
2021 ANNUAL INTEGRATED MANAGEMENT PLAN REPORT:

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

REPORTING ON 2020 DATA

ANNUAL MEETING HELD ON NOVEMBER 9, 2021

2021 ANNUAL REPORT
BY THE DEPARTMENT OF NATURAL RESOURCES OF 2020 DATA
TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE
NATURAL RESOURCES DISTRICT'S INTEGRATED MANAGEMENT PLAN

Purpose

This report fulfills the Department of Natural Resources' (Department or NeDNR) responsibilities as outlined in the Upper Niobrara White Natural Resources District (District or UNWNRD) integrated management plan (IMP) and provide updates to current projects and studies in the area.

Reporting and exchanging information gathered from monitoring projects, streamflow data, or other studies provides a basis for increased understanding of the hydrologically connected surface water and groundwater system. In areas where surface water and groundwater are hydrologically connected, estimates of water quantity of either surface water or groundwater cannot be evaluated separately. The data gathered through the IMP's monitoring plan and reported here are provided to assist evaluation of the success of the IMP's objectives. 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 through December 31, 2020. Also included are canal diversion and streamflow measurements from the 2020 water year, starting October 1, 2019 through September 30, 2020.

Department Reporting

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

1. *Surface water permitting*
 - a. Any order of cancellation issued pursuant to Neb. Rev. Stat. § 46-229.04(5) or any assignment of the right to use that portion of an appropriation which was relinquished.
 - b. Variances granted by the Department, facts offered as justification for the variance to be granted and the reasons for the action taken. See **Appendix C** for full text of the Department of Natural Resources Rules of Surface Water, Title 457, Neb. Admin. Code, Chapter 23, concerning variances.
2. *Diversions*
 - a. Records of surface water diversions collected by the Department upstream of the Box Butte Reservoir.
3. *Streamflow*
 - a. Records of streamflow measurements taken from non-gaged streams within the District.

1. *Surface Water Permitting*

- a. ***Any order of cancellation issued pursuant to Neb. Rev. Stat. § 46-229.04(5) or any assignment of the right to use that portion of an appropriation which was relinquished.***

In 2020, the Department received, from the White River Irrigation District and individual landowners, pursuant to *Neb. Rev. Stat. § 46-229.04(5)*, and subsequently acted upon PREL-9173 and PREL-9174 which provisionally relinquished a portion of surface water appropriations Docket Number 477 (D-477) and Docket Number 477R (D-477R). The Department received Notification of Reassignment REA-9175, reassigning the location of use of the relinquished portions of D-477 and D-477R, filed by the White River Irrigation District. **Table 1** summarizes these filings.

- b. ***Variances granted by the Department, facts offered as justification for the variance to be granted and the reasons for the action taken.***

In 2020, the Department received and acted upon five variances, and four subsequent associated applications. Four were petitions to file for temporary, one-year permits for road construction filed by the Dawes County Road Department. The fifth petition filed was to request leave to file an application to use stored water for irrigation. The process has two steps, where petitioners who have been granted leave to file, have one year from NeDNR's order, to file said application for a permit to appropriate water. The petitioner filing for leave for storage use did file their application in a timely manner, but not until 2021, therefore, the subsequent application approval will be reported in next year's report. **Table 2** summarizes the variances and associated applications.

The Department did not act upon any cancellations in 2020. **Figure 1** shows the locations of the permitting actions in 2020 within the surface water control area.

Table 1: Summary of Preliminary Relinquishments and Notice of Reassignment of Rights

Location of Provisional Relinquishments PREL-9173 and PREL-9174, and Reassignment of Acres REA-9175 For Docket D-477, diverting from White River via the White River Canal and Docket D-477R Diverting from White Clay Creek via the McFarland Canal Held by the White River Irrigation District				
Legal Description	County	Acres	Acres	Acres
		PREL-9173	PREL-9174	REA-9175
		D-477	D-477R	D-477 D-477R
NE NW S25 T32N-R52W	Dawes	12.0	12.0	10.1
SW NW S25 T32N-R52W	Dawes	9.0	9.0	10.2
SE NW S25 T32N-R52W	Dawes	5.0	5.0	30.4
SW NE S25 T32N-R52W	Dawes	28.0	28.0	0.0
NW SW S25 T32N-R52W	Dawes	0.0	0.0	1.4
NE SW S25 T32N-R52W	Dawes	0.0	0.0	1.9
Total Acres		54.0	54.0	54.0

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Table 2: Variances and associated applications acted upon in 2020 within the Upper Niobrara White NRD

Appropriation Number	Approval Date	Point of Diversion Location				Use	Source	Name of Reservoir	Grant in CFS	Grant in AF	Variance Petition Basis	Associated Variance
		Sec	Twn	Rng	Dir							
A-19704	5/14/2020	13	33	48	W	Temporary Road Construction	Bordeaux Creek, Little	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-8917
A-19705	5/14/2020	27	34	48	W	Temporary Road Construction	Bordeaux Creek	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-8918
A-19706	5/14/2020	3	31	52	W	Temporary Road Construction	White River	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-8919
A-19707	5/14/2020	24	32	52	W	Temporary Road Construction	White River	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-8920
Not filed in 2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.04	VAR-7538

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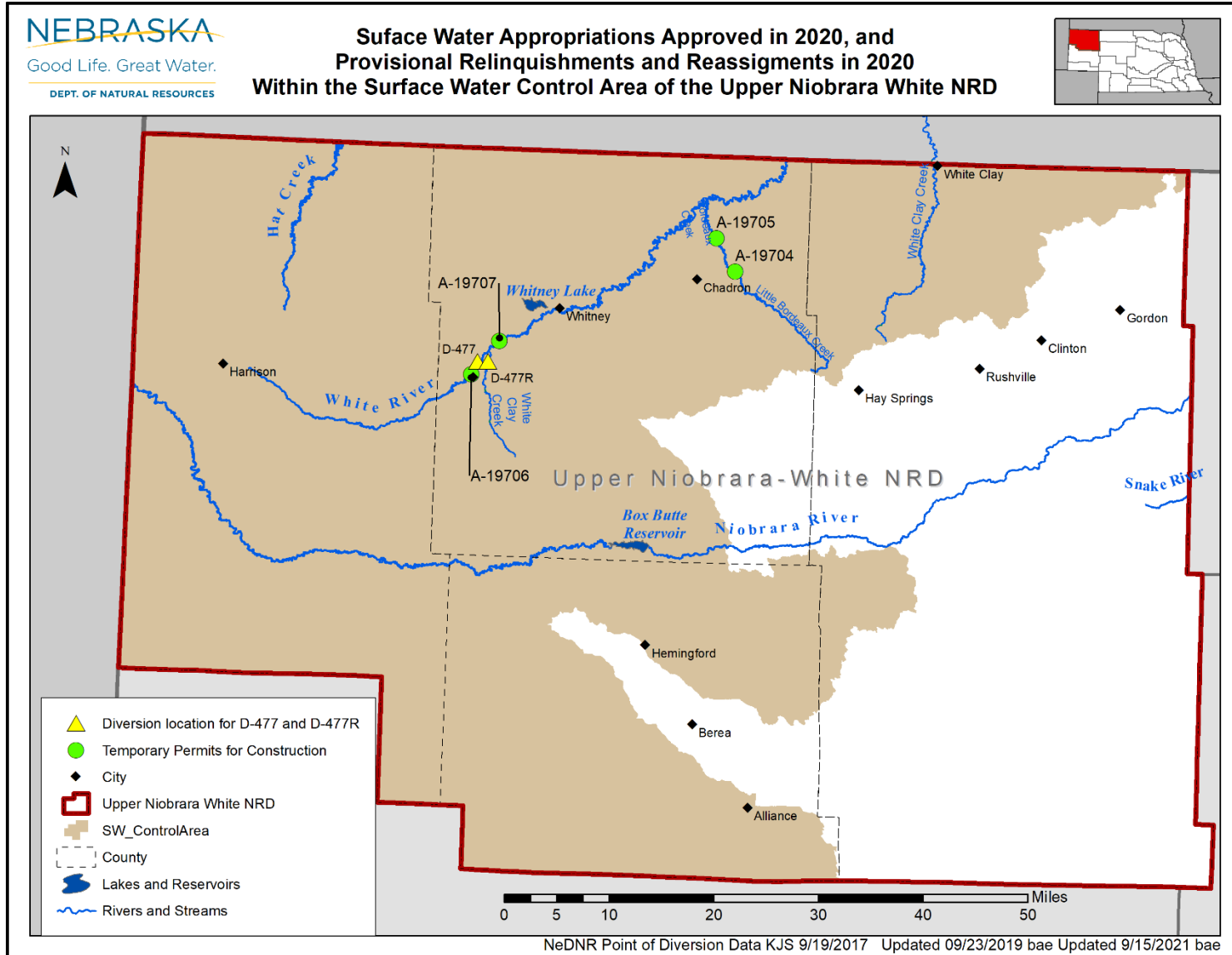


Figure 1: New temporary appropriations for construction, and appropriations preliminarily relinquished and reassigned.

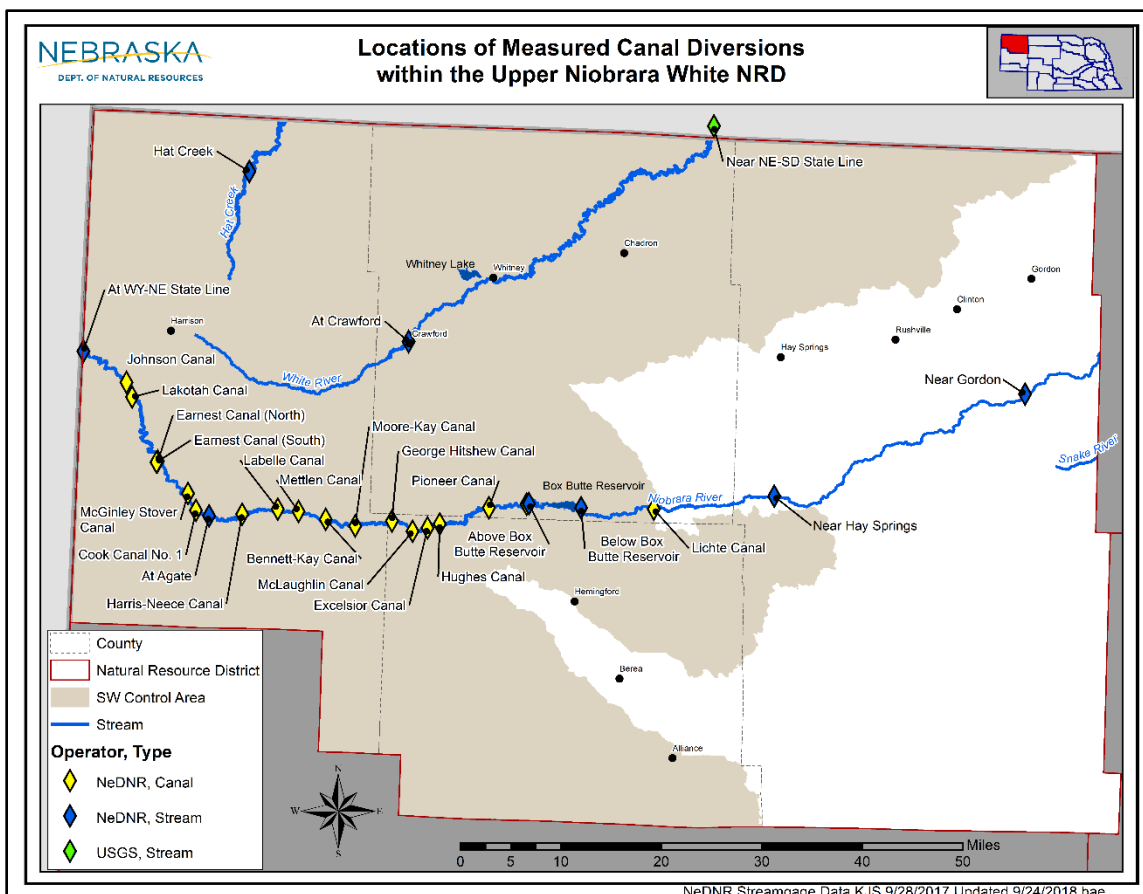


Figure 2: Locations of gaged measurements included in Appendix A.

Diversions

a. Records of surface water diversions collected by the Department upstream of the Box Butte Reservoir

Surface water diversion records for the water year 2020 are included in **Appendix A** and their locations are shown in **Figure 2**. The canals measured include: Bennett-Kay Canal; Cook Canal No. 1; Earnest Canal (North); Earnest Canal (South); Excelsior Canal; Geo. Hitsheiw Canal; Harris-Neece Canal; Hughes Canal; Johnson Canal; Labelle Canal; Lakota Canal; McGinley-Stover Canal; McLaughlin Canal; Mettlen Canal; Moore-Kay Canal and the Pioneer Canal.

Streamflow measurements for gaged streams may be found at: <https://waterdata.usgs.gov/ne/nwis/current/?type=flow>.

2. Streamflow

a. Records of field measurements of diversions into canals and of streamflow within the District.

Non-gaged stream locations, pumpsite and reservoir measurements for calendar year 2020 are included in **Appendix B**.

3. Monitoring

a. Surface water pump site inspections conducted in 2020.

The NeDNR field office staff regularly inspects pump sites of surface water diversion points as conditions allow. Not all pump sites are inspected every irrigation season, and some pump sites may be visited more than once per season. In 2020, field office staff inspected 94 pump sites (**Figure 3**), this is in addition to the field measurements of diversions into canals (**Appendix B**), in the UNWNRD. As a part of inspections, field staff collect the following data:

- Evidence of pump site
- Pumps that are running
- Crops in field
- Irrigation method

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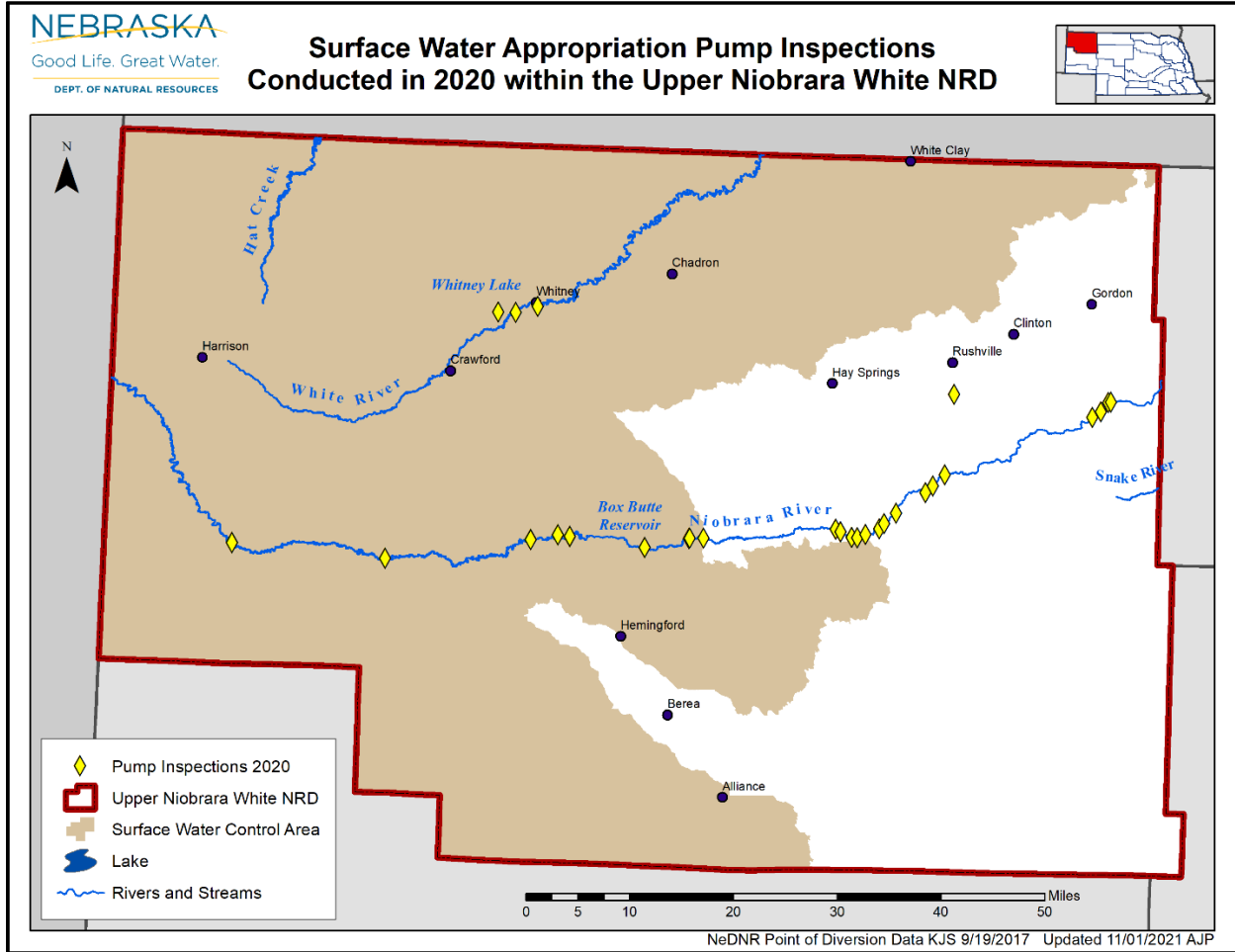


Figure 3: Pump site inspections conducted in 2020

Current Studies

The Department began working with the National Park Service and U.S. Geological Survey in 2020 to develop and calibrate a numerical groundwater model for most of the Niobrara basin in Nebraska, including a portion of the District. Calibration and documentation of the numerical model are expected to be completed in 2022.

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.42555, -103.5654 near Agate, NE. GAGE: Continuous stage recorder and concrete flume

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Dec 1, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00013000, Bennett-Kay Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-16 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 35.2 Mean: .143 Max: 2.59 Min: 0 Ac-Ft: 69.8

WY: Total: 79.8 Mean: .292 Max: 2.17 Min: 0 Ac-Ft: 158

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	0	2.03	.0334	.624	0
2	0	0	***	***	***	***	0	0	1.91	.0396	.509	0
3	0	0	***	***	***	***	0	0	1.71	.0322	.505	0
4	0	0	***	***	***	***	0	0	1.63	.0306	.452	0
5	0	0	***	***	***	***	0	0	1.60	.0245	.467	0
6	0	0	***	***	***	***	0	0	1.59	.0219	.585	0
7	0	0	***	***	***	***	0	0	1.64	.0273	.296	0
8	0	***	***	***	***	***	0	0	1.59	.0215	.255	.0266
9	0	***	***	***	***	***	0	0	1.75	.00222	.370	.0691
10	0	***	***	***	***	***	0	0	1.85	.00422	.300	.485
11	0	***	***	***	***	***	0	0	.618	.00643	.195	1.52
12	0	***	***	***	***	***	0	0	.0726	.409	.0899	1.12
13	0	***	***	***	***	***	0	0	.0552	.737	.0789	0
14	0	***	***	***	***	***	0	0	.593	.820	.112	0
15	0	***	***	***	***	***	0	0	1.54	.926	.172	0
16	0	***	***	***	***	***	0	0	1.64	.865	.0898	0
17	0	***	***	***	***	0	0	0	1.95	.775	.115	0
18	0	***	***	***	***	0	0	0	1.93	.697	.172	0
19	0	***	***	***	***	0	0	0	1.97	.755	.209	0
20	0	***	***	***	***	0	0	0	2.10	1.44	.235	0
21	0	***	***	***	***	0	0	0	2.17	1.19	.135	0
22	0	***	***	***	***	0	0	0	2.16	.915	.140	0
23	0	***	***	***	***	0	0	0	2.11	.0192	.0844	0
24	0	***	***	***	***	0	0	2.09	2.06	.0171	.0129	0
25	0	***	***	***	***	0	0	1.36	2.01	.0117	.00203	0
26	0	***	***	***	***	0	0	1.35	2.00	.00878	0	0
27	0	***	***	***	***	0	0	1.33	1.78	.00624	.00245	0
28	0	***	***	***	***	0	0	1.35	1.48	.00501	0	0
29	0	***	***	***	***	0	0	1.32	1.19	.00134	0	0
30	0	***	***	***	***	0	0	1.52	.0356	.471	0	0
31	0	***	***	***	***	0	0	2.16		.797	0	
Total	0	0				0	0	12.5	46.8	11.1	6.21	3.22
Mean	0	0				0	0	.403	1.56	.358	.200	.107
Max	0	0				0	0	2.16	2.17	1.44	.624	1.52
Min	0	0				0	0	0	.0356	.00134	0	0
Ac-Ft	0	0				0	0	24.7	92.8	22.0	12.3	6.38

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.43063, -103.8183 GAGE: Continuous stage recorder and concrete flume

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Dec 2, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00029000, Cook Canal No. 1 from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-12 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 17.3 Mean: .0850 Max: 1.16 Min: 0 Ac-Ft: 34.3

WY: Total: .439 Mean: .00160 Max: .144 Min: 0 Ac-Ft: .871

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	.00817	0	***	***	***	***	0	0	0	0	0	0
2	.00470	0	***	***	***	***	0	0	0	0	0	0
3	.0201	0	***	***	***	***	0	0	0	0	0	0
4	.0211	.00119	***	***	***	***	0	0	0	0	0	0
5	.00324	***	***	***	***	***	0	0	0	0	0	0
6	.0431	***	***	***	***	***	0	0	0	0	0	0
7	.00411	***	***	***	***	***	0	0	0	0	0	0
8	.00625	***	***	***	***	***	0	0	0	0	0	0
9	.00405	***	***	***	***	0	0	0	0	0	0	0
10	.00487	***	***	***	***	0	0	0	0	0	0	0
11	.144	***	***	***	***	0	0	0	0	0	0	0
12	.0891	***	***	***	***	0	0	0	0	0	0	0
13	.0369	***	***	***	***	0	0	0	0	0	0	0
14	.00815	***	***	***	***	0	0	0	0	0	0	0
15	.0113	***	***	***	***	0	0	0	0	0	0	0
16	.00868	***	***	***	***	0	0	0	0	0	0	0
17	.00412	***	***	***	***	0	0	0	0	0	0	0
18	.000187	***	***	***	***	0	0	0	0	0	0	0
19	.0000987	***	***	***	***	0	0	0	0	0	0	0
20	.0159	***	***	***	***	0	0	0	0	0	0	0
21	.0000472	***	***	***	***	0	0	0	0	0	0	0
22	0	***	***	***	***	0	0	0	0	0	0	0
23	0	***	***	***	***	0	0	0	0	0	0	0
24	0	***	***	***	***	0	0	0	0	0	0	0
25	0	***	***	***	***	0	0	0	0	0	0	0
26	0	***	***	***	***	0	0	0	0	0	0	0
27	0	***	***	***	***	0	0	0	0	0	0	0
28	0	***	***	***	***	0	0	0	0	0	0	0
29	0	***	***	***	***	0	0	0	0	0	0	0
30	0	***	***	***	***	0	0	0	0	0	0	0
31	0	***	***	***	***	0	0	0	0	0	0	0
Total	.438	.00119				0	0	0	0	0	0	0
Mean	.0141	.000297				0	0	0	0	0	0	0
Max	.144	.00119				0	0	0	0	0	0	0
Min	0	0				0	0	0	0	0	0	0
Ac-Ft	.869	.00235				0	0	0	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.49911, -103.897 near Harrison, NE. GAGE: Continuous stage recorder and concrete flume

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Dec 2, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00038200, Earnest Canal (North) from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-10 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 3.26 Mean: .0202 Max: .599 Min: 0 Ac-Ft: 6.46

WY: Total: 0 Mean: 0 Max: 0 Min: 0 Ac-Ft: 0

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	***	***	***	***	***	0	0	0	0	0	0
2	0	***	***	***	***	***	0	0	0	0	0	0
3	0	***	***	***	***	***	0	0	0	0	0	0
4	0	***	***	***	***	***	0	0	0	0	0	0
5	0	***	***	***	***	***	0	0	0	0	0	0
6	0	***	***	***	***	***	0	0	0	0	0	0
7	0	***	***	***	***	***	0	0	0	0	0	0
8	0	***	***	***	***	***	0	0	0	0	0	0
9	0	***	***	***	***	***	0	0	0	0	0	0
10	0	***	***	***	***	***	0	0	0	0	0	0
11	0	***	***	***	***	***	0	0	0	0	0	0
12	0	***	***	***	***	0	0	0	0	0	0	0
13	0	***	***	***	***	0	0	0	0	0	0	0
14	0	***	***	***	***	0	0	0	0	0	0	0
15	0	***	***	***	***	0	0	0	0	0	0	0
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22	0	***	***	***	***	0	0	0	0	0	0	0
23	0	***	***	***	***	0	0	0	0	0	0	0
24	0	***	***	***	***	0	0	0	0	0	0	0
25	0	***	***	***	***	0	0	0	0	0	0	0
26	0	***	***	***	***	0	0	0	0	0	0	0
27	0	***	***	***	***	0	0	0	0	0	0	0
28	0	***	***	***	***	0	0	0	0	0	0	0
29	***	***	***	***	***	0	0	0	0	0	0	0
30	***	***	***	***	***	0	0	0	0	0	0	0
31	***		***	***	***	0		0		0		
Total	0					0	0	0	0	0	0	0
Mean	0					0	0	0	0	0	0	0
Max	0					0	0	0	0	0	0	0
Min	0					0	0	0	0	0	0	0
Ac-Ft	0					0	0	0	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.4976, -103.8993 near Harrison, NE. GAGE: Continuous stage recorder and concrete flume

USGS Daily Mean

Dec 2, 2020

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00038100, Earnest Canal (South) from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-10 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 0 Mean: 0 Max: 0 Min: 0 Ac-Ft: 0

WY: Total: 0 Mean: 0 Max: 0 Min: 0 Ac-Ft: 0

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	0	0	0	0	0
2	0	0	***	***	***	***	0	0	0	0	0	0
3	0	0	***	***	***	***	0	0	0	0	0	0
4	0	0	***	***	***	***	0	0	0	0	0	0
5	0	***	***	***	***	***	0	0	0	0	0	0
6	0	***	***	***	***	***	0	0	0	0	0	0
7	0	***	***	***	***	***	0	0	0	0	0	0
8	0	***	***	***	***	***	0	0	0	0	0	0
9	0	***	***	***	***	***	0	0	0	0	0	0
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12	0	***	***	***	***	0	0	0	0	0	0	0
13	0	***	***	***	***	0	0	0	0	0	0	0
14	0	***	***	***	***	0	0	0	0	0	0	0
15	0	***	***	***	***	0	0	0	0	0	0	0
16	0	***	***	***	***	0	0	0	0	0	0	0
17	0	***	***	***	***	0	0	0	0	0	0	0
18	0	***	***	***	***	0	0	0	0	0	0	0
19	0	***	***	***	***	0	0	0	0	0	0	0
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24	0	***	***	***	***	0	0	0	0	0	0	0
25	0	***	***	***	***	0	0	0	0	0	0	0
26	0	***	***	***	***	0	0	0	0	0	0	0
27	0	***	***	***	***	0	0	0	0	0	0	0
28	0	***	***	***	***	0	0	0	0	0	0	0
29	0	***	***	***	***	0	0	0	0	0	0	0
30	0	***	***	***	***	0	0	0	0	0	0	0
31	0		***	***		0		0		0		
Total	0	0				0	0	0	0	0	0	0
Mean	0	0				0	0	0	0	0	0	0
Max	0	0				0	0	0	0	0	0	0
Min	0	0				0	0	0	0	0	0	0
Ac-Ft	0	0				0	0	0	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.41917, -103.3665 near Marsland, NE. GAGE: Continuous stage recorder and 28-inch cutthroat flume

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Dec 3, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00046000, Excelsior Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-18 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 20.3 Mean: .0597 Max: 1.25 Min: 0 Ac-Ft: 40.2

WY: Total: 15.6 Mean: .0559 Max: 1.25 Min: 0 Ac-Ft: 30.9

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	.421	0	***	***	***	***	0	0	0	0	0	0
2	.550	0	***	***	***	***	0	0	0	0	0	0
3	.619	0	***	***	***	***	0	0	0	0	0	0
4	.646	0	***	***	***	***	0	0	0	0	0	0
5	.637	0	***	***	***	***	0	0	0	0	0	0
6	.666	0	***	***	***	***	0	0	0	0	0	0
7	.663	0	***	***	***	***	0	0	0	0	0	0
8	.659	***	***	***	***	***	0	0	0	0	0	0
9	.513	***	***	***	***	***	0	0	0	0	0	0
10	.552	***	***	***	***	***	0	0	0	0	0	0
11	.693	***	***	***	***	***	0	0	0	0	0	0
12	.989	***	***	***	***	***	0	0	0	0	0	0
13	1.10	***	***	***	***	***	0	0	0	0	0	0
14	1.21	***	***	***	***	***	0	0	0	0	0	0
15	1.21	***	***	***	***	***	0	0	0	0	0	0
16	1.22	***	***	***	***	***	0	0	0	0	0	0
17	1.25	***	***	***	***	***	0	0	0	0	0	0
18	1.24	***	***	***	***	***	0	0	0	0	0	0
19	.766	***	***	***	***	***	0	0	0	0	0	0
20	0	***	***	***	***	***	0	0	0	0	0	0
21	0	***	***	***	***	***	0	0	0	0	0	0
22	0	***	***	***	***	***	0	0	0	0	0	0
23	0	***	***	***	***	***	0	0	0	0	0	0
24	0	***	***	***	***	***	0	0	0	0	0	0
25	0	***	***	***	***	0	0	0	0	0	0	0
26	0	***	***	***	***	0	0	0	0	0	0	0
27	0	***	***	***	***	0	0	0	0	0	0	0
28	0	***	***	***	***	0	0	0	0	0	0	0
29	0	***	***	***	***	0	0	0	0	0	0	0
30	0	***	***	***	***	0	0	0	0	0	0	0
31	0	***	***	***	***	0	0	0	0	0	0	0
Total	15.6	0				0	0	0	0	0	0	0
Mean	.503	0				0	0	0	0	0	0	0
Max	1.25	0				0	0	0	0	0	0	0
Min	0	0				0	0	0	0	0	0	0
Ac-Ft	30.9	0				0	0	0	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.42713, -103.4363 near Marsland, NE. GAGE: Continuous stage recorder and 30-inch cutthroat flume

USGS Daily Mean

Dec 3, 2020

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00063000, Geo. Hitshew Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-16 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 0 Mean: 0 Max: 0 Min: 0 Ac-Ft: 0

WY: Total: .0355 Mean: .000127 Max: .0355 Min: 0 Ac-Ft: .0705

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	0	0	0	0	e0
2	0	0	***	***	***	***	0	0	0	0	0	e0
3	0	0	***	***	***	***	0	0	0	0	0	e0
4	0	0	***	***	***	***	0	0	0	0	0	e0
5	0	0	***	***	***	***	0	.0355	0	0	0	e0
6	0	0	***	***	***	***	0	0	0	0	0	e0
7	0	***	***	***	***	***	0	0	0	0	0	e0
8	0	***	***	***	***	***	0	0	0	0	0	e0
9	0	***	***	***	***	***	0	0	0	0	0	e0
10	0	***	***	***	***	***	0	0	0	0	0	e0
11	0	***	***	***	***	***	0	0	0	0	0	e0
12	0	***	***	***	***	***	0	0	0	0	0	e0
13	0	***	***	***	***	***	0	0	0	0	e0	e0
14	0	***	***	***	***	***	0	0	0	0	e0	e0
15	0	***	***	***	***	***	0	0	0	0	e0	e0
16	0	***	***	***	***	***	0	0	0	0	e0	e0
17	0	***	***	***	***	***	0	0	0	0	e0	e0
18	0	***	***	***	***	***	0	0	0	0	e0	e0
19	0	***	***	***	***	***	0	0	0	0	e0	e0
20	0	***	***	***	***	***	0	0	0	0	e0	e0
21	0	***	***	***	***	***	0	0	0	0	e0	e0
22	0	***	***	***	***	***	0	0	0	0	e0	0
23	0	***	***	***	***	***	0	0	0	0	e0	0
24	0	***	***	***	***	***	0	0	0	0	e0	0
25	0	***	***	***	***	***	0	0	0	0	e0	0
26	0	***	***	***	***	***	0	0	0	0	e0	0
27	0	***	***	***	***	0	0	0	0	0	e0	0
28	0	***	***	***	***	0	0	0	0	0	e0	0
29	0	***	***	***	***	0	0	0	0	0	e0	0
30	0	***	***	***	***	0	0	0	0	0	e0	0
31	0		***	***		0		0		0	e0	
Total	0	0				0	0	.0355	0	0	0	0
Mean	0	0				0	0	.00115	0	0	0	0
Max	0	0				0	0	.0355	0	0	0	0
Min	0	0				0	0	0	0	0	0	0
Ac-Ft	0	0				0	0	.0705	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.42795, -103.7282 near Agate, NE. GAGE: Continuous stage recorder and 30-inch cutthroat flume

USGS Daily Mean

Dec 3, 2020

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00062000, Harris-Neece Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1955-10-01 00:00:00, End Time: 2020-11-16 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 780 Mean: 3.20 Max: 15.0 Min: 0 Ac-Ft: 1550

WY: Total: 1010 Mean: 3.70 Max: 18.4 Min: 0 Ac-Ft: 2010

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	.469	.0759	***	***	***	***	0	0	12.7	6.09	3.97	5.80
2	.458	.0647	***	***	***	***	0	0	13.4	6.85	3.82	6.03
3	.446	.0508	***	***	***	***	0	0	13.8	6.89	3.70	6.05
4	.432	.0379	***	***	***	***	0	0	13.7	6.81	3.67	6.15
5	7.96	.0267	***	***	***	***	0	0	14.4	6.80	3.59	6.15
6	9.28	.0141	***	***	***	***	0	0	15.0	6.93	3.71	5.87
7	6.95	.00417	***	***	***	***	0	0	14.1	7.03	3.69	4.07
8	4.99	***	***	***	***	***	0	0	14.3	6.94	3.51	0
9	.373	***	***	***	***	***	0	0	15.8	7.08	3.70	0
10	.761	***	***	***	***	***	0	0	16.7	7.12	3.84	0
11	.348	***	***	***	***	***	0	0	17.3	6.95	3.79	0
12	.332	***	***	***	***	***	0	0	17.3	6.95	3.57	6.38
13	.320	***	***	***	***	***	0	.845	18.0	6.83	4.04	10.7
14	.307	***	***	***	***	***	0	.851	18.4	7.00	3.96	10.6
15	.294	***	***	***	***	***	0	5.99	8.96	7.07	4.05	10.5
16	.282	***	***	***	***	***	0	10.9	1.41	7.07	3.97	10.3
17	.269	***	***	***	***	0	0	10.8	.881	6.86	3.91	10.4
18	.255	***	***	***	***	0	0	10.7	.888	6.77	3.83	10.8
19	.243	***	***	***	***	0	0	10.5	.894	6.77	3.53	10.8
20	.231	***	***	***	***	0	0	10.9	.901	8.03	3.84	10.9
21	.218	***	***	***	***	0	0	10.3	.907	1.07	3.66	10.7
22	.204	***	***	***	***	0	0	10.5	.914	.546	4.01	10.6
23	.193	***	***	***	***	0	0	10.9	.921	.552	3.76	10.5
24	.180	***	***	***	***	0	0	11.2	.927	.558	3.43	10.7
25	.167	***	***	***	***	0	0	11.4	2.79	.565	4.75	10.4
26	.154	***	***	***	***	0	0	11.3	7.14	.571	5.09	8.85
27	.141	***	***	***	***	0	0	11.2	7.40	.577	4.84	8.50
28	.129	***	***	***	***	0	0	11.6	7.79	2.42	5.15	8.85
29	.116	***	***	***	***	0	0	12.0	7.11	5.54	5.09	9.32
30	.103	***	***	***	***	0	0	12.2	6.44	6.67	5.30	9.36
31	.0898		***	***		0		12.2		6.07	5.44	
Total	36.7	.274				0	0	187	271	164	126	229
Mean	1.18	.0392				0	0	6.02	9.04	5.29	4.07	7.64
Max	9.28	.0759				0	0	12.2	18.4	8.03	5.44	10.9
Min	.0898	.00417				0	0	0	.881	.546	3.43	0
Ac-Ft	72.8	.544				0	0	370	538	325	250	454

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.42558 , -103.3431 near Marsland, NE. GAGE: Continuous stage recorder and concrete flume.

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 3, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00069000, Hughes Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-18 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 14.2 Mean: .283 Max: 1.12 Min: 0 Ac-Ft: 28.1

WY: Total: 7.20 Mean: .0842 Max: .484 Min: 0 Ac-Ft: 14.3

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	***	***	***	***	***	***	.484	0	0	0	0	0
2	***	***	***	***	***	***	.438	.00304	0	0	0	0
3	***	***	***	***	***	***	.389	.0199	0	0	0	0
4	***	***	***	***	***	***	.387	.0281	0	0	0	0
5	***	***	***	***	***	***	.374	.0306	0	0	0	0
6	***	***	***	***	***	***	.343	.0265	0	0	0	0
7	***	***	***	***	***	***	.307	.0181	0	0	0	0
8	***	***	***	***	***	***	.292	.00991	0	0	0	0
9	***	***	***	***	***	***	.261	.000958	0	0	0	0
10	***	***	***	***	***	***	.234	0	0	0	0	0
11	***	***	***	***	***	***	.224	0	0	0	0	0
12	***	***	***	***	***	***	.212	0	0	0	0	0
13	***	***	***	***	***	***	.225	0	0	0	0	0
14	***	***	***	***	***	***	.112	0	0	0	0	0
15	***	***	***	***	***	***	.0116	0	0	0	0	0
16	***	***	***	***	***	***	.0112	0	0	0	0	0
17	***	***	***	***	***	***	.0166	0	0	0	0	0
18	***	***	***	***	***	***	.0196	0	0	0	0	0
19	***	***	***	***	***	***	.0186	0	0	0	0	0
20	***	***	***	***	***	***	.0146	0	0	0	0	0
21	***	***	***	***	***	***	.0114	0	0	0	0	0
22	***	***	***	***	***	***	.00689	0	0	0	0	0
23	***	***	***	***	***	***	.00278	0	0	0	0	0
24	***	***	***	***	***	***	.00482	0	0	0	0	0
25	***	***	***	***	***	***	.00994	0	0	0	0	0
26	***	***	***	***	***	.465	.0116	0	0	0	0	0
27	***	***	***	***	***	.400	.0111	0	0	0	0	0
28	***	***	***	***	***	.407	.00506	0	0	0	0	0
29	***	***	***	***	***	.448	.000147	0	0	0	0	0
30	***	***	***	***	***	.432	0	0	0	0	0	0
31	***	***	***	***	***	.471	0	0	0	0	0	0
Total						2.62	4.44	.137	0	0	0	0
Mean						.437	.148	.00442	0	0	0	0
Max						.471	.484	.0306	0	0	0	0
Min						.400	0	0	0	0	0	0
Ac-Ft						5.20	8.80	.272	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.61062, -103.9648 near Harrison, NE. GAGE: Continuous stage recorder and 1.5 ft. Parshall flume.

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 3, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00072000, Johnson Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-10 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 149 Mean: .606 Max: 14.0 Min: 0 Ac-Ft: 296

WY: Total: 562 Mean: 2.04 Max: 17.1 Min: 0 Ac-Ft: 1120

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	8.22	4.41	2.48	2.61	1.47
2	0	0	***	***	***	***	0	6.85	4.21	2.52	2.39	1.51
3	0	0	***	***	***	***	0	7.18	4.15	2.53	2.14	1.49
4	0	0	***	***	***	***	0	6.98	4.27	2.52	2.07	1.30
5	0	***	***	***	***	***	0	6.77	4.38	2.65	2.03	.0000574
6	0	***	***	***	***	***	0	7.28	4.30	2.72	2.26	0
7	0	***	***	***	***	***	0	7.83	4.23	2.72	2.52	0
8	0	***	***	***	***	***	0	8.79	4.21	2.62	2.47	0
9	0	***	***	***	***	***	0	8.17	4.41	2.50	2.55	0
10	0	***	***	***	***	***	0	5.71	4.49	2.64	2.49	0
11	0	***	***	***	***	***	0	5.61	4.38	2.60	2.42	0
12	0	***	***	***	***	0	0	5.81	4.25	2.37	2.36	0
13	0	***	***	***	***	0	0	6.07	4.11	2.16	2.24	0
14	0	***	***	***	***	0	0	6.05	3.93	2.18	2.18	0
15	0	***	***	***	***	0	0	5.72	3.78	2.12	2.19	0
16	0	***	***	***	***	0	0	9.50	3.81	2.14	2.12	0
17	0	***	***	***	***	0	0	17.1	3.65	1.98	2.18	.837
18	0	***	***	***	***	0	0	15.3	3.57	1.80	2.21	1.46
19	0	***	***	***	***	0	0	4.95	3.64	1.73	2.30	1.54
20	0	***	***	***	***	0	0	4.85	3.81	3.38	2.32	1.53
21	0	***	***	***	***	0	0	5.02	3.90	2.84	2.31	1.51
22	0	***	***	***	***	0	0	4.99	3.75	3.24	2.32	1.55
23	0	***	***	***	***	0	2.10	4.78	3.64	2.41	2.32	1.56
24	0	***	***	***	***	0	5.57	4.99	3.42	2.33	2.24	1.56
25	0	***	***	***	***	0	6.45	4.95	3.14	2.26	2.17	1.53
26	0	***	***	***	***	0	6.01	4.65	3.29	2.53	2.10	1.55
27	0	***	***	***	***	0	7.25	4.82	3.30	2.59	2.09	1.54
28	0	***	***	***	***	0	8.89	4.96	3.10	2.48	5.73	1.57
29	0	***	***	***	***	0	5.80	4.85	2.79	2.35	10.3	1.62
30	0	***	***	***		0	6.66	4.76	2.66	2.41	8.14	1.66
31	0		***	***		0		4.57		2.77	1.43	
Total	0	0				0	48.7	208	115	76.6	87.2	26.8
Mean	0	0				0	1.62	6.71	3.83	2.47	2.81	.892
Max	0	0				0	8.89	17.1	4.49	3.38	10.3	1.66
Min	0	0				0	0	4.57	2.66	1.73	1.43	0
Ac-Ft	0	0				0	96.6	413	228	152	173	53.1

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.4375, -103.6592 near Agate, NE. GAGE: Continuous stage recorder and concrete flume.

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 3, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00078000, Labelle Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-04-01 00:00:00, End Time: 2020-11-16 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 0 Mean: 0 Max: 0 Min: 0 Ac-Ft: 0

WY: Total: 52.9 Mean: .192 Max: 2.22 Min: 0 Ac-Ft: 105

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	0	0	0	.605	.490
2	0	0	***	***	***	***	0	0	0	0	.569	.454
3	0	0	***	***	***	***	0	0	0	0	.554	.444
4	0	0	***	***	***	***	0	0	0	0	.509	.438
5	0	0	***	***	***	***	0	0	0	0	.511	.440
6	0	0	***	***	***	***	0	0	0	0	.620	.427
7	0	0	***	***	***	***	0	0	0	0	.591	.434
8	0	***	***	***	***	***	0	0	0	0	.594	.592
9	0	***	***	***	***	***	0	0	0	0	.634	1.46
10	0	***	***	***	***	***	0	0	0	0	.558	1.62
11	0	***	***	***	***	***	0	0	0	0	.548	1.71
12	0	***	***	***	***	***	0	0	0	0	.508	1.55
13	0	***	***	***	***	***	0	0	0	0	.513	.831
14	0	***	***	***	***	***	0	0	0	0	.471	.671
15	0	***	***	***	***	***	0	0	0	0	.479	.567
16	0	***	***	***	***	***	0	0	0	0	.453	.644
17	0	***	***	***	***	0	0	0	0	0	.444	.682
18	0	***	***	***	***	***	0	0	0	0	.408	.553
19	0	***	***	***	***	0	0	0	0	0	.393	.551
20	0	***	***	***	***	0	0	0	0	0	.395	.524
21	0	***	***	***	***	0	0	0	0	.244	.383	.534
22	0	***	***	***	***	0	0	0	0	1.51	.404	.541
23	0	***	***	***	***	0	0	0	0	1.75	.402	.565
24	0	***	***	***	***	0	0	0	0	1.84	.400	.591
25	0	***	***	***	***	0	0	0	0	1.96	.398	.612
26	0	***	***	***	***	0	0	0	0	2.15	.408	.591
27	0	***	***	***	***	0	0	0	0	2.22	.454	.582
28	0	***	***	***	***	0	0	0	0	2.20	.552	.596
29	0	***	***	***	***	0	0	0	0	1.02	.623	.606
30	0	***	***	***	***	0	0	0	0	.817	.630	.609
31	0		***	***		0		0		.717	.601	
Total	0	0				0	0	0	0	16.4	15.6	20.9
Mean	0	0				0	0	0	0	.530	.504	.697
Max	0	0				0	0	0	0	2.22	.634	1.71
Min	0	0				0	0	0	0	0	.383	.427
Ac-Ft	0	0				0	0	0	0	32.6	31.0	41.5

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.58989, -103.9525 near Harrison, NE. GAGE: Continuous stage recorder and 2 ft. Parshall flume.

USGS Daily Mean

Dec 3, 2020

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00079000, Lakotah Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-04-01 00:00:00, End Time: 2020-11-10 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 3.52 Mean: .0170 Max: .344 Min: 0 Ac-Ft: 6.98

WY: Total: .0138 Mean: .0000494 Max: .0119 Min: 0 Ac-Ft: .0273

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	.000174	0	***	***	***	***	0	0	0	0	0	0
2	0	0	***	***	***	***	0	0	0	0	0	0
3	0	0	***	***	***	***	0	0	0	0	0	0
4	0	0	***	***	***	***	0	0	0	0	0	0
5	0	***	***	***	***	***	0	0	0	0	0	0
6	0	***	***	***	***	***	0	0	0	0	0	0
7	0	***	***	***	***	***	0	0	0	0	0	0
8	0	***	***	***	***	***	0	0	0	0	0	0
9	0	***	***	***	***	***	0	0	0	0	0	0
10	.00122	***	***	***	***	***	0	0	0	0	0	0
11	0	***	***	***	***	***	0	0	0	0	0	0
12	.000245	***	***	***	***	***	0	0	0	0	0	0
13	.000210	***	***	***	***	***	0	0	0	0	0	0
14	0	***	***	***	***	***	0	0	0	0	0	0
15	0	***	***	***	***	***	0	0	0	0	0	0
16	0	***	***	***	***	***	0	0	0	0	0	0
17	0	***	***	***	***	***	0	0	0	0	0	0
18	0	***	***	***	***	***	0	0	0	0	0	0
19	0	***	***	***	***	***	0	0	0	0	0	0
20	0	***	***	***	***	***	0	0	0	0	0	0
21	0	***	***	***	***	***	0	0	0	0	0	0
22	0	***	***	***	***	***	0	0	0	0	0	0
23	0	***	***	***	***	e0	0	0	0	0	0	0
24	0	***	***	***	***	e0	0	0	0	0	0	0
25	0	***	***	***	***	e0	0	0	0	0	0	0
26	0	***	***	***	***	e0	0	0	0	0	0	0
27	.0119	***	***	***	***	e0	0	0	0	0	0	0
28	0	***	***	***	***	e0	0	0	0	0	0	0
29	0	***	***	***	***	e0	0	0	0	0	0	0
30	0	***	***	***		e0	0	0	0	0	0	0
31	0		***	***		e0		0		0		0
Total	.0138	0				0	0	0	0	0	0	0
Mean	.000444	0				0	0	0	0	0	0	0
Max	.0119	0				0	0	0	0	0	0	0
Min	0	0				0	0	0	0	0	0	0
Ac-Ft	.0273	0				0	0	0	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.45577, -103.837 near Agate, NE. GAGE: Continuous stage recorder and 3 ft. Parshall flume.

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 2, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00084000, McGinley-Stover Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1971-05-01 00:00:00, End Time: 2020-11-12 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 144 Mean: .589 Max: 5.34 Min: 0 Ac-Ft: 285

WY: Total: 93.0 Mean: .338 Max: 3.74 Min: 0 Ac-Ft: 184

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	0	1.50	1.20	.645	.00219
2	0	0	***	***	***	***	0	0	1.47	1.16	.675	.00236
3	0	0	***	***	***	***	0	0	1.46	1.10	.677	.00253
4	0	0	***	***	***	***	0	0	1.47	1.10	.642	.00270
5	0	***	***	***	***	***	0	0	1.43	1.09	.624	.00287
6	0	***	***	***	***	***	0	0	1.38	1.07	.978	.00303
7	0	***	***	***	***	***	0	0	1.38	.890	.962	.00320
8	0	***	***	***	***	***	0	0	1.33	.733	1.09	.00337
9	0	***	***	***	***	0	0	0	1.36	.742	1.23	.00354
10	0	***	***	***	***	0	0	0	1.31	.582	1.15	.00371
11	0	***	***	***	***	0	0	0	.470	.744	1.15	.00388
12	0	***	***	***	***	0	0	0	0	.902	1.11	.00404
13	0	***	***	***	***	0	0	0	0	.884	1.05	.00421
14	0	***	***	***	***	0	0	0	0	.904	1.01	.00438
15	0	***	***	***	***	0	0	0	0	.894	1.02	.00455
16	0	***	***	***	***	0	0	0	0	.957	.822	.00472
17	0	***	***	***	***	0	0	0	0	.858	.970	.00488
18	0	***	***	***	***	0	0	.642	0	.749	1.17	.00505
19	0	***	***	***	***	0	0	1.66	0	.877	1.18	.00522
20	0	***	***	***	***	0	0	1.52	0	1.14	1.18	.00539
21	0	***	***	***	***	0	0	1.49	0	.347	1.03	.00556
22	0	***	***	***	***	0	0	1.41	0	0	.866	.00573
23	0	***	***	***	***	0	0	1.32	0	0	.314	.00589
24	0	***	***	***	***	0	0	1.18	0	0	.00335	.528
25	0	***	***	***	***	0	0	1.14	0	0	.00102	2.89
26	0	***	***	***	***	0	0	.986	0	0	.00118	3.58
27	0	***	***	***	***	0	0	.00811	0	0	.00135	3.03
28	0	***	***	***	***	0	0	.00453	.0412	0	.00152	3.33
29	0	***	***	***	***	0	0	.00423	1.19	0	.00169	3.60
30	0	***	***	***		0	0	.930	1.20	.320	.00186	3.74
31	0		***	***		0		1.50		.659	.00203	
Total	0	0				0	0	13.8	17.0	19.9	21.5	20.8
Mean	0	0				0	0	.445	.567	.641	.695	.693
Max	0	0				0	0	1.66	1.50	1.20	1.23	3.74
Min	0	0				0	0	0	0	0	.00102	.00219
Ac-Ft	0	0				0	0	27.4	33.7	39.4	42.7	41.2

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.41358, -103.3953 near Marsland, NE. GAGE: Continuous stage recorder and 30-inch cutthroat flume.

USGS Daily Mean

Dec 2, 2020

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00086000, McLaughlin Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-04-01 00:00:00, End Time: 2020-11-17 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 39.1 Mean: .271 Max: 4.14 Min: 0 Ac-Ft: 77.5

WY: Total: 183 Mean: .683 Max: 8.08 Min: 0 Ac-Ft: 363

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	.0743	.0144	.0117	3.33	.00517	0
2	0	0	***	***	***	***	.0469	.0158	.0118	3.10	.00476	0
3	0	0	***	***	***	***	.0319	.0140	.0115	2.78	.00446	0
4	0	0	***	***	***	***	.0396	.0139	.110	2.44	.00404	0
5	0	0	***	***	***	***	.0261	.0139	3.35	2.33	.00369	0
6	0	0	***	***	***	***	.0161	.0138	5.36	3.50	.00327	0
7	0	0	***	***	***	***	.0156	.0137	5.25	3.18	.00290	0
8	0	***	***	***	***	***	.0160	.0136	5.36	2.40	.00261	0
9	0	***	***	***	***	***	.0158	.0136	6.33	.0173	.00221	0
10	0	***	***	***	***	***	.0158	.0136	6.81	.0132	.00187	0
11	0	***	***	***	***	***	.0160	.0135	6.55	.0128	.00151	0
12	0	***	***	***	***	***	.0158	.0135	6.35	.0124	.00132	0
13	0	***	***	***	***	***	.0155	.0133	5.98	.0121	.000713	0
14	0	***	***	***	***	***	.0152	.0132	5.60	.0118	.000346	0
15	0	***	***	***	***	***	.0155	.0132	5.32	.0118	.0000930	0
16	0	***	***	***	***	***	.0155	.0130	4.68	.0110	.00000478	0
17	0	***	***	***	***	***	.0152	.0130	4.28	.0105	0	e0
18	0	***	***	***	***	***	.0152	.0130	4.80	.0103	0	e.00356
19	0	***	***	***	***	***	.0151	.0129	5.59	.01000	0	e.0164
20	0	***	***	***	***	***	.0149	.0129	6.21	.00952	0	e.0297
21	0	***	***	***	***	***	.0150	.0126	6.88	.00912	0	e.0431
22	0	***	***	***	***	***	.0148	.0127	8.00	.00878	0	e.0564
23	0	***	***	***	***	***	.0148	.0125	8.08	.00847	0	e.0718
24	0	***	***	***	***	***	.0166	.0123	7.78	.00798	0	e.104
25	0	***	***	***	***	.0915	.0146	.0123	7.32	.00758	0	e.147
26	0	***	***	***	***	.0905	.0145	.0122	7.36	.00742	0	e.198
27	0	***	***	***	***	.0848	.0144	.0123	7.34	.00693	0	e.256
28	0	***	***	***	***	.0832	.0143	.0121	6.82	.00663	0	e.319
29	0	***	***	***	***	.0782	.0143	.0120	5.15	.00618	0	e.389
30	0	***	***	***	***	.0721	.0142	.0120	3.59	.00578	0	e.478
31	0		***	***		.0747		.0119		.00547	0	
Total	0	0				.575	.600	.407	156	23.3	.0390	2.11
Mean	0	0				.0822	.0200	.0131	5.21	.751	.00126	.0704
Max	0	0				.0915	.0743	.0158	8.08	3.50	.00517	.478
Min	0	0				.0721	.0142	.0119	.0115	.00547	0	0
Ac-Ft	0	0				1.14	1.19	.807	310	46.2	.0772	4.19

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.43538, -103.6188 near Agate, NE. GAGE: Continuous stage recorder and concrete flume. .

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 2, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00089000, Mettlen Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-16 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 359 Mean: 1.68 Max: 5.18 Min: 0 Ac-Ft: 712

WY: Total: 90.4 Mean: .549 Max: 2.42 Min: 0 Ac-Ft: 179

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1.59	2.42	***	***	***	***	0	0	0	0	.209	0
2	1.65	2.16	***	***	***	***	0	0	0	0	.165	0
3	1.66	2.40	***	***	***	***	0	0	0	0	.131	0
4	1.67	2.31	***	***	***	***	0	0	0	0	.0859	0
5	1.69	***	***	***	***	***	0	0	0	0	.0100	0
6	1.28	***	***	***	***	***	0	0	0	0	.000187	0
7	.694	***	***	***	***	***	0	0	0	0	0	0
8	1.19	***	***	***	***	***	0	0	0	0	0	0
9	1.28	***	***	***	***	***	0	0	0	.638	0	0
10	1.79	***	***	***	***	***	0	0	0	.638	0	0
11	2.00	***	***	***	***	***	0	0	0	.507	0	0
12	2.06	***	***	***	***	***	0	0	0	.628	0	0
13	2.11	***	***	***	***	***	0	0	0	.790	0	0
14	2.14	***	***	***	***	***	0	0	0	.706	0	0
15	2.09	***	***	***	***	***	0	0	0	.781	0	0
16	2.04	***	***	***	***	***	0	0	0	.597	0	0
17	1.98	***	***	***	***	0	0	0	0	.522	0	0
18	1.97	***	***	***	***	0	0	0	0	.346	0	0
19	1.97	***	***	***	***	0	0	0	0	.332	0	0
20	2.04	***	***	***	***	0	0	0	0	.992	0	0
21	2.10	***	***	***	***	0	0	0	0	.666	0	0
22	2.14	***	***	***	***	0	0	0	0	1.00	0	0
23	2.13	***	***	***	***	0	0	0	0	1.99	0	0
24	2.10	***	***	***	***	0	0	0	0	2.29	0	0
25	2.11	***	***	***	***	0	0	0	0	1.69	0	0
26	2.12	***	***	***	***	0	0	0	0	1.64	0	0
27	2.17	***	***	***	***	0	0	0	0	1.81	0	0
28	2.09	***	***	***	***	0	0	0	0	1.81	0	0
29	1.84	***	***	***	***	0	0	0	0	1.09	0	0
30	2.21	***	***	***	***	0	0	0	0	.416	0	0
31	2.24	***	***	***	***	0	0	0	0	.406	0	0
Total	58.2	9.30				0	0	0	0	22.3	.601	0
Mean	1.88	2.32				0	0	0	0	.719	.0194	0
Max	2.24	2.42				0	0	0	0	2.29	.209	0
Min	.694	2.16				0	0	0	0	0	0	0
Ac-Ft	115	18.4				0	0	0	0	44.2	1.19	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION: 42.41793, -103.5075 near Marsland, NE. GAGE: Continuous stage recorder and 2 ft. flume.

USGS Daily Mean

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistics

Dec 2, 2020

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00104000, Moore-Kay Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-05-01 00:00:00, End Time: 2020-11-17 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 216 Mean: 1.21 Max: 8.08 Min: 0 Ac-Ft: 429

WY: Total: 242 Mean: 1.24 Max: 7.57 Min: 0 Ac-Ft: 480

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	5.76	1.54	0	0	0	0
2	0	0	***	***	***	***	5.43	1.88	0	0	0	0
3	0	0	***	***	***	***	5.11	3.48	0	0	0	0
4	0	0	***	***	***	***	4.83	4.27	0	0	0	0
5	0	0	***	***	***	***	4.66	4.62	0	0	0	0
6	0	.0258	***	***	***	***	4.78	4.42	0	0	0	0
7	0	.0724	***	***	***	***	4.80	3.82	0	0	0	0
8	0	***	***	***	***	***	4.37	3.22	0	0	0	0
9	0	***	***	***	***	***	4.16	2.55	0	0	0	0
10	0	***	***	***	***	***	3.99	1.52	0	0	0	0
11	0	***	***	***	***	***	3.91	.696	0	0	0	0
12	0	***	***	***	***	***	3.87	.354	0	0	0	0
13	0	***	***	***	***	***	3.90	.125	0	0	0	0
14	0	***	***	***	***	***	3.92	.0395	0	0	0	0
15	0	***	***	***	***	***	3.92	.00353	0	0	0	0
16	0	***	***	***	***	***	3.86	0	0	0	0	0
17	0	***	***	***	***	7.52	3.95	0	0	0	0	0
18	0	***	***	***	***	7.57	4.02	0	0	0	0	0
19	0	***	***	***	***	7.16	4.00	0	0	0	0	0
20	0	***	***	***	***	6.70	3.82	0	0	0	0	0
21	0	***	***	***	***	6.04	3.40	0	0	0	0	0
22	0	***	***	***	***	5.73	3.21	0	0	0	0	0
23	0	***	***	***	***	5.80	3.08	0	0	0	0	0
24	0	***	***	***	***	6.14	3.26	0	0	0	0	0
25	0	***	***	***	***	5.99	3.58	0	0	0	0	0
26	0	***	***	***	***	5.68	3.64	0	0	0	0	0
27	0	***	***	***	***	5.51	2.99	0	0	0	0	0
28	0	***	***	***	***	5.51	2.45	0	0	0	0	0
29	.0402	***	***	***	***	5.67	2.05	0	0	0	0	0
30	0	***	***	***	***	5.87	1.83	0	0	0	0	0
31	0	***	***	***	***	5.98	0	0	0	0	0	0
Total	.0402	.0982				92.9	117	32.6	0	0	0	0
Mean	.00130	.0140				6.19	3.89	1.05	0	0	0	0
Max	.0402	.0724				7.57	5.76	4.62	0	0	0	0
Min	0	0				5.51	1.83	0	0	0	0	0
Ac-Ft	.0798	.195				184	231	64.6	0	0	0	0

APPENDIX A 2020 CANAL MEASUREMENTS

LOCATION.- 42.45158, -103.2486 near Marsland, NE. GAGE.--Continuous stage recorder and concrete flume

USGS Daily Mean

Jan 5, 2021

2020 Hydrographic Report - Daily Mean Discharge with Monthly and Annual Statistic

Period Selected: 2019-10-01 00:00 - 2020-09-30 23:59

Source Data: Discharge.Daily Mean@00123000, Pioneer Canal from Niobrara River
 UTC Offset: -07:00, Start Time: 1956-04-01 00:00:00, End Time: 2020-12-30 00:00:00

Units: cfs
 Data Coverage Threshold: 80%

Oct 2019 - Sep 2020

Cal Year 2019: Total: 145 Mean: .592 Max: 5.83 Min: 0 Ac-Ft: 287

WY: Total: 145 Mean: .529 Max: 2.76 Min: 0 Ac-Ft: 288

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	***	***	***	***	0	2.41	1.55	0	0	0
2	0	0	***	***	***	***	0	1.87	1.46	0	0	.243
3	0	0	***	***	***	***	0	.202	1.37	0	0	.774
4	0	0	***	***	***	***	0	2.11	1.31	0	.0814	1.01
5	0	0	***	***	***	***	0	2.10	1.24	0	.998	1.09
6	0	0	***	***	***	***	0	1.84	1.06	0	1.27	1.16
7	0	0	***	***	***	***	0	.377	.908	0	1.39	1.14
8	0	***	***	***	***	***	0	0	.876	0	1.39	1.38
9	0	***	***	***	***	***	0	0	1.01	0	1.28	1.35
10	0	***	***	***	***	***	0	0	1.03	0	1.23	1.43
11	0	***	***	***	***	***	0	0	1.07	0	1.31	1.47
12	0	***	***	***	***	***	0	0	1.10	0	1.34	1.45
13	0	***	***	***	***	***	0	0	1.43	0	1.33	1.45
14	0	***	***	***	***	***	0	0	1.48	0	1.27	1.49
15	0	***	***	***	***	***	0	0	1.49	0	1.27	1.51
16	0	***	***	***	***	***	0	0	1.53	.00811	1.21	1.46
17	0	***	***	***	***	***	0	0	1.45	1.49	1.17	1.37
18	0	***	***	***	***	***	0	0	1.36	2.56	1.08	1.35
19	0	***	***	***	***	***	0	.584	1.65	2.68	1.18	1.40
20	0	***	***	***	***	***	0	1.44	1.90	2.76	1.15	1.37
21	0	***	***	***	***	***	0	1.64	2.06	1.55	1.13	.940
22	0	***	***	***	***	***	0	1.55	2.00	2.23	1.15	0
23	0	***	***	***	***	***	0	1.43	1.58	2.46	1.24	0
24	0	***	***	***	***	***	0	1.35	1.56	2.35	1.19	0
25	0	***	***	***	***	0	0	1.25	1.50	2.31	1.06	0
26	0	***	***	***	***	0	0	1.18	1.58	.994	1.03	0
27	0	***	***	***	***	0	0	1.11	1.73	0	.483	0
28	0	***	***	***	***	0	0	1.26	1.62	0	0	0
29	0	***	***	***	***	0	0	1.78	1.54	0	0	0
30	0	***	***	***		0	.350	1.76	1.11	0	0	0
31	0		***	***		0		1.68		0	0	
Total	0	0				0	.350	28.9	42.5	21.4	27.2	24.8
Mean	0	0				0	.0117	.934	1.42	.690	.878	.827
Max	0	0				0	.350	2.41	2.06	2.76	1.39	1.51
Min	0	0				0	0	0	.876	0	0	0
Ac-Ft	0	0				0	.694	57.4	84.4	42.4	53.9	49.2

APPENDIX B 2020 FIELD MEASUREMENTS

Date	Site number	Site Name	Discharge
7/14/2020	3205	Antelope Creek near Montrose	0
7/30/2020	6400	Armstrong Pump fr Niobrara River	0
8/18/2020	6400	Armstrong Pump fr Niobrara River	0
9/21/2020	6400	Armstrong Pump fr Niobrara River	0
7/14/2020	6015	Coffee Flood Canal fr Hat Creek	0
3/5/2020	6380	Cook Pump fr Niobrara River	0
4/13/2020	6380	Cook Pump fr Niobrara River	0
5/12/2020	6380	Cook Pump fr Niobrara River	0
6/16/2020	6380	Cook Pump fr Niobrara River	0
7/21/2020	6380	Cook Pump fr Niobrara River	1.32
8/18/2020	6380	Cook Pump fr Niobrara River	1.45
9/10/2020	6380	Cook Pump fr Niobrara River	0
4/8/2020	6440	Delsing Pump fr Niobrara River	0
4/16/2020	6440	Delsing Pump fr Niobrara River	0
5/14/2020	6440	Delsing Pump fr Niobrara River	0
6/23/2020	6440	Delsing Pump fr Niobrara River	
7/30/2020	6440	Delsing Pump fr Niobrara River	0
8/25/2020	6440	Delsing Pump fr Niobrara River	0
9/22/2020	6440	Delsing Pump fr Niobrara River	1.05
4/15/2020	6435	Enterprise Pump fr Niobrara River	0
7/1/2020	6435	Enterprise Pump fr Niobrara River	0
7/30/2020	6435	Enterprise Pump fr Niobrara River	0
8/20/2020	6435	Enterprise Pump fr Niobrara River	0
9/22/2020	6435	Enterprise Pump fr Niobrara River	0
7/27/2020	6130	Harris-Cooper Canal fr White River	7.91
7/14/2020	3040	Hat Creek below Coffee Flood Canal	0.6
7/14/2020	3250	Hat Creek near Ardmore, South Dakota	0.01
7/14/2020	3011	Hat Creek near Bodarc Rd	1
7/14/2020	3245	Hat Creek near Geisers Bridge	0
7/14/2020	3240	Hat Creek on South Line	1.23
7/14/2020	3255	Indian Creek near Montrose	0
7/14/2020	3146	Jim Creek near Montrose	0
9/30/2020	6450	Johndreau Pump fr Niobrara River	0
9/30/2020	6452	Johndreau Pump fr Niobrara River	0
4/16/2020	2590	Lichte Canal from Niobrara River	0
5/14/2020	2590	Lichte Canal from Niobrara River	0
7/14/2020	3260	Long Branch Creek near Ardmore, South Dakota	0
7/14/2020	3256	Mader-Henry Canal fr Indian Creek	0

APPENDIX B 2020 FIELD MEASUREMENTS

Date	Site number	Site Name	Discharge
4/16/2020	2585	Montague Canal from Niobrara River	0
5/14/2020	2585	Montague Canal from Niobrara River	0
9/21/2020	2585	Montague Canal from Niobrara River	0
4/16/2020	6445	Montague Canal Pump fr Niobrara River	0
6/30/2020	6445	Montague Canal Pump fr Niobrara River	0
8/25/2020	6445	Montague Canal Pump fr Niobrara River	1.56
9/22/2020	6445	Montague Canal Pump fr Niobrara River	0
10/2/2019	2580	Pioneer Canal from Niobrara River	0
11/7/2019	2580	Pioneer Canal from Niobrara River	0
3/25/2020	2580	Pioneer Canal from Niobrara River	0
4/15/2020	2580	Pioneer Canal from Niobrara River	0
5/14/2020	2580	Pioneer Canal from Niobrara River	0
6/19/2020	2580	Pioneer Canal from Niobrara River	1.65
7/23/2020	2580	Pioneer Canal from Niobrara River	2.51
8/20/2020	2580	Pioneer Canal from Niobrara River	
9/17/2020	2580	Pioneer Canal from Niobrara River	1.39
7/30/2020	6425	Pioneer Pump #2 fr Niobrara River	0
7/27/2020	6160	Rasher-Forbes Canal fr White River	0.35
7/14/2020	3065	Sow Belly Creek below Zimmerman Canal	0.26
7/14/2020	3185	Squaw Creek near Montrose (Pants Butte Rd)	0
7/14/2020	3105	Warbonnet Creek@ junction of Jim Creek	0
7/14/2020	3235	White Head Creek above Hat Creek Junction	0
7/27/2020	3449	White River above Rasher Canal	1.45
7/27/2020	3450	White River below Rasher Canal	1.17
7/27/2020	6105	White River Canal fr White River	7.38
7/27/2020	6105	White River Canal fr White River	7.36
10/18/2019	6149	Whitney Reservoir	3885
12/4/2019	6149	Whitney Reservoir	4855
1/7/2020	6149	Whitney Reservoir	5845
2/14/2020	6149	Whitney Reservoir	6870
4/22/2020	6149	Whitney Reservoir	7030
6/25/2020	6149	Whitney Reservoir	5470
8/24/2020	6149	Whitney Reservoir	1700
9/29/2020	6149	Whitney Reservoir	1124
7/30/2020	6430	Wilkins Pump fr Niobrara River	0
8/20/2020	6430	Wilkins Pump fr Niobrara River	0
9/22/2020	6430	Wilkins Pump fr Niobrara River	0

NEBRASKA ADMINISTRATIVE CODE

Title 457 - DEPARTMENT OF NATURAL RESOURCES RULES
FOR SURFACE WATER

Chapter 23 - MORATORIUM AREA VARIANCES FOR SURFACE WATER APPROPRIATIONS

001 PETITION FOR LEAVE TO FILE OR CONSIDER AN APPLICATION. Any person wanting to apply for a new surface water appropriation within a moratorium or stay area must file a petition in the Department requesting leave to file an application. The petition must be accompanied by a copy of the completed proposed application. The application shall not be considered filed at the time it is submitted with the petition. Anyone who currently has an unapproved application on file in the Department for a new appropriation for a project that is within a moratorium or stay area must file a petition requesting a variance to the moratorium or stay. The fee for filing the petitions shall be that described in § 33-105(8) R.R.S. 1943, as amended.

The petition shall include sufficient information to indicate:

001.01 The proposed project is for a non-consumptive use; or

001.02 The applicant has a credible proposal for replacing any consumptive use that will occur in a manner such that the project will not harm other users; or

001.03 The applicant has credible information that indicates there **may be** unappropriated water available at the proposed location at the time the depletion is likely to occur; or

001.04 The project existed prior to any informal moratorium, formal moratorium or stay.

001.05 There is a public safety issue that must be addressed and the proposed project addresses such issue.

001.06 The proposed use is a temporary use for public construction and the total volume requested is less than ten (10) acre-feet.

002 REVIEW. The Department shall review the information provided with the petition and shall make a determination as to whether it is sufficient to indicate good cause for allowing further consideration of the application.

003 DECISION. A written decision shall be issued. The decision shall either deny the petition and state the reasons for such denial, or grant the petition and state either (a) the petitioner may file the application and supporting documentation, or (b) the Department will proceed to process the existing filed application. Any decision approving a petition shall not bind the Director to approve any application to which it relates, or in any way be used as evidence of prejudice for the Director's future decisions

concerning the specific approval requirements of such application. Allowance of a leave to file does not negate the necessity to meet the specific approval requirements for an appropriation.

004 APPEAL. If the petitioner wishes to appeal the decision of the Department, he or she may request a hearing before the Department within 15 days of the date the decision is rendered in accordance with the Department's Rules of Practice and Procedure, Title 454.