
***Lake Thunderbird TMDL Monitoring Plan Implementation:
Sample Year (SY) 2019- April Report***



SY2019 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

April 2019 Monitoring Report

Oklahoma Water Resources Board
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SUMMARY OF APRIL WATER QUALITY SAMPLING

Sampling for April 2019 occurred on the fifteenth and was considered a high flow collection. Water samples were collected at all ten locations, as well as the seven storm outfalls, and discharge was measured at four locations. Mesonet data shows no precipitation occurring on the fifteenth, 2.19 inches of precipitation in the 72 hours prior to sampling, and 0.47 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of April was 4.39 inches. All water level gauges were operational for the month, with the exception of CC-1 as a result of road construction activity, and LT-1 due to equipment malfunction.

RESULTS

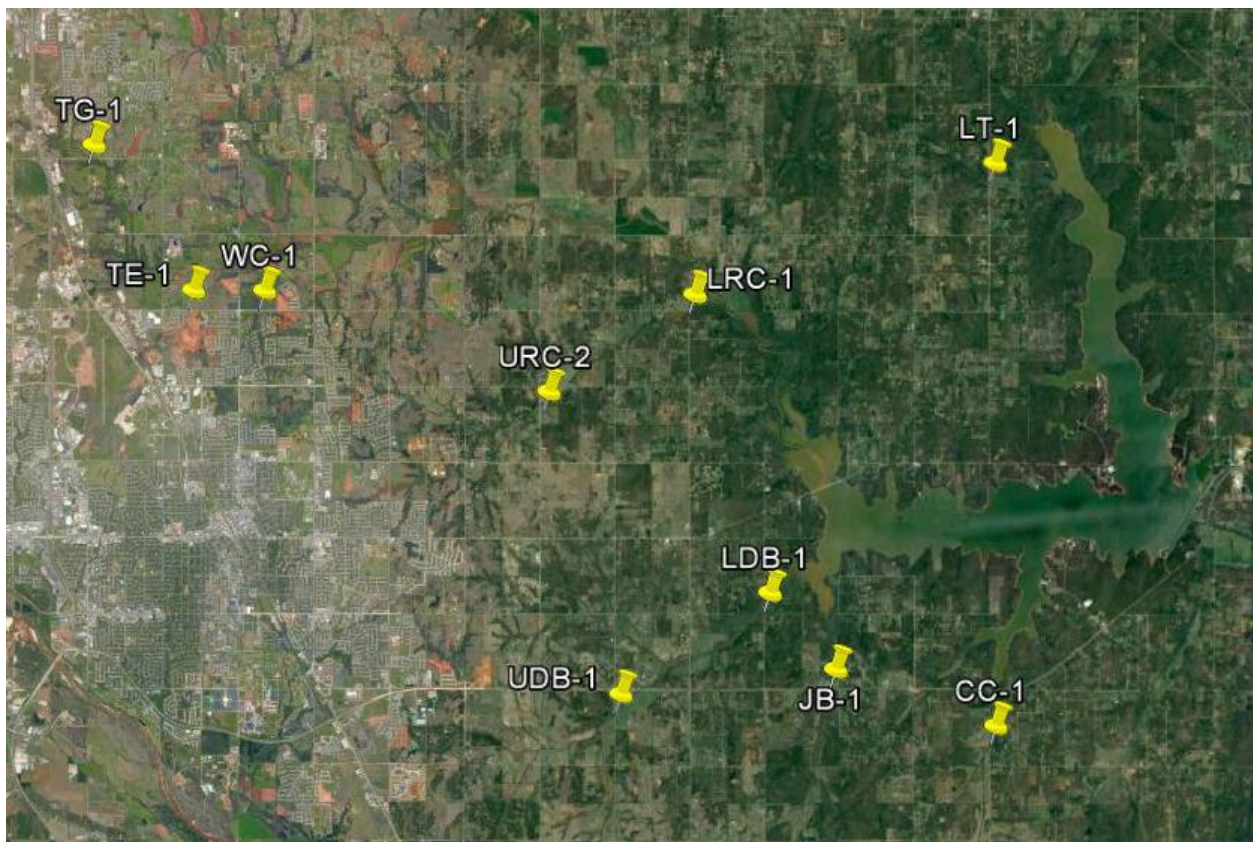


Figure 1 Monitoring Station Map

Monitoring Location ID	Monitoring Location Name	Date	Time	Field Crew	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/l)	pH	Specific Conductance (mS/cm)	Turbidity (NTU)	Notes
CC-1	Clear Creek	04-15-2019	10:40	SD	13.75	9.89	7.60	636	19	
JB-1	Jim Blue Creek	04-13-2019	22:00	SD	*	*	8.06	431	102	collected T3 at 18.14; peak at 18.51 @ 02:00
LDB-1	Lower Dave Blue Creek	04-13-2019	23:30	SD	*	*	8.17	269	459	collected T1 at 18.00; peak at 18.65 @ 01:45
LRC-1	Lower Rock Creek	04-13-2019	19:45	SD	*	*	7.91	296	1000	collected T4 at 22.22; peak at 23.72 @ 02:15; oily sheen on all bottles
LT-1	Lake Laterals	04-15-2019	12:05	SD	14.13	6.99	7.57	309	33	
TE-1	Little River Tributary	04-13-2019	16:15	SD	*	*	7.95	470	537	collected T1 at 14.22; peak at 14.62 @ midnight
TG-1	Little River Tributary	04-13-2019	18:00	SD	*	*	8.1	309	1000	collected T2 at 15.14; peak at 15.79 @ 00:30
UDB-1	Upper Dave Blue Creek	04-15-2019	9:50	SD	12.14	10.25	7.34	771	20	autosampler malfunction, water collected from channel
URC-2	Upper Rock Creek	04-13-2019	17:15	SD	*	*	7.89	378	706	collected T3 at 15.96; peak at 18.16 @ 00:45; flow taken 4/15
WC-1	Woodcrest Creek	04-13-2019	17:30	SD	*	*	*	272	453	collected T3 at 11.63; peak at 12.23 @ midnight
SW-08	Stormwater Outfall 08	4/15/2019	14:20	SD	*	*	7.70	1070	170	sampler collected 4/13-4/14; water clearer now than when bottles installed
SW-09	Stormwater Outfall 09	4/15/2019	9:05	SD	*	*	7.65	697	26	sampler collected 4/13-4/14
SW-10	Stormwater Outfall 10	4/15/2019	8:40	SD	*	*	7.88	680	125	sampler collected 4/13-4/14
SW-11	Stormwater Outfall 11	4/15/2019	8:50	SD	*	*	7.24	106	50	sampler collected 4/13-4/14; current water more turbid than water in sampler
SW-12	Stormwater Outfall 12	4/15/2019	14:00	SD	*	*	7.66	406	171	sampler collected 4/13-4/14; water in sampler more turbid than current stream condition
SW-13	Stormwater Outfall 13	4/15/2019	9:15	SD	*	*	7.80	244	63	sampler collected 4/13-4/14; water level significantly lower than when bottles installed
SW-14	Stormwater Outfall 14	4/15/2019	14:40	SD	*	*	8.08	1220	182	sampler collected 4/13-4/14

Table 1 Field Data Form Where an Asterisk Denotes a Sample from an Autosampler

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	0.12	0.43	0.052	18.0
JB-1	Jim Blue Creek	0.18	1.22	0.186	112
LDB-1	Lower Dave Blue Creek	0.29	1.76	0.404	648
LRC-1	Lower Rock Creek	0.29	4.46	1.160	1760
LT-1	Lake Laterals	<0.05	1.03	0.132	14.0
TE-1	Little River Tributary	0.44	1.74	0.404	372
TG-1	Little River Tributary	0.45	2.52	0.930	990
UDB-1	Upper Dave Blue Creek	0.10	0.46	0.051	26.0
URC-2	Upper Rock Creek	0.32	2.90	0.682	780
WC-1	Woodcrest Creek	0.46	2.16	0.309	430
SW-08	Stormwater Outfall 08	1.27	6.22	0.905	392
SW-09	Stormwater Outfall 09	0.23	1.49	0.219	24.0
SW-10	Stormwater Outfall 10	0.06	2.03	0.332	492
SW-11	Stormwater Outfall 11	0.45	2.01	0.262	104
SW-12	Stormwater Outfall 12	<0.05	1.55	0.214	192
SW-13	Stormwater Outfall 13	0.22	0.97	0.126	68.0
SW-14	Stormwater Outfall 14	0.06	1.24	0.232	408

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	0.10	0.48	0.051	28.0
Duplicate RPD	0%	4.26%	0%	7.41%

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	3.09	N/A
JB-1	Jim Blue Creek	59.08	18.14
LDB-1	Lower Dave Blue Creek	277.00	18.00
LRC-1	Lower Rock Creek	105.00	22.22
LT-1	Lake Laterals	1.10	4.73
TE-1	Little River Tributary	122.60	14.22
TG-1	Little River Tributary	563.00	15.14
UDB-1	Upper Dave Blue Creek	17.01	18.22
URC-2	Upper Rock Creek	14.45	13.64
WC-1	Woodcrest Creek	145.00	11.63

Table 4 Station Discharge Summary

Discharge Measurement Summary

Date Generated: Thu Apr 18 2019

File Information

File Name URC0415.WAD
Start Date and Time 2019/04/15 11:00:35

Site Details

Site Name URC
Operator(s) SCD

System Information

Sensor Type FlowTracker
Serial # P4713
CPU Firmware Version
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.6%
Velocity	0.5%	1.9%
Width	0.1%	0.1%
Method	1.4%	-
# Stations	1.6%	-
Overall	2.4%	2.2%

Summary

Averaging Int. 40 # Stations 33
Start Edge LEW Total Width 19.000
Mean SNR 40.0 dB Total Area 19.837
Mean Temp 57.19 °F Mean Depth 1.044
Disch. Equation Mid-Section Mean Velocity 0.7285
Total Discharge 14.4516

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Mon Apr 15 11:21:39 CDT 2019	13.000	13.640		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:00	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
<i>1</i>	<i>11:00</i>	<i>1.00</i>	<i>0.6</i>	<i>0.400</i>	<i>0.6</i>	<i>0.160</i>	<i>0.1772</i>	<i>1.00</i>	<i>0.1772</i>	<i>0.400</i>	<i>0.0709</i>	<i>0.5</i>
<i>2</i>	<i>11:01</i>	<i>2.00</i>	<i>0.6</i>	<i>0.900</i>	<i>0.6</i>	<i>0.360</i>	<i>0.2589</i>	<i>1.00</i>	<i>0.2589</i>	<i>0.900</i>	<i>0.2330</i>	<i>1.6</i>
3	11:03	3.00	0.6	1.150	0.6	0.460	0.5676	1.00	0.5676	0.862	0.4895	3.4
4	11:04	3.50	0.6	1.350	0.6	0.540	0.7113	1.00	0.7113	0.675	0.4801	3.3
5	11:05	4.00	0.6	1.400	0.6	0.560	0.6516	1.00	0.6516	0.700	0.4561	3.2
6	11:06	4.50	0.6	1.400	0.6	0.560	0.4944	1.00	0.4944	0.700	0.3461	2.4
7	11:07	5.00	0.6	1.400	0.6	0.560	0.2943	1.00	0.2943	0.700	0.2060	1.4
8	11:08	5.50	0.6	1.400	0.6	0.560	0.5082	1.00	0.5082	0.700	0.3557	2.5
9	11:08	6.00	0.6	1.400	0.6	0.560	0.7536	1.00	0.7536	0.700	0.5275	3.7
10	11:09	6.50	0.6	1.400	0.6	0.560	0.8986	1.00	0.8986	0.700	0.6290	4.4
11	11:10	7.00	0.6	1.400	0.6	0.560	1.0079	1.00	1.0079	0.700	0.7055	4.9
12	11:11	7.50	0.6	1.400	0.6	0.560	1.0102	1.00	1.0102	0.700	0.7071	4.9
13	11:12	8.00	0.6	1.300	0.6	0.520	1.0033	1.00	1.0033	0.650	0.6521	4.5
14	11:13	8.50	0.6	1.300	0.6	0.520	1.0748	1.00	1.0748	0.650	0.6986	4.8
15	11:14	9.00	0.6	1.300	0.6	0.520	1.0007	1.00	1.0007	0.650	0.6504	4.5
16	11:15	9.50	0.6	1.300	0.6	0.520	1.1122	1.00	1.1122	0.650	0.7229	5.0
17	11:16	10.00	0.6	1.200	0.6	0.480	1.0144	1.00	1.0144	0.600	0.6087	4.2
18	11:17	10.50	0.6	1.200	0.6	0.480	0.9439	1.00	0.9439	0.600	0.5664	3.9
19	11:17	11.00	0.6	1.200	0.6	0.480	0.9865	1.00	0.9865	0.600	0.5920	4.1
20	11:18	11.50	0.6	1.100	0.6	0.440	0.9085	1.00	0.9085	0.550	0.4997	3.5
21	11:19	12.00	0.6	1.100	0.6	0.440	0.9209	1.00	0.9209	0.550	0.5065	3.5
22	11:20	12.50	0.6	1.100	0.6	0.440	0.9429	1.00	0.9429	0.550	0.5186	3.6
23	11:21	13.00	0.6	1.000	0.6	0.400	0.9606	1.00	0.9606	0.500	0.4803	3.3
24	11:22	13.50	0.6	1.000	0.6	0.400	0.9127	1.00	0.9127	0.500	0.4564	3.2
25	11:23	14.00	0.6	1.000	0.6	0.400	0.9177	1.00	0.9177	0.500	0.4588	3.2
26	11:24	14.50	0.6	0.900	0.6	0.360	0.8176	1.00	0.8176	0.450	0.3679	2.5
27	11:25	15.00	0.6	0.900	0.6	0.360	0.8760	1.00	0.8760	0.450	0.3942	2.7
28	11:26	15.50	0.6	0.800	0.6	0.320	0.6857	1.00	0.6857	0.400	0.2742	1.9
29	11:27	16.00	0.6	0.800	0.6	0.320	0.8071	1.00	0.8071	0.600	0.4842	3.4
<i>30</i>	<i>11:28</i>	<i>17.00</i>	<i>0.6</i>	<i>0.900</i>	<i>0.6</i>	<i>0.360</i>	<i>0.2854</i>	<i>1.00</i>	<i>0.2854</i>	<i>0.900</i>	<i>0.2569</i>	<i>1.8</i>
<i>31</i>	<i>11:29</i>	<i>18.00</i>	<i>0.6</i>	<i>0.800</i>	<i>0.6</i>	<i>0.320</i>	<i>0.0538</i>	<i>1.00</i>	<i>0.0538</i>	<i>0.800</i>	<i>0.0430</i>	<i>0.3</i>
32	11:29	19.00	None	0.500	0.0	0.0	0.0000	1.00	0.0538	0.250	0.0135	0.1

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 2 Discharge Summary URC-2

Discharge Measurement Summary

Date Generated: Thu Apr 18 2019

File Information

File Name UDB0415.WAD
Start Date and Time 2019/04/15 07:37:28

Site Details

Site Name UDB1
Operator(s) JSM

System Information

Sensor Type FlowTracker
Serial # P4713
CPU Firmware Version 3.9
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.3%
Velocity	1.2%	4.0%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.2%	-
Overall	3.4%	4.7%

Summary

Averaging Int. 40 # Stations 23
Start Edge LEW Total Width 16.000
Mean SNR 37.0 dB Total Area 19.150
Mean Temp 53.18 °F Mean Depth 1.197
Disch. Equation Mid-Section Mean Velocity 0.8884
Total Discharge 17.0136

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Mon Apr 15 07:34:53 CDT 2019	0.000	18.220		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	07:37	0.00	None	0.750	0.0	0.0	0.0000	1.00	-0.1739	0.375	-0.0652	-0.4
1	07:37	1.00	0.6	1.150	0.6	0.460	-0.1739	1.00	-0.1739	1.150	-0.2000	-1.2
2	07:38	2.00	0.6	1.500	0.6	0.600	-0.0561	1.00	-0.0561	1.500	-0.0842	-0.5
3	07:39	3.00	0.6	1.100	0.6	0.440	0.3757	1.00	0.3757	0.825	0.3099	1.8
4	07:42	3.50	0.6	1.200	0.6	0.480	0.9843	1.00	0.9843	0.600	0.5906	3.5
5	07:40	4.00	0.6	1.400	0.6	0.560	1.3323	1.00	1.3323	1.050	1.3989	8.2
6	07:43	5.00	0.6	1.700	0.6	0.680	1.1437	1.00	1.1437	1.700	1.9444	11.4
7	07:45	6.00	0.6	1.600	0.6	0.640	1.5636	1.00	1.5636	1.200	1.8765	11.0
8	07:47	6.50	0.6	1.400	0.6	0.560	1.8176	1.00	1.8176	0.700	1.2723	7.5
9	07:46	7.00	0.6	1.400	0.6	0.560	1.5928	1.00	1.5928	0.700	1.1149	6.6
10	07:51	7.50	0.6	1.700	0.6	0.680	1.7844	1.00	1.7844	0.850	1.5169	8.9
11	07:48	8.00	0.6	1.800	0.6	0.720	1.7769	1.00	1.7769	0.900	1.5991	9.4
12	07:50	8.50	0.6	1.550	0.6	0.620	1.8258	1.00	1.8258	0.775	1.4149	8.3
13	07:49	9.00	0.6	1.550	0.6	0.620	1.2864	1.00	1.2864	0.775	0.9969	5.9
14	07:53	9.50	0.6	1.500	0.6	0.600	1.1427	1.00	1.1427	0.750	0.8570	5.0
15	07:53	10.00	0.6	1.350	0.6	0.540	1.1864	1.00	1.1864	1.013	1.2012	7.1
16	07:54	11.00	0.6	1.000	0.6	0.400	0.9892	1.00	0.9892	1.000	0.9892	5.8
17	07:55	12.00	0.6	1.150	0.6	0.460	0.2612	1.00	0.2612	0.862	0.2252	1.3
18	07:57	12.50	0.6	1.000	0.6	0.400	0.2858	1.00	0.2858	0.500	0.1429	0.8
19	07:56	13.00	0.6	0.900	0.6	0.360	0.0486	1.00	0.0486	0.675	0.0328	0.2
20	07:59	14.00	0.6	0.750	0.6	0.300	-0.0558	1.00	-0.0558	0.750	-0.0418	-0.2
21	08:00	15.00	0.6	0.500	0.6	0.200	-0.1578	1.00	-0.1578	0.500	-0.0789	-0.5
22	08:00	16.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 3 Discharge Summary UDB-1

Discharge Measurement Summary

Date Generated: Thu Apr 18 2019

File Information		Site Details	
File Name	LT0415.WAD	Site Name	LT1
Start Date and Time	2019/04/15 09:56:30	Operator(s)	JSM

System Information		Units (English Units)		Discharge Uncertainty		
Sensor Type	FlowTracker	Distance	ft	Category	ISO	Stats
Serial #	P4713	Velocity	ft/s	Accuracy	1.0%	1.0%
CPU Firmware Version	3.9	Area	ft^2	Depth	0.5%	2.3%
Software Ver	2.30	Discharge	cfs	Velocity	1.3%	7.8%
Mounting Correction	0.0%			Width	0.2%	0.2%
				Method	2.3%	-
				# Stations	3.3%	-
				Overall	4.4%	8.2%

Summary			
Averaging Int.	40	# Stations	15
Start Edge	LEW	Total Width	11.000
Mean SNR	29.5 dB	Total Area	5.925
Mean Temp	57.54 °F	Mean Depth	0.539
Disch. Equation	Mid-Section	Mean Velocity	0.1857
		Total Discharge	1.1001

Supplemental Data					
#	Time	Location	Gauge Height	Rated Flow	Comments
1	Mon Apr 15 09:55:08 CDT 2019	0.000	4.730		

Measurement Results												
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:56	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:56	1.00	0.6	0.350	0.6	0.140	0.0689	1.00	0.0689	0.350	0.0241	2.2
2	<i>09:57</i>	<i>2.00</i>	<i>0.6</i>	<i>0.600</i>	<i>0.6</i>	<i>0.240</i>	<i>0.0302</i>	<i>1.00</i>	<i>0.0302</i>	<i>0.600</i>	<i>0.0181</i>	<i>1.6</i>
3	09:58	3.00	0.6	0.700	0.6	0.280	0.1637	1.00	0.1637	0.700	0.1146	10.4
4	09:59	4.00	0.6	0.800	0.6	0.320	0.2339	1.00	0.2339	0.600	0.1403	12.8
5	10:00	4.50	0.6	0.700	0.6	0.280	0.2585	1.00	0.2585	0.350	0.0905	8.2
6	10:01	5.00	0.6	0.700	0.6	0.280	0.2900	1.00	0.2900	0.350	0.1015	9.2
7	10:02	5.50	0.6	0.700	0.6	0.280	0.3579	1.00	0.3579	0.350	0.1253	11.4
8	10:03	6.00	0.6	0.650	0.6	0.260	0.2733	1.00	0.2733	0.325	0.0888	8.1
9	10:03	6.50	0.6	0.600	0.6	0.240	0.2802	1.00	0.2802	0.300	0.0841	7.6
10	10:04	7.00	0.6	0.600	0.6	0.240	0.2257	1.00	0.2257	0.450	0.1016	9.2
11	10:06	8.00	0.6	0.550	0.6	0.220	0.1995	1.00	0.1995	0.550	0.1097	10.0
12	10:07	9.00	0.6	0.600	0.6	0.240	0.0505	1.00	0.0505	0.600	0.0303	2.8
13	10:08	10.00	0.6	0.400	0.6	0.160	0.1778	1.00	0.1778	0.400	0.0711	6.5
14	10:08	11.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 4 Discharge Summary LT-1

Discharge Measurement Summary

Date Generated: Thu Apr 18 2019

File Information

File Name CC0415.WAD
Start Date and Time 2019/04/15 08:28:15

Site Details

Site Name CC1
Operator(s) JSM

System Information

Sensor Type FlowTracker
Serial # P4713
CPU Firmware Version 3.9
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	5.4%
Velocity	0.7%	6.4%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	3.1%	-
Overall	4.1%	8.4%

Summary

Averaging Int.	40	# Stations	16
Start Edge	LEW	Total Width	17.500
Mean SNR	37.5 dB	Total Area	3.750
Mean Temp	57.06 °F	Mean Depth	0.214
Disch. Equation	Mid-Section	Mean Velocity	0.8226
		Total Discharge	3.0851

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:28	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:28	1.00	0.6	0.250	0.6	0.100	0.4767	1.00	0.4767	0.250	0.1192	3.9
2	08:29	2.00	0.6	0.250	0.6	0.100	0.7339	1.00	0.7339	0.250	0.1835	5.9
3	<i>08:30</i>	<i>3.00</i>	<i>0.6</i>	<i>0.150</i>	<i>0.6</i>	<i>0.060</i>	<i>0.9967</i>	<i>1.00</i>	<i>0.9967</i>	<i>0.150</i>	<i>0.1494</i>	<i>4.8</i>
4	<i>08:31</i>	<i>4.00</i>	<i>0.6</i>	<i>0.250</i>	<i>0.6</i>	<i>0.100</i>	<i>0.5597</i>	<i>1.00</i>	<i>0.5597</i>	<i>0.250</i>	<i>0.1399</i>	<i>4.5</i>
5	<i>08:33</i>	<i>5.00</i>	<i>0.6</i>	<i>0.200</i>	<i>0.6</i>	<i>0.080</i>	<i>0.9754</i>	<i>1.00</i>	<i>0.9754</i>	<i>0.300</i>	<i>0.2928</i>	<i>9.5</i>
6	08:34	7.00	0.6	0.250	0.6	0.100	0.7444	1.00	0.7444	0.500	0.3722	12.1
7	08:35	9.00	0.6	0.250	0.6	0.100	0.8514	1.00	0.8514	0.375	0.3193	10.3
8	08:36	10.00	0.6	0.300	0.6	0.120	0.9327	1.00	0.9327	0.300	0.2797	9.1
9	08:37	11.00	0.6	0.300	0.6	0.120	0.9997	1.00	0.9997	0.300	0.2998	9.7
10	08:38	12.00	0.6	0.350	0.6	0.140	1.0082	1.00	1.0082	0.350	0.3529	11.4
11	08:39	13.00	0.6	0.250	0.6	0.100	1.0725	1.00	1.0725	0.250	0.2681	8.7
12	<i>08:40</i>	<i>14.00</i>	<i>0.6</i>	<i>0.200</i>	<i>0.6</i>	<i>0.080</i>	<i>1.1345</i>	<i>1.00</i>	<i>1.1345</i>	<i>0.200</i>	<i>0.2271</i>	<i>7.4</i>
13	08:41	15.00	0.6	0.100	0.6	0.040	0.5384	1.00	0.5384	0.150	0.0808	2.6
14	<i>08:42</i>	<i>17.00</i>	<i>0.6</i>	<i>0.100</i>	<i>0.6</i>	<i>0.040</i>	<i>0.0030</i>	<i>1.00</i>	<i>0.0030</i>	<i>0.125</i>	<i>0.0004</i>	<i>0.0</i>
15	08:42	17.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 5 Discharge Summary CC-1

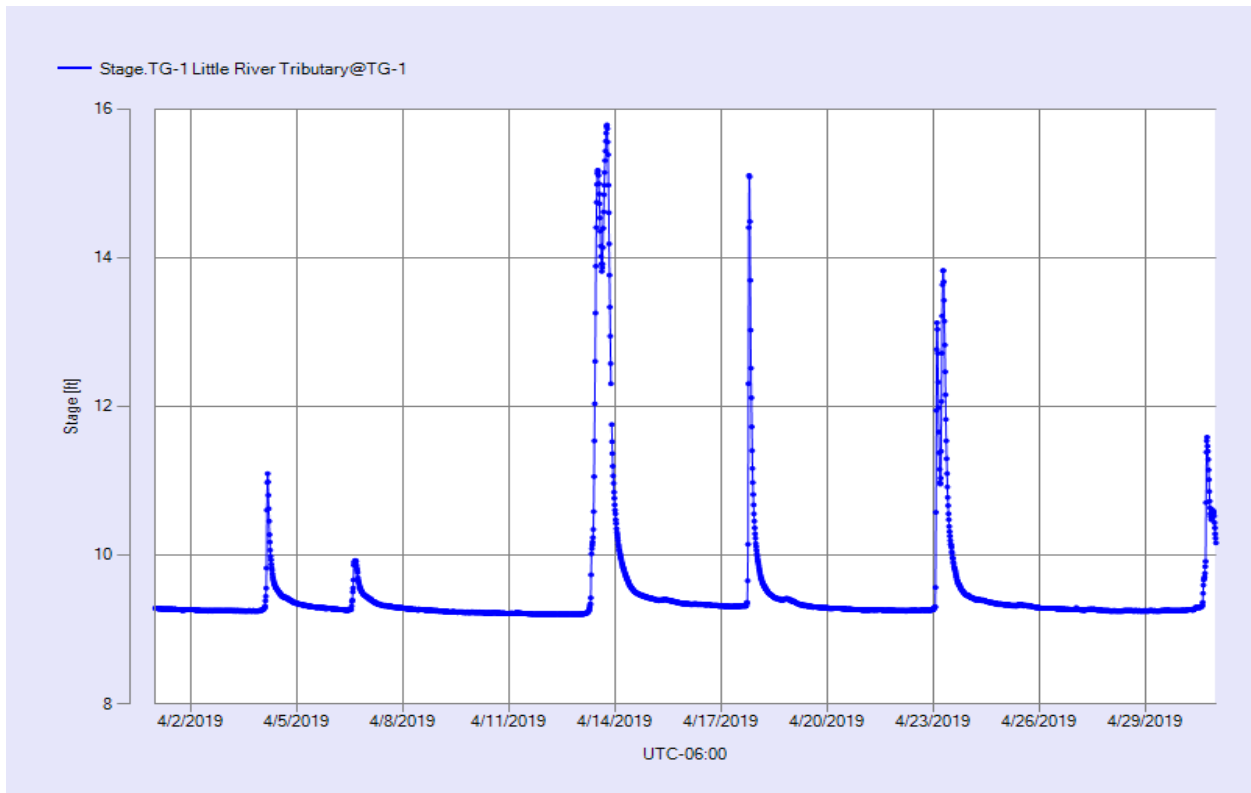


Figure 6 Monthly Hydrograph TG-1

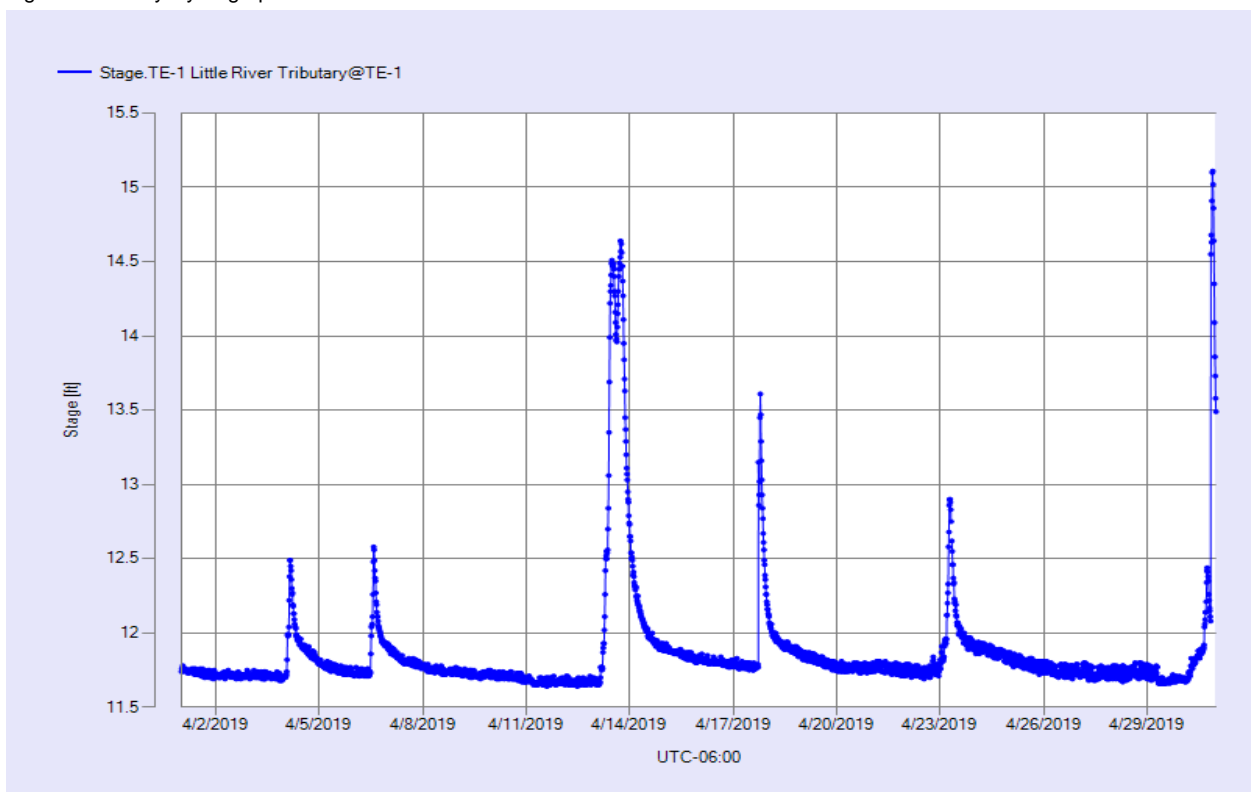


Figure 7 Monthly Hydrograph TE-1

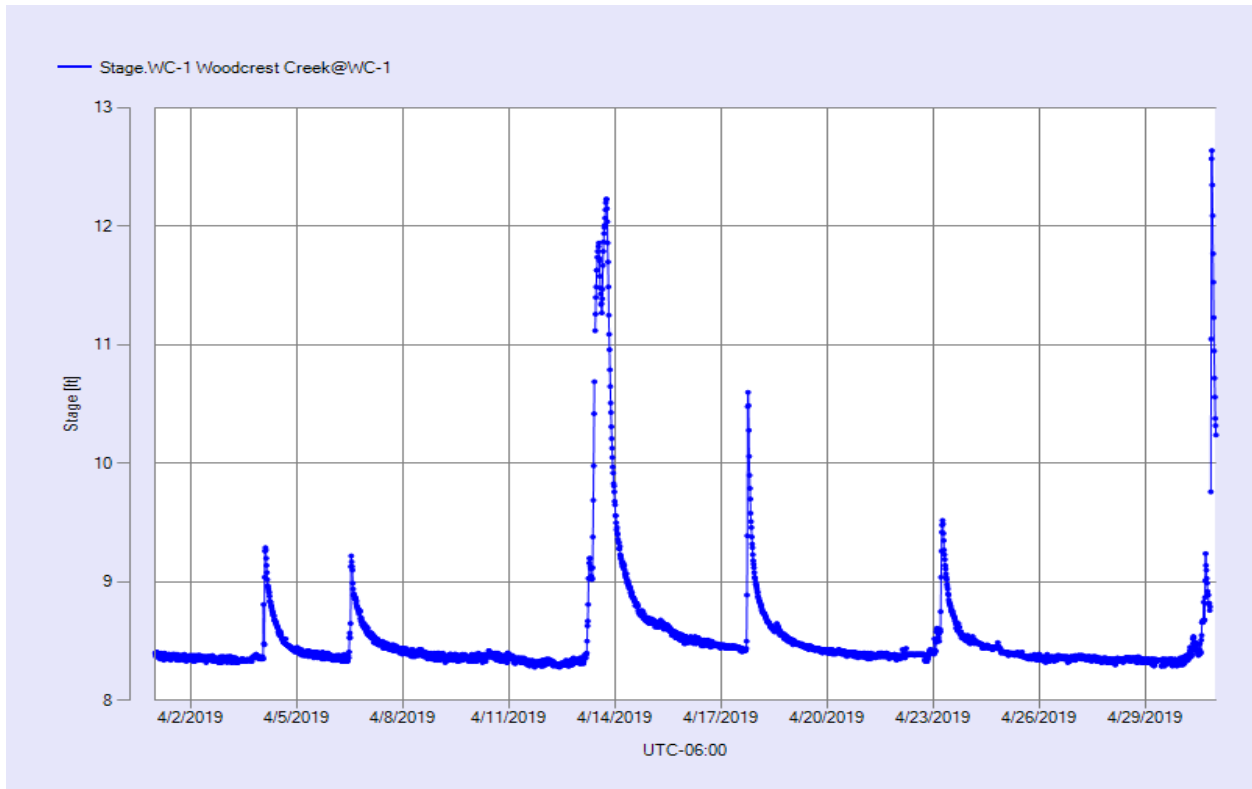


Figure 8 Monthly Hydrograph WC-1

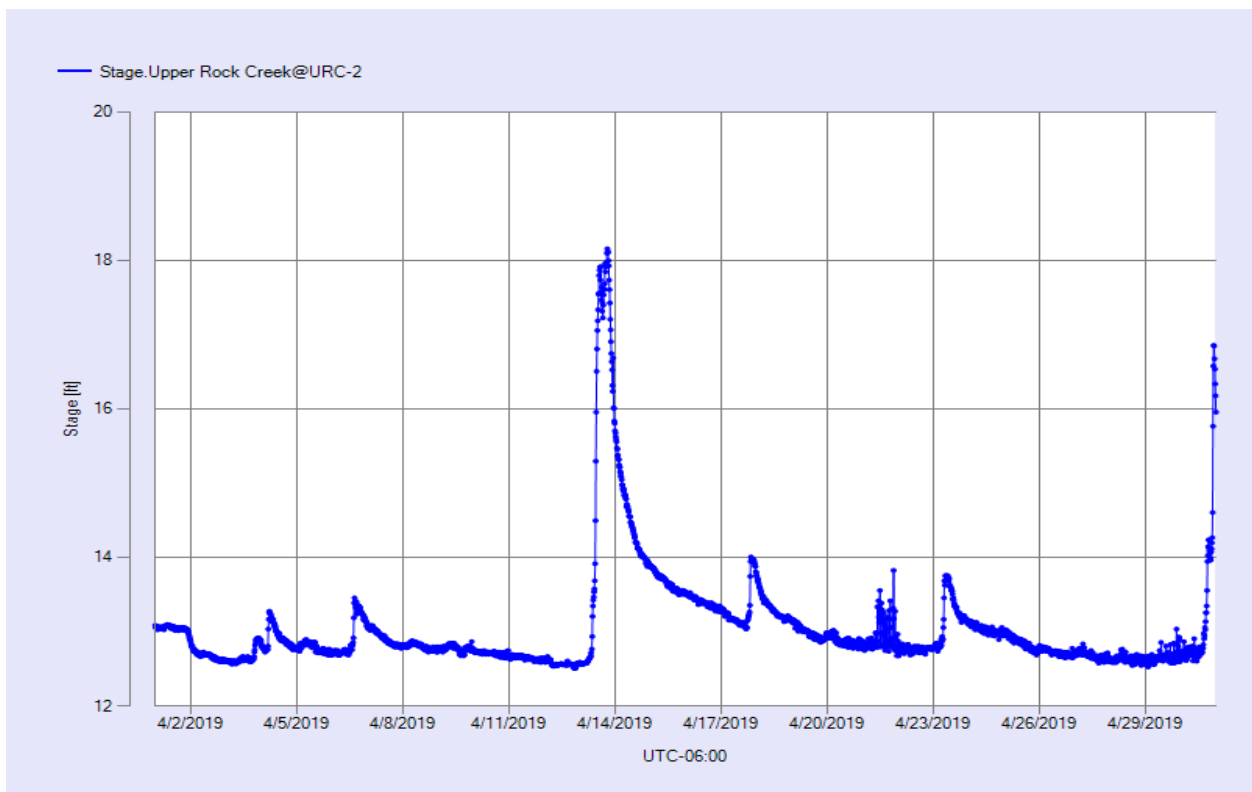


Figure 9 Monthly Hydrograph URC-2

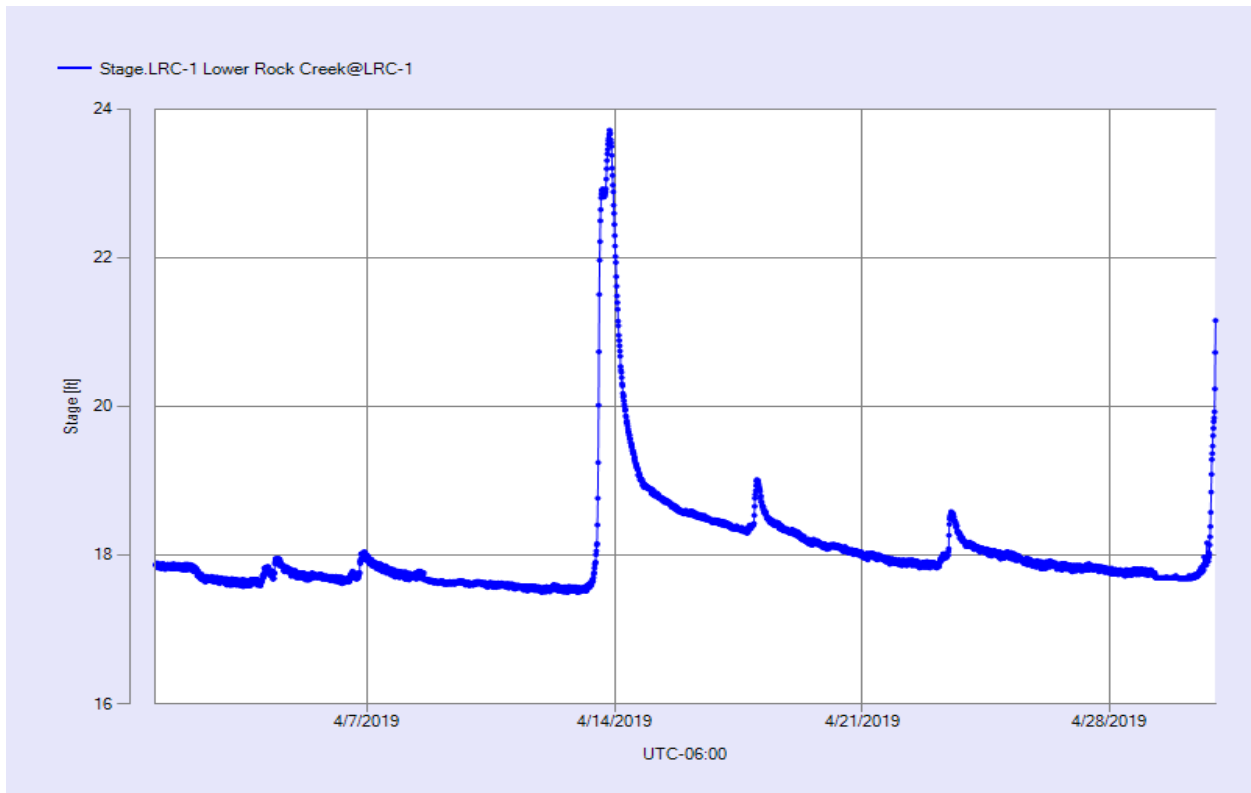


Figure 10 Monthly Hydrograph LRC-1

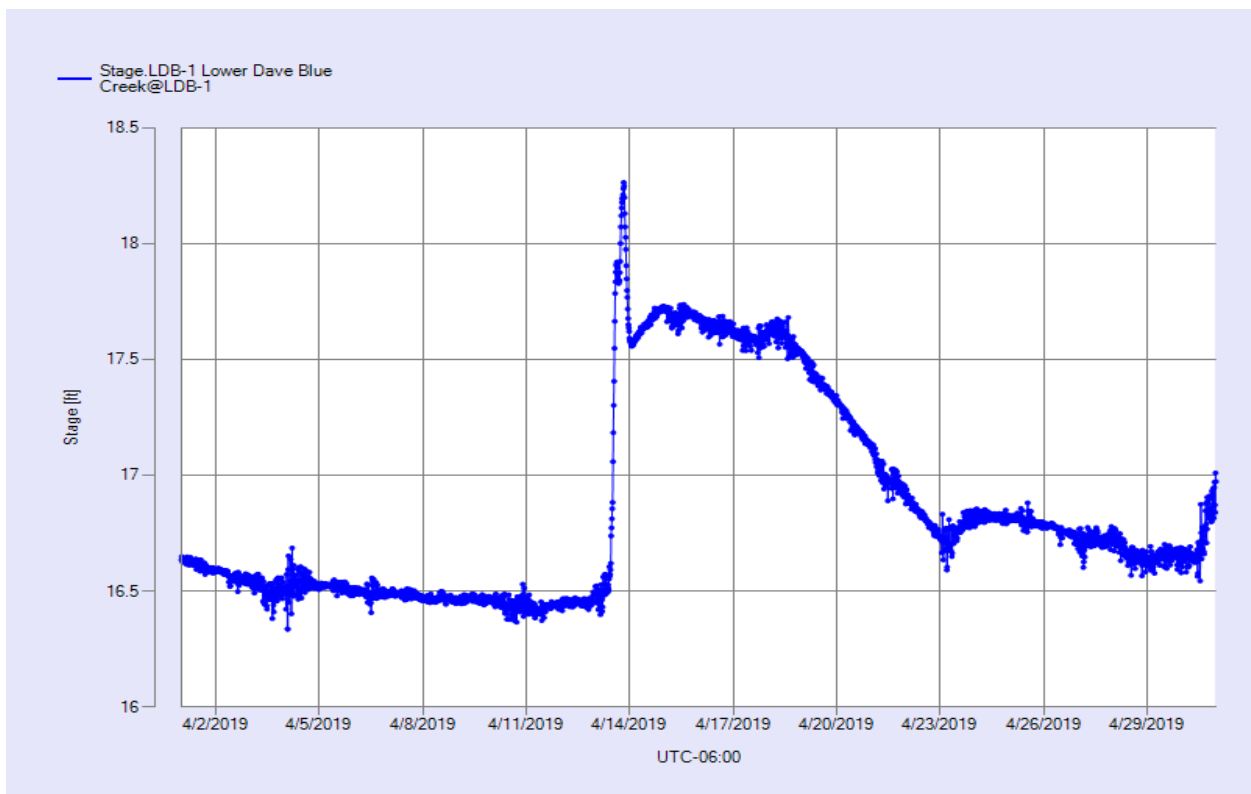


Figure 11 Monthly Hydrograph LDB-1

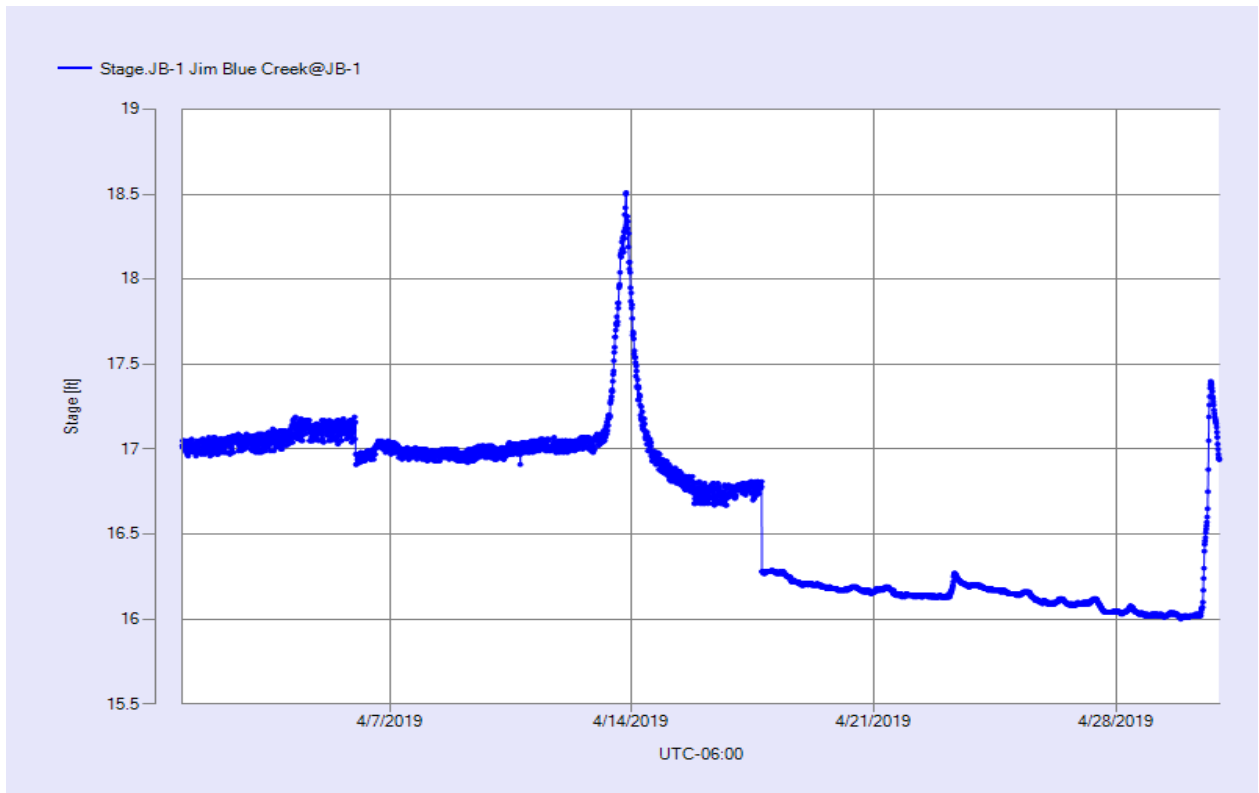


Figure 12 Monthly Hydrograph JB-1

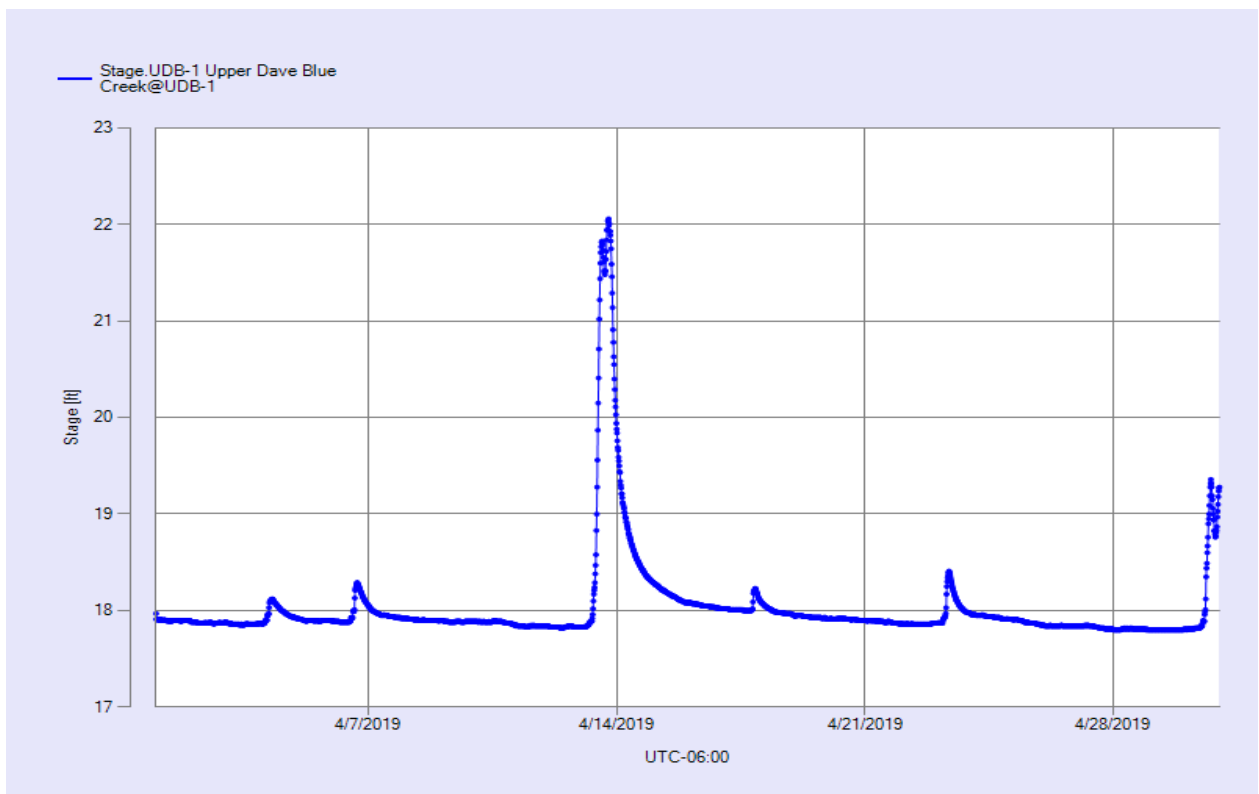


Figure 13 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY				April 2019				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		STN	MSL	DIR	AVG	MAX	SOD		BARE	MAX	MIN	
1	58	36	46.7	26.1	18	0	78	28	47	0.00	28.96	30.22	SSW	3.9	15.6	21.18	52.4	49.4	55	45	
2	71	39	56.1	35.6	10	0	80	28	49	0.00	28.84	30.09	SSE	9.7	22.7	24.74	53.6	52.4	60	45	
3	67	50	59.0	43.2	6	0	78	44	56	0.05	28.77	30.02	SSE	12.6	31.8	15.44	55.1	56.4	60	52	
4	73	52	60.8	53.0	2	0	98	45	78	0.29	28.74	29.99	N	5.9	35.3	18.52	57.8	58.8	64	55	
5	76	46	63.0	52.2	4	0	99	43	71	0.00	28.76	30.01	SE	6.2	18.9	21.99	59.3	59.0	64	53	
6	73	59	64.4	57.4	0	1	96	56	79	0.32	28.64	29.88	SE	9.8	23.6	13.81	60.6	60.3	64	58	
7	73	56	63.2	58.0	1	0	99	64	84	0.00	28.67	29.91	S	5.2	14.6	12.59	61.5	61.3	65	58	
8	80	53	66.5	49.7	0	2	91	27	60	0.00	28.73	29.98	N	5.7	25.6	24.77	62.5	61.7	67	57	
9	86	51	70.4	48.4	0	4	94	22	51	0.00	28.60	29.85	SSE	7.2	22.7	24.84	63.0	63.5	71	56	
10	87	67	76.1	53.0	0	12	58	30	45	0.00	28.24	29.47	S	15.4	35.6	20.56	64.1	67.5	73	63	
11	76	39	51.3	30.7	8	0	72	22	47	0.00	28.44	29.68	WNW	13.9	31.6	26.74	62.5	65.5	69	61	
12	60	35	48.7	28.7	18	0	70	32	47	0.00	28.70	29.95	NNE	7.2	17.4	21.27	58.6	59.5	64	54	
13	52	38	45.0	36.3	20	0	93	41	75	2.18	28.63	29.87	NE	18.2	43.0	1.30	54.9	54.5	60	50	
14	63	40	51.8	36.6	14	0	85	37	58	0.01	28.67	29.92	NW	9.6	23.8	26.90	53.4	53.9	61	49	
15	79	51	64.2	47.2	0	0	69	37	55	0.00	28.61	29.85	SSE	14.3	31.9	26.16	56.7	58.3	64	53	
16	74	58	66.0	56.2	0	1	86	60	71	0.00	28.62	29.87	S	13.3	29.2	13.74	59.4	60.2	63	57	
17	79	58	69.5	62.9	0	4	95	62	80	0.43	28.48	29.72	S	11.3	37.1	17.33	62.4	63.4	68	60	
18	69	50	58.0	47.2	6	0	95	38	70	0.04	28.62	29.86	N	15.0	41.2	22.92	62.2	62.9	66	60	
19	65	45	54.4	39.2	10	0	91	34	59	0.00	28.81	30.06	NNW	12.5	29.2	27.65	59.4	57.6	61	54	
20	78	41	62.3	45.3	5	0	93	33	58	0.00	28.71	29.96	S	7.6	23.7	27.66	59.7	57.5	64	51	
21	81	59	70.1	55.2	0	5	74	42	60	0.00	28.60	29.84	S	13.6	33.8	23.68	62.5	61.7	68	57	
22	71*	62*	67.2*	60.5*	0*	1*	96*	67*	79*	0.04*	28.74*	29.99*	S	7.9*	26.5*	NA	63.6*	63.9*	66*	61*	
23	64	56	59.3	56.9	5	0	98	83	92	0.49	28.76	30.01	N	9.1	37.0	8.31	63.1	63.1	65	61	
24	62	53	57.0	54.1	8	0	98	77	90	0.03	28.66	29.90	N	3.8	11.4	6.43	61.5	60.7	62	59	
25	79*	52*	63.7*	52.5*	0*	0*	100*	36*	71*	0.00*	28.65*	29.90*	NNW*	8.9*	31.1*	NA	62.3*	61.4*	67*	57*	
26	75	46	63.2	45.3	4	0	97	31	57	0.00	28.85	30.10	S	5.6	21.3	27.93	63.5	61.8	68	55	
27	82	59	69.2	49.4	0	6	66	29	50	0.00	28.60	29.85	S	10.8	27.7	26.94	65.2	65.7	74	59	
28	81	51	66.1	53.2	0	1	81	49	64	0.00	28.62	29.86	SSE	11.0	30.3	24.12	65.3	67.5	74	61	
29	73	62	67.2	62.1	0	3	99	72	84	0.01	28.64	29.89	S	9.2	26.9	9.26	66.2	68.0	70	66	
30	75	57	66.5	64.5	0	1	99	81	94	0.50	28.60	29.84	S	7.9	27.5	5.44	66.0	66.5	69	64	
	73*	51*	61.6*	48.7*	←- Monthly Averages →-							28.67*	29.91*	S	9.7*	43.0*	19.37*	60.6*	60.8*	66*	56*
Temperature - Highest: 87*				Degree Days - Total HDD: 139*				Number of Days With:													
Lowest: 35*				Total CDD: 40*				Tmax ≥ 90: 0*				Rainfall ≥ 0.01 inch: 12*									
								Tmax ≤ 32: 0*				Rainfall ≥ 0.10 inch: 6*									
Rainfall: Monthly Total: 4.39* in.				Humidity - Highest: 100*				Tmin ≤ 32: 0*				Avg Wind Speed ≥ 10 mph: 12*									
Greatest 24 Hr: 2.18* in.				Lowest: 22*				Tmin ≤ 0: 0*				Max Wind Speed ≥ 30 mph: 12*									

Figure 14 April Mesonet Data