

Dry Spotted tail Creek at Mitchell, Nebraska 06679000

LOCATION

Latitude and Longitude

41.94272 -103.8331

Road Log

Scotts Bluff County, on right bank 5 feet upstream from bridge on County Road "E", 0.8 mile upstream from mouth, and 1 mile west of the intersection of U.S. Highway 26 and State Highway 29 in Mitchell, NE.

Station reached by driving west on U.S. Highway 26, 0.6 mile from railroad crossing then 0.4 mile south along east bank of Dry Spottedtail Creek. Or by turning south from U.S. Highway 26 onto 22nd Ave in Mitchell, NE and travel approximately 350 feet over railroad tracks then turn west onto County Road "E" and travel west approximately 0.80 miles.

Nearby Features

Enterprise Canal returns flow into Dry Spottedtail Creek during times of heavy rains or emergencies. Water diverted in summer for irrigation use three miles above the station. Base flow is mainly return flow from irrigated lands and is greater during late summer to early fall. At this site, the stage will experience random spikes (up and down) due to the proximity to irrigation canals.

Equipment Details

Recording Gage

A SUTRON CBS Bubbler Flow meter and Satlink DCP connected to stream with an open-end 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 48-inch CMP gage house set on a frame.

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

External Gage

Instrument referenced to outside enameled staff gage attached to a 2 inch x 6 inch timber bolted to a grader blade and driven into the streambed near orifice. Elevation of R.P. on upstream bridge rail is 10.64 feet to gage datum if staff is out of service.

Bench Mark and Reference Marks

PRESENT GAGE DATUMS:

3942.75 feet NGVD29 / 3944.988 feet NAVD88

R.M. #1, R.M. #2, R.M. #5, and R.P. #3 - DESTROYED.

R.M. #3: A \square on upstream concrete headwall of irrigation lateral turnout 88 feet east of southwest corner of shelter across the county road on the right upstream concrete wing wall of the irrigation culvert.

Given elevation of 12.85 feet by levels 04/11/2016 **ORIGIN**.

Elevation of 12.85 ft by levels 06/14/2022. **ORIGIN**

R.M. #4: -Standard bronze tablet 32 feet west 39 feet south from Shelter 3 feet east of power pole (thought destroyed).

Elevation of 12.85 feet by levels on 08/03/18

Levels found the RM DESTROYED 06/14/2022.

R.M. #6: – III chiseled on left upstream corner of shelter base angle iron.

Elevation of 13.76 feet by levels 08/03/18.

This R.M. is moving. Should abandoned or replaced on next levels. (Found moving since 2006.)

Elevation of 13.74 feet by levels 06/14/2022.

R.M. #7: - X on top of southeast pivot bolt 37.5 feet west of southwest corner of shelter step.

Elevation of 12.22 feet by levels 08/03/18.

Elevation of 12.24 feet by levels 06/14/2022.

R.P. #3 - An adjustable slotted nut on threaded bolt attached to upstream bridge rail elevation of 11.64 ft. Has not been included on levels since 05/02/2007 and **may be destroyed**.

Wire Weight ESTABLISHED Check bar EST: 13.07 ft. 06/14/22.

Staff Gage: Located near the east (left) bank across from the station.

Held 3.00 ft., Found 3.04 ft. during levels dated 08/02/18. Adjusted to match staff on 08/03/18.

Hydrology

Drainage Area

77.2 square miles.

Channel and Control

Low flow control is an artificial control under County Road "E" Bridge made from rock and concrete chunks. High flow may wash banks at edge of control causing it to become unstable. Debris lodging on rough surface along with some silting in may also alter its' effectiveness. Channel control will prevail at medium stages (1.5 feet) and above when artificial control will submerge. Bridge opening below the gage will act as the control during high stages (4.0 feet and above).

Discharge Measurements

Wading measurement near the gage and rip rap riffle low water control. High water measurements made from the bridge.

Floods

Maximum flood recorded, 2,010 cubic feet per second June 24, 1951 (gage height, 8.55 feet, present datum), from slope-area determination of peak flow. Floods occur mainly result of heavy summer rains and spilling from irrigation canal approximately 2.5 miles upstream.

Extremes for Period of Record

Peak discharge 2,010 cubic feet per second June 24, 1951, gage height 8.55 feet; minimum daily discharge 1.6 cubic feet per second June 28, 1966.

Point of Zero Flow

PZF: -0.10 foot Date: March 12, 2018

Variable. Depending on stability of rock control.

Winter Flow

This stream has moments of minor slush, but believed never freeze completely over.

Regulation and Diversions

Enterprise Canal returns flow into Dry Spottedtail Creek during times of heavy rains or emergencies. Water diverted in summer for irrigation use three miles above the station. Base flow is mainly return flow from irrigated lands and is greater during late summer to early fall.

Accuracy

The stage-discharge relation is subject to minor shifting. Records considered fair if a bi-weekly measuring schedule followed and control kept clear of debris.

Establishment and History

Gage established in January 1919 by State Bureau of Irrigation. Staff gages used at various locations in the immediate vicinity with no record kept of sites or datum is used.

Reports of the Nebraska State Engineer in addition to those published by the USGS are for May 1 to September 30 only during the water years 1941 and 1943-48. In view of the lack of basic data for checking, these records not published in Compilation Report.

On September 22, 1948, the USGS participated in operation of the station and installed a continuous recorder in a timber shelter over a 36-inch CMP well. The datum was lowered 1.71 foot from that of the existing staff gage.

On October 1, 1958, the datum was lowered one foot to prevent stage values going below 0.00 feet.

A digital recorder installed on February 26, 1970.

Station operated under cooperative program with USGS prior to October 1, 1979. Digital recorder removed when Nebraska resumed gage operation on October 1, 1979.

Telog Datalogger installed January 30, 1991.

On March 3, 1992, timber shelter removed and replaced with a 48-inch CMP shelter attached to a metal base 15 feet right of previous timber shelter.

On October 2, 1993, a G-2 manometer manufactured by Fluid DataSystems installed and connected to stream with an open-end orifice.

On September 18, 1995, Telog data logger and G-2 manometer removed and replaced with an Isco - Model 4230 Bubbler Flow Meter.

On May 21, 2008 Low water conditions were present the datum was lowered one foot. The staff gage was lowered one foot. The elevations of the reference marks were raised one foot. Datum lowered one foot to 3942.75 feet to 3944.988 feet on May 21, 2008.

On August 29, 2016, the ISCO model 4230 Bubbler Flow meter and phone service equipment removed. SUTRON CBS Bubbler Flow meter and Satlink DCP system installed.

Revision History

Original description prepared by J. W. Vassos 03/04/1987

Revised by: J. W. Vassos 03/16/1989

Revised by: J. W. Vassos 02/14/1991

Revised by: J. W. Vassos 03/01/1994

Revised by: J. W. Vassos 03/09/1995

Revised by: J. C. Retchless 04/24/1996

Revised by: J. W. Vassos 02/18/1999

Revised by: J. W. Vassos 01/19/2001

Revised by: S. Wright 02/27/2002

Revised by: J. W. Vassos 02/18/2003

Revised by: J. W. Vassos 11/02/2004

Revised by: Andrew S. Leisy 10/07/2009

Revised by: S. Wright 08/25/2014

Revised by: J.A. Marburger 01/30/2017

Revised by: T. Stephens 03/04/2018

Revised by: K. Schwager 10/31/2023