

SNAKE RIVER NEAR BURGE NEBRASKA 06459500

LOCATION

Latitude and Longitude

42.654167, 100.857778

Road Log

On right bank 150 ft. downstream from Nebraska National Forest boundary, 2.1 mi. downstream from Merritt Dam, 6.5 mi. southwest of Burge, and 22 mi. southwest of Valentine. To reach the gage house you travel 24 miles southwest of Valentine NE. on highway 97 turn west on the bridge that crosses the Ainsworth Canal and travel .3 of a mile on a sand trail through a pasture to the Snake River.

Nearby Features

Merritt Reservoir is 2.1 miles upstream of the gage. The confluence of the Snake River and the Niobrara River is 9.5 miles downstream of the gage.

Equipment Details

Recording Gage

Design Analysis Water Log Series Model H-522XL, Stevens A-71 water stage recorder (Gage-Height Scale, 1:6, time scale, 2.4 inches per day, electric-drive clock) driven by a single float installed in a standard 48-inch CMP shelter and well.

The recorder is referenced to the water level by a weighted steel tape and adjustable reference point mounted on the instrument shelf. Tape length, 12.00 ft. The well is connected to the stream by two three-inch iron intake pipes 13 ft. and 15 ft. long and one 1 ½ inch intake pipe 18 ft. long. The middle and lower intakes are connected to the 20-gallon flush tank mounted under the shelter floor. The tank is connected to the intakes by 2-inch iron riser pipes through a 2" x 2" x 2" tee on the well end of the intake pipes. Two-inch gate valves on the well end of the tees regulates the flow. Valve stems are extended to the shelter floor level by street keys.

External Gage

The outside staff gage (0-3.34 ft.) is attached to a 2" x 6" wooden backing and a 6" channel iron grouted in the streambed and bolted to the right end of the bridge 10 ft. downstream from the recorder well.

Bench Mark and Reference Marks

R.M.#1 is a standard tablet in concrete post located 20 ft. downstream from shelter and 15ft. shoreward from right bank. This R.M. is not stable. Elevation is 10.76 ft. gage datum, as determined by levels of 4/26/2022.

R.M. #3 (basic) is a standard tablet in concrete post 30 ft. directly back of gage well on 2nd bench. Elevation is 31.69 ft. gage datum, as of levels of 4/26/2022 and 2,838.046 ft., NAVD of 1988.

R.M.#4 is the top of ¾" diameter steel pin, with chiseled X on top, next to 6" vertical channel upstream bridge support at the left bank. Elevation is 6.20 ft., gage datum, as determined by levels of 4/26/2022.

E3-RT (2.05 RT) in a standard USBR brass tablet in concrete post 47 ft. upstream and 10 ft. right of gage. Elevation 24.61 ft., gage datum, as determined by levels of 4/26/2022.

RP-2 is a bolt located in the board on the staff gage. Elevation is 4.78 ft., gage datum, as determined by levels of 4/26/2022.

RP is the reference point located inside the gage house mounted on the front of the shelf. Elevation is 12.01 ft., gage datum, as determined by levels of 4/26/2022.

Gage datum is 2,806.356 ft. above the NAVD of 1988 as determined by levels of the Department of Natural Resources on 8/5/2014. Previously the gage datum was 2,805.36 ft. NGVD of 1929 as determined by levels by Bureau of Reclamation from benchmark TT-14WN 1947, elevation 2,872.209 ft.

Establishment and History

Established June 26, 1947, by U.S. Geological Survey.

A digital recorder was installed May 26, 1964.

A manometer was installed November 24, 1964, to record low stages below 1.25 ft., and was removed on October 19, 1965, when a 1 ½ inch lower intake was installed.

The Nebraska Department of Water Resources assumed operation of the gage as of October 1, 1994.

Digital and Stevens A-35 recorder was removed May 10, 1995.

Stevens A-71 recorder was installed May 10, 1995.

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

On April 26, 2005, the Satellite Goes antenna was installed.

On June 15, 2005, the Design Analysis Water Log Series Model H-522XL was installed.

On July 9, 2014, the lower 1 ½ inch intake was dug down to fix the air lock at lower flows.

On August 5, 2014, the DNR Survey Crew established the gage datum as 2,806.356 ft. above the NAVD of 1988.

On March 31, 2021, a set of stairs was installed on the trail leading to gage house for safety in the winter months.

On May 20, 2021, a cable handrail was installed on both the upstream and downstream sides of the walkway by the gage for safety on high water measurements.

Hydrology

Drainage Area

660 sq. mi. approximately, of which about 44 sq. mi. contributes directly to surface runoff.

Channel and Control

The channel is generally winding in deep cut rock. The streambed is cut into chalk rock that is covered with deposit of fine sand. The channel is straight for about 100 ft. above the gage. There is but one channel at all stages. The channel is straight for about 200 ft. below the gage and then bends to the left. This section is deep cut rock with varying sand deposits on the stream bottom.

The control is an irregular rock outcrop about 50 ft. below the gage and should be fairly permanent. Varying sand deposits on the rock above the control will cause small variations in the rating.

Discharge Measurements

Low and medium stages can be waded from 300 to 400 ft. upstream. High stages are measured from a 51-foot span steel bridge located 10 ft. downstream from the gage. Bridge will clear a 6-foot stage.

Floods

There are no floods for this gage due to the stream flows being regulated by Merritt Reservoir only being 2.1 miles upstream.

Extremes for Period of Record

Maximum discharge, 3,170 cfs Feb. 7, 1963, gage height, 6.96 ft., and release of storage behind temporary construction dike, from rating curve extended above 520 cfs on basis of slope-area measurement at gage height 5.39 ft.

In May of 2019 there was a rain event which caused Merritt Reservoir to release water causing a high-water event at the gage on May 25, 2019, with a max instantaneous discharge of 838 cfs. and a gage height of 3.88 ft.

Point of Zero Flow

Estimated at 0.30 ft.

Winter Flow

Flow is regulated by releases from Merritt Dam 2.1 miles upstream and is not affected by ice during the winter.

Regulation and Diversions

Natural flow affected by storage in Merritt Reservoir (station 06459300) 2.1 miles upstream.

Accuracy

Records good.

Revision History

Original description prepared 04-28-48 by L. F. Hanks

Revised 07-03-63 by G. G. Jamison

Revised 07-09-79 by H. D. Stephens

Revised 09-12-86 by R. B. Swanson

Revised 01-09-90 by R. B. Swanson

Revised 04-13-92 by R. A. Drudik

Revised 05-02-94 by R. A. Drudik

Revised 02-02-96 by D. L. Studnicka

Revised 10-24-97 by D. L. Studnicka

Revised 09-29-98 by D. L. Studnicka

Revised 10-17-00 by D. L. Studnicka

Revised 09-25-03 by D. L. Studnicka

Revised 08-16-06 by D. L. Studnicka

Revised 04-05-10 by D. L. Studnicka
Revised 09-25-13 by J.E. Sedlacek
Revised 12-29-14 by J.E. Sedlacek
Revised 11-01-16 by J.E. Sedlacek
Revised 10-25-18 by J.E. Sedlacek
Revised 06-13-19 by J.E. Sedlacek
Revised 10-20-21 by J.E. Sedlacek
Revised 05-06-2022 by J. E. Sedlacek