

**ANNUAL REPORT OF 2015 DATA FOR
THE LOWER NIOBRARA NATURAL RESOURCES DISTRICT AND
NEBRASKA DEPARTMENT OF NATURAL RESOURCES
INTEGRATED MANAGEMENT PLAN**

Prepared by the Nebraska Department of Natural Resources

For the Annual Meeting August 4, 2016

Introduction

The Lower Niobrara Resources District (LNNRD) and the Nebraska Department of Natural Resources (NeDNR or Department) jointly adopted an Integrated Management Plan (IMP) which became effective on May 1, 2014, with the goal of jointly managing ground and surface waters within the LNNRD to sustain a balance between water uses and supplies for the long term. The purpose of the report is to fulfill the Department of Natural Resources (Department) responsibilities under the integrated management plan (IMP) annual reporting obligations and provide updates to current monitoring projects or studies as outlined in the IMP.

Reporting and exchanging information gathered from monitoring projects, streamflow data, or other studies provides a basis to increase understanding of the surface water and hydrologically connected groundwater system. As surface water and groundwater are hydrologically connected throughout much of the district, estimates of water quantity of either surface water or groundwater cannot be evaluated separately. The data gathered through this IMP's monitoring plan are designed to evaluate and measure the success of the objectives of this IMP. This information exchange also helps to test the validity of the conclusions and information upon which the IMP is based. This report contains information from January 1, 2015, through December 31, 2015.

Department Reporting: Data

The IMP requires that the Department annually report on the following surface water data within the District on an annual basis:

- 1) Streamflow measurements;
- 2) Surface water permits issued and/or denied;
- 3) Surface water usage data, such as voluntary water use reports, flow meter data, crops irrigated, and acreage irrigated;
- 4) Groundwater transfers approved; and
- 5) Offsets provided for depletions resulting from increased consumptive use related to any of the above listed items.

Details for each of these items are as follows.

1) Streamflow Measurement

- a. The one-time streamflow measurements made in the field by the Department in eight locations during 2015, are included in **Table 1**, and shown on **Figure 1** below.

Table 1. Streamflow measurements taken by NeDNR staff in 2015

NeDNR Streamflow Field Measurements 2015				
ID	Date	Discharge (cfs)	Stream	Location
1	3/12/2015	2.76	Wyman Creek	NE ¹ / ₄ SE ¹ / ₄ Sec. 19-32-19W
2	6/23/15	5.30	Blackbird Creek	SW ¹ / ₄ NW ¹ / ₄ Sec. 21-31-11W
3	6/23/15	3.16	Honey Creek	NE ¹ / ₄ NW ¹ / ₄ Sec. 10-31-12W
4	6/23/15	1.91	Spring Creek	NE ¹ / ₄ NE ¹ / ₄ Sec. 12-31-11W
5	6/23/15	2.46	Louse Creek	NW ¹ / ₄ NW ¹ / ₄ Sec. 30-32-9W
6	7/16/15	23.1	Middle Br. Verdigre Cr.	NE ¹ / ₄ NE ¹ / ₄ Sec. 25-30-8W
7	7/27/15	0.67	Pishel Creek	SW ¹ / ₄ NW ¹ / ₄ Sec. 33-32-8W
8	7/30/15	1.56	Wyman Creek	NE ¹ / ₄ SE ¹ / ₄ Sec. 19-32-19W
9	9/9/15	16.6	Middle Br. Verdigre Cr.	NE ¹ / ₄ NE ¹ / ₄ Sec. 25-30-8W

- 2) Streamflow measurements made by the USGS and the Department from streamgages located within the LNNRD are shown on **Figure 2**. Daily streamflow measurements from these streamgages for calendar year 2015 are shown in **Appendix 1**. This streamflow data can be acquired from USGS's National Water Information System at <http://waterdata.usgs.gov/>. The USGS stream gage on the Missouri River at Verdel, Nebraska, number 06453620, does not collect discharge data, and only has stage data beginning on January 19, 2015, therefore this record shows no data.

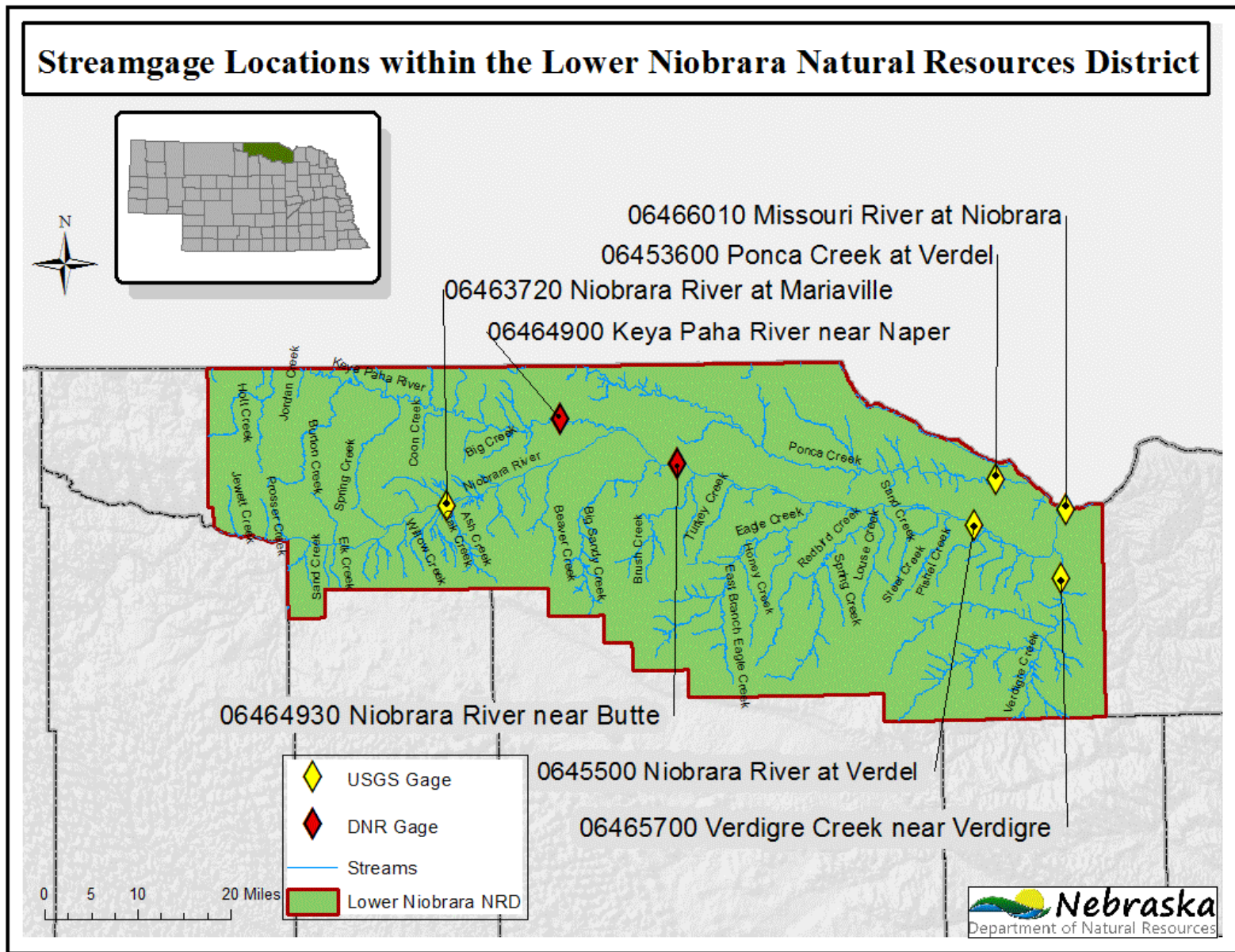


Figure 2. Streamgauge locations within the Lower Niobrara NRD

2) Surface Water Permitting

- a. There were 6 surface water applications approved during 2015. These are listed below in Table 2. This resulted in zero new irrigated acres. The permits approved in 2015 are listed in **Table 2**, below are to store water, irrigate existing surface water irrigated land, or for domestic use.

Table 2. Surface Water Applications Approved in Calendar Year 2015 Within the Lower Niobrara NRD

Surface Water Applications Approved in Calendar Year 2015 Within the Lower Niobrara NRD								
Appropriation Number	Approval Date	S-T-RW	Status	Use	Acres	Grant in CFS	Grant in AF	Number of New Irrigated Acres
A-19086	11/25/2015	19-34-14	Active	SS	0	-	14.7	0
A-19087	11/25/2015	19-34-14	Active	SO	147.2 ¹	-	14.7	0
A-19138	10/29/2015	19-34-12	Active	ST	0	-	24.0	0
A-19003	10/15/2015	1-30-8	Active ²	ST	0	-	14.75	0
A-19312	6/3/2015	30-32-9	Active	IR	253.8 ³	0.55	-	0
A-19323	7/6/2015	9-32-12	Active	DO	2.0 ⁴	0.02	-	0
Totals					403.0	0.57	53.45	0

¹ This appropriation provides supplemental water to a previous storage-use appropriation A-18556, therefore no new irrigated acres result from the permit.

² This appropriation is no longer active. Canceled on 4/26/2016, and will be included in the 2017 report of cancellations.

³ This appropriation provides water from a second source, for irrigation on land already under a permit to irrigate (A-18838R) therefore no new irrigated acres result from the permit.

⁴ Domestic use is not considered irrigated agricultural crop acres, therefore no new irrigated acres result from the permit.

- b. Two surface water permits were cancelled and one application was dismissed during 2015, and are listed below in **Table 3**. This resulted in a cancellation of 187.0 irrigated acres. The basis for the Department’s action taken on each, is listed below.

Table 3. Surface Water Appropriations Cancelled or Dismissed in 2015

Surface Water Appropriations Cancelled, Dismissed or Denied in Calendar Year 2015 Within the Lower Niobrara NRD									
Appropriation Number	Cancellation Date	S-T-RW	Status	Use	Begin Acres	Cancelled Acres	Cancelled CFS	Cancelled AF	Reason for Department Action
A-15247	11/16/2015	26-33-8	Cancelled in Full	IR	162.0	162.0	2.31	0	See 1. Below
A-18905	12/21/2015	17-33-10	Cancelled in Full	IR	25.0	25.0	0.36	0	See 2. Below
A-19094	11/25/2015	5-34-18	Dismissed	IR	0	0	0	0	See 3. Below
Totals					187.0	187.0	2.67	0	-

Basis for Department Action:

1. After a field investigation found the appropriation had not been used in the last 5 years, the owner signed and submitted a voluntary relinquishment-in-full of surface water appropriation.
 - a. Authority upon which the action was based: *Department Rules for Surface Water, Neb. Admin. Code. Title 457, Chapter 3*. Any appropriation, or part of any appropriation, may be voluntarily relinquished. The relinquishment shall be made on a form provided by the Department.

2. A field investigation found the appropriator had not perfected their water right by beneficially applying the water, in the time allowed, by September 1, 2015.
 - a. Authority upon which the action was based: *Neb. Rev. Stat. §46-229.02(7)* A water appropriation that has not been perfected pursuant to the terms of the permit may be canceled by the department without complying with sections 46-229.01 to 46-229.04 if the owner of such appropriation fails to comply with any of the conditions of approval in the permit, except that this subsection does not apply to appropriations to which subsection (2) of section 46-237 applies.

3. The Department received information the applicant was no longer the owner of the land pertaining to the pending application, and has no transferable property right. Therefore the pending application was dismissed.
 - a. Authority upon which the action was based: The Nebraska Supreme Court has determined that a water right applicant has no transferable property right in an application for a permit to divert water and that permitting the assignment of applications could lead to collusion, thereby defeating the rights of other parties along a stream. (*Catherland Reclamation District v. Lower Platte North NRD*, 230 Neb. 580, 433 N.W. 2d 161 (1988))

- c. Surface Water Usage Reporting – There were 153 respondents to NeDNR’s voluntary surface water use reporting of activities in 2015. A total of 3,917 acres were categorized by irrigated, non-irrigated and crop type. Corn was grown on the greatest number of acres, with soybeans a close second of the irrigated crops. The greatest number of acres of non-irrigated crops was in hay or forage, with alfalfa second. The reported data is shown in **Table 4**.

Table 4. Voluntary Surface Water Use Reporting 2015

Voluntary Reporting of Water Use Within LNNRD for 2015					
Crop type	Total Reported Crop Acres	Crop Acres Irrigated		Crop Acres Not Irrigated	
		Acres	Percent of Reported, Irrigated Acres by Type	Acres	Percent of Reported, Non-Irrigated Acres by Type
Alfalfa	447	329	9%	118	43%
Beans, Dry Edible	0	0	-	0	-
Corn	1,507	1,507	41%	0	-
Forage Hay/Grass	300	152	4%	148	54%
Millet	70	70	2%	0	-
Other	222	212	6%	10	4%
Sorghum	115	115	3%	0	-
Soybeans	1,156	1,156	32%	0	-
Wheat	100	100	3%	0	-
Totals	3,917	3,641	100%	276	100%

- 3) Groundwater Transfers – The Department did not act on any Groundwater Permits during 2015.
- 4) Offsets approved – No offsets were approved in 2015.
- 5) Education and Outreach Activity in 2015
- a. NeDNR participated in the joint Lower Niobrara NRD and Upper Elkhorn NRD’s Water Issues Town Hall Meeting, on February 24, 2015. Topics covered:
 - i. Surface water permitting procedures
 - ii. NeDNR Field office functions
 - iii. Integrated water management activities

Appendix A

2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
1/1/2015 12:00:00 AM	119	1119	5	no data	990	1600	1600
1/2/2015 12:00:00 AM	139	1187	4	no data	1030	1850	1850
1/3/2015 12:00:00 AM	113	1293	4	no data	1060	1620	1620
1/4/2015 12:00:00 AM	112	1083	2	no data	1030	1810	1810
1/5/2015 12:00:00 AM	122	1264	2	no data	1030	1960	1960
1/6/2015 12:00:00 AM	106	1091	4	no data	1040	2070	2070
1/7/2015 12:00:00 AM	100	1136	4	no data	1020	2180	2180
1/8/2015 12:00:00 AM	93	1246	6	no data	1040	2280	2280
1/9/2015 12:00:00 AM	102	1172	3	no data	1060	2320	2320
1/10/2015 12:00:00 AM	102	1282	4	no data	1040	2300	2300
1/11/2015 12:00:00 AM	87	1118	7	no data	1020	2350	2350
1/12/2015 12:00:00 AM	75	952	3	no data	1010	2430	2430
1/13/2015 12:00:00 AM	74	1247	2	no data	994	2660	2660
1/14/2015 12:00:00 AM	88	1485	5	no data	1030	2610	2610
1/15/2015 12:00:00 AM	99	1562	8	no data	1070	2300	2300
1/16/2015 12:00:00 AM	112	1603	13	no data	1110	1750	1750
1/17/2015 12:00:00 AM	126	1584	18	no data	1160	1740	1740
1/18/2015 12:00:00 AM	139	1594	22	no data	1240	1740	1740
1/19/2015 12:00:00 AM	155	1760	25	no data	1290	1910	1910
1/20/2015 12:00:00 AM	171	1790	25	no data	1330	1990	1990
1/21/2015 12:00:00 AM	189	1468	26	no data	1350	2030	2030
1/22/2015 12:00:00 AM	205	1555	27	no data	1380	2530	2530
1/23/2015 12:00:00 AM	198	1721	29	no data	1390	2580	2580
1/24/2015 12:00:00 AM	206	1777	31	no data	1410	2470	2470
1/25/2015 12:00:00 AM	217	1495	30	no data	1440	2410	2410
1/26/2015 12:00:00 AM	222	1720	32	no data	1490	2280	2280
1/27/2015 12:00:00 AM	230	1720	34	no data	1530	1850	1850
1/28/2015 12:00:00 AM	234	1857	36	no data	1570	1840	1840
1/29/2015 12:00:00 AM	219	1928	38	no data	1610	1730	1730
1/30/2015 12:00:00 AM	197	1745	40	no data	1600	1620	1620
1/31/2015 12:00:00 AM	196	1533	41	no data	1580	1500	1500
2/1/2015 12:00:00 AM	207	1403	44	no data	1450	1750	1750
2/2/2015 12:00:00 AM	236	1445	46	no data	1340	1280	1280
2/3/2015 12:00:00 AM	248	1626	53	no data	1280	1300	1300

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Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
2/4/2015 12:00:00 AM	260	1468	52	no data	1280	1560	1560
2/5/2015 12:00:00 AM	270	1560	51	no data	1260	2050	2050
2/6/2015 12:00:00 AM	280	1704	53	no data	1280	2380	2380
2/7/2015 12:00:00 AM	288	1840	54	no data	1320	2700	2700
2/8/2015 12:00:00 AM	296	2069	55	no data	1380	3270	3270
2/9/2015 12:00:00 AM	323	1770	57	no data	1600	3970	3970
2/10/2015 12:00:00 AM	345	1883	64	no data	1800	4030	4030
2/11/2015 12:00:00 AM	345	1878	67	no data	1660	3900	3900
2/12/2015 12:00:00 AM	368	1846	63	no data	1740	2080	2080
2/13/2015 12:00:00 AM	371	1417	61	no data	1680	2380	2380
2/14/2015 12:00:00 AM	361	879	58	no data	1390	2460	2460
2/15/2015 12:00:00 AM	348	1200	53	no data	1510	1740	1740
2/16/2015 12:00:00 AM	321	1148	50	no data	1540	2140	2140
2/17/2015 12:00:00 AM	291	1395	47	no data	1450	2170	2170
2/18/2015 12:00:00 AM	286	967	43	no data	1380	1070	1070
2/19/2015 12:00:00 AM	290	858	41	no data	1350	634	634
2/20/2015 12:00:00 AM	279	1074	44	no data	1380	1280	1280
2/21/2015 12:00:00 AM	260	1053	42	no data	1360	2250	2250
2/22/2015 12:00:00 AM	247	1114	36	no data	1280	2640	2640
2/23/2015 12:00:00 AM	255	1289	32	no data	1270	2250	2250
2/24/2015 12:00:00 AM	244	1354	33	no data	1270	2060	2060
2/25/2015 12:00:00 AM	251	1331	33	no data	1250	2100	2100
2/26/2015 12:00:00 AM	261	1409	33	no data	1210	2140	2140
2/27/2015 12:00:00 AM	263	1691	29	no data	1100	1410	1410
2/28/2015 12:00:00 AM	268	1987	29	no data	1110	1080	1080
3/1/2015 12:00:00 AM	271	2097	30	no data	1130	1930	1930
3/2/2015 12:00:00 AM	270	2059	31	no data	1130	1740	1740
3/3/2015 12:00:00 AM	274	1977	31	no data	1130	1820	1820
3/4/2015 12:00:00 AM	266	1899	27	no data	1140	2010	2010
3/5/2015 12:00:00 AM	263	2003	24	no data	1090	1900	1900
3/6/2015 12:00:00 AM	254	2182	25	no data	1120	1960	1960
3/7/2015 12:00:00 AM	251	2083	28	no data	1030	2180	2180
3/8/2015 12:00:00 AM	242	1876	30	no data	1180	2600	2600
3/9/2015 12:00:00 AM	229	1878	40	no data	1210	3180	3180

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Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
3/10/2015 12:00:00 AM	244	1909	51	no data	1250	2760	2760
3/11/2015 12:00:00 AM	225	1716	52	no data	1250	2400	2400
3/12/2015 12:00:00 AM	200	1592	72	no data	1190	2380	2380
3/13/2015 12:00:00 AM	188	1418	86	no data	1230	2320	2320
3/14/2015 12:00:00 AM	178	1437	70	no data	1330	2280	2280
3/15/2015 12:00:00 AM	171	1348	57	no data	1570	2280	2280
3/16/2015 12:00:00 AM	172	1413	52	no data	1760	2220	2220
3/17/2015 12:00:00 AM	167	1447	46	no data	1610	2200	2200
3/18/2015 12:00:00 AM	156	1381	43	no data	1350	2320	2320
3/19/2015 12:00:00 AM	150	1703	35	no data	1170	2340	2340
3/20/2015 12:00:00 AM	148	1543	31	no data	1230	2170	2170
3/21/2015 12:00:00 AM	146	1316	28	no data	1470	2140	2140
3/22/2015 12:00:00 AM	144	1513	26	no data	1530	2180	2180
3/23/2015 12:00:00 AM	142	1845	22	no data	1220	1870	1870
3/24/2015 12:00:00 AM	145	2004	22	no data	1400	1950	1950
3/25/2015 12:00:00 AM	145	1968	21	no data	1780	1880	1880
3/26/2015 12:00:00 AM	145	1858	17	no data	1710	2340	2340
3/27/2015 12:00:00 AM	144	1815	16	no data	1500	2190	2190
3/28/2015 12:00:00 AM	138	1599	18	no data	1310	1780	1780
3/29/2015 12:00:00 AM	138	1610	18	no data	1280	1920	1920
3/30/2015 12:00:00 AM	137	1501	18	no data	1300	2250	2250
3/31/2015 12:00:00 AM	132	1508	19	no data	1370	2240	2240
4/1/2015 12:00:00 AM	130	1483	21	no data	1410	2150	2150
4/2/2015 12:00:00 AM	123	1405	18	no data	1460	2080	2080
4/3/2015 12:00:00 AM	111	1154	15	no data	1570	2110	2110
4/4/2015 12:00:00 AM	105	1177	15	no data	1630	2420	2420
4/5/2015 12:00:00 AM	105	1245	14	no data	1440	2170	2170
4/6/2015 12:00:00 AM	107	1349	14	no data	1290	2130	2130
4/7/2015 12:00:00 AM	103	1520	13	no data	1220	2100	2100
4/8/2015 12:00:00 AM	106	1398	13	no data	1100	1750	1750
4/9/2015 12:00:00 AM	123	1406	19	no data	1370	1920	1920
4/10/2015 12:00:00 AM	133	1294	23	no data	1690	2280	2280
4/11/2015 12:00:00 AM	134	1268	22	no data	1780	2050	2050
4/12/2015 12:00:00 AM	136	1403	22	no data	1800	1940	1940

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
4/13/2015 12:00:00 AM	129	1390	21	no data	1770	1870	1870
4/14/2015 12:00:00 AM	120	1238	19	no data	1660	1770	1770
4/15/2015 12:00:00 AM	108	1022	16	no data	1640	1950	1950
4/16/2015 12:00:00 AM	105	1295	15	no data	1670	1820	1820
4/17/2015 12:00:00 AM	107	1406	14	no data	1890	1650	1650
4/18/2015 12:00:00 AM	137	1474	31	no data	2090	2040	2040
4/19/2015 12:00:00 AM	152	1601	42	no data	2100	2160	2160
4/20/2015 12:00:00 AM	132	1556	38	no data	2030	2020	2020
4/21/2015 12:00:00 AM	118	1569	35	no data	2000	1900	1900
4/22/2015 12:00:00 AM	107	1990	35	no data	2010	1840	1840
4/23/2015 12:00:00 AM	95	1467	32	no data	1760	1800	1800
4/24/2015 12:00:00 AM	99	1745	30	no data	1700	1840	1840
4/25/2015 12:00:00 AM	112	1921	36	no data	1870	1970	1970
4/26/2015 12:00:00 AM	114	2137	28	no data	1770	2080	2080
4/27/2015 12:00:00 AM	106	2210	24	no data	1690	1960	1960
4/28/2015 12:00:00 AM	98	2382	23	no data	1620	2070	2070
4/29/2015 12:00:00 AM	95	2381	21	no data	1530	2110	2110
4/30/2015 12:00:00 AM	92	2315	19	no data	1390	1990	1990
5/1/2015 12:00:00 AM	95	2256	20	no data	1570	1980	1980
5/2/2015 12:00:00 AM	99	2521	17	no data	1710	1860	1860
5/3/2015 12:00:00 AM	96	2775	17	no data	1770	1970	1970
5/4/2015 12:00:00 AM	89	2676	13	no data	1690	1880	1880
5/5/2015 12:00:00 AM	88	2730	12	no data	1650	1890	1890
5/6/2015 12:00:00 AM	104	2726	14	no data	1750	2340	2340
5/7/2015 12:00:00 AM	113	2731	17	no data	1930	2340	2340
5/8/2015 12:00:00 AM	124	2829	22	no data	1870	2230	2230
5/9/2015 12:00:00 AM	141	2978	20	no data	1810	2060	2060
5/10/2015 12:00:00 AM	179	2525	31	no data	1780	2510	2510
5/11/2015 12:00:00 AM	227	2561	35	no data	1690	2360	2360
5/12/2015 12:00:00 AM	307	2809	33	no data	1780	2290	2290
5/13/2015 12:00:00 AM	318	2627	31	no data	1750	2180	2180
5/14/2015 12:00:00 AM	349	3033	39	no data	1760	2390	2390
5/15/2015 12:00:00 AM	333	3851	40	no data	1820	2420	2420
5/16/2015 12:00:00 AM	320	3488	42	no data	2050	3110	3110

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
5/17/2015 12:00:00 AM	319	3502	39	no data	2170	2910	2910
5/18/2015 12:00:00 AM	289	2801	36	no data	2240	2720	2720
5/19/2015 12:00:00 AM	272	2562	35	no data	2340	2600	2600
5/20/2015 12:00:00 AM	380	3094	40	no data	2430	2730	2730
5/21/2015 12:00:00 AM	400	2988	53	no data	2310	2980	2980
5/22/2015 12:00:00 AM	392	3108	55	no data	2180	2600	2600
5/23/2015 12:00:00 AM	371	3048	58	no data	2150	2550	2550
5/24/2015 12:00:00 AM	367	3174	64	no data	2180	2590	2590
5/25/2015 12:00:00 AM	373	3461	62	no data	2280	2520	2520
5/26/2015 12:00:00 AM	404	3436	109	no data	2580	3060	3060
5/27/2015 12:00:00 AM	527	3166	73	no data	2470	3290	3290
5/28/2015 12:00:00 AM	470	3360	50	no data	2840	2890	2890
5/29/2015 12:00:00 AM	521	3513	41	no data	2850	3250	3250
5/30/2015 12:00:00 AM	613	2888	47	no data	2660	3670	3670
5/31/2015 12:00:00 AM	493	3650	58	no data	2470	3110	3110
6/1/2015 12:00:00 AM	420	3318	55	no data	2180	3240	3240
6/2/2015 12:00:00 AM	356	3308	53	no data	1940	3580	3580
6/3/2015 12:00:00 AM	323	3238	71	no data	1820	3380	3380
6/4/2015 12:00:00 AM	275	3059	69	no data	1760	3320	3320
6/5/2015 12:00:00 AM	257	2688	54	no data	1690	2880	2880
6/6/2015 12:00:00 AM	236	2723	42	no data	1710	2770	2770
6/7/2015 12:00:00 AM	240	2757	49	no data	1820	2490	2490
6/8/2015 12:00:00 AM	235	2905	39	no data	1850	2380	2380
6/9/2015 12:00:00 AM	219	2931	32	no data	2070	2660	2660
6/10/2015 12:00:00 AM	200	2848	27	no data	2060	2840	2840
6/11/2015 12:00:00 AM	210	2701	52	no data	1940	3740	3740
6/12/2015 12:00:00 AM	195	2604	91	no data	1760	4070	4070
6/13/2015 12:00:00 AM	168	2187	70	no data	1670	2660	2660
6/14/2015 12:00:00 AM	150	2202	44	no data	1680	2210	2210
6/15/2015 12:00:00 AM	155	2390	32	no data	1630	2280	2280
6/16/2015 12:00:00 AM	138	2749	26	no data	1700	2010	2010
6/17/2015 12:00:00 AM	141	2758	24	no data	1710	2200	2200
6/18/2015 12:00:00 AM	149	2695	24	no data	1850	2180	2180
6/19/2015 12:00:00 AM	169	2472	20	no data	1960	2410	2410

Appendix A

2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
6/20/2015 12:00:00 AM	206	2287	16	no data	1820	2160	2160
6/21/2015 12:00:00 AM	236	2524	15	no data	1840	2010	2010
6/22/2015 12:00:00 AM	231	2476	14	no data	1840	2230	2230
6/23/2015 12:00:00 AM	203	2509	12	no data	1790	2020	2020
6/24/2015 12:00:00 AM	175	2480	12	no data	1670	2050	2050
6/25/2015 12:00:00 AM	163	2483	12	no data	1670	2050	2050
6/26/2015 12:00:00 AM	175	2629	15	no data	1730	2050	2050
6/27/2015 12:00:00 AM	154	2513	15	no data	1760	2010	2010
6/28/2015 12:00:00 AM	148	2405	13	no data	1580	1930	1930
6/29/2015 12:00:00 AM	129	2294	12	no data	1620	1860	1860
6/30/2015 12:00:00 AM	118	2253	11	no data	1670	1800	1800
7/1/2015 12:00:00 AM	104	2120	11	no data	1710	1800	1800
7/2/2015 12:00:00 AM	131	2403	13	no data	1660	1820	1820
7/3/2015 12:00:00 AM	111	2349	20	no data	1520	1770	1770
7/4/2015 12:00:00 AM	96	2154	26	no data	1490	1620	1620
7/5/2015 12:00:00 AM	87	2154	26	no data	1480	1530	1530
7/6/2015 12:00:00 AM	270	2719	41	no data	1940	2080	2080
7/7/2015 12:00:00 AM	226	2414	51	no data	1900	2120	2120
7/8/2015 12:00:00 AM	215	2160	63	no data	1850	2030	2030
7/9/2015 12:00:00 AM	171	1940	55	no data	1740	2020	2020
7/10/2015 12:00:00 AM	133	1900	45	no data	1640	1750	1750
7/11/2015 12:00:00 AM	112	1663	38	no data	1610	1670	1670
7/12/2015 12:00:00 AM	98	1664	31	no data	1740	1600	1600
7/13/2015 12:00:00 AM	88	1535	23	no data	1590	1600	1600
7/14/2015 12:00:00 AM	75	1300	19	no data	1540	1550	1550
7/15/2015 12:00:00 AM	65	1225	18	no data	1490	1540	1540
7/16/2015 12:00:00 AM	65	1154	20	no data	1430	1560	1560
7/17/2015 12:00:00 AM	60	1067	19	no data	1390	1260	1260
7/18/2015 12:00:00 AM	54	1195	32	no data	1420	1350	1350
7/19/2015 12:00:00 AM	48	1260	15	no data	1500	1250	1250
7/20/2015 12:00:00 AM	69	1756	13	no data	1710	1310	1310
7/21/2015 12:00:00 AM	149	1387	10	no data	1210	1740	1740
7/22/2015 12:00:00 AM	182	1380	9	no data	1060	1310	1310
7/23/2015 12:00:00 AM	115	1246	8	no data	1120	1230	1230

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
7/24/2015 12:00:00 AM	85	1259	6	no data	1060	1130	1130
7/25/2015 12:00:00 AM	71	1163	5	no data	1010	1110	1110
7/26/2015 12:00:00 AM	60	1046	5	no data	1030	1100	1100
7/27/2015 12:00:00 AM	72	1053	5	no data	1020	1110	1110
7/28/2015 12:00:00 AM	97	1052	12	no data	929	1390	1390
7/29/2015 12:00:00 AM	83	941	10	no data	879	1320	1320
7/30/2015 12:00:00 AM	54	888	21	no data	877	1240	1240
7/31/2015 12:00:00 AM	38	892	13	no data	934	1200	1200
8/1/2015 12:00:00 AM	30	915	9	no data	1070	1170	1170
8/2/2015 12:00:00 AM	25	1062	7	no data	1120	1170	1170
8/3/2015 12:00:00 AM	25	1069	4	no data	1150	1270	1270
8/4/2015 12:00:00 AM	57	1371	5	no data	1290	1460	1460
8/5/2015 12:00:00 AM	133	1483	8	no data	1060	1770	1770
8/6/2015 12:00:00 AM	100	1216	9	no data	907	1790	1790
8/7/2015 12:00:00 AM	72	1206	7	no data	904	1560	1560
8/8/2015 12:00:00 AM	56	1165	6	no data	957	1500	1500
8/9/2015 12:00:00 AM	49	1202	6	no data	1000	1480	1480
8/10/2015 12:00:00 AM	45	1160	5	no data	906	1450	1450
8/11/2015 12:00:00 AM	45	1071	3	no data	880	1390	1390
8/12/2015 12:00:00 AM	40	1132	3	no data	865	1270	1270
8/13/2015 12:00:00 AM	37	1194	2	no data	823	1230	1230
8/14/2015 12:00:00 AM	35	1273	2	no data	806	1190	1190
8/15/2015 12:00:00 AM	32	1272	2	no data	863	1160	1160
8/16/2015 12:00:00 AM	32	1261	2	no data	907	1190	1190
8/17/2015 12:00:00 AM	34	1322	2	no data	951	1170	1170
8/18/2015 12:00:00 AM	78	1677	7	no data	1330	1500	1500
8/19/2015 12:00:00 AM	83	1567	14	no data	1210	1810	1810
8/20/2015 12:00:00 AM	78	1443	11	no data	1210	1630	1630
8/21/2015 12:00:00 AM	72	1435	8	no data	1200	1450	1450
8/22/2015 12:00:00 AM	66	1397	5	no data	1240	1400	1400
8/23/2015 12:00:00 AM	55	1384	3	no data	1160	1300	1300
8/24/2015 12:00:00 AM	46	1356	2	no data	1040	1260	1260
8/25/2015 12:00:00 AM	45	1322	2	no data	999	1220	1220
8/26/2015 12:00:00 AM	40	1293	2	no data	935	1170	1170

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
8/27/2015 12:00:00 AM	41	1300	2	no data	933	1150	1150
8/28/2015 12:00:00 AM	46	1262	2	no data	1050	1170	1170
8/29/2015 12:00:00 AM	67	1283	2	no data	938	1180	1180
8/30/2015 12:00:00 AM	83	1159	2	no data	917	1260	1260
8/31/2015 12:00:00 AM	64	1140	1	no data	858	1170	1170
9/1/2015 12:00:00 AM	57	1157	1	no data	861	1120	1120
9/2/2015 12:00:00 AM	54	1171	1	no data	846	1100	1100
9/3/2015 12:00:00 AM	44	1157	1	no data	821	1110	1110
9/4/2015 12:00:00 AM	38	1054	1	no data	824	1100	1100
9/5/2015 12:00:00 AM	35	1000	1	no data	867	1080	1080
9/6/2015 12:00:00 AM	35	1016	1	no data	886	1100	1100
9/7/2015 12:00:00 AM	39	998	1	no data	961	1130	1130
9/8/2015 12:00:00 AM	53	1250	1	no data	1080	1340	1340
9/9/2015 12:00:00 AM	42	1001	1	no data	964	1510	1510
9/10/2015 12:00:00 AM	38	947	1	no data	981	1280	1280
9/11/2015 12:00:00 AM	40	957	1	no data	988	1180	1180
9/12/2015 12:00:00 AM	40	940	1	no data	1000	1100	1100
9/13/2015 12:00:00 AM	39	943	1	no data	1050	1050	1050
9/14/2015 12:00:00 AM	39	970	1	no data	1010	1020	1020
9/15/2015 12:00:00 AM	38	1010	2	no data	1010	993	993
9/16/2015 12:00:00 AM	36	1053	1	no data	992	974	974
9/17/2015 12:00:00 AM	37	1059	1	no data	932	986	986
9/18/2015 12:00:00 AM	49	1149	2	no data	1110	1010	1010
9/19/2015 12:00:00 AM	60	1160	2	no data	1180	1310	1310
9/20/2015 12:00:00 AM	60	1136	1	no data	1260	1380	1380
9/21/2015 12:00:00 AM	55	1170	2	no data	1300	1540	1540
9/22/2015 12:00:00 AM	54	1181	2	no data	1300	1660	1660
9/23/2015 12:00:00 AM	94	1372	2	no data	1480	2020	2020
9/24/2015 12:00:00 AM	132	1638	5	no data	2000	2410	2410
9/25/2015 12:00:00 AM	166	1665	129	no data	1690	2780	2780
9/26/2015 12:00:00 AM	433	1513	153	no data	1530	2420	2420
9/27/2015 12:00:00 AM	487	1430	86	no data	1440	2250	2250
9/28/2015 12:00:00 AM	517	1413	56	no data	1340	2310	2310
9/29/2015 12:00:00 AM	445	1449	43	no data	1350	2160	2160

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
9/30/2015 12:00:00 AM	346	1376	31	no data	1260	1880	1880
10/1/2015 12:00:00 AM	276	1287	23	no data	1200	1730	1730
10/2/2015 12:00:00 AM	221	1215	17	no data	1120	2110	2110
10/3/2015 12:00:00 AM	192	1307	15	no data	1120	1950	1950
10/4/2015 12:00:00 AM	191	1348	14	no data	1280	1840	1840
10/5/2015 12:00:00 AM	201	1411	13	no data	1190	1710	1710
10/6/2015 12:00:00 AM	199	1423	11	no data	no data	1920	1920
10/7/2015 12:00:00 AM	200	1501	10	no data	no data	2060	2060
10/8/2015 12:00:00 AM	197	1600	8	no data	no data	2080	2080
10/9/2015 12:00:00 AM	177	1491	7	no data	no data	2030	2030
10/10/2015 12:00:00 AM	152	1365	7	no data	no data	1950	1950
10/11/2015 12:00:00 AM	146	1456	7	no data	no data	2100	2100
10/12/2015 12:00:00 AM	135	1423	6	no data	no data	1840	1840
10/13/2015 12:00:00 AM	123	1318	5	no data	no data	1350	1350
10/14/2015 12:00:00 AM	114	1294	5	no data	no data	1220	1220
10/15/2015 12:00:00 AM	109	1334	5	no data	no data	1410	1410
10/16/2015 12:00:00 AM	105	1232	4	no data	no data	1550	1550
10/17/2015 12:00:00 AM	101	1095	4	no data	no data	1540	1540
10/18/2015 12:00:00 AM	101	1129	4	no data	no data	1560	1560
10/19/2015 12:00:00 AM	102	1175	5	no data	no data	1580	1580
10/20/2015 12:00:00 AM	98	1307	5	no data	no data	1930	1930
10/21/2015 12:00:00 AM	93	1197	4	no data	no data	1950	1950
10/22/2015 12:00:00 AM	91	1056	4	no data	no data	2110	2110
10/23/2015 12:00:00 AM	118	1271	15	no data	no data	2980	2980
10/24/2015 12:00:00 AM	120	1186	18	no data	no data	2680	2680
10/25/2015 12:00:00 AM	109	1213	13	no data	no data	2250	2250
10/26/2015 12:00:00 AM	110	1230	11	no data	no data	2200	2200
10/27/2015 12:00:00 AM	112	1262	9	no data	no data	1810	1810
10/28/2015 12:00:00 AM	107	1339	10	no data	no data	1580	1580
10/29/2015 12:00:00 AM	101	1340	8	no data	no data	1680	1680
10/30/2015 12:00:00 AM	97	1193	8	no data	no data	1780	1780
10/31/2015 12:00:00 AM	99	1385	11	no data	no data	1840	1840
11/1/2015 12:00:00 AM	101	1328	10	no data	no data	1700	1700
11/2/2015 12:00:00 AM	102	1378	9	no data	no data	1660	1660

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
11/3/2015 12:00:00 AM	100	1413	9	no data	no data	1560	1560
11/4/2015 12:00:00 AM	99	1428	9	no data	no data	1620	1620
11/5/2015 12:00:00 AM	111	1554	9	no data	no data	1760	1760
11/6/2015 12:00:00 AM	124	1398	7	no data	no data	1880	1880
11/7/2015 12:00:00 AM	137	1227	7	no data	no data	1940	1940
11/8/2015 12:00:00 AM	145	1167	8	no data	no data	2120	2120
11/9/2015 12:00:00 AM	148	1322	8	no data	no data	2080	2080
11/10/2015 12:00:00 AM	145	1520	8	no data	no data	1740	1740
11/11/2015 12:00:00 AM	137	1483	10	no data	no data	1630	1630
11/12/2015 12:00:00 AM	126	1358	8	no data	no data	1910	1910
11/13/2015 12:00:00 AM	114	1384	6	no data	no data	2170	2170
11/14/2015 12:00:00 AM	107	1428	8	no data	no data	2100	2100
11/15/2015 12:00:00 AM	108	1103	9	no data	no data	1870	1870
11/16/2015 12:00:00 AM	112	1185	11	no data	no data	1920	1920
11/17/2015 12:00:00 AM	179	1600	22	no data	no data	2150	2150
11/18/2015 12:00:00 AM	199	1557	31	no data	no data	2430	2430
11/19/2015 12:00:00 AM	198	1574	28	no data	no data	2050	2050
11/20/2015 12:00:00 AM	188	1545	28	no data	no data	2010	2010
11/21/2015 12:00:00 AM	170	3837	22	no data	no data	2320	2320
11/22/2015 12:00:00 AM	167	1554	20	no data	no data	2100	2100
11/23/2015 12:00:00 AM	159	1147	18	no data	no data	2020	2020
11/24/2015 12:00:00 AM	181	1314	23	no data	no data	1770	1770
11/25/2015 12:00:00 AM	208	1470	34	no data	no data	1660	1660
11/26/2015 12:00:00 AM	221	2432	37	no data	no data	1630	1630
11/27/2015 12:00:00 AM	189	11299	22	no data	no data	1350	1350
11/28/2015 12:00:00 AM	132	3819	no data	no data	no data	1550	1550
11/29/2015 12:00:00 AM	150	6004	22	no data	no data	1720	1720
11/30/2015 12:00:00 AM	181	2704	28	no data	no data	1750	1750
12/1/2015 12:00:00 AM	201	4473	25	no data	no data	1640	1640
12/2/2015 12:00:00 AM	173	4807	27	no data	no data	1880	1880
12/3/2015 12:00:00 AM	165	2313	no data	no data	no data	1580	1580
12/4/2015 12:00:00 AM	150	1785	18	no data	no data	1500	1500
12/5/2015 12:00:00 AM	163	1702	24	no data	no data	2260	2260
12/6/2015 12:00:00 AM	204	1849	32	no data	no data	2090	2090

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2015 Streamgage Discharge in cubic feet per second

	NeDNR Keya Paha River @ Naper	NeDNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Missouri River @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6453620	6463720	6465500	6465700
Date							
12/7/2015 12:00:00 AM	243	1982	36	no data	no data	2260	2260
12/8/2015 12:00:00 AM	213	1936	36	no data	no data	2500	2500
12/9/2015 12:00:00 AM	194	1751	38	no data	no data	2560	2560
12/10/2015 12:00:00 AM	191	1631	43	no data	no data	2630	2630
12/11/2015 12:00:00 AM	222	1522	46	no data	no data	2490	2490
12/12/2015 12:00:00 AM	238	1428	45	no data	no data	2260	2260
12/13/2015 12:00:00 AM	205	1083	42	no data	no data	2230	2230
12/14/2015 12:00:00 AM	199	1058	38	no data	no data	2110	2110
12/15/2015 12:00:00 AM	174	1136	35	no data	no data	2180	2180
12/16/2015 12:00:00 AM	149	5347	33	no data	no data	1860	1860
12/17/2015 12:00:00 AM	90	5065	no data	no data	no data	1490	1490
12/18/2015 12:00:00 AM	84	4571	no data	no data	no data	1500	1500
12/19/2015 12:00:00 AM	85	4538	no data	no data	no data	1650	1650
12/20/2015 12:00:00 AM	87	14554	no data	no data	no data	1810	1810
12/21/2015 12:00:00 AM	113	983	no data	no data	no data	2340	2340
12/22/2015 12:00:00 AM	124	2114	no data	no data	no data	2620	2620
12/23/2015 12:00:00 AM	123	618	25	no data	no data	3170	3170
12/24/2015 12:00:00 AM	123	603	no data	no data	no data	2690	2690
12/25/2015 12:00:00 AM	128	1881	no data	no data	no data	2120	2120
12/26/2015 12:00:00 AM	118	6573	Ice	no data	no data	2250	2250
12/27/2015 12:00:00 AM	109	3141	Ice	no data	no data	1810	1810
12/28/2015 12:00:00 AM	119	5352	Ice	no data	no data	1600	1600
12/29/2015 12:00:00 AM	119	7371	Ice	no data	no data	2230	2230
12/30/2015 12:00:00 AM	118	5681	Ice	no data	no data	2150	2150
12/31/2015 12:00:00 AM	128	1346	Ice	no data	no data	2260	2260