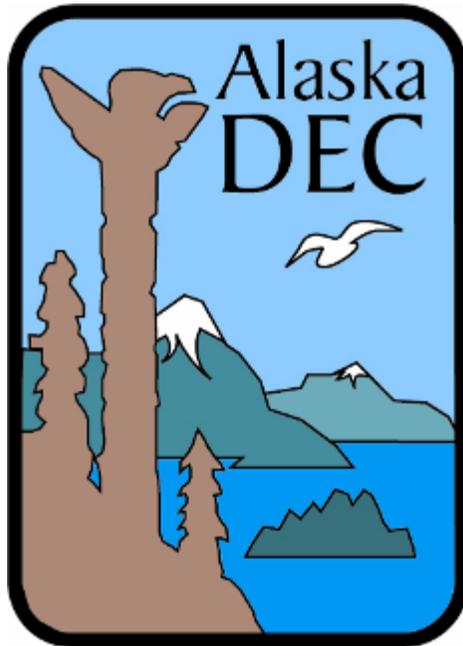


Alaska's Air Monitoring 2010 Network Plan

Chapter 6 – Matanuska Susitna Valley



Prepared by:

State of Alaska Department of Environmental Conservation
Division of Air Quality
Air Monitoring and Quality Assurance Section
619 E. Ship Creek Ave. Suite 249
Anchorage, AK 99501

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6 MATANUSKA-SUSITNA VALLEY MONITORING SITES

6.1 General Information

The Mat-Su Borough has a population¹ of 76,006 and covers 24,682 square miles of land and 578 square miles of water. There are three incorporated cities, several unincorporated communities, and twenty-five recognized community councils within the Mat-Su Borough. Average temperatures in the winter range from 6°F to 14°F; in the summer, 47°F to 67°F. Annual precipitation is 16.5 inches, with 58 inches of snowfall.

The State of Alaska has been conducting air quality monitoring investigations into PM₁₀ concentrations in the Matanuska–Susitna (Mat-Su) Valley for over five years. Monitoring was initiated in response to staff observations and well-documented accounts of wind-blown dust off the Matanuska and Knik River drainages.

Currently, there are three particulate monitoring sites located near the population centers in the southern Mat-Su Borough. All three sites are operated by Alaska Department of Environmental Conservation, Air Quality Division staff.

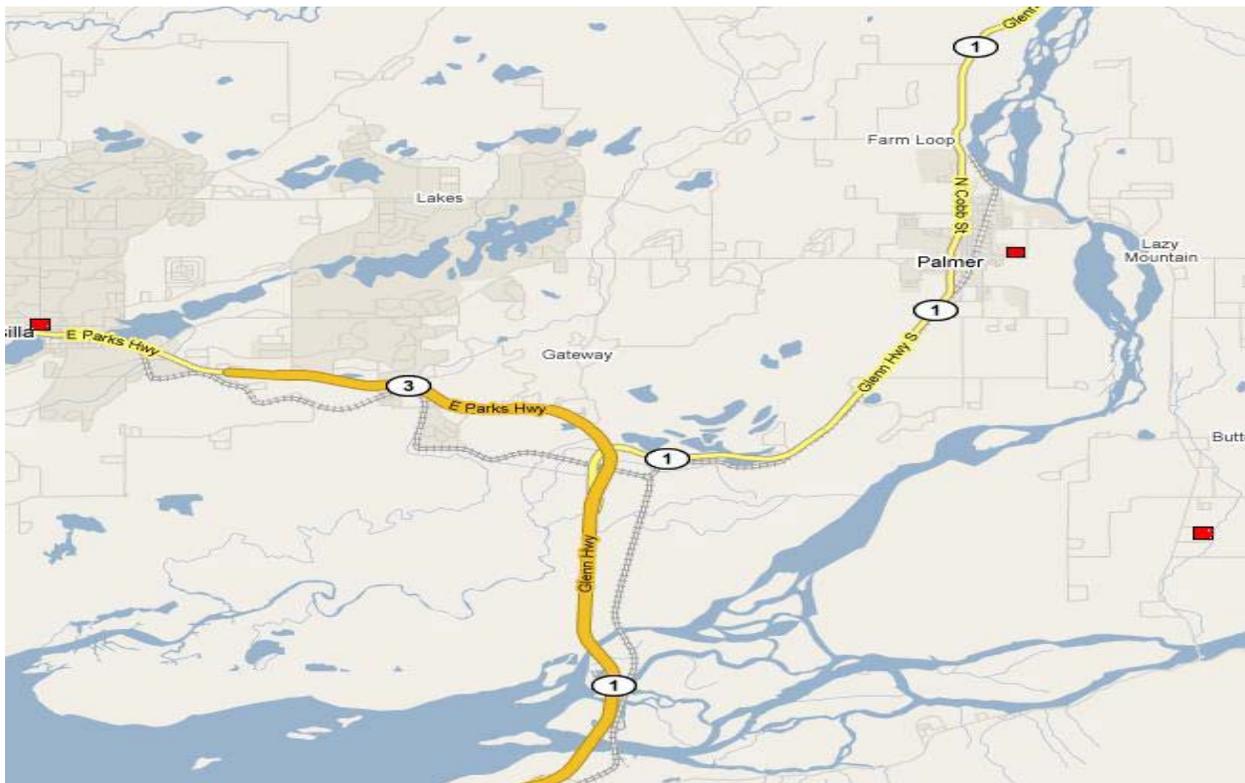


Figure 6.1:1: Map of the Southern Mat-Su Borough area. The red squares indicate the location of the three monitoring sites.

¹ Population data 2005 U.S. Census.

when the river is low (spring and fall) dry, windy weather suspends large amounts of silt in the air. Several air quality alerts are issued per year during spring and fall months because of wind-blown dust events. Additionally, within five miles are two small gravel airstrips (activity unknown but expected to be light), a dirt-track motor raceway, and many acres of farmland. Most land in the area is undeveloped forest. Sources of fine particulate matter include residential wood smoke, vehicular exhaust, and forest fires.

6.2.3 Monitors

The Harrison Court (Butte) Site is currently equipped with:

- PM_{2.5} (SLAMS) – Two Thermo Electron (formerly Rupperecht & Patashnick) Partisol 2000 samplers. Two samplers run on a 1-in-6 day alternating sampling schedule resulting in a 1-in-3 day sampling frequency.
- PM₁₀ (SPM) – One General Metal Works high-volume sampler. Operated on a 1-in-6 sampling schedule.
- PM₁₀ (SPM) – A single Met-One BAM 1020 continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.

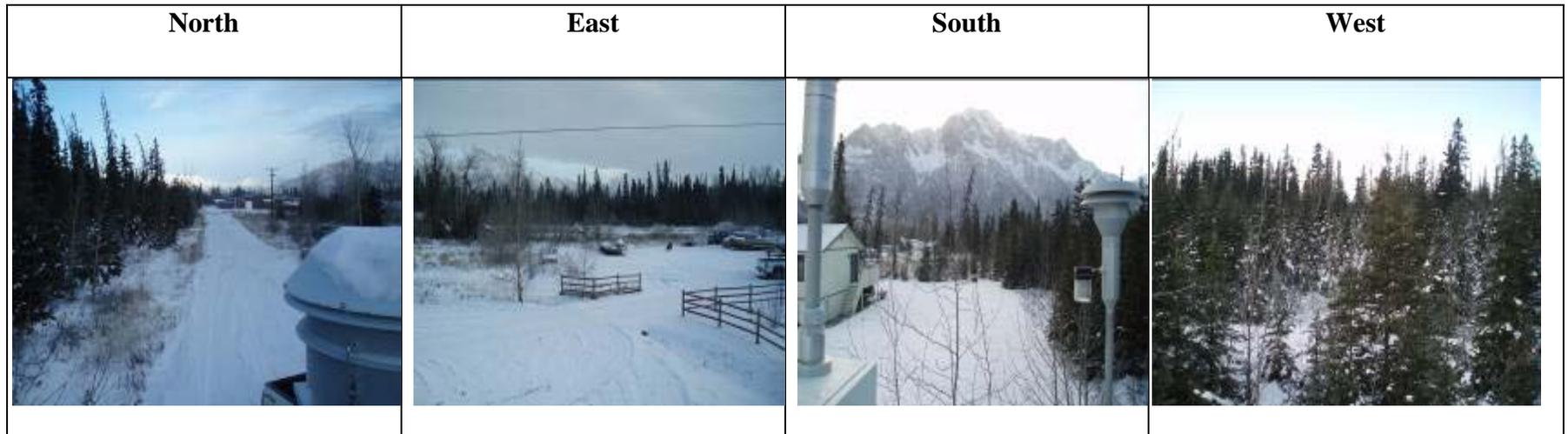
6.2.4 Siting

The manual operated equipment is located on the roof of the trailer and the continuous monitor is housed inside the trailer. All inlets are at a height of approximately four meters (13 feet) above the ground. There is uninterrupted airflow around the inlets. The monitoring objective of this site is to measure airborne glacial loess raised by high winds on the Knik and Matanuska river beds, as well as measure exposure to fine particulate matter from automobiles and home heating in this rural location. The trailer is on the southwest corner of the unpaved Harrison Court cul-de-sac. Photographs of the Harrison Court site are presented in Figure 6.2.2.

6.2.5 Traffic

There are only three house lots on Harrison Court, and traffic is very light. There are numerous unpaved roadways throughout the area. All main roads are paved. Average daily traffic for the area streets is not known.

Figure 6.2:2: Photographs of the Harrison Court Site



Views in four directions from the Harrison Court Site



Views from four directions toward the Harrison Court Site

6.3.2 Sources

The major sources of coarse particulate matter impacting the Palmer site are dust from the Knik and Matanuska Rivers. Both are glacier fed meandering rivers that deposit glacial silt. During times when the river is low (spring and fall) dry, windy weather suspends large amounts of silt in the air. Several air quality alerts are issued per year during spring and fall months because of wind-blown dust events. Other minor sources of coarse particulate are road dust from the local paved road and dust from the Little League ballpark infield. Sources of fine particulate matter include residential wood smoke, vehicular exhaust, and forest fires.

6.3.3 Monitors

The Palmer Site is currently equipped with:

- PM₁₀ (SPM) – A single Met-One BAM 1020 continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.
- PM_{2.5} (SPM) - A single Met-One BAM 1020 continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.
- Meteorological sensors for wind speed, wind direction, and ambient temperature.

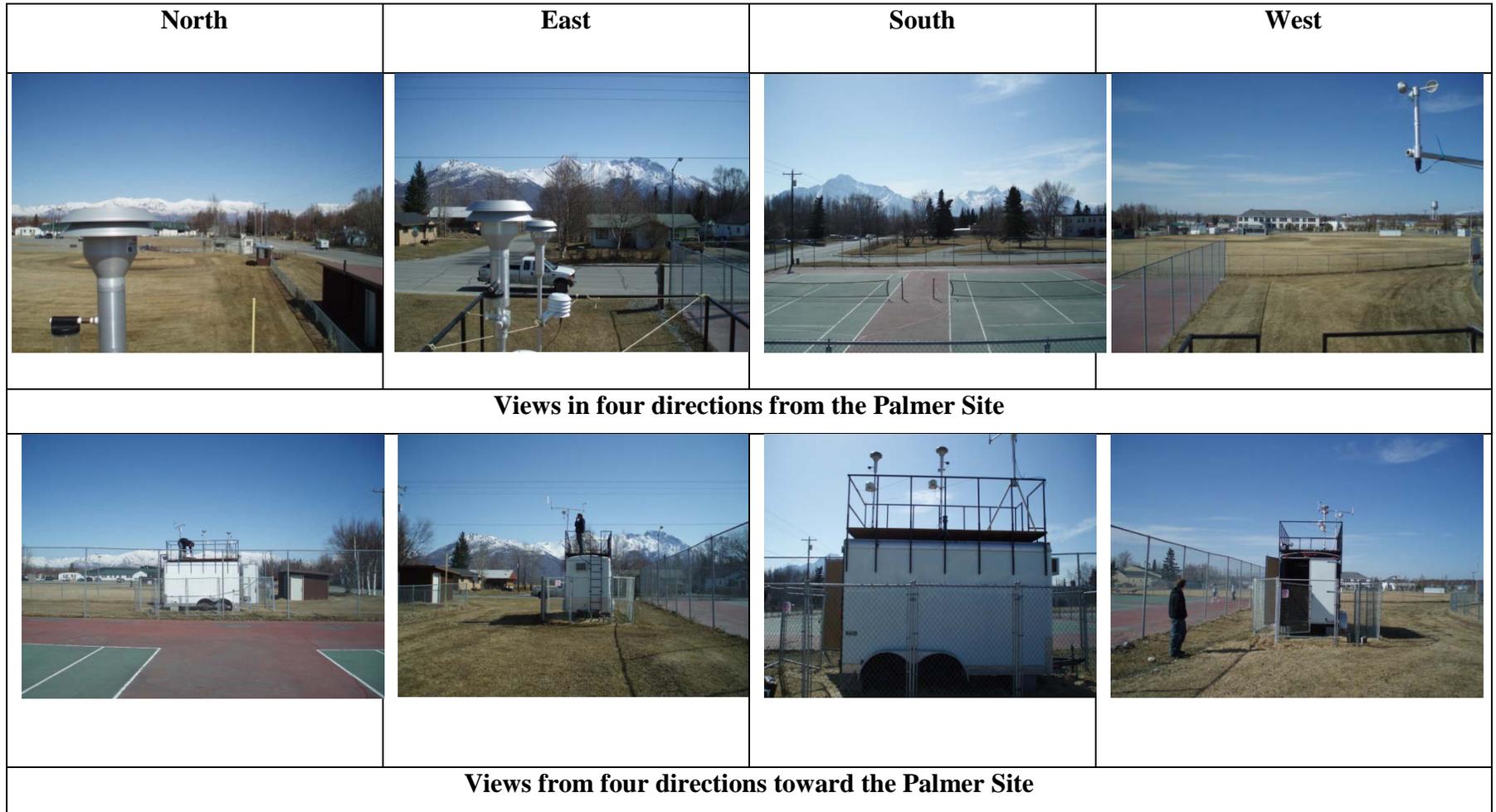
6.3.4 Siting

The continuous particulate monitors are housed in an insulated temperature-controlled trailer within a small security fenced area. All inlets are at a height of approximately four meters (13 feet) above the ground. There is uninterrupted airflow around the inlets. The monitoring objective of this site is to measure coarse particulate from airborne glacial loess raised by high winds on the Knik and Matanuska river beds, as well as measure exposure to fine particulate matter from vehicular exhaust, wood smoke from residential heating and forest fires and then compare the emissions coarse versus fine particulates. Photographs of the Palmer site are presented in Figure 6.3.2.

6.3.5 Traffic

All main roads in immediate area of the monitoring site are paved. Average daily traffic for the area streets is not known.

Figure 6.3.2: Photographs of the Palmer Site



6.4.2 Sources

The major sources of coarse particulate matter impacting the Wasilla site are wind-blown dust from unpaved areas, traffic dust and a somewhat lesser impact of glacial silt from river beds feeding in the northern end of the Cook Inlet. Several air quality alerts are issued per year during spring and fall months because of wind-blown dust events. Sources of fine particulate matter include residential wood smoke, vehicular exhaust, and forest fires.

6.4.3 Monitors

The Palmer Site is currently equipped with:

- PM₁₀ (SPM) – A single Met-One BAM 1020 continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.
- PM_{2.5} (SPM) - A single Met-One BAM 1020 continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.
- PM_{2.5} (SPM) – A single Thermo Electron (formerly Rupprecht & Patashnick) Partisol 2000 samplers. The manual samplers run on a 1-in-6 day sampling schedule.

6.4.4 Siting

The continuous particulate monitors are housed in an insulated temperature-controlled trailer within a small security fenced area. All inlets are at a height of approximately four meters (13 feet) above the ground. There is uninterrupted airflow around the inlets. The monitoring objective of this site is to measure coarse particulate from airborne road dust, glacial loess raised by high winds on exposed ground and river beds, as well as measure exposure to fine particulate matter from vehicular exhaust, wood smoke from residential heating and forest fires and then compare the emissions coarse versus fine particulates. Photographs of the Wasilla Site are presented in Figure 6.4.2

6.4.5 Traffic

All main roads in immediate area of the monitoring site are paved. Average daily traffic for the area streets is not known. Commuter traffic and summer tourist traffic along the George Parks Highway can be heavy at times. The annual average daily traffic for the Park's Highway west of Fishhook Road was 16,494 in 2005 (as recorded by Alaska DOT).

Figure 6.4.2: Photographs of the Wasilla Site

North	East	South	West
			
<p>Views in four directions from the Wasilla Site</p>			
			
<p>Views from four directions toward the Wasilla Site</p>			