

ANNUAL REPORT OF 2016 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 3, 2017

Introduction

The Lower Niobrara Resources District (LNNRD) and the Nebraska Department of Natural Resources (NeDNR) jointly adopted an Integrated Management Plan (IMP) which became effective on May 1, 2014, with the goal of jointly managing ground and surface water within the LNNRD to sustain a balance between water uses and supplies for the long term. The purpose of this report is to fulfill the Department of Natural Resource's responsibilities under the 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. The data gathered through the IMP's monitoring plan are designed to evaluate and measure the success of the objectives of the 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, 2016, through December 31, 2016.

Department Reporting: Data

The IMP requires that the Department annually report on the following 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 Measurements

The one-time streamflow measurements made by the Department's field office staff, in five locations, during 2016 are included in Table 1 below.

Table 1. Streamflow measurements taken by NeDNR staff in 2016

ID	Date	Discharge (cfs)	Stream	Location
1	3/22/16	16.10	Ponca Creek	NE¼NW¼ Sec. 21-34-12W
2	7/20/16	0.34	Willow Creek	NE¼SE¼ Sec. 27-30-21W
3	9/21/16	0.00 (Dry)	Meglin Creek	SE¼NW¼ Sec. 21-34-16W
4	11/2/16	5.77	Merriman Creek	SW¼SW¼ Sec. 24-29-7W
5	11/2/16	0.30	Tributary to Pischel Creek	NE¼NW¼ Sec. 2-31-8W

The locations of streamgages yielding streamflow measurements made within the LNNRD by USGS and the Department are shown in Figure 1. Daily streamflow measurements from these streamflow gages for calendar year 2016 are shown in Appendix 1. Also on Figure 1 are the streamgages that do not collect discharge data and the inactive gages that may have historical data. This streamflow data can be acquired from USGS's National Water Information System at <http://waterdata.usgs.gov/>.

Streamgage Locations within the Lower Niobrara Natural Resources District

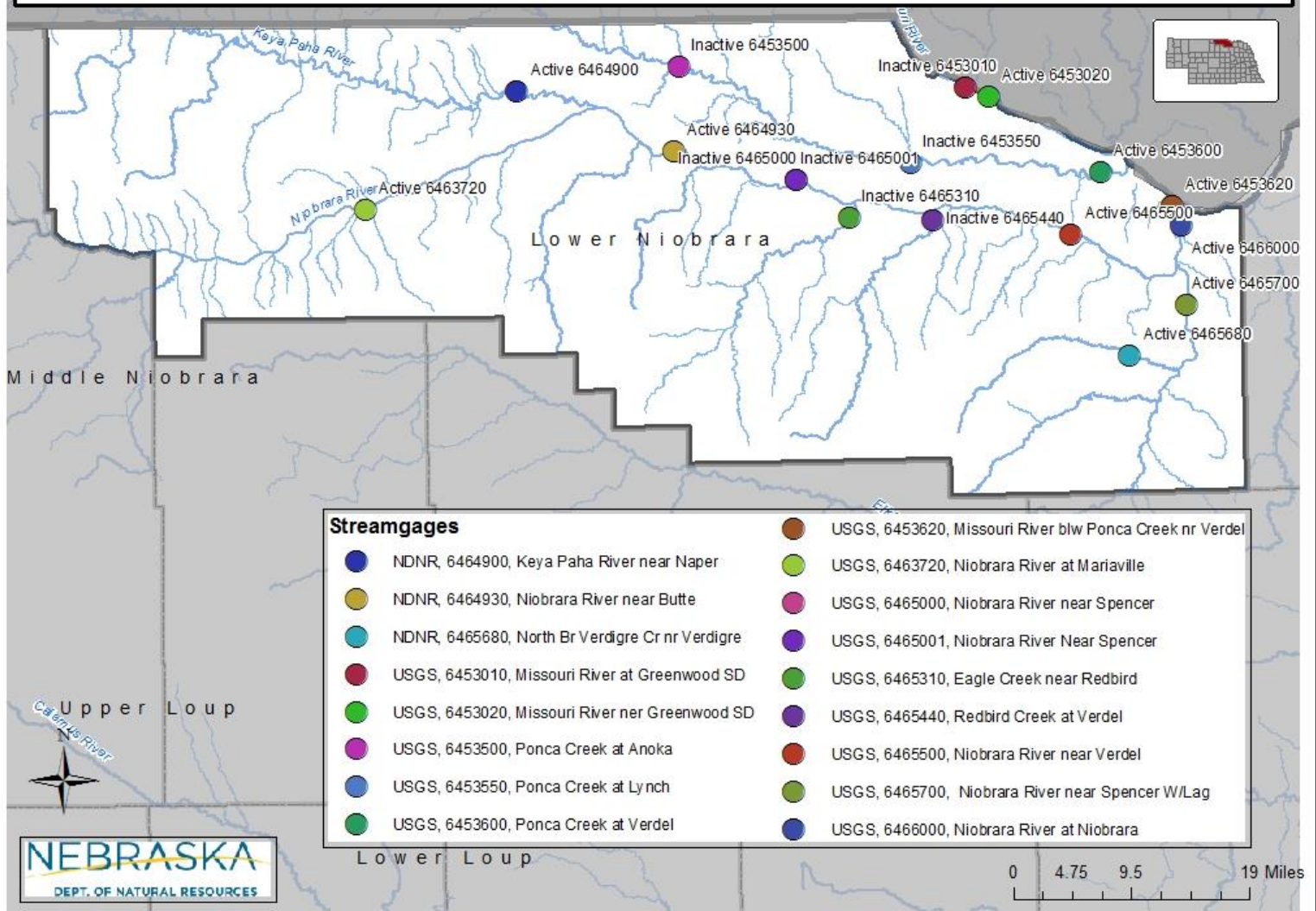


Figure 1. Streamgage locations within the Lower Niobrara NRD

2. Surface Water Permitting

In 2016, one application for a permit to appropriate surface water was approved by NeDNR, and is listed below in Table 2. No new surface water permits for irrigated acres were approved during 2016. The use of the water under the approved permit is to generate hydropower.

Table 2. Surface water applications approved in calendar year 2016 within the LNNRD

Appropriation Number	Approval Date	S-T-RW	Status	Use	Acres	Grant in CFS	Number of New Irrigated Acres
A-18503	7/28/2016	30-33-11W	Active	Power	-	425	0

While the IMP does not specifically require the reporting of cancelled surface water appropriations (in-full or in-part), NeDNR is providing these data for a more complete picture of surface water permitting activities within the NRD. In 2016, five permits to irrigate using surface water from a flowing source (IR), two permits to irrigate using water stored in a reservoir (SO), one domestic-use permit (DO) and one permit to store water (ST) were cancelled in-full or in-part, as summarized in Table 3. One SO permit was dismissed. This results in a cancellation of 1,364.5 acres previously approved for irrigation purposes using surface water. The basis for the Department's action taken on each is listed below Table 3.

Table 3. Surface water appropriations cancelled or dismissed in 2016 in the LNNRD

Appropriation Number	Cancellation Date	S-T-RW	Status	Use	Begin Acres	Cancelled Acres	Cancelled CFS	Cancelled AF	Reason for Department Action
A-7047	8/8/2016	27-34-12W	Cancelled in Full	IR	59.6	59.6	0.46	-	See Item 1 below
A-7593	11/5/2016	20-33-8W	Cancelled in Full	IR	37.0	37.0	0.26	-	See Item 1 below
A-10837	8/8/2016	2-31-9W	Cancelled in Part REL-5695 REL-5711	IR	251.0	238.0	3.40	-	See Item 3 below
A-10859	4/18/2016	11-34-13W	Cancelled in Part REL-5610	IR	90.9	5.8	0.08	-	See Item 3 below
A-18419	5/19/2016	23-33-9W	Cancelled in Full	SO	189.0	189.0	-	182.9	See Item 2 below
A-18444R	10/18/2016	8-33-15W	Cancelled in Full	IR	829.0	829.0	11.84	-	See Item 2 below
A-18840	10/18/2016	21-34-16W	Cancelled in Part	SO	68.0	5.8	-	0	See Item 2 below
A-19003	4/26/2016	1-30-8W	Cancelled in Full	ST	-	-	-	14.75	See Item 4 below
A-19004	4/28/2016	1-30-8W	Dismissed	SO	-	-	-	-	Due to the cancellation of A-19003
A-19006	12/20/2016	2-31-8W	Cancelled in Part	DO	2.0	0.3	0.01	-	See Item 2 below
Totals					1,526.5	1,364.5	16.05	197.65	

Basis for Department Actions

1. The Department found that the appropriation had not been used in the last five years, and the owner did not successfully contest the preliminary determination of nonuse.

Authority upon which the action was based: *Neb. Rev. Stat. §§ 46-229.02(1) through 46-229.02(6)*: If the Department makes a preliminary determination that an appropriation has not been used for more than five consecutive years, and the owner of said appropriation does not successfully contest the determination, the Department may cancel said appropriation in whole or part.

2. The Department found that the appropriator had not perfected their water right by beneficially applying the water in the time allowed.

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 owner signed and submitted a voluntary relinquishment-in-part of surface water appropriation.

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.

4. The appropriator failed to perfect the appropriation in the time allowed.

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. Surface Water Usage Reporting

The Department received responses from 70 water users out of a possible 379, an 18% response rate, to its voluntary surface water use reporting program in 2016. A total of 6,957 acres were reported, categorized by irrigated vs. non-irrigated and crop type. This acreage is up from the 2015 reported 3,917 acres. In 2016, corn was grown on the greatest number of acres, with alfalfa second of the irrigated crops. The greatest number of acres of non-irrigated crops was in hay or forage, with millet second. The reported data is shown in Table 4.

Table 4. Voluntary surface water use reporting in 2016 in the LNNRD.

Crop type	Total Reported Crop Acres	Crop Acres Irrigated		Crop Acres Not Irrigated	
		Acres	Percent of Reported Irrigated Acres (by Crop Type)	Acres	Percent of Reported Non-Irrigated Acres (by Crop Type)
Alfalfa	1,465	1,187	23%	278	16%
Corn	2,493	2,468	48%	25	2%
Forage Hay/Grass	1,516	431	8%	1,085	61%
Millet	341	0	-	341	19%
Other	364	334	6%	30	2%
Soybeans	778	769	15%	9	<1%
Totals	6,957	5,189	100%	1,768	100%

4. Groundwater Transfers

The Department did not act on any groundwater permit applications during 2016.

5. Offsets approved

No offsets were required in 2016.

Department Education and Outreach Activity in 2016

Each year, NeDNR dedicates a portion of staff time and resources to education and outreach efforts that promote a better understanding of integrated water management and why it is important to the state’s citizens. NeDNR’s outreach efforts range from informal conversations with local citizens about how we envision and strive for collaborative water management, to more complex presentations, discussions and demonstrations about the hydrologic connection between surface and groundwater.

In 2016, NeDNR staff attended the Sandhills Ranch Expo held in Bassett, Nebraska. This event provided many people who otherwise may not have had direct contact with NeDNR staff an opportunity to learn about NeDNR in general and the Water Planning Division’s focus on integrated water management specifically. NeDNR staff operated a groundwater model showing the connection and interaction of surface water with groundwater, discussed IMPs, and fielded questions.

Many of NeDNR’s efforts, such as hosting an informational booth at the Nebraska State Fair or improving the INSIGHT web portal, are broadly focused across the entire State and intended to provide all interested citizens with a better understanding of how integrated water management affects them. In 2016, NeDNR staff set up educational booths at the Nebraska State Fair, Husker Harvest Days, the Governor’s Ag Conference, and the University of Nebraska-Lincoln’s Women in Agriculture Conference. Improvements were also made to NeDNR’s website (<https://dnr.nebraska.gov/>) and the INSIGHT web portal (<https://nednr.nebraska.gov/INSIGHT/>),

which will provide citizens with a more convenient and user friendly experience when they need to access water resources related information or data.

Appendix 1						
	DNR Keya Paha River @ Naper	DNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
Gage Number	6464900	6464930	6453600	6463720	6465500	6465700
Date	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1/1/2016	159	852	18.7	1270	1340	120
1/2/2016	151	930	19.2	1280	1440	119
1/3/2016	160	944	19.8	1290	1620	117
1/4/2016	142	953	18.1	1310	1720	110
1/5/2016	138	1010	20.3	1350	1810	113
1/6/2016	130	1050	19.8	1380	1820	119
1/7/2016	125	1040	20.3	1330	1830	125
1/8/2016	124	1010	18.7	1270	1780	124
1/9/2016	106	917	15.4	1230	1790	117
1/10/2016	113	775	12.1	1150	1770	110
1/11/2016	108	754	10.4	1170	1570	110
1/12/2016	98	846	9.9	1180	1570	110
1/13/2016	94	1000	11.5	1220	1780	116
1/14/2016	102	1160	13.2	1240	1880	121
1/15/2016	104	1270	13.2	1240	1940	123
1/16/2016	105	1200	9.9	1160	1920	119
1/17/2016	102	1030	7	1110	1780	112
1/18/2016	102	913	6	1110	1650	112
1/19/2016	102	880	8	1140	1320	123
1/20/2016	100	939	8	1170	1460	127
1/21/2016	102	1040	8	1190	1630	132
1/22/2016	105	1060	8	1240	1750	133
1/23/2016	107	1080	8.5	1290	1850	134
1/24/2016	126	1110	9	1320	1960	133
1/25/2016	132	1160	9	1360	2030	134
1/26/2016	123	1150	9	1240	2000	133
1/27/2016	132	1090	9.5	1280	1950	127
1/28/2016	134	1100	11.1	1340	2030	130
1/29/2016	132	1170	12	1320	1460	133
1/30/2016	124	1030	13.9	1440	2200	134
1/31/2016	130	934	15.8	1470	2290	135
2/1/2016	132	769	17.6	1480	2330	133

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2/2/2016	135	817	108	1420	2320	132
2/3/2016	142	895	157	1370	2220	130
2/4/2016	149	1000	108	1360	2160	127
2/5/2016	153	1100	87.3	1400	2240	128
2/6/2016	164	1200	76.7	1440	2300	126
2/7/2016	182	1100	78.2	1460	2400	127
2/8/2016	195	1000	67.7	1440	2420	128
2/9/2016	204	1050	67.9	1500	2300	131
2/10/2016	211	1220	68.1	1580	2400	131
2/11/2016	216	1420	71.2	1550	2500	130
2/12/2016	220	1430	66.3	1620	2410	128
2/13/2016	227	1450	59.9	1640	2310	126
2/14/2016	242	1530	57.4	1680	2270	129
2/15/2016	265	1710	61.6	1760	2600	129
2/16/2016	293	1710	62.8	1800	2850	130
2/17/2016	304	1930	76.2	1660	3060	141
2/18/2016	316	2280	91.2	1410	3200	175
2/19/2016	330	1250	151	1510	3150	211
2/20/2016	342	1310	186	1450	2420	194
2/21/2016	343	1820	190	1540	2480	189
2/22/2016	351	2220	197	1570	2390	180
2/23/2016	337	2060	174	1490	2570	177
2/24/2016	349	1810	157	1400	2640	170
2/25/2016	315	1850	145	1420	2610	172
2/26/2016	285	1850	124	1620	2570	170
2/27/2016	278	1510	111	1720	2750	165
2/28/2016	302	1390	102	1820	2600	174
2/29/2016	285	1290	95.8	1690	2630	167
3/1/2016	205	1530	89.6	1530	2590	163
3/2/2016	195	1490	81.2	1620	2470	154
3/3/2016	207	1450	77	1680	2420	160
3/4/2016	199	1260	74.8	1460	2200	158
3/5/2016	191	1260	69	1470	1960	150
3/6/2016	181	1290	65	1340	1960	152
3/7/2016	169	1360	64.1	1370	2360	161
3/8/2016	161	1320	58.3	1570	2470	158
3/9/2016	166	1260	51	1630	2240	147
3/10/2016	162	1430	47.1	1520	1860	154

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3/11/2016	158	1390	42.5	1490	1920	151
3/12/2016	149	1440	38.5	1400	2190	150
3/13/2016	147	1520	37.1	1260	2330	153
3/14/2016	146	1480	35.6	1440	2280	149
3/15/2016	139	1480	34.4	1520	2390	140
3/16/2016	134	1460	36.3	1450	2340	142
3/17/2016	133	1650	35.8	1360	2470	132
3/18/2016	129	1660	34.8	1290	2520	134
3/19/2016	129	1550	35.9	1130	2440	137
3/20/2016	131	1470	36.7	1180	2260	142
3/21/2016	126	1530	33.5	1200	2100	136
3/22/2016	122	1540	31.9	1320	1810	141
3/23/2016	130	1620	35.5	1560	1840	152
3/24/2016	143	1800	41.7	1790	2270	164
3/25/2016	132	1840	40.7	1530	2080	149
3/26/2016	161	1800	42.6	1390	1960	153
3/27/2016	190	1860	51.6	1300	2060	147
3/28/2016	213	1740	58.6	1290	2120	144
3/29/2016	209	1570	71.7	1240	2320	146
3/30/2016	274	1600	85.7	1370	2730	157
3/31/2016	401	1610	104	1400	3220	171
4/1/2016	286	1620	121	1400	3300	180
4/2/2016	250	1620	133	1250	2880	169
4/3/2016	305	1630	129	1280	2570	156
4/4/2016	284	1640	126	1190	2210	144
4/5/2016	242	1650	118	1170	1790	138
4/6/2016	216	1660	101	1150	1910	136
4/7/2016	200	1670	82.3	1060	1780	145
4/8/2016	196	1640	69.2	1180	1660	133
4/9/2016	183	1720	58.8	1150	1620	133
4/10/2016	180	1860	51.3	1350	1800	131
4/11/2016	175	1920	48.7	1350	1860	135
4/12/2016	177	1920	46.1	1320	1850	130
4/13/2016	187	2000	42.1	1340	1870	127
4/14/2016	194	2060	39	1510	1870	115
4/15/2016	201	2080	36.8	1510	1910	117
4/16/2016	217	2110	35.9	1300	1880	120
4/17/2016	327	2500	52.8	1610	2430	130

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4/18/2016	619	2520	114	1860	3310	200
4/19/2016	668	2560	202	1790	3400	217
4/20/2016	596	3100	330	1810	3110	207
4/21/2016	519	2950	338	2020	3390	290
4/22/2016	580	2840	325	1990	3140	229
4/23/2016	669	2830	264	1820	2780	184
4/24/2016	644	2900	238	2000	2880	166
4/25/2016	551	3450	211	2140	2610	157
4/26/2016	487	3500	181	1890	2160	148
4/27/2016	759	4840	214	2200	3000	321
4/28/2016	1790	5700	562	2430	4290	459
4/29/2016	1430	5690	877	2690	3450	290
4/30/2016	1380	6180	959	2970	4620	546
5/1/2016	2410	6720	2820	2920	7470	843
5/2/2016	2170	4790	1870	3410	6760	524
5/3/2016	1550	4580	1210	3370	5720	311
5/4/2016	1160	4160	850	3180	5530	239
5/5/2016	834	3990	638	2780	5230	211
5/6/2016	658	3990	483	2470	4980	204
5/7/2016	549	3900	388	2330	4310	194
5/8/2016	574	3950	321	2300	3730	179
5/9/2016	669	4190	321	2570	3820	206
5/10/2016	777	4940	1980	2650	5690	257
5/11/2016	665	4140	1120	2280	5430	407
5/12/2016	589	3270	751	1980	4080	320
5/13/2016	513	3390	489	1850	3600	245
5/14/2016	455	3500	377	1540	3190	203
5/15/2016	425	3210	321	1560	2780	183
5/16/2016	349	3090	284	1630	2340	184
5/17/2016	307	2920	264	1690	2500	185
5/18/2016	277	3000	241	1950	2460	184
5/19/2016	248	3210	223	2050	2480	172
5/20/2016	238	3240	209	1950	2610	162
5/21/2016	221	3110	197	1700	2790	162
5/22/2016	210	3120	186	1600	2830	147
5/23/2016	551	3960	204	2320	3510	192
5/24/2016	884	4560	236	2060	4780	176
5/25/2016	818	3750	990	2120	3660	159

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5/26/2016	857	3820	905	2010	3520	181
5/27/2016	711	3700	918	2150	3360	178
5/28/2016	1020	4130	1380	2230	4110	370
5/29/2016	769	3560	1690	2110	3880	391
5/30/2016	640	3670	1340	1980	3660	290
5/31/2016	522	3430	894	1940	3330	244
6/1/2016	398	3020	636	1890	3040	207
6/2/2016	327	2760	473	1880	2580	176
6/3/2016	296	2480	383	2070	2480	171
6/4/2016	365	2280	324	1830	2440	163
6/5/2016	325	1950	275	1740	2310	155
6/6/2016	256	1790	239	1710	2190	146
6/7/2016	211	1670	216	1610	2570	141
6/8/2016	189	1660	201	1650	2330	136
6/9/2016	167	1590	189	1600	2880	130
6/10/2016	155	1610	176	1470	3590	126
6/11/2016	141	1540	165	1300	3580	125
6/12/2016	127	1480	154	1200	3280	118
6/13/2016	141	1540	167	1230	3370	131
6/14/2016	168	1710	179	1320	3080	155
6/15/2016	194	1880	265	1900	2310	148
6/16/2016	214	2090	274	1800	2680	132
6/17/2016	206	1880	201	1680	2410	114
6/18/2016	267	2110	450	1600	3130	233
6/19/2016	254	1860	882	1500	2490	228
6/20/2016	239	1710	385	1370	2020	150
6/21/2016	232	1600	243	1230	2020	121
6/22/2016	194	1500	183	1150	2090	110
6/23/2016	157	1480	150	1120	1770	97
6/24/2016	140	1400	130	1050	1700	87.4
6/25/2016	124	1350	115	1040	1810	83.7
6/26/2016	110	1290	104	1040	1710	82.4
6/27/2016	104	1270	96.3	1000	1560	81.2
6/28/2016	113	1270	89.3	1020	1640	85
6/29/2016	109	1180	85.5	1140	1710	76.5
6/30/2016	112	1310	80.1	1280	1670	71.8
7/1/2016	111	1400	71.7	1160	1950	61.3
7/2/2016	110	1350	72.5	1240	1880	74.9

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7/3/2016	116	1420	83.2	1290	1840	82.9
7/4/2016	120	1360	83	1300	1790	82.2
7/5/2016	117	1270	77.9	1200	1890	80.2
7/6/2016	116	1250	74.6	1140	1860	79.1
7/7/2016	117	1320	75.9	1210	1950	111
7/8/2016	104	1250	100	1220	1790	114
7/9/2016	95	1190	95.9	1260	1800	99.2
7/10/2016	90	1110	76.8	1250	1710	89.5
7/11/2016	81	1080	60.5	1330	1630	75.7
7/12/2016	73	1100	52.2	1250	1480	68.1
7/13/2016	66	1060	45.3	1120	1470	69.2
7/14/2016	63	1020	39.3	985	1430	70.2
7/15/2016	68	1060	37.3	1050	1530	75.2
7/16/2016	78	1100	39.9	1170	1620	88.3
7/17/2016	79	1080	39.9	1260	1630	79
7/18/2016	73	1080	34.9	1260	1600	72
7/19/2016	71	1140	30	1270	1610	63.5
7/20/2016	72	1110	27.6	1100	1730	58.8
7/21/2016	63	1080	24.1	1050	1570	61.5
7/22/2016	53	1040	21.4	1050	1460	63.4
7/23/2016	46	1030	21.9	1010	1490	64.7
7/24/2016	44	954	19	1010	1410	64.9
7/25/2016	44	967	16.5	980	1300	63.4
7/26/2016	42	936	14.1	915	1290	55.4
7/27/2016	96	1260	17.1	1440	1590	67.1
7/28/2016	159	1710	20.2	1710	2030	83.9
7/29/2016	230	1620	25.5	1500	2690	95.5
7/30/2016	203	1570	23.6	1750	2260	89.6
7/31/2016	208	2000	21.7	1350	2840	101
8/1/2016	236	1590	18.6	1170	1990	105
8/2/2016	335	1580	18.6	1080	1840	103
8/3/2016	225	1480	16.9	1020	1800	93.8
8/4/2016	164	1380	15	986	1650	69.4
8/5/2016	139	1300	15.2	936	1560	66.9
8/6/2016	125	1260	14.8	911	1520	64.4
8/7/2016	115	1270	14	885	1410	68
8/8/2016	103	1210	13.9	880	1350	70
8/9/2016	93	1230	13.3	892	1290	65.2

Appendix 1

	DNR Keya Paha River @ Naper	DNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
8/10/2016	80	1240	11.6	854	1280	58.2
8/11/2016	76	1200	12.1	828	1240	64.8
8/12/2016	88	1330	19.7	834	1350	80.4
8/13/2016	64	1170	20.6	936	1390	90.7
8/14/2016	64	1190	19.6	1040	1230	79.2
8/15/2016	65	1220	16.4	992	1260	71
8/16/2016	66	1150	14.8	1020	1260	79.2
8/17/2016	57	1070	14.4	957	1190	92.5
8/18/2016	48	1000	13.4	898	1250	80.7
8/19/2016	77	1110	13.9	940	1240	79.3
8/20/2016	80	1090	17.6	951	1420	77.3
8/21/2016	102	1080	22	901	1390	73.2
8/22/2016	104	1060	18.1	893	1360	66.1
8/23/2016	92	1020	17.9	831	1300	62.5
8/24/2016	78	988	14.6	793	1250	62.6
8/25/2016	72	1020	12.8	780	1280	55.6
8/26/2016	66	1040	11.5	810	1260	59.2
8/27/2016	66	1080	12.6	872	1250	67.8
8/28/2016	65	1110	12	907	1280	69.5
8/29/2016	59	1090	10.7	977	1270	68.6
8/30/2016	53	1060	10.3	990	1230	67.5
8/31/2016	46	1090	11.8	987	1200	66
9/1/2016	42	1130	11.1	937	1160	58.6
9/2/2016	41	1060	10.4	889	1120	60.2
9/3/2016	41	1070	9.24	882	1130	69.8
9/4/2016	41	1110	8.08	898	1140	71.7
9/5/2016	47	1230	30.4	991	1760	108
9/6/2016	61	1250	36.3	1200	1650	104
9/7/2016	74	1300	28	1230	1690	129
9/8/2016	117	1340	21.7	1110	1720	129
9/9/2016	147	1270	18.7	1040	1630	121
9/10/2016	140	1210	16.1	985	1400	96.1
9/11/2016	124	1120	14.5	977	1270	88.9
9/12/2016	109	1110	13.5	1010	1200	86.4
9/13/2016	112	1160	13.4	1030	1180	91.7
9/14/2016	123	1150	12.6	986	1240	88.8
9/15/2016	135	1310	33.9	1050	1670	172
9/16/2016	120	1330	29.8	1040	1950	208

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	DNR Keya Paha River @ Naper	DNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
9/17/2016	102	1200	18.7	971	1690	147
9/18/2016	97	1160	19.1	927	1520	127
9/19/2016	87	1090	20.2	898	1450	127
9/20/2016	84	1080	18.7	935	1400	114
9/21/2016	82	1140	16	978	1460	121
9/22/2016	78	1160	14.9	957	1510	127
9/23/2016	77	1200	14.5	937	1570	132
9/24/2016	73	1180	13.7	913	1590	127
9/25/2016	70	1140	13.6	841	1530	120
9/26/2016	66	1090	13.2	783	1420	109
9/27/2016	66	1120	12.6	744	1350	114
9/28/2016	63	1170	11.9	801	1350	113
9/29/2016	61	1120	11.5	839	1350	111
9/30/2016	59	1090	11.5	898	1370	111
10/1/2016	61	1100	11.1	950	1330	116
10/2/2016	61	1080	10.5	976	1350	116
10/3/2016	58	1070	10.2	946	1450	112
10/4/2016	64	1140	14	1050	1630	139
10/5/2016	77	1210	18.6	991	1680	167
10/6/2016	86	1210	19.2	1010	1680	143
10/7/2016	98	1250	26.6	1050	1890	131
10/8/2016	94	1200	25.8	1160	1780	128
10/9/2016	94	1230	22.5	1140	1830	124
10/10/2016	100	1290	21.4	1160	1530	129
10/11/2016	102	1320	19.5	1200	1600	126
10/12/2016	103	1290	19.7	1170	1690	129
10/13/2016	96	1100	12.1	1140	1670	126
10/14/2016	93	1000	17.8	1090	1490	124
10/15/2016	94	1090	20.5	1230	1480	130
10/16/2016	94	1240	no data	1290	1530	128
10/17/2016	93	1240	19.6	1320	1670	134
10/18/2016	94	1300	19.1	1340	1610	128
10/19/2016	104	1310	17.1	1350	1640	132
10/20/2016	109	1350	no data	1360	1970	136
10/21/2016	99	1320	no data	1370	1930	134
10/22/2016	93	1450	no data	1380	2280	133
10/23/2016	89	1730	no data	1390	2770	130
10/24/2016	86	1820	no data	1400	2590	128

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	DNR Keya Paha River @ Naper	DNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
10/25/2016	90	1610	19.2	1400	2300	128
10/26/2016	95	1490	17.5	1420	2080	131
10/27/2016	97	1380	17.8	1370	2060	135
10/28/2016	98	1420	21.3	1320	2080	130
10/29/2016	96	1410	21	1190	1930	no data
10/30/2016	91	1480	17.1	1150	2100	129
10/31/2016	94	1460	18	1130	2150	133
11/1/2016	92	1510	17	1120	1820	135
11/2/2016	95	1460	19	1110	1600	140
11/3/2016	95	1360	19.6	1100	1730	142
11/4/2016	93	1180	19.4	1100	2060	143
11/5/2016	92	1120	19	1100	2180	138
11/6/2016	94	1120	18.9	1150	2220	130
11/7/2016	95	1070	no data	1170	2210	143
11/8/2016	96	1050	no data	1140	2110	152
11/9/2016	94	1140	19.3	1140	2310	149
11/10/2016	93	1060	17.7	1140	2270	150
11/11/2016	93	1120	16.6	1170	2100	137
11/12/2016	93	1150	no data	1260	2090	149
11/13/2016	96	1170	no data	1320	2160	149
11/14/2016	94	1220	no data	1360	2200	143
11/15/2016	92	1190	no data	1190	2190	143
11/16/2016	89	1050	no data	1150	2250	139
11/17/2016	96	1180	17.3	1240	2550	142
11/18/2016	110	1350	22.6	1210	2670	164
11/19/2016	106	1270	22.9	1330	2440	150
11/20/2016	103	1260	22.2	1210	2550	143
11/21/2016	109	1220	22.9	1260	2630	136
11/22/2016	117	1210	26.1	1310	2660	190
11/23/2016	122	1240	30.2	1070	2840	230
11/24/2016	118	1110	28.9	1080	2940	184
11/25/2016	113	1210	28.5	1180	2800	180
11/26/2016	104	1160	29	1210	2670	171
11/27/2016	101	1130	34	1150	2820	169
11/28/2016	108	1280	46.2	1230	3020	215
11/29/2016	103	1280	46.6	1150	2380	182
11/30/2016	101	1300	41.1	1300	2880	157
12/1/2016	107	1220	37.5	1200	2940	149

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	DNR Keya Paha River @ Naper	DNR Niobrara River @ Butte	USGS Ponca Creek @ Verdel	USGS Niobrara River @ Mariaville	USGS Niobrara River @ Verdel	USGS Verdigre Creek @ Verdigre
12/2/2016	116	1130	34.2	1290	2440	152
12/3/2016	116	1130	33.1	1080	2060	158
12/4/2016	118	1180	32	1120	2220	155
12/5/2016	94	1140	33.2	1100	2450	158
12/6/2016	73	1210	lce	1140	2220	157
12/7/2016	74	1490	lce	1100	1790	140
12/8/2016	79	1590	lce	1080	lce	lce
12/9/2016	75	2360	lce	1050	lce	lce
12/10/2016	68	3120	lce	1080	lce	lce
12/11/2016	74	2990	lce	1080	lce	lce
12/12/2016	72	3460	lce	1060	lce	lce
12/13/2016	61	3310	lce	1050	lce	lce
12/14/2016	69	3190	lce	1030	lce	lce
12/15/2016	79	3260	no data	1020	lce	lce
12/16/2016	80	3100	no data	961	lce	lce
12/17/2016	87	2920	lce	914	lce	lce
12/18/2016	84	2830	lce	927	lce	lce
12/19/2016	85	2620	lce	1010	lce	lce
12/20/2016	82	2620	lce	1050	lce	lce
12/21/2016	79	2900	no data	1100	lce	lce
12/22/2016	76	3640	no data	1120	lce	lce
12/23/2016	75	4490	lce	1140	lce	lce
12/24/2016	71	4040	lce	1150	lce	lce
12/25/2016	74	4450	lce	1170	lce	lce
12/26/2016	65	4000	lce	1190	lce	lce
12/27/2016	76	4130	no data	1190	lce	lce
12/28/2016	72	3670	no data	1200	lce	lce
12/29/2016	71	3390	no data	1220	lce	lce
12/30/2016	84	3500	no data	1250	lce	lce
12/31/2016	68	3400	no data	1260	lce	lce