

State/Industry Ambient Monitoring Network

Air Quality Report

2nd Quarter 2007

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SECTION ONE

DISCUSSION OF
MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 69 ppb at Hannover; the maximum 3-hour concentration was 47 ppb at Hannover; and, the maximum 24-hour concentration was 11 ppb at DGC #16. The highest arithmetic mean was 2.0 ppb at DGC #16, Hannover, and Hess Tioga #3. All sites achieved at least an 80% data recovery for the period operated. Dunn Center, Lostwood and TRNP - NU all had Trace Level analyzers installed in June. All sites met the 80% data recovery requirements for the period operated.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 249 ppb at Bear Paw - MGP #3. All sites achieved at least an 80% data recovery for the period operated. Dunn Center, Lostwood and TRNP - NU all had Trace Level analyzers installed in June. All sites met the 80% data recovery requirements for the period operated.

Trace Level Sulfur Dioxide (SO₂)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 4.8 ppb at Fargo NW; the maximum 3-hour concentration was 2.6 ppb at Fargo NW; and, the maximum 24-hour concentration was 1.0 ppb at Fargo NW. The highest arithmetic mean was 0.3 ppb at Fargo NW and Lostwood NWR. The site achieved at least an 80% data recovery for the period operated. Dunn Center, Lostwood and TRNP - NU all had Trace Level analyzers installed in June. All sites met the 80% data recovery requirements for the period operated.

Trace Level Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 8.3 ppb at Fargo NW. The site achieved at least an 80% data recovery for the period operated. Dunn Center, Lostwood and TRNP - NU all had Trace Level analyzers installed in June. All sites met the 80% data recovery requirements for the period operated.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 70 ppb at Bismarck Residential. The highest 4th highest 8-hour concentration was 58 ppb at TRNP - NU. All sites achieved at least an 80% data recovery for the period operated.

Nitrogen Dioxide (NO₂)

The highest observed 1-hour concentration was 37 ppb at Bismarck Residential and Hannover. The maximum arithmetic mean concentration was 4.2 ppb at Bismarck Residential. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH₃)

The highest 1-hour concentration was 51.3 ppb at Beulah - North . The site achieved an 80% data recovery for the period.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous PM_{fine} Particulates

The highest 24-hour concentration was 17.1 µg/m³ at Fargo NW. The highest arithmetic mean concentration was 7.0 µg/m³ at Hannover. All sites achieved at least an 80% data recovery for the period operated.

The analyzer used to collect the PM_{fine} was required by EPA, but never given the reference or equivalent designation. Therefore, the data can be used only as an indicator of PM_{fine} concentrations.

Inhalable PM_{fine} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 19.5 $\mu\text{g}/\text{m}^3$ at Fargo NW. The highest arithmetic mean was 7.9 $\mu\text{g}/\text{m}^3$ at Fargo NW. All sites except for TRNP - SU achieved at least an 80% data recovery for the period.

TRNP - SU failed to achieve 80% data recovery due to equipment failures.

Inhalable Continuous PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour concentration was 79.1 $\mu\text{g}/\text{m}^3$ at Bismarck Residential. The highest arithmetic mean was 16.6 $\mu\text{g}/\text{m}^3$ at Bismarck Residential. All sites achieved an 80% data recovery for the period.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

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

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST	2ND	1ST	2ND	1ST	2ND				
Bear Paw - MGP #3	2007	APR-JUN	2165	27	25	10	9	3	2	1.1			2.0
Bear Paw - MGP #5	2007	APR-JUN	2164	34	30	16	16	10	3	1.3			9.2
Beulah - North	2007	APR-JUN	2158	42	21	18	16	4	4	1.5			12.7
Bismarck Residential	2007	APR-JUN	2166	23	19	13	12	4	4	1.3			9.5
DGC #12	2007	APR-JUN	2169	33	26	18	15	5	4	1.6			14.5
DGC #14	2007	APR-JUN	2167	36	31	20	16	7	4	1.6			13.1
DGC #16	2007	APR-JUN	2170	29	29	21	19	11	9	2.0			19.5
DGC #17	2007	APR-JUN	2175	31	31	18	17	6	6	1.8			15.7
Dunn Center	2007	APR-JUN	2076	9	9	8	7	2	2	1.1			3.5
Hannover	2007	APR-JUN	2164	69	46	47	24	10	6	2.0			14.0
Hess - Tioga #1	2007	APR-JUN	2120	21	21	14	11	5	3	1.3			10.8
Hess - Tioga #3	2007	APR-JUN	2119	67	42	36	26	8	8	2.0			20.3
Lostwood NWR	2007	APR-JUN	2083	18	15	11	10	3	3	1.2			8.3
TRNP - NU	2007	APR-JUN	2089	5	4	3	3	1	1	1.0			2.2
TRNP - SU	2007	APR-JUN	2168	5	4	3	3	1	1	1.0			0.8

The highest 1-hour concentration is 69 ppb at Hannover
The highest 3-hour concentration is 47 ppb at Hannover
The highest 24-hour concentration is 11 ppb at DGC #16
The highest arithmetic mean is 2.0 ppb at DGC #16

* 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.

*** Less than 80% of the possible samples (data) were collected.

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

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	SAMPLING PERIOD	5 - M I N U T E			M A X I M A		# HOURS >600	% >MDV
			NUM OBS	1ST	2ND	3RD			
Bear Paw - MGP #3	2007	APR-JUN	2165	249	102	50	0	7.4	
Bear Paw - MGP #5	2007	APR-JUN	2164	91	48	48	0	20.9	
Beulah - North	2007	APR-JUN	2159	63	62	58	0	20.9	
Bismarck Residential	2007	APR-JUN	2166	33	31	28	0	18.1	
Dunn Center	2007	APR-JUN	2076	23	17	12	0	8.6	
Hannover	2007	APR-JUN	2161	155	137	135	0	22.2	
Hess - Tioga #1	2007	APR-JUN	2082	57	57	55	0	19.1	
Hess - Tioga #3	2007	APR-JUN	2063	239	157	110	0	34.5	
Lostwood NWR	2007	APR-JUN	2083	37	31	29	0	13.2	
TRNP - NU	2007	APR-JUN	2089	7	7	7	0	9.0	
TRNP - SU	2007	APR-JUN	1431	5	4	3	0	2.7	

The maximum 5-minute concentration is 249 ppb at Bear Paw - MGP #3

* No Standard is currently in effect:

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

POLLUTANT : Trace Level Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	OBS	1 - HOUR		M A X I M A 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST	2ND	1ST	2ND	1ST	2ND				
Dunn Center	2007	JUN-JUN	84 ***	0.4	0.1	0.2	0.1	0.1	0.1	0.1			1.2
Fargo NW	2007	APR-JUN	2144	4.8	3.7	2.6	2.4	1.0	0.8	0.3			39.2
Lostwood NWR	2007	JUN-JUN	83 ***	1.9	1.6	1.7	1.1	0.6	0.2	0.3			36.1
TRNP - NU	2007	JUN-JUN	80 ***	1.0	1.0	0.7	0.1	0.1	0.1	0.1			2.5

The highest 1-hour concentration is 4.8 ppb at Fargo NW
 The highest 3-hour concentration is 2.6 ppb at Fargo NW
 The highest 24-hour concentration is 1.0 ppb at Fargo NW
 The highest arithmetic mean is 0.3 ppb at Fargo NW

* 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.

*** Less than 80% of the possible samples (data) were collected.

THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Trace Level Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - MINUTE MAXIMA			DATE >600	# HOURS >MDV	%
				1ST	2ND	3RD			
Dunn Center	2007	JUN-JUN	84	1.0			0	1.2	
Fargo NW	2007	APR-JUN	2152	8.3	7.2	6.5	0	62.8	
Lostwood NWR	2007	JUN-JUN	83	2.0	1.0	1.0	0	9.6	
TRNP - NU	2007	JUN-JUN	72	1.0	1.0	1.0	0	13.9	

The maximum 5-minute concentration is 8.3 ppb at Fargo NW

* No Standard is currently in effect:

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

POLLUTANT : **Ozone** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - 1ST	M A - HOUR 2ND	X I 1ST	M A 8 - 2ND	HOUR 3RD	4TH	1HR #>120	8HR #>80
Beulah - North	2007	APR-JUN	2167	65	63	60	57	55	54		
Bismarck Residential	2007	APR-JUN	2169	70	64	62	58	55	55		
Dunn Center	2007	APR-JUN	2165	67	67	60	55	55	53		
Fargo NW	2007	APR-JUN	1770	65	63	63	57	56	54		
Hannover	2007	APR-JUN	2164	64	63	58	57	54	54		
Lostwood NWR	2007	APR-JUN	2169	67	62	63	60	57	54		
TRNP - NU	2007	APR-JUN	2173	66	64	61	61	59	58		
TRNP - SU	2007	APR-JUN	2168	67	64	64	59	59	54		

The highest 1-hour concentration is 70 ppb at Bismarck Residential
The 4th highest 8-hour concentration is 58 ppb at TRNP - NU

* 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.

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

POLLUTANT : **Nitrogen Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X A M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST	2ND		
Beulah - North	2007	APR-JUN	2156	31	24	2.5	87.9
Bismarck Residential	2007	APR-JUN	2152	37	29	4.2	98.9
DGC #12	2007	APR-JUN	2167	33	27	2.0	67.2
DGC #17	2007	APR-JUN	2171	26	25	1.7	52.6
Dunn Center	2007	APR-JUN	2160	11	8	1.6	75.0
Fargo NW	2007	APR-JUN	2149	35	34	4.0	86.1
Hannover	2007	APR-JUN	2155	37	34	1.8	67.8
Lostwood NWR	2007	APR-JUN	2159	10	9	1.0	48.3
TRNP - NU	2007	APR-JUN	2167	7	6	0.7	21.1

The highest 1-hour concentration is 37 ppb at Bismarck Residential and Hannover
The maximum Arithmetic Mean concentration is 4.2 ppb at Bismarck Residential

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

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

POLLUTANT : **Ammonia** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR					
				1ST	2ND	3RD	4TH	5TH	6TH
Beulah - North	2007	APR-JUN	2146	51.3	42.7	38.3	37.6	34.8	32.9

* No Standard is currently in effect:

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

POLLUTANT : **Inhalable Continuous PM_{fine} Particulates** (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR						24 - HOUR 3RD	4TH	ARITH MEAN	24HR #>65 AM>15
				1ST	2ND	1ST	2ND	3RD	4TH				
Beulah - North	2007	APR-JUN	2160	20.6	20.5	10.0	8.9	8.3	8.2	3.8			
Bismarck Residential	2007	APR-JUN	2086	54.5	49.2	12.3	12.1	11.5	10.9	5.2			
Dunn Center	2007	APR-JUN	2142	29.8	26.8	12.3	10.1	9.2	8.7	3.8			
Fargo NW	2007	APR-JUN	2127	101.6	62.1	17.1	14.7	13.5	13.5	5.6			
Hannover	2007	APR-JUN	2156	29.5	29.1	13.3	12.8	12.7	12.3	7.0			
Lostwood NWR	2007	APR-JUN	2159	24.0	20.8	11.3	10.8	9.0	8.7	3.7			
TRNP - NU	2007	APR-JUN	1771	24.0	23.8	11.0	9.4	6.9	6.9	3.4			
TRNP - SU	2007	APR-JUN	2160	26.6	26.1	12.7	12.7	11.2	10.7	6.4			

The highest 24-hour concentration is 17.1 µg/m³ at Fargo NW
The highest Annual Mean concentration is 6.4 µg/m³ at TRNP - SU

* The EPA-required analyzer used to collect this data is not a reference or equivalent method, this data can not be compared to the PM_{fine} standards. This data can only be used as an indicator of the actual PM_{fine} ambient concentrations. If this data were to indicate there may be an exceedance of the ambient standards, then the department could be required to install a designated reference or equivalent sampler.

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

POLLUTANT : Inhalable PM_{fine} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST	2ND	3RD				
Beulah - North	2007	APR-JUN	15	2.3	11.3	11.2	9.8	6.2			100.0
Bismarck Residential	2007	APR-JUN	30	2.0	17.0	12.4	11.0	6.7			100.0
Fargo NW	2007	APR-JUN	27	2.8	19.5	16.4	15.0	7.9			100.0
TRNP - SU	2007	APR-JUN	10 ***	2.0	9.8	9.7	6.3	5.3			100.0

The highest 24-hour concentration was 19.5 µg/m³ at Fargo NW
The highest annual mean concentration was 7.9 µg/m³ at Fargo NW

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 35 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

*** Less than 80% of the possible samples (data) were collected.

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

POLLUTANT : Inhalable Continuous PM₁₀ Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 1ST	— HOUR 2ND	M A X I M A	24 — HOUR 3RD	4TH	MEAN	ARITH #>150	24HR AM>50
Beulah - North	2007	APR-JUN	2163	101.0	85.0	39.1	31.0	26.8	26.3	13.2	
Bismarck Residential	2007	APR-JUN	2166	218.0	171.0	79.1	44.1	34.1	33.3	16.6	
Dunn Center	2007	APR-JUN	2150	84.0	82.0	37.9	30.3	29.8	24.4	12.3	
Fargo NW	2007	APR-JUN	2155	367.0	260.0	77.9	47.3	45.8	43.6	16.5	
Lostwood NWR	2007	APR-JUN	2163	77.0	75.0	43.1	27.3	26.7	22.3	11.5	
TRNP - NU	2007	APR-JUN	2108	94.0	89.0	44.2	30.2	25.5	24.3	10.0	

The highest 24-hour concentration is 79.1 µg/m³ at Bismarck Residential on 05/03
The highest Annual Mean concentration is 16.6 µg/m³ at Bismarck Residential

* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m³ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m³ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{fine} and PM₁₀ (μg/m³)

The * Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{fine} and PM₁₀ (μg/m³)

The * Identifies the Exceedances

NONE

