

## Lincoln County Drain No. 1 at North Platte, Nebraska 06692500

### LOCATION

#### *Latitude and Longitude*

41.198745, -101.04235

#### *Road Log*

On left bank 25 feet upstream from bridge on county road, 0.8 mile upstream from mouth and 1½ miles northwest of City of North Platte. The gage may be reached from the intersection of U. S. Highways 83 and 30 on the north edge of North Platte by driving 1.6 miles west on U. S. 30, then north ¾ mile on county road to gage.

#### *Nearby Features*

Near southeast corner of the Buffalo Bill Ranch State Park.

### Equipment Details

#### *Recording Gage*

November 15<sup>th</sup>, 2016 removed the ISCO bubbler and replaced it with a Sutron CBS recorder and satellite DCP which is referenced to a staff gage. Instrument connected to stream with a bubble line and orifice at the end.

#### *External Gage*

Instrument is referenced to outside enameled staff gage attached to a 2x6 timber bolted to a grader blade and driven into the streambed near orifice.

#### *Bench Mark and Reference Marks*

R.M. #1, R.M. #2, R.M. #3, R.M. #4, and R.M. #5 have been destroyed. Rm#1, 4, and 5 were destroyed when the road was widened from two lanes to a four lane road. R.M. #6, #7, and #8 were established on June 11<sup>th</sup>, 1998 by Mortimore and Green after road construction was complete.

R.M. #6 X on southwest corner of manhole cement pad east and north of station. Elevation 6.98 feet to gage datum used as origin for levels on June 21<sup>st</sup>, 2017.

R.M. #7 X on left upstream headwall 1 foot from end. Elevation 7.74 feet to gage datum from levels dated June 21<sup>st</sup>, 2017.

R.M. #8 X on right upstream headwall 1 foot from end. Elevation 7.74 ft. from levels dated June 21<sup>st</sup>, 2017.

A new staff gage was set to 3.33 feet by levels dated June 21<sup>st</sup>, 2017.

## Hydrology

### *Channel and Control*

The streambed is composed largely of fine sand. The banks are covered with heavy vegetation of weeds and grass and are not subject to erosion. Although the banks are low the nature of the stream is such that they are not subject to overflow. The concrete culvert below the gage acts as a control for most stages and has a stabilizing effect on the channel. As a result shifts are very moderate for a stream with this type of channel bottom. Moss build up on stream bed during summer months can cause backwater conditions.

### *Discharge Measurements*

Normally made by wading in vicinity of the gage. High water measurements may be made by cable suspension from the culvert below the gage. Flow is at right angles to the culvert and there should be no horizontal angles.

### *Floods*

Maximum discharge to date during period of operation was 428 cfs June 17, 1956 (gage height 3.73 feet).

### *Point of Zero Flow*

Variable, invert of concrete culvert subject to fill with debris and silt.

### *Regulation and Diversions*

Flow is largely seepage and return flow from irrigated lands. As a result, the volume of flow is quite uniform.

### *Accuracy*

Monthly and event measurements will contribute toward producing a good record.

## Establishment and History

Records were computed at this station by the State Engineer from staff gage readings for the period January 1929 until the installation of a recording gage on April 29, 1955.

The Geological Survey also published records for the period March 1931 to September 1932 based on staff gage readings.

The recording gage structure was built by D. B. Ender and J. H. Hintz, employees of the State of Nebraska, and Fred Hervert, an employee of the Platte Valley Public Power and Irrigation District, during the month of April 1955.

The datum of the recording gage was established 1.00 foot lower than the staff gage previously in use.

On April 7, 1988 a new 48 inch CMP shelter was installed over a 24-inch concrete pipe stilling well. Well connected to stream with two 3-inch intake pipes equipped with flushing device. A Leupold Stevens pulse generator; Telemark II encoder and UDS modem in

conjunction with Stevens A-35 water stage recorder was the instrumentation. The recorder was set to water surface elevation in well by means of a graduated weighted steel tape and reference point on instrument shelf. Elevation of reference point: 9.73 feet. Elevation of the top intake in stream: 0.65 foot. The outside gage was an enameled staff section 0.00 to 3.33 feet attached to left upstream abutment of bridge.

On October 18, 2006 replaced CMP station with cubical station. Staff is still the base gage. Isco is still the recorder being used.

April 4, 1997 Leupold Stevens GS-93, 2400 modem and shaft encoder in conjunction with A-35 water stage recorder instruments were installed.

On June 11, 1998 shelter was moved and stilling well was abandoned due to new construction on bridge and highway.

On June 15, 1998 an ISCO MODEL 4230 Bubbler Flow meter was installed and connected to stream with an open-end orifice.

On February 16, 2016 replaced shelter.

On November 15<sup>th</sup>, 2016 removed the ISCO bubbler and replaced it with a Sutron CBS recorder and satellite DCP which is referenced to a staff gage.

## Revision History

Original Description Prepared by: J.W.Vassos 03/05/87

Revised by: J.C.Retchless, 03/14/89

Revised by: J.F.Ostdiek, 02/22/93

Revised by: J.W.Vassos, 10/18/96

Revised by: J.C.Retchless, 02/15/01

Revised by: J.W.Vassos, 01/30/02

Revised by: J.C.Retchless, 02/20/04

Revised by: J.C.Retchless, 01/20/05

Revised by: A.S. Leisy, 10/14/2009

Revised by: J.A. Marburger 02/01/2017

Revised by: J.Nichols 04/17/2018

Revised by: S. Figuric 05/01/2018