Lake Thunderbird TMDL Monitoring Plan Implementation: Sample Year (SY) 2017- August Report

SY2017 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

August 2017 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
Jason Murphy, Project Supervisor, jason.murphy@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

LIST OF TABLES

LIST OF FIGURES

SUMMARY OF AUGUST WATER QUALITY SAMPLING

Sampling for August 2017 occurred on the fourteenth and was considered a base flow collection. Water samples were collected at all ten locations, in addition to discharge measurements being conducted, with the exception of LDB-1, LT-1, WC-1 and JB-1. Discharge was not measured at these locations as a result of low water levels. Mesonet data for Norman shows 3.24 inches of precipitation occurring in the 72 hours prior to sampling, no precipitation occurring on the fourteenth, and 0.87 inches of precipitation in the 72 hours after the sampling event. An additional storm collection occurred on the twenty-third, where five stations were sampled: TG-1, TE-1, WC-1, URC-2, and UDB-1. Water was collected by the autosamplers beginning on the evening of the twenty-second through the early morning hours of the twenty-third. The water samples were retrieved on the twenty-third and discharge measurements were conducted at each of the five locations. Mesonet data shows 2.06 inches of precipitation occurring on the twenty-second and no precipitation on the twenty-third or in the 24 hours after the sampling event. The total rainfall amount in Norman for the month of August was 8.43 inches. All water level gages were operational for the month.

RESULTS

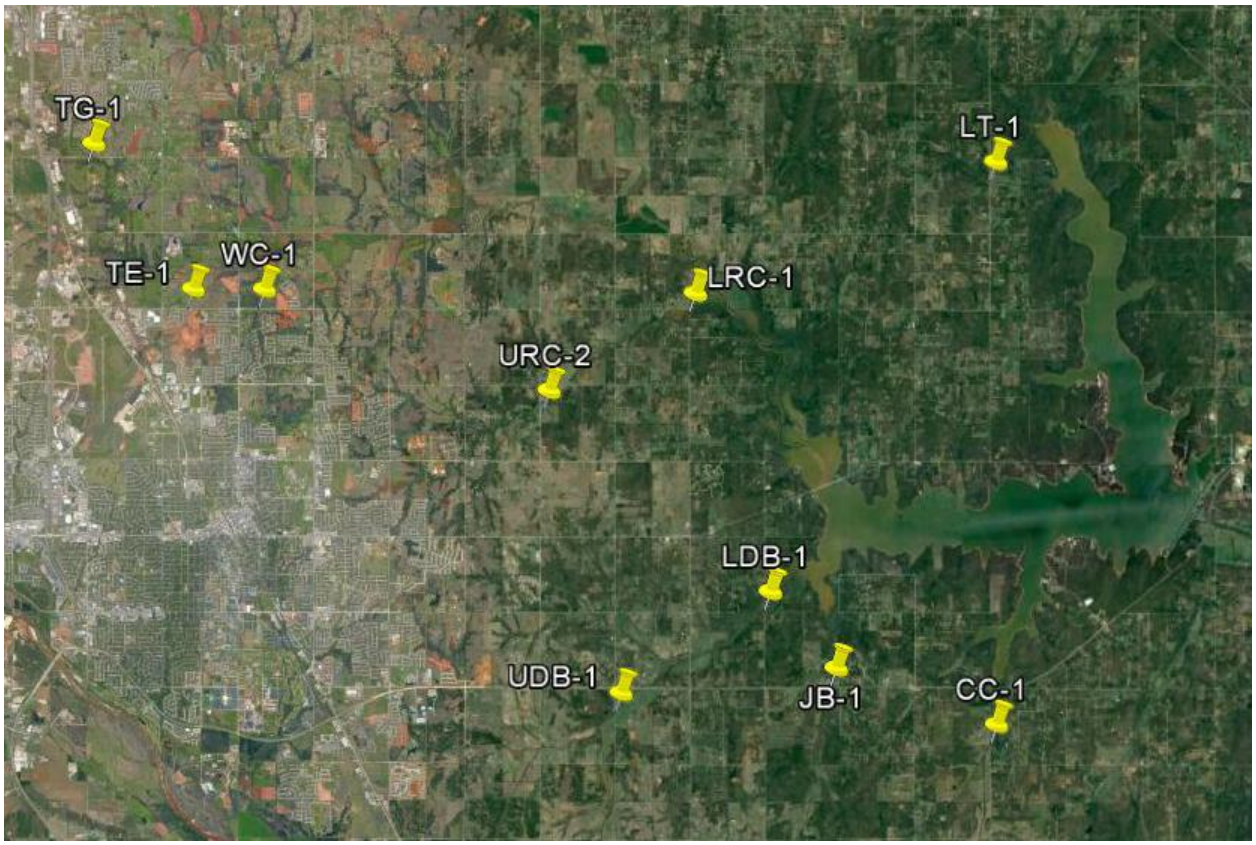

Figure 1 Monitoring Station Map

Field Data Form

Field Measurement Record **Reviewed By:_____SD_____**

Station	Date	Time	Field Crew	Temp C°	DO mg/L	SpC µS	pH	Turb (NTU)	Notes
cc-1	8/14/2017	13:30	JW	24.6	8.1	565.0	8.1	30.0	
lt-1	8/14/2017	11:35	JW	25.3	5.1	324.0	7.7	68.0	channel disconnected
jb-1	8/14/2017	14:10	JW	25.9	3.5	357.0	7.3	26.0	channel not connected under bridge
udb-1	8/14/2017	15:55	JW	25.4	7.8	365.0	7.9	37.0	
ldb-1	8/14/2017	17:10	JW	25.1	4.5	265.0	7.7	83.0	backw ards flow
tg-1	8/15/2017	10:00	JW	24.9	6.3	536.0	7.8	14.0	
te-1	8/15/2017	10:45	JW	25.1	5.0	489.0	7.5	22.0	
wc-1	8/15/2017	12:10	JW	25.4	7.8	434.0	7.7	33.0	
lrc-1	8/15/2017	13:30	JW	26.2	5.1	398.0	7.6	78.0	
urc-2	8/15/2017	15:00	JW	27.0	5.6	360.0	7.8	50.0	
tg-1	8/15/2017	15:40	JW	N/A	N/A	N/A	N/A	0.0	field blank

Table 1 Field Data Form 8/14/17

Site Name	TKN (mg/L)	Nitrate/Nitrite (mg/L)	TP (mg/L)	TSS (mg/L)
TG-1	0.49	0.33	0.097	<5.0
CC-1	0.65	0.18	0.097	19.0
JB-1	1.27	<0.05	0.217	13.0
UDB-1	0.77	0.09	0.084	16.3
LDB-1	1.23	0.14	0.166	40.0
LRC-1	1.08	0.13	0.127	44.0
URC-2	1.16	0.06	0.116	18.8
WC-1	1.34	<0.05	0.223	25.0
TE-1	0.61	0.09	0.075	6.3
LT-1	0.65	<0.05	0.073	48.0

Table 2 Laboratory Analysis Summary 8/14/17

Site Name	TKN	Nitrate/Nitrite	TP	TSS
Field Blank	<0.10 mg/L	<0.05 mg/L	<0.010 mg/L	<5.0 mg/L
Duplicate	0.63 mg/L	0.18 mg/L	0.096 mg/L	16.0 mg/L
Duplicate RPD	3.13%	0%	1.04%	$17.14\%_{*1}$

Table 3 QA/QC Data 8/14/17 Where Subscript 1 Denotes a Level 2 RPD

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.

SITE	TG-1	CC-1	JB-1	UDB-1	LDB-1	LRC-1	URC-2	WC-1	TE-1	LT-1
STAGE (ft)	9.21	0.30	15.54	17.52	15.73	17.62	N/A	8.51	11.62	N/A
DISCHARGE (ft^3/s)	1.522	0.237	0	0.698	0	0.841	0.211	>1	0.005	N/A

Table 4 Station Discharge Summary 8/14/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	TE0815.WAD
Start Date and Time	2017/08/15 08:51:31

Site Details

Site Name	TE
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	4.7%	32.2%
Velocity	82.2%	387.1%
Width	2.3%	2.3%
Method	33.9%	-
# Stations	3.3%	-
Overall	**89.1%**	**388.4%**

Summary

Averaging Int.	40	# Stations	15
Start Edge	LEW	Total Width	8.500
Mean SNR	41.5 dB	Total Area	7.075
Mean Temp	77.80 °F	Mean Depth	0.832
Disch. Equation	Mid-Section	Mean Velocity	0.0007
		Total Discharge	**0.0051**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Tue Aug 15 08:48:21 CDT 2017	0.000	11.620		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:51	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:51*	*1.00*	*0.6*	*0.500*	*0.6*	*0.200*	*-0.0269*	*1.00*	*-0.0269*	*0.375*	*-0.0101*	*-196.3*
2	08:52	1.50	0.6	0.800	0.6	0.320	0.0020	1.00	0.0020	0.400	0.0008	15.3
3	08:53	2.00	0.6	0.900	0.6	0.360	-0.0082	1.00	-0.0082	0.450	-0.0037	-71.8
4	08:54	2.50	0.6	1.100	0.6	0.440	-0.0026	1.00	-0.0026	0.550	-0.0014	-28.1
5	08:55	3.00	0.6	1.200	0.6	0.480	0.0059	1.00	0.0059	0.600	0.0035	69.0
6	08:56	3.50	0.6	1.400	0.6	0.560	0.0039	1.00	0.0039	0.700	0.0028	53.6
7	08:58	4.00	0.6	1.300	0.6	0.520	-0.0010	1.00	-0.0010	0.650	-0.0006	-12.4
8	08:59	4.50	0.6	1.200	0.6	0.480	0.0269	1.00	0.0269	0.600	0.0161	314.2
9	*09:00*	*5.00*	*0.6*	*1.000*	*0.6*	*0.400*	*0.0049*	*1.00*	*0.0049*	*0.500*	*0.0025*	*47.9*
10	*09:01*	*5.50*	*0.6*	*1.000*	*0.6*	*0.400*	*-0.0003*	*1.00*	*-0.0003*	*0.500*	*-0.0002*	*-3.2*
11	09:02	6.00	0.6	1.000	0.6	0.400	0.0108	1.00	0.0108	0.500	0.0054	105.4
12	09:03	6.50	0.6	0.900	0.6	0.360	0.0007	1.00	0.0007	0.450	0.0003	5.7
13	09:04	7.00	0.6	0.800	0.6	0.320	-0.0128	1.00	-0.0128	0.800	-0.0102	-199.2
14	09:04	8.50	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 2 Discharge Summary TE-1 8/15/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information	
File Name	TG0815.WAD
Start Date and Time	2017/08/15 06:52:44

Site Details	
Site Name	TG
Operator(s)	JW

System Information	
Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(English Units)
Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	1.4%
Velocity	0.9%	3.8%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.0%	-
Overall	**3.1%**	**4.2%**

Summary

Averaging Int.	40	# Stations	25
Start Edge	LEW	Total Width	16.000
Mean SNR	25.3 dB	Total Area	9.324
Mean Temp	76.07 °F	Mean Depth	0.583
Disch. Equation	Mid-Section	Mean Velocity	0.1633
		Total Discharge	**1.5224**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Tue Aug 15 06:51:57 CDT 2017	0.000	9.210		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	06:52	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	06:52	1.00	0.6	0.600	0.6	0.240	0.3143	1.00	0.3143	0.450	0.1415	9.3
2	06:54	1.50	0.6	0.600	0.6	0.240	0.3009	1.00	0.3009	0.300	0.0903	5.9
3	06:55	2.00	0.6	0.800	0.6	0.320	0.3330	1.00	0.3330	0.400	0.1332	8.7
4	06:57	2.50	0.6	0.800	0.6	0.320	0.3281	1.00	0.3281	0.400	0.1312	8.6
5	06:58	3.00	0.6	0.800	0.6	0.320	0.3602	1.00	0.3602	0.400	0.1441	9.5
6	06:59	3.50	0.6	0.900	0.6	0.360	0.1824	1.00	0.1824	0.450	0.0821	5.4
7	07:00	4.00	0.6	0.900	0.6	0.360	0.1486	1.00	0.1486	0.450	0.0669	4.4
8	07:02	4.50	0.6	0.900	0.6	0.360	0.1473	1.00	0.1473	0.450	0.0663	4.4
9	07:03	5.00	0.6	0.900	0.6	0.360	0.1703	1.00	0.1703	0.450	0.0766	5.0
10	07:04	5.50	0.6	0.800	0.6	0.320	0.2005	1.00	0.2005	0.400	0.0802	5.3
11	07:05	6.00	0.6	0.800	0.6	0.320	0.2162	1.00	0.2162	0.400	0.0865	5.7
12	07:07	6.50	0.6	0.800	0.6	0.320	0.2182	1.00	0.2182	0.400	0.0873	5.7
13	07:08	7.00	0.6	0.800	0.6	0.320	0.1637	1.00	0.1637	0.400	0.0655	4.3
14	07:09	7.50	0.6	0.800	0.6	0.320	0.1824	1.00	0.1824	0.400	0.0730	4.8
15	07:10	8.00	0.6	0.700	0.6	0.280	0.1572	1.00	0.1572	0.350	0.0550	3.6
16	07:11	8.50	0.6	0.700	0.6	0.280	0.1739	1.00	0.1739	0.350	0.0609	4.0
17	07:12	9.00	0.6	0.600	0.6	0.240	0.1542	1.00	0.1542	0.300	0.0463	3.0
18	*07:13*	*9.50*	*0.6*	*0.600*	*0.6*	*0.240*	*0.1184*	*1.00*	*0.1184*	*0.300*	*0.0355*	*2.3*
19	*07:14*	*10.00*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0200*	*1.00*	*0.0200*	*0.375*	*0.0075*	*0.5*
20	*07:15*	*11.00*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0292*	*1.00*	*0.0292*	*0.500*	*0.0146*	*1.0*
21	*07:16*	*12.00*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0010*	*1.00*	*0.0010*	*0.400*	*0.0004*	*0.0*
22	*07:17*	*13.00*	*0.6*	*0.400*	*0.6*	*0.160*	*-0.0112*	*1.00*	*-0.0112*	*0.400*	*-0.0045*	*-0.3*
23	*07:18*	*14.00*	*0.6*	*0.400*	*0.6*	*0.160*	*-0.0295*	*1.00*	*-0.0295*	*0.600*	*-0.0177*	*-1.2*
24	07:18	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 TG-1 8/15/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	CC10814.WAD
Start Date and Time	2017/08/14 10:21:25

Site Details

Site Name	CC1
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	3.5%
Velocity	1.2%	3.6%
Width	0.2%	0.2%
Method	3.0%	-
# Stations	5.1%	-
Overall	**6.2%**	**5.1%**

Summary

Averaging Int.	40	# Stations	10
Start Edge	LEW	Total Width	3.250
Mean SNR	34.0 dB	Total Area	0.925
Mean Temp	74.97 °F	Mean Depth	0.285
Disch. Equation	Mid-Section	Mean Velocity	0.2564
		Total Discharge	**0.2371**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Mon Aug 14 10:20:31 CDT 2017	0.000	0.300		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:21	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:24*	*1.25*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0108*	*1.00*	*0.0108*	*0.225*	*0.0024*	*1.0*
2	*10:25*	*1.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.1890*	*1.00*	*0.1890*	*0.075*	*0.0142*	*6.0*
3	*10:27*	*1.75*	*0.6*	*0.300*	*0.6*	*0.120*	*0.2448*	*1.00*	*0.2448*	*0.075*	*0.0183*	*7.7*
4	10:29	2.00	0.6	0.400	0.6	0.160	0.3284	1.00	0.3284	0.100	0.0328	13.8
5	10:31	2.25	0.6	0.400	0.6	0.160	0.3655	1.00	0.3655	0.100	0.0365	15.4
6	10:32	2.50	0.6	0.500	0.6	0.200	0.3589	1.00	0.3589	0.125	0.0449	18.9
7	10:34	2.75	0.6	0.500	0.6	0.200	0.3698	1.00	0.3698	0.125	0.0462	19.5
8	10:35	3.00	0.6	0.400	0.6	0.160	0.4170	1.00	0.4170	0.100	0.0417	17.6
9	10:35	3.25	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 CC-1 8/14/17

Discharge Measurement Summary

Date Generated: Thu Sep 7 2017

File Information

File Name	LRC0815.WAD
Start Date and Time	2017/08/15 12:00:21

Site Details

Site Name	LRC
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(English Units)
Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.9%
Velocity	1.2%	5.0%
Width	0.2%	0.2%
Method	3.2%	-
# Stations	3.6%	-
Overall	**5.1%**	**5.9%**

Summary

Averaging Int.	40	# Stations	14
Start Edge	LEW	Total Width	7.000
Mean SNR	36.7 dB	Total Area	5.000
Mean Temp	79.91 °F	Mean Depth	0.714
Disch. Equation	Mid-Section	Mean Velocity	0.1682
		Total Discharge	**0.8412**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Tue Aug 15 11:58:06 CDT 2017	0.000	17.620		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:00	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:00*	*1.00*	*0.6*	*0.600*	*0.6*	*0.240*	*-0.0315*	*1.00*	*-0.0315*	*0.450*	*-0.0142*	*-1.7*
2	*12:01*	*1.50*	*0.6*	*0.600*	*0.6*	*0.240*	*-0.0322*	*1.00*	*-0.0322*	*0.300*	*-0.0096*	*-1.1*
3	*12:02*	*2.00*	*0.6*	*0.600*	*0.6*	*0.240*	*-0.0358*	*1.00*	*-0.0358*	*0.300*	*-0.0107*	*-1.3*
4	12:03	2.50	0.6	0.600	0.6	0.240	-0.0056	1.00	-0.0056	0.300	-0.0017	-0.2
5	*12:04*	*3.00*	*0.6*	*0.700*	*0.6*	*0.280*	*0.0305*	*1.00*	*0.0305*	*0.350*	*0.0107*	*1.3*
6	*12:05*	*3.50*	*0.6*	*1.000*	*0.6*	*0.400*	*0.0656*	*1.00*	*0.0656*	*0.500*	*0.0328*	*3.9*
7	*12:06*	*4.00*	*0.6*	*1.000*	*0.6*	*0.400*	*0.1339*	*1.00*	*0.1339*	*0.500*	*0.0669*	*8.0*
8	12:07	4.50	0.6	1.100	0.6	0.440	0.3176	1.00	0.3176	0.550	0.1747	20.8
9	12:08	5.00	0.6	1.000	0.6	0.400	0.3346	1.00	0.3346	0.500	0.1673	19.9
10	12:09	5.50	0.6	1.000	0.6	0.400	0.3602	1.00	0.3602	0.500	0.1801	21.4
11	12:10	6.00	0.6	0.800	0.6	0.320	0.3261	1.00	0.3261	0.400	0.1304	15.5
12	12:11	6.50	0.6	0.700	0.6	0.280	0.3271	1.00	0.3271	0.350	0.1145	13.6
13	12:11	7.00	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 5 Discharge Summary LRC-1 8/15/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	UDB0814.WAD
Start Date and Time	2017/08/14 12:49:59

Site Details

Site Name	UDB
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	5.4%
Velocity	1.1%	10.3%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.5%	-
Overall	**3.6%**	**11.7%**

Summary

Averaging Int.	40	# Stations	20
Start Edge	LEW	Total Width	12.000
Mean SNR	31.3 dB	Total Area	6.100
Mean Temp	76.87 °F	Mean Depth	0.508
Disch. Equation	Mid-Section	Mean Velocity	0.1144
		Total Discharge	**0.6981**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Mon Aug 14 12:48:50 CDT 2017	0.000	17.520		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:49	-1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:49	0.00	0.6	0.600	0.6	0.240	0.0253	1.00	0.0253	0.450	0.0114	1.6
2	12:52	0.50	0.6	0.700	0.6	0.280	0.1532	1.00	0.1532	0.350	0.0536	7.7
3	12:55	1.00	0.6	0.800	0.6	0.320	0.1647	1.00	0.1647	0.400	0.0659	9.4
4	12:56	1.50	0.6	0.800	0.6	0.320	0.1870	1.00	0.1870	0.400	0.0748	10.7
5	12:57	2.00	0.6	0.600	0.6	0.240	0.0594	1.00	0.0594	0.300	0.0178	2.6
6	12:58	2.50	0.6	0.500	0.6	0.200	0.1926	1.00	0.1926	0.250	0.0481	6.9
7	12:59	3.00	0.6	0.700	0.6	0.280	0.1867	1.00	0.1867	0.350	0.0654	9.4
8	13:01	3.50	0.6	0.500	0.6	0.200	0.1030	1.00	0.1030	0.250	0.0258	3.7
9	*13:03*	*4.00*	*0.6*	*0.700*	*0.6*	*0.280*	*0.1178*	*1.00*	*0.1178*	*0.350*	*0.0412*	*5.9*
10	13:04	4.50	0.6	0.300	0.6	0.120	0.1617	1.00	0.1617	0.150	0.0243	3.5
11	13:05	5.00	0.6	0.400	0.6	0.160	0.1529	1.00	0.1529	0.200	0.0306	4.4
12	*13:06*	*5.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.1381*	*1.00*	*0.1381*	*0.150*	*0.0207*	*3.0*
13	*13:07*	*6.00*	*0.6*	*0.600*	*0.6*	*0.240*	*0.0610*	*1.00*	*0.0610*	*0.300*	*0.0183*	*2.6*
14	*13:09*	*6.50*	*0.6*	*0.800*	*0.6*	*0.320*	*0.0276*	*1.00*	*0.0276*	*0.400*	*0.0110*	*1.6*
15	13:10	7.00	0.6	0.600	0.6	0.240	0.1368	1.00	0.1368	0.300	0.0410	5.9
16	13:12	7.50	0.6	0.600	0.6	0.240	0.1066	1.00	0.1066	0.300	0.0320	4.6
17	13:12	8.00	0.6	0.600	0.6	0.240	0.1335	1.00	0.1335	0.300	0.0401	5.7
18	13:13	8.50	0.6	0.600	0.6	0.240	0.0846	1.00	0.0846	0.900	0.0762	10.9
19	13:13	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 6 Discharge Summary UDB-1 8/14/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	URC0815.WAD
Start Date and Time	2017/08/15 13:16:00

Site Details

Site Name	URC
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	2.0%
Velocity	1.3%	9.0%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	3.3%	-
Overall	**4.4%**	**9.2%**

Summary

Averaging Int.	40	# Stations	15
Start Edge	LEW	Total Width	8.000
Mean SNR	37.6 dB	Total Area	2.599
Mean Temp	81.24 °F	Mean Depth	0.325
Disch. Equation	Mid-Section	Mean Velocity	0.0813
		Total Discharge	**0.2113**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:15	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:15*	*1.00*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0105*	*1.00*	*0.0105*	*0.300*	*0.0031*	*1.5*
2	13:18	1.50	0.6	0.400	0.6	0.160	0.0538	1.00	0.0538	0.200	0.0108	5.1
3	13:16	2.00	0.6	0.300	0.6	0.120	0.0778	1.00	0.0778	0.150	0.0117	5.5
4	*13:20*	*2.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0830*	*1.00*	*0.0830*	*0.150*	*0.0124*	*5.9*
5	*13:22*	*3.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0443*	*1.00*	*0.0443*	*0.150*	*0.0066*	*3.1*
6	13:23	3.50	0.6	0.300	0.6	0.120	0.1096	1.00	0.1096	0.150	0.0164	7.8
7	13:24	4.00	0.6	0.400	0.6	0.160	0.1486	1.00	0.1486	0.200	0.0297	14.1
8	13:25	4.50	0.6	0.400	0.6	0.160	0.0581	1.00	0.0581	0.200	0.0116	5.5
9	13:26	5.00	0.6	0.400	0.6	0.160	0.0591	1.00	0.0591	0.200	0.0118	5.6
10	13:28	5.50	0.6	0.400	0.6	0.160	0.0948	1.00	0.0948	0.200	0.0190	9.0
11	13:29	6.00	0.6	0.400	0.6	0.160	0.0938	1.00	0.0938	0.200	0.0188	8.9
12	13:30	6.50	0.6	0.400	0.6	0.160	0.1175	1.00	0.1175	0.200	0.0235	11.1
13	13:32	7.00	0.6	0.400	0.6	0.160	0.1194	1.00	0.1194	0.300	0.0358	17.0
14	13:32	8.00	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 7 Discharge Summary URC-2 8/15/17

Field Data Form

Field Measurement Record **Reviewed By:_____SD_____**

Station	Date	Time	Field Crew	SpC µS	pH	Turb (NTU)	Notes
te-1	8/23/2017	9:55	JW	142.0	7.0	>1000	autosampled from 20:15 8/22 to 01:00 8/23
udb-1	8/23/2017	10:10	JW	97.0	7.4	>1000	autosampled 20:45 8/22 to 06:00 8/23
urc-2	8/23/2017	9:45	JW	96.0	6.5	>1000	autosampled from 20:45 8/22 to 11:30 8/23
wc-1	8/23/2017	9:19	JW	119.0	7.6	895.0	autosampled 20:15 8/22 to 03:00 8/23
tg-1	8/23/2017	10:00	JW	155.0	7.3	>1000	triggered at 21:00 8/22 to 02:30 8/23

Table 5 Field Data Form 8/23/17

Site Name	TKN (mg/L)	Nitrate/Nitrite (mg/L)	TP (mg/L)	TSS (mg/L)
TG-1	2.91	0.24	1.180	2630
TE-1	2.13	0.25	0.725	1370
WC-1	2.85	0.35	0.770	1110
URC-2	3.59	0.29	0.835	2830
UDB-1	4.94	0.30	1.395	5730

Table 6 Laboratory Analysis Summary 8/23/17

Site Name	TKN	Nitrate/Nitrite	TP	TSS
Duplicate	2.10 mg/L	0.25 mg/L	0.740 mg/L	1410 mg/L
Duplicate RPD	1.42%	0%	2.05%	2.88%

Table 7 QA/QC Data 8/23/17

SITE	TG-1	UDB-1	URC-2	WC-1	TE-1
STAGE (ft)	9.69	18.34	14.115	8.895	11.91
DISCHARGE (ft^3/s)	9.717	21.922	17.402	3.649	2.287

Table 8 Station Discharge Summary 8/23/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	TE0823.WAD
Start Date and Time	2017/08/23 15:25:35

Site Details

Site Name	TE
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.0%
Velocity	1.3%	4.9%
Width	0.2%	0.2%
Method	2.3%	-
# Stations	3.0%	-
Overall	**4.1%**	**5.1%**

Summary

Averaging Int.	40	# Stations	17
Start Edge	LEW	Total Width	10.000
Mean SNR	36.2 dB	Total Area	10.800
Mean Temp	79.01 °F	Mean Depth	1.080
Disch. Equation	Mid-Section	Mean Velocity	0.2117
		Total Discharge	**2.2868**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Aug 23 15:24:03 CDT 2017	0.000	11.910		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:25	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:26	1.50	0.6	0.800	0.6	0.320	0.0984	1.00	0.0984	0.800	0.0787	3.4
2	15:28	2.00	0.6	1.000	0.6	0.400	0.2854	1.00	0.2854	0.500	0.1427	6.2
3	15:29	2.50	0.6	1.200	0.6	0.480	0.2995	1.00	0.2995	0.600	0.1797	7.9
4	15:30	3.00	0.6	1.400	0.6	0.560	0.2940	1.00	0.2940	0.700	0.2058	9.0
5	15:31	3.50	0.6	1.700	0.6	0.680	0.3376	1.00	0.3376	0.850	0.2870	12.5
6	*15:32*	*4.00*	*0.6*	*1.800*	*0.6*	*0.720*	*0.3412*	*1.00*	*0.3412*	*0.900*	*0.3071*	*13.4*
7	*15:33*	*4.50*	*0.6*	*1.800*	*0.6*	*0.720*	*0.3376*	*1.00*	*0.3376*	*0.900*	*0.3038*	*13.3*
8	*15:34*	*5.00*	*0.6*	*1.700*	*0.6*	*0.680*	*0.2303*	*1.00*	*0.2303*	*0.850*	*0.1958*	*8.6*
9	15:36	5.50	0.6	1.400	0.6	0.560	0.1503	1.00	0.1503	0.700	0.1052	4.6
10	15:37	6.00	0.6	1.300	0.6	0.520	0.2159	1.00	0.2159	0.650	0.1403	6.1
11	15:38	6.50	0.6	1.300	0.6	0.520	0.2723	1.00	0.2723	0.650	0.1770	7.7
12	15:39	7.00	0.6	1.200	0.6	0.480	0.1827	1.00	0.1827	0.600	0.1097	4.8
13	15:40	7.50	0.6	1.100	0.6	0.440	0.1286	1.00	0.1286	0.550	0.0707	3.1
14	*15:41*	*8.00*	*0.6*	*1.000*	*0.6*	*0.400*	*-0.0030*	*1.00*	*-0.0030*	*0.750*	*-0.0022*	*-0.1*
15	15:42	9.00	0.6	0.800	0.6	0.320	-0.0180	1.00	-0.0180	0.800	-0.0144	-0.6
16	15:42	10.00	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 8 Discharge Summary TE-1 8/23/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	TG0823.WAD
Start Date and Time	2017/08/23 16:51:59

Site Details

Site Name	TG
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.7%
Velocity	0.5%	3.4%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.7%	-
Overall	**2.5%**	**3.6%**

Summary

Averaging Int.	40	# Stations	31
Start Edge	LEW	Total Width	18.000
Mean SNR	38.8 dB	Total Area	18.025
Mean Temp	79.28 °F	Mean Depth	1.001
Disch. Equation	Mid-Section	Mean Velocity	0.5391
		Total Discharge	**9.7168**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Aug 23 16:50:43 CDT 2017	0.000	9.690		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	16:51	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	16:51	1.00	0.6	1.100	0.6	0.440	0.6453	1.00	0.6453	0.825	0.5324	5.5
2	16:53	1.50	0.6	1.200	0.6	0.480	0.6102	1.00	0.6102	0.600	0.3662	3.8
3	16:53	2.00	0.6	1.200	0.6	0.480	0.6627	1.00	0.6627	0.600	0.3977	4.1
4	16:54	2.50	0.6	1.300	0.6	0.520	0.7290	1.00	0.7290	0.650	0.4738	4.9
5	16:56	3.00	0.6	1.400	0.6	0.560	0.8071	1.00	0.8071	0.700	0.5649	5.8
6	16:56	3.50	0.6	1.400	0.6	0.560	0.7566	1.00	0.7566	0.700	0.5296	5.5
7	16:57	4.00	0.6	1.400	0.6	0.560	0.6991	1.00	0.6991	0.700	0.4894	5.0
8	16:58	4.50	0.6	1.400	0.6	0.560	0.7277	1.00	0.7277	0.700	0.5094	5.2
9	17:00	5.00	0.6	1.400	0.6	0.560	0.7602	1.00	0.7602	0.700	0.5321	5.5
10	17:00	5.50	0.6	1.400	0.6	0.560	0.7234	1.00	0.7234	0.700	0.5064	5.2
11	17:02	6.00	0.6	1.300	0.6	0.520	0.7405	1.00	0.7405	0.650	0.4813	5.0
12	17:02	6.50	0.6	1.300	0.6	0.520	0.7178	1.00	0.7178	0.650	0.4666	4.8
13	17:04	7.00	0.6	1.200	0.6	0.480	0.7349	1.00	0.7349	0.600	0.4410	4.5
14	17:04	7.50	0.6	1.200	0.6	0.480	0.7165	1.00	0.7165	0.600	0.4300	4.4
15	17:05	8.00	0.6	1.200	0.6	0.480	0.7320	1.00	0.7320	0.600	0.4392	4.5
16	17:06	8.50	0.6	1.000	0.6	0.400	0.7674	1.00	0.7674	0.500	0.3837	3.9
17	17:07	9.00	0.6	1.000	0.6	0.400	0.7080	1.00	0.7080	0.500	0.3540	3.6
18	*17:08*	*9.50*	*0.6*	*1.100*	*0.6*	*0.440*	*0.1762*	*1.00*	*0.1762*	*0.550*	*0.0969*	*1.0*
19	17:09	10.00	0.6	1.100	0.6	0.440	0.6161	1.00	0.6161	0.550	0.3389	3.5
20	17:10	10.50	0.6	1.000	0.6	0.400	0.5617	1.00	0.5617	0.500	0.2808	2.9
21	*17:11*	*11.00*	*0.6*	*1.000*	*0.6*	*0.400*	*0.4826*	*1.00*	*0.4826*	*0.500*	*0.2413*	*2.5*
22	17:12	11.50	0.6	1.000	0.6	0.400	0.4639	1.00	0.4639	0.500	0.2320	2.4
23	17:13	12.00	0.6	0.900	0.6	0.360	0.4226	1.00	0.4226	0.450	0.1901	2.0
24	17:14	12.50	0.6	0.900	0.6	0.360	0.3796	1.00	0.3796	0.450	0.1708	1.8
25	17:14	13.00	0.6	0.900	0.6	0.360	0.3261	1.00	0.3261	0.450	0.1467	1.5
26	17:15	13.50	0.6	0.800	0.6	0.320	0.2011	1.00	0.2011	0.400	0.0804	0.8
27	17:16	14.00	0.6	0.800	0.6	0.320	0.1266	1.00	0.1266	0.600	0.0760	0.8
28	17:17	15.00	0.6	0.800	0.6	0.320	0.0190	1.00	0.0190	1.200	0.0228	0.2
29	*17:18*	*17.00*	*0.6*	*0.600*	*0.6*	*0.240*	*-0.0640*	*1.00*	*-0.0640*	*0.900*	*-0.0576*	*-0.6*
30	17:18	18.00	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 9 Discharge Summary TG-1 8/23/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	UDB0823.WAD
Start Date and Time	2017/08/23 08:31:02

Site Details

Site Name	UDB
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.8%
Velocity	0.8%	1.6%
Width	0.1%	0.1%
Method	1.5%	-
# Stations	1.8%	-
Overall	**2.7%**	**2.6%**

Summary

Averaging Int.	40	# Stations	28
Start Edge	LEW	Total Width	14.000
Mean SNR	47.2 dB	Total Area	17.225
Mean Temp	76.10 °F	Mean Depth	1.230
Disch. Equation	Mid-Section	Mean Velocity	1.2727
		Total Discharge	**21.9217**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Aug 23 08:29:49 CDT 2017	0.000	18.340		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:31	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:31*	*1.00*	*0.6*	*1.300*	*0.6*	*0.520*	*0.5879*	*1.00*	*0.5879*	*0.975*	*0.5732*	*2.6*
2	08:32	1.50	0.6	1.400	0.6	0.560	0.9429	1.00	0.9429	0.700	0.6600	3.0
3	08:33	2.00	0.6	1.600	0.6	0.640	0.9098	1.00	0.9098	0.800	0.7279	3.3
4	08:34	2.50	0.6	1.700	0.6	0.680	0.7441	1.00	0.7441	0.850	0.6325	2.9
5	*08:35*	*3.00*	*0.6*	*1.700*	*0.6*	*0.680*	*1.1263*	*1.00*	*1.1263*	*0.850*	*0.9574*	*4.4*
6	08:36	3.50	0.6	1.700	0.6	0.680	1.4114	1.00	1.4114	0.850	1.1998	5.5
7	08:37	4.00	0.6	1.600	0.6	0.640	1.5092	1.00	1.5092	0.800	1.2074	5.5
8	08:38	4.50	0.6	1.500	0.6	0.600	1.3770	1.00	1.3770	0.750	1.0327	4.7
9	08:39	5.00	0.6	1.600	0.6	0.640	1.2507	1.00	1.2507	0.800	1.0006	4.6
10	08:40	5.50	0.6	1.600	0.6	0.640	1.3173	1.00	1.3173	0.800	1.0538	4.8
11	08:41	6.00	0.6	1.200	0.6	0.480	1.4229	1.00	1.4229	0.600	0.8538	3.9
12	08:43	6.50	0.6	1.400	0.6	0.560	1.3737	1.00	1.3737	0.700	0.9615	4.4
13	08:44	7.00	0.6	1.000	0.6	0.400	1.6578	1.00	1.6578	0.500	0.8289	3.8
14	08:45	7.50	0.6	1.200	0.6	0.480	1.6716	1.00	1.6716	0.600	1.0031	4.6
15	08:46	8.00	0.6	1.100	0.6	0.440	1.8963	1.00	1.8963	0.550	1.0430	4.8
16	08:47	8.50	0.6	1.400	0.6	0.560	1.7480	1.00	1.7480	0.700	1.2236	5.6
17	08:47	9.00	0.6	1.400	0.6	0.560	1.4409	1.00	1.4409	0.700	1.0086	4.6
18	08:48	9.50	0.6	1.400	0.6	0.560	1.1460	1.00	1.1460	0.700	0.8022	3.7
19	08:49	10.00	0.6	1.400	0.6	0.560	1.1900	1.00	1.1900	0.700	0.8329	3.8
20	08:50	10.50	0.6	1.200	0.6	0.480	1.4436	1.00	1.4436	0.600	0.8662	4.0
21	08:51	11.00	0.6	1.200	0.6	0.480	1.4377	1.00	1.4377	0.600	0.8627	3.9
22	08:52	11.50	0.6	0.900	0.6	0.360	1.4373	1.00	1.4373	0.450	0.6468	3.0
23	08:53	12.00	0.6	0.900	0.6	0.360	1.3727	1.00	1.3727	0.450	0.6177	2.8
24	08:54	12.50	0.6	0.800	0.6	0.320	1.1047	1.00	1.1047	0.400	0.4418	2.0
25	*08:55*	*13.00*	*0.6*	*0.800*	*0.6*	*0.320*	*1.2008*	*1.00*	*1.2008*	*0.400*	*0.4802*	*2.2*
26	08:56	13.50	0.6	0.800	0.6	0.320	1.0085	1.00	1.0085	0.400	0.4033	1.8
27	08:56	14.00	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 10 Discharge Summary UDB-1 8/23/17

Discharge Measurement Summary

Date Generated: Tue Sep 5 2017

File Information

File Name	WC0823.WAD
Start Date and Time	2017/08/23 13:56:30

Site Details

Site Name	WC
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	1.6%
Velocity	1.1%	6.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.1%	-
Overall	**3.1%**	**6.5%**

Summary

Averaging Int.	40	# Stations	24
Start Edge	LEW	Total Width	13.000
Mean SNR	37.2 dB	Total Area	5.400
Mean Temp	77.01 °F	Mean Depth	0.415
Disch. Equation	Mid-Section	Mean Velocity	0.6759
		Total Discharge	**3.6494**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Aug 23 13:55:36 CDT 2017	0.000	8.895		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:56	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:56	1.00	0.6	0.600	0.6	0.240	0.1936	1.00	0.1936	0.450	0.0871	2.4
2	13:57	1.50	0.6	0.600	0.6	0.240	0.2779	1.00	0.2779	0.300	0.0834	2.3
3	13:58	2.00	0.6	0.600	0.6	0.240	0.5413	1.00	0.5413	0.300	0.1624	4.5
4	13:59	2.50	0.6	0.700	0.6	0.280	0.6332	1.00	0.6332	0.350	0.2217	6.1
5	14:00	3.00	0.6	0.600	0.6	0.240	0.7854	1.00	0.7854	0.300	0.2357	6.5
6	*14:01*	*3.50*	*0.6*	*0.600*	*0.6*	*0.240*	*0.5810*	*1.00*	*0.5810*	*0.300*	*0.1743*	*4.8*
7	14:02	4.00	0.6	0.600	0.6	0.240	0.8885	1.00	0.8885	0.300	0.2666	7.3
8	14:03	4.50	0.6	0.500	0.6	0.200	0.8491	1.00	0.8491	0.250	0.2123	5.8
9	14:04	5.00	0.6	0.500	0.6	0.200	1.1119	1.00	1.1119	0.250	0.2780	7.6
10	14:05	5.50	0.6	0.500	0.6	0.200	0.8553	1.00	0.8553	0.250	0.2138	5.9
11	14:06	6.00	0.6	0.500	0.6	0.200	0.9692	1.00	0.9692	0.250	0.2423	6.6
12	14:08	6.50	0.6	0.500	0.6	0.200	0.9669	1.00	0.9669	0.250	0.2417	6.6
13	14:09	7.00	0.6	0.400	0.6	0.160	0.9537	1.00	0.9537	0.200	0.1907	5.2
14	14:10	7.50	0.6	0.400	0.6	0.160	0.8858	1.00	0.8858	0.200	0.1771	4.9
15	14:11	8.00	0.6	0.400	0.6	0.160	0.5082	1.00	0.5082	0.200	0.1016	2.8
16	14:12	8.50	0.6	0.400	0.6	0.160	1.0545	1.00	1.0545	0.200	0.2109	5.8
17	14:13	9.00	0.6	0.300	0.6	0.120	0.9190	1.00	0.9190	0.150	0.1378	3.8
18	*14:14*	*9.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.6050*	*1.00*	*0.6050*	*0.150*	*0.0907*	*2.5*
19	14:16	10.00	0.6	0.300	0.6	0.120	0.7303	1.00	0.7303	0.150	0.1095	3.0
20	14:17	10.50	0.6	0.300	0.6	0.120	0.5630	1.00	0.5630	0.150	0.0844	2.3
21	*14:18*	*11.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.8520*	*1.00*	*0.8520*	*0.150*	*0.1277*	*3.5*
22	*14:19*	*11.50*	*0.6*	*0.300*	*0.6*	*0.120*	*-0.0010*	*1.00*	*-0.0010*	*0.300*	*-0.0003*	*0.0*
23	14:19	13.00	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 11 Discharge Summary WC-1 8/23/17

Discharge Measurement Summary

Date Generated: Thu Sep 14 2017

File Information

File Name	URC0823.WAD
Start Date and Time	2017/08/23 12:41:18

Site Details

Site Name	URC
Operator(s)	JW

System Information

Sensor Type	FlowTracker
Serial #	P4709
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(English Units)
Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.3%
Velocity	0.7%	3.4%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	2.4%	-
Overall	**3.3%**	**3.7%**

Summary

Averaging Int.	40	# Stations	21
Start Edge	LEW	Total Width	12.000
Mean SNR	49.8 dB	Total Area	15.549
Mean Temp	77.38 °F	Mean Depth	1.296
Disch. Equation	Mid-Section	Mean Velocity	1.1192
		Total Discharge	**17.4023**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Wed Aug 23 12:38:17 CDT 2017	0.000	14.115		

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:41	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:41*	*2.00*	*0.6*	*1.000*	*0.6*	*0.400*	*1.1808*	*1.00*	*1.1808*	*1.250*	*1.4760*	*8.5*
2	*12:42*	*2.50*	*0.6*	*1.300*	*0.6*	*0.520*	*1.0253*	*1.00*	*1.0253*	*0.650*	*0.6664*	*3.8*
3	*12:44*	*3.00*	*0.6*	*1.800*	*0.6*	*0.720*	*0.7956*	*1.00*	*0.7956*	*0.900*	*0.7160*	*4.1*
4	*12:45*	*3.50*	*0.6*	*1.900*	*0.6*	*0.760*	*0.7451*	*1.00*	*0.7451*	*0.950*	*0.7078*	*4.1*
5	*12:46*	*4.00*	*0.6*	*1.800*	*0.6*	*0.720*	*0.9236*	*1.00*	*0.9236*	*0.900*	*0.8311*	*4.8*
6	*12:47*	*4.50*	*0.6*	*1.800*	*0.6*	*0.720*	*0.8097*	*1.00*	*0.8097*	*0.900*	*0.7287*	*4.2*
7	*12:48*	*5.00*	*0.6*	*1.800*	*0.6*	*0.720*	*0.9603*	*1.00*	*0.9603*	*0.900*	*0.8642*	*5.0*
8	*12:49*	*5.50*	*0.6*	*1.800*	*0.6*	*0.720*	*1.0659*	*1.00*	*1.0659*	*0.900*	*0.9593*	*5.5*
9	*12:50*	*6.00*	*0.6*	*1.800*	*0.6*	*0.720*	*1.3757*	*1.00*	*1.3757*	*0.900*	*1.2380*	*7.1*
10	*12:51*	*6.50*	*0.6*	*1.900*	*0.6*	*0.760*	*1.6831*	*1.00*	*1.6831*	*0.950*	*1.5989*	*9.2*
11	*12:52*	*7.00*	*0.6*	*1.900*	*0.6*	*0.760*	*1.3428*	*1.00*	*1.3428*	*0.950*	*1.2757*	*7.3*
12	*12:53*	*7.50*	*0.6*	*1.800*	*0.6*	*0.720*	*1.4839*	*1.00*	*1.4839*	*0.900*	*1.3354*	*7.7*
13	*12:54*	*8.00*	*0.6*	*1.500*	*0.6*	*0.600*	*1.5886*	*1.00*	*1.5886*	*0.750*	*1.1914*	*6.8*
14	*12:56*	*8.50*	*0.6*	*1.600*	*0.6*	*0.640*	*1.1896*	*1.00*	*1.1896*	*0.800*	*0.9517*	*5.5*
15	*12:57*	*9.00*	*0.6*	*1.400*	*0.6*	*0.560*	*0.7385*	*1.00*	*0.7385*	*0.700*	*0.5169*	*3.0*
16	*12:58*	*9.50*	*0.6*	*1.300*	*0.6*	*0.520*	*0.9281*	*1.00*	*0.9281*	*0.650*	*0.6032*	*3.5*
17	12:59	10.00	0.6	1.100	0.6	0.440	1.4163	1.00	1.4163	0.550	0.7790	4.5
18	13:00	10.50	0.6	0.900	0.6	0.360	0.9839	1.00	0.9839	0.450	0.4427	2.5
19	*13:02*	*11.00*	*0.6*	*0.800*	*0.6*	*0.320*	*0.8665*	*1.00*	*0.8665*	*0.600*	*0.5198*	*3.0*
20	13:02	12.00	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 12 Discharge Summary URC-2 8/23/17

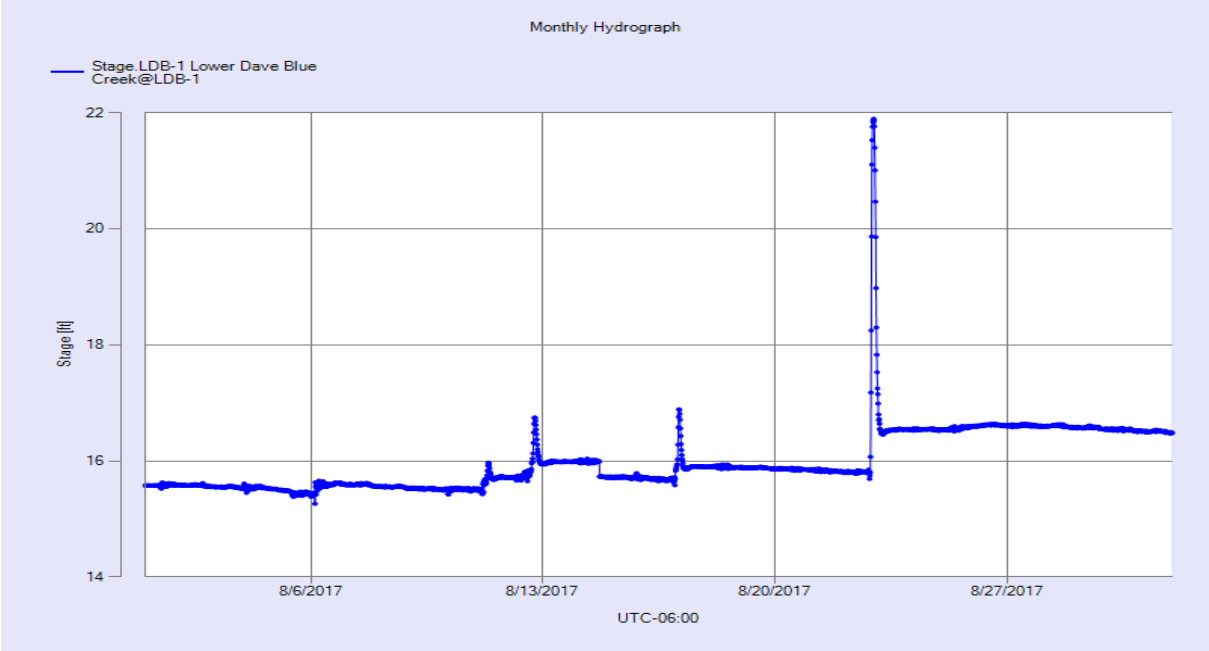

Figure 13 Monthly Hydrograph LDB-1

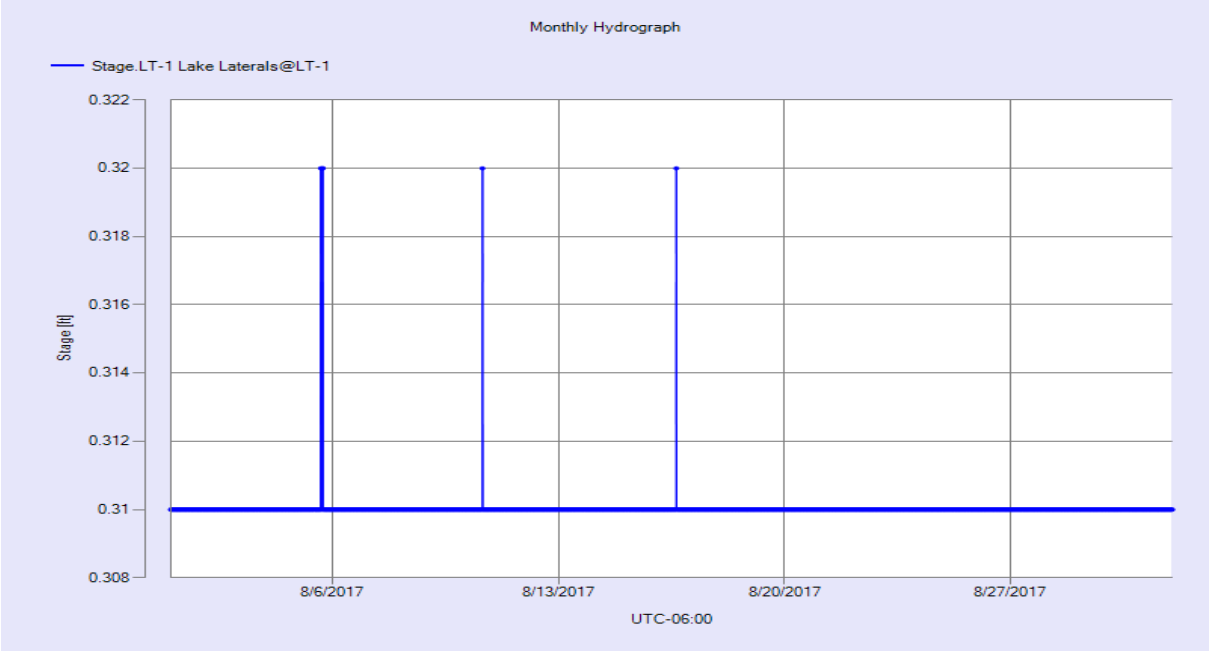

Figure 14 Monthly Hydrograph LT-1

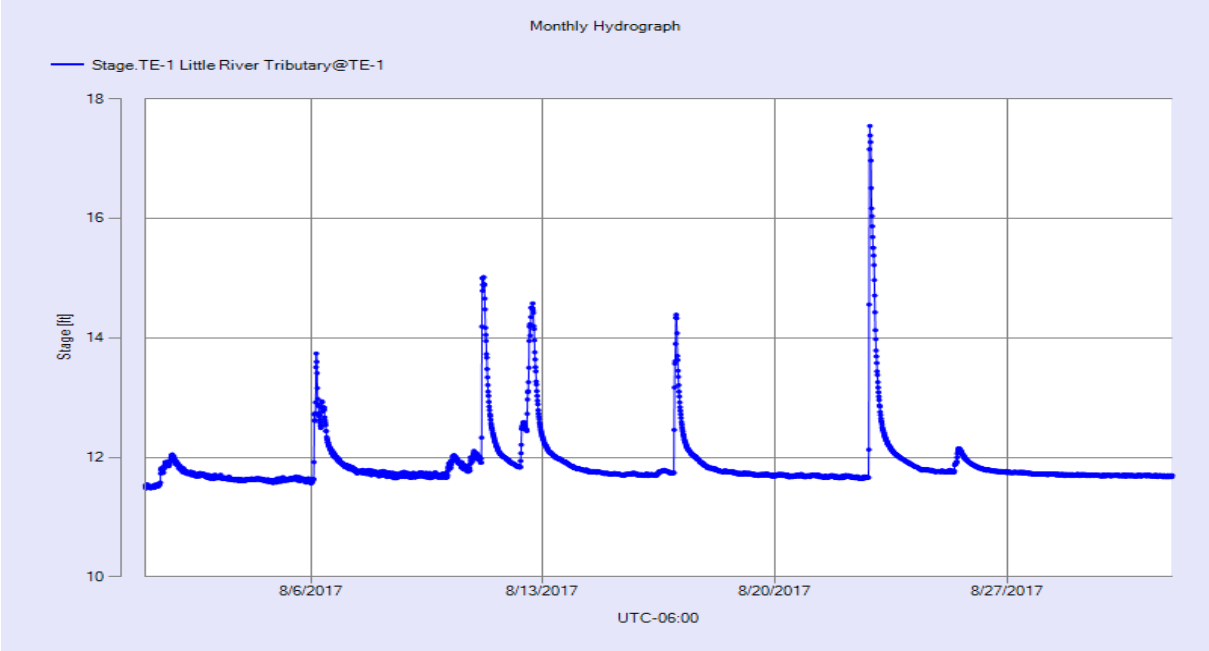

Figure 15 Monthly Hydrograph TE-1

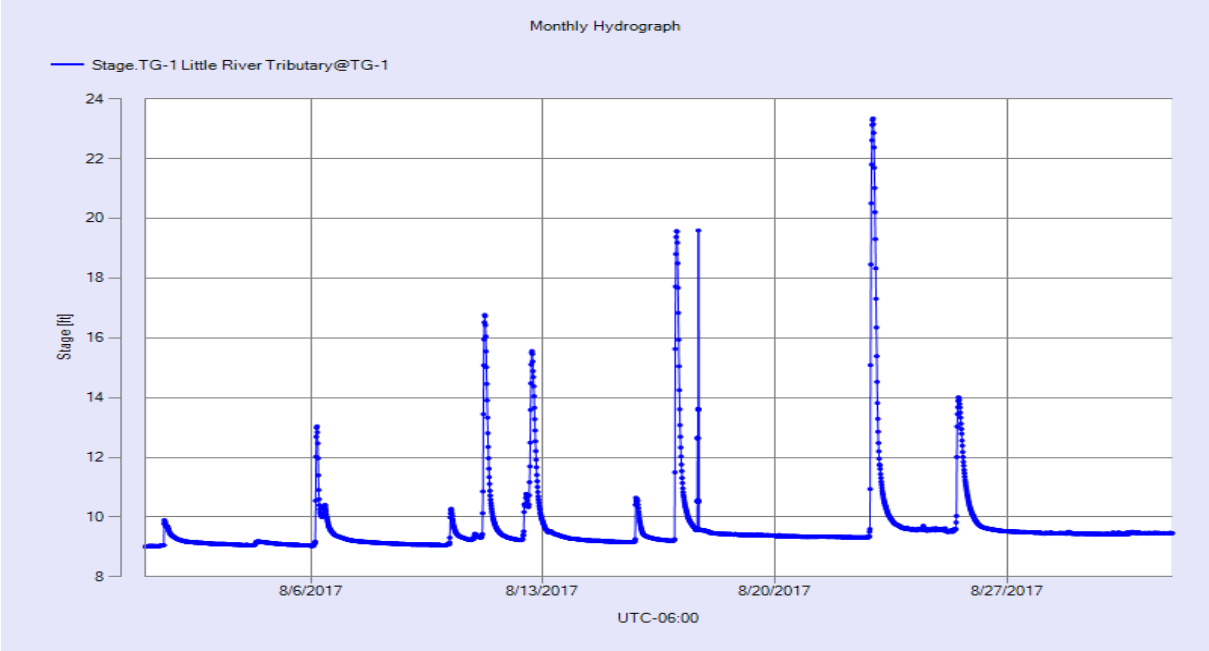

Figure 16 Monthly Hydrograph TG-1

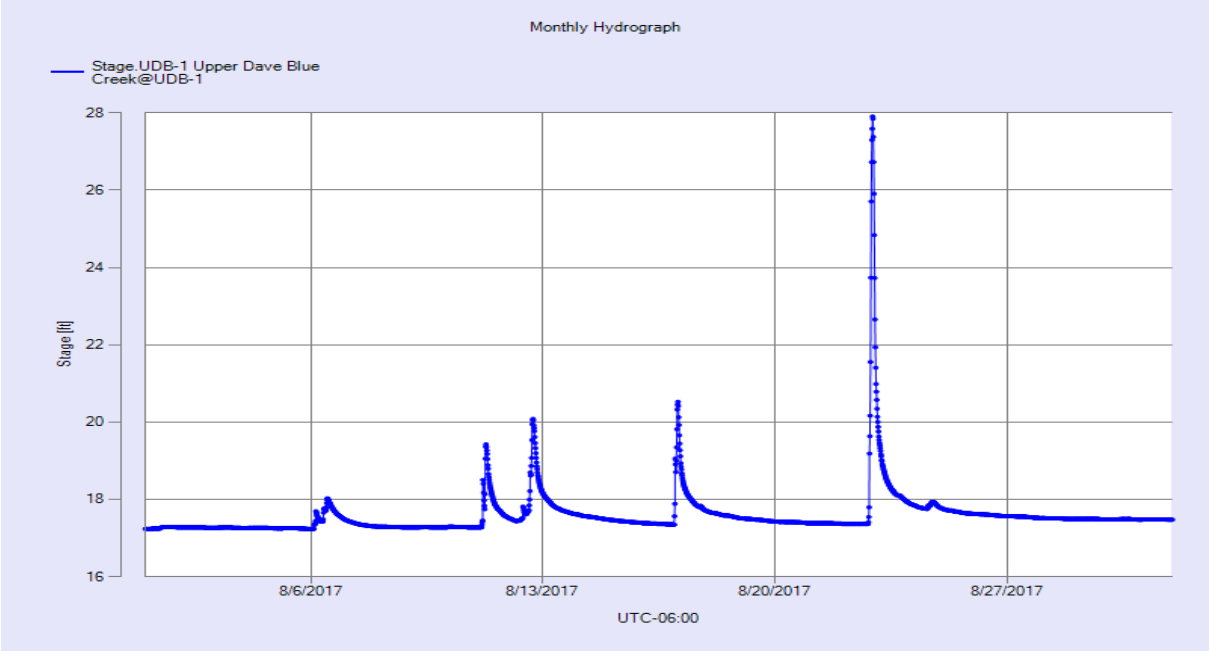

Figure 17 Monthly Hydrograph UDB-1

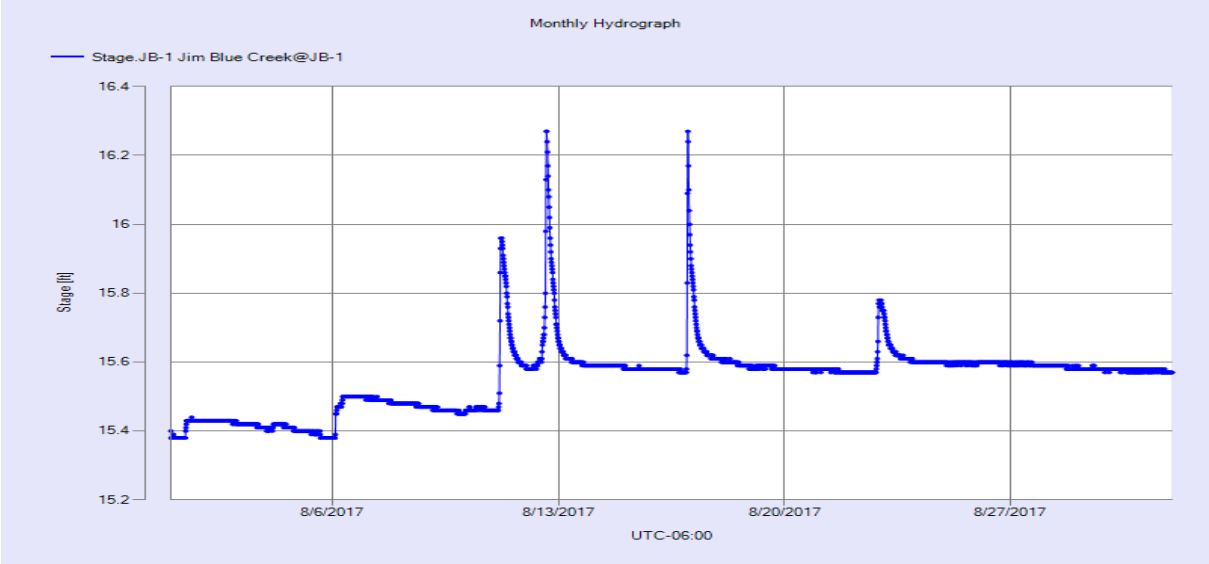

Figure 18 Monthly Hydrograph JB-1

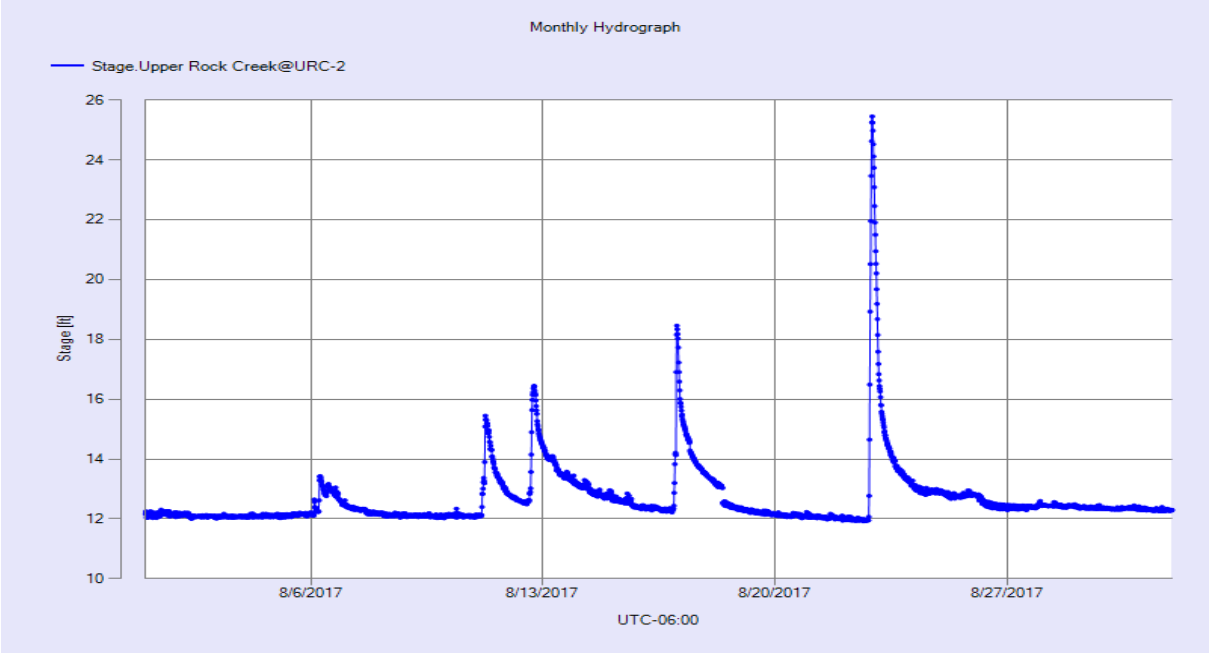

Figure 19 Monthly Hydrograph URC-2

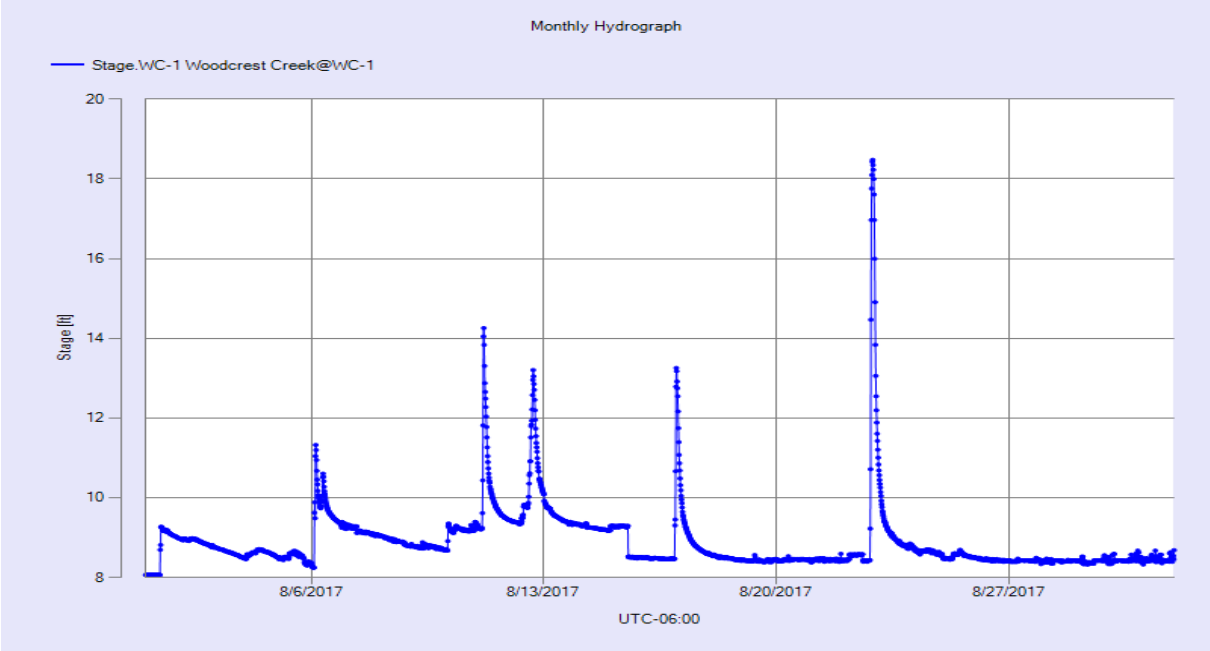

Figure 20 Monthly Hydrograph WC-1

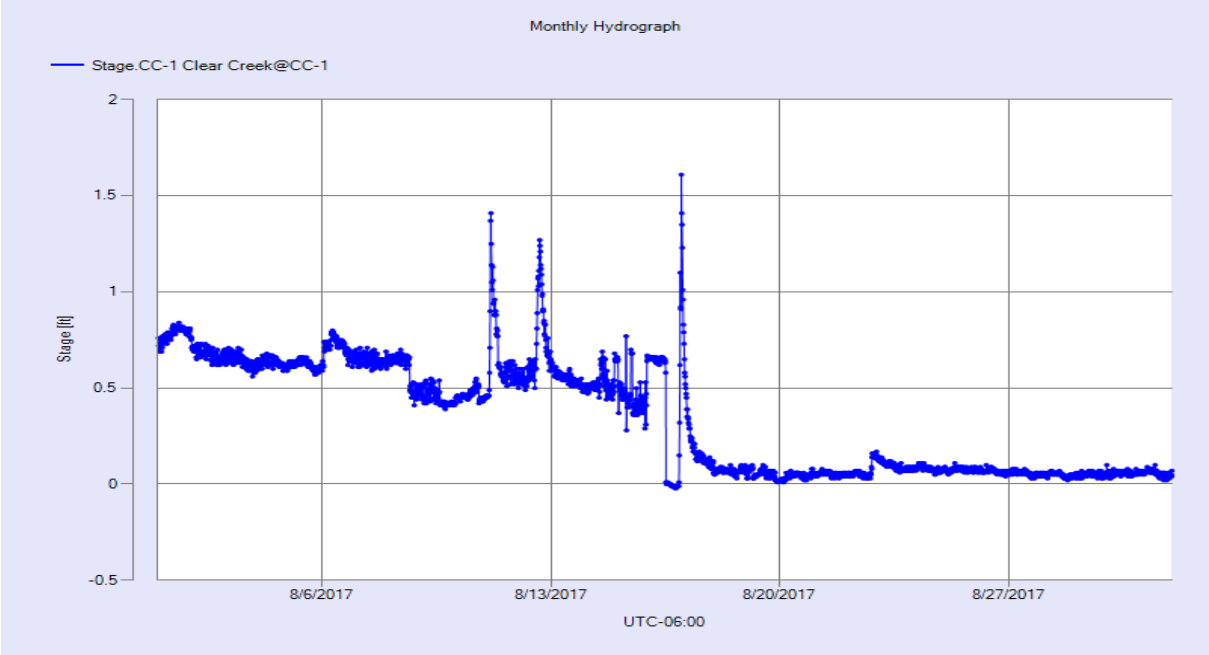

Figure 21 Monthly Hydrograph CC-1

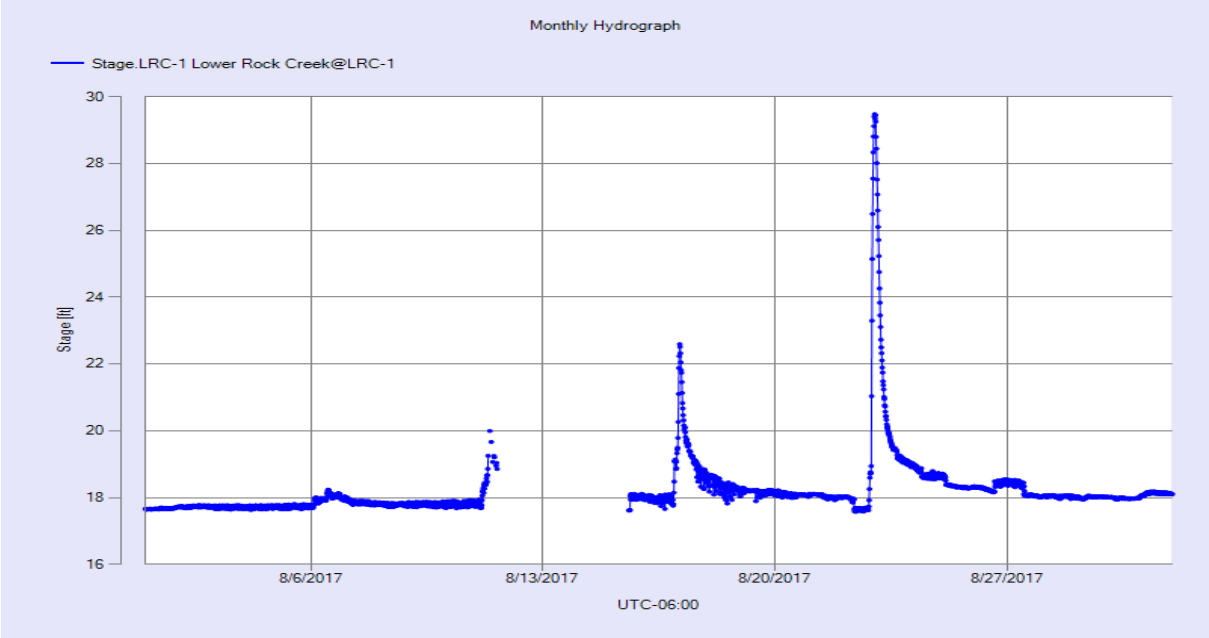

Figure 22 Monthly Hydrograph LRC-1

MESONET CLIMATOLOGICAL DATA SUMMARY — August 2017 — 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) MAX	MIN	AVG	DEWPT	DEG DAYS HDD	CDD	HUMIDITY (%) MAX	MIN	AVG	RAIN (in)	PRESSURE (in) STN	MSL	WIND SPEED (mph) DIR	AVG	MAX	SOLAR (MJ/m^2)	4" SOIL TEMPERATURES SOD	BARE	MAX	MIN
1	76	67	71.9	67.2	0	6	98	65	86	0.36	28.85	30.10	NE	4.2	17.5	6.54	80.2	81.7	85	78
2	86	69	76.5	67.6	0	13	98	52	76	0.00	28.83	30.08	E	4.1	15.7	19.66	80.2	80.8	87	76
3	92*	67*	79.8*	65.6*	0*	15*	98*	35*	66*	0.03*	28.81*	30.06*	SSE*	4.5*	20.5*	NA	81.1*	83.9*	93*	76*
4	86	69	76.8	66.3	0	12	96	50	72	0.02	28.82	30.07	E	7.5	18.0	24.34	81.6	85.1	92	79
5	97	71	84.3	67.4	0	19	92	35	60	0.00	28.65	29.89	S	11.5	30.0	25.81	81.9	86.1	94	79
6	86	71	78.0	70.6	0	14	98	61	79	1.22	28.61	29.85	NE	8.6	37.6	13.85	80.7	82.5	87	79
7	84*	69*	75.3*	67.0*	0*	11*	96*	55*	77*	0.00*	28.78*	30.02*	NE *	8.8*	22.4*	NA	79.9*	80.1*	86*	76*
8	86	68	76.0	66.4	0	12	95	49	74	0.00	28.85	30.10	NNE	6.4	15.3	17.23	79.3	80.5	87	75
9	88	66	78.2	66.9	0	12	98	48	70	0.00	28.82	30.08	SSE	5.7	20.5	24.22	79.9	83.4	92	75
10	91	72	79.2	71.4	0	16	97	54	79	0.36	28.81	30.06	SE	6.9	19.1	21.64	80.9	83.4	90	78
11	88	68	76.7	69.9	0	13	100	56	81	1.60	28.80	30.05	N	7.0	35.4	19.51	79.5	80.1	85	77
12	75	69	71.6	69.9	0	7	99	86	95	1.63	28.78	30.03	ENE	6.0	18.6	3.17	77.3	76.0	78	74
13	86	70	75.9	70.7	0	13	99	61	85	0.01	28.68	29.92	NNE	4.3	13.2	15.79	78.0	77.7	84	73
14	87	72	77.7	70.7	0	14	98	57	80	0.00	28.60	29.84	SE	5.0	20.8	20.06	80.3	79.8	86	76
15	91	71	78.7	73.1	0	16	99	60	84	0.00	28.59	29.83	SE	7.1	22.6	17.57	80.6	79.5	84	75
16	90	71	81.2	73.6	0	15	98	61	79	0.87	28.62	29.86	S	10.5	57.0	20.71	80.7	79.7	85	76
17	90	68	78.6	69.3	0	14	100	43	76	0.00	28.75	30.00	SE	3.9	14.0	24.99	80.8	80.9	89	74
18	92	73	81.8	71.9	0	17	99	49	74	0.00	28.74	29.99	S	6.7	18.8	24.19	81.8	81.0	86	76
19	96	74	84.4	72.5	0	20	96	43	70	0.00	28.72	29.97	S	6.0	15.5	25.13	82.7	82.0	88	76
20	92	75	83.5	71.4	0	19	89	47	68	0.00	28.74	29.99	S	7.3	19.2	19.89	82.5	81.1	85	77
21	91	75	83.0	71.8	0	18	90	51	70	0.00	28.80	30.05	SSE	8.7	23.7	21.01	82.2	82.9	90	77
22	93	70	80.6	70.9	0	16	99	50	75	2.06	28.79	30.04	S	7.0	45.8	20.55	81.7	84.7	93	78
23	84	69	75.1	68.3	0	11	99	55	81	0.00	28.80	30.05	NE	5.8	14.2	15.24	79.7	80.7	85	78
24	85	64	74.1	66.8	0	10	98	53	79	0.00	28.75	29.99	ESE	4.9	14.3	16.26	78.9	77.3	83	72
25	79	68	72.4	68.5	0	9	95	71	88	0.27	28.79	30.04	ESE	6.5	19.7	8.58	78.1	76.0	79	74
26	84	68	75.2	67.9	0	11	97	58	79	0.00	28.84	30.09	E	4.7	13.1	15.19	78.0	76.4	81	73
27	87	65	76.9	67.6	0	11	99	51	75	0.00	28.80	30.05	ENE	3.8	16.5	24.37	79.0	77.9	84	71
28	85	66	75.4	64.2	0	10	97	38	71	0.00	28.78	30.03	NNE	8.1	23.3	23.74	79.1	76.9	81	73
29	82	61	71.7	59.6	0	7	90	46	68	0.00	28.78	30.03	NNE	7.0	20.1	23.84	77.5	74.8	81	69
30	82	60	71.6	60.9	0	6	93	49	71	0.00	28.77	30.02	NNE	7.8	20.6	24.05	76.9	76.3	85	69
31	83	63	73.2	61.8	0	8	93	46	70	0.00	28.78	30.03	NNE	7.5	24.0	22.83	77.1	78.1	86	71
	87*	69*	77.3*	68.3*	<- Monthly Averages ->						28.76*	30.01*	NNE*	6.6*	57.0*	19.31*	79.9*	80.2*	86*	75*

Temperature - Highest: 97*
Lowest: 60*

Degree Days - Total HDD: 0*
Total CDD: 396*

Rainfall: Monthly Total: 8.43* in.
Greatest 24 Hr: 2.06* in.

Humidity - Highest: 100*
Lowest: 35*

Number of Days With:
Tmax ≥ 90: 11* — Rainfall ≥ 0.01 inch: 11*
Tmax ≤ 32: 0* — Rainfall ≥ 0.10 inch: 8*
Tmin ≤ 32: 0* — Avg Wind Speed ≥ 10 mph: 2*
Tmin ≤ 0: 0* — Max Wind Speed ≥ 30 mph: 5*

* Denotes incomplete record

Figure 23 August Mesonet Data