
Lake Thunderbird TMDL Monitoring Plan Implementation: Sample Year (SY) 2023- December Report



OKLAHOMA
Water Resources Board

Lake Thunderbird TMDL Monitoring Plan Implementation: December 2023 Monitoring Report

Oklahoma Water Resources Board
Water Division
Streams 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

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SUMMARY OF DECEMBER SAMPLING

Sampling for December 2023 occurred during base flow conditions on the thirteenth. Water samples were collected at nine locations with two samples collected at JB-1; one sample was collected on the upstream side of the road and the second sample was collected downstream. Mesonet shows no precipitation on the thirteenth or in the 72 hours prior to sampling, and 0.86 inches of precipitation in the 72 hours after sampling occurred. The total rainfall amount in Norman for the month of December was 2.03 inches. Samples were not collected at LT-1 since this station will be relocated. All water level gauges were operational for the month, except for JB-1 which is having communication issues.

RESULTS

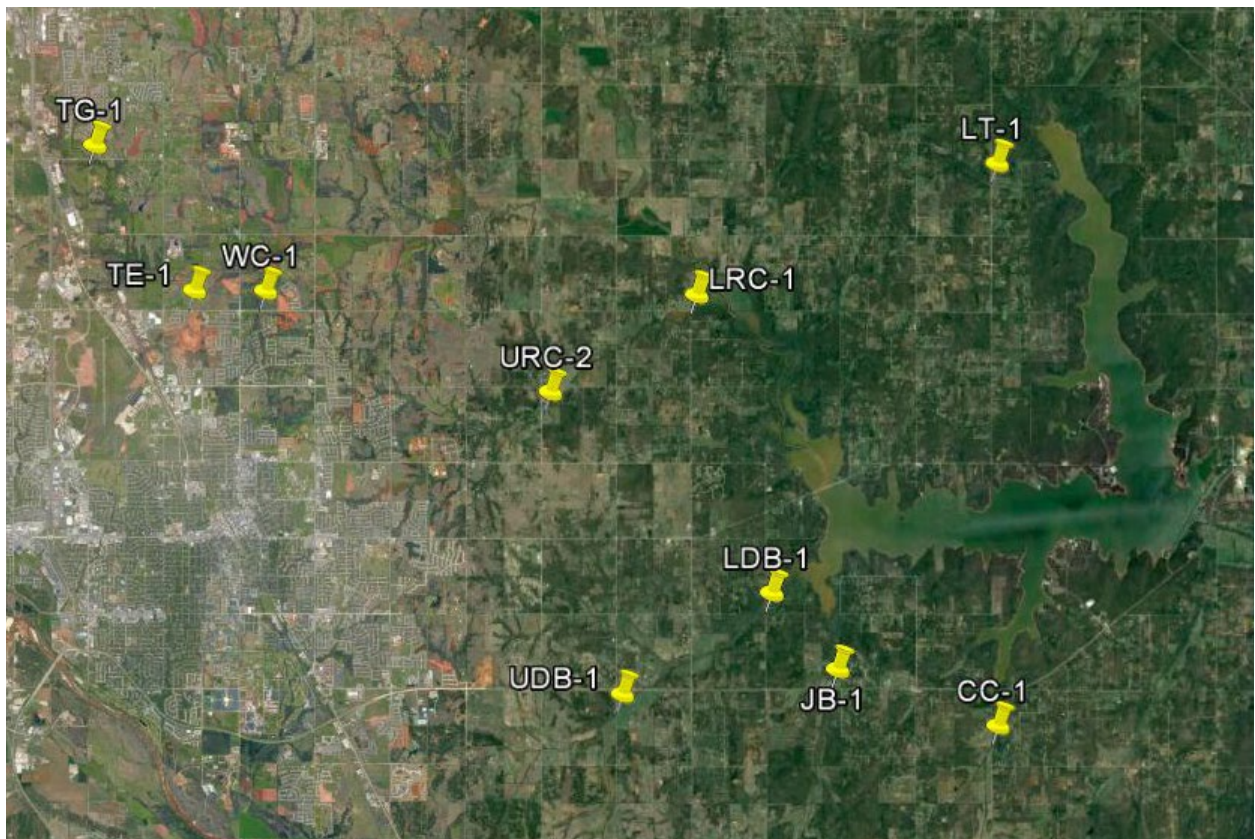


Figure 1 Monitoring Station Map

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	12/13/2023	14:54	ANN	9.3	11.18	8.02	685	4	Used RP4; beaver dam upstream
JB-1	Jim Blue Creek	12/13/2023	14:32	ANN	10.1	6.14	7.44	943	8	Channel connected downstream so collected a second sample; lots of scum
LDB-1	Lower Dave Blue Creek	12/13/2023	13:56	ANN	7.0	9.98	8.16	765	7	
LRC-1	Lower Rock Creek	12/13/2023	12:43	ANN	6.9	9.43	7.73	707	7	Large log downstream may be blocking flow of channel
TE-1	Little River Tributary	12/13/2023	11:14	ANN	7.1	7.98	7.60	887	29	Beaver dam upstream; low water level, some filamentous present
TG-1	Little River	12/13/2023	10:55	ANN	7.3	10.94	7.79	1101	3	Replaced battery
UDB-1	Upper Dave Blue Creek	12/13/2023	13:26	ANN	7.8	10.36	7.93	983	3	Scum upstream
URC-2	Upper Rock Creek	12/13/2023	15:37	ANN	7.7	5.77	7.44	846	6	Disconnected upstream
WC-1	Woodcrest Creek	12/13/2023	11:40	ANN	8.8	6.84	7.31	881	4	Really low water level, filamentous present

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	0.15	0.017	<5.0
JB-1	Jim Blue Creek (ds)	0.12	0.27	0.015	7.0
JB-1	Jim Blue Creek (us)	<0.05	0.21	0.017	<5.0
LDB-1	Lower Dave Blue Creek	<0.05	0.54	0.043	5.0
LRC-1	Lower Rock Creek	<0.05	0.24	0.037	<5.0
TE-1	Little River Tributary	<0.05	0.53	0.046	21.0
TG-1	Little River	<0.05	0.36	0.025	<5.0
UDB-1	Upper Dave Blue Creek	<0.05	0.27	0.023	10.0
URC-2	Upper Rock Creek	<0.05	0.51	0.061	5.0
WC-1	Woodcrest Creek	<0.05	0.27	0.044	7.0

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	0.17	0.016	<5.0
Duplicate RPD	0%	12.50%	6.06%	0%

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.

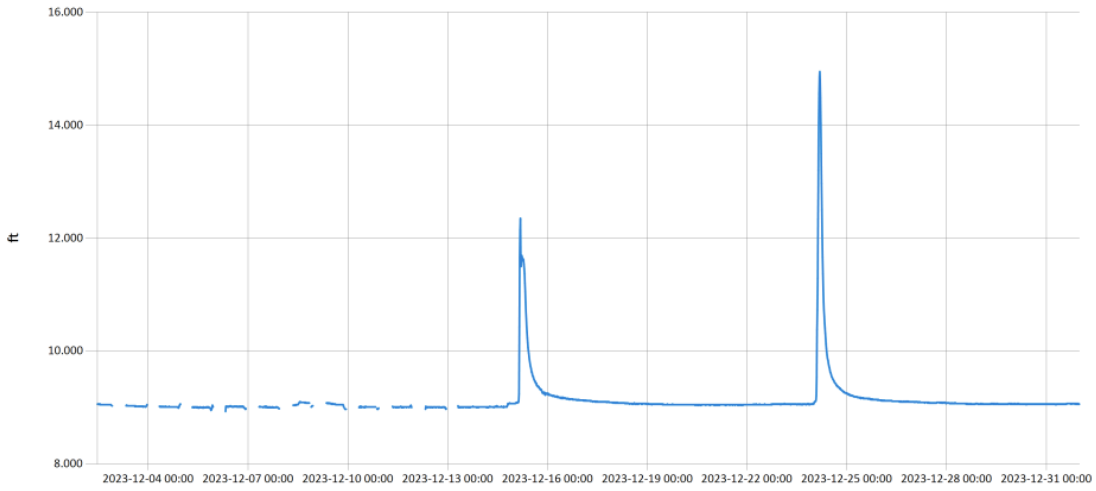
Monitoring Location ID	Monitoring Location Name	Discharge (cfs)	Stream Stage (ft)
CC-1	Clear Creek	0.53	20.89
JB-1	Jim Blue Creek	<0.10	7.26
LDB-1	Lower Dave Blue Creek	1.31	15.75
LRC-1	Lower Rock Creek	0.22	4.13
TE-1	Little River Tributary	0.01	10.72
TG-1	Little River	0.67	8.94
UDB-1	Upper Dave Blue Creek	0.10	17.24
URC-2	Upper Rock Creek	0.05	10.84
WC-1	Woodcrest Creek	0.03	7.45

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

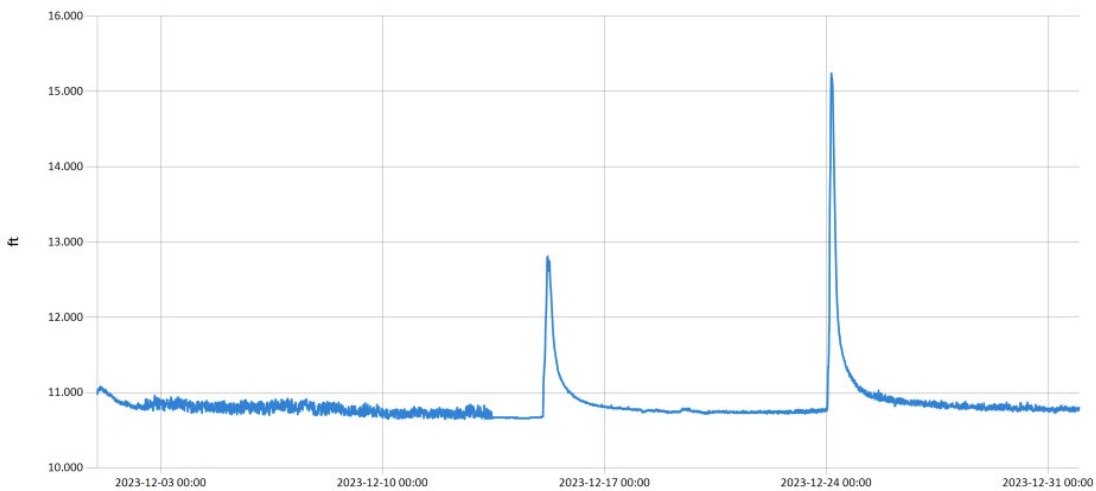


— Stage@TG

Figure 2 Monthly Hydrograph TG-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

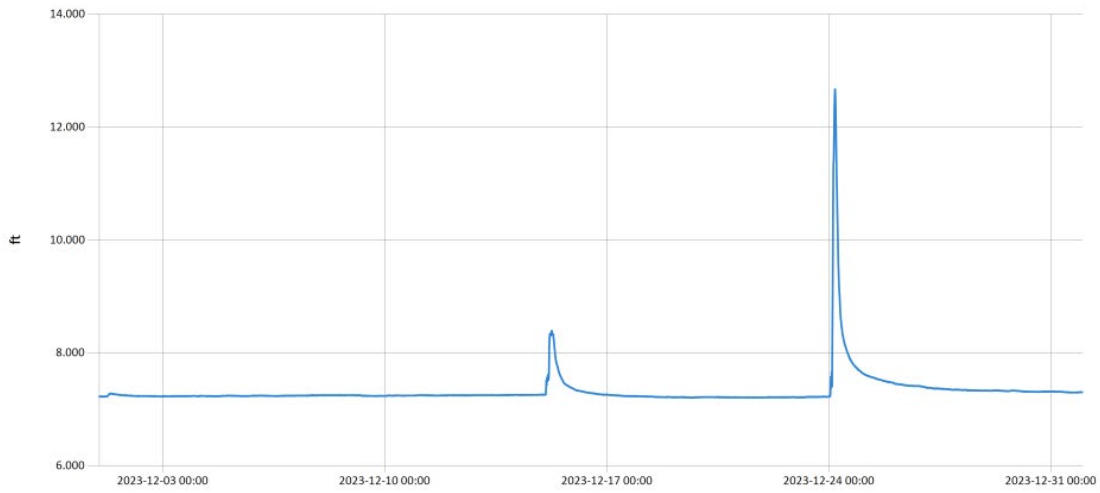


— Stage@TE

Figure 3 Monthly Hydrograph TE-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

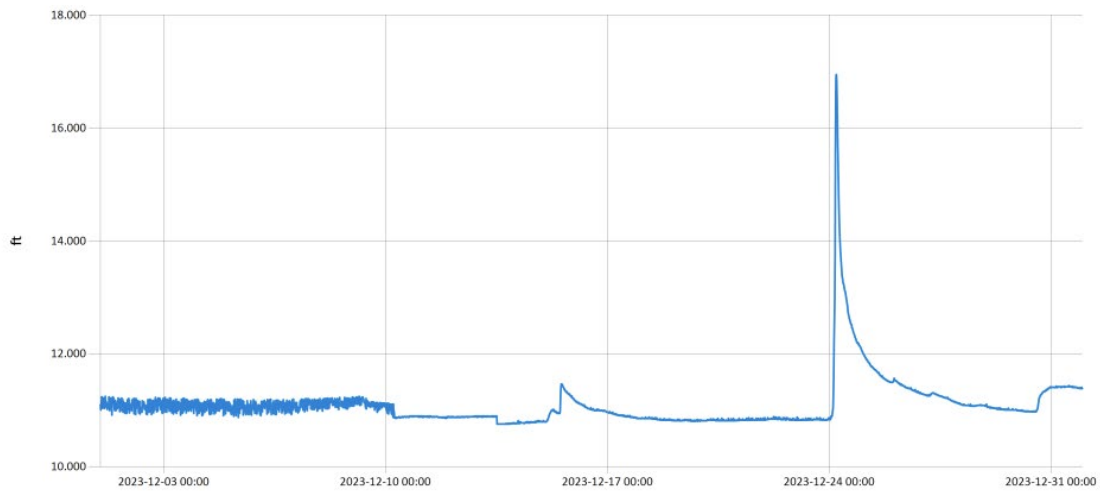


— Stage@WC

Figure 4 Monthly Hydrograph WC-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

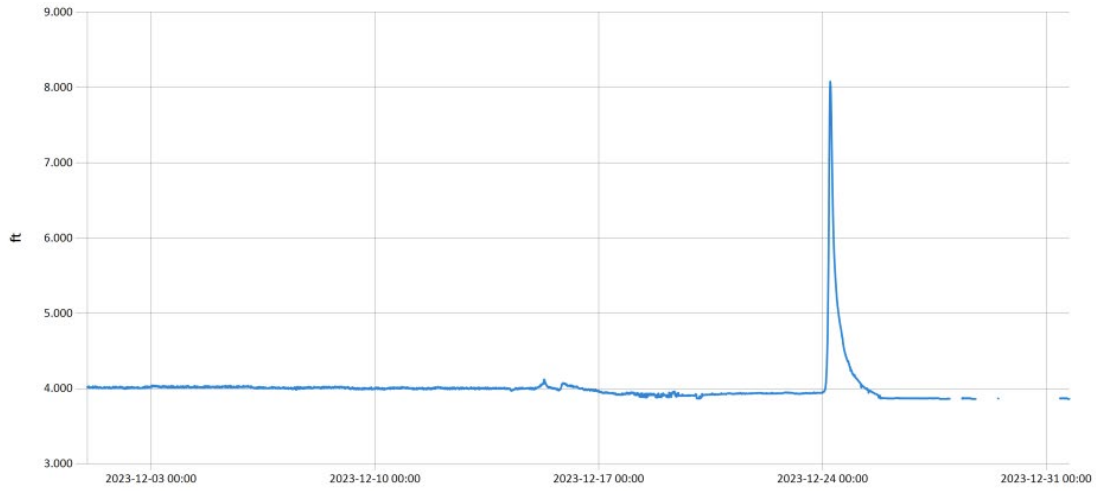


— Stage@URC

Figure 5 Monthly Hydrograph URC-2

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

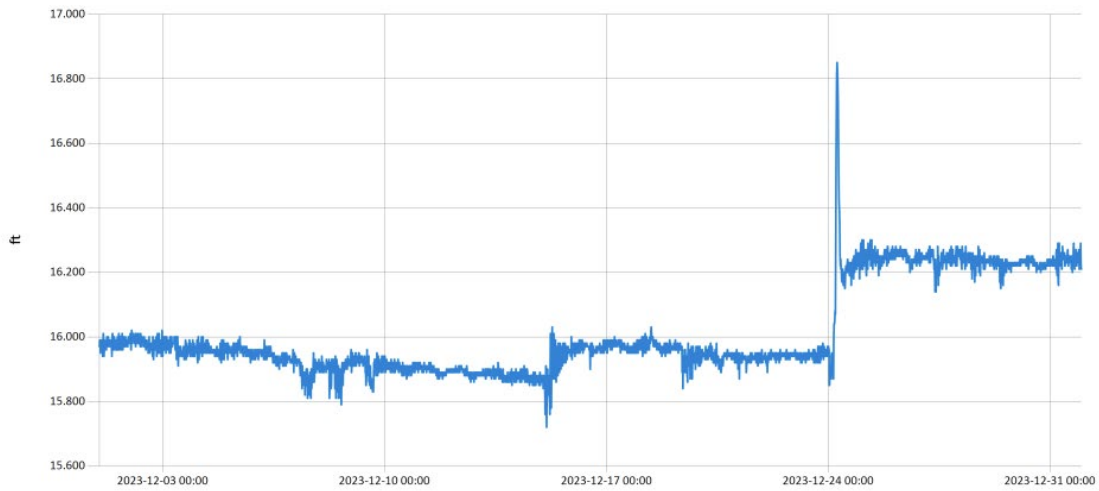


— Stage@LRC

Figure 6 Monthly Hydrograph LRC-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

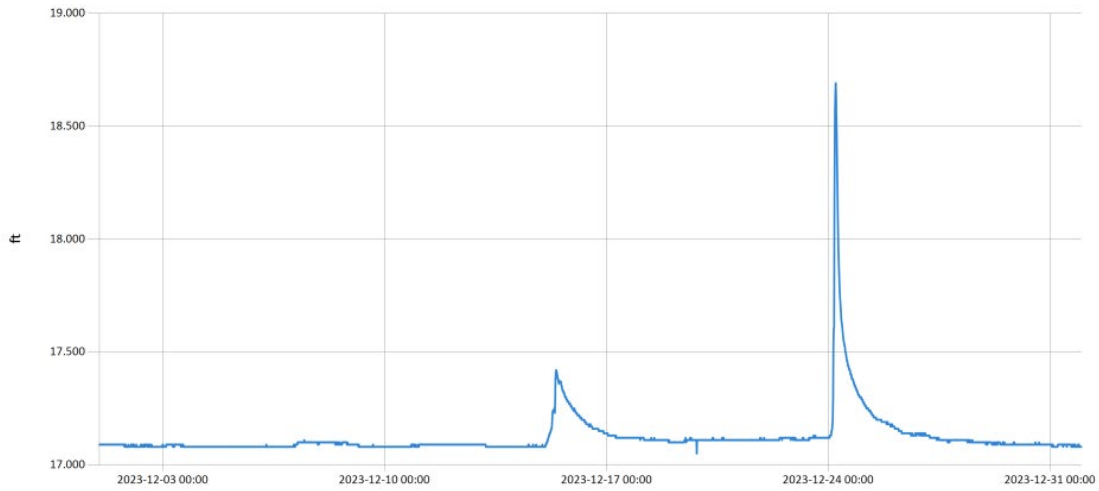


— Stage@LDB

Figure 7 Monthly Hydrograph LDB-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00

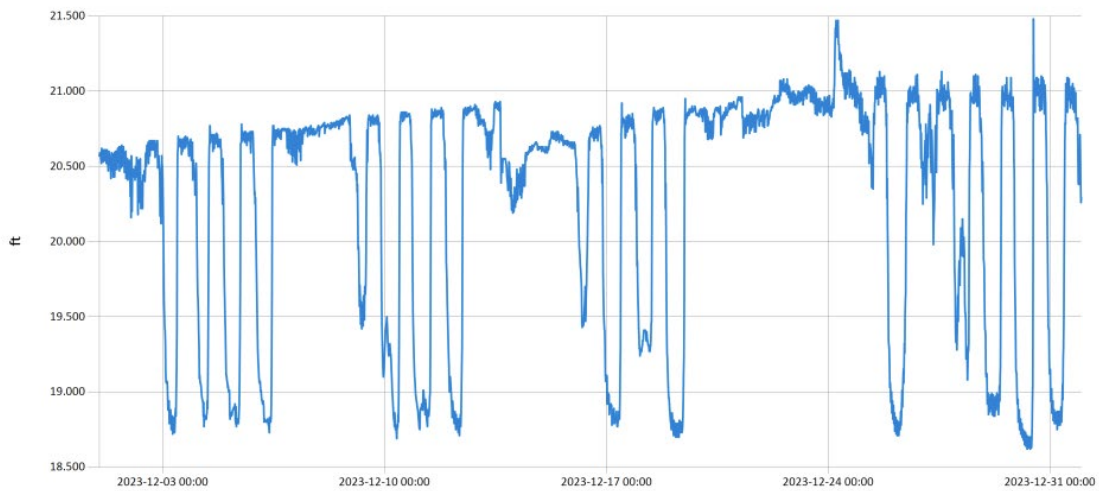


— Stage@UDB

Figure 8 Monthly Hydrograph UDB-1

Period Selected: 2023-12-01 00:00 - 2023-12-31 23:59

UTC Offset: -06:00



— Stage@CC

Figure 9 Monthly Hydrograph CC-1

MESONET CLIMATOLOGICAL DATA SUMMARY					December 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	46	32	40.6	37.3	26	0	98	82	88	0.01	28.65	29.89	NW	8.1	21.7	2.14	50.2	47.7	50	45	
2	59	33	42.1	37.0	19	0	98	42	84	0.00	28.67	29.91	SSW	6.6	22.6	7.52	49.5	45.9	50	44	
3	62	26	44.0	30.6	21	0	98	28	65	0.00	28.67	29.92	SSW	7.1	20.8	11.36	48.4	44.9	50	40	
4	58	33	44.0	25.1	20	0	71	25	50	0.00	28.88	30.13	NW	5.4	13.6	9.29	48.3	45.3	50	41	
5	60	32	44.7	28.1	19	0	78	28	55	0.00	29.03	30.29	N	5.9	21.9	11.55	47.6	45.4	51	41	
6	64	31	48.2	30.1	18	0	83	30	52	0.00	29.03	30.29	S	7.3	20.2	11.36	47.6	46.3	52	41	
7	69	46	57.6	43.5	8	0	81	47	60	0.00	28.63	29.87	S	13.1	36.2	10.87	49.8	50.3	55	46	
8	70*	45*	58.3*	47.6*	7*	0*	89*	27*	70*	0.00*	28.46*	29.70*	S *	12.3*	27.9*	NA	52.8*	54.6*	59*	52*	
9	51	37	44.2	27.7	21	0	85	32	55	0.00	28.87	30.12	NNW	11.8	29.4	10.90	50.5	49.7	52	47	
10	49	23	37.2	15.7	29	0	69	21	43	0.00	29.01	30.27	SSE	6.0	16.4	11.16	47.7	45.4	50	41	
11	61	28	43.9	21.3	20	0	64	22	43	0.00	28.91	30.16	S	4.3	12.6	11.06	47.2	45.6	51	41	
12	60	28	45.4	30.5	21	0	86	32	59	0.00	29.07	30.33	SE	5.2	15.3	8.34	47.1	45.9	50	41	
13	60	44	50.6	30.4	13	0	67	28	47	0.00	29.22	30.48	ESE	7.4	19.9	8.33	48.8	49.0	53	47	
14	61	44	51.8	30.8	13	0	63	26	46	0.01	29.14	30.41	ESE	10.2	27.2	7.79	49.5	50.1	53	48	
15	56	38	46.6	43.1	18	0	97	40	89	0.85	28.94	30.20	WNN	7.3	22.4	1.76	49.8	49.5	51	47	
16	53	34	41.5	33.0	21	0	96	40	74	0.00	28.92	30.17	NW	7.4	21.2	11.34	48.3	45.3	49	42	
17	66	30	46.3	34.2	17	0	93	32	66	0.00	28.81	30.06	S	4.2	13.5	11.34	47.1	44.3	51	39	
18	53	35	43.8	26.7	21	0	84	29	54	0.00	29.02	30.28	N	7.8	21.4	11.32	47.5	44.5	49	41	
19	56	32	43.5	23.9	21	0	61	33	46	0.00	28.90	30.15	SSE	10.9	28.0	10.11	46.2	41.9	46	38	
20	57	42	50.3	43.4	15	0	93	61	77	0.00	28.90	30.15	SSE	10.5	25.7	3.72	47.6	45.2	49	42	
21	61*	54*	56.7*	51.9*	7*	0*	98*	67*	84*	0.00*	28.93*	30.18*	S *	9.6*	24.3*	NA	50.7*	51.3*	54*	49*	
22	66	51	56.9	54.1	7	0	99	65	91	0.03	28.88	30.13	S	6.6	17.3	6.09	52.7	54.4	58	53	
23	65	55	59.2	56.8	5	0	99	72	92	0.06	28.76	30.00	SSE	10.3	26.2	3.25	53.8	55.5	57	53	
24	64	39	54.0	50.5	13	0	98	73	88	1.07	28.57	29.81	NW	13.6	36.5	4.03	55.0	56.5	59	52	
25	45	29	37.4	24.8	28	0	74	42	61	0.00	28.77	30.02	NW	15.3	34.4	10.87	49.6	47.8	52	42	
26	50	28	38.5	22.1	26	0	71	32	53	0.00	28.68	29.93	SSW	9.5	28.4	8.12	46.8	41.5	45	39	
27	41	30	37.4	24.5	29	0	77	43	60	0.00	28.79	30.04	NNW	13.3	37.3	10.43	46.2	41.0	44	39	
28	41	28	34.2	22.7	31	0	88	47	64	0.00	28.91	30.17	NNW	9.5	19.7	7.55	44.9	39.0	42	37	
29	52	27	37.4	26.1	26	0	88	37	66	0.00	28.89	30.14	WNN	9.0	24.6	11.54	44.1	38.8	43	36	
30	61	27	42.9	26.6	21	0	84	26	57	0.00	28.83	30.08	WNN	4.0	16.3	11.24	43.8	40.0	46	36	
31	49	30	37.7	28.8	25	0	84	47	71	0.00	28.88	30.14	NNE	9.9	24.1	6.78	44.0	39.9	43	37	
57* 35* 45.7* 33.2*					<- Monthly Averages ->					28.86* 30.11*		S *		8.7* 37.3*		8.66*		48.5* 46.5* 50* 43*			
Temperature - Highest: 70*					Degree Days - Total HDD: 586*					Number of Days With:											
Lowest: 23*					Total CDD: 0*					Tmax ≥ 90: 0*					Rainfall ≥ 0.01 inch: 6*						
Rainfall: Monthly Total: 2.03* in.					Humidity - Highest: 99*					Tmax ≤ 32: 0*					Rainfall ≥ 0.10 inch: 2*						
Greatest 24 Hr: 1.07* in.					Lowest: 21*					Tmin ≤ 32: 16*					Avg Wind Speed ≥ 10 mph: 10*						
										Tmin ≤ 0: 0*					Max Wind Speed ≥ 30 mph: 4*						

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* Denotes incomplete record

Figure 10 December Mesonet Data