Alaska's 2013 Air Monitoring Network Plan

Chapter 6

Kenai Peninsula Borough

Air Quality Division

Air Monitoring
&
Quality Assurance
Program

619 E. Ship Creek Ave. #249
Anchorage, AK 99501

Phone: (907) 269-7577
Fax: (907) 269-7508

www.state.ak.us/dec/

Table of Contents

List of Figures

6 KENAI PENINSULA BOROUGH MONITORING SITE DESCRIPTION

6.1 General information

The Kenai Peninsula Borough has a population[1] of 55,400 and covers 25,600 square miles of land and 9,900 square miles of water. There are six incorporated cities, three unincorporated communities, and thirty-one recognized community councils within the Kenai Peninsula Borough. Average temperatures in the winter range from 14°F to 26°F; in the summer, 52°F to 55°F. Annual precipitation ranges from 18 inches to 66 inches, with 33 inches to 80 inches of snowfall depending on location.

The State of Alaska has been conducting air quality monitoring in the Borough at a site in Soldotna since October 2011. Monitoring was initiated in response to staff observations of dust events and summer wildland fires on the Peninsula. Currently, DEC is monitoring for particulate matter referred to as $PM_{2.5}$ and PM_{10}. $PM_{2.5}$ are fine particles in the size range equal to or less than 2.5 micrometers (µm) usually associated with smoke and other products of combustion. PM_{10} is a slightly larger particle in the size range equal to or less than 10 µm. PM_{10} is produced from the physical breakdown of solid materials. PM_{10} is usually associated with wind-blown dust such as wind-blown glacial silt from a stream bed or traffic along unpaved roads. PM_{Coarse} is a recent monitoring development to further differentiate PM_{10} from $PM_{2.5}$ and represents the faction of particles in the size range between PM_{10} and $PM_{2.5}$. Currently, there is one particulate monitoring site located in Soldotna operated by DEC.

The Soldotna location is designated as a special purpose monitoring (SPM) site. The Soldotna monitoring site EPA Air Quality System (AQS) ID number is 02-0122-0008.

6.2 Kenai Peninsula Borough Building Site – Soldotna

Soldotna **AQS ID 02-0122-0008**
Parameters: PM_{10}, $PM_{2.5}$, & PM_{Coarse} **Established: October, 2011**

6.2.1 Site information

This monitoring site is located behind the Kenai Peninsula Borough Office at 144 North Binkley Street between the rear parking lot and Shady Lane. Site coordinates are latitude 60° 20’57” North (60.3492°), longitude 150° 59’15” (–150.9877°), at an elevation of 32 meters (105 feet) above sea level. This site has continuous monitors for $PM_{2.5}$ and PM_{10}. Figure 6.1:1 presents a street map of the monitoring site and surrounding area. The dominant land use within a 400 meter diameter area is a mixture of residential housing, a school, the Borough government building, and small business activities.

[1] Population data obtained from 2010 U.S. Census (April 1, 2011).

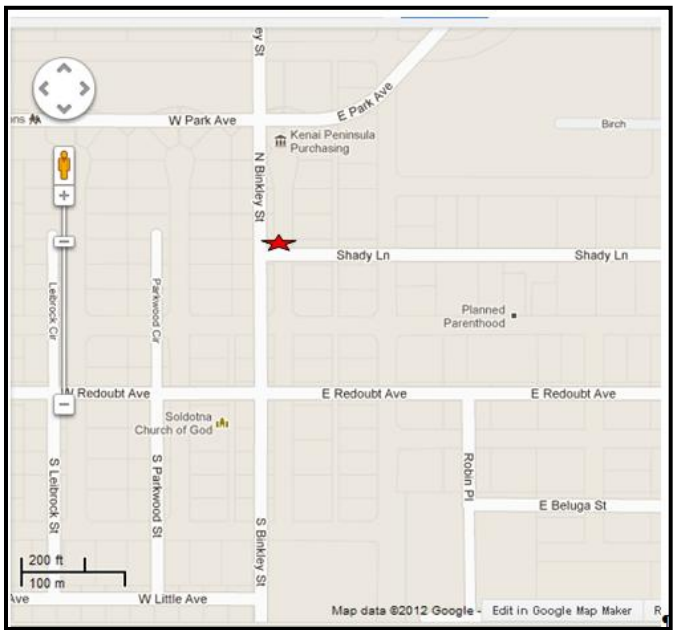


Figure 6.2:1 Map of the Kenai Peninsula Borough monitoring site. The star indicates the location of the site (Courtesy of Google Maps)

6.2.2 Sources

Major sources of PM_{10} matter impacting this site are wind-blown glacial silt from the Kenai River and other stream beds, open un-vegetated ground, and vehicular traffic, especially from unpaved roads. Major sources of $PM_{2.5}$ matter includes wood smoke from residential heating, vehicular exhaust, and especially wildland fires. The Kenai Borough may also be subject to high levels of both $PM_{10}$and $PM_{2.5}$r resulting from volcanic eruptions.

6.2.3 Monitors

The Soldotna Site is currently equipped with:

- PM_{10} / $PM_{2.5}$ /PM_{Coarse} (SLAMS) – Dual Met-One Inc., BAM 1020X FEM continuous beta attenuation monitors which include one continuous monitor for PM_{10} and one continuous monitor for $PM_{2.5}$. PM_{Coarse} is calculated by subtracting the $PM_{2.5}$ value from the PM_{10} value. DEC uses the data to calculate an Air Quality Index for forecasting local air quality conditions and for reporting to the EPA Air Quality System (AQS) data base.

6.2.4 Siting

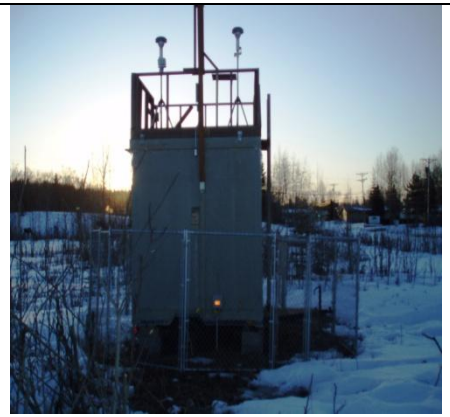
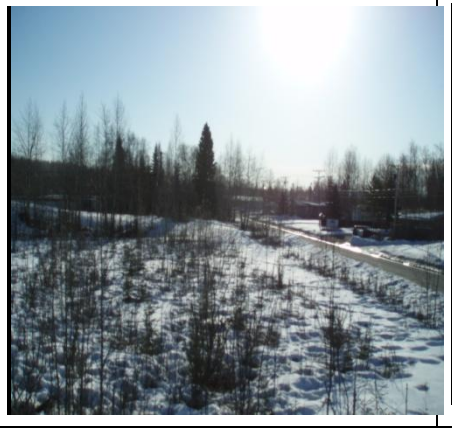
The monitoring objective of this site is to measure the concentration of airborne particulate matter. The continuous monitors are housed inside an insulated, temperature-controlled shelter. All sample inlets extend above the shelter are at a height of approximately four meters (13 feet) above ground level. There are 360 degrees of uninterrupted airflow around the inlets. Photographs of the Soldotna site are presented in Figure 8.2:2 (below).

6.2.5 Traffic

All roads in the area are paved. An average daily traffic at the nearest traffic count site at the intersection of Binkley Street and Redoubt Avenue is 5,320 [2] vehicles. Shady Lane is a side road with lighter traffic than Binkley Street.

[2] Alaska Department of Transportation & Public Facilities, Annual Traffic Volume Report 2009

Figure 6.2:2 Photographs of the Soldotna Site

North	East	South	West
			
			
Views in four directions from Soldotna Site			