

## ELKHORN RIVER NEAR ATKINSON, NE. 06796973

### LOCATION

#### *Latitude and Longitude*

42.48655, -98.91208

#### *Road Log*

On left bank downstream from county road bridge, 4.0 mi. southeast of Atkinson and 0.5 mi. south on 479 AVE.

#### *Nearby Features*

Atkinson Lake is 6 miles upstream from gage.

### Equipment Details

#### *Recording Gage*

The instruments include a Sutron Satlink 3 Data Logger / Transmitter, Sutron Geo-Satellite antenna with GPS, and a Sutron Bubbler. This equipment is located in a 5' x 5' steel Corps of Engineers type shelter set on a steel frame on the left bank on the downstream side of the bridge. The orifice for the bubble line is in a sand point driven into the riverbed.

#### *External Gage*

"Type A" wire-weight gage mounted on the downstream side of the bridge to the concrete guard rail.

#### *Bench Mark and Reference Marks*

Wire Weight is located on downstream side of bridge in the middle, Elevation 16.17 ft. gage datum, Levels of 5/26/2021.

R.M. # 4 is a lag bolt in tree 21ft. south of bridge and 130 ft. downstream on right bank, Elevation 9.90 ft. gage datum, Levels of 5/26/2021.

R.M. # 6 is a chiseled square on the southeast abutment. Elevation 14.61 ft. gage datum, Levels of 5/26/2021.

R.M. # 7 is a chiseled square on the northeast abutment. Elevation 14.51 ft. gage datum, Levels of 5/26/2021.

R.M. # 8 is a brass cap in the concrete bridge rail on the northwest corner. Elevation 17.14 ft. gage datum, Levels of 5/26/2021.

R.P. # 8 is a chiseled V in the downstream bridge rail 34' south of the wire weight or at bridge station 101. Elevation 17.24 ft. gage datum. Levels of 5/26/2021.

R.M. # 9 is a chiseled X in the southwest gage house base leg. Elevation 14.94 ft. gage datum, Levels of 5/26/2021.

R.M. # 10 is a brass cap in concrete in the fence line to the north and east of gage house 86 ½ feet. Elevation 7.24 ft. gage datum, Levels of 5/26/2021.

Datum of gage is 2,044.224 ft. above The North American Vertical Datum of 1988 as determined by GPS on August 6, 2014, by NE Dept. of Natural Resources. New gage location as of August 29, 2012.

## Hydrology

### *Drainage Area*

Undetermined.

### *Channel and Control*

The channel cuts through a wide meandering flood plain which is bounded by marshes and abandoned channels. A road and embankment which cuts across the flood plain next to the gage will prevent river overflows from bypassing the gage. The bank, which rises 5-10 ft. above the steam bed, is fairly resistant to erosion as a result of grass and shrubs. The sandy bed is fairly stable at low to moderate stages in the vicinity of the orifice. Minor channel shifts may be noted at low stages due to sandbar movement.

### *Discharge Measurements*

Low and medium flows may be measured by wading in the vicinity of the gage. High flows can be measured from the bridge.

### *Extremes for Period of Record*

Maximum discharge of 6480 CFS on June 14, 2010, gage height 10.27 ft. present datum, from graph based on gage reading. The previous maximum was 4300 CFS on May 29, 1995, gage height 9.31 ft.

There was a maximum discharge of 3,497 CFS on March 16, 2019, gage height of 9.10 ft.

### *Point of Zero Flow*

1.50 ft. September 12, 2023.

### *Winter Flow*

Partial to complete ice cover depending upon temperature. The cross-section is affected by ice November through March.

### *Regulation and Diversions*

There are minor pump withdrawals for irrigation above and below the gage.

### Accuracy

With frequent measurements to define shifts, "good" records should be obtainable during open water. Ice records will generally be "poor".

### Establishment and History

Established by the Department of Water Resources October 1, 1982

Water-stage recorder (digital 30-minute punch) installed April 1 1985

On January 1, 1993, water stage recorder (digital 30-minute punch) was removed.

August 28, 1997, staff gage and sand point were moved to north downstream pier.

On August 13, 1998, Stacom Manometer was removed.

On August 13, 1998, Water Gage II-25 was installed.

The Nebraska Department of Water Resources name was changed to Nebraska Department of Natural Resources as of July 1, 2000.

On November 19, 2003, Design Analysis Water Log Series Model H-500XL was installed.

On April 21, 2005, Goes Satellite Antenna was installed.

On May 26, 2005, Goes transmitter was installed.

On December 7, 2011, the staff gage was removed.

On December 7, 2011, the gage house and orifice line were moved to a temporary location about 150' upstream due to new bridge construction.

On December 7, 2011 RP7 was installed as a temporary outside base gage.

On August 14, 2012, Type-A wire weight was installed.

On August 28, 2012, RP7 was removed.

On August 29, 2012, the gage house, recording equipment, and orifice line were moved to their new location after the new bridge construction.

On September 5, 2012, a Design Analysis H-522+ data logger was installed and the H-500XL was removed.

On June 25, 2013, a Design Analysis H3553 Bubbler was installed.

On August 23, 2023, the Design Analysis H-522+ logger, H3553 Bubbler, and Goes Satellite antenna were removed and replaced with a Sutron Satelink 3 recorder, a Sutron Bubbler, and a Sutron Geo-Satellite antenna with GPS.

### Revisions

Prepared: 03-03-83 by T. L. Klanecky

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