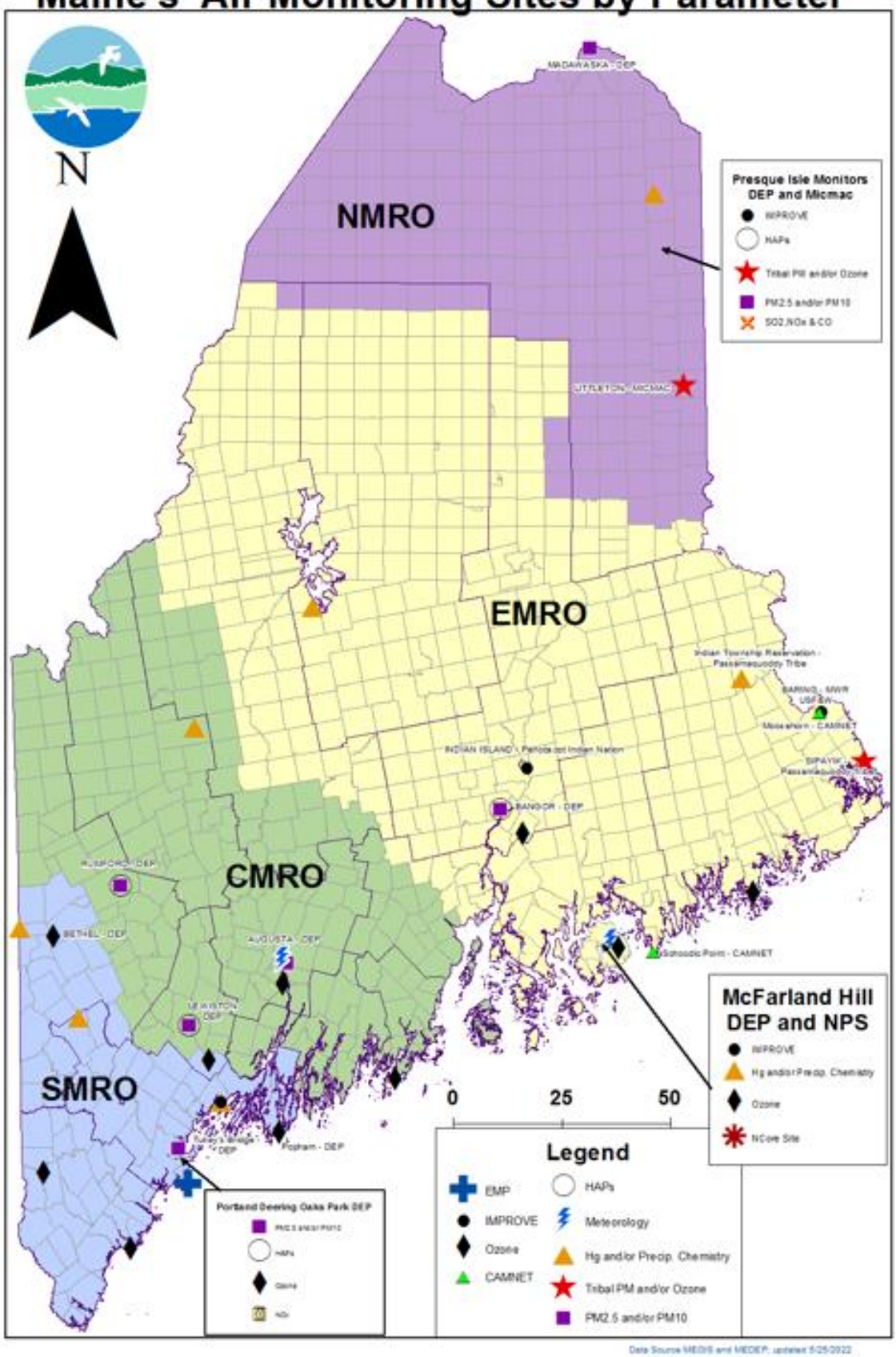
Annual Air Monitoring Plan 2023

- Update -

Maine Department of Environmental Protection
Bureau of Air Quality
January 25, 2023

Maine's Air Monitoring Sites by Parameter



Introduction

The Maine Department of Environmental Protection (DEP) Bureau of Air Quality (BAQ) operates and maintains a network of air samplers in the state to evaluate ambient air quality in Maine. The Code of Federal Regulations (CFR) and the Environmental Protection Agency (EPA) requires state and local agencies to conduct ambient air quality monitoring to determine whether the ambient concentrations of pollutants in the state exceed ambient air quality standards. The State of Maine remains in attainment with all ambient air quality standards. Air quality data also document trends that may be occurring in the concentrations of these pollutants, support the Maine DEP in providing background information for the licensing program and, when necessary, the development of pollution control strategies. For many of the monitored pollutants, the BAQ maintains an automated polling and reporting technology that provides continuous hourly data to the public and scientific community. These data are also used for timely forecasting of regional air quality conditions for Maine citizens and visitors to the state.

The Maine BAQ has been monitoring air quality in Maine since the DEP was formed in 1972, working in partnership with the EPA to uphold the tenets of the 1970 Clean Air Act and subsequent amendments. The BAQ is responsible for most of the ambient air quality monitors located in Maine. Additional monitoring is conducted by several federal agencies such as the EPA, the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, as well as by several of the Indian tribes in Maine. In 2007, Maine BAQ entered into a Primary Quality Assurance Organization (PQAO) agreement with the Aroostook Band of Micmacs, the Passamaquoddy Tribe at Pleasant Point, and the Penobscot Indian Nation in Maine to conduct air monitoring with shared quality assurance plans, practices, and procedures.

The air monitoring program in Maine has evolved as air quality standards have tightened, scientific knowledge has improved, the levels of concern for different pollutants have evolved, and the technology to monitor these pollutants has developed. The DEP initially concentrated resources on neighborhood monitoring of air pollutants, primarily from local sources. As the impact on the ambient environment from local sources was reduced, the state monitoring network began to focus on establishing statewide background levels and improving air quality forecasts.

Maine is a state with many regions of varying topography. Pollutant impacts in one area of the state may be very different from pollutant impacts in another area. Mountain valleys in the western part of the state may experience higher pollution levels at times because of atmospheric inversions, which trap ground-level pollution in the valleys for extended periods, whereas the coastal locations, with higher dispersion of pollutants due to the constant onshore and offshore winds, may not. Aroostook County may record higher particulate levels because of widespread farming operations and the type of soil found in the county. Southern Maine may record higher ozone levels because of air masses originating from other areas of the U.S. Some pollutants monitored may come from the other side of the world, such as particulates from volcanic eruptions, large forest fires, or emissions from less-controlled sources in some of the rapidly developing countries.

The DEP is also aware of heightened interest in air quality issues by Maine's citizenry. Many internet sites provide real-time or near real-time ambient air quality data. Low-cost air samplers are on the market and becoming more readily available. As a result, the citizens the DEP serves are more informed and frequently more engaged in air quality issues than ever before. That expanding knowledge is creating demand for broadened air quality monitoring across the state and increased interest in monitoring for non-criteria pollutants, such as Hazardous Air Pollutants (HAPs) and Aeroallergens.

In addition, the Maine Climate Council came into being with a charge "to address a number of critical and pressing issues relating to the effects of climate change on the State, its communities and its environment and natural resources, must commence work on those issues as soon as is possible….." Among the findings of this Council is the lack of active ambient air quality monitoring in many Maine counties. Though the 2023 Ambient Air Monitoring Plan does not define a plan to address the concerns of the Climate Council, it does acknowledge the need to move in the direction of establishing monitoring equipment in under-served regions of the state and to develop a plan to achieve the goal of assessing ambient air quality statewide.

The DEP must also deal with changing federal regulations. As more data are collected and more health study results are published, the impacts of various pollutants are reviewed. Pollution standards and controls may need to be updated to reflect revised recommendations. The EPA is required to review the National Ambient Air Quality Standards (NAAQS) every five years. Changing standards may mean the implementation of additional monitoring requirements. A list of the current State and National Ambient Air Quality Standards (NAAQS) is presented below.

National Ambient Air Quality Standards (NAAQS)

from: https://www.epa.gov/criteria-air-pollutants/naaqs-table
(as of February 2021)

The EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" air pollutants. The current standards are listed below: parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu g/m^3$	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 $\mu g/m^3$ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in future rulemaking.

(4) The previous SO2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Network Overview

By July 1st of each year, the DEP is required to submit to the EPA a proposed monitoring plan for the next calendar year. In 2006, the EPA also required states to make their proposed plan available for a 30-day comment period prior to submittal to the EPA. The DEP annual monitoring plan is constantly subject to change as standards are revised, new pollutants of concern are identified, monitoring sites are no longer acceptable to property owners, and staffing and budget cuts affect the ability to meet a program objective. Consequently, the monitoring plan proposed in this document is our best effort to project what we will be able to do next year given our current standards, staffing, and budget constraints.

The Maine DEP BAQ monitors air quality as required by the 1970 Clean Air Act and subsequent amendments, the Code of Federal Regulations (CFR), and the Federal Environmental Protection Agency (EPA.) Much of the monitoring effort focuses on the six criteria pollutants: ground level ozone, particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead.

Ozone monitoring continues to be a priority for DEP. Ozone at ground level can trigger a variety of health effects, particularly in young children, the elderly, and those with existing health conditions. It is also harmful to vegetation, buildings, and infrastructure. Ground level ozone is not usually emitted directly into the air from any source, but it is created through the presence of sunlight acting on other airborne pollutants like those found in vehicle exhaust, chemical solvents, and gasoline vapors. Since the Clean Air Act of 1970, Maine has operated ozone monitoring stations at many locations, each selected to optimize the assessment of ozone levels across the state.

Quantification of fine airborne particulate matter ($PM_{2.5}$) is another major component of the DEP ambient monitoring program. Particulate matter (PM) is the term used for any airborne mixture of solid particles and liquid droplets, such as those found in soot, dust, and smoke. The particles can be large enough, like pollen, to be seen with the unaided eye, while others are so fine that they can only be detected with electron microscopes. Of particular concern are those particles, generally 10 microns in size (PM_{10}) and less, which are inhalable, for they can become lodged in the lungs and PM2.5 particles can be respired deeply into the lungs. Fine particulate ($PM_{2.5}$) monitoring in Maine has evolved since 1999 when the program was established. The Total Suspended Particulate (TSP) and PM_{10} program in Maine began shortly after the DEP was established in 1972. DEP efforts have focused on introducing more of the continuous $PM_{2.5}$ monitors into the network. Presently, most monitoring sites where particulate sampling takes place include a continuous $PM_{2.5}$ monitor. In addition, the DEP is intending to increase mobility with particulate monitoring in order to be more responsive to "localized" air quality issues.

Nitrogen dioxide (NO_2) is one of a group of highly reactive gasses known as "oxides of nitrogen," or "nitrogen oxides (NO_x)." EPA's National Ambient Air Quality Standard uses NO_2 as the term representing the larger group of nitrogen oxides that include NO, NO_2, NO_x, and NO_y. Nitrogen Oxide (NO) is created during the combustion stage of engine and boiler operations. The NO, NO_2, NO_x, and NO_y forms of nitrogen oxides react at different rates in the atmosphere in a process that is dependent on sunlight and temperature. NO_x is measured at ground level while NO_y is the reactive form measured at ten meters above ground level. In addition to contributing to the formation of ground-level ozone and fine particle pollution, the oxides of nitrogen are linked with a number of adverse effects on the respiratory system.

Sulfur dioxide (SO_2) and a group of other sulfur oxides, collectively known as SO_x, are emitted into the atmosphere from the burning of fossil fuels by power plants, industrial facilities, ships, locomotives, and heavy equipment. Short-term exposure to SO_2 and SO_x compounds can harm the respiratory system. Children, the elderly, and those with asthma or other breathing troubles are particularly sensitive to these sulfur compounds.

Carbon monoxide (CO) is another harmful gas emitted from combustion processes. Most of this colorless, odorless, yet extremely harmful gas comes from mobile sources like cars and trucks and in the United States is found primarily in and around large urban areas. CO reduces the amount of oxygen that can be absorbed by the body, particularly the heart and brain. At high concentrations, CO can lead to death.

Lead (Pb) in the atmosphere is emitted as particles - mainly from smelters, ore and metal processing facilities, waste incinerators, public utilities, and lead-acid manufactures. Piston aircraft continue to use leaded aviation fuel. Since tetraethyl lead was removed from motor vehicle fuel, the ambient levels of lead in Maine dropped significantly and concentrations are currently at or below minimum detection limits for most Pb monitors.

The DEP also tests the ambient air for many non-criteria yet hazardous air pollutants (HAPs). Based on the HAPs testing in ambient air, a priority list of hazardous pollutants was tabulated and DEP has established background concentrations for several of the pollutants on the list. The list is modified as additional data becomes available.

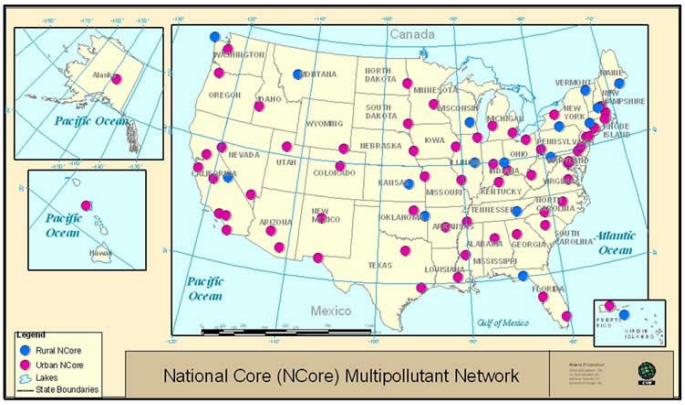
The following section details the individual networks for the various parameters monitored in Maine, any changes proposed for monitored parameters, and identifies future needs for monitoring. Though the spirit and intent of this document is to specify how the network will appear and function for calendar year 2023, the potential exists for additional short-notice changes to the network. If circumstances dictate a change to the network, proposed changes will still be made available for public review and comment prior to implementation.

Monitoring Networks

Most of the sites in the Maine air monitoring network are designated as **SLAMS** - State & Local Air Monitoring Stations. The SLAMS in Maine are part of a standardized, national network administered by the EPA in accordance with the Clean Air Act and subsequent Federal Regulations. Every state must monitor for the criteria air pollutants, following strict criteria set by the EPA that govern all aspects of the monitoring and reporting process. SLAMS sites must meet all stringent monitor siting requirements and utilize specified equipment types. The pollution monitoring instruments at these sites must be approved by the EPA and be designated as either Federal Reference Method (FRM) or Federal Equivalence Method (FEM). In addition, SLAM site operators must follow all quality assurance criteria and must submit detailed quarterly and annual monitoring results to EPA. Data from SLAMS stations are used as one of the factors to define attainment/nonattainment areas and to determine if an area is meeting the NAAQS.

NCore Network

Established in 2011, the **NCore** (National Core) network is comprised of a specialized subset of SLAMS sites.



https://www3.epa.gov/ttn/amtic/ncore.html

The purpose of the NCore network, in addition to aiding in the determination of nonattainment/attainment areas, is to provide data to the scientific community, from a specific suite of monitors, that is used to make health and ecosystem assessments, to establish long-term trends for criteria and certain precursor pollutants, and to develop and evaluate pollutant transportation models. The NCore site in Maine, located at McFarland Hill in Acadia National Park, near Bar Harbor, is designated as a rural or background site. At McFarland Hill the following suite of parameters is monitored:

Air Pollutant Parameters Monitored at NCore Sites

$PM_{2.5}$ speciation	Organic and elemental carbon, major ions and trace metals (24-hour average; every 3rd day); IMPROVE or CSN
$PM_{2.5}$ FRM mass	Filter-based 24 hr. average every 3rd day
Continuous $PM_{2.5}$ mass	1-hour reporting interval; FEM
$PM_{(10-2.5)}$ mass - aka PM_{Coarse}	Filter-based 24 hr. average every 3rd day or Continuous
Ozone (O_3)	Continuous, capable of trace levels (low ppm)
Carbon monoxide (CO)	Continuous, capable of trace levels (low ppm)
Sulfur dioxide (SO_2)	Continuous, capable of trace levels (low ppb)
Nitrogen oxide (NO)	Continuous, capable of trace levels (low ppb)
Total reactive nitrogen (NO_y)	Continuous, capable of trace levels (low ppb)
Surface meteorology	Continuous wind speed and direction (reported as "Resultant"), temperature, RH, solar, and rainfall

CASTNET:

CASTNET (Clean Air Status and Trends Network) is a nationwide monitoring operation that collects air pollutant concentrations to evaluate the effectiveness of national and regional emission control programs, to determine compliance with the National Ambient Air Quality Standards for ozone, and to determine rural trends in ozone, nitrogen and sulfur concentrations. It was established in 1991 as a cooperative program with the EPA, the National Park Service, and state and local partners. The CASTNET site location in Maine is at Acadia National Park. The CASTNET site in Ashland was shut down in May 2022. The data are now incorporated in several regional air quality models. https://www.epa.gov/castnet

RadNet:

RadNet has more than 130 radiation air monitors in 50 states. Maine has two RadNet sites, one in Portland operated by DEP, and one in Orono. https://www.epa.gov/radnet The EPA's Radiation Network runs 24 hours a day, 7 days a week collecting near-real-time measurements of gamma radiation. The RadNet program monitors the nation's air, precipitation and drinking water to track radiation in the environment. Over time, RadNet sample testing and monitoring results show the fluctuations in background levels of environmental radiation. The RadNet system will also detect higher than normal radiation levels during a radiological incident.

Gamma radiation comes from many different radioactive elements, both natural and man-made. Able to penetrate several feet of concrete or a few inches of lead, gamma particles can pose a serious health threat inside and outside

the body and the radiation can be lethal depending on the amount received. Scientists use the properties of gamma radiation to detect the presence of radioactive elements. RadNet stationary air monitors measure gamma radiation emitted from airborne radioactive particles as they collect on the exposed filters. Tracking gamma radiation over time helps to create a picture of the background levels and allows EPA scientists to detect anomalies.

The Maine DEP operates other **Special Purpose Monitors** around the State. These are often set at locations to monitor specific pollutants for a period, usually not exceeding two years, to investigate localized complaints or to reconnoiter a location for a possible long-term site.

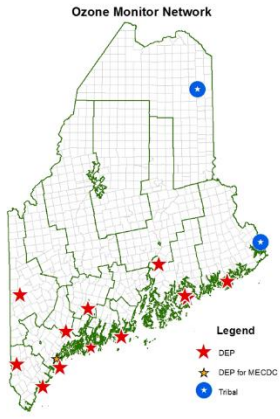
The Deering Oaks Park site in Portland is a special purpose site. It is in a location, determined by the American Lung Association, as being representative of the greater Portland area. Monitoring results at the site are used to provide data useful in tracking relationships between pollutant levels and emergency department visits. Since the Deering Oaks Park location does not meet SLAMS siting requirements, the ozone and nitrogen dioxide data are not used in determining attainment or nonattainment status for criteria pollutants. The information is useful however for other purposes such as quantifying urban air quality in Maine. This site may be relocated due to its use as a common staging area for construction equipment and earthen materials storage. Frequent construction activity in the area means that gaseous and particulate data is influenced by movement of equipment and material proximate to the shelter resulting in data not necessarily representative of Greater Portland.

The EPA, National Park Service, U.S. Fish and Wildlife Service (USFWS) and the U.S. Geological Survey each operate monitoring sites in Maine as part of their respective national networks.

The Aroostook Band of Micmacs, the Passamaquoddy Tribes at Indian Township and Sipayik, and the Penobscot Nation each operate several monitoring sites in Maine. These are independently managed monitoring sites but each tribe has agreed to operate their sites in accordance with Maine DEP Quality Assurance Project Plans.

Other long-term specialized networks including IMPROVE, MDN, CAMNET and EMP are discussed in more detail below.

Ozone Network:



Maine DEP currently operates ground level ozone monitoring sites throughout the state in accordance with SLAMS network requirements. Three of the Maine DEP sites operate year-round while the remainder are "seasonal sites." The EPA operated an ozone site in Ashland as part of the CASTNET program up to May 2022 when that site was shut down. Prior to 2020 a CASTNET ozone site was operated in Howland. The Portland Deering Oaks site is within a metropolitan area and the data collected here is used for health studies and not for regulatory purposes. The remaining year-round ozone monitoring sites are in Bar Harbor and Cape Elizabeth. Two other ozone sites in Maine are operated by Maine Indian tribes.

The monitoring shelter at Port Clyde – Marshall Point was replaced shortly after the start of the 2020 ozone monitoring season. The old shelter was in decrepit condition and was overdue for removal. CMRO staff negotiated with the municipality and the Historic Preservation Commission for approval to establish a weatherproof enclosure that will house the ozone monitoring equipment.

In 2020 the Gardner Pray Street School shelter was moved to accommodate a construction project on that property. The shelter was moved a short distance to the Gardiner High School property. This is a location used previously by the BAQ for ozone monitoring.

The Hollis – West Buxton site was not started up in 2021 and the shelter removed from that location. The termination of this site was done to allow Southern Maine air monitoring staff to focus more fully on a special study in South Portland and Portland. This decision was necessary to immediately relieve Southern Maine staff of the responsibility to operate and maintain the equipment at the site, as well as process the data from it, so those resources could be redirected to other priority needs in their region, and the severe resource constraints that now exist in this region. Our Chief Meteorologist has determined that the data we've collected at the Hollis – West Buxton site is less important to our ozone forecasting needs than other sites in the Southern Maine Region. In addition, there were no exceedances at that site of the 70 ppb NAAQS and the number of "moderate" ozone days monitored at that site were measurably less than other ozone monitoring sites in the Portland MSA. Given we continue to operate three regulatory compliant ozone monitors in the region, the loss of ozone data from Hollis – West Buxton is not likely to detrimentally affect our understanding of ozone transport and ozone concentration levels in the region.

In September 2021, the Passamaquoddy Tribe moved their ozone monitoring equipment into a new shelter situated 53.4 meters (175 feet) from their old shelter. The new shelter is situated on property where the site operator doesn't have assurance that it can remain. Consequently, the old shelter will be maintained in the event the ozone monitor may have to be restored there.

Maine DEP, with the cooperation of the Department of Agriculture, Conservation and Forestry (Maine DACF) installed an ozone site at Popham Beach State Park in 2022. This installation satisfies a long-standing need for a coastal site in between Cape Elizabeth and Port Clyde.

Although the federally required ozone season for Maine runs from April through September, most of the Maine sites now operate from the first of March through the first of October, weather permitting. The Maine sites are scattered throughout the state, with most of them situated along the coast and in southern Maine. The highest ozone concentrations tend to occur along the coast because plumes of contaminated air are often transported into the Gulf of Maine from metropolitan areas to the south. These air masses are subsequently blown ashore and carried inland. In addition to determining attainment/nonattainment status, the ozone sites in Maine collect data that is used by the mapping and forecasting programs to provide the public and scientific community with quality data in a timely fashion and to forecast air quality alerts when necessary.

Ozone data collected at Maine sites begins in March, a month earlier than the required start of our official ozone season yet coinciding with the official start of the season for New Hampshire, provides critical information about ozone transport in the western region of Maine during the weeks before ozone-scrubbing leaves begin to appear on deciduous trees, and should be included in any enhanced ozone monitoring network.

Proposed changes for calendar year 2023: The building in Jonesport housing monitoring equipment may be demolished in 2022. The Maine DEP received permission from the US Coast Guard to establish a shelter at the Jonesport Coast Guard Station. A monitoring shelter will be established in the parking lot for that facility in time for the start-up of the 2023 ozone monitoring season. This new site will need to be evaluated by EPA staff before receiving final approval. If not done in 2022, the Portland Deering Oaks site may be moved. The present location is a staging area for construction equipment and materials storage. The activity immediately adjacent to the shelter frequently has direct impact on the analyzers and sampling equipment compromising the representativeness.

Ozone Monitoring Site Summary

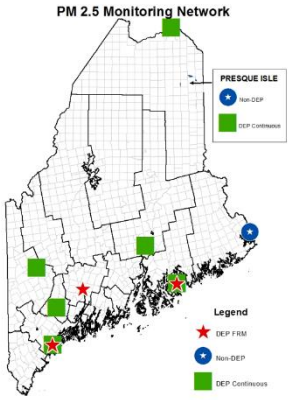
Ozone Monitoring Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor - McFarland Hill	NCore & CASTNET	Transport, Background	Continuous
Bar Harbor - Top of Cadillac Mountain	SLAMS	Transport	Continuous - Seasonal

Bethel, Smith Farm Road	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Cape Elizabeth - Two Lights State Park	SLAMS & EMP	Transport	Continuous
Durham - Fire Station - Route 9	SLAMS	Max. Concentration	Continuous - Seasonal
Gardiner – Gardner High School	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Holden - Rider Bluff	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Jonesport – Coast Guard Station[1]	SLAMS	Max. Concentration	Continuous - Seasonal
Kennebunkport - Parsons Way	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Perry - Pleasant Point/Sipayik, 176 County Road	Tribal	-	Continuous
Phippsburg – Popham Beach State Park	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Port Clyde - Marshall Point Lighthouse	SLAMS	Max. Conc., Transport	Continuous - Seasonal
Portland - Deering Oaks	SPMS	High Pop. Exposure	Continuous
Presque Isle - 8 Northern Road	Tribal	-	Continuous
Shapleigh - Ball Park, West Newfield Road	SLAMS	Max. Conc., Transport	Continuous - Seasonal

1 – New site. Replaces the Jonesport Public Landing site.

$PM_{2.5}$ Network:

In 1999 the Maine DEP began a $PM_{2.5}$ monitoring program, using filter-based samplers that met the Federal Reference Method (FRM), with 15 sites started up during the first year of operation. Three years of data collection demonstrated compliance with the $PM_{2.5}$ standard at all the sites, after which some of the samplers were relocated or modified to collect PM_{10} samples. In 2022 the Maine DEP monitored for $PM_{2.5}$ using the filter-based FRM samplers at 7 sites. In 2022 continuous FEM $PM_{2.5}$ monitoring was conducted at 7 sites operated by Maine DEP. Three continuous monitors were operated by the Tribes. All the current sites continue to comply with the $PM_{2.5}$ standard remain in operation to gather trend data, document future attainment status, and forecast ambient air quality. $PM_{2.5}$ filters can also be analyzed to determine levels of some of the hazardous air pollutants that are on the priority list.



The DEP initiated continuous monitoring of $PM_{2.5}$ in 2000 using Tapered Element Oscillating Microbalance (TEOM) samplers. The continuous monitors generate hourly average data that are available in near real-time and very useful in helping to forecast air quality. TEOM sites were set up in Bangor, Bar Harbor, Greenville, Lewiston, and Portland. The Passamaquoddy Tribe operated a TEOM monitor in Sipayik, but due to sampler failure and lack of supplies that monitor could not be restarted. In October 2021 the Maine DEP helped establish a BAM in a new shelter 175 feet from the shelter where the TEOM was housed. The Micmac Tribe operates TEOM monitors in Presque Isle and Littleton. The TEOM models used in Maine were not an EPA-approved Federal Equivalent Method (FEM), and the DEP did not pursue the required analysis to exclude the use of their data for comparison with the $PM_{2.5}$ standards.

In 2012, the TEOMs were nearing the end of their expected life cycle, so that year the Maine DEP initiated a program to procure new continuous $PM_{2.5}$ monitors known as Beta Attenuation Monitors (BAM). The BAMs are an EPA-approved FEM, so Maine DEP monitors $PM_{2.5}$ NAAQS using both the filter-based FRM and the continuous FEM monitors throughout the state. BAMs replaced the TEOMs in Lewiston, Bangor, and Bar Harbor. In 2018, the Met One BAM in Bar Harbor was replaced with a Thermo Fisher Scientific Instruments model 5030i continuous $PM_{2.5}$ sampler, which needed repairs in 2022 and was briefly replaced with a BAM for several months before reinstallation. The TEOM in Portland remained in operation alongside the new BAM for comparison of methods until the end of June 2015. The BAMs were installed to supplement the filter-based FRM samplers at locations in Madawaska, Presque Isle, and Rumford. In November 2015, a “stand-alone” continuous

$PM_{2.5}$ monitor was started up at a special purpose monitoring site in Carrabassett Valley. The DEP determined that the PM data collected at the Carrabassett Valley was not significantly different from the data being collected at Rumford, so the special purpose monitoring project in Carrabassett Valley was shut down in early September 2017. In 2020 the Maine DEP replaced the existing shelter in Rumford with a larger shelter to accommodate two additional continuous $PM_{2.5}$ monitors (Thermo Fisher Scientific Model 5030i; Teledyne API Model 640). The purpose of this exercise was to evaluate the Model 5030i and Teledyne Model 640 against the Met One BAM real-time in the field. This unofficial collocation provided useful evaluative information with respect to future equipment purchases as the current Met One BAM units are retired. The filter-based FRM sampler was shut down at the end 2020 having satisfied collocated sampler needs for the three continuous methods.

The continuous, hourly averaged $PM_{2.5}$ records are reported in near real time to both the Maine DEP web page and the EPA AirNow web site. Access to this continuous $PM_{2.5}$ data has permitted better forecasting for particulate levels under specific weather conditions for many parts of the state. The Rumford site was chosen to meet a long-standing interest in having real-time continuous data from western mountain valley locations. Complex meteorological conditions in Maine's western mountains and the subsequent dispersion of fine particulates like wood smoke are of particular interest to the DEP as it strives to produce better air quality forecasts in a region with few monitors and sparse data.

The DEP designated its continuous $PM_{2.5}$ monitors as the Primary sampler at PM sites where they are currently operational, except for the NCore site at Bar Harbor – McFarland Hill. This allowed the termination and removal of filter-based PM samplers at three sites (Madawaska; Bangor; and Lewiston). The FRM sampler will continue to be operated on a 1/6-day schedule Presque Isle Riverside as collocated sampler for the BAM $PM_{2.5}$ sampling method. Filter based sampling continues at McFarland Hill on a 1/3-day schedule. In 2020 the Thermo Model 2025 "Sequential" sampler previously operated there was replaced with two Thermo Model 2000i single sampler units. These are operated on a 1/6-day schedule, but the sample dates are staggered 3 days apart from each other to permit 1/3-day filter-based data collection to satisfy NCore sampling requirements. The replacement of Thermo Model 2025 sampler at McFarland Hill relieved the BAQ of the collocation requirement for that sampling method (Method 145). The collocated samplers for Method 145 were located at Portland Deering Oaks (PDO). The two Thermo model 2025i samplers at PDO were replaced with a single Thermo model 2000i early in 2020.

In 2021 the DEP obtained a number of low-cost Purple Air PM samplers on loan from EPA Region 1. The samplers were established at sites around the state as follows:

- One sampler in Washburn to assess effects of agriculture activity on ambient particulate matter.
- Three samplers in Bar Harbor situated at different elevations to assess potential differences of particulate matter concentrations based on elevation above sea level.
- Three samplers in the Waterville – Winslow area in response to an air quality complaint.
- One sampler in Rumford collocated with a BAM and another low-cost sensor on loan from the vendor (Clarity Io) as part of a comparative study.
- Two samplers in South Portland and Portland to supplement the VOC monitoring project in those communities.

DEP staff gained valuable experience from the operation of these samplers for possible use in screening studies around the state in response to citizen air quality inquiries or complaints about air quality.

The low-cost sensor established in Rumford was operated along with another low-cost sensor provided to the DEP from the manufacturer. The data collected from both low-cost sensors were compared with the continuous $PM_{2.5}$ data collected via the FEM Met One BAM sampler and 24-hour average data from the continuous samplers were compared with filter-based data collected via the FRM (Thermo model 2000i) sampler. The Clarity Io device was returned to the manufacturer in June 2021. The Purple Air sampler remained in operation for much of 2021. The results of the comparative study will be made available in the near future.

The samplers at Washburn and Waterville were shut down by the end of 2021. Two of the three samplers in Bar Harbor were operated into 2022.

The Rumford sampler was moved to a new location further down the Androscoggin River valley. A second Purple Air sampler may be established at a location in the north part of town. The purpose of the sampler moves is to assess the potential movement of particulate plumes up and down the river valley. The DEP intends to continue this effort in the winter of 2022 – 2023.

Proposed calendar year 2023 changes for the $PM_{2.5}$ network:
Filter-based sampling entails additional expense for filter purchase and for filter processing by the Metrology Laboratory. The DEP anticipates some savings with operating expense may be achieved by shutting additional FRM samplers down. The DEP applied for a one-time direct award from EPA under the American Rescue Plan. Maine's application was favorably viewed and was awarded funds to undertake the following particulate air monitoring upgrades:

- Replace FRM samplers at the Tukey's Bridge Site in Portland with a continuous sampler.
- Replace an FRM sampler at the Presque Isle Background site with a continuous sampler.
- Upgrade the Augusta Lincoln Street School with a continuous sampler to collocate with method 143.
- Upgrade the Presque Isle – Riverside site with a new continuous sampler.
- Upgrade the Madawaska Public Safety Building site with a new continuous sampler.
- Upgrade the Bar Harbor – McFarland Hill site with a new continuous sampler.

Some of these replacements and upgrades may take place in calendar year 2022.

DEP staff will review the potential benefits from discontinuing $PM_{2.5}$ sampling with the FRM (Method 143) altogether. If the decision is reached to terminate sampling with FRM samplers, that decision will be made available for public review and comment. The Met One BAM will be kept operational and will not be affected by any decision related to the FRM sampler.

The DEP proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska to identify the possibility atmospheric inversions during the winter and early spring. Presque Isle and Madawaska experience occasional short duration particulate events under certain atmospheric conditions (calm winds, lack of cloud cover, diurnal temperature swings) that appear to be due to atmospheric inversions. Having near ground level temperature data coupled with temperature data between 10 to 15 meters above ground would provide direct measure of the temperature gradient above the ground surface.

Establish PM sampler on mobile trailer: The DEP acquired a trailer for the purpose of providing a portable platform to support sampling equipment. The intention is to facilitate quick transport of air sampling equipment in response to citizen complaint regarding air quality; citizen inquiry about air quality; and as a screening tool to assess air quality in areas of the state where little or no ambient air quality data exist.

The following table lists the particulate monitoring sites in Maine reflecting the sampling method changes made in 2022 and 2023. Primary sampler is in bold.

$PM_{2.5}$ Monitoring Site Summary

$PM_{2.5}$ Monitoring Site Address	**Site Type**	**Monitoring Objective**	**Sampling Method and Frequency**
Augusta – Lincoln Street School	SLAMS	200K Pop. Coverage[1]	FRM[2], every 6 days
Augusta – Lincoln Street School	SLAMS	Collocated	FRM[2], every 6 days
Augusta – Lincoln Street School	SLAMS	Collocation	FEM[3], **Continuous**

Bangor – Mary Snow School	SPM	200K Pop Coverage/AQI Forecasting/Mapping[1]	FEM[4], **Continuous**
Bar Harbor – McFarland Hill	NCore	Transport	**FRM**[2], every 3 days
Bar Harbor – McFarland Hill	SLAMS	Mapping	FEM[3], Continuous
Lewiston – Country Kitchen Lot	SLAMS	200K Pop. Coverage/ Mapping[1]	FEM[4], **Continuous**
Madawaska – Public Safety Bldg.	SLAMS	High Pop. Exposure/ AQI Forecasting/Mapping	FEM[3], **Continuous**
Littleton	Tribal	Mapping	TEOM, Continuous
Perry – Pleasant Point/Sipayik, 176 County Road	Tribal	Mapping	FEM[4], Continuous
Portland – Deering Oaks	SLAMS	MSA of 200-500K	FEM[4], **Continuous**
Portland – Deering Oaks	SLAMS	MSA of 200-500K	FRM[2], every 6 days
Portland – Tukey's Bridge	SLAMS	High Traffic	FEM[3], **Continuous**
Presque Isle – 8 Northern Road	Tribal	Mapping	FEM[4], Continuous
Presque Isle – Regional Office	SLAMS	Background	FEM[3], **Continuous**
Presque Isle – Riverside Street	SLAMS	200K Pop Coverage/AQI Forecasting/Mapping[1]	FEM[3], **Continuous**
Presque Isle – Riverside Street	SLAMS	Collocated	FRM[2], every 6 days
Rumford – Rumford Avenue	SLAMS	High Pop. Exposure/ AQI Forecasting/Mapping[1]	FEM[4] -, **Continuous**
Rumford – Rumford Avenue	SLAMS	High Pop. Exposure	FEM[4], Continuous

1 - 200K Pop. – 200,000 Population; AQI – Air Quality Index; MSA – Metropolitan Statistical Area
2 – Monitor method: RFPS-1006-143 Thermo-Fisher Scientific Model 2000i
3 - Monitor method EQPM–0516 –238 Teledyne T640x
4 – Monitor method: EQPM – 0308-170 Met One Instruments Model 1020 BAM

PM Speciation Network (IMPROVE)

Many stunning and breathtaking vistas at National Parks and Wilderness Areas may be lost or diminished due to the haze formed by air pollutants. These light scattering hazes cause discoloration, loss of texture, and reduced visual range. Recognizing the importance of visual air quality, Congress included legislation in the Clean Air Act to prevent and remedy visibility impairment. To aid in the implementation of this legislation, the Interagency Monitoring of Protected Visual Environments (IMPROVE) program was initiated in 1985. The Maine DEP operates one IMPROVE site in Freeport, Maine at Wolfe's Neck Farm. The National Park Service operates an IMPROVE site in Maine's designated Class 1 visibility area in Acadia National Park. The US Fish and Wildlife Service operates an IMPROVE site in Maine's designated Class 1 visibility area in the Moosehorn National Wildlife Refuge in Baring. IMPROVE sites are also operated by the Penobscot and Micmac Tribes on Indian Island and in Presque Isle, respectively.

In 2015 the EPA reassessed each of the IMPROVE sites to optimize the Chemical Speciation Network. As a result of that process, the Bridgton site was discontinued on January 1, 2016. The DEP understands the continued value and importance of the IMPROVE network, and if BAQ funds become available, the Bridgton monitors may be re-installed.

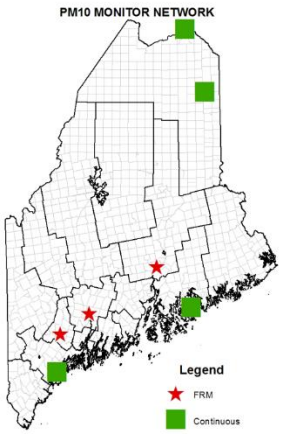
IMPROVE Network Summary

IMPROVE Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NPS/NCore	Regional Haze	Every 3 days
Freeport – Wolfe's Neck Road	SLAMS	Deposition Project	Every 3 days
Indian Island – Penobscot	Tribal	Regional Haze	Every 3 days

Baring - Moosehorn NWR	USFWS	Regional Haze	Every 3 days
Presque Isle – 8 Northern Road	Tribal	Regional Haze	Every 3 days

PM_{10} Network:

The Maine DEP operates most of the current filter-based PM_{10} network using FRM samplers modified with the fine-particle separators removed to collect PM_{10} particles.



A continuous Beta Attenuated Monitor (BAM) was operated in Presque Isle as part of the control strategy for the historically high PM_{10} levels there. The BAM is scheduled to be replaced in late 2022 or early in 2023 with a Teledyne T640x. This replacement monitor collects data for both PM2.5 and PM10. Continuous monitoring for PM10 provides hourly data used by city officials to determine when high levels are occurring and whether street sweeping or other control strategies need to be implemented.

In 2022 the PM_{10} network was comprised of seven sites around the state. The American Rescue Plan Direct Award Grant will bring about a change in the PM_{10} monitoring program for 2023 which will result in the removal of 3 filter-based samplers. Note: the filters collected in the PM_{10} program from the remaining filter-based samplers can be used for the lead monitoring program if needed.

The PM_{10} monitoring at Bangor Kenduskeag Pump Station was shut down in May 2019**.** PM_{10} monitoring is conducted at the Mary Snow Elementary School in Bangor.

Due to an exceedance of the PM_{10} NAAQS recorded at the Madawaska Public Safety Building on August 12, 2018 the DEP sought to assess the potential frequency of the exceedances more accurately to document compliance with the NAAQS. A continuous PM_{10} sampler was established at this monitoring site to provide daily averages for PM_{10} through the 2021 calendar year. This sampler will be replaced in late 2022 or early 2023 with a Teledyne T640x which will remain in operation through 2023, and for a period of years thereafter to demonstrate if remedial action is necessary. A continuous PM10 sampler will be established at Portland – Tukey's Bridge to replace the FRM samplers.

Proposed Calendar Year 2023 changes to the PM_{10} Network:

- A Teledyne T640x continuous PM sampler will be established at Portland -Tukey's Bridge to replace the FRM samplers.
- The collocated PM 10 FRM from Portland - Tukey's Bridge sampler will be relocated to Bangor-Mary Snow School making that site collocated for the sampling method.
- A Teledyne 640x continuous PM sampler will be established at the Bar Harbor – McFarland Hill site. Doing so will allow the collection of $PM_{10-2.5}$ data from that instrument permitting the removal of two PM_{10} FRM samplers.

The BAM at the Madawaska Public Safety building will be replaced with a Teledyne T640x sampler

The following table lists the PM_{10} monitoring stations in Maine for 2023.

PM_{10} Monitoring Site Summary

PM_{10} Monitoring Site Address	Site Type	Monitoring Objective	Sampling Frequency
Augusta – Lincoln Street School	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Augusta – Lincoln Street School	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Bangor – Mary Snow Elementary School	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Bangor – Mary Snow Elementary School	SLAMS	Collocated	FRM[1], every 12 days
Bar Harbor – McFarland Hill	NCore	Rural Background	FEM[2], Continuous
Lewiston – Country Kitchen Lot	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Madawaska – Public Safety Bldg.	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Portland – Tukey's Bridge	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Presque Isle – Riverside Street	SLAMS	Attainment/Nonattainment	FEM[2], Continuous

1- Method RFPS-1298-126 Thermo Scientific Model 2000i

2- Monitor method EQPM–0516 –239 Teledyne T640x

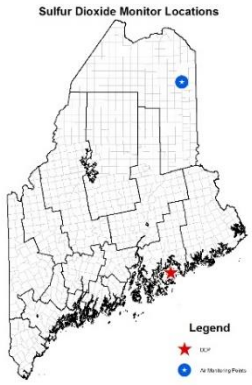
PM_{Coarse} Network:

Required PM_{Coarse}, or $PM_{10-2.5}$ measurements at the NCore site in Bar Harbor are obtained from the Teledyne T640x PM monitor installed in January 12, 2023.. In addition, $PM_{10-2.5}$ data can be calculated from the continuous $PM_{10}/PM_{2.5}$ sampler pair in Presque Isle

PM_{Coarse} Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NCore	Rural Background	FEM[1], Continuous

1- Monitor method EQPM–0516 –239 Teledyne T640x

Sulfur Dioxide Network:



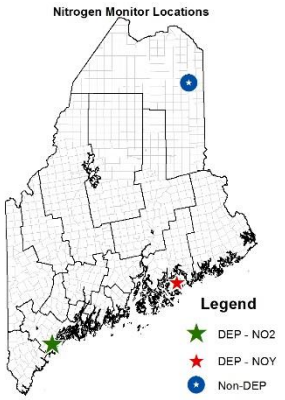
The Maine DEP currently operates one sulfur dioxide (SO_2) monitor, a trace-level monitor located at the NCore site in Bar Harbor. The Special Purpose SO_2 monitor at Portland – Deering Oaks was shut down at the beginning of 2021. This decision was made to further relieve Southern Maine staff of responsibility to operate, maintain and process data from that instrument, so those resources could be redirected to other priority needs in their region. The decision was based on the exceedingly low monitored values from that monitor. The monitor demonstrated that the reductions in sulfur content in heating, industrial boiler, and diesel fuels has successfully reduced SO_2 in ambient air to trace levels. Data from the past three years demonstrate that the SO_2 NAAQS are not likely to be approached or exceeded, and the need for continued monitoring for this pollutant appears not necessary, as EPA has already identified in its Monitoring Collaborative's list of resource savings opportunities for Maine. Resources previously directed at that monitor were better used elsewhere in the network.. The Maine DEP had operated another trace-level monitor in Gardiner for use in gathering background data. That analyzer was shut down at the end of 2019. The Micmac Indian Tribe operates an SO_2 monitor in Presque Isle. No changes in the current long-term SO_2 network are anticipated for 2023.

SO_2 Monitoring Site Summary

SO_2 Monitoring Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NCore	Background	Continuous
Presque Isle – 8 Northern Road	Tribal	-	Continuous

Nitrogen Oxides Network (NO_2, NOx, NO, NOy):

The DEP currently operates one trace-level NO_x monitor and two trace-level NO_y monitors. The NO_x monitor is located at the Deering Oaks site in Portland. The NOx monitor at the Pray Street School site in Gardiner was shut down at the end of 2019. The NO_x monitor at Deering Oaks is a non-regulatory monitor. The NO_y monitors were located at the NCore site in Bar Harbor and the Cape Elizabeth Enhanced Monitoring Plan (EMP) site. After review of historical data from the Cape Elizabeth site the DEP determined continued monitoring for NOy at that location was not necessary and the analyzer will be removed from the shelter. The Micmac Tribe also operates a trace-level NO_2 monitor at their site in Presque Isle. There are no changes in the Nitrogen Oxides Network planned for 2023.



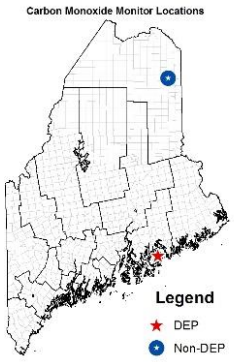
NO_x Monitoring Network Summary

Nitrogen Oxides Network Site Address	Site Type	Monitoring Objective	Sampling Frequency
Portland – Deering Oaks (NO_x)	SPMS	Maximum Concentration, Urban Background	Continuous
Bar Harbor – McFarland Hill (NO_y)	NCore	Transport (trace-level)	Continuous
Presque Isle – 8 Northern Road (NO_2)	Tribal	(trace-level)	Continuous

Carbon Monoxide Network:

The DEP currently operates one trace-level carbon monoxide (CO) monitor located at the NCore site in Bar Harbor. The DEP shut down the CO monitor at the Deering Oaks site early in 2022 as data recorded from this monitor were well below the NAAQS, and resources directed at that monitor could be better used elsewhere in the network. The Micmac Indian Tribe also operates a trace-level CO monitor at their site in Presque Isle

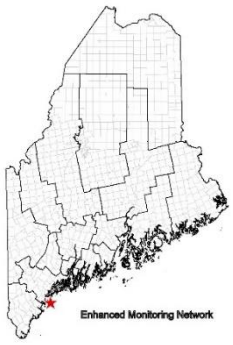
Proposed calendar year 2023 changes to the CO monitoring network: None



CO Monitoring Network Summary

Carbon Monoxide Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NCore	Transport	Continuous
Presque Isle – 8 Northern Road	Tribal	-	Continuous

Enhanced Ozone Monitoring Plan:



Maine's Enhanced Monitoring Plan (EMP) currently includes continued operation of the Photochemical Assessment Monitoring Station (PAMS) that was established at the Two Lights State Park (CETL) in Cape Elizabeth in 1993. An Enhanced Monitoring Plan that includes Maine is required by CFR. The BAQ contends that the continued operation of the Cape Elizabeth (CETL) site in Maine, as a part of any Enhanced Monitoring Plan, is justified, however is currently reviewing historical data and trends to determine the necessity of all parameters currently measured at CETL. Prior to and during the 2022 year; NO, NOy, ozone, and VOCs(PAMS) with its existing continuous Gas Chromatograph, as well as a suite of meteorological measurements were measured at this site. As part of the ongoing review, it was determined that NO-NOy analyzer was no-longer necessary and will be shut down in October 2022. VOCs(PAMS) with the existing continuous GC, and year-round meteorology are still under review as to their requirements. The ozone analyzer will continue to be operated year-round. A 24-hour HAPS canister sampling system collecting samples on SIP days was previously operated at this site and may be restored in 2023 if resources are available. Canister sample analyses include the addition of selected air toxic compounds as needed to support ongoing ambient air quality studies, along with the routine VOC(PAMS) target compounds.

The operation and maintenance ground-level ozone, and the meteorology monitoring systems at the site are ongoing and have been transferred to the SMRO Air Monitoring section staff for routine operation.

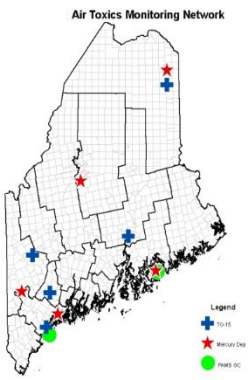
In 2021 a Pandora was established at CETL. The Pandora Sun spectrometer is an instrument developed to measure vertical column densities (total columns) of trace gases in the atmosphere using Sun and sky radiation in the UV visible part of the spectrum. Staff from MEDEP will provide in-person support to keep the instrument running and the EPA and NASA will provide data analysis. A major joint objective is to support the validation and verification of more than a dozen low-earth orbit and geostationary orbit-based UV-visible sensors.

Maine would support the installation of a ceilometer proximate to the NCore site in Bar Harbor. The addition of a ceilometer is contingent on the availability of funds to acquire and support the instrument.

Enhanced Ozone Monitoring Plan Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Cape Elizabeth - Two Lights State Park	EMP	Transport	Continuous - Seasonal

Hazardous Air Pollutants (HAPs) Network:



Although not a required monitoring network, the DEP samples for 67 HAPs compounds at five Special Purpose Monitoring Site (SPMS) locations around the state and at the EMP Site in Cape Elizabeth. The monitoring objective is to document background concentrations around the state and to establish whether there are any trends in the levels of these compounds. Maine monitors for most HAPs compounds using EPA's method TO-15. As detailed in the lead section below, the DEP uses XRF spectroanalysis on randomly selected $PM_{2.5}$ and PM_{10} filters to determine concentrations of several metals designated as HAPs.

In 2022 a HAPS sampler was established at the Background site in Presque Isle. This was done to provide comparative data to the Riverside site which showed high concentration of acrolein and naphthalene. The DEP wants to determine if these pollutants are a city-wide issue or localized to the Riverside monitoring site.

The HAPS sampler at Cape Elizabeth was shut down in June 2019. The sampler was relocated for a special study.

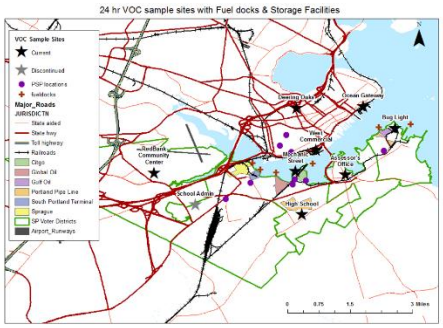
Proposed Calendar Year 2023 changes to the HAPS monitoring Network:

- If resources allow a HAPs sampler will be reestablished at Cape Elizabeth

HAPS Monitoring Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bangor – Mary Snow School	SPMS	Maximum Conc.& Trends	Every 6 days
Cape Elizabeth – Two Lights Park	EMP	Maximum Conc.& Trends	Every 6 days
Lewiston – Country Kitchen Lot	SPMS	Maximum Conc.& Trends	Every 6 days
Portland – 356 State Street	SPMS	Maximum Conc.& Trends	Every 6 days
Presque Isle – Riverside Street	SPMS	Maximum Conc.& Trends	Every 6 days
Presque Isle – Background Site	SPMS	Maximum Conc & Trends	Every 6 Days
Rumford – Rumford Avenue	SPMS	Maximum Conc.& Trends	Every 6 days

South Portland/Portland VOC Monitoring Project:



24-hour Sampling locations

At the request of South Portland City officials, DEP staff attended an April 16, 2019 City Council public workshop focused on citizen concerns about odors and air emissions coming from petroleum product storage facilities in the city. One topic that was repeatedly expressed by the residents who spoke was the very strong desire for air quality monitoring to be conducted within the City's boundaries, since none had been done since the early 2000s. DEP made a commitment at the workshop that it would work with the City to accomplish that goal. On August 28, 2019, officials from the City of Portland formally communicated identical air quality concerns of their citizens about the same VOC sources in South Portland. Since then, Air Bureau staff have collaborated with officials from both cities and other local partners to conduct an ambient air quality monitoring project, where the monitoring objective is to collect data that will help answer the question "Is the air safe to breathe?"

The focus of the monitoring project is to measure Volatile Organic Compounds (VOCs), since they constitute a large majority of the compounds associated with the types of odors being reported, as well as air emissions that come from the facilities of concern. VOCs were also chosen because making that type of measurement is something that the Air Bureau air monitoring program is already set up to do (and is doing) and capable of supporting.

In calendar year 2019 the project consisted of two phases 1) an early "grab sampling" effort in South Portland, and 2) a network of eight fixed 24-hour sampling sites (five in South Portland and three in Portland). The grab sampling phase was launched on June 10, 2019 and concluded on September 15, 2019. As of November 1, 2019, all planned 24-hour sampling sites were established and samples were collected on a frequency of every-6-days. The sites in South Portland were placed so that each of the five voting districts had a sampler established within their boundary.

Fixed 24-hour sampling sites were established at: Bug Light Park; the South Portland City Assessors office; South Portland High School; South Portland School Administration building; Red Bank Community Center in South Portland; Ocean Gateway building in Portland; and on West Commercial Street in Portland. The two new monitoring sites in Portland augment data from the DEP's site at Deering Oaks Park. The DEP established portable meteorological monitors at some of the HAPS sampling locations in 2020 and 2021. Resource limitations prevented full deployment of meteorological monitors.

During calendar year 2020, the implementation of phase 3 began, which includes the deployment of a portable sampling platform (PSP). The process of the MET system installations are still a work in progress, with the first two sites coming online in June 2020 at the South Portland Assessors Office and the Portland Deering Oaks sites. Additional MET systems were established at Bug Light Park, Ocean Gateway, Portland-West Commercial Street, and at South Portland – Mechanics Street. The South Portland Assessors site was taken down due to operational issues. The PSP will initially have both a canister sampling system for measuring VOCs (identical to ones used at the fixed 24-hour sampling sites), and a tube sampling system for measuring Polycyclic Aromatic Hydrocarbons (PAHs). A MET monitoring system, and a continuous particulate matter monitoring sensor was added in 2021. Since the PSP can easily be moved from one location to another, it allowed 24-hour samples to be taken at a number of additional places early in the program. This PSP data ~~will~~ helped improve the overall spatial and temporal understanding of air quality in the project area. The first deployment of the PSP took place at the end of August 2020 and continued through 2021.

After the first full year of concurrent 24-hour sampling by all of the VOC sites in the Project's monitoring network, DEP informed officials in both cities that it intended to extend its support of the Project's monitoring activities through 2021. DEP had committed to run these sites for one full year from the network completion date; that is, until November 2020. After review of the entire dataset is completed by the Maine CDC, DEP, and the Project's partners, any recommendations for adjustments to the Project's monitoring activities will be considered and implemented as resources allow.

For Phase 4 the Maine DEP agreed that, after at least a year of data had been collected in the South Portland – Portland VOC network, the location of sites would be reevaluated. South Portland ~~has~~ proposed some changes. Maine DEP and the City remain in discussion about the immediate future of the program at this time. The site list below will be updated as new sites begin to measure VOCs and more information will be provided here when all new sites for Phase 4 have been agreed upon.

In 2022, the DEP supported continued VOC canister sampling at the locations established in 2019. In addition, DEP had applied for an EPA Community-Scale Air Toxics Monitoring grant award. The application was not successful. Had the application been successful, the grant award would have supported expanded monitoring activities for other pollutants, such as PAHs, and continuous monitoring instrumentation for VOCs and hydrogen sulfide. Continuous monitoring instrumentation would be operated and maintained by a qualified contractor. Maine will continue supporting this program with existing grant resources.

The DEP assembled a Portable Sampling Platform (PSP) in 2020 to collect samples from a number of locations in the study area. The sampler was deployed for three to four weeks at a time with the intent to identify potential "hot spots" of pollutant impacts. In 2021 the PSP was established at the Cash Corner Fire Station and remained there through 2021. In addition to HAPs, a PAH sampler was added to the PSP. Analysis of these samples will be done at a later time.

Early in 2021, the South Portland Clean Air Advisory Committee (CAAC), a citizen's panel advising the South Portland City Council, made a number of recommendations regarding changes to the sampling locations. The DEP considered the recommendations from the CAAC and made changes with two sampling locations and added a new sampling site to the network.

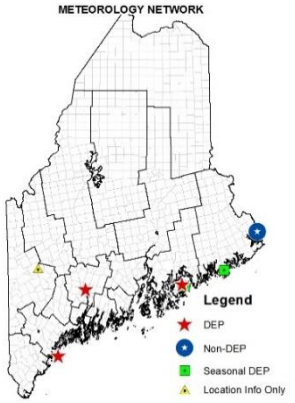
Proposed calendar year 2023 changes to the South Portland/Portland VOC network:

- Pending assessment of sample data, one or more sites may be discontinued and others made permanent.

South Portland/Portland VOC Monitoring Sites

Site Address	Site Type	Monitoring Objective	Sampling Frequency
So. Portland – Bug Light Park	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Assessors Office	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – High School	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Redbank Community Ctr	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Mechanics Street	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Cash Corner Fire Station	SPMS	Max Conc.& Population Exposure	Every 6 days
Portland – Ocean Gateway	SPMS	Max Conc.& Population Exposure	Every 6 Days
Portland – West Commercial Street	SPMS	Max Conc.& Population Exposure	Every 6 days

Meteorological Network:



The DEP, the Passamaquoddy tribe, and the Micmac tribe fund, operate, and maintain year-round meteorological monitoring sites at five locations in the state and two seasonal sites to collect data for use in the analysis and evaluation of air pollutant data. Some of these are stand-alone sites, and some are collocated with air pollutant monitoring equipment. The instruments at these sites measure scalar wind speed and direction, resultant wind speed and direction, and sigma theta (an indicator of the amount of variability in the wind direction). A few of the sites collect additional parameters such as relative humidity, barometric pressure, temperature, and solar radiation.

State forecasters also have access to NOAA weather data from airport stations and other sites located throughout the state. The NOAA airport sites record raw values in 1-minute averages which oblige Maine DEP staff to calculate the hourly averages, making data from the DEP sites more desirable.

The Maine DEP BAQ installed meteorological instruments on a tower adjacent to a building near the Public Boat Landing at Jonesport, Maine, in 2017. Seasonal wind data there and at the Cadillac Mountain site augment hourly ozone concentration measurements.

The BAQ operates several portable meteorological stations as part of the South Portland VOC study. The data from these portable stations are not quality assured and not reported to AQS, but are used to inform staff and others of the micrometeorological conditions at some of the VOC monitoring sites during sample collection.

Proposed calendar year 2023 changes to the Meteorological Network:

Due to the deteriorating condition of the meteorological tower at the Cape Elizabeth – Two Lights site, meteorology there has to be shut down for the 2022/2023 winter. A replacement tower will be installed prior to the 2023 ozone season. ME DEP is reviewing the need for continued year-round meteorology going forward.

Pending the disposition of the South Portland/Portland VOC study, one or more portable meteorological stations may be moved from that study to Madawaska Public Safety Building site and/or Presque Isle – Riverside monitoring site. If resources allow, the BAQ proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska.

Meteorology Monitoring Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Augusta – State Airport	SLAMS	Data Analyses & Modeling	Continuous
Bar Harbor – Cadillac Mountain	SLAMS	Transport	Continuous – Seasonal
Bar Harbor – McFarland Hill	NCore	Transport	Continuous
Cape Elizabeth – Two Lights Park	EMP	Transport	Continuous
Jonesport – Public Boat Landing	SLAMS	Data Analyses & Transport	Continuous – Seasonal
Presque Isle – 8 Northern Road	Tribal	-	Continuous
Rumford - Rumford Avenue Parking	SLAMS	Localized wind	Continuous
Sipayik – 184 County Road	Tribal	-	Continuous

Atmospheric Deposition Network:

There is an extensive atmospheric deposition network in the State of Maine with several sites operated by the Maine DEP. All but two of the sites are part of the National Atmospheric Deposition Program's Mercury Deposition Network (MDN) in addition to the National Trends Network (NTN) that measures precipitation chemistry. Early in the program, several agencies and organizations participated and provided funds for the operation of these deposition network sites. As funds have diminished and budgets have been cut, the continued operation of some of these sites has been in question. The MDN and NTN data are valuable to DEP data users, policy makers, and the public, and to various users representing many scientific disciplines: wildlife biologists, water quality specialists, epidemiologists, atmospheric chemists, government regulators, and academic researchers.

In 2021,in response to the Governor's PFAS (perfluoroalkyl and polyfluoroalkyl substances) Task Force's final report released in January 2020, which recommended that the Department should "consider establishing an air deposition sampling program for a suite of PFAS," the Department communicated this interest to and had conversations with the NADP Program Office and the Wisconsin State Laboratory of Hygiene. We received a favorable response from them being able to include a PFAS analysis whenever there is a sufficient sample volume in the amount of precipitation collected by the NTN sampler. DEP staff began collecting samples for PFAS analysis in early 2021 from the ME96 monitoring station and will continue sample collection through 2023.

In 2021 ME09 was moved from the Fish Hatchery location to a site on the municipal airport property in Greenville. Operational issues at the Fish Hatchery site made continued sampling from that location to be too problematic. The new site will afford better exposure to regional air flow and better site access. Construction activity near ME96 (Freeport – Wolfe's Neck Farm) may necessitate moving the samplers.

No changes are proposed for 2023.

Deposition Monitoring Site Summary

Site Address and NADP ID	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill (MDN) ME98	NPS-SPMS	Transport/Trends	Weekly Composite
Bridgton – Upper Ridge Road	SPMS	Transport/Trends	Weekly Composite

(NTN and MDN) ME02			
Caribou – Airport (NTN and MDN) ME00	SPMS	Transport/Trends	Weekly Composite
Carrabassett Valley – Airport (NTN and MDN) ME04	Tribal	Transport/Trends	Weekly Composite
Freeport – Wolfe's Neck Farm (NTN and MDN) ME96	SPMS	Transport/Trends	Weekly Composite
Gilead – White Mtn. Nat 'l. Forest (NTN) ME08	USGS	Transport/Trends	Weekly Composite
Greenville Station (NTN and MDN) ME09	SPMS	Transport/Trends	Weekly Composite
Indian Township (NTN) ME94	Tribal	Transport/Trends	Weekly Composite

Lead Network:

In 2008 EPA promulgated a lead (Pb) standard and issued some minimum monitoring requirements to the states. At that time, Maine was going to be required to operate one Pb monitor in the Portland CBSA (Core-based statistical area). The state purchased an X-ray fluorescence (XRF) analyzer to measure lead concentrations from PM_{10} filters. The EPA Pb requirement was subsequently revised to require Pb monitoring at urban NCore sites only. The Bar Harbor NCore site is designated as a rural site, so there is no requirement for Pb monitoring in Maine.

Maine DEP maintains the capability and capacity to analyze particulate filters for Pb and other several other metals that are listed as Hazardous Air Pollutants (HAPs) such as arsenic and chromium. As schedules permit, random selections from archived Maine $PM_{2.5}$ and PM_{10} filters are being analyzed with the XRF to determine what the state background concentrations might be for lead and the other metals.

Camnet:

Maine DEP, along with several other state and local agencies and non-profit organizations, helps support the Northeast States for Coordinated Air Use Management (NESCAUM) operate Camnet - a network of real-time visibility cameras situated throughout the Northeast. In Maine, there is an active Camnet location at Schoodic Point with two cameras pointing west towards Acadia National Park on Mount Desert Island. Air quality sensors at the site allow users of Camnet to see the effects of air pollution on visibility. There was a Camnet location in the Moosehorn National Wildlife Refuge. That site was shut down in 2018. **https://www.hazecam.net/**

Proposed Calendar Year 2023 Network Changes:

The monitoring network proposed for 2023 is an ambitious one and will require a significant effort from Air Bureau staff to accomplish. The program is always subject to adjustment because of staffing changes, budget cuts, and the disposition of landowners who allow the placement of air monitoring sites on their property. The field monitoring staff continue to look for increased efficiencies, especially through automation and improved remote access to monitors, to optimize DEP resources.

The following changes are being contemplated or are likely to occur:

- If not accomplished in 2022, the Portland Deering Oaks monitoring station may be relocated. Applicable siting criteria will be met at any new location.
- The Augusta – Lincoln Street School will be upgraded with a Teledyne T640x continuous sampler to collocate with method 143.
- The Portland – Tukey's Bridge site will be upgraded with a Teledyne T640x which will replace three filter – based samplers presently at that site.
- The collocated PM_{10} sampler presently at the Portland – Tukey's Bridge site will be relocated to Bangor – Mary Snow School for collocation with the PM_{10} sampler at that site.
- The Bar Harbor – McFarland Hill site will be upgraded with a Teledyne T640x continuous PM sampler. The T640x instrument will be used to collect $PM_{10-2.5}$ data. Doing so will permit the removal or two filter-based PM_{10} samplers.
- Two-level ambient temperature monitoring may be established in Presque Isle and Madawaska..
- If not accomplished in 2022, the BAM samplers at the Madawaska – Public Safety Building site and Presque Isle – Riverside site will be replaced with a T640x continuous PM monitor.
- If not accomplished in 2022, the FRM sampler at the Presque Isle – Background site will be replaced with a T640x continuous PM monitor.
- If resources allow, a mobile monitoring platform will be populated with sampling equipment and readied for use.
- The ozone monitoring equipment in Jonesport may be relocated pending disposition of building.
- The following changes were made in 2021, but were not described in the 2021 Annual Network Plan:
    - The Hollis – West Buxton ozone monitor was shut down prior to the 2021 ozone season.
    - The sulfur dioxide monitor at the Portland – Deering Oaks site was shut down early in 2021.
- South Portland/Portland VOC network: Pending assessment of sample data, one or more sites may be discontinued and others made permanent.
- NOy monitoring at Cape Elizabeth – Two Lights State Park will not be conducted in 2023.
- Meteorology measurements will not be made at the Cape Elizabeth – Two Lights State Park starting Quarter 4 2022, to resume prior to the 2023 Ozone Season. The necessity for year-round measurements are under review, and maybe become seasonal only during the 2023 calendar year.
- The necessity for continuing the Continuous VOC measurements at Cape Elizabeth – Two Lights State Park are under review and may not be resumed for the 2023 season.

The monitors operated by the Maine DEP undergo constant review to ensure that the ambient air monitoring network is appropriate to meet monitoring goals, does not contain irrelevant monitoring, and can be accomplished within the available budget. The table below presents the location of each active monitor in the State. In the table, each monitor has been identified as meeting one or more State objectives. While there are presently no indications further changes to the network will be contemplated, budget and staffing issues may require cuts in the monitoring program. This table will help to determine the relative importance of each site and assist with the decision - making process.

Maine Ambient Air Monitoring Locations and Objectives as of 2023

EPA-Endorsed Potential Resource Savings (Y/N)	DEP Concurrence (Y/N)	AQS - ID	Site Abbreviation	Parameter	Operator Agency	Monitoring Objective(s)									Comments
						Population Exposure	Maximum Concentration	Historical Trends	Research/Special Studies	CFR Mandate	SIP Required	AQI Forecasting/ Mapping	Data Different from Nearby Monitors	Background Air Quality	
		23-001-0011	LCKP	PM2.5 Hourly	DEP	x	x	x				x		x	Lewiston-Auburn - State's 2nd largest urban area
Y	N	23-001-0011	LCKPX	PM10 FRM	DEP	x	x	x						x	Central Maine urban area
		23-001-0011	LCKP	VOCs - Canister	DEP	x		x	x						Lewiston-Auburn - State's 2nd largest urban area
		23-001-0014	CFS	O3	DEP				x	x	X	x			Max. ozone from Greater Portland precursors; Maint. Area
		23-003-0014	MPSB	PM2.5 Hourly	DEP	x	x	x				x		x	Instrument installed in 2022/2023 that monitors both parameters - T640x
		23-003-0014	MPSB	PM10 Hourly	DEP	x	x	x		x		X			
		23-003-1002	ME00-Caribou	NADP NTN/MDN	DEP			x							Northern Maine precipitation chemistry & Hg deposition
Y	Y	23-003-1008	PIBS	PM2.5 Hourly	DEP			x						x	FRM to be replaced with continuous PM in 2022 or 2023
		23-003-1008	PIBS	VOCs - Canister	DEP	x			x						Expanded assessment of area acrolein & naphthalene levels
Y	N	23-003-1011	PIRS	PM2.5 FRM	DEP	x	x	x							Northern Maine region's collocated FRM & FEM site
		23-003-1011	PIRS	PM2.5 FEM Hourly	DEP	x	x	x				x			Instrument installed in 2022/2023 that monitors both parameters - T640x
		23-003-1011	PIRSX	PM10 FEM Hourly	DEP	x	x	x		x	x	x			
		23-003-1011	PIRS	VOCs - Canister	DEP	x		x	x						Northern Maine region urban area
		23-003-1100	PIMM	CO	Tribal	x						x		x	
		23-003-1100	PIMM	IMPROVE	Tribal			x	x						Regional haze; Mikmac's Presque Isle IMPROVE Protocol site
		23-003-1100	PIMM	NO2	Tribal	x						x		x	
		23-003-1100	PIMM	O3	Tribal	x						x			
		23-003-1100	PIMM	PM2.5 Hourly	Tribal	x						x			
		23-003-1100	PIMM	SO2	Tribal	x						x		x	
		23-003-1101	LITTLETON	PM2.5 Hourly	Tribal							x			
		23-005-0002	ME02-Bridgton	NADP NTN/MDN	LEA			x							Southern interior Maine precipitation chemistry & Hg deposition
Y	Y	23-005-0015	PTB	PM2.5 Hourly	DEP		x	x					x		High traffic - near road impacts. T640x instrument installed in 2022/2023 to monitor both parameters.
Y	Y	23-005-0015	PTBXR	PM10 Hourly	DEP		x	x							
Y	N	23-005-0029	PDO	NO2	DEP	x	x	x				x		x	Greater Portland - State's largest urban area
Y	N	23-005-0029	PDO	O3	DEP	x		x	x			x			Health effects & exposure correlation study Site may be moved in 2023
Y	N	23-005-0029	PDOR	PM2.5 FRM	DEP	x		x					x		BMRO Collo for Method 170. Portland MSA require
		23-005-0029	PDO	PM2.5 Hourly	DEP				x		x	x		x	Southern Maine region's collocated FRM & FEM site
		23-005-0029	PDO1	VOCs - Canister	DEP	x		x	x						Southern Maine region urban area; SoPoPo VOC Project
		23-005-0029	PDO2	VOCs - Canister	DEP			x	x	x					Collocation for canister method
		23-005-2003	CETL	NOY	DEP			x	x						Enhanced ozone monitoring site (former PAMS site)
		23-005-2003	CETL	O3	DEP	x	x	x		x		x			Enhanced ozone monitoring site (former PAMS site)
		23-005-2003	CETL	VOCs - Canister	DEP			x	x						Enhanced ozone monitoring site (former PAMS site)
		23-005-2003	CETL	VOCs - Hourly	DEP			x	x						Enhanced ozone monitoring site (former PAMS site)
		23-005-9002	CABA1	IMPROVE	DEP			x	x						Regional Haze; Freeport - Casco Bay IMPROVE Protocol site
		23-005-9002	ME96-Freeport	NADP NTN/MDN	DEP			x							Southern coastal Maine precipitation chemistry & Hg deposition
		23-007-2002	ME04-Carrabassett	NADP NTN/MDN	Tribal			x							Tribal land precipitation chemistry & Hg deposition
		23-009-0102	BHCM	O3	DEP	x	x	x			x	x			Long range rural transport. High concentration.
		23-009-0103	BHMH	CO	DEP					x		x		x	Nocre - rural
		23-009-0103	BHMH	IMPROVE	NPS/DEP			x	x		x				Regional haze; Class 1 area
		23-009-0103	BHMH	NOY	DEP			x	x	x				x	Nocre - rural
		23-009-0103	BHMH	O3	DEP	x		x		x		x			Nocre - rural
		23-009-0103	BHMH	PM2.5 FRM	DEP			x		x				x	Nocre - rural
		23-009-0103	BHMH	PM2.5 Hourly	DEP			x		x		x		x	Nocre - rural
		23-009-0103	BHMHX	PM10 Hourly	DEP			x		x				x	Nocre - rural T640x sampler to be installed for PM 2.5, PM10 and PM10-2.5
		23-009-0103	BHMH	PM_{10-25} Hourly	DEP				x					x	Nocre - rural
		23-009-0103	BHMH	SO2	DEP					x				x	Nocre - rural
		23-009-0103	BHMH	SO4	DEP			x	x						Regional haze
		23-009-0103	ME98-Bar Harbor	NADP NTN/MDN	NPS/DEP			x	x						Acadia NP precipitation chemistry & Hg deposition
Y	N[3]	23-011-0016	ALSSC	PM2.5 FRM	DEP					x					Required collocation for method 143
Y	N[3]	23-011-0016	ALSSR	PM2.5 FRM	DEP	x		x							Best network site for meeting required PM2.5 method collocation
Y	N[3]	23-011-0016	ALSSX	PM10 FRM	DEP	x		x							See footnote 1 below
		23-011-0016	ALSS	PM10 Hourly	DEP	x									Teledyne T640x to be installed in 2022. To be collocated with FRM samplers.
		23-011-0016	ALSS	PM2.5 Hourly	DEP	x									
		23-011-2001	GAHS	O3	DEP	x	x	x			x	x			Site established as part of a maintenance area requirement
		23-013-0004	PCMP	O3	DEP	x	x	x			x	x			Long range rural transport
		23-017-2011	RRAP	PM2.5 Hourly	DEP	x		x				x		x	
		23-017-2011	RRAP	VOCs - canister	DEP	x		x	x						Western Maine mountains / river valley urban area
		23-017-3002	BSFR	O3	DEP	x			x			x	x		
		23-019-0017	BMSS	PM10 FRM	DEP	x	x	x						x	Collocated sampler to be added in 2023
		23-019-0018	BMSSc	PM10 FRM	DEP										Needed for method 122 collocation
		23-019-0017	BMSS	PM2.5 Hourly	DEP	x	x		x			x			Bangor-Brewer - State's 3rd largest urban area
		23-019-0017	BMSS	VOCs - canister	DEP	x		x	x						Bangor-Brewer - State's 3rd largest urban area
		23-019-1100	INDIAN ISLAND	IMPROVE	Tribal			x	x						Regional haze; Penobscot's Indian Island IMPROVE Protocol site
		23-019-4008	HRB	O3	DEP	x		x	x			x			
		23-021-0001	ME09-Greenville	NADP NTN/MDN	DEP			x							Central Maine precipitation chemistry & Hg deposition
		23-023-0007	PBSP	O3	DEP	x	x	x				x	x		Long range transport
Y	N	23-029-0021	JOG	O3	DEP	x		x				x			Coverage of coastal downeast area. Site may be moved.

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Maine Ambient Air Monitoring Locations and Objectives as of 2023.

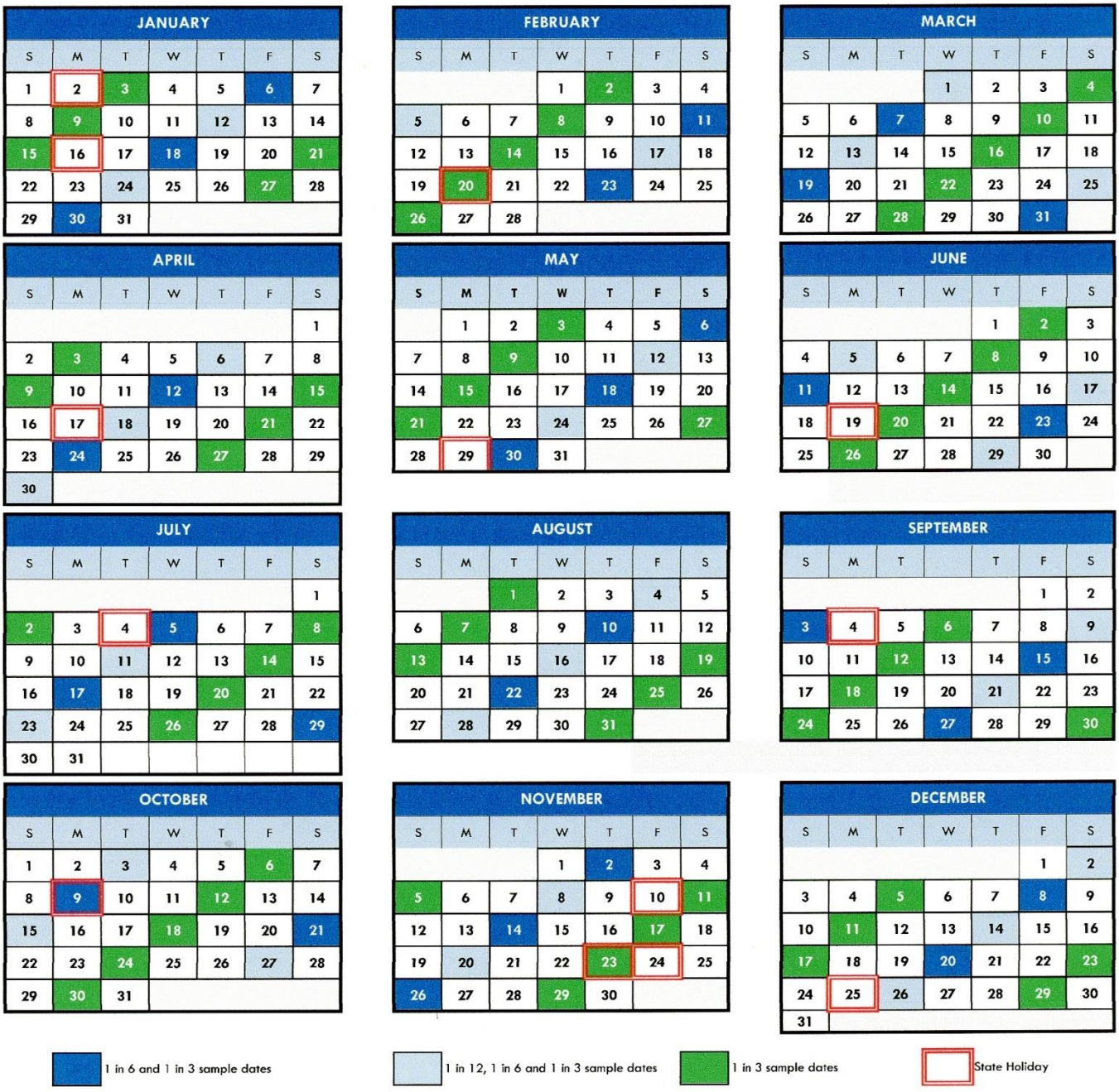
EPA-Endorsed Potential Resource Savings (Y/N)	DEP Concurrence (Y/N)	AQS - ID	Site Abbreviation	Parameter	Operator Agency	Monitoring Objective(s)									Comments
						Population Exposure	Maximum Concentration	Historical Trends	Research/Special Studies	CFR Mandate	SIP Required	AQI Forecasting/ Mapping	Data Different from Nearby Monitors	Background Air Quality	
		23-029-0032	SIPAYIK	O3	Tribal	x						x			Shelter/site to be maintained for potential future use.
		23-029-0033	SIPAYIK	PM2.5 Hourly	Tribal	x						x			
		23-029-0033	SIPAYIK	O3	Tribal	x						x			New shelter in 2021. 175' from 029-0032
		23-029-0033	SIPAYIK	PM2.5 Hourly	Tribal	x						x			
Y	N	23-031-0040	SBP	O3	DEP	x		x	x			x	x		Highest springtime ozone levels in the network
		23-031-2002	KPW	O3	DEP	x	x	x		x	x	x			Long range rural transport
			HOWLAND	O3	CASTNet	Treetop/Canopy level									
			ME94-Indian Twp.	NADP NTN	Tribal			x							Tribal land precipitation chemistry
			Moosehorn	IMPROVE	USFWS			x			x				Regional haze; Class 1 area
			ME08-Gilead	NADP NTN	USGS			x							Western Maine portion of White Mountain National Forest
		1 Plans are to replace with continuous FEM when adequate capital equipment funds become available													
		2 Monitor may be unnecessary if Method 143 removed from enfire network													
		3 Augusta Region may be covered by Lewiston (CKP)													

Monitoring Equipment Used by Maine DEP

PARAMETER	INSTRUMENT	METHOD*
Atmospheric Deposition	Aerochem Metrics wet/dry collector	
Barometric Pressure	Climatronics Met One	
Carbon Monoxide	Thermo Model 48C, 48i, 48iTLE Teledyne API Model T300	RFCA-0981-054 RFCA-1093-093
Hazardous Air Pollutants	24-hour 6-liter sub-ambient canister samplers, designed and built by ME DEP	TO-15
Lead	R&P/Thermo Single Model 2000, 2000i Spectro XEPOS XRF Spectrometer	
Mercury Deposition	Aerochem Metrics N-CON Wet Deposition collector	
Nitrogen Dioxide	Thermo Model 42C, 42i-TL	RFNA-1289-074
Organic/Elemental Carbon	Sunset Semicontinuous OC/EC Carbon Aerosol Analyzer	
Other Metals such as Arsenic, Chromium, etc.	R&P Single Model 2000, 2000i Spectro XEPOS XRF Spectrometer	
Oxides of Nitrogen	Thermo Model 42iY	
Ozone	Thermo Models 49C, 49i; 49iQ Teledyne API Model T400	EQOA-0880-047 EQOA-0992-087
PM 10 Continuous	MET One BAM Model 1020; Teledyne API Model T640x	EQPM-0798-122; EQPM-0516-239
PM 10 FRM	R&P/Thermo Single Model 2000, 2000i	RFPS-1298-126
PM 2.5 Continuous	MET One BAM Model 1020 Thermo Scientific Model 5030i SHARP Teledyne API Model T640x	EQPM-0308-170 EQPM-0609-184 EQPM-0516-239
PM 2.5 FRM	R&P/Thermo Single Model 2000, 2000i	RFPS-0498-117 RFPS-1006-143
PM Coarse	Difference Method PM10-PM2.5; Teledyne T640x	RFPS-0509-176; EQPM-0516-240
PM Speciation	IMPROVE Sampler	
Precipitation	ETI Instrument Systems NOAH IV	
Relative Humidity	Climatronics Met One Rotronic HygroClip HC2-S	
Solar Radiation	Climatronics Met One	
Sulfate Continuous	Thermo Model 5020	
Sulfur Dioxide	Thermo Model 43C, 43C-TLE, 43i, 43i-TLE Teledyne API Model T100	EQSA-0486-060 EQSA-0495-100
Temperature	Climatronics Met One Rotronic HygroClip HC2-S	
Total PAH	Ecochem PAS 2000	
VOC's (PAMS)	Perkin Elmer Clarus 580	
Wind Speed/Direction	Climatronics F460 Met One	

* Designated Reference and Equivalent Methods as of December 17, 2016.

2023 Integrated Sample Schedule



EPA version of sampling schedule can be found at: https://www.epa.gov/amtic/sampling-schedule-calendar

The following pages present descriptions of the ambient air monitoring sites maintained and operated by both the Maine Department of Environmental Protection Bureau of Air Quality and the Tribal Nations. Sites are arranged alphabetically by Town – Site Name; this table offers an index to the sites based on AQS Site ID.

2023 Monitoring Site Information

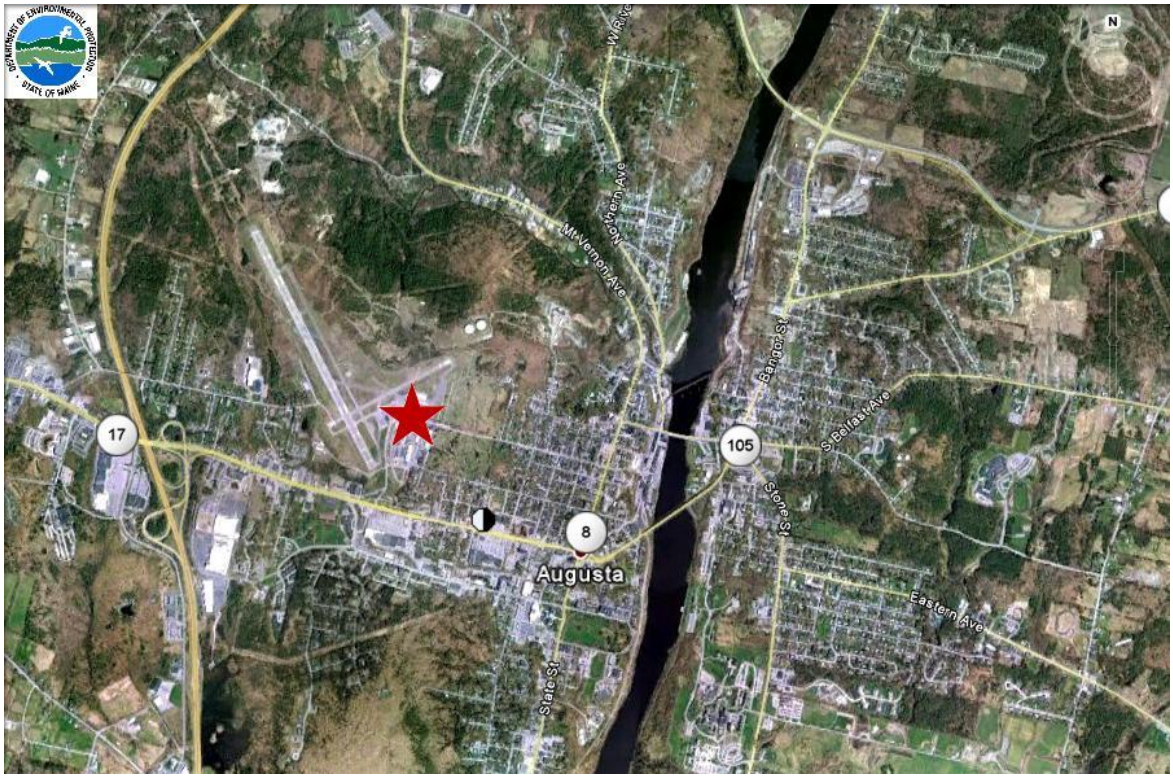
APPENDIX 1

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

MONITORING SITES

FOR 2023

Town – Site:	**Augusta – Airport**		
County:	**Kennebec**	Latitude:	**44.3179**
Address:	**Augusta State Airport**	Longitude:	**-69.7919**
AQS Site ID:	**23-011-0008**	Elevation:	**107 Meters**
Spatial Scale:	**Regional**	Year Established:	**1981**
Statistical Area:	**Augusta-Waterville, ME**		



Augusta – Airport
Pollutant and Meteorological Parameters:

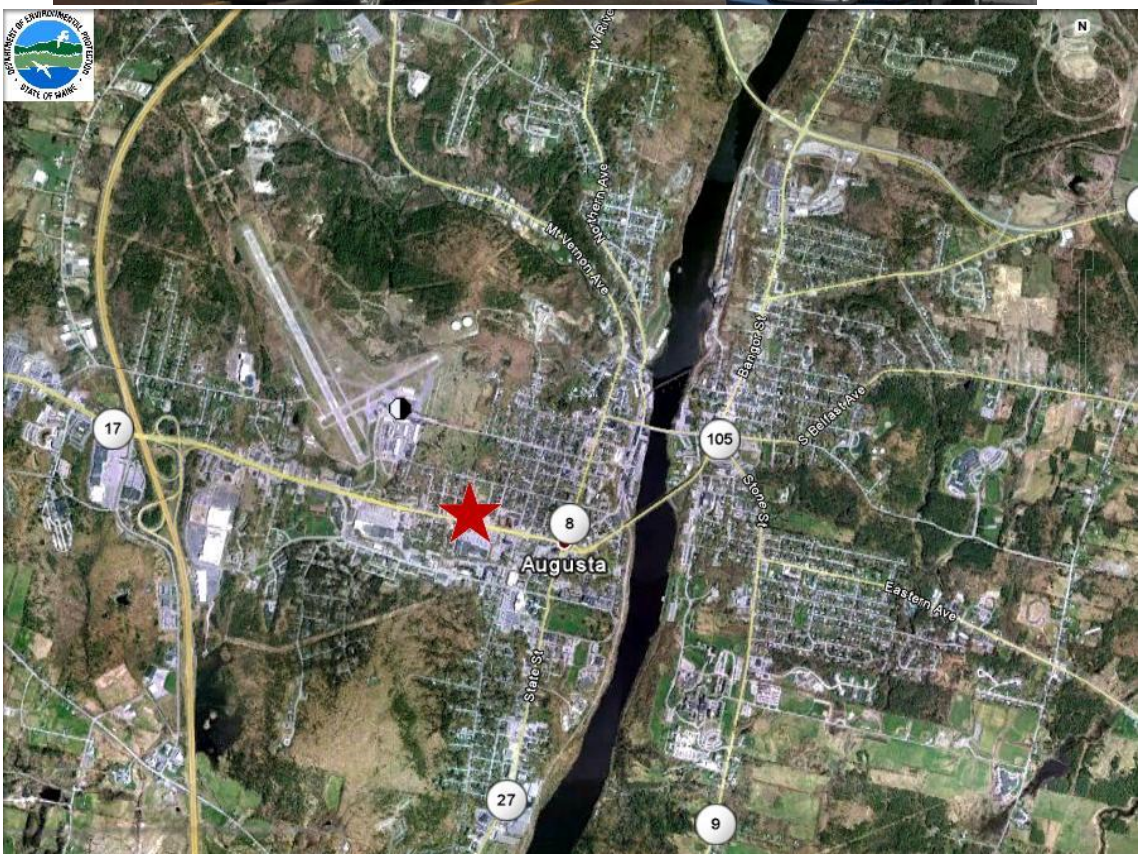
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	01/20/1981	
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
A retractable tower with wind speed and direction sensors is situated on the roof of the Airport Terminal Building at the Augusta State Airport, 0.8 miles NW of the state capitol. The data acquisition equipment and modem are located in the adjacent equipment shed to the west. The 10-meter tower is raised only to the height of the surrounding antennae due to the proximity of the flight line. The tower and equipment were moved to the terminal in October 2015 because the Civil Air Patrol Hanger, where the tower was originally situated, was slated for replacement.

Monitoring Objectives:
Modeling.

Planned changes for 2023:
None.

Town – Site:	**Augusta – Lincoln Street School**		
County:	**Kennebec**	Latitude:	**44.3123**
Address:	**30 Lincoln Street**	Longitude:	**-69.7867**
AQS Site ID:	**23-011-0016**	Elevation:	**71 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1999**
Statistical Area:	**Augusta-Waterville, ME**		



Augusta – Lincoln Street School
Pollutant and Meteorological Parameters:

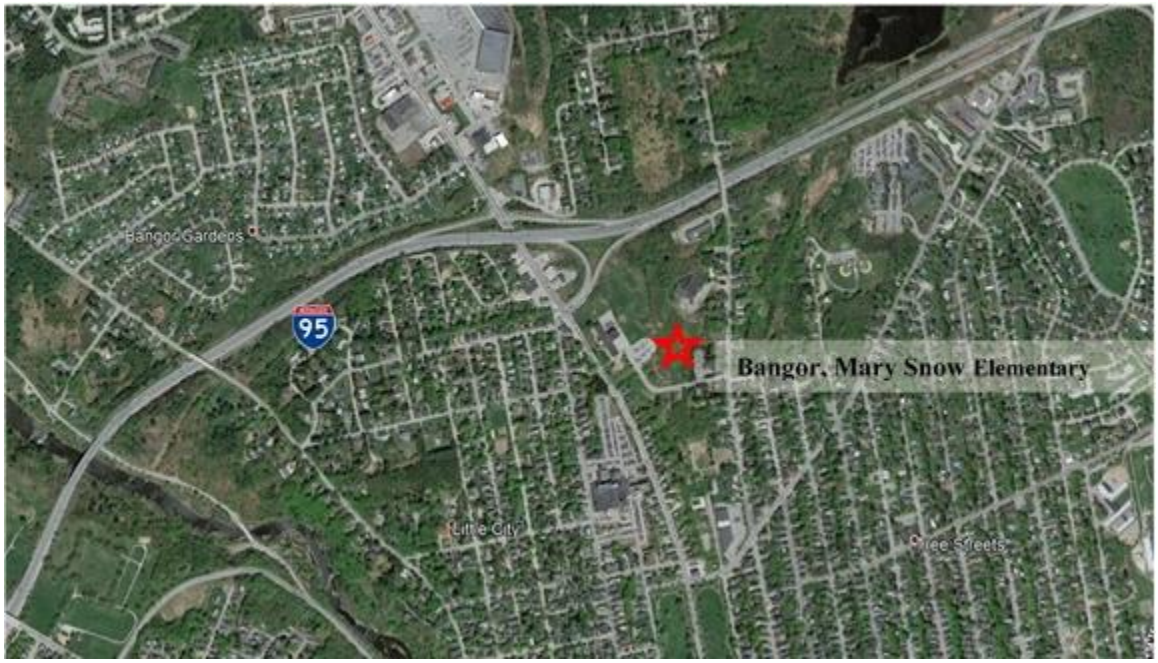
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	01/01/1999		SO_2		
PM2.5 - 24 Hr. Colo	01/01/1999		Ozone		
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	12/02/2002		NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Lincoln Street School is located in Augusta just off Western Avenue, 0.4 miles northwest of the state capitol. An aluminum platform is situated on the roof of the gymnasium. Particulate monitors are attached to the platform.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure.

Planned changes for 2023: A T640X PM monitor may be established in 2023.

Town – Site:	**Bangor – Mary Snow Elementary School**		
County:	**Penobscot**	Latitude:	**44.817398**
Address:	**435 Broadway St.**	Longitude:	**-68.772762**
AQS Site ID:	**23-019-0017**	Elevation:	**54.2 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2017**
Statistical Area:	**Bangor, ME**		



Bangor – Mary Snow Elementary School
Pollutant and Meteorological Parameters:

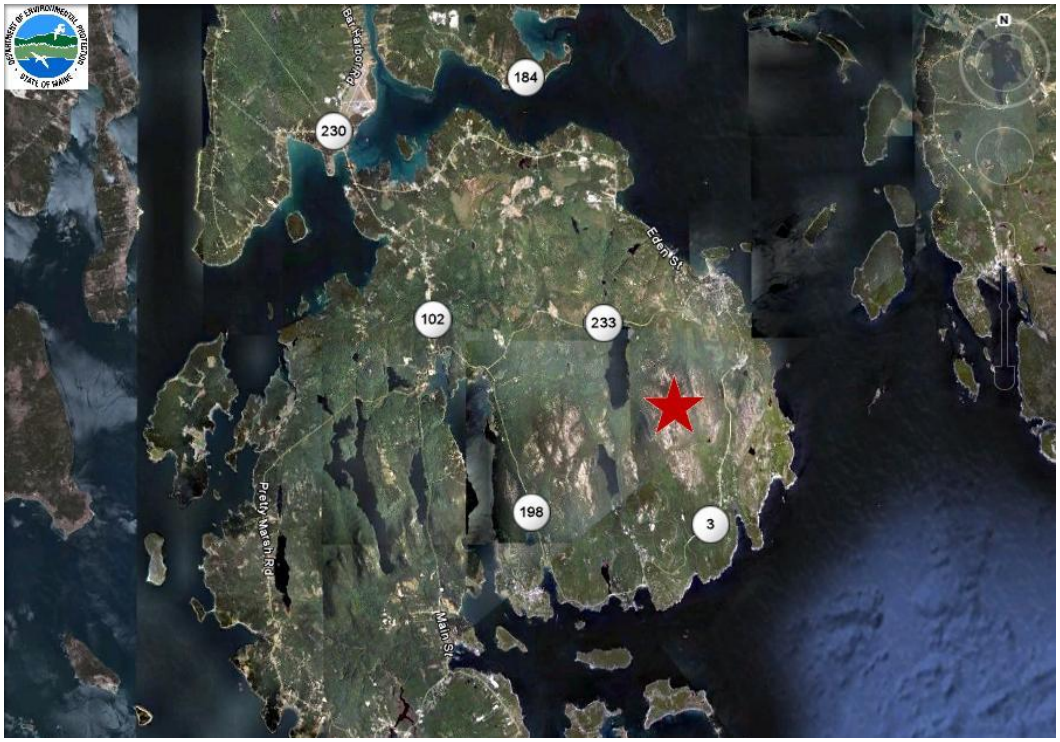
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	10-01-2017	12-31-2019	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	10-01-2017		NOx		
PM10 - 24 Hr.	10-01-2017		NOy		
PM10 - 24 Hr. Colo	TBD		HAPs	10-01-2017	
PM10 Cont.			VOCs (PAMS)		
PM Coarse	10-01-2017	12-31-2019	Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located on the roof of Mary Snow Elementary School located on Broadway just south of the I 95 interchange in Bangor.

Monitoring Objectives:
Attainment/Non-Attainment/High Population Exposure site. AQI Forecasting and Mapping.

Planned changes for 2023: Addition of PM10 – 24hr Collocation (FRM)

Town – Site:	**Bar Harbor – Cadillac Mountain, Acadia National Park**		
County:	**Hancock**	Latitude:	**44.3517**
Address:	**Top of Cadillac Mountain**	Longitude:	**-68.2272**
AQS Site ID:	**23-009-0102**	Elevation:	**463 M (1519 ft)**
Spatial Scale:	**Regional**	Year Established:	**1995**
Statistical Area:	**None**		



Bar Harbor – Cadillac Mountain, Acadia National Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	7-25-1995	
PM2.5 Cont.			NOx	4-1-2004	9-30-2007
PM10 - 24 Hr.			NOy	1-1-2008	9-30-2014
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)	5-1-1996	9-30-2014
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	5-6-1996	
Cont. Sulfate (SO_4)			Outdoor Temperature	4-19-1996	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	4-19-1996	
Lead			Dew point		
CO	4-1-2002	10-1-2003	Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Located on the top of Cadillac Mountain in Acadia National Park. It is a seasonal ozone site operating during the months of April to October. Ambient parameters are also collected seasonally. The 8 by 16 shelter was replaced with an 8 by 10 shelter in 2020 that is more energy efficient and suitable for monitoring going forward.
Purple Air sensor was established at this site for a time during 2021 as part of a particulate matter study in Bar Harbor.

Monitoring Objectives:
Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: None

Town – Site:	**Bar Harbor – McFarland Hill, Acadia National Park**		
County:	**Hancock**	Latitude:	**44.3771**
Address:	**Route 233**	Longitude:	**-68.2609**
AQS Site ID:	**23-009-0103**	Elevation:	**156 Meters**
Spatial Scale:	**Regional**	Year Established:	**1998**
Statistical Area:	**None**		

Bar Harbor – McFarland Hill, Acadia National Park
Pollutant and Meteorological Parameters:

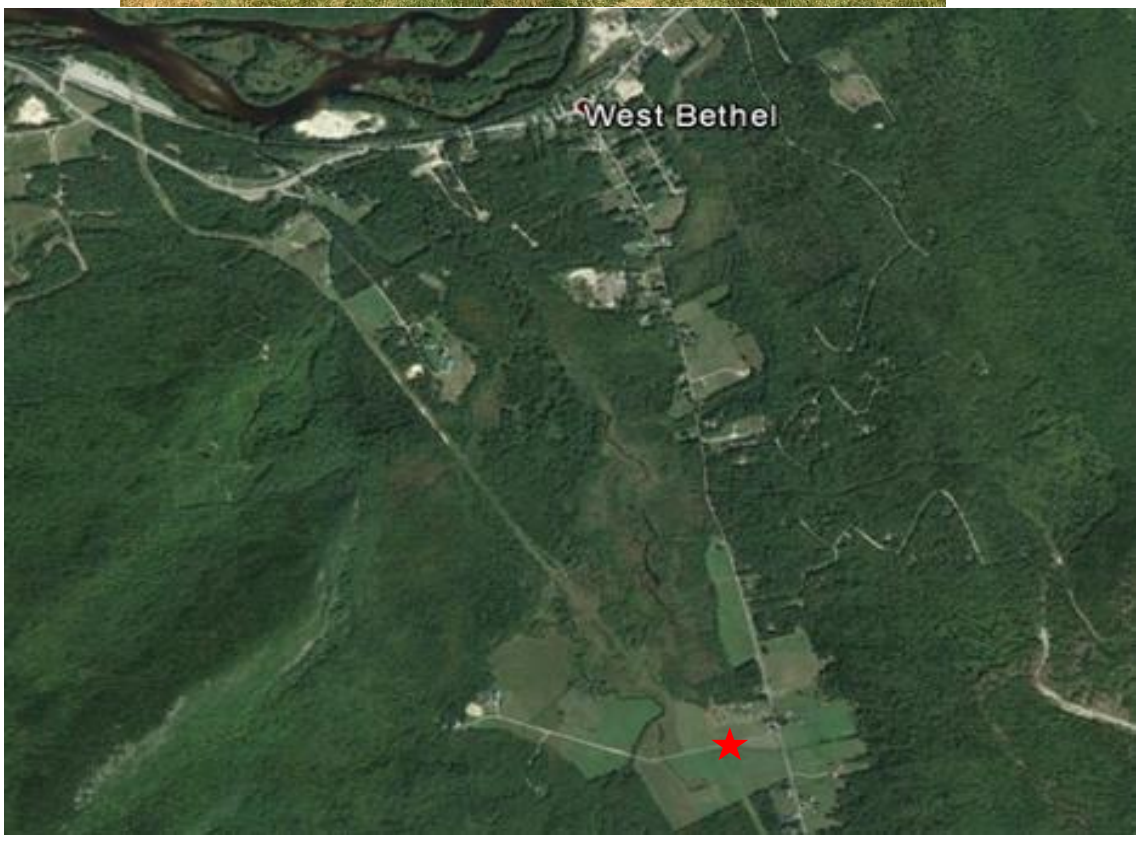
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999		SO_2	2-1-2004	
PM2.5 - 24 Hr. Colo			Ozone	2-1-1998	
PM2.5 Cont.	10-1-2003		NOx		
PM10 - 24 Hr.	1-1-2010		NOy	2-1-2004	
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	1/12/2023		VOCs (PAMS)		
PM Coarse	1-1-2010		Wet Deposition - Mercury	1998	
IMPROVE	3-2-1988		Wet Dep. - Precip Chem.	1998	
Cont. OC/EC	6-29-2004		Wind Direction/Speed	2-1-1998	
Cont. Sulfate (SO_4)	6-26-2004		Outdoor Temperature	2-1-1998	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	2-1-1998	
Lead			Dew point		
CO	2-1-2004		Precipitation Amount	2-1-1998	
CO_2			Solar Radiation	2-1-1998	
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located in a field on the side of McFarland Hill in Bar Harbor. Site slopes to the south/southeast with the hill rising to the north. The site was established by the National Park Service but has since grown to include a variety of monitors for EPA programs, special studies such as the Rural Aerosol Intensive Network and as the NCore site for Maine. A continuous $PM_{2.5}$ TEOM operated from 10/1/2003 until 10/30/2013. It was replaced with a continuous $PM_{2.5}$ BAM which ran from 11/12/2013 to 10/9/2018. The BAM was operated concurrent with a Thermo Fisher Scientific Model 5030i from August 14, 2017 to 10/9/2018. The 5030i remains in operation. Purple Air sensor was established at this site as part pf a particulate matter study in 2021.
Monitoring at this site is a joint effort between the NPS and the Maine DEP.

Monitoring Objectives:
Background. NCore Site. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: Addition of T640X to provide continuous PM10 and PMcoarse along with continuous PM2.5 instead of Thermo 5030i. Removal of FRM PM10 samplers

Town – Site:	**Bethel – Smith Farm Road**		
County:	**Oxford**	Latitude:	**44.377794**
Address:	**Smith Farm Road**	Longitude:	**-70.854697**
AQS Site ID:	**23-017-3002**	Elevation:	**203 Meters**
Spatial Scale:	**Regional**	Year Established:	**2016**
Statistical Area:	**None**		



Bethel – Smith Farm Road
Pollutant and Meteorological Parameters:

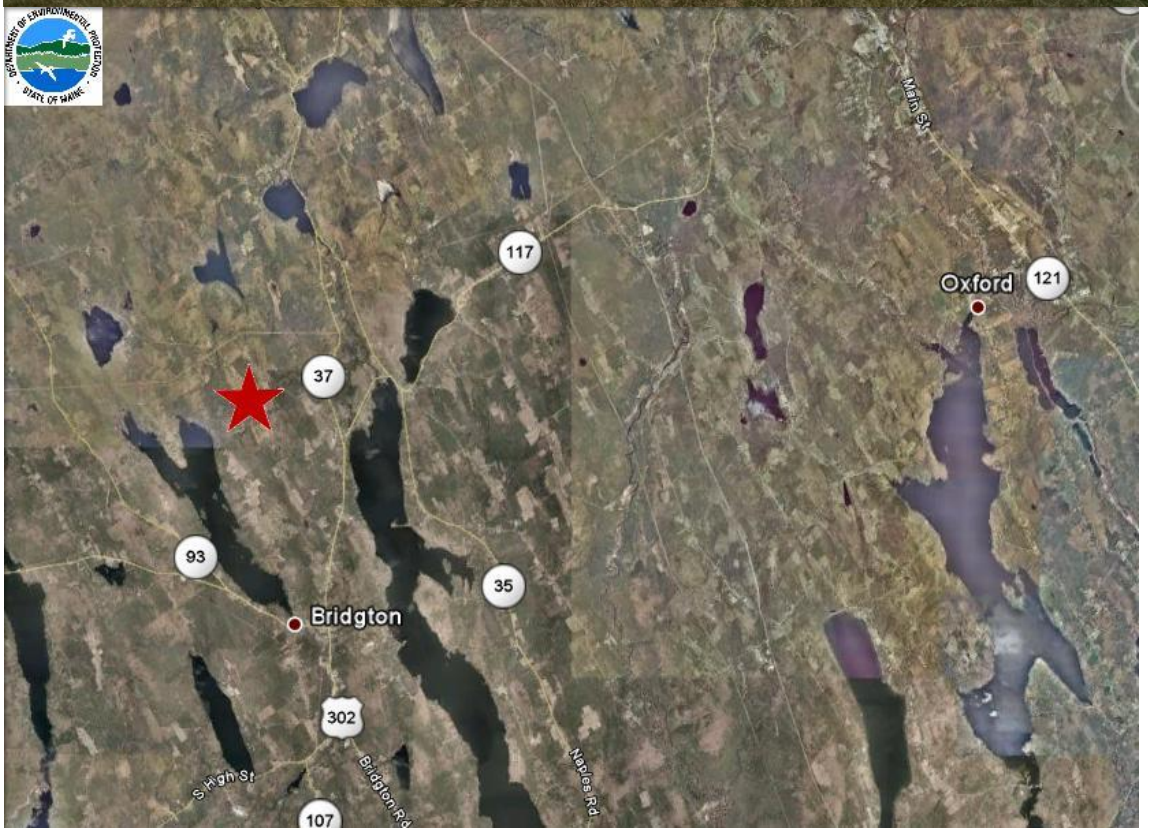
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	5-12-2016	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located approximately 3.5 miles southwest of Bethel, Maine on Smith Farm Road. The shelter is situated in a field along the power line right of way.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Western Mountain Location

Planned changes for 2023:
None.

Town – Site:	**Bridgton**		
County:	**Cumberland**	Latitude:	**44.1074**
Address:	**Upper Ridge Road**	Longitude:	**-70.7290**
AQS Site ID:	**23-005-0002**	Elevation:	**223 meters**
Spatial Scale:	**Regional**	Year Established:	**1980**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Bridgton
Pollutant and Meteorological Parameters:

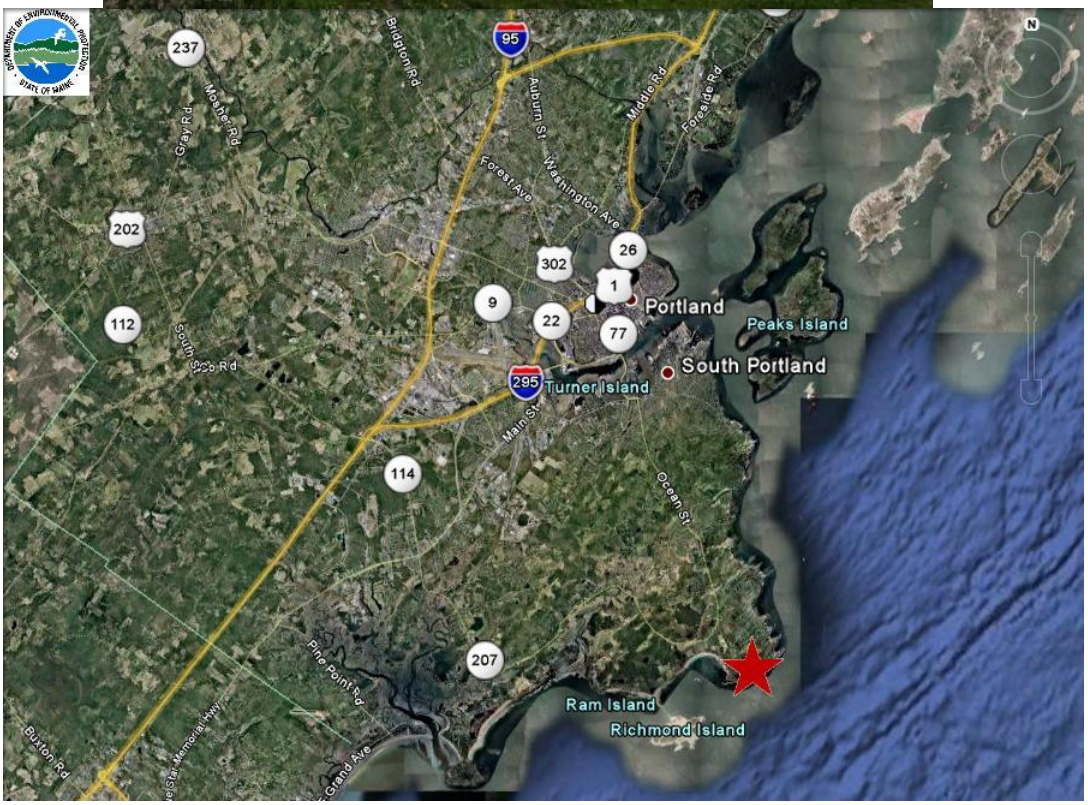
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	6-3-1997	
IMPROVE	3-14-2001	1/1/2016	Wet Dep. - Precip Chem.	1-1-1980	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located on a ridge in an open field area just off the Upper Ridge Road.

Monitoring Objectives:
Long-term tracking of deposition. Western Mountain Location

Planned changes for 2023:
IMPROVE monitoring was discontinued at the end of 2015. The BAQ is seeking alternative funding to re-establish IMPROVE monitoring in the future. Nothing planned for 2023.

Town – Site:	**Cape Elizabeth, Two Lights State Park**		
County:	**Cumberland**	Latitude:	**43.5610**
Address:	**Two Lights State Park**	Longitude:	**-70.2073**
AQS Site ID:	**23-005-2003**	Elevation:	**24 meters**
Spatial Scale:	**Regional**	Year Established:	**1981**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Cape Elizabeth, Two Lights State Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999	12-17-2002	SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-1981	
PM2.5 Cont.			NOx	6-9-1993	10-31-1995
PM10 - 24 Hr.			NOy	6-26-1995	10-25-2022
PM10 - 24 Hr. Colo			HAPs	12-6-2013/6-1-2020	5-30-2019
PM10 Cont.			VOCs (PAMS)	6-1-1993	
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	6-25-1985	
Cont. Sulfate (SO_4)			Outdoor Temperature	6-7-1994	
Black Carbon			Bar. Pressure	6-7-1994	
Cont. PAH			Relative Humidity	6-7-1994	
Lead			Dew point		
CO	5-1-2001	10-1-2007	Precipitation Amount		
CO_2			Solar Radiation	6-7-1994	
Gamma Radiation			UV-b Radiation	6-1-1995	
			Pandora	June 2021	

Site Description:
The Cape Elizabeth site is located in an open elevated area in the Two Lights State Park in Cape Elizabeth. Ozone and meteorological parameters are monitored year-round, The GC is operated during the peak ozone months of June, July and August.

Monitoring Objectives:
Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: If resources allow, a HAPS sampler will be re-established at Cape Elizabeth**. NOy monitoring will be discontinued. Meteorological measurements may become seasonal upon review. The Continuous GC measuring VOCs (PAMS) maybe shut down upon review.**

Town – Site:	**Caribou – Caribou Airport**		
County:	**Aroostook**	Latitude:	**46.8683**
Address:	**Caribou Airport**	Longitude:	**-67.9931**
AQS Site ID:	**23-003-1002**	Elevation:	**191 meters**
Spatial Scale:	**Regional**	Year Established:	**1982**
Statistical Area:	**None**		

Caribou – Caribou Airport
Pollutant and Meteorological Parameters:

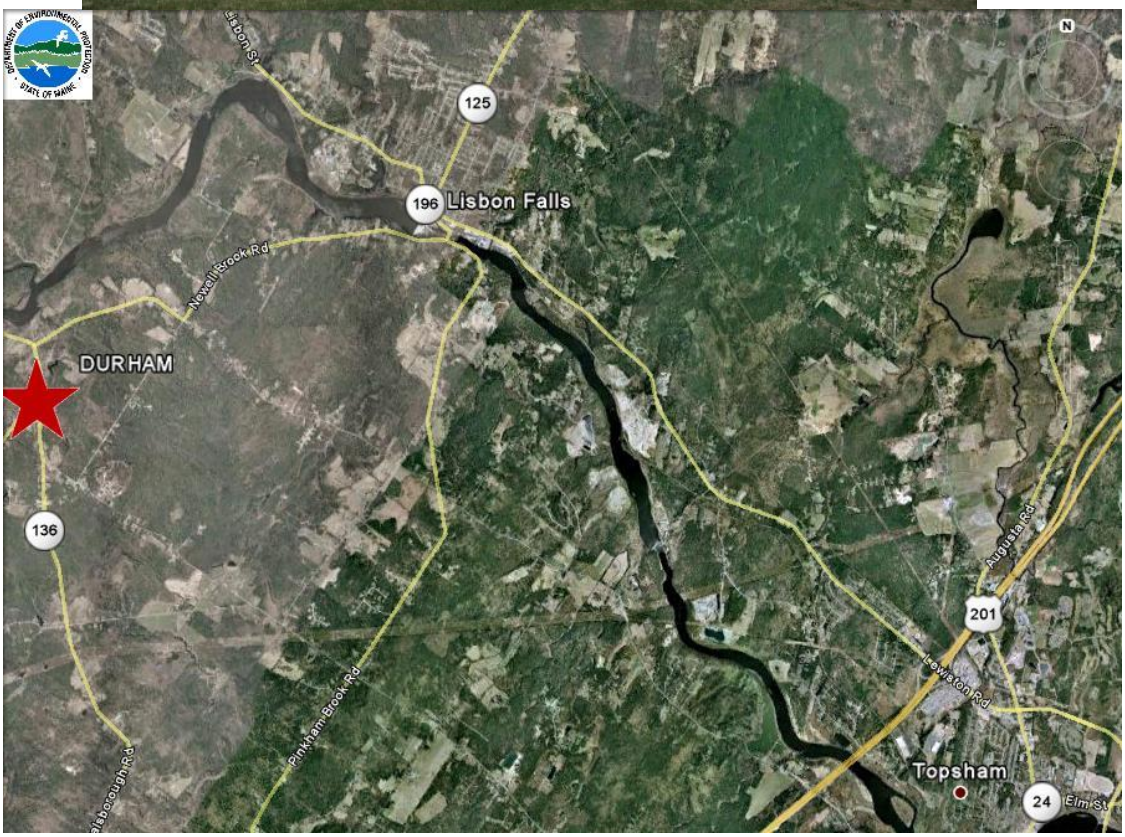
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	5/9/2007	
IMPROVE			Wet Dep. - Precip Chem.	1-1-1982	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	1-1-1982	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located in a grassy area inside the fence and off the south end of the runway at Caribou Airport

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in northern Maine

Planned changes for 2023:
None.

Town – Site:	**Durham – Fire Station**		
County:	**Androscoggin**	Latitude:	**43.9745**
Address:	**Route 9**	Longitude:	**-70.1249**
AQS Site ID:	**23-001-0014**	Elevation:	**50 meters**
Spatial Scale:	**Regional**	Year Established:	**2004**
Statistical Area:	**Lewiston-Auburn, ME**		



Durham – Fire Station
Pollutant and Meteorological Parameters:

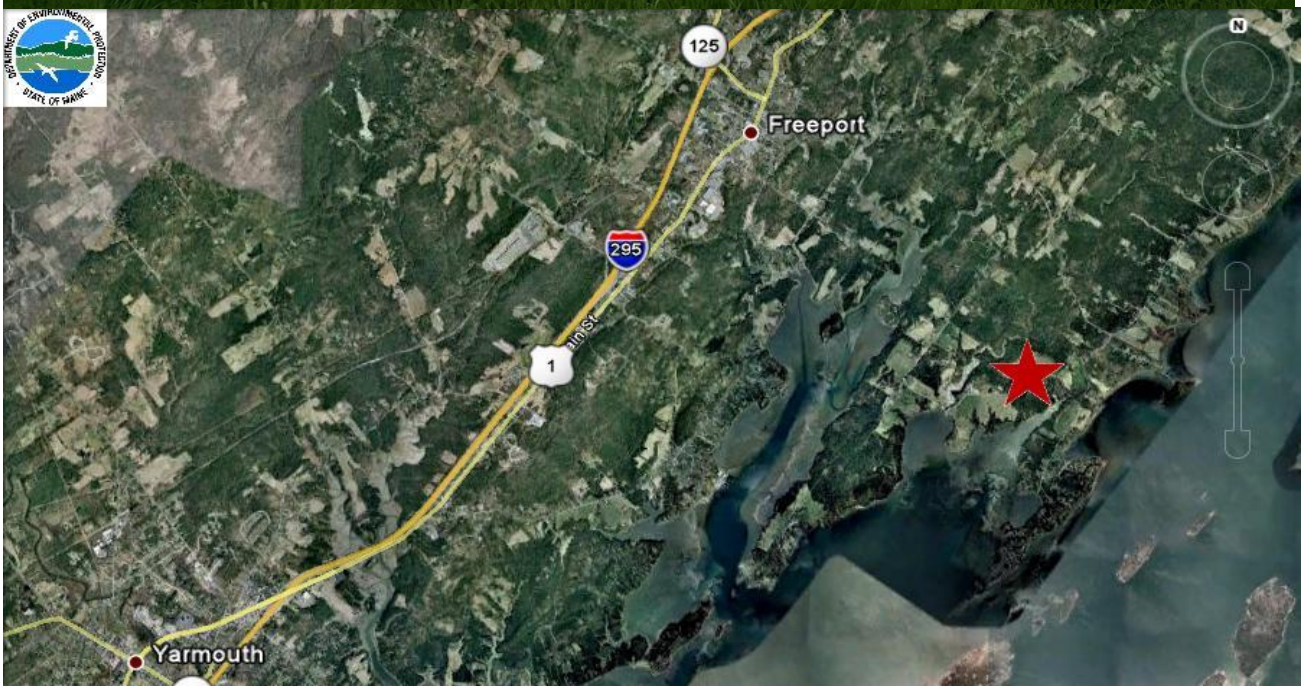
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	04/01/2004	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located on the grounds of the Durham Fire Station, 9 ½ miles SE of Lewiston. An ozone monitor is located within an 8'x8'x8' environmentally controlled shelter. The shelter was installed in 2006. During the summers of 2004 and 2005, an ozone monitor was set up temporarily in a corner of the fire station with a probe attached to the roof edge to determine if the location warranted continued monitoring.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2023: none

Town – Site:	**Freeport – Wolfes Neck Farm**		
County:	**Cumberland**	Latitude:	**43.8325**
Address:	**Wolfe's Neck Road**	Longitude:	**-70.0644**
AQS Site ID:	**23-005-9002**	Elevation:	**27 Meters**
Spatial Scale:	**Regional/Neighborhood**	Year Established:	**1998**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Freeport – Wolfes Neck Farm
Pollutant and Meteorological Parameters:

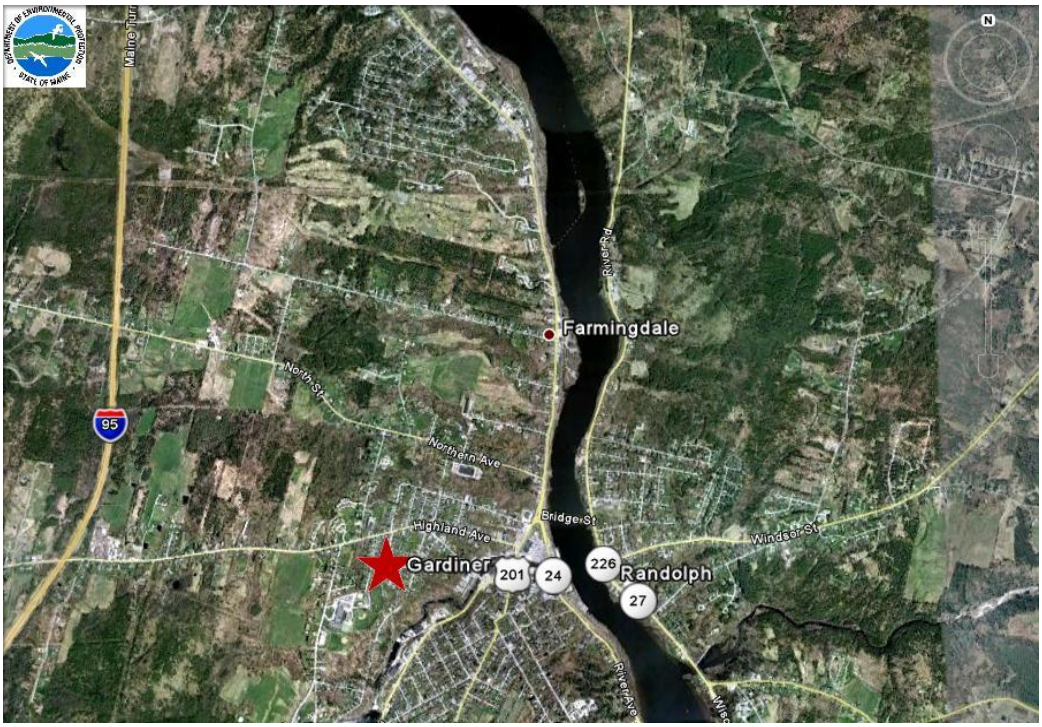
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	1-7-1998	
IMPROVE	3/14/2001		Wet Dep. - Precip Chem.	1-7-1998	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	1-7-1998	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		
			Wet Deposition - PFAS	10/13/2020	

Site Description:
Site is located within a fenced in area in the middle of a large open field used as a pasture by the Wolfe's Neck farm. Construction activity near site may force relocation of the samplers.

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in northern Maine**.** IMPROVE Site. PFAS sampling started in 2020.

Planned changes for 2023: none

Town – Site:	**Gardiner – High School**		
County:	**Kennebec**	Latitude:	**44.226566**
Address:	**West Street**	Longitude:	**-69.788624**
AQS Site ID:	**23-011-2001**	Elevation:	**63.6 Meters**
Spatial Scale:	**Regional**	Year Established:	**2020**
Statistical Area:	**Augusta-Waterville, ME**		



Gardiner – High School
Pollutant and Meteorological Parameters

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	01/01/2020	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The shelter is located not far from the southeast corner of the building. Good exposure to the northeast around to the west.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: none
Our intention is to monitor ozone from this location going forward. This site replaces the Pray Street School site.

Town – Site:	**Greenville**		
County:	**Piscataquis**	Latitude:	**45.463**
Address:	**Greenville Municipal Airport**	Longitude:	**-69.55579**
AQS Site ID:	**23-021-0001**	Elevation:	**424 Meters**
Spatial Scale:	**Regional**	Year Established:	**2021**
Statistical Area:	**None**		

Greenville
Pollutant and Meteorological Parameters:

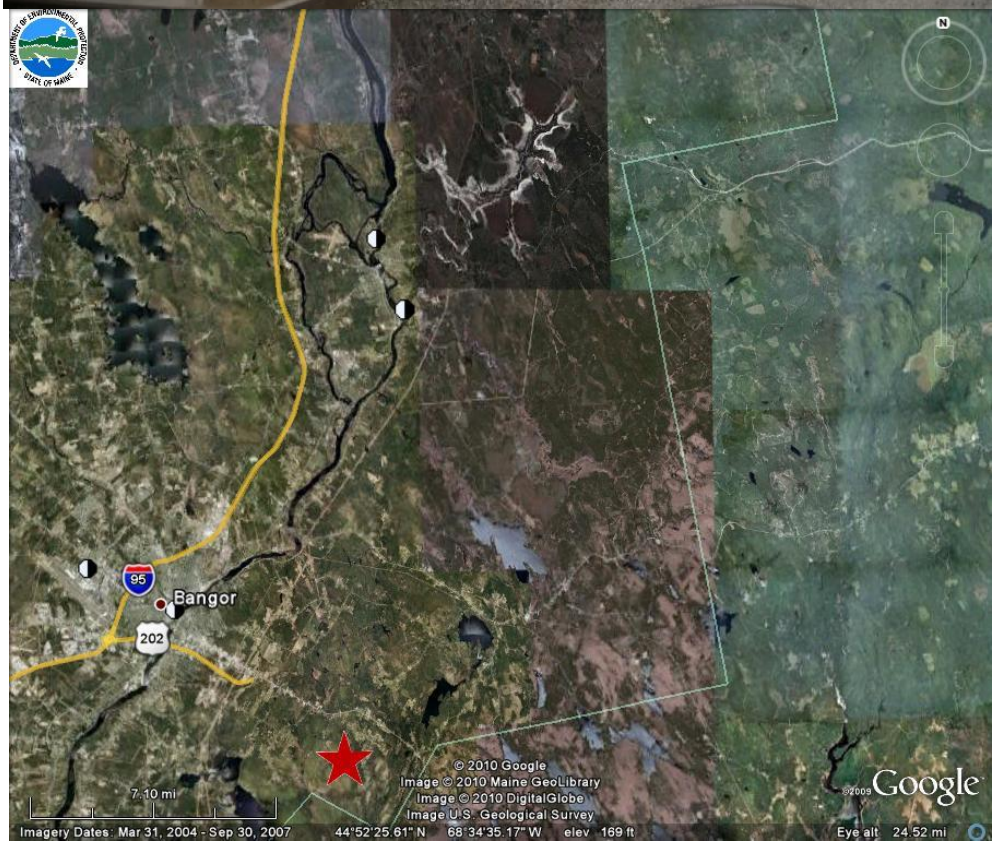
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	7/2021	
IMPROVE			Wet Dep. - Precip Chem.	7/2021	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	7/2021	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
This site was moved from the private property northwest of Greenville Junction to the Greenville Municipal Airport property. This was done to improve siting for the samplers. This location has much better exposure to regional air flow.

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in western Maine

Planned changes for 2023: None.

Town – Site:	**Holden**		
County:	**Penobscot**	Latitude:	**44.7365**
Address:	**Summit of Rider's Bluff**	Longitude:	**-68.6711**
AQS Site ID:	**23-019-4008**	Elevation:	**250 Meters**
Spatial Scale:	**Regional**	Year Established:	**1993**
Statistical Area:	**Bangor, ME**		



Holden

Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	5-19-1993	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is a transmission tower location for a local TV station at the top of a hill in Holden with good exposure in all directions.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: none

Town – Site:	**Jonesport – Coast Guard Station**		
County:	**Washington**	Latitude:	**44.5276553**
Address:	**9 Bridge St.**	Longitude:	**-67.615495**
AQS Site ID:	**23-029-0021**	Elevation:	**2.0 Meters**
Spatial Scale:	**Regional**	Year Established:	**2022**
Statistical Area:	**None**		

Jonesport – Coast Guard Station
Pollutant and Meteorological Parameters:

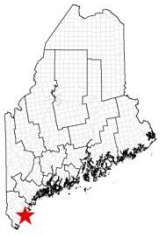
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	2/24/2023 (est)	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	11/16/2022	
Cont. Sulfate (SO_4)			Outdoor Temperature	11/16/2022	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	11/16/2022	
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

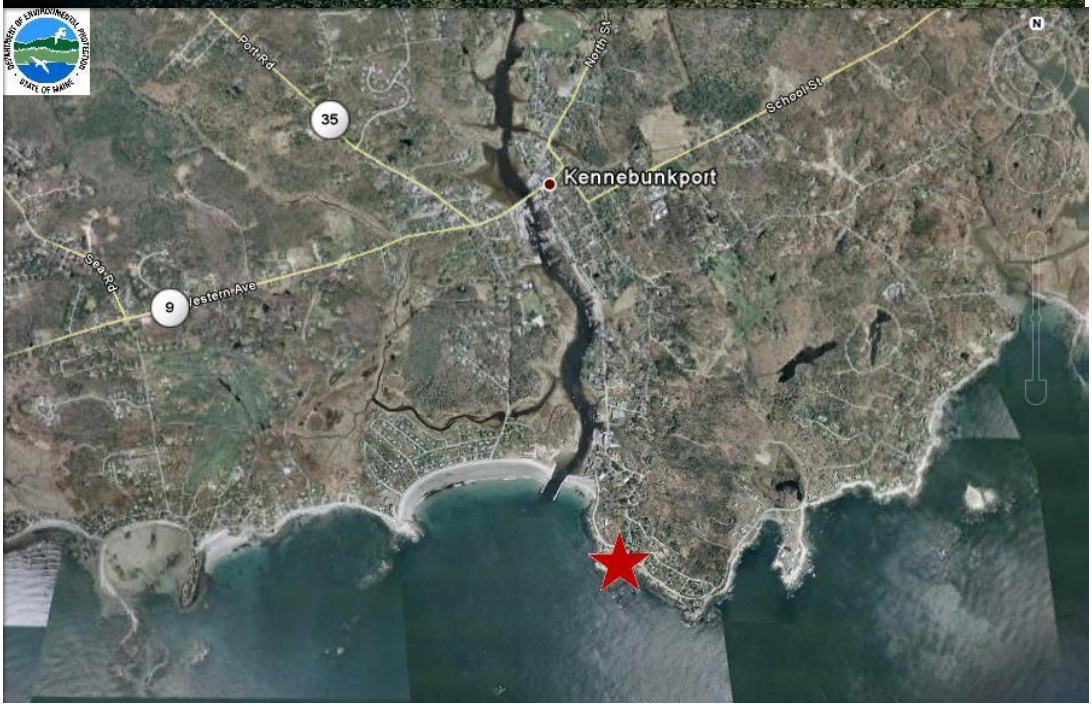
Site Description:
Monitor located in a shelter at the US Coast Guard Station parking lot. This site replaces the Jonesport Public Landing site. That site was discontinued due to the planned demolition of the building at the Public Landing.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2023:
None.

Town – Site:	**Kennebunkport – Parson's Way**		
County:	**York**	Latitude:	**43.3431**
Address:	**Ocean Avenue**	Longitude:	**-70.4714**
AQS Site ID:	**23-031-2002**	Elevation:	**6 Meters**
Spatial Scale:	**Regional**	Year Established:	**1983**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		





Kennebunkport – Parson's Way
Pollutant and Meteorological Parameters:

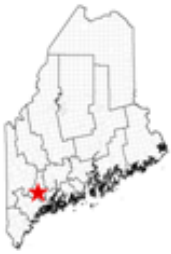
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-1983	
PM2.5 Cont.			NOx	6-1-1990	9-1-1990
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

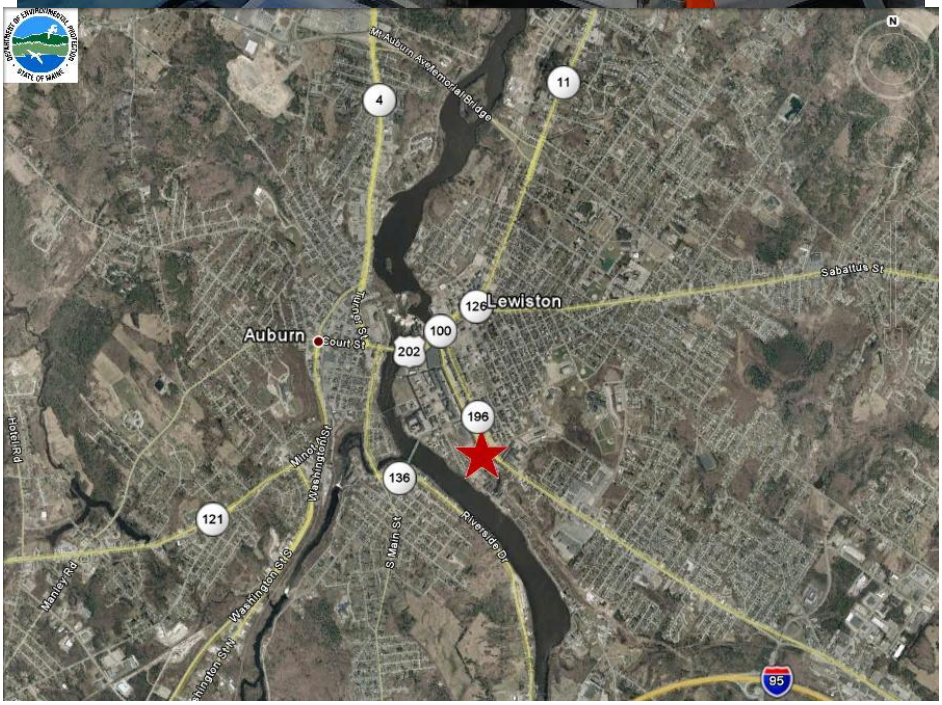
Site Description:
Site is located on a rocky beach area just off Ocean Avenue. Site has good exposure and has recorded some of the highest ozone concentrations in the state. A wooden 8'x8'x8' structure remains chained to the rocky ledge year-round for convenience at the start-up and shut-down of each ozone season.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: none

Town – Site:	**Lewiston – Country Kitchen Parking Lot**		
County:	**Androscoggin**	Latitude:	**44.0894**
Address:	**Canal Street**	Longitude:	**-70.2141**
AQS Site ID:	**23-001-0011**	Elevation:	**50 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1981**
Statistical Area:	**Lewiston-Auburn ME**		





Lewiston – Country Kitchen Parking Lot
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	01/01/1999	12/31/2019	SO_2	07/13/1998	12/30/2002
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	01/01/2000		NOx		
PM10 - 24 Hr.	04/01/2004		NOy		
PM10 - 24 Hr. Colo			HAPs	06/14/2004	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead	06/01/1989	12/31/1993	Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located in downtown Lewiston in the parking lot of the Country Kitchen Bakery. An 8'x8'x8' shelter houses electronic monitoring equipment, data acquisition system and modem, in a climate-controlled environment, with PM monitors and intakes situated on the roof. A continuous $PM_{2.5}$ TEOM operated from 1/1/2000 until 9/12/2013. It was replaced with a continuous $PM_{2.5}$ BAM on 9/12/2013 which remains in operation.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure

Planned changes for 2023: none.

Town – Site:	**Madawaska – Public Safety Bldg.**		
County:	**Aroostook**	Latitude:	**47.3553**
Address:	**East Maine St.**	Longitude:	**-68.3211**
AQS Site ID:	**23-003-0014**	Elevation:	**177 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2009**
Statistical Area:	**None**		

Madawaska – Public Safety Bldg.
Pollutant and Meteorological Parameters:

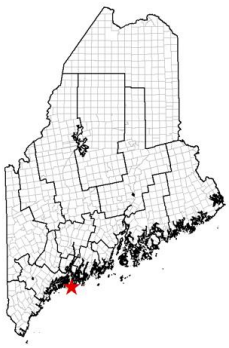
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	8-1-2009	12-31-2019	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	1-17-2014		NOx		
PM10 - 24 Hr.	8-1-2009	12/31/2021	NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	September 2020		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

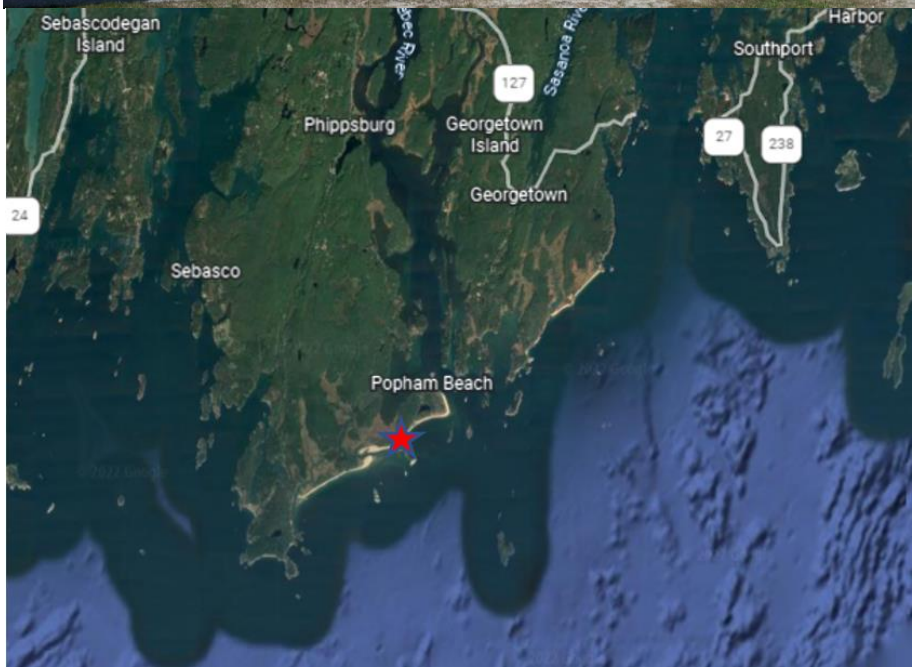
Site Description:
Monitoring platform established in 2009 on the roof of the Madawaska Public Service Building.
NOTE: The fire department has hosted big BBQ events on certain holidays and smoke from the grills are quite often detected by the ambient air monitoring equipment. Continuous PM10 sampler established by September 2020 to document ambient air quality effects from this festive event.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2023: . The two Met One BAM samplers will be replaced with a single T640x instrument for PM2.5/PM10

Town – Site:	**Popham Beach State Park**		
County:	**Sagadahoc**	Latitude:	**43.736277**
Address:	**711 Popham Road.**	Longitude:	**-69.797654**
AQS Site ID:	**23-023-0007**	Elevation:	**5 meters**
Spatial Scale:	**Regional**	Year Established:	**2022**
Statistical Area:	**None**		





Popham Beach State Park
Pollutant and Meteorological Parameters:

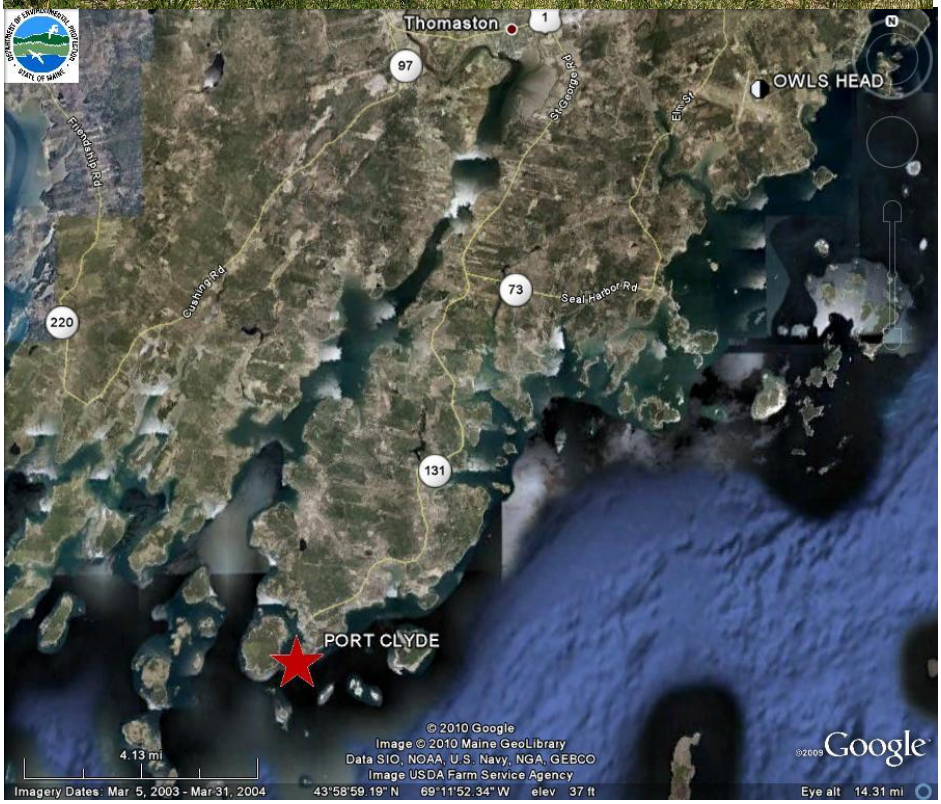
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	April 13, 2022	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Environmentally controlled cabinet installed in a utility room of the "Bath House" at the State Park.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2023: None.

Town – Site:	**Port Clyde – Marshall Point Lighthouse**		
County:	**Knox**	Latitude:	**43.9180**
Address:	**Marshall Point Road**	Longitude:	**-69.2608**
AQS Site ID:	**23-013-0004**	Elevation:	**9 Meters**
Spatial Scale:	**Regional**	Year Established:	**1987**
Statistical Area:	**Rockland, ME**		



Port Clyde – Marshall Point Lighthouse
Pollutant and Meteorological Parameters:

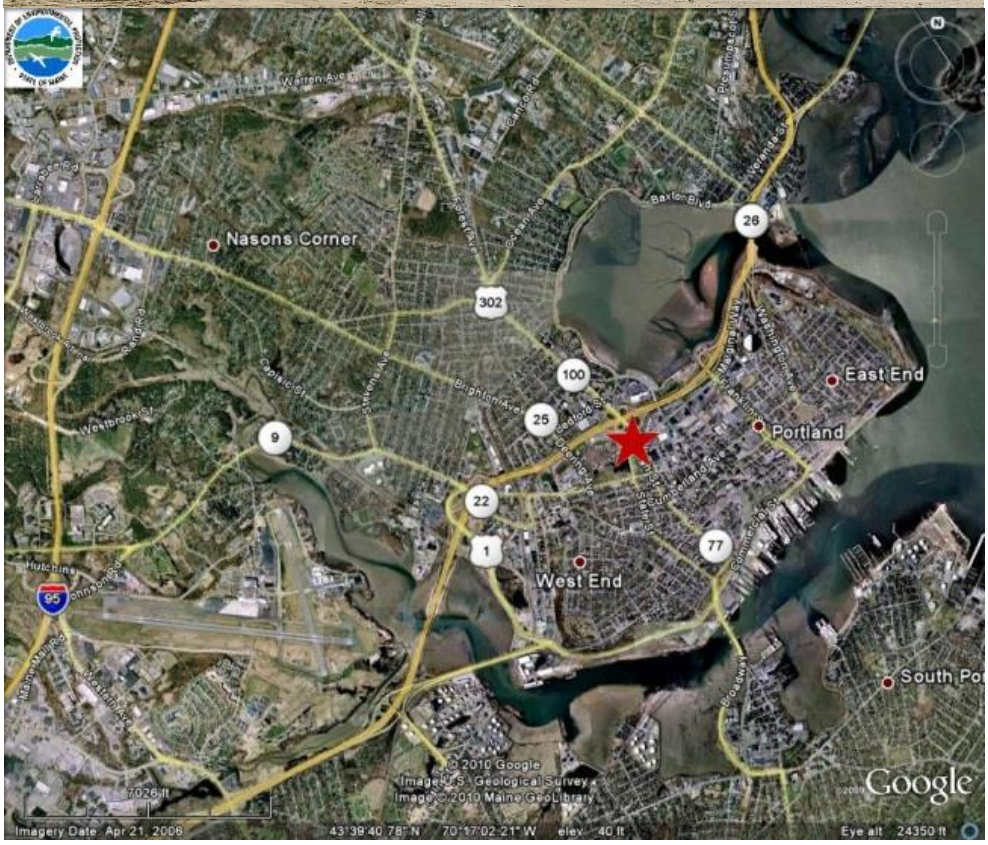
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	05/01/1987	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located at Marshall Point on the grounds of the Marshall Point Lighthouse Museum about 14.8 miles southwest of downtown Rockland. A 6'x6'x'8 environmentally controlled shelter houses the monitor, data acquisition equipment and modem.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: None

Town – Site:	**Portland – Deering Oaks Park**		
County:	**Cumberland**		
Address:	**356 State St.**	Latitude:	**43.6602**
AQS Site ID:	**23-005-0029**	Longitude:	**-70.2690**
Spatial Scale:	**Neighborhood**	Elevation:	**4 meters**
Statistical Area:	**Portland-South Portland-Biddeford, ME**	Year Established:	**2008**



Portland – Deering Oaks Park
Pollutant and Meteorological Parameters:

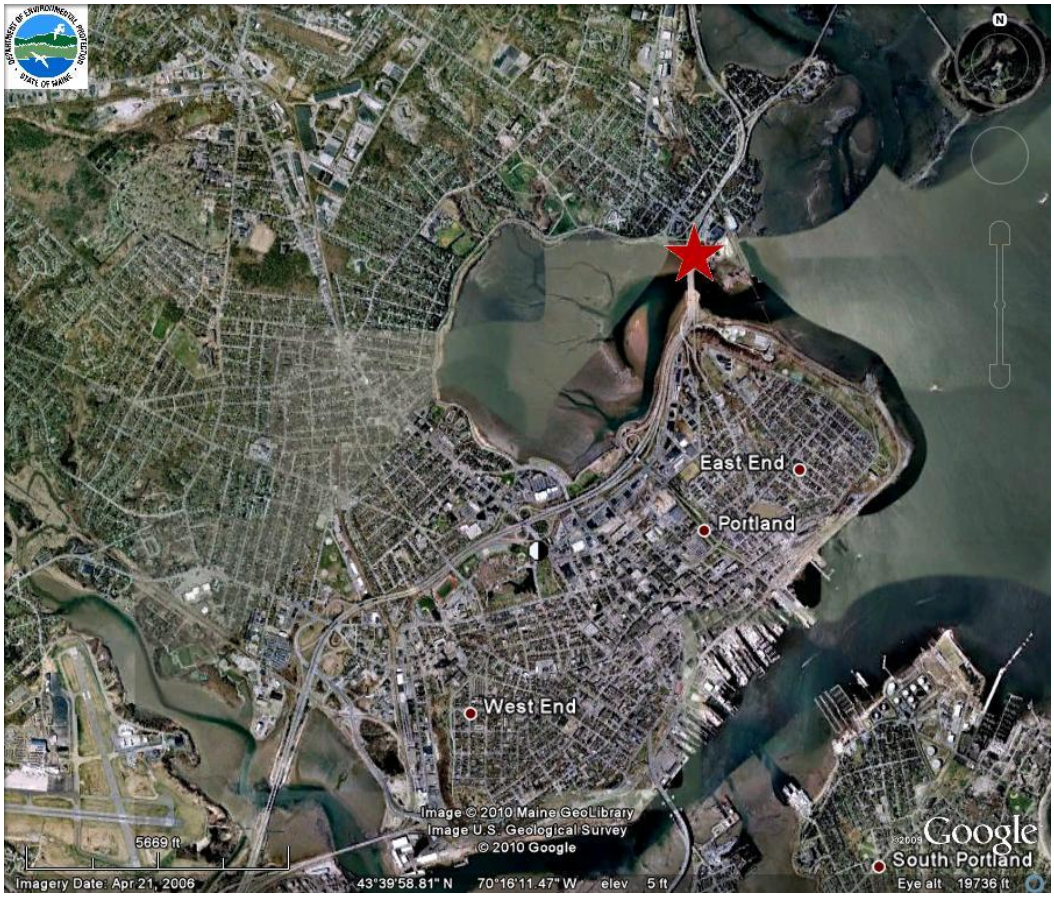
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-22-2008		SO_2	1-24-2008	3-1-2021
PM2.5 - 24 Hr. Colo	1-31-2008	1/31/2020	Ozone	1-18-2008	
PM2.5 Cont.	1-18-2008		NOx	2-5-2008	
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs	3-14-2009	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO	5-1-2008	1 – 17 - 2022	Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation	1-29-2009		UV-b Radiation		

Site Description:
The Portland Deering Oaks (PDO) site was established in 2008 to replace the Marginal Way site, which had to be removed to make way for development activity. The site is located in a grassy area of the park near the intersection of Forest Avenue and State Street, and close to an off ramp from I-295. To the west of the site is a wooded area of the park as well as numerous athletic fields. The site does not meet strict EPA siting criteria so sample results are not used for regulatory purposes. The location was chosen in cooperation with the Maine and American Lung Association for use in their health statistics. Annual Average Daily Traffic volume on Forest Avenue is around 46,000.
A continuous $PM_{2.5}$ TEOM operated from 1/18/2008 until 6/30/2015. A continuous $PM_{2.5}$ BAM was installed on 5/7/2013. The two continuous $PM_{2.5}$ monitors operated together for a one-year data comparison study. The TEOM was removed 6/20/2015 and the BAM remains in operation.
Gamma radiation measurements obtained at PDO are included in the EPA radiation network, RadNet.

Monitoring Objectives:
High Population Exposure Neighborhood scale monitoring. The ozone and nitrogen dioxide monitors are special purpose, non-regulatory monitors installed at the request of the Maine Bureau of Health.

Planned changes for 2023:
This site may be moved in 2023.

Town – Site:	**Portland – Tukey's Bridge**		
County:	**Cumberland**	Latitude:	**43.6780**
Address:	**Tukey's Bridge (Route 295)**	Longitude:	**-70.2562**
AQS Site ID:	**23-005-0015**	Elevation:	**6 meters**
Spatial Scale:	**Middle/Micro**	Year Established:	**1981**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Portland – Tukey's Bridge
Pollutant and Meteorological Parameters:

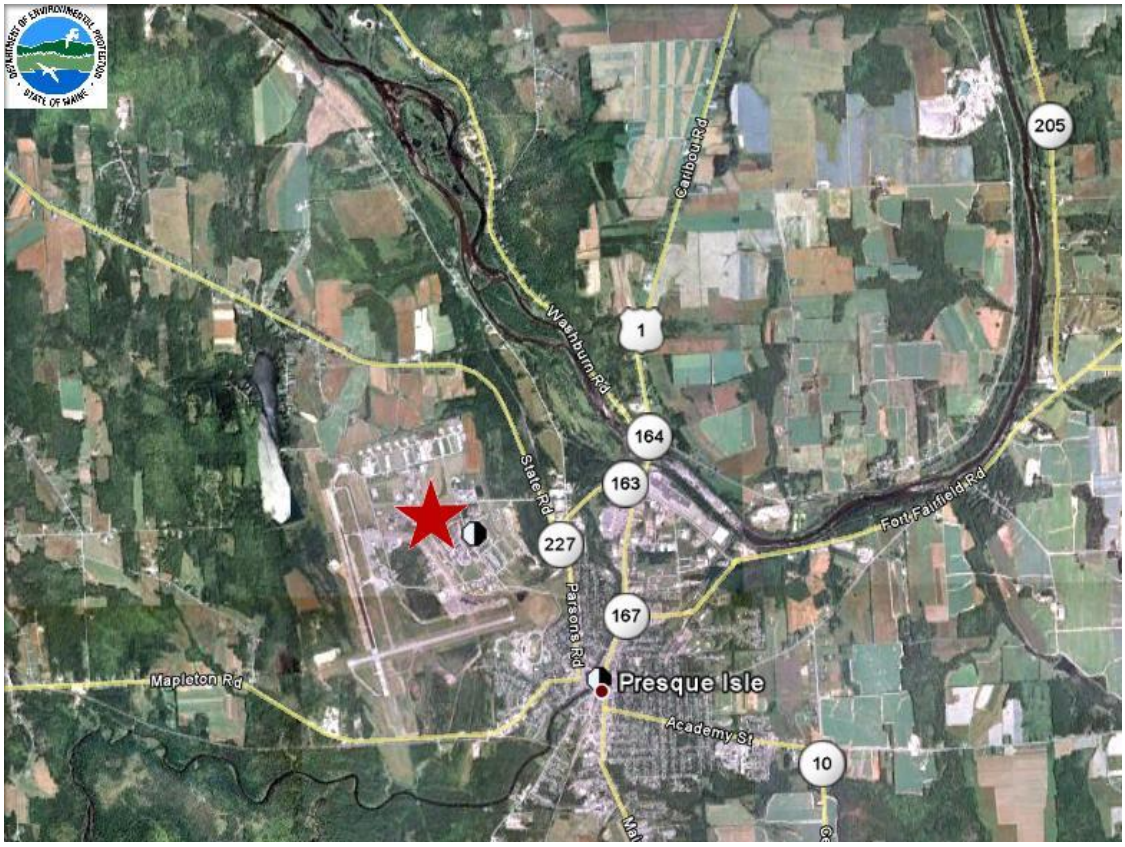
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999	TBD	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	2-8-1991	TBD	NOy		
PM10 - 24 Hr. Colo	1-9-2003	TBD	HAPs		
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located on a platform next to I-295/Washington Street. This section of road has some of the highest annual average daily traffic volume in the state.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Traffic Volume**.**

Planned changes for 2023: FRM samplers will be replaced with a T640x FEM for both PM2.5 and PM10

Town – Site:	**Presque Isle – DEP Regional Office**		
County:	**Aroostook**	Latitude:	**46.6984**
Address:	**528 Central Drive**	Longitude:	**-68.0389**
AQS Site ID:	**23-003-1008**	Elevation:	**158 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1983**
Statistical Area:	**None**		



Presque Isle – DEP Regional Office
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	9-27-2007	TBD	SO_2	8-1-1988	9-21-1989
PM2.5 - 24 Hr. Colo			Ozone	8-1-1988	9-21-1989
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	7-1-1989	9-27-2007	NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	2-13-1983	9-21-2016
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Suburban background site for monitoring $PM_{2.5}$. The sampler is in a field next to the regional office in Presque Isle.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Background Site. Modeling

Planned changes for 2023: FRM to be replaced with T640X FEM

Town – Site:	**Presque Isle – Riverside Shelter**		
County:	**Aroostook**	Latitude:	**46.6823**
Address:	**Riverside Street**	Longitude:	**-68.0156**
AQS Site ID:	**23-003-1011**	Elevation:	**131 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1993**
Statistical Area:	**None**		

Presque Isle – Riverside Shelter
Pollutant and Meteorological Parameters:

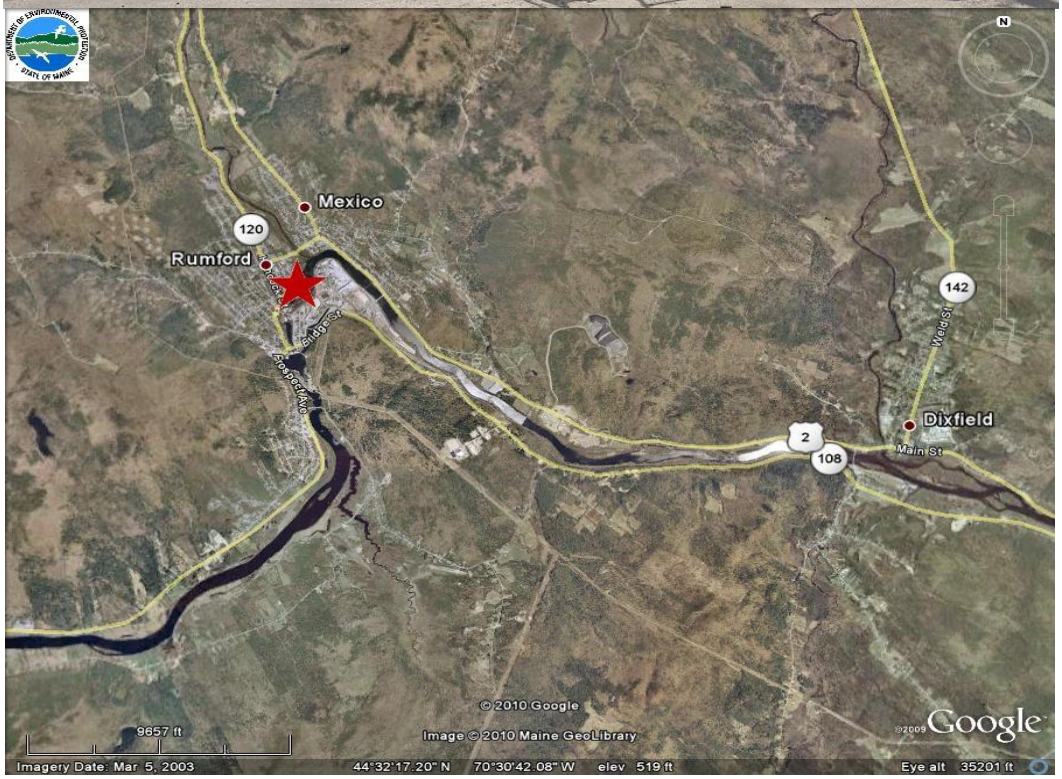
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	10-1-1997		SO_2	9-19-1994	7-2-1996
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	7-18-2014		NOx		
PM10 - 24 Hr.	9-10-1993	11-2-1998	NOy		
PM10 - 24 Hr. Colo			HAPs	12-14-03	
PM10 Cont.	9-15-1995		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located in a parking lot off Main Street in the downtown area of Presque Isle. The site is relatively open, next to the railroad tracks and the Presque Isle Stream**.** PM10 TEOM replaced in October **2018.**

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2023: The two BAM samplers will be replaced with one T640x FEM

Town – Site:	**Rumford – Rumford Ave. Parking Lot**		
County:	**Oxford**	Latitude:	**44.5514**
Address:	**Rumford Ave. Parking Lot**	Longitude:	**-70.5463**
AQS Site ID:	**23-017-2011**	Elevation:	**135 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1998**
Statistical Area:	**None**		



Rumford – Rumford Ave. Parking Lot
Pollutant and Meteorological Parameters:

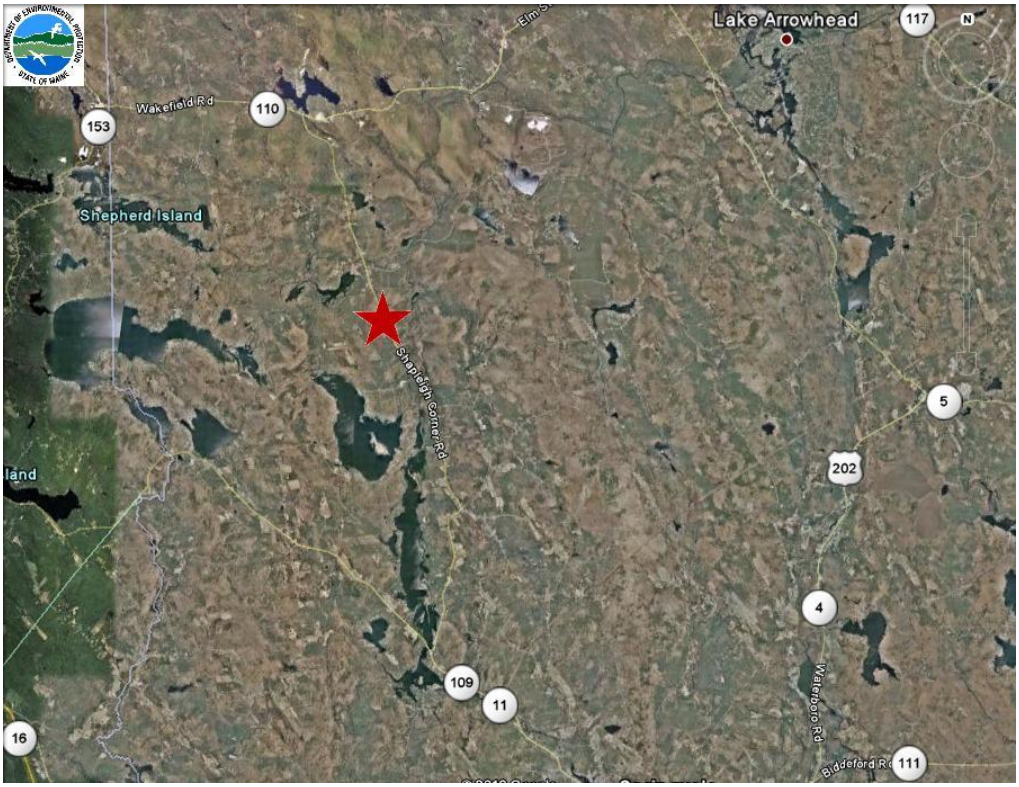
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	12/01/1998	12/31/2021	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	10/1/2014		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs	07/01/1998	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	12/16/2016	
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located in a paper mill employees' parking lot off of Rumford Avenue in Rumford, Maine across the street from the Eagles Club and Bingo Parlor. An 8'x8'x10' environmentally controlled shelter houses HAPs sampling equipment, data acquisition system, and a BAM 1020 for continuous $PM_{2.5}$ sampling. A Thermo Fisher Scientific Instruments Model 2000i $PM_{2.5}$ sampler is located on the roof of the shelter for collocation with the BAM 1020.. In 2020 two additional continuous FEM samplers were collocated with the BAM 1020 for a short period for a comparative study. In addition, two low-cost PM samplers were established for comparison with the BAM. One low-cost (Purple Air) sampler was retained in 2022, and a second Purple Air sampler established further down - stream from the site.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure. Western Mountain Location.

Planned changes for 2023: The two Purple Air samplers will be retained at their present locations. A third Purple Air sampler may be established further north of the site.

Town – Site:	**Shapleigh -- Shapleigh Ball Park**		
County:	**York**	Latitude:	**43.5889**
Address:	**Route 11**	Longitude:	**-70.8773**
AQS Site ID:	**23-031-0040**	Elevation:	**171 Meters**
Spatial Scale:	**Regional**	Year Established:	**2008**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Shapleigh -- Shapleigh Ball Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	6-13-2008	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located in an open area surrounding a baseball outfield just off Route 11.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2023: none.

TRIBAL MONITORING SITES

FOR 2023

Tribe – Site Name:	**Micmac Tribe -- Littleton**		
County:	**Aroostook**	Latitude:	**46.228730**
Address:	**198 West Ridge Road**	Longitude:	**-67.82566**
AQS Site ID:	**23-003-1101**	Elevation:	**188 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2014**
Statistical Area:	**None**		

Micmac Tribe -- Littleton
Pollutant and Meteorological Parameters:

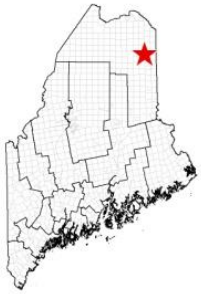
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	05-01-2014		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	05-01-2014	
Cont. Sulfate (SO_4)			Outdoor Temperature	05-01-2014	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The Aroostook Band of Micmacs ambient air monitor site continuously monitors $PM_{2.5}$ and meteorological parameters in Littleton, ME. The PM2.5 CONT. equipment is audited by Maine DEP.

Monitoring Objectives:
Population – Orientated Surveillance

Planned changes for 2023:
None

Tribe – Site Name:	**Micmac Tribe -- Presque Isle Shelter**		
County:	**Aroostook**	Latitude:	**46.6964**
Address:	**8 Northern Road**	Longitude:	**-68.0330**
AQS Site ID:	**23-003-1100**	Elevation:	**165 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2004**
Statistical Area:	**None**		



Micmac Tribe -- Presque Isle Shelter
Pollutant and Meteorological Parameters:

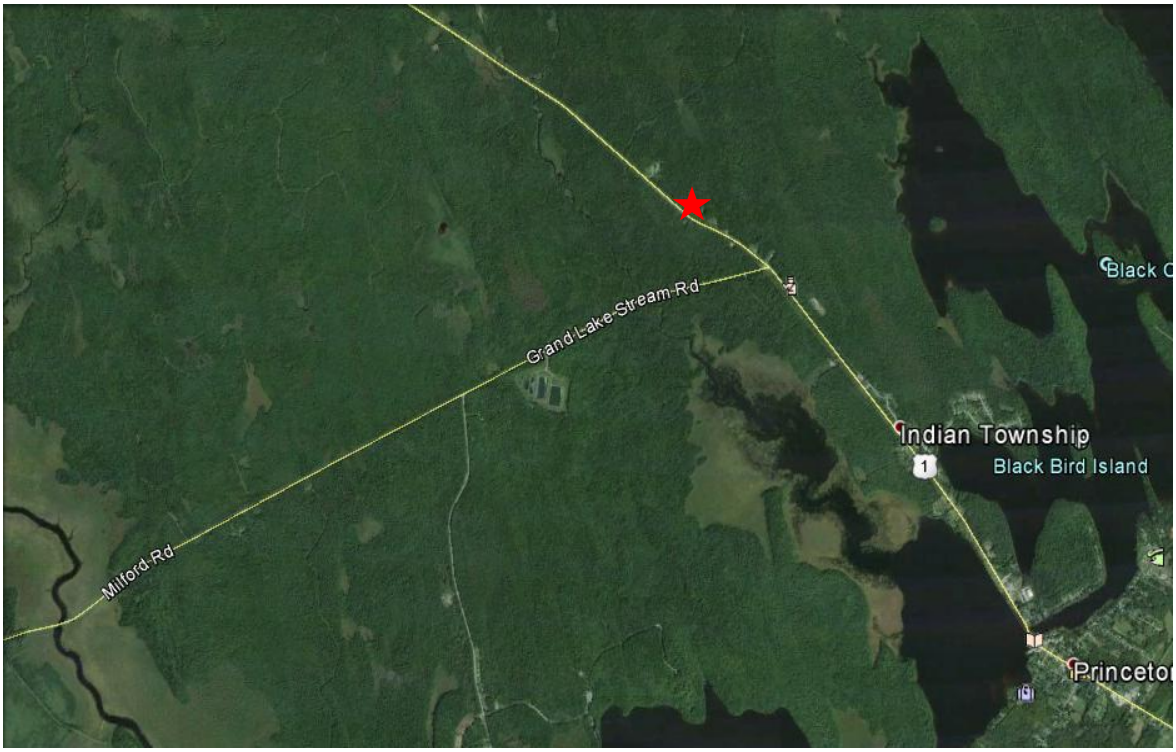
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2	1-1-2006	
PM2.5 - 24 Hr. Colo			Ozone	1-1-2006	
PM2.5 Cont.	1-1-2006		NOx	1-1-2006	
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	3-1-2014	
IMPROVE	1-1-2004		Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	1-1-2006	
Cont. Sulfate (SO_4)			Outdoor Temperature	1-1-2006	
Black Carbon			Bar. Pressure	1-1-2006	
Cont. PAH			Relative Humidity	1-1-2006	
Lead			Dew point	1-1-2006	
CO	1-1-2006		Precipitation Amount		
CO_2	1-1-2006		Solar Radiation	1-1-2006	
Gamma Radiation			UV-b Radiation		

Site Description:
The Aroostook Band of Micmacs ambient air monitor site continuously monitors ozone, $PM_{2.5}$, carbon monoxide, sulfur dioxide, nitrogen dioxide, carbon dioxide, mercury, and meteorological parameters in Presque Isle, ME. The equipment is audited by Maine DEP.

Monitoring Objectives:
To provide local air quality information to Aroostook Band of Micmacs

Planned changes for 2023:
Not available

Tribe – Site Name:	**Passamaquoddy Tribe -- Indian Township**		
County:	**Washington**	Latitude:	**45.2436**
Address:	**Indian Township**	Longitude:	**-67.6308**
AQS Site ID:		Elevation:	**101 meters**
Spatial Scale:	**N/A**	Year Established:	**2013**
Statistical Area:	**None**		



Passamaquoddy Tribe -- Indian Township
Pollutant and Meteorological Parameters:

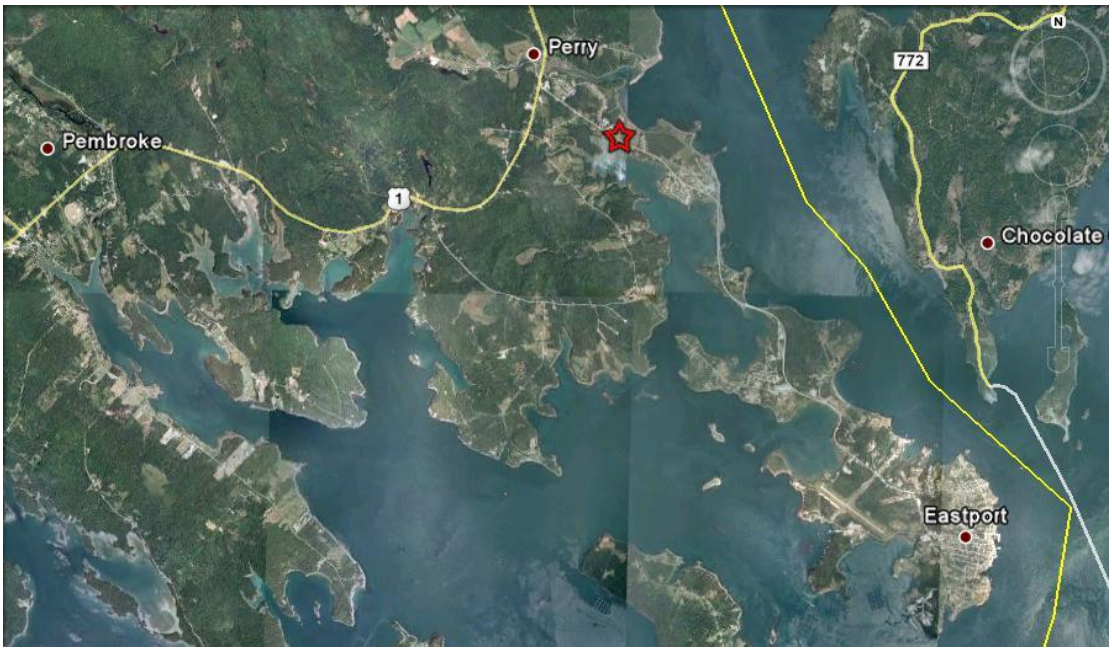
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.	10-3-2013	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	10-3-2013	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Not available

Monitoring Objectives:
To provide NADP/NDN data from vicinity of the Passamaquoddy Tribe -- Indian Township

Planned changes for 2023:
As more information about this NADP/NDN site in Maine becomes available, this page will be updated.

Tribe – Site Name:	**Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik**		
County:	**Washington**		Latitude:
Address:	**184 County Road**	Latitude:	**44.9630**
AQS Site ID:	**23-029-0032**	Longitude:	**-67.0592**
Spatial Scale:	**Regional**	Elevation:	**4 meters**
Statistical Area:	**None**	Year Established:	**2006**



Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik
Pollutant and Meteorological Parameters:

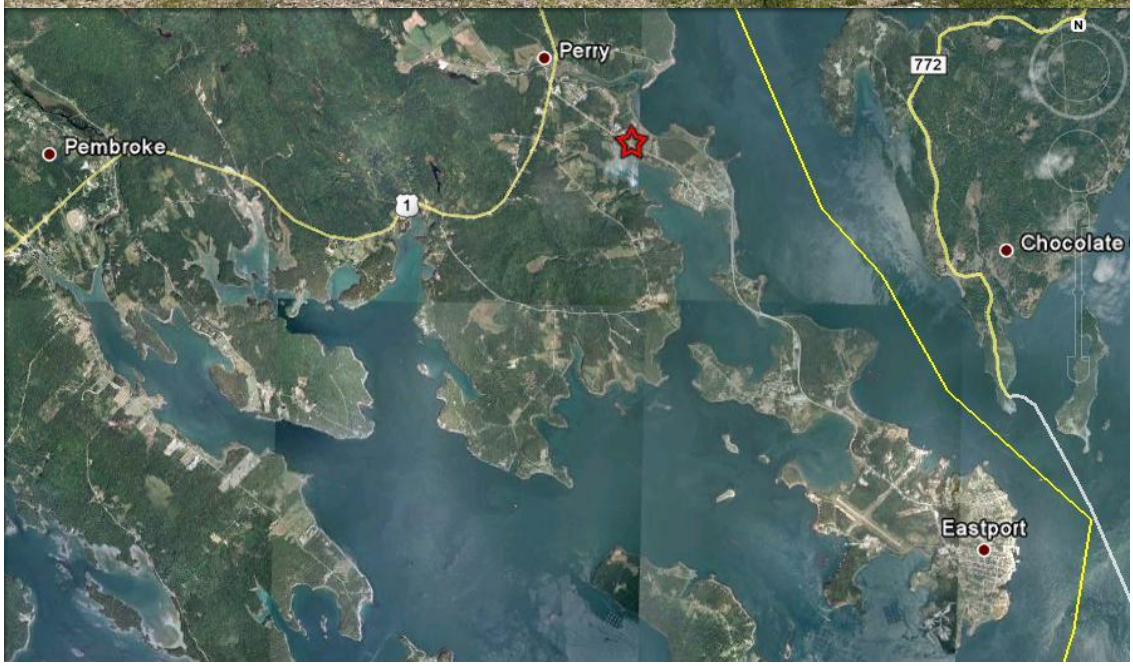
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	3-31-2006	
PM2.5 Cont.	12-18-2008		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	4-20-2005	
Cont. Sulfate (SO_4)			Outdoor Temperature	4-22-2005	
Black Carbon			Bar. Pressure	4-25-2005	
Cont. PAH			Relative Humidity	4-22-2005	
Lead			Dew point		
CO			Precipitation Amount	4-27-2008	
CO_2			Solar Radiation	6-16-2005	
Gamma Radiation			UV-b Radiation	6-16-2005	

Site Description: The site was needed because area monitoring was going to be shut down in Roosevelt-Campobello International Park on Campobello Island, New Brunswick, CAN. Pleasant Point decided to handle the criteria pollutants and run a MET station. Indian Township was going to take on the acid and mercury deposition studies. The Passamaquoddy Tribe wanted to start contributing to the monitoring. The data was polled and used by ME DEP BAQ. The ozone and $PM_{2.5}$ instruments were audited by ME DEP on a quarterly basis. Only the ozone hourly data was uploaded into AQS. The met data was shared with the TREX network and posted on their website. This site was taken out of service in the fall of 2021 and the ozone analyzer moved to another shelter (see page 92), and a new continuous PM sampler installed there.

Monitoring Objectives: The site is to provide pollutant data for modeling and forecasting needs. The site fills a void in the region. Otherwise, there would be a data gap in the area.

Planned changes for 2023: This site is inactive, but will be maintained in the event monitoring will need to be restored there.

Tribe – Site Name:	**Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik**		
County:	**Washington**		
Address:	**176 County Road**	Latitude:	**44.963894**
AQS Site ID:	**23-029-0033**	Longitude:	**-67.061325**
Spatial Scale:	**Regional**	Elevation:	**4 meters**
Statistical Area:	**None**	Year Established:	**2006**



Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	9-27-2021	
PM2.5 Cont.	10-06-2021		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description: The site was needed because area monitoring was going to be shut down in Roosevelt-Campobello International Park on Campobello Island, New Brunswick, CAN. Pleasant Point decided to handle the criteria pollutants and run a MET station. Indian Township was going to take on the acid and mercury deposition studies. The Passamaquoddy Tribe wanted to start contributing to the monitoring. The data are polled and used by ME DEP BAQ. The ozone and $PM_{2.5}$ instruments are audited by ME DEP on a quarterly basis. Only the ozone hourly data is uploaded into AQS. This site replaces 23-029-0032. The shelter at that site is smaller and in poorer condition.

Monitoring Objectives: The site is to provide pollutant data for modeling and forecasting needs. The site fills a void in the region. Otherwise, there would be a data gap in the area.

Planned changes for 2023: The tribal air program is open to monitoring for other pollutants if resources are available.

Tribe – Site Name:	**Penobscot Nation -- Indian Island**		
County:	**Penobscot**	Latitude:	**44.95204**
Address:	**27 Wabanaki Way**	Longitude:	**-68.64768**
AQS Site ID:	**23-019-1100**	Elevation:	**41 meters**
Spatial Scale:	**Regional**	Year Established:	**2006**
Statistical Area:	**None**		

Penobscot Nation -- Indian Island
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-2006	1/1/2018
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE	1-14-2006		Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	7-2002	1/17/2018
Cont. Sulfate (SO_4)			Outdoor Temperature	7-2002	1/17/2018
Black Carbon			Bar. Pressure	7-2002	1/17/2018
Cont. PAH			Relative Humidity	7-2002	1/17/2018
Lead			Dew point		
CO			Precipitation Amount	7-2002	1/17/2018
CO_2			Solar Radiation	7-2002	1/17/2018
Gamma Radiation			UV-b Radiation		

Site Description: The original IMPROVE Site location, established on 6/27/2001, was located near the Marsh Island Apartments. That location was shut down on 5/29/2006 having been made redundant after 1/14/2006 when the current IMPROVE site was established on Indian Island. After several seasons of contending with failing equipment, all ambient air monitoring at Indian Island, except for the IMPROVE monitoring, was officially discontinued in January 2018. Future monitoring efforts will focus on indoor air quality.

Monitoring Objectives:
IMPROVE and NADP/NDN data plus local ozone concentrations for Penobscot Nation -- Indian Island

Planned changes for 2023: Not aware of any planned changes to the site

Appendix 2
Wyman Station
Update Provision of US EPA'S
2015 Data Requirements Rule

Additional Data to Satisfy Update Provision of USEPA's 2015 "*Data Requirements Rule"*

On August 21, 2015, the United States Environmental Protection Agency (USEPA) finalized the "*Data Requirements Rule for the 2010 1-hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard*" (DRR) which requires all states to characterize ambient SO_2 levels in areas with large sources of SO_2, specifically for the purpose of demonstrating each source's attainment of the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS).

The DRR, which establishes minimum criteria for identifying sources that may be selected for further examination, states that *"…each air agency is required to submit a list to the USEPA by January 15, 2016, that identifies all sources within its jurisdiction that have SO_2 emissions that exceeded a 2000 ton per year annual threshold during the most recent year from which emissions data for that source are available".*

In a January 13, 2016 letter from the Maine Department of Environmental Protection (MEDEP) to the USEPA Region I Air Programs Branch Chief, MEDEP informed USEPA that it did not have any individual sources with actual reported SO_2 emissions exceeding 2000 tons per year (using the three-year period 2013 – 2015). The letter further stated that Maine did not anticipate that any of its currently regulated sources would likely emit in excess of 2000 tons per year of SO_2 in the foreseeable future.

In a March 17, 2016 response letter from USEPA's Regional Administrator to MEDEP, USEPA stated that they had reviewed Maine's January 13th submittal and were identifying William F Wyman Station (Wyman Station), located in Yarmouth Maine, as a source that the DRR requires to be characterized. USEPA's basis for the request cited *"Though total annual SO_2 emissions from Wyman have declined in recent years, it appears that Wyman's operation from month-to-month is highly variable, and that may continue into the future. For example, in 2015, Wyman had 22 days with SO_2 emissions greater than 40 tons per day. Therefore, the USEPA believes that it is appropriate and necessary to characterize William F Wyman under the Data Requirements Rule."*

In addition, the March 17th letter stated that each air agency must identify the approach that it will use to characterize air quality in the source's respective area by July 1, 2016. Under the DRR, each state must indicate if they will use current representative monitoring data, perform ambient dispersion modeling, or establish federally-enforceable SO_2 emissions restrictions in the source's Title V permit. If the state chose either the ambient monitoring or dispersion modeling options, the DRR required that the appropriate protocol be submitted by July 1, 2016.

On June 29, 2016, MEDEP sent a letter to inform USEPA that performing air dispersion modeling was the chosen option for Wyman Station. Attached to the June 29th letter was Wyman Station's air dispersion modeling protocol which provided in-depth discussions of methodologies and assumptions being proposed for use in the modeling demonstration. After several iterations of written correspondence to resolve questions regarding the modeling protocol, MEDEP received agreement from USEPA that the protocol was acceptable. MEDEP, in close consultation with Wyman Station, conducted an air dispersion modeling analysis using USEPA-approved models and modeling guidance/techniques in a manner consistent with the approved June 2016 modeling protocol. The DRR required that Wyman Station's final modeling analyses, results and all supporting documentation be submitted to USEPA by January 13, 2017.

On January 11, 2017, MEDEP submitted Wyman Station's dispersion modeling results and associated files to USEPA. The results, which were based on 2013-2015 hourly current-actual emissions data, demonstrated that Wyman Station was in compliance with the 1-hour SO_2 NAAQS. On March 9, 2017, MEDEP was contacted by

USEPA Region I Air Quality Modeling Manager, Leiran Biton, via telephone stating that the modeling submitted by MEDEP was complete and acceptable to meet the requirements of the DRR.

Federal regulation 40 CFR Part 51 Subpart BB §51.1205(b) states, "*For any area where modeling of actual SO_2 emissions serve as the basis for designating such area as attainment for the 2010 SO_2 NAAQS, the air agency shall submit an annual report to the EPA Regional Administrator by July 1 of each year, either as a stand-alone document made available for public inspection, or as an appendix to its Annual Monitoring Network Plan (also due on July 1 each year under 40 CFR 58.10), that documents the annual SO_2 emissions of each applicable source in each such area and provides an assessment of the cause of any emissions increase from the previous year. The first report for each such area is due by July 1 of the calendar year after the effective date of the area's initial designation*."

Since the effective date for Maine's final SO_2 designation was April 9, 2018 (as published in the January 9, 2018 Federal Register), Maine is submitting the following additional information to meet the above requirements:

As stated previously, Wyman Station's modeling demonstration utilized hourly current-actual emissions and stack flow data from the calendar years 2013 – 2015. Table 1 lists the ton per year (TPY) emissions for the three years modeled (2013 - 2015) as well as the most-recent three-year period (2019 – 2021).

Table 1: Annual Actual SO_2 Emissions Data for Wyman Station

Calendar Year	Actual SO_2 Emissions (TPY)
2013	861.16
2014	844.03
2015	1750.67
2019	102.71
2020	86.53
2021	63.51

Annual actual SO_2 emissions for the most recent three years show that Wyman Station's emissions are significantly lower than those modeled for the 2013 - 2015 period, the timeframe that served as the basis for USEPA's identification of Wyman Station as a DRR source.

There are several factors that can account for these lower TPY values: Wyman Station is primarily relied upon as a peaking power plant (i.e., generally operates only when there is a very high demand for electricity), the migration toward lower sulfur fuel oil, a more consistent supply of natural gas, etc.

The following information was contained in a December 19, 2018 letter from Wyman Station to MEDEP: "*Pursuant to 40 CFR 75.61 (a)(7), FPL Energy Wyman, LLC is hearby providing notice that Units 1 and 2 at the Wyman facility have been shut down, and placed into long-term storage as defined in §72.2. Shutdown of the unit occurred on October 1, 2018 at 0000 hours."* The letter further states that *"…the duration of the shutdown is expected to last for at least two years…*" Units 1 and 2 continue to remain in long-term storage given that Wyman Station has reported zero emissions for both units during the 2019, 2020 and 2021 calendar years.

Given that Wyman Station is primarily relied upon as a peaking power plant, Wyman Station's migration toward lower sulfur fuel oil and several of Wyman Station's units remaining in long-term storage, MEDEP does not anticipate a significant increase in future SO_2 emissions from Wyman Station.

Therefore, when all of the above factors are considered, MEDEP finds that the modeling results required by the DRR demonstrate that Wyman Station remains and will continue to remain in compliance with the 1-hour SO_2 NAAQS. Per requirements of the DRR, Maine will continue to update Wyman Station's SO_2 actual TPY emissions (as seen in Table 1) and report those values to USEPA as part of MEDEP's Annual Air Monitoring Plan each subsequent year. Should Wyman Station's actual TPY emissions increase significantly above those 2013 – 2015 values used in the analysis, Maine recognizes that an updated modeling demonstration may be required.

Appendix 3
Public Comment and Response

June 5, 2022

In the past, I have made inquiries about the installation of additional monitoring sites.
I was advised of the expense, and other considerations. And perhaps there are factors of which I am unaware, that would hinder usefulness.

Response: Available resources do limit the breadth of ambient air quality monitoring in Maine. Maine DEP monitors in areas where pollutant exposure is expected to be highest in the state.

Not having learned what those mitigating factors are, I will again urge increased siting of monitoring stations, and, as I reside in Rockland, Maine, I will use Rockland as an example.

Response: Maine DEP intends to outfit a trailer with air quality monitoring equipment with the intention of conducting air quality monitoring at locations distant from the monitoring sites presently in use.

In the summer months, especially, air quality on Route 1/Main Street downtown is impeded due to increased traffic. This is true of many municipalities in Maine, but as well, nationally. (And there is an absence of laws limiting vehicle idling, year-round, with enforcement being neigh impossible).,

Response: Maine DEP is aware of seasonal traffic congestion. It should be noted that improvements with internal combustion engine performance have reduced pollutant emissions from motor vehicles significantly. Motor vehicle manufacturers have committed to introducing fully electric vehicles to their sales offerings. The sale and use of fully electric vehicles should further reduce pollutant emissions on our roadways.

Too, the location of the monitoring station for the Rockland, Maine area is, as I recall, out on the peninsula - a placement that I should think, would be less valid.

Response: The monitoring station nearest Rockland is in Port Clyde at Marshall Point, and was established to monitor for ozone. Decades of ozone monitoring in Maine indicates the highest ambient concentration of that pollutant occur along the immediate coast, and tend to diminish further inland. Maine DEP feels the monitor in Port Clyde adequately represents air quality in the Rockland for that pollutant.

Rockland, Maine also has the presence of the Dragon Cement Company in Thomaston. While that plant does its own monitoring, the drift from that plant, which is often west to east, isn't captured closer in. Then, too, there is the DuPont plant in Rockland which also self-monitors, but Rockland, "central" is bookended by the two plants, creating a kind of holding area for emissions.

Response: Maine DEP is aware of the two facilities and their potential for impact on ambient air quality in Rockland. As mentioned previously, Maine DEP intends to outfit a mobile trailer with air monitoring equipment. As resources allow, this trailer may be established in Rockland to assess ambient air quality in the municipality.

I have the additional uneducated and unscientific thought that perhaps monitoring stations might be placed on or near cell towers, if there would not be communication interference, as perhaps a more cost-effective mechanism, although I understand there would need to be all manner of discussions and contractual agreements.

Response: Maine DEP appreciates this suggestion.

Then, too, while I have no mobile devices, I wonder if there are applications that exist on many such devices that monitor air quality, and whether that data could be transmitted by individuals to a central data site.

Response: It is important to note that there is a difference between an app, accessible from a mobile device, that will connect you with a monitoring station distant from where you are and a portable device that actually samples the air from where you are standing. There are very few portable devices that can do real-time sampling and produce credible data. Maine DEP keeps abreast of portable sensor developments in collaboration with the USEPA. Maine DEP is aware of potential utility of expanded citizen involvement in air quality monitoring. Purple Air particulate sensors are available to the public as a way for citizens to monitor air quality and to share data with others. Please check the following web site for details: https://www2.purpleair.com/

Investment in air monitoring stations will, of course, only be as useful as the laws that will enforce findings showing unhealthful air, and strict regulations on vehicle size - thinking huge SUVs and pickup trucks - the latter which will not happen.

Response: Maine DEP appreciates your comments.

Nonetheless, monitoring stations provide science-based data. An increase in, and/or better locating of, these stations and the hard data they provide is surely worthwhile.

Response: Maine DEP appreciates your comments.

Sincerely,
Maggie Trout
77 Broadway
Rockland, Maine

Appendix 4
EPA Comments and Response

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
LABORATORY SERVICES AND APPLIED SCIENCE DIVISION
11 Technology Drive
North Chelmsford, MA 01863

June 22, 2022

Don Darling
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Dear Mr. Darling:

Thank you for providing EPA with a draft of the Maine Department of Environmental Protection (ME DEP) 2023 Air Monitoring Network Plan which was made available on May 31, 2022 for public comment. EPA-New England has reviewed your draft plan with respect to meeting the requirements of 40 CFR Part 58. Upon final submission of this document in July, we will move forward regarding approval of the Annual Network Plan. Upon final submission of this document, we will work with our Headquarters offices to address the portions of the plan which require their attention, most notably monitoring associated with NCore.

The following are our comments:

1. Over the past few years, we identified many potential resource saving opportunities relative to your overall ambient air monitoring network for each criteria pollutant measured in your network. We are pleased that you seem to have taken some of our suggestions.

Response: Acknowledged.

2. Page 8, Ozone Network - We acknowledge that the EPA operated CASTNET ozone site in Ashland was shut down in May 2022.

Response: None required.

3. Page 9 - We acknowledge the changes made/discussion around the decision to no longer operate the Hollis - West Buxton site starting in 2021.

Response: None Required.

4. Page 9 - We acknowledge that ME DEP, with the cooperation of the Department of Agriculture, Conservation and Forestry (Maine DACF) installed an ozone site at Popham Beach State Park in 2022. This installation satisfies a long-standing need for a coastal site between Cape Elizabeth and Port Clyde.

Response: None required.

5. Page 9 We acknowledge the building in Jonesport housing monitoring equipment may be

demolished in 2022. If that comes to pass, the DEP may establish a shelter at that location to house the monitoring equipment, or seek another location in the area.

Response: None required.

6. Page 9 We also acknowledge that if not done in 2022, the Portland Deering Oaks site may be moved. The present location is a staging area for construction equipment and materials storage. The activity immediately adjacent to the shelter frequently has direct impact on the analyzers and sampling equipment compromising the representativeness.

Response: None required.

7. Page 10, Ozone Monitoring Site Summary Table Perry Pleasant Point/Sipayik, 184 County Road Need to update information/address for the new site that replaced this one last year.

Response: Change made.

8. Page 10, $PM_{2.5}$ Network We acknowledge that ME DEP helped establish a BAM in Perry (Passamaquoddy Tribe site) in 2021 for mapping purposes.

Response: None required.

9. Pages 11- 12, Purple Air We acknowledge the following: The samplers at Washburn and Waterville were shut down by the end of 2021. Two of the three samplers in Bar Harbor were operated into 2022. Two samplers are in South Portland and Portland to supplement the VOC monitoring project in those communities. The Rumford sampler was moved to a new location further down the Androscoggin River valley. A second Purple Air sampler may be established at a location in the north part of town. The purpose of the sampler moves is to assess the potential movement of particulate plumes up and down the river valley. The DEP intends to continue this effort in the winter of 2022 2023.

Response: None required.

10. Page 12, Proposed calendar year 2023 changes for the $PM_{2.5}$ network:
The DEP applied for a one-time direct award from EPA under the American Rescue Plan. Maine's application was favorably viewed and was awarded funds to undertake the following particulate air monitoring upgrades:

- Replace FRM samplers at Tukey's Bridge in Portland with a continuous sampler.
- Replace an FRM sampler at the Presque Isle Background site with a continuous sampler.
- Upgrade the Augusta Lincoln Street School with a continuous sampler to collocate with method 143.
- Upgrade the Presque Isle – Riverside site with a new continuous sampler.
- Upgrade the Bar Harbor – McFarland Hill site with a new continuous sampler.

Some of these replacements and upgrades may take place in calendar year 2022.

The DEP proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska to identify the possibility atmospheric inversions during the winter and

early spring.

Establish PM sampler on mobile trailer.

Response: None required.

11. Page 13, $PM_{2.5}$ Monitoring Site Summary Table Perry Need to update information/address for the new site that replaced this one last year.

Response: Change made.

12. Page 14, PM_{10} Network We note the following: A continuous Beta Attenuated Monitor (BAM) was operated in Presque Isle as part of the control strategy for the historically high PM_{10} levels there. The BAM is scheduled to be replaced in late 2022 or early in 2023 with a Teledyne T640x. This replacement monitor collects data for both $PM_{2.5}$ and PM_{10}.

The American Rescue Plan Direct Award Grant will bring about a change in the PM_{10} monitoring program for 2023 which will result in the removal of 3 filter-based samplers. Note: the filters collected in the PM_{10} program from the remaining filter-based samplers can be used for the lead monitoring program if needed.

Madawaska - This sampler will be replaced in late 2022 or early 2023 with a Teledyne T640x which will remain in operation through 2023, and for a period of years thereafter to demonstrate if remedial action is necessary. (We believe such daily/continuous monitoring will remain necessary.) A continuous PM_{10} sampler will be established at Portland Bridge to replace the FRM samplers.

Proposed Calendar Year 2023 changes to the PM_{10} Network:

- A Teledyne 640x continuous PM sampler will be established at Portland – Tukey's Bridge to replace FRM samplers.
- The collocated PM10 FRM from Portland – Tukey's Bridge will be relocated to Bangor – Mary Snow School making that site collocated for the sampling method.
- A Teledyne 640x continuous PM sampler will be established at the Bar Harbor – McFarland Hill site. Doing so will allow the collection of PM10-2.5 from that instrument permitting the removal of two PM10 FRM samplers.
- The BAM at the Madawaska Public Safety Building will be replaced with a Teledyne 640x sampler.

Response: None required.

13. Page 15, Sulfur Dioxide Network We acknowledge the changes made/discussion around the decision to no longer operate the Hollis - West Buxton site starting in 2021.

Response: None required.

14. Page 16, Carbon Monoxide Network - We acknowledge that the DEP shut down the CO monitor at the Deering Oaks site early in 2022 as data recorded from this monitor were well below the NAAQS, and resources directed at that monitor could be better used elsewhere in

the network.

Response: None required.

15. Page 17, Enhanced Monitoring Plan We note that Maine intends to maintain this program and provide laboratory support of the ongoing Long Island Sound Tropospheric Ozone Study (LISTOS) and/or other studies related to ambient air quality. We acknowledge that Maine would support the installation of a ceilometer proximate to the NCore site in Bar Harbor. The addition of a ceilometer is contingent on the availability of funds to acquire and support the instrument.

Response: None required.

16. Page 18, Hazardous Air Pollutants (HAPs) Network We acknowledge that a new HAPs sampler may be reinstalled at Cape Elizabeth in 2023.

Response: None Required.

17. Pages 18 - 20, South Portland/Portland VOC Monitoring Project It's noted that pending assessment of sample data, one or more sites may be discontinued and others made permanent.

Response: None required.

18. Page 20, Meteorological Network We note that the BAQ operates several portable meteorological stations as part of the South Portland VOC study. The data from these portable stations are not quality assured and not reported to AQS, but are used to inform staff and others of the micrometeorological conditions at some of the VOC monitoring sites during sample collection. Pending the disposition of the South Portland/Portland VOC study, one or more portable meteorological stations may be moved from that study to Madawaska Public Safety Building site and/or Presque Isle Riverside monitoring site. If resources allow, the BAQ proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska.

Response: None required.

19. We acknowledge the Proposed Calendar Year 2023 Network Changes as described on Pages 22 - 23, but we believe other known changes should be mentioned (as added in red font below). The following changes are being contemplated or are likely to occur:

- If not accomplished in 2022, the Portland Deering Oaks monitoring station will be relocated. Applicable siting criteria will be met at the new location.
- Filter – based particulate samplers will be replaced with continuous samplers at Portland – Tukey's Bridge; Presque Isle – Background site; and Bar Harbor – McFarland Hill.
- Two-level ambient temperature monitoring may be established in Presque Isle and Madawaska.
- If not accomplished in 2022, the BAM samplers at the Madawaska Public Safety Building site and Presque Isle Riverside site will be replaced with a T640x continuous PM monitor.
- If resources allow, a mobile monitoring platform will be populated with sampling equipment and readied for use.
- The ozone monitoring equipment in Jonesport may be relocated pending disposition of building.

- The following changes were made in 2021, but not described in the 2021 Annual Network Plan:
  - The Hollis West Buxton ozone monitor was shut down prior to the 2021 ozone season.
  - The sulfur dioxide monitor at the Portland Deering Oaks site was shut down early in 2021.
- Upgrade the Augusta Lincoln Street School with a continuous sampler to collocate with method 143.
- Teledyne T640x continuous PM sampler will be established at Portland – Tukey's Bridge site to replace the FRM samplers.
- The collocated PM_{10} FRM sampler from Portland – Tukey's Bridge will be relocated to Bangor-Mary Snow School making that site collocated for the sampling method.
- A Teledyne 640x continuous PM sampler will be established at the Bar Harbor McFarland Hill site. Doing so will allow the collection of $PM_{10-2.5}$ data from that instrument permitting the removal of two PM10 FRM samplers.
- South Portland/Portland VOC network: Pending assessment of sample data, one or more sites may be discontinued and others made permanent.

We encourage you discuss any other planned changes in this section. Public notice is required before changes are made to State Ambient Air Monitoring Networks approved by EPA, as described in Section 110 of the CAA.

Response: Suggested additions to *Proposed Calendar Year 2023 Network Changes* were made.

20. Pages 24 25, Maine Ambient Air Monitoring Locations and Objectives as of 2022 This should be updated to reflect the proposed 2023 network.

Response: Done

21. Page 27 - We encourage you to review and include the 2023 EPA integrated sampling schedule which we expect be posted on AMTIC soon. There are some errors on this one.

Response: Link to calendar added below Maine DEP calendar.

22. Page 28, 2023 Monitoring Site Information 23-029-0032 should be updated to the new site for Perry: 23-029-0033.

Response: Done

23. Page 43, Bridgton Planned changes for 2023: Change wording from 2022 to 2023.

Response: Done

24. Page 45, Cape Elizabeth Planned changes for 2023: None. Suggest adding the HAPs comment from page 18 - If resources allow a HAPs sampler will be reestablished at Cape Elizabeth.

Response: Done

25. Page 67, Popham Beach Ozone Date Began: April 13, 2023. Is this date correct? Is this site operating now? Please clarify. On page 9, you stated that Maine DEP, with the cooperation of the Department of Agriculture, Conservation and Forestry (Maine DACF) installed an ozone site at Popham Beach State Park in 2022.

Response: Popham Beach Ozone monitoring did start on April 13, 2022.

26. Page 71, Portland Deering Oaks Park Delete 3 in name. Put in the Date Ended for CO.

Response: Don

27. Page 77, Presque Isle Riverside Shelter Suggest updating Date Began and Date Ended on the site form when the T640x FEM is installed.

Response: Maine DEP will endeavor to update startup/shut down dates for equipment at this site.

28. Pages 78, Rumford-Rumford Ave. Parking Lot Move the name under the picture to page 79 (top of site form).

Response: Done

29. Page 79, Rumford Rumford Ave. Parking Lot, Planned changes for 2023: May want to include the Purple Air discussion/information found on page 12.

Response: Summary information added.

30. Page 82, Tribal Air Monitoring Sites For 2022 Update to 2023.

Response: Done

31. Page 84 Planned changes for 2022: Update to 2023.

Response: Done

32. Page 87, Passamaquoddy Tribe Indian Township Add the AQS Site ID number.

Response: Done

33. Pages 89 - 90 Passamaquoddy Tribe Perry, Pleasant Point/Sipayik This is the old site. Include Date Ended for TEOM and Date Began for BAM.

Response: Done

34. Pages 89 90 - Passamaquoddy Tribe Perry, Pleasant Point/Sipayik This is the old site. A new fully completed site form (including new AQS Site ID and pictures of the new site) needs to be included in the plan.

Response: Done

35. Page 93 - We acknowledge Appendix 2 regarding Wyman Station and EPA RR regarding SO_2.

Response: No response required

EPA Region 1 appreciates your partnership in conducting ambient air monitoring, and we look forward to working with you to continuously improve the quality of ambient air in Maine. We look forward to the submission of the Final Annual Network Plan this July. If you have any questions or comments regarding these comments, please contact me at (617) 918-8383.

Sincerely,
Mary Jane Cuzzupe

State Air Monitoring Coordinator
Laboratory Services and Applied Science Division
EPA Region I

cc: Jeff Crawford, ME DEP
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