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# **2016 ANNUAL INTEGRATED MANAGEMENT PLAN REPORT:**

NEBRASKA DEPARTMENT OF NATURAL RESOURCES  
&  
UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT

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REPORTING ON CALENDAR YEAR 2015 DATA

ANNUAL MEETING HELD ON OCTOBER 6, 2016



*Serving Box Butte, Dawes, Sheridan and Sioux Counties*

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October 6, 2016

Annual report by Upper Niobrara White Natural Resources District (UNWNRD) on the activities related to the joint Integrated Management Plan (IMP) with the Nebraska Department of Natural Resources (DNR).

Purpose: The purpose of the report is to fulfill the UNWNRD's responsibilities under the IMP annual reporting obligations and provide updates to current monitoring projects and 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 ground water system. As surface and ground water are hydrologically connected throughout much of the district, estimates of water quantity of either surface or ground water cannot be evaluated separately. The data gathered through this IMP's monitoring plan is 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.

### **UNWNRD Reporting: Permitting**

The IMP requires that the UNWNRD annually report to the following permitting actions within the district:

- 1) Ground Water Permitting
- 2) Ground Water Variances/Modifications
- 3) New Ground Water Uses
- 4) Municipal Accounting

- 1) Ground Water Permitting – The following ground water permits were granted in 2015:

#### **A) Replacement well permits**

- (1) 25 – Replacement Irrigation
- (2) 0 – Replacement Public Water Supply
- (3) 0 – Replacement Commercial/Industrial

#### **B) New well permits**

- (1) 2 – New Public Water Supply
- (2) 0 – New Public Water Supply – Test Wells
- (3) 3 – New Irrigation – Failed to Decommission within 180 Days (Replacement/Conversion)
- (4) 0 – New Industrial Well – Replacing Use From Existing Well (Acre Offset Provided)

2) Ground Water Variances/Modifications – The following ground water variances were requested in 2015:

- A) Tod Dorshorst motioned to approve the Benda Land & Cattle Co. acre modification, Scott Berndt seconded the motion. PASS (January 2015)
- B) Tod Dorshorst motioned to approve the Irwin acre modification, Mike Strasburger seconded the motion. PASS (January 2015)
- C) Tod Dorshorst motioned to approve all 98 allocation transfer requests submitted to the NRD as a group, John Burke seconded the motion. PASS (January 2015)
- D) Tod Dorshorst motioned to approve the Mundt acre modification, Dave Carlson seconded the motion. PASS (February 2015)
- E) Scott Berndt moved to approve the new well permit for H7 Bar Ranch for a replacement well, Mike Strasburger seconded the motion. Absent: Kevin Oligmueller. PASS (March 2015)
- F) Tod Dorshorst moved to approve the acre transfer request for Frost Sun Prairie Farms, Steve Sandberg seconded the motion. PASS (June 2015)
- G) Rolling Meadows Ranch was permitted to replace an irrigation well in Sheridan County. There were multiple contractors involved in the project and in the end, the replacement well was drilled but the “old” well was not decommissioned or converted to a livestock well within 180 days; making the “new” well illegal and unable to be registered. The new well permit, if approved, would be approved with the requirement that the old well would be decommissioned. Mike Strasburger moved to approve the late new well permit for Rolling Meadows Ranch, Steve Sandberg seconded the motion. PASS (August 2015)
- H) There is a variance request from Jerry Bottorff for a new well permit; if granted, he would convert the old irrigation well into a livestock/observation well. Jerry is proposing to pour a concrete pad over the top of the old irrigation well, which was not decommissioned or converted within 180 days. A small riser will be installed to allow installation of submersible pump and access for observing static water levels. This is in an area where the District does not currently have an observation site. Tod Dorshorst moved to approve the Bottorff Variance Request, Steve Sandberg seconded the motion. PASS (October 2015)

3) Ground Water Uses – No new ground water uses were granted in 2015.

The UNWNRD does allow through the “483” application process, additional acres to be added to existing wells in an area of subarea 3 that was once fully appropriated. The District received no applications. This application process for additional acres expired in June of 2015 and is no longer in effect.

Road Construction Uses: One Use for 810,000 gallons in 2015

- 4) Municipal Accounting – This use is required to be reported by October 1 of each year. At meeting time the District has received all reports. Hemingford's use for 2013-2014 was calculated using an average for reporting periods 2011-2012, 2012-2013, 2014-2015 and 2015- 2016; because of multiple Village staffing changes and what appears to be lost records, this calculation seemed the best way to represent this use. This report is considered final with no expected changes.

## **Integrated Management Studies**

Currently, DNR and UNWNRD have several joint/cooperative studies:

- 1) Niobrara Hydrogeologic and Hydrostratigraphic Framework Study: This study provides geospatial coverages of aquifer properties throughout the upper portion of the Niobrara Basin. It is intended to help expand the Box Butte ground water model. The study was finished in 2010, with basin coverages delivered to DNR. (Finished 2010)
- 2) Niobrara Operations Model Study (IWMPPF): The operations model will combine three separate models, CROPSIM, a ground water model and a surface water model to develop operational scenarios that maximize water use efficiency. All portions of the operations model are currently developed and the model has been calibrated. Work continues on data collection needs for model refinement and is currently being utilized to analyze the model area. (Completed with ongoing refinement)
- 3) Niobrara River Basin Study (Bureau of Reclamation Basin Study Program): The basin study will assist in projecting water supply and demand in the basin, analyze water supply operations under alternate water availability conditions and develop and analyze options for providing and optimizing use of future water supplies. The study will include development of a basin-wide ground water model and a surface water operations model used to analyze conjunctive management options. Currently model is completed and continued analysis of basin is ongoing.
- 4) Economic implications of reduced ground water allocations study: The multi-NRD study has a goal to provide farm-level economic analysis of limited irrigation impacts for crops grown in the panhandle of Nebraska and to provide educational programming to assist producers effectively manage ground water irrigation in areas that instituted pumping allocations. The study was completed in 2014, with final reporting being completed by UNL staff. (Completed 2014)
- 5) Upper Niobrara River Basin Model evaluation of existing water use data utilizing the INSIGHT Data enhancement Program (IDEP) to create a program for converting metered water use into model input data sets. The work has been completed on the program for converting actual metered water use to a model input data set. Follow up will be provided by Marc Groff and the Flatwater Group to the NRD and the DNR to finalize deliverables. (Completed 2015)
- 6) Upper Niobrara River Basin Model evaluation of modeled water use in the district as estimated by CROPSIM and comparing estimates to actual water use as measured since 2007 utilizing the INSIGHT Data enhancement Program (IDEP). The work has been completed on the evaluation of estimated model water use vs. actual metered water use. Follow up will be provided by Marc Groff and the Flatwater Group to the NRD and the DNR to finalize deliverables. (Completed 2015)

- 7) The Upper Niobrara White NRD continues to collaborate with the four other NRD's in the Niobrara Basin and the Department to develop or refine management plans for each district in the basin. An ongoing coordinated effort for long term planning is desired by the District's as well as the Department for the management of hydrologically connected surface and ground water.
- 8) The Upper Niobrara White NRD, along with the Department, is utilizing a Citizen's Advisory Committee (CAC) to consult on long term planning within the District. The integrated model consists of a watershed/land use model, surface water operations model and a ground water model. The models have been calibrated to match crop types within the district and actual water use obtained from the meter data. The purpose of the model moving forward will be to evaluate various management schemes that can be used to establish future policy. One of the roles of the CAC will be to recommend scenarios to be evaluated.

Board Actions for Additional Ground Water and Integrated Water Management Purposes:

- 1) Tod Dorshorst motioned to adopt the proposed changes to the Rules and Regulations regarding Chemigation Fees and Cease and Desist Rules, Steve Sandberg seconded the motion. PASS (January 2015)
- 2) Tod Dorshorst motioned to request a letter to DNR be sent by the NRBA regarding the issuance of surface water permits until the basin planning process has been completed, Scott Berndt seconded the motion. PASS (January 2015)
- 3) Steve Sandberg moved to approve the Instream Flow Application, Tod Dorshorst seconded it. Absent: Kevin Oligmueller. PASS (March 2015)
- 4) Allen Rasmussen moved to participate in the proposed Watershed Management Plan, Dave Carlson seconded the motion. Absent: Steve Sandberg, Mike Strasburger. PASS (April 2015)
- 5) John Burke moved to go forward with the Baseline Water Estimate and the five year repeat of actual water use for 100 years. Tod Dorshorst seconded the motion. PASS (June 2015)

**Municipal Pumping and Consumption Analysis**

IMP Report 6 October 2016

<b>Total Ground Water Consumed</b>						
Year	Harrison	Crawford	Chadron	Hemingford	Alliance	Totals
2001-2002	42,659,770.00	2,317,170.85	290,590,000.00	92,127,600.00	939,049,000.00	1,366,743,540.85
2002-2003	32,881,170.00	1,134,426.67	205,370,000.00	73,471,700.00	747,359,000.00	1,060,216,296.67
2003-2004	38,736,290.00	1,139,258.38	222,540,000.00	80,977,600.00	762,402,000.00	1,105,795,148.38
2004-2005	30,832,360.00	989,245.19	167,290,000.00	73,997,700.00	700,382,000.00	973,491,305.19
2005-2006	34,191,160.00	3,397,553.26	213,950,000.00	73,666,200.00	854,551,000.00	1,179,755,913.26
<b>Baseline Average</b>	<b>35,860,150.00</b>	<b>1,795,530.87</b>	<b>219,948,000.00</b>	<b>78,848,160.00</b>	<b>800,748,600.00</b>	<b>1,137,200,440.87</b>
2006-2007	33,515,350.00	6,098,591.49	215,840,000.00	62,344,500.00	755,301,000.00	1,073,099,441.49
2007-2008	30,508,130.00	6,178,706.41	252,880,000.00	62,902,801.00	726,318,000.00	1,078,787,637.41
2008-2009	28,186,390.00	1,460,376.57	170,430,000.00	62,396,468.00	572,650,000.00	835,123,234.57
2009-2010	23,009,380.00	1,883,287.76	78,112,467.72	63,859,442.00	528,620,000.00	695,484,577.48
2010-2011	28,995,660.00	427,640.96	13,647,502.97	59,925,360.00	527,891,000.00	630,887,163.93
<b>5 Year Average</b>	<b>28,842,982.00</b>	<b>3,209,720.64</b>	<b>146,181,994.14</b>	<b>62,285,714.20</b>	<b>622,156,000.00</b>	<b>862,676,410.98</b>
2011-2012	35,879,760.00	2,673,073.78	92,617,749.00	76,119,700.00	698,624,000.00	905,914,282.78
2012-2013	32,078,600.00	2,772,729.87	69,682,045.72	64,233,900.00	635,348,000.00	804,115,275.59
2013-2014	24,839,900.00	551,335.33	16,981,185.74	64,106,683.00	500,263,000.00	606,742,104.07
2014-2015	25,249,500.00	548,305.56	10,213,875.47	51,234,600.00	509,189,000.00	596,435,281.03
2015-2016	34,348,950.00	782,092.29	42,640,537.83	64,838,532.00	579,441,000.00	722,051,112.12
<b>5 Year Average</b>	<b>30,479,342.00</b>	<b>1,465,507.37</b>	<b>46,427,078.75</b>	<b>64,106,683.00</b>	<b>584,573,000.00</b>	<b>727,051,611.12</b>
<b>2001-2016 Total</b>	<b>475,912,370.00</b>	<b>32,353,794.37</b>	<b>2,062,785,364.45</b>	<b>1,026,202,786.00</b>	<b>10,037,388,000.00</b>	<b>13,634,642,314.82</b>

<b>Total Ground Water Consumed per person per day</b>						
Year	Harrison	Crawford	Chadron	Hemingford	Alliance	Averages
2001-2002	442.71	5.75	140.73	263.20	295.58	229.59
2002-2003	333.65	2.84	99.04	209.90	236.82	176.45
2003-2004	383.13	2.85	107.49	237.79	247.46	195.74
2004-2005	316.38	2.54	83.44	222.05	232.25	171.33
2005-2006	352.16	8.81	108.17	224.50	287.30	196.19
<b>Baseline Average</b>	<b>365.61</b>	<b>4.56</b>	<b>107.77</b>	<b>231.49</b>	<b>259.88</b>	<b>193.86</b>
2006-2007	357.29	15.99	110.57	192.13	256.61	186.52
2007-2008	327.78	16.37	126.82	193.42	246.09	182.10
2008-2009	312.64	3.91	86.28	192.29	192.93	157.61
2009-2010	262.66	5.01	39.36	201.33	180.99	137.87
2010-2011	316.49	1.12	6.39	204.46	189.50	143.59
<b>5 Year Average</b>	<b>315.37</b>	<b>8.48</b>	<b>73.88</b>	<b>196.73</b>	<b>213.22</b>	<b>161.54</b>
2011-2012	391.64	7.35	43.37	259.71	239.19	188.25
2012-2013	350.15	7.62	32.63	219.16	217.53	165.42
2013-2014	275.52	1.53	8.04	219.54	161.28	133.18
2014-2015	280.07	1.53	4.78	175.46	164.16	125.20
2015-2016	381	2.18	19.97	222.05	186.81	162.40
<b>5 Year Average</b>	<b>335.68</b>	<b>4.04</b>	<b>21.76</b>	<b>219.18</b>	<b>193.79</b>	<b>154.89</b>
<b>2001-2016 Avg.</b>	<b>338.88</b>	<b>5.69</b>	<b>67.81</b>	<b>215.80</b>	<b>222.30</b>	<b>170.10</b>

**2016 ANNUAL REPORT OF 2015 DATA**  
**BY THE DEPARTMENT OF NATURAL RESOURCES**  
**TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL**  
**RESOURCES DISTRICT'S INTEGRATED MANAGEMENT PLAN**

Purpose: The purpose of the report is to fulfill the Department of Natural Resources (Department or NeDNR) responsibilities under the Upper Niobrara White Natural Resources District (District or UNWNRD) 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 on variance activities and permit activities from January 1, 2015, through December 31, 2015. Also included are canal diversion measurements from October 1, 2014, through September 30, 2015.

**Department Reporting: Data**

The IMP requires that the Department annually report on the following surface water data within the district:

- Diversion records upstream of Box Butte Reservoir
- Non-gaged stream measurements

***1) Surface Water Diversion Records Upstream of Box Butte Reservoir***

Surface water diversion records for the water year 2015 are included in Appendix A. The canals measured include: Bennett-Kay Canal; Cook Canal No. 1; Earnest Canal (South); Earnest Canal (North); Excelsior Canal; Harris-Neece Canal; Geo. Hitsheew Canal; Hughes Canal; Johnson Canal; Labelle Canal; Lakota Canal; Lichte Canal; McGinley-Stover Canal; McLaughlin Canal; Mettlen Canal; Montague Canal; and the Moore-Kay Canal.

***2) Non-gaged Stream Measurements***

Non-gaged stream measurements for the water year 2015 are included in Appendix B. Measurements were conducted at the following streams: Niobrara River and White River. Measurements were also conducted at various diversions: Armstrong Pump, Cook Pump, Delsing Pump, Harris-Cooper Canal, Montague Canal Pump, Pioneer Pump #2, White River Canal, Whitney Reservoir and Wilkins Pump.

**2016 ANNUAL REPORT OF 2015 DATA**  
**BY THE DEPARTMENT OF NATURAL RESOURCES**  
**TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL**  
**RESOURCES DISTRICT'S**  
**INTEGRATED MANAGEMENT PLAN**

**Department Reporting: Permitting**

The IMP requires that the Department annually report the following permitting actions within the surface water control area of the district:

- Surface water variances
- Cancelled surface water rights
- New uses and increases in municipal and industrial consumptive uses

Table 1 below contains detailed information on the permitting activities for calendar year 2015.

***1) Surface Water Variances***

During calendar year 2015, no requests for leave to file an application for a new surface water appropriation within an area under a moratorium or stay (variance) were received.

***2) Cancelled Surface Water Rights***

During calendar year 2015, six surface water permits were cancelled. They were temporary, one-year permits for road construction granted to the Dawes County Road Department (Table 1).

***3) New or Increased Municipal and Industrial Groundwater Uses***

There were no new or increased municipal or industrial groundwater uses in calendar year 2015.

**Current Studies**

The WaterSMART program was completed in 2015 by NeDNR and the United States Bureau of Reclamation. It is proposed that the District will be utilizing the program to analyze alternative water management scenarios and forecasting future groundwater conditions.

The Upper Niobrara White NRD and the Department are currently working together to prepare a refined hydrogeologic and hydrostratigraphic framework along the Niobrara River between Agate, Nebraska, and the Dunlap diversion for the Mirage Flats irrigation project. The Department is contracting with the University of Nebraska-Lincoln's Conservation and Survey Division to conduct this study. The purpose of this study is to gain additional information regarding surface water/groundwater interaction along the Niobrara River near the Box Butte Reservoir. The resulting information will be used in considering the extent of hydrologic connection in this area.



**2016 ANNUAL REPORT OF 2015 DATA**  
**BY THE DEPARTMENT OF NATURAL RESOURCES**  
 TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT'S  
 INTEGRATED MANAGEMENT PLAN

Table 1. Surface water permits cancelled during calendar year 2015, in the surface water control area of the UNWNRD

<b>Appropriation Number</b>	<b>Order of Cancellation Date</b>	<b>Variance</b>	<b>Sec</b>	<b>Twn</b>	<b>Rng</b>	<b>Dir</b>	<b>Use</b>	<b>Begin Acres</b>	<b>Cancelled Acres</b>	<b>Cancellation in CFS</b>	<b>Cancellation in AF</b>
A-19222	6/30/2015	VAR-4947	24	32	52	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10
A-19223	6/30/2015	VAR-4945	13	33	48	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10
A-19224	6/30/2015	VAR-4944	3	31	52	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10
A-19225	6/30/2015	VAR-4946	6	34	47	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10
A-19226	6/30/2015	VAR-4943	27	34	48	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10
A-19227	6/30/2015	VAR-4942	12	32	49	W	Manufacturing; Temporary Construction	N/A	N/A	N/A	10

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**13000 Bennett-Kay Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND,  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	0.17	1.9	0.36	0.49	0
2	---	---	---	---	---	---	---	0.11	1.7	0.39	0.49	0
3	---	---	---	---	---	---	---	0.04	1.6	0.33	0.5	0
4	---	---	---	---	---	---	---	0.01	1.4	0.26	0.51	0
5	---	---	---	---	---	---	---	0.01	1.2	0.28	1.7	0
6	---	---	---	---	---	---	---	0.04	1.1	0.3	2.3	0
7	---	---	---	---	---	---	---	0.13	0.77	0.27	2.3	0
8	---	---	---	---	---	---	---	0.18	3.7	0.28	2.3	0
9	---	---	---	---	---	---	---	0.62	4.2	0.29	2.3	0
10	---	---	---	---	---	---	---	2.8	2.4	0.29	2.3	0
11	---	---	---	---	---	---	---	1.8	1.8	0.3	1.6	0
12	---	---	---	---	---	---	---	1.7	1.5	0.31	1.2	0
13	---	---	---	---	---	---	---	1.5	1.2	0.32	1.2	0
14	---	---	---	---	---	---	0	1.3	1	0.32	1.2	0
15	---	---	---	---	---	---	0	1.4	0.9	2.4	1.2	0
16	---	---	---	---	---	---	0	1.7	0.83	3.6	1.2	0
17	---	---	---	---	---	---	0.09	1.6	0.79	3.8	0.4	0
18	---	---	---	---	---	---	0.36	1.3	0.74	3.8	0	0
19	---	---	---	---	---	---	0.72	1.2	0.71	3.3	0	0
20	---	---	---	---	---	---	0.51	1.6	0.68	0.83	0	0
21	---	---	---	---	---	---	0.38	1.9	0.65	0.53	0	0
22	---	---	---	---	---	---	0.33	1.8	0.62	0.45	0	0
23	---	---	---	---	---	---	0.31	1.5	0.62	0.47	0	---
24	---	---	---	---	---	---	0.29	1.7	0.6	0.49	0	---
25	---	---	---	---	---	---	0.24	2.4	0.61	0.51	0	---
26	---	---	---	---	---	---	0.22	2.4	0.62	0.53	0	---
27	---	---	---	---	---	---	0.27	2.2	0.58	0.55	0	---
28	---	---	---	---	---	---	0.29	1.9	0.56	0.56	0	---
29	---	---	---	---	---	---	0.27	1.9	0.54	0.53	0	---
30	---	---	---	---	---	---	0.23	2	0.51	0.5	0	---
31	---	---	---	---	---	---	---	2	---	0.51	0	---
<b>Total</b>	---	---	---	---	---	---	4.51	40.91	36.03	27.66	23.19	0.00
<b>Mean</b>	---	---	---	---	---	---	0.26	1.32	1.2	0.89	0.74	0
<b>Max</b>	---	---	---	---	---	---	0.72	2.8	4.2	3.8	2.3	0
<b>Min</b>	---	---	---	---	---	---	0	0.01	0.51	0.26	0	0
<b>AC-FT</b>	---	---	---	---	---	---	8.9	81	71	55	46	0
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	60	<b>MEAN</b>	0.34	<b>MAX</b>	3	<b>MIN</b>	0	<b>AC-FT</b>	119	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	132	<b>MEAN</b>	0.82	<b>MAX</b>	4	<b>MIN</b>	0	<b>AC-FT</b>	262	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**29000 Cook Canal No. 1 from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIobrara WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**38200 Earnest Canal (North) from Niobrara Rive  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	235	<b>MEAN</b>	1.74	<b>MAX</b>	8	<b>MIN</b>	0	<b>AC-FT</b>	465	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**38100 Earnest Canal (South) from Niobrara Rive  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	186	<b>MEAN</b>	1.38	<b>MAX</b>	7	<b>MIN</b>	0	<b>AC-FT</b>	369	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**46000 Excelsior Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**63000 Geo. Hitsheew Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**62000 Harris-Neece Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	0.00	0.87	2.70	7.80
2	---	---	---	---	---	---	---	---	0.00	1.80	2.80	7.80
3	---	---	---	---	---	---	---	---	0.00	2.80	2.8	7.5
4	---	---	---	---	---	---	---	---	0.00	4.20	---	7.30
5	---	---	---	---	---	---	---	0	0	5.9	---	7
6	---	---	---	---	---	---	---	0	0	7.8	---	6.8
7	---	---	---	---	---	---	---	0	0	11	---	6.5
8	---	---	---	---	---	---	---	0	---	11	---	6.3
9	---	---	---	---	---	---	---	0	---	11	---	6.4
10	---	---	---	---	---	---	---	0	---	11	---	6.4
11	---	---	---	---	---	---	---	0	---	11	8.9	6.4
12	---	---	---	---	---	---	---	0	---	11	8.8	6.5
13	---	---	---	---	---	---	---	0	---	11	8.8	6.5
14	---	---	---	---	---	---	---	0	---	8	8.9	6.6
15	---	---	---	---	---	---	---	0	---	3.3	8.9	6.4
16	---	---	---	---	---	---	---	0	---	3.4	8.8	6.3
17	---	---	---	---	---	---	---	0	---	3.7	8.6	6.3
18	---	---	---	---	---	---	---	0	---	4	8.2	6.4
19	---	---	---	---	---	---	---	0	---	4.3	7.8	6.4
20	---	---	---	---	---	---	---	0	---	4.5	7.9	6.5
21	---	---	---	---	---	---	---	0	---	4.7	8	6.7
22	---	---	---	---	---	---	---	0	---	7.8	8	6.8
23	---	---	---	---	---	---	---	0	---	9.4	8.1	6.9
24	---	---	---	---	---	---	---	0	0.03	7.2	8.1	7.1
25	---	---	---	---	---	---	---	0	0.02	6.2	8.1	7.3
26	---	---	---	---	---	---	---	0	0.02	6.3	8.5	8.1
27	---	---	---	---	---	---	---	0	0.01	6.5	8.5	8.8
28	---	---	---	---	---	---	---	0	0.01	3.8	7.8	9.1
29	---	---	---	---	---	---	---	0	0	2.4	7.4	9.2
30	---	---	---	---	---	---	---	0	0.18	2.5	7.3	---
31	---	---	---	---	---	---	---	0	---	2.6	7.1	---
<b>Total</b>	---	---	---	---	---	---	---	0.00	0.27	190.97	180.80	204.10
<b>Mean</b>	---	---	---	---	---	---	---	0	0.02	6.19	7.53	7.04
<b>Max</b>	---	---	---	---	---	---	---	0	0.18	11	8.90	9.2
<b>Min</b>	---	---	---	---	---	---	---	0	0	0.87	2.7	6.3
<b>AC-FT</b>	---	---	---	---	---	---	---	0.00	0.50	379.00	359.00	405.00
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	557	<b>MEAN</b>	3.44	<b>MAX</b>	11	<b>MIN</b>	0	<b>AC-FT</b>	1110	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	576	<b>MEAN</b>	4.61	<b>MAX</b>	11	<b>MIN</b>	0	<b>AC-FT</b>	1140	



**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**69000 Hughes Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	11	<b>MEAN</b>	0.075	<b>MAX</b>	1	<b>MIN</b>	0	<b>AC-FT</b>	22	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**72000 Johnson Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	0	7.7	0	0	0
2	---	---	---	---	---	---	---	0	7.4	0	0	0
3	---	---	---	---	---	---	---	0	6.6	0	0	0
4	---	---	---	---	---	---	---	0	2.2	0	0	0
5	---	---	---	---	---	---	---	0	0.05	0	0	0
6	---	---	---	---	---	---	---	0	9.8	0	0	0
7	---	---	---	---	---	---	---	0	11	0	0	0
8	---	---	---	---	---	---	---	0	9.5	0	0	0
9	---	---	---	---	---	---	---	0	8.5	0	0	0
10	---	---	---	---	---	---	---	0.61	7.4	0	0	0
11	---	---	---	---	---	---	---	1.3	6.4	0	0	---
12	---	---	---	---	---	---	---	1.7	5.5	0	0	---
13	---	---	---	---	---	---	---	0.93	4.6	0	0	---
14	---	---	---	---	---	---	---	0.76	3.8	0	0	---
15	---	---	---	---	---	---	---	0.72	3	0	0	---
16	---	---	---	---	---	---	---	0.75	2.3	0	0	---
17	---	---	---	---	---	---	---	0.46	1.7	0	0	---
18	---	---	---	---	---	---	---	0.5	0.57	0	0	---
19	---	---	---	---	---	---	---	0.78	0	0	0	---
20	---	---	---	---	---	---	---	2.1	0	0	0	---
21	---	---	---	---	---	---	---	2.2	0	0	0	---
22	---	---	---	---	---	---	0	2.1	0	0	0	---
23	---	---	---	---	---	---	0	1.9	0	0	0	---
24	---	---	---	---	---	---	0	2	0	0	0	---
25	---	---	---	---	---	---	0	1.6	0	0	0	---
26	---	---	---	---	---	---	0	1.1	0	0	0	---
27	---	---	---	---	---	---	0	0.97	0	0	0	---
28	---	---	---	---	---	---	0	2.1	0	0	0	---
29	---	---	---	---	---	---	0	10	0	0	0	---
30	---	---	---	---	---	---	0	9.5	0	0	0	---
31	---	---	---	---	---	---	---	8.3	---	0	0	---
<b>Total</b>	---	---	---	---	---	---	0	52.38	98.02	0	0	0
<b>Mean</b>	---	---	---	---	---	---	0	1.7	3.26	0	0	0
<b>Max</b>	---	---	---	---	---	---	0	10	11	0	0	0
<b>Min</b>	---	---	---	---	---	---	0	0	0	0	0	0
<b>AC-FT</b>	---	---	---	---	---	---	0	104	194	0	0	0
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	85	<b>MEAN</b>	0.52	<b>MAX</b>	6	<b>MIN</b>	0	<b>AC-FT</b>	168	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	150	<b>MEAN</b>	1.06	<b>MAX</b>	11	<b>MIN</b>	0	<b>AC-FT</b>	298	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**78000 Labelle Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	6.2	0.9	0	0	0
2	---	---	---	---	---	---	---	5.6	0.37	0	0	0
3	---	---	---	---	---	---	---	5.2	0.16	0	0	0
4	---	---	---	---	---	---	---	4.1	0.03	0	0	0
5	---	---	---	---	---	---	---	0.25	0	0	0	0
6	---	---	---	---	---	---	---	0.07	0	0	0	0
7	---	---	---	---	---	---	---	0.05	0.1	0	0	0
8	---	---	---	---	---	---	---	0.03	0.5	0	0	0
9	---	---	---	---	---	---	---	0.49	0.51	0	0	0
10	---	---	---	---	---	---	---	3.8	0.51	0	0	0
11	---	---	---	---	---	---	---	2.8	0.52	0	0	0
12	---	---	---	---	---	---	---	5.2	0.52	0	0	0
13	---	---	---	---	---	---	---	1.3	0.46	0	0	0
14	---	---	---	---	---	---	6.6	1.3	0.36	0	0	0
15	---	---	---	---	---	---	6.7	1.2	0.22	0	0	0
16	---	---	---	---	---	---	6.7	1.4	0	0	0	0
17	---	---	---	---	---	---	6.7	1.1	0	0	0	0
18	---	---	---	---	---	---	6.7	1	0	0	0	0
19	---	---	---	---	---	---	6.9	1.1	0	0	0	0
20	---	---	---	---	---	---	7.1	1.2	0	0	0	0
21	---	---	---	---	---	---	7.1	1	0	0	0	0
22	---	---	---	---	---	---	7.1	0.8	0	0	0	0
23	---	---	---	---	---	---	7.2	0.7	0	0	0	---
24	---	---	---	---	---	---	7.2	0.83	0	0	0	---
25	---	---	---	---	---	---	7.1	0.86	0	0	0	---
26	---	---	---	---	---	---	7.2	0.81	0	0	0	---
27	---	---	---	---	---	---	7.2	0.78	0	0	0	---
28	---	---	---	---	---	---	7.2	0.76	0	0	0	---
29	---	---	---	---	---	---	7.1	0.78	0	0	0	---
30	---	---	---	---	---	---	6.7	1.1	0	0	0	---
31	---	---	---	---	---	---	---	1.1	---	0	0	---
<b>Total</b>	---	---	---	---	---	---	118.5	52.91	5.16	0	0	0
<b>Mean</b>	---	---	---	---	---	---	6.97	1.7	0.17	0	0	0
<b>Max</b>	---	---	---	---	---	---	7.2	6.2	0.9	0	0	0
<b>Min</b>	---	---	---	---	---	---	6.6	0.03	0	0	0	0
<b>AC-FT</b>	---	---	---	---	---	---	235	105	10	0	0	0
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	177	<b>MEAN</b>	1.09	<b>MAX</b>	7	<b>MIN</b>	0	<b>AC-FT</b>	350	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**79000 Lakotah Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	3.1	---	---	---	---	---	---	3.7	0.76	0.21	2.2	2
2	2.8	---	---	---	---	---	---	3.5	0.6	0.22	2.1	2
3	3.4	---	---	---	---	---	---	3.3	0.48	0.97	2.1	1.9
4	3.4	---	---	---	---	---	---	3.1	0.46	1.3	2.2	1.9
5	2.3	---	---	---	---	---	---	3.1	0.67	1.2	2.2	1.9
6	1.7	---	---	---	---	---	---	3.4	1.1	1.2	2.3	1.9
7	---	---	---	---	---	---	---	4.3	0.68	2.3	2.4	1.8
8	---	---	---	---	---	---	---	4	0.64	4.3	2.4	1.8
9	---	---	---	---	---	---	---	5.5	0.7	4.5	2.4	1.8
10	---	---	---	---	---	---	---	8	1.4	4.4	2.3	1.8
11	---	---	---	---	---	---	---	8.3	1.9	4.1	2.3	1.9
12	---	---	---	---	---	---	---	9	1.9	3.7	2.4	2
13	---	---	---	---	---	---	---	8.1	1.8	3.4	2.7	2
14	---	---	---	---	---	---	---	8.4	1.8	3.3	2.8	2
15	---	---	---	---	---	---	0.82	8.3	1.7	3.3	2.4	2
16	---	---	---	---	---	---	2.2	9.2	1.7	3.7	2.1	2
17	---	---	---	---	---	---	2.8	7.9	1.7	3.9	2	1.9
18	---	---	---	---	---	---	4.1	5.5	1.6	6.9	2.3	1.9
19	---	---	---	---	---	---	4.5	2.5	1.5	11	2.6	2
20	---	---	---	---	---	---	4.3	2.3	1.3	7.2	2.7	2.1
21	---	---	---	---	---	---	4.2	1.8	1.1	5.3	2.7	2.1
22	---	---	---	---	---	---	4	1.6	0.94	5.3	2.5	2.1
23	---	---	---	---	---	---	3.5	1.5	0.82	4.7	2.4	2.1
24	---	---	---	---	---	---	3.3	1.9	0.76	3.8	2.2	2.2
25	---	---	---	---	---	---	3.2	2.1	0.76	3.3	2.2	2.2
26	---	---	---	---	---	---	3.3	1.9	0.74	3	2.1	2.2
27	---	---	---	---	---	---	3.9	1.8	0.68	2.8	2.2	2.2
28	---	---	---	---	---	---	3.9	3	0.63	2.6	2.3	2.2
29	---	---	---	---	---	---	4	1.9	0.58	2.4	2.2	2.2
30	---	---	---	---	---	---	4	1.1	0.36	2.3	2.2	---
31	---	---	---	---	---	---	---	1.1	---	2.2	2.1	---
<b>Total</b>	16.7	---	---	---	---	---	56.02	131.1	31.76	108.8	72	58.1
<b>Mean</b>	2.78	---	---	---	---	---	3.5	4.24	1.06	3.52	2.32	2
<b>Max</b>	3.4	---	---	---	---	---	4.5	9.2	1.9	11	2.8	2.2
<b>Min</b>	1.7	---	---	---	---	---	0.82	1.1	0.36	0.21	2	1.8
<b>AC-FT</b>	33	---	---	---	---	---	111	260	63	216	143	115
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	170	<b>MEAN</b>	1.01	<b>MAX</b>	5	<b>MIN</b>	0	<b>AC-FT</b>	336	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	474	<b>MEAN</b>	2.73	<b>MAX</b>	11	<b>MIN</b>	0.21	<b>AC-FT</b>	941	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**81000 Lichte Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**84000 McGinley-Stover Canal from Niobrara Rive  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	0.01	---	---	---	---	---	---	0	0.01	0.36	2.7	0
2	0	---	---	---	---	---	---	0	0	0.39	2.3	0
3	0	---	---	---	---	---	---	0	0	0.38	2	0
4	0	---	---	---	---	---	---	0	0	0.36	1.8	0
5	0	---	---	---	---	---	---	0	0	0.36	1.6	0
6	0	---	---	---	---	---	---	0	4.9	0.32	1.5	0
7	0	---	---	---	---	---	---	0	22	0.14	1.4	0
8	---	---	---	---	---	---	---	0	18	0	1.5	0
9	---	---	---	---	---	---	---	0	15	0	1.3	0
10	---	---	---	---	---	---	---	0.41	11	0	1.2	0
11	---	---	---	---	---	---	---	0.37	6.9	0	1.3	0
12	---	---	---	---	---	---	---	0.34	2.2	0	1.1	0
13	---	---	---	---	---	---	---	0.32	0.53	0	0.87	0
14	---	---	---	---	---	---	---	0.3	0.1	0	0.84	0
15	---	---	---	---	---	---	---	0.34	0.1	0	0.68	0
16	---	---	---	---	---	---	---	0.25	0.15	0	0.65	0
17	---	---	---	---	---	---	---	0.18	0.59	0	0.76	0
18	---	---	---	---	---	---	---	0.13	0.19	0	0.42	0
19	---	---	---	---	---	---	---	0.08	0.16	0	0	0
20	---	---	---	---	---	---	---	0.07	0.17	0	0	0
21	---	---	---	---	---	---	---	0.06	0.15	0.49	0	0
22	---	---	---	---	---	---	0	0.04	0.16	0.13	0	0
23	---	---	---	---	---	---	0	0.03	4.5	0.06	0	0
24	---	---	---	---	---	---	0	0.02	8.5	3.4	0	0
25	---	---	---	---	---	---	0	0.02	5.1	5.5	0	0
26	---	---	---	---	---	---	0	0.01	3.4	4.1	0	0
27	---	---	---	---	---	---	0	0	3.1	3.1	0	---
28	---	---	---	---	---	---	0	0	1.8	2.9	0	---
29	---	---	---	---	---	---	0	0.02	1.6	3	0	---
30	---	---	---	---	---	---	0	0.03	0.89	3.2	0	---
31	---	---	---	---	---	---	---	0.02	---	2.9	0	---
<b>Total</b>	0.01	---	---	---	---	---	0	3.04	111.2	31.09	23.92	0
<b>Mean</b>	0.001	---	---	---	---	---	0	0.099	3.71	1	0.77	0
<b>Max</b>	0.01	---	---	---	---	---	0	0.41	22	5.5	2.7	0
<b>Min</b>	0	---	---	---	---	---	0	0	0	0	0	0
<b>AC-FT</b>	0.02	---	---	---	---	---	0	6	221	62	47	0
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	146	<b>MEAN</b>	0.86	<b>MAX</b>	5	<b>MIN</b>	0	<b>AC-FT</b>	289	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	169	<b>MEAN</b>	1.03	<b>MAX</b>	22	<b>MIN</b>	0	<b>AC-FT</b>	336	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**86000 McLaughlin Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**89000 Mettlen Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	0.85	0.02	0.01	0	0
2	---	---	---	---	---	---	---	0.74	0.02	0.01	0	0
3	---	---	---	---	---	---	---	0.63	0.02	0.01	0	0
4	---	---	---	---	---	---	---	0.54	0.02	0.01	0	0
5	---	---	---	---	---	---	---	0.19	0.02	0.02	0	0
6	---	---	---	---	---	---	---	0	0.02	0.02	0	0
7	---	---	---	---	---	---	---	0	0.04	0.02	0	0
8	---	---	---	---	---	---	---	0	0.14	0.02	0	0
9	---	---	---	---	---	---	---	0	0.07	0.02	0	0
10	---	---	---	---	---	---	---	0.05	0.05	0.02	0	0
11	---	---	---	---	---	---	---	0	0.03	0.01	0	0
12	---	---	---	---	---	---	---	0	0.03	0.01	0	0
13	---	---	---	---	---	---	---	0	0.02	0	0	0
14	---	---	---	---	---	---	0.94	0	0.02	0	0	0
15	---	---	---	---	---	---	0.94	0	0.03	0	0	0
16	---	---	---	---	---	---	0.94	0	0.03	0.01	0	0
17	---	---	---	---	---	---	0.95	0	0.03	0.01	0	0
18	---	---	---	---	---	---	0.97	0	0.02	0.02	0	0
19	---	---	---	---	---	---	0.97	0	0.02	0.01	0	0
20	---	---	---	---	---	---	0.97	0	0.02	0.01	0	0
21	---	---	---	---	---	---	0.97	0	0.02	0.03	0	0
22	---	---	---	---	---	---	0.97	0	0.01	0.04	0	0
23	---	---	---	---	---	---	0.97	0	0.01	0.02	0	---
24	---	---	---	---	---	---	0.97	0.01	0.01	0	0	---
25	---	---	---	---	---	---	0.96	0.01	0.01	0	0	---
26	---	---	---	---	---	---	0.96	0.01	0.01	0	0	---
27	---	---	---	---	---	---	0.97	0.01	0.01	0	0	---
28	---	---	---	---	---	---	0.97	0.01	0.01	0	0	---
29	---	---	---	---	---	---	0.97	0.02	0.01	0	0	---
30	---	---	---	---	---	---	0.95	0.02	0.01	0	0	---
31	---	---	---	---	---	---	---	0.02	---	0	0	---
<b>Total</b>	---	---	---	---	---	---	16.34	3.11	0.78	0.33	0	0
<b>Mean</b>	---	---	---	---	---	---	0.96	0.099	0.026	0.01	0	0
<b>Max</b>	---	---	---	---	---	---	0.97	0.85	0.14	0.04	0	0
<b>Min</b>	---	---	---	---	---	---	0.94	0	0.01	0	0	0
<b>AC-FT</b>	---	---	---	---	---	---	32	6.2	1.5	0.7	0	0
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	58	<b>MEAN</b>	0.36	<b>MAX</b>	4	<b>MIN</b>	0	<b>AC-FT</b>	115	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	21	<b>MEAN</b>	0.13	<b>MAX</b>	1	<b>MIN</b>	0	<b>AC-FT</b>	41	



**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**102000 Montague Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**104000 Moore-Kay Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	1	7.5	---	---	---
2	---	---	---	---	---	---	---	0.92	8.5	---	---	---
3	---	---	---	---	---	---	---	0.92	8.2	---	---	---
4	---	---	---	---	---	---	---	0.91	7.8	---	---	---
5	---	---	---	---	---	---	---	0.25	7.2	---	---	---
6	---	---	---	---	---	---	---	0	6.8	---	---	---
7	---	---	---	---	---	---	---	0.05	---	---	---	---
8	---	---	---	---	---	---	---	0.28	---	---	---	---
9	---	---	---	---	---	---	---	0.06	---	0	---	---
10	---	---	---	---	---	---	---	0	---	0	---	---
11	---	---	---	---	---	---	---	0	---	0	---	---
12	---	---	---	---	---	---	---	0	---	0	---	---
13	---	---	---	---	---	---	---	0	---	0	---	---
14	---	---	---	---	---	---	---	0	---	0	---	---
15	---	---	---	---	---	---	---	0.11	---	0	---	---
16	---	---	---	---	---	---	---	0.14	---	0	---	---
17	---	---	---	---	---	---	---	0.24	---	0	---	---
18	---	---	---	---	---	---	---	0.7	---	0	---	---
19	---	---	---	---	---	---	---	1.1	---	0	---	---
20	---	---	---	---	---	---	---	1.2	---	---	---	---
21	---	---	---	---	---	---	2.6	1.4	---	---	---	---
22	---	---	---	---	---	---	2.6	1.6	---	---	---	---
23	---	---	---	---	---	---	2.6	2.3	---	---	---	---
24	---	---	---	---	---	---	2.4	2.5	---	---	---	---
25	---	---	---	---	---	---	2.2	1.4	---	---	---	---
26	---	---	---	---	---	---	1.9	1.5	---	---	---	---
27	---	---	---	---	---	---	1.3	2.7	---	---	---	---
28	---	---	---	---	---	---	1.2	4	---	---	---	---
29	---	---	---	---	---	---	1.1	5.2	---	---	---	---
30	---	---	---	---	---	---	0.97	5.4	---	---	---	---
31	---	---	---	---	---	---	---	6.2	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	18.87	42.08	46	0	---	---
<b>Mean</b>	---	---	---	---	---	---	1.88	1.35	7.68	0	---	---
<b>Max</b>	---	---	---	---	---	---	2.6	6.2	8.5	0	---	---
<b>Min</b>	---	---	---	---	---	---	0.97	0	6.8	0	---	---
<b>AC-FT</b>	---	---	---	---	---	---	37	83	91	0	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	114	<b>MEAN</b>	0.73	<b>MAX</b>	5	<b>MIN</b>	0	<b>AC-FT</b>	225	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	107	<b>MEAN</b>	1.84	<b>MAX</b>	9	<b>MIN</b>	0	<b>AC-FT</b>	212	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**123000 Pioneer Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	e0.00	---	---	---	---	---	---	---	---	---	1	4.4
2	e0.00	---	---	---	---	---	---	---	---	0	1.2	4.3
3	e0.00	---	---	---	---	---	---	---	---	---	1.3	4.2
4	e0.00	---	---	---	---	---	---	---	---	---	2.3	4.2
5	e0.00	---	---	---	---	---	---	---	---	---	6.7	4.2
6	e0.00	---	---	---	---	---	---	---	---	---	9.2	4.1
7	e0.00	---	---	---	---	---	---	---	---	---	9.9	4.1
8	---	---	---	---	---	---	---	---	---	---	9.9	4.1
9	---	---	---	---	---	---	---	---	---	0	9.8	4.1
10	---	---	---	---	---	---	---	---	---	0	9.4	4.1
11	---	---	---	---	---	---	---	---	---	0	9.1	4.1
12	---	---	---	---	---	---	---	---	---	0	8.6	4.1
13	---	---	---	---	---	---	---	---	---	0	8.4	4.1
14	---	---	---	---	---	---	---	---	---	0	8.1	4.1
15	---	---	---	---	---	---	---	---	---	0	7.8	4.1
16	---	---	---	---	---	---	---	---	---	0	7.5	3.7
17	---	---	---	---	---	---	---	---	---	0	7.3	3.1
18	---	---	---	---	---	---	---	---	---	0	7.3	3.2
19	---	---	---	---	---	---	---	---	---	0	7.2	3.2
20	---	---	---	---	---	---	---	---	---	0	7.1	3.2
21	---	---	---	---	---	---	---	---	---	0	6.9	3.2
22	---	---	---	---	---	---	---	---	---	0	6.7	3.3
23	---	---	---	---	---	---	---	---	---	0.02	6.4	3.3
24	---	---	---	---	---	---	---	---	---	0.1	6	3.3
25	---	---	---	---	---	---	---	---	---	0.17	5.8	3.7
26	---	---	---	---	---	---	---	---	---	0.25	5.6	4.4
27	---	---	---	---	---	---	---	---	---	0.33	5.4	4.4
28	---	---	---	---	---	---	---	---	---	0.45	5.2	4.5
29	---	---	---	---	---	---	---	---	---	0.56	5	4.5
30	---	---	---	---	---	---	---	---	---	0.7	4.7	4.5
31	---	---	---	---	---	---	---	---	---	0.85	4.5	---
<b>Total</b>	0	---	---	---	---	---	---	---	---	3.43	201.3	117.8
<b>Mean</b>	0	---	---	---	---	---	---	---	---	0.14	6.49	3.92
<b>Max</b>	0	---	---	---	---	---	---	---	---	0.85	9.9	4.5
<b>Min</b>	0	---	---	---	---	---	---	---	---	0	1	3.1
<b>AC-FT</b>	0	---	---	---	---	---	---	---	---	6.8	399	234
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	110	<b>MEAN</b>	0.69	<b>MAX</b>	3	<b>MIN</b>	0	<b>AC-FT</b>	217	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	323	<b>MEAN</b>	3.51	<b>MAX</b>	10	<b>MIN</b>	0	<b>AC-FT</b>	640	

**APPENDIX A  
CANAL DIVERSIONS 2015**

2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL RESOURCES TO  
MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE NATURAL RESOURCES DISTRICT  
INTEGRATED MANAGEMENT PLAN

**124000 Potmesil Canal from Niobrara River  
DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCT 2014 TO SEP 2015  
Daily Mean Values**

Day	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
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26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>AC-FT</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>CAL</b>												
<b>YEAR</b>	2014	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	
<b>WTR</b>												
<b>YEAR</b>	2015	<b>TOTAL</b>	0	<b>MEAN</b>	0	<b>MAX</b>	0	<b>MIN</b>	0	<b>AC-FT</b>	0	

**APPENDIX B**  
**NON-GAGED MEASUREMENTS 2015**  
2016 ANNUAL REPORT OF 2015 DATA, BY THE DEPARTMENT OF NATURAL  
RESOURCES TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE  
NATURAL RESOURCES DISTRICT INTEGRATED MANAGEMENT PLAN

Date	Site number	Site Name	Discharge
4/21/2015	6400	Armstrong Pump fr Niobrara River	0
6/2/2015	6400	Armstrong Pump fr Niobrara River	0
6/24/2015	6400	Armstrong Pump fr Niobrara River	0
6/30/2015	6400	Armstrong Pump fr Niobrara River	0
7/7/2015	6400	Armstrong Pump fr Niobrara River	0
7/14/2015	6400	Armstrong Pump fr Niobrara River	0
7/21/2015	6400	Armstrong Pump fr Niobrara River	0
7/28/2015	6400	Armstrong Pump fr Niobrara River	0
8/4/2015	6400	Armstrong Pump fr Niobrara River	0
8/11/2015	6400	Armstrong Pump fr Niobrara River	0
8/18/2015	6400	Armstrong Pump fr Niobrara River	0
8/25/2015	6400	Armstrong Pump fr Niobrara River	0
9/8/2015	6400	Armstrong Pump fr Niobrara River	0
4/22/2015	6380	Cook Pump fr Niobrara River	0
4/30/2015	6380	Cook Pump fr Niobrara River	0
5/5/2015	6380	Cook Pump fr Niobrara River	0
6/3/2015	6380	Cook Pump fr Niobrara River	0
6/30/2015	6380	Cook Pump fr Niobrara River	0
7/7/2015	6380	Cook Pump fr Niobrara River	1.45
7/14/2015	6380	Cook Pump fr Niobrara River	0
7/22/2015	6380	Cook Pump fr Niobrara River	0
7/28/2015	6380	Cook Pump fr Niobrara River	0
8/4/2015	6380	Cook Pump fr Niobrara River	1.23
8/11/2015	6380	Cook Pump fr Niobrara River	1.34
8/18/2015	6380	Cook Pump fr Niobrara River	1.23
8/25/2015	6380	Cook Pump fr Niobrara River	0
9/1/2015	6380	Cook Pump fr Niobrara River	0
9/8/2015	6380	Cook Pump fr Niobrara River	0
7/2/2015	6440	Delsing Pump fr Niobrara River	0.99
7/9/2015	6440	Delsing Pump fr Niobrara River	0.99
7/14/2015	6440	Delsing Pump fr Niobrara River	0
7/16/2015	6440	Delsing Pump fr Niobrara River	0
8/6/2015	6440	Delsing Pump fr Niobrara River	0.99
8/13/2015	6440	Delsing Pump fr Niobrara River	0.99
8/20/2015	6440	Delsing Pump fr Niobrara River	0
8/28/2015	6440	Delsing Pump fr Niobrara River	0
9/14/2015	6440	Delsing Pump fr Niobrara River	0

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Date	Site number	Site Name	Discharge
7/20/2015	6130	Harris-Cooper Canal fr White River	0
8/12/2015	6130	Harris-Cooper Canal fr White River	0
3/31/2015	3500	Indian Creek near Whitney	0.48
8/5/2015	6335	Meister Pump fr Bordeaux Creek	2.7
4/13/2015	6445	Montague Canal Pump fr Niobrara River	0
5/4/2015	6445	Montague Canal Pump fr Niobrara River	0
7/2/2015	6445	Montague Canal Pump fr Niobrara River	0
7/9/2015	6445	Montague Canal Pump fr Niobrara River	0
7/23/2015	6445	Montague Canal Pump fr Niobrara River	0
8/6/2015	6445	Montague Canal Pump fr Niobrara River	0
8/13/2015	6445	Montague Canal Pump fr Niobrara River	0
8/20/2015	6445	Montague Canal Pump fr Niobrara River	0
8/28/2015	6445	Montague Canal Pump fr Niobrara River	0
9/14/2015	6445	Montague Canal Pump fr Niobrara River	0
4/30/2015	6379	Niobrara River 600' upstream Cook Canal	12.9
4/13/2015	3750	Niobrara River at old Dunlap Bridge	10.4
7/2/2015	3750	Niobrara River at old Dunlap Bridge	18.8
4/30/2015	6366	Niobrara River at Wilson's Culvert (5' culvert)	6.27
4/30/2015	6369	Niobrara River Road into Joe Nunn's (3.5' culvert)	11.8
4/30/2015	6368	Niobrara River Road into Neil Nunn's (4' culvert)	7.48
4/30/2015	6381	Niobrara River Road into Sandoz house(4' culvert)	17.7
8/5/2015	6325	Pinkerton Pump fr Bordeaux Creek	0
4/16/2015	6425	Pioneer Pump #2 fr Niobrara River	0
7/9/2015	6425	Pioneer Pump #2 fr Niobrara River	0
7/16/2015	6425	Pioneer Pump #2 fr Niobrara River	0
7/23/2015	6425	Pioneer Pump #2 fr Niobrara River	0
8/6/2015	6425	Pioneer Pump #2 fr Niobrara River	0
8/13/2015	6425	Pioneer Pump #2 fr Niobrara River	0
8/20/2015	6425	Pioneer Pump #2 fr Niobrara River	0
8/28/2015	6425	Pioneer Pump #2 fr Niobrara River	0
9/3/2015	6425	Pioneer Pump #2 fr Niobrara River	0
3/24/2015	3390	Squaw Creek above Squaw Creek Reservoir	0.23
4/28/2015	3390	Squaw Creek above Squaw Creek Reservoir	0.4
5/15/2015	3390	Squaw Creek above Squaw Creek Reservoir	0.86
9/21/2015	3390	Squaw Creek above Squaw Creek Reservoir	0.07
3/24/2015	3400	Squaw Creek below Squaw Creek Reservoir	0.16
4/28/2015	3400	Squaw Creek below Squaw Creek Reservoir	0.32

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Date	Site number	Site Name	Discharge
5/15/2015	3400	Squaw Creek below Squaw Creek Reservoir	0.85
7/20/2015	6105	White River Canal fr White River	0
8/12/2015	6105	White River Canal fr White River	7.37
4/20/2015	6165	Whitney Pipeline fr White River	0
7/20/2015	6165	Whitney Pipeline fr White River	0
10/2/2014	6149	Whitney Reservoir	7030
1/20/2015	6149	Whitney Reservoir	9260
6/23/2015	6149	Whitney Reservoir	8830
7/20/2015	6149	Whitney Reservoir	10412
7/9/2015	6430	Wilkins Pump fr Niobrara River	0
8/6/2015	6430	Wilkins Pump fr Niobrara River	0
8/28/2015	6430	Wilkins Pump fr Niobrara River	0