

MATANUSKA-SUSITNA VALLEY MONITORING SITES

General Information

The Matanuska-Susitna Borough is a second class borough containing sixteen communities. The Mat-Su Borough has a population¹ of 57,288 and covers 24,682 square miles of land and 578 square miles of water. The Mat-Su Borough average temperatures in January range from 6°F to 14°F; in July, 47°F to 67°F. Annual precipitation is 16.5 inches.

There are two particulate monitoring site in the Mat-Su Borough and both are operated by Alaska Department of Environmental Conservation staff. The sites are (in order of AIRS ID number):

02-170-0004 Big Lake Elementary School (PM_{2.5})

02-170-0008 Harrison Court, Butte (PM_{2.5} & PM₁₀)

Figure 1 is a topographical map showing the Borough in the vicinity of the Big Lake monitoring site and surrounding geographical features. The Big Lake site serves to monitor transport of fine particulate matter coming from Anchorage. Figure 2 is a topographical map of the Harrison Court monitoring site. The Harrison Court site is used to monitor population exposure.

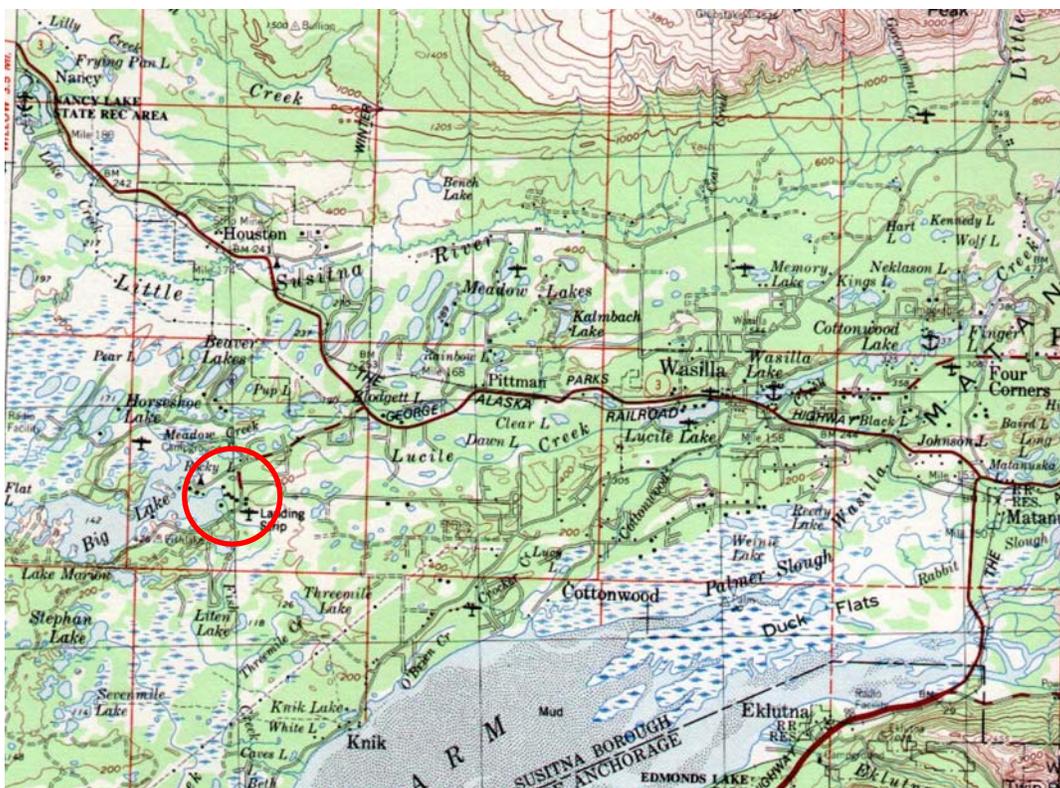


Figure 1 – Topographical map of Wasilla and Big Lake area.

Big Lake is an unincorporated community (population² 2,699) on the shore of Big Lake, 21 km southwest of Wasilla and 29 km north of Anchorage, in the Chugach

¹ Population data certified December, 1999 by the Department of Community and Economic Development.

² Population data certified December, 1999 by the Department of Community and Economic Development.

Mountains. The area encompasses 133 square miles of land and 13 square miles of water.

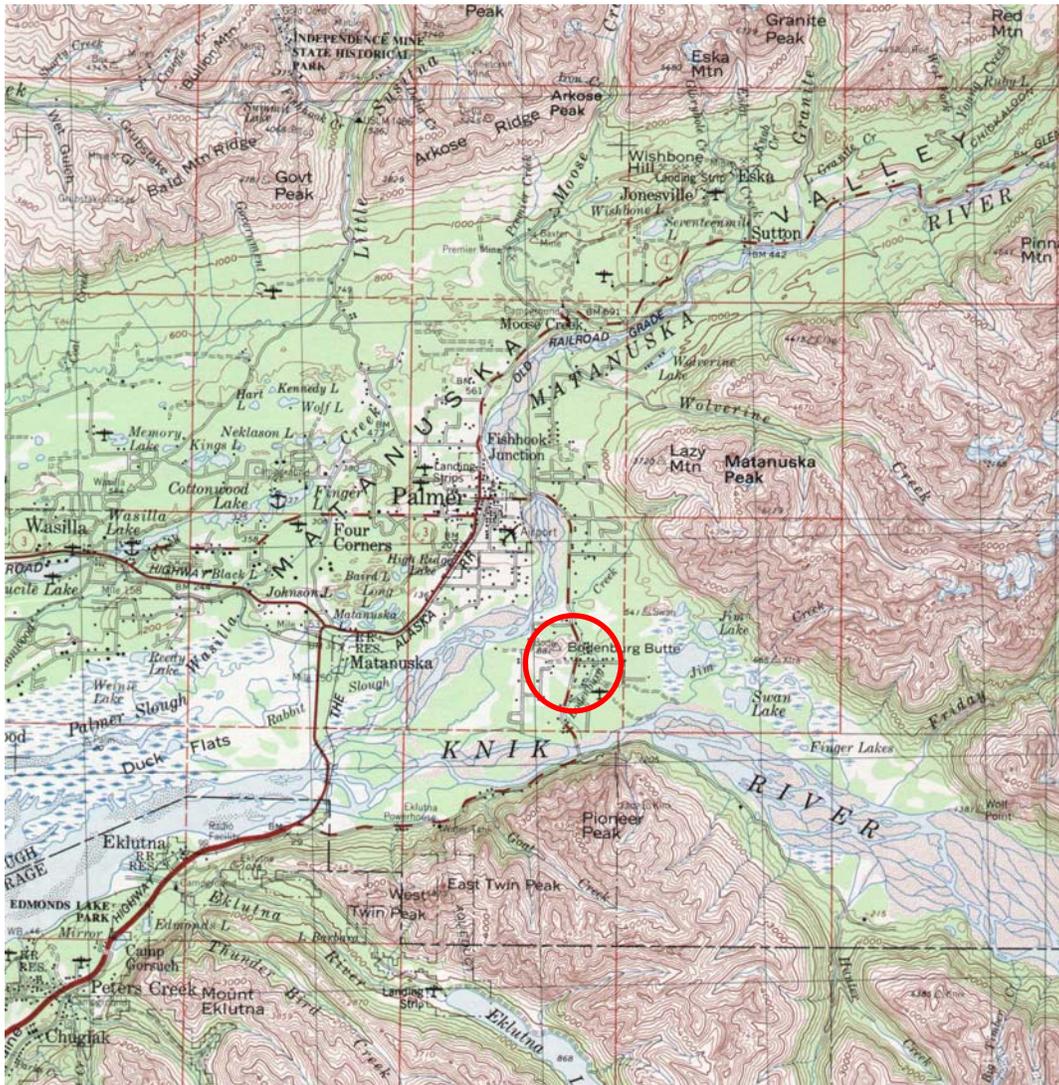


Figure 2 – Topographical map of Palmer and Butte area.

Butte is an unincorporated community (population³ 2,561) 8 kilometers south of Palmer and approximately 42 miles northeast of Anchorage. The area encompasses 3.8 square miles of land and 0 square miles of water

³ Population data from 2000 U. S. Census.

HARRISON COURT SITE – MATANUSKA-SUSITNA BOROUGH

Harrison Court

AIRS ID 02-170-0008
Prepared 08 Sept, 2001

Site Information

The site is located on the roof of a Wells-Cargo trailer at the cul-de-sac at the end of Harrison Court. The latitude⁴ is 61° 32' 02.986", and the longitude is -149° 01' 53.958". The ground elevation is approximately 30 meters. The site is located 8 km from the central business district.

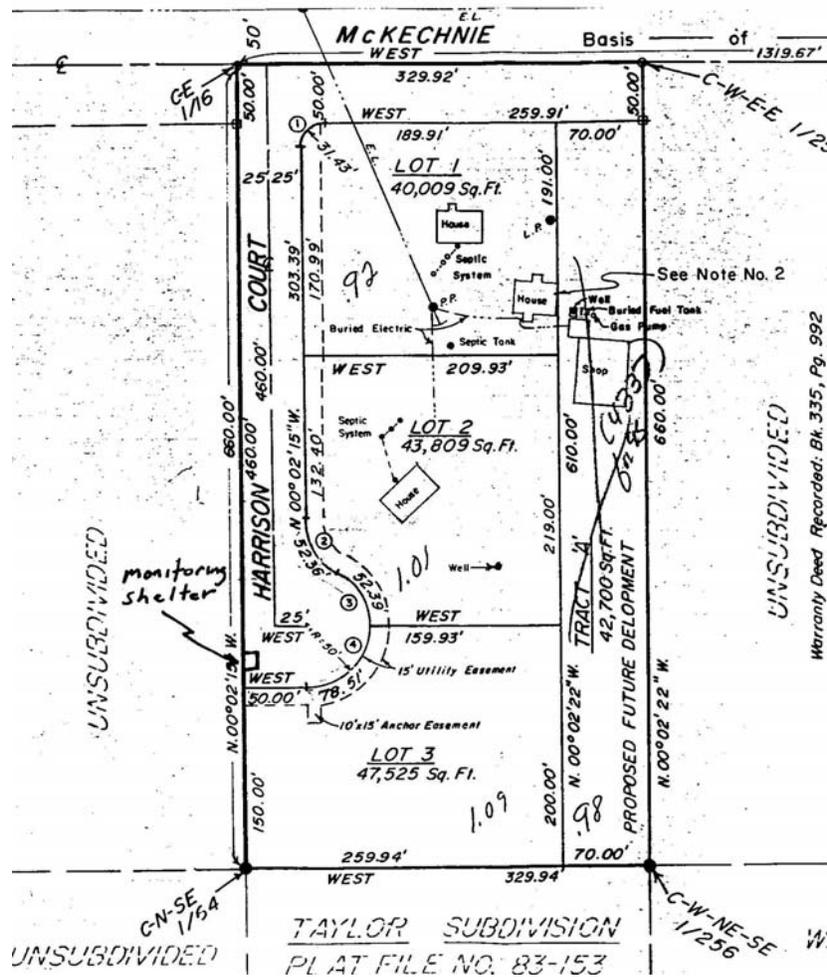


Figure 3 – Harrison Court Subdivision plat drawing.

The location is rural and residential. The site is within the Cook Inlet air quality control region (AIRS AQCR= 008), and is not within any metropolitan statistical area (AIRS MSA= 0000). The samplers are located on the roof of the trailer. Harrison Court

⁴ These values were determined using a 1:25,000 USGS topographical map and/or hand held GPS.

is an urban-scale, population-oriented site. The monitoring objective of Harrison Court 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.

Traffic

The trailer is on the southwest corner of the unpaved Harrison Court cul-de-sac. 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 4 – Monitoring trailer and samplers as seen from the north. This photo was taken on a windy day with a large amount of suspended particles obscuring the view.

Sources

Butte is a sparsely populated residential area. Local sources expected to impact the samplers are residential wood smoke, automobile exhaust, and fugitive dust. Within eight kilometers are a two small gravel airstrips (activity unknown but expected to be light), a dirt-track motor raceway, and many acres of farmland.

The major sources for airborne particulate matter impacting this site are the Knik and Matanuska Rivers. Both are glacier fed meandering rivers that deposit 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.

Most land in the area is undeveloped forest.

Monitors

The equipment is located on the roof of the trailer. The inlet is at a height of approximately 4 meters above the ground. There is uninterrupted airflow around the inlets.

Equipment installed

The PM_{2.5} monitors are two Rupprecht & Pattashnick Partisol 2000 FRM samplers. The site is operated year round on an every third day schedule. The monitors were installed on 04 Mar, 2000.

The PM₁₀ monitors are two General Metal Works high Volume samplers. The site is operated year round on an every third day schedule. The monitors were installed in April, 1998.

There is also an Anderson beta-attenuation monitor with a PM₁₀ inlet. This monitor runs continuously to alert staff to wind-blown dust events.

Figure 2 – Big Lake Elementary School as seen from the road. The red circle indicates the sampler locations.



Figure 5 – The view north of the samplers.



Figure 6 – The view east from the samplers.



Figure 7 – The view south from the samplers.



Figure 8 – The view southwest from the samplers.

BIG LAKE ELEMENTARY SCHOOL SITE – MATANUSKA-SUSITNA BOROUGH

South Big Lake Road

**AIRS ID 02-170-0004
Prepared 30 June, 2000**

Site Information

The site is located on the second floor roof of Big Lake Elementary School on South Big Lake Road. The latitude⁵ is 61° 32' 33", and the longitude is -149° 48' 53". The ground elevation is approximately 15 meters. The site is located 2 km from the central business district.

The location is rural and residential. The site is within the Cook Inlet air quality control region (AIRS AQCR= 008), and is not within any metropolitan statistical area (AIRS MSA= 0000). The samplers are located on the roof of the school. Big Lake is an urban-scale, transport site. The monitoring objective of Big Lake is to measure regional transport of particulate matter traveling north from Anchorage.

Traffic

Big Lake Elementary School is on the north side of Big Lake Road, a two-lane through street with unknown average daily traffic.

Sources

Big Lake is a sparsely populated residential area. The only local sources expected to impact the samplers are residential wood smoke, automobile exhaust, and fugitive dust. The lack of significant local sources was what lead ADEC staff to choose the site as a regional transport monitoring location. Particulate matter from Anchorage (29 km to the south), carried by southerly winds, may be detected at Big Lake.

Monitors

The equipment is located on the second floor roof of the school. The probe is at a height of approximately twelve meters above the ground. There is uninterrupted airflow around the inlets.

Equipment installed

The particulate monitors are two Rupprecht & Pattashnick Partisol 2000 FRM samplers (serial numbers 200FA203559908 and 200FA203619908). The site is operated year round on an every third day schedule. The monitors were installed on 04 Mar, 2000.

There is also a Peet Bros non-PSD quality meteorological system installed. Wind speed, wind direction, ambient temperature, and ambient pressure data are collected by the Principal, but are not stored or used for routine regulatory reporting.

⁵ These values were determined using a 1:25,000 USGS topographical map and/or hand held GPS.



Figure 9 – Big Lake Elementary School as seen from the road. The red circle indicates the sampler locations.



Figure 10 – The view north of the samplers.



Figure 11 – The view east from the samplers.



Figure 12 – The view south from the samplers.



Figure 13 – The view west from the samplers.