Annual Report

North Dakota Ambient Monitoring Network Plan 2010

NORTH DAKOTA
DEPARTMENT *of* HEALTH

Annual Report

North Dakota Ambient Monitoring Network Plan 2010

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1.0 INTRODUCTION

The North Dakota Department of Health, Division of Air Quality, has the primary responsibility of protecting the health and welfare of North Dakotans from the detrimental effects of air pollution. Toward that end, the Division of Air Quality ensures the ambient air quality in North Dakota is maintained in accordance with the levels established by the state and federal Ambient Air Quality Standards (AAQS) and the Prevention of Significant Deterioration of Air Quality (PSD) Rules. To carry out this responsibility, the Division of Air Quality operates and maintains a network of ambient air quality monitors and requires three major industrial pollution sources to conduct source-specific ambient air quality monitoring. There are 16 ambient air quality monitoring sites currently operating in the State. However, this review addresses only the seven department-operated sites. The Theodore Roosevelt National Park – South Unit site at Painted Canyon is a National Park Service site. The department operates and maintains the sulfur dioxide, ozone and continuous fine particulate analyzers at the National Park Service's request. The remaining eight sites are department-required industry-supported sites

To evaluate the effectiveness of the state's air quality monitoring effort, the U.S. Environmental Protection Agency (EPA) requires the Division of Air Quality to conduct an annual review of the department's ambient air quality monitoring (AAQM) network. EPA's requirements, as set forth in 40 CFR 58.10, are to (1) determine if the system meets the monitoring objectives defined in 40 CFR 58, Appendix D, and (2) identify network modifications such as termination or relocation of unnecessary sites or establishment of new sites that are necessary.

The 2005 Draft National Ambient Air Monitoring Strategy (NAAMS, www.epa.gov/ttn/amtic/monstratdoc.html) established a new monitoring site classification system for the national AAQM network structure. There are two primary categories: National Core (NCore) and State, Local, and Tribal (SLT). Each state is required to have at least one NCore site. Fargo NW has been selected as North Dakota's required NCore site. Fargo NW is also a part of EPA's 54-site Speciation Trends National Network. The NAAMS explains the purpose of these national networks and rationale for each gaseous and particulate measurement.

For the States and tribes, the State and Local Monitoring Systems (SLAMS), SPM, Prevention of Significant Deterioration (PSD) and Tribal Networks site designations still apply. The remaining six department-operated sites are designated as SLAMS sites.

1.1 Network Plan Process

The locations of sites in a monitoring program are established to meet certain objectives. The Oc. 17, 2006, Federal Register (40 CFR 58, Appendix D), defined six basic monitoring objectives. These objectives are as follows:

1. To determine the highest pollutant concentrations expected to occur in an area covered by the network.

2. To determine representative concentrations in areas of high population density.

3. To determine the impact on ambient pollution levels by a significant source or class categories.

4. To determine the general/background concentration levels.

5. *To determine the impact on air quality by regional transport.*

6. *To determine welfare-related impacts (such as visibility impacts and vegetation effects).*

The link between basic monitoring objectives and the physical location of a particular monitoring site involves the concept of spatial scale of representativeness. This spatial scale is determined by the physical dimensions of the air parcel nearest a monitoring site throughout which actual pollutant concentrations are reasonably similar. The goal in locating sites is to match the spatial scale represented by the sample of monitored air with a spatial scale most appropriate for the monitoring objective. Spatial scales of representativeness, as specified by EPA, are described as follows:

Microscale – dimensions ranging from several meters up to about 100 meters.
Middle Scale – areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 km.
Neighborhood Scale – city areas of relatively uniform land use with dimensions of 0.5 to 4.0 km.
Urban Scale – overall, city-wide dimensions on the order of 4 to 50 km. (Usually requires more than one site for definition.)
Regional Scale – rural areas of reasonably homogeneous geography covering from 50 km to hundreds of km.

The relationships between monitoring objectives and spatial scales of representativeness, as specified by EPA, are as follows:

Monitoring Objective	Appropriate Siting Scales
Highest Concentration	Micro, middle, neighborhood, (sometimes urban or regional for secondarily formed pollutants)
Population Oriented	Neighborhood, urban
Source Impact	Micro, middle, neighborhood
General/Background	Urban, regional
Regional Transport	Urban, regional
Welfare-related Impacts	Urban, regional

Recommended scales of representativeness appropriate to the criteria pollutants monitored in North Dakota are shown below:

Criteria Pollutant	Spatial Scales
Inhalable Particulate	micro, middle, neighborhood, urban, regional
Sulfur Dioxide	middle, neighborhood, urban, regional
Ozone	middle, neighborhood, urban, regional
Nitrogen Dioxide	middle, neighborhood, urban

Using this physical basis to locate sites allows for an objective approach, ensures compatibility among sites, and provides a common basis for data interpretation and application. The annual review process involves reviewing each site and associated monitors to evaluate their monitoring objectives and spatial scales to ensure each site and monitor still meets the intended purpose. Sites and monitors that no longer satisfy the intended purpose are either terminated or modified accordingly. Further details on network design can be found in 40 CFR 58, Appendix D.

1.2 General Monitoring Needs

As can be gathered from the prior discussion, each air pollutant has certain characteristics that must be considered when establishing a monitoring site. These characteristics may result from (1) variations in the number and types of sources and emissions in question; (2) reactivity of a particular pollutant with other constituents in the air; (3) local site influences such as terrain and land use; and (4) climatology. The Department's AAQM network is designed to monitor air quality data for five basic conditions: (1) background monitoring; (2) population exposure; (3) significant source or class category; (4) long range transport; and (5) regional haze.

There are a total of 16 ambient air quality monitoring sites operating in the state: eight are source-specific industry sites and one site, Painted Canyon in Theodore Roosevelt National Park, is a part of the National Park Service's (NPS) network. The department, at the NPS's request, provides sulfur dioxide and ozone analyzers and a manual fine particulate (PM_{fine}) sampler. The NPS also provides a continuous PM_{fine} analyzer, which the department operates

and maintains. The remaining seven sites fall into two categories: 40 CFR 58 required sites (3) and supplemental sites (4). The primary function of the department's three required sites (see Table 1) are to satisfy five monitoring objectives. Beulah is a significant source and population-oriented site because of the three major sources in the vicinity of Beulah. Also, the site is between the city and downwind of two major sources. Fargo NW is population orientated because Fargo is a major population center with five major sources in the Fargo, ND-Moorhead, MN, area. The data from this site is used as input to dispersion models to evaluate permits-to-construct and permits-to-operate for projects located in or near population centers in the eastern part of the state. And, TRNP-NU is the background/long-range transport/welfare-related site. The remaining four sites are used to support modeling activities (model calibration and/or validation) and supplement data collected at the required sites. For the national PM_{fine} program, the department is required to operate three "non-Core required" sites (Fargo, Bismarck and Beulah).

Background, welfare-related and long-range transport sites are chosen to determine concentrations of air contaminants in areas remote from urban sources and generally are sited using the regional spatial scale. This is true for NO_2 despite the fact that the regional spatial scale is not normally used for NO_2 monitoring. Once a specific location is selected for a site, the site is established in accordance with the specific sitting criteria specified in 40 CFR 58, Appendices A, C, D and E.

1.3 Monitoring Objectives

The department's monitoring objective is to track those pollutants that are judged to have the potential for violating either state or federal Ambient Air Quality Standards. To accomplish this objective, the department operates SLAMS sites at selected locations around the state. Table 1 lists basic site information: Appendix A contains a full description for each site, site photographs, and a site map taken from Google Earth™ mapping service. Figure 1 shows the approximate site locations.

With the visibility regulations in 40 CFR 51.300, 40 CFR 51.308 (regional haze rules) and 40 CFR 51, Appendix Y (Best Available Retrofit Technology, BART) coming into effect, the department is beginning to evaluate monitoring requirements and changes needed to support the visibility regulations.

Table 1
AAQM Network Description

Site Name AQS Site #	Parameter Monitored[1]	Monitoring Objective[2]
1 Beulah North 380570004	SO_2, NO_2, O_3, NH_3, MET cont. PM_{fine}, PM_{10} Manual PM_{fine}	Population Exposure & Significant Source
2 Bismarck Residential 380150003	SO_2, NO_2, O_3, MET cont. PM_{fine}, PM_{10} Manual PM_{fine}	Population Exposure
3 Dunn Center 380250003	SO_2[4], NO_2, O_3, MET cont. PM_{fine}, cont. PM_{10}	General Background
4 Fargo NW 380171004	SO_2[4], NO_2, O_3, MET cont. PM_{fine}, PM_{10} Manual PM_{fine} PM_{fine} Speciation	Population Exposure Population Exposure Population Exposure Population Exposure
5 Hannover 380650002	SO_2, NO_2, O_3, MET cont. PM_{fine}	Source Impact
6 Lostwood NWR 380130004	SO_2[4], NO_2, O_3, NH_3, MET, cont. PM_{fine}, cont. PM_{10} PM_{fine} Speciation (IMPROVE)	General Background & Significant Source
7 TRNP - NU 380530002	SO_2[4], NO_2, O_3, MET cont. PM_{fine}, PM_{10}	General Background, Long range Transport, & Welfare-related

1. MET refers to meteorological and indicates wind speed and wind direction monitoring equipment.
2. Not applicable to MET.
3. This analyzer will serve a dual role of population exposure and general background.
4. The SO_2 was replaced with a SO_2 Trace Level Analyzer.

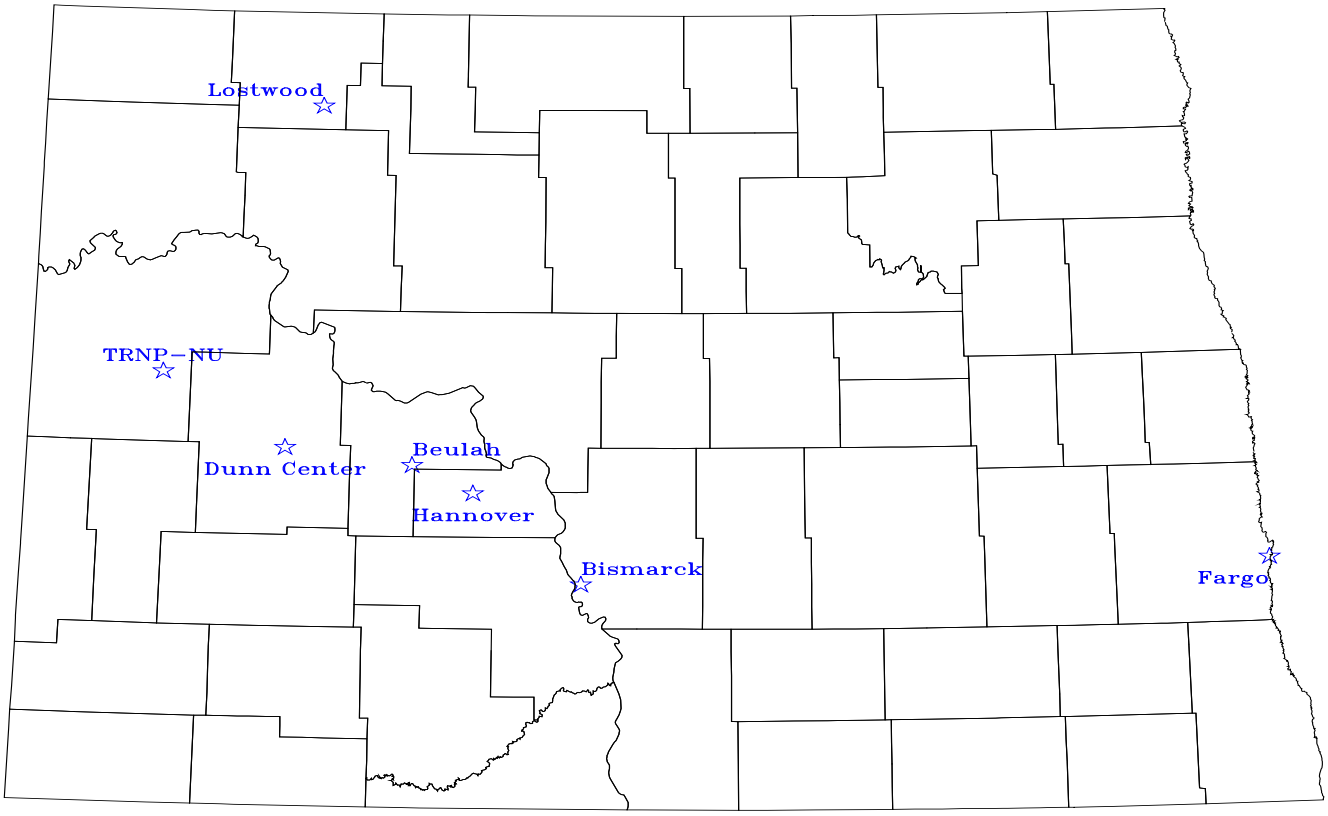


Figure 1 North Dakota Ambient Air Quality Monitoring Sites

2.0 Ambient Air Monitoring Network Coverage

The State of North Dakota is in attainment for all ambient standards for criteria pollutants, including PM_{fine} and 8-hour ozone. The seven department-operated ambient monitoring sites are positioned to satisfy five monitoring objectives and collect data to compare to the State and federal ambient air quality standards and support dispersion modeling activities relating to, first, visibility/regional haze, and, second, source permit evaluation.

2.1 Sulfur Dioxide

Energy development in the west and west-central portions of North Dakota has produced a number of sources of sulfur dioxide (SO_2). These sources include coal-fired steam-powered electrical generating facilities, a coal gasification plant, natural gas processing plants, an oil refinery, and flaring at oil/gas well sites. As a result, SO_2 is one of the Department's primary interests in regard to visibility: first, to aid in establishing the visibility baseline, then to track visibility improvement over time.

2.1.1 Point Sources

The major SO_2 point sources (>100 Tons Per Year or TPY) based on 2009 emissions are listed in Table 2. Figure 2 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Figure 2A shows the total annual SO_2 emissions from point sources and three sub-categories for 1984 through 2009.

2.1.2 Other Sources

The western part of the state has a number of potential SO_2 sources associated with the development of oil and gas. These sources include individual oil/gas wells, oil storage facilities, and compressor stations. Emissions from these sources may lead to two problems. First, these sources may directly emit significant amounts of hydrogen sulfide (H_2S) to the ambient air (see Section 2.7). Second, flaring the H_2S from these sources may create significant concentrations of SO_2 in the ambient air. The primary counties for these sources in western North Dakota are outlined in green on Figure 2. Figure 2A shows the contribution of an “Other Point Sources” category that consists of Dakota Gasification Company (DGC), oil refineries, natural gas processing plants, and agricultural processing plants.

Table 2

Major SO_2 Sources

(>100 TPY)

#	Company Name	SOURCE	Facility ID
1	Basin Electric Power Cooperative	Leland Olds Station	3805700001
2	Great River Energy	Coal Creek Station	3805500017
3	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
4	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
5	Otter Tail Power Company	Coyote Station	3805700012
6	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
7	Montana Dakota Utilities Company	RM Heskett Station	3805900001
8	Great River Energy	Stanton Station	3805700004
9	Hess Corporation	Tioga Gas Plant	3810500004
10	American Crystal Sugar Company	Hillsboro Plant	3809700019
11	Bear Paw Energy, L.L.C.	Grasslands Gas Plant	3805300023
12	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
13	University of North Dakota	UND Heating Plant	3803500003
14	Petro-Hunt, LLC	Little Knife Gas Plant	3800700002
15	North Dakota State University	NDSU Heating Plant	3801700005
16	American Crystal Sugar Company	Drayton Plant	3806700003
17	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
18	ADM Corn Processing	Walhalla Ethanol Plant	3806700004
19	Hebron Brick Company	Hebron Brick Plant	3805900017
20	Bear Paw Energy, LLC	Lignite Gas Plant	3801300071
21	Idahoan Foods, LLC	Grand Forks Plant	3803500058

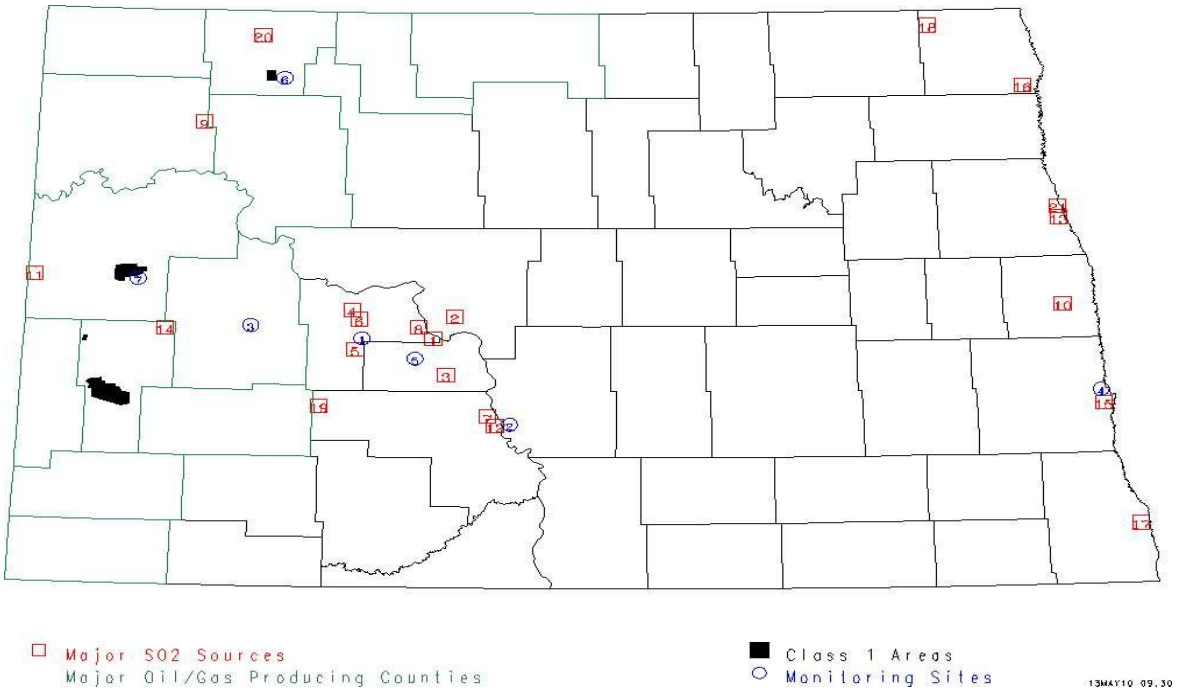


Figure 2 Major Sulfur Dioxide Sources

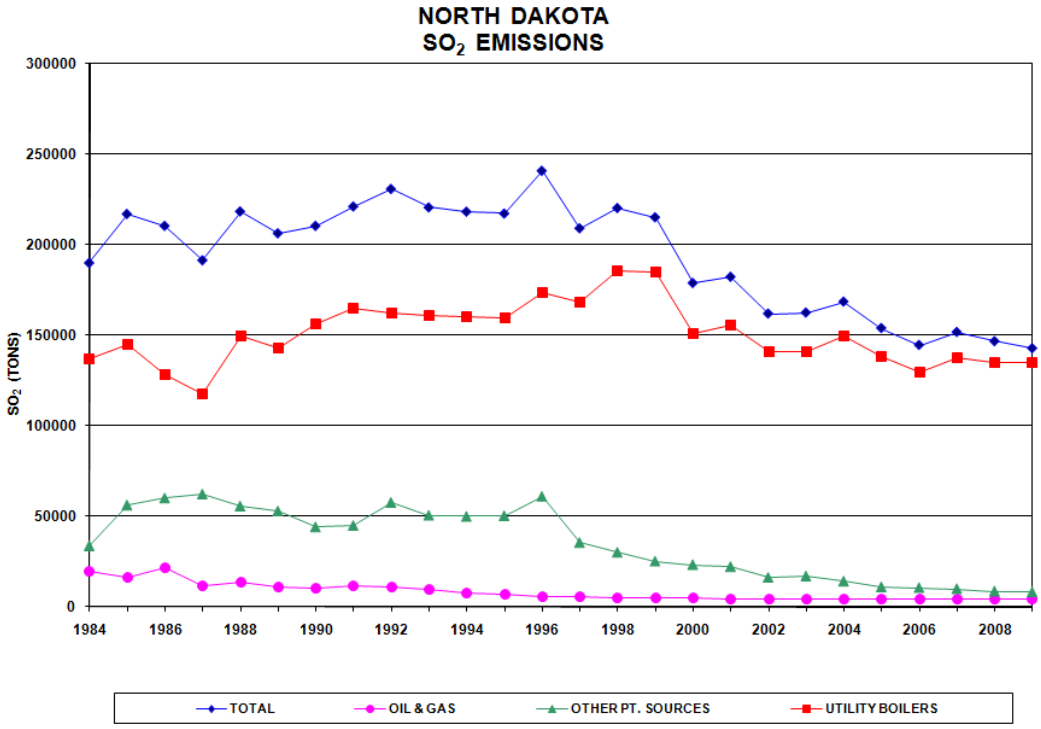


Figure 2A Annual Sulfur Dioxide Emissions

2.1.3 Monitoring Network

The SO_2 monitoring sites are shown on Figure 2. There were no significant changes to the SO_2 monitoring network for 2009.

As can be seen in Figure 2, the monitoring sites are concentrated in the vicinity of the oil and gas development in the west and the coal-fired steam electrical generating plants in the west-central part of the state. Tables 3 and 3A show the 2009 annual SO_2 data summaries; Tables 4 and 4A show the 5-minute data summaries. There were no exceedances of either state or federal SO_2 standards.

2.1.4 Network Analysis

Ten major SO_2 sources are within 45 miles of both the Beulah and Hannover sites. This makes these two sites very important in tracking the impact of these sources on the ambient air. Also, Lostwood NWR is within 45 miles of four major sources: two natural gas processing plants and two power plants. The two natural gas processing plants are the Lignite Gas Plant and Tioga Gas Plant. The two power plants, Shand Power Station and Boundary Dam Power Station, are located near Estevan, Saskatchewan, approximately 40 miles to the northwest.

One would expect that as the large sources in Oliver and Mercer counties came on line beginning in 1980, a noticeable change would be seen on the ambient air quality. This has not been the case. There have been possible short-term influences, but no significant long-term impact by these sources combined has been demonstrated in the data. Figures 3, 4 and 5 present the following for the Department-operated sites: (1) 1-hour maximums; (2) 3-hour maximums; and (3) 24-hour maximums. Because the industry sites are sited specifically for maximum expected concentrations (primarily as predicted by dispersion models and secondarily in a downwind direction), the industry sites are not reviewed for particular long-term trends.

To calculate valid statistics, at least 75 percent of the data for each averaging period must be valid. The result of the 75 percent requirement is that each 1-hour average must have at least 45 valid minutes of data. The 3-hour average must have three valid values. The 24-hour average must have at least 18 valid hourly averages. And, the annual average must have 6,570 hours of data.

TABLE 3

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	NUM OBS	MAX 1-HOUR 1ST	MAX 1-HOUR 2ND	MAX 3-HOUR 1ST	MAX 3-HOUR 2ND	24-HOUR 1ST	24-HOUR 2ND	ARITH MEAN	1HR #>273	24HR #>99
Beulah - North	2009	8689	41	38	31	20	7	6	1.6		
Bismarck Residential	2009	8626	50	32	27	25	10	8	2.0		
Hannover	2009	8692	59	47	30	29	10	8	1.7		

* The air quality standards are:
STATE Standards -
1) 273 ppb maximum 1-hour average concentration.
2) 99 ppb maximum 24-hour average concentration.
3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -
1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
3) 30 ppb annual arithmetic mean.

TABLE 3A

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : TRACE LEVEL SULFUR DIOXIDE (ppb)

LOCATION	YEAR	PERIOD	NUM OBS	MAX 1-HOUR 1ST	MAX 1-HOUR 2ND	MAX 3-HOUR 1ST	MAX 3-HOUR 2ND	24-HOUR 1ST	24-HOUR 2ND	ARITH MEAN	1HR #>273	24HR #>99
Dunn Center	2009		8621	20.1	17.4	13.0	12.0	6.0	5.0	0.5		
Fargo NW	2009		8505	8.5	8.0	7.0	4.0	3.0	3.0	0.3		
Lostwood NWR	2009		6478	57.1	56.9	46.0	34.0	15.0	13.0	1.7		
TRNP - NU	2009		8142	20.3	11.6	10.0	8.0	4.0	4.0	0.6		

* The air quality standards are:
STATE Standards -
1) 273 ppb maximum 1-hour average concentration.
2) 99 ppb maximum 24-hour average concentration.
3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -
1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
3) 30 ppb annual arithmetic mean.

TABLE 4

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : SO2 5-Minute Averages (ppb)

LOCATION	YEAR	NUM OBS	5 - M I N U T E M A X I M A 1ST	2ND	3RD	# HOURS >600
Beulah - North	2009	8689	73	66	51	
Bismarck Residential	2009	8628	82	64	62	
Hannover	2009	8639	128	97	92	

* No Standard is currently in effect

TABLE 4A

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Trace Level SO2 5-Minute Averages (ppb)

LOCATION	YEAR	NUM OBS	5 - M I N U T E M A X I M A 1ST	2ND	3RD	# HOURS >600
Dunn Center	2009	8240	25.6	22.5	20.5	
Fargo NW	2009	8515	14.6	12.6	11.8	
Lostwood NWR	2009	6479	144.0	118.0	113.0	
TRNP - NU	2009	8022	29.0	17.0	15.2	

* No Standard is currently in effect:

Beginning in 1980, major events are traceable. In 1980, the oil industry was expanding. In 1981, Otter Tail Power's Coyote Power Station began operation. In 1982 the oil industry in western North Dakota hit its peak activity. Dunn Center and TRNP – NU show the influence from the oil field activity as the oil fields expanded and flared the gas. As pipelines were built and wells were tied into the pipelines, the amount of hydrogen sulfide gas flared decreased, reducing the amount of sulfur dioxide emitted. Once the wells were tied into pipelines, the predominant influence at these two sites has been long-range transport from major point sources.

Dunn Center and TRNP – NU were indicators of the "oil patch" activity and tracked the activity very well. Since TRNP – NU is more centrally located in the "oil patch," it is the stronger indicator. Dunn Center, which is on the eastern edge of the oil development area, demonstrates influences from both the "oil patch" and the coal conversion facilities to the east.
1983, 1984 and 1985 were startup years for Basin Electric's Antelope Valley Unit #1, the synthetic natural gas plant (aka, Dakota Gasification Company, DGC), and Antelope Valley Unit #2, respectively. At Hannover, 1985 and 1986 reflected these startups (1984 had only three months of data and shut down Dec. 31, 1986). Hannover was started up again Jan. 1, 1988; and the Beulah - North site began operation in 1999 and has tracked the Hannover data.

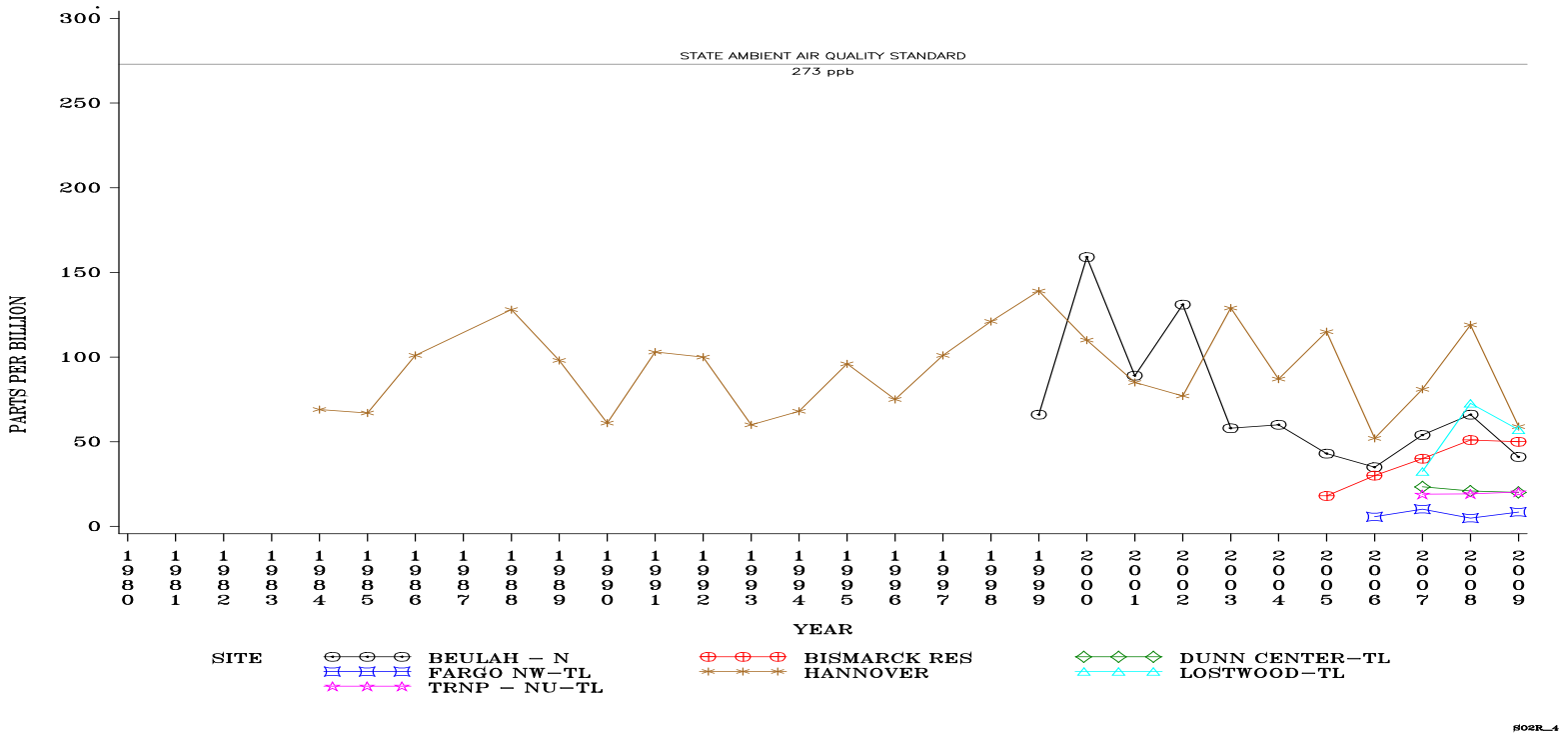


Figure 3 SO_2 Maximum 1-Hour Concentrations

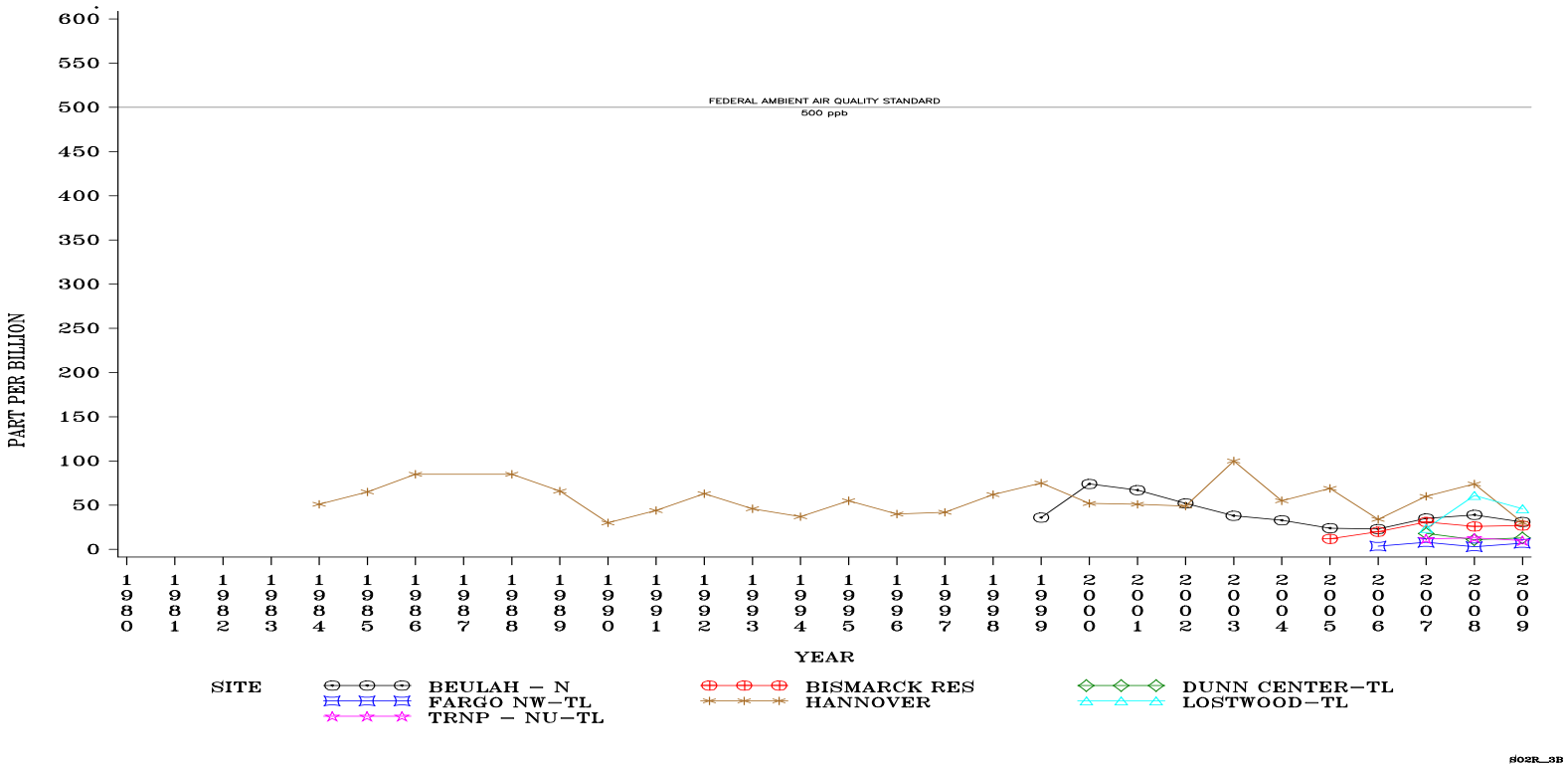


Figure 4 SO_2 Maximum 3-Hour Concentrations

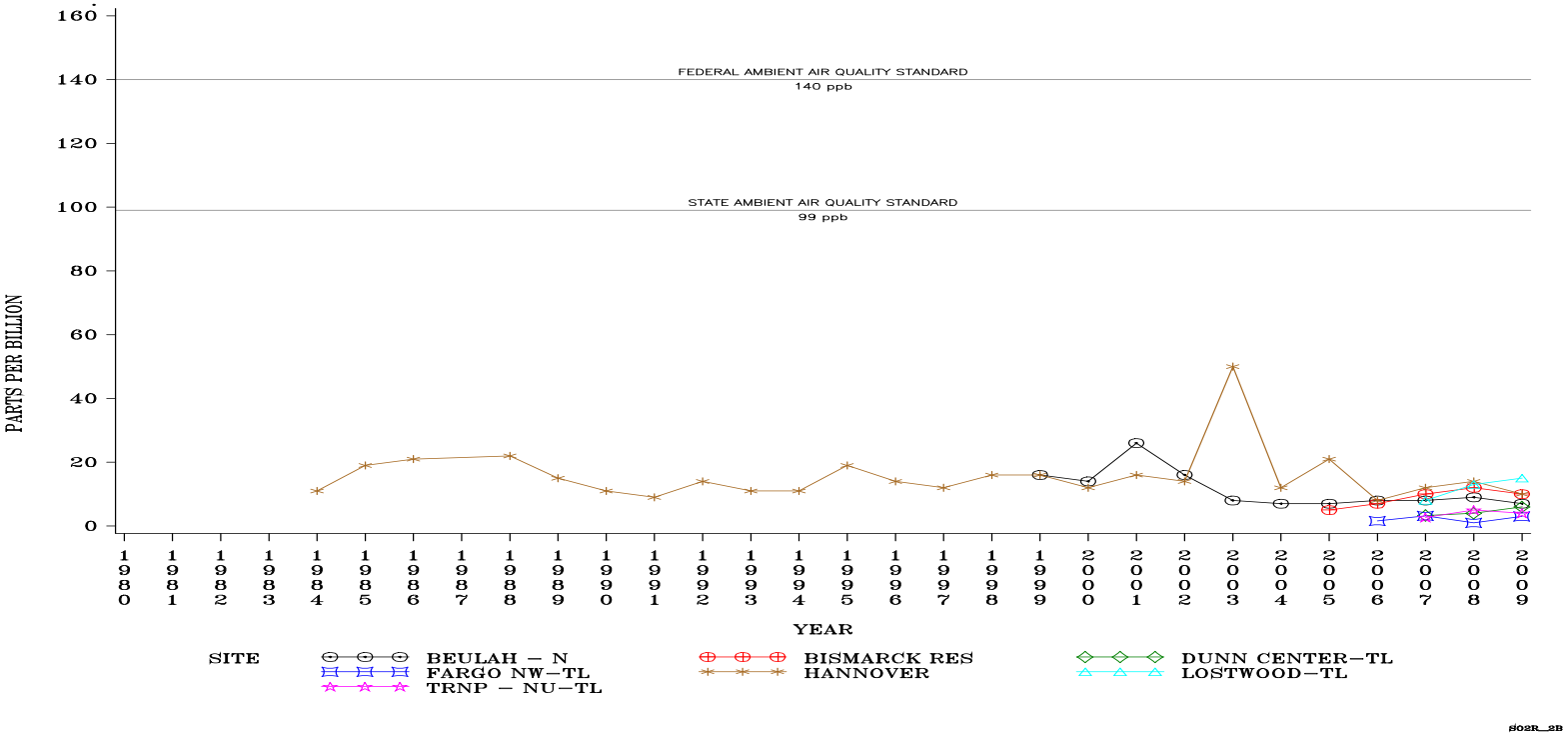


Figure 5 SO_2 Maximum 24-Hour Concentrations

2.2 Oxides of Nitrogen

"Oxides of Nitrogen" (NO_x) is the term used to represent nitric oxide (NO) plus nitrogen dioxide (NO_2). NO_2 is formed when NO is oxidized in the ambient air. There is no ambient air quality standard for NO.

2.2.1 Point Sources

The major NO_x stationary point sources (>100 TPY) are listed in Table 5, along with their emissions as calculated from the most recent emission inventories reported to the department. Figure 6 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). The larger NO_x point sources in North Dakota are associated with coal-fired steam-powered electrical generating plants in the west-central portion of the state and large internal combustion compressor engines in the natural gas fields in the western part of the state. Figure 6A shows the contribution of point sources to the total NO_X emissions. The "Point Sources" category consists of utility boilers (power plant boilers) and oil and gas wells.

2.2.2 Area Sources

Another source of NO_X is automobile emissions. North Dakota has no significant urbanized areas with regard to oxides of nitrogen; the entire population of the state is less than 1,000,000 people. However, currently operating NO analyzers cannot be terminated without EPA Region 8 administrator permission. Figure 6A shows the contribution of "Other Point Sources" and "Utility Boilers." The "Other Point Sources" category consists of DGC, oil refineries, natural gas processing plants and agricultural processing plants.

2.2.3 Monitoring Network

The Department currently operates seven $NO/NO_2/NO_x$ analyzers. Table 6 shows the 2009 NO_2 data summaries. The measured NO_2 values are quite low. From Figure 6 it can be seen that $NO/NO_2/NO_x$ analyzers, except for Dunn Center and TRNP - NU, are well placed with respect to the major NO_x sources: TRNP - NU is defined as a background and long-range transport/welfare-related site.

TABLE 5

Major NO_x Sources

(> 100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
2	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
3	Great River Energy	Coal Creek Station	3805500017
4	Ottertail Power Company	Coyote Station	3805700012
5	Basin Electric Power Cooperative	Leland Olds Station	3805700001
6	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
7	Great River Energy	Stanton Station	3805700004
8	Hess Corporation	Tioga Gas Plant	3810500004
9	Montana Dakota Utilities Company	RM Heskett Station	3805900001
10	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
11	American Crystal Sugar Company	Hillsboro Plant	3809700019
12	American Crystal Sugar Company	Drayton Plant	3806700003
13	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
14	Bear Paw Energy, L.L.C.	Alexander Compressor Station	3805300024
15	University of North Dakota	UND Heating Plant	3803500003
16	Bear Paw Energy, L.L.C.	Cow Creek Station	3810500077
17	North Dakota State University	NDSU Heating Plant	3801700005
18	Northern Border Pipeline Company	Compressor Station #4	3805300014
19	ADM Corn Processing	Walhalla Ethanol Plant	3806700004
20	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
21	Bear Paw Energy, L.L.C.	Tree Top Station	3800700019

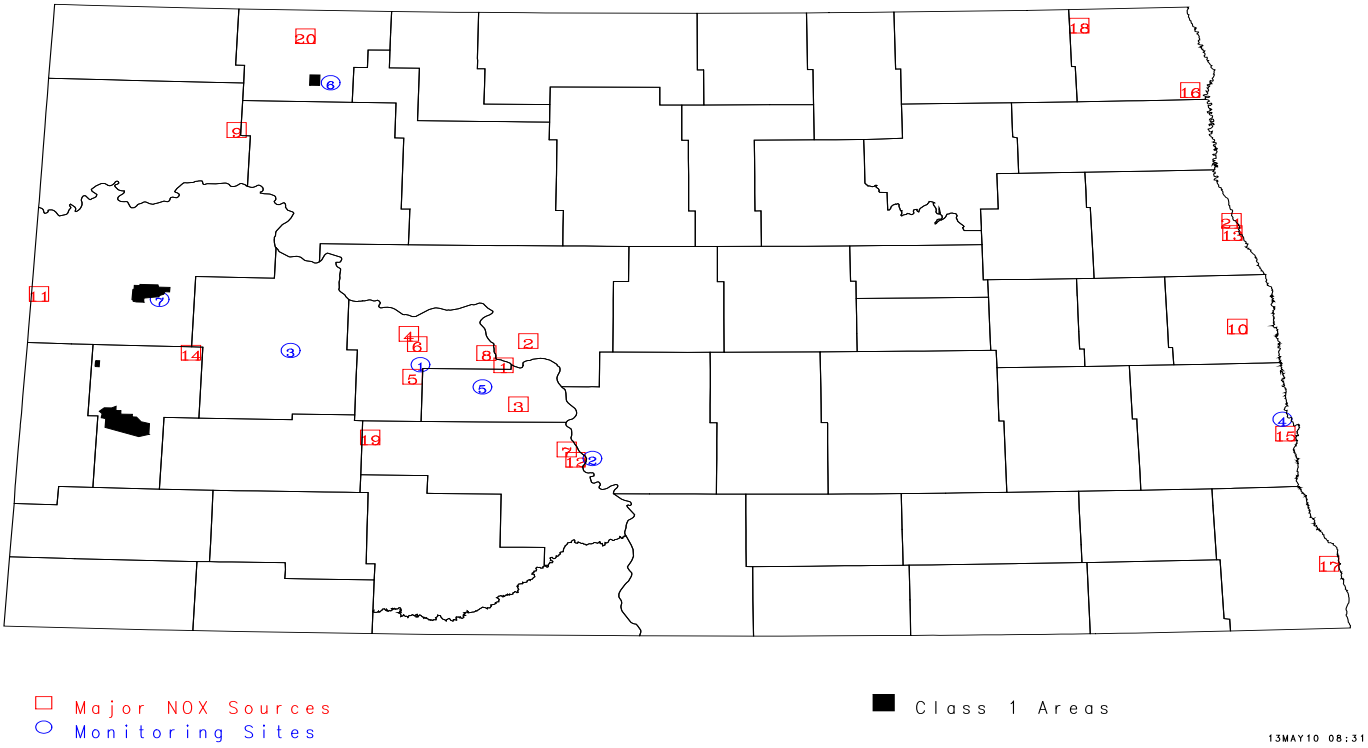


Figure 6 Major Oxides of Nitrogen Sources

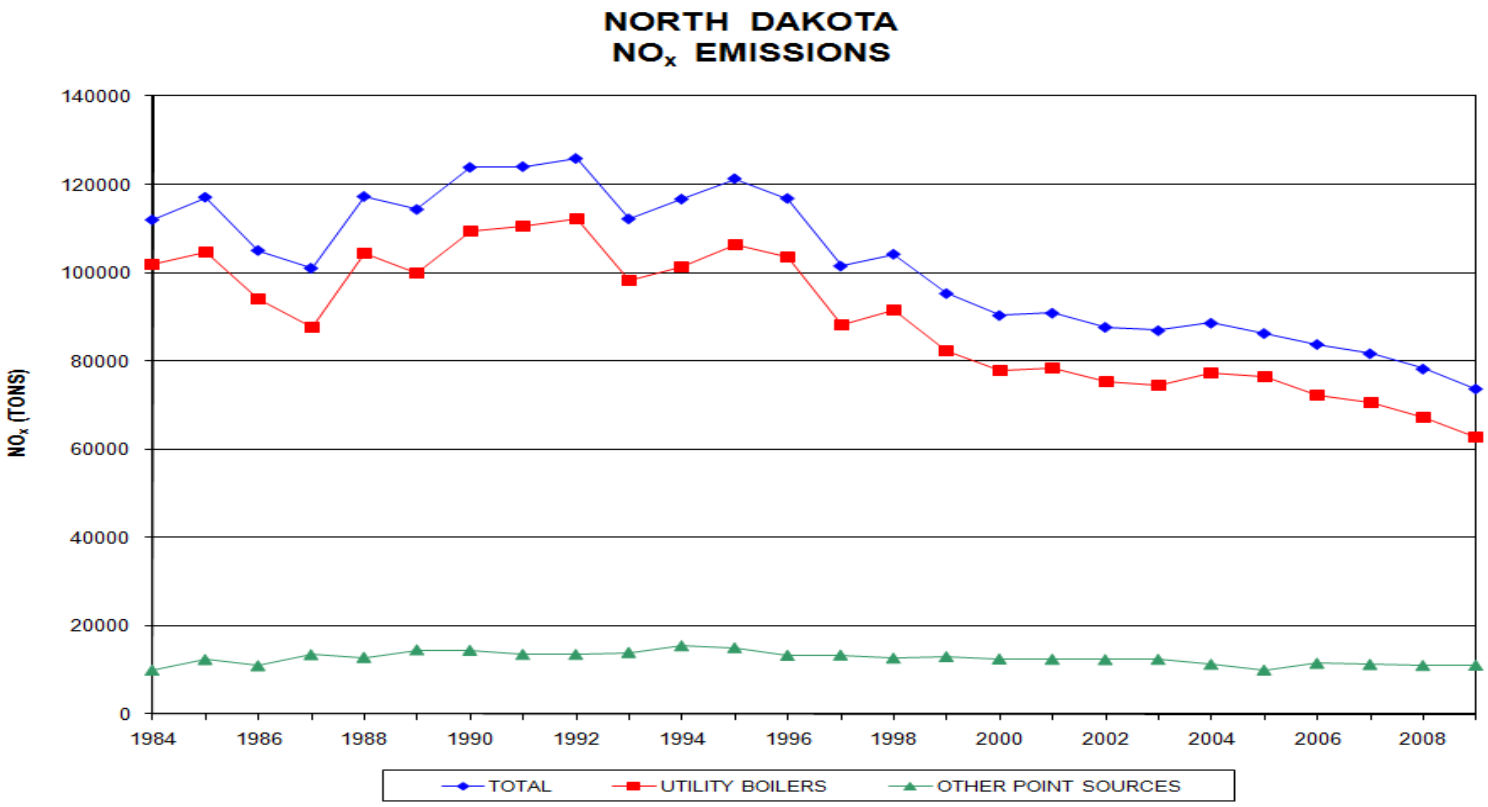


Figure 6A Annual Oxides of Nitrogen Emissions

TABLE 6

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : NITROGEN DIOXIDE (ppb)

LOCATION	YEAR	NUM OBS	MAXIMA 1 - HOUR 1ST	2ND	ARITH MEAN
Beulah - North	2009	8622	59	51	2.8
Bismarck Residential	2009	8486	47	45	5.9
Dunn Center	2009	8329	14	12	1.5
Fargo NW	2009	8590	57	54	5.0
Hannover	2009	8663	53	50	2.0
Lostwood NWR	2009	7965	29	27	1.7
TRNP - NU	2009	8293	15	13	1.0

*The air quality standards are:

STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

2.2.4 Network Analysis

Nine of the 10 largest NO_X sources in the state are within 45 miles of the Beulah and Hannover monitoring sites. Figure 7 shows the annual average concentrations for the department-operated sites for 1980 - 2009.

The state and federal annual standard is 53 ppb. However, the annual averages are at most 16 percent of the standard; therefore, a more appropriate scale was chosen to better show the data.

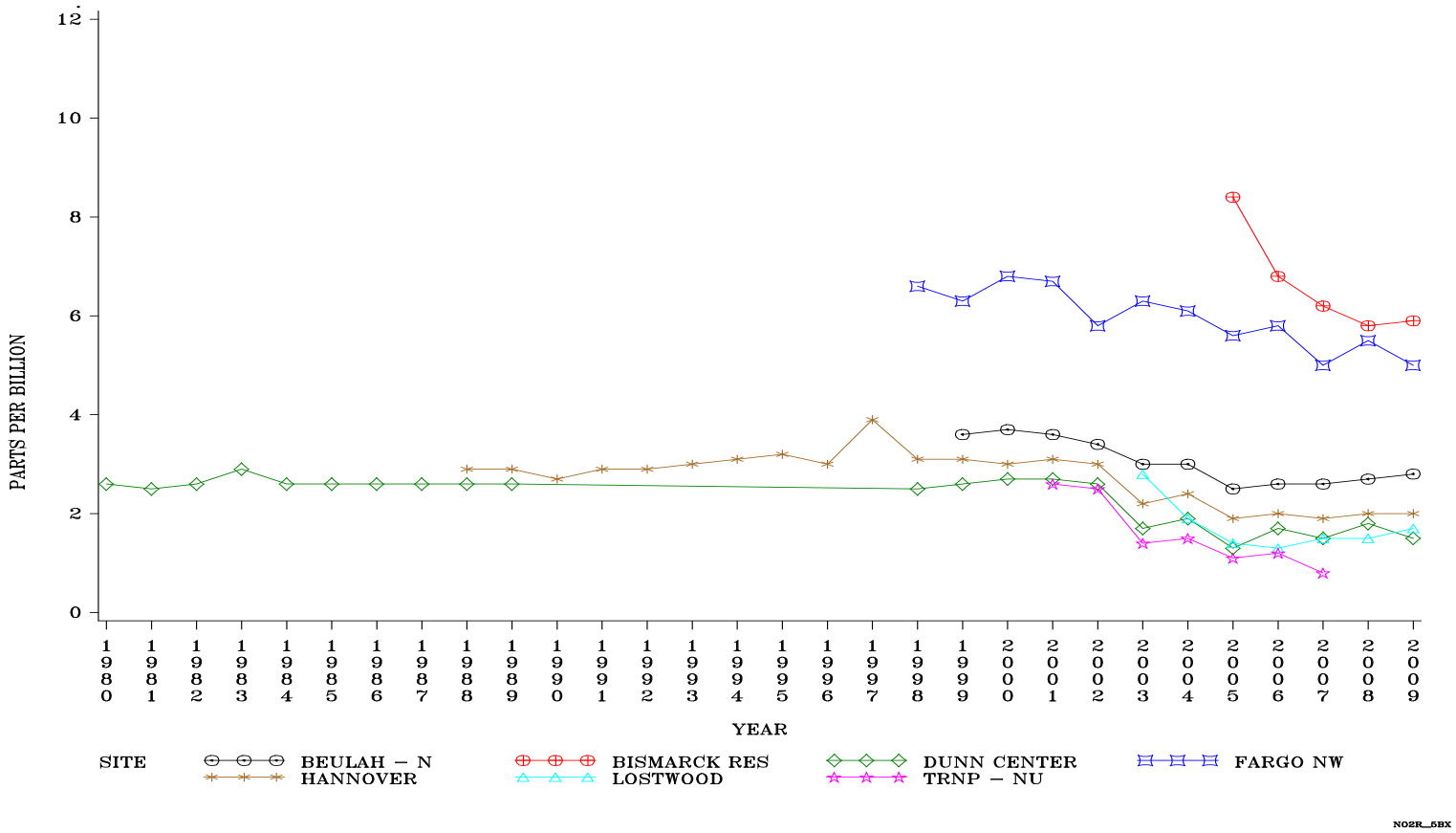


Figure 7 NO_2 Annual Average Concentrations

2.3 Ozone

Unlike most other pollutants, ozone (O_3) is not emitted directly into the atmosphere but results from a complex photochemical reaction between volatile organic compounds (VOC), oxides of nitrogen (NO_x), and solar radiation. Both VOC and NO_x are emitted directly into the atmosphere. Since solar radiation is a major factor in O_3 production, O_3 concentrations are known to peak in summer months. 40 CFR 58 defines the O_3 monitoring season for North Dakota as May 1 through September 30. However, O_3 analyzers at all the sites run year round, collecting data for use in dispersion modeling.

2.3.1 Point Sources

The major stationary point sources (> 100 TPY) of VOC as calculated from the most recent emission inventories reported to the department are listed in Table 8. Figure 8 shows the approximate locations of these facilities.

2.3.2 Area Sources

Point sources contribute only part of the total VOC and NO_x emissions. The remaining emissions can be attributed to oilfield-related activities and mobile sources in urban areas. The EPA has specified design criteria for selecting locations for O_3 as any urbanized area having a population of 50,000 to less than 350,000. North Dakota has three urbanized areas (Bismarck; Fargo, ND-Moorhead, MN; and Grand Forks) populated enough to qualify for population-oriented monitoring. However, to require monitoring, the 4th highest 8-hour average concentration must be at least 68 parts per billion.

2.3.3 Monitoring Network

The department currently has seven continuous ozone analyzers in operation. The department is currently working on siting an Ozone monitoring station in the oil field development region of the state. The site will contain an ozone monitor as well as a meteorological equipment set consisting of wind speed, wind direction, and ambient temperature. This site is to ascertain the impacts of oil development on the ozone levels in the state as they pertain to the national ambient air quality standards. The site is proposed to be located to the south of Stanley, ND in Mountrail County which is currently the highest oil producing county in the state. See Table 1 and Figure 8 for locations. Table 8 presents the 2009 8-hour data summaries.

TABLE 7

Major VOC Sources
(> 100 TPY)

#	Company	Source	Facility ID
1	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
2	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
3	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
4	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
5	ADM Processing	Velva Facility	3804900005
6	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
7	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
8	DMI Industries	DMI Industries	3801700122
9	Great River Energy	Coal Creek Station	3805500017
10	Kaneb Pipe Line Operating Partnership, L.P.	Jamestown East Products Terminal	3809300037
11	Basin Electric Power Cooperative	Leland Olds Station	3805700001
12	ADM Corn Processing	Walhalla Ethanol Plant	3806700004
13	Hood Packaging Corporation	Hood Packaging Corporation	3803500052
14	Plains Marketing, LP	Fryburg Station	3800700038

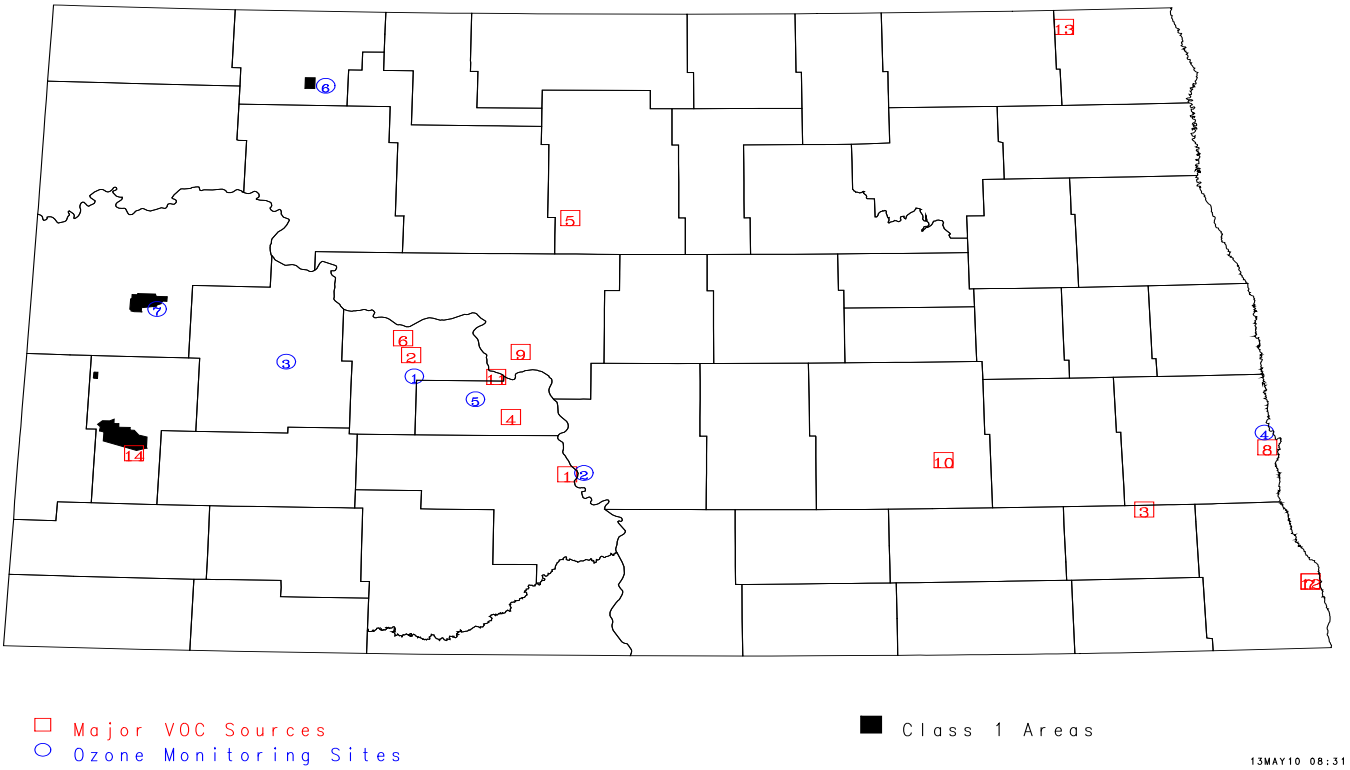


Figure 8 Major VOC Sources

TABLE 8

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (ppb)

LOCATION	YEAR	NUM OBS	1 - HOUR 1ST	1 - HOUR 2ND	M A X I M A 8 - HOUR 1ST	8 - HOUR 2ND	8 - HOUR 3RD	8 - HOUR 4TH	1HR #>120	8HR #>75
Beulah - North	2009	8615	66	63	60	58	56	55		
Bismarck Residential	2009	8624	76	61	58	57	54	54		
Dunn Center	2009	8378	67	61	57	55	55	54		
Fargo NW	2009	8600	64	63	60	60	58	57		
Hannover	2009	8641	67	65	62	59	57	57		
Lostwood NWR	2009	8123	66	63	60	60	59	59		
TRNP - NU	2009	8620	62	60	58	56	56	56		

* The air quality standards for ozone are:
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL Standards -
1) 120 ppb maximum 1-hour concentration with no more than one expected exceedance per year.
2) Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

2.3.4 Network Analysis

Only three of the seven monitoring sites are in an area not significantly influenced by VOC sources (see Figure 8). Beulah and Hannover are within 45 miles of six of the 14 major VOC sources in the state. Lostwood NWR and TRNP - NU are located in Class I areas surrounded by oil fields. Bismarck Residential and Fargo NW are located in population centers and influenced by city traffic. Dunn Center is located in a rural area surrounded by crop land. With this diversity of site locations and influences, one would expect to see a diversity of ozone concentrations. On the contrary, Figures 9 and 10 shows a significant similarity among the 4th maximum 8-hour concentrations whether view monthly or annually. Since 1980, only four 8-hour averages have been higher than 70 ppb. Another, even stronger, indication of a uniform ozone distribution is the 8-hour concentrations: for all sites, the difference among the 4th highest average is 5 ppb (see Table 8).

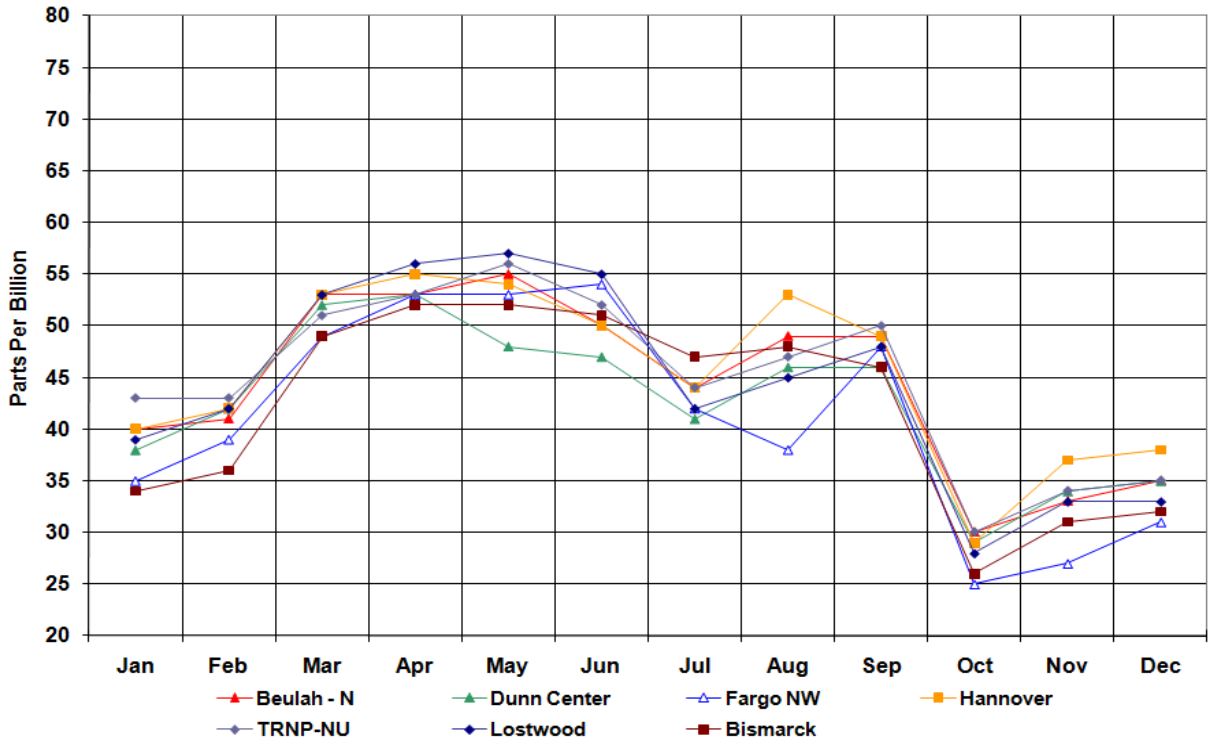


Figure 9 Monthly 4th Highest Ozone Concentrations

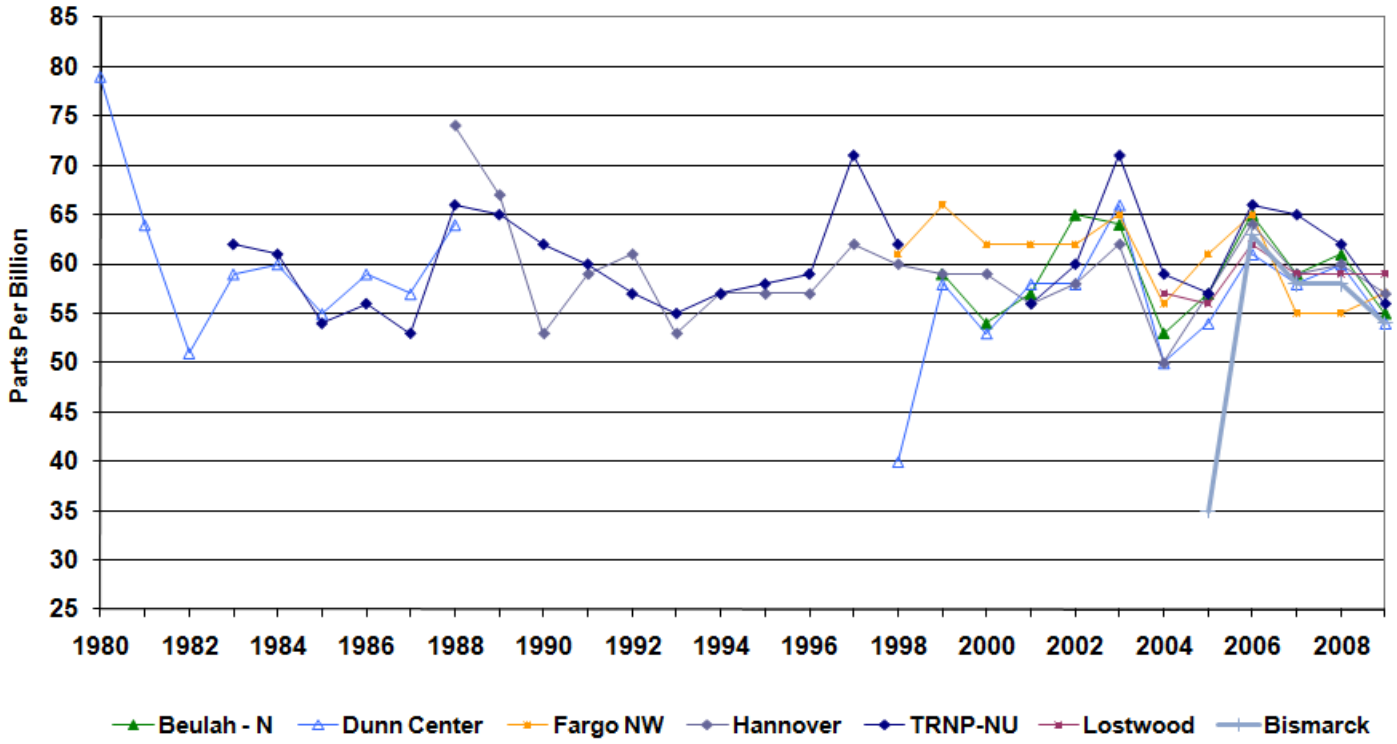


Figure 10 Annual 4th Highest 8-HR Ozone Concentrations

2.4 Inhalable Particulates

The inhalable particulate standards are designed to protect against those particulates that can be inhaled deep into the lungs and cause respiratory problems. The major designation for particulates is PM. Within this designation there are two subgroups: PM_{10} and PM_{fine}. The PM_{10} particulates have an aerodynamic diameter less than or equal to a nominal 10 microns and are designated as PM_{10}. The PM_{fine} particulates have an aerodynamic diameter less than or equal to a nominal 2.5 microns. The EPA is working on a new PM subgroup of particles called "coarse fraction," or PM_{coarse}. This subgroup is made up of $PM_{10} - PM_{fine}$. Specific health effects have been identified for both the PM_{coarse} and PM_{fine}. The EPA is working with equipment manufacturers to develop a continuous analyzer and a manual sampler to collect and report both of these subgroups. Continuous analyzers are available with equivalence designation and the department has developed a plan to deploy these analyzers as the current analyzers come due for replacement.

2.4.1 Sources

The major PM_{10} point sources (>100 TPY) are listed in Table 9. Figure 11 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Most of these sources are large coal-fired facilities, and the PM_{10} particles are part of the boiler stack emissions; however, some of the emissions are the result of processing operations. Not included in this table are sources of fugitive dust such as coal mines, gravel pits, agricultural fields and unpaved roads. Figure 11A shows the contribution of point sources to the total PM_{10} emissions. The "Utility Boilers" category consists of power plant boilers. The "Other Point Sources" category consists of DGC, oil refineries, natural gas processing plants and agricultural processing plants.

2.4.2 Monitoring Network

The Department operated six continuous PM_{10} analyzers, three manual PM_{fine} samplers, seven continuous PM_{fine} analyzers, and one speciation sampler. Table 11 shows the continuous PM_{10} particulate data summary. Tables 10 and 12 show the manual and continuous PM_{fine} data summaries, respectively.

TABLE 9

Major PM_{10} Sources
(> 100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
2	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
3	Otter Tail Power Company	Coyote Station	3805700012
4	American Crystal Sugar Company	Drayton Plant	3806700003
5	Basin Electric Power Cooperative	Leland Olds Station	3805700001
6	American Crystal Sugar Company	Hillsboro Plant	3809700019
7	American Colloid Company	Gascoyne Leonardite Facility	3801100071
8	Great River Energy	Coal Creek Station	3805500017
9	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
10	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
11	Great River Energy	Stanton Station	3805700004

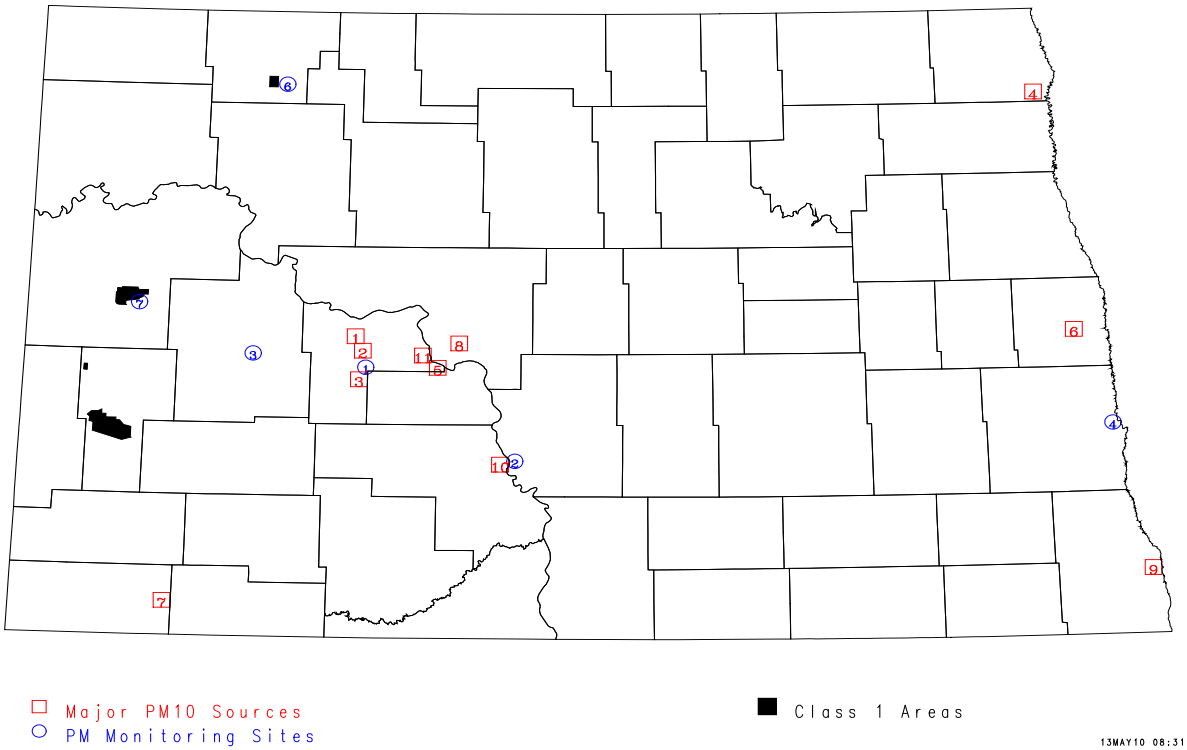


Figure 11 Major PM_{10} Sources

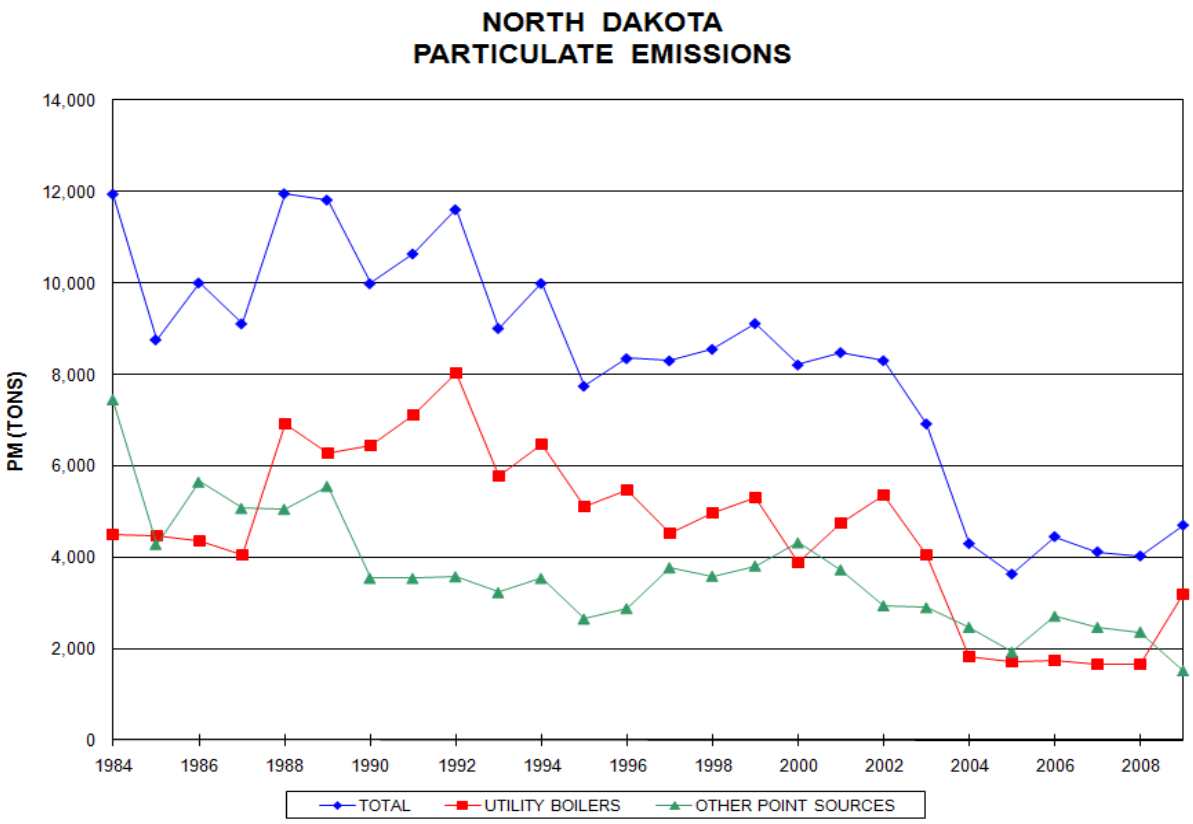


Figure 11A Annual PM Emissions

TABLE 10

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : FRM PM_{fine} Particulates ($\mu g/m^3$)

LOCATION	YEAR	NUM OBS	MAXIMA 1ST	2ND	3RD	ARITH MEAN	#>35	AM>15
Beulah - North	2009	60	14.8	13.5	12.0	5.47		
Bismarck Residential	2009	119	17.8	15.7	15.1	6.39		
Fargo NW	2009	110	35.9	35.5	19.9	7.63	2	

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 35 $\mu g/m^3$.
2) Annual: 3-year average not to exceed 15 $\mu g/m^3$.

Table 11

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{10} ($\mu g/m^3$)

LOCATION	YEAR	NUM OBS	MAXIMA 1 - HOUR 1ST	1 - HOUR 2ND	24 - HOUR 1ST	24 - HOUR 2ND	24 - HOUR 3RD	24 - HOUR 4TH	MEAN	24HR #>150	AM>50
Beulah - North	2009	8628	137.0	135.0	34	32	31	31	11.0		
Bismarck Residential	2009	8585	137.0	124.0	43	37	34	32	12.4		
Dunn Center	2009	8139	248.0	234.0	54	52	37	35	11.3		
Fargo NW	2009	8679	92.0	90.0	26	25	24	22	9.0		
Lostwood NWR	2009	8322	72.0	67.0	31	27	27	26	8.5		
TRNP - NU	2009	8447	264.0	254.0	44	40	35	33	9.2		

* The STATE and FEDERAL air quality standards are:
1) 150 $\mu g/m^3$ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
2) 50 $\mu g/m^3$ expected annual arithmetic mean.

Table 12

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{fine} ($\mu g/m^3$)

LOCATION	YEAR	NUM OBS	MAXIMA 1 - HOUR 1ST	1 - HOUR 2ND	24 - HOUR 1ST	24 - HOUR 2ND	24 - HOUR 3RD	24 - HOUR 4TH	MEAN	24HR #>35	AM>15
Beulah - North	2009	8635	40.7	35.6	15.0	14.8	12.9	12.8	3.4		
Bismarck Residential	2009	8415	118.4	99.0	27.8	26.4	23.5	23.4	6.35		
Dunn Center	2009	8298	38.9	33.2	15.0	14.3	14.0	13.4	3.4		
Fargo NW	2009	8642	68.9	67.2	14.7	14.6	14.5	13.9	4.2		
Hannover	2009	8565	81.3	71.7	18.9	18.2	15.9	14.2	6.6		
Lostwood NWR	2009	8315	94.4	48.4	18.1	18.1	17.1	15.7	3.8		
TRNP - NU	2009	8576	32.0	30.0	14.9	11.3	10.6	9.6	3.0		

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 35 $\mu g/m^3$.
2) Annual: 3-year average not to exceed 15 $\mu g/m^3$.

2.4.3 PM_{10} Network Analysis

PM_{10} and smaller particles are of concern mainly because of their health effects. Continuous PM_{10} analyzers are installed at Beulah, Bismarck, Dunn Center, Fargo, Lostwood NWR, and TRNP – NU. The primary purpose for the continuous PM_{10} analyzers is to be used with the continuous PM_{fine} analyzers to determine the PM_{coarse} fraction. The data also was compared to both the data and federal ambient air quality standards.

2.4.4 PM_{fine} Network

The manual PM_{fine} network currently has three sites. Bismarck, Fargo and Beulah are non-CORE required sites. Bismarck and Fargo operate on a 1-in-3 day schedule, while Beulah operates on a 1-in-6 day schedule. Continuous PM_{fine} analyzers have been installed at Beulah, Bismarck, Dunn Center, Fargo, Hannover, Lostwood NWR and TRNP-NU. Current continuous PM_{fine} analyzers will be replaced with EPA designated equivalent method analyzers as they come due for scheduled replacement. The continuous PM_{fine} analyzer at the Bismarck site has been replaced with a BAM 1020 sampler which has Equivalency designation.

2.4.5 Speciation Network

One speciation sampler is installed as a National Trends Network sampler in Fargo. The data collected by this sampler is added to the AQS database by RTI.

2.5 Carbon Monoxide

Many large urban areas in the United States have problems attaining the NAAQS for carbon monoxide (CO) where the primary source of CO is automobiles. North Dakota does not have sufficient population with the corresponding traffic congestion and geographical/meteorological conditions to create significant CO emission problems. However, there are several stationary sources in the state that emit more than 100 TPY of CO.

2.5.1 Sources

The major stationary CO sources (>100 TPY) are listed in Table 13. Figure 12 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Most of these sources are the same sources that are the major emitters of SO_2 and NO_x. However, the corresponding CO levels from these sources are considerably lower.

2.5.2 Monitoring Network

Carbon monoxide monitoring in North Dakota was terminated March 31, 1994, after operating five years. The conclusion drawn from the data was that North Dakota did not have a CO problem. A summary report of the data collected at the West Acres Shopping Mall was drafted for the Fargo-Moorhead Council of Governments for use in its traffic planning program. The department operates a Trace Level CO analyzer at the Fargo NW site in order to comply with the NCore requirements.

TABLE 13
Major CO Sources
(> 100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Great River Energy	Coal Creek Station	3805500017
2	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
3	American Crystal Sugar Company	Hillsboro Plant	3809700019
4	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
5	Montana Dakota Utilities Company	RM Heskett Station	3805900001
6	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500020
7	Basin Electric Power Cooperative	Leland Olds Station	3805700001
8	Otter Tail Power Company	Coyote Station	3805700012
9	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
10	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
11	American Crystal Sugar Company	Drayton Plant	3806700003
12	Hess Corporation	Tioga Gas Plant	3810500004
13	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
14	Bear Paw Energy, L.L.C.	Alexander Station	3805300024
15	Great River Energy	Stanton Station	3805700004
16	University of North Dakota	Heating Plant	3803500003
17	Bear Paw Energy, L.L.C.	Cow Creek Station	3810500077
18	Bear Paw Energy, L.L.C.	Tree Top Station	3800700019

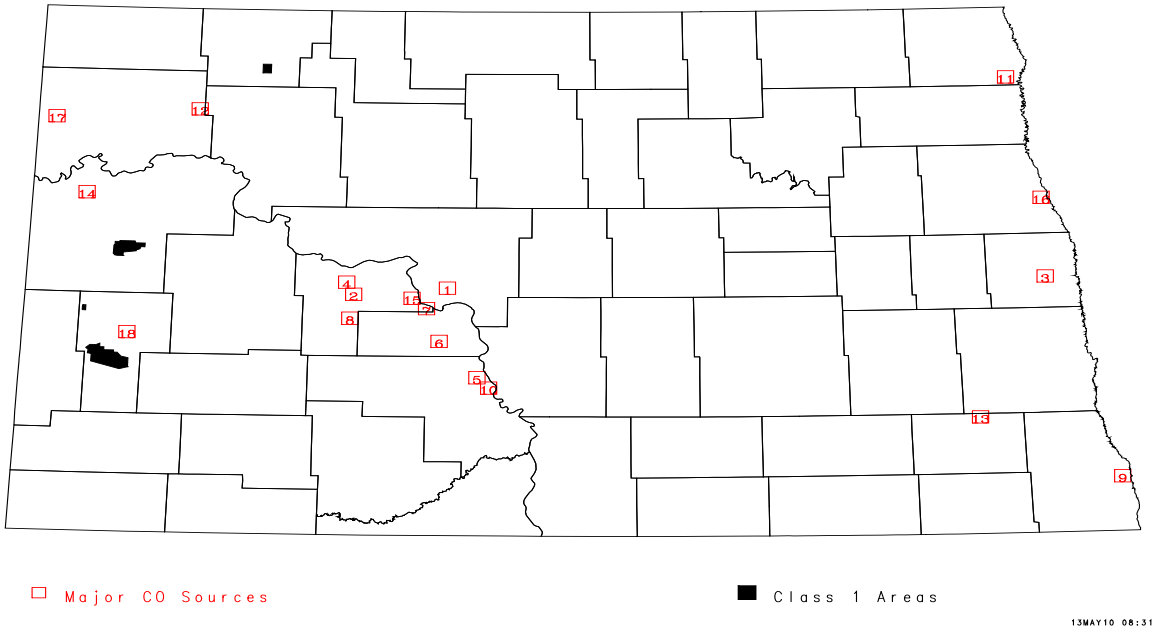


Figure 12 Major CO Sources

TABLE 14

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT: **CARBON MONOXIDE** (PPB)

LOCATION	YEAR	NUM OBS	MAX 1-HOUR 1ST	MAX 1-HOUR 2ND	MAX 8-HOUR 1ST	MAX 8-HOUR 2ND	1HR #>35000	8HR #>9000
Fargo NW	2009	8525	1186.0	1003.0	700.0	500.0		

* The STATE and FEDERAL air quality standards are:
1) The maximum allowable 1-hour concentration is 35000 ppb not to be exceeded more than once per year.
2) The maximum allowable 8-hour concentration is 9000 ppb not to be exceeded more than once per year.

2.6 Lead

Through prior sampling efforts, the department has determined that the state has low lead concentrations and no significant lead sources. This determination, coupled with the federal requirement for a NAMS network only in urbanized areas, resulted in terminating the lead monitoring program effective Dec. 31, 1983. Along with the low monitored concentrations, lead has been completely removed from gasoline since lead monitoring began in 1979.

With the revised, lower limits on lead; the department has taken another look at the sources and urban areas to ensure compliance with the EPA rules. With the new lower threshold of 0.5 tons per year, it has been determined that Grand Forks International Airport may need a lead monitor. The Department is looking into siting as well as the preliminary study at Centennial Field in Colorado to determine the best placement of the monitor.

2.7 Hydrogen Sulfide

Although no Federal Ambient Air Quality Standard exists for hydrogen sulfide (H_2S), the state of North Dakota has developed H_2S standards.

2.7.1 Sources

H_2S emissions of concern stems almost totally from the oil and gas operations in the western part of the state; principally from the green outlined area on Figure 2. Flares and treater stacks associated with oil/gas wells, oil storage tanks, compressor stations, pipeline risers, and natural gas processing plants are potential H_2S emission sources.

2.7.2 Monitoring Network

Currently there are no state or industry H_2S monitoring sites.

2.8 Air Toxics

Currently there are no state or federal air toxics monitoring sites.

2.8.1 Sources

The major air toxics sources are listed in Table 15 and Figure 13 shows the approximate

locations of these facilities (the numbers correspond to the source table).

2.8.2 Monitoring Network

Currently there are no state or industry air toxics monitoring sites. The historic raw data and associated summaries are available in EPA's Air Quality System.

Table 15
Major Air Toxics Sources
(>100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
2	ADM Processing	Velva Facility	3804900005
3	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
4	Great River Energy	Coal Creek Station	3805500017
5	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003

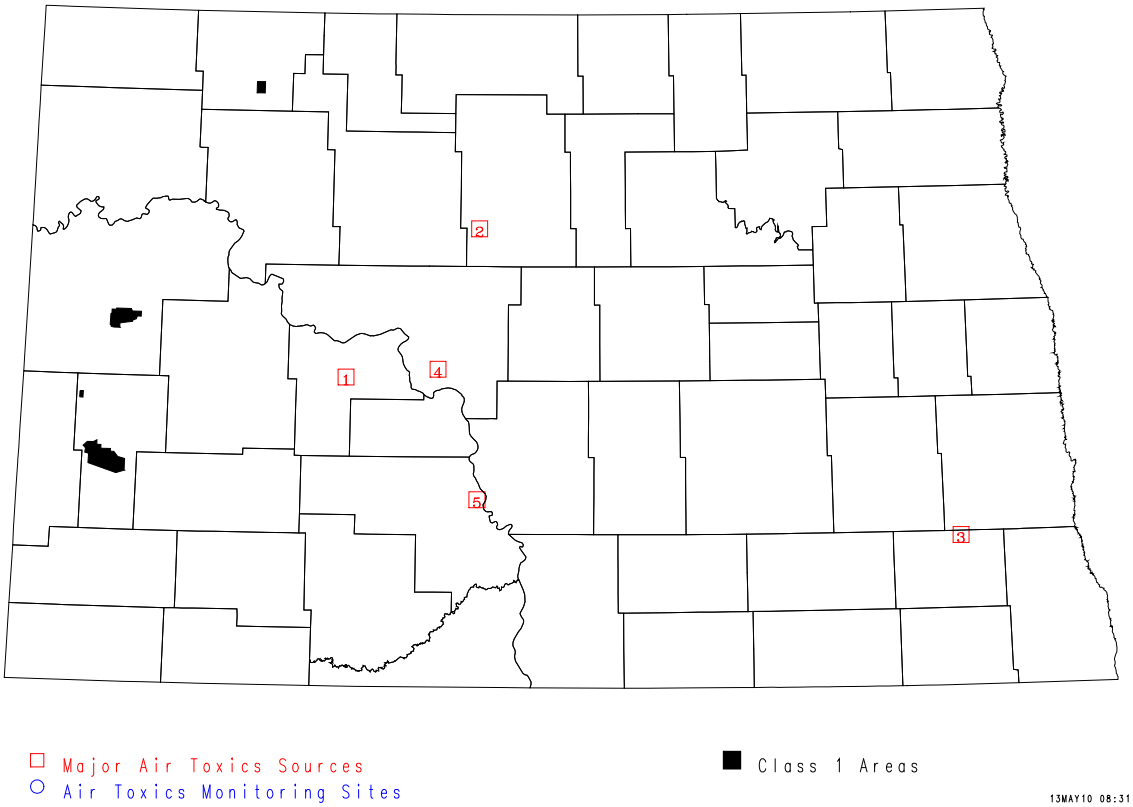


Figure 13 Major Air Toxics Sources

3.0 SUMMARY AND CONCLUSIONS

The North Dakota Ambient Air Quality Monitoring Network is designed to monitor those air pollutants that demonstrate the greatest potential for deteriorating the air quality of North Dakota. Due to a greater number of pollution-producing sources in the western part of the state (primarily associated with the energy producing industries) the greatest percentage of the network is located in the western part of the State.

3.1 Sulfur Dioxide (SO_2)

Neither the state nor federal standards were exceeded at any monitoring site. The maximum concentrations are as follows: 1-hour –111 ppb; 3-hour – 62 ppb; 24-hour – 28 ppb; annual – 3.0 ppb.

There is no SO_2 5-minute standard currently in effect. The maximum 5-minute average was 225 ppb.

3.2 Nitrogen Dioxide (NO_2)

Neither the state nor federal standards were exceeded at any of the monitoring sites. The maximum concentrations are as follows: annual – 5.9 ppb.

3.3 Ozone (O_3)

Neither the state nor federal standard was exceeded during the year. The 1-hour maximum and highest 4th highest 8-hour concentrations are as follows: 1-hour – 76 ppb; highest 4th highest 8-hour – 59 ppb.

3.4 Inhalable Particulates

Neither the state nor federal PM_{10} standards were exceeded during the year. The maximum concentrations are as follows: 24-hour –54.0 µg/m^3; annual – 12.4 µg/m^3.

The federal PM_{fine} standards were not exceeded during the year. The maximum concentrations and are as follows: 24-hour FRM –35.9 µg/m^3; annual FRM – 7.63 µg/m^3.

3.5 Carbon Monoxide (CO)

Neither the state nor federal standards were exceeded at the monitoring site. The maximum concentrations are as follows: 1-hour – 1186 ppb; 8-hour – 700 ppb.

3.6 Lead

No monitoring was conducted.

3.7 Hydrogen Sulfide

No monitoring was conducted.

3.8 Air Toxics

No monitoring was conducted.

Appendix A

AAQM Site Descriptions

This appendix is a condensation of Appendices B and C, combined with a site description and any information relating to specific analyzer or sampler. Please note that all sites meet the siting criteria specified in 40 CFR 58, Appendices A, C, D, and E. When selecting a site, five factors are considered: modeling results, landowner permission, power availability, year-round access to the site, and prevailing wind direction.

The sites addressed in this report are only the current active sites. A complete list of sites and all monitoring that has been conducted at each site that has ever reported data to EPA, you may go to www.epa.gov/air/data/aqsdb.html. The site is very easy to use and with a little experimenting, site and monitor selections can be made very specific. Also available at this site are air quality summary data and emissions data.

Another useful tool is Google Earth™. (http://free.download.earth.googlepages.com/) With this tool, one can enter latitude and longitude to get either an expanded view or close-up view of each monitoring site.

For both of these tools, a high-speed Internet connection is highly recommended. They can be used with a dial-up connection, but it is not recommended.

Site: Beulah – North **Station Type:** SLAMS (required)
AQS#: 38-057-0004 **MSA:** 0000
Address: 6024 Highway 200, Beulah
Latitude: +47.298611 **Longitude:** -101.766944

Site Description: This is one of three key sites in the department's ambient monitoring network to meet the six required monitoring objectives. When this site was established, it was decided to enhance the site to include ammonia, solar radiation and delta temperature to support air quality dispersion modeling. This site is one of the required PM_{fine} monitoring sites for North Dakota

Gas/Particulate parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Population Exposure	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Urban
Ammonia	Instrumental Chemiluminescence	Continuous	General Background	Regional
PM_{fine}	24-hour Gravimetric	1/6	Population Exposure	Urban
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	Population Exposure	Urban
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	Population Exposure	Urban

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

There are no plans to move or remove this site.

The manual PM_{fine} data may be compared to the annual NAAQS.

Site Pictures: **Beulah North**

North

South

East

West

Looking Northeast

Looking Northwest

Beulah
North
N
© 2007 Europa Technologies
©2007 Google™
Pointer 47°17'29.92" N 101°46'17.69" W elev 2092 ft
Streaming 100%
Eye alt 9780 ft

Site: Bismarck Residential **Station Type:** SLAMS
AQS#: 38-015-0003 **MSA:** 1010
Address: 1810 N 16th Street, Bismarck
Latitude: +46.825425 **Longitude:** -100.768210

Site Description: This site is located in the second largest metropolitan area in the state. When two special purpose sites in Mandan were closed, this site was expanded from a particulates-only site to be a full site for gases, continuous particulates (inc. ambient pressure) and the basic meteorological parameters (wind speed, wind direction and temperature). Another key role this site plays is to field test new types of equipment and procedures isolated from the equipment used to report data to AQS.

Gas/Particulate parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Population Exposure	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Urban
PM_{fine}	24-hour Gravimetric	1/6	Population Exposure	Urban
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	Population Exposure	Urban
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	Population Exposure	Urban

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban

There are no plans to move or remove this site.

The manual PM_{fine} data may be compared to the annual NAAQS.

Site Pictures: **Bismarck Residential**

North

East

West

Looking Northwest

South

Looking Southeast

Bismarck
Residential
© 2007 Europa Technologies
Google
Pointer 46°49'28.95" N 100°46'21.93" W elev 1863 ft
Streaming 100%
Eye alt 9584 ft

Site: Dunn Center **Station Type:** SLAMS
AQS#: 38-025-0003 **MSA:** 0000
Address: 9610 Seventh Street SW, Dunn Center
Latitude: +47.313200 **Longitude:** -102.527300

Site Description: This site is located about midway between the oil development all along the North Dakota – Montana border and the seven coal conversion facilities to the east. The importance lies in the ability to monitor the transport of sulfur dioxide, nitrogen dioxide, and PM_{fine} between these two areas. Also, this is a key site used in dispersion model calibration and validation.

Gas/Particulate parameters

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	General/Background	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	General/Background	Urban
Ozone	Instrumental Ultra Violet	Continuous	General/Background	Urban
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	General/Background	Urban
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	General/Background	Urban

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

There are no plans to move or remove this site.

Site Pictures: **Dunn Center**

North

West

East

South

Looking Northwest

Looking Northeast

200
N
6TH St SW
Dunn Center
7TH St SW
© 2007 Navteq
©2007 Google™
Pointer 47°19'38.44" N 102°32'07.35" W elev 2257 ft
Streaming 100%
Eye alt 13726 ft

Site Name: Fargo NW **Station Type:** SLAMS (required)
AQS#: 38-017-1004 **MSA:** 2520
Address: 4266 40th Avenue North, Fargo
Latitude: +46.933754 **Longitude:** -96.855350

Site Description: This site is one of EPA's 54 Speciation Trends Network sites, the state's required NCORE site, located in the largest metropolitan area in North Dakota. The data collected at this site is used in dispersion modeling for input, calibration and validation. An NCORE site is required to have trace level analyzers for sulfur dioxide, carbon monoxide, and NO_Y (total reactive nitrogen) operational by January 1, 2011. The trace level analyzers are installed.

Gas/Particulate parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Population Exposure	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Carbon Monoxide	Gas Filter Correlation	Continuous	Population Exposure	Urban
NO_y	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Urban
PM_{fine}	24-hour Gravimetric	1/3	Population Exposure	Urban
PM_{fine}	PM_{FINE} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	Population Exposure	Urban
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	Population Exposure	Urban
PM_{fine} Speciation	METOne SASS 24-hour Gravimetric	1/3	Population Exposure	Urban

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

There are no plans to move or remove this site.

The manual PM_{fine} data may be compared to the annual NAAQS

Site Pictures: **Fargo NW**

North

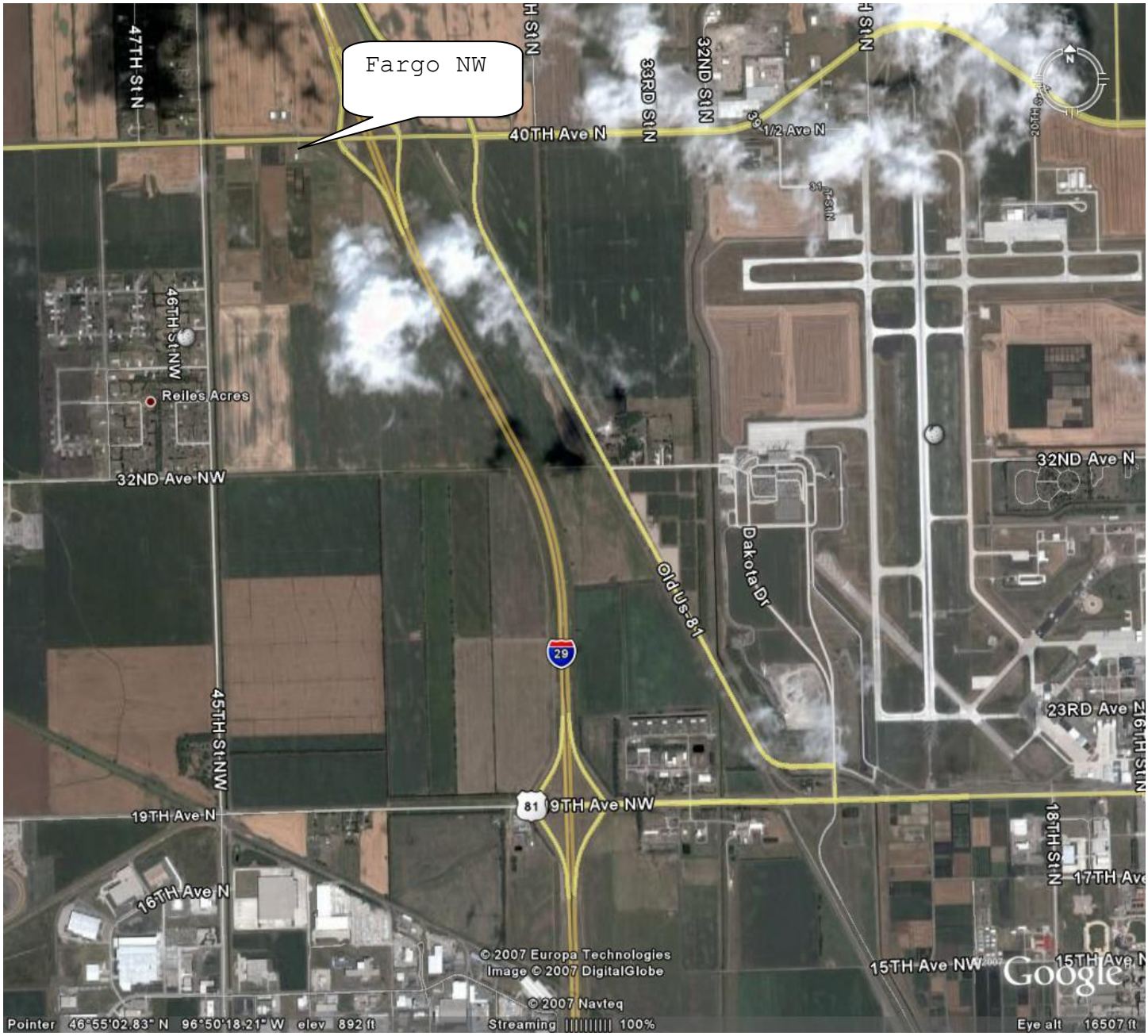
West

East

South

Looking Northeast

Looking West


Fargo NW
47TH St N
40TH Ave N
33RD St N
32ND St N
38 1/2 Ave N
31 1/2 St N
46TH St NW
Reiles Acres
32ND Ave NW
32ND Ave N
Dakota Dr
Old Us-81
29
45TH St NW
23RD Ave N
16TH St N
81
19TH Ave NW
19TH Ave N
18TH St N
17TH Ave
16TH Ave N
© 2007 Europa Technologies
Image © 2007 DigitalGlobe
© 2007 Navteq
15TH Ave NW
15TH Ave N
Google
Pointer 46°55'02.83" N 96°50'18.21" W elev 892 ft
Streaming 100%
Eye alt 16507 ft

Site Name: Hannover **Station Type:** SLAMS
AQS#: 38-065-0002 **MSA:** 0000
Address: 1575 Highway 31, Stanton
Latitude: +47.185833 **Longitude:** -101.428056

Site Description: This site is centrally located to the power plants in the Oliver-Mercer-McLean county area. The data collected here is used to supplement ambient data collected at Beulah – North and TRNP – NU.

Gas/Particulate parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Source Oriented	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Source Oriented	Urban
Ozone	Instrumental Ultra Violet	Continuous	Source Oriented	Urban
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	Source Oriented	Urban

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban

There are no plans to move or remove this site.

Site Pictures: **Hannover**

North

East

South

West

Looking Southwest

Looking Northeast

Site Location

Hannover
16TH St SW
31
© 2007 Navteq
©2007 Google™
Pointer 47°10'59.32" N 101°25'48.92" W elev 2243 ft
Streaming |||||||||| 100%
Eye alt 7895 ft

Site Name: Lostwood NWR **Station Type:** SLAMS
AQS#: 38-013-0004 **MSA:** 0000
Address: 8315 Highway 8, Kenmare
Latitude: +48.641930 **Longitude:** -102.401800

Site Description: This site is located in a PSD Class I area. Because this site is downwind of the two power plants near Estevan, SK, and located in the Souris River Airshed, this data is also usable by SaskEnvironment in a study they are conducting in the western region of the Souris Basin Airshed.

The site has an IMPROVE sampler operated by the US Fish and Wildlife Service. This data will be used with the other ambient data collected here to evaluate long-range transport of aerosols affecting regional haze/visibility.

Gas/Particulate parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Regional Transport	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Regional Transport	Regional
Ozone	Instrumental Ultra Violet	Continuous	Regional Transport	Regional
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	Regional Transport	Regional
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	Regional Transport	Regional

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban

There are no plans to move or remove this site.

Site Pictures: **Lostwood NWR**

North

South

East

West

Looking Northwest

Looking North

Lostwood
8
© 2007 Navteq
©2007 Google™
Pointer 48°38'29.10" N 102°24'07.51" W elev 2290 ft
Streaming 100%
Eye alt 6885 ft

Site Name: TRNP-NU **Station Type:** SLAMS(required)
AQS#: 38-053-0002 **MSA:** 0000
Address: 229 Service Road, Watford City
Latitude: +47.581200 **Longitude:** -103.299500

Site Description: This site is located in Theodore Roosevelt National Park – North Unit and is one of three key sites in the department's ambient monitoring network to meet the six required monitoring objectives. The data collected is used for model calibration/validation.

Gas/Particulate parameters:

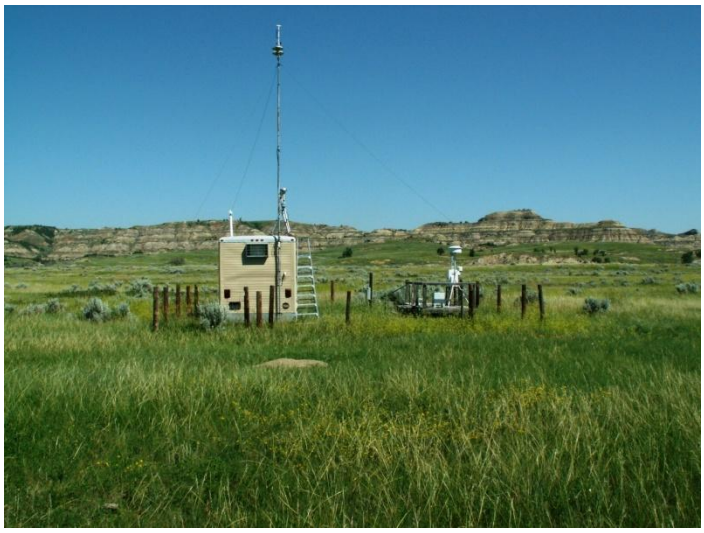
Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	General/Background	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	General/Background	Regional
Ozone	Instrumental Ultra Violet	Continuous	General/Background	Regional
PM_{fine}	PM_{fine} SCC W/ No Correction TEOM Gravimetric 40 deg. Celsius	Continuous	General/Background Regional Transport	Regional
PM_{10}	PM_{10} TEOM Gravimetric 50° Celsius	Continuous	General/Background Regional Transport	Regional

Meteorological parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban

There are no plans to move or remove this site.

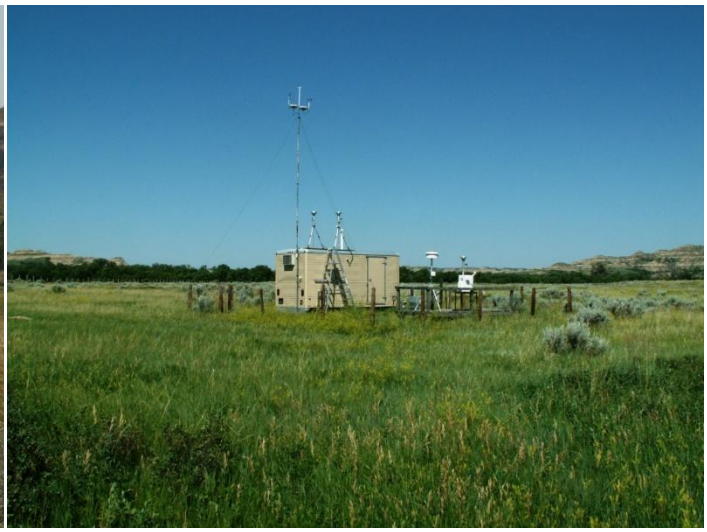
Site Pictures: **TRNP-NU**



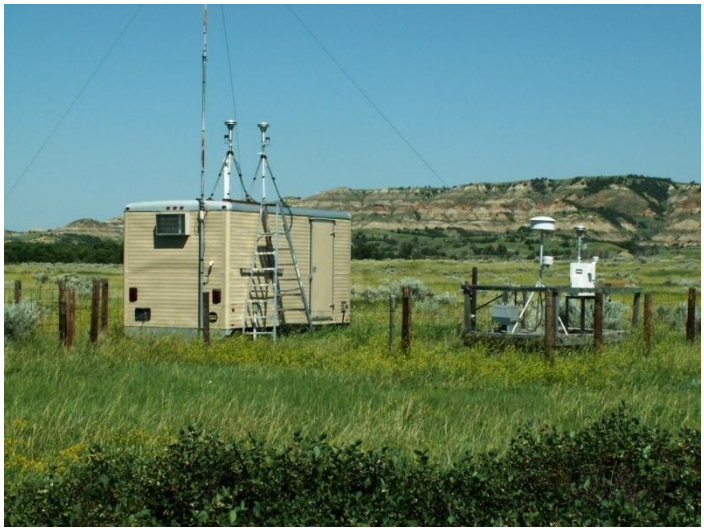
North

South

East



West



Looking Northwest

Looking Northeast

TRNP-NU
Nf-842
200
Image © 2007 DigitalGlobe
© 2007 Navteq
© 2007 Europa Technologies
©2007 Google™
Pointer 47°35'09.25" N 103°16'59.02" W elev 1954 ft
Streaming |||||||||| 100%
Eye alt 16020 ft

Appendix B

Detailed Site Descriptions

This appendix is a listing printed from the EPA's Air Quality System (AQS) database. Please note that if the latitude and longitude are used in Google Earth™, the display generated may not exactly match the display in Appendix A. This is a problem with Google Earth™, not the coordinates in AQS.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-013-0004 Site Name: **LOSTWOOD NWR** Local ID:
Street Address: 8315 HIGHWAY 8, KENMARE City: Not in a city
State: North Dakota Zip Code: 58721 County: Burke
Location Description: MONITORING POINT Location Setting: RURAL
Coll. Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL Land Use: AGRICULTURAL
Date Established: 19990101 Date Terminated: Last Updated: 20060814
Regional Eval. Date: HQ Eval. Date: AQCR : NORTH DAKOTA
MSA: Not in a MSA CMSA: Not in a CMSA Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP Dist to Met. Site(m): Local Region:
Urban Area: NOT IN AN URBAN AREA EPA Region: DENVER
City Population: 1 Dir. to CBD: Dist. to City(km):
Census Block: Block Group: Census Tract:
Congressional District: Class 1 Area: Lostwood National Wildlife Refuge
Site Latitude: +48.641930 Site Longitude: -102.401800 Time Zone: CENTRAL
UTM Zone: 13 UTM Northing: 5390691.44 UTM Easting: 691395.29
Accuracy: .01 Datum: WGS84 Scale: 24000 Point/Line/Area: POINT
Vertical Measure(m): 696.0 Vert Accuracy: .01
Vert Datum NAVD88 Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
SLAMS	5
OTHER	12
IMPROVE	59

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	20031027	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	90TH STREET NW	10	2002	DOT	LOCAL ST OR HY	N
2	ND HIGHWAY 8	100	2002	DOT	THRU ST OR HY	E
3	NDHIGHWAY 8	100	2002	DOT	THRU ST OR HY	S
4	COUNTY ROAD 11	10	2002	DOT	LOCAL ST OR HY	W

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-015-0003 | Site Name: **BISMARCK RESIDENTIAL** | Local ID:
Street Address: 1810 N 16TH STREET | City: Bismarck
State: North Dakota | Zip Code: 58501 | County: Burleigh
Location Description: MONITORING POINT | Location Setting: SUBURBAN
Coll. Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL | Land Use: RESIDENTIAL
Date Established: 19950501 | Date Terminated: | Last Updated: 20060814
Regional Eval. Date: | HQ Eval. Date: | AQCR : NORTH DAKOTA
MSA: Bismarck,ND | CMSA: | Direct Met Site: S | Met. Site ID:
Type Met Site: NWS | Dist to Met. Site(m): 3200 | Local Region:
Urban Area: BISMARCK, ND | EPA Region: DENVER
City Population: 55532 | Dir. to CBD: N | Dist. to City(km): 2
Census Block: | Block Group: | Census Tract:
Congressional District: | Class 1 Area:
Site Latitude: +46.825425 | Site Longitude: -100.768210 | Time Zone: CENTRAL
UTM Zone: 14 | UTM Northing: 5187064 | UTM Easting: 365130.78
Accuracy: .03 | Datum: WGS84 | Scale: 0 | Point/Line/Area: POINT
Vertical Measure(m): 580.0 | Vert Accuracy: .03
Vert Datum NAVD88 | Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
SUPPLMNTL	134
SPECIAT	
OTHER	18
SLAMS	16

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19950501	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	16TH AVE.	10650	1991		LOCAL ST OR HY	S
2	15TH ST	150	1994		LOCAL ST OR HY	W
3	17TH ST	100	1994		LOCAL ST OR HY	E
4	SPALDING AVE.	20	1994		LOCAL ST OR HY	N

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-017-1004 Site Name: **FARGO NW** Local ID:
Street Address: 4266 40TH AVE NORTH City: Fargo
State: North Dakota Zip Code: 58102 County: Cass
Location Description: MONITORING POINT Location Setting: SUBURBAN
Coll. Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL Land Use: AGRICULTURAL
Date Established: 19980513 Date Terminated: Last Updated: 20060814
Regional Eval. Date: HQ Eval. Date: AQCR : METROPOLITAN FARGO-MOORHEAD
MSA: Fargo-Moorhead,ND-MN CMSA: Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP Dist to Met. Site(m): Local Region:
Urban Area: FARGO-MOORHEAD, ND-MN EPA Region: DENVER
City Population: 90599 Dir. to CBD: N Dist. to City(km): 4
Census Block: Block Group: Census Tract:
Congressional District: 1 Class 1 Area:
Site Latitude: +46.933754 Site Longitude: - 96.855350 Time Zone: CENTRAL
UTM Zone: 14 UTM Northing: 5199816.62 UTM Easting: 663252.17
Accuracy: .03 Datum: WGS84 Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 275.0 Vert Accuracy: .03
Vert Datum NAVD88 Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
TRENDS SPECIATION	67
OTHER	23
SLAMS	6

Air Toxics

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19980513	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	19TH AVE N.	550	1989		THRU ST OR HY	S
2	INTERSTATE 94	8790	1989		ARTERIAL	E
3	COUNTY 20	975	1989		THRU ST OR HY	N

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-025-0003 | Site Name: **DUNN CENTER** | Local ID:
Street Address: 9610 SEVENTH STREET SW | City: Not in a city
State: North Dakota | Zip Code: 58626 | County: Dunn
Location Description: MONITORING POINT | Location Setting: RURAL
Coll. Method: GPS CARRIER PHASE STATIC RELATIVE POSITION | Land Use: AGRICULTURAL
Date Established: 19750701 | Date Terminated: | Last Updated: 20060814
Regional Eval. Date: | HQ Eval. Date: | AQCR : NORTH DAKOTA
MSA: Not in a MSA | CMSA: Not in a CMSA | Direct Met Site: | Met. Site ID:
Type Met Site: ON-SITE MET EQUIP | Dist to Met. Site(m): | Local Region:
Urban Area: NOT IN AN URBAN AREA | EPA Region: DENVER
City Population: 1 | Dir. to CBD: | Dist. to City(km):
Census Block: | Block Group: | Census Tract:
Congressional District: 1 | Class 1 Area:
Site Latitude: +47.313200 | Site Longitude: -102.527300 | Time Zone: MOUNTAIN
UTM Zone: 13 | UTM Northing: 5242716.42 | UTM Easting: 686888.26
Accuracy: .03 | Datum: WGS84 | Scale: 0 | Point/Line/Area: POINT
Vertical Measure(m): 683.0 | Vert Accuracy: .03
Vert Datum NAVD88 | Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

SITE COMMENTS

* *

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
INDEX SITE	1
OTHER	10
SLAMS	7

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19750701	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	SEVENTH STREET SW	10	2004	DOT	LOCAL ST OR HY	N

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-053-0002 Site Name: **TRNP-NU** Local ID:
Street Address: 229 SERVICE RD., WATFORD CITY City: Not in a city
State: North Dakota Zip Code: 58854 County: McKenzie
Location Description: MONITORING POINT Location Setting: RURAL
Coll. Method: GPS CARRIER PHASE STATIC RELATIVE POSITION Land Use: AGRICULTURAL
Date Established: 19781201 Date Terminated: Last Updated: 20060814
Regional Eval. Date: HQ Eval. Date: AQCR : NORTH DAKOTA
MSA: Not in a MSA CMSA: Not in a CMSA Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP Dist to Met. Site(m): Local Region:
Urban Area: NOT IN AN URBAN AREA EPA Region: DENVER
City Population: 1 Dir. to CBD: Dist. to City(km):
Census Block: Block Group: Census Tract:
Congressional District: Class 1 Area: T. Roosevelt Park (North)
Site Latitude: +47.581200 Site Longitude: -103.299500 Time Zone: MOUNTAIN
UTM Zone: 13 UTM Northing: 5270936.38 UTM Easting: 627875.21
Accuracy: .03 Datum: NAD83 Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 624.0 Vert Accuracy: 0
Vert Datum NAVD88 Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

SITE COMMENTS

LOCATED IN THE THOEDORE ROOSEVELT NATIONAL PARK APPROXIMATELY 10 KM INSIDE THE PARK ENTRANCE.

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
SLAMS	6
SUPPLMNTL SPECIAT	67
OTHER	9

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19781201	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-057-0004 | Site Name: **BEULAH NORTH** | Local ID:
Street Address: 6024 HIGHWAY 200 | City: Beulah
State: North Dakota | Zip Code: 58571 | County: Mercer
Location Description: MONITORING POINT | Location Setting: RURAL
Coll. Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL | Land Use: AGRICULTURAL
Date Established: 19981213 | Date Terminated: | Last Updated: 20031212
Regional Eval. Date: | HQ Eval. Date: | AQCR : NORTH DAKOTA
MSA: Not in a MSA | CMSA: Not in a CMSA | Direct Met Site: | Met. Site ID:
Type Met Site: ON-SITE MET EQUIP | Dist to Met. Site(m): | Local Region:
Urban Area: NOT IN AN URBAN AREA | EPA Region: DENVER
City Population: 3152 | Dir. to CBD: | Dist. to City(km):
Census Block: | Block Group: | Census Tract:
Congressional District: | Class 1 Area:
Site Latitude: +47.298611 | Site Longitude: -101.766944 | Time Zone: MOUNTAIN
UTM Zone: 14 | UTM Northing: 5241843 | UTM Easting: 290816
Accuracy: .03 | Datum: WGS84 | Scale: 0 | Point/Line/Area: POINT
Vertical Measure(m): 630.0 | Vert Accuracy: .03
Vert Datum NAVD88 | Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors	
SLAMS	10	
OTHER	78	Air Toxics

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19981213	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	HIGHWAY 200	1000	1998		THRU ST OR HY	N
2	COUNTY ROAD	100	1998		LOCAL ST OR HY	W
3	CITY STREET	250	1998		THRU ST OR HY	S

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM

SITE DESCRIPTION REPORT

May. 18, 2007

Site ID: 38-065-0002 Site Name: **HANNOVER** Local ID:
Street Address: 1575 HIGHWAY 31 City: Not in a city
State: North Dakota Zip Code: County: Oliver
Location Description: MONITORING POINT Location Setting: RURAL
Coll. Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL Land Use: AGRICULTURAL
Date Established: 19841004 Date Terminated: Last Updated: 20050304
Regional Eval. Date: HQ Eval. Date: AQCR : NORTH DAKOTA
MSA: Not in a MSA CMSA: Not in a CMSA Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP Dist to Met. Site(m): Local Region:
Urban Area: NOT IN AN URBAN AREA EPA Region: DENVER
City Population: 1 Dir. to CBD: S Dist. to City(km): 7
Census Block: Block Group: Census Tract:
Congressional District: 1 Class 1 Area:
Site Latitude: +47.185833 Site Longitude: -101.428056 Time Zone: MOUNTAIN
UTM Zone: 14 UTM Northing: 5228457 UTM Easting: 316045
Accuracy: .01 Datum: WGS84 Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 697.0 Vert Accuracy: .01
Vert Datum NAVD88 Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

SITE COMMENTS

*

ACTIVE MONITOR TYPES

Monitor Type	# of Monitors
OTHER	6
SLAMS	5

AGENCY ROLES

Role	Agency Desc	Begin Date	End Date
SUPPORTING	North Dakota State Department Of Health	19841004	

TANGENT ROADS

Road Number	Road Name	Traffic Count	Traffic Year	Traffic Volume Source	Road Type	Compass Sector
1	STATE HIGHWAY 31	350	2000	DOT	LOCAL ST OR HY	E

Appendix C

Detailed Monitor Descriptions

This appendix is a listing printed from the AQS database for only the gaseous parameters for each site.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-42602-1
Parameter Measured: **Nitrogen Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19990114		ANALYZING	North Dakota State Department Of Health	19990114	
		REPORTING	North Dakota State Department Of Health	19990114	
		COLLECTING	North Dakota State Department Of Health	19990114	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990114			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-42604-1
Parameter Measured: **Ammonia**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20001103		ANALYZING	North Dakota State Department Of Health	20001103	
		COLLECTING	North Dakota State Department Of Health	20001103	
		REPORTING	North Dakota State Department Of Health	20001103	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
OTHER	20001114			
SLAMS	20001103	20001113		

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20001103
Reference Method Used	Y	20001101
Siting Criteria Met	Y	20001101

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-88101-1
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070507
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: GROUND LEVEL SUPPORT
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
19990101	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	Inter-Mountain Laboratory Sheridan, WY	19990101	
COLLECTING	North Dakota State Department Of Health	19990101	
REPORTING	North Dakota State Department Of Health	19990101	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

COLLOCATION INFORMATION

Begin Date	End Date	Dist.(m)	Primary?
20060125			Y

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-88101-1
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20061231
Last Updated: 20070226
Owner: North Dakota
City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY
Site Name: **TRNP-NU**
MSA: Not in a MSA
County: McKenzie
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: GROUND LEVEL SUPPORT
Horizontal Distance (m):
Probe Height (m): 2.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20020101	20061231	ANALYZING	Inter-Mountain Laboratory Sheridan, WY	20020101	
		COLLECTING	North Dakota State Department Of Health	20020101	20061231
		REPORTING	North Dakota State Department Of Health	20020101	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20020101	20061231		

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20020101
Reference Method Used	Y	20020101
Siting Criteria Met	Y	20020101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-88501-3

Parameter Measured: **PM-Fine**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Not in a city

Street Address: 229 SERVICE RD., WATFORD CITY

Site Name: **TRNP-NU**

MSA: Not in a MSA

County: McKenzie

UAR: NOT IN AN URBAN AREA

Project Type: BACKGROUND SURVEILLANCE

Dominant Source: POINT

Meas. Scale: REGIONAL SCALE

Location Setting: RURAL

Probe Location: TOP OF BUILDING

Horizontal Distance (m): 0.0

Probe Height (m): 4.0

Surrogate?:

Vertical Distance (m): 1.0

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20021001		COLLECTING	North Dakota State Department Of Health	20021001	
		REPORTING	North Dakota State Department Of Health	20021001	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20021001			

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-88101-1
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070507
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: SOURCE-ORIENTED AMBIENT SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: GROUND LEVEL SUPPORT
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION

Begin Date	End Date
19990101	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	Inter-Mountain Laboratory Sheridan, WY	19990101	
COLLECTING	North Dakota State Department Of Health	19990101	
REPORTING	North Dakota State Department Of Health	19990101	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

COLLOCATION INFORMATION

Begin Date	End Date	Dist.(m)	Primary?
20000101	20030714		Y

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-013-0004-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 8315 HIGHWAY 8, KENMARE
Site Name: **LOSTWOOD NWR**
MSA: Not in a MSA
County: Burke
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: POINT
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20031028		COLLECTING	North Dakota State Department Of Health	20031028	
		REPORTING	North Dakota State Department Of Health	20031028	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20031028
Reference Method Used	Y	20031028
Siting Criteria Met	Y	20031028

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
90TH STREET NW	LOCAL ST OR HY	10	2002	8290
ND HIGHWAY 8	THRU ST OR HY	100	2002	1120
NDHIGHWAY 8	THRU ST OR HY	100	2002	840
COUNTY ROAD 11	LOCAL ST OR HY	10	2002	13800

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-025-0003-42602-1
Parameter Measured: **Nitrogen Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 9610 SEVENTH STREET SW
Site Name: **DUNN CENTER**
MSA: Not in a MSA
County: Dunn
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?:

MONITOR COMMENT

*

DATES OF OPERATION

Begin Date	End Date
19791001	19890331
19981214	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19791001	
COLLECTING	North Dakota State Department Of Health	19791001	
REPORTING	North Dakota State Department Of Health	19791001	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
OTHER	19791001	19791231		
SLAMS	19800101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19800101
Reference Method Used	Y	19800101
Siting Criteria Met	Y	19800101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Fargo
Street Address: 4266 40TH AVE NORTH
Site Name: **FARGO NW**
MSA: Fargo-Moorhead,ND-MN
County: Cass
UAR: FARGO-MOORHEAD, ND-MN
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19980527		ANALYZING	North Dakota State Department Of Health	19980527	
		REPORTING	North Dakota State Department Of Health	19980527	
		COLLECTING	North Dakota State Department Of Health	19980527	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19980527			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19980501
Reference Method Used	Y	19980501
Siting Criteria Met	Y	19980501

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
19TH AVE N.	THRU ST OR HY	550	1989	1600
INTERSTATE 94	ARTERIAL	8790	1989	350
COUNTY 20	THRU ST OR HY	975	1989	30

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
MAX PRECURSOR EMISSIONS IMPACT		Fargo-Moorhead,ND-MN	
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?:

DATES OF OPERATION

Begin Date	End Date
20051003	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
COLLECTING	North Dakota State Department Of Health	20051003	
REPORTING	North Dakota State Department Of Health	20051003	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20051003			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20051003
Reference Method Used	Y	20051003
Siting Criteria Met	Y	20051003

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19990114		ANALYZING	North Dakota State Department Of Health	19990114	
		COLLECTING	North Dakota State Department Of Health	19990114	
		REPORTING	North Dakota State Department Of Health	19990114	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990114			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19990114		ANALYZING	North Dakota State Department Of Health	19990114	
		COLLECTING	North Dakota State Department Of Health	19990114	
		REPORTING	North Dakota State Department Of Health	19990114	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990114			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-065-0002-42602-1
Parameter Measured: **Nitrogen Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 1575 HIGHWAY 31
Site Name: **HANNOVER**
MSA: Not in a MSA
County: Oliver
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
19880323	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19880323	
COLLECTING	North Dakota State Department Of Health	19880323	
REPORTING	North Dakota State Department Of Health	19880323	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19880323			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19880301
Reference Method Used	Y	19880301
Siting Criteria Met	Y	19880301

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
SOURCE ORIENTED	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-025-0003-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 9610 SEVENTH STREET SW
Site Name: **DUNN CENTER**
MSA: Not in a MSA
County: Dunn
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20040908		ANALYZING	North Dakota State Department Of Health	20040908	
		COLLECTING	North Dakota State Department Of Health	20040908	
		REPORTING	North Dakota State Department Of Health	20040908	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
INDEX SITE	20040908			
OTHER	20040908			
SLAMS	20040908			

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY
Site Name: **TRNP-NU**
MSA: Not in a MSA
County: McKenzie
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

SITE RESTARTED ON AUG 8, 2001

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19821105	19980630	ANALYZING	North Dakota State Department Of Health	19821105	
20010801		REPORTING	North Dakota State Department Of Health	19821105	
		COLLECTING	North Dakota State Department Of Health	19821105	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19821105			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19821101
Reference Method Used	Y	19821101
Siting Criteria Met	Y	19821101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-42401-1

Parameter Measured: **Sulfur Dioxide**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Fargo

Street Address: 4266 40TH AVE NORTH

Site Name: **FARGO NW**

MSA: Fargo-Moorhead,ND-MN

County: Cass

UAR: FARGO-MOORHEAD, ND-MN

Project Type: POPULATION-ORIENTED SURVEILLANCE

Dominant Source: POINT

Meas. Scale: URBAN SCALE

Location Setting: SUBURBAN

Probe Location: TOP OF BUILDING

Horizontal Distance (m):

Probe Height (m): 3.0

Surrogate?:

Vertical Distance (m):

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION	
Begin Date	End Date
19980527	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19980527	
COLLECTING	North Dakota State Department Of Health	19980527	
REPORTING	North Dakota State Department Of Health	19980527	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19980527			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19980501
Reference Method Used	Y	19980501
Siting Criteria Met	Y	19980501

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
19TH AVE N.	THRU ST OR HY	550	1989	1600
INTERSTATE 94	ARTERIAL	8790	1989	350
COUNTY 20	THRU ST OR HY	975	1989	30

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
MAX PRECURSOR EMISSIONS IMPACT		Fargo-Moorhead,ND-MN	
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-42602-1

Parameter Measured: **Nitrogen Dioxide**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Fargo

Street Address: 4266 40TH AVE NORTH

Site Name: **FARGO NW**

MSA: Fargo-Moorhead,ND-MN

County: Cass

UAR: FARGO-MOORHEAD, ND-MN

Project Type: POPULATION-ORIENTED SURVEILLANCE

Dominant Source: MOBILE

Meas. Scale: URBAN SCALE

Location Setting: SUBURBAN

Probe Location: TOP OF BUILDING

Horizontal Distance (m):

Probe Height (m): 4.0

Surrogate?:

Vertical Distance (m):

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION	
Begin Date	End Date
19980527	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19980527	
COLLECTING	North Dakota State Department Of Health	19980527	
REPORTING	North Dakota State Department Of Health	19980527	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19980527			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19980501
Reference Method Used	Y	19980501
Siting Criteria Met	Y	19980501

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
19TH AVE N.	THRU ST OR HY	550	1989	1600
INTERSTATE 94	ARTERIAL	8790	1989	350
COUNTY 20	THRU ST OR HY	975	1989	30

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
MAX PRECURSOR EMISSIONS IMPACT		Fargo-Moorhead,ND-MN	
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20051005	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
COLLECTING	North Dakota State Department Of Health	20051005	
REPORTING	North Dakota State Department Of Health	20051005	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20051005			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20051005
Reference Method Used	Y	20051005
Siting Criteria Met	Y	20051005

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-88101-1
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070507
Owner: North Dakota
City: Fargo
Street Address: 4266 40TH AVE NORTH
Site Name: **FARGO NW**
MSA: Fargo-Moorhead,ND-MN
County: Cass
UAR: FARGO-MOORHEAD, ND-MN
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: GROUND LEVEL SUPPORT
Horizontal Distance (m):
Probe Height (m): 2.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
19990101	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	Inter-Mountain Laboratory Sheridan, WY	19990101	
COLLECTING	North Dakota State Department Of Health	19990101	
REPORTING	North Dakota State Department Of Health	19990101	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19990101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19990101
Reference Method Used	Y	19990101
Siting Criteria Met	Y	19990101

COLLOCATION INFORMATION

Begin Date	End Date	Dist.(m)	Primary?
20000101	20011230		Y

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		
SOURCE ORIENTED	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-42602-1

Parameter Measured: **Nitrogen Dioxide**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Not in a city

Street Address: 229 SERVICE RD., WATFORD CITY

Site Name: **TRNP-NU**

MSA: Not in a MSA

County: McKenzie

UAR: NOT IN AN URBAN AREA

Project Type: BACKGROUND SURVEILLANCE

Dominant Source: AREA

Meas. Scale: REGIONAL SCALE

Location Setting: RURAL

Probe Location: TOP OF BUILDING

Horizontal Distance (m):

Probe Height (m): 4.0

Surrogate?:

Vertical Distance (m):

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20010801	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	20010801	
COLLECTING	North Dakota State Department Of Health	20010801	
REPORTING	North Dakota State Department Of Health	20010801	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20010801			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20010801
Reference Method Used	Y	20010801
Siting Criteria Met	Y	20010801

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-013-0004-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 8315 HIGHWAY 8, KENMARE
Site Name: **LOSTWOOD NWR**
MSA: Not in a MSA
County: Burke
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20031028		REPORTING	North Dakota State Department Of Health	20031028	
		COLLECTING	North Dakota State Department Of Health	20031028	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20031028
Reference Method Used	Y	20031028
Siting Criteria Met	Y	20031028

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
90TH STREET NW	LOCAL ST OR HY	10	2002	8290
ND HIGHWAY 8	THRU ST OR HY	100	2002	1120
NDHIGHWAY 8	THRU ST OR HY	100	2002	840
COUNTY ROAD 11	LOCAL ST OR HY	10	2002	13800

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?:

DATES OF OPERATION

Begin Date	End Date
20051003	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
COLLECTING	North Dakota State Department Of Health	20051003	
REPORTING	North Dakota State Department Of Health	20051003	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20051003			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20051003
Reference Method Used	Y	20051003
Siting Criteria Met	Y	20051003

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-025-0003-81102-3

Parameter Measured: **PM10**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Not in a city

Street Address: 9610 SEVENTH STREET SW

Site Name: **DUNN CENTER**

MSA: Not in a MSA

County: Dunn

UAR: NOT IN AN URBAN AREA

Project Type: BACKGROUND SURVEILLANCE

Dominant Source: AREA

Meas. Scale: REGIONAL SCALE

Location Setting: RURAL

Probe Location: TOP OF BUILDING

Horizontal Distance (m):

Probe Height (m): 4.0

Surrogate?:

Vertical Distance (m): 1.0

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20040908	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	20040908	
REPORTING	North Dakota State Department Of Health	20040908	
COLLECTING	North Dakota State Department Of Health	20040908	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20040908			

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-88101-2
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070507
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: GROUND LEVEL SUPPORT
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20060125	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	Inter-Mountain Laboratory Sheridan, WY	20060125	
COLLECTING	North Dakota State Department Of Health	20060125	
REPORTING	North Dakota State Department Of Health	20060125	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20060125			

COLLOCATION INFORMATION

Begin Date	End Date	Dist.(m)	Primary?
20060125		2	N

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: SOURCE-ORIENTED AMBIENT SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20001011		ANALYZING	North Dakota State Department Of Health	20001011	
		COLLECTING	North Dakota State Department Of Health	20001011	
		REPORTING	North Dakota State Department Of Health	20001011	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20001011			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20001011
Reference Method Used	Y	20001001
Siting Criteria Met	Y	20001001

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
HIGHWAY 200	THRU ST OR HY	1000	1998	32
COUNTY ROAD	LOCAL ST OR HY	100	1998	1000
CITY STREET	THRU ST OR HY	250	1998	3200

POLLUTANT AREA INFORMATION

Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED					

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-065-0002-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 1575 HIGHWAY 31
Site Name: **HANNOVER**
MSA: Not in a MSA
County: Oliver
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
19880323	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19880323	
COLLECTING	North Dakota State Department Of Health	19880323	
REPORTING	North Dakota State Department Of Health	19880323	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19880323			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19880301
Reference Method Used	Y	19880301
Siting Criteria Met	Y	19880301

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
SOURCE ORIENTED	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-065-0002-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 1575 HIGHWAY 31
Site Name: **HANNOVER**
MSA: Not in a MSA
County: Oliver
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 2.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20020917		ANALYZING	North Dakota State Department Of Health	20020917	
		REPORTING	North Dakota State Department Of Health	20020917	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20020917			

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
SOURCE ORIENTED	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-013-0004-42602-1
Parameter Measured: **Nitrogen Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 8315 HIGHWAY 8, KENMARE
Site Name: **LOSTWOOD NWR**
MSA: Not in a MSA
County: Burke
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20031028		COLLECTING	North Dakota State Department Of Health	20031028	
		REPORTING	North Dakota State Department Of Health	20031028	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20031028
Reference Method Used	Y	20031028
Siting Criteria Met	Y	20031028

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
90TH STREET NW	LOCAL ST OR HY	10	2002	8290
ND HIGHWAY 8	THRU ST OR HY	100	2002	1120
NDHIGHWAY 8	THRU ST OR HY	100	2002	840
COUNTY ROAD 11	LOCAL ST OR HY	10	2002	13800

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY
Site Name: **TRNP-NU**
MSA: Not in a MSA
County: McKenzie
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

SITE RESTARTED AUG 8, 2001

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19800101	19980630	ANALYZING	North Dakota State Department Of Health	19800101	19980630
20010801		COLLECTING	North Dakota State Department Of Health	19800101	19980630
		REPORTING	North Dakota State Department Of Health	19800101	
		ANALYZING	North Dakota State Department Of Health	20010801	
		COLLECTING	North Dakota State Department Of Health	20010801	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19800101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19800101
Reference Method Used	Y	19800101
Siting Criteria Met	Y	19800101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-025-0003-44201-1
Parameter Measured: **Ozone**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 9610 SEVENTH STREET SW
Site Name: **DUNN CENTER**
MSA: Not in a MSA
County: Dunn
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

MONITOR COMMENT

*

DATES OF OPERATION

Begin Date	End Date
19791001	19890430
19981214	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
COLLECTING	North Dakota State Department Of Health	19791001	
REPORTING	North Dakota State Department Of Health	19791001	
ANALYZING	North Dakota State Department Of Health	19791001	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
OTHER	19791001	19791231		
SLAMS	19800101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19800101
Reference Method Used	Y	19800101
Siting Criteria Met	Y	19800101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-057-0004-81102-3
Parameter Measured: **PM10**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Beulah
Street Address: 6024 HIGHWAY 200
Site Name: **BEULAH NORTH**
MSA: Not in a MSA
County: Mercer
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20060717	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
REPORTING	North Dakota State Department Of Health	20060717	
ANALYZING	North Dakota State Department Of Health	20060717	
COLLECTING	North Dakota State Department Of Health	20060717	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20060717			

COLLOCATION INFORMATION

Begin Date	End Date	Dist.(m)	Primary?
20060717			Y

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-025-0003-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 9610 SEVENTH STREET SW
Site Name: **DUNN CENTER**
MSA: Not in a MSA
County: Dunn
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?:

MONITOR COMMENT

*

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
19791001		COLLECTING	North Dakota State Department Of Health	19791001	
		REPORTING	North Dakota State Department Of Health	19791001	
		ANALYZING	North Dakota State Department Of Health	19791001	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
OTHER	19791001	19791231		
SLAMS	19800101			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19800101
Reference Method Used	Y	19800101
Siting Criteria Met	Y	19800101

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-065-0002-42401-1
Parameter Measured: **Sulfur Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 1575 HIGHWAY 31
Site Name: **HANNOVER**
MSA: Not in a MSA
County: Oliver
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: AREA
Meas. Scale: URBAN SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 3.0
Surrogate?:
Vertical Distance (m):
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
19880323	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	19880323	
COLLECTING	North Dakota State Department Of Health	19880323	
REPORTING	North Dakota State Department Of Health	19880323	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19880323			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	19880301
Reference Method Used	Y	19880301
Siting Criteria Met	Y	19880301

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
SOURCE ORIENTED	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-013-0004-81102-3
Parameter Measured: **PM10**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 8315 HIGHWAY 8, KENMARE
Site Name: **LOSTWOOD NWR**
MSA: Not in a MSA
County: Burke
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: POINT
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION	
Begin Date	End Date
20031028	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	20031028	
REPORTING	North Dakota State Department Of Health	20031028	
COLLECTING	North Dakota State Department Of Health	20031028	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20031028
Reference Method Used	Y	20031028
Siting Criteria Met	Y	20031028
Short Term Satisfied	Y	20031028

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
90TH STREET NW	LOCAL ST OR HY	10	2002	8290
ND HIGHWAY 8	THRU ST OR HY	100	2002	1120
NDHIGHWAY 8	THRU ST OR HY	100	2002	840
COUNTY ROAD 11	LOCAL ST OR HY	10	2002	13800

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-013-0004-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 8315 HIGHWAY 8, KENMARE
Site Name: **LOSTWOOD NWR**
MSA: Not in a MSA
County: Burke
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: POINT
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20031028	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	20031028	
REPORTING	North Dakota State Department Of Health	20031028	
COLLECTING	North Dakota State Department Of Health	20031028	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20031028
Reference Method Used	Y	20031028
Siting Criteria Met	Y	20031028

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
90TH STREET NW	LOCAL ST OR HY	10	2002	8290
ND HIGHWAY 8	THRU ST OR HY	100	2002	1120
NDHIGHWAY 8	THRU ST OR HY	100	2002	840
COUNTY ROAD 11	LOCAL ST OR HY	10	2002	13800

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-88501-3
Parameter Measured: **PM-Fine**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Fargo
Street Address: 4266 40TH AVE NORTH
Site Name: **FARGO NW**
MSA: Fargo-Moorhead,ND-MN
County: Cass
UAR: FARGO-MOORHEAD, ND-MN
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20000608		ANALYZING	North Dakota State Department Of Health	20000608	
		COLLECTING	North Dakota State Department Of Health	20000608	
		REPORTING	North Dakota State Department Of Health	20000608	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20000608			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20000608
Reference Method Used	Y	20000601
Siting Criteria Met	Y	20000601

TANGENT ROAD INFORMATION

Street Name	Type Road	Traff Count	Traff Yr	Dist. to Road (m)
19TH AVE N.	THRU ST OR HY	550	1989	1600
INTERSTATE 94	ARTERIAL	8790	1989	350
COUNTY 20	THRU ST OR HY	975	1989	30

POLLUTANT AREA INFORMATION

Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration and is expected to monitor at recommended sampling frequency.				

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		
SOURCE ORIENTED	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-017-1004-81102-3
Parameter Measured: **PM10**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Fargo
Street Address: 4266 40TH AVE NORTH
Site Name: **FARGO NW**
MSA: Fargo-Moorhead,ND-MN
County: Cass
UAR: FARGO-MOORHEAD, ND-MN
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: POINT
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION	
Begin Date	End Date
20040628	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
ANALYZING	North Dakota State Department Of Health	20040628	
COLLECTING	North Dakota State Department Of Health	20040628	
REPORTING	North Dakota State Department Of Health	20040628	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20040628			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20040628
Reference Method Used	Y	20040628
Siting Criteria Met	Y	20040628

POLLUTANT AREA INFORMATION

Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration and is expected to monitor at recommended sampling frequency.				

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-053-0002-81102-3
Parameter Measured: **PM10**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY
Site Name: **TRNP-NU**
MSA: Not in a MSA
County: McKenzie
UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE
Dominant Source: POINT
Meas. Scale: REGIONAL SCALE
Location Setting: RURAL
Probe Location: TOP OF BUILDING
Horizontal Distance (m):
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?: Y

DATES OF OPERATION		AGENCY ROLES			
Begin Date	End Date	Agency Role	Agency Name	Begin Date	End Date
20040616		COLLECTING	North Dakota State Department Of Health	20040616	
		REPORTING	North Dakota State Department Of Health	20040616	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20040616			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20040616
Reference Method Used	Y	20040616
Siting Criteria Met	Y	20040616

POLLUTANT AREA INFORMATION

Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration and is expected to monitor at recommended sampling frequency.				

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-81102-3

Parameter Measured: **PM10**

Date of Latest Collection: 20070331

Last Updated: 20070430

Owner: North Dakota

City: Bismarck

Street Address: 1810 N 16TH STREET

Site Name: **BISMARCK RESIDENTIAL**

MSA: Bismarck,ND

County: Burleigh

UAR: BISMARCK, ND

Project Type: POPULATION-ORIENTED SURVEILLANCE

Dominant Source: AREA

Meas. Scale: URBAN SCALE

Location Setting: SUBURBAN

Probe Location: TOP OF BUILDING

Horizontal Distance (m): 0.0

Probe Height (m): 4.0

Surrogate?:

Vertical Distance (m): 1.0

Sample Residence Time:

Unrestricted Air FLow?: Y

DATES OF OPERATION

Begin Date	End Date
20051001	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
REPORTING	North Dakota State Department Of Health	20051001	
COLLECTING	North Dakota State Department Of Health	20051001	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20051001			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20051001
Reference Method Used	Y	20051001
Siting Criteria Met	Y	20051001

POLLUTANT AREA INFORMATION

Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration and is expected to monitor at recommended sampling frequency.				

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MONITOR DESCRIPTION REPORT

May. 18, 2007

North Dakota

Monitor ID: 38-015-0003-42602-1
Parameter Measured: **Nitrogen Dioxide**
Date of Latest Collection: 20070331
Last Updated: 20070430
Owner: North Dakota
City: Bismarck
Street Address: 1810 N 16TH STREET
Site Name: **BISMARCK RESIDENTIAL**
MSA: Bismarck,ND
County: Burleigh
UAR: BISMARCK, ND
Project Type: POPULATION-ORIENTED SURVEILLANCE
Dominant Source: MOBILE
Meas. Scale: URBAN SCALE
Location Setting: SUBURBAN
Probe Location: TOP OF BUILDING
Horizontal Distance (m): 0.0
Probe Height (m): 4.0
Surrogate?:
Vertical Distance (m): 1.0
Sample Residence Time:
Unrestricted Air FLow?:

DATES OF OPERATION

Begin Date	End Date
20051003	

AGENCY ROLES

Agency Role	Agency Name	Begin Date	End Date
COLLECTING	North Dakota State Department Of Health	20051003	
REPORTING	North Dakota State Department Of Health	20051003	

MONITOR TYPE INFORMATION

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20051003			

REGULATION INFORMATION

Regulation	Met?	Date Met
Quality Assurance Criteria Met	Y	20051003
Reference Method Used	Y	20051003
Siting Criteria Met	Y	20051003

MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	BISMARCK, ND		

Appendix D

Public Comments

DAKOTA RESOURCE COUNCIL

P. O. Box 1095, Dickinson ND 58602-1095
(701) 483-2851; www.drcinfo.com

July 8, 2010

Terry O'Clair, Director
Division of Air Quality
North Dakota Department of Health
918 East Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947

RE: Comments on the July 2010 Annual Report: North Dakota Ambient Monitoring Network Plan

Dear Mr. O'Clair:

On behalf of the Dakota Resource Council, National Parks Conservation Association, Minnesota Center for Environmental Advocacy, Sierra Club, and Voyageurs National Park Association, we respectfully submit the following comments on the July 2010 Annual Report: North Dakota Ambient Monitoring Network Plan (2010 Monitoring Report). We appreciate the opportunity to comment on the plan, and support the planned maintenance of all existing monitors. We encourage the North Dakota Department of Health (NDDH) to include a broader range of necessary and relevant information as identified below and to more fully consider the implications of implementing more recent air quality regulations, including the Regional Haze Rule and newly revised National Ambient Air Quality Standards (NAAQS).

As a document describing the ambient air quality monitoring (AAQM) network in North Dakota, the 2010 Monitoring Report lacks important information which would give the public the ability to fully evaluate and understand the current AAQM network and decisions being made as to its future configuration. On a basic level, the document itself is not clear in its purpose. Two types of reports are required by the U.S. Environmental Protection Agency (U.S. EPA). First, an annual monitoring network plan is required, as outlined primarily by 40 CFR 58.10(a) – (c). Second, an assessment of the monitoring network is required every five years, as described in 40 CFR 58.10(d). This Report is described as an annual report but also references the requirements for the five year assessment; its purpose should be clearly stated. If the 2010 Monitoring Report is an annual monitoring network plan, it should describe the status of the first five year network assessment which was due July 1, 2010. If it is intended as the five year network assessment,

then the network analysis and conclusions as to the sufficiency of the monitoring for each pollutant should be more thoroughly addressed and clearly stated.

The 2010 Monitoring Report omits any information, besides the fact of their existence, about the 8 industry-supported sites and the National Park Service site at the South Unit of Theodore Roosevelt National Park (TRNP). Prior year AAQM data summaries have included information about these monitors, including location, parameters monitored, and data summaries. It is unclear why information from these department-required monitors was omitted in this context, particularly since industry-supported sites routinely register the highest readings of specific pollutants (e.g. SO2). Descriptive information and data from these additional monitors, corresponding to that provided for the department-run monitors, as well as the rationale and process for determining the location and pollutants monitored, would be useful in evaluating the robustness of the AAQM network as a whole. Similarly, the Report should provide a clear demarcation of which monitors (by pollutant) can be or are used for determining NAAQS compliance.

More thorough information about source emissions and locations is also vital to providing regulators and the public alike with an informed evaluation of monitoring adequacy. The 2010 Monitoring Report fails to include the following data necessary to ensure comprehensive information reflective of the state's air quality:

1. Major point source emissions data;
2. The types and amounts of air toxics emitted by major sources;
3. Distances from a given point source to the nearest monitor for the pollutant in question.

In addition to the quantitative information described above, the 2010 Monitoring Report would benefit from a more significant consideration of and narrative about the new and newly implemented regulations which rely heavily on ambient air quality monitoring. These include new NAAQS for lead, ozone, SO2, NO2, and the Regional Haze rule. Adequate and timely discussion of these newer regulations is particularly important to determining whether new monitoring sites are necessary.

The Regional Haze rule and associated Best Available Retrofit Technology (BART) requirements are mentioned in passing as something "the department is beginning to evaluate." We encourage NDDH to include this evaluation in the monitoring planning process more explicitly, considering such questions as whether additional visibility monitors are necessary and feasible (e.g. at the TRNP North Unit), and how additional monitoring might be used to obtain a more accurate picture of the impacts of both point and area sources on concentrations of visibility-causing pollutants. Given the number of point and area SO2 sources, similar questions

can and should be anticipated and discussed with regard to the significantly lowered SO2 NAAQS.

Conclusion

The annual review process is intended to ensure that the State's monitoring efforts are sufficient to support and achieve state and federal ambient air quality standards. The 2010 Monitoring Report and future plans should include supplemental information, both quantitative and qualitative, to aid in the regulating agency and public's understand and ability to evaluate whether this goal is being achieved.

Thank you for the opportunity to comment on the 2010 Monitoring Report.

Sincerely,

Mark Trechock, Staff Director
Dakota Resource Council
P.O. Box 1095
Dickinson, ND 58602-1095
701-483-2851

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Executive Director
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Minneapolis, MN 55401

August 5, 2010

Mr. Mark Trechock
Staff Director
Dakota Resource Council
P.O. Box 1095
Dickinson, ND 58602-1095

Re: Comments on the July 2010 Annual Report: North Dakota Ambient Monitoring Network Plan

Dear Mr. Trechock:

The Department would like to thank-you for your recent submittal of comments on the Ambient Air Monitoring Network Plan. As the title page states, this report is the Annual Report of the North Dakota Ambient Monitoring Network and not the five-year assessment. As described in 40 CFR 58.10(a), this report shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS (State and Local Air Monitoring Systems). This report does not include the industry or NPS sites due to them not being designated as part of the SLAMS network. This report is not required to provide information on specific sources and their location, although the Department will take that under advisement. When the report is completed, any NAAQS that have been promulgated are reviewed in determining whether sites should be added or removed.

Thank-you again for taking time to provide comments on the Ambient Network Plan. If you have any further questions or concerns, please feel free to contact us at (701)328-5188.

Sincerely,

Terry O'Clair

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/JDM:csc