NEBRASKA
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DEPT. OF NATURAL RESOURCES

# Middle Loup River at Rockville, Nebraska
06780000

## LOCATION

### *Latitude and Longitude*

41.11082, -98.83563

### *Road Log*

The gage is located on the left upstream bank of NE-68 and can be accessed by driving 0.5 miles southwest from Rockville, NE or 10.0 miles north and east from Ravenna, NE.

### *Nearby Features*

Rock Creek enters the stream on the left bank 0.18 mile upstream near the old bridge and gaging station site. The concrete apron of the Boelus Hydroelectric Plant diversion structure is still visible 7.0 miles downstream. The confluence of the Middle Loup River and South Loup River is 12.5 miles downstream.

## Equipment Details

### *Recording Gage*

Instruments include OTT products: Sutron Satlink 3 data logger, Radar Level Sensor, Sutron Dome Antenna; powered by a 12-volt battery and solar panel. This equipment is located in a 48" CMP shelter set on a steel frame on the left bank approximately 30' upstream from the centerline of State Highway 68. The radar wiring is encased in 1¼" black plastic tubing. The radar is mounted 15' left of the wire weight.

### *External Gage*

The inside gages are referenced and set according to the wire-weight gage mounted on the guardrail on the upstream side of the bridge, approx. 65' streamward from the left upstream end. Check bar elevation is 16.56 ft., gage datum (levels of 9/14/2023).

### *Bench Mark and Reference Marks*

R.M.'s 1, 2, 4, and 5; and R.P. 3 have been destroyed.

R.M. 3 and R.P. 1 have been abandoned.

R.M. No. 6 is a chiseled X on the upstream, streamward gage house leg (channel iron). Elevation 13.74 ft., gage datum (levels of 9/14/2023). Established March 31, 2015.

R.M. No. 7 is a standard USGS brass tablet set in a concrete post under fence line 25 ft. northwest (left) of southern most corner post, fence around city lagoons, north of gage house. Elevation 8.36 ft., gage datum (levels of 9/14/2023). Established March 31, 2015.

R.M. No. 8 is a standard USGS brass tablet on top of upstream concrete guardrail, 3.5 ft. streamward from left upstream corner of concrete deck girder bridge. Elevation 18.96 ft., gage datum (levels of 9/14/2023). Established October 6, 2020.

R.M. No. 9 is a standard USGS brass tablet on top of downstream concrete guardrail, 3.5 ft. streamward from right downstream corner of concrete deck girder bridge. Elevation 18.61 ft., gage datum (levels of 9/14/2023). Established October 6, 2020.

R.P. No. 2 is top of head of ¼ inch bolt set horizontally into upstream side of bridge below the top of the guardrail, approx. 100' streamward from the right upstream end. Elevation 17.31 ft., gage datum (levels of 9/14/2023). Established August 27, 1974.

R.P. No. 4 is a chiseled arrow on the downstream guardrail at station 220'. Elevation 19.12 ft., gage datum (levels of 9/14/2023). Established October 6, 2020.

The gage datum is 1,954.501 ft. above the North American Vertical Datum of 1988; obtained using NDOR levels ran in 2013 to R.M. No. 4.

## Hydrology

### *Drainage Area*

The streamgage has a drainage area 5,310 square miles of which 4,220 square miles probably is noncontributing.

### *Channel and Control*

The channel at this station is typical of the sandhill streams in that it has a loose sandy bottom and flow in the channel meanders from side to side, causing extreme changes in the stage-discharge relationship. The banks are low and covered with grass and willows. Overflow occurs when the flow is obstructed by ice jams. The channel acts as the control for all stages.

### *Discharge Measurements*

Wading measurements are made in the vicinity of the gage. Medium and high stages are made from the downstream side of the bridge. Discharge measurements are normally made once every four weeks.

### *Floods*

ACTION STAGE: 7.0 FT

FLOOD STAGE: 8.0 FT

MODERATE STAGE: 11.0 FT

MAJOR STAGE: 14.0 FT

Values provided by NWS as of November 2, 2018.

Widespread flooding occurs in lowland pastures near river at 8.0 feet. Floodwaters reach the Rockville sewer lagoon at 11.0 feet. Floodwaters will cover Highway 68 at 14.0 feet.

### *Extremes for Period of Record*

Maximum discharge during periods 1955-64 and 1967-1975, 10,400 cfs June 16, 1957, gage height 4.62 feet; maximum gage height, 11.44 feet March 13, 2019, backwater from ice jam at the bridge (estimated discharge of 11,500 and 12,500 cfs on March 13 & 14, respectively); minimum daily discharge, 27 cubic feet per second July 20, 1974.

### *Point of Zero Flow*

Variable. Changes with conditions of scour and fill.

### *Winter Flow*

Complete ice cover can be expected during severe winter weather. Stage – discharge relation will be affected by ice cover for a major part of the winter period, with ice jams occurring at breakup. Flow may be affected by ice November through March.

### *Regulation and Diversions*

There are a number of small irrigation diversions, above and below the gage. The natural flow at this site is greatly affected by the diversions and return flows of three irrigation districts with headgates upstream. They are: Sargent Canal near Milburn, Middle Loup canals #1 and #2 at Sargent, and Farwell Feeder Canal near Arcadia (including Middle Loup canals #3 and #4).

### *Accuracy*

With frequent measurements to define shifts, “fair to good” records should be attainable during open water. Ice records will generally be “poor”. Previous records show fair to poor records were obtained due to the severe shifting conditions. Records for winter period would be poor.

## Establishment and History

Established September 12, 1955. Discontinued September 30, 1964. September 1955 to September 1964; Stevens A-35 graphic water-stage recorder.

Re-established September 29, 1967, by G.G. Jamison, K.H. Calver, and J.R. Wagner of the USGS. At same site and datum. Records will be published beginning Oct. 1, 1967. Original shelter still in place.

Steel truss bridge removed January 25, 1974 and replaced with concrete deck girder bridge 0.2 mile downstream. Discontinued Sept. 30, 1975.

Re-established on April 15, 2015, by S.R. Kolar, P.J. Breitkreutz, and J.E. Sedlacek of Nebraska Department of Natural Resources. Gage datum was lowered 3.00 ft. from last full set of levels on August 27, 1974. The gage datum was lowered from 1,957.501 to 1,954.501 ft. above NAVD 88; based upon levels ran by the Nebraska Dept. of Roads to R.M. 4 in 2013.

On September 14, 2023, YSI datalogger H-522+ V2, Bubbler H-3553-15, Yagi antenna w/ cables & grounding block, & sandpoint orifice were removed. Ott equipment was installed: Sutron Satlink 3 datalogger (SL3-ENC-DISP-1), Ott Radar Level Sensor (mounted 15' left of the Wire Weight), & Ott Dome Antenna (GEO-ANT-GPS-K3) with wiring & grounding block.

## Revision History

Original description prepared 08-21-61 by K.G. Polinoski

Revised 03-25-68 by G.G. Jamison

Revised 05-13-76 by H.D. Stephens

Revised 04-17-15 by T.L. Klanecky

Revised 11-16-17 by P.J. Breitkreutz

Revised 11-02-18 by P.J. Breitkreutz

Revised 05-06-19 by P.J. Breitkreutz

Revised 06-11-20 by P.J. Breitkreutz

Revised 10-12-20 by P.J. Breitkreutz

Revised 10-03-23 by P.J. Breitkreutz