Platte River at Cozad, Nebraska Combined Stations

06766498 Platte River at Cozad (South Channel)

06766499 Platte River at Cozad (North Channel)

06766500 Combined Platte River at Cozad

LOCATION 06766500 Combined

Hydrology

Drainage Area

56,200 mi, approximately, of which about 51,700 mi contributes directly to surface runoff.

Floods

BOTH CHANNELS

BENCHMARK

Nebraska Department of Roads No. 230-2. Standard bronze tablet in concrete post in north-south fence on east side of highway south of Cozad and approximately 3,000 feet north (left) of north channel bridge was used to determine mean sea level elevation of datum of gages. Elevation of benchmark is 2,483.98 feet above mean sea level.

CHANNEL AND CONTROL

Channels are winding above and below both bridges. Streambeds are composed of sand and gravel and are wide and flat. There is no defined control for either channel.

The South Channel obstructed above and below bridge for approximately ¼ mile from beaver dams in channel and has created a pond affect in the channel. The Dawson County Canal diversion is located about 0.25 mile above the North Channel gage and the Jeffrey Power Return enters the stream approximately 25 miles above the station. The regulation of diversion gates of upstream canals keeps the volume changing.

Extremes for Period of Record

Peak discharge 21,500 cubic feet per second June 29, 1983, combined channel flow; flood of June 1935 estimated to have reached a discharge of 40,000 cubic feet per second; no flow at times in 1937-1940.

PERIOD OF RECORD

Irrigation season 1932, 1937 - 1938, Apr. 1939 - present (monthly discharges only for periods).

REMARKS

Published by the USGS up to Oct. 1, 1991. Records are good, except estimated records are poor.

Published by the Nebraska Department of Natural Resources as Platte River at Cozad (North Channel), Platte River at Cozad (South Channel), and Combined Stations starting Water Year 2016, prior to this date the record for Platte River at Cozad only published as a combined Channel Flow station. Records are good, except estimated records are poor.

HISTORY

July to September 1932, and May 1937 to April 1939, irrigation season records only. Since March 17, 1939, gages moved back and forth to various positions on or near the bridges as the flow meandered in the streambed and the gages operated at various gage datum's. A breakdown of gage locations and datum's for the two channels given below.

Stations on both channels operated in cooperation with the USGS prior to October 1, 1990.

South channel gage operated in summer months only from 2002 until 2007.

Beaver dams in south channel above and below gage have created a large pond affect in the channel, making it very difficult to obtain a reasonable stage-discharge relationship. Recording instrument in south channel not installed in 2008.

LOCATION 06766498 Platte River at Cozad (South Channel)

Latitude and Longitude

40.83286 -99.99137

Road Log

Dawson County, at left downstream end of south bridge over the Platte River on State Highway 21, 1.9 mile south of Cozad, NE. Alternatively, 1 mile south of I-80 interchange 222 (Cozad Exit) on State Highway 21.

Equipment Details

Recording Gage

SUTRON CBS flow meter connected to stream with a sand point orifice. SATLINK DCP communications installed so a near real time data is available in one-hour transmissions. Instrument powered from 12-volt gel cell battery connected to solar panel. All instruments housed in a 2.5 foot x 2.5 foot x 2.5 foot precut metal shelter on the left bank 10 feet downstream from left bridge abutment on Highway 21.

Real-time data accessed through the internet at https://nednr.nebraska.gov/RealTime

External Gage

Reference gage is an enameled staff (0.00-6.74 feet) attached to a 2 inch x 6 inch timber bolted to a steel grader blade driven in stream. Checked by levels April 26, 2018. Held and reads 6.00 feet. (Was replaced by a wire weight May 25, 2018)

Wire weight gage check bar elevation is 21.42 feet (established May 25, 2018) Base Gage after May 25, 2018.

Bench Mark and Reference Marks

Mean Sea Level, for South Channel Gage and periods of use:

May 04, 1950 to Sept. 30, 1940	2,478.09 feet.
Oct. 01, 1940 to July 20, 1947	2,477.09 feet.
July 21, 1947 to Sept. 22, 1947	2,476.09 feet.
Sept.23, 1947 to July 18, 1949	2,475.60 feet.
July 18, 1949 to May 09, 1966	2,474.07 feet.
May 10, 1966 to date	2,473.07 feet.

R.M.No. 1, R.M.No. 2, R.M.No. 3, R.M.No. 4, and R.M. No. 7 destroyed

R.M. No. 5 - Nebraska Department of Roads bronze tablet marker on top left end of upstream bridge rail. Elevation 20.90 feet from levels on September 9, 2015. (ORIGIN)

R.M. No. 6 - Nebraska Department of Roads bronze tablet marker on top right end of downstream bridge rail. Elevation 20.89 feet. From levels dated June 23, 1998. R.M. not shot since levels of February 14, 2006.

R.M. No.8 – (x) in upstream concrete bridge rail. Elevation 21.07 feet to gage datum from levels dated May 25, 2018.

R.M. No.9 – (X) in downstream concrete bridge rail. Elevation 21.34 feet to gage datum from levels dated June 23, 1998. R.M. not shot since levels of September 14, 2010.

R.M. No. 10 – Chiseled "X" in the top of bridge rail 208 feet from the left side downstream rail. Elevation 21.27 feet by levels May 25, 2018. (Established)

R.M. No. 11 – Chiseled "X" in the top of bridge rail 410 feet from the left side downstream rail. Elevation 21.33 feet by levels May 25, 2018. (Established).

R.M. No. 12 – Chiseled "X" in the top of bridge rail 499 feet from the left side downstream rail. Elevation 21.18 feet by levels May 25, 2018. (Established).

R. M. No. 13 – Chiseled "X" in the top of bridge rail 635 feet from the left side downstream rail. Elevation 20.97 feet by levels May 25, 2018. (Established).

OLD R.P.No.1 is an (X) 78.6 feet from the left end of the downstream bridge rail. Elevation 20.96 feet from levels dated April 26, 2018. This one is hard to read.

R.P.No.2 is an X 78.6 feet from the left end of the downstream TOP bridge rail. Elevation 21.02 feet from levels dated May 25, 2018.

Wire weight gage check bar elevation is 21.42 feet (established May 25, 2018 by levels)

Channel and Control

Channel is winding above and below the bridge. Streambed is composed of sand and gravel and are wide and flat. There is no defined control for the channel.

The South Channel obstructed above and below bridge for approximately 0.25 mile from beaver dams in channel. This has created a pond affect in the channel.

The Dawson County Canal diversion is located about 0.25 mile above the North Channel gage and the Jeffrey Power Return enters the stream approximately 25 miles above the station. The regulation of diversion gates of upstream canals keeps the volume changing.

Discharge Measurements

Medium and low flow measurements made by wading near the gage. High water measurements made from the highway bridge.

Point of Zero Flow

Variable.

Regulation and Diversions

Flow completely regulated by trans mountain diversions storage reservoir, power developments, groundwater withdrawals, river diversions for irrigation and return flow from irrigated areas. Diversion by Dawson County Canal (capacity 450 cubic feet per second) approximately 0.25 mile above North Channel gage and return flow from Jeffrey power station approximately 25 miles above the gage cause diurnal fluctuations in stage of up to 1.0 foot depending upon the season and mode of operation.

Accuracy

Records rated fair with a bi-weekly measurement schedule along with measurements made during special events. Winter and estimated record considered poor.

Establishment and History

Wooden box shelter on 24 inch CMP well with one-foot conical bottom.

May 4, 1940 to Nov. 2, 1942, on downstream end of first pier from right bank.

Nov. 3, 1942 to May 19, 1947, on downstream end of sixth pier from right bank.

May 20, 1947 to June 24, 1952, on downstream end of fourth pier from right bank.

June 25, 1952 to Apr. 16, 1971, on downstream end of first pier from right bank.

April 7, 1971, on downstream end of fifth pier from right bank.

July 17, 1980, a 5 foot x 5 foot x 8 foot precut metal shelter on right bank 10 feet downstream from Highway Bridge.

Nov. 16, 1988 5x5x8 precut metal shelter 10 feet downstream from left bridge abutment on State Highway 21.

On February 17, 2016, shelter replaced with a 2.5 foot x 2.5 foot x 2.5 foot precut metal shelter to prepare for Sutron installation.

February 24, 2016 the ISCO equipment removed and the Sutron CBS unit along with the SatLink DCP transmitter installed. This station is now on the real time status with 1 hour transmissions uploaded to the world.

Established a Wire weight gage May 25, 2018.

REMARKS

Published by the Nebraska Department of Natural Resources as Platte River at Cozad (North Channel), Platte River at Cozad (South Channel), and Combined Stations starting Water Year 2016, prior to this date the record for Platte River at Cozad only published as a combined Channel Flow station. Records are good, except estimated records are poor.

Revision History

Original description prepared 11-14-1942 by L.F.Hanks

Revised 08-23-1977 by E.K.Steele

Revised 05-27-1980 by E.K.Steele

Revised 01-30-1990 by J.W.Vassos

Revised 03-25-1994 by J.C.Retchless

Revised 03-20-1996 by J.W.Vassos

Revised 03-10-1997 by J.C.Retchless

Revised 02-05-1999 by J.C.Retchless

Revised 11-8-1999 by J.C.Retchless

Revised 02/21/2001 by J.C.Retchless & J.W.Vassos

Revised 12-09-2002 by J.C.Retchless

Revised 10/30/2003 by J.C.Retchless

Revised 10/18/2005 by J.C.Retchless

Revised 07/24/2008 by J.C.Retchless

Revised 10/06/2009 by A.S. Leisy

Revised 02/28/2017 by S. Figuric

Revised 04/17/2018 by J. Nichols

Revised 05/11/2018 by J.A. Marburger

Revised 03/01/2019 by J.A. Marburger

LOCATION 06766499 Platte River at Cozad (North Channel)

Latitude and Longitude

40.83774 -99.98677

Road Log

Dawson County, at left downstream end of North Bridge over the Platte River on State Highway 21, 1.4 mile south of Cozad, NE. Alternatively, .5 mile south of I-80 interchange 222 (Cozad Exit) on State Highway 21.

Equipment Details

Recording Gage

SUTRON CBS flow meter connected to stream with a muffler type orifice. SATLINK DCP communications installed so a near real time data is available in one-hour transmissions. Instrument powered from 12-volt gel cell battery connected to solar panel. All instruments housed in a 2.5 foot x 2.5 foot x 2.5 foot precut metal shelter on the left bank 10 feet downstream from left bridge abutment on Highway 21.

Real-time data accessed through the internet at https://nednr.nebraska.gov/RealTime

External Gage

Wire-weight attached to downstream bridge rail near the right end of bridge.

Bench Mark and Reference Marks

In feet above, mean sea level, for North Channel gage and periods of use:

March 17, 1939 to September 30, 1940	2,478.72 feet
October 1, 1940 to July 11, 1955	2,477.72 feet
July 12, 1955 to May 10, 1976	2,476.72 feet
May 11, 1976 to July 2014	2,475.72 feet
July 2014 to July 7, 2017	2,474.72 feet
July 7, 2017 to September 25, 2018	2,473.72 feet
September 25, 2018 to present	2,472.72 feet

R.M.No.1, R.M.No. 2, R.M.No.3, R.M.No.4, R.M.No.5, R.M.No.8 and R.M. No. 9, and **R.M. No.10 have been destroyed.**

R.M. No. 6 - Nebraska Dept. of Roads bronze tablet marker on top left end of upstream bridge rail. Elevation 20.01 feet. Lowered datum 1.0 foot September 25, 2018 (no Levels).

R.M. No. 7 - Nebraska Dept. of Roads bronze tablet marker on top right end of downstream bridge rail. Elevation 23.64 feet. Lowered datum 1.0 foot September 25, 2018 (no Levels).

R.M. No. 11 –X in asphalt shoulder east of downstream metal bridge rail. 26 feet north of end of concrete bridge. Elevation 19.80. Lowered datum 1.0 foot September 25, 2018 (no Levels).

R.M. No. 12 –X in top of cement bridge rail 11 feet south of the north end of the bridge. Elevation 22.62. Lowered datum 1.0 foot September 25, 2018 (no Levels).

Wire Weight gage: Downstream bridge rail near the right end of bridge. Elevations 22.43 feet from changing gage datum (no Levels) September 25, 2018. (Lowered datum 1.0 foot)

Channel and Control

Channels are winding above and below bridge. Streambeds are composed of sand and gravel and are wide and flat. There is no defined control for either channel.

The Dawson County Canal diversion is located about 0.25 mile above the North Channel gage and the Jeffrey Power Return enters the stream approximately 25 miles above the station. The regulation of diversion gates of upstream canals keeps the volume changing.

Discharge Measurements

Medium and low flow measurements made by wading near both gages. High water measurements made from the highway bridges on both channels.

Point of Zero Flow

Variable for both channels.

Winter Flow

Ice conditions will form rapidly on the North Channel.

Regulation and Diversions

Flow completely regulated by trans mountain diversions storage reservoir, power developments, groundwater withdrawals, river diversions for irrigation and return flow from irrigated areas. Diversion by Dawson County Canal (capacity 450 ft /s) approximately 0.25 mile above North Channel gage and return flow from Jeffrey power station approximately 25 miles above the gage cause diurnal fluctuations in stage of up to 1.0 foot depending upon the season and mode of operation.

Accuracy

Records rated fair with a bi-weekly measurement schedule along with measurements made during special events. Winter and estimated record considered poor.

Establishment and History

Established by A. W. Hall of the Nebraska Bureau of Irrigation, Water Power and Drainage (currently Nebraska Department of Natural Resources). Recording gage installed on North Channel March 17, 1939 and South channel May 4, 1940.

July to September 1932, and May 1937 to April 1939, irrigation season records only. Since March 17, 1939, gages moved back and forth to various positions. Near the bridge as the

flow meandered in the streambed and the gages been operated at various gage datums. A breakdown of gage locations and datums for the north channel above in the Benchmark and Reference mark section above.

March 17, 1939 to October 3, 1950, wooden box shelter on 24 inch CMP well with one-foot conical bottom attached to downstream end of first pier from right bank.

October 3, 1950 to June 16, 1977 wooden shelter on 36 inch CMP stilling well on right bank 30 feet below the downstream end of right bridge abutment.

June 17, 1977, a 48-inch CMP shelter installed on a plank and post platform on left bank 30 feet above the upstream end of the left bridge abutment.

November 15, 1988, a Wire-Weight 20.02 feet elevation to gage datum was installed and attached to downstream bridge rail 100 feet from left end of bridge.

November 16, 1989, a 48-inch CMP shelter on a metal platform supported by metal legs set in concrete on left bank 10 feet downstream from left bridge abutment on Highway 21.

Stations on both channels operated in cooperation with the USGS prior to October 1, 1990.

March 16, 1993, a 5 foot x 5 foot x 8 foot precut metal shelter mounted on a metal platform supported by metal legs set in concrete on the left bank 10 feet downstream from left bridge abutment on Highway 21.

February 24, 2016 the ISCO equipment removed and the Sutron CBS unit along with the SatLink DCP transmitter installed. This station is now on the real time status with 1-hour transmissions uploaded to the world.

On October 12, 2016, 5 foot x 5 foot x 8 foot shelter was removed and replaced at a location further down the downslope of the road with a 2.5 footx2.5 foot x 2.5 foot precut metal shelter.

Gage Datum Lowered 1.0 foot on July 7, 2017

Gage Datum Lowered 1.0 foot on September 25, 2018

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Revised 02/28/2017 by S. Figuric

Revised 04/17/2018 by J. Nichols

Revised 05/11/2018 by J.A. Marburger

Revised 03/04/2019 by J.A. Marburger