2	N/A
Purpose of Monitor <sup>2</sup>	1,2,4	1,2,4	4	N/A
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	N/A	N/A	N/A
<b>DATA QUALITY</b>				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	12/5/12	12/5/12	12/5/12	N/A
Date of last annual independent performance audit (AQMS)	10/29/18	10/29/18	No data	N/A
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	N/A
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	Weekly	N/A
Frequency of multi-point gas calibration	60 days	60 days	60 days	N/A
Annual data certification submitted	5/1/19	5/1/19	5/1/19	N/A
Changes in the next 18 months?	Site move	Site move	Site move	None

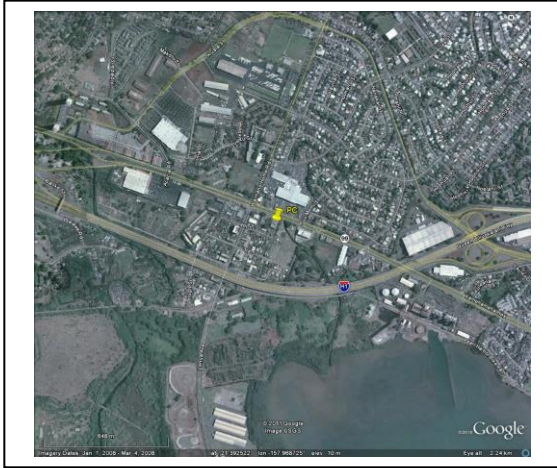
**(KA) Kapolei SLAMS and NCore continued**

<b>KA MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>Pb-TSP Co-loc</b>	<b>PM<sub>2.5</sub> Spec.</b>	<b>RH</b>	<b>WS</b>
POC/FRM or FEM	N/A	N/A	POC 1	POC 1
Type of Monitor	N/A	NCore/Supp. Speciation	NCore	NCore
AQS parameter code	N/A	Various	62201	61103
Manufacturer	N/A	Met-One/URG	RM Young	RM Young
Model No.	N/A	SASS/300N	05103VP	05103VP
AQS method code	N/A	810/136	014	020
Monitoring start date	N/A	10/1/2009	1/1/2011	1/1/2011
Monitoring frequency	Discontinued	1/3 days	Continuous	Continuous
Probe material	N/A	N/A	N/A	N/A
Residence time (sec)	N/A	N/A	N/A	N/A
Distance between co-located monitors	N/A	N/A	N/A	N/A
Analytical laboratory	N/A	EPA contract	N/A	N/A
Location of probe	N/A	shelter roof	10m tower	10m tower
Shelter dimensions (H x W x D) (m)	N/A	4 x 2.4 x 5	4 x 2.4 x 5	4 x 2.4 x 5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	N/A
Vertical distance above supporting structure (m)	N/A	1.7/1.6	N/A	N/A
Height of probe above ground (m)	N/A	5.7/5.6	N/A	N/A
Distance (m) & direction from drip line of tree(s)	N/A	13N/11N	N/A	N/A
Horizontal distance from edge of nearest traffic lane (m)	N/A	165	N/A	N/A
Horizontal distance from nearest parking lot (m)	N/A	85	N/A	N/A
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	N/A
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	168 E, 9	N/A	N/A
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	N/A
Unrestricted airflow	N/A	360°	360°	360°
Located in paved (P) or vegetative (V) ground?	N/A	V	V	V
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	N/A	Neighborhood	N/A	N/A
Applicable NAAQS averaging time(s)	N/A	N/A	N/A	N/A
Sampling season	N/A	12 months	12 months	12 months
Site type <sup>1</sup>	N/A	2	N/A	N/A
Purpose of Monitor <sup>2</sup>	N/A	4	N/A	N/A
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	N/A	N/A	N/A
<b>DATA QUALITY</b>				
Last PEP	N/A	N/A	N/A	N/A
Last NPAP	N/A	N/A	N/A	N/A
Date of last annual independent performance audit (AQMS)	N/A	N/A	11/28/18	11/28/18
Frequency of flow rate verification (automated PM)	N/A	N/A	N/A	N/A
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	Monthly	N/A	N/A
Dates of last 2 semi-annual flow rate audits (manual PM <sub>2.5</sub> )	N/A	3/6/19; 10/19/18	N/A	N/A
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	N/A
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	N/A
Precision & accuracy submitted to AQS	N/A	Quarterly	N/A	N/A
Frequency of 1-pt. QC check (gases)	N/A	N/A	N/A	N/A
Frequency of multi-point gas calibration	N/A	N/A	N/A	N/A
Annual data certification submitted	N/A	5/1/19	5/1/19	5/1/19
Changes in the next 18 months?	None	Site move	Site move	Site move

**(KA) Kapolei SLAMS and NCore continued**

<b>KA MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>WD</b>	<b>AT</b>	
POC/FRM or FEM	POC 1	POC 1	
Type of Monitor	NCore	NCore	
AQS parameter code	61104	62101	
Manufacturer	RM Young	RM Young	
Model No.	05103VP	05103VP	
AQS method code	020	020	
Monitoring start date	1/1/2011	1/1/2011	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	N/A	
Residence time (sec)	N/A	N/A	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	10m tower	10m tower	
Shelter dimensions	4 x 2.4 x 5	4 x 2.4 x 5	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	N/A	N/A	
Height of probe above ground (m)	N/A	N/A	
Distance (m) & direction from drip line of tree(s)	N/A	N/A	
Horizontal distance from edge of nearest traffic lane (m)	N/A	N/A	
Horizontal distance from nearest parking lot (m)	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height (m)	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	N/A	N/A	
Applicable NAAQS averaging time(s)	N/A	N/A	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	N/A	N/A	
Purpose of Monitor <sup>2</sup>	N/A	N/A	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	N/A	
<b>DATA QUALITY</b>			
Last PEP	N/A	N/A	
Last NPAP	N/A	N/A	
Date of last annual independent performance audit (AQMS)	11/28/18	11/28/18	
Frequency of flow rate verification (automated PM)	N/A	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits	N/A	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	N/A	N/A	
Frequency of 1-pt. QC check (gases)	N/A	N/A	
Frequency of multi-point gas calibration	N/A	N/A	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	Site Move	Site Move	

<b>(PC) PEARL CITY</b>			
AQS: 150032004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 860 4 <sup>th</sup> St., Pearl City, HI 96782			
Latitude: 21.39283		Longitude: -157.96913	Elevation: 23.1 m MSL
<b>Location Description:</b> 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 Wai'au Generating Station and is approximately 3 miles NW of the Pearl Harbor Naval Complex. This station has been operating since 1994.			



<b>PC TRAFFIC DESCRIPTION</b>			
Type of Roadway	4 <sup>th</sup> 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	<sup>2</sup> Estimated: <2,000	8,900 <sup>1</sup>	59,100 <sup>1</sup>
Average vehicle speed (est. mph)	20	30	35
Traffic one way or two	2	2	2
Street parking?	Yes	No	No

<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)  
<sup>2</sup> Estimate only, no data available, small side street used by a few local businesses and residences

**For "Site Representativeness" in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(PC) Pearl City continued**

<b>PC MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	
POC/FRM or FEM	3/FEM	4/FEM	
Type of Monitor	SLAMS	SLAMS	
AQS parameter code	81102	88101	
Manufacturer	Met One	Met One	
Model No.	BAM1020	BAM 1022	
AQS method code	122	209	
Monitoring start date	9/29/2007	2/13/2019	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	N/A	
Residence time (sec)	N/A	N/A	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	building roof	building roof	
Building dimensions (H) (m)	12	12	
Horizontal distance from supporting structure (m)	14	14	
Vertical distance above supporting structure (m)	2.5	2.1	
Height of probe above ground (m)	14.5	14.1	
Distance (m) & direction from drip line of tree(s)	20 E	20 E	
Horizontal distance from edge of nearest traffic lane (m)	58	58	
Horizontal distance from nearest parking lot (m)	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	10.1 S, 3.2	10.1 S, 3.2	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	360°	360°	
Located in paved (P) or vegetative (V) ground?	P	P	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr	24-hr, annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	1	1	
Purpose of Monitor <sup>2</sup>	1, 2	1, 2	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	Yes	
<b>DATA QUALITY</b>			
Last PEP	N/A	6/26/18	
Last NPAP	N/A	N/A	
Date of last annual independent performance audit (AQMS)	7/15/14	7/15/14	
Frequency of flow rate verification (automated PM)	Monthly	Monthly	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/12/19; 11/8/18	2/12/19; 11/8/18	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	N/A	
Frequency of multi-point gas calibration	N/A	N/A	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	None	None	

<b>(SI) SAND ISLAND</b>			
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
<b>Location Description:</b> 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.			



<b>SI TRAFFIC DESCRIPTION</b>	
<b>Type of Roadway</b>	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	14,000 <sup>1</sup>
Average vehicle speed (est. mph)	30
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)	

For "Site Representativeness" in the following table:

- <sup>1</sup>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

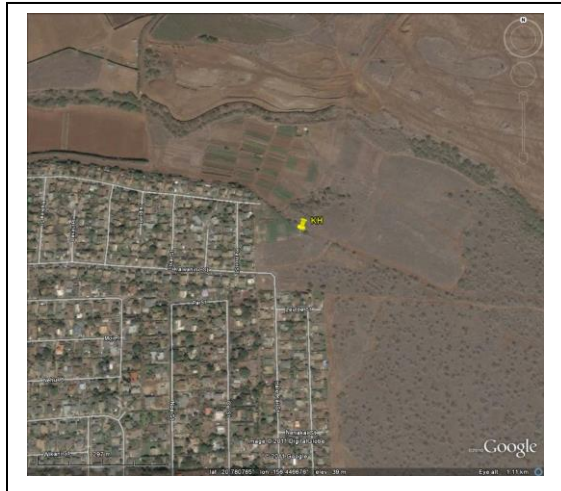
- <sup>2</sup> Purposes:
- 1) Provide air pollution data to the general public in a timely manner;
  - 2) Support compliance with ambient air quality standards;
  - 3) Support emissions strategy development and track trends in air pollution abatement control measures;
  - 4) Support for air pollution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

**(SI) Sand Island continued**

<b>SI MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>O<sub>3</sub></b>	
POC/FRM or FEM	2/FEM	2/FRM	
Type of Monitor	SLAMS	SLAMS	
AQS parameter code	88101	44201	
Manufacturer	Met One	TECO	
Model No.	BAM1022	49C	
AQS method code	209	047	
Monitoring start date	2/13/2019	1/1/1980	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	18.3	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x2x5	3x2x5	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	1.1	2.1	
Height of probe above ground (m)	4.1	5.1	
Distance (m) & direction from drip line of tree(s)	15 E	15 E	
Horizontal distance from edge of nearest traffic lane (m)	37	37	
Horizontal distance from nearest parking lot (m)	40	40	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	14 N, 5.5	14 N, 5.5	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	360°	360°	
Located in paved (P) or vegetative (V) ground?	gravel	gravel	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	8-hr	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	5	1	
Purpose of Monitor <sup>2</sup>	1, 2	1, 2, 3	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	N/A	
<b>DATA QUALITY</b>			
Last PEP	6/22/18	N/A	
Last NPAP	N/A	6/14/17	
Date of last annual independent performance audit (AQMS)	N/A	11/1/18	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/12/19; 11/1/18	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	None	None	



<b>(KH) KIHEI</b>			
AQS: 150090006	Type: SLAMS	County: Maui	MSA: Maui
Address: TMK 2-3-9-4:28 Hale Piilani Park, Kihei, HI 96753			
Latitude: 20.780997	Longitude: -156.44637	Elevation: 46.5 m MSL	
<b>Location Description:</b> 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 monitoring for particulates.			



<b>KH TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Kaiolohia</b>	<b>Kaiwahine</b>
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	<sup>1</sup> Estimated <3,000	<sup>1</sup> Estimated <3,000
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	Yes	Yes
<sup>1</sup> Estimated only, no data available, roads are for local residential access		

**For "Site Representativeness" in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(KH) Kihei continued**

<b>KH MONITOR INFORMATION (N/A = Not Applicable)</b>				
		<b>PM<sub>2.5</sub></b>		
POC/FRM or FEM		2/FEM		
Type of Monitor		SLAMS		
AQS parameter code		88101		
Manufacturer		Met One		
Model No.		BAM1022		
AQS method code		209		
Monitoring start date		2/11/2019		
Monitoring frequency		Continuous		
Probe material		N/A		
Residence time (sec)		N/A		
Distance between co-located monitors		N/A		
Analytical laboratory		N/A		
Location of probe		shelter roof		
Shelter dimensions (H x W x D) (m)		4 x 2 x 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 drip line of tree(s)		15.2 NNW		
Horizontal distance from edge of nearest traffic lane (m)		154.5		
Horizontal distance from nearest parking lot (m)		105.2		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)		N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)		15.2 NNW, 7.6		
Distance (m) & direction from furnace or incineration flues		N/A		
Unrestricted airflow		360°		
Located in paved (P) or vegetative (V) ground?		V		
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale		Neighborhood		
Applicable NAAQS averaging time(s)		24-hr, annual		
Sampling season		12 months		
Site type <sup>1</sup>		3		
Purpose of Monitor <sup>2</sup>		1, 2, 4		
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?		Y		
<b>DATA QUALITY</b>				
Last PEP		10/10/17		
Last NPAP		N/A		
Date of last annual independent performance audit (AQMS)		N/A		
Frequency of flow rate verification (automated PM)		Monthly		
Frequency of flow rate verification (manual PM <sub>2.5</sub> )		N/A		
Dates of last 2 semi-annual flow rate audits (PM)		2/11/19; 10/7/18		
Frequency of 1-point flow rate verification (Pb)		N/A		
Dates of last 2 semi-annual flow rate audits (Pb)		N/A		
Precision & accuracy submitted to AQS		Quarterly		
Frequency of 1-pt. QC check (gases)		N/A		
Frequency of multi-point gas calibration		N/A		
Annual data certification submitted		5/1/19		
Changes in the next 18 months?		None		

<b>(KL) KAHULUI</b>			
AQS: 150090025	Type: SPMS	County: Maui	MSA: Maui
Address: TMK 2-3-8-007-153 Maulani Parkway, Kahului, HI 96732			
Latitude: 20.869444	Longitude: -156.492417	Elevation: 55.5 m MSL	
<b>Location Description:</b> This station is located off of Maulani Parkway in Kahului and surrounded primarily by residential land. The station was established to measure typical concentrations of air pollutants in areas of high population density. This station began monitoring for PM <sub>2.5</sub> on January 13, 2015.			



<b>KL TRAFFIC DESCRIPTION</b>	
Type of Roadway	Maulani Parkway
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	80
Direction from air inlet	S
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	<1500 <sup>1</sup>
Average vehicle speed (est. mph)	30
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Estimate only, no data available, local road	

For “Site Representativeness” in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(KL) Kahului continued**

<b>KL MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM 1022			
AQS method code	209			
Monitoring start date	2/11/2019			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	N/A			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	N/A			
Height of probe above ground (m)	2.7			
Distance (m) & direction from drip line of tree(s)	15.2 NE			
Horizontal distance from edge of nearest traffic lane (m)	70			
Horizontal distance from nearest parking lot (m)	N/A			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height above probe (m)	15.2 NE, 6.1			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	360°			
Located in paved (P) or vegetative (V) ground?	P			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	2, 3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Yes			
<b>DATA QUALITY</b>				
Last PEP	10/10/17			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	11/7/18; 5/8/18			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	5/1/19			
Changes in the next 18 months?	None			

<b>(NI) NIUMALU</b>			
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
<b>Location Description:</b> 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. With the new lower ECA fuel sulfur requirements for cruise ships, this station provides information on the effects of lowered fuel sulfur on ambient SO <sub>2</sub> . This station began operating in April 2011.			



<b>NI TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Hulemalu Rd.</b>	<b>Niualu Rd.</b>
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 <sup>1</sup>	30 <sup>1</sup>
Average vehicle speed (est. mph)	15	20
Traffic one way or two	2	2
Street parking?	No	No
<sup>1</sup> Estimated only, no data available, roads are for local residential access		

**For "Site Representativeness" in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(NI) Niimalu continued**

<b>NI MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>	
POC/FRM or FEM	1/FEM	2/FRM	1/FEM	
Type of Monitor	SPMS	SPMS	SPMS	
AQS parameter code	42401	42602	88101	
Manufacturer	TECO	API	Met One	
Model No.	43i	T500U 182	BAM 1020	
AQS method code	060	212	170	
Monitoring start date	4/1/2011	4/1/2011	4/1/2011	
Monitoring frequency	Continuous	Continuous	Continuous	
Probe material	Glass	Glass	N/A	
Residence time (sec)	19.4	19.4	N/A	
Distance between co-located monitors	N/A	N/A	N/A	
Analytical laboratory	N/A	N/A	N/A	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x5x2.4	3x5x2.4	3x5x2.4	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	1	1	1	
Height of probe above ground (m)	4	4	4	
Distance (m) & direction from drip line of tree(s)	17.8 ESE	17.8 ESE	17.8 ESE	
Horizontal distance from edge of nearest traffic lane (m)	44.4	44.4	44.4	
Horizontal distance from nearest parking lot (m)	N/A	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	14.6 W, 7.2	14.6 W, 7.2	14.6 W, 7.2	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	1-hr, 3-hr, annual	1-hr, annual	24-hr, annual	
Sampling season	12 months	12 months	12 months	
Site type <sup>1</sup>	3	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A	N/A	Y	
<b>DATA QUALITY</b>				
Last PEP	N/A	N/A	12/12/14	
Last NPAP	2/3/12	2/3/12	N/A	
Date of last annual independent performance audit (AQMS)	11/16/18	11/16/18	N/A	
Frequency of flow rate verification (automated PM)	N/A	N/A	Monthly	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	N/A	N/A	2/22/19; 12/4/18	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	Weekly	Weekly	N/A	
Frequency of multi-point gas calibration	60 days	60 days	N/A	
Annual data certification submitted	5/1/19	5/1/19	5/1/19	
Changes in the next 18 months?	None	None	Yes, upgrade to BAM 1022	

<b>(HL) HILO</b>			
AQS: 150011006	Type: SLAMS (SO <sub>2</sub> ); SPMS (PM <sub>2.5</sub> )	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
<b>Location Description:</b> 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. This shelter is scheduled to be replaced by December 2019.			



<b>HL TRAFFIC DESCRIPTION</b>	
<b>Type of Roadway</b>	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	8,400 <sup>1</sup>
Average vehicle speed (est. mph)	35
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)	

For “Site Representativeness” in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

## (HL) Hilo continued

HL MONITOR INFORMATION (N/A = Not Applicable)				
	PM <sub>2.5</sub> Primary	SO <sub>2</sub>	PM <sub>2.5</sub> Co-loc	
POC/FRM or FEM	1/FEM	1/FEM	2/FRM	
Type of Monitor	SPMS	SLAMS	SPMS	
AQS parameter code	88101	42401	88101	
Manufacturer	Met-One	TECO	BGI	
Model No.	BAM 1022	43i		
AQS method code	209	060	142	
Monitoring start date	1/1/2018	1/1/1997	1/1/2018	
Monitoring frequency	Continuous	Continuous	1/3 days	
Probe material	N/A	Glass	N/A	
Residence time (sec)	N/A	18.0	N/A	
Distance between co-located monitors	1.9	N/A	1.9	
Analytical laboratory	N/A	N/A	N/A	
Location of probe	shelter roof	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x4.9x2.4	3x4.9x2.4	3x4.9x2.4	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	2.1	1.2	2.0	
Height of probe above ground (m)	5.5	4.8	5.5	
Distance (m) & direction from drip line of tree(s)	15 N	15 N	15 N	
Horizontal distance from edge of nearest traffic lane (m)	20	20	20	
Horizontal distance from nearest parking lot (m)	25	25	25	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	N/A	
Distance (m) & direction from furnace or incineration flues	29 NNW (10m stack height)	29 NNW (10m stack height)	29 NNW (10m stack height)	
Unrestricted airflow	360°	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr, annual	24-hr, annual	
Sampling season	12 months	12 months	12 months	
Site type <sup>1</sup>	3	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	N/A	Y	
<b>DATA QUALITY</b>				
Last PEP	6/26/16	N/A	N/A	
Last NPAP	N/A	2/10/12	N/A	
Date of last annual independent performance audit (AQMS)	N/A	4/4/19	N/A	
Frequency of flow rate verification (automated PM)	Monthly	N/A	Monthly	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/17/19; 12/11/18	N/A	2/17/19; 12/11/18	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	N/A	
Frequency of multi-point gas calibration	N/A	60 days	N/A	
Annual data certification submitted	5/1/19	5/1/19	5/1/19	
Changes in the next 18 months?	Replace shelter	Replace shelter	Replace shelter; replace with a sequential instrument	



<b>(KN) KONA</b>			
AQS: 150011012	Type: SLAMS (SO <sub>2</sub> ) SPMS (PM <sub>2.5</sub> )	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
<b>Location Description:</b> 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. The shelter is scheduled to be replaced by December 2020.			



<b>KN TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Konawaena School Rd.</b>	<b>Mamalahoa Hwy.</b>
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 <sup>2</sup>	16,300 <sup>1</sup>
Average vehicle speed (est. mph)	10	55
Traffic one way or two	2	2
Street parking?	No	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count) <sup>2</sup> 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.		

**For “Site Representativeness” in the following table:**

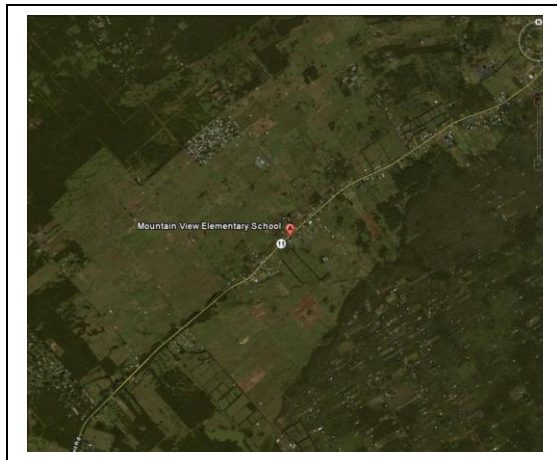
- <sup>1</sup>Site Types:
- 1) located to determine the highest concentrations;
  - 2) located to measure typical concentrations in areas of high population density;
  - 3) located to determine the impact of significant sources or source categories on air quality;
  - 4) located to determine general 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

- <sup>2</sup> 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

**(KN) Kona continued**

<b>KN MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub> Primary</b>	<b>PM<sub>2.5</sub> Co-Lo</b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	2/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	SLAMS	
AQS parameter code	88101	88101	42401	
Manufacturer	Met-One	Met-One	TECO	
Model No.	BAM 1022	BAM 1022	43i	
AQS method code	209	209	060	
Monitoring start date	3/5/2019	3/5/2019	9/13/2005	
Monitoring frequency	Continuous	Continuous	Continuous	
Probe material	N/A	N/A	Glass	
Residence time (sec)	N/A	N/A	17.3	
Distance between co-located monitors (m)	2.5	2.5	N/A	
Analytical laboratory	N/A	N/A	N/A	
Location of probe	stand-alone shelter on ground	stand-alone shelter on ground	shelter roof	
Shelter dimensions (H x W x D) (m)	N/A	N/A	3x2.4x5	
Horizontal distance from supporting structure (m)	N/A	N/A	N/A	
Vertical distance above supporting structure (m)	N/A	N/A	1.1	
Height of probe above ground (m)	2.1	2.1	4.1	
Distance (m) & direction from drip line of tree(s)	15.2 W	15.2 W	38 NE	
Horizontal distance from edge of nearest traffic lane (m)	30	30	30	
Horizontal distance from nearest parking lot (m)	N/A	N/A	N/A	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	3.4 S, 3	3.4 S, 3	21 SSW, 9	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	N/A	
Unrestricted airflow	270°	270°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	V	
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	12 months	
Site type <sup>1</sup>	3	QC	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	Y	N/A	
<b>DATA QUALITY</b>				
Last PEP	10/20/16	N/A	N/A	
Last NPAP	N/A	N/A	6/18/14	
Date of last annual independent performance audit (AQMS)	N/A	N/A	4/8/19	
Frequency of flow rate verification (automated PM)	Monthly	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	3/5/19; 11/14/18	3/5/19; 11/14/18	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	N/A	60 days	
Annual data certification submitted	5/1/19	5/1/19	5/1/19	
Changes in the next 18 months?	None	None	Replace shelter	

<b>(MV) MOUNTAIN VIEW</b>			
AQS: 150012023	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 18-1235 Volcano Rd., Mt. View, HI 96771			
Latitude: 19.57002	Longitude: -155.08046		Elevation: 436.5 m MSL
<b>Location Description:</b> This station is located on the grounds of the Mountain View Elementary School. The original Mountain 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. The shelter is scheduled to be replaced by January 2020.			



<b>MV TRAFFIC DESCRIPTION</b>	
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	13,400 <sup>1</sup>
Average vehicle speed (est. mph)	40
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)	

For "Site Representativeness" in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(MV) Mt. View continued**

<b>MV MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	
AQS parameter code	88101	42401	
Manufacturer	Met-One	TECO	
Model No.	BAM 1020	43i	
AQS method code	170	060	
Monitoring start date	12/7/2010	12/8/2010	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	18.2	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	shelter roof	shelter roof	
Shelter dimensions (H x W x D) (m)	3x2.4x5	3x2.4x5	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	2.1	1	
Height of probe above ground (m)	2.1	4	
Distance (m) & direction from drip line of 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 (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A	N/A	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	360°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	N/A	
<b>DATA QUALITY</b>			
Last PEP	10/23/18	N/A	
Last NPAP	N/A	2/13/12	
Date of last annual independent performance audit (AQMS)	N/A	4/2/19	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/27/19; 12/11/18	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	Yes, upgrade to BAM 1022	Replace shelter	

<b>(OV) OCEAN VIEW</b>			
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
<b>Location Description:</b> 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. This shelter is scheduled to be replaced by December 2019.			



<b>OV TRAFFIC DESCRIPTION</b>	
<b>Type of Roadway</b>	<b>Orchid Mauka Circ.</b>
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 <sup>1</sup>
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Estimated only, local residential street, no data available	

**For “Site Representativeness” in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(OV) Ocean View continued**

<b>OV MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	
AQS parameter code	88101	42401	
Manufacturer	Met-One	TECO	
Model No.	BAM 1022	43i	
AQS method code	209	060	
Monitoring start date	5/1/2019	4/1/2010	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	18.3	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	Stand-alone PM shelter on station stairs platform	shelter roof	
Shelter dimensions (H x W x D) (m)	N/A	3x2.4x5	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	2.1	1.1	
Height of probe above ground (m)	3.1	4.1	
Distance (m) & direction from drip line of tree(s)	3	N/A	
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 (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	0.6 W/ 3.4 (station shelter)	N/A	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	270°	360°	
Located in paved (P) or vegetative (V) ground?	gravel	gravel	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	3, 6	3, 6	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	N/A	
<b>DATA QUALITY</b>			
Last PEP	6/22/14	N/A	
Last NPAP	N/A	2/9/12	
Date of last annual independent performance audit (AQMS)	N/A	3/27/19	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/27/19; 12/6/18	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	none	Replace shelter	

<b>(PA) PAHALA</b>			
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	
<b>Location Description:</b> 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. This shelter is scheduled to be replaced by December 2019.			



<b>PA TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Puahala</b>	<b>Pumeli</b>
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 <sup>1</sup>	< 3,000 <sup>1</sup>
Average vehicle speed (est. mph)	25 mph	25 mph
Traffic one way or two	2	2
Street parking?	No	No
<sup>1</sup> Estimated only, no data available. Local roads for a community with a 2010 population of about 1,400		

For “Site Representativeness” in the following table:

- <sup>1</sup>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

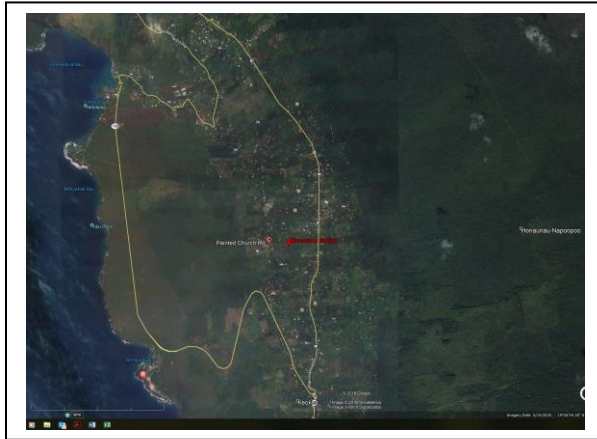
- <sup>2</sup> Purposes: 1) Provide air pollution data to the general public in a timely manner;  
 2) Support compliance with ambient air quality standards;  
 3) Support emissions strategy development and track trends in air pollution abatement control measures;  
 4) Support for air pollution research

**(PA) Pahala continued**

<b>PA MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	
AQS parameter code	88101	42401	
Manufacturer	Met-One	TECO	
Model No.	BAM 1022	43i	
AQS method code	209	060	
Monitoring start date	2/26/2019	8/10/2007	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	17.9	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	stand-alone shelter on ground	shelter roof	
Shelter dimensions (H x W x D) (m)	N/A	2.4x2.4x6	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	2.1	1.2	
Height of probe above ground (m)	2.1	3.6	
Distance (m) & direction from drip line of tree(s)	11 N	11 N	
Horizontal distance from edge of nearest traffic lane (m)	48	48	
Horizontal distance from nearest parking lot (m)	73	73	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	N/A	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	2 W/ 2.7 (building)	N/A	
Distance (m) & direction from furnace or incineration flues	N/A	N/A	
Unrestricted airflow	270°	360°	
Located in paved (P) or vegetative (V) ground?	V	V	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	Y	N/A	
<b>DATA QUALITY</b>			
Last PEP	10/25/18	N/A	
Last NPAP	N/A	6/18/14	
Date of last annual independent performance audit (AQMS)	N/A	4/26/18	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	2/26/19; 12/6/18	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	5/1/19	5/1/19	
Changes in the next 18 months?	Replace shelter	Replace shelter	



<b>(HN) HONAUNAU</b>			
AQS: 150013032	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Department of Water Supply Keei Well C, Painted Church Road, Honaunau, HI 96726			
Latitude: 19.44276389	Longitude: -155.88583333		Elevation: 274.3 m MSL
<b>Location Description:</b> This station is located in a residential subdivision within a fenced area that contains a Hawaii County Department of Water Supply water tank and pump house. The station was established to monitor the effects of volcanic emissions and has been operating since August 16, 2018 monitoring for PM <sub>2.5</sub> .			



<b>HN TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Painted Church Road</b>	<b>Mamalaha Highway</b>
Freeway		
Major Street or Highway		X
Local Street or Road	X	
Distance from air intake (m)	364	603
Direction from air inlet	NW	S
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	2
Average daily traffic	<sup>2</sup> Estimated <2,000	6,700 <sup>1</sup>
Average vehicle speed (est. mph)	20	45
Traffic one way or two	2	2
Street parking?	No	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)		
<sup>2</sup> Estimated only, no data available, roads are for local residential access		

**For “Site Representativeness” in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(HN) Honaunau continued**

<b>HN MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1022			
AQS method code	209			
Monitoring start date	8/16/2018			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	1.8x1.1x0.6			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	N/A			
Height of probe above ground (m)	2.2			
Distance (m) & direction from drip line of tree(s)	16.8 NE			
Horizontal distance from edge of nearest traffic lane (m)	63			
Horizontal distance from nearest parking lot (m)	N/A (residential/rural)			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	3 N, 3			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	270°			
Located in paved (P) or vegetative (V) ground?	gravel			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N			
<b>DATA QUALITY</b>				
Last PEP	No info available			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	No info available			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	No info available			
Changes in the next 18 months?	Site improvement			

<b>(KK) KAILUA-KONA</b>			
AQS: 150013028	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Department of Water Supply Puapua'a Reservoir, Kailua-Kona, HI 96740			
Latitude: 19.61815833	Longitude: -155.9711111		Elevation: 92.4 m MSL
<b>Location Description:</b> This station is located in the middle Kailua-Kona town within a fenced area that contains a County of Hawaii water reservoir and pump house. The station was established to monitor the effects of volcanic emissions and has been operating since November 21, 2018 monitoring for PM <sub>2.5</sub> .			



<b>KK TRAFFIC DESCRIPTION</b>			
Type of Roadway	Kuakini Highway	Walua Road	Queen Kaahumanu Hwy
Freeway			
Major Street or Highway	X		X
Local Street or Road		X (no through traffic)	
Distance from air intake (m)	125	42	145
Direction from air inlet	NW	S	E
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	2	2	2
Average daily traffic	8,200 <sup>1</sup>	<sup>2</sup> Estimated <50	22,900 <sup>1</sup>
Average vehicle speed (est. mph)	45	25	45
Traffic one way or two	2	2	2
Street parking?	No	No	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)			
<sup>2</sup> Estimated only, no data available, road is for local business access			

For "Site Representativeness" in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(KK) Kailua-Kona continued**

<b>KK MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1022			
AQS method code	209			
Monitoring start date	11/15/2018			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	N/A			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	2.2			
Height of probe above ground (m)	2.2			
Distance (m) & direction from drip line of tree(s)	19.8 SE			
Horizontal distance from edge of nearest traffic lane (m)	42			
Horizontal distance from nearest parking lot (m)	25			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	3 NE/3			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	180°			
Located in paved (P) or vegetative (V) ground?	gravel			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N			
<b>DATA QUALITY</b>				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	N/A			
Changes in the next 18 months?	Site improvement			

<b>(KS-T) KEAAU – Temporary</b>			
AQS: 150013027	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Kamehameha Schools Hawaii Campus, 16-714 Volcano Road, Keaau, HI 96749			
Latitude: 19.60533889	Longitude: -155.05138889	Elevation: 179.8 m MSL	
<b>Location Description:</b> This temporary station is located in the town of Keaau on the Kamehameha Schools Hawaii campus. The station began monitoring for PM <sub>2.5</sub> and SO <sub>2</sub> on June 14, 2018. The monitors at this temporary station are to be relocated to the long-term location approximately 827 meters to the SSE (see detailed site description for Keaau – Long-term).			



<b>KS TRAFFIC DESCRIPTION</b>	
<b>Type of Roadway</b>	<b>Volcano Road/Mamalahoa Highway</b>
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	720
Direction from air inlet	W
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	13,400 <sup>1</sup>
Average vehicle speed (est. mph)	45
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)	

For “Site Representativeness” in the following table:

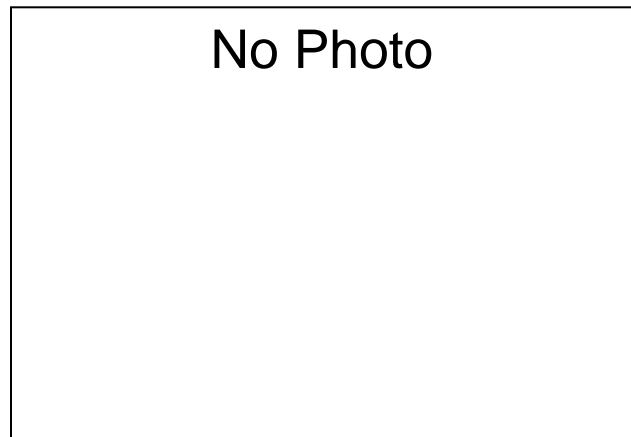
- <sup>1</sup>Site Types:
- 1) located to determine the highest concentrations;
  - 2) located to measure typical concentrations in areas of high population density;
  - 3) located to determine the impact of significant sources or source categories on air quality;
  - 4) located to determine general 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

- <sup>2</sup> 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

**(KS-T) Keaau – Temporary continued**

<b>KS-T MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	
AQS parameter code	88101	42401	
Manufacturer	Met One	TECO	
Model No.	BAM1022	43i	
AQS method code	209	060	
Monitoring start date	6/14/2018	6/14/2018	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	No info available	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	stand-alone shelter on ground	shelter roof	
Shelter dimensions (H x W x D) (m)	N/A	2.4 x 2.0 x 3.7	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	No info available	No info available	
Height of probe above ground (m)	No info available	No info available	
Distance (m) & direction from drip line of tree(s)	No info available	No info available	
Horizontal distance from edge of nearest traffic lane (m)	720	720	
Horizontal distance from nearest parking lot (m)	No info available	No info available	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A	No info available	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	No info available	No info available	
Distance (m) & direction from furnace or incineration flues	No info available	No info available	
Unrestricted airflow	No info available	No info available	
Located in paved (P) or vegetative (V) ground?	P/V	P/V	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N	N/A	
<b>DATA QUALITY</b>			
Last PEP	No info available	N/A	
Last NPAP	N/A	No info available	
Date of last annual independent performance audit (AQMS)	N/A	No info available	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)	No info available	N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	No info available	No info available	
Changes in the next 18 months?	None	None	

<b>(KS-LT) KEAAU – Long-term</b>			
AQS: TBD	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Kamehameha Schools Hawaii Campus, 16-714 Volcano Road, Keaau, HI 96749			
Latitude: 19.60533889		Longitude: -155.05138889	Elevation: 179.8 m MSL
<b>Location Description:</b> This station is to be located in the town of Keaau, at the Switch Gear Building of the Kamehameha Schools Hawaii campus, and will monitor the effects of volcanic emissions in the communities between the Hilo and Mountain View stations. The monitors for this station are currently located at the Keaau – Temporary station, approximately 827 meters to the NNW and will need to relocate here.			



<b>KS TRAFFIC DESCRIPTION</b>	
<b>Type of Roadway</b>	Volcano Road/Mamalahoa Highway
Freeway	
Major Street or Highway	X
Local Street or Road	
Distance from air intake (m)	28
Direction from air inlet	NW
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	13,400 <sup>1</sup>
Average vehicle speed (est. mph)	45
Traffic one way or two	2
Street parking?	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)	

For “Site Representativeness” in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(KS-LT) Keaau – Long-term continued**

<b>KS-LT MONITOR INFORMATION (N/A = Not Applicable)</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
POC/FRM or FEM	1/FEM	1/FEM	
Type of Monitor	SPMS	SPMS	
AQS parameter code	88101	42401	
Manufacturer	Met One	TECO	
Model No.	BAM1022	43i	
AQS method code	209	060	
Monitoring start date	TBD	TBD	
Monitoring frequency	Continuous	Continuous	
Probe material	N/A	Glass	
Residence time (sec)	N/A	No info available	
Distance between co-located monitors	N/A	N/A	
Analytical laboratory	N/A	N/A	
Location of probe	stand-alone shelter on ground	shelter roof	
Shelter dimensions (H x W x D) (m)	N/A	2.4 x 2.0 x 3.7	
Horizontal distance from supporting structure (m)	N/A	N/A	
Vertical distance above supporting structure (m)	TBD	TBD	
Height of probe above ground (m)	TBD	TBD	
Distance (m) & direction from drip line of tree(s)	TBD	TBD	
Horizontal distance from edge of nearest traffic lane (m)	TBD	TBD	
Horizontal distance from nearest parking lot (m)	TBD	TBD	
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	TBD	TBD	
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	TBD	TBD	
Distance (m) & direction from furnace or incineration flues	TBD	TBD	
Unrestricted airflow	TBD	TBD	
Located in paved (P) or vegetative (V) ground?	TBD	TBD	
<b>SITE REPRESENTATIVENESS</b>			
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging time(s)	24-hr, annual	1-hr, 3-hr; annual	
Sampling season	12 months	12 months	
Site type <sup>1</sup>	3	3	
Purpose of Monitor <sup>2</sup>	1, 2, 4	1, 2, 4	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N	N/A	
<b>DATA QUALITY</b>			
Last PEP	N/A	N/A	
Last NPAP	N/A	N/A	
Date of last annual independent performance audit (AQMS)	N/A	N/A	
Frequency of flow rate verification (automated PM)	Monthly	N/A	
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (PM)		N/A	
Frequency of 1-point flow rate verification (Pb)	N/A	N/A	
Dates of last 2 semi-annual flow rate audits (Pb)	N/A	N/A	
Precision & accuracy submitted to AQS	Quarterly	Quarterly	
Frequency of 1-pt. QC check (gases)	N/A	Weekly	
Frequency of multi-point gas calibration	N/A	60 days	
Annual data certification submitted	N/A	N/A	
Changes in the next 18 months?	Site improvement	Site improvement	



<b>(NA-TP) NAALEHU – Temporary PM<sub>2.5</sub></b>			
AQS: 150013028	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Naalehu Volunteer Fire Station, Kalaiki Road., Naalehu, HI 96772			
Latitude: 19.061379	Longitude: -155.586748		Elevation: 207.9 m MSL
<b>Location Description:</b> This station is located at the Naalehu Volunteer Fire Station. During normal trade-winds, volcanic emissions are carried into this rural community. This station has been operating since June 19, 2018 monitoring for PM <sub>2.5</sub> and will need to relocate to the final selected long-term site. Relocation is to be completed in the summer of 2019.			



<b>NA TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Kalaiki Road</b>	<b>Mamalahoa Hwy.</b>
Freeway		
Major Street or Highway		X
Local Street or Road	X	
Distance from air intake (m)	48	90
Direction from air inlet	E	S
Composition of roadway	asphalt	Asphalt
Number of traffic lanes	2	2
Average daily traffic	< 500 <sup>1</sup>	3,700 <sup>2</sup>
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	Yes	No
<sup>1</sup> Estimated only, local traffic only. <sup>2</sup> Source: State of Hawaii Department of Transportation (2016 count).		

For “Site Representativeness” in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(NA-TP) Naalehu – Temporary PM<sub>2.5</sub> continued**

<b>NA-TP MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1022			
AQS method code	209			
Monitoring start date	6/19/2018			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	N/A			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	2.1			
Height of probe above ground (m)	2.1			
Distance (m) & direction from drip line of tree(s)	16.8 SW			
Horizontal distance from edge of nearest traffic lane (m)	48			
Horizontal distance from nearest parking lot (m)	51			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	180°			
Located in paved (P) or vegetative (V) ground?	P/V			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N			
<b>DATA QUALITY</b>				
Last PEP	No info available			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	No info available			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	N/A			
Changes in the next 18 months?	Relocation			

<b>(NA-TS) NAALEHU – Temporary SO<sub>2</sub></b>			
AQS: 150013033	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: Naalehu Elementary School, 95-5547 Mamalahoa Hwy., Naalehu, HI 96772			
Latitude: 19.060656	Longitude: -155.579167		Elevation: 196.3 m MSL
<b>Location Description:</b> This temporary station is located inside the USGS Seismograph building on the campus of Naalehu Elementary School. This station has been operating since September 6, 2018 monitoring for SO <sub>2</sub> and will need to relocate to the final selected long-term site. Relocation is to be completed in the summer of 2019.			



<b>NA TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Mamalahoa Highway</b>	<b>Ohai Road</b>
Freeway		
Major Street or Highway	X	
Local Street or Road		X
Distance from air intake (m)	114	79
Direction from air inlet	N	W
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	2
Average daily traffic	3,700 <sup>1</sup>	< 100 <sup>2</sup>
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	No	No

<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)

For “Site Representativeness” in the following table:

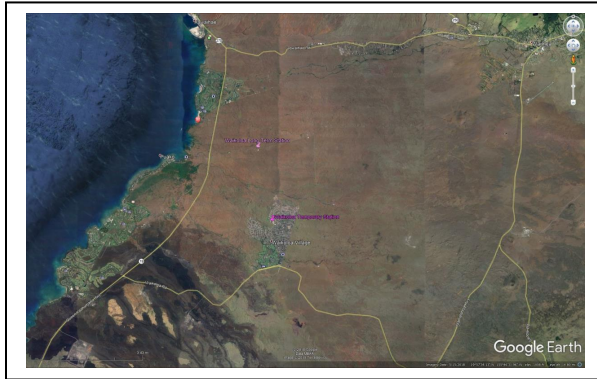
- <sup>1</sup>Site Types:
- 1) located to determine the highest concentrations;
  - 2) located to measure typical concentrations in areas of high population density;
  - 3) located to determine the impact of significant sources or source categories on air quality;
  - 4) located to determine general 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

- <sup>2</sup> 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

**(NA-TS) Naalehu – Temporary SO<sub>2</sub> continued**

<b>NA-TS MONITOR INFORMATION</b>		<b>(N/A = Not Applicable)</b>		
	<b>SO<sub>2</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	42401			
Manufacturer	TECO			
Model No.	43i			
AQS method code	060			
Monitoring start date	9/6/2018			
Monitoring frequency	Continuous			
Probe material	Glass			
Residence time (sec)	17.9			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	shelter roof			
Shelter dimensions (H x W x D) (m)				
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	1			
Height of probe above ground (m)	3			
Distance (m) & direction from drip line of tree(s)	No info available			
Horizontal distance from edge of nearest traffic lane (m)	114			
Horizontal distance from nearest parking lot (m)	114			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	N/A			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	360°			
Located in paved (P) or vegetative (V) ground?	V			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	1-hr, 3-hr; annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A			
<b>DATA QUALITY</b>				
Last PEP	N/A			
Last NPAP	No info available			
Date of last annual independent performance audit (AQMS)	No info available			
Frequency of flow rate verification (automated PM)	N/A			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	Weekly			
Frequency of multi-point gas calibration	60 days			
Annual data certification submitted	N/A			
Changes in the next 18 months?	Relocation			

<b>(WL-T) WAIKOLOA - Temporary</b>			
AQS: 150013030	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: 68-1730 Hooko Street, Waikoloa, HI 96738			
Latitude: 19.945325		Longitude: -155.79138889	Elevation: 259.1 m MSL
Location Description: This temporary station is located at the Waikoloa Elementary School. This station began monitoring for PM <sub>2.5</sub> on June 29, 2018. The monitor at this temporary station is to be relocated to the long-term location ~2.28 miles to the NNW (see detailed site description for Waikoloa – Long-term).			



<b>WL TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Paniolo Avenue</b>	<b>Hooko Street</b>
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	153	4,580
Direction from air inlet	ESE	N
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	2
Average daily traffic	<3,000 <sup>1</sup>	<1,000 <sup>1</sup>
Average vehicle speed (est. mph)	25	25
Traffic one way or two	2	2
Street parking?	No	No

<sup>1</sup> Estimated only, no data available, roads are for local residential access

For “Site Representativeness” in the following table:

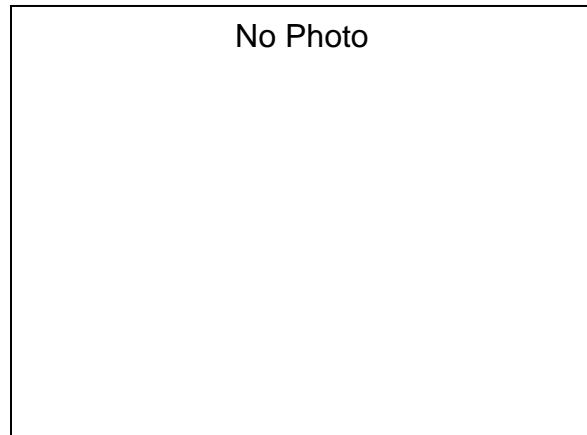
- <sup>1</sup>Site Types:
- 1) located to determine the highest concentrations;
  - 2) located to measure typical concentrations in areas of high population density;
  - 3) located to determine the impact of significant sources or source categories on air quality;
  - 4) located to determine general 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

- <sup>2</sup> 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

**(WL-T) Waikoloa – Temporary continued**

<b>WL-T MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1022			
AQS method code	209			
Monitoring start date	6/29/18			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	N/A			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	N/A			
Height of probe above ground (m)	~ 2.1			
Distance (m) & direction from drip line of tree(s)	No info available			
Horizontal distance from edge of nearest traffic lane (m)	154			
Horizontal distance from nearest parking lot (m)	150			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	No info available			
Distance (m) & direction from furnace or incineration flues	N/A			
Unrestricted airflow	270°			
Located in paved (P) or vegetative (V) ground?	V			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N			
<b>DATA QUALITY</b>				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)				
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	No info available			
Changes in the next 18 months?	Relocate			

<b>(WL-LT) WAIKOLOA – Long-Term</b>			
AQS: TBD	Type: SPMS	County: Hawaii	MSA: Not in a MSA
Address: TMK 3-6-8-002-019, Waikoloa, HI 96738			
Latitude: 19.977467		Longitude: -155.798067	Elevation: 180.1 m MSL
Location Description: This station is to be located within a fenced area that contains a County of Hawaii water tank and pump house, approximately 3 km northeast of Waikoloa. The monitor for this station is currently located at the temporary station at Waikoloa E.S. and will need to relocate here. This station will monitor for PM <sub>2.5</sub> .			



<b>WL TRAFFIC DESCRIPTION</b>		
<b>Type of Roadway</b>	<b>Queen Kaahumanu Hwy.</b>	<b>Waikoloa Road</b>
Freeway		
Major Street or Highway	X	
Local Street or Road		X
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	11,900 <sup>1</sup>	8,200 <sup>1</sup>
Average vehicle speed (est. mph)	55	55
Traffic one way or two	2	2
Street parking?	No	No
<sup>1</sup> Source: State of Hawaii Department of Transportation (2016 count)		

**For “Site Representativeness” in the following table:**

- <sup>1</sup>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

- <sup>2</sup> 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

**(WL-LT) Waikoloa – Long-term continued**

<b>WL-LT MONITOR INFORMATION (N/A = Not Applicable)</b>				
	<b>PM<sub>2.5</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SPMS			
AQS parameter code	88101			
Manufacturer	Met One			
Model No.	BAM1022			
AQS method code	209			
Monitoring start date	TBD			
Monitoring frequency	Continuous			
Probe material	N/A			
Residence time (sec)	N/A			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	stand-alone shelter on ground			
Shelter dimensions (H x W x D) (m)	N/A			
Horizontal distance from supporting structure (m)	N/A			
Vertical distance above supporting structure (m)	TBD			
Height of probe above ground (m)	TBD			
Distance (m) & direction from drip line of tree(s)	TBD			
Horizontal distance from edge of nearest traffic lane (m)	TBD			
Horizontal distance from nearest parking lot (m)	N/A			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	TBD			
Distance (m) & direction from furnace or incineration flues	TBD			
Unrestricted airflow	TBD			
Located in paved (P) or vegetative (V) ground?	V			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	Neighborhood			
Applicable NAAQS averaging time(s)	24-hr, annual			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	1, 2, 4			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N			
<b>DATA QUALITY</b>				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit (AQMS)	N/A			
Frequency of flow rate verification (automated PM)	Monthly			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)				
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	Quarterly			
Frequency of 1-pt. QC check (gases)	N/A			
Frequency of multi-point gas calibration	N/A			
Annual data certification submitted	N/A			
Changes in the next 18 months?	None			



<b>KAHE (Data Requirements Rule)</b>			
AQS: 150034001	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: Palehua Road, Makakilo, Oahu			
Latitude: 21.3678	Longitude: -158.1053		Elevation: 388 m MSL
Location Description: This station is located on the hillside south of Palehua Road and overlooks the Pacific Ocean. The area around the station is undeveloped and is currently used for cattle grazing. The station is approximately 2.7 kilometers northeast of the Kahe Generating Station. The city of Makakilo is located to the east and southeast. The areas immediately to the west through north are undeveloped.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Palehua Road	Farrington Highway	
Freeway			
Major Street or Highway	X	X	
Distance from air intake (m)	12.8	2,750	
Direction from air inlet	N	SW	
Composition of roadway	asphalt	asphalt	
Number of traffic lanes	1	4	
Average daily traffic	20 (estimate)	52,300 <sup>1</sup>	
Average vehicle speed (est. mph)	15	40	
Traffic one way or two	2	2	
Street parking?	No	No	
<sup>1</sup> Source: State of Hawaii Department of Transportation 2015 count			

For "Site Representativeness" in the following table:

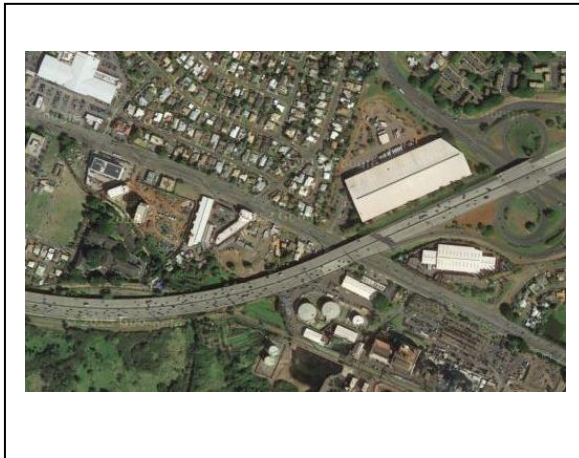
- <sup>1</sup>Site Types:
- 1) located to determine the highest concentrations;
  - 2) located to measure typical concentrations in areas of high population density;
  - 3) located to determine the impact of significant sources or source categories on air quality;
  - 4) located to determine general 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

- <sup>2</sup> 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

**(KE) Kahe continued**

<b>KAHE MONITOR INFORMATION</b>		<b>(N/A = Not Applicable)</b>		
		<b>SO<sub>2</sub></b>		
POC/FRM or FEM		1/FEM		
Type of Monitor		SLAMS		
AQS parameter code		42401		
Manufacturer		Thermo Scientific		
Model No.		43i-TLE		
AQS method code		060		
Monitoring start date		12/16/2016		
Monitoring frequency		Continuous		
Probe material		Borosilicate glass		
Residence time (sec)		18.1		
Distance between co-located monitors		N/A		
Analytical laboratory		N/A		
Location of probe		Shelter roof		
Building dimensions (H) (m)		3.3		
Horizontal distance from supporting structure (m)		0		
Vertical distance above supporting structure (m)		1.0		
Height of probe above ground (m)		4.3		
Distance (m) & direction from drip line of tree(s)		N/A		
Horizontal distance from edge of nearest traffic lane (m)		12.8		
Horizontal distance from nearest parking lot (m)		N/A		
Distance (m) & direction from obstructions on roof, vertical height above probe (m)		N/A		
Distance (m) & direction from possible obstructions not on roof, vertical height (m)		N/A		
Distance (m) & direction from furnace or incineration flues		2,740 SW		
Unrestricted airflow		360°		
Located in paved (P) or vegetative (V) ground?		V		
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale		Neighborhood		
Applicable NAAQS averaging time(s)		1-hr		
Sampling season		12 months		
Site type <sup>1</sup>		3		
Purpose of Monitor <sup>2</sup>		2, 3		
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?		N/A		
<b>DATA QUALITY</b>				
Last PEP		N/A		
Last NPAP		NA		
Date of last annual independent performance audit		12/6/17		
Frequency of flow rate verification (automated PM)		N/A		
Frequency of flow rate verification (manual PM <sub>2.5</sub> )		N/A		
Dates of last 2 semi-annual flow rate audits (PM)		N/A		
Frequency of 1-point flow rate verification (Pb)		N/A		
Dates of last 2 semi-annual flow rate audits (Pb)		N/A		
Precision & accuracy submitted to AQS		N/A		
Frequency of 1-pt. QC check (gases)		Biweekly		
Frequency of multi-point gas calibration		Quarterly		
Annual data certification submitted		N/A		
Changes in the next 18 months?		None		

<b>WAI AU (Data Requirements Rule)</b>			
AQS: 150034100	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 689 Kamehameha Highway, Pearl City, Oahu			
Latitude: 21.3909	Longitude: -157.9653		Elevation: 7 m MSL
Location Description: This station is located in an urban area and is approximately 400 meters northwest of the Waiau Power Generating Station in, Pearl City, Oahu. The station is surrounded by a residential area to the north, the H-1 Freeway from the east to southwest and the business district to the west.			



<b>TRAFFIC DESCRIPTION</b>			
<b>Type of Roadway</b>	<b>H-1</b>	<b>Kamehameha Highway</b>	
Freeway	X		
Major Street or Highway		X	
Distance from air intake (m)	59	114	
Direction from air inlet	SSE	NE	
Composition of roadway	Concrete	Asphalt	
Number of traffic lanes	6	4	
Average daily traffic	231,589 <sup>1</sup>		
Average vehicle speed (est. mph)	55	35	
Traffic one way or two	2	2	
Street parking?	No	No	
<sup>1</sup> Source: State of Hawaii Department of Transportation 2015 count			

For “Site Representativeness” in the following table:

- <sup>1</sup>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

- <sup>2</sup> 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

**(WI) Waiau continued**

<b>WAIU MONITOR INFORMATION</b>		<b>(N/A = Not Applicable)</b>		
	<b>SO<sub>2</sub></b>			
POC/FRM or FEM	1/FEM			
Type of Monitor	SLAMS			
AQS parameter code	42401			
Manufacturer	Thermo Scientific			
Model No.	43i-TLE			
AQS method code	060			
Monitoring start date	12/12/16			
Monitoring frequency	Continuous			
Probe material	Borosilicate glass			
Residence time (sec)	18.5			
Distance between co-located monitors	N/A			
Analytical laboratory	N/A			
Location of probe	Shelter roof			
Building dimensions (H) (m)	3.3			
Horizontal distance from supporting structure (m)	0			
Vertical distance above supporting structure (m)	1.0			
Height of probe above ground (m)	4.3			
Distance (m) & direction from drip line of tree(s)	20 WSW, 36 SSW			
Horizontal distance from edge of nearest traffic lane (m)	59			
Horizontal distance from nearest parking lot (m)	30			
Distance (m) & direction from obstructions on roof, vertical height above probe (m)	N/A			
Distance (m) & direction from possible obstructions not on roof, vertical height (m)	23 NNW, 5			
Distance (m) & direction from furnace or incineration flues	415 SE			
Unrestricted airflow	360			
Located in paved (P) or vegetative (V) ground?	V			
<b>SITE REPRESENTATIVENESS</b>				
Spatial scale	neighborhood			
Applicable NAAQS averaging time(s)	1-hr			
Sampling season	12 months			
Site type <sup>1</sup>	3			
Purpose of Monitor <sup>2</sup>	2, 3			
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	N/A			
<b>DATA QUALITY</b>				
Last PEP	N/A			
Last NPAP	N/A			
Date of last annual independent performance audit	12/6/17			
Frequency of flow rate verification (automated PM)	N/A			
Frequency of flow rate verification (manual PM <sub>2.5</sub> )	N/A			
Dates of last 2 semi-annual flow rate audits (PM)	N/A			
Frequency of 1-point flow rate verification (Pb)	N/A			
Dates of last 2 semi-annual flow rate audits (Pb)	N/A			
Precision & accuracy submitted to AQS	N/A			
Frequency of 1-pt. QC check (gases)	Biweekly			
Frequency of multi-point gas calibration	Quarterly			
Annual data certification submitted	N/A			
Changes in the next 18 months?	None			

## Appendix A

### Public Notice Documentation

The 2019 Network Plan was made available for public viewing on the Clean Air Branch web site as well at the following Department of Health locations:

- Clean Air Branch, 2827 Waimano Home Road, Rm. 130, Pearl City, Oahu
- Kauai District Health Office, Department of Health, 3040 Umi St., Lihue, Kauai
- Maui District Health Office, Department of Health, 54 High St., Rm. 300, Wailuku, Maui
- Hawaii District Health Office, Department of Health, 1582 Kamehameha Ave., Hilo, Hawaii
- Clean Air Branch-Kona, Keakealani Building, Department of Health, 79-1020 Haukapila St., Rm. 115, Kealahou, Hawaii

Public notification of the availability of the Plan for public inspection was published in the major newspapers on all counties. The public comment period was for 30 days from May 23 to June 22, 2019.

The public notice was published in the following newspapers for the following counties:

- Kauai County: The Garden Island
- City and County of Honolulu: The Star Advertiser
- Maui County: The Maui News
- Hawaii County: West Hawaii Today and Hawaii Tribune Herald (East Hawaii)

Documentations of the public notice are attached.

No comments to the plan were received.

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF  
PUBLIC NOTICE

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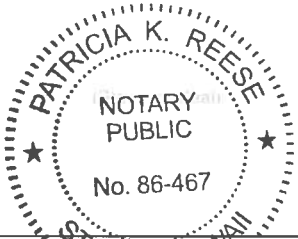
STATE OF HAWAII }  
} SS.  
City and County of Honolulu }

**Doc. Date:** MAY 23 2019 # **Pages:** 1

**Notary Name:** Patricia K. Reese **First Judicial Circuit**

**Doc. Description:** Affidavit of Publication

*Patricia K. Reese* MAY 23 2019  
Notary Signature Date



Gwyn Pang being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the

Honolulu Star-Advertiser 1 times on:  
05/23/2019

MidWeek 0 times on:

The Garden Island 0 times on:

Hawaii Tribune-Herald 0 times on:

West Hawaii Today 0 times on:

Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

*Gwyn Pang*  
Gwyn Pang

Subscribed to and sworn before me this 23 day of May A.D. 2019

*Patricia K. Reese*  
Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii  
My commission expires: Oct 07, 2022

Ad # 0001200568

**PUBLIC NOTICE**  
(Docket No. 19-CA-PA-10)

The Department of Health, State of Hawaii, is notifying all interested persons of the report, "2019 Air Monitoring Network Plan." This report, based on 40 CFR 58.10, describes Hawaii's ambient air monitoring network.

The report is available for public review during regular office hours, Monday through Friday, 7:45 a.m. to 4:15 p.m., at the following locations:

**Oahu:**

- Clean Air Branch, Department of Health  
2827 Waimano Home Road, Room 130  
Pearl City, HI 96782

**Hawaii:**

- Hawaii District Health Office, Department of Health  
1582 Kamehameha Ave., Hilo, Hawaii 96720
- Clean Air Branch - Kona, Keakealani Building, Department of Health  
79-1020 Haukapila Street, Room 115, Kealahou, Hawaii 96750

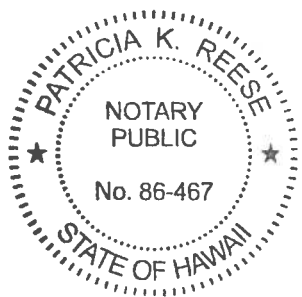
**Kauai:**

- Kauai District Health Office, Department of Health  
3040 Umi St., Lihue, Kauai 96766

**Mau:**

- Mau District Health Office, Department of Health (Environmental Health)  
54 High St., Room 300, Walluku, Maui 96793

The report is also available on the Clean Air Branch, Department of Health website at <http://health.hawaii.gov/cab>. Interested persons may submit written comments addressed to the Department of Health at the above address on Oahu, and must be postmarked or received by June 22, 2019. For additional information, contact Ms. Lisa Young of the Clean Air Branch in Honolulu at (808) 586-4200. (SA1200568 5/23/19)



SP.NO.: \_\_\_\_\_ L.N. \_\_\_\_\_

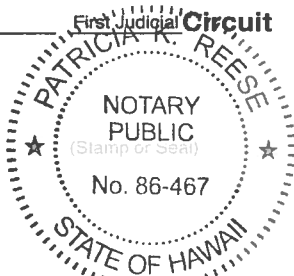
AFFIDAVIT OF PUBLICATION

IN THE MATTER OF  
PUBLIC NOTICE

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STATE OF HAWAII }  
 } SS.  
City and County of Honolulu }

Doc. Date: MAY 23 2019 # Pages: 1  
 Notary Name: Patricia K. Reese  
 Doc. Description: Affidavit of Publication  
 Notary Signature: [Signature] Date: MAY 23 2019



Gwyn Pang being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the

Honolulu Star-Advertiser 0 times on:  
 MidWeek 0 times on:  
 The Garden Island 0 times on:  
 Hawaii Tribune-Herald 0 times on:  
 West Hawaii Today 1 times on:  
 05/23/2019  
 Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

[Signature]  
Gwyn Pang

Subscribed to and sworn before me this 23 day of May A.D. 2019

[Signature]  
Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii  
My commission expires Oct 07, 2022

Ad # 0001201109

**PUBLIC NOTICE**  
(Docket No. 19-CA-PA-10)

The Department of Health, State of Hawaii, is notifying all interested persons of the report, "2019 Air Monitoring Network Plan." This report, based on 40 CFR 58.10, describes Hawaii's ambient air monitoring network.

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Pearl City, HI 96782

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- Hawaii District Health Office, Department of Health  
1582 Kamehameha Ave., Hilo, Hawaii 96720
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79-1020 Haukapila Street, Room 115, Kealahou, Hawaii 96750

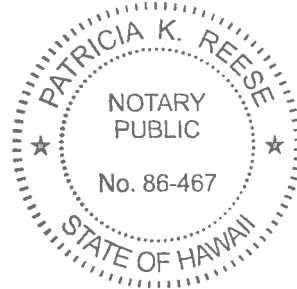
**Kauai:**

- Kauai District Health Office, Department of Health  
3040 Umi St., Lihue, Kauai 96786

**Mau:**

- Mau District Health Office, Department of Health (Environmental Health)  
54 High St., Room 300, Wailuku, Maui 96793

The report is also available on the Clean Air Branch, Department of Health website at <http://health.hawaii.gov/cab>. Interested persons may submit written comments addressed to the Department of Health at the above address on Oahu, and must be postmarked or received by June 22, 2019. For additional information, contact Ms. Lisa Young of the Clean Air Branch in Honolulu at (808) 588-4200.  
(WHT1201109 5/23/19)



SP.NO.: \_\_\_\_\_ L.N. \_\_\_\_\_

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF  
PUBLIC NOTICE

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STATE OF HAWAII }  
 } SS.  
City and County of Honolulu }

Doc. Date: MAY 23 2019 # Pages: 1  
 Notary Name: Patricia K. Reese First Judicial Circuit  
 Doc. Description: Affidavit of  
Publication  
 Notary Signature: *Patricia K. Reese* Date: MAY 23 2019  
 Notary Public Seal: PATRICIA K. REESE, NOTARY PUBLIC, No. 86-467, STATE OF HAWAII

Gwyn Pang being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the

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05/23/2019  
Hawaii Tribune-Herald 0 times on:  
West Hawaii Today 0 times on:  
Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

*Gwyn Pang*  
Gwyn Pang

Subscribed to and sworn before me this 23 day of May A.D. 2019

*Patricia K. Reese*  
Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07, 2022

Ad # 0001201112

**PUBLIC NOTICE**  
(Docket No. 19-CA-PA-10)

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Pearl City, HI 96782

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- Hawaii District Health Office, Department of Health  
1582 Kamehameha Ave., Hilo, Hawaii 96720
- Clean Air Branch - Kona, Keakealani Building, Department of Health  
79-1020 Haukapila Street, Room 115, Kealahou, Hawaii 96750

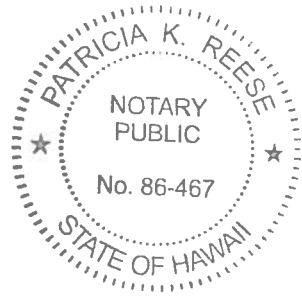
**Kauai:**

- Kauai District Health Office, Department of Health  
3040 Umi St., Lihue, Kauai 96766

**Maul:**

- Maul District Health Office, Department of Health (Environmental Health)  
54 High St., Room 300, Wailuku, Maui 96793

The report is also available on the Clean Air Branch, Department of Health website at <http://health.hawaii.gov/cab>. Interested persons may submit written comments addressed to the Department of Health at the above address on Oahu, and must be postmarked or received by June 22, 2019. For additional information, contact Ms. Lisa Young of the Clean Air Branch in Honolulu at (808) 586-4200. (TG1201112 5/23/19)



SP.NO.: \_\_\_\_\_ L.N. \_\_\_\_\_



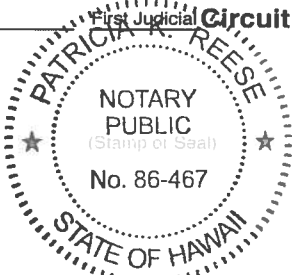
AFFIDAVIT OF PUBLICATION

IN THE MATTER OF  
PUBLIC NOTICE

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STATE OF HAWAII }  
} SS.  
City and County of Honolulu }

Doc. Date: MAY 23 2019 # Pages: 1  
 Notary Name: Patricia K. Reese  
 Doc. Description: Affidavit of  
Publication  
 Notary Signature: *Patricia K. Reese* Date: MAY 23 2019



Gwyn Pang being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the

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05/23/2019  
 West Hawaii Today 0 times on:  
 Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

*Gwyn Pang*  
Gwyn Pang

Subscribed to and sworn before me this 23 day of May A.D. 20 19

*Patricia K. Reese*  
Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii  
My commission expires: Oct 07, 2022

Ad # 0001201110

**PUBLIC NOTICE**  
(Docket No. 19-CA-PA-10)

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79-1020 Haukapila Street, Room 115, Kealahou, Hawaii 96750

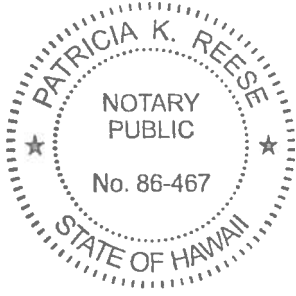
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The report is also available on the Clean Air Branch, Department of Health website at <http://health.hawaii.gov/cab>. Interested persons may submit written comments addressed to the Department of Health at the above address on Oahu, and must be postmarked or received by June 22, 2019. For additional information, contact Ms. Lisa Young of the Clean Air Branch in Honolulu at (808) 586-4200. (HTH1201110 5/23/19)



SP.NO.: \_\_\_\_\_ L.N.

**AFFIDAVIT OF PUBLICATION**

STATE OF HAWAII, }  
County of Maui. } ss.

Valerie Piano being duly sworn  
deposes and says, that she is an Advertising Clerk of  
the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a  
newspaper published in Wailuku, County of Maui, State of Hawaii;  
that the ordered publication as to \_\_\_\_\_

**PUBLIC NOTICE**

Docket No. 19-CA-PA-10

of which the annexed is a true and correct printed notice, was  
published 1 time in THE MAUI NEWS, aforesaid, commencing  
on the 23rd day of May, 2019, and ending  
on the 23rd day of May, 2019, (one day  
inclusive), to-wit: on \_\_\_\_\_

May 23, 2019

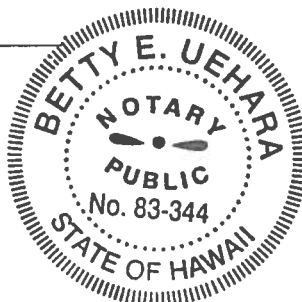
and that affiant is not a party to or in any way interested in the above  
entitled matter.

*Valerie Piano*

This 1 page PUBLIC NOTICE, dated  
May 23 2019,

was subscribed and sworn to before me this 23rd day of  
May, 2019, in the Second Circuit of the State of Hawaii,  
by Valerie Piano

*Betty E. Uehara*  
Notary Public, Second Judicial  
Circuit, State of Hawaii  
BETTY E. UEHARA



My Commission expires 09-26-2019

**PUBLIC NOTICE**

(Docket No. 19-CA-PA-10)

The Department of Health, State of Hawaii, is notifying all interested persons of the report, "2019 Air Monitoring Network Plan." This report, based on 40 CFR 58.10, describes Hawaii's ambient air monitoring network.

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Hilo, Hawaii 96720
- Clean Air Branch - Kona,  
Keakealani Building, Department of Health  
79-1020 Haukapila Street, Room 115  
Kealahou, Hawaii 96750

**Kauai:**

- Kauai District Health Office,  
Department of Health  
3040 Umi St., Lihue, Kauai 96766

**Maui:**

- Maui District Health Office,  
Department of Health  
(Environmental Health)  
54 High St., Room 300  
Wailuku, Maui 96793

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(MN: May 23, 2019)

## **Appendix B**

### **Documentation of EPA Approval For The Discontinuation of Pb Monitoring at the Kapolei NCore Station**

DAVID Y. IGE  
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D.  
DIRECTOR OF HEALTH

**CERTIFIED MAIL -  
RETURN RECEIPT REQUESTED**  
(#7017 0660 0001 0766 4094)

**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**  
P.O. Box 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to  
File:

18-483M&A CAB

July 12, 2018

Ms. Gwen Yoshimura  
Manager  
Air Quality Analysis Office (AIR-7)  
U.S. EPA, Region IX  
75 Hawthorne Street  
San Francisco, California 94105

Dear Ms. Yoshimura:

**SUBJECT: Non-Source Oriented Lead (Pb) Monitoring at National Core  
Network (NCore) Station  
Located At: Kapolei NCore Station (AQS ID No. 150030010)**

The Hawaii Department of Health, Clean Air Branch, requests the U.S. Environmental Protection Agency's approval to discontinue the subject monitoring via the Total Suspended Particular sampler. This request is made pursuant to 40 CFR Part 58.14 and recent revisions to 40 CFR Part 58, Appendix D. The Pb monitor has indicated attainment during the previous five (5) years with the calculated design value for Pb showing  $0.003 \mu\text{g}/\text{m}^3$  for the previous three (3) years of data (2015 to 2017), which is well below the National Ambient Air Quality Standards for Pb ( $0.15 \mu\text{g}/\text{m}^3$ ).

If there are any questions regarding this letter, please contact Ms. Lisa Young of my staff at (808) 586-4200.

Sincerely,

A handwritten signature in blue ink that reads "Marianne Rossio".

MARIANNE ROSSIO, P.E.  
Manager, Clean Air Branch

JY:rkb

Attachments

c: Randall Chang, Air Quality Analysis Office (AIR-7), U.S. EPA, Region IX  
Wanda Chang, Branch Chief, Environmental Health Analytical Services Branch,  
State Laboratories Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

NOV

8 2018

POSTMARK  
OCT 31 2018

OCT 29 2018

Ms. Marianne Rossio  
Manager, Clean Air Branch  
Hawaii Department of Health  
2827 Waimano Home Road, #130  
Pearl City, HI 96782

Dear Ms. Rossio:

Thank you for your submission of the Hawaii Department of Health (HDOH) *2018 Air Monitoring Network Plan* on June 29, 2018. We have reviewed the submitted document based on the requirements set forth in 40 CFR Part 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve the following system modification: the discontinuation of lead monitoring at Kapolei (AQS ID: 15-003-0010). More information about this approval is included in enclosure B.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information provided does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. The first enclosure (*A. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. Items highlighted in yellow are those EPA Region 9 is not acting on, as we either lack the authority to approve the specific item, or we have determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met. Items highlighted in green in enclosure A require attention in order to improve next year's plan.

All comments conveyed via this letter and enclosures should be addressed prior to submittal of next year's annual monitoring network plan to EPA.

11/20

## **B. EPA Approval of the Discontinuation of Lead Monitoring at Kapolei**

This enclosure provides the U.S. Environmental Protection Agency's (EPA's) review and approval for HDOH's discontinuation of lead (Pb) monitoring at the Kapolei NCore site (AQS ID: 15-003-0010).

On July 12, 2018, HDOH sent a letter to EPA with a description of this system modification request. HDOH began monitoring for Pb at Kapolei in 2012. The highest three-month rolling average measured from the start of monitoring through June 2018 was less than  $0.01 \mu\text{g}/\text{m}^3$ . As stated in the preamble to the revised monitoring rule (81 FR 17259), EPA anticipated that waiver requests for shutdown of Pb monitoring at urban NCore sites would be received based on three years of data showing design values well below the 2008 Pb National Ambient Air Quality Standards (NAAQS).

EPA approves the shutdown based on a case-by-case approval per 40 CFR 58.14(c). Discontinuance does not compromise data collection needed for implementation of the Pb NAAQS, and the requirements of Appendix D will continue to be met after this monitor is close as Pb monitoring is no longer required at urban NCore sites.

Please include your July 12, 2018 request letter and this response in your next network plan.