

III.K.13.C. MONITORING STRATEGY

Title 40 CFR §51.308(f)(6) of the RH Rule requires a monitoring strategy for measuring, characterizing, and reporting regional haze visibility impairment that is representative of the Class I areas within Alaska. Alaska complies with this requirement through participation in the IMPROVE program. Alaska works with EPA and the FLMs to ensure that monitoring networks provide data that are representative of visibility conditions in each affected Class I area within the state. Along with monitoring strategies for the Class I areas, the RH SIP must include a determination of whether additional monitoring sites or equipment are needed to establish if progress goals are being achieved. Alaska has determined the state has met the requirements of analysis of visibility monitoring data.

IMPROVE monitoring within each of Alaska's Class I area is provided below. This is followed by a brief discussion of monitoring considerations particularly relevant to Alaska's Class I areas and conditions. Alaska used IMPROVE data provided by federal agencies for inclusion in this RH SIP. More analysis of data is found in other sections throughout this RH SIP.

1. MONITORING AT CLASS I AREAS IN ALASKA

A. Denali National Park and Preserve

IMPROVE monitoring data are available from the Denali NP Headquarters site (DENA1) from March 1988 to the present, and at the Trapper Creek site (TRCR1) from 2001 to the present.

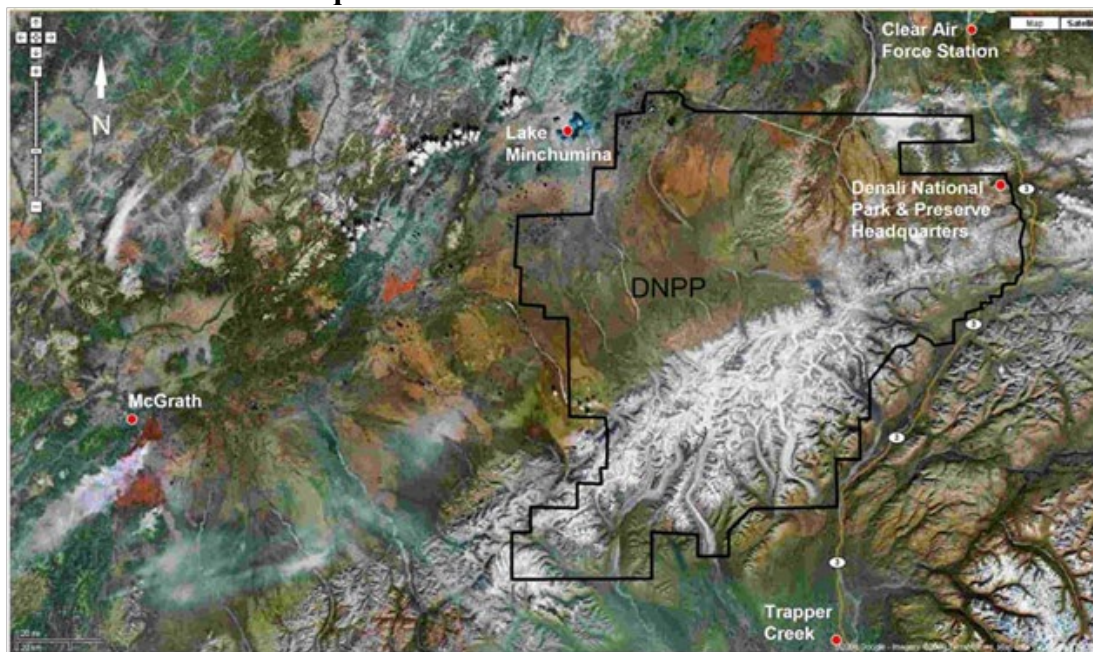
The Denali NP Headquarters site is located near the eastern end of the Park Road from park headquarters, approximately 250 yards from headquarters area buildings (see Figure III.K.13.C-1). The site (elevation of 2,125 feet) sits above the main road (elevation 2,088 feet). The side road to the monitoring site winds uphill for 130 yards, providing access to the monitoring site and a water treatment facility. The hill is moderately wooded, but the monitoring site sits in a half-acre clearing. The site is 2 miles west of the Nenana River and 3.2 miles south of the Healy Ridge, which rises to 6,000 feet at its highest point. It is located in an east-west valley, between the Healy Ridge and the main Alaska Range, which is about two miles wide at the monitoring station and gets wider to the west towards the Sanctuary and Savage Rivers. The site was previously the official IMPROVE site for Denali NP. Due to topographical barriers, such as the Alaska Range, it was determined that the headquarters site was not adequately representative of the entire Class I area. The headquarters site still operates as an IMPROVE protocol site.

A second, newer site, known as "Trapper Creek"/TRCR1, has been the official Denali IMPROVE site as of September 10, 2001. The site is located to the south of the park, 100 yards east of the Trapper Creek Elementary School, west of Trapper Creek, and a quarter mile south of Petersville Road (see Figure III.K.13.C-1). The site was established in September 2001 to evaluate the long-range transport of pollution into the Park from more densely populated and industrialized areas to the south. The elementary school experiences relatively little traffic during the day, about 4 buses and 50 automobiles. The school is closed June through August. This site

was selected because it has year-round access to power, is relatively open, and is not directly impacted by local sources. It should be noted that DEC and the National Park Service disagree on which IMPROVE site, DENA1 or TRCR1, is the official IMPROVE site and which is the protocol site. Data from both sites is of value and included in this RH SIP. DEC is developing further documentation related to the attributes of the TRCR1 site and its differences from the DENA1 site. When complete, this documentation will be provided to EPA and the National Park Service as supplemental information related to the SIP.

In addition to the IMPROVE network, several other monitoring networks have sites at the Denali NP headquarters monitoring site. These include the Clean Air Status and Trends Network (CASTNet) monitor, the National Atmospheric Deposition Program, and NPS's meteorological monitoring equipment.

Figure III.K.13.C-1. Map of Denali National Park and Preserve with locations of Trapper Creek and Denali Headquarters IMPROVE sites



B. Simeonof Wilderness Area

The FWS has placed an IMPROVE air monitor in the community of Sand Point to represent the Simeonof Class I area. The community is on a nearby more accessible island approximately 60 miles north west of Simeonof. This monitor, SIME1, has been operating since September 2001. The location was selected to provide representative data for regional haze conditions at the wilderness area. The IMPROVE site has more potential for local pollution impact than a site located at the Class I area, but it is not possible or practical to service such a remote site.

C. Tuxedni National Wildlife Refuge

The current official IMPROVE site for the Tuxedni Class I area is located on the Kenai Peninsula to monitor visibility at the wilderness on Chisik Island, across Cook Inlet. The monitor, referred to as the Kenai Peninsula Borough (KPBO1) was moved from the former Tuxedni monitoring site, TUXE1, on the western side of the inlet in 2015 after the fishing lodge it was located near shut its doors.

The TUXE1 monitor was built next to a seasonal fishing lodge which was used by destination backpackers and fishing guides. This meant that the site was exposed to very little direct local stationary emissions and limited amounts of mobile emissions. The monitoring site was operated from the baseline period until 2014, when the lodge owner notified the EPA and DEC that they would be closing the lodge. As DEC personnel utilized the lodge to access and maintain the monitoring site, it was necessary to move the monitoring site to continue providing data to the EPA IMPROVE network and to keep track of visibility per the RH Rule. Several options were put forward as potential replacements for the closed Tuxedni monitoring site.

The NPS and FWS air monitoring staff requested assistance from DEC in selecting a replacement site location. The NPS and FWS air staff offices are located in Denver, Colorado, and with budget consideration in mind they asked DEC staff to do the site reconnaissance work prior to visiting the proposed locations. DEC staff reviewed several possible locations and provided FWS and NPS with site photos and information. As access to the west side of Cook Inlet is too costly, a site on the east side of the inlet was selected. The replacement site (KPBO1) south of the community of Ninilchik was selected because of ease of access and option for accessing power. The site has been active since mid-2015. There was a resulting gap between the close of the TUXE1 and KPBO1 monitoring site which was initially backfilled with information from the Trapper Creek monitoring station south of Denali NP. DEC rejected this data backfilling as this area was not considered a suitable replacement for data from the Tuxedni site.

This change in monitoring sites resulted in an emissions profile shift that was significant enough to result in a data discrepancy which led the DEC and EPA to treat the KPBO1 and TUXE1 sites as different sites and not as a continuation. The primary reason for this is the presence of large population centers, electrical generation, and industrial sites on the eastern side of Cook Inlet. TUXE1 was located on the western side of the inlet, where the population is much smaller than on the Kenai Peninsula. Along the Kenai Peninsula there are larger natural gas-fired power plants, and the Alaska state highway runs between Homer, Kenai, Soldotna, and Anchorage. This highway brings a significant amount of mobile source emissions compared with the old site, which had only a few All-Terrain Vehicles (ATVs) and limited small boat traffic near Chisik Island.

In addition, the Homer Spit is a common anchorage point for large international and domestic cargo vessels and tankers entering Cook Inlet. Most international maritime traffic anchors off the Homer Spit to allow for a U.S. Coast Guard (USCG) inspection prior to continuing north. Most vessels are either transiting north to the Nikiski Oil Refinery or further north to the Port of Anchorage. The Nikiski facility, along with a number of off-shore oil drilling platforms, including the recent Bluecrest Cosmopolitan Platform, appear to impact the KPBO1 site more than the TUXE1 site.

As discussed elsewhere in this RH SIP, the IMPROVE MID visibility metric is used to track visibility progress at Class I areas. The IMPROVE MID were based on an analysis of 2000-2014 IMPROVE observations, so they are available for the TUXE1 monitor whose last full year was 2014, but not for the KPBO1 whose first full year was 2016.

D. Bering Sea Wilderness Area

There is no air monitoring being conducted or planned for the Bering Sea Class I area due to its remote location and its inaccessibility.

2. ADDITIONAL MONITORING CONSIDERATIONS

One of the monitoring issues that Alaska has identified is the logistical difficulty of monitoring at remote locations. Remote locations make it challenging to provide power for instrumentation. If a monitor is located at the nearest power source, such as a town, it is also near local sources of emissions, and therefore is less likely to be representative of the Class I area. Remote sampling in Class I areas may be needed to verify that data from an off-site IMPROVE monitor are representative. The Davis Rotating-drum Universal-size-cut Monitoring (DRUM) sampler utilizing fluorescent monodisperse aerosols provided an opportunity early on to verify visibility impacts at remote Class I areas like Simeonof and Tuxedni, but the use of these samplers still proved problematic and challenging. The challenges for ongoing air and visibility monitoring in Alaska are transportation and site maintenance. Sites are remote, access may be only by air or water, and electrical power may be lacking. In many places winter temperatures are extreme, often dipping well below zero Fahrenheit for weeks at a time.