NEBRASKA
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DEPT. OF NATURAL RESOURCES

Willow Creek near Foster, Nebraska
06799080

LOCATION

Latitude and Longitude

42.17717, -97.66728

Road Log

7.5 miles west of Pierce, NE on Pierce County Road 852.

Nearby Features

About 6 miles above Willow Creek Reservoir near Pierce, NE

Equipment Details

Recording Gage

Sutron SL3 and an OTT radar gun for real-time data. Orifice is an OTT Radar Gun located on the downstream side of the bridge, toward the middle. Real-time data can be accessed through the internet at https://nednr.nebraska.gov/RealTime

External Gage

Wire weight gage located on the downstream side of bridge.

Bench Mark and Reference Marks

March 31, 2014, gage datum is at elevation 1650.538 (NAVD88 MSL). Levels were conducted again September 27th, 2022.

RM #1 and **RM #2** were **destroyed** upon bridge removal on October 17, 1994.

BM-1 – 06799080 – PID #LB0021 is a chiseled square located on the northwest corner of the concrete bridge deck. Levels of September 27th, 2022, elevation is 11.89 feet.

RM #3 is a spike in top of sawed REA pole in fence line on right downstream side of bridge about 8 feet west of creek bank. Levels of September 27th, 2022 had a stage elevation of 11.30 feet.

RM #4 is a spike in top of sawed REA pole in fence line on left downstream side of bridge approximately 6 feet shoreline from creek bank. **NOTE**: On 3/31/2014 survey found the spike loose and it came out of the pole. They did not run elevation to it at that time. May be considered destroyed, should check it on next level to confirm if destroyed.

RM #5 is a spike inside of power pole on downstream side of bridge about 100 feet east of east bridge abutment. Levels of September 27th, 2022 had a stage elevation of 11.87 feet.

RM #6 is a chiseled "X" on the bridge deck about 1½ feet NW of SE corner of bridge deck. Levels of September 27th, 2022 had a stage elevation of 11.91 feet.

RM #7 is a chiseled "X" in the center of I beam 12 feet east of SE corner of bridge. Levels of September 27th, 2022 had a stage elevation of 11.16 feet.

WWCB – Levels of September 27th, 2022 had a stage elevation of 13.04 feet

40.8 PID # AR2188 is aluminum cap five feet south of first power pole east of the bridge. Levels of July 1, 2019, 7.35 feet.

Hydrology

Drainage Area

137 square miles (87,680 acres)

Channel and Control

The channel is extensively meandering above and below the gage. The bed and banks are fine sand and subject to scour and fill.

Discharge Measurements

Wading measurements can be easily made in the vicinity of the gage. High flow measurements will be made from the bridge. Maximum stage for safe wading is in the vicinity of 5.50 feet.

Floods

Peak flow of record was on March 14th, 2019 at 1708 cfs, with a stage of 12.83'. Flood stage is at 8.0' for this site. Top six high flow events are as listed:

Rank	Flood Event	Peak Stage	Channel Condition	Instantaneous Peak Flow
1	March 14th, 2019	12.83'	Flood Event	1710
2	March 18th, 1987	7.94'		574
3	August 24, 1995	8.40		517
4	June 14, 2010	8.85'	Storm Event	499
5	April 13, 1984	7.41		442

Extremes for Period of Record

Peak discharge 1708 cubic feet per second March 14, 2019, gage height 12.83 feet; maximum stage 8.85 feet June 14, 2010; minimum daily discharge 0.856 cubic feet per second September 7, 2023

Point of Zero Flow

Variable with scour and fill.
Point of Zero Flow for Water Year 2022 was 1.59-feet. Point of Zero flow for Water Year 2023 was 1.25-feet.

Winter Flow

Backwater from ice can be expected from November to March.

Regulation and Diversions

Considerable pumping from stream for irrigation.

Accuracy

Records are considered good except for winter period which are poor.

Establishment and History

Established November 13, 1975, by U. S. Geological Survey. Operated on a cooperative basis since 1981 with the Department of Natural Resources until the end of September of 1994, when the gage was taken over and run solely by the Department of Natural Resources with the Lower Elkhorn Natural Resources District (LENRD) as cooperator.

On October 3, 1994, Fischer-Porter Digital removed commencing end to USGS involvement with gage.

On October 12, 1994, the USGS removed the remainder of their equipment.

On May 8, 1995, Wire weight installed.

On May 12,1995, the station was reactivated with installation of DNR equipment.

On July 19, 1995 DNR installed Sutron equipment provided by LENRD. Sutron Model 5600 operated until November 15, 2006.

On November 15, 2006, a WaterLog 500 XL was installed with satellite real-time radio.

On July 25, 2013, the SafePurge Bubble system and Nitrogen Tank were removed and a Water Logger H-3553 Bubbler was installed to replace the SafePurge system.

On December 3, 2020, an OTT radar gun was installed on the downstream side of the bridge toward the western edge. This replaced the Bubbler orifice.

On May 3, 2022 a Sutron SL3 and Dome antenna were installed. Waterlog encoder was removed.

Cooperation

Commencing on October 1, 1994, gage is operated solely by NeDNR and equipment is owned in cooperation with LENRD until July 25, 2013 when equipment was replaced and now is solely owned and run by NeDNR.

Revision History

Original description prepared by: G.G. Engel and P. Hemphill 08/21/1976

Revised by: Wm. H. Birkel 07/28/1995

Revised by: Wm. H. Birkel 08/27/1996

Revised by: Wm. H. Birkel 04/02/1998

Revised by: Wm. H. Birkel 02/23/1999

Revised by: Wm. H. Birkel 02/24/2000

Revised by: Wm. H. Birkel 03/07/2002

Revised by: Wm. H. Birkel 02/26/2003

Revised by: Wm. H. Birkel 03/24/2004

Revised by: Wm. H. Birkel 06/28/2005

Revised by: Wm. H. Birkel 04/23/2007

Revised by: Wm. H. Birkel 06/19/2008

Revised by: Wm. H. Birkel 04/06/2009

Revised by: Wm. H. Birkel 05/19/2010

Revised by: Kenneth M. Meikle 03/30/2011

Revised by: Wm. H. Birkel 07/12/2012

Revised by: Wm. H. Birkel 12/14/2013

Revised by: Wm. H. Birkel 1/11/2014

Revised by: Wm. H. Birkel 02/05/2015

Revised by: Wm. H. Birkel 07/01/2016

Revised by: M. Wieseler 01/17/2017

Revised by: M. Wieseler 12/04/2017

Revised by: Grant Beckman 11/20/2018

Revised by: J.A.Marburger 12/202018

Revised by A. Houser 10/14/2019

Revised by A. Houser 09/30/2020

Revised by A. Houser 09/30/2021

Revised by A. Houser 10/31/2022

Revised by A. Houser 10/03/2023