



Robin L. Simmons
Regional Land Manager

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May 20, 2019

MAY 23 2019

Oklahoma Water Resources Board

Oklahoma Water Resources Board
3800 N. Classen Boulevard
Oklahoma City, OK 73118
Attn: Mr. Matt Cogburn

Re: Martin Marietta/TXI Mill Creek Limestone Quarry Monitoring Report Q1 2019

Dear Mr. Cogburn:

Attached please find the Q1 2019 Quarterly Monitoring Report for Martin Marietta/TXI's Mill Creek Limestone quarry. The report is summarized on the table labeled Appendix C. Supporting data is also included.

Please call if you have any questions or comments.

Sincerely,

A handwritten signature in cursive script that reads "Robin L. Simmons".

Robin L. Simmons
Regional Land Manager

North Texas/Oklahoma District
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ATTACHMENT 1 (Appendix C)
 Martin Marietta (TXI) Mill Creek 2019

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Appendix C . Consumptive use of Pitwater

Q1 2019

PIT GROUNDWATER VOLUME		
1	Total volume pumped from producing mine pit(s) (AC-FT)	586.68
2	Volume of precipitation that falls onto the surface of producing Mine Pits (AC-FT)	240.70
3	Portion of total precipitation that flows over the land surface that drains into the mine pit water (AC-FT)	114.16
4	(WATER HELD IN PIT FROM PREVIOUS MONTHS) other non pit waters pumped from the producing mining pit (AC-FT)	
5	add lines 2 through 4	354.86
6	Pit Groundwater Volume (AC-FT) (line 1 minus Line 5)	231.82
DEFINED ELEMENTS OF CONSUMPTIVE USE		
7	Vol. of pit groundwater that is driven off (by drying) the mined material transp off of the mine site (AC-FT)	0.00
8	Vol. of pit groundwater that is carried away with the the mined material transp. off of the mine site (AC-FT)	2.93
9	Vol. of pit groundwater that evaporates from producing mine pits, process ponds and lined ponds (excluding structures used for augmentation) (AC-FT)	8.60
10	Volume of pit groundwater that is used for other beneficial uses off of the mine site (AC-FT) (includes on-site dust control)	6.00
11	DEFINED ELEMENTS OF CONSUMPTIVE USE of Pit groundwater (AC-FT) (add lines 7 through 10)	17.53
PIT GROUNDWATER BALANCE		
12	Lines 6 minus 11	214.30
13	Groundwater Augmentation Volume of pit water returned to GW Basin or subbasin. (Troy Recharge AC-FT)	761.82
14	Stream Augmentation volume of pit water discharged to a definite Stream, during flow conditions that are less than or equal to the accepted exceedance level (AC-FT)	0.00
15	PPT and Runoff Volume of Precipitation and surface runoff into a recharge pit or holding pond (AC-FT)	218.01
16	Recycled Pit Groundwater - Volume of ground water returned to the mine pit or holding basin (AC-FT)	197.20
17	Other Non-Consumptive GW Losses Including pit GW returned to the land surface from which surface runoff flows into a mine pit and other losses (AC-FT)	0
18	add lines 13 through 17	1177.02
19	OTHER CONSUMPTIVE USE Line 12 minus Line 18	-962.73
TOTAL REPORTED CONSUMPTIVE USE (AC-FT)		
TOTAL NET CONSUMPTIVE USE (AC-FT) Line 11 plus line 19		-945.20

RESULTS FROM RUNOFF MODELLING

2019	PPT. Inches	Quarry Monthly Totals				FW Pond Monthly Totals		Re-cycle Recharge (Troy) Monthly Totals		TXI-Mill Creek Totals	
		Sump Direct ppt	In-Quarry Runoff	Runoff from beyond Quarry	Quarry Totals	Direct ppt	Runoff	Direct ppt	Runoff	Direct ppt	Runoff
		ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
January	2.70	0.045	24.112	7.433	31.59	4.21	3.54	8.89	7.14	13.14	42.23
February	2.38	0.040	15.152	4.365	19.56	3.71	2.90	7.83	4.84	11.58	27.25
March	1.96	0.033	14.328	5.702	20.06	3.05	4.81	6.45	7.28	9.54	32.12
Q1 Subtotal		0.12	53.59	17.50	71.21	10.97	11.25	23.17	19.26	34.26	101.60

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Water Volume Movements		January	February	March
Pumped from Pit	(Ac-Ft)	200.7	179.8	206.2
Groundwater Component of Pitwater		108.4	86.5	111.9
Quarry dust suppression		2.7	2.5	6.0
Q- freshwater pond	(Ac-Ft)	198.0	177.3	200.2
To Secondary FM7	(Ac-Ft)	415.8	410.2	519.5
To sand Plant FM8	(Ac-Ft)	78.9	82.8	108.0
to loadout FM6	(Ac-Ft)	277.1	284.7	361.2
to dust control FM9	(Ac-Ft)	0.031	0.061	0.675
to Plant FM7+FM8+FM6	(Ac-Ft)	771.7	777.8	988.6
to stream Augmentation	Ac-ft	0.00	0.00	0.00
To Troy FM3	(Ac-Ft)	769.6	785.8	995.1
From Troy to Freshwater Pond FM4	+	554.2	483.3	773.2

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Quarter Summary	1st Qtr
Total Tons Shipped	1,150,000
Total Acre Feet	24.22
Average Moisture %	2.87%

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 # for any damages resulting from its use.
 #
 # Additional info: <https://help.waterdata.usgs.gov/policies/provisional-data-statement>
 #
 # File-format description: <https://help.waterdata.usgs.gov/faq/about-tab-delimited-output>
 # Automated-retrieval info: <https://help.waterdata.usgs.gov/faq/automated-retrievals>
 #
 # Contact: gs-w_support_nwisweb@usgs.gov
 # retrieved: 2019-03-29 15:24:34 EDT (nadww01)
 #

Data for the following 1 site(s) are contained in this file
 # USGS 07331200 Mill Creek near Mill Creek, OK
 # -----
 #

Data provided for site 07331200
 # TS parameter statistic Description
 # 111780 00060 00003 Discharge, cubic feet per second (Mean)
 #

Data-value qualification codes included in this output:
 # P Provisional data subject to revision.
 #

agency_cd	site_no	datetime	111780_00060_00003	111780_00060_00003_cd
5s	15s	20d	14n	10s
USGS	07331200	2019-01-01	84.2	P
USGS	07331200	2019-01-02	53.3	P
USGS	07331200	2019-01-03	198	P
USGS	07331200	2019-01-04	171	P
USGS	07331200	2019-01-05	104	P
USGS	07331200	2019-01-06	83.0	P
USGS	07331200	2019-01-07	69.3	P
USGS	07331200	2019-01-08	50.6	P
USGS	07331200	2019-01-09	39.3	P
USGS	07331200	2019-01-10	34.0	P
USGS	07331200	2019-01-11	61.1	P
USGS	07331200	2019-01-12	148	P
USGS	07331200	2019-01-13	78.6	P
USGS	07331200	2019-01-14	52.5	P
USGS	07331200	2019-01-15	44.6	P
USGS	07331200	2019-01-16	41.0	P
USGS	07331200	2019-01-17	38.5	P
USGS	07331200	2019-01-18	35.5	P
USGS	07331200	2019-01-19	42.6	P
USGS	07331200	2019-01-20	38.8	P
USGS	07331200	2019-01-21	35.8	P
USGS	07331200	2019-01-22	34.3	P
USGS	07331200	2019-01-23	31.2	P
USGS	07331200	2019-01-24	26.2	P
USGS	07331200	2019-01-25	21.9	P
USGS	07331200	2019-01-26	21.2	P
USGS	07331200	2019-01-27	18.3	P
USGS	07331200	2019-01-28	16.9	P
USGS	07331200	2019-01-29	14.8	P
USGS	07331200	2019-01-30	13.6	P
USGS	07331200	2019-01-31	12.5	P

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 # Automated-retrieval info: <https://help.waterdata.usgs.gov/faq/automated-retrievals>
 #
 # Contact: gs-w_support_nwisweb@usgs.gov
 # retrieved: 2019-03-29 15:26:06 EDT (nadww01)
 #

Data for the following 1 site(s) are contained in this file
 # USGS 07331200 Mill Creek near Mill Creek, OK
 # -----
 #

Data provided for site 07331200

TS	parameter	statistic	Description
111780	00060	00003	Discharge, cubic feet per second (Mean)

Data-value qualification codes included in this output:

P Provisional data subject to revision.

agency_cd	site_no	datetime	111780_00060_00003	111780_00060_00003_cd
5s	15s	20d	14n	10s
USGS	07331200	2019-02-01	12.5	P
USGS	07331200	2019-02-02	12.1	P
USGS	07331200	2019-02-03	11.8	P
USGS	07331200	2019-02-04	11.3	P
USGS	07331200	2019-02-05	10.3	P
USGS	07331200	2019-02-06	30.0	P
USGS	07331200	2019-02-07	148	P
USGS	07331200	2019-02-08	59.7	P
USGS	07331200	2019-02-09	36.3	P
USGS	07331200	2019-02-10	28.7	P
USGS	07331200	2019-02-11	47.1	P
USGS	07331200	2019-02-12	46.9	P
USGS	07331200	2019-02-13	27.8	P
USGS	07331200	2019-02-14	20.4	P
USGS	07331200	2019-02-15	16.1	P
USGS	07331200	2019-02-16	13.7	P
USGS	07331200	2019-02-17	13.5	P
USGS	07331200	2019-02-18	12.5	P
USGS	07331200	2019-02-19	15.7	P
USGS	07331200	2019-02-20	22.1	P
USGS	07331200	2019-02-21	21.3	P
USGS	07331200	2019-02-22	20.9	P
USGS	07331200	2019-02-23	23.1	P
USGS	07331200	2019-02-24	21.1	P
USGS	07331200	2019-02-25	19.4	P
USGS	07331200	2019-02-26	20.3	P
USGS	07331200	2019-02-27	21.2	P
USGS	07331200	2019-02-28	20.1	P

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 # Automated-retrieval info: <https://help.waterdata.usgs.gov/faq/automated-retrievals>
 #
 # Contact: gs-w_support_nwisweb@usgs.gov
 # retrieved: 2019-04-01 16:53:03 EDT (nadww01)
 #

Data for the following 1 site(s) are contained in this file
 # USGS 07331200 Mill Creek near Mill Creek, OK
 # -----
 #

Data provided for site 07331200
 # TS parameter statistic Description
 # 111780 00060 00003 Discharge, cubic feet per second (Mean)
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agency_cd	site_no	datetime	111780_00060_00003	111780_00060_00003_cd
5s	15s	20d	14n	10s
USGS	07331200		2019-03-01	18.9 P
USGS	07331200		2019-03-02	14.8 P
USGS	07331200		2019-03-03	12.6 P
USGS	07331200		2019-03-04	10.3 P
USGS	07331200		2019-03-05	8.74 P
USGS	07331200		2019-03-06	7.70 P
USGS	07331200		2019-03-07	7.44 P
USGS	07331200		2019-03-08	7.66 P
USGS	07331200		2019-03-09	9.20 P
USGS	07331200		2019-03-10	9.68 P
USGS	07331200		2019-03-11	23.4 P
USGS	07331200		2019-03-12	68.9 P
USGS	07331200		2019-03-13	135 P
USGS	07331200		2019-03-14	69.4 P
USGS	07331200		2019-03-15	34.4 P
USGS	07331200		2019-03-16	24.1 P
USGS	07331200		2019-03-17	21.5 P
USGS	07331200		2019-03-18	18.7 P
USGS	07331200		2019-03-19	15.4 P
USGS	07331200		2019-03-20	14.0 P
USGS	07331200		2019-03-21	13.1 P
USGS	07331200		2019-03-22	12.7 P
USGS	07331200		2019-03-23	12.8 P
USGS	07331200		2019-03-24	13.4 P
USGS	07331200		2019-03-25	13.0 P
USGS	07331200		2019-03-26	12.2 P
USGS	07331200		2019-03-27	12.2 P
USGS	07331200		2019-03-28	12.3 P
USGS	07331200		2019-03-29	12.7 P
USGS	07331200		2019-03-30	12.3 P
USGS	07331200		2019-03-31	12.5 P

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Date	Daily Rainfall Total	Total Daily Evaporation
1/1/2019	0	0.001
1/2/2019	0	0
1/3/2019	0.99	0.99
1/4/2019	0.11	0.116
1/5/2019	0	0.006
1/6/2019	0	0.001
1/7/2019	0	0.004
1/8/2019	0	0.009
1/9/2019	0	0.005
1/10/2019	0	0.001
1/11/2019	1.3	1.303
1/12/2019	0.09	0.093
1/13/2019	0	0.001
1/14/2019	0	0.004
1/15/2019	0	0.002
1/16/2019	0	0.011
1/17/2019	0	0.007
1/18/2019	0	0.005
1/19/2019	0.13	0.131
1/20/2019	0	0.005
1/21/2019	0	0.007
1/22/2019	0.08	0.09
1/23/2019	0	0.005
1/24/2019	0	0.005
1/25/2019	0	0.003
1/26/2019	0	0.006
1/27/2019	0	0.005
1/28/2019	0	0.004
1/29/2019	0	0.006
1/30/2019	0	0.008
1/31/2019	0	0.003
2/1/2019	0.02	0.023
2/2/2019	0	0.001
2/3/2019	0	0.002
2/4/2019	0	0.007
2/5/2019	0	0.004
2/6/2019	0.67	0.44
2/7/2019	0.34	0.342
2/8/2019	0	0.009
2/9/2019	0	0.001
2/10/2019	0.15	0.151
2/11/2019	0.58	0.303
2/12/2019	0	0.006
2/13/2019	0	0.005
2/14/2019	0	0.009
2/15/2019	0	0.008

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2/16/2019	0.01	0.011
2/17/2019	0.01	0.015
2/18/2019	0	0.003
2/19/2019	0.38	0.383
2/20/2019	0.01	0.016
2/21/2019	0	0.006
2/22/2019	0.11	0.115
2/23/2019	0.06	0.065
2/24/2019	0	0.005
2/25/2019	0	0.006
2/26/2019	0	0.003
2/27/2019	0.04	0.045
2/28/2019	0	0
3/1/2019	0	0.004
3/2/2019	0	0.001
3/3/2019	0.03	0.03
3/4/2019	0	0.003
3/5/2019	0	0.012
3/6/2019	0	0.005
3/7/2019	0	0.002
3/8/2019	0	0.004
3/9/2019	0.19	0.192
3/10/2019	0.14	0.149
3/11/2019	0.4	0.402
3/12/2019	0.4	0.141
3/13/2019	0.75	0.261
3/14/2019	0	0.007
3/15/2019	0	0.008
3/16/2019	0	0.003
3/17/2019	0	0.014
3/18/2019	0	0.008
3/19/2019	0	0.011
3/20/2019	0.01	0.013
3/21/2019	0	0.009
3/22/2019	0	0.011
3/23/2019	0	0.001
3/24/2019	0	0.003
3/25/2019	0	0.007
3/26/2019	0	0.007
3/27/2019	0	0.007
3/28/2019	0	0.007
3/29/2019	0	0.003
3/30/2019	0.04	0.046
3/31/2019	0	0.007

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MESONET CLIMATOLOGICAL DATA SUMMARY
(TISH) Tishomingo
Latitude: 34-19-57

January 2019
Nearest City: 6.0 N Tishomingo
Longitude: 96-40-44

Time Zone: Midnight-Midnight CST
County: Johnston
Elevation: 879 feet

DAY	TEMPERATURE (F)				DEG DAYS		HUMIDITY (%)			RAIN		PRESSURE (in)		WIND SPEED (mph)			SOLAR	4" SOIL TEMPERATURES			
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG	(in)	STN	MSL	DIR	AVG	MAX	(MJ/m2)	SOD	BARE	MAX	MIN	
1	38	29	31.3	25.1	32	0	86	71	78	0.00	29.34	30.28	N	12.8	25.8	4.02	42.6	41.5	45	38	
2	32	28	29.4	26.7	35	0	98	78	90	0.08	29.27	30.21	N	8.2	15.6	0.82	40.0	36.3	38	36	
3	37	32	34.2	33.5	30	0	99	95	97	1.11	29.04	29.98	NNE	6.5	18.5	1.88	40.1	37.8	40	36	
4	56	33	41.5	32.9	21	0	97	33	75	0.05	29.01	29.95	WNW	7.0	20.9	12.94	41.6	42.5	50	38	
5	67	28	46.8	35.0	18	0	96	33	68	0.00	29.12	30.07	SSE	3.8	12.2	13.09	43.2	45.3	53	39	
6	66	34	52.7	44.6	15	0	97	52	75	0.00	29.03	29.97	S	10.3	31.4	10.28	45.3	47.1	53	41	
7	70	39	59.5	46.2	10	0	91	31	66	0.00	29.00	29.94	SW	9.1	24.3	13.06	51.1	54.0	60	49	
8	59	37	48.3	29.8	17	0	92	25	53	0.00	29.31	30.25	NNE	11.0	34.1	10.74	48.0	46.7	51	43	
9	55	30	42.5	22.3	22	0	82	23	48	0.00	29.53	30.49	N	5.8	17.0	13.48	45.6	43.8	51	38	
10	47	28	39.8	27.0	28	0	91	43	62	0.00	29.33	30.28	SE	5.8	15.7	2.60	43.9	40.9	43	38	
11	45	40	41.9	37.1	22	0	99	52	85	1.02	29.08	30.02	SE	7.8	18.1	0.84	44.7	42.6	43	42	
12	46	36	41.0	37.2	24	0	100	72	86	0.07	29.08	30.02	NW	12.2	28.6	2.58	44.5	43.8	45	42	
13	36	32	34.2	29.0	31	0	85	77	81	0.00	29.45	30.40	NNW	8.9	21.7	2.07	41.9	40.6	42	40	
14	44	28	35.0	29.8	29	0	98	63	82	0.00	29.46	30.41	N	3.1	10.5	8.08	42.4	41.4	48	38	
15	45	28	36.5	33.8	28	0	99	76	90	0.01	29.32	30.27	SSE	5.0	13.5	4.94	41.6	39.5	44	36	
16	55	43	47.7	45.0	16	0	99	83	90	0.00	29.16	30.10	S	8.2	22.7	2.53	44.6	44.3	47	42	
17	56	33	48.6	43.8	21	0	99	60	84	0.00	29.13	30.07	NNW	7.6	23.7	9.60	47.8	48.9	53	44	
18	63	32	49.8	46.5	18	0	100	65	89	0.00	28.87	29.81	SSE	9.2	26.3	9.29	46.7	46.5	53	40	
19	56	24	31.4	24.4	25	0	93	64	75	0.14	29.14	30.09	NNW	18.9	42.0	7.27	44.2	42.3	52	37	
20	42	19	29.8	19.8	35	0	91	41	68	0.01	29.34	30.29	SSE	5.4	16.4	12.94	39.6	36.8	41	35	
21	54	30	41.7	31.3	23	0	82	45	67	0.00	29.07	30.02	SSE	13.7	35.4	12.57	41.0	39.0	44	35	
22	55	30	46.4	43.2	23	0	99	70	89	0.12	28.93	29.86	SSE	15.1	33.9	0.92	45.1	45.2	49	40	
23	43	23	30.6	19.9	32	0	92	39	66	0.00	29.15	30.09	NW	8.9	26.9	14.72	40.7	38.5	43	36	
24	54	21	36.6	24.7	27	0	94	31	66	0.00	29.20	30.14	NNE	6.4	26.6	9.64	40.4	38.4	44	35	
25	43	21	30.9	20.6	33	0	88	40	68	0.00	29.36	30.31	NE	4.2	15.3	10.13	40.3	37.4	43	34	
26	55	21	36.2	25.5	27	0	94	30	69	0.00	29.25	30.19	NW	4.4	14.1	14.50	40.4	39.4	48	34	
27	60	25	43.5	27.7	22	0	94	25	58	0.00	29.11	30.06	WNW	6.6	20.2	15.14	41.8	41.4	50	35	
28	54	28	40.5	27.0	24	0	87	44	59	0.00	29.04	29.98	N	12.3	37.2	7.85	41.8	39.8	44	36	
29	43	17	31.0	17.9	35	0	93	32	62	0.00	29.32	30.27	NNW	4.7	13.5	11.73	39.5	37.0	42	34	
30	46	23	32.3	21.0	31	0	89	37	65	0.00	29.26	30.20	ESE	5.9	19.4	14.20	39.4	37.6	45	34	
31	50	27	40.4	33.4	27	0	86	64	76	0.00	29.15	30.09	SSE	7.7	21.4	4.09	40.1	38.4	43	35	
	51	29	39.7	31.0	<- Monthly Averages ->						29.19	30.13	SSE	8.3	42.0	8.34	42.9	41.8	47	38	
Temperature - Highest: 70 Lowest: 17							Degree Days - Total HDD: 779 Total CDD: 0					Number of Days With: Tmax >= 90: 0 Rainfall >= 0.01 inch: 9 Tmax <= 32: 1 Rainfall >= 0.10 inch: 4 Tmin <= 32: 23 Avg Wind Speed >= 10 mph: 8 Tmin <= 0: 0 Max Wind Speed >= 30 mph: 6									
Rainfall: Monthly Total: 2.61 in. Greatest 24 Hr: 1.11 in.							Humidity - Highest: 100 Lowest: 23														

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MESONET CLIMATOLOGICAL DATA SUMMARY February 2019 Time Zone: Midnight-Midnight CST
 (TISH) Tishomingo Nearest City: 6.0 N Tishomingo County: Johnston
 Latitude: 34-19-57 Longitude: 96-40-44 Elevation: 879 feet

DAY	TEMPERATURE (F)				DEG DAYS		HUMIDITY (%)			RAIN (in)	PRESSURE (in)		WIND SPEED (mph)			SOLAR (MJ/m2)	4" SOIL TEMPERATURES			
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG		STN	MSL	DIR	AVG	MAX		SOD	BARE	MAX	MIN
1	59	44	50.0	48.3	14	0	100	79	94	0.00	29.18	30.12	SE	5.1	13.2	4.13	44.8	46.1	51	43
2	58	49	54.1	53.3	12	0	100	92	97	0.00	29.12	30.06	SSE	7.4	17.7	3.01	48.0	50.0	53	47
3	71	55	60.7	56.8	2	0	100	62	88	0.00	28.88	29.81	SSE	12.6	31.4	7.27	51.4	54.2	59	51
4	77	46	60.5	49.8	3	0	100	31	73	0.01	28.86	29.80	S	7.2	19.6	15.89	54.0	56.9	65	51
5	74	44	58.6	53.0	6	0	99	64	83	0.00	28.90	29.84	S	8.3	25.6	7.78	54.3	55.0	61	50
6	68	53	60.5	58.9	5	0	100	90	94	0.31	28.83	29.77	E	5.9	22.7	3.46	56.3	57.8	60	56
7	68	21	33.7	27.7	21	0	98	56	79	0.39	29.22	30.16	NNW	13.5	43.3	11.51	51.1	50.6	60	41
8	35	18	26.0	12.3	39	0	75	38	57	0.00	29.67	30.63	NNE	8.3	19.5	13.64	42.7	39.3	43	37
9	38	24	31.2	20.6	34	0	97	44	66	0.00	29.55	30.51	E	6.6	20.1	5.75	42.0	37.5	40	36
10	42	32	37.1	36.9	28	0	100	97	99	0.15	29.22	30.17	SSE	7.5	16.6	1.77	42.6	39.3	42	38
11	54	42	48.1	47.8	17	0	100	93	99	0.55	28.86	29.80	S	7.0	21.7	3.13	45.5	45.0	49	42
12	55	29	43.5	31.0	23	0	99	31	66	0.00	29.21	30.15	NNW	10.1	31.5	17.73	46.6	48.3	55	43
13	61	28	46.2	29.3	21	0	93	24	57	0.00	29.12	30.06	S	12.8	35.1	13.64	44.7	44.3	49	39
14	73	49	58.8	37.2	4	0	68	24	47	0.00	28.79	29.73	SSW	11.4	27.3	13.88	48.2	48.9	56	43
15	58	29	40.2	32.0	22	0	90	39	74	0.00	28.88	29.81	NE	12.9	23.8	7.05	48.1	46.0	49	40
16	38	26	31.4	30.3	33	0	100	88	96	0.02	28.88	29.82	NNE	6.8	18.3	3.66	43.7	39.2	42	37
17	52	33	39.9	29.5	23	0	100	35	70	0.00	29.01	29.95	NNW	9.3	20.8	14.51	44.7	42.8	50	39
18	39	24	31.9	18.8	34	0	74	43	59	0.00	29.36	30.31	NNE	13.1	27.0	10.78	41.9	37.4	40	35
19	37	33	34.5	28.9	30	0	99	59	81	0.64	29.15	30.09	NE	8.0	19.3	1.81	40.6	36.7	38	35
20	52	34	41.8	32.9	22	0	100	42	74	0.01	28.98	29.92	W	6.7	19.2	14.55	43.1	43.6	52	38
21	48	35	42.9	37.1	24	0	95	66	80	0.00	29.08	30.02	E	7.2	20.2	6.44	44.4	44.0	47	41
22	49	41	45.2	44.8	20	0	100	90	99	0.09	29.03	29.97	ENE	7.3	18.5	3.25	45.7	45.4	47	43
23	65	40	52.8	39.0	13	0	100	24	66	0.06	28.87	29.81	WNW	16.0	47.7	18.90	48.6	49.9	56	45
24	57	28	42.5	24.0	22	0	88	21	53	0.00	29.36	30.31	NW	6.3	23.1	20.19	46.7	45.3	55	38
25	62	28	46.2	27.6	20	0	92	25	52	0.00	29.30	30.25	SSE	9.2	27.7	18.89	46.5	44.3	53	38
26	61*	41*	49.9*	43.0*	14*	0*	100*	60*	78*	0.00*	29.20*	30.15*	SE *	6.4*	17.0*	NA	48.3*	47.1*	53*	42*
27	52	26	38.8	38.3	26	0	100	94	98	0.04	29.18	30.13	N	10.1	22.9	3.71	48.8	46.9	51	39
28	28	25	26.5	24.3	38	0	97	86	91	0.00	29.19	30.14	NNW	8.5	17.3	3.73	41.9	36.8	39	36
55* 35* 44.0* 36.2*				← Monthly Averages →				29.10* 30.05*				NNW* 9.0* 47.7*			9.26* 46.6* 45.7* 50* 41*					
Temperature - Highest: 77*				Degree Days - Total HDD: 568*				Number of Days With:				Tmax > 90: 0*				Rainfall > 0.01 inch: 11*				
Lowest: 18*				Total CDD: 0*				Tmax < 32: 1*				Rainfall > 0.10 inch: 5*								
Rainfall: Monthly Total: 2.27* in.				Humidity - Highest: 100*				Tmin < 32: 13*				Avg Wind Speed > 10 mph: 9*								
Greatest 24 Hr: 0.64* in.				Lowest: 21*				Tmin < 0: 0*				Max Wind Speed > 30 mph: 5*								

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MESONET CLIMATOLOGICAL DATA SUMMARY
(TISH) Tishomingo
Latitude: 34-19-57

March 2019
Nearest City: 6.0 N Tishomingo
Longitude: 96-40-44

Time Zone: Midnight-Midnight CST
County: Johnston
Elevation: 879 feet

DAY	TEMPERATURE (F)				DEG DAYS		HUMIDITY (%)			RAIN (in)	PRESSURE (in)		WIND SPEED (mph)			SOLAR (MJ/m2)	4" SOIL TEMPERATURES				
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG		STN	MSL	DIR	AVG	MAX		SOD	BARE	MAX	MIN	
1	39	27	32.1	27.5	32	0	93	68	83	0.00	29.14	30.08	NNE	4.7	12.9	6.93	42.1	38.6	44	35	
2	40	31	36.2	34.3	29	0	98	87	93	0.02	29.19	30.13	NNE	8.8	18.9	2.82	42.5	39.3	42	37	
3	35	19	28.2	22.7	38	0	98	65	80	0.03	29.28	30.22	N	16.5	33.6	7.17	40.6	37.1	39	35	
4	29	14	20.5	4.6	43	0	73	33	51	0.00	29.48	30.43	N	12.2	30.1	19.30	37.5	33.9	35	33	
5	45	16	28.6	9.7	35	0	76	22	49	0.00	29.52	30.47	NNW	6.8	21.0	21.59	38.2	35.2	42	33	
6	53	22	37.6	15.5	28	0	77	23	43	0.00	29.39	30.34	SSE	9.1	25.5	20.66	40.2	38.0	46	34	
7	64	33	50.7	42.3	16	0	99	50	74	0.00	29.02	29.96	S	9.9	31.7	12.85	44.1	43.5	52	35	
8	66	48	56.7	51.7	8	0	100	59	85	0.00	28.86	29.80	SE	4.4	13.7	12.44	49.2	51.4	59	45	
9	74	54	64.6	42.9	1	0	97	22	52	0.24	28.79	29.72	W	13.4	43.0	22.04	53.6	56.3	62	52	
10	54	40	43.1	34.3	18	0	95	45	73	0.20	29.19	30.14	NNE	11.2	24.4	3.95	49.2	46.2	51	44	
11	57	42	50.3	47.3	15	0	99	78	90	0.75	29.30	30.25	NE	6.4	21.3	8.56	49.3	49.2	55	44	
12	65	53	56.7	55.9	6	0	100	88	97	0.42	29.08	30.02	SE	9.4	25.7	2.47	52.3	53.3	55	52	
13	68	53	62.2	52.7	4	0	98	37	74	0.85	28.60	29.53	S	17.1	49.3	17.16	56.0	58.1	63	55	
14	66	44	52.0	32.6	10	0	71	32	48	0.00	29.00	29.94	NW	14.0	34.9	22.99	53.7	54.3	61	48	
15	57	34	45.1	22.1	20	0	69	22	43	0.00	29.42	30.37	N	11.2	30.9	23.73	50.1	47.3	55	41	
16	61	28	44.8	25.4	21	0	85	25	52	0.00	29.44	30.40	NNW	4.5	14.5	22.71	50.2	47.7	59	38	
17	66	34	50.0	29.6	15	0	86	20	52	0.00	29.36	30.31	NW	3.9	14.2	23.54	52.3	51.3	63	41	
18	69	35	53.0	32.3	13	0	89	20	52	0.00	29.32	30.27	SSE	4.6	17.2	23.25	53.8	52.8	64	43	
19	70	39	54.7	37.9	10	0	90	26	57	0.00	29.26	30.21	S	7.4	28.2	22.16	54.6	53.0	62	45	
20	63	38	51.6	39.6	14	0	92	33	67	0.04	29.27	30.21	NW	6.8	26.1	15.03	54.2	52.5	60	49	
21	72	35	54.1	36.8	12	0	93	27	57	0.00	29.22	30.17	NNE	6.4	21.3	23.67	54.0	52.8	63	43	
22	74	37	57.8	37.1	10	0	90	24	50	0.00	29.18	30.12	ESE	5.4	16.0	20.97	56.0	54.4	64	46	
23	67	54	59.4	51.4	5	0	98	47	77	0.19	29.06	30.00	SE	8.5	24.7	3.73	56.1	54.9	59	52	
24	79	53	66.2	56.5	0	1	94	40	73	0.00	29.04	29.99	SSW	9.5	23.2	16.33	59.8	61.3	68	57	
25	68	44	56.2	45.4	9	0	96	45	69	0.00	29.25	30.19	N	8.5	21.4	23.17	59.0	58.0	66	51	
26	68	41	55.1	42.9	10	0	97	37	67	0.00	29.36	30.31	E	4.8	19.7	23.86	59.0	57.3	67	49	
27	73	44	59.1	45.3	7	0	98	38	63	0.00	29.26	30.21	SSE	9.8	27.6	21.07	58.8	57.2	65	51	
28	73	53	63.5	50.2	2	0	84	46	63	0.00	29.10	30.04	SSE	13.0	33.5	18.97	59.6	59.6	66	53	
29	72	57	64.0	57.2	0	0	94	60	79	0.00	28.95	29.89	S	11.9	27.5	9.55	60.4	60.8	65	57	
30	63	38	47.2	38.4	15	0	94	51	72	0.05	29.16	30.10	NNW	15.4	36.5	8.15	56.3	53.9	60	48	
31	53	29	42.0	24.0	24	0	85	26	51	0.00	29.40	30.35	NNE	8.8	24.6	23.52	52.5	49.9	59	42	
	61	38	49.8	37.0	<- Monthly Averages ->							29.19	30.13	S	9.2	49.3	16.27	51.5	50.3	57	45
Temperature - Highest: 79 Lowest: 14					Degree Days - Total HDD: 469 Total CDD: 1					Number of Days With: Tmax > 90: 0 Rainfall > 0.01 inch: 10 Tmax < 32: 1 Rainfall > 0.10 inch: 6 Tmin < 32: 8 Avg Wind Speed > 10 mph: 10 Tmin < 0: 0 Max Wind Speed > 30 mph: 9											
Rainfall: Monthly Total: 2.79 in. Greatest 24 Hr: 0.85 in.					Humidity - Highest: 100 Lowest: 20																

Date	Reference ET, Short [in]	Reference ET, Tall [in]	Cool Season Grass ET [in]	Warm Season Grass ET [in]	Pan Evaporation [in]
2019-03-31	0.12	0.17	0.12	0.08	0.17
2019-03-30	0.13	0.19	0.12	0.08	0.18
2019-03-29	0.11	0.15	0.10	0.07	0.15
2019-03-28	0.17	0.24	0.16	0.11	0.24
2019-03-27	0.16	0.22	0.15	0.10	0.21
2019-03-26	0.13	0.16	0.12	0.08	0.17
2019-03-25	0.15	0.19	0.14	0.09	0.19
2019-03-24	0.15	0.20	0.14	0.09	0.20
2019-03-23	0.08	0.12	0.08	0.05	0.11
2019-03-22	0.15	0.20	0.14	0.09	0.20
2019-03-21	0.15	0.21	0.14	0.10	0.20
2019-03-20	0.11	0.14	0.10	0.07	0.14
2019-03-19	0.16	0.21	0.14	0.10	0.20
2019-03-18	0.13	0.17	0.12	0.08	0.17
2019-03-17	0.12	0.16	0.12	0.08	0.16
2019-03-16	0.12	0.15	0.11	0.07	0.15
2019-03-15	0.15	0.22	0.14	0.09	0.22
2019-03-14	0.19	0.28	0.18	0.12	0.29
2019-03-13	0.13	0.17	0.12	0.08	0.18
2019-03-12	0.04	0.06	0.04	0.03	0.05
2019-03-11	0.05	0.06	0.05	0.03	0.06
2019-03-10	0.09	0.13	0.08	0.05	0.12
2019-03-09	0.21	0.31	0.20	0.13	0.31
2019-03-08	0.08	0.09	0.07	0.05	0.09
2019-03-07	0.09	0.13	0.09	0.06	0.12
2019-03-06	0.12	0.17	0.11	0.07	0.16
2019-03-05	0.09	0.12	0.08	0.05	0.12
2019-03-04	0.07	0.09	0.06	0.04	0.10
2019-03-03	0.04	0.05	0.03	0.02	0.05
2019-03-02	0.02	0.02	0.02	0.01	0.03
2019-03-01	0.04	0.05	0.03	0.02	0.04
2019-02-28	0.02	0.02	0.02	0.01	0.02
2019-02-27	0.03	0.04	0.03	0.02	0.04
2019-02-26	0.07	0.10	0.07	0.04	0.09
2019-02-25	0.13	0.19	0.12	0.08	0.17
2019-02-24	0.10	0.15	0.10	0.06	0.14
2019-02-23	0.15	0.22	0.14	0.09	0.21
2019-02-22	0.02	0.02	0.02	0.01	0.03
2019-02-21	0.04	0.05	0.04	0.02	0.05
2019-02-20	0.07	0.10	0.07	0.05	0.09
2019-02-19	0.03	0.05	0.03	0.02	0.04
2019-02-18	0.07	0.10	0.06	0.04	0.10
2019-02-17	0.09	0.13	0.08	0.05	0.11
2019-02-16	0.02	0.02	0.02	0.01	0.03
2019-02-15	0.10	0.15	0.09	0.06	0.13
2019-02-14	0.17	0.27	0.16	0.11	0.25
2019-02-13	0.12	0.19	0.11	0.07	0.17
2019-02-12	0.09	0.13	0.09	0.06	0.12
2019-02-11	0.02	0.02	0.02	0.01	0.03

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2019-02-10	0 02	0 02	0.01	0.01	0.02
2019-02-09	0 04	0 06	0.04	0 03	0 05
2019-02-08	0 06	0 08	0.05	0.03	0 07
2019-02-07	0 16	0 25	0 15	0 10	0 21
2019-02-06	0 03	0.04	0.03	0.02	0.04
2019-02-05	0 08	0 12	0.08	0 05	0 10
2019-02-04	0.12	0.17	0.11	0.07	0.15
2019-02-03	0 08	0 11	0.07	0.05	0 11
2019-02-02	0 02	0.02	0.02	0.01	0.03
2019-02-01	0 04	0 04	0.03	0 02	0 04
2019-01-31	0 04	0.06	0.04	0 03	0 05
2019-01-30	0 06	0 08	0.05	0 04	0 07
2019-01-29	0.05	0 06	0.04	0 03	0 08
2019-01-28	0 09	0.14	0.08	0 06	0 12
2019-01-27	0 08	0 12	0 08	0 05	0 11
2019-01-26	0 06	0 08	0 05	0 04	0 07
2019-01-25	0 04	0.06	0 04	0 03	0 05
2019-01-24	0 07	0 10	0 06	0 04	0 08
2019-01-23	0 06	0.09	0 06	0 04	0 08
2019-01-22	0 02	0.03	0 02	0.01	0.03
2019-01-21	0.08	0.13	0.08	0.05	0.12
2019-01-20	0 04	0 06	0 04	0 03	0 05
2019-01-19	0 13	0 21	0 12	0 08	0 20
2019-01-18	0 05	0 06	0 04	0 03	0 06
2019-01-17	0 03	0.04	0 03	0 02	0 04
2019-01-16	0.04	0 05	0.03	0 02	0 05
2019-01-15	0.03	0.03	0 02	0.02	0 03
2019-01-14	0.03	0 04	0.03	0.02	0.03
2019-01-13	0.03	0.04	0.03	0.02	0.04
2019-01-12	0.03	0.05	0 03	0 02	0.04
2019-01-11	0.04	0.05	0 03	0 02	0.05
2019-01-10	0 04	0 06	0 04	0 03	0.06
2019-01-09	0 07	0.11	0 07	0 04	0.10
2019-01-08	0 11	0 17	0 10	0 07	0 15
2019-01-07	0 09	0.13	0.08	0.06	0.12
2019-01-06	0 07	0 10	0 06	0 04	0.09
2019-01-05	0 06	0 08	0.05	0.04	0.07
2019-01-04	0 06	0.09	0.06	0 04	0 08
2018-01-03	0 02	0.02	0.02	0.01	0.02
2019-01-02	0 02	0 03	0 02	0 01	0 03
2019-01-01	0 05	0 07	0 04	0 03	0.06
2018-12-31	0 06	0 08	0.05	0 04	0.07
2018-12-30	0 02	0.02	0.02	0 01	0.02
2018-12-29	0 04	0 06	0 04	0 02	0.05
2018-12-28	0 05	0.08	0.05	0.03	0.07
2018-12-27	0 06	0.08	0 05	0.04	0.07
2018-12-26	0 03	0.04	0.03	0 02	0.04
2018-12-25	0 02	0 03	0.02	0.01	0.03
2018-12-24	0.06	0.08	0.05	0.03	0.07

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Mill Creek Water Levels First Quarter 2019

