

State/Industry Ambient Monitoring Network

Air Quality Report

3rd Quarter 2005

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TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
DISCUSSION OF MONITORING RESULTS	1
Sulfur Dioxide (SO ₂)	2
Sulfur Dioxide (SO ₂) 5-Minute Average	2
Ozone (O ₃)	2
Nitrogen Dioxide (NO ₂)	2
Ammonia (NH ₃)	2
Inhalable Continuous PM _{2.5} Particulates	3
Inhalable PM _{2.5} Particulates	3
Inhalable Continuous PM ₁₀ Particulates	3
Inhalable PM ₁₀ Particulates	3
AMBIENT AIR QUALITY DATA SUMMARIES	5
Sulfur Dioxide	6
Sulfur Dioxide 5-Minute Averages	8
Ozone	9
Nitrogen Dioxide	10
Ammonia	11
Inhalable Continuous PM _{2.5} Particulates	11
Inhalable PM _{2.5} Particulates	12
Inhalable Continuous PM ₁₀ Particulates	13
Inhalable PM ₁₀ Particulates	13
EXCEEDANCE LISTINGS	15
By Site Date Hour	16
By Date Hour Site	16

SECTION ONE

DISCUSSION OF
MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of the federal standards during the quarter. There was no exceedance of the State 1-hour standard. The maximum 1-hour concentration was 99 ppb on July 20 at Hannover; the maximum 3-hour concentration was 69 ppb on July 20 at Hannover; and, the maximum 24-hour concentration was 21 ppb on July 10 at Amerada Hess - Tioga #3. The highest arithmetic mean is 2.8 ppb at Amerada Hess - Tioga #3. All sites achieved at least an 80% data recovery for the period operated.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 257 ppb on August 7 at Hannover. All sites achieved at least an 80% data recovery for the period operated.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 72 ppb on July 10 at Fargo NW. The highest 4th highest 8-hour concentration was 58 ppb on July 11 at Fargo - NW and July 9 at TRNP - SU. All sites achieved at least an 80% data recovery for the period operated.

Nitrogen Dioxide (NO₂)

The highest observed 1-hour concentration was 35 ppb on September 20 at Fargo-NW. The maximum arithmetic mean concentration was 4.1 ppb at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH₃)

The highest 1-hour concentration was 119.9 ppb on August 6 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_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour concentration was 25.0 µg/m³ on August 2 at Fargo NW. The highest arithmetic mean concentration was 10.6 µg/m³ at Beulah - North. All sites achieved at least an 80% data recovery for the period operated.

Inhalable PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 25.2 µg/m³ on September 10 at Fargo NW. The highest arithmetic mean was 7.9 µg/m³ at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable Continuous PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour concentration was 55 µg/m³ on September 10 at Fargo NW. The highest arithmetic mean was 25.3 µg/m³ at Fargo NW. The site achieved an 80% data recovery for the period except Dunn Center.

Dunn Center failed to achieve 80% data recover due to problems with the flow controllers.

Inhalable PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 40 µg/m³ on August 2 at Bismarck Residential. The highest arithmetic mean was 20.0 µg/m³ at Bismarck Residential. At least an 80% data recovery for the period was achieved.

The Bismarck manual sampler was terminated effective September 30 and replaced with a continuous analyzer effective October 1.

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 MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	2005	JUL-SEP	2156	88 08/05:18	62 07/12:09	37 07/12:11	33 08/05:17	14 08/05	9 07/12	1.6			10.5
Amerada Hess - Tioga #3	2005	JUL-SEP	2164	94 07/14:18	64 08/06:06	44 07/10:20	44 07/19:14	21 07/10	20 07/14	2.8			23.2
Bear Paw - MGP #3	2005	JUL-SEP	2181	42 09/27:08	6 08/09:05	15 09/27:08	3 08/09:05	3 09/27	1 08/09	1.1			2.3
Bear Paw - MGP #5	2005	JUL-SEP	2178	31 08/23:17	24 09/23:00	11 08/23:17	9 09/23:02	2 08/23	2 09/23	1.1			3.8
Beulah - North	2005	JUL-SEP	2188	43 07/22:09	43 08/21:09	24 08/21:11	23 07/22:11	7 07/22	7 08/21	1.7			16.0
DGC #12	2005	JUL-SEP	2195	66 08/21:09	61 07/18:07	42 08/21:11	34 07/18:08	10 07/18	10 08/21	1.9			16.8
DGC #14	2005	JUL-SEP	2190	54 07/19:11	30 09/16:08	19 07/19:11	17 08/16:11	5 08/25	5 08/21	1.8			16.4
DGC #16	2005	JUL-SEP	2189	56 07/13:21	52 07/21:09	35 07/13:23	26 07/21:08	9 08/23	8 07/15	2.6			24.9
DGC #17	2005	JUL-SEP	2195	89 07/21:03	44 07/21:09	34 07/21:05	27 08/16:11	8 08/30	8 07/21	2.1			16.6
Dunn Center	2005	JUL-SEP	2187	11 08/16:08	11 09/15:23	6 08/16:08	5 07/22:08	2 07/22	2 08/16	1.1			3.9
Fargo NW	2005	JUL-SEP	2192	5 07/06:21	3 07/06:20	3 07/06:23	2 09/23:20	1 07/06	1 09/23	1.0			0.4
Hannover	2005	JUL-SEP	2193	99 07/20:08	74 07/20:07	69 07/20:08	40 07/20:11	21 07/20	8 09/03	2.5			20.2
Lostwood NWR	2005	JUL-SEP	2194	18 09/07:08	15 07/15:09	9 07/24:14	8 07/19:05	3 08/27	3 07/24	1.3			10.6

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 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
TRNP - NU	2005	JUL-SEP	2196	8 07/22:20	6 07/08:08	5 07/22:20	4 07/08:08	2 07/22	2 07/08	1.1			6.8
TRNP - SU	2005	JUL-SEP	2080	8 07/20:20	5 07/20:19	5 07/20:20	4 09/21:05	2 09/21	2 09/20	1.1			4.7

The maximum 1-hour concentration is 99 ppb at Hannover on 07/20:08
 The maximum 3-hour concentration is 69 ppb at Hannover on 07/20:08
 The maximum 24-hour concentration is 21 ppb at Amerada Hess - Tioga #3 on 07/10
 The maximum arithmetic mean concentration was 2.8 ppb at Amerada Hess - Tioga #3

* 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.

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

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - M I N U T E			M A X I M A		# HOURS >600	% >MDV
				1ST DATE MM/DD:HH	2ND DATE MM/DD:HH	3RD DATE MM/DD:HH	DATE MM/DD:HH	DATE MM/DD:HH		
Amerada Hess - Tioga #1	2005	JUL-SEP	2156	182 08/05:18	163 07/12:09	113 07/14:04		0	17.9	
Amerada Hess - Tioga #3	2005	JUL-SEP	2164	230 08/08:03	213 07/19:13	186 07/14:18		0	40.9	
Bear Paw - MGP #3	2005	JUL-SEP	2181	138 09/27:08	49 07/30:15	12 08/02:08		0	5.4	
Bear Paw - MGP #5	2005	JUL-SEP	2178	194 08/23:17	107 09/23:00	76 09/22:22		0	10.6	
Beulah - North	2005	JUL-SEP	2189	95 07/19:14	83 07/24:10	80 07/24:09		0	23.9	
Dunn Center	2005	JUL-SEP	2187	28 09/15:23	16 07/24:17	13 08/16:08		0	7.0	
Fargo NW	2005	JUL-SEP	2192	11 07/05:00	6 07/06:21	5 07/06:22		0	1.9	
Hannover	2005	JUL-SEP	2193	257 08/07:07	238 07/20:08	131 07/20:07		0	29.5	
Lostwood NWR	2005	JUL-SEP	2194	42 09/07:08	34 08/13:07	23 08/27:09		0	18.4	
TRNP - NU	2005	JUL-SEP	2196	14 07/20:06	9 07/20:23	9 07/22:20		0	11.5	
TRNP - SU	2005	JUL-SEP	2080	12 09/05:02	11 07/20:20	11 09/20:20		0	10.2	

The maximum 5-minute concentration is 257 ppb at Hannover on 08/07:07

* 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	M A X I M A		8 - HOUR				1HR #>120	8HR #>80
				1ST MM/DD	2ND MM/DD	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD		
Beulah - North	2005	JUL-SEP	2186	62 07/06	61 08/07	57 08/07	57 07/06	47 07/02	35 07/01		
Dunn Center	2005	JUL-SEP	2097	58 09/03	58 08/27	53 08/06	53 09/03	51 08/07	47 08/15		
Fargo NW	2005	JUL-SEP	2193	72 07/10	68 07/13	64 07/10	62 09/10	58 08/07	58 07/11		
Hannover	2005	JUL-SEP	2193	59 08/07	58 08/06	56 08/06	55 08/07	54 08/05	53 07/06		
Lostwood NWR	2005	JUL-SEP	2195	64 08/07	63 09/09	57 09/09	56 08/07	56 09/03	54 08/05		
TRNP - NU	2005	JUL-SEP	2199	62 09/03	60 08/06	60 09/03	55 08/05	53 07/23	51 07/02		
TRNP - SU	2005	JUL-SEP	2080	65 09/16	65 09/03	62 08/06	61 08/05	59 07/23	58 07/09		

The maximum 1-hour concentration is 72 ppb at Fargo NW on 07/10
The 4th highest 8-hour concentration is 58 ppb at Fargo NW on 07/11

* The air quality standards for ozone are:

STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - 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 I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH		
Beulah - North	2005	JUL-SEP	2003	20 08/26:20	20 09/05:19	2.5	94.9
DGC #12	2005	JUL-SEP	2185	29 09/22:00	26 08/06:09	2.5	89.2
DGC #17	2005	JUL-SEP	2151	26 09/02:20	26 09/04:23	2.5	94.6
Dunn Center	2005	JUL-SEP	2178	10 09/15:23	8 07/14:20	1.2	66.0
Fargo NW	2005	JUL-SEP	2183	35 09/20:18	31 08/01:22	4.1	93.8
Hannover	2005	JUL-SEP	2187	29 08/29:22	27 08/29:23	1.9	71.2
Lostwood NWR	2005	JUL-SEP	2188	7 08/13:06	6 07/19:03	0.7	16.0
Short Creek, ND	2005	JUL-SEP	2189	13 07/17:22	12 08/30:23	1.5	79.1
TRNP - NU	2005	JUL-SEP	2192	6 07/22:20	6 07/22:21	0.9	66.9

The maximum 1-hour concentration is 35 ppb at Fargo NW on 09/20:18
The maximum arithmetic mean was 4.1 ppb at Fargo NW

* 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					
				1ST MM/DD:HH	2ND MM/DD:HH	3RD MM/DD:HH	4TH MM/DD:HH	5TH MM/DD:HH	6TH MM/DD:HH
Beulah - North	2005	JUL-SEP	2165	119.9 08/06:09	116.8 08/06:10	87.2 09/05:11	77.5 09/06:11	77.1 09/06:12	42.8 08/28:11

* No standard is currently in effect.

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

POLLUTANT : Inhalable Continuous PM_{2.5} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		24 - HOUR				ARITH MEAN	24HR #>65	AM>15
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Beulah - North	2005	JUL-SEP	2187	89.5 09/10:15	53.2 08/08:04	21.4 09/10	19.9 08/27	19.7 08/30	19.3 07/09	10.6		
Dunn Center	2005	JUL-SEP	2127	58.7 07/16:18	58.4 09/10:14	13.1 08/27	10.5 07/16	9.5 07/09	9.3 09/10	4.3		
Fargo NW	2005	JUL-SEP	2192	90.7 08/15:21	84.5 07/13:08	25.0 08/02	24.9 07/13	23.6 07/11	21.6 09/10	9.0		
Hannover	2005	JUL-SEP	2033	450.0 09/20:08	69.5 07/16:22	23.7 09/20	16.5 09/09	15.4 09/10	14.2 08/27	7.9		
Lostwood NWR	2005	JUL-SEP	2119	45.0 09/10:17	31.6 09/04:08	18.1 08/26	13.9 09/09	13.9 07/09	10.8 08/15	4.2		
TRNP - NU	2005	JUL-SEP	2050	74.6 09/10:13	55.4 09/10:14	10.6 09/10	8.9 07/09	8.7 09/04	8.2 07/16	3.7		
TRNP - SU	2005	JUL-SEP	2077	90.8 09/10:13	63.8 08/08:06	16.7 08/08	14.4 09/10	13.4 08/16	12.8 09/09	7.1		

The highest 24-hour concentration is 25.0 µg/m³ at Fargo NW on 08/02
The highest arithmetic mean concentration is 10.6 µg/m³ at Beulah - North

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

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

POLLUTANT : Inhalable PM_{2.5} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2005	JUL-SEP	15	3.0	12.3 07/09	10.7 08/02	9.3 08/26	5.7			100.0
Bismarck Residential	2005	JUL-SEP	29	2.9	16.9 09/10	14.9 08/02	13.0 07/09	7.0			100.0
Fargo NW	2005	JUL-SEP	30	2.6	25.2 09/10	22.6 08/02	15.1 09/04	7.9			100.0
TRNP - NU	2005	JUL-SEP	14	3.3	9.7 07/09	8.1 08/02	7.8 08/26	5.4			100.0
TRNP - SU	2005	JUL-SEP	15	2.8	10.6 08/08	8.9 07/09	7.4 08/02	5.1			100.0

The maximum 24-hour concentration is 25.2 µg/m³ at Fargo NW on 09/10
The highest annual average 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 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

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 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	24HR #>150	AM>50
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Dunn Center	2005	JUL-SEP	1054 ***	124.0 09/10:14	81.0 09/27:15	28.2 09/10	26.0 07/09	25.3 07/16	23.5 09/27	14.9		
Fargo NW	2005	JUL-SEP	2192	243.0 08/15:21	185.0 07/13:08	55.0 09/10	51.5 07/13	49.5 09/29	46.8 08/02	25.3		
Lostwood NWR	2005	JUL-SEP	2194	191.0 09/10:17	97.0 08/29:07	30.6 07/13	29.9 09/10	29.2 08/29	27.5 07/09	15.0		
TRNP - NU	2005	JUL-SEP	2196	151.0 09/10:14	136.0 09/10:13	29.7 08/30	29.2 09/10	26.3 07/09	26.0 09/03	13.3		

The highest 24-hour concentration is 55.0 µg/m³ at Fargo NW on 09/10
The highest annual mean concentration is 25.3 µg/m³ at Fargo NW

* 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.

*** 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 PM₁₀ Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>150	AM>50	% >MDV
					24 - HOUR						
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2005	JUL-SEP	15	7.0	40.0 08/02	38.0 07/09	36.0 08/08	20.0			100.0

The highest 24-hour average was 40 µg/m³ at Bismarck Residential
The highest annual average is 20 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 g/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_{2.5} 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_{2.5} and PM₁₀ (µg/m³)

The * Identifies the Exceedances

NONE