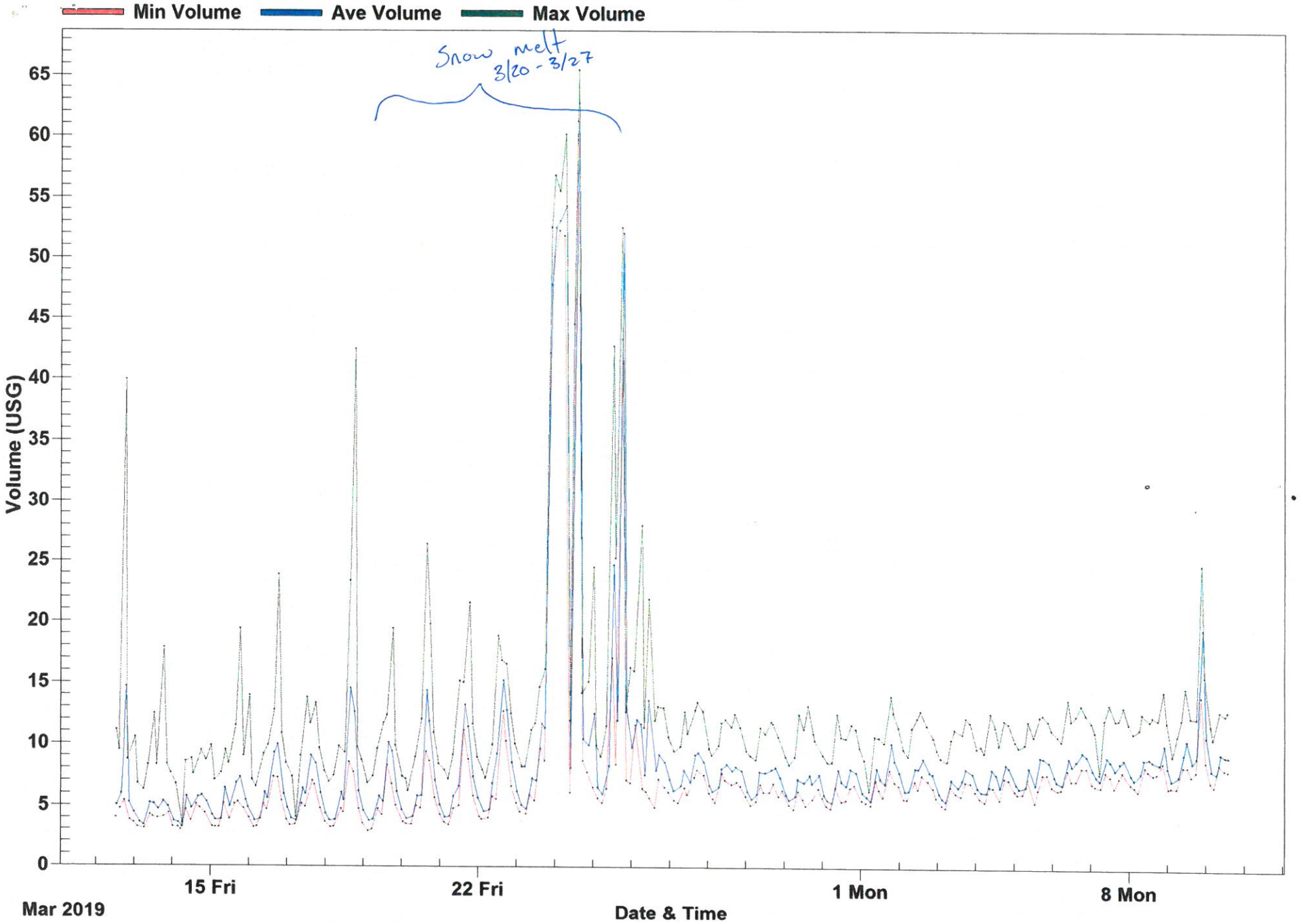
Appendix K

Sanitary Sewer Plant Inflows

INFLUENT

Formatted Site 0 Volume Data

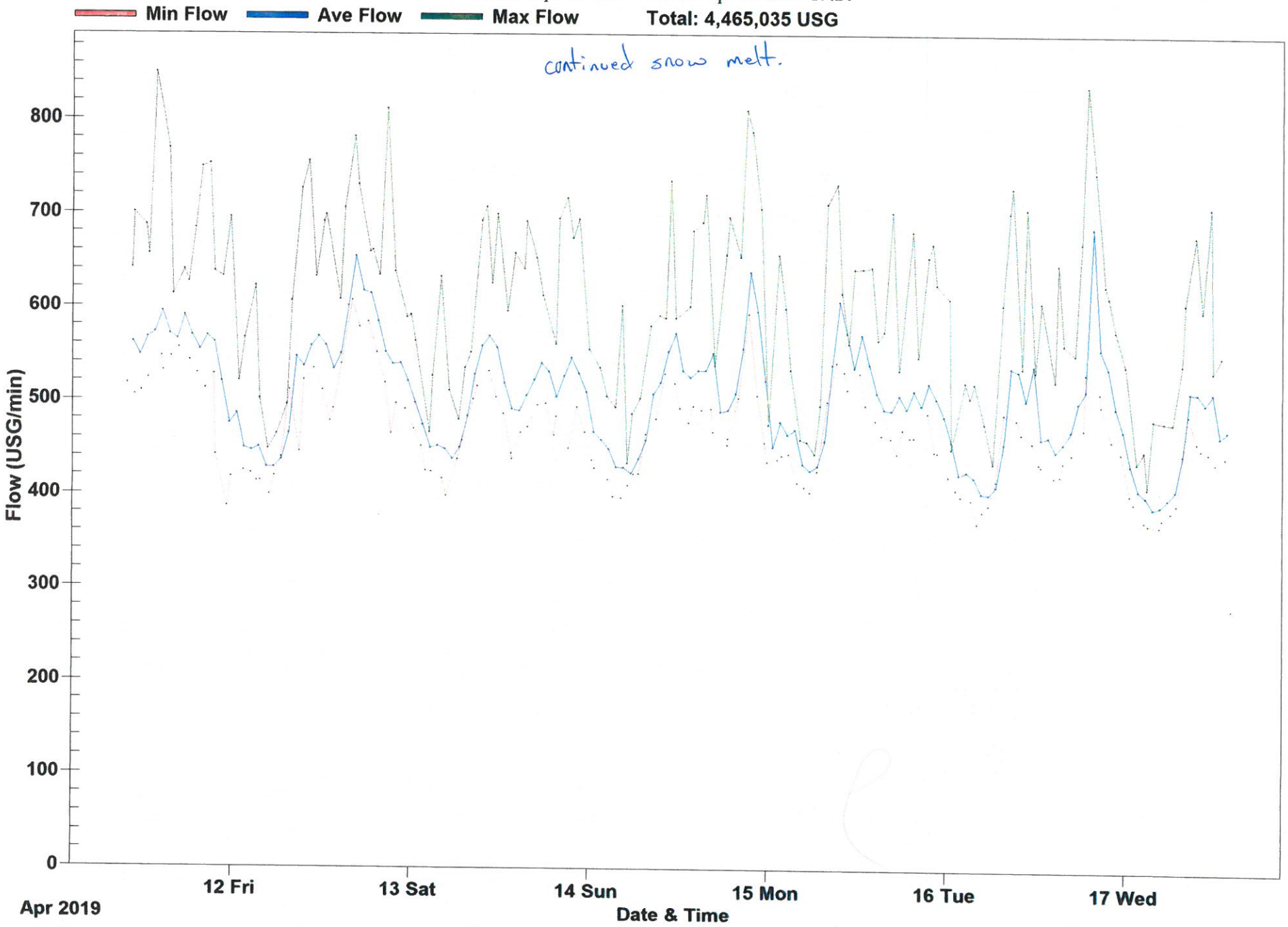
From: Mar 12 2019 10:06 To Apr 10 2019 13:44



INFLUENT

Formatted Site 0 Flow Data

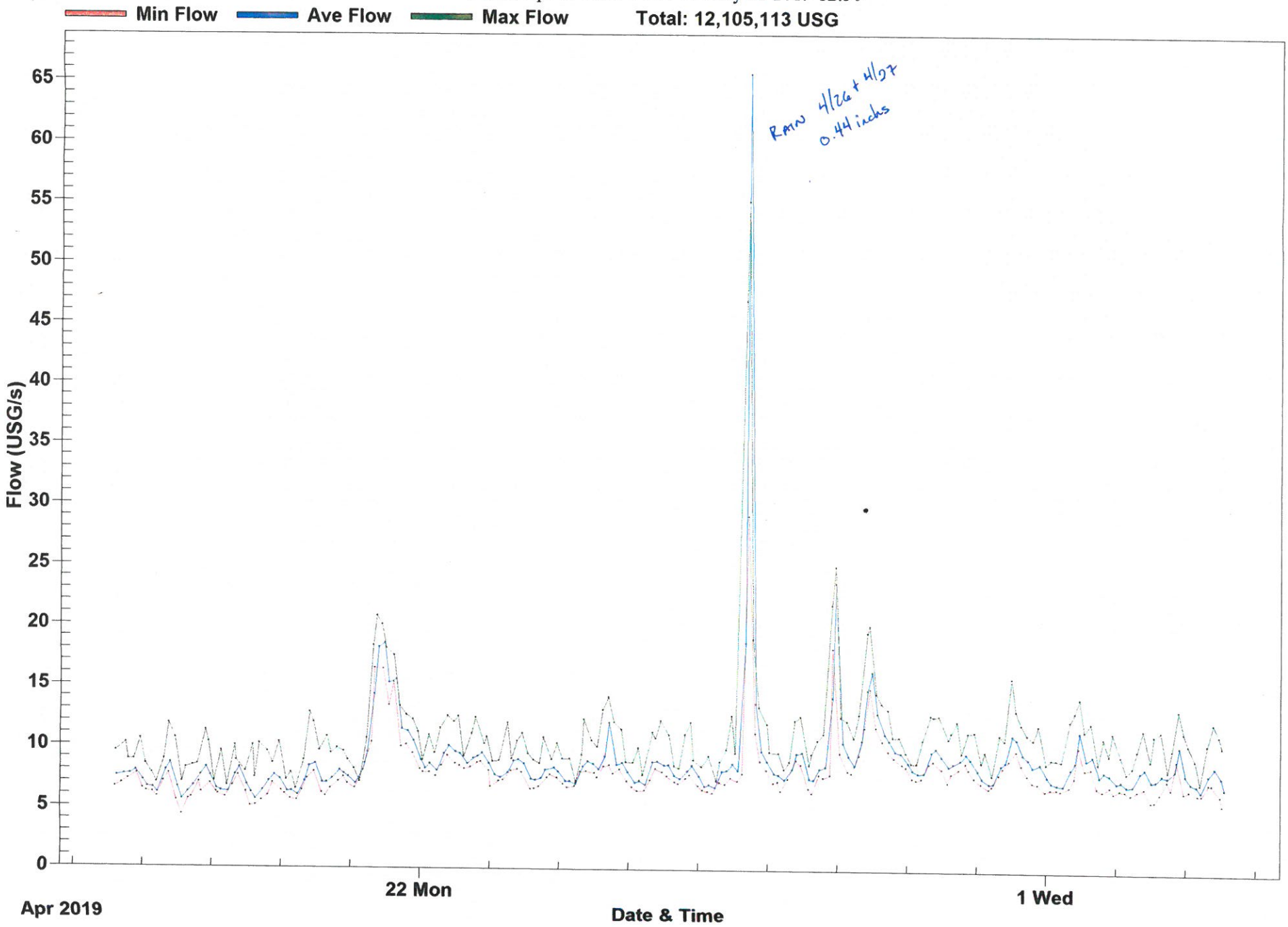
From: Apr 11 2019 9:50 To Apr 17 2019 13:20



INFLUENT

Formatted Site 0 Flow Data

From: Apr 17 2019 14:35 To May 03 2019 12:30

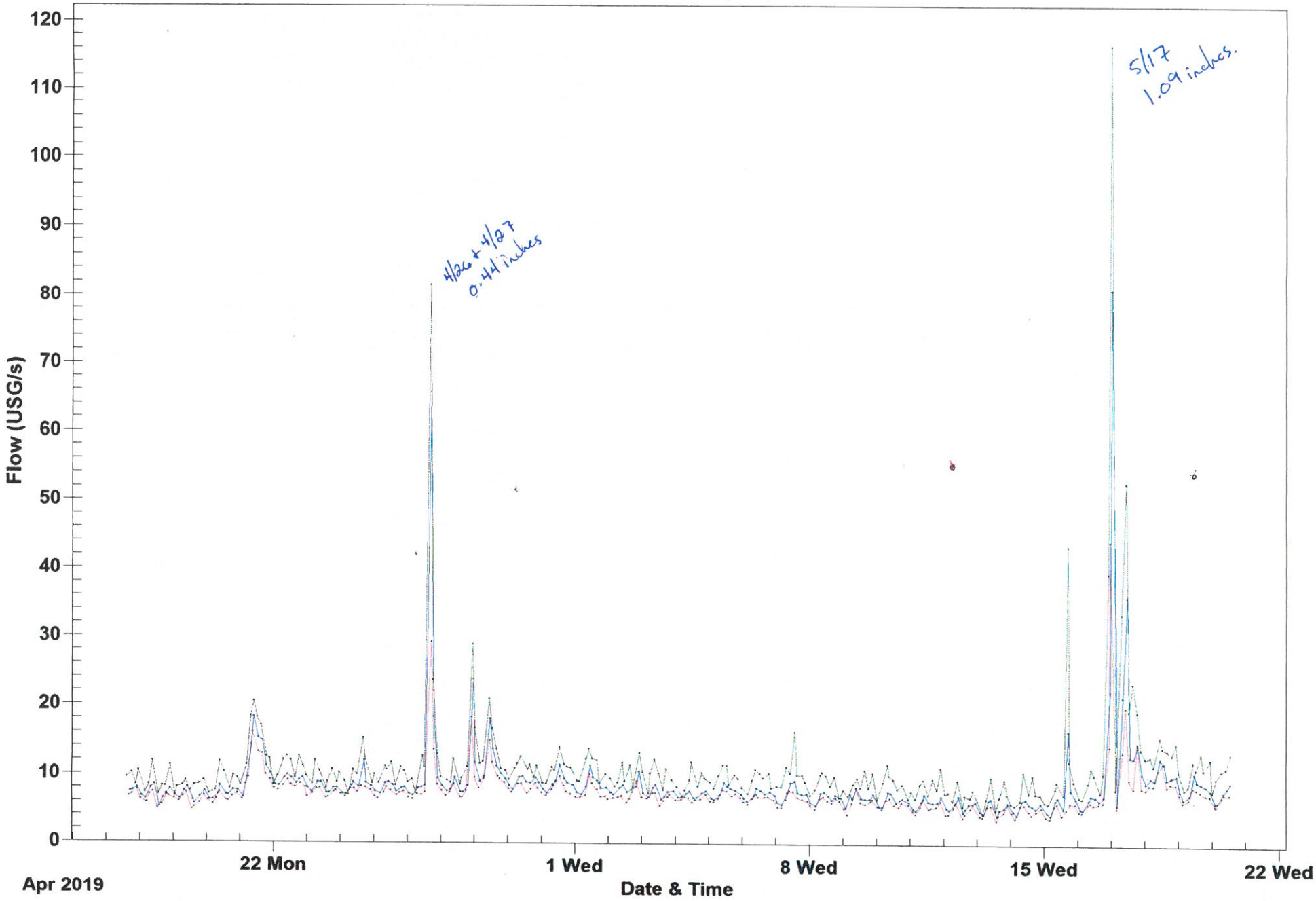


INFLUENT

Formatted Site 0 Flow Data

From: Apr 17 2019 14:35 To May 20 2019 13:25

Min Flow | Ave Flow | Max Flow | Total: 23,217,268 USG

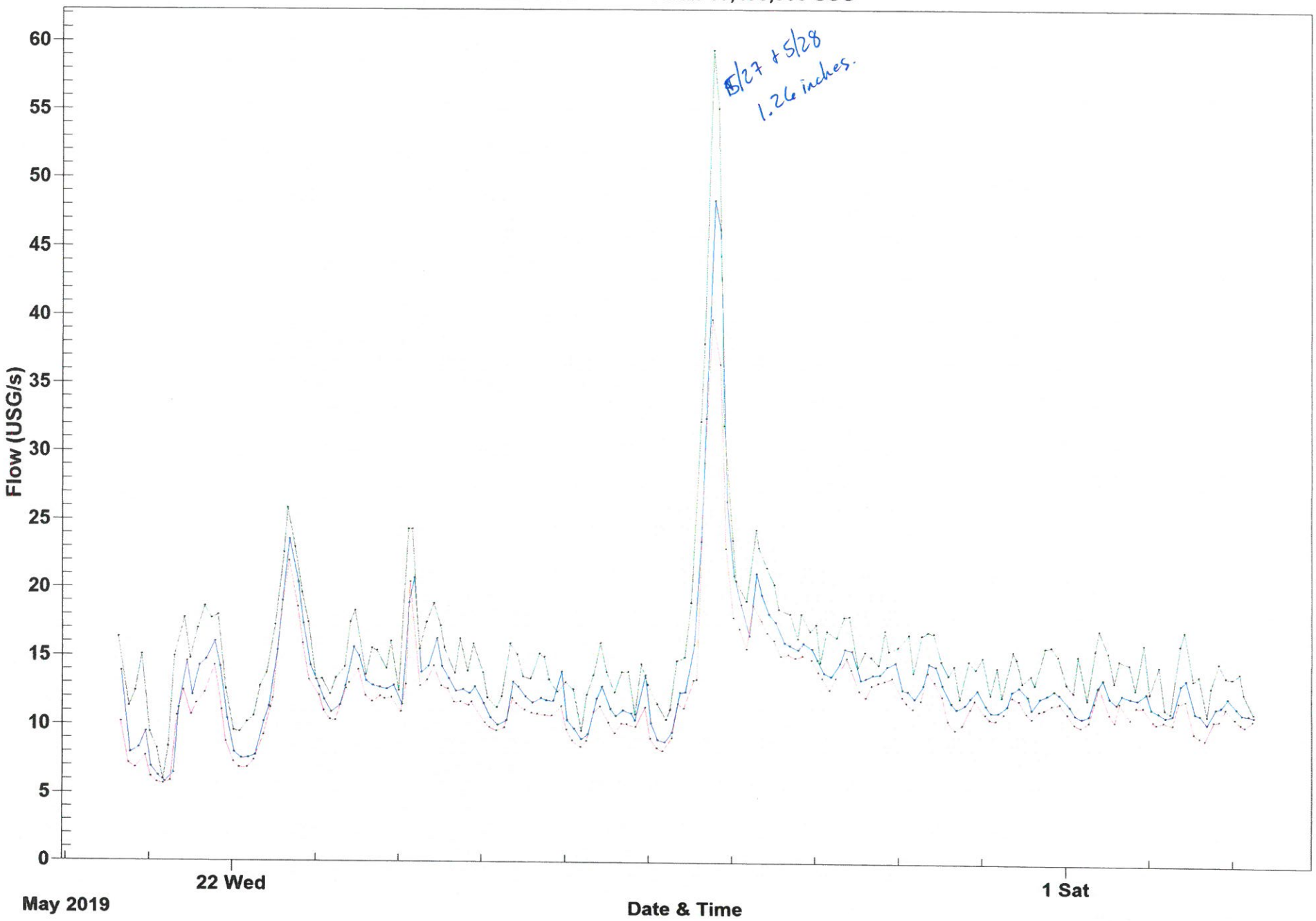


INFLUENT

Formatted Site 0 Flow Data

From: May 20 2019 16:05 To Jun 03 2019 5:45

Min Flow Ave Flow Max Flow **Total: 15,496,930 USG**

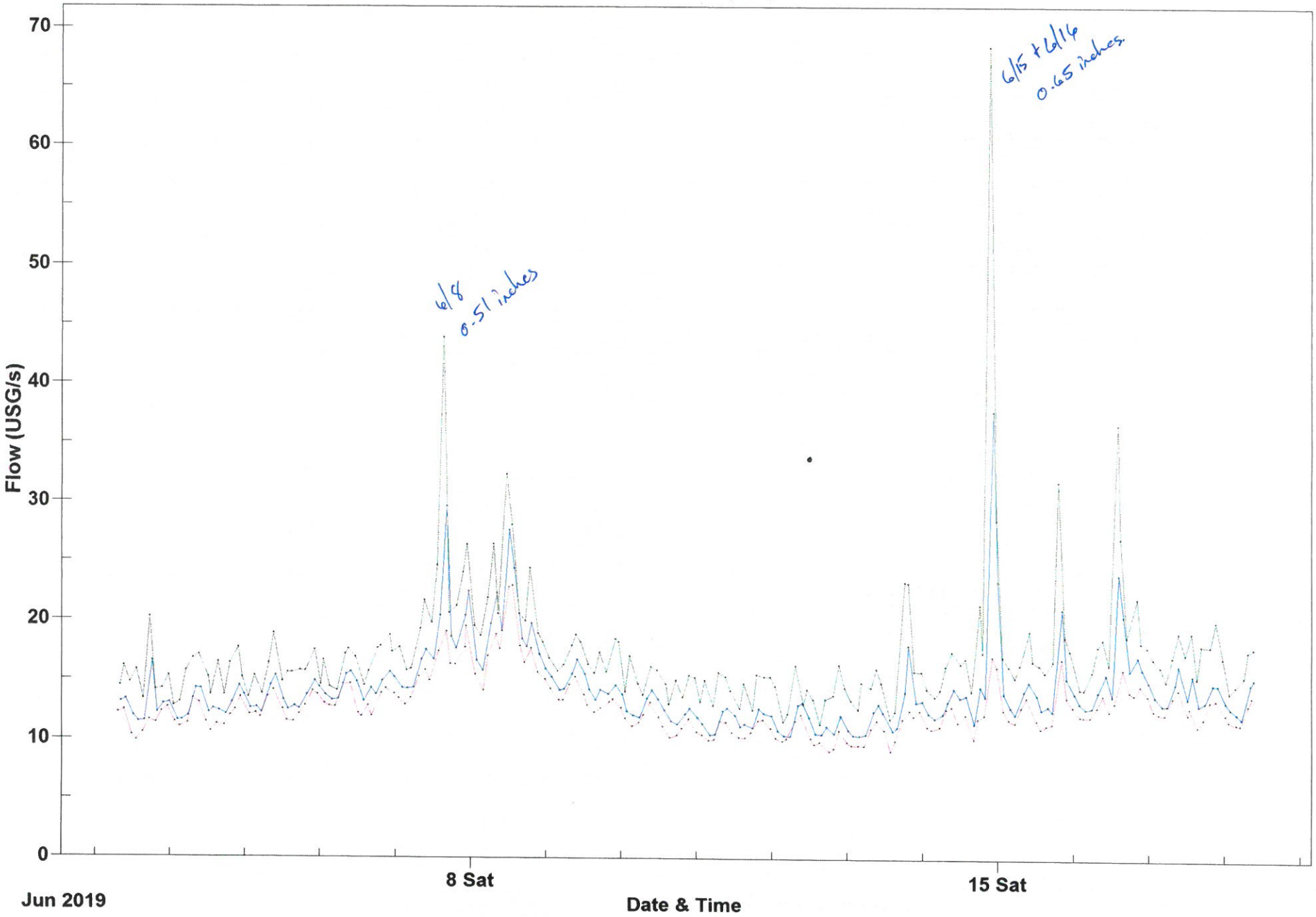


INFLUENT

Formatted Site 0 Flow Data

From: Jun 03 2019 6:35 To Jun 18 2019 8:40

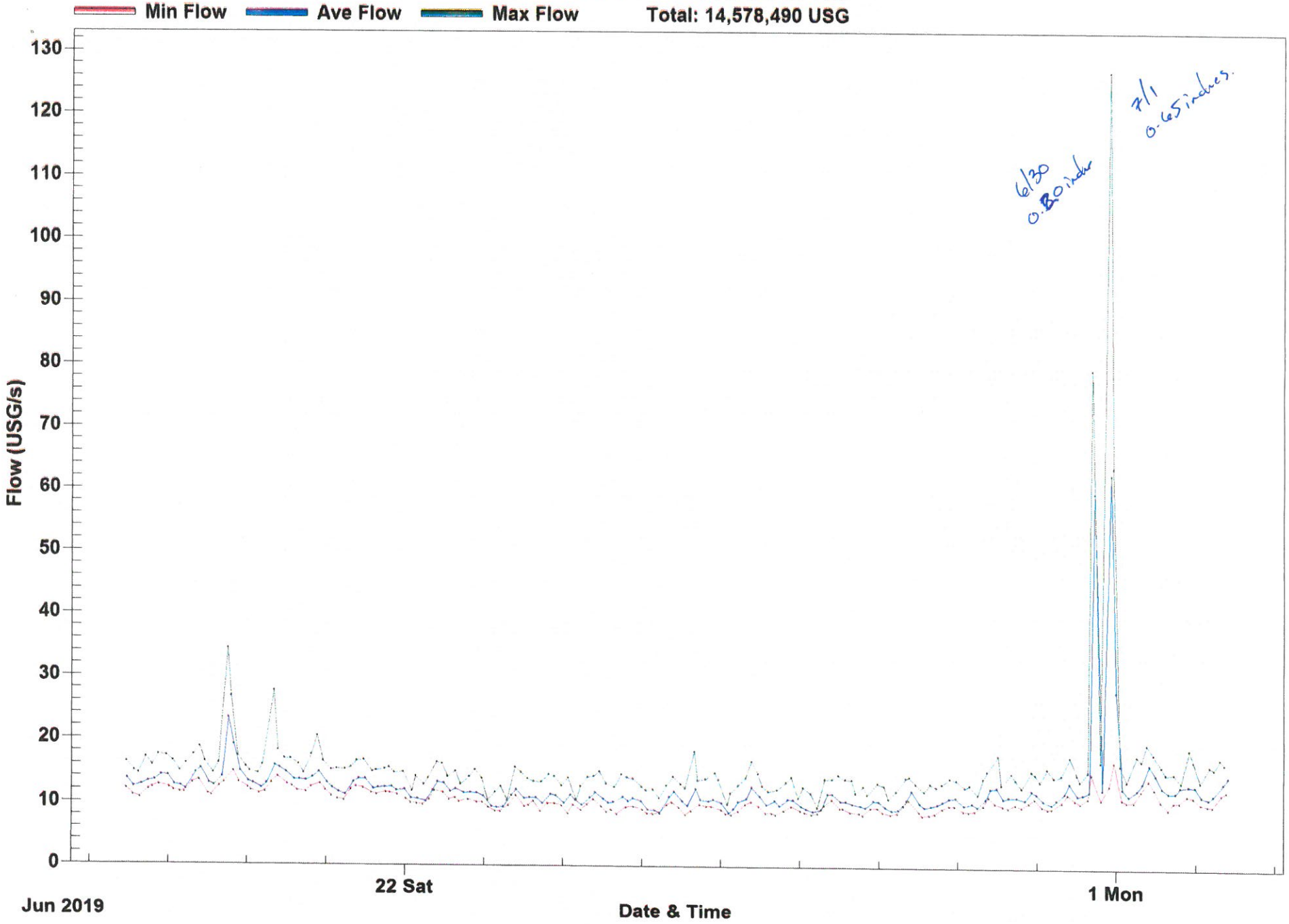
Min Flow | Ave Flow | Max Flow | Total: 18,311,653 USG



INFLUENT

Formatted Site 0 Flow Data

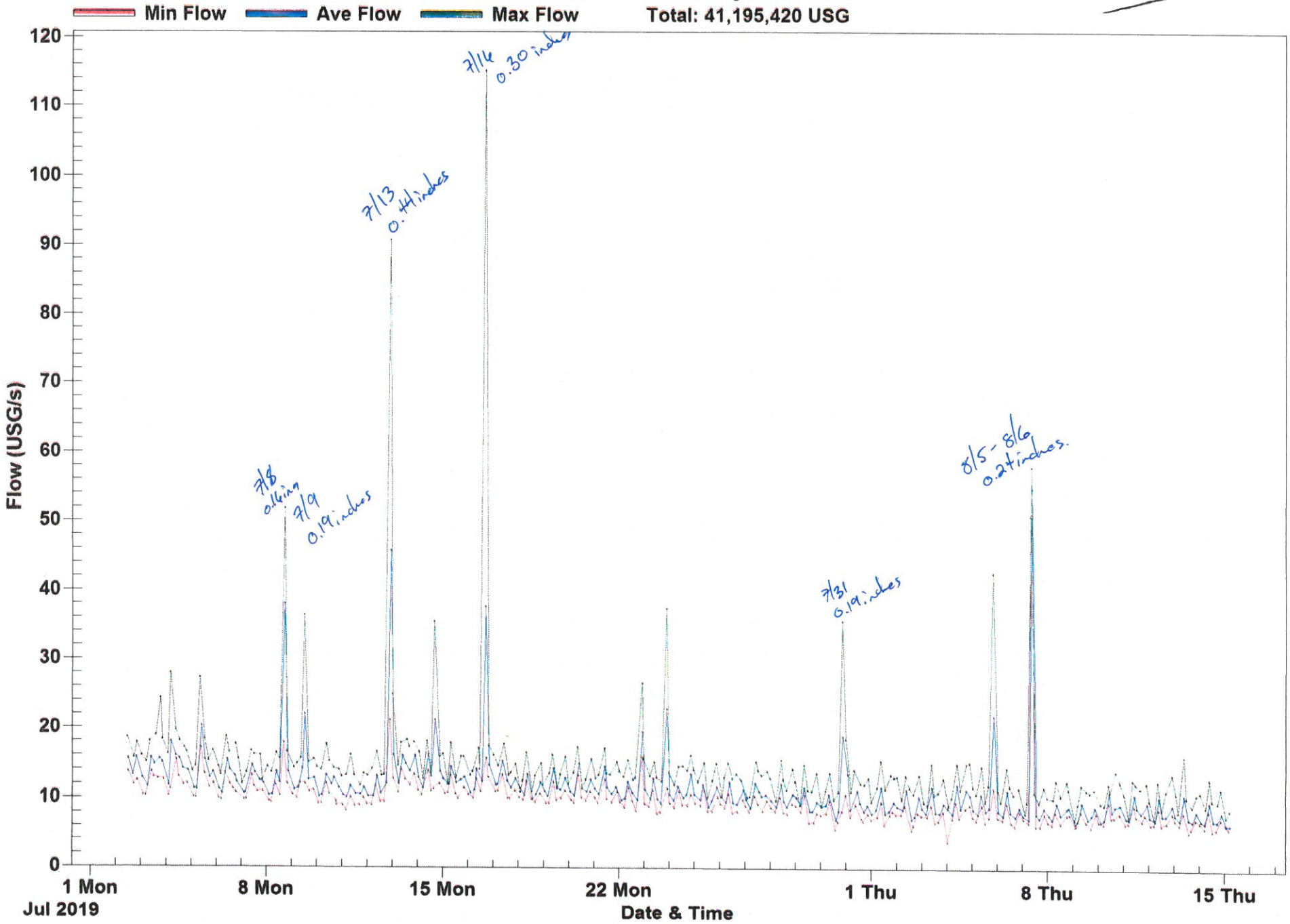
From: Jun 18 2019 11:05 To Jul 02 2019 9:20



Formatted Site 0 Flow Data

From: Jul 02 2019 11:40 To Aug 15 2019 5:20

INFLUENT

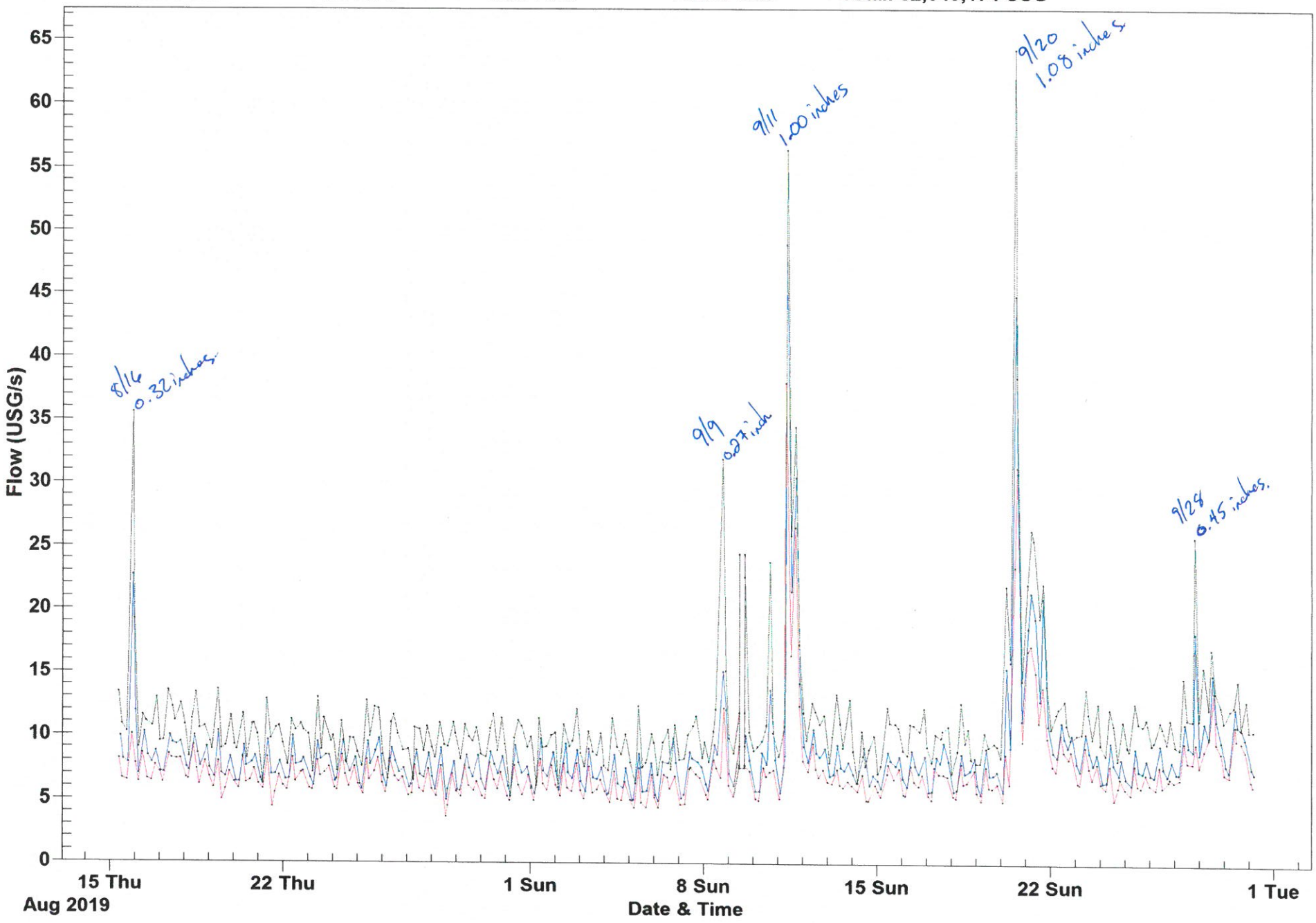


Formatted Site 0 Flow Data

INFLUENT

From: Aug 15 2019 6:35 To Sep 30 2019 5:05

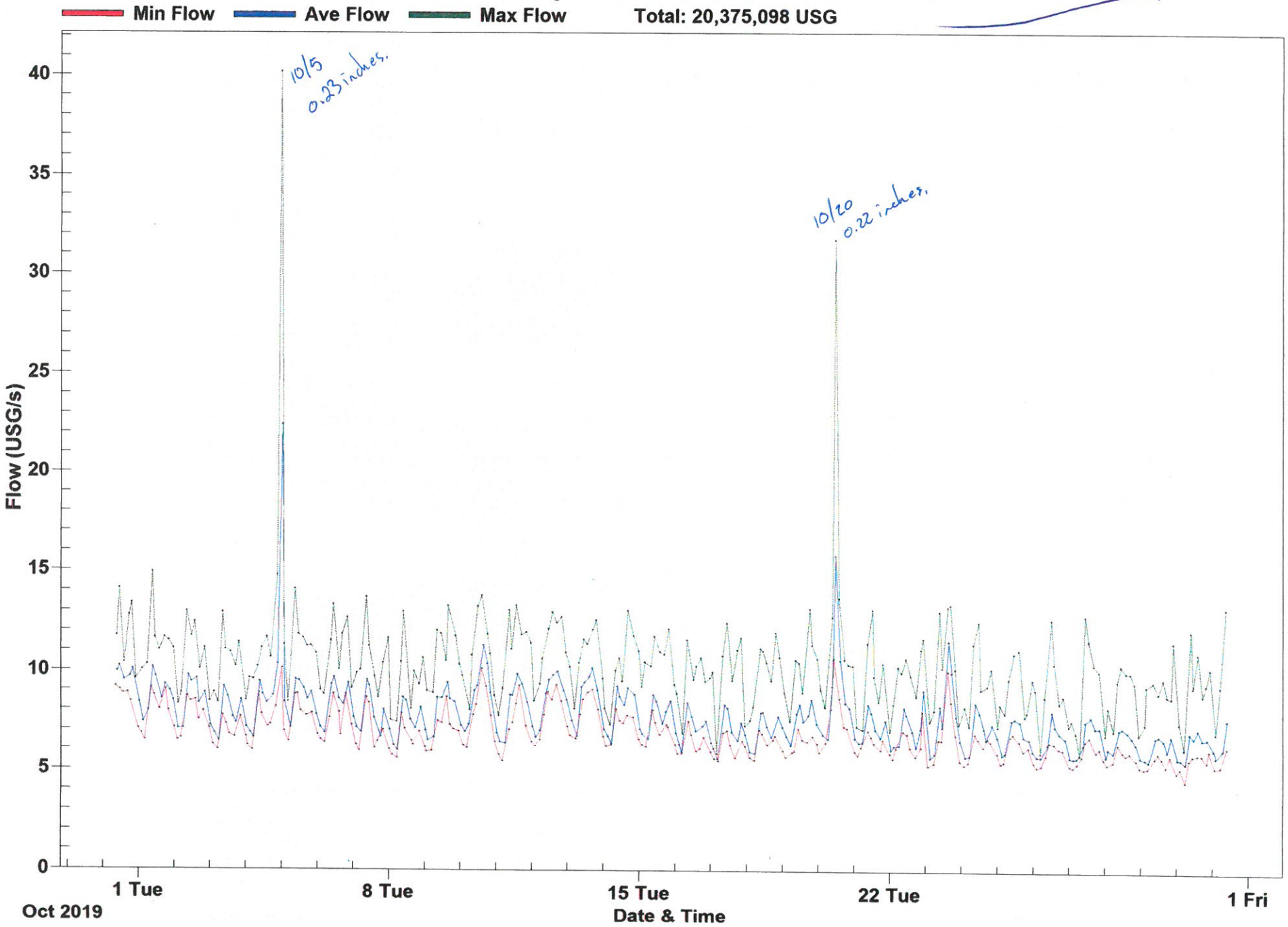
Min Flow | Ave Flow | Max Flow | Power Out | Total: 32,343,174 USG



Formatted Site 0 Flow Data

From: Sep 30 2019 6:35 To Oct 31 2019 9:25

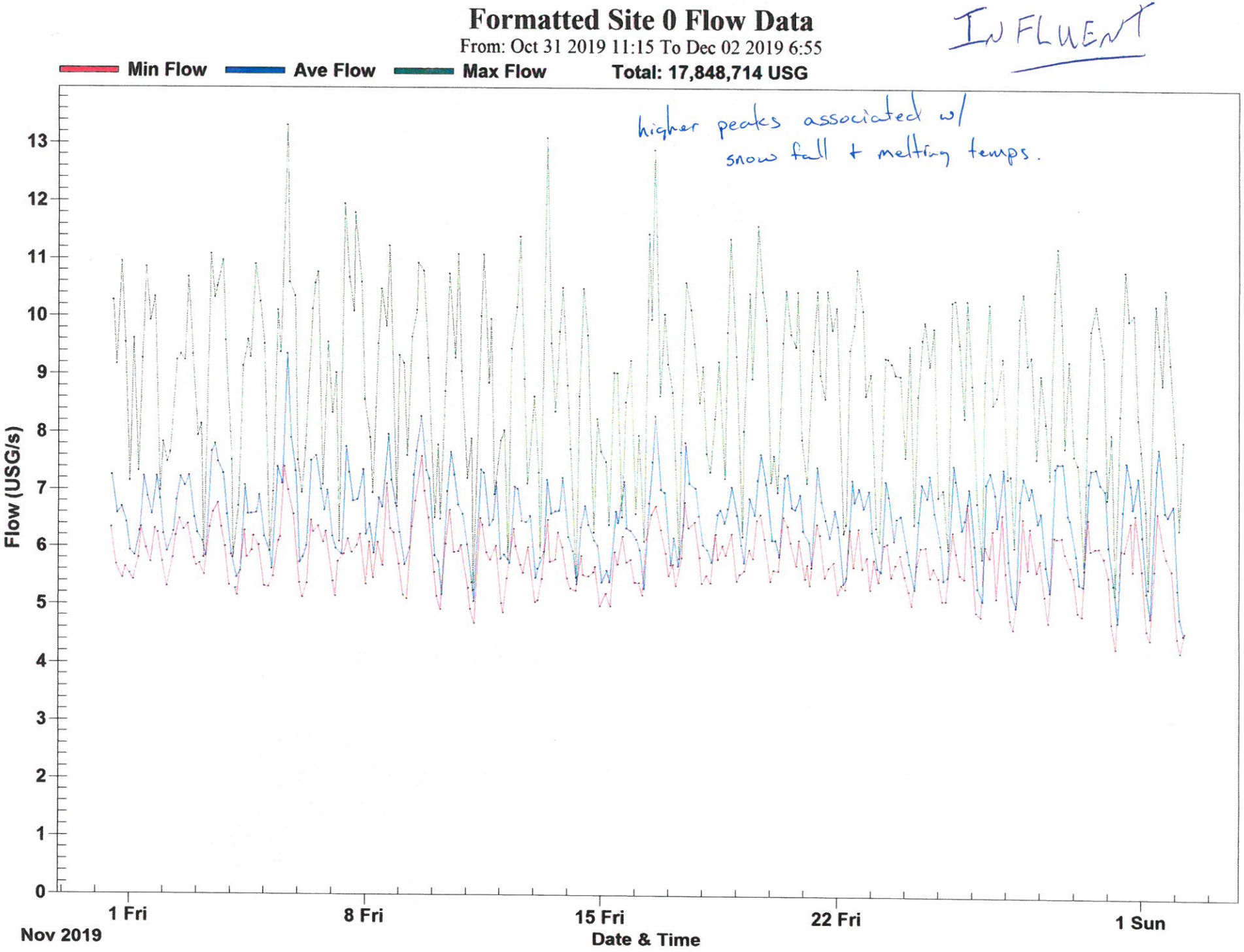
INFLUENT



Formatted Site 0 Flow Data

From: Oct 31 2019 11:15 To Dec 02 2019 6:55

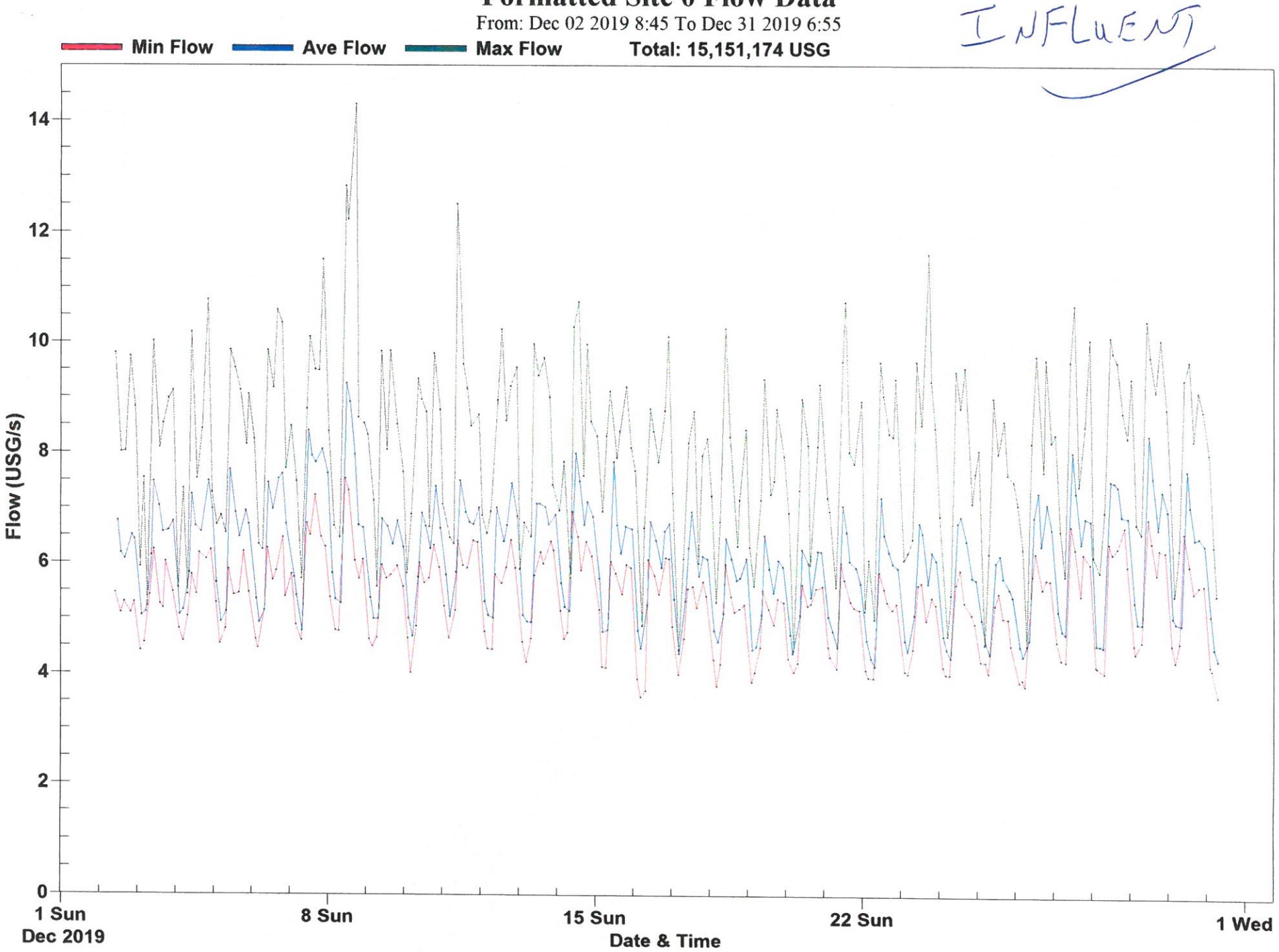
INFLUENT



Formatted Site 0 Flow Data

From: Dec 02 2019 8:45 To Dec 31 2019 6:55

INFLUENT



U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 5646 ft. Lat: 45.1769° N Lon: -109.2571° W
Station: **RED LODGE, MT US USC00246918**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 06/08/2020

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	03	01	27	2	23	0.31		6.0		43.0								
2019	03	02	23	-17	-11	0.02		0.5		40.0								
2019	03	03	4	-15	-2	0.03		0.5		38.0								
2019	03	04	17	-20	13	0.00		0.0		38.0								
2019	03	05	19	-4	16	0.00		0.0		37.0								
2019	03	06	16	6	8	T		T		37.0								
2019	03	07	49	3	45	0.01		0.2		35.0								
2019	03	08	45	17	23	T		T		35.0								
2019	03	09	29	15	24	0.11		2.0		36.0								
2019	03	10	36	5	34	T		T		36.0								
2019	03	11	38	5	37	0.00		0.0		34.0								
2019	03	12	46	29	43	0.00		0.0		34.0								
2019	03	13	43	22	24	0.10		2.0		36.0								
2019	03	14	34	9	31	0.05		1.0		35.0								
2019	03	15	41	11	41	0.00		0.0		35.0								
2019	03	16	43	19	43	0.00		0.0		33.0								
2019	03	17	46	25	42	0.00		0.0		33.0								
2019	03	18	42	14	42	0.00		0.0		32.0								
2019	03	19	48	14	46	0.00		0.0		31.0								
2019	03	20	50	29	50	0.00		0.0		29.0								
2019	03	21	56	26	48	0.00		0.0		27.0								
2019	03	22	53	22	53	0.00		0.0		26.0								
2019	03	23	56	35	49	0.00		0.0		24.0								
2019	03	24	49	26	44	0.00		0.0		21.0								
2019	03	25	54	29	47	0.09		0.2		20.0								
2019	03	26	60	30	55	0.00		0.0		17.0								
2019	03	27	55	27	43	0.00		0.0		16.0								
2019	03	28	43	27	32	0.05		T		16.0								
2019	03	29	32	26	30	0.13		1.0		17.0								
2019	03	30	43	18	42	0.05		1.5		15.0								
2019	03	31	51	24	50	0.00		0.0		14.0								
Summary			40	15		0.95		14.9										

Snow melt

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests.

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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Station: **RED LODGE, MT US USC00246918**

Record of Climatological Observations

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Generated on 06/08/2020

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	04	01	50	27	33	0.01		T		13.0								
2019	04	02	40	21	40	0.33		2.0		14.0								
2019	04	03	49	29	48	0.00		0.0		13.0								
2019	04	04	60	32	55	0.00		0.0		11.0								
2019	04	05	58	35		0.00		0.0										
2019	04	06	57	31		0.00		0.0										
2019	04	07	58	31	54	0.00		0.0		9.0								
2019	04	08	54	34	41	0.03		0.0		9.0								
2019	04	09	43	32	38	0.08		0.0		5.0								
2019	04	10	38	27	29	0.60		6.5		10.0								
2019	04	11	34	16	30	0.04		T		6.0								
2019	04	12	38	20	37	0.12		2.0		4.0								
2019	04	13	51	21	48	0.00		0.0		0.0								
2019	04	14	48	30	43	0.02		0.0		0.0								
2019	04	15	47	27	44	0.15		1.5		0.0								
2019	04	16	50	32	43	T		0.0		0.0								
2019	04	17	52	29	50	0.06		0.0		0.0								
2019	04	18	65	35	65	0.00		0.0		0.0								
2019	04	19	72	39	71	0.00		0.0		0.0								
2019	04	20	71	48	62	0.00		0.0		0.0								
2019	04	21	62	32	37	0.69		T		0.0								
2019	04	22	54	32	53	0.13		T		0.0								
2019	04	23	68	38	65	0.00		0.0		0.0								
2019	04	24	65	40	44	0.07		0.0		0.0								
2019	04	25	46	29	46	T		0.0		0.0								
2019	04	26	49	27	37	0.31		0.0		0.0								
2019	04	27	58	28	53	0.13		T		0.0								
2019	04	28	53	23	33	0.42		5.0		T								
2019	04	29	37	16	33	T		0.0		0.0								
2019	04	30	33	22	28	0.17		2.0		0.0								
		Summary	52	29		3.36		19.0										

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National Oceanic & Atmospheric Administration
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Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	05	01	44	21	41	0.13		1.5		0.0								
2019	05	02	50	26	45	0.00		0.0		0.0								
2019	05	03	57	26	57	0.09		0.5		0.0								
2019	05	04	61	32	60	0.00		0.0		0.0								
2019	05	05	60	32	32	0.01		0.0		0.0								
2019	05	06	37	28	37	0.07		0.4		0.0								
2019	05	07	44	34	43	0.10		0.0		0.0								
2019	05	08	47	35	44	T		0.0		0.0								
2019	05	09	50	31	46	0.11		0.5		0.0								
2019	05	10	59	32	54	0.00		0.0		0.0								
2019	05	11	64	36	63	0.02		0.0		0.0								
2019	05	12	73	36	72	0.00		0.0		0.0								
2019	05	13	74	49	69	0.00		0.0		0.0								
2019	05	14	74	48	68	0.00		0.0		0.0								
2019	05	15	70	50	56	0.10		0.0		0.0								
2019	05	16	56	44	45	0.01		0.0		0.0								
2019	05	17	47	41	44	1.09		0.0		0.0								
2019	05	18	44	30	34	0.44		0.2		0.0								
2019	05	19	34	26	31	0.11		1.0		0.0								
2019	05	20	39	29	38	0.13		0.2		0.0								
2019	05	21	38	32	35	0.30		T		0.0								
2019	05	22	43	30	39	0.93		10.0		5.0								
2019	05	23	48	36	45	0.02		0.0		0.0								
2019	05	24	56	36	51	0.34		0.0		0.0								
2019	05	25	63	39	61	0.00		0.0		0.0								
2019	05	26	64	38	51	0.03		0.0		0.0								
2019	05	27	51	42	42	0.44		0.0		0.0								
2019	05	28	55	39	53	0.82		0.0		0.0								
2019	05	29	64	36	64	0.00		0.0		0.0								
2019	05	30	72	41	71	0.00		0.0		0.0								
2019	05	31	71	44	57	0.04		0.0		0.0								
		Summary	55	35		5.33		14.3										

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*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

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Current Location: Elev: 5646 ft. Lat: 45.1769° N Lon: -109.2571° W
Station: **RED LODGE, MT US USC00246918**

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151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	06	01	72	40	72	0.00		0.0		0.0								
2019	06	02	77	51	71	0.03		0.0		0.0								
2019	06	03	75	53	66	0.24		0.0		0.0								
2019	06	04	73	44	72	0.02		0.0		0.0								
2019	06	05	74	49	72	0.00		0.0		0.0								
2019	06	06	80	49	77	0.00		0.0		0.0								
2019	06	07	79	44	47	0.19		0.0		0.0								
2019	06	08	48	31	46	0.51		1.0		0.0								
2019	06	09	62	31		0.06		0.0		0.0								
2019	06	10	66	39		0.00		0.0		0.0								
2019	06	11	63	44	58	0.04		0.0		0.0								
2019	06	12	74	46	74	0.00		0.0		0.0								
2019	06	13	74	54		0.10		0.0		0.0								
2019	06	14	74	48	71	0.05		0.0		0.0								
2019	06	15	71	45	68	0.29		0.0		0.0								
2019	06	16	68	44	57	0.36		0.0		0.0								
2019	06	17	68	43	64	0.17		0.0		0.0								
2019	06	18	70	48		0.07		0.0		0.0								
2019	06	19	70	47		0.12		0.0		0.0								
2019	06	20	63	37		0.16		0.0		0.0								
2019	06	21	64	34	54	0.08		0.0		0.0								
2019	06	22	59	35		0.01		0.0		0.0								
2019	06	23	64	41	59	0.00		0.0		0.0								
2019	06	24	64	45	56	0.15		0.0		0.0								
2019	06	25	69	43	59	0.02		0.0		0.0								
2019	06	26	71	45	62	0.07		0.0		0.0								
2019	06	27	81	44	81	0.00		0.0		0.0								
2019	06	28	81	48	73	0.00		0.0		0.0								
2019	06	29	74	53	73	0.00		0.0		0.0								
2019	06	30	73	46	60	0.20		0.0		0.0								
Summary			70	44		2.94		1.0										

Empty, or blank, cells indicate that a data observation was not reported.

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Current Location: Elev: 5646 ft. Lat: 45.1769° N Lon: -109.2571° W
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151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	07	01	76	49	72	0.65		0.0		0.0								
2019	07	02	73	53	68	0.04		0.0		0.0								
2019	07	03	68	47	57	0.16		0.0		0.0								
2019	07	04	66	48	62	0.17		0.0		0.0								
2019	07	05	67	47	63	0.14		0.0		0.0								
2019	07	06	75	43	70	T		0.0		0.0								
2019	07	07	72	51	68	0.09		0.0		0.0								
2019	07	08	72	48	52	0.16		0.0		0.0								
2019	07	09	66	44	62	0.19		0.0		0.0								
2019	07	10	81	44	78	0.00		0.0		0.0								
2019	07	11	81	58	77	0.01		0.0		0.0								
2019	07	12	79	52	78	0.03		0.0		0.0								
2019	07	13	82	55	71	0.44		0.0		0.0								
2019	07	14	82	54	78	0.14		0.0		0.0								
2019	07	15	79	53	66	0.04		0.0		0.0								
2019	07	16	72	46	61	0.30		0.0		0.0								
2019	07	17	75	51	70	0.03		0.0		0.0								
2019	07	18	76	46	74	0.00		0.0		0.0								
2019	07	19	75	48	67	0.00		0.0		0.0								
2019	07	20	71	41	70	0.00		0.0		0.0								
2019	07	21	70	46	68	0.00		0.0		0.0								
2019	07	22	84	48	79	0.00		0.0		0.0								
2019	07	23	89	58	87	0.17		0.0		0.0								
2019	07	24	87	56	80	0.24		0.0		0.0								
2019	07	25	80	49	77	0.04		0.0		0.0								
2019	07	26	82	51	81	0.00		0.0		0.0								
2019	07	27	82	56	77	0.00		0.0		0.0								
2019	07	28	79	50	76	0.00		0.0		0.0								
2019	07	29	81	44	81	0.06		0.0		0.0								
2019	07	30	84	52	83	0.00		0.0		0.0								
2019	07	31	85	54	79	0.19		0.0		0.0								
		Summary	77	50		3.29		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 5646 ft. Lat: 45.1769° N Lon: -109.2571° W
Station: **RED LODGE, MT US USC00246918**

Record of Climatological Observations

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Generated on 06/08/2020

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	08	01	82	60	74	T		0.0		0.0								
2019	08	02	86	54		0.00		0.0		0.0								
2019	08	03	86	55	83	0.02		0.0		0.0								
2019	08	04	84	53	84	0.00		0.0		0.0								
2019	08	05	83	55	75	0.12		0.0		0.0								
2019	08	06	83	57	78	0.12		0.0		0.0								
2019	08	07	81	50	77	0.00		0.0		0.0								
2019	08	08	80	58	72	0.02		0.0		0.0								
2019	08	09	80	57	79	0.03		0.0		0.0								
2019	08	10	79	51	62	0.06		0.0		0.0								
2019	08	11	74	51	71	0.05		0.0		0.0								
2019	08	12	75	42		0.00		0.0		0.0								
2019	08	13	78	45		0.00		0.0		0.0								
2019	08	14	79	49		0.00		0.0		0.0								
2019	08	15	77	51		0.00		0.0		0.0								
2019	08	16	76	46		0.32		0.0		0.0								
2019	08	17	71	48		T		0.0		0.0								
2019	08	18	80	44		0.04		0.0		0.0								
2019	08	19	86	48		0.00		0.0		0.0								
2019	08	20	86	47		0.00		0.0		0.0								
2019	08	21	82	47		T		0.0		0.0								
2019	08	22	78	56		0.00		0.0		0.0								
2019	08	23	69	51		0.04		0.0		0.0								
2019	08	24	80	50		0.00		0.0		0.0								
2019	08	25	78	47		0.11		0.0		0.0								
2019	08	26	68	37		0.05		0.0		0.0								
2019	08	27	70	38		0.00		0.0		0.0								
2019	08	28	84	47	83	0.00		0.0		0.0								
2019	08	29	83	45	69	T		0.0		0.0								
2019	08	30	72	44	71	0.07		0.0		0.0								
2019	08	31	83	52	82	0.03		0.0		0.0								
Summary			79	50		1.08		0.0										

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	09	01	84	51		0.00		0.0		0.0								
2019	09	02	87	48		0.00		0.0		0.0								
2019	09	03	86	45	81	0.00		0.0		0.0								
2019	09	04	92	55	92	0.00		0.0		0.0								
2019	09	05	92	46	82	0.00		0.0		0.0								
2019	09	06	85	47	57	0.06		0.0		0.0								
2019	09	07	57	45		0.12		0.0		0.0								
2019	09	08	66	45	57	0.02		0.0		0.0								
2019	09	09	62	46	59	0.27		0.0		0.0								
2019	09	10	61	41	50	0.08		0.0		0.0								
2019	09	11	50	42		1.00		0.0		0.0								
2019	09	12	65	35		0.18		0.0		0.0								
2019	09	13	73	43		0.00		0.0		0.0								
2019	09	14	79	45	78	0.00		0.0		0.0								
2019	09	15	81	50		0.00		0.0		0.0								
2019	09	16	81	50	79	0.00		0.0		0.0								
2019	09	17	79	50	51	0.04		0.0		0.0								
2019	09	18	68	37	66	0.01		0.0		0.0								
2019	09	19	66	35	59	0.00		0.0		0.0								
2019	09	20	59	43	43	1.08		0.0		0.0								
2019	09	21	55	38	55	0.60		0.0		0.0								
2019	09	22	65	35	64	0.00		0.0		0.0								
2019	09	23	73	42	73	0.00		0.0		0.0								
2019	09	24	73	43	67	0.00		0.0		0.0								
2019	09	25	67	39	59	0.00		0.0		0.0								
2019	09	26	73	37	63	0.00		0.0		0.0								
2019	09	27	63	38	47	0.07		0.0		0.0								
2019	09	28	47	32	33	0.45		T		0.0								
2019	09	29	35	27	32	0.15		1.5		0.0								
2019	09	30	33	24	33	0.01		T		0.0								
		Summary	69	42		4.14		1.5										

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Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	10	01	33	25	29	0.04		0.2		T								
2019	10	02	42	26	42	0.09		1.5		0.0								
2019	10	03	55	27	54	0.00		0.0		0.0								
2019	10	04	54	33	50	0.00		0.0		0.0								
2019	10	05	50	26	42	0.23		0.0		0.0								
2019	10	06	70	34	68	0.00		0.0		0.0								
2019	10	07	70	34	68	0.00		0.0		0.0								
2019	10	08	69	46	68	0.00		0.0		0.0								
2019	10	09	68	16	17	0.68		11.5		11.0								
2019	10	10	24	9	24	0.08		2.5		8.0								
2019	10	11	36	7	35	0.00		0.0		5.0								
2019	10	12	49	23	48	0.00		0.0		3.0								
2019	10	13	57	30	53	0.00		0.0		1.0								
2019	10	14	54	32	46	0.00		0.0		0.0								
2019	10	15	50	23	47	0.00		0.0		0.0								
2019	10	16	68	36	64	0.00		0.0		0.0								
2019	10	17	69	43	65	0.00		0.0		0.0								
2019	10	18	65	28	50	T		0.0		0.0								
2019	10	19	50	23	44	0.00		0.0		0.0								
2019	10	20	44	30	39	0.22		4.0		2.0								
2019	10	21	43	24	40	T		0.0		0.0								
2019	10	22	57	26	56	T		T		0.0								
2019	10	23	56	27	34	0.24		3.0		3.0								
2019	10	24	42	20	40	T		T		2.0								
2019	10	25	58	29	58	0.00		0.0		0.0								
2019	10	26	61	21	21	0.54		11.0		10.0								
2019	10	27	21	6	16	0.14		5.5		14.0								
2019	10	28	18	1	10	0.17		2.5		15.0								
2019	10	29	11	-1	9	0.09		1.5		12.0								
2019	10	30	17	-3	17	0.00		0.0		10.0								
2019	10	31	33	9	30	0.00		0.0		9.0								
		Summary	48	23		2.52		43.2										

Empty, or blank, cells indicate that a data observation was not reported.

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	11	01	35	18	34	0.13		2.0		10.0								
2019	11	02	47	19	41	0.00		0.0		8.0								
2019	11	03	41	37	37	T		T		7.0								
2019	11	04	37	32	32	0.60		6.5		11.0								
2019	11	05	55	28	41	T		T		9.0								
2019	11	06	47	12	15	0.09		1.2		10.0								
2019	11	07	34	12	29	T		T		10.0								
2019	11	08	60	25	46	0.00		0.0		9.0								
2019	11	09	61	32	42	0.00		0.0		7.0								
2019	11	10	45	6	6	0.07		2.5		9.0								
2019	11	11	17	-1	12	0.05		0.5		9.0								
2019	11	12	49	10	35	0.00		0.0		9.0								
2019	11	13	45	26	36	T		0.0		8.0								
2019	11	14	42	21	37	0.00		0.0		8.0								
2019	11	15	55	37	39	0.00		0.0		7.0								
2019	11	16	44	33	33	0.10		T		7.0								
2019	11	17	46	28	41	0.01		0.0		6.0								
2019	11	18	56	27	45	0.00		0.0		6.0								
2019	11	19	55	31	48	0.00		0.0		5.0								
2019	11	20	48	21	21	0.16		2.0		7.0								
2019	11	21	28	5	22	T		T		7.0								
2019	11	22	48	22	35	0.00		0.0		7.0								
2019	11	23	52	26	39	0.00		0.0		6.0								
2019	11	24	51	31	41	0.00		0.0		5.0								
2019	11	25	41	16	25	0.00		0.0		5.0								
2019	11	26	28	14	16	0.08		1.0		6.0								
2019	11	27	24	10	19	T		0.0		6.0								
2019	11	28	19	7	16	0.03		1.0		6.0								
2019	11	29	16	11	11	0.08		1.5		7.0								
2019	11	30	22	11	14	0.34		9.0		16.0								
Summary			42	20		1.74		27.2										

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Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2019	12	01	23	11	20	0.00		0.0		14.0								
2019	12	02	45	20	33	0.00		0.0		13.0								
2019	12	03	46	22	34	0.00		0.0		12.0								
2019	12	04	45	30	30	0.00		0.0		12.0								
2019	12	05	38	21	26	0.00		0.0		12.0								
2019	12	06	42	26	31	0.00		0.0		12.0								
2019	12	07	53	25	44	0.00		0.0		10.0								
2019	12	08	44	17	17	0.24		4.0		14.0								
2019	12	09	33	7	27	0.03		0.5		13.0								
2019	12	10	35	14	28	0.04		0.5		13.0								
2019	12	11	39	22	28	0.00		0.0		13.0								
2019	12	12	47	21	31	0.00		0.0		12.0								
2019	12	13	36	23	29	0.00		0.0		12.0								
2019	12	14	30	19	26	0.00		0.0		12.0								
2019	12	15	29	9	22	0.00		0.0		12.0								
2019	12	16	28	8	17	T		0.0		12.0								
2019	12	17	31	17	26	0.00		0.0		12.0								
2019	12	18	50	24	35	0.00		0.0		11.0								
2019	12	19	44	19	33	0.00		0.0		11.0								
2019	12	20	50	33		0.00		0.0		11.0								
2019	12	21	55	33	41	0.00		0.0		11.0								
2019	12	22	52	34	43	0.00		0.0		11.0								
2019	12	23	51	27	38	0.00		0.0		11.0								
2019	12	24	41	28	32	0.00		0.0		11.0								
2019	12	25	34	26	26	0.02		T		11.0								
2019	12	26	29	21	22	0.00		0.0		11.0								
2019	12	27	32	11	22	0.00		0.0		11.0								
2019	12	28	22	15	19	0.02		0.5		11.0								
2019	12	29	27	7	18	0.02		0.5		11.0								
2019	12	30	27	6	18	0.00		0.0		11.0								
2019	12	31	37	13	28	0.00		0.0		11.0								
		Summary	39	20		0.37		6.0										

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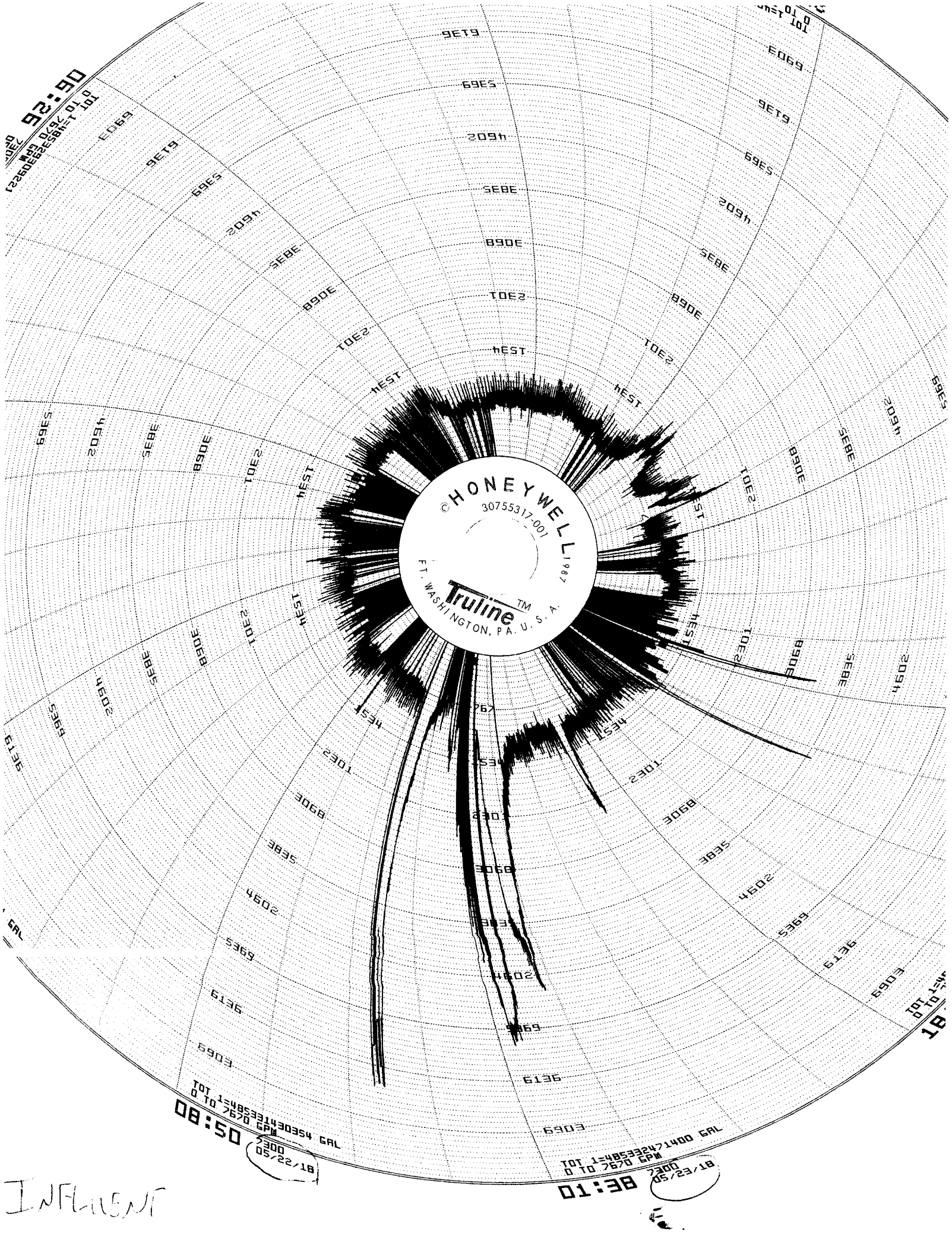
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FT. WASHINGTON, PA. U.S.A.
08:50
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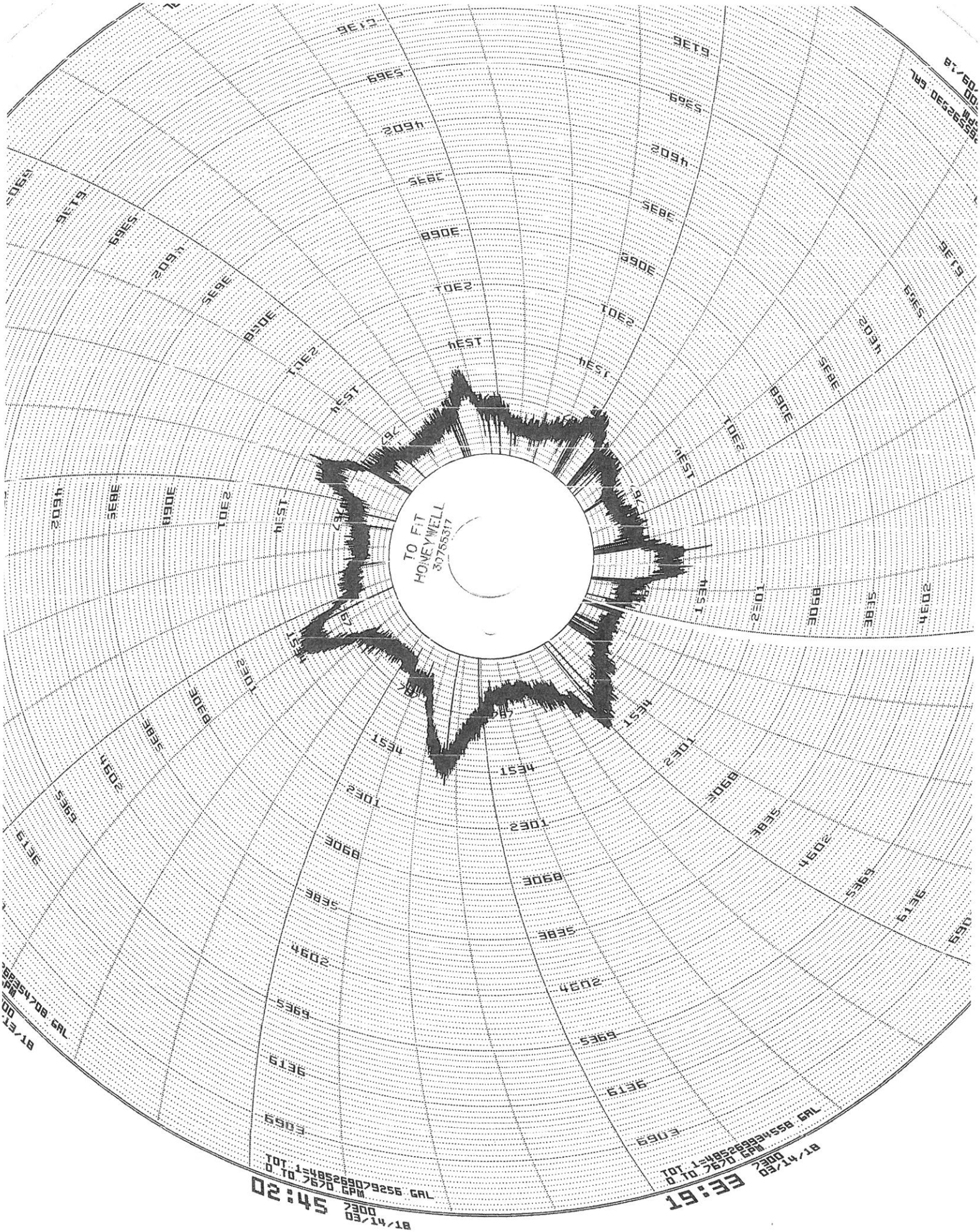
0 TO 7670 GPM
2300
05/22/18
01:38
TOT 1=48533247 1400 GAL
0 TO 7670 GPM
2300
05/23/18

INFLUENT


TO FIT
HONEYWELL
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1534
2301
3068
3835
4602
5369
6136
6903
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2300
03/14/18
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19:33
2300
03/14/18

INFLUENT

TO FIT
HONEYWELL
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01/23/18
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01/24/18
19:39

INFLUENT

Appendix L

Hydrology Calculations

Precipitation Frequency Data Output

NOAA Atlas 2

Montana 45.185778°N 109.246821°W
Site-specific Estimates

Map	Precipitation (inches)	Precipitation Intensity (in/hr)
2-year 6-hour	1.25	0.21
2-year 24-hour	2.17	0.09
100-year 6-hour	2.59	0.43
100-year 24-hour	4.47	0.19

Go to PFDS
Go to NA2

Hydrometeorological Design Studies Center - NOAA/National Weather Service
1325 East-West Highway - Silver Spring, MD 20910 - (301) 713-1669
Tue Jan 16 19:01:15 2018

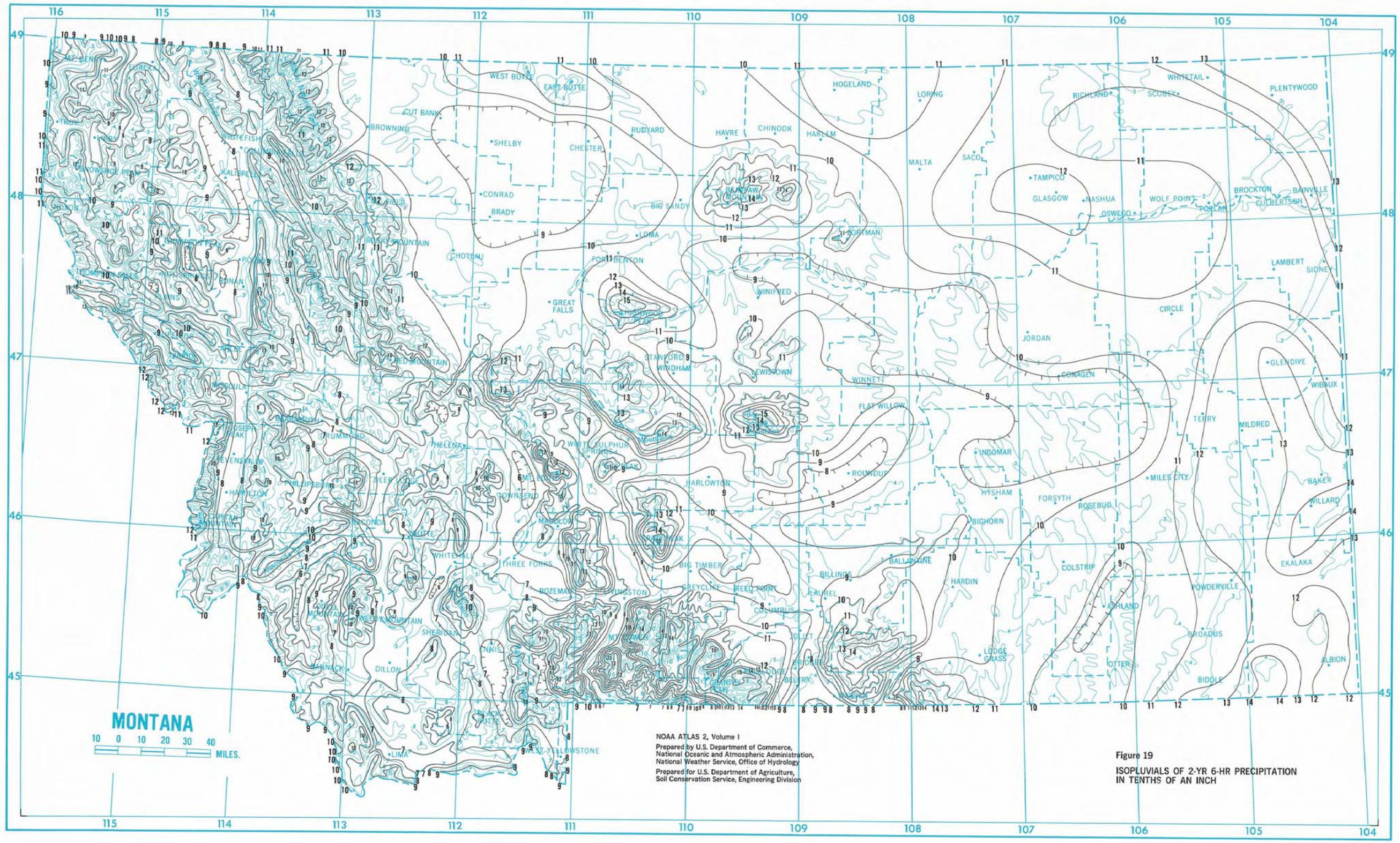

Figure 19

ISOPLUVIALS OF 2-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

MONTANA

10 0 10 20 30 40 MILES.

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National Weather Service, Office of Hydrology

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Figure 20

ISOPLUVIALS OF 5-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

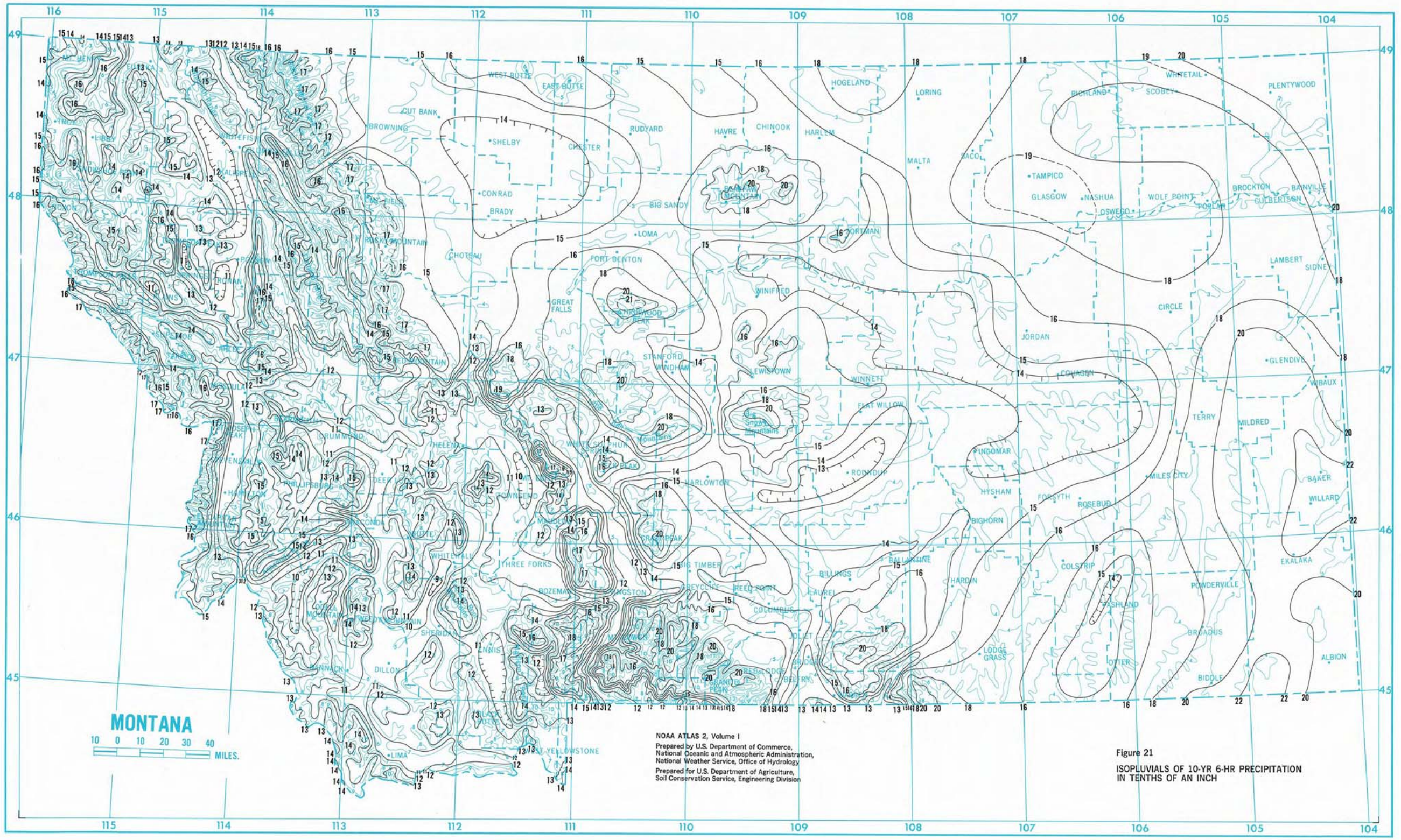

Figure 21

ISOPLUVIALS OF 10-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

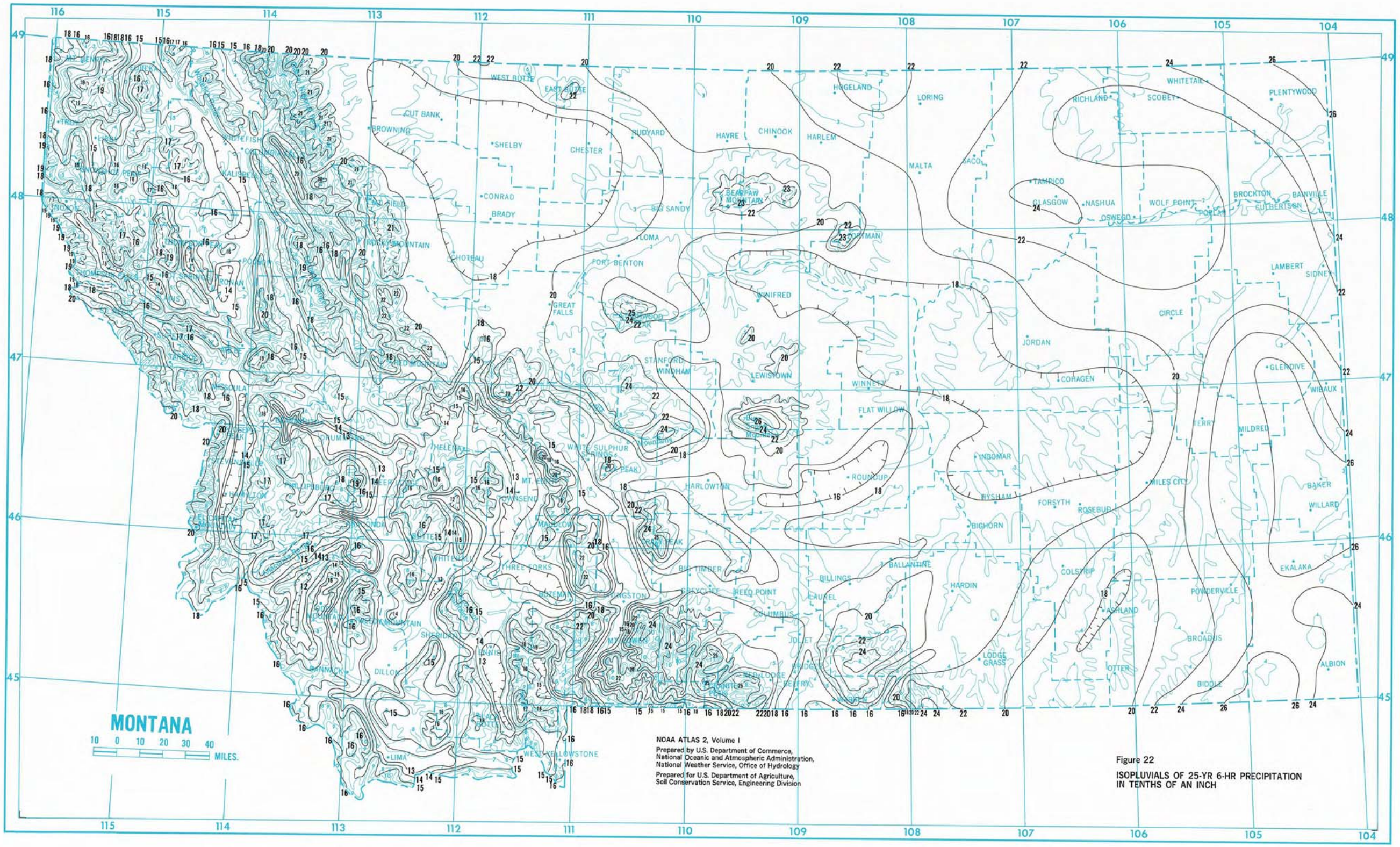

Figure 22

ISOPLUVIALS OF 25-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

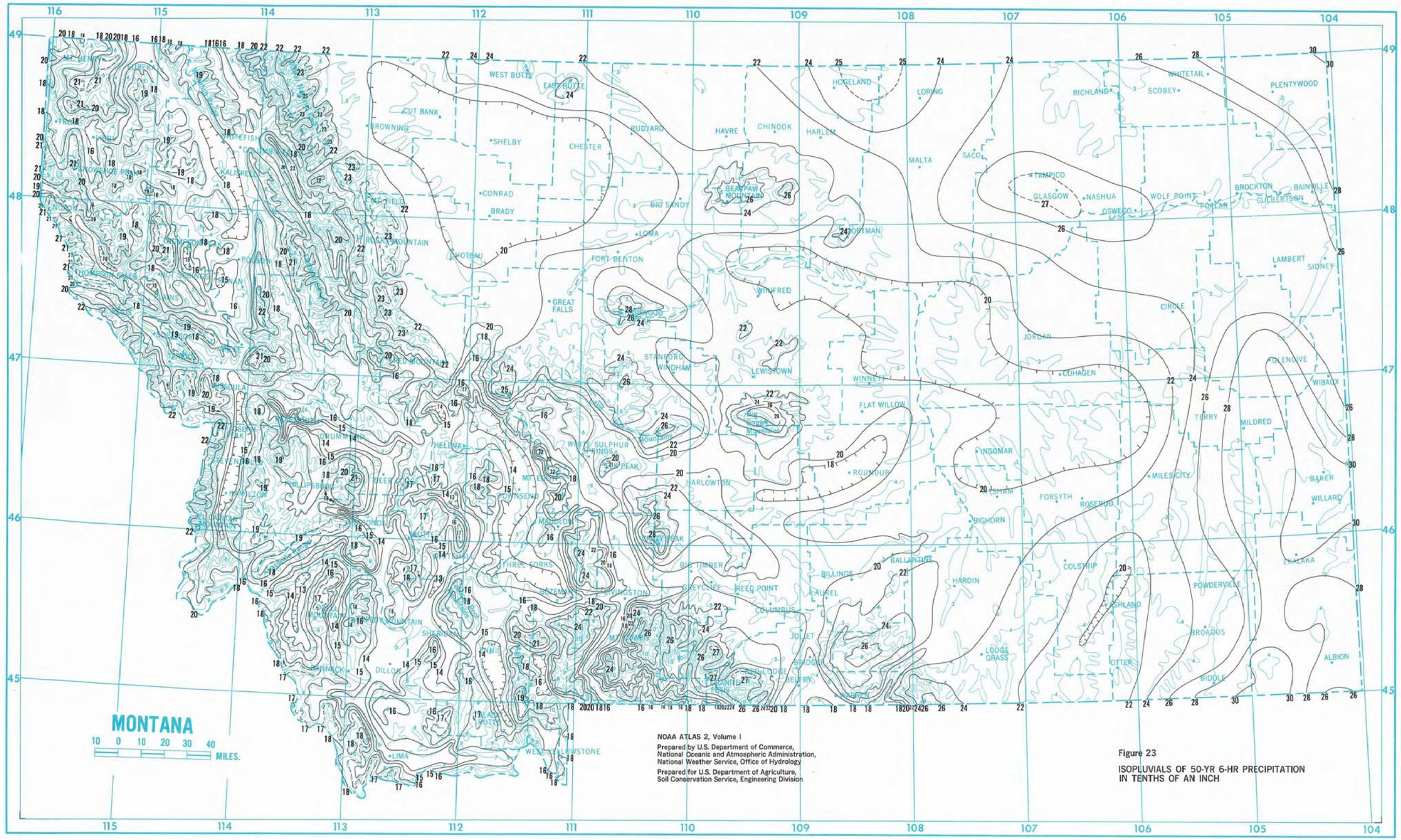

Figure 23

ISOPLUVIALS OF 50-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

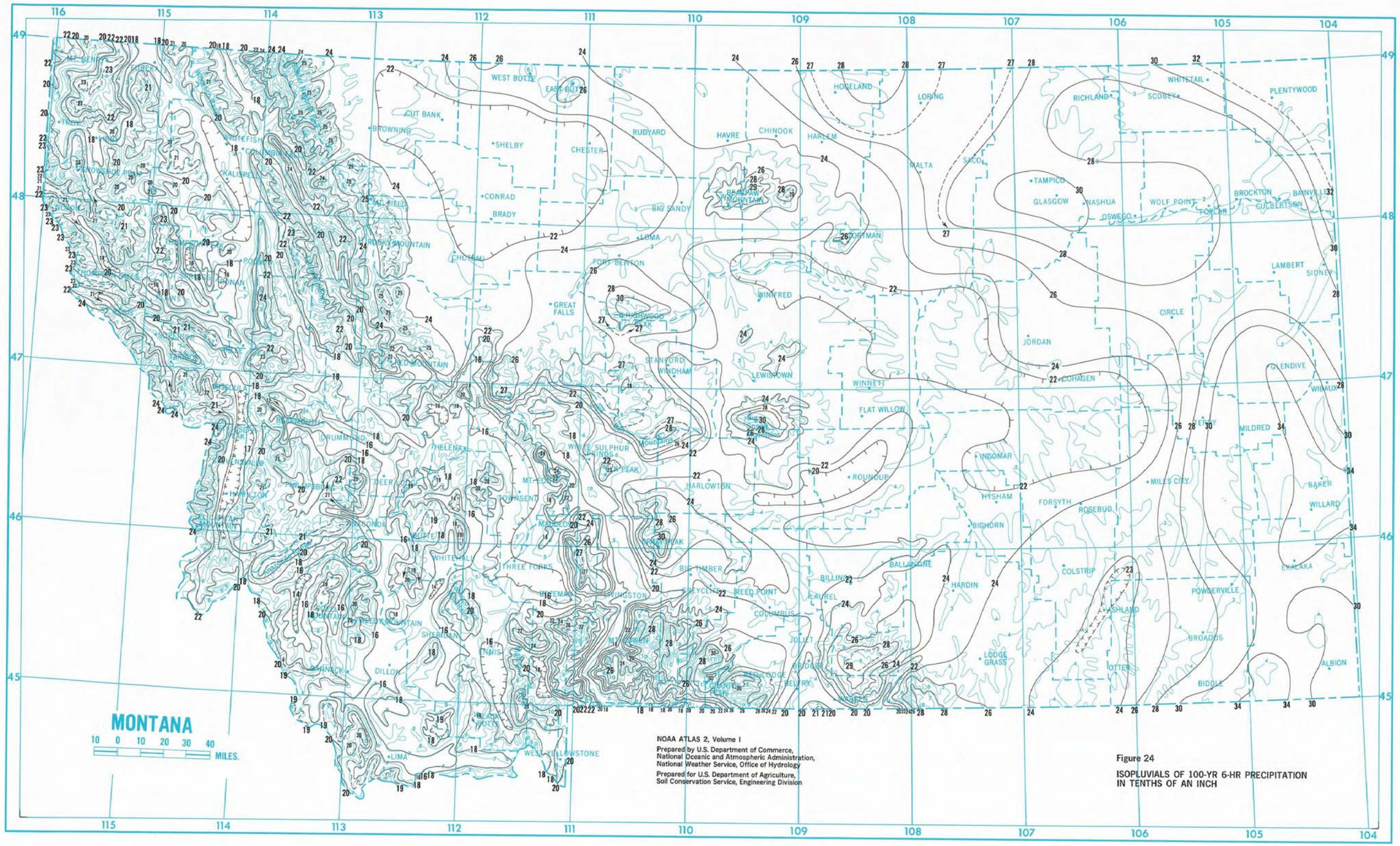

Figure 24

ISOPLUVIALS OF 100-YR 6-HR PRECIPITATION
IN TENTHS OF AN INCH

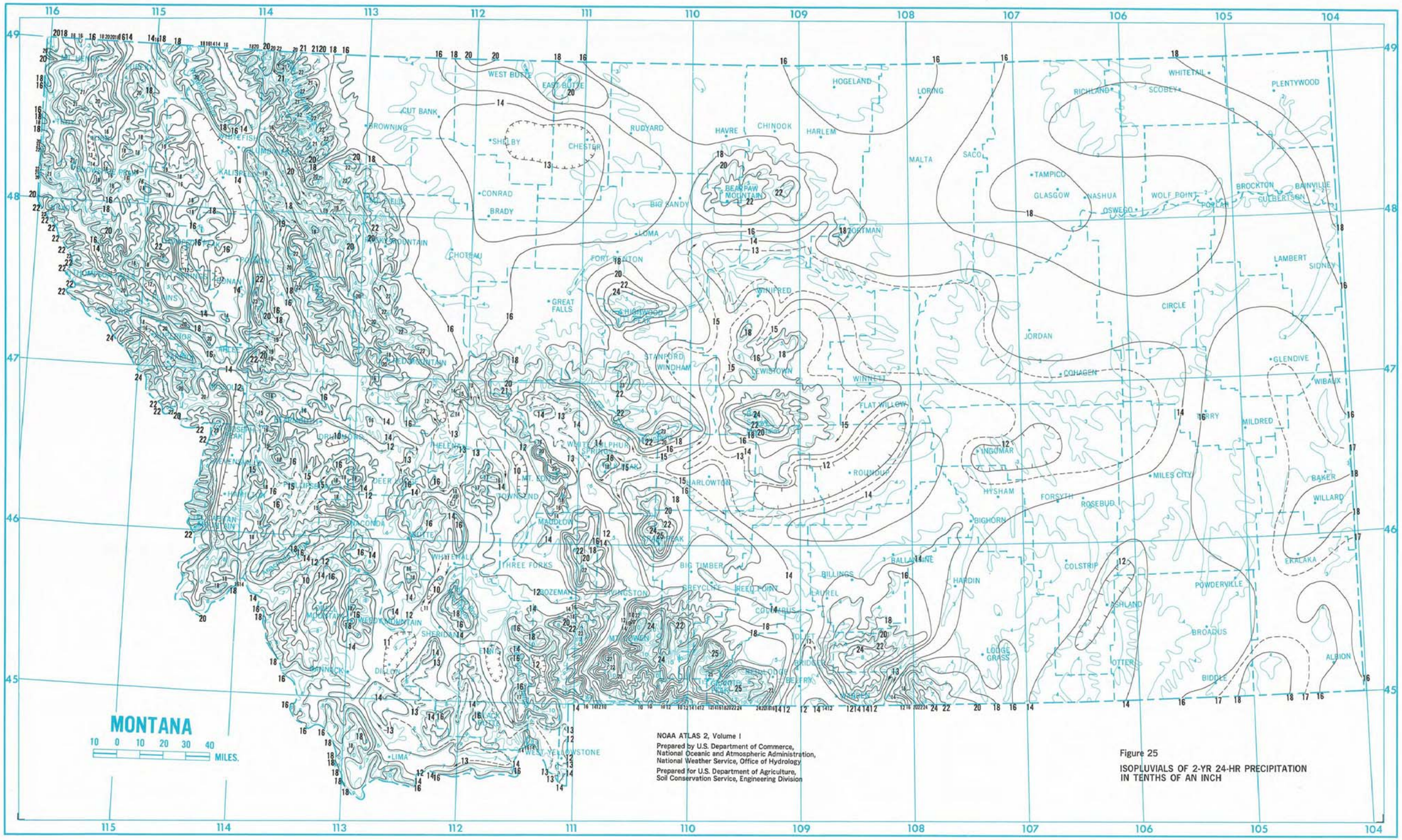

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Figure 25

ISOPLUVIALS OF 2-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH

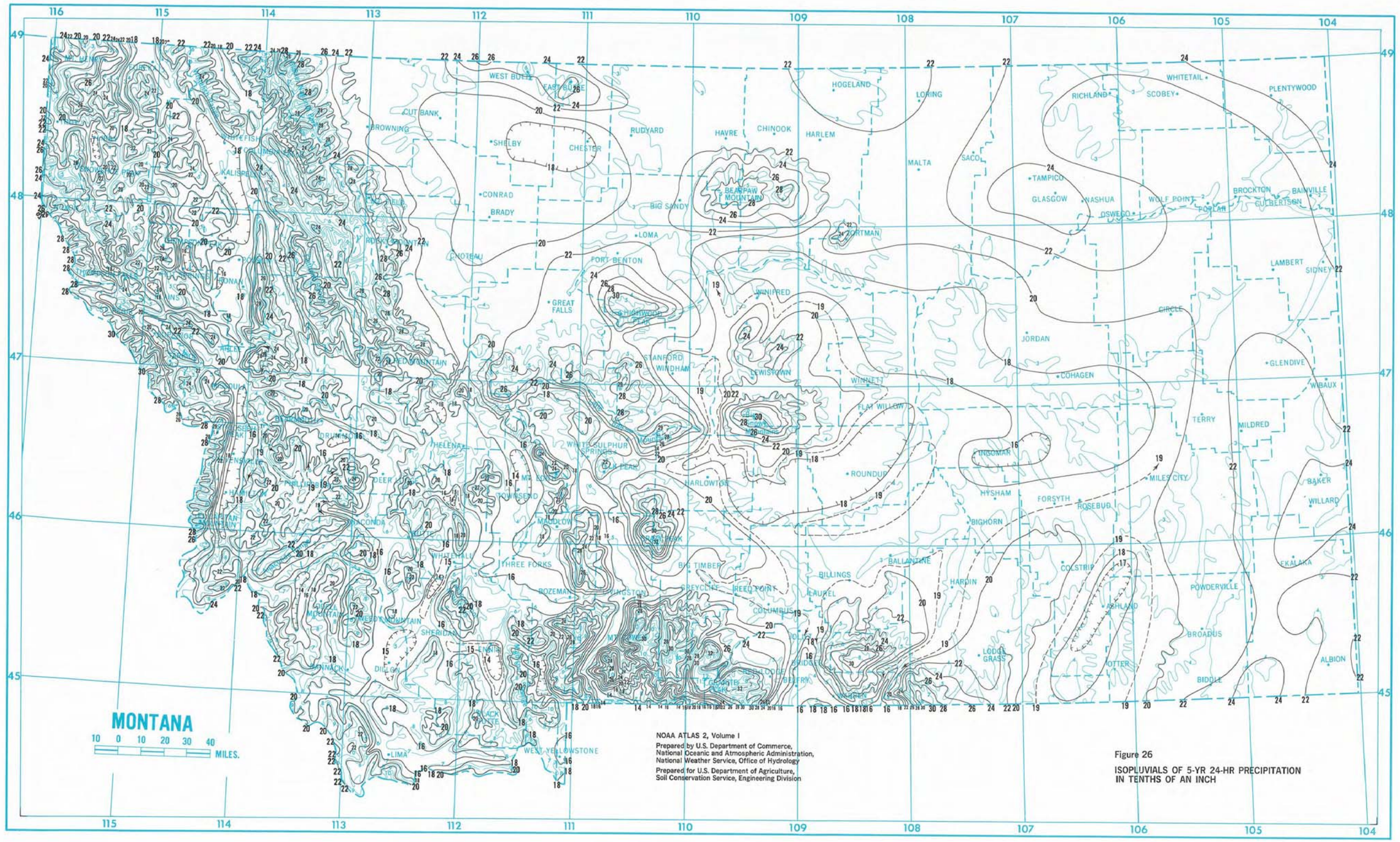

Figure 26

ISOPLUVIALS OF 5-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH

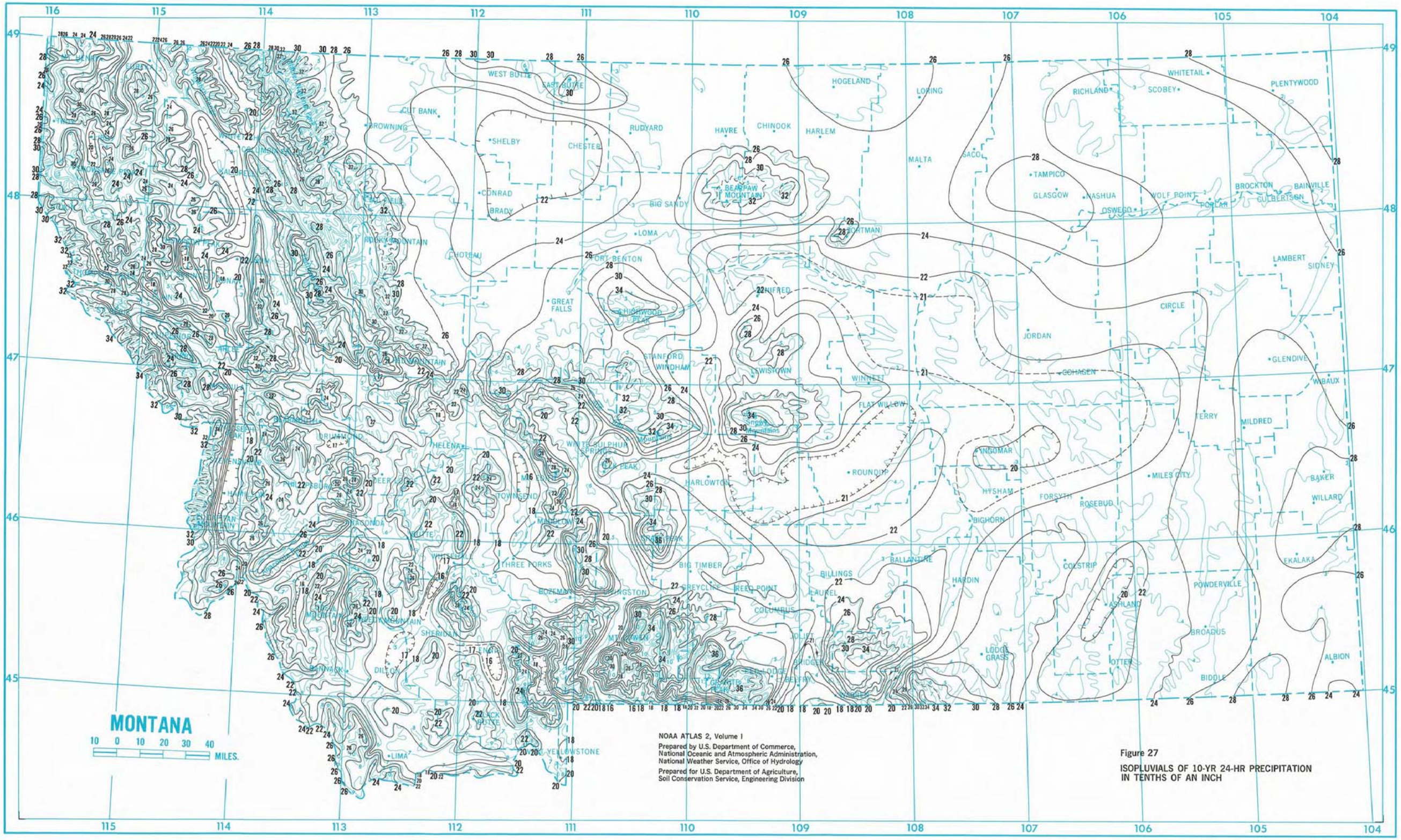

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Figure 27

ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH

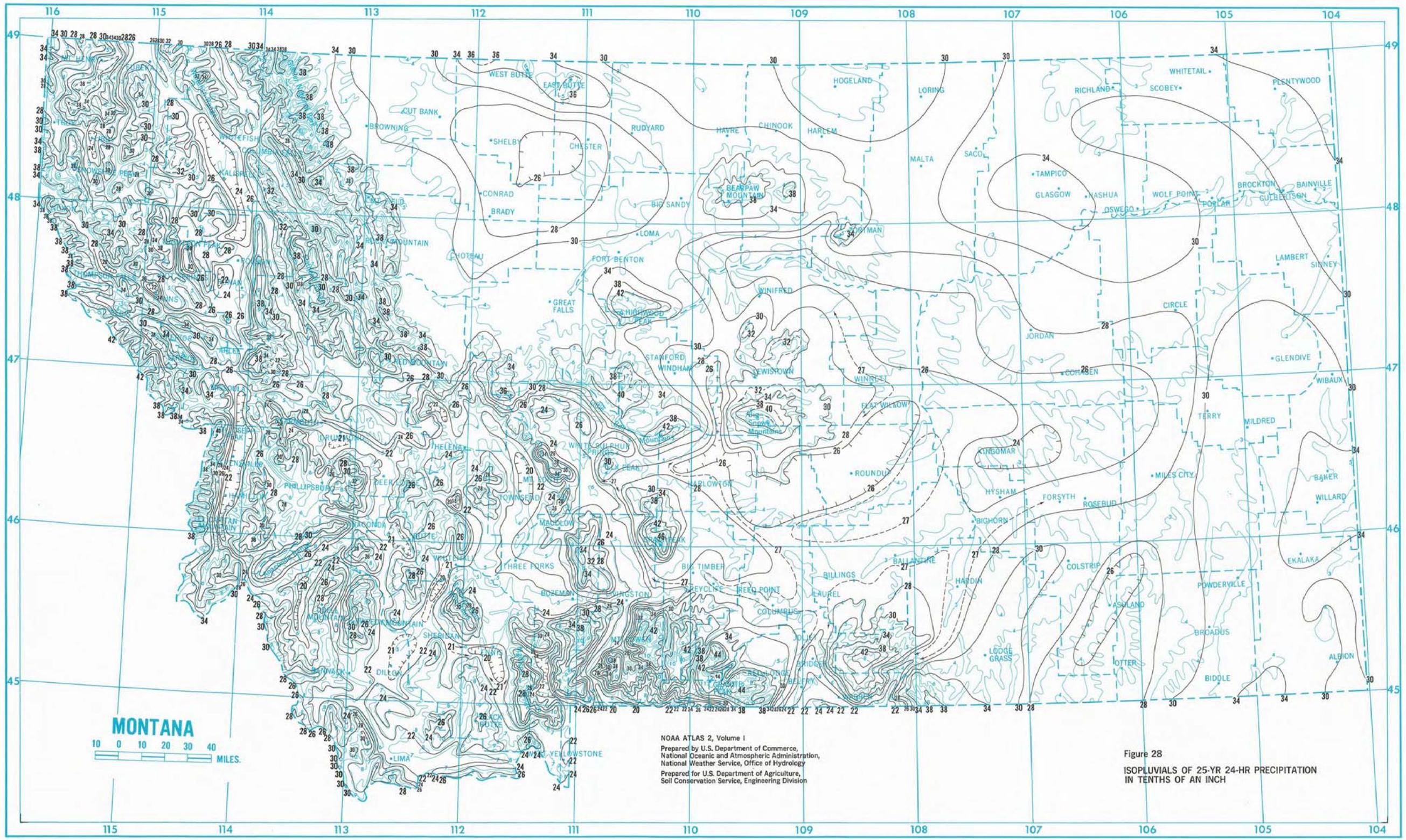

Figure 28

ISOPLUVIALS OF 25-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

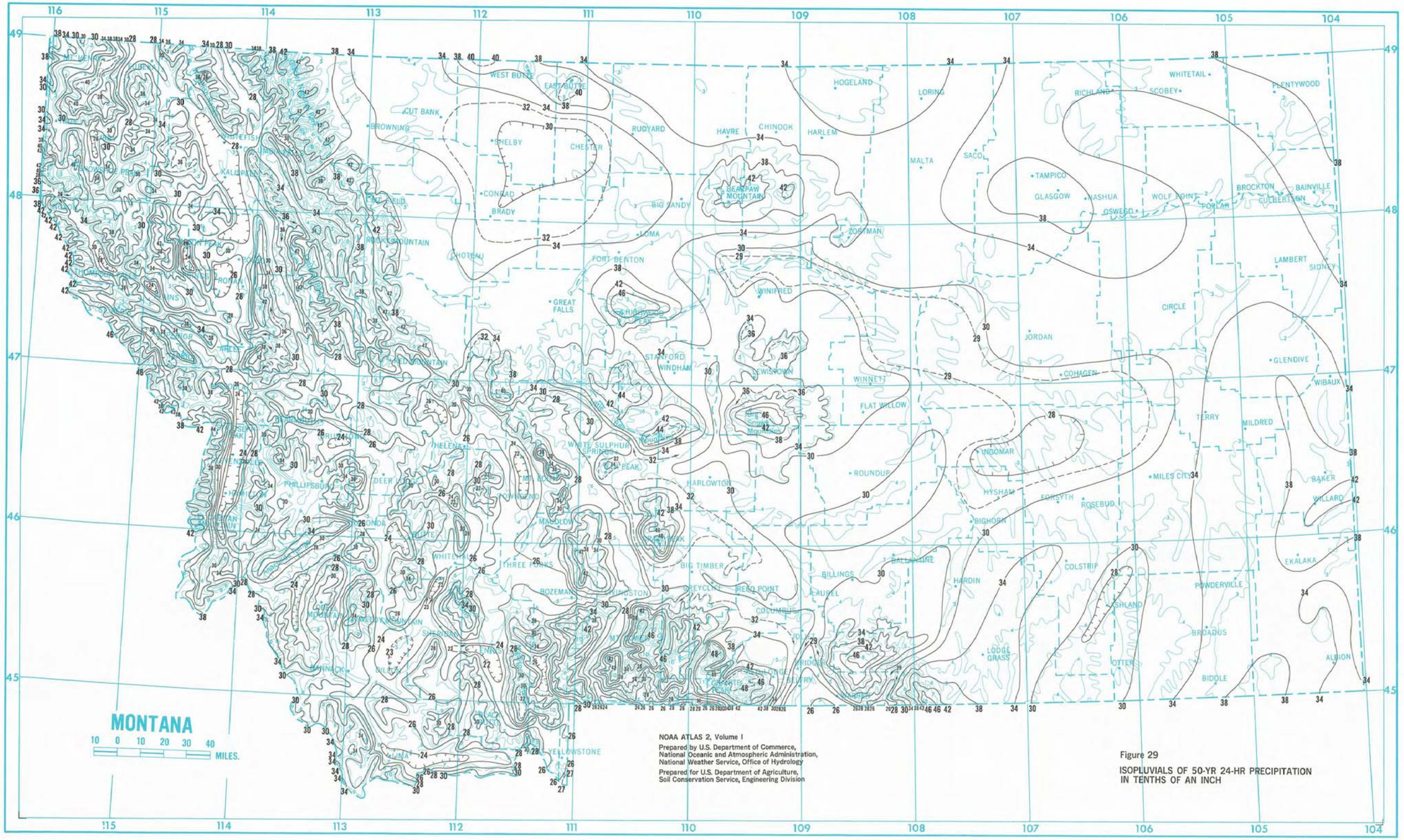

Figure 29

ISOPLUVIALS OF 50-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

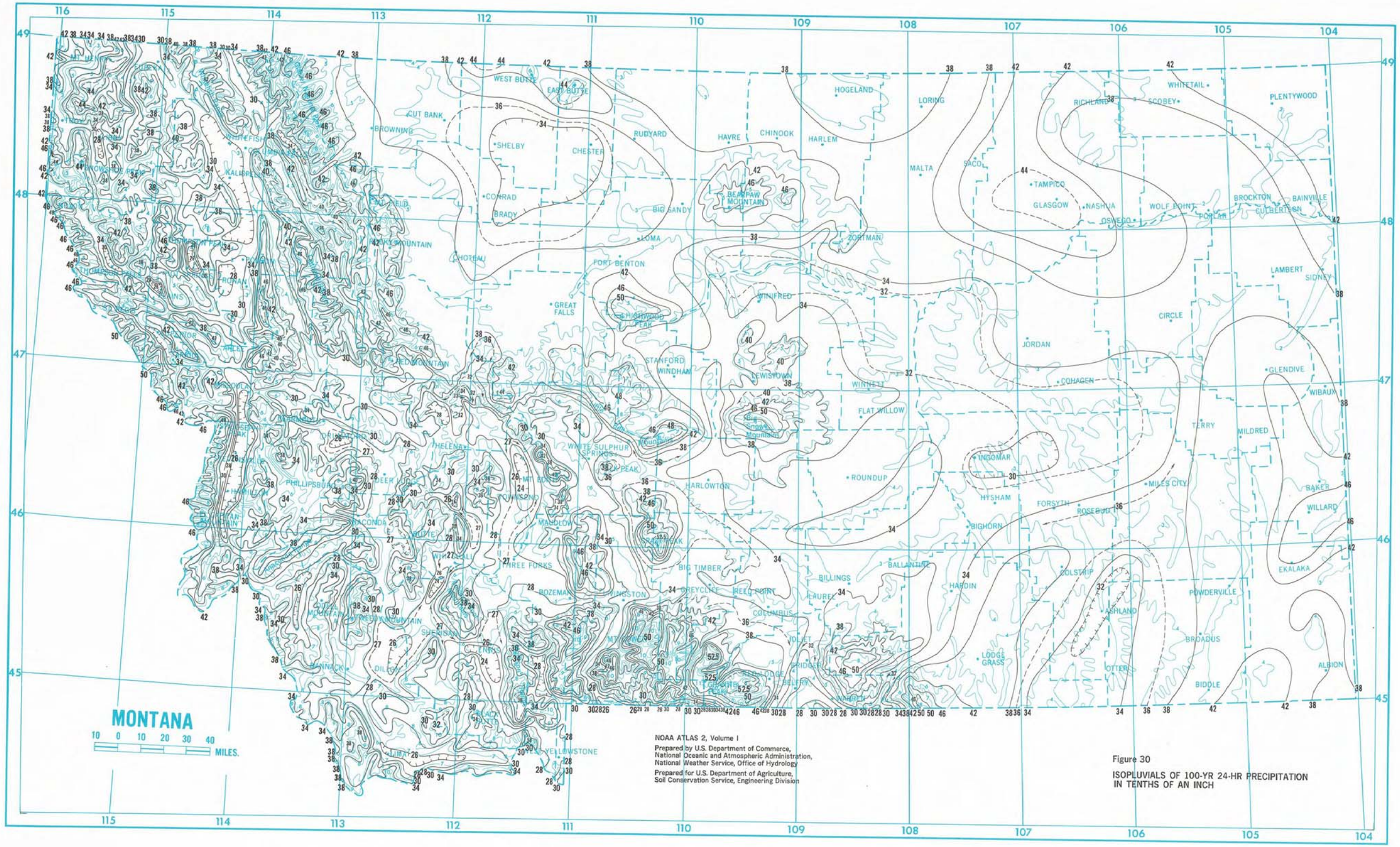

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Figure 30

ISOPLUVIALS OF 100-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH

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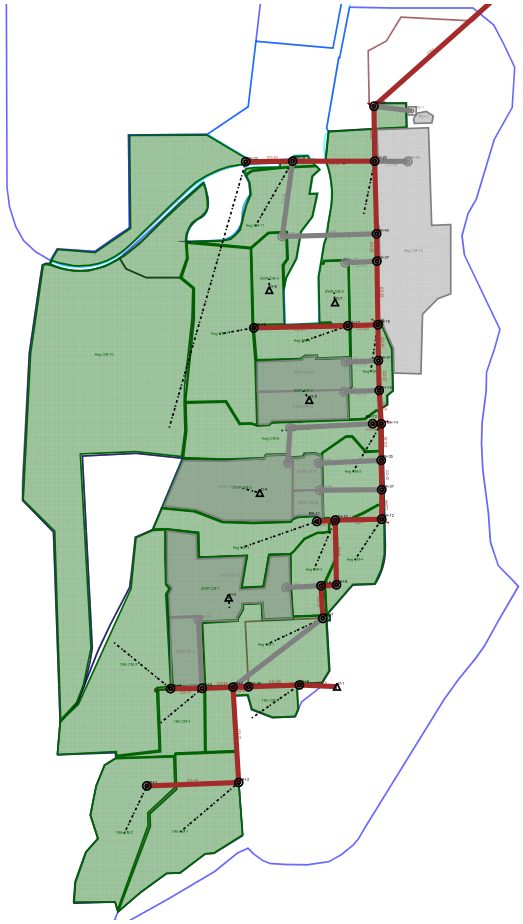
Appendix M

Hydraulics Calculations

Existing Conditions

Scenario: Pre-Development 2 -yr



Scenario Summary Report
Scenario: Pre-Development 2 -yr

Scenario Summary	
ID	225
Label	Pre-Development 2 -yr
Notes	
Active Topology	<I> Pre-Development Active Topology
User Data Extensions	<I> Pre-Development User Data Extensions
Physical	<I> Pre-Development Physical
Boundary Condition	<I> Pre-Development Boundary Condition
Initial Settings	<I> Pre-Development Initial Settings
Hydrology	<I> Pre-Development Hydrology
Output	<I> Pre-Development Output
Infiltration and Inflow	<I> Pre-Development Infiltration and Inflow
Rainfall Runoff	2-year
Water Quality	<I> Pre-Development Water Quality
Sanitary Loading	<I> Pre-Development Sanitary Loading
Headloss	<I> Pre-Development Headloss
Operational	<I> Pre-Development Operational
Design	<I> Pre-Development Design
System Flows	<I> Pre-Development System Flows
SCADA	<I> Pre-Development SCADA
Solver Calculation Options	<I> Base Calculation Options

Implicit Engine			
Y Iteration Tolerance	0.0 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.0 ft
NR Weighting Coefficient	0.700	Start Type	Transition Start
NR Iterations	10	Virtual Flow Depth	0.040 ft

Inlets			
Active Components for Combination Inlets on Grade	Grate and Curb	Neglect Gutter Cross Slope For Side Flow?	False
Active Components for Combination Inlets In Sag	Grate and Curb	Neglect Side Flow?	False

Grating Parameters (United Kingdom)

Grating Type	Grating Parameter
P	30.000
Q	45.000
R	60.000
S	80.000
T	110.000

Pressure Hydraulics	
Pressure Friction Method	Hazen-Williams

Scenario Summary Report
Scenario: Pre-Development 2 -yr

Rational Method			
Use Rational Method Frequency Factors	False	Allow Runoff Coefficient to Exceed 1.0?	False

SWMM Hydrology			
Default Infiltration Method	SCS CN	SWMM Hydrologic Increment	0.250 hours

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

FlexTable: Catchment Table

Current Time: 0.000 hours

ID	Label	Outflow Element	Area (User Defined) (acres)	Runoff Method	Loss Method	Unit Hydrograph Method	Flow (Maximum) (cfs)	SCS CN (Composite)	Time of Concentration (Composite) (hours)	Volume (Total Runoff) (gal)
35	19th CM-1	MH-2	27.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	1.19	70.000	0.363	202,512.6
36	19th CM-2	MH-1	24.530	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	1.05	71.000	0.734	199,610.2
37	19th CM-3	MH-4	40.450	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	2.09	70.000	0.249	304,487.1
38	19th CM-4	MH-5	9.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	3.91	85.000	0.356	215,760.6
39	19th CM-5	MH-6	10.100	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	2.33	81.000	0.547	181,230.5
40	SWR CM-1	O-3	28.340	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	17.52	87.000	0.197	754,836.8
41	SWR CM-2	O-4	25.950	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.46	82.000	0.437	499,444.4
42	SWR CM-3	O-5	16.510	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	12.40	89.000	0.163	496,893.5
43	SWR CM-4	O-6	8.230	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	4.97	86.000	0.153	206,230.4
44	SWR CM-5	O-7	5.360	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	3.02	86.000	0.204	134,178.1
45	Hag CM-1	MH-7	24.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	12.50	87.000	0.331	643,219.9
46	Hag CM-2	MH-10	8.840	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	6.20	88.000	0.155	250,507.6
47	Hag CM-3	MH-11	15.800	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.48	85.000	0.272	370,973.9
48	Hag CM-4	MH-12	11.220	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	3.76	86.000	0.640	278,522.2
49	Hag CM-5	MH-14	12.130	Unit Hydrograph	SCS CN					
50	Hag CM-6	MH-13	20.590	Unit Hydrograph	SCS CN					
51	Hag CM-7	MH-16	30.290	Unit Hydrograph	SCS CN					
52	Hag CM-8	MH-17	9.310	Unit Hydrograph	SCS CN					
53	Hag CM-9	MH-18	10.250	Unit Hydrograph	SCS CN					
54	Hag CM-10	MH-22	144.360	Unit Hydrograph	SCS CN					
55	Hag CM-11	MH-19	15.180	Unit Hydrograph	SCS CN					
56	Hag CM-12	MH-20	25.350	Unit Hydrograph	SCS CN					
172	SWR CM-1a	<None>	0.000	Unit Hydrograph	SCS CN					
174	SWR CM-1b	<None>	0.000	Unit Hydrograph	SCS CN					
175	SWR CM-2c	<None>	0.000	Unit Hydrograph	SCS CN					
176	SWR CM-2b	<None>	0.000	Unit Hydrograph	SCS CN					
177	SWR CM-2a	<None>	0.000	Unit Hydrograph	SCS CN					
178	SWR CM-3a	<None>	0.000	Unit Hydrograph	SCS CN					
179	SWR CM-3b	<None>	0.000	Unit Hydrograph	SCS CN					
204	Hag CM-13	<None>	0.000	Unit Hydrograph	SCS CN					

FlexTable: Catchment Table

Current Time: 0.000 hours

Unit Hydrograph Method	Flow (Maximum) (cfs)	SCS CN (Composite)	Time of Concentration (Composite) (hours)	Volume (Total Runoff) (gal)
SCS Unit Hydrograph	7.00	87.000	0.250	322,806.9
SCS Unit Hydrograph	6.56	82.000	0.355	396,923.8
SCS Unit Hydrograph	1.79	71.000	0.340	249,632.4
SCS Unit Hydrograph	6.94	89.000	0.171	280,190.3
SCS Unit Hydrograph	6.01	86.000	0.183	256,753.9
SCS Unit Hydrograph	1.22	61.000	1.273	341,440.8
SCS Unit Hydrograph	4.44	81.000	0.347	273,517.7
SCS Unit Hydrograph	12.43	88.000	0.427	714,778.6
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)

FlexTable: Conduit Table

Current Time: 0.000 hours

ID	Label	Start Node	Set Invert to Start?	Invert (Start) (ft)	Stop Node	Set Invert to Stop?	Invert (Stop) (ft)	Length (User Defined) (ft)	Length (Scaled) (ft)
92	CO-1	MH-21	True	5,492.20	O-2	True	5,471.41	2,240.0	1,766.0
93	CO-2	MH-20	True	5,501.23	MH-21	True	5,492.20		608.5
96	CO-5	MH-14	True	5,544.85	MH-15	True	5,539.73		369.3
98	CO-7	MH-10	True	5,563.85					
99	CO-8	MH-9	True	5,569.79					
100	CO-9	MH-8	True	5,572.08					
101	CO-10	MH-7	True	5,577.52					
104	CO-12	MH-3	False	0.00					
105	CO-13	MH-2	True	5,608.89					
106	CO-14	MH-1	True	5,633.40					
107	CO-15	MH-6	True	5,590.58					
109	CO-17	MH-4	True	5,605.96					
110	CO-18	MH-13	True	5,546.76					
111	CO-19	MH-11	True	5,574.85					
112	CO-20	MH-17	True	5,533.98					
113	CO-21	MH-16	True	5,552.20					
114	CO-22	MH-19	True	5,512.27					
115	CO-23	MH-22	True	5,520.00					
136	CO-25	MH-5	True	5,602.53					
137	CO-26	MH-24	True	5,596.83					
138	CO-27	MH-3	True	5,599.03					
140	CO-28	MH-25	True	0.00					
143	CO-29	MH-18	True	5,528.10					
145	CO-31	MH-26	True	0.00					
148	CO-32	MH-29	True	0.00					
151	CO-33	MH-15	True	5,539.73					
152	CO-34	MH-31	True	5,534.43					
153	CO-35	MH-30	True	0.00					
156	CO-36	MH-32	True	0.00					
157	CO-37	MH-33	True	0.00					
161	CO-39	MH-35	True	5,550.15					
162	CO-40	MH-34	True	0.00					
165	CO-41	MH-12	True	5,558.66					
166	CO-42	MH-37	True	5,554.39					
167	CO-43	MH-36	True	0.00					
169	CO-44	MH-38	True	0.00					
171	CO-45	MH-39	True	0.00					
206	CO-46	MH-40	True	0.00					
217	CO-49	POS-1	False	0.00					
219	CO-50	MH-27	True	5,517.66					
220	CO-51	MH-43	True	5,513.17					
221	CO-52	MH-25	True	0.00					

FlexTable: Conduit Table

Current Time: 0.000 hours

Stop Node	Set Invert to Stop?	Invert (Stop) (ft)	Length (User Defined) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)
MH-12	True	5,558.66		516.4	0.009	Circle	24.0	0.013	21.79
MH-10	True	5,563.85		717.2	0.015	Circle	18.0	0.010	16.63
MH-9	True	5,569.79		171.7	0.014	Circle	15.0	0.010	9.89
MH-8	True	5,572.08		362.0	0.010	Circle	15.0	0.010	8.42
MH-7	True	5,577.52	1,584.0	1,255.0	0.008	Circle	15.0	0.010	7.64
MH-3	True	5,599.03		1,058.9	0.013	Circle	15.0	0.010	9.70
MH-2	True	5,608.89		1,019.9					
O-1	True	5,586.40		418.7					
MH-5	True	5,602.53		350.9					
MH-14	True	5,544.85		95.0					
MH-10	True	5,563.85		203.3					
MH-18	True	5,528.10		334.3					
MH-17	True	5,533.98		1,044.0					
MH-20	True	5,501.23		910.2					
MH-19	True	5,512.27		520.7					
MH-24	True	5,596.83		514.5					
MH-6	True	5,590.58		564.0					
MH-24	True	5,596.83		172.5					
MH-19	True	5,512.27		843.0					
MH-27	True	5,517.66		704.2					
MH-27	True	5,517.66		350.2					
MH-15	True	5,539.73		392.9					
MH-31	True	5,534.43		332.0					
MH-18	True	5,528.10		396.8					
MH-31	True	5,534.43		363.7					
MH-33	True	0.00		392.2					
MH-13	True	5,546.76		918.1					
MH-14	True	5,544.85		406.2					
MH-35	True	5,550.15		694.7					
MH-37	True	5,554.39		327.6					
MH-35	True	5,550.15		324.5					
MH-37	True	5,554.39		688.4					
MH-8	True	5,572.08		387.7					
MH-5	True	5,602.53		760.9					
MH-20	True	5,501.23		367.4					
MH-21	True	5,492.20		426.7					
MH-43	True	5,513.17		303.3					
MH-20	True	5,501.23		805.3					
MH-43	True	5,513.17		1,047.7					

FlexTable: Conduit Table

Current Time: 0.000 hours

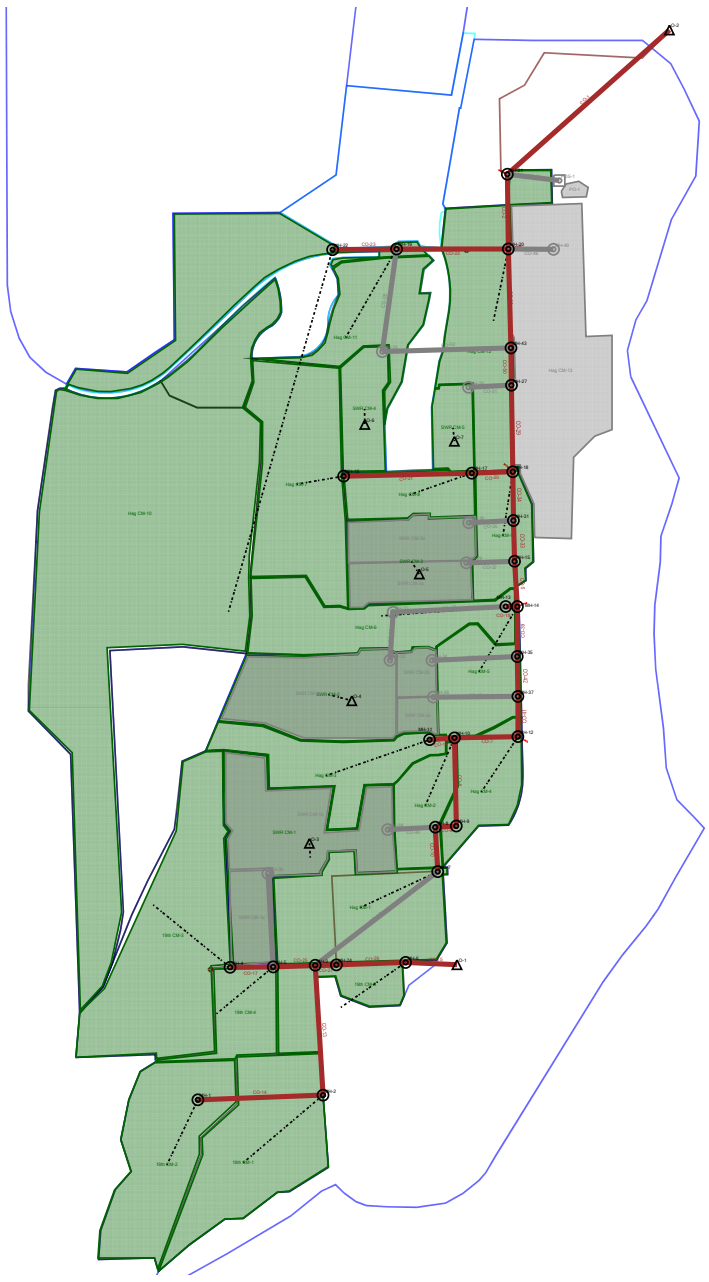
Slope (Calculated) (ft/ft)	Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)	Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)	Is Ever Surcharged?
0.015	Circle	12.0	0.010	5.68	24.55	5,499.37	7.81	True
-3.521	Circle	12.0	0.010	86.91	24.57	5,519.13	13.90	True
0.009	Circle	8.0	0.013	1.17	14.78	5,562.07	12.05	True
0.024	Circle	8.0	0.013	1.87	13.98	5,594.43	11.39	True
0.010	Circle	24.0	0.013	22.60	7.63	5,600.37	6.21	True
0.010	Circle	15.0	0.010	8.30	7.94	5,601.80	6.47	True
0.020	Circle	12.0	0.013	5.05	9.18	5,614.02	11.69	True
0.054	Circle	12.0	0.010	10.77	(N/A)	(N/A)	(N/A)	False
0.018	Circle	15.0	0.010	11.14				
0.017	Circle	12.0	0.010	6.12				
0.012	Circle	15.0	0.010	9.25				
0.015	Circle	15.0	0.010	10.23				
0.011	Circle	24.0	0.010	30.95				
0.011	Circle	24.0	0.010	30.95				
0.013	Circle	8.0	0.010	1.77				
-6.539	Circle	12.0	0.013	91.10				
0.015	Circle	18.0	0.010	16.63				
-15.754	Circle	12.0	0.013	141.40				
-14.098	Circle	12.0	0.013	133.77				
0.016	Circle	18.0	0.010	17.25				
0.016	Circle	18.0	0.010	17.25				
-15.219	Circle	12.0	0.013	138.98				
0.000	Circle	12.0	0.013	0.00				
-6.041	Circle	12.0	0.013	87.57				
0.013	Circle	15.0	0.010	9.59				
-7.989	Circle	12.0	0.013	100.70				
0.013	Circle	15.0	0.010	9.59				
0.013	Circle	15.0	0.010	9.60				
-8.069	Circle	12.0	0.013	101.20				
-14.373	Circle	12.0	0.013	135.06				
-7.363	Circle	12.0	0.013	96.67				
-14.974	Circle	12.0	0.013	137.86				
-12.872	Circle	12.0	0.013	127.82				
0.015	Circle	18.0	0.010	16.61				
0.015	Circle	18.0	0.010	16.63				
-5.262	Circle	12.0	0.013	81.72				

FlexTable: Conduit Table

Current Time: 0.000 hours

Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)	Is Ever Surcharged?
1.75	5,622.90	5.02	True
1.04	5,633.76	2.97	True
8.99	5,591.46	6.77	False
2.06	5,606.39	5.50	False
6.53	5,562.09	8.31	True
7.39	5,594.44	9.41	True
7.29	5,543.66	5.94	True
1.78	5,552.57	6.61	True
4.51	5,519.21	3.68	True
1.22	5,520.30	5.78	True
5.84	5,603.12	7.54	False
6.72	5,597.47	7.85	False
1.75	5,599.58	5.68	False
(N/A)	(N/A)	(N/A)	False
20.68	5,543.62	11.70	True
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
14.65	5,550.90	8.29	True
15.54	5,547.15	8.79	True
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
11.67	5,568.20	9.51	True
(N/A)	(N/A)	(N/A)	False
16.39	5,583.06	13.35	True
11.71	5,574.30	9.54	True
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
(N/A)	(N/A)	(N/A)	False
19.85	5,527.93	11.23	True
17.48	5,521.89	9.89	True
(N/A)	(N/A)	(N/A)	False

Scenario: Pre-Development 10-Year



Scenario Summary Report
Scenario: Pre-Development 10-Year

Scenario Summary	
ID	1
Label	Pre-Development 10-Year
Notes	
Active Topology	Pre-Development Active Topology
User Data Extensions	Pre-Development User Data Extensions
Physical	Pre-Development Physical
Boundary Condition	Pre-Development Boundary Condition
Initial Settings	Pre-Development Initial Settings
Hydrology	Pre-Development Hydrology
Output	Pre-Development Output
Infiltration and Inflow	Pre-Development Infiltration and Inflow
Rainfall Runoff	10-Year
Water Quality	Pre-Development Water Quality
Sanitary Loading	Pre-Development Sanitary Loading
Headloss	Pre-Development Headloss
Operational	Pre-Development Operational
Design	Pre-Development Design
System Flows	Pre-Development System Flows
SCADA	Pre-Development SCADA
Solver Calculation Options	Base Calculation Options

Implicit Engine			
Y Iteration Tolerance	0.0 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.0 ft
NR Weighting Coefficient	0.700	Start Type	Transition Start
NR Iterations	10	Virtual Flow Depth	0.040 ft

Inlets			
Active Components for Combination Inlets on Grade	Grate and Curb	Neglect Gutter Cross Slope For Side Flow?	False
Active Components for Combination Inlets In Sag	Grate and Curb	Neglect Side Flow?	False

Grating Parameters (United Kingdom)

Grating Type	Grating Parameter
P	30.000
Q	45.000
R	60.000
S	80.000
T	110.000

Pressure Hydraulics	
Pressure Friction Method	Hazen-Williams

Rational Method			
Use Rational Method Frequency Factors	False	Allow Runoff Coefficient to Exceed 1.0?	False

SWMM Hydrology			
Default Infiltration Method	SCS CN	SWMM Hydrologic Increment	0.250 hours

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

FlexTable: Catchment Table

Current Time: 0.000 hours

ID	Label	Outflow Element	Area (User Defined) (acres)	Runoff Method	Loss Method	Unit Hydrograph Method	Flow (Maximum) (cfs)	SCS CN (Composite)	Time of Concentration (Composite) (hours)	Volume (Total Runoff) (gal)
35	19th CM-1	MH-2	27.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	6.50	70.000	0.363	499,055.4
36	19th CM-2	MH-1	24.530	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	4.44	71.000	0.734	478,521.3
37	19th CM-3	MH-4	40.450	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.40	70.000	0.249	749,600.4
38	19th CM-4	MH-5	9.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.45	85.000	0.356	384,184.5
39	19th CM-5	MH-6	10.100	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	5.07	81.000	0.547	346,093.7
40	SWR CM-1	O-3	28.340	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	31.57	87.000	0.197	1,300,525.7
41	SWR CM-2	O-4	25.950	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	15.68	82.000	0.437	936,389.0
42	SWR CM-3	O-5	16.510	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	21.16	89.000	0.163	829,410.1
43	SWR CM-4	O-6	8.230	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	9.09	86.000	0.153	361,077.2
44	SWR CM-5	O-7	5.360	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	5.60	86.000	0.204	234,940.7
45	Hag CM-1	MH-7	24.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	22.50	87.000	0.331	1,108,523.2
46	Hag CM-2	MH-10	8.840	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	10.83	88.000	0.155	424,773.8
47	Hag CM-3	MH-11	15.800	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	14.22	85.000	0.272	660,410.2
48	Hag CM-4	MH-12	11.220	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.01	86.000	0.640	488,148.8
49	Hag CM-5	MH-14	12.130	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	12.56	87.000	0.250	556,243.9
50	Hag CM-6	MH-13	20.590	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	13.76	82.000	0.355	743,982.5
51	Hag CM-7	MH-16	30.290	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	8.30	71.000	0.340	596,743.5
52	Hag CM-8	MH-17	9.310	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.85	89.000	0.171	467,697.0
53	Hag CM-9	MH-18	10.250	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.08	86.000	0.183	449,556.8
54	Hag CM-10	MH-22	144.360	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	4.62	61.000	1.273	1,296,239.4
55	Hag CM-11	MH-19	15.180	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	9.64	81.000	0.347	521,983.2
56	Hag CM-12	MH-20	25.350	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	21.92	88.000	0.427	1,212,584.7
172	SWR CM-1a	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
174	SWR CM-1b	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
175	SWR CM-2c	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
176	SWR CM-2b	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
177	SWR CM-2a	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
178	SWR CM-3a	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
179	SWR CM-3b	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)
204	Hag CM-13	<None>	0.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	0.000	0.083	(N/A)

FlexTable: Conduit Table

Current Time: 0.000 hours

ID	Label	Start Node	Set Invert to Start?	Invert (Start) (ft)	Stop Node	Set Invert to Stop?	Invert (Stop) (ft)	Length (User Defined) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)
92	CO-1	MH-21	True	5,492.20	O-2	True	5,471.41	2,240.0	1,766.0	0.009
93	CO-2	MH-20	True	5,501.23	MH-21	True	5,492.20		608.5	0.015
96	CO-5	MH-14	True	5,544.85	MH-15	True	5,539.73		369.3	0.014
98	CO-7	MH-10	True	5,563.85	MH-12	True	5,558.66		516.4	0.010
99	CO-8	MH-9	True	5,569.79	MH-10	True	5,563.85		717.2	0.008
100	CO-9	MH-8	True	5,572.08	MH-9	True	5,569.79		171.7	0.013
101	CO-10	MH-7	True	5,577.52	MH-8	True	5,572.08		362.0	0.015
104	CO-12	MH-3	False	0.00	MH-7	True	5,577.52	1,584.0	1,255.0	-3.521
105	CO-13	MH-2	True	5,608.89	MH-3	True	5,599.03		1,058.9	0.009
106	CO-14	MH-1	True	5,633.40	MH-2	True	5,608.89		1,019.9	0.024
107	CO-15	MH-6	True	5,590.58	O-1	True	5,586.40		418.7	0.010
109	CO-17	MH-4	True	5,605.96	MH-5	True	5,602.53		350.9	0.010
110	CO-18	MH-13	True	5,546.76	MH-14	True	5,544.85		95.0	0.020
111	CO-19	MH-11	True	5,574.85	MH-10	True	5,563.85		203.3	0.054
112	CO-20	MH-17	True	5,533.98	MH-18	True	5,528.10		334.3	0.018
113	CO-21	MH-16	True	5,552.20	MH-17	True	5,533.98		1,044.0	0.017
114	CO-22	MH-19	True	5,512.27	MH-20	True	5,501.23		910.2	0.012
115	CO-23	MH-22	True	5,520.00	MH-19	True	5,512.27		520.7	0.015
136	CO-25	MH-5	True	5,602.53	MH-24	True	5,596.83		514.5	0.011
137	CO-26	MH-24	True	5,596.83	MH-6	True	5,590.58		564.0	0.011
138	CO-27	MH-3	True	5,599.03	MH-24	True	5,596.83		172.5	0.013
140	CO-28	MH-25	True	0.00	MH-19	True	5,512.27		843.0	-6.539
143	CO-29	MH-18	True	5,528.10	MH-27	True	5,517.66		704.2	0.015
145	CO-31	MH-26	True	0.00	MH-27	True	5,517.66		350.2	-15.754
148	CO-32	MH-29	True	0.00	MH-15	True	5,539.73		392.9	-14.098
151	CO-33	MH-15	True	5,539.73	MH-31	True	5,534.43		332.0	0.016
152	CO-34	MH-31	True	5,534.43	MH-18	True	5,528.10		396.8	0.016
153	CO-35	MH-30	True	0.00	MH-31	True	5,534.43		363.7	-15.219
156	CO-36	MH-32	True	0.00	MH-33	True	0.00		392.2	0.000
157	CO-37	MH-33	True	0.00	MH-13	True	5,546.76		918.1	-6.041
161	CO-39	MH-35	True	5,550.15	MH-14	True	5,544.85		406.2	0.013
162	CO-40	MH-34	True	0.00	MH-35	True	5,550.15		694.7	-7.989
165	CO-41	MH-12	True	5,558.66	MH-37	True	5,554.39		327.6	0.013
166	CO-42	MH-37	True	5,554.39	MH-35	True	5,550.15		324.5	0.013
167	CO-43	MH-36	True	0.00	MH-37	True	5,554.39		688.4	-8.069
169	CO-44	MH-38	True	0.00	MH-8	True	5,572.08		387.7	-14.373
171	CO-45	MH-39	True	0.00	MH-5	True	5,602.53		760.9	-7.363
206	CO-46	MH-40	True	0.00	MH-20	True	5,501.23		367.4	-14.974
217	CO-49	POS-1	True	0.00	MH-21	True	5,492.20		426.7	-12.872
219	CO-50	MH-27	True	5,517.66	MH-43	True	5,513.17		303.3	0.015
220	CO-51	MH-43	True	5,513.17	MH-20	True	5,501.23		805.3	0.015
221	CO-52	MH-25	True	0.00	MH-43	True	5,513.17		1,047.7	-5.262

Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)	Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)
Circle	24.0	0.013	21.79	25.64	5,501.99	8.16
Circle	18.0	0.010	16.63	25.79	5,523.75	14.59
Circle	15.0	0.010	9.89	19.62	5,594.66	15.99

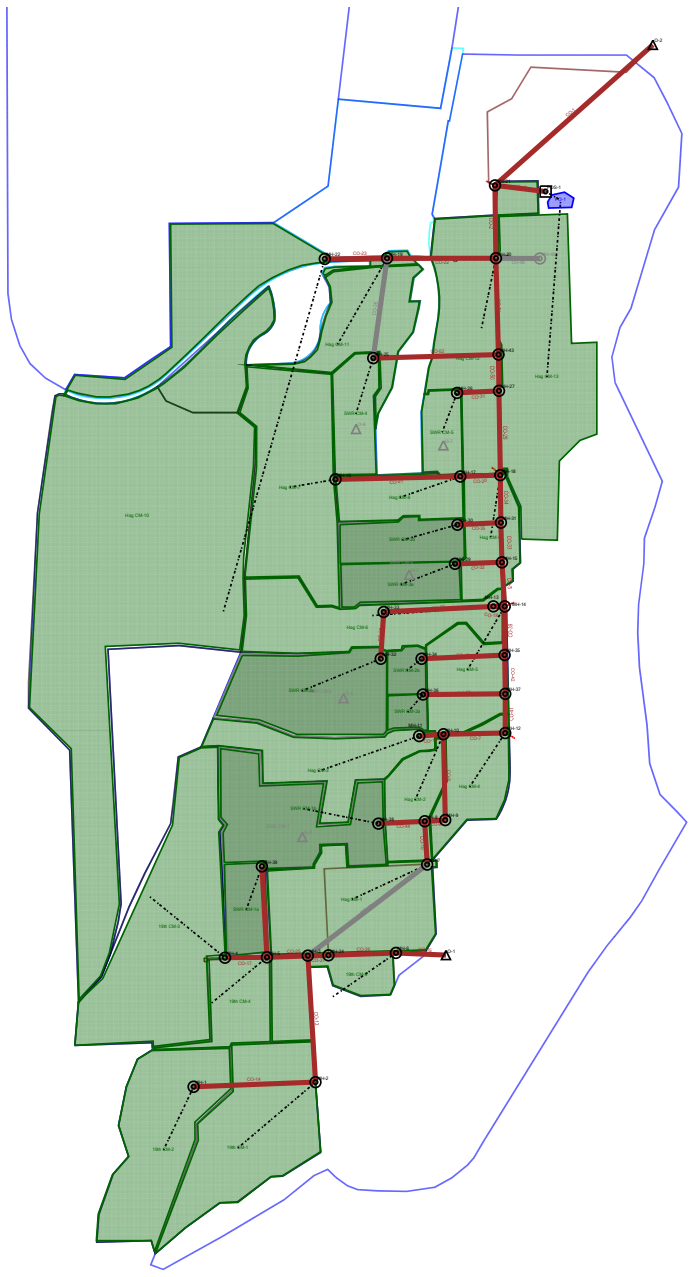
FlexTable: Conduit Table

Current Time: 0.000 hours

Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)	Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)
Circle	15.0	0.010	8.42	17.49	5,646.04	14.25
Circle	15.0	0.010	7.64	9.25	5,654.78	7.54
Circle	15.0	0.010	9.70	10.49	5,656.94	8.55
Circle	12.0	0.010	5.68	14.23	5,679.12	18.11
Circle	12.0	0.010	86.91	(N/A)	(N/A)	(N/A)
Circle	8.0	0.013	1.17	3.10	5,676.06	8.89
Circle	8.0	0.013	1.87	1.55	5,693.70	4.45
Circle	24.0	0.013	22.60	24.84	5,592.67	8.12
Circle	15.0	0.010	8.30	11.31	5,610.23	9.22
Circle	12.0	0.013	5.05	13.08	5,594.70	16.65
Circle	12.0	0.010	10.77	14.15	5,646.05	18.01
Circle	15.0	0.010	11.14	16.39	5,564.08	13.36
Circle	12.0	0.010	6.12	7.76	5,566.18	9.88
Circle	15.0	0.010	9.25	9.94	5,523.92	8.10
Circle	15.0	0.010	10.23	4.62	5,524.00	8.10
Circle	24.0	0.010	30.95	18.74	5,603.65	10.31
Circle	24.0	0.010	30.95	20.63	5,598.03	10.53
Circle	8.0	0.010	1.77	3.10	5,604.58	8.89
Circle	12.0	0.013	91.10	(N/A)	(N/A)	(N/A)
Circle	18.0	0.010	16.63	28.77	5,564.01	16.28
Circle	12.0	0.013	141.40	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	133.77	(N/A)	(N/A)	(N/A)
Circle	18.0	0.010	17.25	19.14	5,576.02	10.83
Circle	18.0	0.010	17.25	20.38	5,569.88	11.53
Circle	12.0	0.013	138.98	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	0.00	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	87.57	(N/A)	(N/A)	(N/A)
Circle	15.0	0.010	9.59	14.65	5,604.25	11.94
Circle	12.0	0.013	100.70	(N/A)	(N/A)	(N/A)
Circle	15.0	0.010	9.59	21.53	5,628.25	17.54
Circle	15.0	0.010	9.60	14.82	5,613.89	12.07
Circle	12.0	0.013	101.20	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	135.06	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	96.67	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	137.86	(N/A)	(N/A)	(N/A)
Circle	12.0	0.013	127.82	(N/A)	(N/A)	(N/A)
Circle	18.0	0.010	16.61	27.45	5,533.96	15.53
Circle	18.0	0.010	16.63	16.00	5,523.90	9.05
Circle	12.0	0.013	81.72	(N/A)	(N/A)	(N/A)

Proposed Conditions

Scenario: Proposed Alt - 2 10-yr



Scenario Summary Report
Scenario: Proposed Alt - 2 10-yr

Scenario Summary

ID	209
Label	Proposed Alt - 2 10-yr
Notes	
Active Topology	Active Topology Props Alternative - 2
User Data Extensions	<I> Pre-Development User Data Extensions
Physical	Physical Proposed Alternative - 2
Boundary Condition	Boundary Condition Proposed
Initial Settings	Initial Settings Proposed
Hydrology	Hydrology Proposed
Output	Output Proposed
Infiltration and Inflow	Infiltration and Inflow Proposed
Rainfall Runoff	<I> 10-Year
Water Quality	<I> Pre-Development Water Quality
Sanitary Loading	<I> Pre-Development Sanitary Loading
Headloss	Headloss Proposed
Operational	<I> Pre-Development Operational
Design	Design Proposed
System Flows	<I> Pre-Development System Flows
SCADA	<I> Pre-Development SCADA
Solver Calculation Options	<I> Base Calculation Options

Implicit Engine

Y Iteration Tolerance	0.0 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.0 ft
NR Weighting Coefficient	0.700	Start Type	Transition Start
NR Iterations	10	Virtual Flow Depth	0.040 ft

Inlets

Active Components for Combination Inlets on Grade	Grate and Curb	Neglect Gutter Cross Slope For Side Flow?	False
Active Components for Combination Inlets In Sag	Grate and Curb	Neglect Side Flow?	False

Grating Parameters (United Kingdom)

Grating Type	Grating Parameter
P	30.000
Q	45.000
R	60.000
S	80.000
T	110.000

Pressure Hydraulics

Pressure Friction Method	Hazen-Williams

Rational Method

Use Rational Method Frequency Factors	False	Allow Runoff Coefficient to Exceed 1.0?	False

SWMM Hydrology

Default Infiltration Method	SCS CN	SWMM Hydrologic Increment	0.250 hours

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA
+1-203-755-1666

FlexTable: Catchment Table

Current Time: 0.000 hours

ID	Label	Outflow Element	Area (User Defined) (acres)	Runoff Method	Loss Method	Unit Hydrograph Method	Flow (Maximum) (cfs)	SCS CN (Composite)	Time of Concentration (Composite) (hours)	Volume (Total Runoff) (gal)
35	19th CM-1	MH-2	27.000	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	6.50	70.000	0.363	499,055.4
36	19th CM-2	MH-1	24.530	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	4.44	71.000	0.734	478,521.3
37	19th CM-3	MH-4	40.450	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.40	70.000	0.249	749,600.4
38	19th CM-4	MH-5	9.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.45	85.000	0.356	384,184.5
39	19th CM-5	MH-6	10.100	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	5.07	81.000	0.547	346,093.7
40	SWR CM-1	O-3	28.340	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	87.000	0.197	(N/A)
41	SWR CM-2	O-4	25.950	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	82.000	0.437	(N/A)
42	SWR CM-3	O-5	16.510	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	(N/A)	89.000	0.163	(N/A)
43	SWR CM-4	MH-25	8.230	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	9.09	86.000	0.153	361,077.2
44	SWR CM-5	MH-26	5.360	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	5.60	86.000	0.204	234,940.7
45	Hag CM-1	MH-7	24.200	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	22.50	87.000	0.331	1,108,523.2
46	Hag CM-2	MH-10	8.840	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	10.83	88.000	0.155	424,773.8
47	Hag CM-3	MH-11	15.800	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	14.22	85.000	0.272	660,410.2
48	Hag CM-4	MH-12	11.220	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.01	86.000	0.640	488,148.8
49	Hag CM-5	MH-14	12.130	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	12.56	87.000	0.250	556,243.9
50	Hag CM-6	MH-13	20.590	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	13.76	82.000	0.355	743,982.5
51	Hag CM-7	MH-16	30.290	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	8.30	71.000	0.340	596,743.5
52	Hag CM-8	MH-17	9.310	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.85	89.000	0.171	467,697.0
53	Hag CM-9	MH-18	10.250	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	11.08	86.000	0.183	449,556.8
54	Hag CM-10	MH-22	144.360	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	4.62	61.000	1.273	1,296,239.4
55	Hag CM-11	MH-19	15.180	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	9.64	81.000	0.347	521,983.2
56	Hag CM-12	MH-20	25.350	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	21.92	88.000	0.427	1,212,584.7
172	SWR CM-1a	MH-39	6.050	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.68	87.000	0.097	278,125.7
174	SWR CM-1b	MH-38	22.290	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	23.96	87.000	0.218	1,022,639.4
175	SWR CM-2c	MH-32	20.620	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	7.96	80.000	0.768	668,736.0
176	SWR CM-2b	MH-34	2.660	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	3.85	91.000	0.147	145,930.0
177	SWR CM-2a	MH-36	2.670	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	3.24	88.000	0.167	128,268.5
178	SWR CM-3a	MH-29	7.970	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	10.70	89.000	0.138	400,566.9
179	SWR CM-3b	MH-30	8.540	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	10.34	88.000	0.170	410,224.2
204	Hag CM-13	PO-1	30.090	Unit Hydrograph	SCS CN	SCS Unit Hydrograph	18.90	80.000	0.305	984,989.9

FlexTable: Conduit Table

Current Time: 0.000 hours

ID	Label	Start Node	Set Invert to Start?	Invert (Start) (ft)	Stop Node	Set Invert to Stop?	Invert (Stop) (ft)	Length (User Defined) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)
92	CO-1	MH-21	True	5,492.20	O-2	False	5,473.00	2,240.0	1,766.0	0.009
93	CO-2	MH-20	True	5,501.23	MH-21	True	5,492.20		608.5	0.015
96	CO-5	MH-14	True	5,544.85	MH-15	True	5,539.73		369.3	0.014
98	CO-7	MH-10	True	5,563.85	MH-12	True	5,558.66		516.4	0.010
99	CO-8	MH-9	True	5,569.79	MH-10	True	5,563.85		717.2	0.008
100	CO-9	MH-8	True	5,572.08	MH-9	True	5,569.79		171.7	0.013
101	CO-10	MH-7	True	5,577.52	MH-8	True	5,572.08		362.0	0.015
104	CO-12	MH-3	True	5,599.03	MH-7	True	5,577.52	1,584.0	1,255.0	0.014
105	CO-13	MH-2	True	5,608.89	MH-3	True	5,599.03		1,058.9	0.009
106	CO-14	MH-1	True	5,633.40	MH-2	True	5,608.89		1,019.9	0.024
107	CO-15	MH-6	True	5,590.58	O-1	True	5,586.40		418.7	0.010
109	CO-17	MH-4	True	5,605.96	MH-5	True	5,602.53		350.9	0.010
110	CO-18	MH-13	True	5,548.00	MH-14	False	5,546.35		95.0	0.017
111	CO-19	MH-11	True	5,574.85	MH-10	False	5,565.35		203.3	0.047
112	CO-20	MH-17	True	5,533.98	MH-18	False	5,529.60		334.3	0.013
113	CO-21	MH-16	True	5,552.20	MH-17	False	5,534.73		1,044.0	0.017
114	CO-22	MH-19	True	5,512.27	MH-20	False	5,503.23		910.2	0.010
115	CO-23	MH-22	True	5,520.00	MH-19	False	5,513.02		520.7	0.013
136	CO-25	MH-5	True	5,602.53	MH-24	False	5,597.08		514.5	0.011
137	CO-26	MH-24	True	5,596.83	MH-6	True	5,590.58		564.0	0.011
138	CO-27	MH-3	True	5,599.03	MH-24	True	5,596.83		172.5	0.013
140	CO-28	MH-25	True	5,538.00	MH-19	False	5,512.77	1,150.0	843.0	0.022
143	CO-29	MH-18	True	5,528.10	MH-27	True	5,517.66		704.2	0.015
145	CO-31	MH-26	True	5,524.00	MH-27	False	5,519.66		350.2	0.012
148	CO-32	MH-29	True	5,543.73	MH-15	False	5,541.73	400.0	392.9	0.005
151	CO-33	MH-15	True	5,539.73	MH-31	True	5,534.43		332.0	0.016
152	CO-34	MH-31	True	5,534.43	MH-18	True	5,528.10		396.8	0.016
153	CO-35	MH-30	True	5,540.18	MH-31	False	5,536.68	350.0	363.7	0.010
156	CO-36	MH-32	True	5,564.00	MH-33	True	5,560.00	400.0	392.2	0.010
157	CO-37	MH-33	True	5,560.00	MH-13	False	5,548.50		918.1	0.013
161	CO-39	MH-35	True	5,550.15	MH-14	True	5,544.85		406.2	0.013
162	CO-40	MH-34	True	5,557.10	MH-35	False	5,551.65		694.7	0.008
165	CO-41	MH-12	True	5,558.66	MH-37	True	5,554.39		327.6	0.013
166	CO-42	MH-37	True	5,554.39	MH-35	True	5,550.15		324.5	0.013
167	CO-43	MH-36	True	5,561.27	MH-37	False	5,555.89		688.4	0.008
169	CO-44	MH-38	True	5,575.96	MH-8	False	5,573.08		387.7	0.007
171	CO-45	MH-39	True	5,610.14	MH-5	False	5,603.78		760.9	0.008
206	CO-46	MH-40	False	5,517.85	MH-20	False	5,503.73	2,515.0	367.4	0.005
217	CO-49	POS-1	False	5,496.30	MH-21	False	5,495.70	100.0	426.7	0.006
219	CO-50	MH-27	True	5,517.66	MH-43	True	5,513.17		303.3	0.015
220	CO-51	MH-43	True	5,513.17	MH-20	True	5,501.23		805.3	0.015
221	CO-52	MH-25	True	5,538.00	MH-43	False	5,515.42		1,047.7	0.022

Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)	Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)
Circle	54.0	0.010	236.67	193.15	5,495.30	16.60
Circle	48.0	0.010	227.46	194.42	5,504.08	20.29
Circle	42.0	0.010	154.07	106.61	5,546.99	17.28

FlexTable: Conduit Table

Current Time: 0.000 hours

Section Type	Diameter (in)	Manning's n	Capacity (Full Flow) (cfs)	Flow (Maximum) (cfs)	Hydraulic Grade (Maximum) (ft)	Velocity (Maximum Calculated) (ft/s)
Circle	36.0	0.010	86.92	66.89	5,565.83	13.56
Circle	30.0	0.010	48.52	44.02	5,571.66	11.19
Circle	30.0	0.010	61.59	44.30	5,573.66	13.18
Circle	24.0	0.010	36.05	22.19	5,578.65	12.05
Circle	12.0	0.010	5.40	(N/A)	(N/A)	(N/A)
Circle	18.0	0.010	13.18	9.38	5,609.83	8.08
Circle	15.0	0.010	13.02	4.42	5,633.90	9.46
Circle	36.0	0.013	66.64	35.51	5,592.14	9.58
Circle	18.0	0.010	13.50	11.34	5,607.02	8.54
Circle	24.0	0.013	29.82	18.79	5,549.15	10.02
Circle	15.0	0.010	18.15	13.96	5,575.67	16.35
Circle	24.0	0.010	33.66	17.38	5,535.00	10.78
Circle	15.0	0.010	10.86	8.23	5,553.02	9.69
Circle	18.0	0.010	13.61	9.77	5,513.22	8.36
Circle	15.0	0.010	9.72	4.62	5,520.61	7.78
Circle	30.0	0.010	54.88	24.85	5,603.71	10.89
Circle	36.0	0.010	91.26	31.13	5,598.04	11.67
Circle	18.0	0.010	15.42	9.36	5,599.88	9.12
Circle	15.0	0.010	12.44	(N/A)	(N/A)	(N/A)
Circle	42.0	0.010	159.23	150.50	5,530.82	18.83
Circle	18.0	0.010	15.20	5.54	5,524.63	7.89
Circle	18.0	0.010	9.66	10.45	5,545.11	6.28
Circle	42.0	0.010	165.18	114.75	5,541.88	18.52
Circle	42.0	0.010	165.18	124.12	5,536.70	18.80
Circle	18.0	0.013	10.50	10.15	5,541.37	6.74
Circle	15.0	0.010	8.40	7.94	5,564.97	7.76
Circle	15.0	0.010	9.40	7.95	5,560.88	8.55
Circle	36.0	0.010	99.04	77.72	5,552.16	15.49
Circle	15.0	0.013	5.72	3.75	5,557.85	4.95
Circle	36.0	0.010	99.04	71.65	5,560.55	15.25
Circle	36.0	0.010	99.04	74.49	5,556.33	15.37
Circle	15.0	0.013	5.71	3.19	5,561.94	4.74
Circle	24.0	0.010	25.35	23.80	5,577.50	9.19
Circle	18.0	0.013	9.60	7.54	5,611.14	5.99
Circle	24.0	0.010	21.36	(N/A)	(N/A)	(N/A)
Circle	8.0	0.010	1.22	1.33	5,496.88	8.28
Circle	42.0	0.010	159.22	154.91	5,520.45	18.94
Circle	42.0	0.010	159.22	163.02	5,516.17	18.83
Circle	15.0	0.010	12.33	8.95	5,538.80	10.92

FlexTable: Pond Table

Current Time: 0.000 hours

ID	Label	Volume Type	Initial Elevation Type	Elevation (Initial) (ft)	Hydraulic Grade (ft)	Storage (Maximum) (gal)	Is Overflowing?	Notes	Flow (Total In Maximum) (cfs)	Time to Maximum Inflow (hours)
210	PO-1	Elevation-Area	Invert		5,495.60	630,573.4	False		18.74	10.050

FlexTable: Outfall Table

Current Time: 0.000 hours

ID	Label	Elevation (Ground) (ft)	Set Rim to Ground Elevation?	Elevation (Invert) (ft)	Boundary Condition Type	Boundary Element	Elevation (User Defined Tailwater) (ft)	Elevation-Flow Curve	Time-Elevation Curve	Cyclic Time-Elevation Curve
57	O-1	5,595.00	True	5,586.40	User Defined Tailwater	<None>	5,586.90	<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
58	O-2	5,475.50	True	5,471.41	User Defined Tailwater	<None>	5,471.91	<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
59	O-3	0.00	True	0.00	Free Outfall	<None>		<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
60	O-4	0.00	True	0.00	Free Outfall	<None>		<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
61	O-5	0.00	True	0.00	Free Outfall	<None>		<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
62	O-6	0.00	True	0.00	Free Outfall	<None>		<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>
63	O-7	0.00	True	0.00	Free Outfall	<None>		<Collection: 0 items>	<Collection: 0 items>	<Collection: 0 items>

Hydraulic Grade (ft)	Time to Maximum Hydraulic Grade (hours)	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
5,586.40	10.150	10.100	35.41
5,473.00	10.150	10.150	191.53
(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	(N/A)	(N/A)
(N/A)	(N/A)	(N/A)	(N/A)

Appendix N

Site Photos

View of 7th Street looking east towards Cooper Ave, localized flooding at intersection.

Localized flooding at the intersection of 6th Street and Cooper Ave.

Localized flooding at the intersection of 2nd Street and Cooper Avenue.

Localized flooding at north end of Haggin Avenue, near MDT outfall.

View of MDT outfall looking northwest.

View of MDT outfall ditch looking east toward Rock Creek.

Typical storm inlet on existing infrasturcture, cover has structural damage and is almost completely clogged.

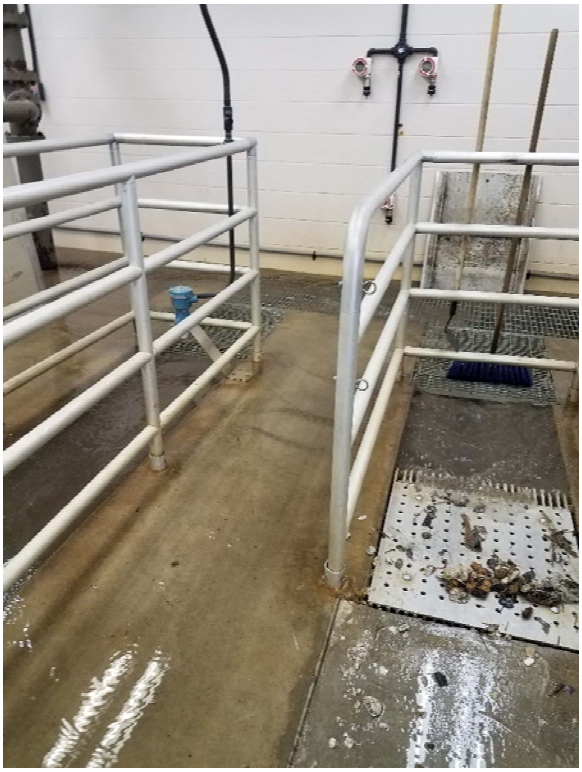
Resident identified flooding area at corner of 18th Street and Grant Avenue.

Drainage issues on Adams Avenue between 12th and 13th Street.

View of Haggin Avenue Outfall, looking south.

View of abandoned sanitary sewer aerial crossing of Rock Creek, looking north east.

Sewer manhole at Adams and 19th St., main running over half full with I&I.



Inflow to sanitary sewer treatment plant during rain event. Contaminated water flooding building and bubbling out of grates.

Inflow to sanitary sewer treatment plant during rain event. Contaminated water flooding building and bubbling out of grates.

Manhole cover blown off during May 22 rain event, 3rd and Haggin.

Appendix O

MPDES Permit Information

Rule: 17.30.1107

Prev Up Next

Rule Title: DESIGNATION PROCEDURES: SMALL MS4S

Department: ENVIRONMENTAL QUALITY, DEPARTMENT OF
Chapter: WATER QUALITY
Subchapter: Storm Water Discharges

Latest version of the adopted rule presented in Administrative Rules of Montana (ARM):

17.30.1107 DESIGNATION PROCEDURES: SMALL MS4S

(1) For purposes of this rule, "designation" means a determination by the department that an MS4 is subject to the permit requirements of this subchapter.

(2) The department shall designate an MS4 other than those identified in ARM 17.30.1102(23) if a discharge from the MS4 results in, or has the potential to result in, exceedances of water quality standards, including impairment of designated uses, or has other significant water quality impacts, including habitat and biological impacts. In making a designation under this subsection, the department shall:

(a) consider whether the MS4:

(i) has discharges to a listed impaired waterbody that is on the most recent 303(d) list;

(ii) has high growth or growth potential;

(iii) has high population density;

(iv) is contiguous to an urbanized area; and

(v) is a significant contribution of pollutants to surface waters; and

(b) place a high priority on evaluating small MS4s that have a combined permanent and seasonal population of over 10,000, as determined by the latest decennial census by the United States census bureau plus the number of commercially advertised bedroom accommodations that will allow for an overnight stay, as listed through the chamber of commerce, or any local resort or property management company.

(3) The department shall designate an MS4 other than those identified in ARM 17.30.1102(23) if the MS4 contributes substantially to the pollutant loadings of a physically interconnected municipal separate storm sewer that is a regulated small MS4 under these rules.

(4) The department may designate an MS4 other than those identified in ARM 17.30.1102(23) pursuant to the criteria in ARM 17.30.1105(1) (e) or (f) .

(5) The department may designate discharges from municipal separate storm sewers on a system-wide or on a jurisdiction-wide basis. In making its designation the department may consider the following factors:

(i) the location of the discharge with respect to surface waters;

(ii) the size of the discharge;

(iii) the quantity and nature of the pollutants discharged to surface waters; and

(iv) other relevant factors.

(6) Upon petition, the department may designate an MS4 under the appropriate criteria in these rules. The department shall make a final determination on a petition to designate a small MS4 within 180 days after receipt of the petition.

(7) An MS4 may petition the department to reduce the census estimates of the population served by the MS4 to account for storm water discharges to combined sewers, as defined in 40 CFR 35.2005(b) (11) , that are treated in a publicly owned treatment works. In municipalities in which combined sewers are operated, the census estimates of population may be reduced in proportion to the fraction, based on estimated lengths, of the length of combined sewers over the sum of the length of combined sewers and municipal separate storm sewers. The MS4 shall submit the MPDES permit number associated with each discharge point and a map indicating areas served by combined sewers and the location of any combined sewer overflow discharge point.

(8) The department may re-evaluate its designation of an MS4 if circumstances change or if new information becomes available.

(9) The department may waive the permit requirements of this subchapter for an MS4 identified in ARM 17.30.1102(23) if the MS4 demonstrates to the department that the MS4 has existing storm water quality control programs that are equivalent to the six minimum control measures set out in ARM 17.30.1111.

(10) The department may waive the permit requirements of this subchapter for an MS4, which would otherwise be regulated because it is located within an urbanized area, if the MS4 serves a population of under 1,000 and both of the following criteria are met:

(a) discharges from the MS4 are not contributing substantially to the pollutant loadings of a physically interconnected regulated MS4; and

(b) storm water controls are not needed for the MS4 based on wasteload allocations that are part of an EPA-approved or established TMDL that addresses the pollutants of concern.

(11) The department may waive the permit requirements of this subchapter for an MS4, which would otherwise be regulated because it is located within an urbanized area, if the MS4 serves a population of between 1,000 and 10,000 and both of the following criteria are met:

(a) the department has evaluated all surface waters, including small streams, tributaries, lakes, and ponds, that receive a discharge from the MS4 and has determined that storm water controls are not needed based on wasteload allocations that are part of an EPA-approved or established TMDL that addresses the pollutants of concern or, if a TMDL has not been developed or approved, an equivalent analysis that determines sources and allocations for the pollutants of concern;

(i) for purposes of this subsection, pollutants of concern include biochemical oxygen demand (BOD) , sediment or a parameter that addresses sediment (such as total suspended solids, turbidity, or siltation) , pathogens, oil and grease, and any pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the MS4; and

(b) the department has determined that current and future discharges from the MS4 do not have the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including habitat and biological impacts.

(12) The department shall at least once every five years review all waivers granted under this rule to determine whether any of the information required for granting the waiver has changed. The department shall consider a petition to review a waiver if the petitioner provides evidence that the information required for granting the waiver has substantially changed.

(13) The department may designate an MS4 for which the permit requirement is waived under this rule if circumstances change or new information becomes available.

History: 75-5-201, 75-5-401, MCA; IMP, 75-5-401, MCA; NEW, 2003 MAR p. 219, Eff. 2/14/03.

MAR Notices	Effective From	Effective To	History Notes
	2/14/2003	Current	History: **75-5-201**, **75-5-401**, MCA; IMP, **75-5-401**, MCA; NEW, 2003 MAR p. 219, Eff. 2/14/03.

Fact Sheet
Montana Pollutant Discharge Elimination System
General Permit
For
Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems

Permittees: Various Public Entities

MPDES Permit Number: MTR040000

I. Permit Status

Montana Pollutant Discharge Elimination System (MPDES) permit MTR040000 is a reissued General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems (Small MS4s) for a five year permit cycle. The proposed reissuance is the fourth iteration of the General Permit for Storm Water Discharges associated with Small MS4s.

The current permit became effective January 1, 2015, and expires on December 31, 2016.

MS4s Stakeholder Cooperative Process

To support the General Permit reissuance process, the Montana Department of Environmental Quality (DEQ) and the permitted MS4 cities (Billings, Missoula, Great Falls, Bozeman, Helena, Butte, and Kalispell) entered into a memorandum of understanding (MOU) on October 24, 2014, to cooperatively discuss and document common Montana-specific issues with implementation of the MS4 program. The MOU initiated a working group led by the permitted MS4 cities where the cities provided the facilitator and agendas for the meetings. The ultimate goal of the MS4 cities working group included improvements to MS4 storm water programs and compliance with state and federal requirements. Other participating stakeholders included MS4 counties and non-traditional permittees, the Environmental Protection Agency (EPA), and multiple non-governmental organizations. The MS4 cities working group scheduled monthly meetings in Helena, Montana and developed a technical subgroup in which DEQ also participated. The last meeting was held on April 7, 2016. The MOU declares that the MS4 cities working group will continue to meet on a quarterly basis. The MS4 cities working group's meeting agendas and summaries are located here: http://deq.mt.gov/Water/WPB/stormsewer.

II. Authority

Pursuant to 75-5-402, MCA and requirements found in ARM, Title 17, Chapter 30, Subchapters 11, 12, and 13, the Department regulates storm water discharges from Small MS4s. ARM 17.30.1105(1)(d) requires MPDES permit coverage for Small MS4s that are identified in ARM 17.30.1102(23) or designated pursuant to ARM 17.30.1107.

III. Background

The EPA promulgated a rule establishing the Storm Water Phase II Rule that extended coverage of the National Pollution Discharge Elimination System (NPDES) storm water program to certain "Small" MS4s. A small municipal separate storm sewer system means all separate storm sewers that are:

- Owned and operated by the United States, a State, city, town borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the Clean Water Act (CWA) that discharges to waters of the United States,

- Not defined as "large" or "medium" municipal separate storm sewer systems…, and

- This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares (40 Code of Federal Regulations (CFR) § 122.26(b)(16).

A Small MS4 can be designated by the permitting authority as a regulated Small MS4 in one of three ways:

- Automatic nationwide designation
  The Phase II Final Rule requires nationwide coverage of all operators of Small MS4s that are located within the boundaries of a Bureau of the Census-defined "urbanized area" (UA) based on the latest decennial Census. Once a Small MS4 is designated into the program based on the UA boundaries, it cannot be waived from the program if in a subsequent UA calculation the Small MS4 is no longer within the UA boundaries. An automatically designated Small MS4 remains regulated unless, or until it meets the criteria for a waiver;

- Potential Designation by the NPDES Permitting Authority-Required Evaluation
  An operator of a Small MS4 located outside of a UA may be designated as a regulated Small MS4 if the NPDES permitting authority determines that its discharges cause, or have the potential to cause an adverse impact on water quality. The Phase II Final Rule requires the NPDES permitting authority to develop a set of designation criteria and apply them, at a minimum, to all Small MS4s located outside of a UA serving a jurisdiction with a population of at least 10,000 and a population density of at least 1,000-people/square mile; and

- Potential Designation by the NPDES Permitting Authority-Physically Interconnected
  Under the final rule, the NPDES permitting authority is required to designate any Small MS4 located outside of a UA that contributes substantially to the pollutant loadings of a physically interconnected MS4 regulated by the NPDES storm water program. The final rule does not set a deadline for designation of Small MS4s meeting this criterion (40 CFR § 122.32).

MPDES permitting of storm water discharges from Small MS4s is required to be implemented nationally through the federal EPA, or authorized states and tribes, as part of EPA's NPDES Storm Water Phase II requirements. Federal requirements have been incorporated into the Administrative Rules of Montana (ARM), Title 17, Chapter 30, Subchapters 11, 12, and 13. These rules became effective on February 14, 2003.

Owners or operators of Small MS4s shall obtain coverage under an MPDES individual permit or general permit. General permit coverage requires completion of a notice of intent (NOI) and compliance with the application requirements set forth in ARM 17.30.1110 and ARM 17.30.1111(2).

In accordance with ARM 17.30.1341(4) and the Montana Environmental Policy Act (MEPA), the Department of Environmental Quality (the Department or DEQ) will issue an authorization or notify the applicant that the source does not qualify for authorization under the General Permit within 30 days of receipt of a completed application. The Department will provide an opportunity for public comment on the General Permit for Storm Water Discharges associated with Small MS4s, in accordance with ARM 17.30.1372 and shall adhere to the requirements of ARM 17.30.1373 through 17.30.1377 regarding public comments and public hearings.

IV. Summary of Significant Permit Changes

Proposed Permitting Approach with Reissuance
Summary of significant proposed changes to the existing 2015 General Permit include:

- Provides more flexible options for permittee authorizations;
- Requirement to establish a storm water management team with a primary coordinator;
- Requirements specific to Non-Traditional MS4s;
- Requirements to develop public education and involvement strategies based upon pollutants of concern and associated target audiences;
- Requirements to develop enforcement response plans for illicit discharge detection and elimination, construction site storm water runoff, and post-construction storm water management in new and redevelopment control measures;
- Requirements for the permittee to develop a corrective action plan for the illicit discharge and elimination control measure;
- Requirements specified for minimum construction storm water management practices that must be implemented and installed on all regulated projects;
- Requirements for construction projects that include prioritized inspections;
- Requirements for post-construction retention performance standards to include a water quality treatment performance standard for the portion of the runoff that is not retained;
- Requirements for the permittee to evaluate barriers to the implementation of Low Impact Development and green infrastructure practices;
- Requirements in the pollution prevention good housekeeping for permittee operations minimum measure for development of standard operating procedures (SOPs) for categories of permittee facilities and activities to reduce the discharge of pollutants;
- Requirements for all permittees to perform monitoring of storm water discharges; and

- Requirements for both storm water discharges to impaired waterbodies with Pre-Total Maximum Daily Load (TMDL) approval and approved TMDL wasteload allocations.

V. General Permit Authorization

This 2017 permit renewal authorizes all Small MS4s (ARM 17.30.1102(13)) to apply for coverage separately or together with another Small MS4.

ARM 17.30.1105(1)(d) requires MPDES permit coverage for Small MS4s that are identified in ARM 17.30.1102(23) or designated pursuant to ARM 17.30.1107. Regulated Small MS4s are required to apply for, and obtain, authorization for the discharge of storm water into state waters.

Permitted MS4s Under the 2015-Issued General Permit
The areas requiring permit coverage, pursuant to ARM 17.30.1102(23), that are served by, or contribute to, municipal separate storm sewers owned or operated by current permittees, and discharge to state waters are as follows:

1. Cities: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula.

For cities required to maintain coverage under this renewed permit, the geographic area of permit coverage will include the U.S. Census designated urbanized areas in accordance with the 2010 census for cities listed in ARM 17.30.1102(23)(a) and the entirety of the municipal incorporated boundary for cities listed in ARM 17.30.1102(23)(b). For the purposes of the 2017 General Permit, these permittees are referred to as Traditional MS4s.

2. Counties: Cascade, Missoula, and Yellowstone.

For counties required to maintain coverage under this renewed permit, the geographic area of permit coverage will include the U.S. Census designated urbanized areas in accordance with the 2010 census for counties listed in ARM 17.30.1102(23)(a). For the purposes of the 2017 General Permit, these permittees are referred to as Traditional MS4s.

3. Other: Malmstrom Air Force Base, Montana State University, and University of Montana (Missoula).

For all other permitted MS4s as identified in accordance with ARM 17.30.1102(23)(d) and required to maintain coverage under this renewed permit, the geographic area of permit coverage is the portion of the permittee's jurisdiction that is within permitted Traditional MS4s. For the purposes of the 2017 General Permit, these permittees are referred to as Non-Traditional MS4s.

Authorization Options under this Permit

New Authorizations (Not currently authorized under the 2015 General Permit)
Applicants seeking authorization under the 2017 General Permit shall submit a complete application package at least 30 days before the anticipated date of required permit coverage. If an applicant owns and operates Small MS4 areas throughout the state, the applicant can submit:

- application packages for each Small MS4 area separately,
- application packages for each Small MS4 area separately as a co-permittee with the interconnected Small MS4,
- application packages for each Small MS4 area to reflect both permittee and co-permittee statuses, as requested, or
- a single comprehensive application package to cover all Small MS4 areas in the state.

An application package includes:

- an application form, as provided by the Department,
- a storm water management program, and
- fees (renewal permit fees) as required under ARM 17.30.201.

If there are deficiencies with the application package, the Department may deny authorization under the permit or contact the MS4 for additional information necessary to ensure the application package meets requirements. If the request is denied, the Department may process the request as an Individual Permit (with additional fees); the applicant may withdraw the request; or the applicant may modify the MS4's operations to meet the conditions of the 2017 General Permit and re-apply for coverage under the 2017 General Permit.

Once determined adequate, the Department will issue an authorization letter to these MS4s confirming coverage under the 2017 General Permit beginning January 1, 2017 [ARM 17.30.1341(4)].

Continuing Authorizations issued under the 2015 General Permit
Permitted MS4s renewing authorizations under the 2017 General Permit shall submit a complete renewal application package at least 30 days in advance of the existing 2015 General Permit expiration.

A renewal application package includes:

- a renewal application form, as provided by the Department,
- a storm water management program, and
- fees (renewal permit fees) as required under ARM 17.30.201.

If there are deficiencies with the renewal application package, the Department may deny authorization under the permit or contact the MS4 for additional information necessary to ensure the application package meets requirements. If the request is denied, the Department may process the request as an Individual Permit (with additional fees); the applicant may withdraw the request; or the applicant may modify the MS4's operations to meet the conditions of the 2017 General Permit and re-apply for coverage under the 2017 General Permit.

Once determined adequate, the Department will issue an authorization letter to these MS4s confirming coverage under the 2017 General Permit beginning January 1, 2017 [ARM 17.30.1341(4)].

Co-permittees Authorizations (New or Continuing Authorizations)
When multiple Small MS4s apply for coverage under a single permit authorization number, they shall be considered co-permittees and shall be jointly responsible for compliance under the 2017 General Permit as set forth at ARM 17.30.1111(3) and (7). Each co-permittee must submit a separate application package to obtain authorization. Co-permittee authorizations may occur under the 2017 General Permit as a renewal authorization with continuing coverage under the 2015 General Permit or a new authorization. Co-permittees will be subject to the requirements above based on their status: new or continuing.

Other Permitting Requirements
Submittal of the application package and receipt of an authorization letter from the Department does not eliminate a permittee's obligation to obtain other necessary permits to include MS4-related activities that utilize the storm sewer systems as a conveyance for non-storm water discharges to a receiving waterbody.

Ineligibility for Coverage

This 2017 General Permit does not authorize, or supersede permitting requirements for "storm water discharge associated with industrial activity" as defined in ARM 17.30.1102(28), "storm water discharge associated with small construction activity" as defined in ARM 17.30.1102(29), or storm water discharges required or covered under another MPDES permit.

Applicants
The Department may determine that a Small MS4 applying for coverage does not qualify for authorization under the renewed 2017 General Permit for Storm Water Discharges associated with Small MS4s, citing one or more of the following reasons:

- The specific source applying for authorization appears unable to comply with the following requirements:
  - effluent standards, effluent limitations, standards of performance for new sources of pollutants, toxic effluent standards and prohibitions, and pretreatment standards;
  - water quality standards established pursuant to 75-5-301, MCA;
  - prohibition of discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste;
  - prohibition of any discharges to which the regional administrator has objected in writing;
  - prohibition of any discharge which is in conflict with a plan or amendment thereto approved pursuant to section 208(b) of the Act; and
  - any additional requirements that the Department determines are necessary to carry out the provisions of 75-5-101, et seq., MCA.
- The storm water discharge is different in degree or nature from discharges reasonably expected from sources or activities within the category described in this MPDES General Permit (including pollutants from process wastewater streams).

- The MPDES permit authorization for the same operation has previously been denied or revoked.
- The discharge sought to be authorized under the 2017 General Permit is also included within an application or is subject to review under the Major Facility Siting Act, 75-20-101, et seq., MCA.
- The point source is, or will be, located in an area of unique ecological or recreational significance. Such determination must be based upon considerations of Montana stream classifications adopted under 75-5-301, MCA, impacts on fishery resources, local conditions at proposed discharge sites, and designations of wilderness areas under 16 USC 1132 or of wild and scenic rivers under 16 USC 1274.

If the Department determines ineligibility for a Small MS4, the Department shall proceed, unless the application withdrawn, to process the application through the Individual MPDES Permit requirements. The Department will contact the applicant regarding ineligibility and request more information and fees, as needed, for Individual MPDES permit requirements.

Permittees

Per ARM 17.30.1341(9), the Department may require any Small MS4 authorized by the 2017 General Permit to obtain an Individual Permit instead. The Department might require a Small MS4 to get an Individual Permit citing one or more of the following reasons:

- a water quality management plan has been approved that contains requirements applicable to categories or subcategories of discharges or facilities covered in a general permit;
- the Department has determined that the Small MS4 is a significant contributor to pollution;
- a change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the Small MS4;
- the discharger is not in compliance with the conditions of the 2017 General Permit;
- circumstances have changed since the time of the request to be covered by the 2015 General Permit so that the Small MS4 is no longer appropriately controlled under the 2017 General Permit;
- effluent limitations guidelines have been promulgated for facilities covered under the 2017 General Permit; or
- a change in any condition that requires either a temporary or permanent reduction or elimination of the discharge authorized under the 2017 General Permit has occurred.

VI. Description of Discharging Facilities

The 2017 General Permit is applicable to the discharge of storm water associated with Small MS4s within the boundaries of the State of Montana, including those on state, federal, or private lands. An "MS4" is defined in ARM 17.30.1102(13). ARM 17.30.1102(23) defines "Small MS4" and identifies Small MS4s determined and designated to require permit coverage in Montana. Briefly, an MS4 is typically a conveyance or system of conveyances owned or operated by a state, city, town, or other public entity that discharges to state waters, and is designed or used for collecting or conveying storm water and is not part of a publicly-owned sanitary sewer system.

Small MS4s within Montana that have US Census Bureau designated urbanized area and require MPDES permit coverage include the City of Billings, portions of Yellowstone County outside the City of Billings, the City of Missoula, portions of Missoula County outside the City of Missoula, the City of Great Falls, and portions of Cascade County located outside the City of Great Falls. An "urbanized area" is defined by the U.S. Census Bureau as an area that has a population over 50,000 and an average population density of 1,000 people per square mile.

The Board designated the cities of Helena, Butte, Bozeman, and Kalispell as Small MS4s that require MPDES permit coverage because these cities are outside of urbanized areas with a population of at least 10,000 and have the potential to affect water quality.

Malmstrom Air Force Base, University of Montana-Missoula, Montana State University-Bozeman, and Montana Department of Transportation (MDT) roadways are areas that require Small MS4 General Permit coverage because they are classified as systems similar to separate storm sewer systems in municipalities (i.e. municipal systems at military bases, large educational, hospital or prison complexes, and highways and other thoroughfares). ARM 17.30.1107 also contains designation criteria and procedures for designation of Small MS4s in addition to those stated above.

VII. Description of Storm Water Discharges

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage. Storm water runoff picks up and transports pollutants then discharges them, untreated, to waterways via storm sewer systems. Potential storm water discharges from Small MS4s in urbanized areas are a concern because urbanization increases the amount of impervious surface such as city streets, driveways, parking lots, and sidewalks, and diversifies the potential constituents of pollutants to multiple land-use categories including residential, commercial, industrial, institutional, transportation, and open-space. Urbanized areas with multiple land-use categories are pollutant sources for insecticides, pesticides, fertilizers, paint, solvents, auto fluids, oils, salt, litter, sediment, plastic bags, bottles, cigarette butts and other debris. Another concern is the possible illicit connections of sanitary sewers, which can result in fecal coliform bacteria entering the storm sewer system. The U.S. Environmental Protection Agency (EPA) conducted the Nationwide Urban Runoff Program (NURP) and published the report in 1983 which concluded that standard pollutants characterizing urban storm water runoff from multiple land-use categories included:

- Total Suspended Solids (TSS)
- Biological Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Total Phosphorus (TP)
- Total Kjeldahl Nitrogen (TKN)
- Nitrite + Nitrate ($NO_2 + NO_3$)
- Total Copper (Cu)
- Total Lead (Pb)
- Total Zinc (Zn)

When left uncontrolled, these discharges can result in fish kills, the destruction of spawning and wildlife habitats, a loss in aesthetic value, and contamination of recreational waterways that can threaten public health. Polluted storm water often affects drinking water sources. This, in turn, can effect human health and increase drinking water treatment costs. In addition, non-storm water discharges can occur from MS4s and also cause impacts on plants, fish, animals, and people. Non-storm water discharges are discharges not entirely comprised of storm water and can be caused by such activities as illegal dumping into the storm drain system or unpermitted discharges from factories. These potential storm water discharges are general descriptions of typical MS4 discharges and are not intended to be representative of any MS4 specifically.

VIII. Receiving Waters and Applicable Standards

Nondegradation

New or increased sources (as defined at ARM 17.30.702(18)), must comply with Montana's Nondegradation Policy [75-5-303 MCA], and rules (ARM 17.30.701 et. seq.). Based on 75-5-306 MCA, the Department has determined that the reissuance of the 2017 General Permit to existing sources does not require review under Montana's Nondegradation Policy.

Mixing Zones

Consistent with all previously issued MPDES General Permits for Storm Water Discharges associated with Small MS4s, the Department is not authorizing mixing zones with this renewal because of the intermittent nature of storm water discharges and the lack of specific data on the characteristics of urban storm water and receiving waters.

Total Maximum Daily Loads (TMDL)

According to federal regulation, where a TMDL has been approved, NPDES permits must contain effluent limits and conditions consistent with the requirements and assumptions of the wasteload allocations (WLAs) in the TMDL (see 40 CFR § 122.44(d)(1)(vii)(B)). For the renewal 2017 General Permit, the Department has ensured that the Special Conditions permit section is consistent with the requirements and assumptions of WLAs assigned to MS4s. After the 2017 General Permit effectiveness date, the Department may develop TMDLs that EPA will have to approve.

According to the 2002 EPA memorandum and 2014 revisions, "where the NPDES permitting authority allows for a choice of Best Management Practices (BMPs), a discussion of the BMP selection and assumptions needs to be included in the permit's administrative record, including the fact sheet when one is required (see 40 C.F.R.§§ 124.8, 124.9, & 124.18). The clear, specific, and measurable permitting requirements within this renewal will be sufficient to implement applicable WLAs. Also, the Department has required and provided a timeframe for the development of TMDL implementation plans in the Special Conditions permit section.

IX. Proposed Effluent Limitations

The control of pollutants is established through effluent limits and other requirements in an MPDES permit. Two principal bases are reflected in the 2017 General Permit for Storm Water Discharges associated with Small MS4s' established effluent limits including: technology-based effluent limits (TBELs) that specify the minimum level of treatment or control; and water quality-based effluent limits (WQBELs) that attain and maintain applicable numeric and narrative water quality standards. TBELs are based on implementing available technologies to reduce or treat pollutants while WQBELs are designed to protect the beneficial uses of the receiving water.

Effluent Limits Rationale

Effluent limits contained in the 2017 General Permit for Storm Water Discharges associated with Small MS4s are non-numeric and constitute the level of controls to reduce the discharge of pollutants from the Small MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the federal Clean Water Act. Non-numeric effluent limits are practice-based effluent limits or the implementation of Best Management Practices (BMPs) that can be authorized in lieu of numeric limits, where "[n]umeric effluent limits are infeasible" [40 CFR 122.44(k)(3) and adopted by reference in ARM 17.30.1344(2)(b)]. ARM 17.30.1111(5) requires the Small MS4 to develop, implement, and enforce a Storm Water Management Program (SWMP) as the most appropriate form of effluent limits to satisfy technology requirements and protect water quality. The SWMP must include the six minimum control measures:

- Public education and outreach;
- Public involvement/participation;
- Illicit discharge detection and elimination;
- Construction site storm water runoff control;
- Post-construction storm water management in new development and redevelopment; and,
- Pollution prevention and good housekeeping for permittee operations.

Implementation of BMPs consistent with the six minimum control measures of the SWMP and all other provisions, including monitoring, reporting, and special conditions for impaired waterbodies and implementation of wasteload allocations, of the permit shall constitute compliance with the standard of reducing pollutants to the maximum extent practicable. BMPs are implemented to eliminate or minimize the migration of pollutants to surface waters. The Department affirms its position that Montana's surface water quality standards can be maintained for discharges from Small MS4s through water quality-based controls and implemented with BMPs through the iterative process of adaptive management of the MS4 storm water program.

Maximum extent practicable (MEP) is the statutory standard that directs the permitting authority, the Montana Department of Environmental Quality, to establish the level of pollutant reductions that permittees of regulated Small MS4s must achieve including management practices, control techniques, and system, design and engineering methods. The MEP standard for non-numeric limits is a unique permitting approach developed specifically for MS4s. During development of the MEP standard, the Department establishes General Permit requirements to reflect the determination of the maximum achievable level of pollutant reductions for all permittees. MEP is not to be interpreted as a minimum approach for MS4 program development, feasibility, and achievability. Therefore, implementation beyond MEP may be feasible and appropriate for permittees with developed storm water management programs. Consistent with EPA's Phase II Final Rule, the Department has determined that the achievement of MEP is an iterative and evaluative process. The Department will reassess MEP with each permit renewal cycle and this standard will continually adapt to current MS4 conditions and BMP effectiveness. To facilitate this iterative process, this 2017 General Permit renewal utilizes a more prescriptive approach with clear, specific, measurable, and enforceable requirements to allow the Department to assess whether or not storm water management plans are meeting the MEP standard.

X. Storm Water Management Plan (SWMP)

Permittees must develop and maintain a SWMP that includes management practices, control techniques, systems, designs, good standard engineering practices, and such other provisions necessary to reduce the discharge of pollutants from the permitted Small MS4 to the MEP. This section describes required BMPs and implementation schedules or deadlines for each BMP.

Note: DEQ does not utilize a customized Montana-specific storm water BMP manual and has not approved a list of BMPs. Consistent with all previously issued General Permits for Storm Water Discharges associated with Small MS4s, DEQ does not require specific BMPs that a permittee must implement to control pollutant sources. DEQ requires adequate and effective BMPs that are ***selected, designed, installed, implemented, inspected, and maintained*** (or replaced based on inspections) in accordance with good engineering, hydrologic, and pollution control practices. DEQ provides the flexibility for permittees to choose appropriate BMPs; therefore, permittees must utilize their location-specific discretion to self-determine appropriate BMPs to control pollutant sources.

The Permittee shall effectively manage a storm water management program inclusive of the six minimum control measures: Public Education and Outreach, Public Involvement and Participation, Illicit Discharge Detection & Elimination, Construction Site Storm Water Runoff Control, Post-Construction Site Storm Water Management in New and Redevelopment, and Pollution Prevent/Good Housekeeping for Permittee Operations.

Sharing Responsibility

In accordance with 17.30.1111(7), a Small MS4 may share responsibility to implement the minimum control measures with another entity in order to satisfy their MPDES permit obligations to implement a minimum control measure. Shared responsibility is allowed only if the other entity implements the control measure, and the particular control measure, or component therof, is at least as stringent as the corresponding MPDES permit requirement. The other entity must agree to implement the control measure on behalf of the owners and operators of the regulated Small MS4. In annual reports, the owners and operators must specify that they are relying on another entity to satisfy some of their permit obligations, unless the other entity is responsible to file the reports. The MS4 remains responsible for compliance with its permit obligations if the other entity fails to implement the control measure (or component thereof). The MS4 should enter into a legally binding agreement with the other entity in order to minimize uncertainty about compliance with the MPDES permit.

Program Management

The renewal 2017 General Permit will require the permittee to establish a primary storm water coordinator. Establishing a storm water management team with a primary contact person that meets at regular intervals will facilitate enhanced communication and coordination between the permittee departments and agencies. Therefore, the permittee shall effectively implement a coordinated storm water program inclusive of the development of a storm water management team comprised of persons responsible for implementation of the SWMP and the establishment of formal mechanisms for communication and coordination between team members (e.g. meetings, email updates, etc.) to ensure cooperation necessary to facilitate permit compliance and timely reporting. In addition, requiring the participation of all pertinent staff in the overall management of the SWMP will help increase ownership in the program and improve SWMP development and implementation, activity tracking, and timely reporting to DEQ.

Within 60 Days of 2017 General Permit effective date and then reviewed annually thereafter, all permittees must develop a storm water management team, including a primary SWMP coordinator, and organizational chart which identifies the position responsible for implementing each minimum measure. Any updates to this information shall be submitted with annual reports.

During the entire permit term, all permittees must establish and execute formalized mechanisms for regular communication between management team members to allow for exchange of information and submittal of information necessary for permit compliance tracking and reporting.

Public education and outreach

The permittee shall implement a storm water public education and outreach (PEO) program to develop or adapt, distribute, and evaluate educational materials and outreach activities to key target audiences in the MS4 that raise awareness about the impacts of storm water discharges on waterbodies, educate audiences about the behaviors and activities that have the potential to pollute storm water discharges, and motivate action to change behaviors to reduce pollutants in storm water runoff. The 2015 General Permit provided baseline requirements to identify target pollutants and target audiences of the identified pollutants, and utilizes a self-determined method to implement and evaluate success of the PEO program. The underlying goals of an effective PEO program are to generate awareness among target audiences, provide strategic guidance for

solutions to polluting behaviors, and change the polluting behaviors. The 2017 General Permit builds upon the permittee's PEO program and requires the permittee to analyze their MS4 and develop a more targeted approach to engage polluting audiences with increased accessibility to pollution solution materials and channels. With the 2017 General Permit renewal, DEQ prescribes measurable goals with specific timeframes to progress permittees' PEO programs. The permittees are required to develop or adapt their PEO program with a tailored and targeted approach towards specific water quality issues of concern throughout the MS4 and promote polluting behavior change.

Public involvement/participation

The permittee shall develop a public involvement/participation (PIP) program that strategically involves key target audiences in the development and implementation of the SWMP that complies with state and local public notice requirements. The 2015 General Permit provided baseline requirements for implementing and documenting a PIP program and utilizing a self-determined method to evaluate success of the PIP program. DEQ recognizes that the Public education and outreach minimum control measure is intrinsically related to Public involvement/participation. With the 2017 General Permit renewal, DEQ prescribes measurable goals with specific timeframes to progress the permittee's PIP program. The permittee is required to develop or adapt their PIP program with a tailored and targeted approach towards specific water quality issues of concern throughout the MS4 that increases public participation and solicits feedback. The renewal permit builds upon the permittee's PIP program and requires the permittee to analyze their MS4 and develop and implement a more targeted approach to engage key target audiences on the MS4 Storm Water Management Plan (SWMP). The permittee is encouraged to collaborate with existing organizations to maximize outreach efforts and strategically utilize available resources regarding SWMP feedback and improvements. Also, DEQ required increased accessibility to outreach materials and public feedback mechanisms.

Illicit discharge detection and elimination

The permittee shall develop, implement and enforce an Illicit discharge detection and elimination (IDDE) program to detect and eliminate illicit discharges (as defined in ARM 17.30.1102(7)) into the permitted Small MS4. The 2015 General Permit required developing, implementing and documenting an IDDE program and utilizing a self-determined method to evaluate success of the IDDE program. This 2017 General Permit renewal utilizes the previous requirements as a foundation to progress the program into a more focused approach. This focused and systematic approach qualifies non-storm water discharge categories based on significance, prioritizes outfalls susceptible to illicit discharges, outlines more specific infrastructure and outfall mapping requirements, prescribes a dry weather screening routine, and requires the development and implementation of an Enforcement Response Plan (ERP). DEQ recognized that the IDDE control measure needed more structured requirements to assist permittees in administering a comprehensive and effective IDDE program.

The 2015 General Permit requires permittees to address known common and occasional non-storm water discharges and flows to Small MS4s, and include a provision prohibiting any "individual" non-storm water discharge that is determined to be contributing significant amounts of pollutants. The 2017 General Permit renewal builds on these requirements by annually

reevaluating the significance of known common and occasional non-storm water and documenting/updating associated controls. Also, the 2017 General Permit requires all permittees to include a provision prohibiting any occasional incidental non-storm water discharge that is determined to be contributing significant amounts of pollutants to the Small MS4 in ordinances, regulatory mechanism, or memoranda of agreement by the second permit year.

DEQ recognized that a comprehensive IDDE program requires clear policies and procedures for tracing and eliminating illicit discharges upon detection (through outfall screening processes, complaints, or public notification) to ensure that permittees display consistency among protocol with each incident. The permittees will utilize the Center for Watershed Protection's Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assistance (https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf) or equivalent published resources for information and guidance developing a comprehensive IDDE program to include outfall screening protocol for inspecting and screening all of the permittee's outfalls during dry weather.

The 2015 General Permit requires permittees to identify how a storm sewer map was developed to include the outfall locations and storm sewer system components. DEQ recognized that understanding a MS4s infrastructure is essential to an effective IDDE program. Therefore, the 2017 General Permit renewal requires additional information to be provided on existing maps and outlines specific storm sewer system components.

The 2017 General Permit outlines requirements for further development of the IDDE program. The completion of the permittee's storm sewer map is the first step to addressing illicit discharges. This tool will be used for tracking illicit discharges. During this renewal permit cycle, permittees will develop an Illicit Discharge Investigation and Corrective Action Plan to include, at a minimum, processes to investigate all illicit discharges; prioritize non-storm water discharges suspected as sanitary sewage and/or significantly contaminated illegal dumping for investigation first; notify Montana DEQ and appropriate agencies of dry weather flows believed to be an immediate threat to human health or to the environment; document good faith efforts made to find the source of the dry weather discharge and document each phase of the investigation in a case file; and resolve and document the conclusion of all investigations. This Illicit Discharge Investigation and Corrective Action Plan should include procedures to notify neighboring localities if a discharge is discovered either originating on or discharging to the neighboring storm sewer system and a clear, step-by-step procedure for conducting the investigation of illicit discharges. In many circumstances, sources of intermittent, illicit discharges are very difficult to locate, and these cases may remain unresolved, however the Illicit Discharge Investigation and Corrective Action Plan should describe how each case will be investigated and when the investigation should be concluded, after which the case may be considered closed. Resulting enforcement actions must follow the Storm Water Management Plan Enforcement Response Plan. The permittee will develop an Enforcement Response Plan (ERP) for illicit discharges that describes their legal authority (through ordinance, formal policies, or memoranda of understanding) to eliminate and abate illicit discharges; identify staff with enforcement authority; list enforcement actions available; outline an enforcement escalation process; and provide a schedule to be utilized to quickly and consistently eliminate the source of the discharge, abate any

damages, and prevent reoccurrence. Also, the ERP must include three tiers of responses: informal, formal, and judicial. Permittee staff who conduct the dry weather outfall screening must be properly trained in detecting illicit discharge, investigating the source and applying the appropriate enforcement action per the Illicit Discharge Investigation and Corrective Action Plan and ERP, respectively.

In efforts to utilize resources effectively and implement the Illicit Discharge Investigation and Corrective Action Plan, the 2017 General Permit focuses dry weather field screening activities in priority areas that are the most common sources of illicit discharges. The permittee will prioritize outfalls based on provided criteria. The 2017 General Permit outlines the criteria to use in the determination of high priority outfalls and provides high priority outfall inspection and screening frequencies. Each permittee will have a different set of priority areas. Priority areas must be based on land use, and prior history and frequency of problems. The identification of priority areas must include "hotspots" or areas where dumping, spills, or other illicit discharges are common. These hotspots will help identify potential field screening locations and may help target educational activities.

Construction site storm water runoff control

The permittee shall develop, implement, and enforce a program to reduce pollutants in storm water runoff to the permitted Small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. The 2017 General Permit renewal builds upon the requirements set forth in the 2015 General Permit.

To ensure consistency among regulated projects and provide the basis for effective plan review and inspections, the 2017 General Permit specifies that the minimum standards required for construction site storm water management are reflective of the Non-Numeric Technology-Based Effluent Limits of the most current Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity. The permittee is required to have, if not completed previously, the necessary legal authority or regulatory mechanism (including formal policies or contractual agreements) to require erosion and sediment controls on all regulated projects and to ensure that the controls are included in site plans as well. These minimum standards should also be the basis for construction site inspections. To effectively conduct construction inspections and use resources efficiently, the permittee must know where construction activity is occurring and the potential pollutant impacts from each project to water quality. A construction site inventory tracks information such as project size, disturbed area, distance to any waterbody or flow channel, when the erosion and sediment control/storm water plan was approved by the permittee, and whether the project is covered by the DEQ's General Permit for Storm Water Discharges Associated with Construction Activity. This inventory will allow the permittee to track and target its inspections. DEQ provides criteria for prioritization of project inspections and establishes a minimum frequency for inspections. The permittee will inspect higher priority projects and noncompliant construction sites more frequently. In addition to inspections at regular intervals, inspections are required within a certain timeframe after rain events to ensure that storm water

controls are functional or repaired in a timely manner. Inspections are required before land disturbance occurs to ensure erosion and sediment controls are in place and a plan has been developed, during active construction, and after the site has been stabilized. The permittee is required to develop and implement an Enforcement Response Plan (ERP) that will ensure compliance with the construction storm water management using legal authority or regulatory mechanisms and tiered responses including any non-monetary construction project-specific penalties and corrective actions. Resulting enforcement actions must follow the ERP. Construction inspectors must be properly and regularly trained to ensure that inspections are conducted consistently and that the proper compliance actions are required per the ERP.

The Construction site storm water runoff control measure is separate from the Montana DEQ General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit) although there is some overlap. The Construction General Permit applies to construction activities that result in a total area of ground disturbance of equal to or greater than one acre, and where area(s) of ground disturbance or other construction-related pollutant sources have the potential to discharge into state surface waters. Because construction projects are known pollutant-generating activities that have the potential to impact surrounding waterbodies, the construction site storm water runoff control measure allows the permittee to proactively manage construction activities that discharge within their MS4s. This control measure requires more localized site regulation and enforcement efforts that, in return, enables the permittee to more effectively control construction site discharges to their MS4s. DEQ recognizes that MS4s may reference the Construction General Permit in their local program and any references have no compliance impacts on to the permittee's requirements under the Construction site storm water runoff control measure. References allow the permittee to clarify overlapping local and state permitting requirements that construction projects must adhere to.

Post-construction storm water management in new development and redevelopment

The permittee shall develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the permitted Small MS4. This program must ensure that controls are in place that would prevent or minimize water quality impacts. By reducing the volume of storm water discharges, the discharge of pollutants in storm water is subsequently reduced. The discharge volume reduction concept is the critical focus and metric for post-construction storm water management.

As in the 2015 General Permit, the performance standard for runoff reduction from the site is 0.5 inches of rainfall and this standard represents the 90th percentile rainfall frequency event. This renewal permit maintains the core performance standard for regulated projects implementing post-construction storm water control measures that infiltrate, evapotranspire, or capture for reuse the runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation. This 2017 General Permit maintains the requirements established in the 2015 General Permit. The purpose of the runoff reduction standard (the first 0.5 inches) is to maintain or restore stable hydrology in receiving waters, and protect water quality by having post-construction hydrology mimic the natural hydrology of the area. DEQ recognizes the

cascading effect of MS4 development to include increased impervious surface decreases precipitation infiltration; increased development increases potential pollutant sources; increased impervious surface increases the quantity of storm water runoff; increased pollutant sources decreases the water quality of storm water runoff that ultimately discharges to receiving waterbodies. The overall goal of the Post-construction site storm water management in new and redevelopment control measure is to have the hydrology associated with new development reflect the predevelopment hydrology, and to improve redeveloped sites' hydrology. Infiltration, evapotranspiration, and capturing for reuse are the required control practices to manage storm water from redevelopment and new development sites. The permit renewal provides options for projects that cannot meet 100 percent of the runoff reduction requirements where the remainder must be: (1) treated prior to discharge onsite with measures expected to remove 80 percent of total suspended solids; (2) managed offsite within the same sub-watershed using post-construction storm water management controls that are designed to infiltrate, evapotranspire, and/or capture for reuse; or (3) treated offsite within the same sub-watershed using post-construction storm water management controls expected to remove 80 percent of total suspended solids or alternative measures determined and documented to treat the remainder of the runoff to the best water quality practicable. The permittee must systematically start with option 1 and determine infeasibility before consideration of option 2 and so on to option 3. DEQ has further provided an outline for offsite treatment criteria and the permittee is required to develop a formal review and approval process for determination of eligibility for offsite treatment. DEQ has determined that Part 2.A.5.B.iv meets the intent of the MEP standard to prevent or minimize water quality impacts from new and redevelopment post-construction storm water management through the updated requirements of permittee plan review and approval process with specified criteria.

To ensure consistency among regulated projects and provide the basis for effective plan review and inspections, the 2017 General Permit specifies the minimum standards required for post-construction site storm water management as outlined above. In addition, the permittee is required to have, if not completed previously, the necessary legal authority or regulatory mechanism (including formal policies or contractual agreements) to require post-construction storm water management controls on all regulated projects and ensure that they are included in site plans as well. The above runoff reduction standards and the operation and maintenance of post-construction controls should also be the basis for post-construction inspections and the permittee-developed inspection forms or checklists. To effectively conduct post-construction inspections and use resources efficiently, the permittee must inventory all new post-construction controls being implemented, inventory existing high priority post-construction controls based on provided criteria, and develop and conduct an inspection program focused on annual high-priority inspections. Creating an inventory of post-construction structural storm water control measures, including tracking of specific information, will enable the permittee to know what control measures need to be maintained in order to function as designed. If control measures are not inspected and maintained, they might not retain or treat storm water onsite as designed and they could become sources of pollution rather than reducing pollution (e.g., through sediment discharges of poorly stabilized practices). The permittee is required to develop and implement an Enforcement Response Plan (ERP) that will ensure compliance with the post-construction storm water management using legal authority or regulatory mechanisms and tiered response including identification of staff with enforcement authority, enforcement escalation processes, and a

schedule for corrective actions. Resulting enforcement actions must follow the ERP. Post-construction inspectors must be properly and regularly trained to ensure that inspections are conducted consistently and that the proper compliance actions are required per the ERP.

The 2017 General Permit renewal builds upon the requirements established in the 2015 General Permit for runoff reduction being a preferred control practice because it can achieve both volume control and pollutant removal. DEQ encourages the use of "Low Impact Development" (LID) and "Green Infrastructure" best management practices. More information about green infrastructure benefits and practices can be found at EPA's Green Infrastructure website (http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm). The EPA Water Quality Scorecard (Scorecard) is a tool that allows reviewers to evaluate whether common planning documents, codes, ordinances and policy documents impede the implementation of green infrastructure practices and policies. Plans, codes and ordinances, and policies can inadvertently drive the creation of additional impervious surfaces such as large parking lots, wide roads, and curbed streets, and act as a barrier to property owners who attempt to decrease storm water runoff. The Scorecard addresses a variety of issues, and it, or an equivalent code review checklist, provides a quantitative scale that the permittee must use to score its policies with respect to the management of post-construction runoff. Adopted from the EPA Water Quality Scorecard, the 2017 General Permit requires the permittee to perform exercises targeted at incorporating recommendations and requirements into plans, codes, ordinances, and policies which allow and support the utilization of LID and green infrastructure concepts on public and private property. The purpose of the exercise is: 1) to help the permittee identify barriers to comprehensive post-construction storm water management and green infrastructure implementation, and 2) to identify ways to eliminate these barriers. DEQ's intent is permittee identification of barriers and solutions, and not for the permittee to overcome these barriers under this renewal permit cycle. The permittee will submit a summary of their efforts with the fourth year annual report.

DEQ clarifies that the Post-construction storm water management in new development and redevelopment control measure is separate from Circular DEQ 8 Montana Standards for Subdivision Storm Drainage although there is parallel regarding standards of runoff volume. Circular DEQ 8 Montana Standards for Subdivision Storm Drainage applies to all storm drainage plans for subdivisions in Montana and is not exclusive to subdivisions within permitted MS4 areas. Circular DEQ 8 Montana Standards for Subdivision Storm Drainage contains standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainage ways for subdivisions in Montana. Also, Circular DEQ 8 Montana Standards were developed in compliance with Section 76-4-104, MCA, of the Sanitation in Subdivisions Act and ARM 17.36.310 whereas Small MS4s are regulated pursuant to 75-5-402, MCA and requirements found in ARM, Title 17, Chapter 30, Subchapters 11, 12, and 13. Circular DEQ 8 applications have their own requirements and forms, and are submitted and reviewed separately from the General Permit for Storm Water Discharges Associated with Small MS4s. DEQ recognizes that MS4s may reference Circular DEQ 8 in their local program and any references have no compliance impacts to the permittee's requirements under the Post-construction storm water management in new development and redevelopment control measure. References allow the permittee to clarify similar local and state permitting post-construction requirements.

Pollution prevention and good housekeeping for permittee operations
The permittee shall develop and implement an operation and maintenance program which includes a training component, and has the ultimate goal of preventing or reducing pollutant runoff from permittee operations. The 2017 General Permit renewal builds upon the requirements set forth in the 2015 General Permit.

The Pollution prevention and good housekeeping control measure has more detailed requirements for development of a facility and activity inventory to include identification of potential contaminants and department(s)/position(s) with associated responsibilities. Also, the permittee will develop and update annually a map that identifies the locations of facilities and activities listed in the pollution prevention and good housekeeping inventory. The permittee will organize similar facilities and activities identified in the inventory into categories, and standard operating procedures (SOPs) will be developed for each category. The SOPs for these facilities and activities must be developed in order to ensure that the proper BMPs are implemented by staff to prevent the discharge of pollutants. DEQ has outlines requirements and timeframes for SOPs that include annual training for all permittee staff directly involved with implementing the SOPs.

XI. Training

Based on the seasonal nature of some municipal employees directly involved in implementation of the storm water management program, normal employee turnover, and the iterative process involved with storm water permitting, the 2017 General Permit renewal outlines more comprehensive training requirements than the 2015 General Permit including identification of who should be trained, timeframes for training, and new hire training requirements.

XII. Monitoring

The "power to require monitoring" is granted to the DEQ through 75-5-602 MCA, and is further clarified through ARM 17.30.1351(2). Part V. of the 2017 General Permit describes the monitoring requirements during this permit term. DEQ reserves the right to require additional storm water sampling, testing, and reporting on a case-by-case basis. Factors which may trigger monitoring requirements could include, but are not limited to: atypical discharges into the Small MS4; SWMP development, implementation, and enforcement effectiveness; storm water quality issues; potential contamination issues; historical issues; compliance issues; new requirements; or other water quality issues.

The 2017 General Permit renewal builds upon the requirements set forth in the 2015 General Permit by requiring all permitted MS4s to monitor storm water discharge. DEQ has (1) increased monitoring requirements to provide more water quality information within the MS4 area, (2) increased monitoring options to provide more flexibility in the renewal permit, and (3) allowed the ability to strategically choose monitoring locations to be more representative of discharges from the MS4.

XIII. Total Maximum Daily Load (TMDL) Summaries

A TMDL is the maximum amount of a pollutant a waterbody can receive and still meet water quality standards. The TMDL assigns wasteload allocations (WLAs) to point sources to meet water quality standards. These WLAs are portions of the receiving waterbody's assimilative capacity. TMDLs provide an approach to improve water quality so that streams and lakes can support and maintain their state-designated beneficial uses.

City of Billings
The Department has not completed TMDLs for the receiving water bodies; therefore, MS4 wasteload allocations do not currently exist.

City of Bozeman
The "Lower Gallatin Planning Area TMDLs & Framework Water Quality Improvement Plan" was completed March 2013 and provides the following MS4 WLAs.

- Sediment in Bozeman (Sourdough) Creek & Bear Creek:

Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Nutrients in Bozeman Creek (Total Nitrogen), East Gallatin River (Total Nitrogen & Total Phosphorus); Bridger Creek (Nitrate), and Mandeville Creek (Total Nitrogen & Total Phosphorus):

The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Escherichia coli in Bozeman Creek:

The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP

performance and help determine whether and where additional BMP implementation may be necessary.

Butte-Silver Bow
The "Upper Clark Fork Phase 2 Sediment and Nutrients TMDLs and Framework Water Quality Improvement Plan" was completed in April 2014 and provides the following MS4 WLAs.

- Sediment in Silver Bow Creek

Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Nutrients (Total Nitrogen & Total Phosphorus) in Silver Bow Creek

The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Metals (Arsenic, Cadmium, Copper, Lead, Mercury, and Zinc) in Silver Bow Creek

The Butte-Silver Bow MS4 and the Butte Area Superfund Site are presently addressed via a composite wasteload allocation because the sections of these areas overlap. The WLAs are met by adhering to the permit requirements. The Superfund site has the goal of meeting water quality targets in Silver Bow Creek with direction from the CERCLA program.

City of Great Falls
The "Sun River TMDL" was completed in December 2004 and provides the following direction for future TMDL revisions.

- Nutrient and Sediment in the Lower Sun River

In 2004, the MS4 was not considered a significant point source and no MS4 WLAs were developed. However, the Department recognized that urban areas have the potential to impact nutrient and sediment loading and future analysis is needed. To meet the intent of the TMDL goals and future recommendations, the Great Falls MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize pollutant loads to the lower Sun River.

City of Helena
The "Framework Water Quality Restoration Plan and Total Maximum Daily Loads (TMDLs) for the Lake Helena Watershed Planning Area: Volume II-Final Report" was completed in August 2006 and provides the following MS4 WLAs.

- Nutrients (Total Nitrogen & Total Phosphorus) in Prickly Pear Creek and Nutrients (Total Nitrogen & Total Phosphorus) in Ten Mile Creek

The Department recognized that regulated storm water contributes only a small fraction of the total nutrient load and imposed no additional requirements for permitted storm water facilities. However, to meet the intent of the TMDL goals and future recommendations, the Helena MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize pollutant loads to Ten Mile Creek.

- Sediment in Prickly Pear Creek and Ten Mile Creek

The Department recognized that regulated storm water contributes only a small fraction of the total sediment load and imposed no additional requirements for permitted storm water facilities. However, to meet the intent of the TMDL goals and future recommendations, the Helena MS4 must continue to follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize pollutant loads to Prickly Pear Creek and Ten Mile Creek.

City of Kalispell
The "Flathead-Stillwater Planning Area Nutrient, Sediment, and Temperature TMDLs and Water Quality Improvement Plan" was completed in December 2014 and provides the following MS4 WLAs.

- Nutrients in Ashley Creek (Nitrate + Nitrite, Total Nitrogen & Total Phosphorus) and Spring Creek (Nitrate +Nitrite, Total Nitrogen & Total Phosphorus):

The Kalispell MS4 does not continuously discharge, and it only sporadically discharges during the dry summer growing season. Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements and discharge volumes. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Dissolved Oxygen in Ashley Creek and Spring Creek:

Water quality improvements addressed in Nutrient TMDLs will result in improved DO concentrations. Therefore, the DO concentrations will increase by adhering to the permit requirements and discharge volumes. As identified in the permit, monitoring data should

continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Sediment in Ashley Creek and Stillwater River:

Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements and discharge volumes. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

- Temperature in Ashley Creek and Whitefish River

The discharge temperatures will be consistent with naturally occurring conditions by the City of Kalispell MS4 adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

The "Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana" was completed in December 2002 and provides the following direction for future TMDL revisions.

- Nutrients in Flathead Lake (Total Nitrogen & Total Phosphorus):

In 2002, the MS4 was not a permitted point source and no MS4 WLAs were developed. However, the Department recognized that urban areas have the potential to impact nutrients loading and future analysis is needed. To meet the intent of the TMDL goals and future recommendations, the Kalispell MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, and utilize monitoring to implement an adaptive management approach to minimize nutrient loads to Flathead Lake.

City of Missoula

The allocations for the Missoula MS4 are found within five different TMDL documents including the 1998 Clark Fork nutrient TMDL document that does not include numeric WLAs for the Missoula MS4 or any urban areas, but intrinsically includes them within the composite load allocations for applicable upstream sources. The remaining TMDL documents include:

- The "Silver Bow Creek and Clark Fork River Metals TMDLs" completed in May 2014;
- The "Bitterroot Watershed Total Maximum Daily Loads and Water Quality Improvement Plan" completed in December 2014;
- The "Bitterroot Temperature and Tributary Sediment Total Maximum Daily Loads and Framework Water Quality Improvement Plan" completed in August 2011; and
- The "Central Clark Fork Basin Tributaries TMDLs and Water Quality Improvement Plan" completed in September 2014.

These four documents provide the following WLAs.

- Sediment in Grant Creek

Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary to minimize sediment loading to Grant Creek.

- Nutrients (Total Nitrogen) in Grant Creek

Percent reduction allocations were developed, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize Total Nitrogen loading to Grant Creek.

- Temperature in Grant Creek and Bitterroot River

No MS4 WLAs (except during periods of non-storm water runoff) were developed for Grant Creek or the Bitterroot River; however, the Department recognized that urban areas have the potential to impact temperature. To meet the intent of the TMDL goals and future recommendations, the Missoula MS4 must follow their permit requirements, evaluate potential impacts to impaired receiving waters, implement Low Impact Development water retention and infiltration requirements, and utilize monitoring to implement an adaptive management approach. The MS4 is assigned a wasteload allocation of zero when the storm water system is not activated or functioning during storm events. As required by the permit, an illicit discharge detection and elimination program is necessary to achieve this WLA, which requires the permittees to regularly update the storm sewer system map, showing the location and number of outfalls. When the storm water system is activated, the WLAs are met by adhering to the permit requirements and that monitoring can be used to implement an adaptive management approach to minimize temperature increases.

- Metals- Lead in Bitterroot River and Arsenic, Cadmium, Copper, Iron, Lead, and Zinc in Clark Fork River

Percent reduction allocations were developed for the metals identified above in the Bitterroot River and Clark Fork River, but the WLAs are not intended to add load limits to the permit. The WLAs are met by adhering to the permit requirements. As identified in the permit, monitoring data should continue to be evaluated to assess BMP performance and help determine whether and where additional BMP implementation may be necessary.

XIV. Special Conditions

The 2015 General Permit addresses discharges to "water quality impaired waters" through requirements for the permittee to include a section in the SWMP that identifies specific BMPs used to collectively control the discharges of pollutants of concern, and ensuring the Department incorporates wasteload allocations, as applicable. The underlying goal of implementing TMDLs is to ensure that storm water discharges will not cause or contribute to instream exceedances of water quality standards. The 2017 General Permit renewal requires TMDL targeted monitoring, and the development and implementation of a long-term impairment improvement strategy with interim milestones.

The 2017 General Permit outlines requirements for both storm water discharges to impaired waterbodies with pre-TMDL approval and approved TMDL wasteload allocations. Appendix A of the permit contains a list of TMDLs with WLAs assigned to MS4s approved by the Department and EPA as of the effective date of this permit.

DEQ addresses water quality controls for storm water discharges to impaired waterbodies with pre-TMDL approval because this requirement increases awareness of receiving waterbodies and proactively engages the permittee to manage pollutants of impairment and plan for implementation of future controls. This requirement establishes a TMDL foundation for the permittee's storm water management program upon WLA approval.

DEQ addresses water quality controls for storm water discharges to impaired waterbodies with approved TMDL WLAs through a two-step process: (1) an approved TMDL Sampling Plan with public review and (2) based on the monitoring data from the TMDL Sampling Plan, the SWMP will include a section identifying the measures and BMPs that the permittee plans to implement, describing the permittee's impairment priorities and long term strategy, and outlining interim milestones (i.e., a completion schedule for action items) for controlling the discharge of the pollutants of concern and making progress towards meeting the TMDL. DEQ's TMDL WLA approach in the 2017 General Permit renewal provides the permittee with the flexibility, and a clear and specific framework to evaluate their controls specific to wasteload allocations, and develop and adaptively manage a part of their storm water program focused on wasteload allocations through an approved long-term strategy.

XV. Record Keeping

The permittee shall retain records of all monitoring information, copies of all reports required by the 2017 General Permit, and records of all data used to complete the application for the 2017 General Permit, for a period of at least three years from the date of sample, measurement, report, or application.

XVI. Reporting (Annual Reports and SWMPs)

Annual Report

The permittee (or co-permittee if co-permitted under one permit authorization number) shall prepare and submit an annual report to DEQ for each calendar year within the General Permit term by March 1st of the following year. Annual report requirements are located in Part IV of the 2017 General Permit. Annual reports are critical for providing the opportunity for the permittee to document and summarize implementation of the SWMP, evaluate program results, and describe planned changes. DEQ has updated annual reporting requirements to solicit more comprehensive feedback. DEQ has updated the annual report form to reflect 2017 General Permit requirements.

SWMP

Permittees must develop and maintain a SWMP per Part II of the 2017 General Permit. The SWMP will be submitted at the time of application and any changes to the SWMP are submitted with the corresponding annual report. DEQ acknowledges that parts of the SWMP include staggered development and implementation, and the permittee is able to detail such development and implementation progress in the SWMP until the specified timeframe.

DEQ may require changes to the SWMP as needed. Changes requested by DEQ must be made in writing, set forth the time schedule for the permittee to develop the changes, and offer the permittee the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by DEQ will be made in accordance with ARM 17.30.1365, ARM 17.30.1361, or as appropriate ARM 17.30.1362.

XVII. Standard Permit Conditions

Conditions that apply to all MPDES permits including General Permit MTR040000 are listed in ARM 17.30.1342. Additional conditions applicable to MPDES permits are set forth in ARM 17.30.1344. All conditions applicable to MPDES permits must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these rules must be given in the permit. A listing of all Standard Conditions pertaining to all MPDES permits will be included in the 2017 General Permit.

XVIII. References

- Administrative Rules of Montana Title 17, Chapter 30 *et al.*
- Montana Code Annotated Title 75, Chapters 5, Subchapters 1 through 6.
- Code of Federal Regulations 40 CFR Parts 122 through 133.
- EPA *Environmental Impacts of Storm water Discharges: A National Profile*, published June 1992; EPA Document No. 841-R-92-001.
- National Research Council's *Urban Storm water Management in the United States*, 2008.
- EPA *Revisions to the November 22,2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"*; Memorandum, November 2014.
- EPA *National Pollutant Discharge Elimination System - Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule* . 1999.
- EPA *MS4 Permit Improvement Guide*, April 2010.
- EPA *MS4 Program Evaluation Guidance,* January 2007.
- Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments,* October 2004.
- Center for Watershed Protection. 2004. Illicit Discharge Detection and Tracking Guide. Center for Watershed Protection, Ellicott City, MD.
- *Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems* published in the "Federal Register / Vol. 61, No. 155 / Friday, August 9, 1996 / Rules and Regulations".
- *Technical Guidance on Implementing the Storm water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security,* published 2009; EPA Document No. 841-B-09-001.
- *Managing Storm water In Your Community - A Guide for Building an Effective Post-Construction Program,* Center for Watershed Protection, published 2008; EPA Document No. 833-R-08-001.
- California Storm water Quality Association's *Municipal Storm water Program Effectiveness Guidance,* May 2007.
- EPA *Understanding Impaired Waters and Total Maximum Daily Load (TMDL) Requirements for Municipal Storm water Programs,* January 2008.
- Various Montana Small MS4 permittee Annual Reports.
- Various Final Montana TMDL documents

Appendix P

Public Hearings

NOTICE OF PUBLIC HEARING

The City of Red Lodge will hold a public hearing on Tuesday, March 24, 2020 at 6:00 PM, at the City of Red Lodge Council Chambers, 1 South Platt Ave., Red Lodge, MT 59068. The purpose of the hearing is to discuss the update to the engineering study that was conducted for the stormwater system. Recommended improvements will be discussed along with the associated project costs, and possible sources of funding.

The public is strongly encouraged to attend and will be given an opportunity to ask questions and to express their opinions regarding the findings in the engineering report. Comment may be given orally at the hearing or submitted in writing prior to 5:00 PM on the day of the hearing. The City will hold a meeting after the hearing to discuss acceptance of the Preliminary Engineering Report, and Funding Strategy.

Anyone who would like more information or who wants to submit questions or comments should contact Jim Bushnell, Public Works Director, at (406) 425-9557 or Brandon Duffey, Great West Engineering, at (406) 652-5000.

Published in the Carbon County News on 3/12/2020 and 3/19/2020.

Meeting was canceled due to COVID-19

Notice of Availability of Environmental Assessment and Public Hearing for City of Red Lodge Stormwater Facility Improvements Project

The City of Red Lodge is preparing an application for a Treasure State Endowment Program (TSEP) grant from the Montana Department of Commerce (DOC). TSEP grants are a state action subject to the Montana Environmental Policy Act (MEPA). As required by MEPA and DOC regulations, the City of Red Lodge has prepared a draft Environmental Assessment (EA) that evaluates the potential environmental effects and consequences of the proposed project. This notice announces the availability of the draft EA for public review and comments as well as the date and time of a Public Hearing regarding the proposed project.

The project will consist of replacing the City's stormwater collection system and installing new infrastructure to disconnect stormwater drainage basins that currently drain to sanitary sewer. Copies of the draft EA are available for review at City Hall, 1 South Platt Ave., Red Lodge, MT 59068. It will also be available on the City's website under the public works section. The City of Red Lodge will consider all substantive comments received in response to the draft EA.

A public hearing will be held on Tuesday, April 14, 2020 at the City of Red Lodge Council Chambers, 1 South Platt Avenue, Red Lodge, MT 59068 at 6:00 p.m.

At the public hearing, the proposed project will be explained, including the purpose and proposed area of the project, activities, budget, possible sources of funding, environmental assessment process, and any costs that may result for local citizens because of the project.

All interested persons will be given the opportunity—and are encouraged–to ask questions and to express their opinions regarding this proposed project and its environmental impacts. For further information, contact Brandon Duffey, Great West Engineering, 6780 Trade Center Ave, Billings, MT 59101, (406) 652-5000, email: bduffey@greatwesteng.com. Comments may be given orally at the hearing or submitted in writing.

Published in the Carbon County News on 4/2/2020 and 4/9/2020.

Meeting was canceled due to COVID-19

CITY OF RED LODGE

1 PLATT AVENUE SOUTH, P.O. BOX 9, RED LODGE, MONTANA 59068

Due to the COVID-19 Pandemic the City is initiating revised protocols for this public meeting. Citizens can participate in the meeting by joining the following GOToMeeting Link:

https://global.gotomeeting.com/join/330312381 **You can also dial in using your phone. United States:** +1 (571) 317-3122 **Access Code:** 330-312-381. **New to GoToMeeting? Get the app now and be ready when your first meeting starts:** https://global.gotomeeting.com/install/330312381

Public comment will be taken only during the Public Comment periods as indicated on the agenda. There will also be time in conjunction with each agenda item for public comment relating to that item but you may only speak once. Comments may be sent to Council via email before 12:00 PM on Tuesday May 12th, at cityclerk@cityofredlodge.com. Emails received after 12:00 PM and prior to 5:00 PM, may be read during the meeting.

The Public may call in to the GoToMeeting during specific Public Comment periods at 1 (571)317-3122. All persons addressing the City Council shall speak in a civil and courteous manner. All Callers will be restricted to 3 minutes of comment as is customary.

CITY COUNCIL WORKING SESSION

May 26, 2020 6:00 p.m. to 8:00 p.m.

1. **Mayor's Comments**
2. **Solid Waste Contract with Republic Services (discussion)**
3. **Resolution #3546 - Stormwater Preliminary Engineering Report (PER) update and presentation (discussion)**
4. **Resolution #3545 – Authorizing the Mayor to submit a Treasure State Endowment Program (TSEP) funding grant (discussion)**
5. **Professional Services Contract – Extension, Amendment NO. 1 Great West Engineering**
6. **Resolution #3547- Requesting Distribution of Bridge and Road Safety Program Funds (discussion)**
7. **TBID FY 20-21 Budget (discussion)**
8. **Use of City Owned Land Permit, Farmers Market (Discussion)**
9. **Ordinance #952, Administration of Resort Tax (Discussion)**
10. **Public Comment**

Disclaimer – The Council reserves the right to limit the amount of time for comments from the Public on each topic; typically, the maximum amount of time allocated will be up to 3 minutes per person. This agenda/packet is provided for information purposes only and is subject to change. Some documents may not have been available at the time this agenda/packet was prepared. This agenda and information related to specific items are available at City Hall or may be downloaded at the City's website: http://cityofredlodge.net/city-government/mayor-and-city-council/council-meetings/ For additional information, please contact the City Clerk, Loni Hanson, at cityclerk@cityofredlodge.com You are encouraged to sign-up for automatic E-Mail notifications about City issues at: https://groups.google.com/group/city-of-red-lodge

May 26, 2020

The Red Lodge City Council met for a working session on May 26, 2020 from 6:00 p.m. to 8:00 p.m. by GoToMeeting.

Members Present: Mayor Larson, Aldermen Cameron, Lyman, Hoffman, Mahan, Weamer, and Westwood.

The items the Mayor, City Council, Public, and Staff discussed were the following:

1. Mayor's Comments- Mayor Larson said there is a vacancy on the Sustainablity Board for a Council rep and asked if any Council member would like to sit on that board. Alderman Weamer volunteered.
2. Solid Waste Contract with Republic Services- James Caniglia, Community Development Director, said we put out an RFP for Solid Waste and we received two bids back. One from Republic Services and the other from McKenzie Disposal. James said McKenzie was substantially higher in price then Republic. He said the selection committee decided to go with Republic Services. There were a couple of minor changes that Republic had on the contract and James would get the Council the updated contract at the next meeting. There was discussion if a Resolution is needed to approve the contract. Majority of Council agreed a resolution was not needed and agreed to move it forward.
3. Resolution No. 3546, Stormwater Preliminary Engineering Report (PER) update and presentation- Brandon Duffy, Great West Engineering, did a presentation on where the City is with the Stormwater Preliminary Engineering Report and also discussed the resolution to approve the report. Council agreed to move forward. Council also agreed to change the resolution number to 3546.
4. Resolution No. 3545, Authorizing the Mayor to submit a Treasure State Endowment Program (TSEP) funding grant- Brandon Duffy, Great West Engineering, said this resolution is just a standard resolution to request grant funding. Council agreed to move this forward, but to change the resolution number to 3546 to make it follow the order of the resolutions.
5. Professional Services Contract- Extension, Amendment NO. 1 Great West Engineering- James Caniglia said our Engineering Contract with Great West is up at the end of June, but we can extend it for another two years, before we need to go out for bid again. James said staff and the Mayor have been very pleased with their work and would like to continue with them. Council agreed to move forward.
6. Resolution No. 3547- Requesting Distribution of Bridge and Road Safety Program Funds- Loni Hanson, City Clerk, said with House Bill 473, the City receives special Gas Tax funds to use on specific projects, but we have to have a resolution done to identify the project and where the matching funds are coming from. She said the project for these funds will be used for the crack sealing at the Country Club Estates. Council agreed to move this forward.
7. TBID FY 20-21 Budget- Council did not see any problem moving this forward.
8. Use of City Owned Land Permit, Farmers Market- James Caniglia said the Farmers Market is requesting in kind services to offset the application fee. He said they would be pruning trees and checking the restrooms during the event. James said they have been working with the

County on the requirements needed to follow their social distancing guidelines. Council agreed to move forward with the condition they have their county compliance plan approved.

9. Ordinance No. 952, Administration of Resort Tax- Rebecca Narmore, City Attorney, went through the changes in the ordinance that the Council received. There was more discussion between staff and Council regarding the changes and the ordinance.
   Aldermen Westwood moved to extend the meeting past the 8:00 p.m. end time. Council agreed. Council agreed to have Rebecca make the changes they discussed and have that draft out to Council members by the end of the week. Council agreed to discuss this more at the next meeting.
10. Public Comment- Mahan said the Parade is still a go, but it is undecided if it will be a Rodeo sponsored parade or if it will be a City sponsored parade.

Meeting adjourned at 8:52 p.m.

ATTEST:

_____ _____

Mayor City Clerk

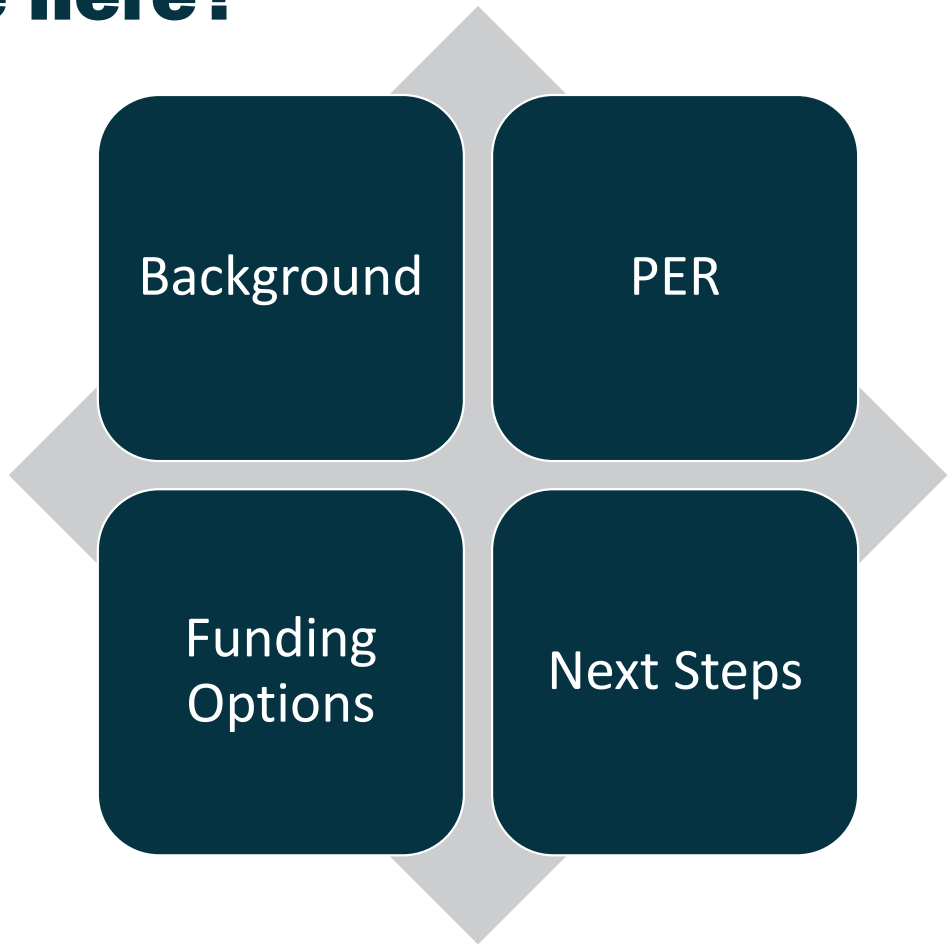
Stormwater Preliminary Engineering Report (PER) - update

Brandon Duffey, PE

city of RED LODGE MONTANA

GreatWest engineering®

Why are we here?



2017

- City Identified Need
- Decided to analyze overall storm system

2018

- Completed analysis of existing system
- Completed PER
- June 2018 – Submitted TSEP application

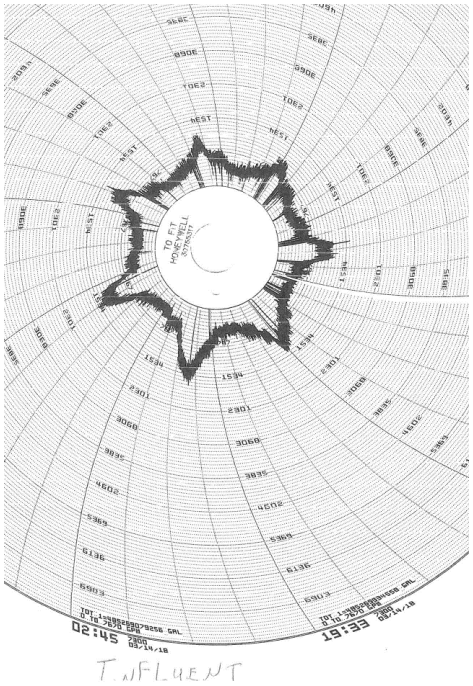
2019

- HB 652 - $500K Grant
- Worked to meet startup conditions

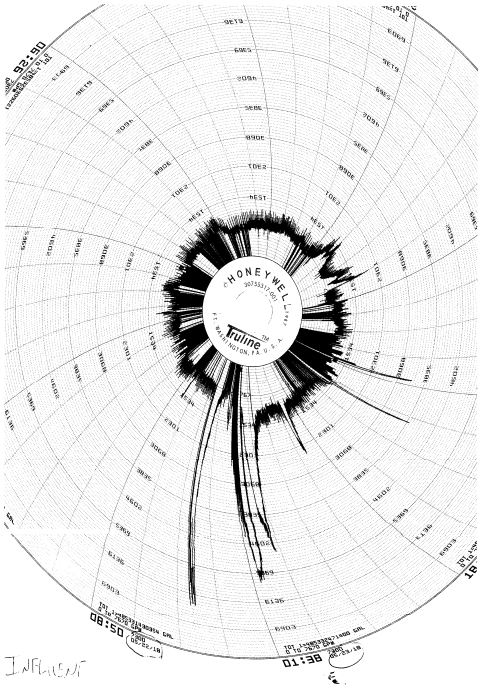
2020

- Notified HB 652 out of money
- City decides to resubmit Phase 1 for TSEP 2020

Deficiencies



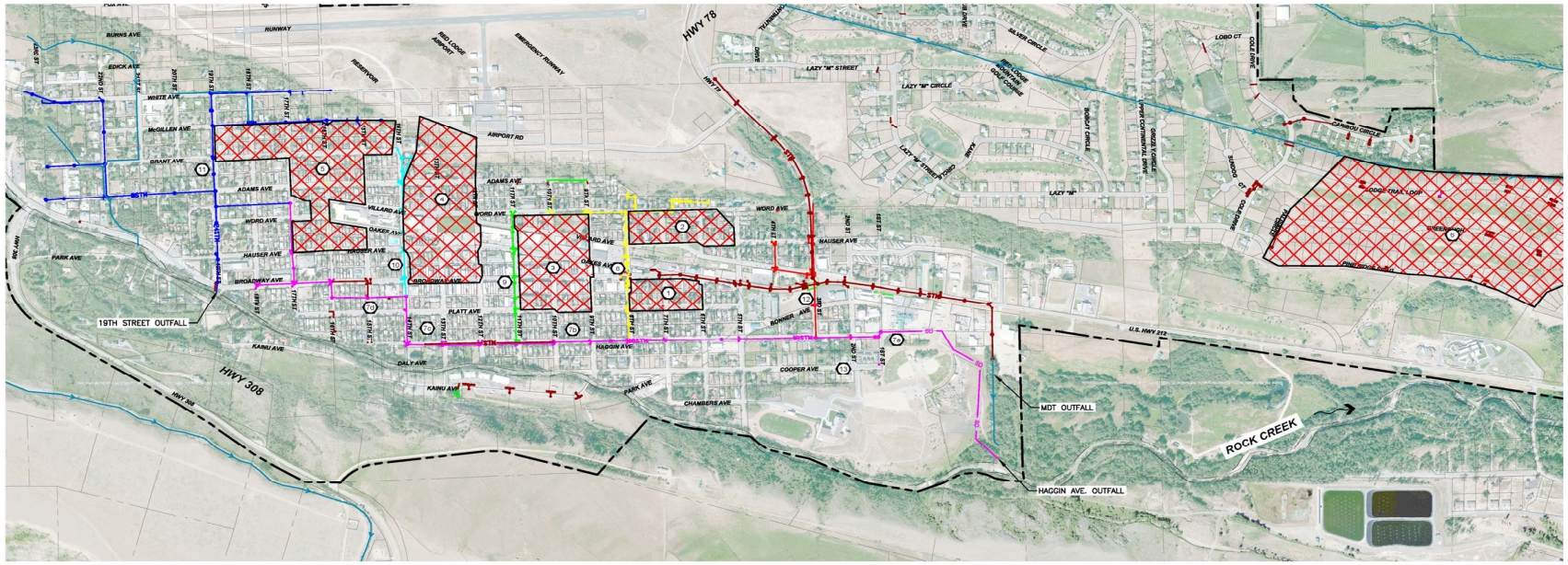
Influent (3/14/18)



Influent (5/22/18)

- Cross Connections to Sanitary Sewer
- Existing Infrastructure Undersized
- Localized Flooding
- General Maintenance Issues

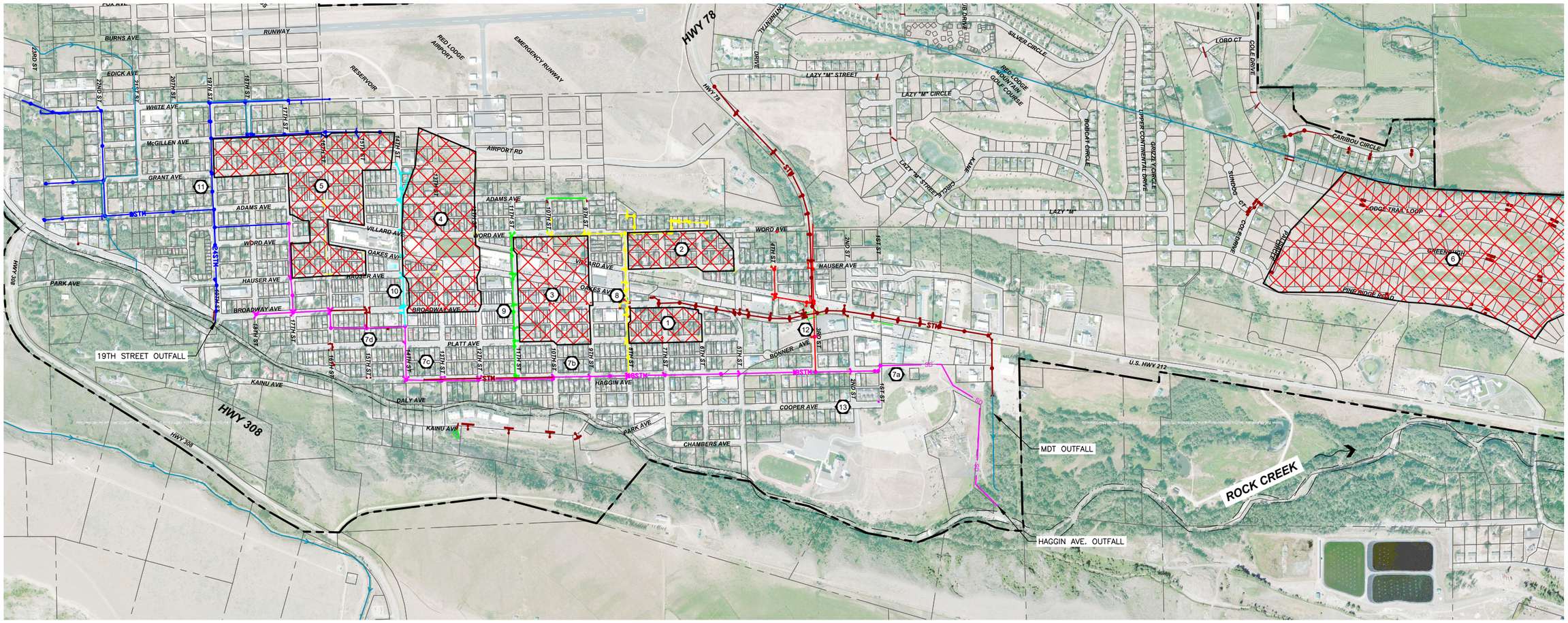
Identified Problem Areas



LEGEND	
1	SITE ID OF IDENTIFIED PROBLEM AREAS
	RED LODGE CITY LIMITS
SD	HAGGIN AVE. STORM MAINS
SD	3RD ST. STORM MAINS
SD	8TH ST. STORM MAINS
SD	11TH ST. STORM MAINS
SD	14TH ST. STORM MAINS
SD	19TH ST. STOMR MAINS
SD	OTHER STORM WATER FACILITIES
	DRAINS TO SANITARY SEWER
	IRRIGATION/DRAINAGE DITCH

NORTH
0 500 1000
SCALE IN FEET

Figure #8
ID OF PROBLEM AREAS
CITY OF RED LODGE
2020 STORMWATER IMPROVEMENTS PER



LEGEND

(1)	SITE ID OF IDENTIFIED PROBLEM AREAS
	RED LODGE CITY LIMITS
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SD	OTHER STORM WATER FACILITIES
	DRAINS TO SANITARY SEWER
	IRRIGATION/DRAINAGE DITCH

NORTH

0 500 1000

SCALE IN FEET

GreatWest engineering®

city of RED LODGE MONTANA

Figure #8
ID OF PROBLEM AREAS

CITY OF RED LODGE
2020 STORMWATER IMPROVEMENTS PER

J:\2-17103 - Red Lodge On-Call 2017\TO 15 - Stormwater PER Update\CADD 2-17103-TO15\Exhibits\PER\2-17103-TO15-PER-ID of problem areas.dwg

Preferred Alternative

PRIORITY /PHASE	SITE ID	AREA	EXISTING STRUCTURE TYPE	EXISTING SIZE	DESCRIPTION	TYPE OF IMPROVEMENT	PROPOSED STRUCTURE TYPE	PROPOSED SIZE	ESTIMATED TOTAL COST
PHASE 1									
1	1	6th St. to 8th St. & Platt to Broadway	N/A	N/A	Drainage basin drains to sanitary sewer	New Storm Infrastructure	PVC or HDPE	18"	$145,095
1	2	5th St. to 8th St. & Hauser to Word	N/A	N/A	Drainage basin drains to sanitary sewer	New Storm Infrastructure	PVC or HDPE	15"	$503,265
1	7a	Haggin Ave: Outfall to 5th St., Platt: 5th to 8th	PVC/Vitrified Clay pipe	24" & 18"	Main is undersized	Replace existing main, New main along Platt, add additionalal inlets	PVC or HDPE	42", 48" & 54"	$2,012,535
1	6	Diamond C Estates Subdivision	N/A	N/A	Potential for some storm inlets to be tied into sanitary sewer system.	Further Investigation	PVC or HDPE	TBD	$11,087
								Phase 1 Total:	**$2,671,982**
PHASE 2									
2	3	9th St. to 11 St. & Platt to Word	N/A	N/A	Drainage basin drains to sanitary sewer	New Storm Infrastructure	PVC or HDPE	18"	$749,183
2	7b	Platt Ave: 8th St. to 11th St.	PVC/Vitrified Clay pipe	18"	Main is undersized	New main in Platt, add additional inlets	PVC or HDPE	42"	$570,706
								Phase 2 Total:	**$1,319,889**
PHASE 3									
3	4	12th St. to 14th St. & Broadway to top of hill/airport rd.	N/A	N/A	Drainage basin drains to sanitary sewer	New Storm Infrastructure	PVC or HDPE	15"	$511,040
3	7c	Platt Ave: 11th St. to 14th St.	PVC/Vitrified Clay pipe	15"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	36"	$542,669
3	9	11th St.: Platt to Word	PVC/Vitrified Clay pipe	12"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	24" & 15"	$558,765
								Phase 3 Total:	**$1,612,474**
PHASE 4									
4	5	15th St. to 17th St/Hauser to Grant & 14th St. to 19th St./Grant to Mcgillen	N/A	N/A	Drainage basin drains to sanitary sewer	New Storm Infrastructure	PVC or HDPE	24" & 18"	$1,045,470
4	7d	14th St:Platt to Alley, Alley: 14th St. to 16th St., & 16th St.: alley to Broadway	PVC/Vitrified Clay pipe	15" & 12"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	36" & 30"	$602,475
4	11	19th St Storm Main System	PVC/Vitrified Clay pipe	24" & 8"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	36", 30", & 18"	$1,301,765
								Phase 4 Total:	**$2,949,711**
FUTURE PROJECTS									
F	8	8th St.: Platt to Word, & Word: 10th to 7th	PVC/Vitrified Clay pipe	12" & 8"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	24", 18", & 15"	$990,641
F	10	14th St.: 7d improvements to Grant	PVC/Vitrified Clay pipe	12"	Main is undersized	Replace existing main, add additional inlets	PVC or HDPE	15"	$687,287
F	13	Cooper Ave: 9th St. to 1st St.	N/A	N/A	no storm infrastructure	New Mains, Inlets, stormwater pond	PVC or HDPE	24"	$319,346
								Future Projects Total:	**$1,997,273**

Proposed Phasing

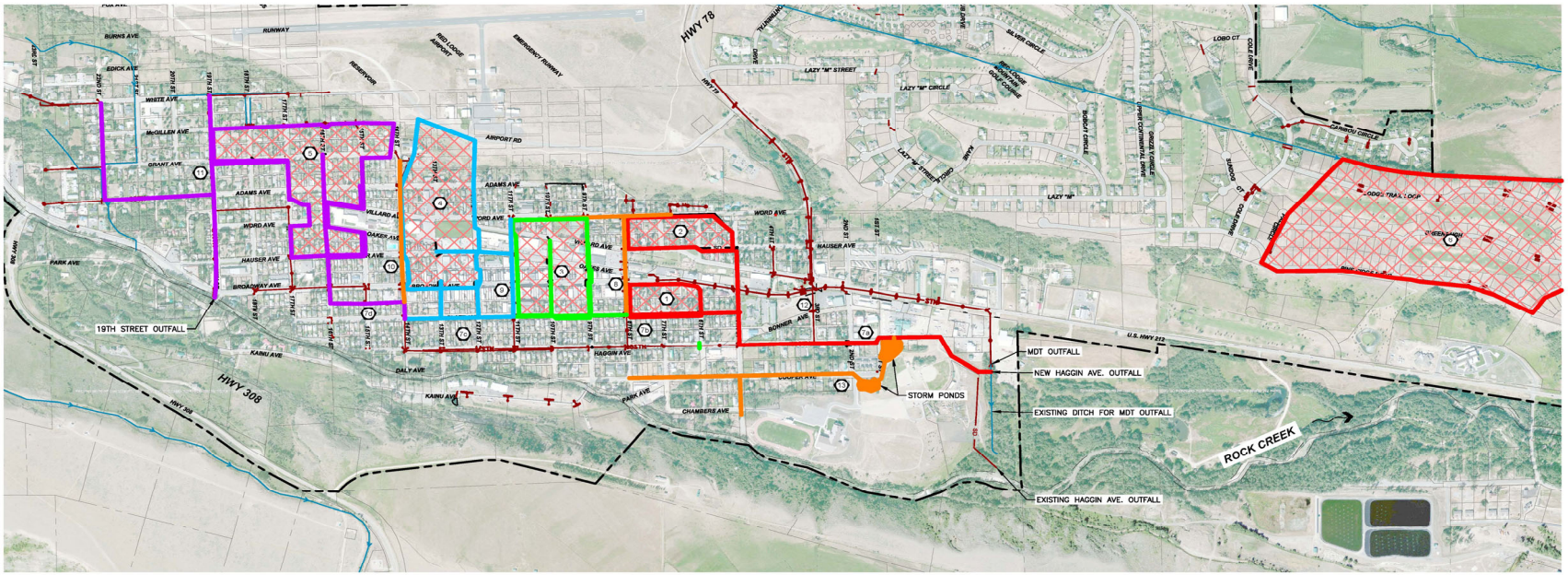
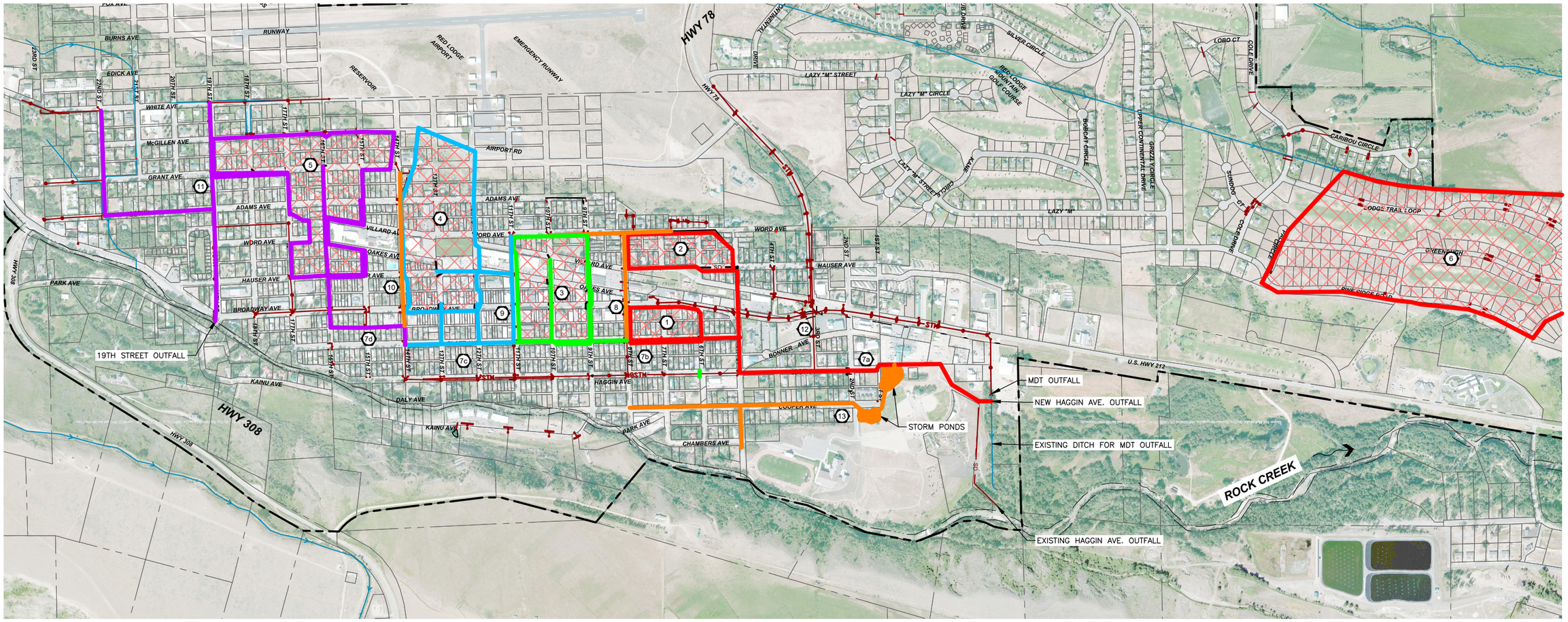


Figure #17
PHASING OF PROPOSED IMPROVEMENTS

CITY OF RED LODGE
2020 STORMWATER IMPROVEMENTS PER



LEGEND	
(1)	SITE ID OF IDENTIFIED PROBLEM AREAS
	RED LODGE CITY LIMITS
	PHASE 1 IMPROVEMENTS
	PHASE 2 IMPROVEMENTS
	PHASE 3 IMPROVEMENTS
	PHASE 4 IMPROVEMENTS
	FUTURE PHASE(S) IMPROVEMENTS

NORTH

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SCALE IN FEET

Figure #17
PHASING OF PROPOSED IMPROVEMENTS

CITY OF RED LODGE
2020 STORMWATER IMPROVEMENTS PER

J:\2-17103 - Red Lodge On-Call 2017\TO 15 - Stormwater PER Update\CADD 2-17103-TO15\Exhibits\PER\2-17103-TO15-PER-Proposed Improvements-PHASED.dwg

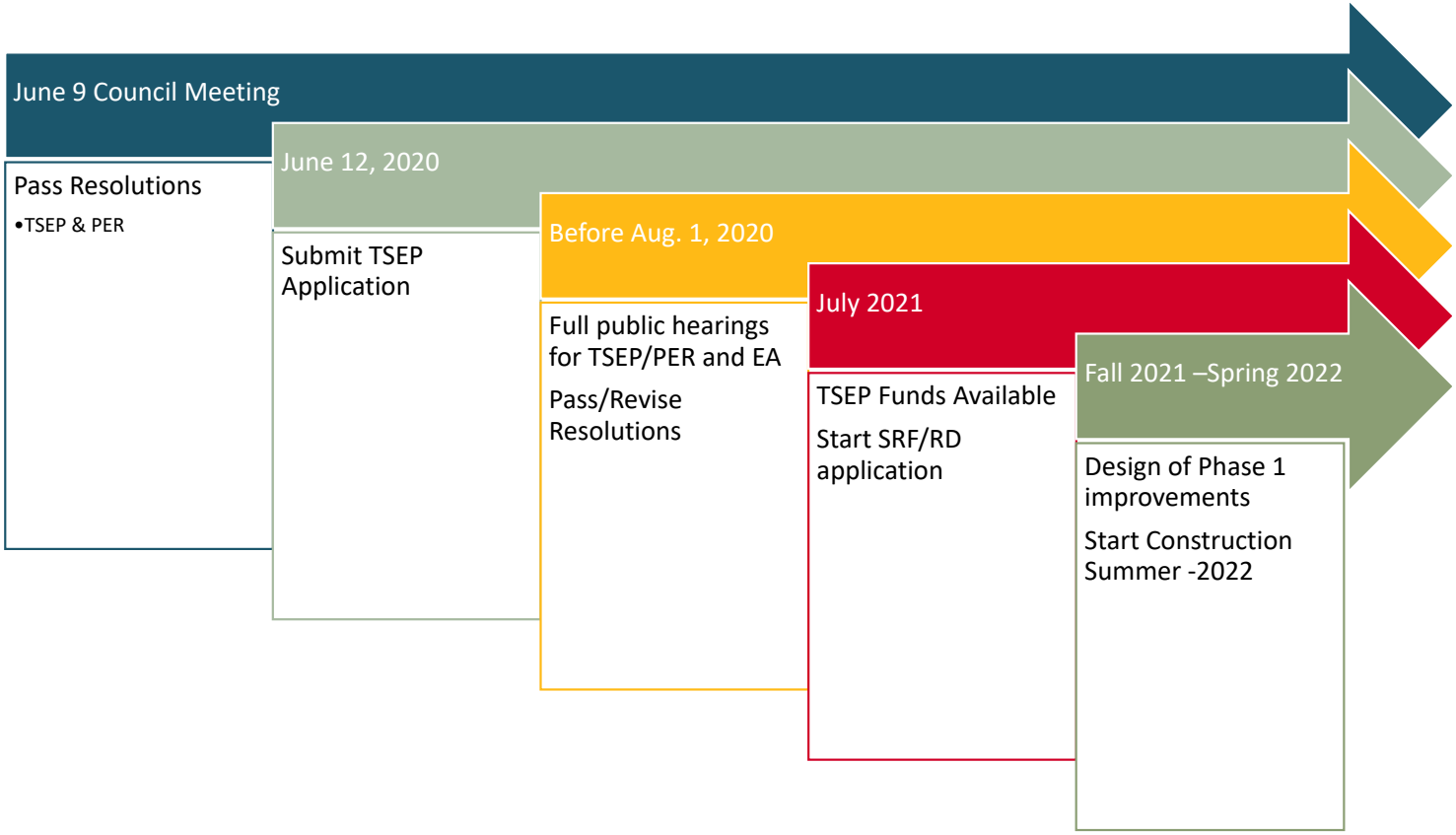
Funding Scenarios

ITEM	PHASE 1 TSEP and RD Loan only (3.125% for 40 years*)	PHASE 1 TSEP and SRF (2.5% for 20 years)	PHASE 1 SRF Only (2.5% for 20 years)	PHASE 1 RD Loan only (3.125% for 40 years*)
Project Total	$2,671,982	$2,671,982	$2,671,982	$2,671,982
Rounded Total	**$2,672,000**	**$2,672,000**	**$2,672,000**	**$2,672,000**
TSEP Grant	$500,000	$500,000		
SRF Loan		$2,172,000	$2,672,000	
RD Loan	$2,172,000			$2,672,000
Total Project Funds	**$2,672,000**	**$2,672,000**	**$2,672,000**	**$2,672,000**
SRF Bond Reserve (1/2 year payment)	$0	$69,721	$63,861	$0
Total Loan Amount	**$2,172,000**	**$2,241,721**	**$2,735,861**	**$2,672,000**
Annual Loan Payment	$77,840	$143,920	$175,650	$95,760
Total Loan Payments Over Life of Loan	$3,113,600	$2,878,400	$3,513,000	$3,830,400
Total Interest Paid Over Life of Loan	**$941,600**	**$636,679**	**$777,139**	**$1,158,400**
Annual Loan Coverage	$7,784	$14,392	$17,565	$9,576
TOTAL ANNUAL CAPITAL DEBT SERVICE COST	**$85,624**	**$158,312**	**$193,215**	**$105,336**
User Capital Cost/Month	***$3.43***	***$6.34***	***$7.73***	***$4.22***
Annual O&M for Storm Utility	$50,000	$50,000	$50,000	$50,000
Storm Utility Administration Fee	$15,000	$15,000	$15,000	$15,000
Storm Utility Reserve	$20,000	$20,000	$20,000	$20,000
TOTAL ANNUAL O&M COSTS to NEW USERS	**$85,000**	**$85,000**	**$85,000**	**$85,000**
New User O&M Cost/Month	***$3.40***	***$3.40***	***$3.40***	***$3.40***
USER COST/MONTH FOR STORM UTILITY	**$6.83**	**$9.74**	**$11.14**	**$7.62**
Existing Average User Cost/Month/EDU	$0.00	$0.00	$0.00	$0.00
COST/MONTH INCREASE/EDU	**$6.83**	**$9.74**	**$11.14**	**$7.62**
Existing Other System Cost/Month	$91.00	$91.00	$91.00	$91.00
Total Proposed Water/Sewer/Storm Cost/Month	$97.83	$100.74	$102.14	$98.62
Combined Systems Target Rate	$81.46	$81.46	$81.46	$81.46
PERCENT OF COMBINED TARGET RATE	**120.1%**	**123.7%**	**125.4%**	**121.1%**
EDU is based on number of lots within the City boundary				
The stormwater infrastructure is currently operated out of the general fund. The City does not have assessments/funds specifically ge				

Funding Strategy

- **Project Options:**
  - Phase 1 Only
- **Most likely grant source:**
  - TSEP Grant $500,000
- **Rate increase dependent on final project and funding package received**

Project Schedule



Questions?

CITY OF RED LODGE

1 PLATT AVENUE SOUTH, P.O. BOX 9, RED LODGE, MONTANA 59068

Due to the COVID-19 Pandemic the City is initiating revised protocols for this public meeting. Citizens can participate in the meeting by joining the following GoToMeeting Link: https://global.gotomeeting.com/join/906369149 You can also dial in using your phone. United States: 1 (786)535-3211 Access Code: 906-369-149. New to GoToMeeting? Get the app now and be ready when your first meeting starts: https://global.gotomeeting.com/install/906369149

Public comment will be taken only during the Public Comment periods as indicated on the agenda. There will also be time in conjunction with each agenda item for public comment relating to that item but you may only speak once. Comments may be sent to Council via email before 12:00 PM on Tuesday June 9th, at cityclerk@cityofredlodge.com. Emails received after 12:00 PM and prior to 5:00 PM, may be read during the meeting.

The Public may call in to the GoToMeeting during specific Public Comment periods at 1 (786)535-3211. All persons addressing the City Council shall speak in a civil and courteous manner. All Callers will be restricted to 3 minutes of comment as is customary.

CITY COUNCIL WORKING SESSION

JUNE 9, 2020 6:00 p.m. to 7:00 p.m.

1. **Audit Contract, Olness Associates (Discussion)**
2. **Ordinance #952, Administration of Resort Tax (Discussion)**
3. **Resolution to Ensure Public Visibility into the Budget Development Process (Discussion)**

CITY COUNCIL BUSINESS MEETING / PUBLIC HEARING AGENDA

JUNE 9, 2020 at 7:00 P.M.

1. **CALL TO ORDER and PLEDGE OF ALLEGIANCE**
2. **ROLL CALL OFFICERS**
3. **MINUTES OF MAY 12 & 26, 2020**
4. **WARRANTS PAYABLE**
5. **OFFICER REPORTS**
6. **MAYOR'S COMMENTS**
7. **PUBLIC COMMENTS** – Anyone may address the Council at this time on any topic within the City Jurisdiction; not specifically on this Agenda.
8. **OLD BUSINESS**
    a. **Solid Waste Contract with Republic Services (Action)**
    b. **Resolution #3545 - Stormwater Preliminary Engineering Report (PER) (Action)**
    c. **Resolution #3546 – Authorizing the Mayor to submit a Treasure State Endowment Program (TSEP) funding grant (Action)**
    d. **Professional Services Contract – Extension, Amendment NO. 1 Great West Engineering (Action)**
    e. **Resolution #3547- Requesting Distribution of Bridge and Road Safety Program Funds (Action)**
    f. **TBID FY 20-21 Budget (Action)**
    g. **Use of City Owned Land Permit, Farmers Market (Action)**
    h. **Ordinance #952, Administration of Resort Tax (Public Hearing, 1st Reading)**
9. **NEW BUSINESS**
    a. **Audit Contract, Olness Associates (Action)**
10. **CORRESPONDENCE**
11. **ADJOURN**

Disclaimer – The Council reserves the right to limit the amount of time for comments from the Public on each topic; typically, the maximum amount of time allocated will be up to 3 minutes per person. This agenda/packet is provided for information purposes only and is subject to change. Some documents may not have been available at the time this agenda/packet was prepared. This agenda and information related to specific items are available at City Hall or may be downloaded at the City's website: http://cityofredlodge.net/city-government/mayor-and-city-council/council-meetings2/ For additional information, please contact the City Clerk, Loni Hanson, at cityclerk@cityofredlodge.comYou are encouraged to sign-up for automatic E-Mail notifications about City issues at: https://groups.google.com/group/city-of-red-lodge

BRIDGER

June 13 - Bridger High School details to be announced.

ROBERTS

June 20 - Roberts High School at 8:30 p.m. on the football field. There will also be an 8th-grade promotion that day. Plans at present are: Graduates and staff will be spaced 6 feet apart; Families that live together will be allowed to sit in pods, but pods will be spaced 8-10 feet apart. There will be no formal receiving lines, cakes, drinks, at the school. Decisions on masks, symptom checks will be made closer to the event.

County COVID-19 team announces event-planning guidance

By Amy Hyfield
Deputy PIO
Carbon County COVID-19 IMT.

On May 11, the Carbon County COVID-19 Incident Management Team (IMT) announced a COVID-19 Mitigation plan review process for events during the Phase 1 reopening process. Gathering in groups of more than 10 people in circumstances that do not readily allow for appropriate physical distancing should be avoided. Some gatherings, including graduation parties, wedding receptions and funerals, are not recommended by the IMT during this phase.

The IMT is strongly encouraging any future events of over 10 people to submit the form at least two weeks in advance of their event to have their questions, concerns and mitigation plans reviewed by Public Health and the IMT for compliance with current directives. The submission form can be found on the CarbonCountyEconomy.org and CarbonAlert.org websites.

IMT understands that there can be a lot of confusion and uncertainty as we all try to adapt to the phased reopening. They also know that Carbon County residents want to keep themselves and their neighbors safe. The Incident Management Team would like to help people

See COVID-19, Page 2

New Red Lodge Resort Tax designed to strengthen the community

By Alastair Baker
News Editor

This year Red Lodge voters will see a different type of Resort Tax renewal, one designed not just to provide separate funding for infrastructure needs but also to support aesthetic projects that will provide for a stronger community through a thriving tourism market.

The essential change to the Resort Tax this year is the additional 1 percent along with the 3 percent as it is now. The 3 percent, if it passes, will be in place for 25 years, and presently draws in $800,000 a year to the town. The additional 1 percent is on the ballot for infrastructure projects only and will leave once they are completed.

"One hundred percent of the 1 percent will go towards stormwater and stormwater-related projects such as curb and gutter, sidewalks, drainage wells, retention ponds, and rebuilding streets," said James Caniglia, Red Lodge Community Development Director. "This carries on until the projects are done which will be 10 years or more."

The infrastructure projects cost $11 million with the 1 percent bringing in approximately $250,000 a year towards them.

The 1 percent is a priority explained Caniglia as the City has been warned as well as fined by the Montana Department of Environmental Quality because stormwater is going into the sewage ponds and in extreme rain events the stormwater flows into Rock Creek.

"DEQ told us we have to do something sooner or later," said Caniglia.

At present the 3 percent will also focus primarily on those underground infrastructure projects as right now no beautification can be carried out under the current ordinance. This will change once the Resort Tax is passed.

Perhaps the best way to explain the 3 percent and the 1 percent scenario is that both will be collected the same as the Resort Tax is at present. When a person buys an item a 4 percent Resort Tax will be incurred but when it gets to the City the 4 percent will be separated into 3 percent with 1 percent for infrastructure.

To help assess how and where the Resort Tax money should be spent, a Resort Tax Committee has been set up.

"Our main goal is how do you use the Resort Tax to best help the town of Red Lodge," Tim Weamer, Resort Tax Committee member. "And that is what we set out to do. The whole idea of the Resort Tax was born for towns just like Red Lodge, and the state did it because you have a town that is so busy but is so small that it doesn't have a big enough tax base to take care of itself. And it isn't just a tourist or resort town it is all small towns. So if you can set it up in a way that visitors coming in can help with that then a town can make infrastructure improvements to make it nice for people to visit and for the residents to enjoy. It's creating a better community."

"Every decision and discussion came back to that thing, 'how does it benefit the town itself?'" said Weamer. "The City no longer collects one percent

See RESORT TAX, Page 2

plan review process with law enforcement and local officials to help mitigate concerns.

In Phase 2, people can begin to gather in groups of 50 and fewer; in Phase 3, there is no limit. They do not know when the state will move to Phase 2 and understand that this puts event planners and businesses in a difficult situation. Some events and gatherings may need to postpone until later in the year.

the directive, plan and the updated FAQs can be found at Carbonalert.org or CarbonCountyEconomy.org.

As we establish a new norm to live with this virus, all individuals will need to take it upon themselves to be safe, regardless of the phase. This means keeping up with handwashing and coughing or sneezing into your elbow or tissue. Cleaning frequently touched surfaces. When in public (e.g., parks, outdoor recreation

bonAlert.org. Updates are also available through Carbon Alert on Facebook and Instagram. For text updates to your mobile device, text: CovidCC to: 99411. Questions can be directed to covid19imt@co.carbon.mt.us or call (406) 445-7258. More information on the state's response to COVID-19 can be found at covid19.mt.gov. For general information on COVID-19, visit cdc.gov or dphhs.mt.gov.

BEC ends 2019 with decade of rate decreases

By Eleanor Guerrero
CCN Senior Reporter

For those who may not have virtually attended the Beartooth Electric Cooperative, Inc. (BEC) Annual Meeting, the BEC has made substantial progress and is perhaps going even further than ever before with rate design. To clarify and correct any wrong impressions given in a prior article, although BEC had a history of increases immediately up to its bankruptcy, in the past ten years rates have come steadily down. BEC Vice President Bill Pascoe referred to this decrease in the meeting.

BEC General Manager Kevin Owens makes the rate progress clear with a timeline. "Here's a historical look back at our rates. From 2015 to 2017 the Board of Trustees lowered rates four times in four years for a total of 25 percent; 2015-5 percent, 2016- 10 percent, 2016- 5 percent and 2017- 5 percent. In March, 2020, the Board increased energy rates 2.8 percent to accommodate an increase in transmission rates from NWE. The NWE transmission charge will vary from year to year. In the last 10 years, from 3/20/10 to 3/01/20 energy rates have decreased 18 percent."

CCN asked Owens explain more about the third component to be potentially added to residential and small business rate design now being considered by the board and which will be open to public comment. CCN asked whether the addition of a system charge in determining rates was likely to have unlimited increase-with old systems needing replacement in the future.

Owens responded, "The System Charge is based upon system costs, naturally. Those costs are all the annual budgeted costs related to the operation and maintenance of our electric system. It also includes depreciation expense for our system. Replacement of our system is a capital expense that is depreciated over 30 years. Conversely, this means parts of our system get fully depreciated every year, so they come off the books. So the depreciation part of the system costs remains pretty stable.

As the Cooperative seeks to recover more of its operating revenues from a relatively stable System Charge rather than a fluctuating Energy Charge and the Base Charge, the System Charge may increase, but the Energy and Base Charge would be reduced as is currently the case with the introduction of the System Charge to keep revenues the same. The Base Charge and Energy Charge may be reduced approximately 10 percent."

Providing Help for Our Community

As part of this year's allocation of the Hazel Chamberlain Endowment Funds, the Stewardship and Missions Committee of the Red Lodge Community Church recently donated $9,000 to the Carbon County COVID-19 Relief Fund. All 100 percent of this donation will go to COVID-19-related emergency needs and future recovery efforts in Carbon County.

Each year, the Hazel Chamberlain Endowment earnings are earmarked for second-mile giving, meaning they should go to work in the community and help benefit people in the Red Lodge area. Committee member Linda Hanson said, "Last year we were able to give grants between $500-$2,000 to local organizations, and this year we thought we'd do better by giving most of it to help with COVID-19 relief." Another committee member added, "we liked the idea that half of it is going to be saved to see what the needs are in the future, coming down the road, because nobody knows what's going to happen really—a month from now, even."

On a conference call with members of the Community Foundation, committee members of the Community Church reiterated that the decision about where the Church's discretionary money should go this year was an easy one to make. Julia Childs summarized the decision, "I think we felt that we wanted to really focus the money on being local, and that the local needs this year are so strong and so obvious that we really didn't have to go very far to see where our hearts wanted to go."

Everyone in Carbon County can participate with the Carbon County COVID-19 Relief Fund. Donate if you can or apply if you need support, online at www.rlacf.org. Red Lodge Community Church, United Church of Christ, is an Open and Affirming Congregation, located at 308 S. Broadway Ave, Red Lodge.

RESORT TAX from Page 1

for admin, that's back in the pot to use for the town. The City is contributing to this as well."

"The parks are a great use of the Resort Tax," said Caniglia, "because it is created in large part to cover larger burdens like water and sewer capacity because of the influx of tourists."

"We can't just spend this money on underground infrastructure because we could have the best water system in the country, but that isn't going to bring in tourists, we need to make the town look nice, make Broadway look nice and the parks as well," said Caniglia. "We haven't spent a chunk of Resort Tax on that, but it is a very large piece of how the town can look more attractive for the visitors and us."

"It's about getting the most amount of Resort Tax to where it belongs. That's why we had the public forum and the survey and it came back to the public wanting parks and beautification," said Weamer.

"Working within the tourist industry is not why I moved to Red Lodge. I moved here because I think it is a great town and if we do things to make it better using this we not only create a better town for tourism but also for us to live," said Weamer.

Weamer suggested that without the Resort Tax in place the City would have to raise property taxes to double or triple what they are now.

"Here we have a Resort Tax which adds a large income to the City and of that 65 percent, even 80 percent, comes from outside the town. When you think about that we are on track to reach over $1 million in 10 years. Think of that money coming from outside to create a better community, infrastructure, and parks. The only way we will get a swimming pool in a town of this size is either through a federal grant, probably how this one was built initially, or do it like this. We are not the only town losing their pools and parks but we are in a very fortunate position to be able to do something about it," said Weamer.

Weamer is hopeful the community stays involved with what the Resort Tax Committee is doing.

"The committee meetings will continue, once a year maybe, more, especially once it passes," said Weamer.

The committee is up to listening to recommendations and will be making them to the City.

"The City is listening," he said.

"The committee is going to stay very active in collecting the information from the budget and putting it out for the public and listening for ways to make it better," said Weamer.

This way as Weamer points out, "If they don't get what they want at first they will understand why."

"We want to use tourism to build a strong economy, a strong community. We don't want to be the typical 'tourist town'. True tourist towns are not communities. They are not a place to live. It's not a place where you say, 'I want to retire here.' But you do get that in Red Lodge and that is what we are trying to build. We're just doing it using tourism as the economic driver." said Weamer.

"Red Lodge is a community with tourism," said Caniglia.

RED LODGE MONTANA

STATE OF THE INFRASTRUCTURE 2019

DEFINITION OF INFRASTRUCTURE

- The basic physical and organizational structures and facilities (e.g. buildings, roads, and utility supplies) needed for the operation of a society or enterprise.

DEFERRED MAINTENANCE

- **Deferred maintenance** is the practice of postponing **maintenance** activities such as repairs on both real property (i.e. infrastructure) and personal property (i.e. machinery) in order to save costs, meet budget funding levels, or realign available budget monies.
- An amount needed but not yet expended for repairs or rehabilitation of an asset.

C.I.P

- 21 PROJECTS IN LAST 5 YEAR C.I.P

NEW GENERATOR AT WASTE WATER TREATMENT PLANT	$150,000	
SEWER JETTER TRUCK	$275,000	
WASTE WATER P.E.R.	$100,000	
NEW GENERATOR AT LIFT STATION	$150,000	
WASTEWATER SIPHON AND INTERCEPTOR MAIN	$1,600,000	DONE FOR $1,700,000 - $400,000 GRANT = $1,300,000
WASTEWATER FORCED MAIN REPLACEMENT	$977,000	
WASTE WATER SPRAY IRRIGATION PROJECT	$4,000,000	
CEMETERY IRRIGATION	$145,000	
CEMETERY MAUSOLEUM RENOVATION	$240,000	
POLICE BUILDING ROOF REPAIR	$28,000	
GOLF COURSE STREETS REHABILITATION	$1,250,000	
LIBRARY VESTIBLUE	$200,000	
STORM WATER MASTER PLAN	$120,000	
WATER TREATMENT PLANT GENERATOR	$150,000	
WATER PRESSURE REDUCING VALVE BROADWAY AND ROBINSON LN	$130,000	
WATER PRESSURE REDUCIN VALVE WHITE AVE	$130,000	
CITY POOL REHABILITATION	$250,000	
PLATT AVE WATER REHAB 14TH TO 16TH	$50,000	DONE FOR $1,623,000 - $500,000 GRANT = $1,123,000
HAGGIN WATER LINE 3RD TO 16TH	$2,565,000	
HAGGIN STREET RECONSTRUCTION	$4,012,500	
HAGGIN AVE WATER EXTENTION 3RD TO R.E.A	$1,000,080	

PROJECTS ACCOMPLISHED NOT ON A C.I.P.

- 8 MAJOR PROJECTS
  - NEW VFD MOTORS AND PANELS FOR SEWER POND BLOWERS $62,000
  - NEW VFD MOTOR AND PANEL AT GRANT WELL $23,000
  - SCATA SYSTEM INSTALLED $60,000
  - POOL, GRANT WELL AND MAIN WELL TO LIQUID CHLORINE $15,000
  - NEW WATER MAIN FROM BROADWAY UP 2ND ST $70,000
  - TWO NEW PLOW TRUCKS FOR STREETS $348,000
  - LOADER AND V-PLOW $105,000
  - PAVE CITY SHOP PARKING AND DRIVE AREA $13,000
  - NEW SEWER INSPECTION CAMERA $90,000
    - TOTAL MONEY SPENT WITH NO LONG TERM LOAN $1,459,000

PROJECTS FOR THE NEXT 5 YEAR C.I.P.

- 8 MAJOR ITEMS
  - 2 OR MORE PRV'S ON WATER MAINS
  - LOOP IN DEAD ENDS ON SOUTH TOWN WATER MAINS
  - STORM WATER PLAN PHASE 1 AND 2
  - SEWER MAIN LINING AND REPAIRS
  - UPDATE SOME STREETS DEPARTMENT EQUIPMENT
  - EXPAND SHOP FACILITIES
  - RECONSTRUCT SOME STREETS THAT ARE IN BAD SHAPE
  - POOL REBUILD


hospital sign -> wet well
381.18 ft
389.18 ft
591 mbar
624 mbar
0.00 ft/min


16th and alley between houser and oaks <- 15th and al
6.26 ft
20.26 ft
621 mbar
741 mbar
0.00 ft/min


18th street alley betweem white and mcgillan -> 18th
108.21 ft
118.02 ft
675 mbar
749 mbar
0.00 ft/min

water

sewer

Storm

gas

power

com

INFRASTRUCTURE LOANS

PROJECT	PAYMENT	INTEREST	PRINCIPLE	INTEREST %	YEARLY COST	LOAN BALANCE	PAY OFF YEAR
WATER TREATMEN REBUILD	17,399.00	12,563.31	4,835.69	4.125	208,788.00	3,581,173.71	2049
12" WATER MAIN DOWN HWY 212 TO HOSPITAL	7,191.00	1,536.62	5,654.38	4.375	86,292.00	407,888.41	2024
GRANT, ADAMS AND MCGILLEN WATER REHAB	5,877.00	3,518.89	2,358.11	4.500	70,524.00	918,536.06	2038
SEWER POND REBUILD	10,409.00	6,858.39	3,550.61	4.500	124,908.00	1,790,939.69	2042
SEWER POND REBUILD	6,045.00	3,254.45	2,790.55	3.250	72,540.00	1,176,240.76	2042
	BI ANNUAL PAYMENT	332,779.92	230,272.08				
SEWER LIFT STATION AND FORCED MAIN REHAB	39,554.00	19,777.00	19,777.00	2.500	79,108.00	883,000.00	2037
HAGGIN WATER REHAB	37,762.50	13,762.50	24,000.00	2.500	75,525.00	1,423,979.17	2039
		67,079.00	87,554.00		TOTAL LOAN COST	TOTAL LOAN DEBT	
	ANNUAL COST	399,858.92	317,826.08	RESORT TAX	717,685.00	10,181,757.80	
	INTER LOAN WATER						
BROADWAY WATER REHAB	2,702.29	719.79	1,982.50	2.000	32,427.48	429,892.88	
					TOTAL COST	TOTAL DEBT	
					750,112.48	10,611,650.68	

RESORT TAX, WHERE DOES IT GO?

Resort Tax			
2100	**Police**		
MDT'S/In-car Computers	942	$	5,000.00
Sheriff IMC	944	$	6,500.00
Vehicle Lease (New Payment)	948	$	48,000.00
Total		**$**	**59,500.00**
2100	**streets**		
Wayfinding Plan	930	$	5,000.00
Street Sign/Addressing	931		
Plow Trucks Lease	946	$	72,800.00
Total		**$**	**77,800.00**
2100	**Parks**		
Future Pool Improvements	900	$	47,000.00
Total		**$**	**47,000.00**
2100	**Future Haggin Ave. Project**		
	930	$	242,964.00
Total		**$**	**242,964.00**
2100	**Water**		
Transfer to Water	829	$	100,000.00
Total		**$**	**100,000.00**
2100	**Sewer**		
Transfer to Sewer	828	$	150,000.00
2nd Phase/ Force Main	930	$	100,000.00
Jetter Truck Lease	947	$	68,567.00
Total		**$**	**318,567.00**
Transfer to General	15%	$	120,000.00
Transfer to General	1%	$	8,000.00
Transfer to Gas Tax Special		$	5,000.00
Total		**$**	**133,000.00**
Grand Total		**$**	**978,831.00**

$644,964 WENT TOWARDS INFRUSTRUCURE, PAST AND CURRENT PROJECTS
$128,000 WENT TOWARDS TAX RELIEF FOR THE GENERAL BUDGET

CITY BUDGETS

FUND	BUDGET $ AMOUNT	
Elections	$2,000	
League Dues	$1,000	
Audit	$23,000	
Street Lghts	$44,000	
Dogs	$200	
Airport	$7,079	
Council	$12,700	
Mayor	$3,605	
Court	$76,500	
Clerk	$98,989	
Planning	$92,050	
Attorney	$78,650	
City Hall	$33,010	
Police	$649,180	
Fire	$199,198	
Streets	$134,070	
Cemetery	$12,650	
Library	$157,808	
Parks	$35,298	
Pool	$47,200	
Weeds	$9,500	FUNDED BY
TOTAL GENERAL BUDGET	$1,717,687	CITY PROPERTY TAX MILLS AND RESORT TAX
WATER	$1,466,877	ENTERPRIDING FUNDS (SEWER AND WATER BILLS) AND RESORT TAX
SEWER	$1,489,800	ENTERPRIDING FUNDS (SEWER AND WATER BILLS) AND RESORT TAX
BUILDING CODE	$61,150	BUILDING PERMITS AND FEES
GAS TAX	$62,959	TAXES FROM STATE LEVEL FUEL SALES
SOLID WASTE	$458,650	SOLID WASTE BILL ON PROPERTY TAXES
RESORT TAX	$978,831	RESORT TAX
TOTAL	$6,235,954	

CONCERNS

- THE CITY OF RED LODGE IS MAXED OUT WITH PAYMENTS FROM CURRENT AND PAST LOANS FOR INFRUSTRUCTURE PROJECTS
- THE YEAR 2024 IS THE FIRST LOAN PAYOFF MONEY AVAILABLE
  - $86,292 A YEAR
- WHAT HAPPENS IF THE RESORT TAX IS NOT VOTED BACK IN
  - $4,500,000 IN DEBT RELIEF FROM THE RESORT TAX (SINCE 2001)
  - $2,008,947 IN TRANSFERS TO GENERAL FUND (SINCE 2001)
- HOW DO WE FINANCE THE CITY GENERAL BUDGET TO COVER EXPENSES OF CURRENT OPERATIONS AND FUTURE EXPANDING OPERATIONS
- HOW DO WE FIND MONEY TO COVER FUTURE C.I.P. PROJECTS

SOLUTIONS

- CONTINUOUS WATER AND SEWER RATE INCREASES ANNUALLY
  - A SMALL INCREASE TO ENSURE WE STAY AT OUR TARGET RATE
- ADD MILLS TO CITY TAX
  - LAST VOTED MILL INCREASE?? **(CITY HAS NEVER ASKED FOR A MILL INCREASE)**
- SELL CITY ASSETS
- INCREASE REVENUE FROM CITY OWNED ASSETS
- REFINANCE LOANS TO A LOWER INTEREST RATE
- FORM DISTRICTS TO FUND SPECIFIC AREAS OF INFRUSTRUCTURE
  - (STREETS DISTRICT, LIGHTS DISTRICT)
- CREATE A STORM WATER UTILITY
  - ADD A SMALL DOLLAR AMOUNT ADDED TO SEWER AND WATER BILL LABELED AS STORM WATER AND USED FOR STORM WATER FUNDING
- CUT SERVICES
  - (POOL, STREETS, POLICE, PARKS, PLOWING)

Appendix Q

Stormwater Utility District Information

Stormwater Utility District Summary– City of Red Lodge
June 2020

General

In an attempt to illustrate the revenue benefits of developing a utility district to fund stormwater related improvements, Great West Engineering has developed a preliminary district boundary and a simple fixed fee rate structures. This funding can be used to pay for the operation, maintenance, planning and improvement of existing and possible future public stormwater features.

District Boundary

An arbitrary district boundary was drawn using the current city limit boundary. This boundary is depicted in Figure 1. The district boundary is a necessary starting point to define a clear and distinct border in which to assess the stormwater rate structure. Montana Cadastral information can be used on the properties within the boundary in order to determine the type of lot and area if a different rate model was selected, but for the purposes of this report we looked at a simple fixed rate across all lots in the boundary.

Rate Structure

The intent of the rate structure is to create a fair and simple rate structure.

Discussions with City staff indicated that the rate structure should be kept as simple as possible. Therefore, a fixed fee rate structure was used to access all lots the same rate for each lot. Table 1 below shows a fixed fee rate.

Table 1 – Fixed Fee Rate Structure

	Fixed Fee Rates
Lots in Boundary	2,082
Fixed Fee	$10.00
Monthly generated Revenue	$20,820
Annual Revenue	**$249,840**

The revenue generated from a $10.00/month fixed fee across the entire city limit boundary generates enough to cover the O&M costs and Phase 1 improvements loan annual payment.

Other Rate Structures

There are many different ways to break out rate structures in relation to stormwater infrastructure. The fixed fee method shown above is among the simplest. Another methods to be aware of is the Equivalent Residential Unit (ERU) rate structure. This rate structure allows the fee to be based on impervious areas which have direct correlation to stormwater runoff. The average impervious area per residential lot is used to determine the ERU, then each lot's impervious area is divided by the ERU area to determine the number of ERU's for that lot.

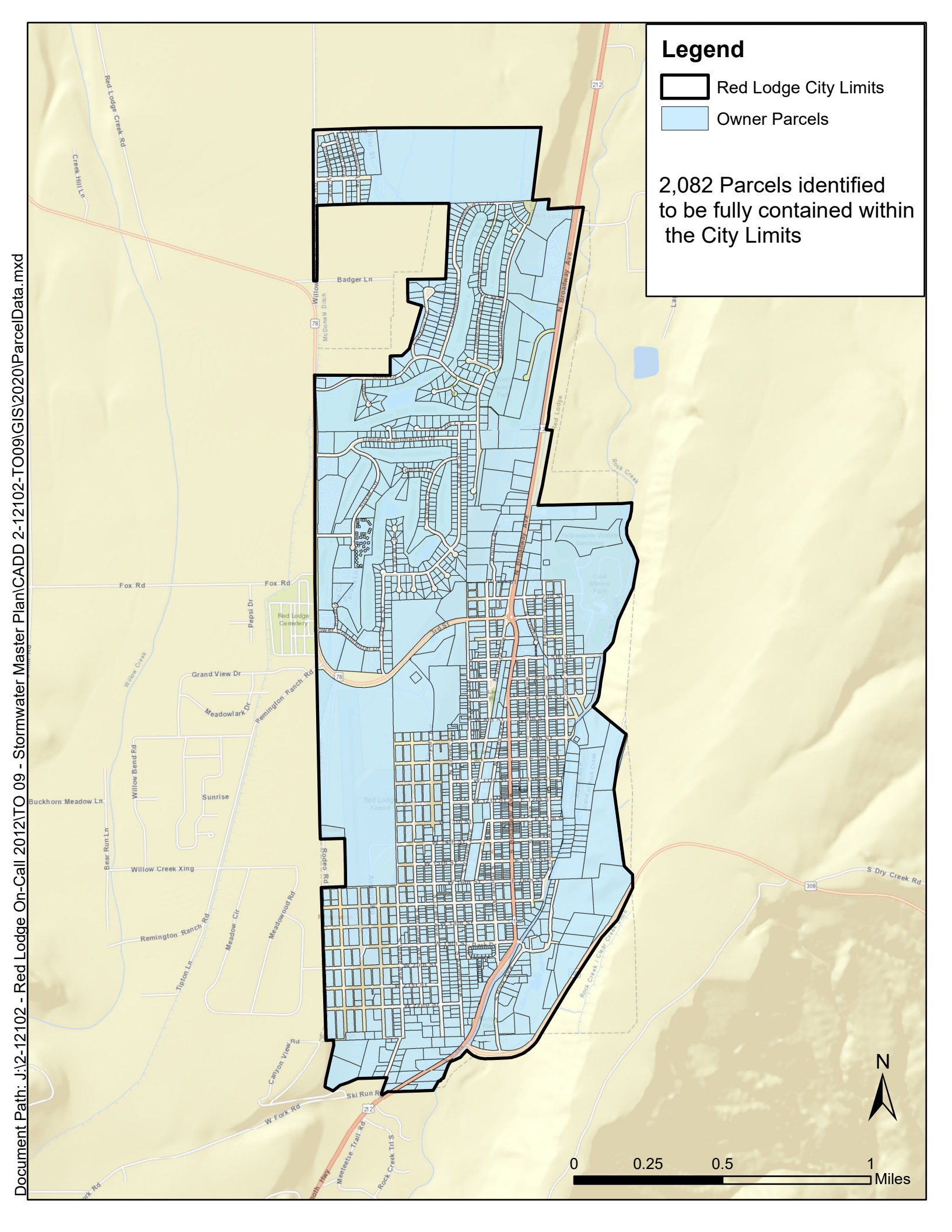
Another option would be to use a base plus ERU rate structure which assesses a fixed “base fee” and then adds in the ERU fee.

Moving Forward

This summary shows a potential stormwater district for the City of Red Lodge and what the district could generate annually. These ideas can be expanded on and the district boundary can be increased or decreased as necessary, but should be reasonable.

Next steps:

- Identify revenue need
- Identify preferred rate structure
- Develop a vision for the stormwater district and prioritize projects and O&M needs
- Get public involvement and support
- Once the steps above are achieved, city council can vote to accept the stormwater district and rate structure
- Implement rate structure and set up administrative staff
- Build stormwater infrastructure improvements!



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Appendix R

Rock Creek Water Quality Data

2018 Water Quality Information

New Search | View Data in Map ()

Detailed Assessment Report (http://deq.mt.gov/Portals/112/Water/WQPB/CWAIC/Reports/2018/MT43D002_131.pdf)

Cycle Year: 2018 ▾ View detailed report by cycle year

Water Information

AUID	MT43D002_131	**Water Type**	RIVER
Waterbody Name	Rock Creek	**HUC Name**	Clarks Fork Yellowstone
Size (Miles / Acres)	27.47	**HUC**	10070006
Ecoregion	Northwestern Great Plains	**Basin**	Yellowstone
County	Carbon County	**Use Class**	B-1
TMDL Planning Area	Clarks Fork Yellowstone	**Trophic Status and Trend**	
Location	ROCK CREEK, West Fork Rock Creek to Red Lodge Creek		
Water Quality Category	4C		

Beneficial Use Support Information

Use Name	Fully Supporting	Not Fully Supporting	Threatened	Insufficient Information	Not Assessed
Aquatic Life		✔	No		

Use Name	Fully Supporting	Not Fully Supporting	Threatened	Insufficient Information	Not Assessed
Drinking Water			No		✔
Primary Contact Recreation			No		✔
Agricultural			No		✔

Impairment Information

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Flow Regime Modification	Water Diversions,Crop Production (Irrigated)	Aquatic Life	N/A

Observed Effects

Observed Effect	Associated Uses

Report Explanation

Water Information

- *AUID* - Assessment Unit Identification (AUID) is a unique code assigned to each waterbody to facilitate assessment and tracking.
- *Waterbody Name* - The current name of a river or lake.
- *Size (Miles/Acres)* - The size of the assessment unit; rivers and streams are measured in miles; lakes in acres.
- *Ecoregion* - A large unit of land in which the waterbody is situated and denoted by a general similarity in ecosystems and resources. Link to additional ecoregion description: http://www.eoearth.org/view/article/152124 (http://www.eoearth.org/view/article/152124)
- *County* - The county or counties within which the waterbody (assessment unit) is situated.
- *Total Maximum Daily Load (TMDL) Planning Area* - DEQ has divided the state in multiple planning areas to facilitate a ‘watershed approach’ to developing TMDLs (http://deq.mt.gov/Water/WQPB/TMDL).
- *Water Type* - Lake or river.

- *Hydro Unit* - The code used by USGS to identify hydrologic units. DEQ uses 4th code (eight digit) HUCs.
- *Basin* - Montana DEQ divides the state into four major (administrative) basins; Columbia, Upper Missouri, Lower Missouri (including Saskatchewan) & Yellowstone.
- *Watershed* - Each major basin is divided into sub-major basins, or watersheds, that identify the major waterbodies that smaller streams drain into. Montana has 16 sub-major basins.
- *Use Class* - Montana's Water Quality Act establishes a systematic classification of waters in accordance to their "present and future most beneficial uses" (75-5-701 MCA).
    - **A-Closed** - Waters classified as suitable for drinking, culinary, and food processing purposes after simple disinfection.
    - **A-1** - Waters classified as suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities.
    - **B-1** - Waters classified as suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
    - **B-2** - Waters classified as suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
    - **B-3** - Waters classified as suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
    - **C-1** - Waters classified as suitable for bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
    - **C-2** - Waters classified as suitable for bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
    - **C-3** - Waters classified as suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. The quality of these waters is naturally marginal for drinking, culinary and food processing purposes, agriculture, and industrial water supply.
    - **I** - The goal of the State of Montana is to have these waters fully support the following uses: drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of fishes and associated awuatic life, waterfowl and furbearers; and agricultural and industrial water supply.
- *Trophic Status and Trend* - Trophic states are based on lake fertility (i.e., ability to support aquatic life and plant growth) and classified based on the amount of available nutrients (Phosphorus and Nitrogen) for organisms. Trophic Statuses are: Oligotrophic, Mesotrophic, Dystrophic, Eutrophic, Hypertrophic and Unknown. Trophic Trends are: Improving, Degrading, Fluctuating, Stable or Unknown. A blank means the trophic status and trend is undetermined.
- *Location* - A description of the waterbody the assessment relates to including upstream and downstream points.
- *Water Quality Category* - Each waterbody is assigned a unique assessment category as listed below.
    - **1** - Waters for which all applicable beneficial uses have been assessed and all uses are determined to be fully supported.

- **2** - Available data and/or information indicate that some, but not all of the beneficial uses are supported.
- **3** - Waters for which there is insufficient data to assess the use-support of any applicable beneficial use; no use-support determinations have been made.
- **4A** - All TMDLs needed to rectify all identified threats or impairments have been completed and approved.
- **4B** - Waterbodies are on lands where "other pollution control requirements required by local, state, or federal authority" [see 40 CFR 130.7(b)(1)(iii)] are in place, are expected to address all waterbody-pollutant combinations, and attain all WQS in a reasonable period of time. These control requirements act "in lieu of" a TMDL, thus no actual TMDLs are required.
- **4C** - Identified threats or impairments result from pollution categories such as dewatering or habitat modification and, thus, a TMDL is not required.
- **5** - Waters where one or more applicable beneficial uses are impaired or threatened, and a TMDL is required to address the factors causing the impairment or threat.
- **5N** - Available data and/or information indicate that a water quality standard is exceeded due to an apparent natural source in the absence of any identified manmade sources.

Beneficial Use Support Information

- *Use Name* - All surface waters have designated beneficial uses that may include: agriculture, drinking water, primary contact recreation, aquatic life, and industry.
- *Support Status*
  - Fully Supporting - The use has been assessed and is determined to be fully supporting.
  - Not Fully Supporting - The use has been assessed and is determined to be impaired or partially impaired.
  - Threatened - If yes, the use has been assessed and is fully supporting, but has been determined to be threatened for impairment (see 75-5-103(36), MCA (http://leg.mt.gov/bills/mca/75/5/75-5-103.htm)).
  - Insufficient Information - there is not enough available data/information to perform a valid assessment.
  - Not Assessed - The waterbody has not been assessed for use support.

Impairment Information

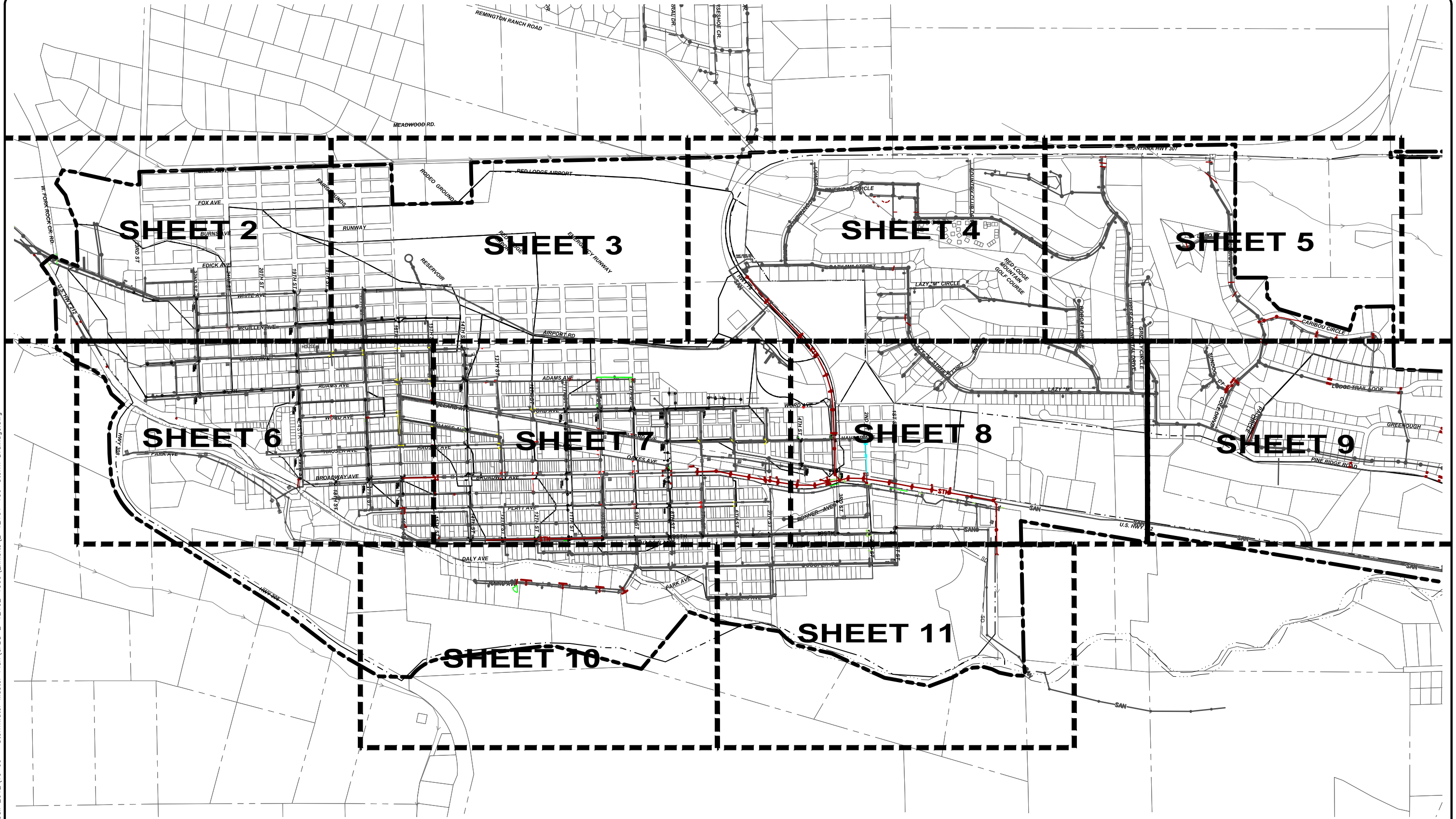
- *Probable Causes* - The list of probable causes of pollution.
- *Probable Sources* - The probable source or sources related to the cause of impairment.
- *Associated Uses* - The Beneficial Use being affected by the impairment cause.
- *TMDL Completed* - If the TMDL is completed for the cause there will be a “yes” button. Click the button to be redirected to the TMDL document. A "no" indicates that either a TMDL is required or the cause is a non-pollutant. An N/A identifies the cause as a non-pollutant and no TMDL is required.

Observed Effects Information

- *Observed Effect* - Indications of pollution may be observed and documented (e.g., excess algal growth) which are a response to environmental conditions and potentially excessive pollutant loading. These are termed “observed effects.”
- *Associated Uses* - The uses that may be impaired due to the observed effect.

Appendix S

Red Lodge Drainage Pattern Maps



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GreatWest engineering®

city of RED LODGE MONTANA

Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

1
OF 11

J:\2-12102 - Red Lodge On-Call 2012\TO 09 - Stormwater Master Plan\CADD 2-12102-T009\Exhibits\2-12101-T09-Storm Drainage.dwg

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Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

2
OF 11

RODEO GROUNDS

RED LODGE AIRPORT

RUNWAY

RED LODGE AIRPORT

EMERGENCY RUNWAY

RESERVOIR

16TH ST

15TH ST

14TH ST

AIRPORT RD

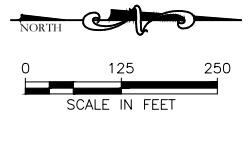
AIR RELEASE MH

12STM

16W

18STM

4W



Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

3
OF 11

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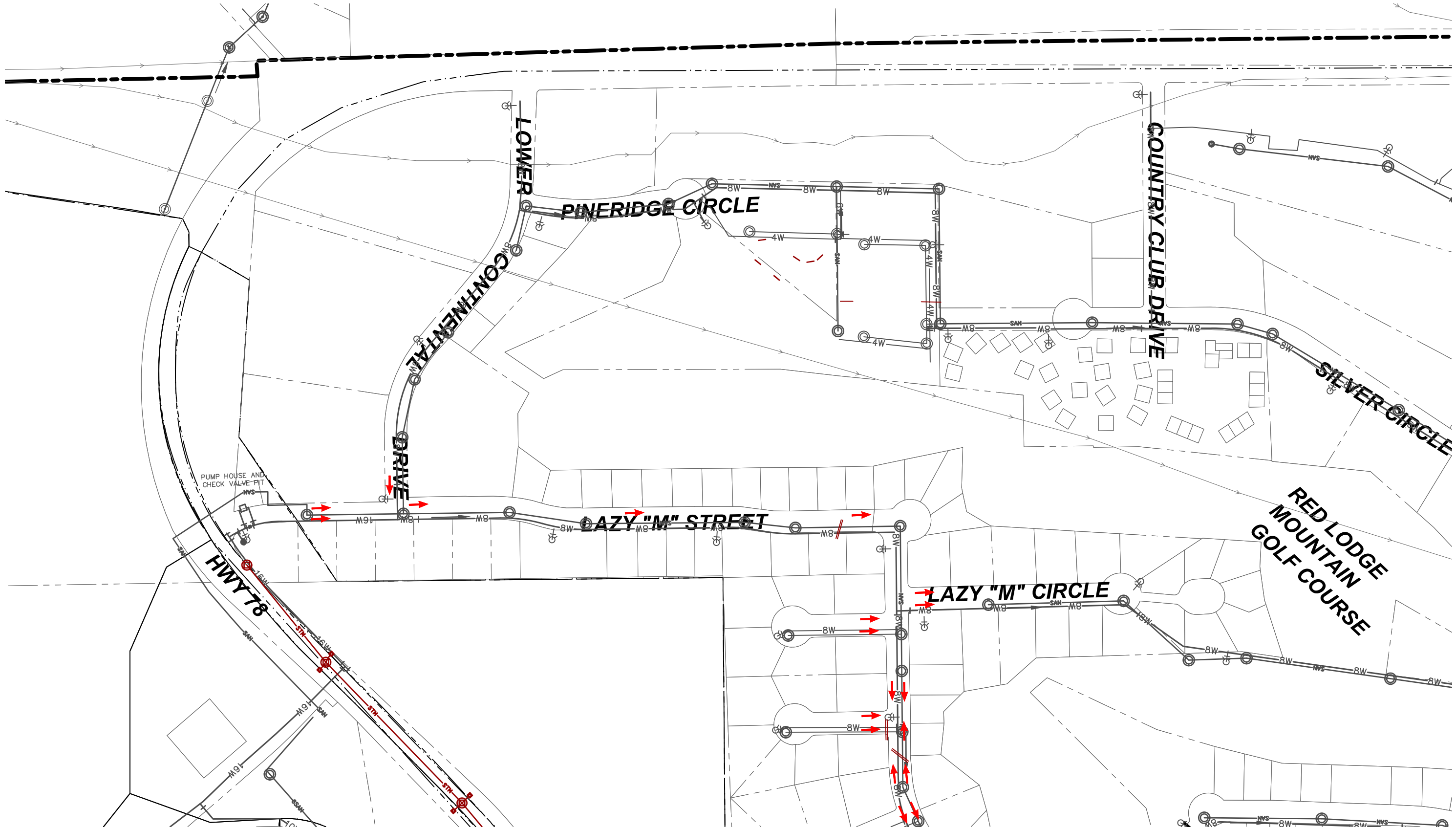

NORTH

0 125 250

SCALE IN FEET

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Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

4
OF 11

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MONTANA HWY 307

LOBO CT

COLE DRIVE

UPPER CONTINE

GRIZZ

BOBCAT CIRC

CARIBOU CIRCLE

8W

SAN

NORTH

0 125 250

SCALE IN FEET

GreatWest engineering®

city of RED LODGE MONTANA

Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

5
OF 11

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GRANT AVE

ADAMS AVE

WORD AVE

HAUSER AVE

BROADWAY AVE

KAINU AVE

PARK AVE

HWY 308

PUMP HOUSE

18TH ST

17TH ST

16TH ST

NORTH

0 125 250

SCALE IN FEET

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Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

6
OF 11

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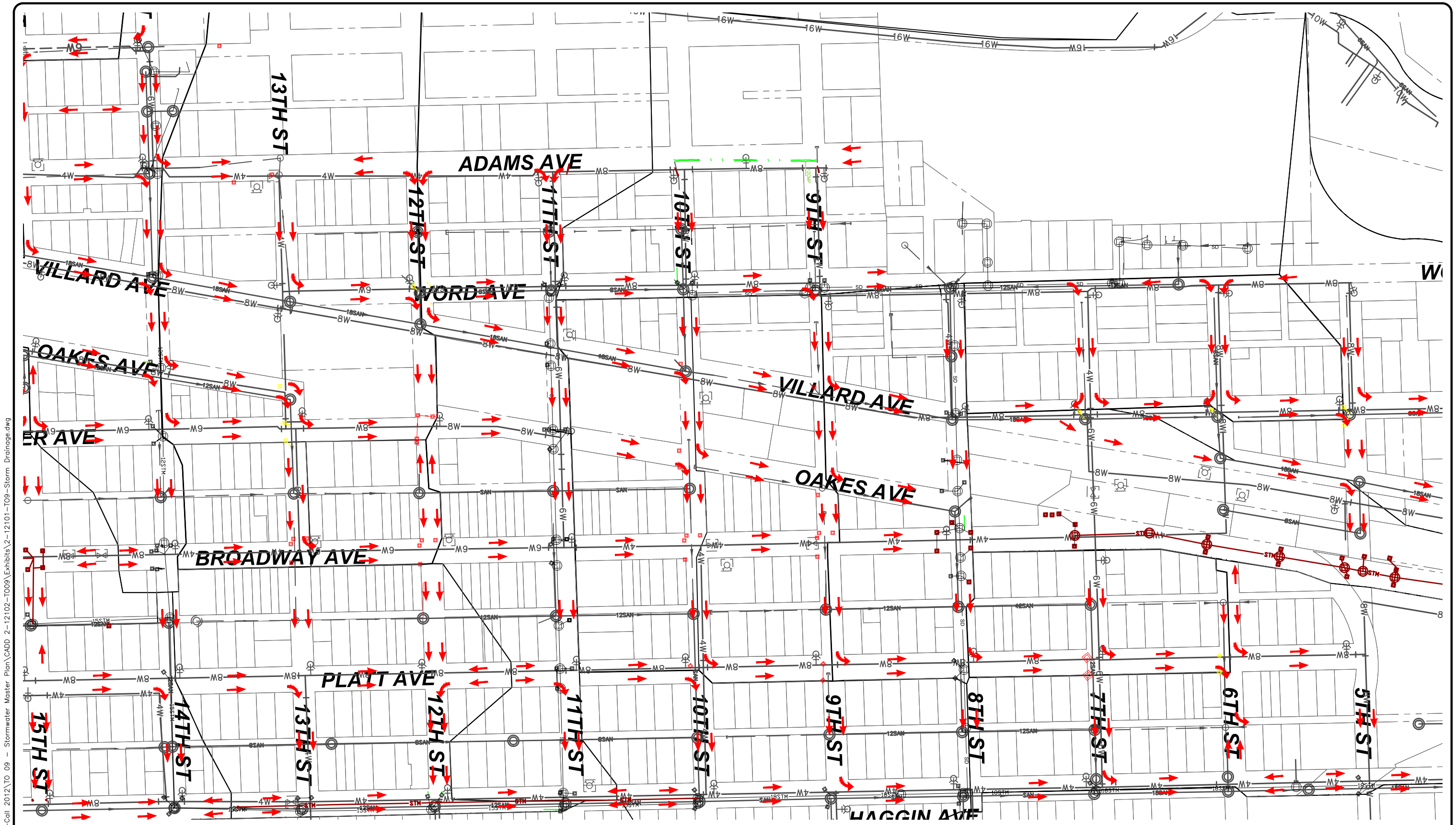

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NORTH

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Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

7
OF 11

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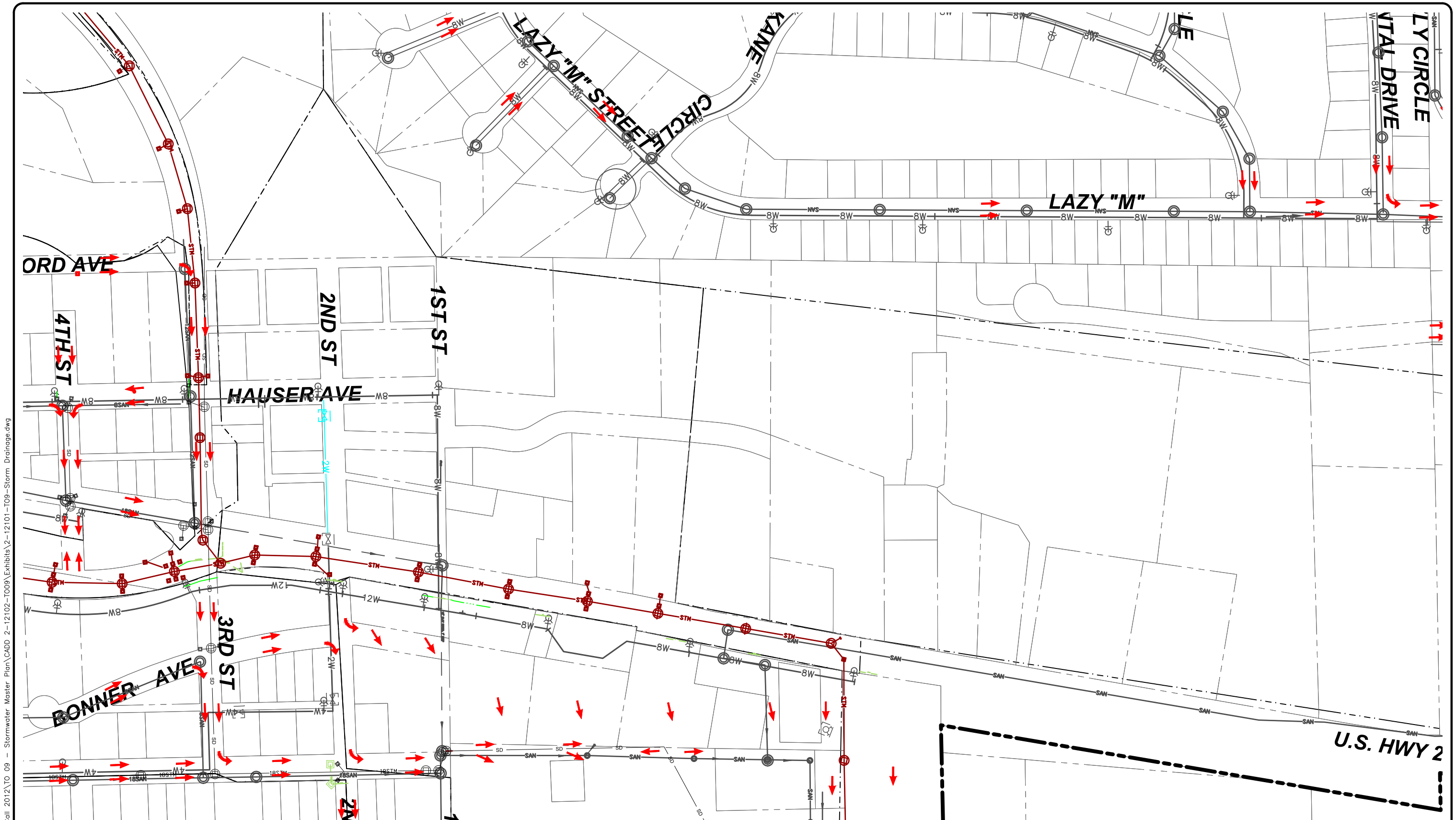

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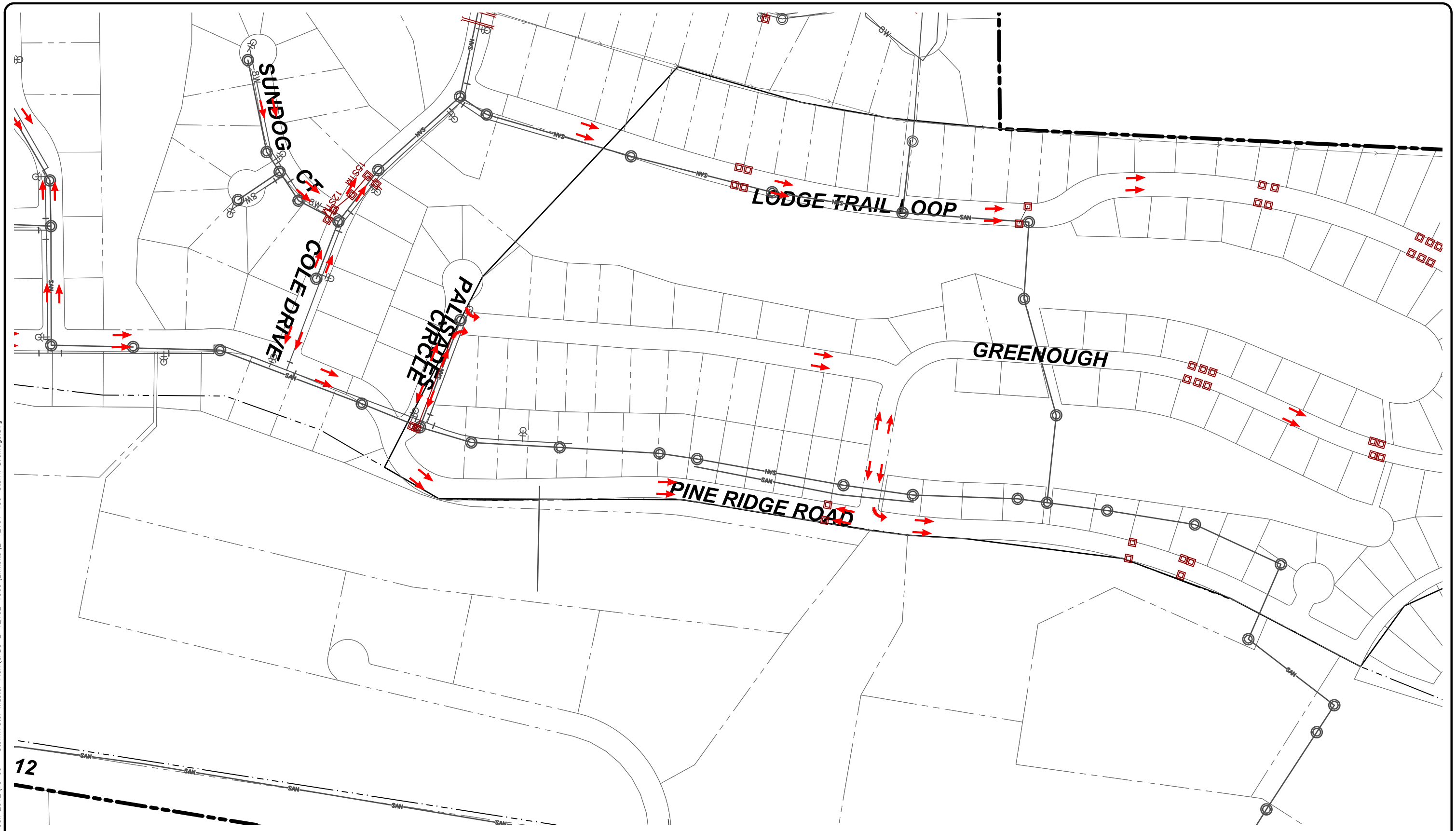
SCALE IN FEET

Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

8

OF 11



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Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

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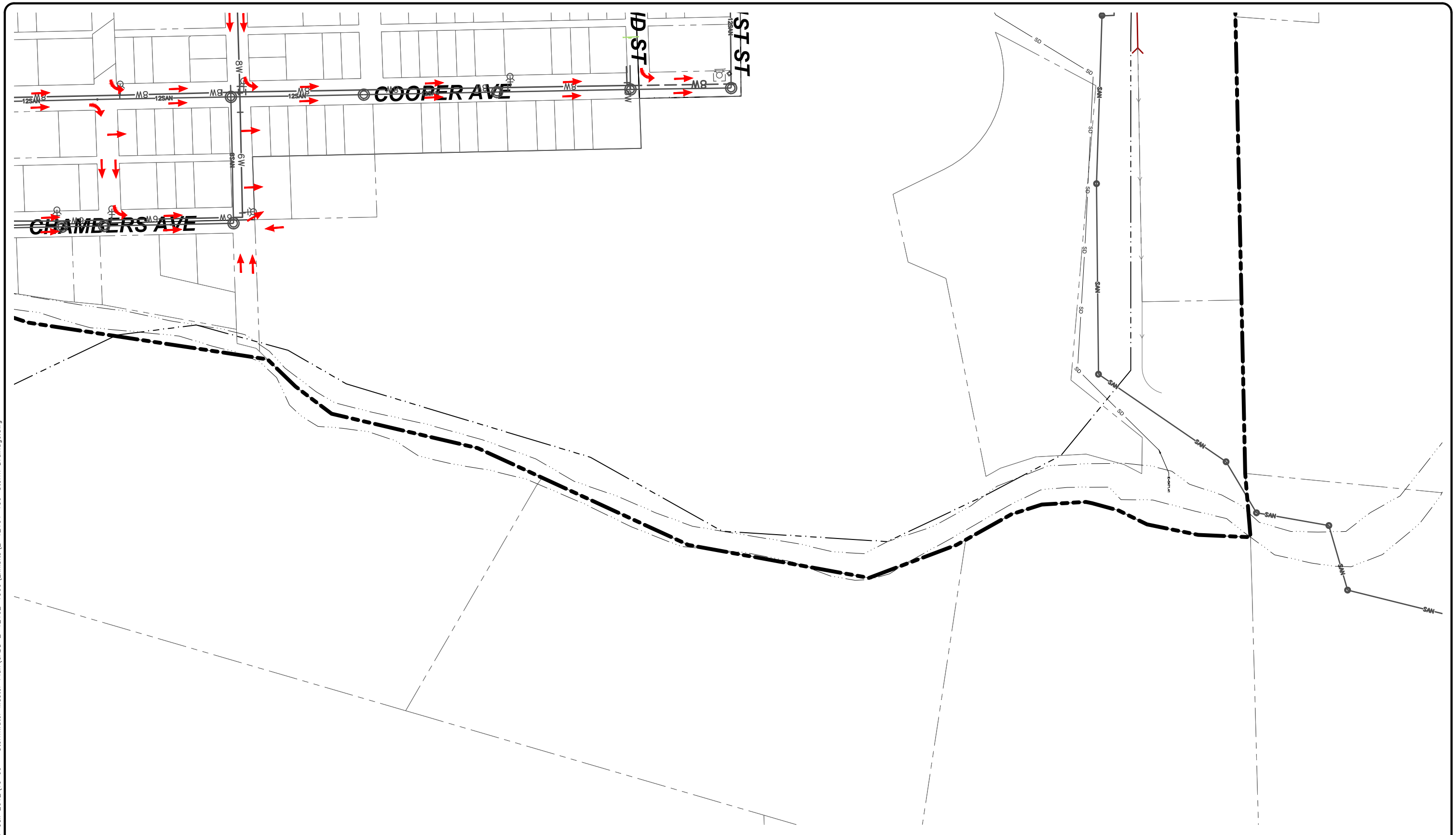
Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

10

OF 11



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SCALE IN FEET

Drainage Patterns

CITY OF RED LODGE
2018 STORMWATER IMPROVEMENTS PER

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OF 11

Appendix V

City Financial Data

Water/Wastewater ▪ Transportation ▪ Grant Services ▪ Solid Waste ▪
Structural ▪ Bridges ▪ Natural Resources ▪ Planning

BILLINGS
6780 Trade Center Avenue
Billings, MT 59101
PHONE 406.652.5000

BOISE
3050 N. Lakeharbor Lane,
Suite 201
Boise, ID 83703
PHONE 208.576.6646

GREAT FALLS
702 2nd Street South #2
Great Falls, MT 59405
PHONE 406.952.1109

HELENA
PO Box 4817
2501 Belt View Drive
Helena, MT 59604
PHONE 406.449.8627
FAX 406.449.8631

SPOKANE
9221 N. Division St.,
Suite F
Spokane, WA 99218
PHONE 509.413.1430