
**Lake Thunderbird TMDL Monitoring
Plan Implementation: Sample Year
(SY) 2022- February Report**



OKLAHOMA
Water Resources Board

Lake Thunderbird TMDL Monitoring Plan Implementation: February 2023 Monitoring Report

Oklahoma Water Resources Board
Water Quality Programs Division
Monitoring and Assessment Section
3800 N. Classen, Oklahoma City, Oklahoma 73118
405-530-8800

Contact

Sarah Dexter, Project Leader, sarah.dexter@owrb.ok.gov
Lance Phillips, Streams Program Manager, lance.phillips@owrb.ok.gov
Bill Cauthron, Monitoring Coordinator, bill.cauthron@owrb.ok.gov

TABLE OF CONTENTS

TABLE OF CONTENTS	3
LIST OF TABLES.....	3
LIST OF FIGURES	3
SUMMARY OF FEBRUARY SAMPLING	4
RESULTS	4

LIST OF TABLES

TABLE 1 FIELD DATA FORM	5
TABLE 2 LABORATORY ANALYSIS SUMMARY.....	6
TABLE 3 QA/QC DATA	6
TABLE 4 STATION DISCHARGE SUMMARY.....	6

LIST OF FIGURES

FIGURE 1 MONITORING STATION MAP	4
FIGURE 2 MONTHLY HYDROGRAPH TG-1.....	7
FIGURE 3 MONTHLY HYDROGRAPH TE-1	7
FIGURE 4 MONTHLY HYDROGRAPH WC-1	8
FIGURE 5 MONTHLY HYDROGRAPH URC-2	8
FIGURE 6 MONTHLY HYDROGRAPH LRC-1	9
FIGURE 7 MONTHLY HYDROGRAPH LDB-1	9
FIGURE 8 MONTHLY HYDROGRAPH CC-1	10
FIGURE 9 MONTHLY HYDROGRAPH UDB-1.....	10
FIGURE 10 FEBRUARY MESONET DATA.....	11

SUMMARY OF FEBRUARY SAMPLING

Sampling for February 2023 occurred during base flow conditions on the twenty-first. Water samples were collected at nine locations, with no samples collected at JB-1 due to pool conditions. Mesonet shows no precipitation on the twenty-first or in the 72 hours prior to sampling, and 0.10 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of February was 2.19 inches. All water level gauges were operational for the month, except for JB-1 due to road construction. The gauge at LT-1 was removed in 2018 as a result of equipment malfunction. The equipment has not been replaced due to intermittent streamflow and dry conditions. Furthermore, this station is being reviewed for a possible location change.

RESULTS

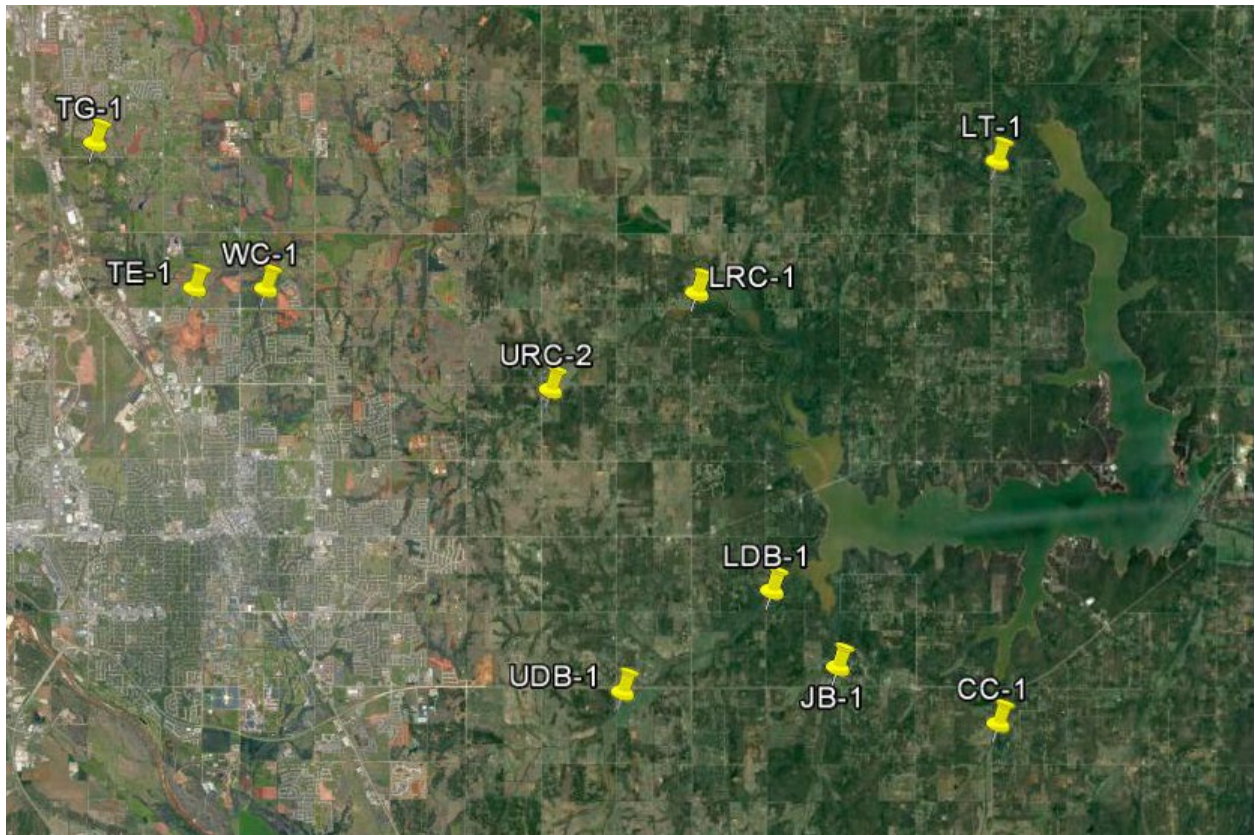


Figure 1 Monitoring Station Map

Monitoring Location ID	Monitoring Location Name	Date	Time	Field Crew	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Notes
CC-1	Clear Creek	2/21/2023	9:12	NH	9.7	8.53	7.74	679	12	Beaver dam still present upstream of bridge
JB-1	Jim Blue Creek	2/21/2023	N/A	NH	N/A	N/A	N/A	N/A	N/A	Not sampled
LDB-1	Lower Dave Blue Creek	2/21/2023	9:32	NH	9.2	13.41	8.19	635	18	Very low ; scummy
LRC-1	Lower Rock Creek	2/21/2023	10:30	NH	8.9	10.78	7.86	637	9	Low visual flow
LT-1	Lake Laterals	2/21/2023	10:10	NH	8.6	8.34	7.52	410	5	Site had water, no visual flow ; extensive damage to guard rail on bridge from vehicle apparently striking the rail; RP still intact
TE-1	Little River Tributary	2/21/2023	12:45	NH	10.9	15.58	8.00	728	15	Water greenish
TG-1	Little River	2/21/2023	13:05	NH	11.3	14.08	8.24	868	10	
UDB-1	Upper Dave Blue Creek	2/21/2023	8:37	NH	8.6	8.90	7.72	718	13	
URC-2	Upper Rock Creek	2/21/2023	11:00	NH	8.5	8.25	7.48	545	17	Little visual flow
WC-1	Woodcrest Creek	2/21/2023	12:30	NH	11.3	11.77	7.68	756	13	Channel has shifted to right bank under bridge; beaver activity

Table 1 Field Data Form

Monitoring Location ID	Monitoring Location Name	Nitrate and Nitrite (mg/L)	Kjeldahl Nitrogen (mg/L)	Phosphorus (mg/L)	Total Suspended Solids (mg/L)
CC-1	Clear Creek	<0.05	0.37	0.038	10.0
JB-1	Jim Blue Creek	N/A	N/A	N/A	N/A
LDB-1	Lower Dave Blue Creek	<0.05	0.50	0.037	12.0
LRC-1	Lower Rock Creek	<0.05	0.37	0.030	7.0
LT-1	Lake Laterals	<0.05	0.52	0.030	<5.0
TE-1	Little River Tributary	0.22	0.54	0.046	12.0
TG-1	Little River	0.15	0.44	0.030	10.0
UDB-1	Upper Dave Blue Creek	<0.05	0.42	0.032	14.0
URC-2	Upper Rock Creek	<0.05	0.57	0.058	11.0
WC-1	Woodcrest Creek	<0.05	0.68	0.068	23.0

Table 2 Laboratory Analysis Summary

Monitoring Location Name	Nitrate and Nitrite (mg/L)	Kjeldahl Nitrogen (mg/L)	Phosphorus (mg/L)	Total Suspended Solids (mg/L)
Field Blank	<0.05	<0.10	<0.010	<5.0
Duplicate	<0.05	0.40	0.038	9.0
Duplicate RPD	0%	7.79%	0%	10.53%

Table 3 QA/QC Data

Quality assurance/quality control (QA/QC) of the data includes a field blank and duplicate sample from each collection event and is qualified by the OWRB. Relative Percent Difference (RPD) of the duplicate sample can be categorized into four levels, where Level 1 likely has no QA issues and Level 4 has major QA issues and should be used with caution.

Monitoring Location ID	Monitoring Location Name	Discharge (cfs)	Stream Stage (ft)
CC-1	Clear Creek	0.26	20.27
JB-1	Jim Blue Creek	N/A	N/A
LDB-1	Lower Dave Blue Creek	0.25	14.53
LRC-1	Lower Rock Creek	0.07	4.23
LT-1	Lake Laterals	0.01	4.23
TE-1	Little River Tributary	0.01	10.76
TG-1	Little River	0.55	8.73
UDB-1	Upper Dave Blue Creek	0.08	17.21
URC-2	Upper Rock Creek	0.01	10.67
WC-1	Woodcrest Creek	0.01	7.24

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

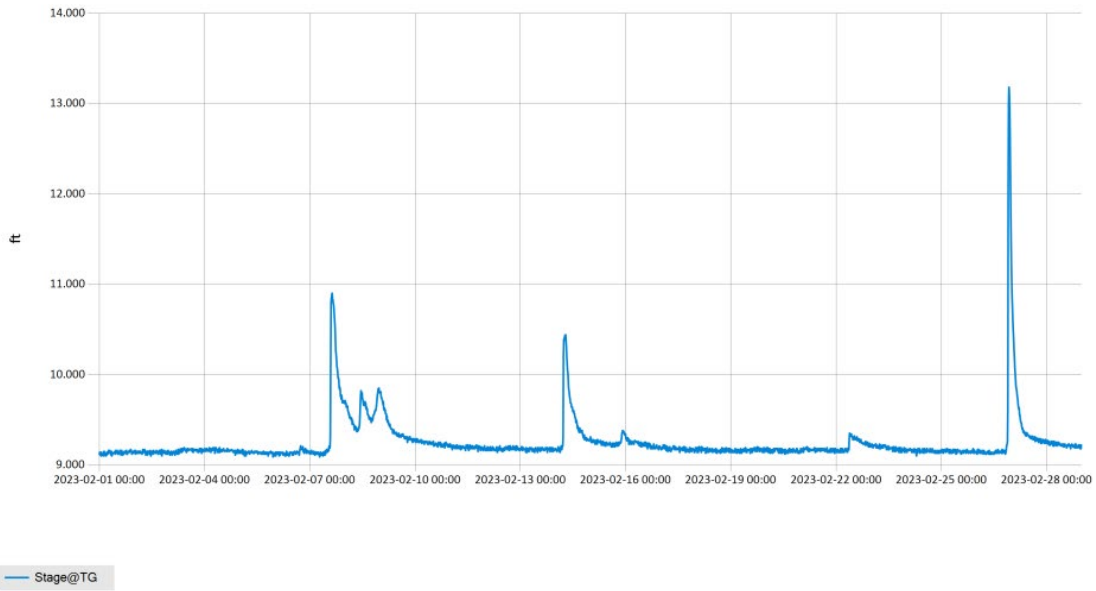


Figure 2 Monthly Hydrograph TG-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

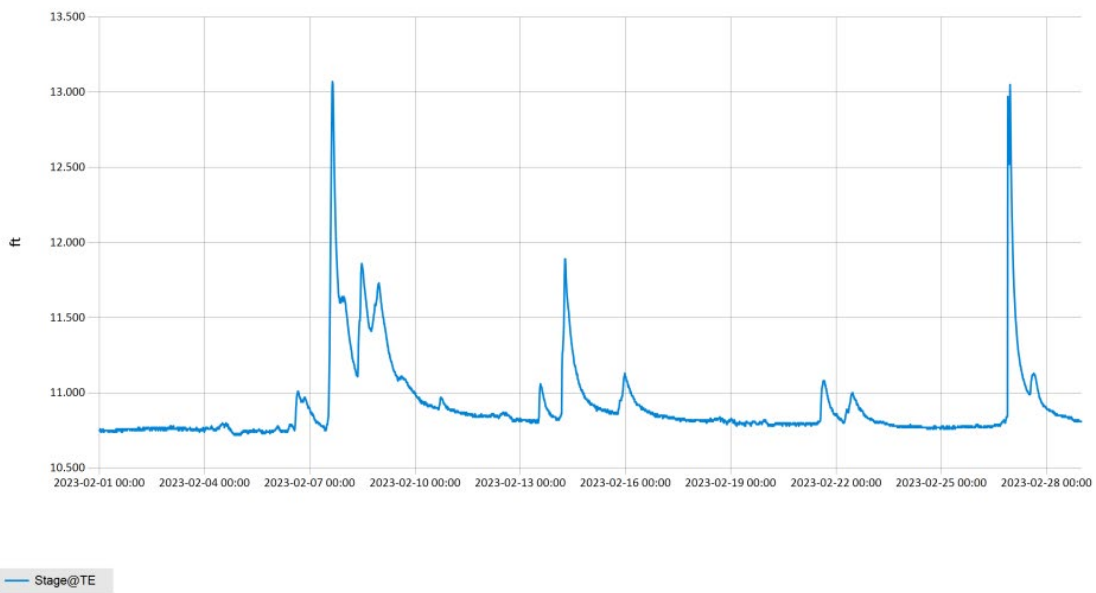
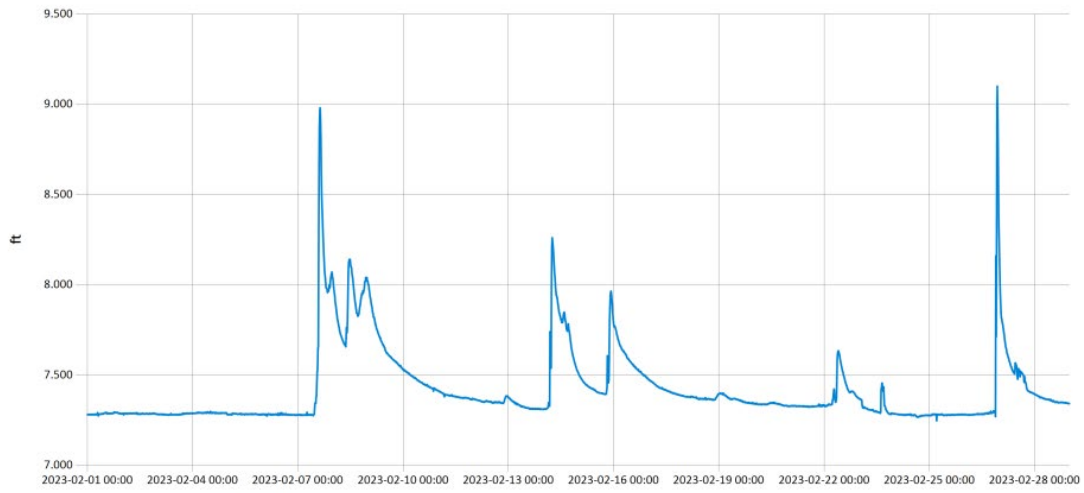


Figure 3 Monthly Hydrograph TE-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

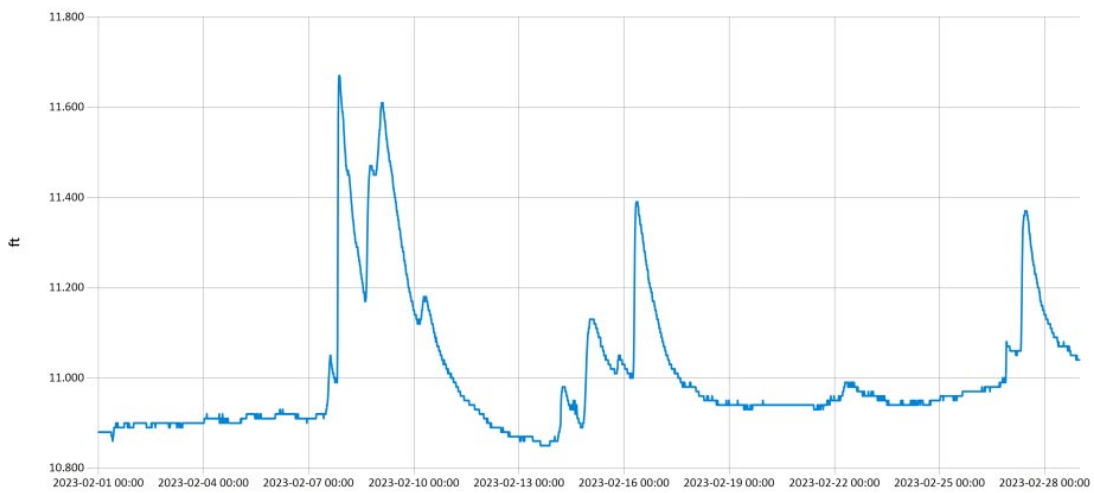


— Stage@WC

Figure 4 Monthly Hydrograph WC-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

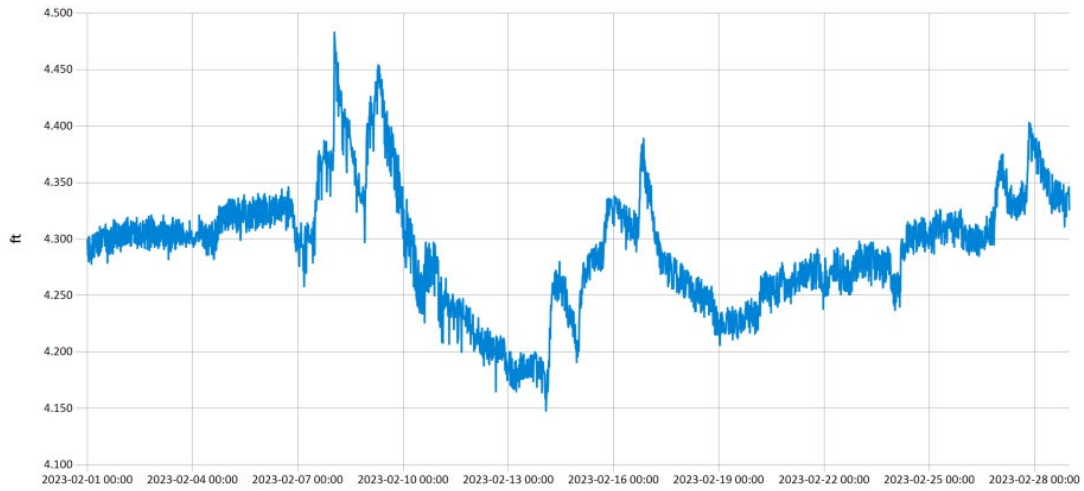


— Stage@URC

Figure 5 Monthly Hydrograph URC-2

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

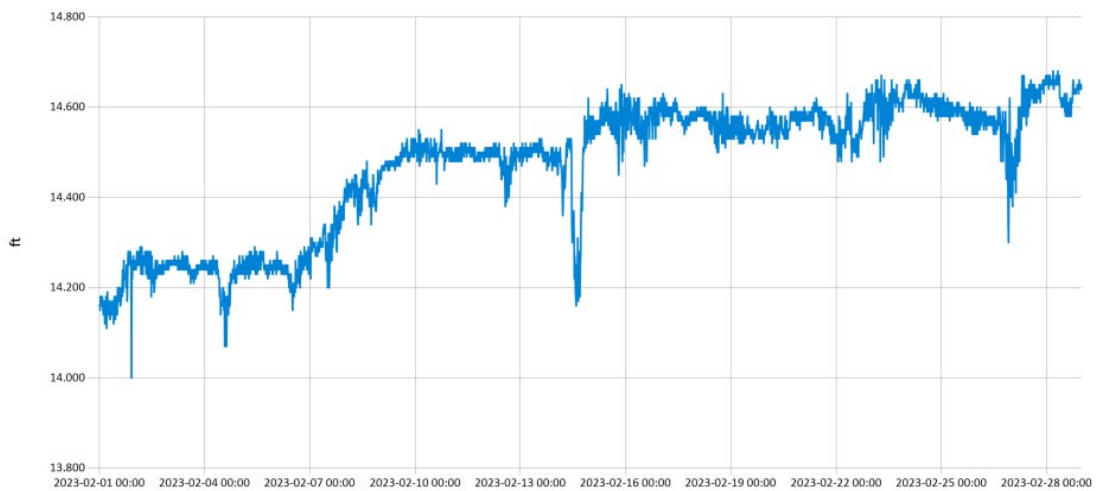


— Stage@LRC

Figure 6 Monthly Hydrograph LRC-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

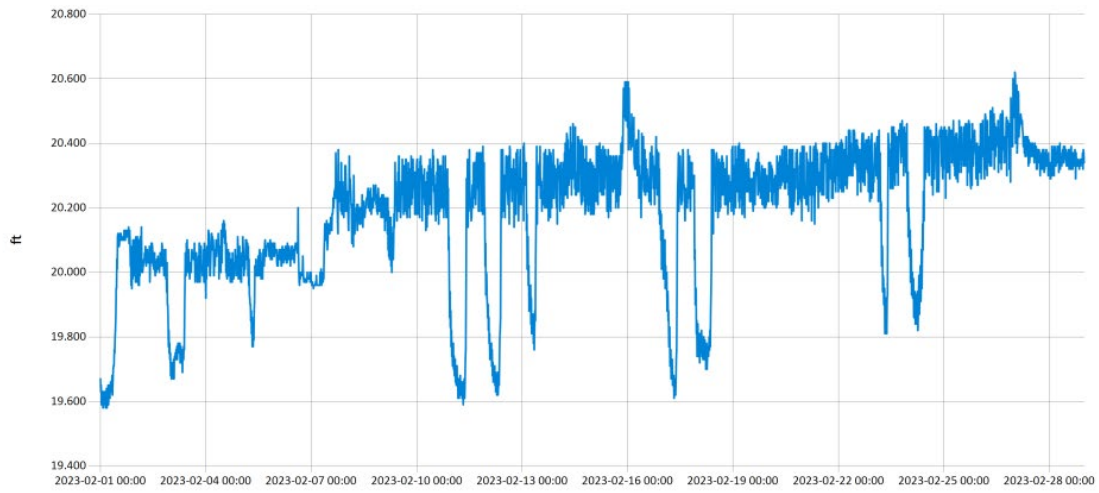


— Stage@LDB

Figure 7 Monthly Hydrograph LDB-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00

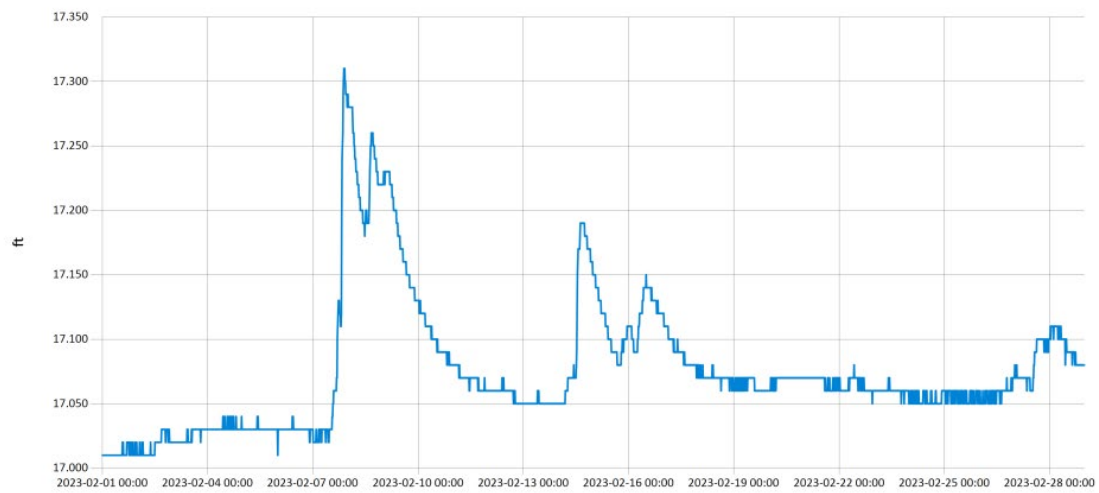


— Stage@CC

Figure 8 Monthly Hydrograph CC-1

Period Selected: 2023-02-01 00:00 - 2023-02-28 23:59

UTC Offset: -06:00



— Stage@UDB

Figure 9 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY				February 2023				Time Zone: Midnight-Midnight CST														
(NRMN) Norman				Nearest City: 2.1 NW Norman				County: Cleveland														
Latitude: 35-14-09				Longitude: 97-27-53				Elevation: 1171 feet														
DAY	TEMPERATURE (°F)				DEG DAYS		HUMIDITY (%)			RAIN (in)		PRESSURE (in)			WIND SPEED (mph)		SOLAR (MJ/m ²)	4" SOIL TEMPERATURES				
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG	(in)	STN	MSL	DIR	AVG	MAX	SOD		BARE	MAX	MIN		
1	29	16	24.9	12.1	42	0	83	46	59	0.00	29.08	30.34	NNE	2.9	9.4	4.27	36.3	32.3	33	32		
2	45	28	33.5	24.5	29	0	88	47	70	0.04	29.06	30.32	NNW	4.9	17.8	7.97	37.9	32.9	33	33		
3	51	24	37.0	23.2	28	0	84	37	59	0.00	29.22	30.49	N	7.4	19.2	14.80	38.5	33.8	36	33		
4	61	36	46.5	32.8	16	0	83	32	61	0.00	28.93	30.19	S	11.5	32.4	13.39	40.7	38.7	45	34		
5	68	28	48.6	35.2	17	0	97	27	66	0.00	28.84	30.10	SE	5.2	20.0	14.94	41.8	42.1	49	36		
6	71*	49*	58.5*	48.3*	5*	0*	91*	41*	71*	0.00*	28.62*	29.87*	SSE*	11.7*	30.0*	NA	45.2*	48.2*	53*	44*		
7	52	39	42.4	37.7	20	0	94	56	84	0.82	28.89	30.14	NNE	12.9	33.0	1.65	45.6	45.9	51	44		
8	41	33	38.5	35.7	28	0	97	79	90	0.39	28.75	30.00	NNE	13.0	29.4	2.37	43.9	43.1	44	42		
9	52	29	40.1	32.9	25	0	97	56	77	0.02	28.84	30.09	N	10.1	28.5	15.72	42.8	43.2	49	39		
10	43	28	35.5	22.2	30	0	81	36	59	0.00	29.13	30.39	N	12.2	30.5	10.35	42.5	41.1	44	38		
11	53	24	37.6	24.8	26	0	84	34	62	0.00	29.05	30.31	NNW	3.5	9.9	16.15	40.9	40.3	48	36		
12	66	31	47.8	23.8	16	0	72	18	44	0.00	28.79	30.04	SSW	9.3	30.2	15.51	41.5	41.2	47	36		
13	65	32	49.6	30.8	16	0	80	27	51	0.00	28.68	29.92	SSE	7.3	23.1	13.71	43.0	43.5	50	37		
14	69	44	55.1	40.9	8	0	96	31	62	0.33	28.27	29.50	SW	15.5	56.6	12.88	46.1	48.8	53	46		
15	67	38	49.3	36.7	13	0	84	36	64	0.12	28.52	29.75	NE	10.2	31.8	15.40	46.1	47.7	53	42		
16	38	27	32.7	21.2	32	0	85	44	63	0.00	28.91	30.17	NW	19.6	36.0	15.37	44.1	42.0	47	38		
17	49	21	35.4	16.7	30	0	84	21	51	0.00	29.17	30.43	S	6.4	19.9	17.50	41.6	39.0	44	36		
18	47	29	39.9	20.5	27	0	62	34	46	0.00	28.99	30.24	S	10.9	28.5	6.06	41.4	37.7	40	36		
19	66	41	53.7	32.1	11	0	57	30	44	0.00	28.72	29.97	SSW	13.4	29.8	11.50	43.1	41.8	48	37		
20	69	49	59.8	43.6	6	0	69	37	56	0.00	28.56	29.80	SW	8.5	23.8	7.67	47.1	48.9	53	46		
21	76	42	61.4	42.1	6	0	77	29	51	0.00	28.37	29.60	S	9.1	30.5	8.09	47.8	48.9	53	45		
22	73	39	62.2	45.3	9	0	91	27	58	0.10	28.28	29.51	SW	14.6	35.4	15.78	51.5	54.8	59	50		
23	41	23	31.6	13.0	33	0	70	30	47	0.00	28.93	30.18	N	14.5	29.8	17.67	46.8	43.7	50	40		
24	32	26	29.2	17.3	36	0	70	48	61	0.00	29.10	30.36	NNE	11.2	26.9	4.47	43.2	38.0	40	37		
25	43	28	36.1	29.3	29	0	89	66	76	0.00	29.00	30.25	S	5.1	16.8	4.78	43.3	39.6	43	37		
26	66	42	51.2	46.5	11	0	95	34	85	0.37	28.55	29.79	S	12.7	54.8	5.53	45.8*	45.9	52	42		
27	73	46	59.2	31.7	6	0	56	20	37	0.00	28.45	29.69	W	12.0	43.3	18.68	48.4	49.6	56	43		
28	76	42	60.5	29.1	6	0	55	13	33	0.00	28.47	29.71	SW	9.5	26.0	18.92	48.8	49.3	55	43		
	57*	33*	44.9*	30.4*	<- Monthly Averages ->				28.79*	30.04*	S	10.2*	56.6*	11.52*	43.8*	42.9*	47*	39*				
Temperature - Highest: 76*				Degree Days - Total HDD: 562*				Number of Days With:				Tmax ≥ 90: 0*				Rainfall ≥ 0.01 inch: 8*						
Lowest: 16*				Total CDD: 0*				Tmax ≤ 32: 2*				Rainfall ≥ 0.10 inch: 6*										
Rainfall: Monthly Total: 2.19* in.				Humidity - Highest: 97*				Tmin ≤ 32: 15*				Avg Wind Speed ≥ 10 mph: 16*										
Greatest 24 Hr: 0.82* in.				Lowest: 13*				Tmin ≤ 0: 0*				Max Wind Speed ≥ 30 mph: 12*										

© 1993-2023 Oklahoma Climatological Survey and the Oklahoma Mesonet

* Denotes incomplete record

Figure 10 February Mesonet Data