Wayne County Rouge Valley Sewage Disposal System

Annual System Monitoring Report for 2018

Report to Wayne County and Communities

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and

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November 5, 2019

Table of Contents

List of Tables

List of Figures

Section 1

Noteworthy Items

Noteworthy Items

The annual system monitoring report provides a summary of the flow monitoring data for the Rouge Valley Sewage Disposal System (RVSDS) for January through December 2018. This report supersedes and consolidates the information in the four (4) quarterly system monitoring reports previously issued for 2018. It is intended to provide the best available estimate of flow rates for the entire RVSDS, each meter district and community during the dry and wet weather conditions that occurred in 2018. For some meter districts and communities, the data have been revised from the previously issued reports. The flow monitoring data were reviewed and missing or erroneous data have been estimated using fill-in techniques to provide a complete data set. Any monitoring plan updates made in the annual period and major findings from the RVSDS 2018 system monitoring are presented below.

1. The Agreement Regarding Rouge Valley Sewage Disposal System Between Great Lakes Water Authority and County of Wayne ("Agreement") was executed on May 6, 2019. This Agreement extends the wastewater service agreement between Wayne County and the Great Lakes Water Authority (GLWA), revises the service area for the RVSDS, and provides clarification of GLWA responsibilities regarding the three County owned flow meters at the RVSDS outlets to the GLWA wastewater system.

2. Revisions to the service area for the RVSDS under the Agreement (see Figure 1-1) include the proposed termination of RVSDS service to Canton Township, Northville Township, and Plymouth Township (collectively known as the Western Townships Utilities Authority (WTUA)). The County and WTUA have been negotiating a service termination agreement which is expected to be executed in 2019. There are some small service areas of the WTUA communities directly connected to the RVSDS, and small service areas of the RVSDS which are directly connected to WTUA sewers. Rather than undertake costly physical improvements to local community/WTUA sewer systems to effect complete physical separation of WTUA flows from RVSDS and of RVSDS customer flows from WTUA, under the WTUA service termination agreement WTUA will continue to convey and treat sewage from the areas of Cities of Plymouth and Northville which are directly connected to their system in exchange for the County continue to convey and treat sewage from the areas within the WTUA townships which are directly connected to the RVSDS. These areas are collectively known as the "flow swap" areas and are described in detail below. Because WTUA diverted its wastewater flow from their service area within the RVSDS to the Ypsilanti Community Utility Authority (YCUA) for 2018 and the flow swap arrangement was in effect for 2018, the sewage flow meter math for the Cities of Northville and Plymouth was updated as described below. The revised sewage flow meter math for the Cities of Northville and Plymouth was utilized for flow reporting in this RVSDS System Monitoring Report for 2018, and will be utilized in further RVSDS System Monitoring Reports.

    a. There are small portions of Northville Township (WTUA) from line connections 93 and 94 (totaling 22.6 acres) which are directly connected to the RVSDS, and small portions of the City of Northville from line connection 197 (47.3 acres) which are directly connected to the WTUA system and would be difficult to separate. Figure 1-2 shows the service area swap between the City of Northville and Northville Township under the pending WTUA service termination agreement.

The sewage flow meter math for the City of Northville has been updated as follows:

Old Sewage Flow Meter Math	New Sewage Flow Meter Math
97.3%{[P-1] - [BG-1]} + 0.3%{[FE-22] - [C-B-A]}	[P-1] - [BG-1]

b. Similarly, there are small portions of Canton Township and Plymouth Township (WTUA) from line connections 102, 103 ,194, and 195 (totaling 406.5 acres) which are directly connected to the RVSDS, and small portions of the City of Plymouth from line connections 101 and 197 (totaling 457.5 acres) which are directly connected to the WTUA system, and would be difficult to separate. Figure 1-3 shows the service area swap between the City of Plymouth and Canton Township and Plymouth Township under the pending WTUA service termination agreement.

The sewage flow meter math for the City of Plymouth has been updated as follows:

Old Sewage Flow Meter Math	New Sewage Flow Meter Math
[P-3] + [P-26] - [P-1] + [C-B-A]	[P-3] + [P-26] - [P-1] + [FE-22]

3. Rain gauge R-11 was removed from the County Parks Phoenix Maintenance Yard on September 12, 2018 and installed at Northville's Department of Public Works Yard on November 16, 2018. The rain gauge was relocated because the Phoenix Yard property was sold.

4. Over the year, the flow meters in the RVSDS operated and provided useful data for 93.9% of the period. Excluding the three outlet meters, which were out-of-service for the entire year (see discussion under items 11-13), the flow meters in the RVSDS operated and provided useful data for 97.9% of the period.

5. In 2018, dye-dilution testing was conducted for Meters LV-04, LV-14, M-1, M-2 and P-34. The results of all applicable dye-dilution tests of RVSDS flow meters for year 2018 data have been updated to include the results of these tests and are shown in Table 1-1 for reference. The data presented in this annual report reflects the results of these dye-dilution tests. The dye test results provided important information that was used to adjust the flow meter data. These adjustments provide more reasonable estimates of flow rates for the meters, meter districts, and communities.

6. The total precipitation at the Detroit Metropolitan Wayne County Airport (DTW) for the year was 43.81 inches, which is 10.34 inches above normal.

7. There were ten significant storm events during the year. A summary of these events is presented in Table 6-1. Total rainfall values for each rain gage and each event are presented in Tables 8-1 through 8-10.

8. A summary of maximum allowable flow limit exceedances by community during significant storm events for 2018 are listed in Table 1-2. Oakland County (Novi), Plymouth City, Garden City, Livonia, Dearborn Heights and Wayne exceeded the maximum allowable flow limits for at least one significant storm event in 2018. Northville City, Westland, Redford Township, Van Buren Township, Romulus and Inkster did not exceed the maximum allowable flow limits for any of the significant storm events in 2018.

9. Table 1-3 lists the peak flow rates and estimated flood frequencies on the Middle and Lower Rouge Rivers for each storm event. The peak flow rate and return frequency on the Middle Rouge River occurred during Event 5, on May 13, 2018. The estimated flood frequency for the Middle Rouge River for this event was about 7 years. The peak flow rate and return frequency on the Lower Rouge River occurred during Event 1, on February 21, 2018. The estimated flood frequency for the Lower Rouge River for this event was about 10 years.

10. On August 6, 2018, the velocity readings for WTUA Plymouth Meter A dropped out and the velocity readings have since become erratic or are zero. Consequently, WTUA Plymouth Meter A flow rates from October 1, 2018 through December 30, 2018 were estimated.

11. Flow Meters WC-S-1, WC-S-2 and WC-S-3 are owned by Wayne County and operated by the Great Lakes Water Authority (GLWA). Meters WC-S-1 and WC-S-2 were out-of-service all of year 2018.

12. GLWA and Wayne County agreed to implement a common data estimation methodology for WC-S-1, WC-S-2 and WC-S-3 missing data as of GLWA fiscal year 2017 (starting on July 1, 2016 at 12:00 AM) and continuing into the future. Currently, GLWA publishes monthly "compiled" data for WC-S-1, WC-S-2, and WC-S-2 on the GDRSS portal based on daily average flow rate values (i.e., 24-hour time increment) using trend analysis to estimate missing data. Wayne County currently estimates the flow rates for the malfunctioning Meters WC-S-1, WC-S-2 and WC-S-3 in 5-minute increments, based on correlations to upstream RVSDS meters. The increased level of detail provided by the Wayne County estimated data is important for estimating peak hourly flow rates during significant storm events. GLWA and Wayne County are in the process of working out a data sharing agreement which will provide GLWA the necessary RVSDS meter data to implement the new data estimation methodology on a monthly basis. GLWA has confirmed that the "Annual Compiled" data to be published on the GDRSS portal for WC-S-1, WC-S-2 and WC-S-3 will be daily average values, with missing data estimated based on the correlation with upstream RVSDS meter data per the agreed upon flow rate estimation methods.

13. The agreed upon flow rate estimation methods for Meters WC-S-1, WC-S-2 and WC-S-3 are based on correlations to upstream RVSDS flow meters. Details of these correlations are provided in the *Wayne County Rouge Valley Sewage Disposal System Annual System Monitoring Report for 2016* dated May 8, 2017.

    a. On June 10, 2016, the meter electronics for Meter WC-S-1 failed. The electronics have not been repaired/replaced and GLWA is reviewing meter replacement options. As a result, Meter WC-S-1 was out-of-service for all of year 2018. Meter WC-S-1 flow rates from January 1, 2018 through December 31, 2018 were estimated with a correlation to Meters P-14 + P-24 + P-25.

    b. Since late 2015, Meters WC-S-2 and WC-S-3 have had numerous issues, such as failed sensors. As a result, one or both of these meters was out-of-service for all of year 2018. Meters WC-S-2 + WC-S-3 flow rates from January 1, 2018 through December 31, 2018 were estimated with a correlation to Meters P-14, P-30, P-31 and P-32.

14. Table 1-4 lists the total monthly volumes for year 2018 for Meters WC-S-1, WC-S-2 and WC-S-3 as estimated by GLWA and by Wayne County. The method used by GLWA to estimate the flow rates for WC-S-2 and WC-S-3 provides significantly higher results than the Wayne County method. Wayne County uses actual upstream flow meter data to provide the estimated outlet flow rate and is therefore considered to be more accurate.

15. Table 1-5 lists the average annual flow rate and total annual flow volume for each customer for year 2018. The sum of the customer flow rates is based on the upstream interceptor system flow meters. The sum of the outlet flow meters is based on the Wayne County estimated flow rates for Meters WC-S-1, WC-S-2 and WC-S-3. The GLWA estimated values for the sum of outlet Meters WC-S-1, WC-S-2 and WC-S-3 is also provided for comparison.

Note: Service area boundary reflects pending execution of WTUA Service Termination Agreement anticipated November 2019.

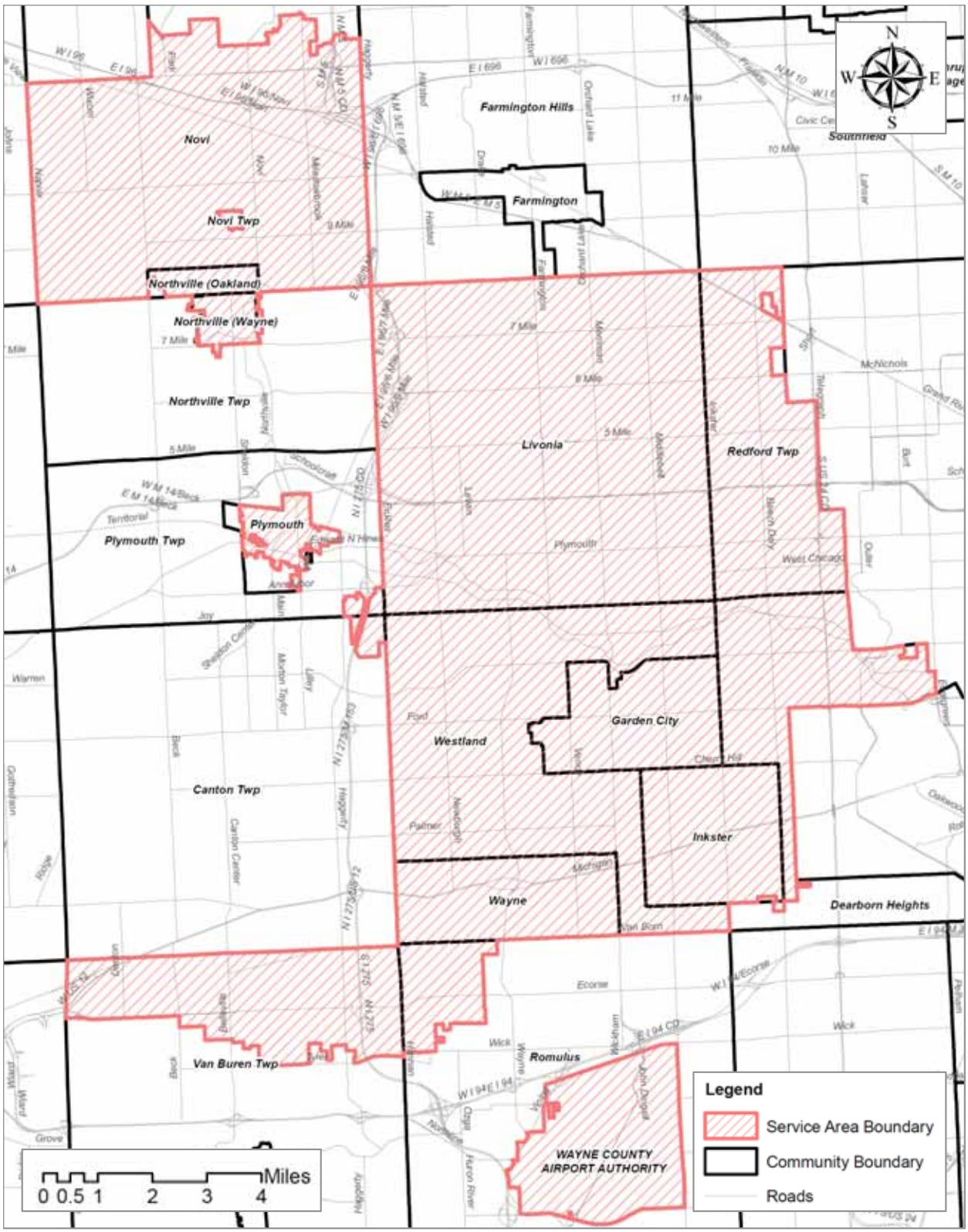


Figure 1-1
Rouge Valley Sewage Disposal System
New RVSDS Service Area Map

Note: Service area boundary reflects pending execution of WTUA Service Termination Agreement anticipated November 2019.

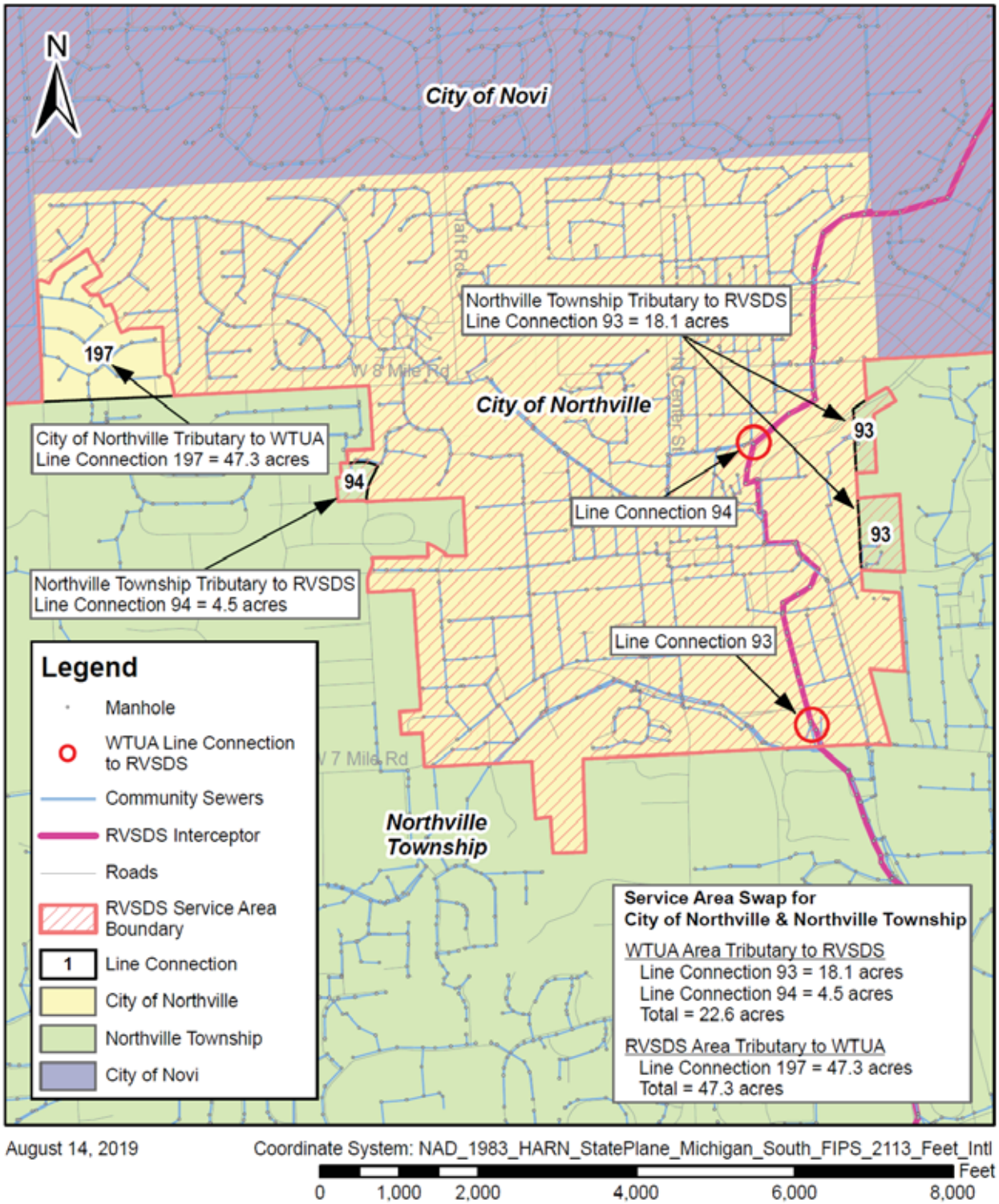


Figure 1-2
Rouge Valley Sewage Disposal System
Service Area Detail for City of Northville & Northville Township Service Areas

Note: Service area boundary reflects pending execution of WTUA Service Termination Agreement anticipated November 2019.

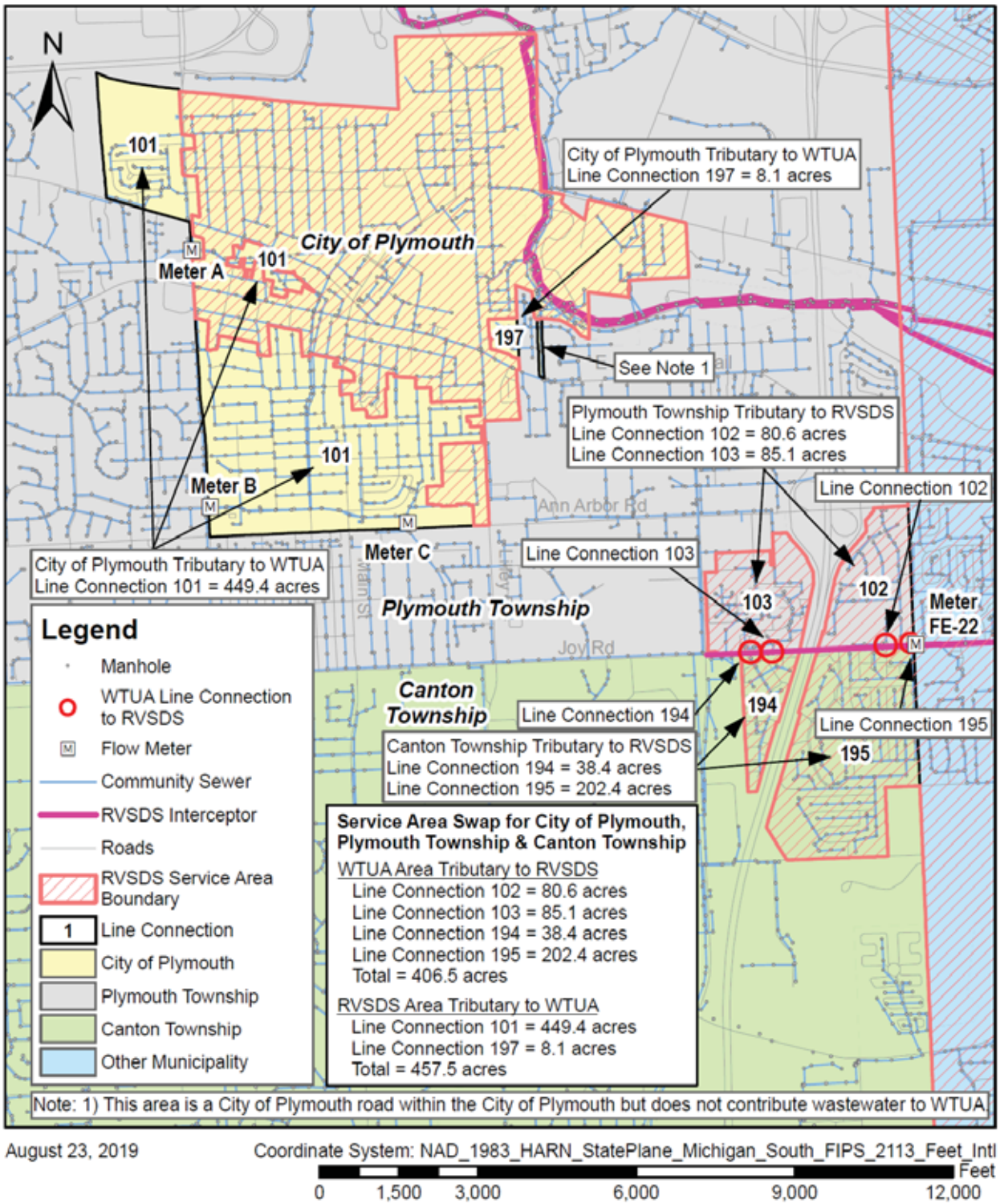


Figure 1-3
Rouge Valley Sewage Disposal System
Service Area Detail for City of Plymouth, Plymouth Township & Canton Township Service Areas

Table 1-1
Rouge Valley Sewage Disposal System
Dye-Dilution Test Summary

Meter	Dye Test Date	Adjustment Factor	Period Adjustment Factor
BG-1	8/10/2016	0.93	0.93
LV-04	7/20/2018	1.11	1.11
LV-14	7/19/2018	0.90	0.90
LV-Basin	8/8/2016	0.82	0.82
M-1	7/18/2018	0.87	0.90
	12/13/2018	0.93	
M-2	7/17/2018	0.84	0.84
P-1	7/11/2016	0.89	0.89
P-7	8/9/2016	0.67	0.67
P-8	8/9/2016	1.10	1.10
P-9	9/1/2015	0.96	0.96
	9/26/2017	0.96	
P-10	8/27/2015	0.97	1.00
	9/27/2017	1.05	
P-11	8/26/2015	0.96	0.97
	9/25/2017	0.97	
P-12	8/26/2015	1.01	0.99
	9/29/2017	0.96	
P-13	7/18/2016	0.93	0.93
P-14	9/10/2015	1.00	0.97
	9/29/2017	0.93	
P-15	6/23/2016	0.84	0.84
P-17	8/8/2016	0.80	0.80
P-19	9/16/2015	0.94	0.94
	9/28/2017	0.94	
P-20	6/24/2016	0.99	0.99
P-21	9/16/2015	0.94	1.03
	10/5/2017	1.12	
P-24	12/4/2014	0.92	0.91
	9/8/2015	0.82	
	9/26/2017	0.97	
P-25	9/8/2015	0.95	0.96
	9/27/2017	0.96	
P-28	6/24/2016	0.74	0.74
P-29	7/27/2016	0.81	0.81
P-30	7/14/2016	0.98	0.98
P-31	7/7/2016	1.00	1.00
P-32	7/7/2016	0.89	0.89
P-33	7/14/2016	0.86	0.86
P-34	11/5/2018	1.11	1.11
P-35	7/12/2016	0.94	0.94
WE-28	10/15/2015	0.72	0.79
	9/27/2017	0.85	

Table 1-2
Rouge Valley Sewage Disposal System
Maximum Allowable Flow Limit Exceedances for Significant Storm Events in 2018

Event	Date	Precipitation (inches)	Customer										
			Oakland County (Novi)	Plymouth City	Northville City	Garden City	Livonia	Westland	Redford Twp	Dearborn Heights	Van Buren Twp	Romulus	Wayne	Inkster
1	2/19-21/2018	2.25	×	✓	×	✓	×	×	×	✓	×	×	✓	×
2	3/1-2/2018	1.22	×	✓	×	×	×	×	×	×	×	×	×	×
3	4/14-16/2018	2.30	×	✓	×	✓	×	×	×	✓	×	×	×	×
4	5/2-4/2018	1.24	×	✓	×	×	×	×	×	×	×	×	×	×
5	5/11-12/2018	2.21	✓	✓	×	✓	✓	×	×	✓	×	×	×	×
6	7/31/2018 - 8/1/2018	2.15	×	✓	×	✓	×	×	×	✓	×	×	×	×
7	9/20/2018	1.76	×	✓	×	✓	×	×	×	✓	×	×	×	×
8	9/24-26/2018	2.08	×	✓	×	✓	×	×	×	✓	×	×	×	×
9	10/6-7/2018	1.35	×	✓	×	✓	×	×	×	✓	×	×	×	×
10	10/31/2018 - 11/2/2018	1.81	×	✓	×	✓	×	×	×	×	×	×	×	×
Total			1/10	10/10	0/10	8/10	1/10	0/10	0/10	7/10	0/10	0/10	1/10	0/10

Legend:

✓	Maximum Allowable Flow Limit Exceeded
×	Maximum Allowable Flow Limit Not Exceeded

Table 1-3
Rouge Valley Sewage Disposal System
Rouge River Flood Frequency in the 2018 Monitoring Period

Significant Storm Event		Peak 15-minute Flow Rate (cfs)		Estimated Flood Frequency[2]	
Event No.	Date	Middle Rouge USGS Gage #04167000	Lower Rouge USGS Gage #04168400	Middle Rouge USGS Gage #04167000	Lower Rouge USGS Gage #04168400
1	2/19-21/2018	1,730	2,420	7 - year	10 - year
2	3/1-2/2018	445	668	3 - month	4 - month
3	4/14-16/2018	1,150	1,310	3 - year	2 - year
4	5/2-4/2018	354	393	1 - month	1 - month
5	5/11-12/2018	1,750	1,090	7 - year	11 - month
6	7/31/2018 - 8/1/2018	1,080	1,260	2 - year	1 - year
7	9/20/2018	1,360	810	4 - year	5 - month
8	9/24-26/2018	1,180	998	3 - year	8 - month
9	10/6-7/2018	700	803	6 - month	5 - month
10	10/31/2018 -	634	783	5 - month	5 - month
Estimated Flood Frequency[1]		315	408	1 - month	
		734	903	6 - month	
		944	1,152	1 - year	
		1,066	1,405	2 - year	
		1,549	1,943	5 - year	
		1,988	2,436	10 - year	
		3,255	3,717	100 - year	

Notes:
1. A partial duration analysis was used to estimate the 1-month, 6-month, and 1-year flood frequency flow rates. An annual peak series analysis was used to estimate the 2, 5, 10 and 100-year flood frequency flow rates.
2. The estimated flood frequency for each storm event was linearly interpolated between the estimated flood frequencies listed in the lower half of this table.

Table 1-4
Rouge Valley Sewage Disposal System
Monthly Volume Comparison

Period	[WC-S-1] (MG)				[WC-S-2] + [WC-S-3] (MG)				[WC-S-1] + [WC-S-2] + [WC-S-3] (MG)			
	GLWA	Wayne County	Difference		GLWA	Wayne County	Difference		GLWA	Wayne County	Difference	
January 2018	1,324	1,226	-98	-7.4%	417	365	-52	-12.5%	1,741	1,591	-150	-8.6%
February 2018	1,734	1,512	-222	-12.8%	738	707	-31	-4.2%	2,472	2,219	-253	-10.2%
March 2018	1,747	1,701	-46	-2.6%	705	605	-100	-14.2%	2,452	2,306	-146	-6.0%
April 2018	1,856	1,796	-60	-3.2%	838	702	-136	-16.2%	2,694	2,498	-196	-7.3%
May 2018	1,921	2,004	83	4.3%	996	876	-120	-12.0%	2,917	2,880	-37	-1.3%
June 2018	1,332	1,207	-125	-9.4%	407	339	-68	-16.7%	1,739	1,546	-193	-11.1%
July 2018	1,051	1,014	-37	-3.5%	297	211	-86	-29.0%	1,348	1,225	-123	-9.1%
August 2018	1,102	1,198	96	8.7%	325	281	-44	-13.5%	1,427	1,479	52	3.6%
September 2018	1,248	1,336	88	7.1%	486	409	-77	-15.8%	1,734	1,745	11	0.6%
October 2018	1,439	1,525	86	6.0%	541	492	-49	-9.1%	1,980	2,017	37	1.9%
November 2018	1,577	1,634	57	3.6%	617	556	-61	-9.9%	2,194	2,190	-4	-0.2%
December 2018	1,449	1,478	29	2.0%	479	458	-21	-4.4%	1,928	1,936	8	0.4%
Total	17,780	17,631	-149	-0.8%	6,846	6,001	-845	-12.3%	24,626	23,632	-993	-4.0%

Notes:

1. GLWA monthly compiled data as published on the GDRSS portal
2. MG = Million Gallons

Table 1-5
Rouge Valley Sewage Disposal System
Average Annual Flow Rate and Volume by Customer for 2018

Customer		Estimated Annual Average Flow Rate (cfs)	Estimated Annual Flow Volume	
			(MG)	(MCF)
Oakland County (Novi)		7.28	1,718	229,658
Plymouth City		3.85	908	121,317
Northville City		1.56	367	49,050
Garden City		7.31	1,723	230,367
Livonia		27.12	6,398	855,283
Westland		18.72	4,417	590,469
Redford Twp		11.09	2,617	349,847
Dearborn Heights		9.52	2,246	300,201
Van Buren Twp		1.40	330	44,150
Romulus		0.31	74	9,837
Wayne		5.94	1,401	187,250
Inkster		4.33	1,021	136,445
WCAA		0.52	122	16,254
Sum of Customer Flow Rates		98.94	23,340	3,120,128
Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3]	Wayne County	100.18	23,632	3,159,135
	GLWA	104.39	24,625	3,291,940

Notes:
1. cfs = Cubic Feet per Second
2. MG = Million Gallons
3. MCF = Thousand Cubic Feet

Section 2

Monitoring Network

FIGURE A3

FIGURE A7

FIGURE A4

FIGURE A5

FIGURE A6

FIGURE A8

FIGURE A2

FIGURE A1

N

W E

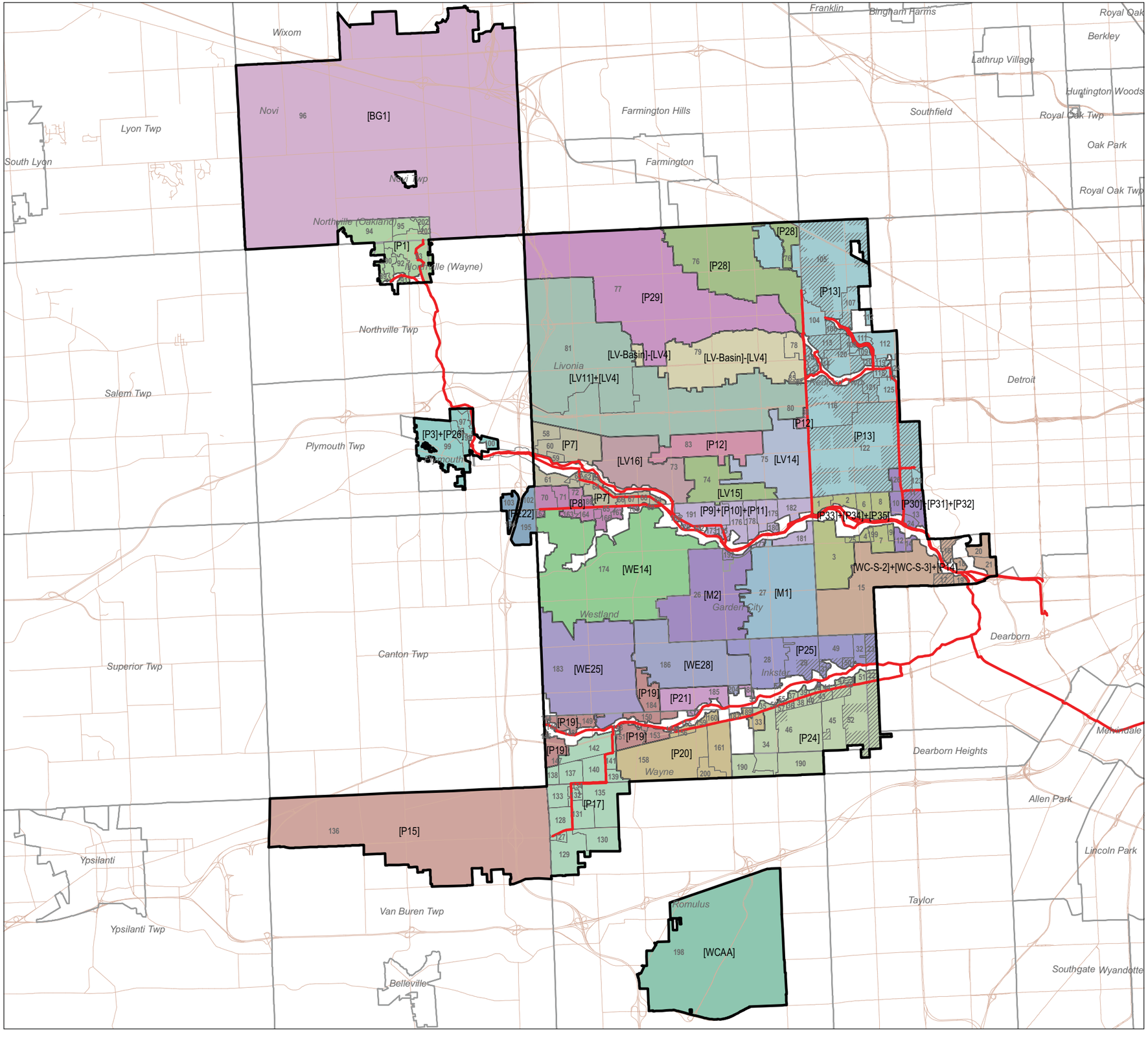
S

FIGURE 2-1
ROUGE VALLEY SEWAGE DISPOSAL SYSTEM
INTERCEPTOR SCHEMATIC

SYSTEM
MONITORING
INDEX SHEET

REVISION DATE: NOVEMBER 4, 2019

Rouge Valley Sewage Disposal System



N
W E
S

0 0.5 1 2 3 4 Miles

Legend

- Interceptor
- [P1] Meter District
- 1 Line Connection Area
- Combined Area
- Community Boundary
- Service Area Boundary
- Roads

Figure 2-2
Meter District and Line Connection Areas

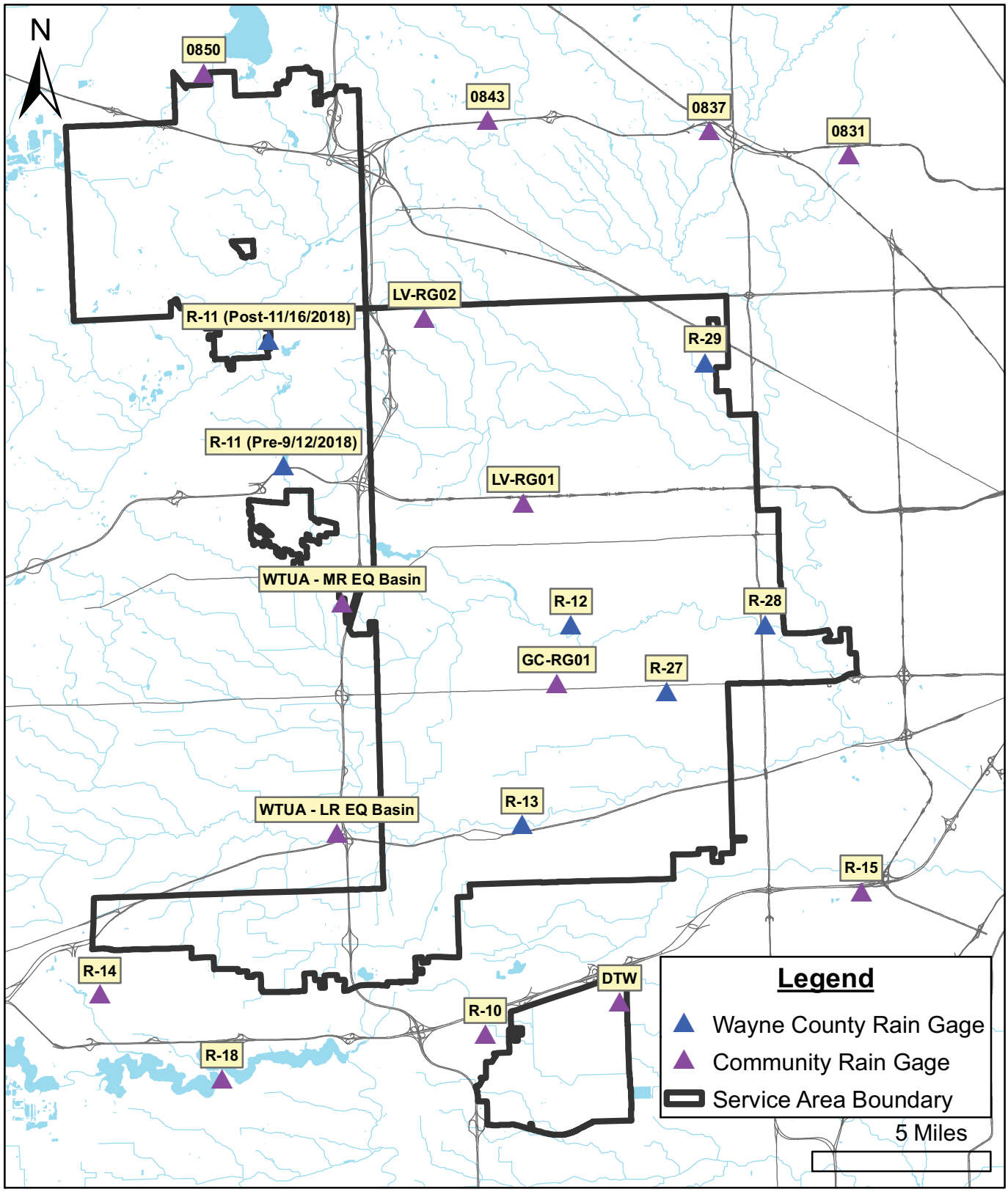
Note: Service area boundary reflects pending execution of WTUA Service Termination Agreement anticipated November 2019.

Prepared By:

Applied Science, Inc.

REVISION DATE: OCTOBER 7, 2019

Note: Service area boundary reflects pending execution of WTUA Service Termination Agreement anticipated November 2019



REVISION DATE: October 10, 2019

Figure 2-3
Rouge Valley Sewage Disposal System
Rain Gage Location Map

Table 2-1
Rouge Valley Sewage Disposal System
Flow Monitoring Meters

Wayne County Meters	P-1, P-3, P-7, P-8, P-9, P-10, P-11, P-12, P-13, P-14, P-15, P-17, P-19, P-20, P-21, P-24, P-25, P-26, P-28, P-29, P-30, P-31, P-32, P-33, P-34, P-35, LV-Basin, M-22A, M-22B, WE-14, WE-25 & WE-28, WC-S-1A	
Customer Meters	City of Livonia	LV-4, LV-11, LV-14, LV-15, LV-16, & LV-20
	Garden City	M-1 & M-2
	Oakland County (City of Novi)	BG-1
	WTUA[1]	FE-19, FE-22, A, B & C
	WCAA	Pond 3 West to RVSDS
RVSDS Outlet Meters[2]	WC-S-1, WC-S-2 & WC-S-3	

1) Western Townships Utilities Authority (WTUA)

2) Meters owned by Wayne County and operated/maintained by GLWA

Table 2-2
Rouge Valley Sewage Disposal System
Rain Gages

Rain Gage	Operated By	Location
R-10	DUWA[1]	11111 Wayne Road, Romulus
R-11	Wayne County	14973 Northville Road, Northville Township[4] 650 Doheny Drive, Northville[4]
R-12	Wayne County	7651 Merriman Road, Westland
R-13	Wayne County	3301 Josephine Street, Wayne
R-14	DUWA[1]	Willow Run Airport, Van Buren Township
R-15	DUWA[1]	20195 Trolley, Taylor
R-18	DUWA[1]	130 4th Street, Belleville
R-27	Wayne County	2001 Inkster Road, Inkster
R-28	Wayne County	23800 Hines Drive, Dearborn Heights
R-29	Wayne County	15145 Beech Daly Road, Redford
Livonia RG01	Livonia	Schoolcraft Road, Livonia
Livonia RG02	Livonia	Whispering Willows Golf Course, Livonia
DTW	NOAA[2]	Wayne County Metro Airport, Romulus
Garden City RG01	Garden City	Moeller Park, Garden City
WTUA LR EQ Basin	WTUA	3501 Haggerty Road, Canton
WTUA MR EQ Basin	WTUA	40905 Joy Road, Plymouth
0831	Oakland County WRC[3]	19625 Middlesex Street, Southfield
0837	Oakland County WRC[3]	25515 Clara Lane, Southfield
0843	Oakland County WRC[3]	34189 12 Mile Road, Farmington Hills
0850	Oakland County WRC[3]	46351 West Road, Walled Lake

1) Downriver Utility Wastewater Authority (DUWA) transferred from Wayne County (effective September 27, 2018)
2) National Oceanic and Atmospheric Administration (NOAA)
3) Oakland County Water Resources Commissioner (WRC)
4) Rain gauge R-11 was removed from the Phoenix Road Yard on September 12, 2018 and installed at Northville's Department of Public Works Yard on November 16, 2018.

Section 3

Per-Capita Flow Rate at Key Locations

Table 3-1
Rouge Valley Sewage Disposal System
Average Per-Capita Flow Rate at Key Locations

Branch	Sewage Flow Meter	Year 2010 Residential Population	Total Developed Land (acres)	Monthly Average Incremental Flow Rate (cfs)												Annual Average Incremental Flow Rate	
				Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	(cfs)	(gallons / capita / day)
Middle Rouge at Inkster Road	[P-9] + [P-10] + [P-11]	223,281	38,468	42.3	61.4	59.2	64.2	70.4	42.6	33.3	38.1	44.7	51.7	57.0	49.5	51.1	148
Middle Rouge Outlet	[WC-S-2] + [WC-S-3] + [P-14]	308,765	46,337	57.5	87.5	80.8	91.4	103.5	59.0	45.7	53.0	64.3	72.3	79.7	68.9	71.8	150
Lower Rouge Outlet	[P-24] + [P-25] - [FE-19] - [WCAA]	96,019	20,858	16.8	26.6	24.3	27.2	29.6	15.7	12.1	16.1	19.8	21.4	24.5	20.1	21.1	142
RVSDS Outlet	[WC-S-1] + [WC-S-2] + [WC-S-3] - [FE-19] - [WCAA]	404,784	67,194	79.1	121.9	113.3	127.8	143.2	79.7	61.1	73.8	90.0	100.6	112.3	95.4	99.7	159

Table 3-2
Rouge Valley Sewage Disposal System
Average Per-Capita Dry Weather Flow Rate at Key Locations

Branch	Sewage Flow Meter	Year 2010 Residential Population	Total Developed Land (acres)	Monthly Average Incremental Dry Weather Flow Rate (cfs)												Annual Average Incremental Dry Weather Flow Rate	
				Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	(cfs)	(gallons / capita / day)
Middle Rouge at Inkster Road	[P-9] + [P-10] + [P-11]	223,281	38,468	39.9	43.1	52.3	54.4	53.9	41.9	32.9	35.1	32.8	43.7	52.2	47.3	44.1	128
Middle Rouge Outlet	[WC-S-2] + [WC-S-3] + [P-14]	308,765	46,337	53.3	57.6	69.5	73.9	74.6	57.3	44.9	47.4	44.6	59.4	71.8	65.4	60.0	126
Lower Rouge Outlet	[P-24] + [P-25] - [FE-19] - [WCAA]	96,019	20,858	15.1	16.8	19.5	21.4	20.2	15.0	11.8	13.0	12.2	16.3	20.9	18.5	16.7	112
RVSDS Outlet	[WC-S-1] + [WC-S-2] + [WC-S-3] - [FE-19] - [WCAA]	404,784	67,194	72.7	79.4	96.0	102.8	101.6	77.0	60.0	64.2	60.2	81.1	100.0	90.2	82.1	131

Section 4

Customer Flow Summaries

Table 4-1
Rouge Valley Sewage Disposal System
Monthly Average Flow Rate by Customer
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math[1]	Year 2010 Residential Population	Total Developed Land (acres)	Maximum Allowable Flow Limit[2] (cfs)	Estimated Monthly Average Customer Flow Rate (cfs)												Estimated Annual Average Flow Rate		Estimated Maximum Monthly Average Flow Rate (cfs)
					Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	(cfs)	(gallons / capita / day)	
Oakland County (Novi)	[BG-1]	43,217	12,473	20.48	7.16	7.81	7.59	7.76	8.48	6.81	6.29	6.68	6.77	7.23	7.57	7.30	*7.28*	*109*	*8.48*
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	9,022	968	4.80	3.65	4.65	4.39	3.83	4.75	3.58	3.05	3.26	3.30	4.07	3.89	3.80	*3.85*	*276*	*4.75*
Northville City	[P-1] - [BG-1]	5,765	871	7.61	1.28	1.45	1.73	1.96	1.82	1.68	1.46	1.36	1.51	1.42	1.55	1.44	*1.56*	*174*	*1.96*
Garden City	99.4%[M-1] + 93.1%[M-2]	27,647	2,796	24.40	5.50	9.97	8.10	9.72	10.18	4.96	3.56	4.73	7.49	7.91	9.50	6.38	*7.31*	*171*	*10.18*
Livonia	[P-7] - [P-26] + [P-12] + 51.5%{[P-8] - [FE-22]} + 4.4%[P-13] + [LV-14] + 99.7%[LV-15] + [LV-16]	96,949	16,928	106.52	21.87	32.52	32.94	35.28	40.66	22.48	17.22	18.78	21.74	26.61	29.90	25.99	*27.12*	*181*	*40.66*
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	84,123	9,274	80.04	15.26	22.14	21.08	23.09	25.21	15.74	11.67	14.21	17.38	19.81	21.64	17.88	*18.72*	*144*	*25.21*
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	47,040	4,703	52.89	8.64	12.64	13.24	15.13	16.87	8.97	6.44	7.53	8.39	11.02	12.92	11.53	*11.09*	*152*	*16.87*
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	38,721	3,156	65.47	6.49	13.37	8.20	11.96	16.02	7.31	5.93	7.31	11.30	9.49	9.58	7.71	*9.52*	*159*	*16.02*
Van Buren Twp	[P-15]	6,938	4,471	5.00	1.18	1.52	1.59	1.55	1.87	1.26	1.00	1.15	1.25	1.29	1.66	1.51	*1.40*	*130*	*1.87*
Romulus	38.0%{[P-17] - [P-15]}	2,362	1,562	3.60	0.31	0.43	0.44	0.54	0.37	0.29	0.18	0.22	0.22	0.27	0.26	0.23	*0.31*	*85*	*0.54*
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	17,597	2,517	27.92	4.48	7.47	6.79	7.60	7.72	4.13	3.39	4.69	5.84	6.64	7.17	5.52	*5.94*	*218*	*7.72*
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	25,242	2,578	26.66	3.66	5.83	5.26	5.66	6.20	2.89	2.51	3.29	4.04	3.75	4.71	4.26	*4.33*	*111*	*6.20*
WCAA	[WCAA]	--	4,881	1.50	0.28	0.70	1.73[3]	1.07	0.56	0.00	0.00	0.00	0.00	0.00	0.67	1.17	*0.52*	--	*1.73[3]*
Row A) Sum of Customer Flow Rates (cfs):					**79.78**	**120.51**	**113.08**	**125.16**	**140.71**	**80.09**	**62.69**	**73.21**	**89.23**	**99.50**	**111.02**	**94.73**	**98.94**	**--**	140.71
Row B) Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3] (cfs):					**79.43**	**122.63**	**115.08**	**128.87**	**143.74**	**79.75**	**61.15**	**73.82**	**90.00**	**100.63**	**112.95**	**96.61**	**100.18**	**--**	143.74

Notes:
1. Sewage flow meter math for some customers based on 2010 Census populations.
2. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
3. Wayne County authorized a temporary increase in the dry weather MAFL to 1.5 MGD (2.32 cfs) for WCAA due to emergency circumstances.

Table 4-2
Rouge Valley Sewage Disposal System
Monthly Average Dry Weather Flow Rate by Customer
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math[1]	Year 2010 Residential Population	Total Developed Land (acres)	Maximum Allowable Flow Limit[2] (cfs)	Estimated Monthly Average Customer Dry Weather Flow Rate (cfs)												Estimated Annual Average Dry Weather Flow Rate		Estimated Maximum Monthly Average Dry Weather Flow Rate (cfs)
					Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	(cfs)	(gallons / capita / day)	
Oakland County (Novi)	[BG-1]	43,217	12,473	20.48	6.94	6.85	7.34	7.22	7.33	6.79	6.26	6.52	6.41	6.89	7.38	7.17	*6.92*	*104*	*7.38*
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	9,022	968	4.80	3.54	3.83	3.97	3.47	3.57	3.57	3.05	3.11	2.94	3.85	3.78	3.77	*3.54*	*253*	*3.97*
Northville City	[P-1] - [BG-1]	5,765	871	7.61	1.22	1.12	1.68	1.77	1.87	1.69	1.45	1.32	1.49	1.36	1.50	1.42	*1.49*	*167*	*1.87*
Garden City	99.4%[M-1] + 93.1%[M-2]	27,647	2,796	24.40	4.70	5.33	6.29	6.91	6.28	4.61	3.44	3.71	3.71	5.09	7.95	5.78	*5.31*	*124*	*7.95*
Livonia	[P-7] - [P-26] + [P-12] + 51.5%{[P-8] - [FE-22]} + 4.4%[P-13] + [LV-14] + 99.7%[LV-15] + [LV-16]	96,949	16,928	106.52	20.74	22.93	28.93	30.58	30.72	22.16	17.02	17.57	16.87	22.85	27.75	25.04	*23.59*	*157*	*30.72*
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	84,123	9,274	80.04	14.62	15.87	18.64	19.79	19.81	15.49	11.55	12.85	12.46	16.73	19.79	17.28	*16.24*	*125*	*19.81*
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	47,040	4,703	52.89	7.72	8.13	11.55	12.62	12.46	8.63	6.25	6.38	5.86	9.19	11.75	10.92	*9.29*	*128*	*12.62*
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	38,721	3,156	65.47	5.67	6.33	5.37	6.66	8.03	6.69	5.70	5.82	5.81	6.18	7.66	7.01	*6.41*	*107*	*8.03*
Van Buren Twp	[P-15]	6,938	4,471	5.00	1.12	1.17	1.43	1.35	1.51	1.24	1.02	1.11	1.11	1.17	1.55	1.46	*1.27*	*118*	*1.55*
Romulus	38.0%{[P-17] - [P-15]}	2,362	1,562	3.60	0.30	0.39	0.41	0.50	0.31	0.29	0.18	0.20	0.17	0.26	0.23	0.22	*0.29*	*79*	*0.50*
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	17,597	2,517	27.92	4.11	4.77	5.74	6.26	5.60	4.04	3.36	4.04	3.99	5.57	6.27	5.20	*4.91*	*180*	*6.27*
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	25,242	2,578	26.66	2.95	3.17	3.47	3.74	3.12	2.49	2.34	2.06	1.59	1.91	3.52	3.55	*2.82*	*72*	*3.74*
WCAA	[WCAA]	--	4,881	1.50	0.33	1.06	2.41[3]	1.51	1.14	0.00	0.00	0.00	0.00	0.00	0.99	1.41	*0.74*	-	*2.41[3]*
Row A) Sum of Customer Flow Rates (cfs):					**73.95**	**80.94**	**97.21**	**102.39**	**101.75**	**77.68**	**61.61**	**64.68**	**62.39**	**81.06**	**100.11**	**90.25**	**82.82**	**-**	102.39
Row B) Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3] (cfs):					**73.04**	**80.42**	**98.40**	**104.28**	**102.79**	**77.03**	**59.97**	**64.24**	**60.24**	**81.13**	**100.98**	**91.66**	**82.84**	**-**	104.28

Notes:
1. Sewage flow meter math for some customers based on 2010 Census populations.
2. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
3. Wayne County authorized a temporary increase in the dry weather MAFL to 1.5 MGD (2.32 cfs) for WCAA due to emergency circumstances.

Section 5

Maximum Hourly Flow Rates for Significant Storm Events by Customer

Table 5-1
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 1 2/19-21/2018 2.25 in		
			Estimated Monthly Average Dry Weather Flow Rate for February 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.85	17.87	2.61
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.83	15.19	3.96
Northville City	[P-1] - [BG-1]	7.61	1.12	4.57	4.07
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	5.33	60.81	11.42
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	22.93	87.32	3.81
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	15.87	59.09	3.72
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	8.13	35.12	4.32
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.33	74.64	11.80
Van Buren Twp	[P-15]	5.00	1.17	4.09	3.49
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.39	1.45	3.73
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.77	28.95	6.07
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	3.17	21.96	6.93

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-2
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 2 3/1-2/2018 1.22 in		
			Estimated Monthly Average Dry Weather Flow Rate for March 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	7.34	10.55	1.44
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.97	8.32	2.09
Northville City	[P-1] - [BG-1]	7.61	1.68	3.40	2.03
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.29	24.11	3.83
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	28.93	60.74	2.10
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	18.64	38.33	2.06
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	11.55	26.07	2.26
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.37	42.96	8.00
Van Buren Twp	[P-15]	5.00	1.43	3.27	2.28
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.41	1.19	2.92
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.74	14.65	2.55
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	3.47	23.00	6.63

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-3
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 3 4/14-16/2018 2.30 in		
			Estimated Monthly Average Dry Weather Flow Rate for April 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	7.22	18.97	2.63
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.47	9.87	2.84
Northville City	[P-1] - [BG-1]	7.61	1.77	5.27	2.97
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.91	48.32	6.99
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	30.58	73.88	2.42
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	19.79	55.35	2.80
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	12.62	31.16	2.47
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.66	91.41	13.72
Van Buren Twp	[P-15]	5.00	1.35	3.59	2.66
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.50	1.68	3.39
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	6.26	22.58	3.61
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	3.74	22.31	5.97

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-4
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 4 5/2-4/2018 1.24 in		
			Estimated Monthly Average Dry Weather Flow Rate for May 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	7.33	10.43	1.42
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.57	5.75	1.61
Northville City	[P-1] - [BG-1]	7.61	1.87	3.21	1.72
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.28	17.99	2.86
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	30.72	44.86	1.46
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	19.81	30.94	1.56
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	12.46	24.24	1.95
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	8.03	41.46	5.16
Van Buren Twp	[P-15]	5.00	1.51	2.50	1.66
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.31	1.22	3.94
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.60	13.26	2.37
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	3.12	23.65	7.57

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-5
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 5 5/11-12/2018 2.21 in		
			Estimated Monthly Average Dry Weather Flow Rate for May 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	7.33	21.91	2.99
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.57	18.97	5.32
Northville City	[P-1] - [BG-1]	7.61	1.87	6.87	3.68
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.28	39.64	6.31
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	30.72	107.14	3.49
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	19.81	48.50	2.45
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	12.46	36.87	2.96
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	8.03	85.94	10.70
Van Buren Twp	[P-15]	5.00	1.51	3.64	2.41
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.31	1.00	3.23
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.60	19.62	3.50
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	3.12	21.02	6.73

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-6
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 6 7/31/2018 - 8/1/2018 2.15 in		
			Estimated Monthly Average Dry Weather Flow Rate for July 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.26	13.09	2.61
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.05	8.57	2.81
Northville City	[P-1] - [BG-1]	7.61	1.45	4.75	3.26
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.44	51.75	15.04
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	17.02	54.58	3.21
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	11.55	43.49	3.77
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	6.25	32.98	5.28
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.70	100.29	17.60
Van Buren Twp	[P-15]	5.00	1.02	1.74	1.70
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.18	1.20	6.50
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	3.36	27.85	8.30
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	2.34	25.10	10.73

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-7
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 7 9/20/2018 1.76 in		
			Estimated Monthly Average Dry Weather Flow Rate for September 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.41	19.51	2.61
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	2.94	9.61	3.28
Northville City	[P-1] - [BG-1]	7.61	1.49	5.53	3.71
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.71	59.58	16.05
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	16.87	58.82	3.49
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	12.46	48.13	3.86
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	5.86	30.72	5.25
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.81	86.97	14.98
Van Buren Twp	[P-15]	5.00	1.11	1.87	1.69
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.17	0.62	3.68
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	3.99	18.84	4.73
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	1.59	19.55	12.32

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-8
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 8 9/24-26/2018 2.08 in		
			Estimated Monthly Average Dry Weather Flow Rate for September 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.41	9.13	2.61
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	2.94	5.20	1.77
Northville City	[P-1] - [BG-1]	7.61	1.49	2.91	1.95
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.71	61.12	16.47
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	16.87	63.38	3.76
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	12.46	58.09	4.66
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	5.86	28.21	4.82
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.81	95.95	16.53
Van Buren Twp	[P-15]	5.00	1.11	4.08	3.69
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.17	1.48	8.76
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	3.99	26.97	6.77
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	1.59	21.44	13.51

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-9
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 9 10/6-7/2018 1.35 in		
			Estimated Monthly Average Dry Weather Flow Rate for October 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.89	12.72	2.61
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.85	6.80	1.76
Northville City	[P-1] - [BG-1]	7.61	1.36	3.06	2.26
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	5.09	47.99	9.43
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	22.85	53.14	2.33
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	16.73	47.83	2.86
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	9.19	30.04	3.27
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.18	85.66	13.87
Van Buren Twp	[P-15]	5.00	1.17	3.54	3.02
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.26	0.93	3.57
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.57	17.71	3.18
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	1.91	19.75	10.32

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-10
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2018
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit[1] (cfs)	Event 10 10/31/2018 - 11/2/2018 1.81 in		
			Estimated Monthly Average Dry Weather Flow Rate for October 2018 (cfs)	Estimated Maximum Hourly Flow Rate[2] (cfs)	Peaking Factor[3]
Oakland County (Novi)	[BG-1]	20.48	6.89	11.53	1.44
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	4.80	3.85	5.73	1.49
Northville City	[P-1] - [BG-1]	7.61	1.36	3.54	2.61
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	5.09	28.76	5.65
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	22.85	54.43	2.38
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} +0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	16.73	38.46	2.30
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	9.19	27.56	3.00
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.18	52.90	8.57
Van Buren Twp	[P-15]	5.00	1.17	3.39	2.89
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.26	1.02	3.89
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.57	15.59	2.80
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [FE-19] - [WCAA]}	26.66	1.91	17.70	9.24

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Section 6

Summary of Rainfall Events

Table 6-1
Rouge Valley Sewage Disposal System
Summary of Rainfall Events

Period: 1/1/2018 through 12/31/2018

Significant Event No.[1]	Start Date/Time	Stop Date/Time	Duration (hours)	Preceding Week Rainfall (inches)	Event Precipitation Depth (inches)[2]				Coefficient of Variation[4]
					Minimum	Average[3]	Maximum	Std. Dev	
1	2/19/18	2/21/18	54	0.09	1.93	2.25	2.63	0.18	8%
2	3/1/18	3/2/18	20	0.19	0.65	1.22	1.75	0.31	25%
3	4/14/18	4/16/18	48	0.04	1.91	2.30	2.57	0.21	9%
4	5/2/18	5/4/18	31	0.11	0.89	1.24	1.86	0.22	18%
5	5/11/18	5/12/18	32	0.31	1.42	2.21	3.22	0.56	25%
6	7/31/18	8/1/18	14	0.21	1.24	2.15	3.17	0.58	27%
7	9/20/18	9/20/18	9	0.00	0.65	1.76	3.23	0.77	44%
8	9/24/18	9/26/18	36	1.76	0.49	2.08	3.39	0.94	45%
9	10/6/18	10/7/18	24	1.03	0.65	1.35	1.91	0.39	29%
10	10/31/18	11/2/18	54	0.31	0.69	1.81	2.44	0.42	23%

Notes:

1. Significant storm events are defined as those with at least 0.5 inches of rainfall occurring on a single day with an event total of at least 1.0 inch of rainfall. Significant storm events are separated by at least 2 consecutive days without precipitation over 0.1 inches. This storm event definition is based on the arithmetic mean of the rainfall recorded by all rain gages used in the analysis for that storm.

2. The values presented in Table 6-1 are a summary of RVSDS rain gages. Individual rain gage data are summarized in Tables 8-1 through 8-10.

3. The average precipitation value is an arithmetic average of the collection of point gages listed in Tables 8-1 through 8-10.

4. The coefficient of variation (CV) is the ratio of the standard deviation to the average. It provides a normalized assessment of the degree of spatial variability for a given event. This allows comparisons to be made between events regarding their uniformity over the service area independent of the magnitude of each event. A low CV means the storm event's rainfall was evenly distributed over the district, a high CV means the storm event had pockets of intense rainfall within the district.

Section 7

Peak Hydraulic Gradeline Summary

Table 7-1
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 1 2/19-21/2018 2.25 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	17.87	2/20/18 4:50	-	-	-	-
	P-1	NAI	48	740.82	716.31	20.76	2/20/18 9:45	718.06	1.75	○	2/20/18 6:25
	P-3	MRIR	36	681.37	652.48	21.50	2/20/18 18:40	654.23	1.75	○	2/20/18 19:10
	P-26	PWI	30	649.24	647.86	4.02	2/20/18 7:05	648.60	0.74	○	2/20/18 19:20
	P-7	PWI	48	649.09	625.23	4.72	2/20/18 21:10	626.91	1.68	○	2/20/18 21:35
	LV-16	CS	48	-	627.38	8.25	2/21/18 9:50	628.86	1.48	○	2/21/18 11:05
	FE-22	RVI	48	685.04	644.88	10.92	2/20/18 16:55	646.23	1.35	○	2/20/18 17:25
	A	CS	21	-	-	2.88	2/20/18 3:45	-	0.92	○	2/20/18 4:30
	B	CS	36	-	-	6.90	2/20/18 3:55	-	1.02	○	2/20/18 4:45
	C	CS	30	-	-	20.28	2/20/18 4:10	-	1.37	○	2/20/18 5:00
	P-8	RVI	48	645.40	621.80	14.23	2/20/18 18:10	623.29	1.49	○	2/20/18 18:30
	WE-14	CS	42	-	613.48	17.27	2/21/18 8:20	621.19	7.71	⊗	2/20/18 18:50
	LV-15	CS	60	636.29	617.03	13.71	2/21/18 3:10	624.10	7.07	⦿	2/20/18 21:20
	M-22 MP#1	CS	42	630.49	614.41	-	-	623.14	8.73	⊘	2/20/18 15:00
	M-22 MP#2	CS	42	630.49	614.41	-	-	624.81	10.40	⦿	2/21/18 4:55
	M-2	CS	27	636.70	612.39	22.92	2/20/18 6:25	619.75	7.36	⦿	2/20/18 19:10
	M-1	CS	72	630.59	607.59	49.98	2/20/18 4:20	617.77	10.18	⦿	2/21/18 9:20
	LV-14	CS	60	612.02	605.57	15.29	2/20/18 4:45	610.39	4.82	○	2/20/18 19:10
	P-28	RVI	54	629.02	607.92	8.28	2/21/18 10:15	615.89	7.97	⦿	2/20/18 13:05
	P-29	CS	42	-	-	9.96	2/20/18 7:40	-	4.35	●	2/20/18 17:50
	LV-20	CS	54	-	-	-	-	-	0.25	○	2/21/18 16:55
	LV-BASIN	RVI	54	632.00	602.01	28.62	2/22/18 1:50	613.76	11.75	⦿	2/20/18 18:10
	LV-4	CS	30	652.59	638.51	10.96	2/21/18 23:55	640.90	2.39	○	2/20/18 5:10
	LV-11	CS	42	-	-	18.21	2/21/18 12:55	-	6.83	⊗	2/20/18 18:25
	P-12	RVI	60	613.41	597.67	57.43	2/21/18 3:05	606.83	9.16	⦿	2/20/18 18:25
	P-9	MRIR	42	610.36	597.01	28.42	2/20/18 22:55	605.82	8.81	⦿	2/20/18 17:45
	P-10	RVI	66	607.65	595.62	86.56	2/21/18 13:20	604.97	9.35	⦿	2/20/18 17:30
	P-11	MRPIE	48	607.91	596.68	40.98	2/20/18 20:45	605.85	9.17	⦿	2/20/18 17:55
	P-13	MRPIE	54	613.22	586.85	36.13	2/20/18 7:50	594.46	7.61	⦿	2/21/18 10:45
	P-35	MRIR	54	597.62	584.15	52.29	2/20/18 6:35	592.41	8.26	⦿	2/21/18 11:40
	P-34	RVI	62	595.60	582.30	72.05	2/20/18 8:15	589.95	7.65	⦿	2/20/18 15:35
	P-33	MRPIE	48	597.01	585.22	41.38	2/20/18 16:10	589.11	3.89	○	2/22/18 1:40
	P-32	MRIR	66	597.03	578.79	56.85	2/20/18 17:30	586.94	8.15	⦿	2/20/18 14:35
	P-31	RVI	78	599.00	578.71	118.44	2/20/18 17:10	587.22	8.51	⦿	2/20/18 14:35
	P-30	MRPIE	60	593.00	580.29	59.74	2/20/18 16:10	587.28	6.99	⦿	2/20/18 16:50
	P-14	RVI	78	604.91	570.93	94.74	2/22/18 3:50	582.41	11.48	⦿	2/20/18 14:30
Lower Rouge	P-15	WRVI	24	667.57	651.67	4.09	2/20/18 5:35	653.67	2.00	⦿	2/20/18 6:45
	P-17	LRIR	30	641.21	632.39	7.20	2/20/18 9:15	633.70	1.31	○	2/20/18 17:10
	FE-19	CS	-	-	-	0.16	2/20/18 21:05	-	-	-	-
	WE-25	CS	27	-	-	11.36	2/21/18 12:10	-	2.58	⊗	2/21/18 10:55
	P-19	RVI	48	630.34	621.54	34.86	2/20/18 16:35	624.64	3.10	○	2/20/18 22:05
	WE-28	CS	30	-	-	9.76	2/20/18 4:35	-	1.56	○	2/20/18 4:50
	P-21	RVI	54	620.17	608.14	50.85	2/20/18 5:40	610.96	2.82	○	2/20/18 5:45
	P-25	RVI	60	598.36	588.06	55.86	2/21/18 2:40	595.75	7.69	⦿	2/21/18 10:05
	P-20	WI	48	630.66	619.72	14.37	2/20/18 3:40	623.47	3.75	○	2/20/18 5:10
	P-24	RVI	36	594.24	584.52	22.14	2/20/18 4:30	591.35	6.83	⦿	2/20/18 14:35
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	173.41	2/22/18 3:30	576.91	22.01	⦿	2/20/18 14:15
	WC-S-1	RVI	66	586.88	500.94	182.46	2/22/18 3:15	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	190.85	2/20/18 18:50	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⊘
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-2
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 2 3/1-2/2018 1.22 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	10.55	3/1/18 21:15	-	-	-	-
	P-1	NAI	48	740.82	716.31	12.70	3/2/18 21:20	717.57	1.26	○	3/2/18 19:25
	P-3	MRIR	36	681.37	652.48	16.66	3/2/18 0:05	653.96	1.48	○	3/2/18 1:05
	P-26	PWI	30	649.24	647.86	1.34	3/2/18 21:20	648.28	0.42	○	3/2/18 21:55
	P-7	PWI	48	649.09	625.23	2.98	3/2/18 21:45	626.55	1.32	○	3/2/18 18:40
	LV-16	CS	48	-	627.38	6.29	3/1/18 21:00	628.50	1.12	○	3/1/18 21:35
	FE-22	RVI	48	685.04	644.88	2.11	3/2/18 18:50	645.50	0.62	○	3/2/18 18:45
	A	CS	21	-	-	1.57	3/1/18 12:40	-	0.84	○	3/1/18 13:00
	B	CS	36	-	-	3.67	3/1/18 12:40	-	0.75	○	3/1/18 13:20
	C	CS	30	-	-	11.65	3/1/18 12:55	-	1.03	○	3/1/18 13:30
	P-8	RVI	48	645.40	621.80	4.24	3/2/18 19:25	622.60	0.80	○	3/2/18 21:55
	WE-14	CS	42	-	613.48	10.59	3/2/18 19:10	615.33	1.85	○	3/2/18 19:05
	LV-15	CS	60	636.29	617.03	9.45	3/1/18 12:25	618.96	1.93	○	3/1/18 13:50
	M-22 MP#1	CS	42	630.49	614.41	-	-	618.94	4.53	◉	3/1/18 13:45
	M-22 MP#2	CS	42	630.49	614.41	-	-	621.52	7.11	◉	3/2/18 0:10
	M-2	CS	27	636.70	612.39	11.55	3/2/18 18:15	614.16	1.77	○	3/2/18 19:10
	M-1	CS	72	630.59	607.59	17.32	3/1/18 12:35	612.02	4.43	○	3/1/18 14:30
	LV-14	CS	60	612.02	605.57	7.00	3/1/18 12:55	606.61	1.04	○	3/1/18 13:25
	P-28	RVI	54	629.02	607.92	6.09	3/2/18 19:25	610.05	2.13	○	3/2/18 19:55
	P-29	CS	42	-	-	7.98	3/2/18 20:30	-	2.22	○	3/2/18 20:00
	LV-20	CS	54	-	-	-	-	-	0.20	○	3/2/18 15:50
	LV-BASIN	RVI	54	632.00	602.01	23.52	3/2/18 19:50	606.76	4.75	◉	3/2/18 20:20
	LV-4	CS	30	652.59	638.51	7.98	3/2/18 18:10	640.52	2.01	○	3/1/18 13:35
	LV-11	CS	42	-	-	11.59	3/1/18 15:25	-	1.27	○	3/1/18 16:05
	P-12	RVI	60	613.41	597.67	37.24	3/2/18 19:40	600.52	2.85	○	3/2/18 19:55
	P-9	MRIR	42	610.36	597.01	20.52	3/2/18 19:15	599.62	2.61	○	3/2/18 19:15
	P-10	RVI	66	607.65	595.62	57.40	3/1/18 16:10	598.61	2.99	○	3/1/18 16:20
	P-11	MRPIE	48	607.91	596.68	32.32	3/1/18 14:00	599.74	3.06	○	3/1/18 14:25
	P-13	MRPIE	54	613.22	586.85	27.01	3/1/18 15:00	589.80	2.95	○	3/1/18 15:15
	P-35	MRIR	54	597.62	584.15	39.57	3/1/18 15:00	587.62	3.47	○	3/2/18 19:35
	P-34	RVI	62	595.60	582.30	45.65	3/2/18 20:50	586.31	4.01	○	3/1/18 15:15
	P-33	MRPIE	48	597.01	585.22	22.40	3/2/18 2:35	587.67	2.45	○	3/1/18 14:45
	P-32	MRIR	66	597.03	578.79	45.28	3/2/18 19:00	582.76	3.97	○	3/1/18 15:55
	P-31	RVI	78	599.00	578.71	75.02	3/2/18 18:25	583.14	4.43	○	3/1/18 15:50
	P-30	MRPIE	60	593.00	580.29	39.93	3/2/18 18:25	583.70	3.41	○	3/1/18 15:45
	P-14	RVI	78	604.91	570.93	86.65	3/2/18 19:20	575.08	4.15	○	3/2/18 19:25
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.27	3/1/18 14:35	653.02	1.35	○	3/1/18 15:00
	P-17	LRIR	30	641.21	632.39	5.52	3/1/18 18:00	633.50	1.11	○	3/1/18 18:00
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	7.88	3/2/18 17:35	-	1.36	○	3/2/18 18:05
	P-19	RVI	48	630.34	621.54	17.08	3/2/18 15:55	623.47	1.93	○	3/2/18 18:55
	WE-28	CS	30	-	-	5.61	3/1/18 12:50	-	1.08	○	3/1/18 13:00
	P-21	RVI	54	620.17	608.14	25.31	3/2/18 19:05	610.00	1.86	○	3/2/18 16:10
	P-25	RVI	60	598.36	588.06	46.70	3/2/18 11:35	590.62	2.56	○	3/2/18 12:00
	P-20	WI	48	630.66	619.72	12.11	3/1/18 13:15	622.28	2.56	○	3/1/18 13:40
	P-24	RVI	36	594.24	584.52	17.06	3/1/18 14:15	586.07	1.55	○	3/2/18 16:45
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	144.55	3/2/18 23:15	564.22	9.32	◉	3/1/18 19:20
	WC-S-1	RVI	66	586.88	500.94	162.94	3/2/18 21:40	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	85.64	3/1/2018 16:30	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
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MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⊘
Surcharging sewer, grade elevation known:	◉
Above grade:	●
Data Not Available:	-

Table 7-3
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 3 4/14-16/2018 2.30 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	18.97	4/15/18 18:25	-	-	-	-
	P-1	NAI	48	740.82	716.31	23.53	4/15/18 19:20	718.21	1.90	○	4/15/18 19:50
	P-3	MRIR	36	681.37	652.48	23.74	4/15/18 20:35	654.33	1.85	○	4/15/18 21:05
	P-26	PWI	30	649.24	647.86	4.58	4/15/18 20:55	648.66	0.80	○	4/15/18 21:15
	P-7	PWI	48	649.09	625.23	5.17	4/15/18 19:40	627.00	1.77	○	4/15/18 22:40
	LV-16	CS	48	-	627.38	7.99	4/15/18 17:10	628.73	1.35	○	4/15/18 18:10
	FE-22	RVI	48	685.04	644.88	3.11	4/16/18 17:40	645.59	0.71	○	4/15/18 21:00
	A	CS	21	-	-	1.29	4/15/18 11:20	-	1.08	○	4/15/18 14:55
	B	CS	36	-	-	6.14	4/15/18 14:30	-	0.98	○	4/15/18 15:05
	C	CS	30	-	-	12.49	4/15/18 14:40	-	1.26	○	4/15/18 15:00
	P-8	RVI	48	645.40	621.80	5.74	4/16/18 10:45	622.73	0.93	○	4/15/18 21:45
	WE-14	CS	42	-	613.48	14.34	4/15/18 19:25	621.27	7.79	⊗	4/15/18 19:35
	LV-15	CS	60	636.29	617.03	12.51	4/16/18 5:35	623.65	6.62	⦿	4/16/18 1:15
	M-22 MP#1	CS	42	630.49	614.41	-	-	622.99	8.58	⦿	4/15/18 17:30
	M-22 MP#2	CS	42	630.49	614.41	-	-	623.96	9.55	⦿	4/16/18 4:25
	M-2	CS	27	636.70	612.39	18.44	4/15/18 16:05	620.24	7.85	⦿	4/15/18 19:40
	M-1	CS	72	630.59	607.59	28.69	4/15/18 18:00	617.33	9.74	⦿	4/15/18 19:55
	LV-14	CS	60	612.02	605.57	11.10	4/15/18 19:25	610.87	5.30	⦿	4/15/18 20:05
	P-28	RVI	54	629.02	607.92	9.71	4/15/18 19:25	616.33	8.41	⦿	4/15/18 20:05
	P-29	CS	42	-	-	11.12	4/15/18 14:00	-	4.48	⊗	4/15/18 19:40
	LV-20	CS	54	-	-	-	-	-	0.30	○	4/15/18 17:40
	LV-BASIN	RVI	54	632.00	602.01	29.66	4/17/18 11:15	615.60	13.59	⦿	4/15/18 20:25
	LV-4	CS	30	652.59	638.51	8.75	4/15/18 15:30	641.02	2.51	⦿	4/15/18 18:45
	LV-11	CS	42	-	-	23.53	4/15/18 20:40	-	8.83	⊗	4/15/18 18:40
	P-12	RVI	60	613.41	597.67	46.12	4/16/18 23:35	609.23	11.56	⦿	4/15/18 19:10
	P-9	MRIR	42	610.36	597.01	24.63	4/15/18 20:50	608.54	11.53	⦿	4/15/18 18:55
	P-10	RVI	66	607.65	595.62	74.69	4/15/18 21:40	607.52	11.90	⦿	4/15/18 23:00
	P-11	MRPIE	48	607.91	596.68	36.50	4/15/18 21:30	608.52	11.84	●	4/15/18 19:00
	P-13	MRPIE	54	613.22	586.85	32.05	4/15/18 18:55	598.39	11.54	⦿	4/15/18 19:05
	P-35	MRIR	54	597.62	584.15	48.32	4/15/18 19:20	595.06	10.91	⦿	4/16/18 16:15
	P-34	RVI	62	595.60	582.30	59.67	4/15/18 15:55	592.67	10.37	⦿	4/15/18 23:20
	P-33	MRPIE	48	597.01	585.22	39.30	4/15/18 20:00	594.68	9.46	⦿	4/16/18 2:25
	P-32	MRIR	66	597.03	578.79	51.33	4/15/18 18:40	590.99	12.20	⦿	4/15/18 18:20
	P-31	RVI	78	599.00	578.71	116.38	4/15/18 19:30	592.13	13.42	⦿	4/15/18 18:25
	P-30	MRPIE	60	593.00	580.29	56.92	4/15/18 20:00	592.72	12.43	⦿	4/15/18 19:10
	P-14	RVI	78	604.91	570.93	115.02	4/17/18 0:45	585.70	14.77	⦿	4/15/18 18:05
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.59	4/15/18 15:50	653.18	1.51	○	4/15/18 16:35
	P-17	LRIR	30	641.21	632.39	7.50	4/15/18 18:45	633.71	1.32	○	4/15/18 19:20
	FE-19	CS	-	-	-	0.03	4/16/18 13:05	-	-	-	-
	WE-25	CS	27	-	-	11.83	4/15/18 17:10	-	2.93	⊗	4/15/18 20:40
	P-19	RVI	48	630.34	621.54	38.01	4/15/18 22:20	624.46	2.92	○	4/15/18 22:50
	WE-28	CS	30	-	-	9.49	4/15/18 20:55	-	1.48	○	4/15/18 20:00
	P-21	RVI	54	620.17	608.14	43.43	4/15/18 23:00	610.65	2.51	○	4/15/18 23:35
	P-25	RVI	60	598.36	588.06	61.71	4/16/18 0:00	597.45	9.39	⦿	4/15/18 19:10
	P-20	WI	48	630.66	619.72	12.07	4/15/18 10:15	622.62	2.90	○	4/15/18 19:00
	P-24	RVI	36	594.24	584.52	20.46	4/15/18 11:05	594.03	9.51	⦿	4/15/18 18:50
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	190.70	4/16/18 13:30	576.23	21.33	⦿	4/15/18 15:00
	WC-S-1	RVI	66	586.88	500.94	193.28	4/17/18 0:30	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	165.63	4/15/18 21:20	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key

Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-4
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 4 5/2-4/2018 1.24 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	10.43	5/3/18 10:25	-	-	-	-
	P-1	NAI	48	740.82	716.31	12.29	5/3/18 11:40	717.47	1.16	○	5/2/18 22:55
	P-3	MRIR	36	681.37	652.48	14.69	5/4/18 10:05	653.88	1.40	○	5/4/18 11:10
	P-26	PWI	30	649.24	647.86	1.14	5/4/18 11:00	648.24	0.38	○	5/4/18 11:50
	P-7	PWI	48	649.09	625.23	2.51	5/4/18 12:05	626.47	1.24	○	5/4/18 13:15
	LV-16	CS	48	-	627.38	4.96	5/4/18 6:25	628.36	0.98	○	5/4/18 0:55
	FE-22	RVI	48	685.04	644.88	1.55	5/3/18 17:00	645.44	0.56	○	5/3/18 21:10
	A	CS	21	-	-	0.95	5/3/18 9:05	-	0.82	○	5/3/18 10:05
	B	CS	36	-	-	3.24	5/3/18 8:00	-	0.73	○	5/3/18 8:45
	C	CS	30	-	-	6.96	5/3/18 8:20	-	0.92	○	5/3/18 9:00
	P-8	RVI	48	645.40	621.80	3.74	5/4/18 7:35	622.57	0.77	○	5/4/18 8:00
	WE-14	CS	42	-	613.48	8.24	5/3/18 8:40	615.07	1.59	○	5/4/18 9:15
	LV-15	CS	60	636.29	617.03	7.27	5/3/18 8:35	618.68	1.65	○	5/3/18 9:05
	M-22 MP#1	CS	42	630.49	614.41	-	-	618.24	3.83	◉	5/3/18 10:45
	M-22 MP#2	CS	42	630.49	614.41	-	-	620.78	6.37	◉	5/4/18 9:10
	M-2	CS	27	636.70	612.39	8.23	5/3/18 8:55	613.77	1.38	○	5/2/18 23:35
	M-1	CS	72	630.59	607.59	10.35	5/2/18 23:15	609.87	2.28	○	5/3/18 0:10
	LV-14	CS	60	612.02	605.57	4.59	5/3/18 8:55	606.43	0.86	○	5/3/18 9:15
	P-28	RVI	54	629.02	607.92	4.84	5/3/18 9:40	609.58	1.66	○	5/4/18 9:25
	P-29	CS	42	-	-	6.42	5/3/18 17:50	-	1.80	○	5/4/18 9:25
	LV-20	CS	54	-	-	-	-	-	0.21	○	5/3/18 7:20
	LV-BASIN	RVI	54	632.00	602.01	19.21	5/4/18 8:20	605.76	3.75	○	5/3/18 11:15
	LV-4	CS	30	652.59	638.51	6.80	5/3/18 8:40	640.34	1.83	○	5/3/18 9:00
	LV-11	CS	42	-	-	8.30	5/3/18 11:50	-	1.07	○	5/3/18 12:10
	P-12	RVI	60	613.41	597.67	29.12	5/3/18 12:30	600.12	2.45	○	5/3/18 12:40
	P-9	MRIR	42	610.36	597.01	13.14	5/3/18 11:50	598.90	1.89	○	5/3/18 12:05
	P-10	RVI	66	607.65	595.62	44.18	5/3/18 10:45	598.15	2.53	○	5/3/18 12:25
	P-11	MRPIE	48	607.91	596.68	24.99	5/3/18 10:05	599.20	2.52	○	5/3/18 10:35
	P-13	MRPIE	54	613.22	586.85	25.34	5/4/18 2:45	589.47	2.62	○	5/4/18 3:15
	P-35	MRIR	54	597.62	584.15	28.86	5/3/18 11:45	587.10	2.95	○	5/3/18 11:40
	P-34	RVI	62	595.60	582.30	30.91	5/3/18 12:05	585.68	3.38	○	5/3/18 11:30
	P-33	MRPIE	48	597.01	585.22	22.51	5/3/18 10:10	587.22	2.00	○	5/3/18 10:15
	P-32	MRIR	66	597.03	578.79	34.10	5/3/18 11:15	582.07	3.28	○	5/3/18 11:45
	P-31	RVI	78	599.00	578.71	57.10	5/3/18 11:25	582.44	3.73	○	5/3/18 12:00
	P-30	MRPIE	60	593.00	580.29	33.31	5/3/18 11:20	583.34	3.05	○	5/3/18 11:45
	P-14	RVI	78	604.91	570.93	78.19	5/3/18 11:55	574.84	3.91	○	5/3/18 12:35
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.50	5/3/18 14:10	652.79	1.12	○	5/3/18 14:50
	P-17	LRIR	30	641.21	632.39	5.56	5/3/18 10:30	633.50	1.11	○	5/3/18 10:45
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	5.65	5/4/18 8:20	-	1.13	○	5/4/18 7:20
	P-19	RVI	48	630.34	621.54	14.69	5/3/18 11:00	623.35	1.81	○	5/3/18 11:40
	WE-28	CS	30	-	-	4.94	5/3/18 16:25	-	0.97	○	5/2/18 23:40
	P-21	RVI	54	620.17	608.14	22.36	5/3/18 17:05	609.90	1.76	○	5/3/18 17:55
	P-25	RVI	60	598.36	588.06	43.46	5/3/18 17:25	590.33	2.27	○	5/3/18 17:45
	P-20	WI	48	630.66	619.72	10.90	5/2/18 23:15	622.07	2.35	○	5/2/18 23:45
	P-24	RVI	36	594.24	584.52	15.32	5/3/18 0:55	585.90	1.38	○	5/3/18 1:15
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	139.61	5/3/18 14:40	566.69	11.79	◉	5/3/18 2:55
	WC-S-1	RVI	66	586.88	500.94	140.12	5/3/18 20:15	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	56.57	5/4/18 4:45	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⊘
Surcharging sewer, grade elevation known:	◉
Above grade:	●
Data Not Available:	-

Table 7-5
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 5 5/11-12/2018 2.21 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	21.91	5/12/18 12:35	-	-	-	-
	P-1	NAI	48	740.82	716.31	24.96	5/12/18 13:50	716.31	0.00	○	-
	P-3	MRIR	36	681.37	652.48	26.73	5/12/18 13:55	654.49	2.01	○	5/12/18 14:35
	P-26	PWI	30	649.24	647.86	5.66	5/12/18 14:20	648.81	0.95	○	5/12/18 15:10
	P-7	PWI	48	649.09	625.23	5.67	5/12/18 15:00	627.15	1.92	○	5/12/18 16:25
	LV-16	CS	48	-	627.38	8.28	5/12/18 13:20	628.93	1.55	○	5/12/18 14:15
	FE-22	RVI	48	685.04	644.88	10.67	5/12/18 14:45	646.26	1.38	○	5/12/18 15:40
	A	CS	21	-	-	1.39	5/12/18 12:35	-	0.93	○	5/12/18 12:35
	B	CS	36	-	-	5.60	5/12/18 11:35	-	0.92	○	5/12/18 12:40
	C	CS	30	-	-	11.40	5/12/18 11:40	-	1.19	○	5/12/18 12:00
	P-8	RVI	48	645.40	621.80	13.62	5/12/18 16:00	623.34	1.54	○	5/12/18 16:25
	WE-14	CS	42	-	613.48	12.68	5/13/18 5:30	618.75	5.27	⊗	5/13/18 10:05
	LV-15	CS	60	636.29	617.03	10.71	5/13/18 2:50	621.51	4.48	○	5/13/18 12:10
	M-22 MP#1	CS	42	630.49	614.41	-	-	621.69	7.28	⦿	5/13/18 13:05
	M-22 MP#2	CS	42	630.49	614.41	-	-	624.74	10.33	⦿	5/13/18 6:55
	M-2	CS	27	636.70	612.39	20.00	5/12/18 12:50	614.28	1.89	○	5/15/18 3:05
	M-1	CS	72	630.59	607.59	22.22	5/13/18 4:55	617.78	10.19	⦿	5/13/18 5:15
	LV-14	CS	60	612.02	605.57	11.17	5/12/18 12:50	610.93	5.36	⦿	5/13/18 9:20
	P-28	RVI	54	629.02	607.92	11.76	5/12/18 14:05	617.94	10.02	⦿	5/12/18 13:55
	P-29	CS	42	-	-	11.59	5/14/18 13:40	-	4.64	⊗	5/12/18 12:00
	LV-20	CS	54	-	-	-	-	-	0.47	○	5/12/18 13:35
	LV-BASIN	RVI	54	632.00	602.01	32.18	5/12/18 11:40	615.62	13.61	⦿	5/12/18 17:00
	LV-4	CS	30	652.59	638.51	9.49	5/12/18 12:45	641.03	2.52	⦿	5/12/18 12:55
	LV-11	CS	42	-	-	22.01	5/12/18 14:40	-	8.45	⊗	5/12/18 17:40
	P-12	RVI	60	613.41	597.67	79.49	5/13/18 5:50	608.76	11.09	⦿	5/13/18 7:10
	P-9	MRIR	42	610.36	597.01	26.69	5/12/18 11:15	608.04	11.03	⦿	5/13/18 6:55
	P-10	RVI	66	607.65	595.62	81.95	5/12/18 12:25	607.48	11.86	⦿	5/13/18 7:35
	P-11	MRPIE	48	607.91	596.68	37.69	5/12/18 15:10	608.15	11.47	●	5/13/18 6:30
	P-13	MRPIE	54	613.22	586.85	38.46	5/12/18 11:45	598.50	11.65	⦿	5/13/18 10:55
	P-35	MRIR	54	597.62	584.15	46.81	5/12/18 14:35	595.15	11.00	⦿	5/13/18 22:15
	P-34	RVI	62	595.60	582.30	63.71	5/12/18 14:00	592.65	10.35	⦿	5/12/18 23:30
	P-33	MRPIE	48	597.01	585.22	39.99	5/12/18 13:35	593.35	8.13	⦿	5/13/18 8:20
	P-32	MRIR	66	597.03	578.79	52.36	5/12/18 14:35	591.06	12.27	⦿	5/13/18 3:00
	P-31	RVI	78	599.00	578.71	118.72	5/12/18 13:40	592.14	13.43	⦿	5/13/18 14:30
	P-30	MRPIE	60	593.00	580.29	57.85	5/12/18 13:35	593.74	13.45	●	5/13/18 6:25
	P-14	RVI	78	604.91	570.93	119.41	5/14/18 5:25	585.57	14.64	⦿	5/13/18 7:10
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.64	5/13/18 10:05	653.10	1.43	○	5/13/18 10:30
	P-17	LRIR	30	641.21	632.39	5.91	5/13/18 8:55	633.55	1.16	○	5/13/18 9:00
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	10.49	5/13/18 8:55	-	2.02	○	5/13/18 8:50
	P-19	RVI	48	630.34	621.54	27.88	5/13/18 13:00	624.27	2.73	○	5/13/18 14:20
	WE-28	CS	30	-	-	9.30	5/13/18 6:00	-	1.45	○	5/13/18 5:25
	P-21	RVI	54	620.17	608.14	37.36	5/13/18 14:40	610.44	2.30	○	5/13/18 15:00
	P-25	RVI	60	598.36	588.06	47.54	5/13/18 18:50	595.11	7.05	⦿	5/13/18 13:00
	P-20	WI	48	630.66	619.72	13.78	5/13/18 5:10	622.46	2.74	○	5/13/18 5:50
	P-24	RVI	36	594.24	584.52	19.84	5/12/18 13:35	591.10	6.58	⦿	5/13/18 5:50
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	186.80	5/13/18 19:55	574.52	19.62	⦿	5/13/18 6:00
	WC-S-1	RVI	66	586.88	500.94	200.12	5/14/18 6:05	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	177.52	5/12/18 15:40	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key

Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-6
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 6 7/31/2018 - 8/1/2018 2.15 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	13.09	8/1/18 2:10	-	-	-	-
	P-1	NAI	48	740.82	716.31	15.17	8/1/18 3:00	717.72	1.41	○	8/1/18 3:40
	P-3	MRIR	36	681.37	652.48	18.56	8/1/18 3:25	654.07	1.59	○	8/1/18 3:25
	P-26	PWI	30	649.24	647.86	2.02	8/1/18 3:35	648.37	0.51	○	8/1/18 3:45
	P-7	PWI	48	649.09	625.23	2.57	8/1/18 5:05	626.50	1.27	○	8/1/18 6:35
	LV-16	CS	48	-	627.38	7.99	8/1/18 0:00	628.74	1.36	○	8/1/18 0:45
	FE-22	RVI	48	685.04	644.88	1.66	8/1/18 13:45	645.52	0.64	○	8/1/18 14:20
	A	CS	21	-	-	1.43	8/1/18 1:10	-	0.91	○	8/1/18 1:55
	B	CS	36	-	-	3.95	8/1/18 1:20	-	0.83	○	8/1/18 2:00
	C	CS	30	-	-	7.88	8/1/18 1:20	-	1.03	○	8/1/18 2:00
	P-8	RVI	48	645.40	621.80	3.50	8/1/18 15:10	622.57	0.77	○	8/1/18 15:35
	WE-14	CS	42	-	613.48	10.69	8/1/18 0:15	615.45	1.97	○	8/1/18 0:45
	LV-15	CS	60	636.29	617.03	12.97	8/1/18 0:00	620.70	3.67	○	8/1/18 2:50
	M-22 MP#1	CS	42	630.49	614.41	-	-	620.85	6.44	⦿	8/1/18 2:55
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.69	8.28	⦿	8/1/18 12:35
	M-2	CS	27	636.70	612.39	10.20	8/1/18 0:25	614.73	2.34	⦿	8/1/18 1:15
	M-1	CS	72	630.59	607.59	38.05	8/1/18 0:55	618.01	10.42	⦿	8/1/18 1:05
	LV-14	CS	60	612.02	605.57	14.75	8/1/18 0:50	607.65	2.08	○	8/1/18 2:00
	P-28	RVI	54	629.02	607.92	6.16	8/1/18 1:35	610.02	2.10	○	8/1/18 2:35
	P-29	CS	42	-	-	7.82	8/1/18 2:45	-	2.14	○	8/1/18 3:20
	LV-20	CS	54	-	-	-	-	-	0.17	○	8/1/18 1:00
	LV-BASIN	RVI	54	632.00	602.01	21.81	8/1/18 2:35	606.58	4.57	⦿	8/1/18 4:05
	LV-4	CS	30	652.59	638.51	7.08	8/1/18 0:45	640.60	2.09	○	8/1/18 1:15
	LV-11	CS	42	-	-	13.49	8/1/18 1:35	-	1.36	○	8/1/18 1:55
	P-12	RVI	60	613.41	597.67	36.82	8/1/18 5:10	602.57	4.90	○	8/1/18 3:45
	P-9	MRIR	42	610.36	597.01	21.70	8/1/18 1:30	602.08	5.07	⦿	8/1/18 3:25
	P-10	RVI	66	607.65	595.62	69.02	8/1/18 2:05	601.72	6.10	⦿	8/1/18 3:20
	P-11	MRPIE	48	607.91	596.68	35.72	8/1/18 1:00	602.43	5.75	⦿	8/1/18 3:15
	P-13	MRPIE	54	613.22	586.85	34.96	8/1/18 1:05	596.12	9.27	⦿	8/1/18 3:20
	P-35	MRIR	54	597.62	584.15	41.03	8/1/18 1:20	594.15	10.00	⦿	8/1/18 3:05
	P-34	RVI	62	595.60	582.30	50.61	8/1/18 6:10	591.71	9.41	⦿	8/1/18 3:15
	P-33	MRPIE	48	597.01	585.22	38.06	8/1/18 1:05	593.17	7.95	⦿	8/1/18 4:15
	P-32	MRIR	66	597.03	578.79	45.71	8/1/18 3:20	590.55	11.76	⦿	8/1/18 3:00
	P-31	RVI	78	599.00	578.71	102.76	8/1/18 3:25	590.87	12.16	⦿	8/1/18 3:05
	P-30	MRPIE	60	593.00	580.29	49.70	8/1/18 5:35	590.86	10.57	⦿	8/1/18 3:05
	P-14	RVI	78	604.91	570.93	113.85	8/1/18 7:55	583.65	12.72	⦿	8/1/18 2:50
Lower Rouge	P-15	WRVI	24	667.57	651.67	1.74	8/1/18 2:10	652.67	1.00	○	8/1/18 2:30
	P-17	LRIR	30	641.21	632.39	4.59	8/1/18 0:00	633.42	1.03	○	8/1/18 0:15
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	6.80	8/1/18 2:00	-	1.26	○	8/1/18 2:10
	P-19	RVI	48	630.34	621.54	24.22	8/1/18 0:30	623.96	2.42	○	8/1/18 1:00
	WE-28	CS	30	-	-	8.84	8/1/18 0:15	-	1.49	○	8/1/18 0:50
	P-21	RVI	54	620.17	608.14	42.85	8/1/18 1:05	610.69	2.55	○	8/1/18 1:30
	P-25	RVI	60	598.36	588.06	51.16	8/1/18 1:30	593.56	5.50	⦿	8/1/18 3:00
	P-20	WI	48	630.66	619.72	13.75	7/31/18 23:55	624.74	5.02	⦿	8/1/18 0:40
	P-24	RVI	36	594.24	584.52	26.36	8/1/18 1:10	591.24	6.72	⦿	8/1/18 2:55
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	172.72	8/1/18 3:20	573.28	18.38	⦿	8/1/18 2:30
	WC-S-1	RVI	66	586.88	500.94	193.34	8/1/18 4:05	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	119.33	8/1/18 5:15	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key

Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-7
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 7 9/20/2018 1.76 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	19.51	9/20/18 10:15	-	-	-	-
	P-1	NAI	48	740.82	716.31	21.83	9/20/18 10:55	718.11	1.80	○	9/20/18 11:40
	P-3	MRIR	36	681.37	652.48	21.24	9/20/18 10:35	654.28	1.80	○	9/20/18 11:05
	P-26	PWI	30	649.24	647.86	3.87	9/20/18 12:00	648.59	0.73	○	9/20/18 12:45
	P-7	PWI	48	649.09	625.23	4.15	9/20/18 13:00	626.85	1.62	○	9/20/18 13:45
	LV-16	CS	48	-	627.38	12.21	9/20/18 7:10	630.04	2.66	○	9/20/18 7:35
	FE-22	RVI	48	685.04	644.88	1.83	9/20/18 18:30	645.47	0.59	○	9/20/18 20:10
	A	CS	21	-	-	2.34	9/20/18 8:10	-	1.16	○	9/20/18 9:05
	B	CS	36	-	-	5.42	9/20/18 8:10	-	0.96	○	9/20/18 9:00
	C	CS	30	-	-	10.69	9/20/18 8:15	-	1.15	○	9/20/18 9:00
	P-8	RVI	48	645.40	621.80	4.04	9/20/18 20:10	622.59	0.79	○	9/20/18 20:35
	WE-14	CS	42	-	613.48	16.87	9/20/18 9:10	619.01	5.53	⊗	9/20/18 11:55
	LV-15	CS	60	636.29	617.03	13.14	9/20/18 9:45	623.01	5.98	◉	9/20/18 12:45
	M-22 MP#1	CS	42	630.49	614.41	-	-	623.40	8.99	◉	9/20/18 12:55
	M-22 MP#2	CS	42	630.49	614.41	-	-	623.74	9.33	◉	9/20/18 19:45
	M-2	CS	27	636.70	612.39	19.57	9/20/18 9:55	618.16	5.77	◉	9/20/18 12:15
	M-1	CS	72	630.59	607.59	37.32	9/20/18 9:25	617.46	9.87	◉	9/20/18 10:10
	LV-14	CS	60	612.02	605.57	15.46	9/20/18 8:15	609.93	4.36	○	9/20/18 11:55
	P-28	RVI	54	629.02	607.92	5.24	9/20/18 9:35	611.04	3.12	○	9/20/18 12:15
	P-29	CS	42	-	-	9.40	9/20/18 10:20	-	3.32	○	9/20/18 12:10
	LV-20	CS	54	-	-	-	-	-	0.18	○	9/21/18 0:00
	LV-BASIN	RVI	54	632.00	602.01	21.11	9/20/18 9:15	609.65	7.64	◉	9/20/18 11:45
	LV-4	CS	30	652.59	638.51	6.48	9/20/18 8:40	640.78	2.27	○	9/20/18 9:20
	LV-11	CS	42	-	-	12.17	9/20/18 8:30	-	2.94	○	9/20/18 12:05
	P-12	RVI	60	613.41	597.67	38.19	9/20/18 18:55	607.92	10.25	◉	9/20/18 11:50
	P-9	MRIR	42	610.36	597.01	23.44	9/20/18 17:35	607.16	10.15	◉	9/20/18 11:15
	P-10	RVI	66	607.65	595.62	72.21	9/20/18 15:10	607.20	11.58	◉	9/20/18 11:10
	P-11	MRPIE	48	607.91	596.68	37.32	9/20/18 8:15	607.52	10.84	◉	9/20/18 11:20
	P-13	MRPIE	54	613.22	586.85	32.51	9/20/18 8:45	598.31	11.46	◉	9/20/18 11:15
	P-35	MRIR	54	597.62	584.15	46.60	9/20/18 10:20	596.16	12.01	◉	9/20/18 11:15
	P-34	RVI	62	595.60	582.30	62.71	9/20/18 18:30	594.23	11.93	◉	9/20/18 11:10
	P-33	MRPIE	48	597.01	585.22	38.20	9/20/18 8:55	593.36	8.14	◉	9/20/18 12:40
	P-32	MRIR	66	597.03	578.79	51.40	9/20/18 16:10	591.04	12.25	◉	9/20/18 12:30
	P-31	RVI	78	599.00	578.71	113.32	9/20/18 10:45	592.12	13.41	◉	9/20/18 11:10
	P-30	MRPIE	60	593.00	580.29	55.87	9/20/18 10:45	592.32	12.03	◉	9/20/18 11:25
	P-14	RVI	78	604.91	570.93	122.48	9/20/18 18:00	583.42	12.49	◉	9/20/18 11:15
Lower Rouge	P-15	WRVI	24	667.57	651.67	1.87	9/20/18 10:45	652.65	0.98	○	9/20/18 11:45
	P-17	LRIR	30	641.21	632.39	3.14	9/20/18 10:20	633.24	0.85	○	9/20/18 10:45
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	6.40	9/20/18 9:35	-	1.20	○	9/20/18 8:30
	P-19	RVI	48	630.34	621.54	16.18	9/20/18 10:00	623.46	1.92	○	9/20/18 10:40
	WE-28	CS	30	-	-	6.98	9/20/18 9:30	-	1.26	○	9/20/18 10:05
	P-21	RVI	54	620.17	608.14	26.61	9/20/18 10:30	610.05	1.91	○	9/20/18 10:55
	P-25	RVI	60	598.36	588.06	39.21	9/20/18 11:25	590.68	2.62	○	9/20/18 12:10
	P-20	WI	48	630.66	619.72	13.94	9/20/18 9:45	622.57	2.85	○	9/20/18 10:35
	P-24	RVI	36	594.24	584.52	19.52	9/20/18 11:00	588.60	4.08	◉	9/20/18 12:05
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	182.51	9/20/18 14:50	573.79	18.89	◉	9/20/18 10:25
	WC-S-1	RVI	66	586.88	500.94	187.87	9/20/18 18:15	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	129.80	9/20/18 13:40	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⊘
Surcharging sewer, grade elevation known:	◉
Above grade:	●
Data Not Available:	-

Table 7-8
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 8 9/24-26/2018 2.08 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	9.13	9/25/2018 20:50	-	-	-	-
	P-1	NAI	48	740.82	716.31	10.71	9/26/2018 9:00	717.47	1.16	○	9/25/2018 22:35
	P-3	MRIR	36	681.37	652.48	12.87	9/24/2018 10:10	653.67	1.19	○	9/25/2018 22:50
	P-26	PWI	30	649.24	647.86	0.77	9/25/2018 10:45	648.16	0.30	○	9/25/2018 11:25
	P-7	PWI	48	649.09	625.23	2.57	9/25/2018 20:40	626.50	1.27	○	9/25/2018 20:30
	LV-16	CS	48	-	627.38	8.96	9/25/2018 19:35	629.09	1.71	○	9/25/2018 20:20
	FE-22	RVI	48	685.04	644.88	2.04	9/26/2018 19:10	645.50	0.62	○	9/26/2018 6:40
	A	CS	21	-	-	1.07	9/25/2018 19:50	-	0.90	○	9/25/2018 11:10
	B	CS	36	-	-	2.55	9/25/2018 19:50	-	0.66	○	9/25/2018 20:15
	C	CS	30	-	-	5.33	9/25/2018 19:30	-	0.79	○	9/25/2018 20:00
	P-8	RVI	48	645.40	621.80	4.03	9/26/2018 7:20	622.60	0.80	○	9/26/2018 7:50
	WE-14	CS	42	-	613.48	15.68	9/25/2018 20:15	616.98	3.50	⊗	9/25/2018 22:55
	LV-15	CS	60	636.29	617.03	14.00	9/25/2018 19:35	621.59	4.56	○	9/25/2018 23:00
	M-22 MP#1	CS	42	630.49	614.41	-	-	621.94	7.53	⦿	9/25/2018 23:00
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.64	8.23	⦿	9/25/2018 22:20
	M-2	CS	27	636.70	612.39	23.15	9/25/2018 21:50	617.23	4.84	⦿	9/25/2018 22:55
	M-1	CS	72	630.59	607.59	36.06	9/25/2018 20:45	617.05	9.46	⦿	9/25/2018 21:05
	LV-14	CS	60	612.02	605.57	15.96	9/25/2018 20:25	608.89	3.32	○	9/25/2018 23:10
	P-28	RVI	54	629.02	607.92	4.96	9/25/2018 20:50	609.56	1.64	○	9/25/2018 22:10
	P-29	CS	42	-	-	6.66	9/25/2018 22:00	-	1.81	○	9/25/2018 22:25
	LV-20	CS	54	-	-	-	-	-	0.19	○	9/26/2018 9:40
	LV-BASIN	RVI	54	632.00	602.01	19.85	9/25/2018 21:20	607.48	5.47	⦿	9/26/2018 1:10
	LV-4	CS	30	652.59	638.51	5.58	9/25/2018 19:45	640.40	1.89	○	9/25/2018 20:30
	LV-11	CS	42	-	-	14.33	9/25/2018 20:45	-	1.41	○	9/25/2018 21:25
	P-12	RVI	60	613.41	597.67	37.19	9/25/2018 22:15	605.57	7.90	⦿	9/25/2018 23:25
	P-9	MRIR	42	610.36	597.01	23.75	9/25/2018 20:40	604.99	7.98	⦿	9/25/2018 23:10
	P-10	RVI	66	607.65	595.62	75.52	9/26/2018 0:50	604.50	8.88	⦿	9/25/2018 23:10
	P-11	MRPIE	48	607.91	596.68	37.13	9/25/2018 20:15	605.35	8.67	⦿	9/25/2018 23:15
	P-13	MRPIE	54	613.22	586.85	29.38	9/25/2018 22:50	596.46	9.61	⦿	9/25/2018 22:50
	P-35	MRIR	54	597.62	584.15	44.02	9/25/2018 23:05	595.39	11.24	⦿	9/25/2018 23:00
	P-34	RVI	62	595.60	582.30	54.90	9/26/2018 3:25	593.59	11.29	⦿	9/25/2018 23:00
	P-33	MRPIE	48	597.01	585.22	37.84	9/25/2018 10:20	593.44	8.22	⦿	9/25/2018 23:10
	P-32	MRIR	66	597.03	578.79	49.37	9/26/2018 1:00	591.04	12.25	⦿	9/25/2018 23:40
	P-31	RVI	78	599.00	578.71	107.06	9/25/2018 23:20	591.85	13.14	⦿	9/25/2018 22:55
	P-30	MRPIE	60	593.00	580.29	52.77	9/25/2018 23:40	591.81	11.52	⦿	9/25/2018 23:00
	P-14	RVI	78	604.91	570.93	104.27	9/26/2018 5:25	584.98	14.05	⦿	9/25/2018 22:35
Lower Rouge	P-15	WRVI	24	667.57	651.67	4.08	9/25/2018 20:45	653.96	2.29	⦿	9/25/2018 22:35
	P-17	LRIR	30	641.21	632.39	5.48	9/25/2018 19:40	633.50	1.11	○	9/25/2018 19:50
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	11.59	9/25/2018 21:00	-	2.87	⊗	9/25/2018 22:05
	P-19	RVI	48	630.34	621.54	29.54	9/25/2018 20:50	624.19	2.65	○	9/25/2018 21:05
	WE-28	CS	30	-	-	9.12	9/25/2018 20:10	-	1.47	○	9/25/2018 20:55
	P-21	RVI	54	620.17	608.14	47.90	9/25/2018 21:05	610.82	2.68	○	9/25/2018 21:40
	P-25	RVI	60	598.36	588.06	53.09	9/25/2018 10:35	596.73	8.67	⦿	9/25/2018 23:15
	P-20	WI	48	630.66	619.72	14.73	9/25/2018 20:20	622.90	3.18	○	9/25/2018 20:50
	P-24	RVI	36	594.24	584.52	24.26	9/25/2018 20:30	592.27	7.75	⦿	9/25/2018 22:30
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	186.91	9/26/2018 5:20	574.62	19.72	⦿	9/25/2018 22:30
	WC-S-1	RVI	66	586.88	500.94	189.94	9/26/2018 7:25	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	133.43	9/26/2018 1:30	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-9
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 9 10/6-7/2018 1.35 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	12.72	10/6/2018 11:20	-	-	-	-
	P-1	NAI	48	740.82	716.31	14.69	10/6/2018 13:05	717.67	1.36	○	10/6/2018 13:25
	P-3	MRIR	36	681.37	652.48	17.28	10/6/2018 14:05	653.92	1.44	○	10/6/2018 14:05
	P-26	PWI	30	649.24	647.86	1.86	10/6/2018 13:40	648.34	0.48	○	10/6/2018 14:25
	P-7	PWI	48	649.09	625.23	2.77	10/6/2018 15:00	-	-	-	-
	LV-16	CS	48	-	627.38	5.49	10/6/2018 8:45	628.43	1.05	○	10/7/2018 0:00
	FE-22	RVI	48	685.04	644.88	2.13	10/7/2018 18:45	645.53	0.65	○	10/7/2018 10:55
	A	CS	21	-	-	1.31	10/6/2018 11:30	-	1.14	○	10/6/2018 3:30
	B	CS	36	-	-	3.08	10/6/2018 11:30	-	0.68	○	10/6/2018 12:10
	C	CS	30	-	-	6.93	10/6/2018 11:40	-	0.87	○	10/6/2018 12:00
	P-8	RVI	48	645.40	621.80	4.31	10/7/2018 11:10	622.60	0.80	○	10/7/2018 11:15
	WE-14	CS	42	-	613.48	12.39	10/6/2018 11:55	615.70	2.22	○	10/6/2018 19:40
	LV-15	CS	60	636.29	617.03	10.56	10/6/2018 3:15	619.31	2.28	○	10/6/2018 13:40
	M-22 MP#1	CS	42	630.49	614.41	-	-	619.32	4.91	⦿	10/6/2018 13:40
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.29	7.88	⦿	10/6/2018 11:05
	M-2	CS	27	636.70	612.39	19.40	10/6/2018 19:40	615.20	2.81	⦿	10/6/2018 20:25
	M-1	CS	72	630.59	607.59	30.19	10/6/2018 19:20	616.02	8.43	⦿	10/6/2018 19:30
	LV-14	CS	60	612.02	605.57	9.02	10/6/2018 3:40	606.94	1.37	○	10/6/2018 4:10
	P-28	RVI	54	629.02	607.92	4.62	10/6/2018 11:10	609.64	1.72	○	10/6/2018 13:05
	P-29	CS	42	-	-	6.78	10/6/2018 12:30	-	1.83	○	10/6/2018 13:10
	LV-20	CS	54	-	-	-	-	-	0.18	○	10/6/2018 16:05
	LV-BASIN	RVI	54	632.00	602.01	20.47	10/6/2018 12:40	605.96	3.95	○	10/6/2018 13:25
	LV-4	CS	30	652.59	638.51	7.77	10/6/2018 10:30	640.37	1.86	○	10/6/2018 11:00
	LV-11	CS	42	-	-	8.73	10/6/2018 22:00	-	1.09	○	10/6/2018 22:30
	P-12	RVI	60	613.41	597.67	31.18	10/6/2018 22:35	601.61	3.94	○	10/6/2018 21:20
	P-9	MRIR	42	610.36	597.01	22.64	10/6/2018 13:05	601.24	4.23	⦿	10/6/2018 20:40
	P-10	RVI	66	607.65	595.62	69.74	10/6/2018 20:30	600.90	5.28	○	10/6/2018 21:00
	P-11	MRPIE	48	607.91	596.68	35.41	10/6/2018 11:55	601.68	5.00	⦿	10/6/2018 20:20
	P-13	MRPIE	54	613.22	586.85	31.41	10/6/2018 5:25	593.86	7.01	⦿	10/6/2018 21:15
	P-35	MRIR	54	597.62	584.15	40.56	10/6/2018 19:10	592.88	8.73	⦿	10/6/2018 20:50
	P-34	RVI	62	595.60	582.30	57.61	10/6/2018 15:20	592.98	10.68	⦿	10/6/2018 21:15
	P-33	MRPIE	48	597.01	585.22	35.03	10/6/2018 11:00	592.79	7.57	⦿	10/6/2018 20:30
	P-32	MRIR	66	597.03	578.79	44.91	10/6/2018 14:45	589.76	10.97	⦿	10/6/2018 18:50
	P-31	RVI	78	599.00	578.71	98.94	10/6/2018 22:45	590.10	11.39	⦿	10/6/2018 18:55
	P-30	MRPIE	60	593.00	580.29	48.66	10/6/2018 21:55	590.01	9.72	⦿	10/6/2018 18:50
	P-14	RVI	78	604.91	570.93	108.59	10/6/2018 8:30	584.50	13.57	⦿	10/6/2018 18:40
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.54	10/6/2018 12:50	652.95	1.28	○	10/6/2018 13:20
	P-17	LRIR	30	641.21	632.39	4.24	10/6/2018 11:30	633.33	0.94	○	10/6/2018 16:10
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	10.27	10/6/2018 19:20	-	1.94	○	10/6/2018 20:00
	P-19	RVI	48	630.34	621.54	20.11	10/6/2018 12:10	623.74	2.20	○	10/6/2018 12:50
	WE-28	CS	30	-	-	8.31	10/6/2018 11:35	-	1.34	○	10/6/2018 12:00
	P-21	RVI	54	620.17	608.14	31.03	10/6/2018 12:30	610.19	2.05	○	10/6/2018 13:00
	P-25	RVI	60	598.36	588.06	47.59	10/6/2018 12:50	591.70	3.64	○	10/6/2018 17:00
	P-20	WI	48	630.66	619.72	13.62	10/6/2018 4:05	622.59	2.87	○	10/6/2018 4:15
	P-24	RVI	36	594.24	584.52	22.45	10/6/2018 11:35	589.97	5.45	⦿	10/6/2018 17:00
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	176.21	10/7/2018 2:35	577.59	22.69	⦿	10/6/2018 16:20
	WC-S-1	RVI	66	586.88	500.94	182.91	10/6/2018 10:55	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	115.56	10/6/2018 18:00	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key	
CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key	
Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Table 7-10
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 10 10/31/2018 - 11/2/2018 1.81 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	11.53	11/1/2018 19:50	-	-	-	-
	P-1	NAI	48	740.82	716.31	13.33	11/1/2018 20:20	717.59	1.28	○	11/1/2018 22:15
	P-3	MRIR	36	681.37	652.48	16.00	11/1/2018 21:45	653.85	1.37	○	11/1/2018 22:05
	P-26	PWI	30	649.24	647.86	1.58	11/1/2018 21:55	648.30	0.44	○	11/1/2018 23:15
	P-7	PWI	48	649.09	625.23	2.72	11/2/2018 13:25	626.51	1.28	○	11/2/2018 13:10
	LV-16	CS	48	-	627.38	5.59	11/1/2018 17:30	628.44	1.06	○	11/1/2018 18:00
	FE-22	RVI	48	685.04	644.88	1.88	11/3/2018 10:15	645.50	0.62	○	11/3/2018 10:25
	A	CS	21	-	-	1.43	11/1/2018 21:35	-	1.18	○	11/2/2018 2:50
	B	CS	36	-	-	3.36	11/1/2018 21:35	-	0.70	○	11/1/2018 22:25
	C	CS	30	-	-	6.55	11/1/2018 21:35	-	0.83	○	11/1/2018 22:00
	P-8	RVI	48	645.40	621.80	4.08	11/3/2018 11:05	622.59	0.79	○	11/3/2018 11:25
	WE-14	CS	42	-	613.48	10.18	11/2/2018 10:15	615.30	1.82	○	11/2/2018 8:10
	LV-15	CS	60	636.29	617.03	9.36	11/2/2018 2:00	619.12	2.09	○	11/2/2018 3:45
	M-22 MP#1	CS	42	630.49	614.41	-	-	619.01	4.60	⦿	11/2/2018 3:40
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.56	8.15	⦿	11/2/2018 10:20
	M-2	CS	27	636.70	612.39	11.14	11/2/2018 2:00	614.28	1.89	○	11/2/2018 2:25
	M-1	CS	72	630.59	607.59	18.59	11/2/2018 3:25	614.45	6.86	⦿	11/2/2018 4:40
	LV-14	CS	60	612.02	605.57	6.46	11/2/2018 2:00	606.36	0.79	○	11/2/2018 12:10
	P-28	RVI	54	629.02	607.92	4.25	11/1/2018 23:05	609.59	1.67	○	11/1/2018 23:25
	P-29	CS	42	-	-	6.68	11/1/2018 21:20	-	1.81	○	11/1/2018 23:40
	LV-20	CS	54	-	-	-	-	-	0.20	○	11/3/2018 8:30
	LV-BASIN	RVI	54	632.00	602.01	19.81	11/1/2018 22:15	606.11	4.10	○	11/1/2018 23:35
	LV-4	CS	30	652.59	638.51	7.41	11/1/2018 22:15	640.33	1.82	○	11/2/2018 2:40
	LV-11	CS	42	-	-	10.62	11/1/2018 22:35	-	1.22	○	11/1/2018 23:15
	P-12	RVI	60	613.41	597.67	32.06	11/2/2018 0:15	600.44	2.77	○	11/2/2018 0:20
	P-9	MRIR	42	610.36	597.01	19.67	11/1/2018 23:15	599.59	2.58	○	11/1/2018 23:50
	P-10	RVI	66	607.65	595.62	60.27	11/1/2018 23:10	598.78	3.16	○	11/2/2018 3:30
	P-11	MRPIE	48	607.91	596.68	33.61	11/2/2018 3:40	600.00	3.32	○	11/2/2018 3:35
	P-13	MRPIE	54	613.22	586.85	28.49	11/2/2018 5:05	591.21	4.36	○	11/2/2018 4:55
	P-35	MRIR	54	597.62	584.15	39.49	11/1/2018 22:25	589.81	5.66	⦿	11/2/2018 4:55
	P-34	RVI	62	595.60	582.30	50.70	11/2/2018 2:25	588.92	6.62	⦿	11/2/2018 4:35
	P-33	MRPIE	48	597.01	585.22	31.69	11/1/2018 22:20	589.66	4.44	⦿	11/2/2018 4:50
	P-32	MRIR	66	597.03	578.79	40.89	11/2/2018 4:05	586.81	8.02	⦿	11/2/2018 4:30
	P-31	RVI	78	599.00	578.71	86.76	11/2/2018 4:15	587.14	8.43	⦿	11/2/2018 4:35
	P-30	MRPIE	60	593.00	580.29	45.02	11/2/2018 4:35	587.18	6.89	⦿	11/2/2018 4:30
	P-14	RVI	78	604.91	570.93	96.11	11/2/2018 9:10	580.61	9.68	⦿	11/2/2018 0:50
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.39	11/2/2018 4:55	652.92	1.25	○	11/1/2018 23:05
	P-17	LRIR	30	641.21	632.39	5.22	11/2/2018 8:05	633.44	1.05	○	11/2/2018 8:25
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	8.38	11/2/2018 5:15	-	1.47	○	11/2/2018 5:40
	P-19	RVI	48	630.34	621.54	18.35	11/2/2018 8:30	623.60	2.06	○	11/2/2018 9:00
	WE-28	CS	30	-	-	6.07	11/2/2018 2:35	-	1.13	○	11/1/2018 22:45
	P-21	RVI	54	620.17	608.14	26.62	11/2/2018 3:25	610.04	1.90	○	11/2/2018 10:55
	P-25	RVI	60	598.36	588.06	39.41	11/2/2018 3:35	590.54	2.48	○	11/2/2018 4:15
	P-20	WI	48	630.66	619.72	12.94	11/2/2018 2:30	622.36	2.64	○	11/2/2018 3:15
	P-24	RVI	36	594.24	584.52	19.60	11/2/2018 3:40	586.41	1.89	○	11/2/2018 3:55
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	169.53	11/2/2018 9:30	572.25	17.35	⦿	11/2/2018 0:55
	WC-S-1	RVI	66	586.88	500.94	170.65	11/2/2018 11:05	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	93.34	11/2/2018 6:10	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

Key

Within sewer:	○
Surcharging sewer, grade elevation unknown:	⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor:	⦸
Surcharging sewer, grade elevation known:	⦿
Above grade:	●
Data Not Available:	-

Section 8

Rainfall Event Summary Tables

Table 8-1
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 1
Start Date: 2/19/2018
Stop Date: 2/21/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.36	0.58	0.71	0.81	1.00	1.57	2.35	2.38	2.38
R-11	0.29	0.52	0.63	0.70	0.89	1.33	2.09	2.11	2.11
R-12	0.45	0.66	0.78	0.85	1.00	1.53	2.22	2.22	2.22
R-13	0.40	0.63	0.75	0.81	0.94	1.37	2.09	2.11	2.11
R-14	0.45	0.73	0.86	0.91	1.11	1.62	2.46	2.48	2.48
R-15	0.33	0.59	0.73	0.83	1.02	1.54	2.28	2.32	2.32
R-18	0.44	0.68	0.80	0.88	1.08	1.63	2.32	2.35	2.35
R-27	0.46	0.72	0.84	0.92	1.06	1.53	2.31	2.32	2.32
R-28	0.44	0.66	0.77	0.85	1.01	1.53	2.25	2.26	2.26
R-29	0.27	0.46	0.56	0.63	0.83	1.29	2.00	2.00	2.00
WTUA LR	0.47	0.72	0.84	0.89	1.05	1.59	2.34	2.36	2.36
WTUA MR	0.39	0.59	0.70	0.75	0.94	1.42	2.05	2.05	2.05
0831	0.25	0.47	0.59	0.70	0.91	1.24	1.93	1.93	1.93
0837	0.36	0.64	0.78	0.98	1.21	1.56	2.39	2.40	2.40
0843	0.38	0.68	0.84	1.12	1.44	1.81	2.62	2.64	2.63
0850	0.36	0.60	0.76	1.10	1.41	1.69	2.35	2.36	2.36
GC RG01	0.48	0.73	0.84	0.91	1.07	1.61	2.27	2.29	2.29
LV RG01	0.34	0.54	0.65	0.71	0.90	1.40	2.17	2.18	2.18
LV RG02	0.29	0.52	0.63	0.72	0.89	1.26	1.99	2.00	2.00
DTW	0.29	0.49	0.75	0.76	0.99	1.54	2.24	2.27	2.27
Minimum	0.25	0.46	0.56	0.63	0.83	1.24	1.93	1.93	1.93
Average	0.38	0.61	0.74	0.84	1.04	1.50	2.24	2.25	2.25
Maximum	0.48	0.73	0.86	1.12	1.44	1.81	2.62	2.64	2.63
							Standard Deviation (in):		0.18
							Coefficient of Variation:		8%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
0843	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-2
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 2
Start Date: 3/1/2018
Stop Date: 3/2/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.29	0.54	0.70	1.08	1.63	1.75	1.75	1.75	1.75
R-11	0.23	0.40	0.52	0.76	0.90	0.92	1.44	1.44	0.92
R-12	0.24	0.38	0.51	0.92	1.37	1.46	1.46	1.46	1.46
R-13	0.21	0.36	0.44	0.66	1.10	1.24	1.24	1.24	1.24
R-14	0.29	0.49	0.63	1.17	1.60	1.63	1.63	1.63	1.63
R-15	0.20	0.33	0.43	0.68	1.12	1.29	1.29	1.29	1.29
R-18	0.25	0.48	0.66	0.95	1.39	1.44	1.44	1.44	1.44
R-27	0.23	0.38	0.49	0.77	1.27	1.45	1.45	1.45	1.45
R-28	0.20	0.35	0.48	0.80	1.31	1.42	1.42	1.42	1.42
R-29	0.22	0.37	0.54	0.83	1.25	1.29	1.29	1.29	1.29
WTUA LR	0.24	0.40	0.54	0.90	1.36	1.47	1.47	1.47	1.47
WTUA MR	0.20	0.35	0.53	0.79	1.04	1.05	1.05	1.05	1.05
0831	0.16	0.30	0.42	0.58	0.89	0.92	0.92	0.92	0.92
0837	0.15	0.29	0.42	0.65	0.99	1.03	1.03	1.03	1.03
0843	0.18	0.31	0.47	0.69	1.06	1.13	1.13	1.13	1.13
0850	0.19	0.36	0.49	0.89	1.32	1.38	1.38	1.38	1.38
GC RG01	0.18	0.30	0.37	0.53	0.66	0.68	0.69	0.69	0.68
LV RG01	0.21	0.37	0.47	0.62	0.77	0.81	1.22	1.22	0.81
LV RG02	0.18	0.29	0.38	0.57	0.64	0.65	1.11	1.11	0.65
DTW	0.23	0.46	0.73	0.92	1.34	1.42	1.42	1.42	1.42
Minimum	0.15	0.29	0.37	0.53	0.64	0.65	0.69	0.69	0.65
Average	0.21	0.38	0.51	0.79	1.15	1.22	1.29	1.29	1.22
Maximum	0.29	0.54	0.73	1.17	1.63	1.75	1.75	1.75	1.75
							Standard Deviation (in):		0.31
							Coefficient of Variation:		25%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-3
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 3
Start Date: 4/14/2018
Stop Date: 4/16/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.65	0.79	0.97	1.23	1.52	1.54	2.51	2.52	2.50
R-11	0.22	0.34	0.46	0.80	0.99	0.99	1.98	1.99	1.98
R-12	0.21	0.32	0.45	0.71	1.11	1.49	2.37	2.39	2.37
R-13	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-14	0.24	0.36	0.52	0.74	1.11	1.27	2.15	2.16	2.15
R-15	0.23	0.37	0.47	0.71	1.14	1.54	2.46	2.46	2.44
R-18	0.25	0.36	0.49	0.73	1.19	1.45	2.32	2.34	2.32
R-27	0.23	0.35	0.46	0.75	1.21	1.66	2.58	2.62	2.57
R-28	0.22	0.33	0.45	0.73	1.15	1.59	2.50	2.51	2.50
R-29	0.24	0.37	0.50	0.77	1.15	1.54	2.56	2.57	2.56
WTUA LR	0.24	0.36	0.50	0.72	1.14	1.48	2.36	2.37	2.36
WTUA MR	0.16	0.26	0.40	0.61	0.90	1.18	1.91	1.91	1.91
0831	0.23	0.36	0.49	0.79	1.05	1.44	2.42	2.43	2.42
0837	0.17	0.30	0.44	0.79	1.11	1.41	2.37	2.38	2.37
0843	0.19	0.34	0.48	0.86	1.10	1.45	2.50	2.51	2.50
0850	0.18	0.29	0.42	0.72	1.01	1.20	2.10	2.12	2.10
GC RG01	0.17	0.29	0.43	0.71	1.09	1.33	2.06	2.08	2.06
LV RG01	0.19	0.32	0.46	0.78	1.17	1.39	2.30	2.31	2.30
LV RG02	0.76	0.95	1.00	1.05	1.11	1.11	2.02	2.03	2.02
DTW	0.17	0.33	0.51	0.68	1.06	1.46	2.29	2.30	2.29
Minimum	0.16	0.26	0.40	0.61	0.90	0.99	1.91	1.91	1.91
Average	0.26	0.39	0.52	0.78	1.12	1.40	2.30	2.32	2.30
Maximum	0.76	0.95	1.00	1.23	1.52	1.66	2.58	2.62	2.57
							Standard Deviation (in):		0.21
							Coefficient of Variation:		9%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	-	-	-	-	-	-	-	-	-
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2
R-28	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	2	< 1	2
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Maximum	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-4
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 4
Start Date: 5/2/2018
Stop Date: 5/4/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.42	0.43	0.55	0.69	0.80	0.92	1.03	1.03	0.98
R-11	0.28	0.31	0.43	0.57	0.92	1.15	1.38	1.38	1.32
R-12	0.30	0.34	0.44	0.57	0.87	0.97	1.21	1.21	1.21
R-13	0.57	0.58	0.70	0.80	0.96	1.10	1.23	1.23	1.23
R-14	0.68	0.73	0.84	0.98	1.25	1.32	1.41	1.41	1.41
R-15	0.31	0.32	0.44	0.54	0.66	0.79	0.92	0.92	0.89
R-18	0.42	0.43	0.57	0.70	0.83	0.99	1.20	1.20	1.16
R-27	0.43	0.44	0.52	0.58	0.71	0.84	0.97	0.97	0.96
R-28	0.58	0.59	0.70	0.80	1.01	1.09	1.26	1.26	1.26
R-29	0.36	0.39	0.49	0.61	0.93	1.14	1.63	1.63	1.43
WTUA LR	0.48	0.55	0.62	0.72	0.93	1.13	1.30	1.30	1.18
WTUA MR	0.35	0.42	0.53	0.64	0.99	1.11	1.25	1.25	1.25
0831	0.29	0.31	0.38	0.48	0.73	1.00	1.21	1.21	1.19
0837	0.21	0.23	0.28	0.40	0.70	0.98	1.13	1.13	1.13
0843	0.24	0.28	0.29	0.45	0.71	1.05	1.22	1.22	1.22
0850	0.51	0.51	0.52	0.76	1.00	1.53	1.86	1.86	1.86
GC RG01	0.36	0.38	0.50	0.63	0.83	0.99	1.21	1.21	1.20
LV RG01	0.36	0.39	0.49	0.62	0.95	1.17	1.51	1.51	1.43
LV RG02	0.31	0.33	0.42	0.53	0.89	1.25	1.49	1.49	1.49
DTW	0.29	0.46	0.60	0.62	0.84	0.89	1.04	1.04	1.01
Minimum	0.21	0.23	0.28	0.40	0.66	0.79	0.92	0.92	0.89
Average	0.39	0.42	0.52	0.63	0.88	1.07	1.27	1.27	1.24
Maximum	0.68	0.73	0.84	0.98	1.25	1.53	1.86	1.86	1.86
							Standard Deviation (in):		0.22
							Coefficient of Variation:		18%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-5
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 5
Start Date: 5/11/2018
Stop Date: 5/12/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.94	1.14	1.20	1.25	1.64	2.29	2.84	3.12	2.38
R-11	0.40	0.47	0.52	0.66	1.21	1.82	2.39	2.46	1.91
R-12	0.39	0.65	0.79	0.88	1.31	1.80	2.41	2.48	1.87
R-13	0.28	0.43	0.50	0.54	0.82	1.33	1.99	2.12	1.42
R-14	0.66	0.90	0.98	1.01	1.23	1.74	2.31	2.58	1.81
R-15	0.38	0.56	0.63	0.69	0.91	1.39	2.01	2.14	1.49
R-18	1.07	1.26	1.29	1.37	1.56	2.09	2.63	2.93	2.17
R-27	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-28	0.43	0.75	0.88	0.96	1.41	1.93	2.52	2.58	1.99
R-29	0.86	1.03	1.07	1.37	2.17	2.78	3.40	3.45	2.85
WTUA LR	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
WTUA MR	0.42	0.69	0.77	0.83	1.24	1.67	2.30	2.30	1.73
0831	1.08	1.41	1.46	1.98	2.46	2.99	3.63	3.66	3.08
0837	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0843	1.29	1.52	1.57	2.08	2.59	3.12	3.85	3.88	3.22
0850	0.89	1.11	1.16	1.62	1.99	2.53	3.25	3.27	2.63
GC RG01	0.31	0.48	0.62	0.71	1.11	1.50	2.12	2.21	1.56
LV RG01	0.35	0.54	0.60	0.74	1.36	2.00	2.55	2.61	2.07
LV RG02	0.79	0.98	1.03	1.28	2.03	2.53	3.15	3.20	2.61
DTW	0.77	1.01	1.29	1.31	1.83	2.61	3.15	3.38	2.71
Minimum	0.28	0.43	0.50	0.54	0.82	1.33	1.99	2.12	1.42
Average	0.67	0.88	0.96	1.13	1.58	2.12	2.74	2.85	2.21
Maximum	1.29	1.52	1.57	2.08	2.59	3.12	3.85	3.88	3.22
							Standard Deviation (in):		0.56
							Coefficient of Variation:		25%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	2	3	3	3
R-11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	2	1	< 1	< 1	< 1	1	2	2	2
R-27	-	-	-	-	-	-	-	-	-
R-28	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R-29	< 1	< 1	< 1	< 1	3	4	6	4	6
WTUA LR	-	-	-	-	-	-	-	-	-
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	2	2	2	3	4	6	8	6	8
0837	-	-	-	-	-	-	-	-	-
0843	3	3	2	4	5	7	9	7	9
0850	< 1	< 1	< 1	1	1	3	4	3	4
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	1	1	1
LV RG02	< 1	< 1	< 1	< 1	2	3	4	3	4
DTW	< 1	< 1	< 1	< 1	1	4	4	4	4
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	1	2	3	2	3
Maximum	3	3	2	4	5	7	9	7	9

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-6
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 6
Start Date: 7/31/2018
Stop Date: 8/1/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	1.59	1.96	1.99	2.00	2.49	2.49	2.50	2.50	2.49
R-11	0.67	0.99	1.32	1.39	1.95	1.95	1.95	1.95	1.95
R-12	1.56	1.98	2.02	2.14	2.35	2.35	2.35	2.35	2.35
R-13	1.46	1.92	1.94	1.98	2.34	2.34	2.34	2.34	2.34
R-14	0.42	0.58	0.88	0.98	1.24	1.24	1.24	1.24	1.24
R-15	1.90	2.44	2.50	2.50	2.68	2.68	2.68	2.68	2.68
R-18	0.50	0.79	1.00	1.11	1.43	1.43	1.43	1.43	1.43
R-27	2.07	2.84	2.86	2.87	3.03	3.03	3.03	3.03	3.03
R-28	2.69	3.07	3.10	3.11	3.17	3.17	3.17	3.17	3.17
R-29	1.56	1.98	2.05	2.20	2.28	2.28	2.28	2.28	2.28
WTUA LR	0.33	0.61	0.94	1.19	1.46	1.46	1.46	1.46	1.46
WTUA MR	0.53	0.85	1.23	1.28	1.77	1.77	1.77	1.77	1.77
0831	1.17	1.43	1.54	1.65	1.69	1.69	1.69	1.69	1.69
0837	1.40	1.81	2.19	2.33	2.34	2.34	2.34	2.34	2.34
0843	0.56	1.01	1.47	1.55	1.64	1.64	1.64	1.64	1.64
0850	0.61	0.89	1.04	1.12	1.52	1.52	1.52	1.52	1.52
GC RG01	1.42	1.80	1.81	1.88	2.31	2.31	2.31	2.31	2.31
LV RG01	0.87	1.19	1.42	1.51	1.66	1.66	1.66	1.66	1.66
LV RG02	0.88	1.62	2.09	2.15	2.55	2.55	2.55	2.55	2.55
DTW	2.08	2.46	2.50	2.50	3.00	3.00	3.00	3.00	3.00
Minimum	0.33	0.58	0.88	0.98	1.24	1.24	1.24	1.24	1.24
Average	1.21	1.61	1.79	1.87	2.15	2.15	2.15	2.15	2.15
Maximum	2.69	3.07	3.10	3.11	3.17	3.17	3.17	3.17	3.17
							Standard Deviation (in):		0.58
							Coefficient of Variation:		27%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	8	8	6	3	5	3	1	< 1	8
R-11	< 1	< 1	1	< 1	1	< 1	< 1	< 1	1
R-12	7	8	6	4	4	2	< 1	< 1	8
R-13	5	7	5	3	4	2	< 1	< 1	7
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	18	22	16	8	7	4	2	1	22
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	25	45	27	15	12	7	4	2	45
R-28	103	70	41	21	15	8	4	3	103
R-29	7	8	6	5	3	2	< 1	< 1	8
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	2	2	2	1	< 1	< 1	< 1	< 1	2
0837	5	6	8	6	4	2	< 1	< 1	8
0843	< 1	< 1	2	< 1	< 1	< 1	< 1	< 1	2
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	5	5	4	2	3	2	< 1	< 1	5
LV RG01	< 1	1	1	< 1	< 1	< 1	< 1	< 1	1
LV RG02	< 1	4	7	4	5	3	1	< 1	7
DTW	26	23	16	8	11	7	4	2	26
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	11	11	8	4	4	2	1	1	13
Maximum	103	70	41	21	15	8	4	3	103

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-7
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 7
Start Date: 9/20/2018
Stop Date: 9/20/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.57	0.73	0.90	0.92	0.92	0.92	0.92	0.92	0.92
R-11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-12	1.90	2.43	3.07	3.23	3.23	3.23	3.23	3.23	3.23
R-13	0.66	0.80	1.11	1.31	1.31	1.31	1.31	1.31	1.31
R-14	0.47	0.49	0.61	0.65	0.65	0.65	0.65	0.65	0.65
R-15	0.98	1.33	1.60	1.83	1.83	1.83	1.83	1.83	1.83
R-18	0.41	0.58	0.65	0.70	0.70	0.70	0.70	0.70	0.70
R-27	1.01	1.46	1.78	1.98	1.98	1.98	1.98	1.98	1.98
R-28	1.49	2.16	2.73	2.99	3.00	3.00	3.00	3.00	3.00
R-29	0.76	1.27	1.53	1.55	1.55	1.56	1.56	1.56	1.55
WTUA LR	0.41	0.59	0.87	0.99	0.99	0.99	0.99	0.99	0.99
WTUA MR	1.50	1.97	2.40	2.54	2.54	2.54	2.54	2.54	2.54
0831	0.53	0.70	0.87	0.92	0.94	0.94	0.94	0.94	0.94
0837	0.69	0.91	1.10	1.19	1.30	1.30	1.30	1.30	1.30
0843	0.63	0.98	1.32	1.64	1.88	1.88	1.88	1.88	1.88
0850	0.99	1.43	1.62	1.79	1.92	1.92	1.92	1.92	1.92
GC RG01	1.48	2.02	2.51	2.73	2.73	2.73	2.73	2.73	2.73
LV RG01	1.22	1.90	2.39	2.45	2.45	2.45	2.46	2.46	2.45
LV RG02	0.90	1.38	1.81	1.90	1.90	1.91	1.91	1.91	1.90
DTW	0.63	1.14	1.48	1.53	1.53	1.53	1.53	1.53	1.53
Minimum	0.41	0.49	0.61	0.65	0.65	0.65	0.65	0.65	0.65
Average	0.91	1.28	1.60	1.73	1.76	1.76	1.76	1.76	1.76
Maximum	1.90	2.43	3.07	3.23	3.23	3.23	3.23	3.23	3.23
							Standard Deviation (in):		0.77
							Coefficient of Variation:		44%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	-	-	-	-	-	-	-	-	-
R-12	17	21	39	24	16	9	5	3	39
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	1	2	2	2	1	< 1	< 1	< 1	2
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	1	2	4	3	2	< 1	< 1	< 1	4
R-28	6	12	22	18	11	7	3	2	22
R-29	< 1	1	2	1	< 1	< 1	< 1	< 1	2
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	6	8	12	8	5	3	1	< 1	12
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	1	1	1	< 1	< 1	< 1	1
0850	1	2	2	2	1	< 1	< 1	< 1	2
GC RG01	6	9	15	12	7	4	2	1	15
LV RG01	3	7	12	7	4	2	1	< 1	12
LV RG02	< 1	2	4	2	1	< 1	< 1	< 1	4
DTW	< 1	< 1	2	< 1	< 1	< 1	< 1	< 1	2
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	2	4	6	5	3	2	1	< 1	6
Maximum	17	21	39	24	16	9	5	3	39

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-8
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 8
Start Date: 9/24/2018
Stop Date: 9/26/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	1.09	1.16	1.18	1.19	1.88	2.20	2.60	2.60	2.60
R-11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-12	1.10	1.10	1.11	1.12	1.87	2.09	2.45	2.45	2.45
R-13	0.96	1.21	1.24	1.30	1.94	2.25	2.63	2.63	2.63
R-14	1.06	1.07	1.07	1.08	2.00	2.26	2.64	2.64	2.64
R-15	1.39	1.63	1.64	1.65	2.84	3.23	3.39	3.39	3.39
R-18	0.98	1.10	1.16	1.20	2.02	2.31	2.58	2.58	2.58
R-27	1.13	1.51	1.52	1.56	2.20	2.53	2.74	2.74	2.73
R-28	1.14	1.44	1.46	1.51	2.21	2.53	2.70	2.70	2.70
R-29	0.84	0.84	0.84	0.85	1.19	1.34	1.56	1.56	1.56
WTUA LR	1.10	1.23	1.23	1.38	2.00	2.78	3.03	3.03	3.03
WTUA MR	0.71	0.71	0.71	0.73	1.02	1.17	1.44	1.44	1.44
0831	0.61	0.61	0.62	0.62	0.90	1.06	1.20	1.20	1.20
0837	0.20	0.21	0.21	0.22	0.34	0.39	0.63	0.63	0.62
0843	0.28	0.30	0.30	0.33	0.54	0.65	0.76	0.76	0.76
0850	0.15	0.16	0.16	0.18	0.31	0.49	0.49	0.49	0.49
GC RG01	1.20	1.30	1.32	1.46	2.49	2.78	3.15	3.15	3.15
LV RG01	0.75	0.75	0.75	0.77	1.14	1.34	1.68	1.68	1.68
LV RG02	0.26	0.29	0.30	0.33	0.45	0.68	0.93	0.93	0.93
DTW	1.10	1.28	1.32	1.33	2.22	2.64	2.92	2.92	2.92
Minimum	0.15	0.16	0.16	0.18	0.31	0.39	0.49	0.49	0.49
Average	0.84	0.94	0.95	0.99	1.56	1.83	2.08	2.08	2.08
Maximum	1.39	1.63	1.64	1.65	2.84	3.23	3.39	3.39	3.39
							Standard Deviation (in):		0.94
							Coefficient of Variation:		45%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	2	< 1	< 1	< 1	1	1	2	1	2
R-11	-	-	-	-	-	-	-	-	-
R-12	2	< 1	< 1	< 1	1	1	1	< 1	2
R-13	< 1	1	< 1	< 1	2	2	2	1	2
R-14	2	< 1	< 1	< 1	2	2	2	1	2
R-15	4	4	3	1	9	9	6	4	9
R-18	1	< 1	< 1	< 1	2	2	2	1	2
R-27	2	3	2	1	3	3	2	1	3
R-28	2	2	2	< 1	3	3	2	1	3
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	2	1	< 1	< 1	2	5	4	2	5
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	3	2	1	< 1	5	4	4	3	5
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	2	1	1	< 1	3	4	3	2	4
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	1	1	< 1	< 1	2	2	2	1	2
Maximum	4	4	3	1	9	9	6	4	9

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-9
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 9
Start Date: 10/6/2018
Stop Date: 10/7/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.53	0.58	0.58	0.60	0.98	1.32	1.37	1.38	1.32
R-11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-12	0.79	0.91	0.92	0.93	1.45	1.85	1.87	1.89	1.85
R-13	0.92	0.97	0.99	1.00	1.44	1.62	1.64	1.66	1.62
R-14	0.99	1.02	1.02	1.09	1.44	1.73	1.77	1.78	1.73
R-15	0.33	0.37	0.38	0.39	0.71	1.02	1.06	1.07	1.02
R-18	0.52	0.54	0.54	0.56	0.92	1.40	1.43	1.44	1.40
R-27	0.84	0.93	0.96	0.97	1.47	1.69	1.71	1.73	1.69
R-28	0.78	0.88	0.89	0.90	1.42	1.90	1.92	1.93	1.90
R-29	0.39	0.53	0.54	0.54	0.84	0.99	0.99	1.01	0.99
WTUA LR	0.65	0.98	0.98	1.01	1.44	1.75	1.78	1.79	1.75
WTUA MR	0.69	0.79	0.79	0.80	1.01	1.21	1.22	1.29	1.21
0831	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0837	0.46	0.60	0.62	0.63	0.91	1.13	1.13	1.16	1.13
0843	0.38	0.54	0.56	0.58	0.84	0.89	0.89	0.91	0.89
0850	0.20	0.29	0.31	0.33	0.62	0.65	0.65	0.65	0.65
GC RG01	0.87	0.96	0.96	0.98	1.45	1.91	1.93	1.94	1.91
LV RG01	0.51	0.63	0.64	0.64	0.84	1.01	1.03	1.15	1.01
LV RG02	0.51	0.64	0.65	0.66	0.89	1.01	1.01	1.02	1.01
DTW	0.41	0.51	0.51	0.53	0.88	1.25	1.30	1.30	1.25
Minimum	0.20	0.29	0.31	0.33	0.62	0.65	0.65	0.65	0.65
Average	0.60	0.70	0.71	0.73	1.09	1.35	1.37	1.39	1.35
Maximum	0.99	1.02	1.02	1.09	1.47	1.91	1.93	1.94	1.91
							Standard Deviation (in):		0.39
							Coefficient of Variation:		29%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	-	-	-	-	-	-	-	-	-
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	-	-	-	-	-	-	-	-	-
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table 8-10
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 10
Start Date: 10/31/2018
Stop Date: 11/2/2018

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.35	0.48	0.65	0.77	0.93	1.55	2.28	2.37	2.37
R-11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-12	0.25	0.41	0.54	0.61	0.83	1.32	1.91	1.93	1.93
R-13	0.24	0.42	0.50	0.57	0.82	1.40	1.94	1.97	1.97
R-14	0.27	0.44	0.53	0.61	0.89	1.45	2.03	2.06	2.06
R-15	0.15	0.26	0.31	0.50	0.90	1.47	1.49	1.49	1.49
R-18	0.33	0.49	0.59	0.69	0.90	1.49	2.15	2.19	2.19
R-27	0.30	0.44	0.54	0.63	0.91	1.50	2.09	2.16	2.15
R-28	0.24	0.43	0.53	0.62	0.87	1.38	1.98	2.02	2.02
R-29	0.25	0.40	0.53	0.62	0.87	1.23	1.84	1.90	1.90
WTUA LR	0.29	0.44	0.56	0.64	0.92	1.51	2.11	2.16	2.16
WTUA MR	0.18	0.28	0.42	0.49	0.75	1.10	1.59	1.59	1.59
0831	0.15	0.26	0.39	0.53	0.86	1.19	1.63	1.68	1.67
0837	0.16	0.28	0.40	0.52	0.82	1.13	1.57	1.58	1.58
0843	0.14	0.27	0.40	0.45	0.78	1.05	1.46	1.50	1.50
0850	0.14	0.25	0.37	0.41	0.64	0.87	1.27	1.30	1.29
GC RG01	0.25	0.45	0.56	0.63	0.64	0.64	0.69	0.69	0.69
LV RG01	0.22	0.36	0.48	0.57	0.86	1.30	1.85	1.87	1.87
LV RG02	0.15	0.26	0.37	0.48	0.77	1.09	1.51	1.54	1.54
DTW	0.31	0.51	0.82	0.91	0.94	1.50	2.37	2.44	2.44
Minimum	0.14	0.25	0.31	0.41	0.64	0.64	0.69	0.69	0.69
Average	0.23	0.38	0.50	0.59	0.84	1.27	1.78	1.81	1.81
Maximum	0.35	0.51	0.82	0.91	0.94	1.55	2.37	2.44	2.44

Standard Deviation (in):	0.42
Coefficient of Variation:	23%

X.XX* Missing or suspect data (not used).

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	-	-	-	-	-	-	-	-	-
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.

2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Section 9

Dry/Wet Weather Day Count by Month

Table 9-1
Rouge Valley Sewage Disposal System
Dry/Wet Weather Day Count by Month

Month	Number of Dry Weather Days	Number of Wet Weather Days
January 2018	25	6
February 2018	17	11
March 2018	21	10
April 2018	20	10
May 2018	15	16
June 2018	22	8
July 2018	28	3
August 2018	21	10
September 2018	11	19
October 2018	22	9
November 2018	20	10
December 2018	23	8
Total	245	120

Notes:

1)A single set of dry days was used to estimate the dry weather flow rates for all of the meters. The dry weather days were determined by analyzing the daily flow rate traces for meter groups near the downstream end of the interceptor system. The meter groups used for this analysis include: Meters [P-9]+[P-10]+[P-11] which represent the Middle Rouge interceptor system, Meters [P-24]+[P-25] which represent the Lower Rouge interceptor system, and Meters [WC-S-1]+[WC-S-2]+[WC-S-3] which represent the entire RVSDS. These meter groups were chosen because they are near the downstream end of the interceptor system, include some dewatering flow rates, and provide a well-defined sort of dry/wet days. Two methods were used for screening out dry and wet weather days using average daily flow rates.

The first method was designed to flag days that exhibited abrupt changes in average daily flow rate from the preceding or following days. This criterion was selected because wet weather events that cause an RDI/I response will significantly raise the average daily flow rate when compared to the preceding day. Likewise, the average daily flow rate on the day following a wet weather event will exhibit a decrease as the RDI/I flow rates subside.

The second method was designed to flag additional wet weather days that were typically found during large, multiple day events that elevated the metered flow rates for a few days. When this happens, the days in the middle of the event are not flagged by the first method because there is no change in the already elevated flow rate. For this method, the average daily flow rate on dry days was constrained to remain below two standard deviations of the three month average flow rate. Any day with a daily average above this was flagged as a wet day.

2) The same set of dry days was used to estimate the dry weather flow rates for all of the meters.

Section 10

Flow Rate Data Flags

Figure 10-1
Rouge Valley Sewage Disposal System
2018 Flow Rate Flags

Section 11

Data Edits

Table 11-1
Rouge Valley Sewage Disposal System
Notable Data Edits

Meter	Period		Issue	Fix Applied
	Start	Stop		
A	3/1/2018	3/5/2018	Bad velocity data	Correlation to Meter B
	8/6/2018	8/22/2018		
	8/29/2018	12/31/2018		
BG-1	6/18/2018	6/30/2018	No data	Correlation to Meter P-1
	9/1/2018	9/3/2018	Flow rate temporarily flatlined	
	9/19/2018	9/19/2018		
	9/21/2018	9/21/2018		
	9/24/2018	9/24/2018		
	12/1/2018	12/1/2018		
FE-22	12/5/2018	12/31/2018	Unrealistic increase in velocity	Rating curve to depth
LV-4	2/20/2018	2/28/2018	Bad velocity data	Correlation to Meter LV-Basin
LV-11	10/22/2018	10/25/2018	No data	Diurnal pattern
LV-14	11/1/2018	11/2/2018	No data	Correlation to Meter LV-15
LV-15	11/12/2018	11/13/2018	No data	Diurnal pattern
M-1	11/16/2018	12/11/2018	No data	Correlation to Meter M-2
M-2	5/3/2018	5/15/2018	No data	Correlation to Meter LV-14
P-1	5/3/2018	5/25/2018	Fuse malfunctioned No data	Meter replaced Correlation to Meter BG-1
P-7	10/3/2018	10/9/2018	Fuse malfunctioned No data	Correlation to Meters P-8, P-26
	10/13/2018	10/15/2018	Fuse malfunctioned No data	Meter replaced Diurnal Pattern
P-9	5/4/2018	5/6/2018	Cabinet power failure No data	Correlation to Meter P-35
P-10	3/2/2018	3/3/2018	Cabinet power failure No data	Diurnal pattern
	5/4/2018	5/6/2018	Cabinet power failure No data	Correlation to Meter P-34
P-11	3/2/2018	3/3/2018	Cabinet power failure No data	Diurnal pattern
	5/4/2018	5/6/2018	Cabinet power failure No data	Correlation to Meter P-35
P-12	1/4/2018	1/5/2018	Fuse malfunctioned No data	Meter replaced Diurnal pattern
	1/8/2018	1/9/2018		
P-13	11/19/2018	11/21/2018	Fuse malfunctioned No data	Meter replaced Diurnal pattern
P-17	11/25/2018	12/6/2018	Fuse malfunctioned No data	Meter replaced Correlation to Meters P-19, WE-25
P-20	4/15/2018	4/19/2018	Critically low battery No data	Correlation to Meter P-24
	12/31/2018	12/31/2018	Power loss No data	Correlation to Meter P-21
P-25	4/15/2018	4/16/2018	Fuse malfunctioned No data	Meter replaced Correlation to Meter P-21
P-28	4/20/2018	4/24/2018	Critically low battery No data	Diurnal pattern
P-29	9/27/2018	10/4/2018	Fuse malfunctioned No data	Meter replaced Correlation to Meter LV-Basin
P-33	2/20/2018	2/22/2018	Bad velocity data	Correlation to Meter P-30
	4/15/2018	4/17/2018		
	5/12/2018	5/14/2018		
P-35	12/5/2018	12/5/2018	Power Loss No data	Diurnal pattern
WE-28	1/7/2018	1/26/2018	Condensation inside cabinet reset power supply No data	Correlation to Meter P-21
	12/4/2018	12/8/2018	Cabinet AC power caused meter to short out No data	Meter taken off AC power Diurnal Pattern
	12/12/2018	12/14/2018		
WC-S-1A	12/10/2018	12/12/2018	Fuse malfunctioned No data	Meter replaced Diurnal pattern
WC-S-1	1/1/2018	12/31/2018	Out-of-service	Correlation to Meters P-14, P-24, P-25
WC-S-2 + WC-S-3	1/1/2018	12/31/2018	Out-of-service	Correlation to Meters P-30, P-31, P-32, P-14

Section 12

System Flow Rate Checks

Table 12-1
Rouge Valley Sewage Disposal System
Flow Rate Continuity Check

Meter Grouping	Relative Location	Monthly Average Dry Weather Flow Rate (cfs)												Annual Average (cfs)
		Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	
Comparison 1														
[WC-S-2] + [WC-S-3] + [P-14]	Downstream	53.3	57.6	69.5	73.9	74.6	57.3	44.9	47.4	44.6	59.4	71.8	65.4	60.0
[P-30] + [P-31]+ [P-32]	Upstream	51.2	55.2	66.4	70.5	71.4	55.1	43.4	45.7	43.1	57.0	68.6	62.7	57.5
	Incremental	2.1	2.4	3.1	3.4	3.2	2.2	1.5	1.7	1.5	2.4	3.2	2.7	2.5
Comparison 2														
[WC-S-2] + [WC-S-3] + [P-14]	Downstream	53.3	57.6	69.5	73.9	74.6	57.3	44.9	47.4	44.6	59.4	71.8	65.4	60.0
[P-9] + [P-10] + [P-11] + [P-13]	Upstream	47.9	51.5	64.4	67.5	66.8	50.8	39.4	41.7	38.9	53.3	64.4	58.7	53.8
	Incremental	5.4	6.1	5.1	6.4	7.8	6.5	5.5	5.7	5.7	6.1	7.4	6.7	6.2
Comparison 3														
[P-30] + [P-31]+ [P-32]	Downstream	51.2	55.2	66.4	70.5	71.4	55.1	43.4	45.7	43.1	57.0	68.6	62.7	57.5
[P-13] + [P-33] + [P-34]+ [P-35]	Upstream	47.1	51.0	65.5	69.1	68.7	52.4	40.6	43.5	40.8	56.7	68.3	61.6	55.4
	Incremental	4.1	4.2	0.9	1.4	2.7	2.7	2.8	2.2	2.3	0.3	0.3	1.1	2.1
Comparison 4														
[P-33] + [P-34] + [P-35]	Downstream	39.0	42.5	53.5	55.9	55.8	43.5	34.1	36.8	34.7	47.2	56.1	50.3	45.8
[P-9] + [P-10] + [P-11]	Upstream	39.9	43.1	52.3	54.4	53.9	41.9	32.9	35.1	32.8	43.7	52.2	47.3	44.1
	Incremental	-0.9	-0.6	1.2	1.5	1.9	1.6	1.2	1.7	1.9	3.5	3.9	3.0	1.7
Comparison 5														
[WC-S-1]	Downstream	57.1	61.7	75.2	78.8	76.6	60.4	49.9	53.2	49.9	63.9	76.9	70.7	64.5
[WC-S-1A]	Upstream	56.6	61.3	72.6	76.0	72.5	56.5	45.4	49.4	48.4	61.1	74.6	68.4	61.9
	Incremental	0.5	0.4	2.6	2.8	4.1	3.9	4.5	3.8	1.5	2.8	2.3	2.3	2.6
Comparison 6														
[WC-S-1]	Downstream	57.1	61.7	75.2	78.8	76.6	60.4	49.9	53.2	49.9	63.9	76.9	70.7	64.5
[P-14]+[P-24]+[P-25]	Upstream	52.8	56.8	68.2	71.3	69.7	55.6	46.6	49.3	46.5	58.4	69.6	64.5	59.1
	Incremental	4.3	4.9	7.0	7.5	6.9	4.8	3.3	3.9	3.4	5.5	7.3	6.2	5.4
Comparison 7														
[WC-S-1A]	Downstream	56.6	61.3	72.6	76.0	72.5	56.5	45.4	49.4	48.4	61.1	74.6	68.4	61.9
[P-14]+[P-24]+[P-25]	Upstream	52.8	56.8	68.2	71.3	69.7	55.6	46.6	49.3	46.5	58.4	69.6	64.5	59.1
	Incremental	3.8	4.5	4.4	4.7	2.8	0.9	-1.2	0.1	1.9	2.7	5.0	3.9	2.8
Comparison 8														
[P-24] + [P-25]	Downstream	15.4	17.8	21.9	22.9	21.3	15.0	11.8	13.0	12.2	16.3	21.9	19.9	17.4
[P-20] + [P-21]	Upstream	11.7	13.8	17.5	18.2	17.3	11.8	8.8	10.4	10.2	13.9	17.5	15.4	13.9
	Incremental	3.7	4.0	4.4	4.7	4.0	3.2	3.0	2.6	2.0	2.4	4.4	4.5	3.5
Comparison 9														
[P-21]	Downstream	9.0	10.1	11.4	12.6	12.5	8.9	6.5	7.7	7.4	10.3	12.4	10.5	9.9
[P-19] + [WE-28]	Upstream	7.8	8.7	9.5	11.0	11.0	8.2	5.6	6.6	6.4	8.5	10.2	8.9	8.5
	Incremental	1.2	1.4	1.9	1.6	1.5	0.7	0.9	1.1	1.0	1.8	2.2	1.6	1.4
Comparison 10														
[P-19]	Downstream	5.8	6.6	7.7	8.5	8.1	6.2	4.5	5.4	5.2	7.0	8.2	7.1	6.7
[P-17] + [WE-25] + [FE-19]	Upstream	4.3	4.9	6.2	6.6	6.2	4.8	3.4	4.0	3.9	5.2	6.3	5.5	5.1
	Incremental	1.5	1.7	1.5	1.9	1.9	1.4	1.1	1.4	1.3	1.8	1.9	1.6	1.6
Comparison 11														
[P-3] + [P-26]	Downstream	10.9	10.9	11.9	11.3	11.5	11.1	10.0	10.1	10.1	11.0	11.4	11.2	10.9
[P-1]	Upstream	8.2	8.0	9.0	9.0	9.2	8.5	7.7	7.8	7.9	8.2	8.9	8.6	8.4
	Incremental	2.7	2.9	2.9	2.3	2.3	2.6	2.3	2.3	2.2	2.8	2.5	2.6	2.5
Comparison 12														
[P-1]	Downstream	8.2	8.0	9.0	9.0	9.2	8.5	7.7	7.8	7.9	8.2	8.9	8.6	8.4
[BG-1]	Upstream	6.9	6.8	7.3	7.2	7.3	6.8	6.3	6.5	6.4	6.9	7.4	7.2	6.9
	Incremental	1.3	1.2	1.7	1.8	1.9	1.7	1.4	1.3	1.5	1.3	1.5	1.4	1.5
Comparison 13														
[P-12]	Downstream	12.6	13.9	17.7	18.5	18.8	13.1	10.1	10.3	9.8	13.2	16.4	15.0	14.1
[LV-Basin] + [LV-11]	Upstream	11.9	12.8	16.6	17.3	17.7	12.5	9.4	9.8	9.4	12.6	15.7	14.5	13.4
	Incremental	0.7	1.1	1.1	1.2	1.1	0.6	0.7	0.5	0.4	0.6	0.7	0.5	0.7

Table 12-2

Rouge Valley Sewage Disposal System

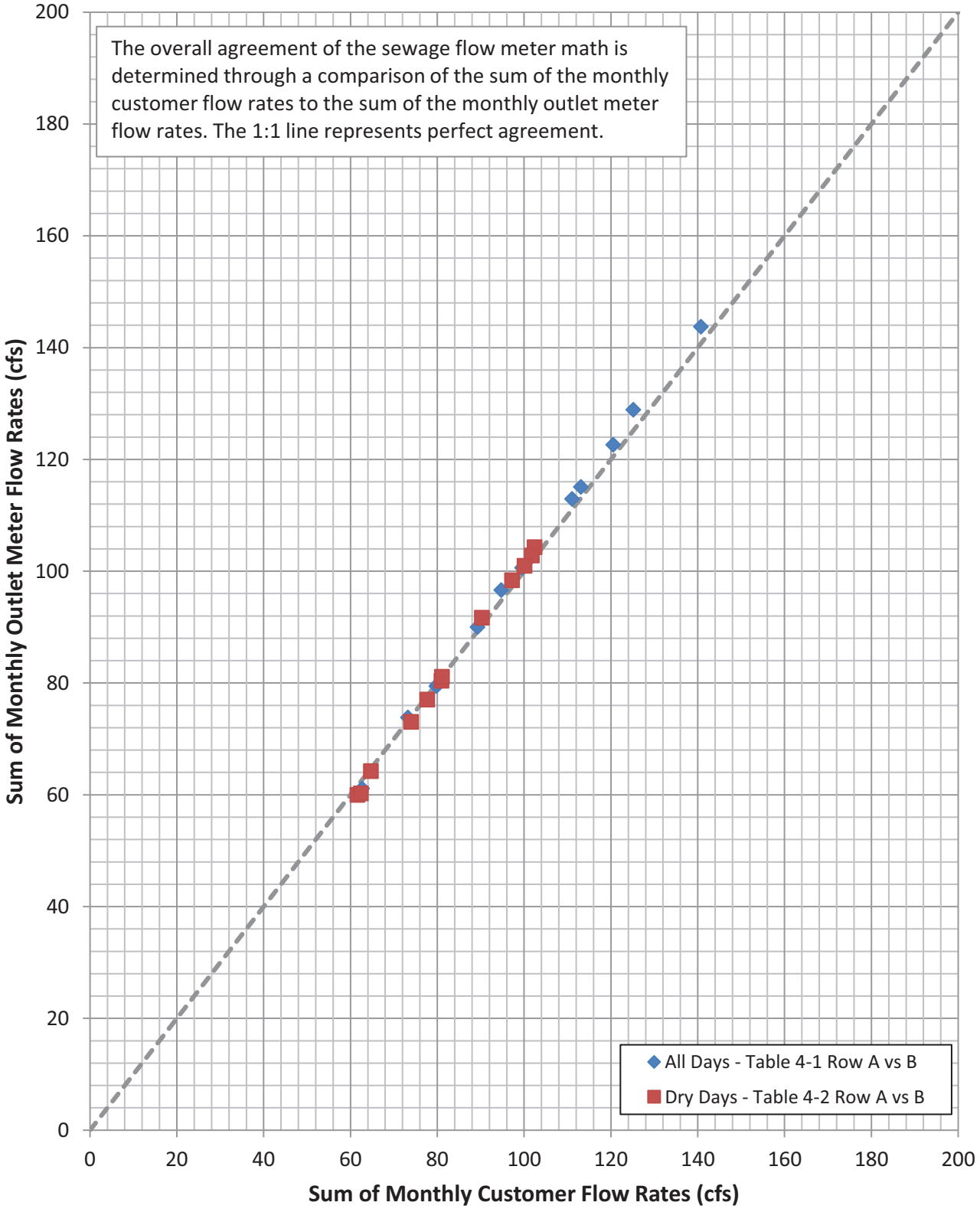
Monthly Average Dry Weather Flow Rate Versus Residential Population Check

Meter Grouping	Year 2010 Residential Population	Metric	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Annual Average	Percent of Area as Residential	Residential Area (acres)	Total Developed Land (Acres)
[BG-1]	43,217	cfs	6.9	6.8	7.3	7.2	7.3	6.8	6.3	6.5	6.4	6.9	7.4	7.2	6.9	62%	7,768	12,473
		GPCD	*103.8*	*102.4*	*109.7*	*107.9*	*109.7*	*101.6*	*93.6*	*97.5*	*95.9*	*103.1*	*110.3*	*107.2*	*103.6*			
[P-1]	49,143	cfs	8.2	8.0	9.0	9.0	9.2	8.5	7.7	7.8	7.9	8.2	8.9	8.6	8.4	63%	8,421	13,361
		GPCD	*107.3*	*104.8*	*118.5*	*118.2*	*121.0*	*111.5*	*101.4*	*103.1*	*103.9*	*108.5*	*116.7*	*112.9*	*110.7*			
[P-3] + [P-26]	55,091	cfs	10.9	10.9	11.9	11.3	11.5	11.1	10.0	10.1	10.1	11.0	11.4	11.2	10.9	63%	8,762	13,982
		GPCD	*127.8*	*127.8*	*139.3*	*132.8*	*134.8*	*129.7*	*117.3*	*119.0*	*118.2*	*128.8*	*134.1*	*131.7*	*128.4*			
[LV-16]	5,147	cfs	1.7	2.1	2.7	2.7	2.8	2.2	1.6	1.7	1.6	2.3	2.6	2.3	2.2	62%	599	963
		GPCD	*215.2*	*258.8*	*333.2*	*334.2*	*351.5*	*271.0*	*205.8*	*213.4*	*203.2*	*289.9*	*330.4*	*287.9*	*274.6*			
[LV-15]	6,570	cfs	3.0	3.3	3.9	4.4	4.3	3.0	2.4	2.5	2.4	3.3	4.0	3.5	3.3	81%	484	596
		GPCD	*298.4*	*321.5*	*382.3*	*436.2*	*419.0*	*299.1*	*233.1*	*250.6*	*240.3*	*326.8*	*395.9*	*339.6*	*328.5*			
[WE-14]	26,724	cfs	5.0	5.4	6.4	6.4	6.4	5.4	4.2	4.5	4.4	5.8	6.5	5.8	5.5	60%	2,000	3,348
		GPCD	*121.8*	*131.0*	*154.4*	*155.1*	*154.7*	*130.0*	*101.5*	*109.5*	*105.9*	*140.8*	*158.3*	*140.6*	*133.6*			
[M-2]	13,739	cfs	2.5	2.9	3.6	3.8	3.4	2.5	1.6	2.0	1.9	2.5	4.4	3.3	2.9	81%	1,143	1,409
		GPCD	*118.3*	*135.5*	*167.9*	*180.0*	*162.0*	*118.9*	*77.3*	*92.6*	*89.9*	*119.8*	*205.4*	*154.3*	*135.0*			
[M-1]	14,943	cfs	2.4	2.7	3.0	3.4	3.1	2.3	1.9	1.9	1.9	2.7	3.9	2.7	2.7	81%	1,181	1,453
		GPCD	*102.7*	*115.0*	*129.1*	*145.7*	*133.8*	*98.3*	*83.1*	*81.7*	*84.1*	*118.4*	*168.9*	*118.8*	*114.9*			
[LV-14]	7,738	cfs	1.4	1.6	2.0	2.2	2.0	1.5	1.1	1.1	1.1	1.6	2.1	1.8	1.6	56%	573	1,029
		GPCD	*116.8*	*132.6*	*169.3*	*180.5*	*168.7*	*128.1*	*93.4*	*95.7*	*90.2*	*136.3*	*171.5*	*153.8*	*136.4*			
[LV-11] + [LV-4]	39,591	cfs	6.4	6.9	8.9	8.8	9.1	6.7	5.3	5.7	5.4	7.1	8.5	7.7	7.2	49%	2,439	5,018
		GPCD	*104.6*	*112.8*	*145.7*	*143.5*	*149.1*	*109.4*	*86.2*	*92.4*	*87.5*	*115.1*	*138.0*	*126.2*	*117.6*			
[LV-11] + [LV-Basin]	28,266	cfs	11.9	12.8	16.6	17.3	17.7	12.5	9.4	9.8	9.4	12.6	15.7	14.5	13.4	64%	7,708	11,998
		GPCD	*273.2*	*293.1*	*379.3*	*396.0*	*404.2*	*285.7*	*214.0*	*224.3*	*215.6*	*288.9*	*358.4*	*332.1*	*305.4*			
[P-12]	68,311	cfs	12.6	13.9	17.7	18.5	18.8	13.1	10.1	10.3	9.8	13.2	16.4	15.0	14.1	61%	7,733	12,722
		GPCD	*118.9*	*131.4*	*167.2*	*174.9*	*178.1*	*124.0*	*95.3*	*97.4*	*92.8*	*124.8*	*155.2*	*141.6*	*133.5*			
[P-9] + [P-10] + [P-11]	223,281	cfs	39.9	43.1	52.3	54.4	53.9	41.9	32.9	35.1	32.8	43.7	52.2	47.3	44.1	64%	24,438	38,468
		GPCD	*115.4*	*124.7*	*151.5*	*157.4*	*155.9*	*121.1*	*95.2*	*101.5*	*95.1*	*126.6*	*151.0*	*137.0*	*127.7*			
[P-13]	48,847	cfs	8.0	8.4	12.0	13.1	13.0	9.0	6.5	6.6	6.1	9.6	12.2	11.4	9.7	73%	3,636	4,961
		GPCD	*106.1*	*111.7*	*159.2*	*173.9*	*171.5*	*118.6*	*85.8*	*87.6*	*80.3*	*126.5*	*161.7*	*150.3*	*127.8*			
[WC-S-2] + [WC-S-3] + [P-14]	308,765	cfs	53.3	57.6	69.5	73.9	74.6	57.3	44.9	47.4	44.6	59.4	71.8	65.4	60.0	66%	30,460	46,337
		GPCD	*111.6*	*120.6*	*145.4*	*154.6*	*156.2*	*120.0*	*94.0*	*99.1*	*93.4*	*124.2*	*150.2*	*137.0*	*125.5*			
[P-15]	6,938	cfs	1.1	1.2	1.4	1.4	1.5	1.2	1.0	1.1	1.1	1.2	1.5	1.5	1.3	36%	1,626	4,471
		GPCD	*104.3*	*109.2*	*133.3*	*125.8*	*140.8*	*115.2*	*95.3*	*103.1*	*103.2*	*109.1*	*144.4*	*135.6*	*118.3*			
[P-17]	9,561	cfs	1.9	2.2	2.5	2.7	2.3	2.0	1.5	1.6	1.6	1.9	2.2	2.0	2.0	37%	2,476	6,748
		GPCD	*128.6*	*148.2*	*169.1*	*179.5*	*157.4*	*134.8*	*101.9*	*111.3*	*104.9*	*125.8*	*146.4*	*137.4*	*137.0*			
[WE-25]	16,269	cfs	2.4	2.7	3.7	3.9	3.9	2.8	1.9	2.4	2.3	3.3	4.1	3.4	3.1	70%	1,503	2,141
		GPCD	*93.7*	*106.4*	*146.0*	*156.1*	*155.0*	*112.7*	*75.4*	*95.2*	*91.5*	*133.0*	*162.4*	*137.0*	*122.1*			
[P-19] - [FE-19]	32,127	cfs	5.8	6.6	7.7	8.5	8.1	6.2	4.5	5.4	5.2	7.0	8.2	7.1	6.7	46%	4,454	9,630
		GPCD	*115.7*	*133.0*	*154.1*	*171.9*	*163.7*	*125.4*	*90.5*	*107.7*	*105.1*	*140.7*	*164.9*	*143.5*	*134.6*			
[WE-28]	14,096	cfs	2.0	2.1	1.9	2.5	2.9	2.0	1.1	1.2	1.2	1.5	2.0	1.8	1.9	72%	931	1,294
		GPCD	*91.7*	*96.6*	*86.2*	*114.1*	*133.4*	*92.4*	*51.9*	*55.1*	*54.5*	*71.0*	*93.3*	*81.9*	*85.0*			
[P-21] - [FE-19]	51,271	cfs	9.0	10.1	11.4	12.6	12.5	8.9	6.5	7.7	7.4	10.3	12.4	10.5	9.9	50%	5,665	11,264
		GPCD	*112.9*	*127.1*	*143.9*	*159.2*	*158.0*	*112.8*	*82.0*	*97.0*	*93.1*	*129.8*	*156.2*	*132.6*	*125.3*			
[P-25] - [FE-19]	66,119	cfs	10.8	12.2	13.6	14.9	14.1	10.1	7.9	8.8	7.8	10.5	14.0	12.4	11.4	54%	6,687	12,479
		GPCD	*105.6*	*119.7*	*133.1*	*145.5*	*137.5*	*98.8*	*76.8*	*86.5*	*75.8*	*102.9*	*137.3*	*121.6*	*111.6*			
[P-20]	12,503	cfs	2.7	3.7	6.1	5.5	4.8	2.9	2.3	2.7	2.8	3.6	5.1	4.9	3.9	12%	731	6,147
		GPCD	*138.9*	*192.3*	*315.3*	*286.3*	*248.7*	*147.4*	*119.0*	*140.9*	*146.7*	*187.4*	*263.2*	*253.4*	*203.3*			
[P-24]	29,900	cfs	4.6	5.6	8.3	8.0	7.2	4.8	3.9	4.2	4.5	5.8	7.9	7.5	6.0	66%	2,294	3,498
		GPCD	*99.1*	*120.5*	*179.3*	*173.2*	*156.2*	*104.8*	*84.6*	*90.1*	*96.4*	*125.0*	*170.4*	*161.9*	*130.1*			
[WC-S-1] + [WC-S-2] + [WC-S-3] - [FE-19]	404,784	cfs	73.0	80.4	98.4	104.3	102.8	77.0	60.0	64.2	60.2	81.1	101.0	91.7	82.8	59%	39,441	67,194
		GPCD	*116.6*	*128.4*	*157.1*	*166.5*	*164.1*	*123.0*	*95.8*	*102.6*	*96.2*	*129.5*	*161.2*	*146.3*	*132.3*			

Legend:

xx.x	Per capita flow rates are greater than the district-wide average by 20% or more.
xx.x	Per capita flow rates are less than the district-wide average by 20% or more.

Figure 12-1
Rouge Valley Sewage Disposal System
End of System Monthly Flow Rate Comparison



Section 13

Annual Meter Reports

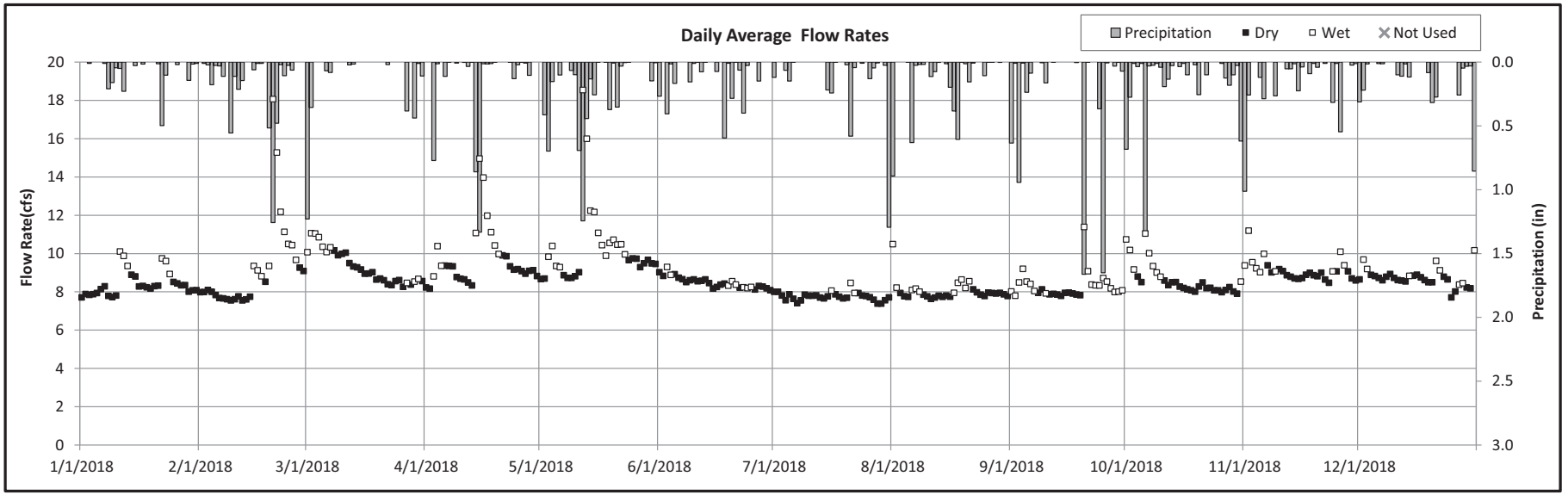
Rouge Valley Sewage Disposal System

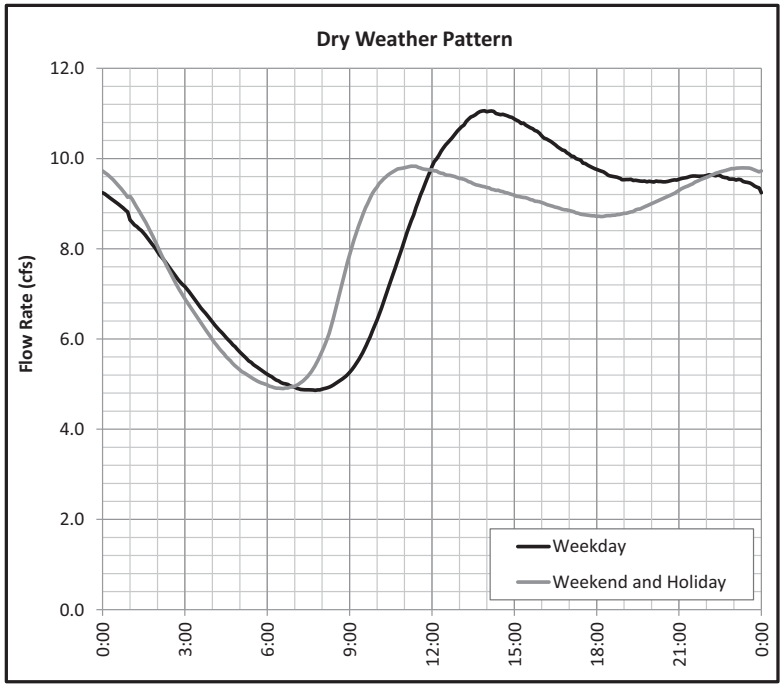
Annual Meter Report

Meter: P-1
Interceptor Manhole ID: NAI 1-13A

Location: 5 Mile Road and Hines Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	8.4	169.1	8.2	163.5	25	6
Feb-18	9.3	167.6	8.0	144.2	17	11
Mar-18	9.3	186.6	9.0	180.6	21	10
Apr-18	9.7	188.6	9.0	174.3	20	10
May-18	10.3	206.4	9.2	184.3	15	16
Jun-18	8.5	164.6	8.5	164.4	22	8
Jul-18	7.8	155.4	7.7	154.5	28	3
Aug-18	8.0	161.1	7.8	157.0	21	10
Sep-18	8.3	160.5	7.9	153.2	11	19
Oct-18	8.7	173.3	8.2	165.2	22	9
Nov-18	9.1	176.7	8.9	172.1	20	10
Dec-18	8.7	175.1	8.6	172.0	23	8

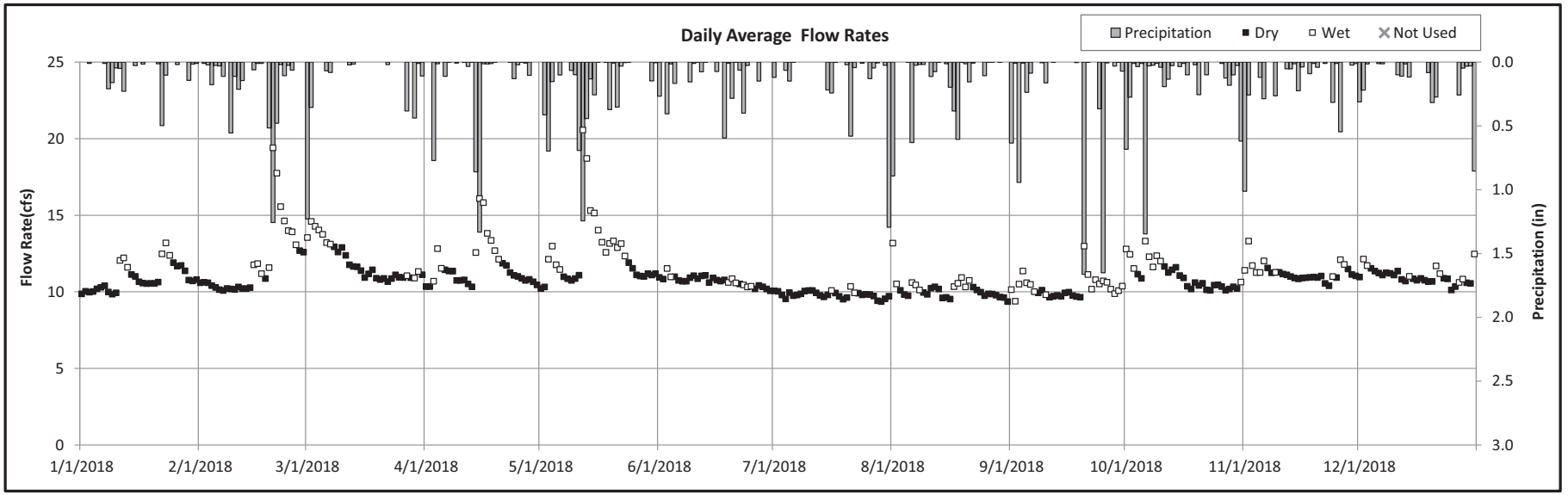
Statistics for Significant Wet Weather Events

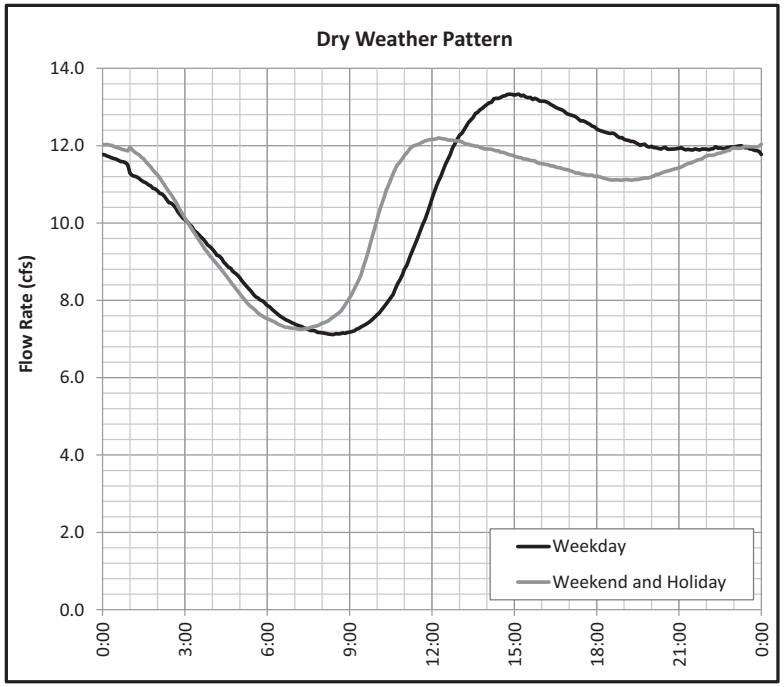
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	20.76	2/20/18 9:45	1.75	2/20/18 6:25
2	1.22	3/1/2018	3/2/2018	12.70	3/2/18 21:20	1.26	3/2/18 19:25
3	2.30	4/14/2018	4/16/2018	23.53	4/15/18 19:20	1.90	4/15/18 19:50
4	1.24	5/2/2018	5/4/2018	12.29	5/3/18 11:40	1.16	5/2/18 22:55
5	2.21	5/11/2018	5/12/2018	24.96	5/12/18 13:50	0.00	-
6	2.15	7/31/2018	8/1/2018	15.17	8/1/18 3:00	1.41	8/1/18 3:40
7	1.76	9/20/2018	9/20/2018	21.83	9/20/18 10:55	1.80	9/20/18 11:40
8	2.08	9/24/2018	9/26/2018	10.71	9/26/18 9:00	1.16	9/25/18 22:35
9	1.35	10/6/2018	10/7/2018	14.69	10/6/18 13:05	1.36	10/6/18 13:25
10	1.81	10/31/2018	11/2/2018	13.33	11/1/18 20:20	1.28	11/1/18 22:15

Meter: P-3
Interceptor Manhole ID: MRIR 5C-01

Location: Plymouth Road East of I-275
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	10.9	219.0	10.6	212.4	25	6
Feb-18	12.0	216.5	10.6	192.0	17	11
Mar-18	11.9	238.8	11.4	228.8	21	10
Apr-18	11.7	226.0	10.9	211.6	20	10
May-18	12.5	250.6	11.0	220.4	15	16
Jun-18	10.7	207.3	10.7	207.3	22	8
Jul-18	9.8	196.7	9.8	196.0	28	3
Aug-18	10.2	203.5	9.9	197.7	21	10
Sep-18	10.2	198.7	9.8	190.1	11	19
Oct-18	11.1	221.8	10.6	213.3	22	9
Nov-18	11.2	218.0	11.0	213.4	20	10
Dec-18	11.0	221.0	10.9	218.1	23	8

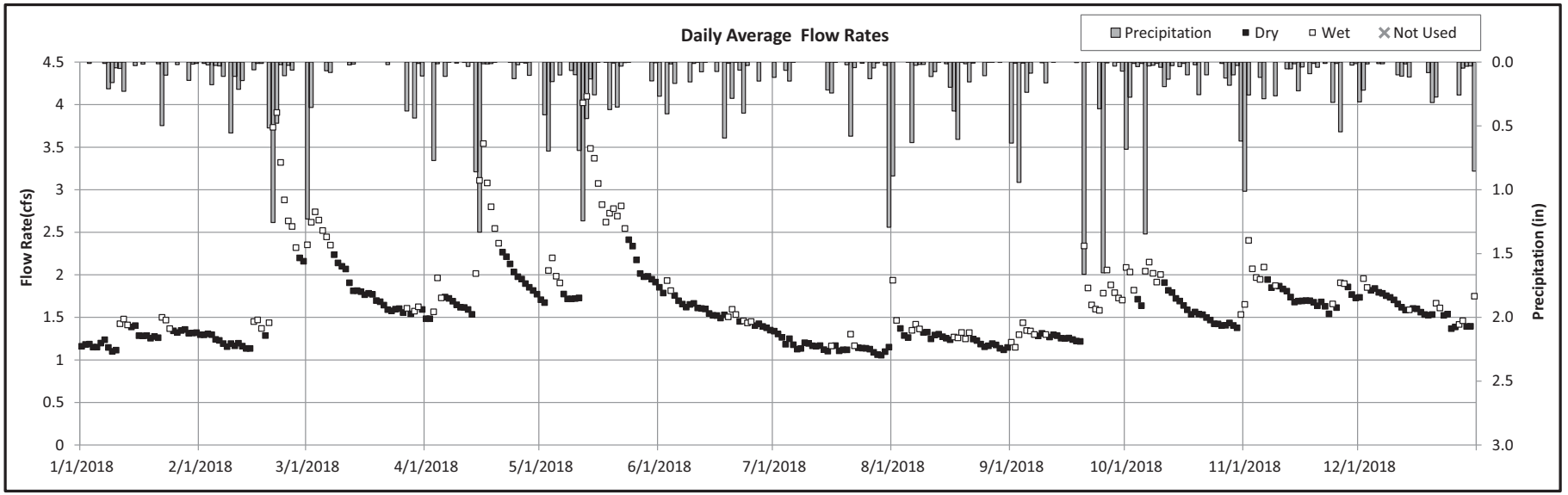
Statistics for Significant Wet Weather Events

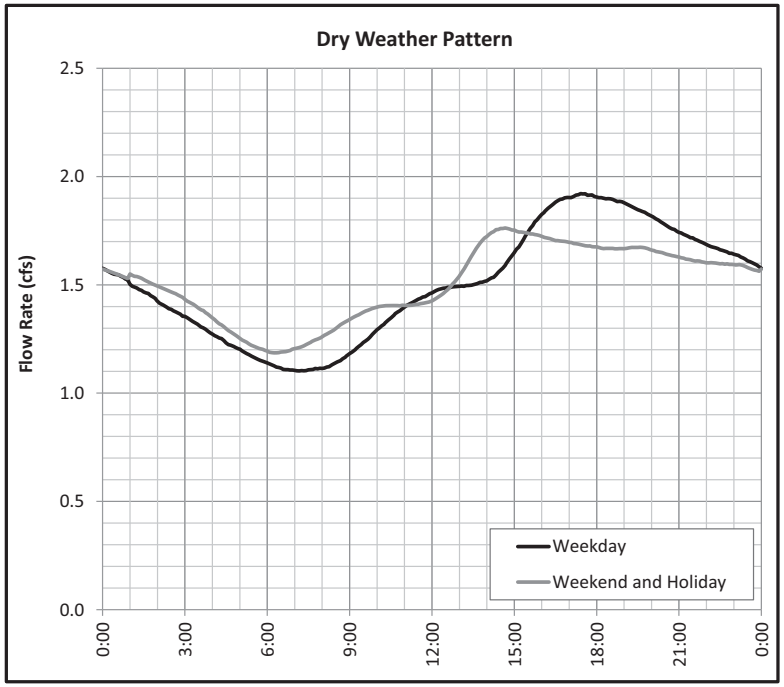
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	21.50	2/20/18 18:40	1.75	2/20/18 19:10
2	1.22	3/1/2018	3/2/2018	16.66	3/2/18 0:05	1.48	3/2/18 1:05
3	2.30	4/14/2018	4/16/2018	23.74	4/15/18 20:35	1.85	4/15/18 21:05
4	1.24	5/2/2018	5/4/2018	14.69	5/4/18 10:05	1.40	5/4/18 11:10
5	2.21	5/11/2018	5/12/2018	26.73	5/12/18 13:55	2.01	5/12/18 14:35
6	2.15	7/31/2018	8/1/2018	18.56	8/1/18 3:25	1.59	8/1/18 3:25
7	1.76	9/20/2018	9/20/2018	21.24	9/20/18 10:35	1.80	9/20/18 11:05
8	2.08	9/24/2018	9/26/2018	12.87	9/24/18 10:10	1.19	9/25/18 22:50
9	1.35	10/6/2018	10/7/2018	17.28	10/6/18 14:05	1.44	10/6/18 14:05
10	1.81	10/31/2018	11/2/2018	16.00	11/1/18 21:45	1.37	11/1/18 22:05

Meter: P-7
Interceptor Manhole ID: PWI I-03

Location: Joy Road West of Farmington Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.3	25.8	1.3	25.1	25	6
Feb-18	1.8	32.1	1.3	24.1	17	11
Mar-18	1.9	38.6	1.8	35.5	21	10
Apr-18	2.0	39.2	1.8	34.9	20	10
May-18	2.4	47.8	1.9	38.4	15	16
Jun-18	1.6	30.5	1.6	30.4	22	8
Jul-18	1.2	23.3	1.2	23.2	28	3
Aug-18	1.3	25.7	1.2	24.7	21	10
Sep-18	1.5	28.6	1.3	24.5	11	19
Oct-18	1.7	33.7	1.6	31.4	22	9
Nov-18	1.8	34.9	1.7	33.6	20	10
Dec-18	1.6	32.5	1.6	32.2	23	8

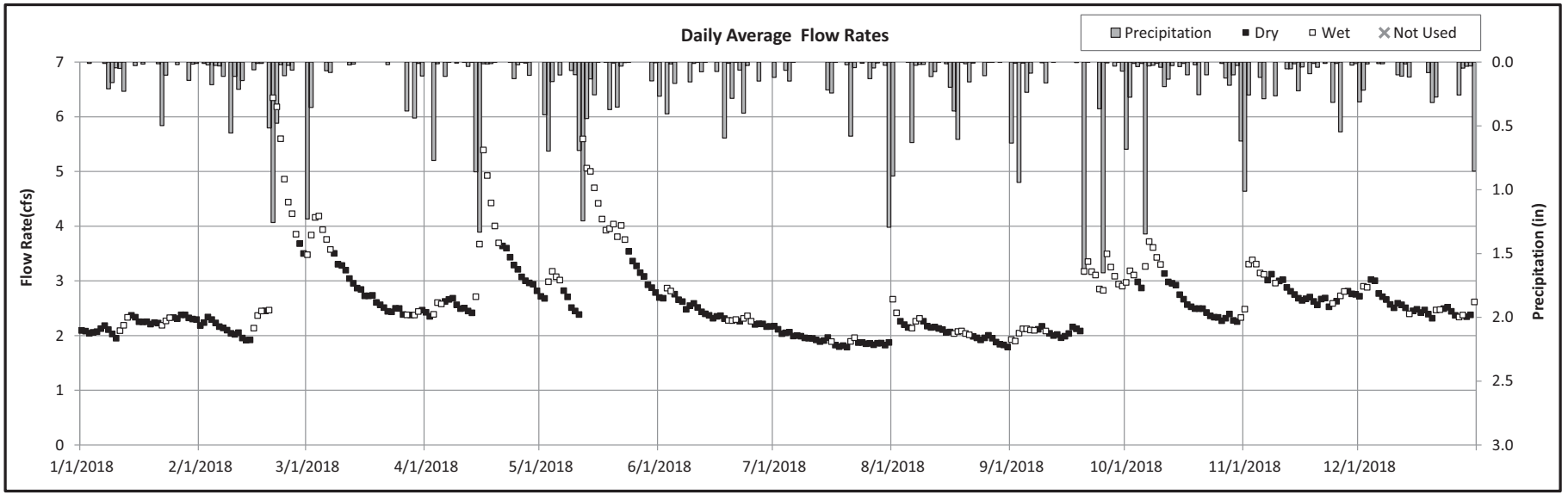
Statistics for Significant Wet Weather Events

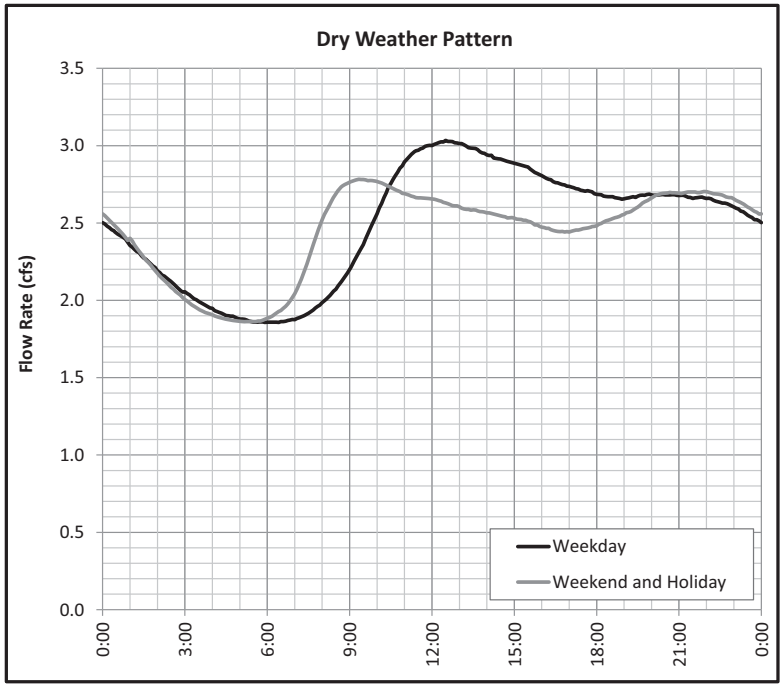
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	4.72	2/20/18 21:10	1.68	2/20/18 21:35
2	1.22	3/1/2018	3/2/2018	2.98	3/2/18 21:45	1.32	3/2/18 18:40
3	2.30	4/14/2018	4/16/2018	5.17	4/15/18 19:40	1.77	4/15/18 22:40
4	1.24	5/2/2018	5/4/2018	2.51	5/4/18 12:05	1.24	5/4/18 13:15
5	2.21	5/11/2018	5/12/2018	5.67	5/12/18 15:00	1.92	5/12/18 16:25
6	2.15	7/31/2018	8/1/2018	2.57	8/1/18 5:05	1.27	8/1/18 6:35
7	1.76	9/20/2018	9/20/2018	4.15	9/20/18 13:00	1.62	9/20/18 13:45
8	2.08	9/24/2018	9/26/2018	2.57	9/25/18 20:40	1.27	9/25/18 20:30
9	1.35	10/6/2018	10/7/2018	2.77	10/6/18 15:00	-	-
10	1.81	10/31/2018	11/2/2018	2.72	11/2/18 13:25	1.28	11/2/18 13:10

Meter: P-8
Interceptor Manhole ID: RVI 9-20

Location: Joy Road West of Farmington Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.2	44.3	2.2	44.2	25	6
Feb-18	3.0	54.4	2.3	41.7	17	11
Mar-18	3.0	59.5	2.8	55.3	21	10
Apr-18	3.1	60.4	2.9	55.4	20	10
May-18	3.5	69.7	2.9	57.8	15	16
Jun-18	2.4	47.0	2.4	47.0	22	8
Jul-18	1.9	38.5	1.9	38.5	28	3
Aug-18	2.1	41.9	2.0	40.8	21	10
Sep-18	2.4	47.3	2.1	40.0	11	19
Oct-18	2.8	55.4	2.6	51.7	22	9
Nov-18	2.8	55.0	2.8	53.6	20	10
Dec-18	2.6	51.1	2.6	51.1	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	14.23	2/20/18 18:10	1.49	2/20/18 18:30
2	1.22	3/1/2018	3/2/2018	4.24	3/2/18 19:25	0.80	3/2/18 21:55
3	2.30	4/14/2018	4/16/2018	5.74	4/16/18 10:45	0.93	4/15/18 21:45
4	1.24	5/2/2018	5/4/2018	3.74	5/4/18 7:35	0.77	5/4/18 8:00
5	2.21	5/11/2018	5/12/2018	13.62	5/12/18 16:00	1.54	5/12/18 16:25
6	2.15	7/31/2018	8/1/2018	3.50	8/1/18 15:10	0.77	8/1/18 15:35
7	1.76	9/20/2018	9/20/2018	4.04	9/20/18 20:10	0.79	9/20/18 20:35
8	2.08	9/24/2018	9/26/2018	4.03	9/26/18 7:20	0.80	9/26/18 7:50
9	1.35	10/6/2018	10/7/2018	4.31	10/7/18 11:10	0.80	10/7/18 11:15
10	1.81	10/31/2018	11/2/2018	4.08	11/3/18 11:05	0.79	11/3/18 11:25

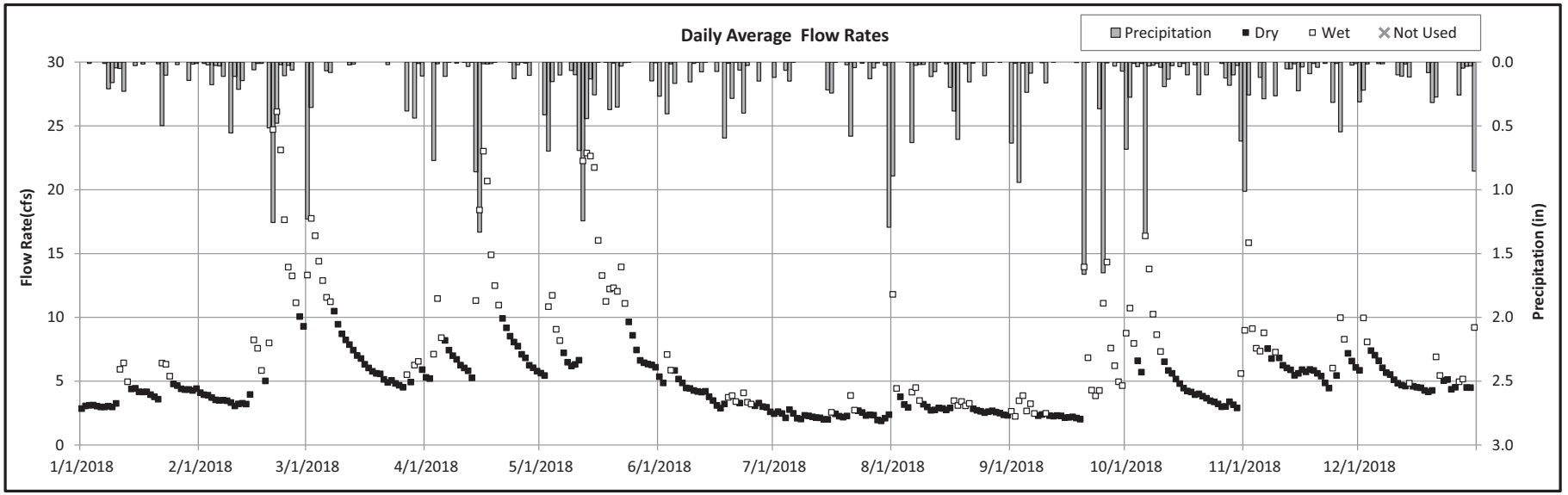
Rouge Valley Sewage Disposal System

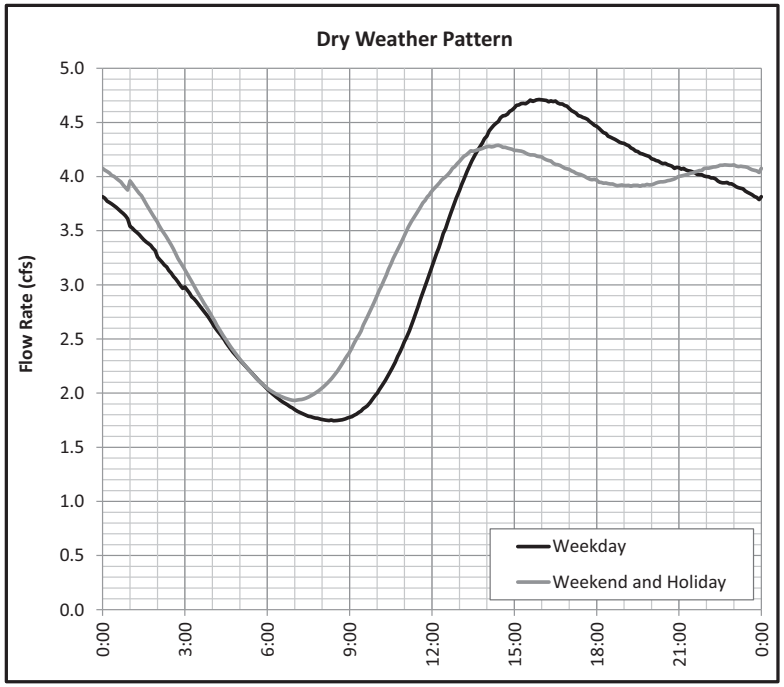
Annual Meter Report

Meter: P-9
Interceptor Manhole ID: NHV 3-34

Location: Hines Drive East of Inkster Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	4.2	83.7	3.8	75.4	25	6
Feb-18	8.3	150.9	4.4	78.8	17	11
Mar-18	8.1	162.1	6.4	128.9	21	10
Apr-18	9.2	179.2	6.9	134.3	20	10
May-18	10.7	215.0	6.8	135.3	15	16
Jun-18	4.0	78.1	3.9	76.1	22	8
Jul-18	2.3	47.1	2.3	45.6	28	3
Aug-18	3.3	66.6	2.8	55.8	21	10
Sep-18	4.3	83.6	2.2	43.0	11	19
Oct-18	5.9	118.4	4.3	85.5	22	9
Nov-18	6.9	134.7	6.0	115.6	20	10
Dec-18	5.6	111.2	5.1	102.4	23	8

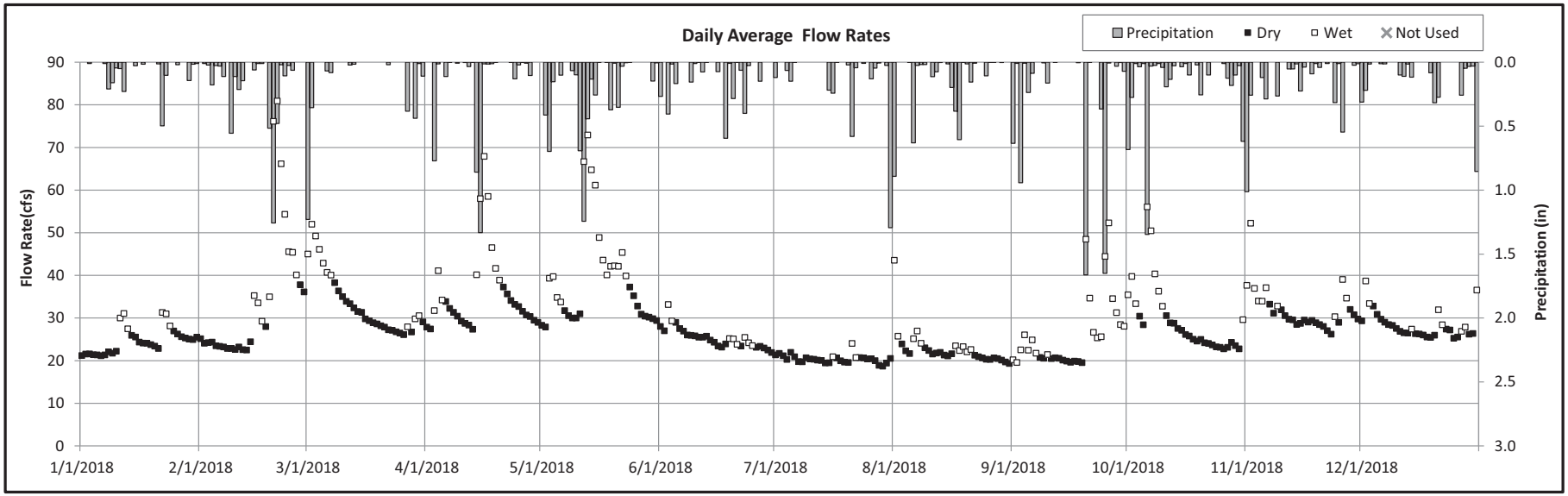
Statistics for Significant Wet Weather Events

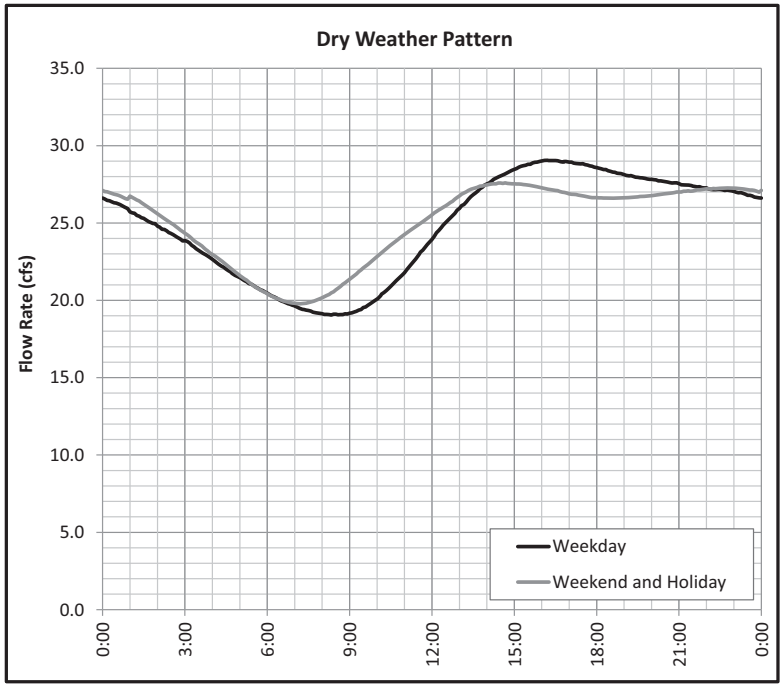
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	28.42	2/20/18 22:55	8.81	2/20/18 17:45
2	1.22	3/1/2018	3/2/2018	20.52	3/2/18 19:15	2.61	3/2/18 19:15
3	2.30	4/14/2018	4/16/2018	24.63	4/15/18 20:50	11.53	4/15/18 18:55
4	1.24	5/2/2018	5/4/2018	13.14	5/3/18 11:50	1.89	5/3/18 12:05
5	2.21	5/11/2018	5/12/2018	26.69	5/12/18 11:15	11.03	5/13/18 6:55
6	2.15	7/31/2018	8/1/2018	21.70	8/1/18 1:30	5.07	8/1/18 3:25
7	1.76	9/20/2018	9/20/2018	23.44	9/20/18 17:35	10.15	9/20/18 11:15
8	2.08	9/24/2018	9/26/2018	23.75	9/25/18 20:40	7.98	9/25/18 23:10
9	1.35	10/6/2018	10/7/2018	22.64	10/6/18 13:05	4.23	10/6/18 20:40
10	1.81	10/31/2018	11/2/2018	19.67	11/1/18 23:15	2.58	11/1/18 23:50

Meter: P-10
Interceptor Manhole ID: RVI 6-50

Location: Hines Drive East of Inkster Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	24.8	496.0	23.5	471.7	25	6
Feb-18	34.7	628.1	25.3	458.2	17	11
Mar-18	33.5	670.8	30.2	604.8	21	10
Apr-18	36.0	697.2	31.0	601.4	20	10
May-18	39.4	789.9	31.0	621.3	15	16
Jun-18	25.3	490.6	25.0	484.2	22	8
Jul-18	20.4	408.4	20.2	405.2	28	3
Aug-18	22.7	455.4	21.2	425.3	21	10
Sep-18	26.0	504.0	20.1	390.6	11	19
Oct-18	29.6	592.1	25.6	512.1	22	9
Nov-18	32.0	620.1	29.6	573.0	20	10
Dec-18	28.4	568.5	27.3	547.7	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	86.56	2/21/18 13:20	9.35	2/20/18 17:30
2	1.22	3/1/2018	3/2/2018	57.40	3/1/18 16:10	2.99	3/1/18 16:20
3	2.30	4/14/2018	4/16/2018	74.69	4/15/18 21:40	11.90	4/15/18 23:00
4	1.24	5/2/2018	5/4/2018	44.18	5/3/18 10:45	2.53	5/3/18 12:25
5	2.21	5/11/2018	5/12/2018	81.95	5/12/18 12:25	11.86	5/13/18 7:35
6	2.15	7/31/2018	8/1/2018	69.02	8/1/18 2:05	6.10	8/1/18 3:20
7	1.76	9/20/2018	9/20/2018	72.21	9/20/18 15:10	11.58	9/20/18 11:10
8	2.08	9/24/2018	9/26/2018	75.52	9/26/18 0:50	8.88	9/25/18 23:10
9	1.35	10/6/2018	10/7/2018	69.74	10/6/18 20:30	5.28	10/6/18 21:00
10	1.81	10/31/2018	11/2/2018	60.27	11/1/18 23:10	3.16	11/2/18 3:30

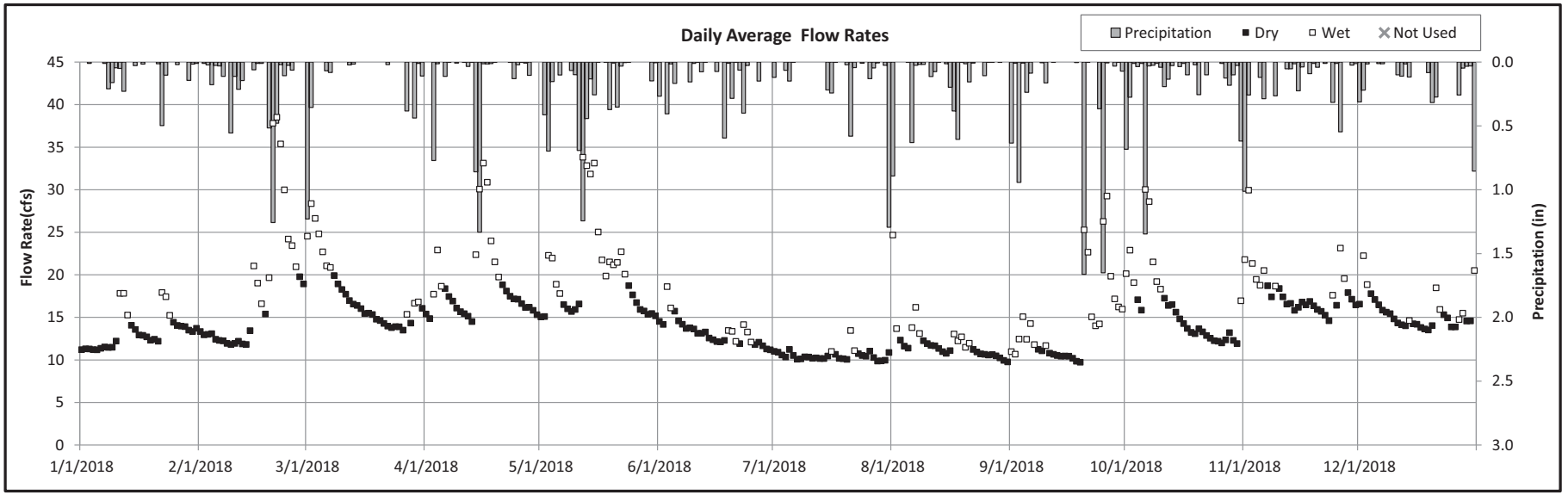
Rouge Valley Sewage Disposal System

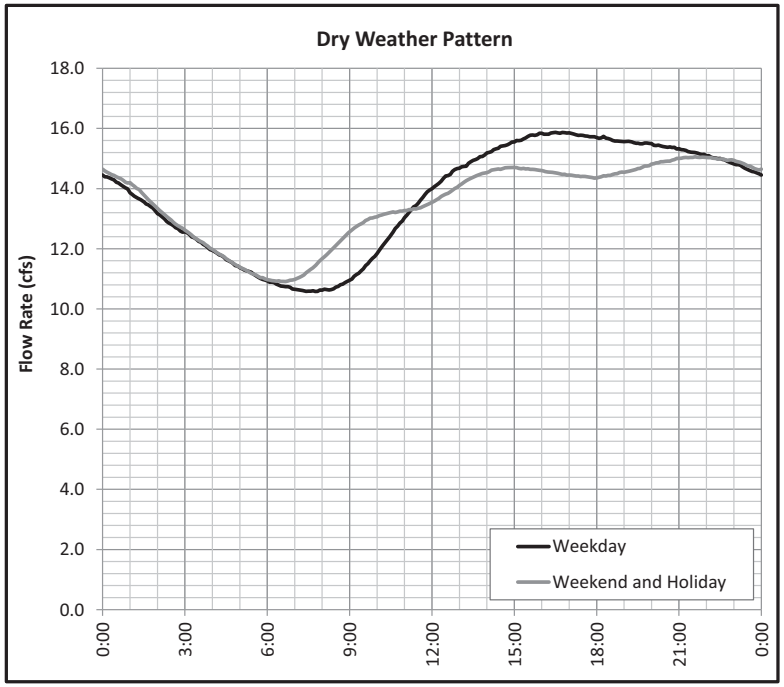
Annual Meter Report

Meter: P-11
Interceptor Manhole ID: MR II-18

Location: Hines Drive East of Inkster Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	13.4	268.5	12.6	251.6	25	6
Feb-18	18.4	332.7	13.4	243.0	17	11
Mar-18	17.7	353.9	15.7	314.8	21	10
Apr-18	19.0	367.9	16.4	318.4	20	10
May-18	20.2	405.5	16.1	322.5	15	16
Jun-18	13.3	257.3	13.0	251.2	22	8
Jul-18	10.5	211.0	10.4	208.2	28	3
Aug-18	12.1	242.2	11.0	221.3	21	10
Sep-18	14.3	278.1	10.5	203.1	11	19
Oct-18	16.2	324.9	13.9	278.8	22	9
Nov-18	18.1	351.3	16.6	322.7	20	10
Dec-18	15.6	312.3	14.9	298.3	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	40.98	2/20/18 20:45	9.17	2/20/18 17:55
2	1.22	3/1/2018	3/2/2018	32.32	3/1/18 14:00	3.06	3/1/18 14:25
3	2.30	4/14/2018	4/16/2018	36.50	4/15/18 21:30	11.84	4/15/18 19:00
4	1.24	5/2/2018	5/4/2018	24.99	5/3/18 10:05	2.52	5/3/18 10:35
5	2.21	5/11/2018	5/12/2018	37.69	5/12/18 15:10	11.47	5/13/18 6:30
6	2.15	7/31/2018	8/1/2018	35.72	8/1/18 1:00	5.75	8/1/18 3:15
7	1.76	9/20/2018	9/20/2018	37.32	9/20/18 8:15	10.84	9/20/18 11:20
8	2.08	9/24/2018	9/26/2018	37.13	9/25/18 20:15	8.67	9/25/18 23:15
9	1.35	10/6/2018	10/7/2018	35.41	10/6/18 11:55	5.00	10/6/18 20:20
10	1.81	10/31/2018	11/2/2018	33.61	11/2/18 3:40	3.32	11/2/18 3:35

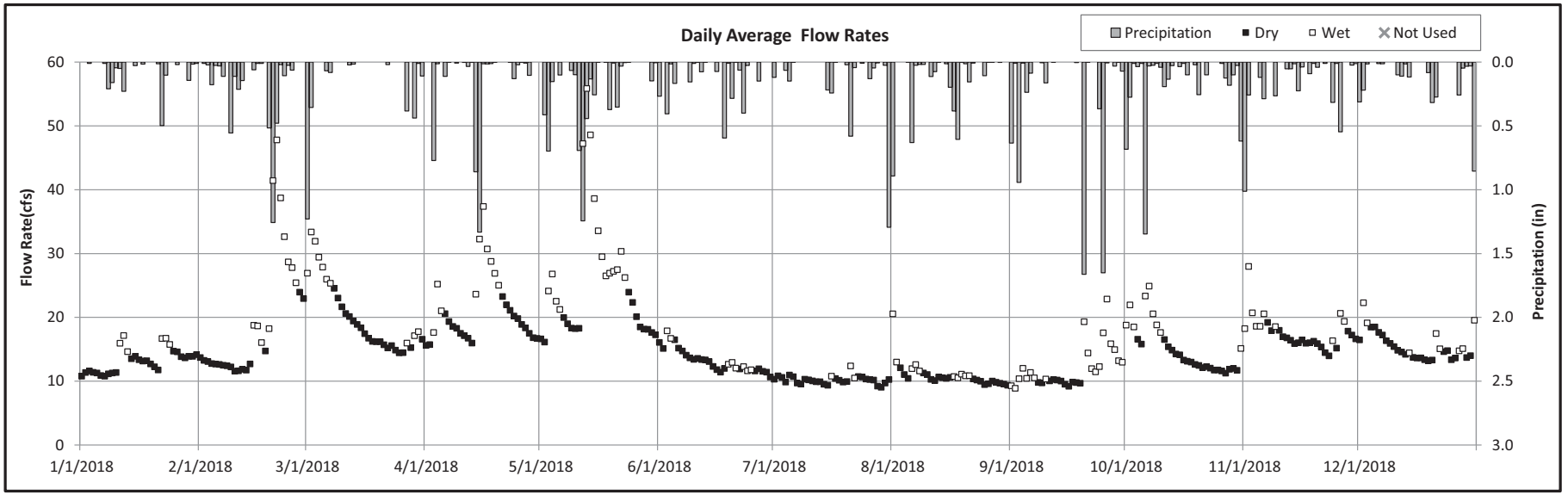
Rouge Valley Sewage Disposal System

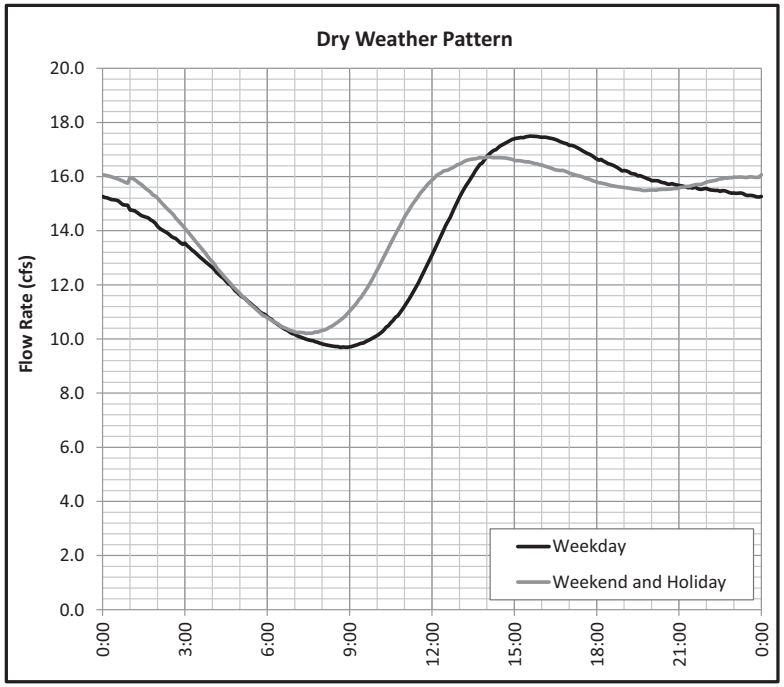
Annual Meter Report

Meter: P-12
Interceptor Manhole ID: RVI 12-01

Location: Inkster Road North of Hines Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	13.3	265.6	12.6	251.7	25	6
Feb-18	19.6	355.6	13.9	251.4	17	11
Mar-18	20.1	402.5	17.7	354.1	21	10
Apr-18	21.3	412.4	18.5	358.4	20	10
May-18	25.6	513.7	18.8	377.2	15	16
Jun-18	13.2	256.0	13.1	254.1	22	8
Jul-18	10.2	204.0	10.1	201.9	28	3
Aug-18	11.0	219.6	10.3	206.3	21	10
Sep-18	11.9	231.2	9.8	190.2	11	19
Oct-18	15.1	303.5	13.2	264.2	22	9
Nov-18	17.6	341.0	16.4	318.1	20	10
Dec-18	15.5	311.5	15.0	299.9	23	8

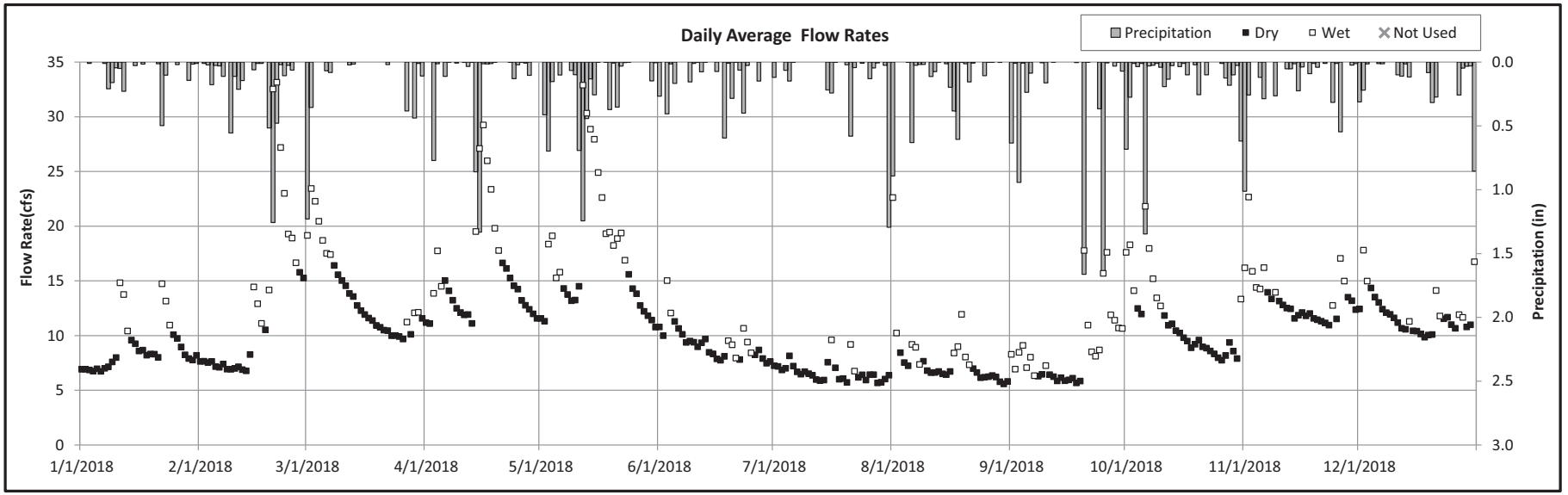
Statistics for Significant Wet Weather Events

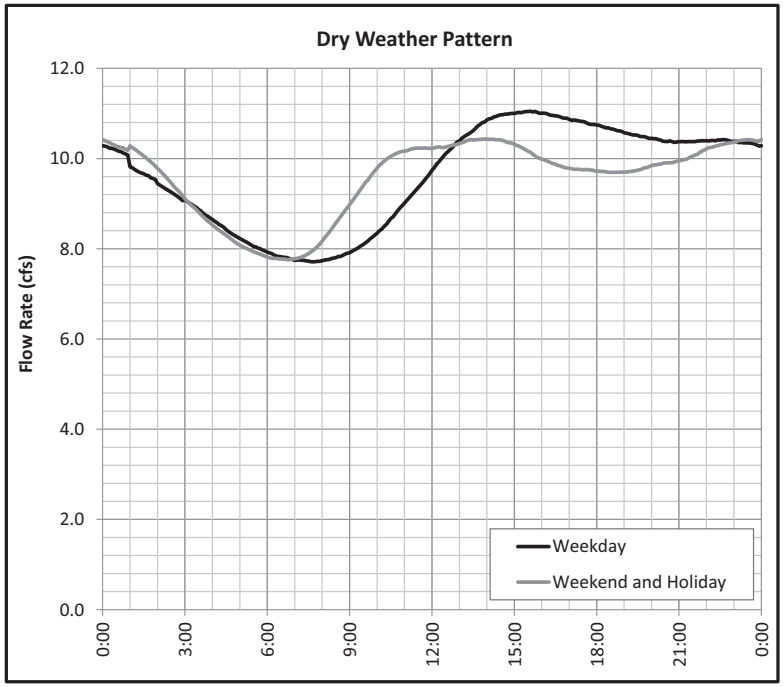
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	57.43	2/21/18 3:05	9.16	2/20/18 18:25
2	1.22	3/1/2018	3/2/2018	37.24	3/2/18 19:40	2.85	3/2/18 19:55
3	2.30	4/14/2018	4/16/2018	46.12	4/16/18 23:35	11.56	4/15/18 19:10
4	1.24	5/2/2018	5/4/2018	29.12	5/3/18 12:30	2.45	5/3/18 12:40
5	2.21	5/11/2018	5/12/2018	79.49	5/13/18 5:50	11.09	5/13/18 7:10
6	2.15	7/31/2018	8/1/2018	36.82	8/1/18 5:10	4.90	8/1/18 3:45
7	1.76	9/20/2018	9/20/2018	38.19	9/20/18 18:55	10.25	9/20/18 11:50
8	2.08	9/24/2018	9/26/2018	37.19	9/25/18 22:15	7.90	9/25/18 23:25
9	1.35	10/6/2018	10/7/2018	31.18	10/6/18 22:35	3.94	10/6/18 21:20
10	1.81	10/31/2018	11/2/2018	32.06	11/2/18 0:15	2.77	11/2/18 0:20

Meter: P-13
Interceptor Manhole ID: MR IV -07

Location: Telegraph Road North of Joy Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	9.0	179.9	8.0	160.7	25	6
Feb-18	13.1	237.1	8.4	152.8	17	11
Mar-18	13.8	276.0	12.0	241.1	21	10
Apr-18	15.7	304.8	13.1	254.8	20	10
May-18	17.5	350.7	13.0	259.7	15	16
Jun-18	9.3	180.6	9.0	173.8	22	8
Jul-18	6.7	133.8	6.5	129.9	28	3
Aug-18	7.8	156.4	6.6	132.7	21	10
Sep-18	8.7	168.1	6.1	117.7	11	19
Oct-18	11.4	229.2	9.6	191.5	22	9
Nov-18	13.4	260.3	12.2	237.0	20	10
Dec-18	12.0	240.2	11.4	227.6	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	36.13	2/20/18 7:50	7.61	2/21/18 10:45
2	1.22	3/1/2018	3/2/2018	27.01	3/1/18 15:00	2.95	3/1/18 15:15
3	2.30	4/14/2018	4/16/2018	32.05	4/15/18 18:55	11.54	4/15/18 19:05
4	1.24	5/2/2018	5/4/2018	25.34	5/4/18 2:45	2.62	5/4/18 3:15
5	2.21	5/11/2018	5/12/2018	38.46	5/12/18 11:45	11.65	5/13/18 10:55
6	2.15	7/31/2018	8/1/2018	34.96	8/1/18 1:05	9.27	8/1/18 3:20
7	1.76	9/20/2018	9/20/2018	32.51	9/20/18 8:45	11.46	9/20/18 11:15
8	2.08	9/24/2018	9/26/2018	29.38	9/25/18 22:50	9.61	9/25/18 22:50
9	1.35	10/6/2018	10/7/2018	31.41	10/6/18 5:25	7.01	10/6/18 21:15
10	1.81	10/31/2018	11/2/2018	28.49	11/2/18 5:05	4.36	11/2/18 4:55

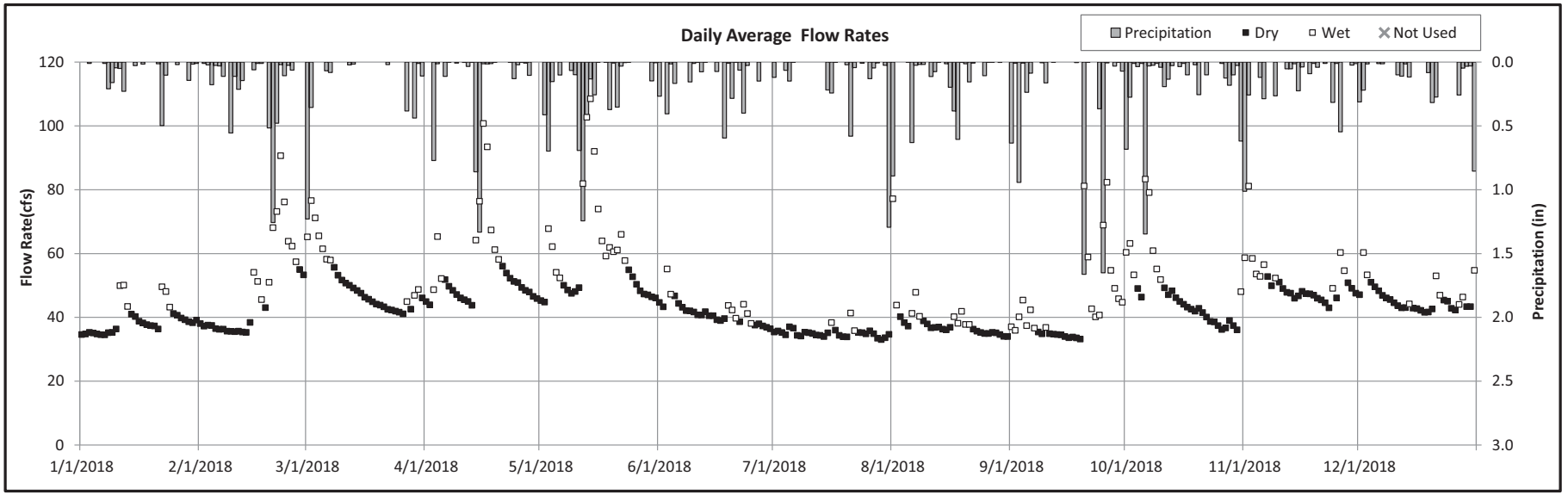
Rouge Valley Sewage Disposal System

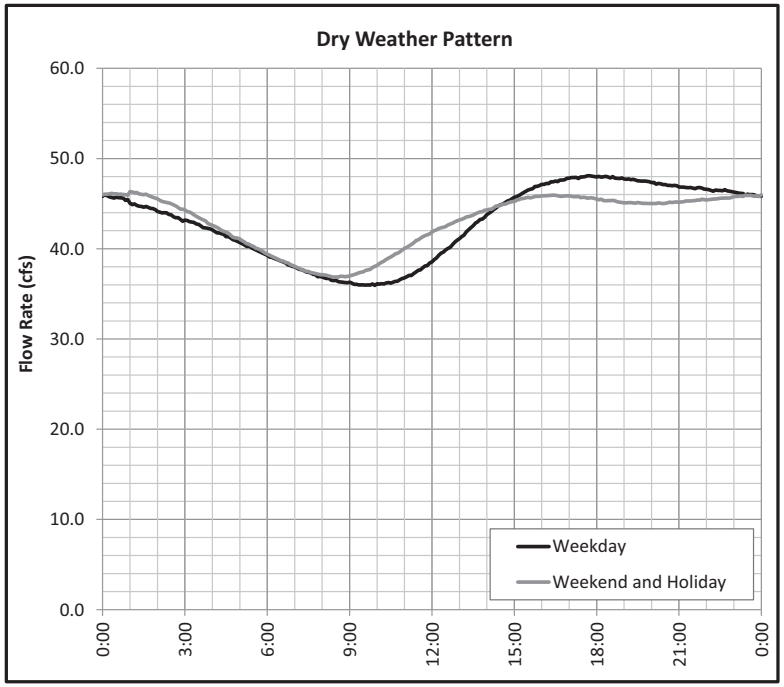
Annual Meter Report

Meter: P-14
Interceptor Manhole ID: RVI 4-16A

Location: Brady Road near Willoway Road
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	39.3	787.2	37.4	748.4	25	6
Feb-18	48.4	875.8	38.9	704.6	17	11
Mar-18	50.6	1014.0	46.3	927.8	21	10
Apr-18	55.2	1070.2	48.4	938.9	20	10
May-18	59.7	1196.9	48.4	970.1	15	16
Jun-18	41.5	805.1	40.7	788.2	22	8
Jul-18	35.2	704.5	34.8	697.4	28	3
Aug-18	39.0	780.8	36.3	727.1	21	10
Sep-18	43.2	838.6	34.3	664.4	11	19
Oct-18	47.8	957.9	42.1	844.2	22	9
Nov-18	51.0	989.0	47.6	923.8	20	10
Dec-18	46.0	922.2	44.5	892.1	23	8

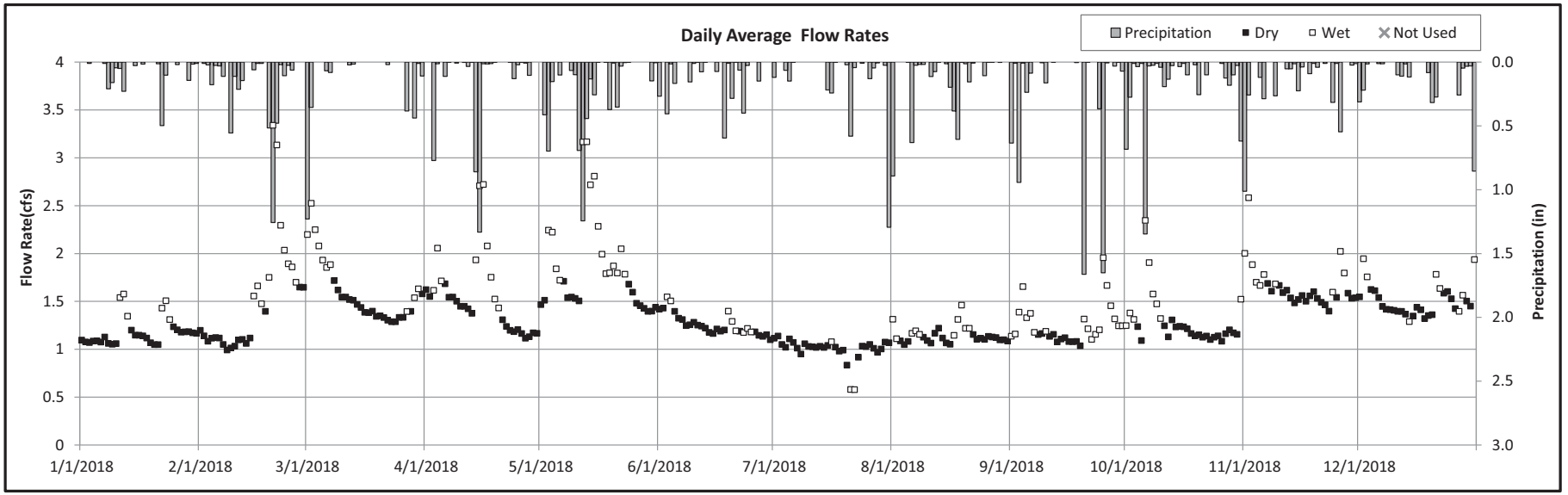
Statistics for Significant Wet Weather Events

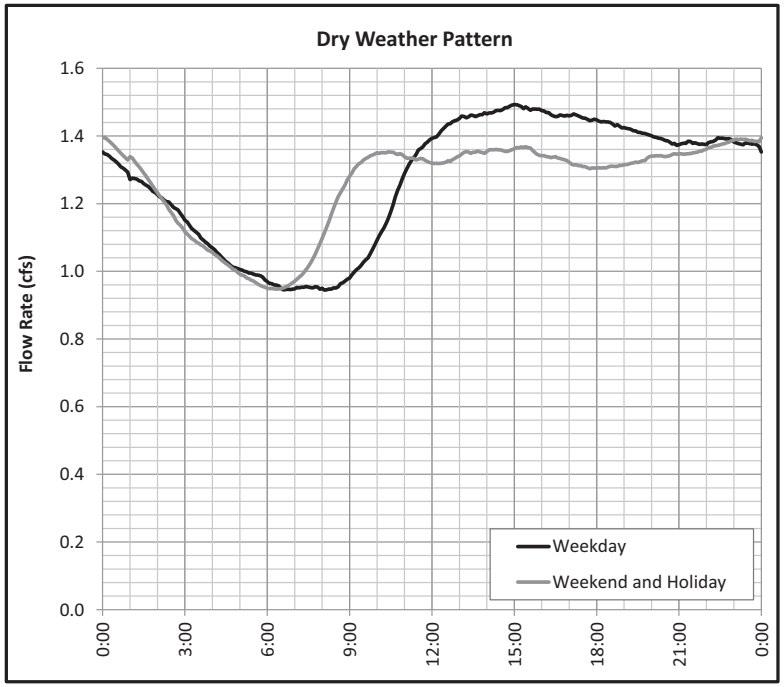
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	94.74	2/22/18 3:50	11.48	2/20/18 14:30
2	1.22	3/1/2018	3/2/2018	86.65	3/2/18 19:20	4.15	3/2/18 19:25
3	2.30	4/14/2018	4/16/2018	115.02	4/17/18 0:45	14.77	4/15/18 18:05
4	1.24	5/2/2018	5/4/2018	78.19	5/3/18 11:55	3.91	5/3/18 12:35
5	2.21	5/11/2018	5/12/2018	119.41	5/14/18 5:25	14.64	5/13/18 7:10
6	2.15	7/31/2018	8/1/2018	113.85	8/1/18 7:55	12.72	8/1/18 2:50
7	1.76	9/20/2018	9/20/2018	122.48	9/20/18 18:00	12.49	9/20/18 11:15
8	2.08	9/24/2018	9/26/2018	104.27	9/26/18 5:25	14.05	9/25/18 22:35
9	1.35	10/6/2018	10/7/2018	108.59	10/6/18 8:30	13.57	10/6/18 18:40
10	1.81	10/31/2018	11/2/2018	96.11	11/2/18 9:10	9.68	11/2/18 0:50

Meter: P-15
Interceptor Manhole ID: WRVI - 54

Location: Ecorse Road and Hannan Road
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.2	23.7	1.1	22.4	25	6
Feb-18	1.5	27.5	1.2	21.2	17	11
Mar-18	1.6	31.9	1.4	28.7	21	10
Apr-18	1.6	30.1	1.4	26.2	20	10
May-18	1.9	37.4	1.5	30.3	15	16
Jun-18	1.3	24.4	1.2	24.0	22	8
Jul-18	1.0	20.0	1.0	20.5	28	3
Aug-18	1.1	23.0	1.1	22.2	21	10
Sep-18	1.2	24.2	1.1	21.5	11	19
Oct-18	1.3	25.8	1.2	23.5	22	9
Nov-18	1.7	32.1	1.5	30.1	20	10
Dec-18	1.5	30.2	1.5	29.2	23	8

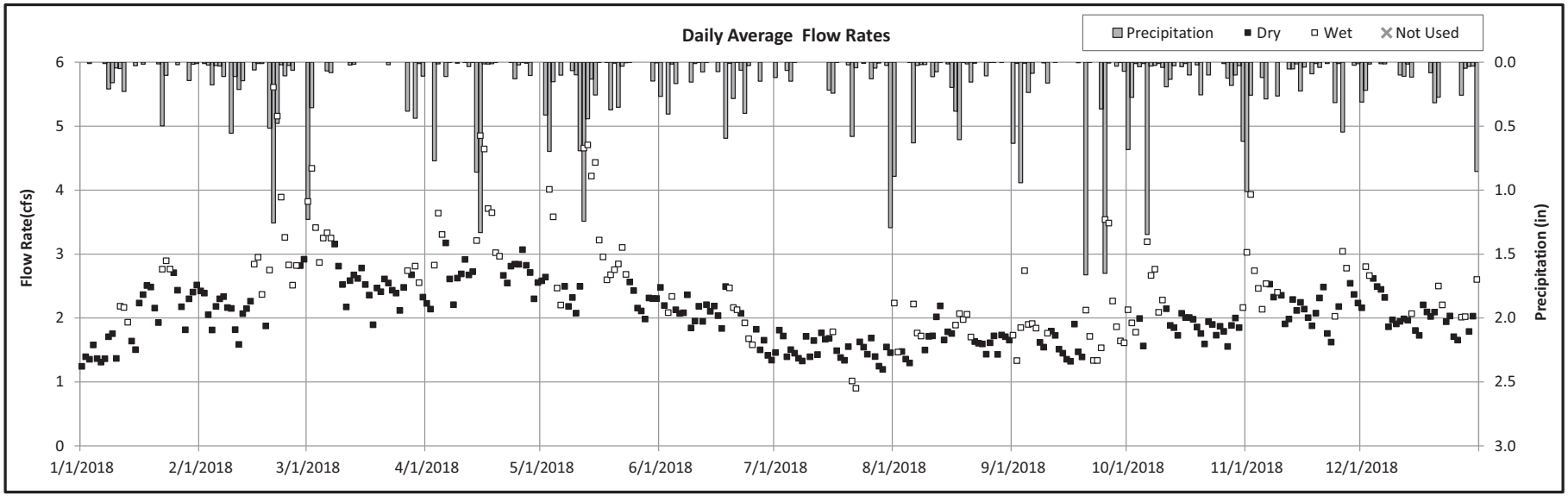
Statistics for Significant Wet Weather Events

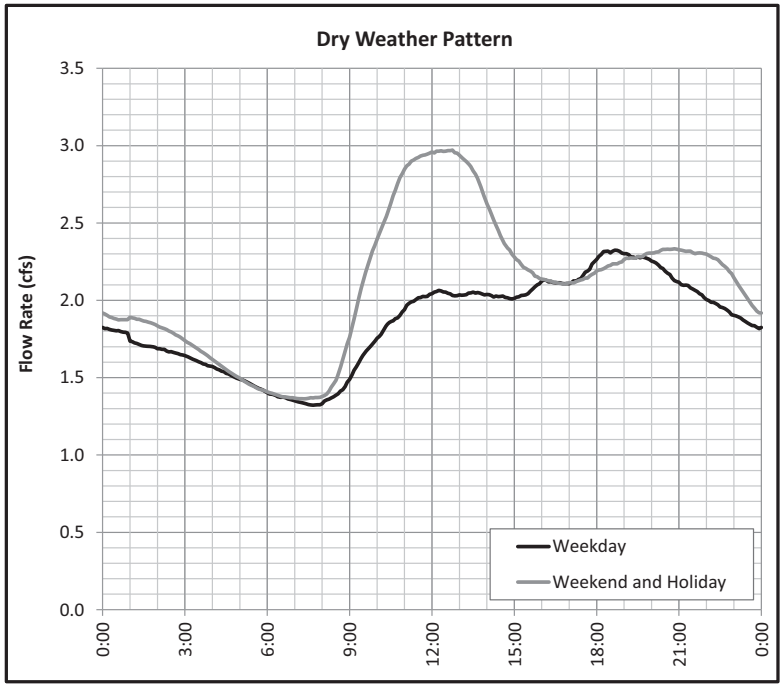
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	4.09	2/20/18 5:35	2.00	2/20/18 6:45
2	1.22	3/1/2018	3/2/2018	3.27	3/1/18 14:35	1.35	3/1/18 15:00
3	2.30	4/14/2018	4/16/2018	3.59	4/15/18 15:50	1.51	4/15/18 16:35
4	1.24	5/2/2018	5/4/2018	2.50	5/3/18 14:10	1.12	5/3/18 14:50
5	2.21	5/11/2018	5/12/2018	3.64	5/13/18 10:05	1.43	5/13/18 10:30
6	2.15	7/31/2018	8/1/2018	1.74	8/1/18 2:10	1.00	8/1/18 2:30
7	1.76	9/20/2018	9/20/2018	1.87	9/20/18 10:45	0.98	9/20/18 11:45
8	2.08	9/24/2018	9/26/2018	4.08	9/25/18 20:45	2.29	9/25/18 22:35
9	1.35	10/6/2018	10/7/2018	3.54	10/6/18 12:50	1.28	10/6/18 13:20
10	1.81	10/31/2018	11/2/2018	3.39	11/2/18 4:55	1.25	11/1/18 23:05

Meter: P-17
Interceptor Manhole ID: LRIR 9-17

Location: North of Michigan Avenue along Railroad
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.0	40.2	1.9	38.1	25	6
Feb-18	2.7	48.0	2.2	39.7	17	11
Mar-18	2.7	54.9	2.5	50.1	21	10
Apr-18	3.0	57.5	2.7	51.5	20	10
May-18	2.8	56.9	2.3	46.7	15	16
Jun-18	2.0	38.9	2.0	38.7	22	8
Jul-18	1.5	29.7	1.5	30.2	28	3
Aug-18	1.7	34.7	1.6	33.0	21	10
Sep-18	1.8	35.3	1.6	30.1	11	19
Oct-18	2.0	40.0	1.9	37.3	22	9
Nov-18	2.3	45.5	2.2	42.0	20	10
Dec-18	2.1	42.4	2.0	40.7	23	8

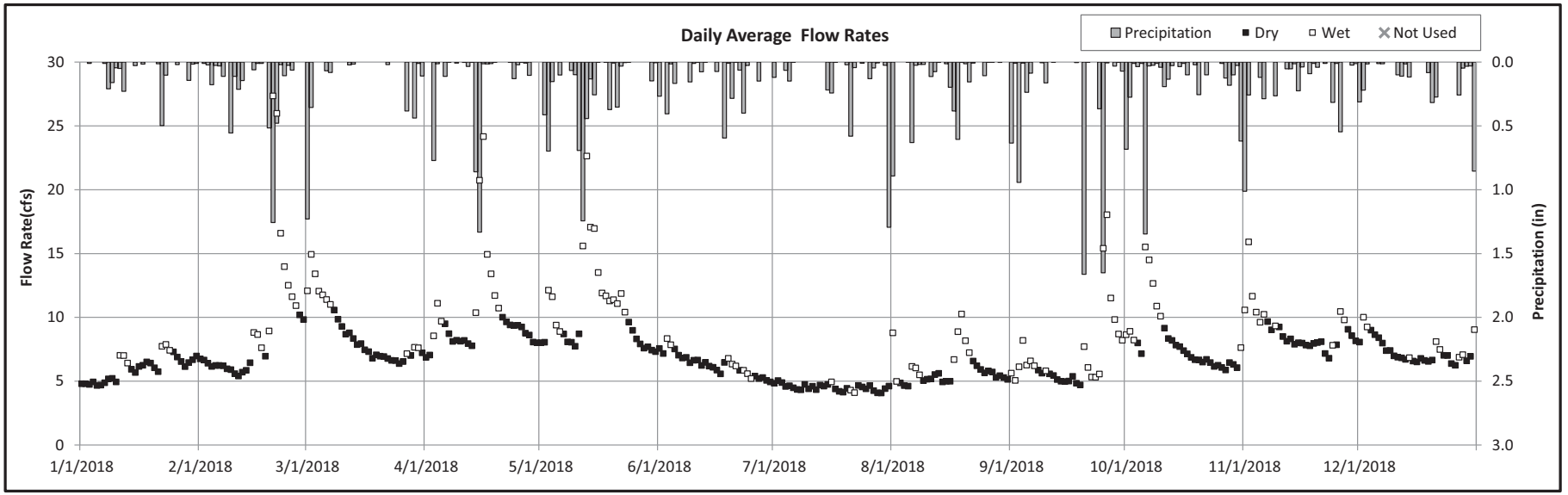
Statistics for Significant Wet Weather Events

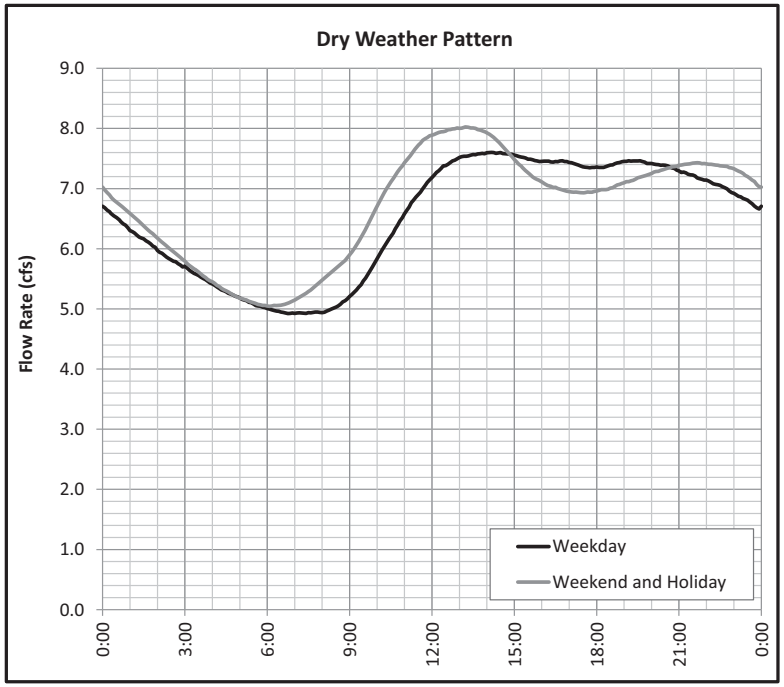
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	7.20	2/20/18 9:15	1.31	2/20/18 17:10
2	1.22	3/1/2018	3/2/2018	5.52	3/1/18 18:00	1.11	3/1/18 18:00
3	2.30	4/14/2018	4/16/2018	7.50	4/15/18 18:45	1.32	4/15/18 19:20
4	1.24	5/2/2018	5/4/2018	5.56	5/3/18 10:30	1.11	5/3/18 10:45
5	2.21	5/11/2018	5/12/2018	5.91	5/13/18 8:55	1.16	5/13/18 9:00
6	2.15	7/31/2018	8/1/2018	4.59	8/1/18 0:00	1.03	8/1/18 0:15
7	1.76	9/20/2018	9/20/2018	3.14	9/20/18 10:20	0.85	9/20/18 10:45
8	2.08	9/24/2018	9/26/2018	5.48	9/25/18 19:40	1.11	9/25/18 19:50
9	1.35	10/6/2018	10/7/2018	4.24	10/6/18 11:30	0.94	10/6/18 16:10
10	1.81	10/31/2018	11/2/2018	5.22	11/2/18 8:05	1.05	11/2/18 8:25

Meter: P-19
Interceptor Manhole ID: RVI 15-17

Location: Josephine Street and Lower Rouge River
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	6.1	121.4	5.8	115.7	25	6
Feb-18	9.5	171.4	6.6	119.6	17	11
Mar-18	8.7	174.4	7.7	153.5	21	10
Apr-18	10.2	197.9	8.5	165.7	20	10
May-18	10.6	212.9	8.1	163.1	15	16
Jun-18	6.3	122.3	6.2	120.9	22	8
Jul-18	4.5	90.0	4.5	90.2	28	3
Aug-18	6.0	119.6	5.4	107.3	21	10
Sep-18	7.0	135.0	5.2	101.3	11	19
Oct-18	8.1	162.1	7.0	140.1	22	9
Nov-18	9.0	174.3	8.2	158.9	20	10
Dec-18	7.4	147.8	7.1	142.9	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	34.86	2/20/18 16:35	3.10	2/20/18 22:05
2	1.22	3/1/2018	3/2/2018	17.08	3/2/18 15:55	1.93	3/2/18 18:55
3	2.30	4/14/2018	4/16/2018	38.01	4/15/18 22:20	2.92	4/15/18 22:50
4	1.24	5/2/2018	5/4/2018	14.69	5/3/18 11:00	1.81	5/3/18 11:40
5	2.21	5/11/2018	5/12/2018	27.88	5/13/18 13:00	2.73	5/13/18 14:20
6	2.15	7/31/2018	8/1/2018	24.22	8/1/18 0:30	2.42	8/1/18 1:00
7	1.76	9/20/2018	9/20/2018	16.18	9/20/18 10:00	1.92	9/20/18 10:40
8	2.08	9/24/2018	9/26/2018	29.54	9/25/18 20:50	2.65	9/25/18 21:05
9	1.35	10/6/2018	10/7/2018	20.11	10/6/18 12:10	2.20	10/6/18 12:50
10	1.81	10/31/2018	11/2/2018	18.35	11/2/18 8:30	2.06	11/2/18 9:00

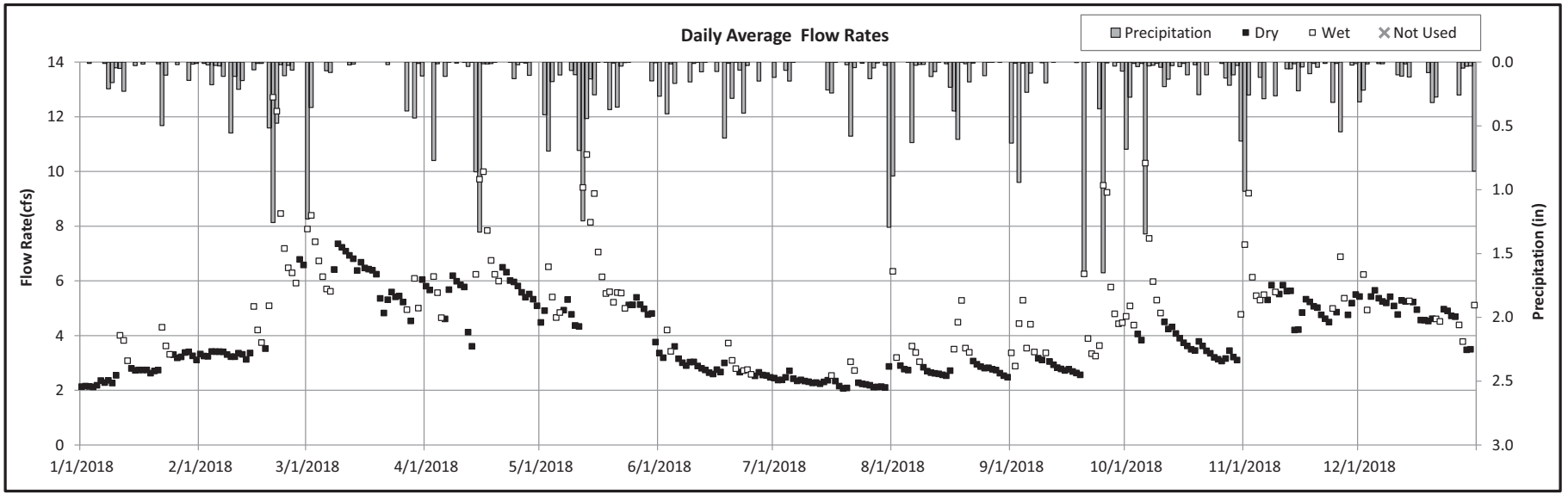
Rouge Valley Sewage Disposal System

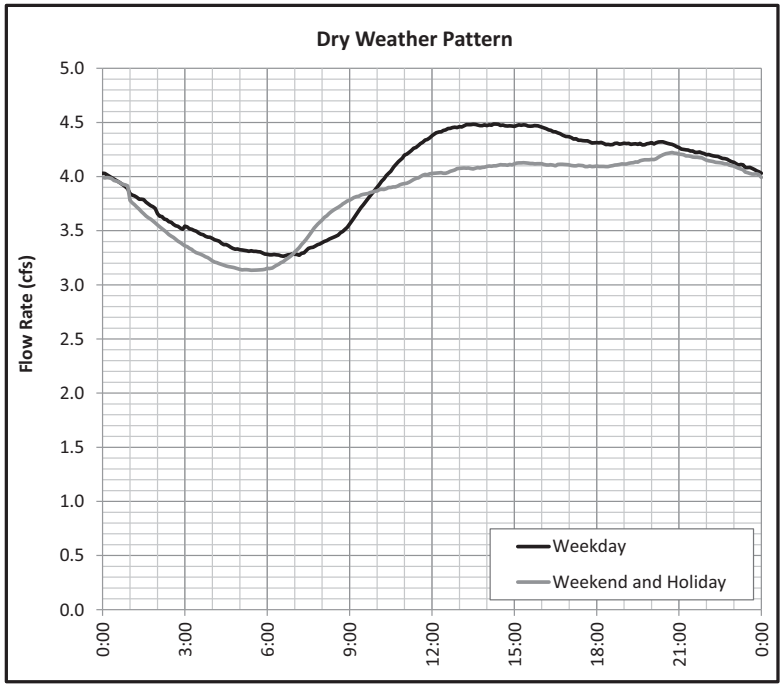
Annual Meter Report

Meter: P-20
Interceptor Manhole ID: WI E-35

Location: Michigan Avenue and Henry Ruff Road
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.9	57.7	2.7	53.8	25	6
Feb-18	5.0	90.8	3.7	67.3	17	11
Mar-18	6.2	124.1	6.1	122.2	21	10
Apr-18	6.0	116.3	5.5	107.4	20	10
May-18	5.7	114.1	4.8	96.4	15	16
Jun-18	2.9	56.9	2.9	55.3	22	8
Jul-18	2.3	47.0	2.3	46.1	28	3
Aug-18	3.1	62.7	2.7	54.6	21	10
Sep-18	4.0	77.8	2.8	55.0	11	19
Oct-18	4.3	85.7	3.6	72.6	22	9
Nov-18	5.5	105.7	5.1	98.7	20	10
Dec-18	4.9	98.0	4.9	98.2	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	14.37	2/20/18 3:40	3.75	2/20/18 5:10
2	1.22	3/1/2018	3/2/2018	12.11	3/1/18 13:15	2.56	3/1/18 13:40
3	2.30	4/14/2018	4/16/2018	12.07	4/15/18 10:15	2.90	4/15/18 19:00
4	1.24	5/2/2018	5/4/2018	10.90	5/2/18 23:15	2.35	5/2/18 23:45
5	2.21	5/11/2018	5/12/2018	13.78	5/13/18 5:10	2.74	5/13/18 5:50
6	2.15	7/31/2018	8/1/2018	13.75	7/31/18 23:55	5.02	8/1/18 0:40
7	1.76	9/20/2018	9/20/2018	13.94	9/20/18 9:45	2.85	9/20/18 10:35
8	2.08	9/24/2018	9/26/2018	14.73	9/25/18 20:20	3.18	9/25/18 20:50
9	1.35	10/6/2018	10/7/2018	13.62	10/6/18 4:05	2.87	10/6/18 4:15
10	1.81	10/31/2018	11/2/2018	12.94	11/2/18 2:30	2.64	11/2/18 3:15

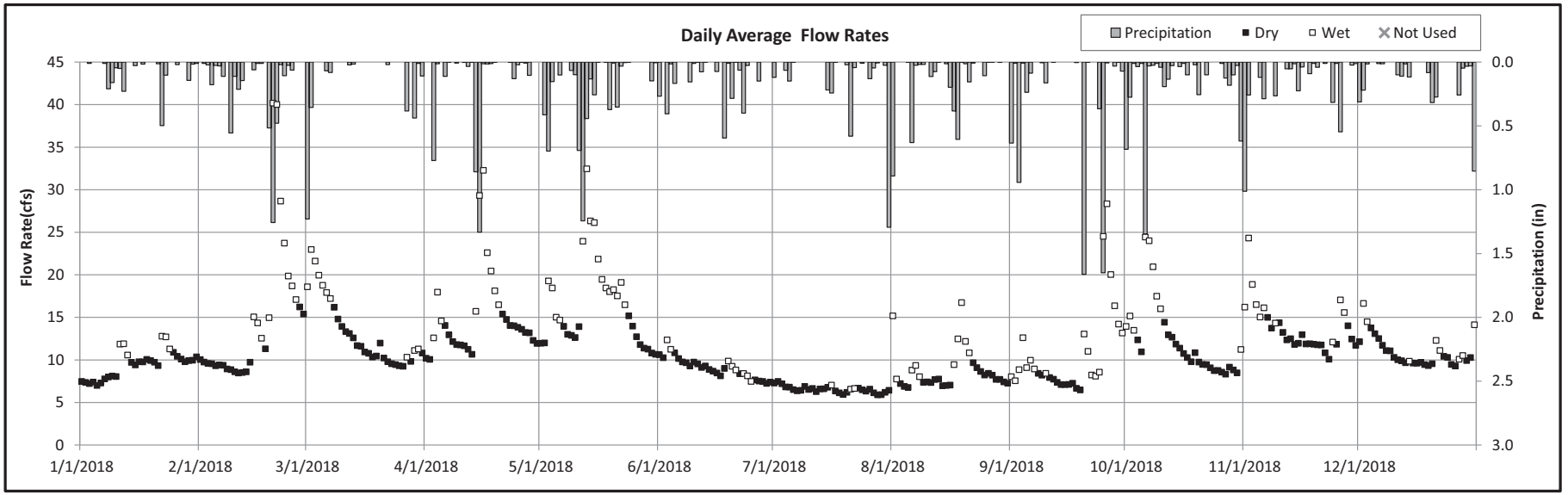
Rouge Valley Sewage Disposal System

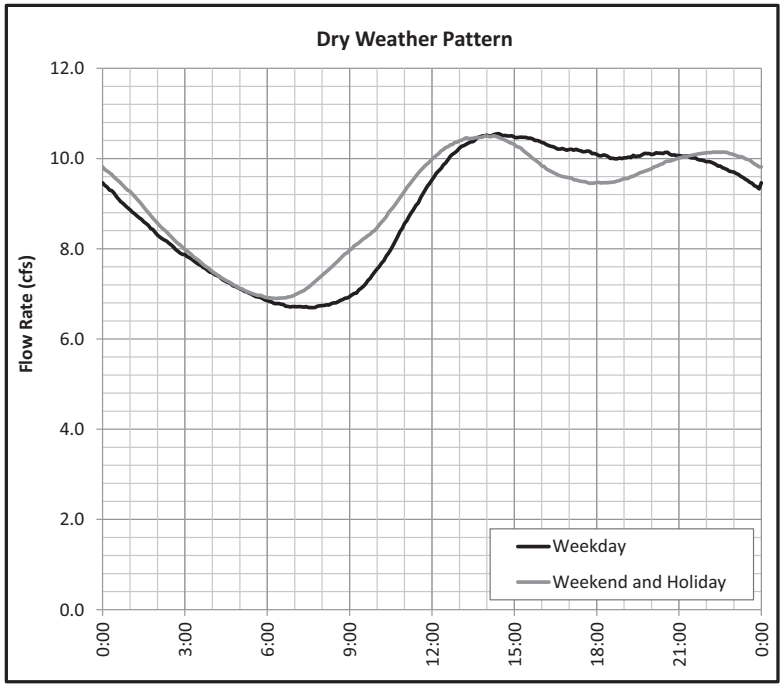
Annual Meter Report

Meter: P-21
Interceptor Manhole ID: RVI 14-19

Location: Merriman Road and Lower Rouge River
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	9.5	191.0	9.0	179.9	25	6
Feb-18	14.9	269.1	10.1	182.4	17	11
Mar-18	13.2	264.5	11.4	228.7	21	10
Apr-18	15.1	292.5	12.6	244.8	20	10
May-18	16.6	331.7	12.5	251.1	15	16
Jun-18	9.1	175.9	8.9	173.4	22	8
Jul-18	6.5	130.8	6.5	130.3	28	3
Aug-18	8.8	175.9	7.7	154.1	21	10
Sep-18	10.7	206.9	7.4	143.2	11	19
Oct-18	12.4	247.6	10.3	206.3	22	9
Nov-18	13.8	267.4	12.4	240.2	20	10
Dec-18	11.0	220.4	10.5	210.7	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	50.85	2/20/18 5:40	2.82	2/20/18 5:45
2	1.22	3/1/2018	3/2/2018	25.31	3/2/18 19:05	1.86	3/2/18 16:10
3	2.30	4/14/2018	4/16/2018	43.43	4/15/18 23:00	2.51	4/15/18 23:35
4	1.24	5/2/2018	5/4/2018	22.36	5/3/18 17:05	1.76	5/3/18 17:55
5	2.21	5/11/2018	5/12/2018	37.36	5/13/18 14:40	2.30	5/13/18 15:00
6	2.15	7/31/2018	8/1/2018	42.85	8/1/18 1:05	2.55	8/1/18 1:30
7	1.76	9/20/2018	9/20/2018	26.61	9/20/18 10:30	1.91	9/20/18 10:55
8	2.08	9/24/2018	9/26/2018	47.90	9/25/18 21:05	2.68	9/25/18 21:40
9	1.35	10/6/2018	10/7/2018	31.03	10/6/18 12:30	2.05	10/6/18 13:00
10	1.81	10/31/2018	11/2/2018	26.62	11/2/18 3:25	1.90	11/2/18 10:55

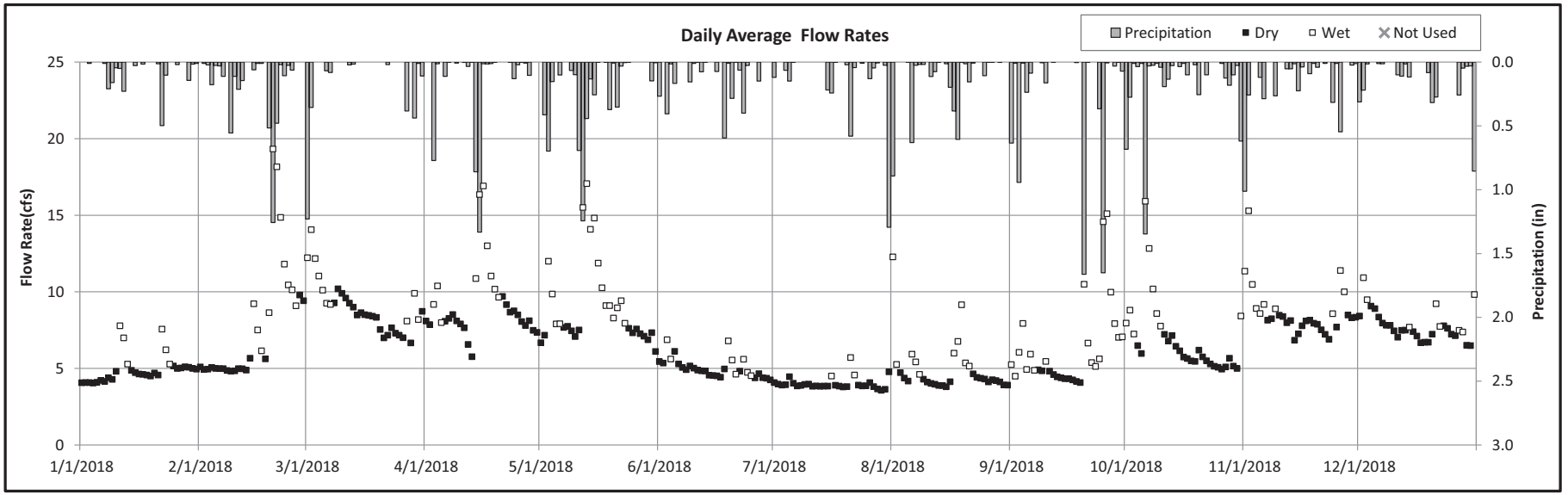
Rouge Valley Sewage Disposal System

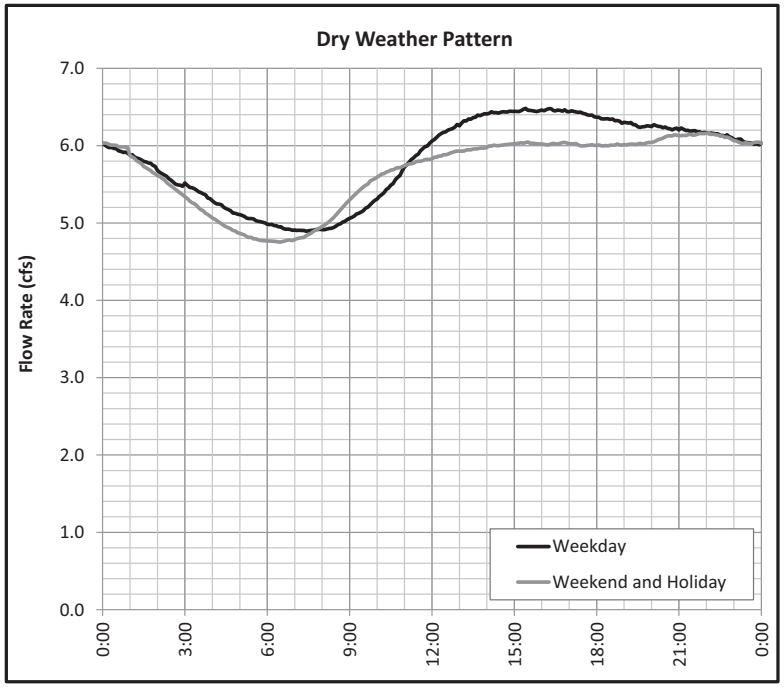
Annual Meter Report

Meter: P-24
Interceptor Manhole ID: WI E-08

Location: Michigan Avenue West of Beech Daly Road
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	5.0	99.3	4.6	91.8	25	6
Feb-18	7.9	142.2	5.6	100.9	17	11
Mar-18	9.0	179.9	8.3	166.2	21	10
Apr-18	9.2	178.2	8.0	155.4	20	10
May-18	9.1	182.5	7.2	144.8	15	16
Jun-18	5.0	97.6	4.8	94.0	22	8
Jul-18	4.0	80.4	3.9	78.4	28	3
Aug-18	4.9	99.1	4.2	83.5	21	10
Sep-18	6.3	122.0	4.5	86.5	11	19
Oct-18	6.9	138.9	5.8	115.9	22	9
Nov-18	8.7	168.2	7.9	152.9	20	10
Dec-18	7.8	156.4	7.5	150.1	23	8

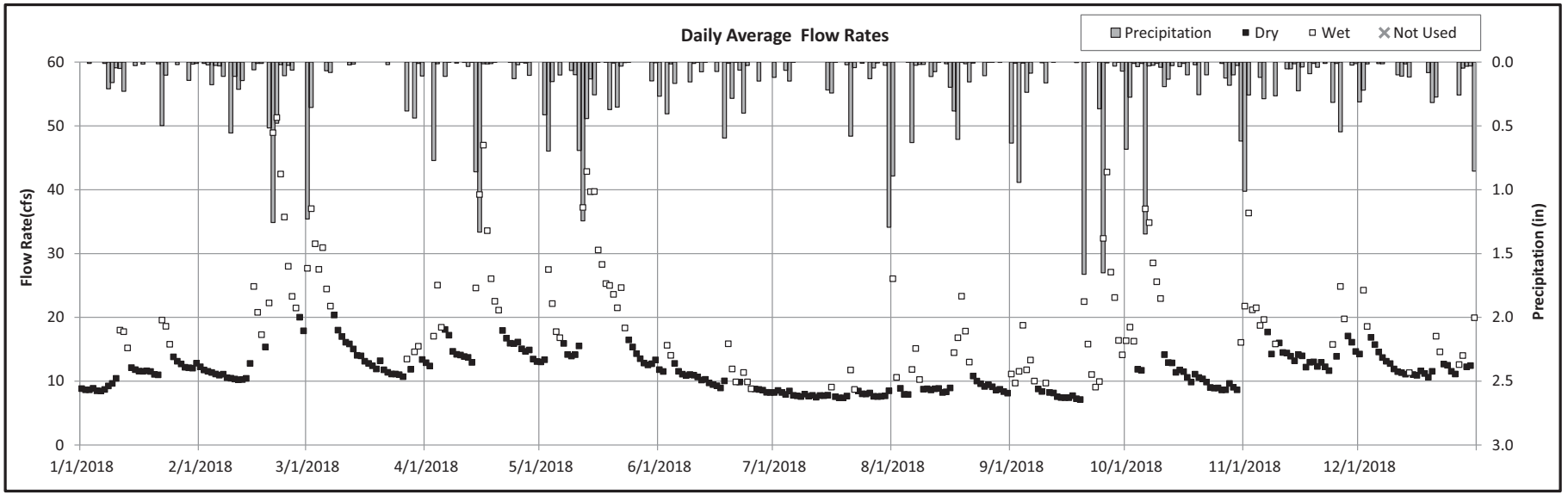
Statistics for Significant Wet Weather Events

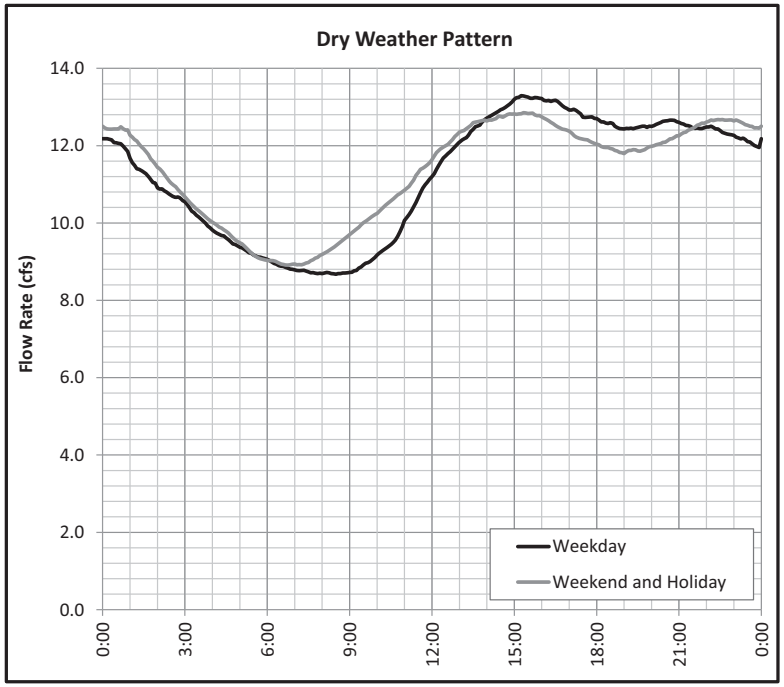
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	22.14	2/20/18 4:30	6.83	2/20/18 14:35
2	1.22	3/1/2018	3/2/2018	17.06	3/1/18 14:15	1.55	3/2/18 16:45
3	2.30	4/14/2018	4/16/2018	20.46	4/15/18 11:05	9.51	4/15/18 18:50
4	1.24	5/2/2018	5/4/2018	15.32	5/3/18 0:55	1.38	5/3/18 1:15
5	2.21	5/11/2018	5/12/2018	19.84	5/12/18 13:35	6.58	5/13/18 5:50
6	2.15	7/31/2018	8/1/2018	26.36	8/1/18 1:10	6.72	8/1/18 2:55
7	1.76	9/20/2018	9/20/2018	19.52	9/20/18 11:00	4.08	9/20/18 12:05
8	2.08	9/24/2018	9/26/2018	24.26	9/25/18 20:30	7.75	9/25/18 22:30
9	1.35	10/6/2018	10/7/2018	22.45	10/6/18 11:35	5.45	10/6/18 17:00
10	1.81	10/31/2018	11/2/2018	19.60	11/2/18 3:40	1.89	11/2/18 3:55

Meter: P-25
Interceptor Manhole ID: RVI 5-14

Location: Lower Rouge River West of Beech Daly Road
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	12.1	242.7	10.8	216.9	25	6
Feb-18	19.4	351.8	12.2	221.6	17	11
Mar-18	17.1	342.7	13.6	272.8	21	10
Apr-18	19.1	369.8	14.9	288.6	20	10
May-18	21.0	421.2	14.1	281.8	15	16
Jun-18	10.7	206.5	10.1	195.9	22	8
Jul-18	8.0	161.2	7.9	157.4	28	3
Aug-18	11.1	222.9	8.8	177.2	21	10
Sep-18	13.5	261.9	7.8	150.3	11	19
Oct-18	14.4	289.3	10.5	211.0	22	9
Nov-18	16.5	320.6	14.0	272.3	20	10
Dec-18	13.5	270.4	12.4	249.2	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	55.86	2/21/18 2:40	7.69	2/21/18 10:05
2	1.22	3/1/2018	3/2/2018	46.70	3/2/18 11:35	2.56	3/2/18 12:00
3	2.30	4/14/2018	4/16/2018	61.71	4/16/18 0:00	9.39	4/15/18 19:10
4	1.24	5/2/2018	5/4/2018	43.46	5/3/18 17:25	2.27	5/3/18 17:45
5	2.21	5/11/2018	5/12/2018	47.54	5/13/18 18:50	7.05	5/13/18 13:00
6	2.15	7/31/2018	8/1/2018	51.16	8/1/18 1:30	5.50	8/1/18 3:00
7	1.76	9/20/2018	9/20/2018	39.21	9/20/18 11:25	2.62	9/20/18 12:10
8	2.08	9/24/2018	9/26/2018	53.09	9/25/18 10:35	8.67	9/25/18 23:15
9	1.35	10/6/2018	10/7/2018	47.59	10/6/18 12:50	3.64	10/6/18 17:00
10	1.81	10/31/2018	11/2/2018	39.41	11/2/18 3:35	2.48	11/2/18 4:15

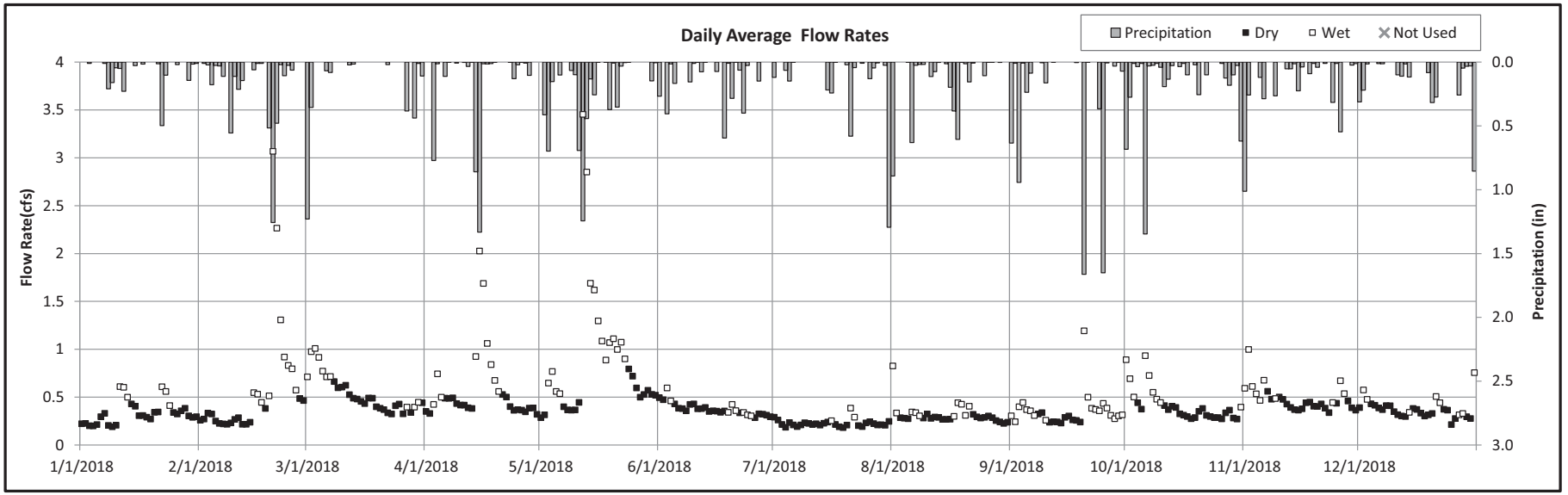
Rouge Valley Sewage Disposal System

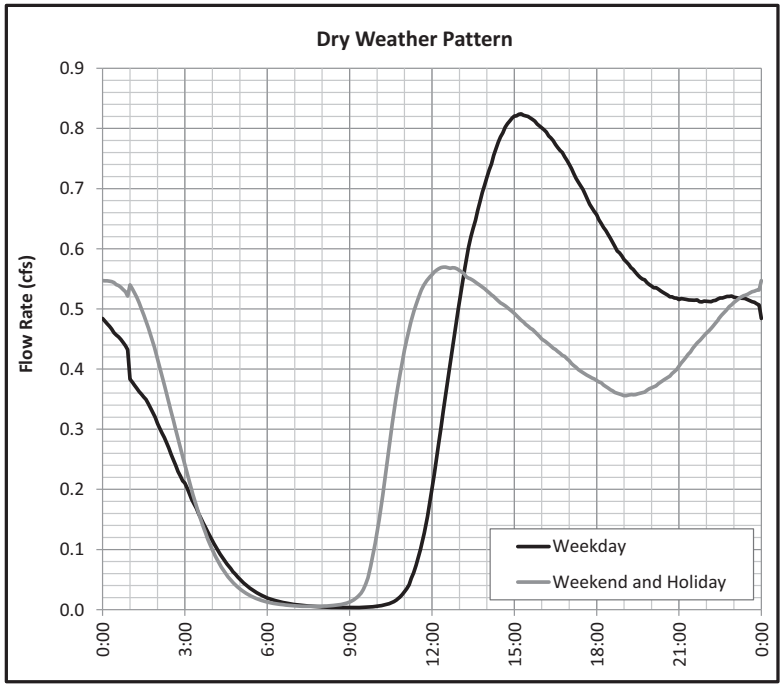
Annual Meter Report

Meter: P-26
Interceptor Manhole ID: PWI 2-05

Location: Plymouth Road East of I-275
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.3	6.8	0.3	5.8	25	6
Feb-18	0.6	10.8	0.3	5.2	17	11
Mar-18	0.5	10.7	0.5	9.1	21	10
Apr-18	0.6	11.4	0.4	7.9	20	10
May-18	0.9	18.0	0.5	9.7	15	16
Jun-18	0.4	7.3	0.4	7.2	22	8
Jul-18	0.2	4.5	0.2	4.4	28	3
Aug-18	0.3	6.4	0.3	5.6	21	10
Sep-18	0.3	6.8	0.3	5.2	11	19
Oct-18	0.4	8.3	0.3	6.7	22	9
Nov-18	0.5	9.3	0.4	8.2	20	10
Dec-18	0.4	7.5	0.3	6.9	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	4.02	2/20/18 7:05	0.74	2/20/18 19:20
2	1.22	3/1/2018	3/2/2018	1.34	3/2/18 21:20	0.42	3/2/18 21:55
3	2.30	4/14/2018	4/16/2018	4.58	4/15/18 20:55	0.80	4/15/18 21:15
4	1.24	5/2/2018	5/4/2018	1.14	5/4/18 11:00	0.38	5/4/18 11:50
5	2.21	5/11/2018	5/12/2018	5.66	5/12/18 14:20	0.95	5/12/18 15:10
6	2.15	7/31/2018	8/1/2018	2.02	8/1/18 3:35	0.51	8/1/18 3:45
7	1.76	9/20/2018	9/20/2018	3.87	9/20/18 12:00	0.73	9/20/18 12:45
8	2.08	9/24/2018	9/26/2018	0.77	9/25/18 10:45	0.30	9/25/18 11:25
9	1.35	10/6/2018	10/7/2018	1.86	10/6/18 13:40	0.48	10/6/18 14:25
10	1.81	10/31/2018	11/2/2018	1.58	11/1/18 21:55	0.44	11/1/18 23:15

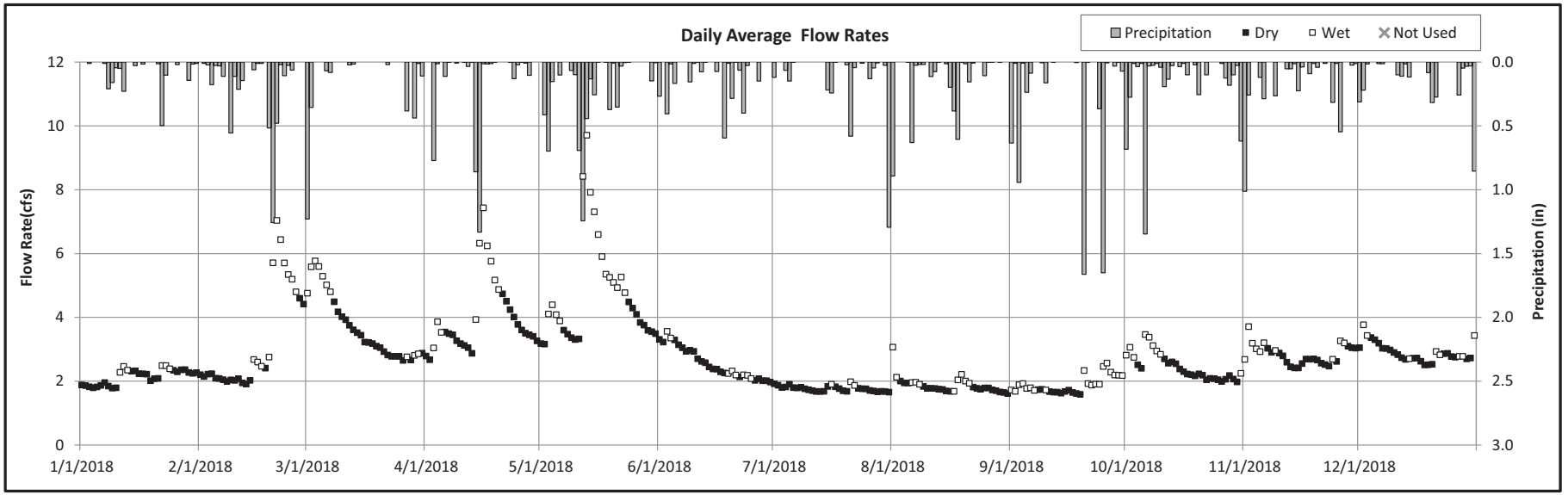
Rouge Valley Sewage Disposal System

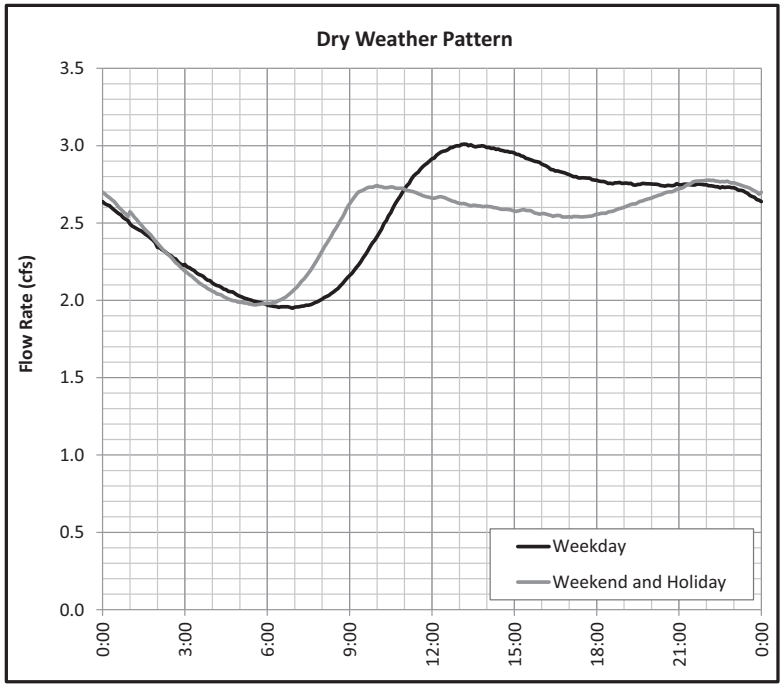
Annual Meter Report

Meter: P-28
Interceptor Manhole ID:

Location: Inkster Road south of Rougeway Street
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.1	42.9	2.1	41.7	25	6
Feb-18	3.3	58.9	2.4	43.0	17	11
Mar-18	3.7	73.8	3.3	65.8	21	10
Apr-18	4.0	77.6	3.5	67.7	20	10
May-18	4.8	95.3	3.6	72.8	15	16
Jun-18	2.6	49.6	2.6	50.0	22	8
Jul-18	1.8	35.4	1.8	35.1	28	3
Aug-18	1.9	37.5	1.8	35.4	21	10
Sep-18	1.9	36.4	1.7	32.3	11	19
Oct-18	2.5	49.2	2.2	45.1	22	9
Nov-18	2.8	54.9	2.7	52.4	20	10
Dec-18	2.9	58.1	2.8	56.9	23	8

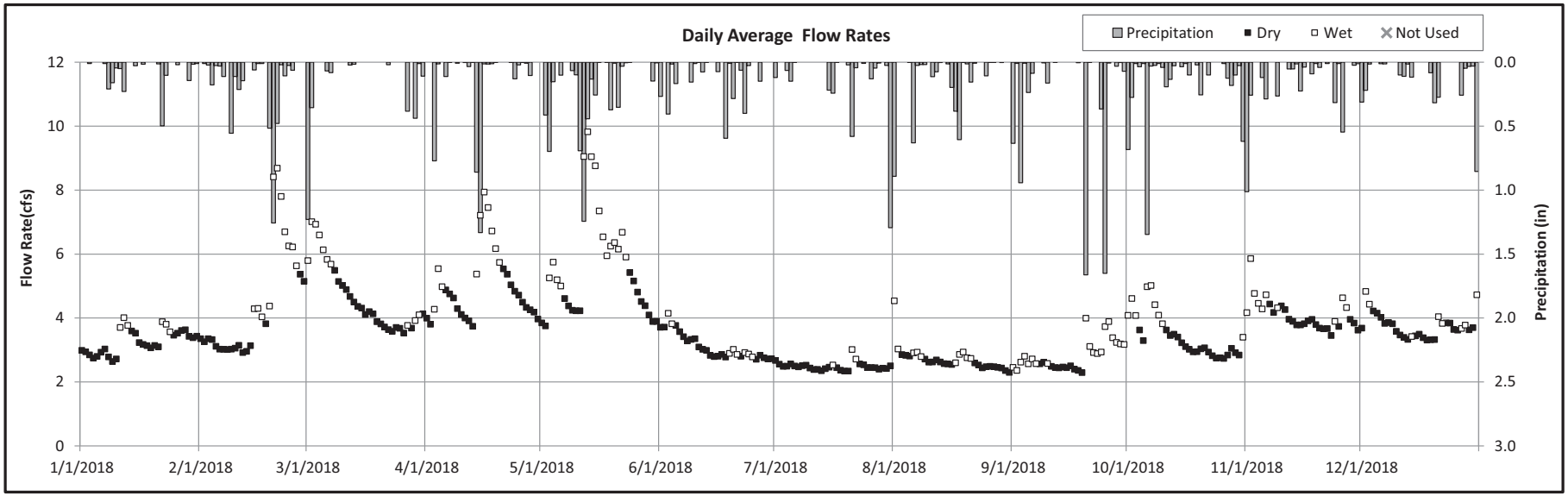
Statistics for Significant Wet Weather Events

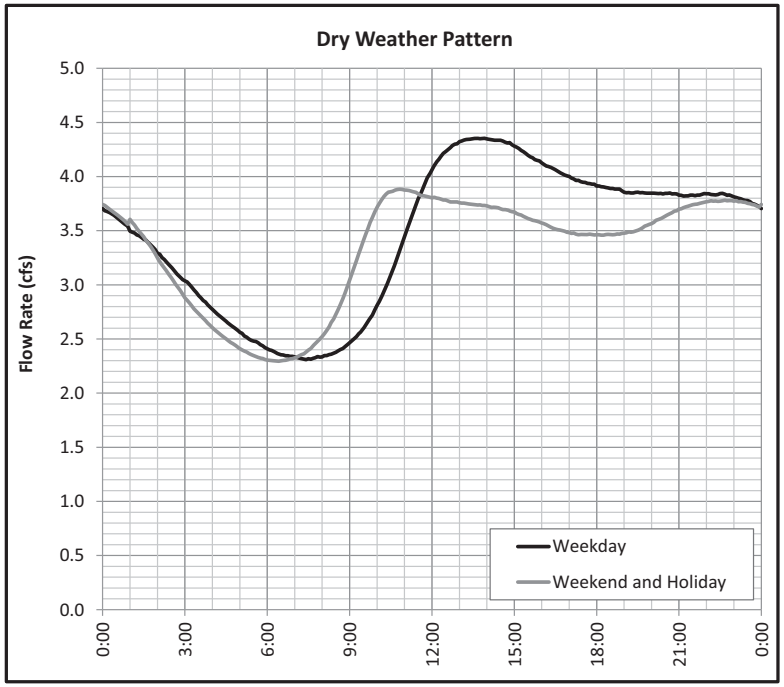
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	8.28	2/21/18 10:15	7.97	2/20/18 13:05
2	1.22	3/1/2018	3/2/2018	6.09	3/2/18 19:25	2.13	3/2/18 19:55
3	2.30	4/14/2018	4/16/2018	9.71	4/15/18 19:25	8.41	4/15/18 20:05
4	1.24	5/2/2018	5/4/2018	4.84	5/3/18 9:40	1.66	5/4/18 9:25
5	2.21	5/11/2018	5/12/2018	11.76	5/12/18 14:05	10.02	5/12/18 13:55
6	2.15	7/31/2018	8/1/2018	6.16	8/1/18 1:35	2.10	8/1/18 2:35
7	1.76	9/20/2018	9/20/2018	5.24	9/20/18 9:35	3.12	9/20/18 12:15
8	2.08	9/24/2018	9/26/2018	4.96	9/25/18 20:50	1.64	9/25/18 22:10
9	1.35	10/6/2018	10/7/2018	4.62	10/6/18 11:10	1.72	10/6/18 13:05
10	1.81	10/31/2018	11/2/2018	4.25	11/1/18 23:05	1.67	11/1/18 23:25

Meter: P-29
Interceptor Manhole ID:

Location: Along Rouge River, Inkster Road south of Rougeway Street
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	3.3	65.6	3.2	63.1	25	6
Feb-18	4.5	80.6	3.4	61.7	17	11
Mar-18	4.6	93.0	4.2	84.1	21	10
Apr-18	5.0	97.0	4.4	86.1	20	10
May-18	5.6	112.7	4.4	87.4	15	16
Jun-18	3.1	60.2	3.1	59.8	22	8
Jul-18	2.5	49.8	2.5	49.3	28	3
Aug-18	2.7	54.3	2.6	51.5	21	10
Sep-18	2.8	54.3	2.5	47.6	11	19
Oct-18	3.4	68.7	3.1	61.7	22	9
Nov-18	4.1	79.6	3.9	75.3	20	10
Dec-18	3.8	75.3	3.6	73.0	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	9.96	2/20/18 7:40	4.35	2/20/18 17:50
2	1.22	3/1/2018	3/2/2018	7.98	3/2/18 20:30	2.22	3/2/18 20:00
3	2.30	4/14/2018	4/16/2018	11.12	4/15/18 14:00	4.48	4/15/18 19:40
4	1.24	5/2/2018	5/4/2018	6.42	5/3/18 17:50	1.80	5/4/18 9:25
5	2.21	5/11/2018	5/12/2018	11.59	5/14/18 13:40	4.64	5/12/18 12:00
6	2.15	7/31/2018	8/1/2018	7.82	8/1/18 2:45	2.14	8/1/18 3:20
7	1.76	9/20/2018	9/20/2018	9.40	9/20/18 10:20	3.32	9/20/18 12:10
8	2.08	9/24/2018	9/26/2018	6.66	9/25/18 22:00	1.81	9/25/18 22:25
9	1.35	10/6/2018	10/7/2018	6.78	10/6/18 12:30	1.83	10/6/18 13:10
10	1.81	10/31/2018	11/2/2018	6.68	11/1/18 21:20	1.81	11/1/18 23:40

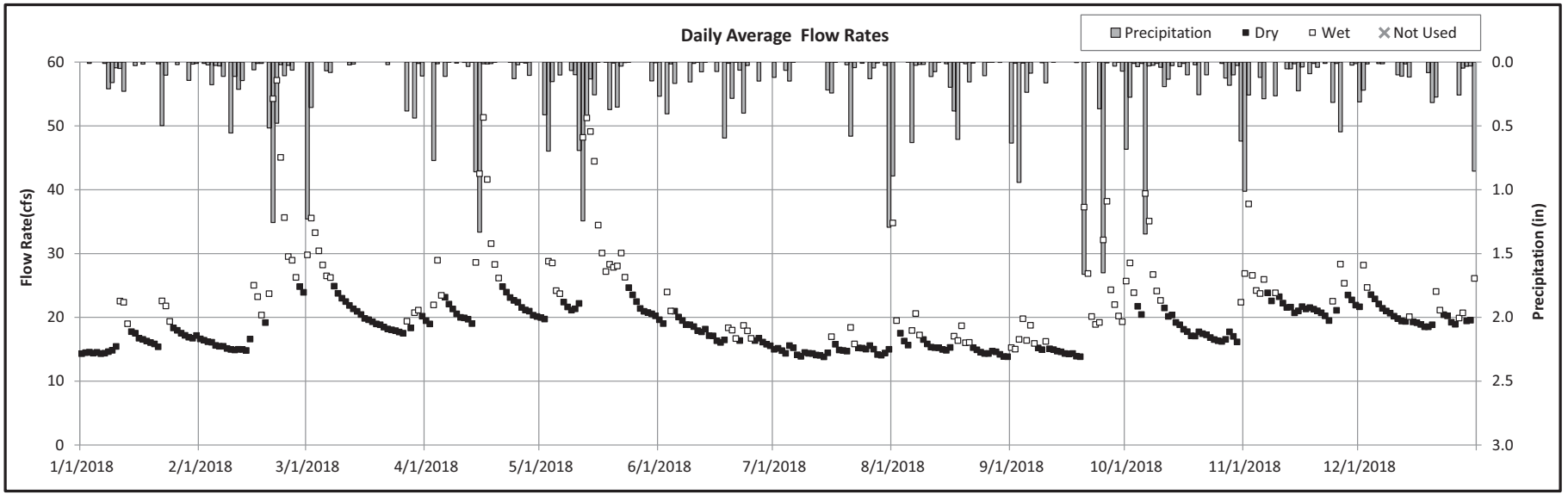
Rouge Valley Sewage Disposal System

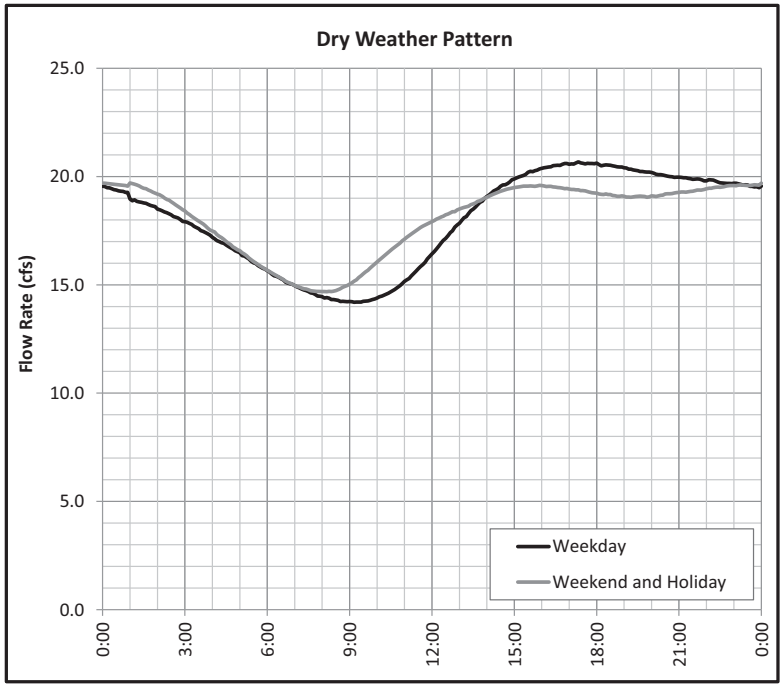
Annual Meter Report

Meter: P-30
Interceptor Manhole ID: MR 1-11

Location: Hines Drive and Outer Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	17.0	340.6	16.0	320.1	25	6
Feb-18	23.4	423.3	16.8	304.3	17	11
Mar-18	22.3	447.6	20.1	402.0	21	10
Apr-18	25.0	484.2	21.3	412.0	20	10
May-18	27.5	551.3	21.5	431.0	15	16
Jun-18	18.0	349.1	17.7	342.8	22	8
Jul-18	14.9	298.8	14.7	294.2	28	3
Aug-18	16.5	330.4	15.1	302.5	21	10
Sep-18	19.1	369.8	14.5	282.0	11	19
Oct-18	20.8	417.6	18.1	362.2	22	9
Nov-18	23.3	451.1	21.6	419.7	20	10
Dec-18	20.9	418.5	20.1	403.1	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	59.74	2/20/18 16:10	6.99	2/20/18 16:50
2	1.22	3/1/2018	3/2/2018	39.93	3/2/18 18:25	3.41	3/1/18 15:45
3	2.30	4/14/2018	4/16/2018	56.92	4/15/18 20:00	12.43	4/15/18 19:10
4	1.24	5/2/2018	5/4/2018	33.31	5/3/18 11:20	3.05	5/3/18 11:45
5	2.21	5/11/2018	5/12/2018	57.85	5/12/18 13:35	13.45	5/13/18 6:25
6	2.15	7/31/2018	8/1/2018	49.70	8/1/18 5:35	10.57	8/1/18 3:05
7	1.76	9/20/2018	9/20/2018	55.87	9/20/18 10:45	12.03	9/20/18 11:25
8	2.08	9/24/2018	9/26/2018	52.77	9/25/18 23:40	11.52	9/25/18 23:00
9	1.35	10/6/2018	10/7/2018	48.66	10/6/18 21:55	9.72	10/6/18 18:50
10	1.81	10/31/2018	11/2/2018	45.02	11/2/18 4:35	6.89	11/2/18 4:30

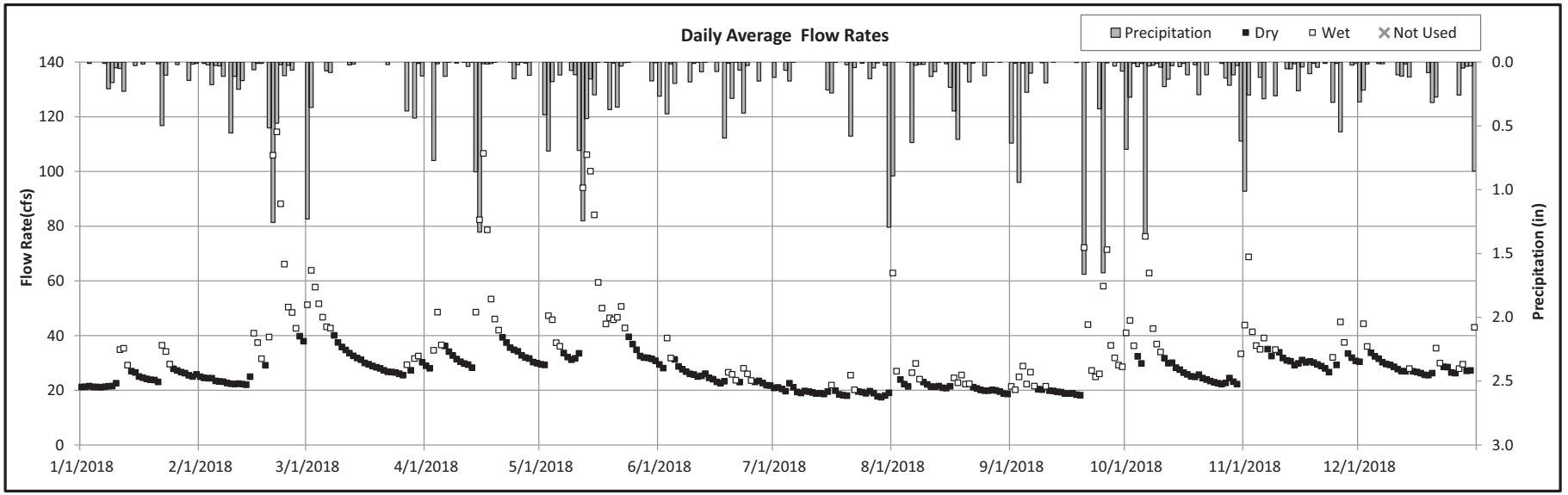
Rouge Valley Sewage Disposal System

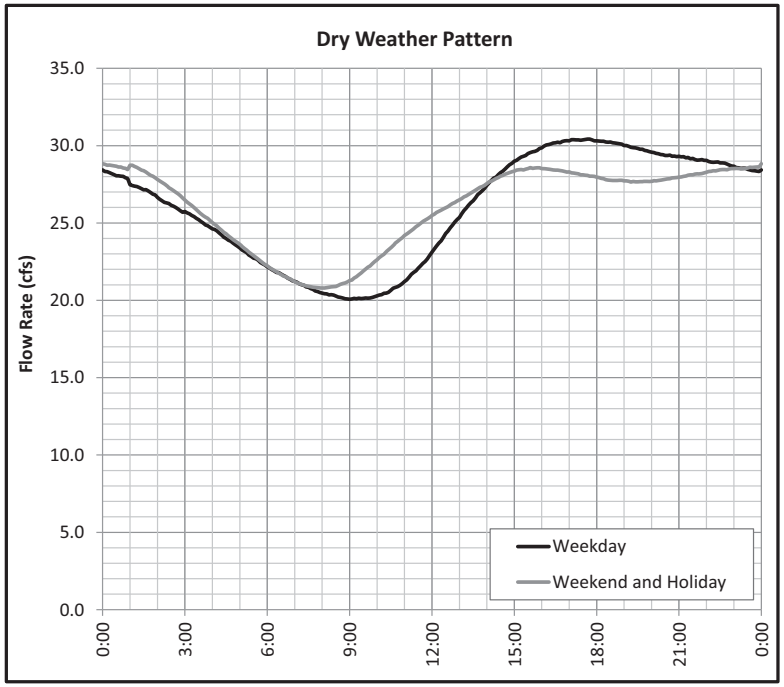
Annual Meter Report

Meter: P-31
Interceptor Manhole ID: RVI 6-12

Location: Hines Drive and Outer Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	25.7	514.1	23.8	477.6	25	6
Feb-18	39.2	710.2	25.5	461.4	17	11
Mar-18	35.1	703.2	30.4	608.4	21	10
Apr-18	40.8	791.0	32.3	626.9	20	10
May-18	46.0	922.2	32.7	654.9	15	16
Jun-18	25.9	502.3	25.1	487.3	22	8
Jul-18	19.6	393.2	19.3	387.1	28	3
Aug-18	23.4	469.0	20.9	418.2	21	10
Sep-18	28.3	548.3	19.3	373.2	11	19
Oct-18	31.5	631.8	25.9	518.3	22	9
Nov-18	34.2	663.7	30.7	594.6	20	10
Dec-18	29.7	596.0	28.2	564.7	23	8

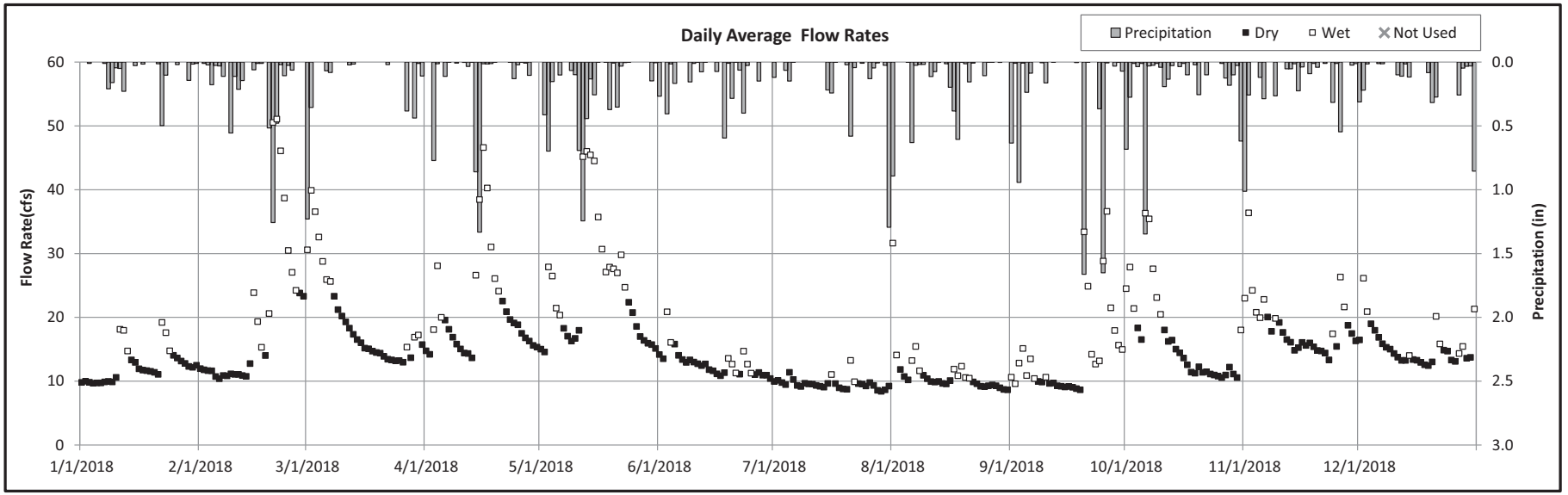
Statistics for Significant Wet Weather Events

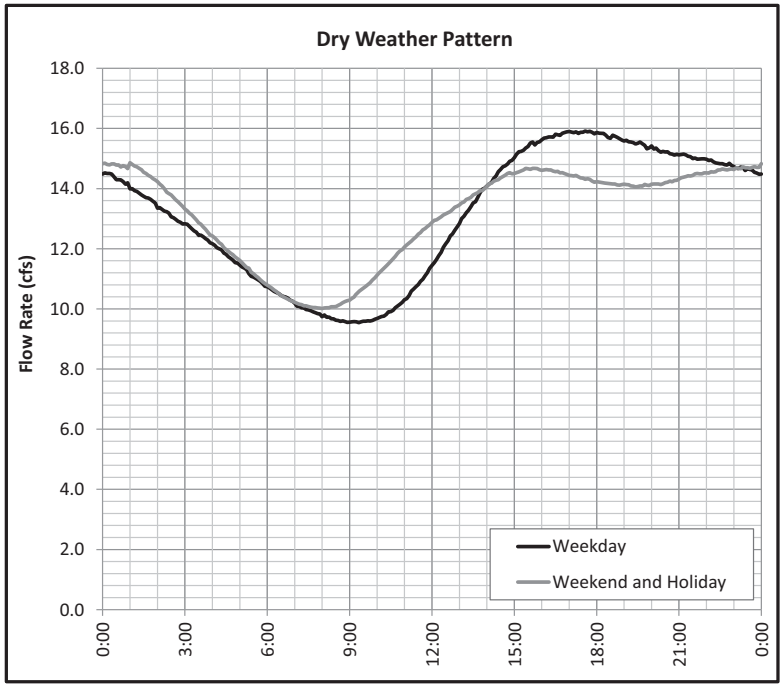
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	118.44	2/20/18 17:10	8.51	2/20/18 14:35
2	1.22	3/1/2018	3/2/2018	75.02	3/2/18 18:25	4.43	3/1/18 15:50
3	2.30	4/14/2018	4/16/2018	116.38	4/15/18 19:30	13.42	4/15/18 18:25
4	1.24	5/2/2018	5/4/2018	57.10	5/3/18 11:25	3.73	5/3/18 12:00
5	2.21	5/11/2018	5/12/2018	118.72	5/12/18 13:40	13.43	5/13/18 14:30
6	2.15	7/31/2018	8/1/2018	102.76	8/1/18 3:25	12.16	8/1/18 3:05
7	1.76	9/20/2018	9/20/2018	113.32	9/20/18 10:45	13.41	9/20/18 11:10
8	2.08	9/24/2018	9/26/2018	107.06	9/25/18 23:20	13.14	9/25/18 22:55
9	1.35	10/6/2018	10/7/2018	98.94	10/6/18 22:45	11.39	10/6/18 18:55
10	1.81	10/31/2018	11/2/2018	86.76	11/2/18 4:15	8.43	11/2/18 4:35

Meter: P-32
Interceptor Manhole ID: MRIR 2-21

Location: Hines Drive and Outer Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	12.5	250.3	11.4	228.4	25	6
Feb-18	20.2	365.5	12.8	232.5	17	11
Mar-18	19.5	390.7	16.0	319.9	21	10
Apr-18	21.3	412.5	17.0	328.7	20	10
May-18	24.7	494.5	17.2	344.0	15	16
Jun-18	12.8	247.7	12.3	238.2	22	8
Jul-18	9.6	192.4	9.4	188.6	28	3
Aug-18	11.2	224.3	9.8	195.6	21	10
Sep-18	14.3	277.6	9.3	180.3	11	19
Oct-18	16.8	337.1	13.0	261.4	22	9
Nov-18	18.6	360.5	16.3	315.6	20	10
Dec-18	15.5	310.1	14.4	289.0	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	56.85	2/20/18 17:30	8.15	2/20/18 14:35
2	1.22	3/1/2018	3/2/2018	45.28	3/2/18 19:00	3.97	3/1/18 15:55
3	2.30	4/14/2018	4/16/2018	51.33	4/15/18 18:40	12.20	4/15/18 18:20
4	1.24	5/2/2018	5/4/2018	34.10	5/3/18 11:15	3.28	5/3/18 11:45
5	2.21	5/11/2018	5/12/2018	52.36	5/12/18 14:35	12.27	5/13/18 3:00
6	2.15	7/31/2018	8/1/2018	45.71	8/1/18 3:20	11.76	8/1/18 3:00
7	1.76	9/20/2018	9/20/2018	51.40	9/20/18 16:10	12.25	9/20/18 12:30
8	2.08	9/24/2018	9/26/2018	49.37	9/26/18 1:00	12.25	9/25/18 23:40
9	1.35	10/6/2018	10/7/2018	44.91	10/6/18 14:45	10.97	10/6/18 18:50
10	1.81	10/31/2018	11/2/2018	40.89	11/2/18 4:05	8.02	11/2/18 4:30

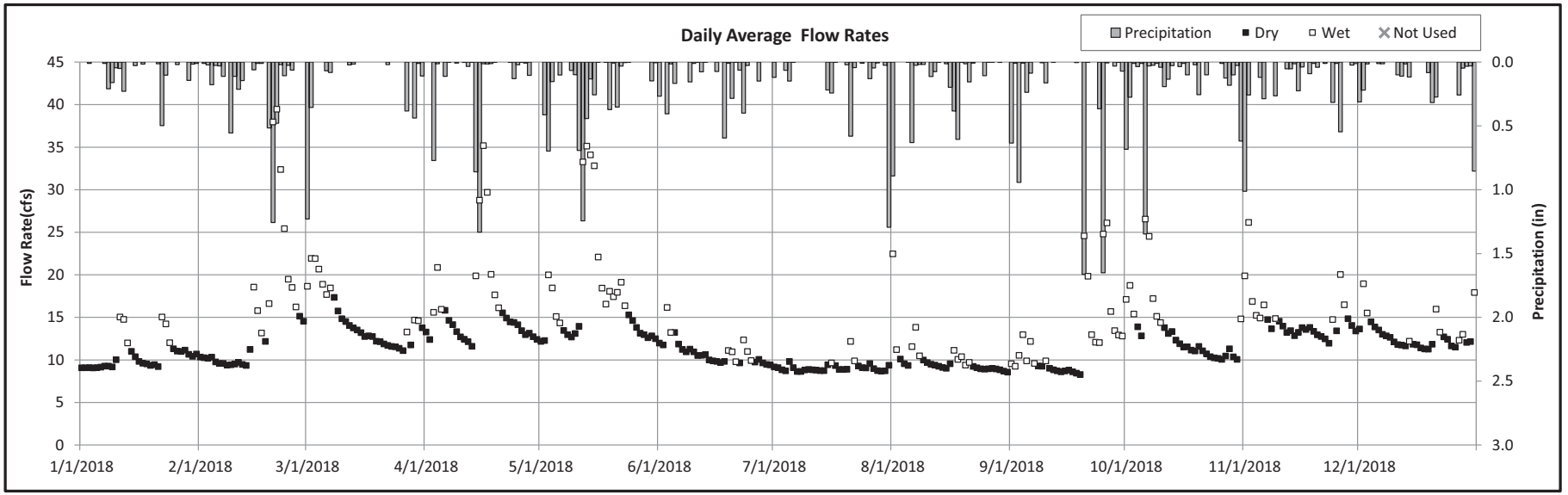
Rouge Valley Sewage Disposal System

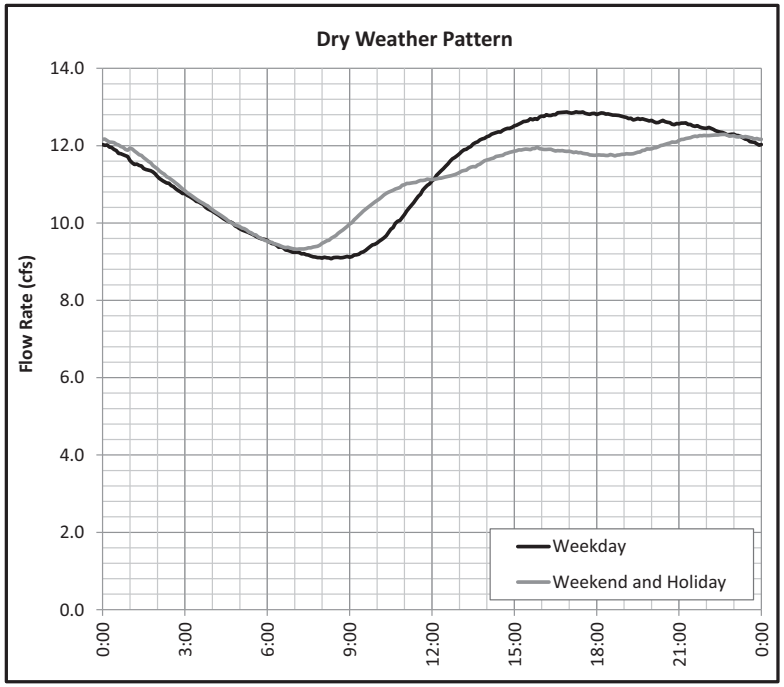
Annual Meter Report

Meter: P-33
Interceptor Manhole ID: MR 2-1

Location: Hines Drive West of Telegraph Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	10.6	213.0	9.9	197.6	25	6
Feb-18	15.5	280.0	10.6	191.4	17	11
Mar-18	14.7	293.9	13.1	261.5	21	10
Apr-18	16.3	316.7	13.5	262.2	20	10
May-18	17.7	353.7	13.2	264.7	15	16
Jun-18	10.9	210.8	10.5	204.3	22	8
Jul-18	9.1	183.0	9.0	179.9	28	3
Aug-18	10.1	202.6	9.2	184.5	21	10
Sep-18	12.2	237.4	8.8	170.0	11	19
Oct-18	13.4	269.1	11.5	230.0	22	9
Nov-18	14.8	287.8	13.5	261.6	20	10
Dec-18	13.0	259.8	12.3	246.5	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	41.38	2/20/18 16:10	3.89	2/22/18 1:40
2	1.22	3/1/2018	3/2/2018	22.40	3/2/18 2:35	2.45	3/1/18 14:45
3	2.30	4/14/2018	4/16/2018	39.30	4/15/18 20:00	9.46	4/16/18 2:25
4	1.24	5/2/2018	5/4/2018	22.51	5/3/18 10:10	2.00	5/3/18 10:15
5	2.21	5/11/2018	5/12/2018	39.99	5/12/18 13:35	8.13	5/13/18 8:20
6	2.15	7/31/2018	8/1/2018	38.06	8/1/18 1:05	7.95	8/1/18 4:15
7	1.76	9/20/2018	9/20/2018	38.20	9/20/18 8:55	8.14	9/20/18 12:40
8	2.08	9/24/2018	9/26/2018	37.84	9/25/18 10:20	8.22	9/25/18 23:10
9	1.35	10/6/2018	10/7/2018	35.03	10/6/18 11:00	7.57	10/6/18 20:30
10	1.81	10/31/2018	11/2/2018	31.69	11/1/18 22:20	4.44	11/2/18 4:50

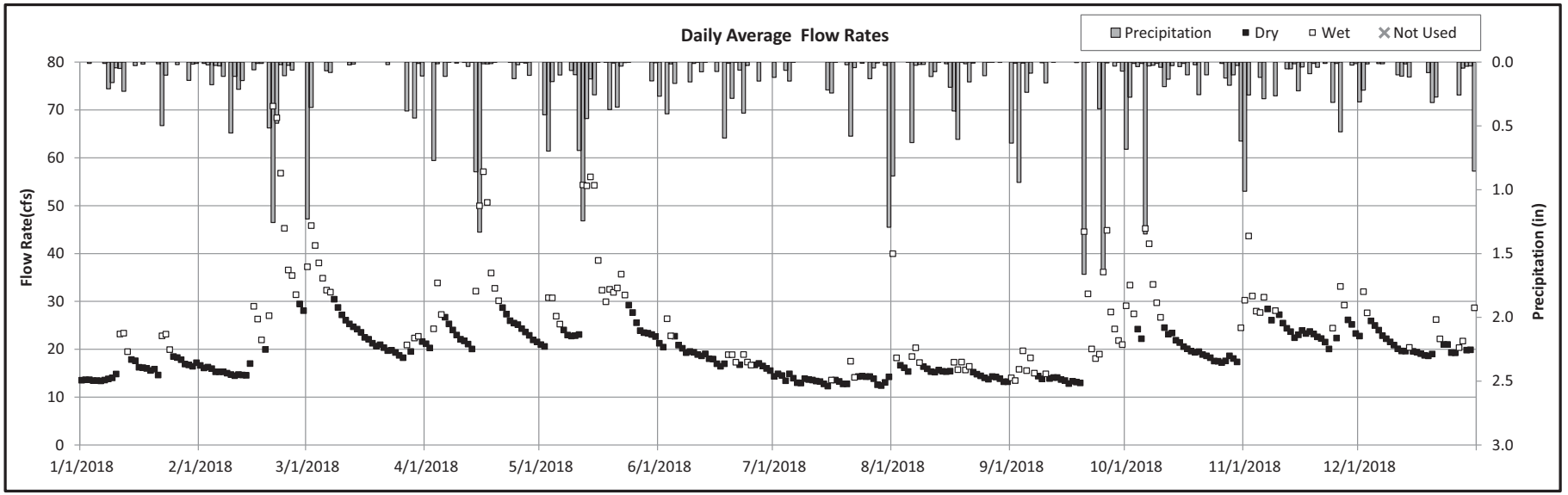
Rouge Valley Sewage Disposal System

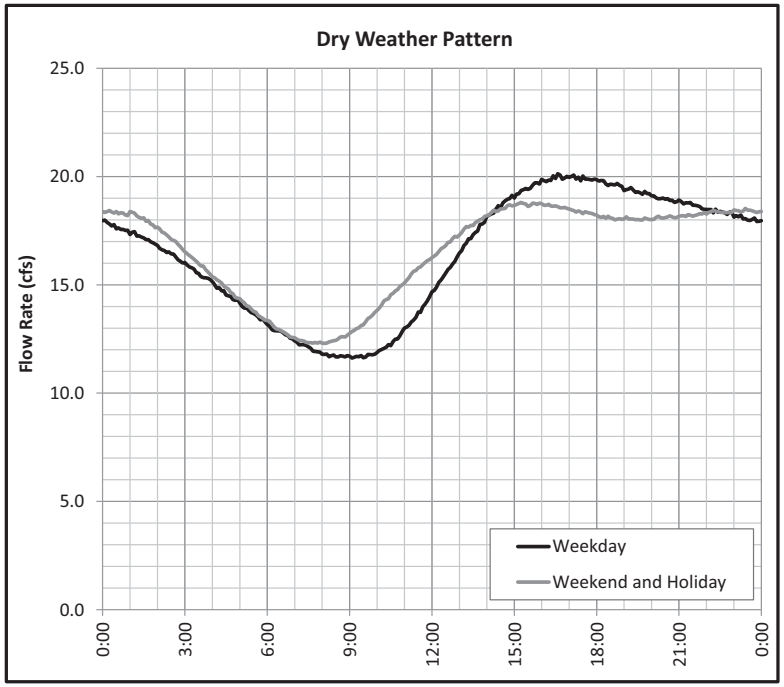
Annual Meter Report

Meter: P-34
Interceptor Manhole ID: RVI 6-28

Location: Hines Drive West of Telegraph Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	16.8	336.3	15.5	311.4	25	6
Feb-18	26.5	479.4	17.2	311.9	17	11
Mar-18	25.9	518.5	22.6	452.7	21	10
Apr-18	28.2	546.7	23.6	457.5	20	10
May-18	30.7	616.0	23.7	475.4	15	16
Jun-18	18.7	363.1	18.4	356.8	22	8
Jul-18	13.7	274.7	13.6	271.8	28	3
Aug-18	16.4	329.4	14.9	299.0	21	10
Sep-18	19.5	377.9	13.6	263.4	11	19
Oct-18	23.6	472.1	20.0	399.9	22	9
Nov-18	26.1	506.7	23.9	463.1	20	10
Dec-18	21.9	437.9	20.8	417.0	23	8

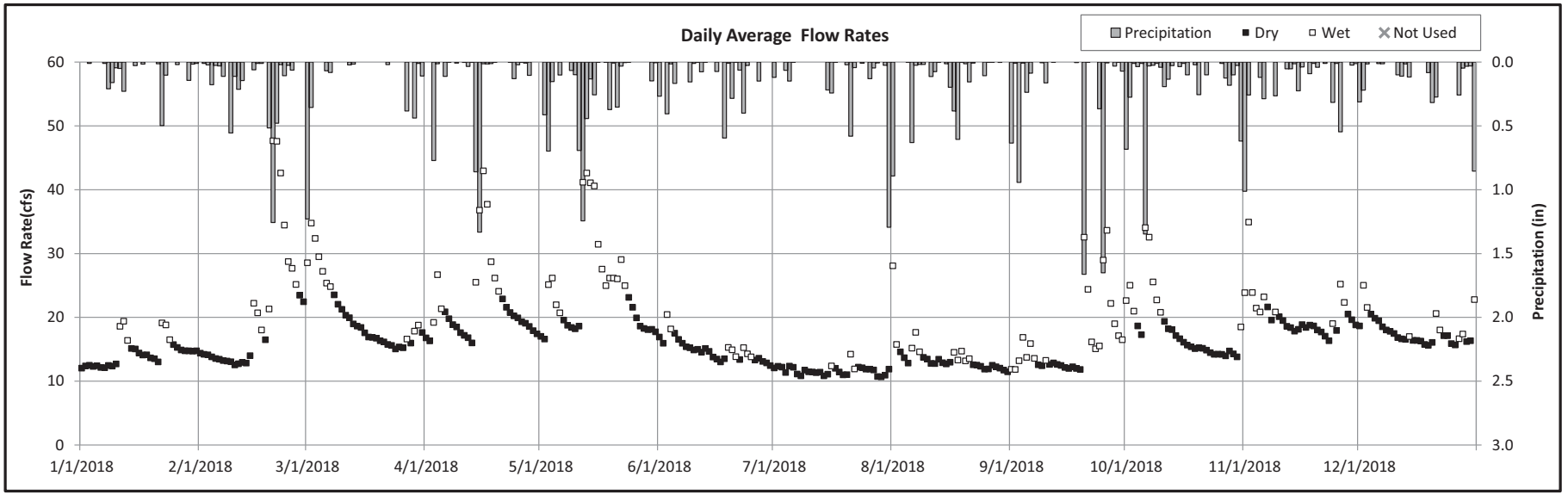
Statistics for Significant Wet Weather Events

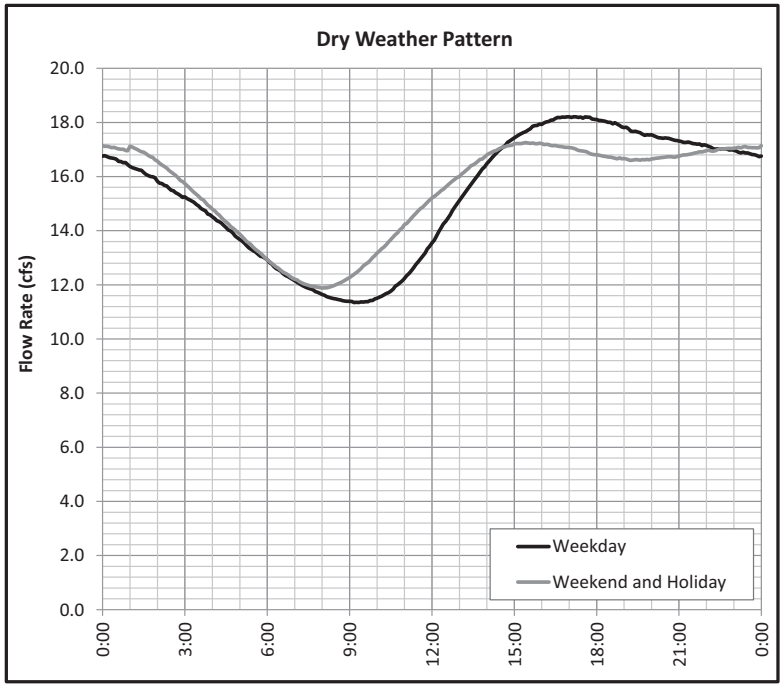
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	72.05	2/20/18 8:15	7.65	2/20/18 15:35
2	1.22	3/1/2018	3/2/2018	45.65	3/2/18 20:50	4.01	3/1/18 15:15
3	2.30	4/14/2018	4/16/2018	59.67	4/15/18 15:55	10.37	4/15/18 23:20
4	1.24	5/2/2018	5/4/2018	30.91	5/3/18 12:05	3.38	5/3/18 11:30
5	2.21	5/11/2018	5/12/2018	63.71	5/12/18 14:00	10.35	5/12/18 23:30
6	2.15	7/31/2018	8/1/2018	50.61	8/1/18 6:10	9.41	8/1/18 3:15
7	1.76	9/20/2018	9/20/2018	62.71	9/20/18 18:30	11.93	9/20/18 11:10
8	2.08	9/24/2018	9/26/2018	54.90	9/26/18 3:25	11.29	9/25/18 23:00
9	1.35	10/6/2018	10/7/2018	57.61	10/6/18 15:20	10.68	10/6/18 21:15
10	1.81	10/31/2018	11/2/2018	50.70	11/2/18 2:25	6.62	11/2/18 4:35

Meter: P-35
Interceptor Manhole ID: MRIR 3-1

Location: Hines Drive West of Telegraph Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	14.5	290.7	13.6	273.3	25	6
Feb-18	20.9	378.8	14.7	266.2	17	11
Mar-18	20.3	407.0	17.8	356.9	21	10
Apr-18	22.2	429.9	18.8	364.6	20	10
May-18	24.5	489.9	18.8	377.2	15	16
Jun-18	14.9	288.1	14.5	281.9	22	8
Jul-18	11.7	233.6	11.5	231.1	28	3
Aug-18	13.8	276.1	12.7	254.5	21	10
Sep-18	16.2	314.6	12.3	239.1	11	19
Oct-18	18.4	367.8	15.7	315.5	22	9
Nov-18	20.3	394.0	18.7	362.8	20	10
Dec-18	17.9	357.9	17.2	344.0	23	8

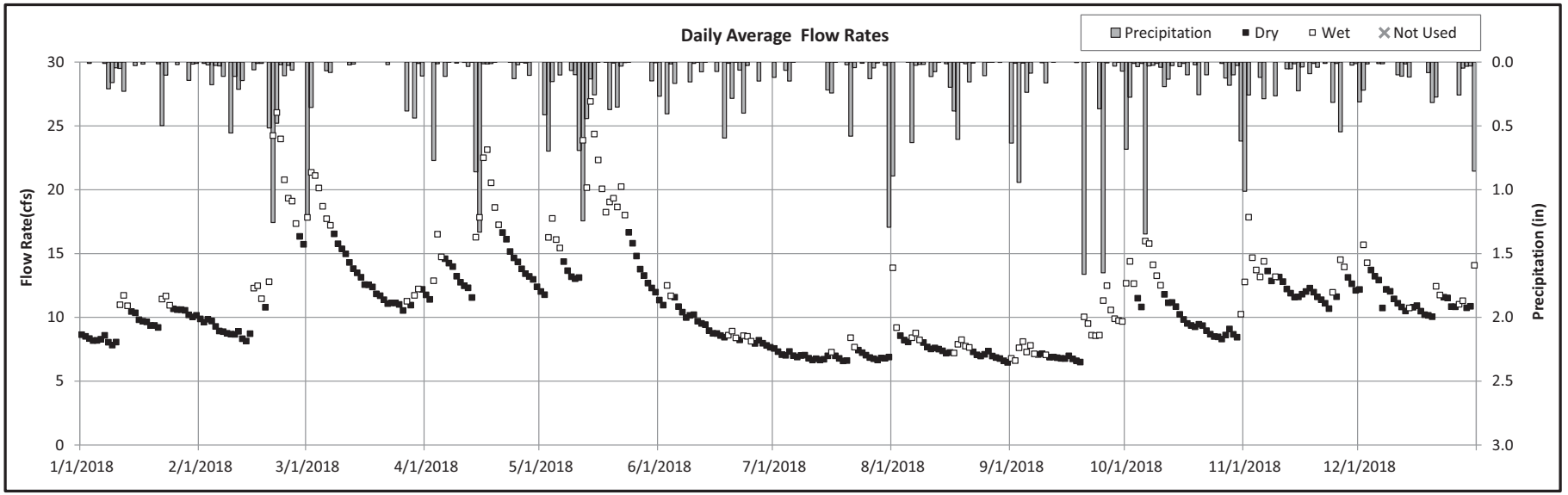
Statistics for Significant Wet Weather Events

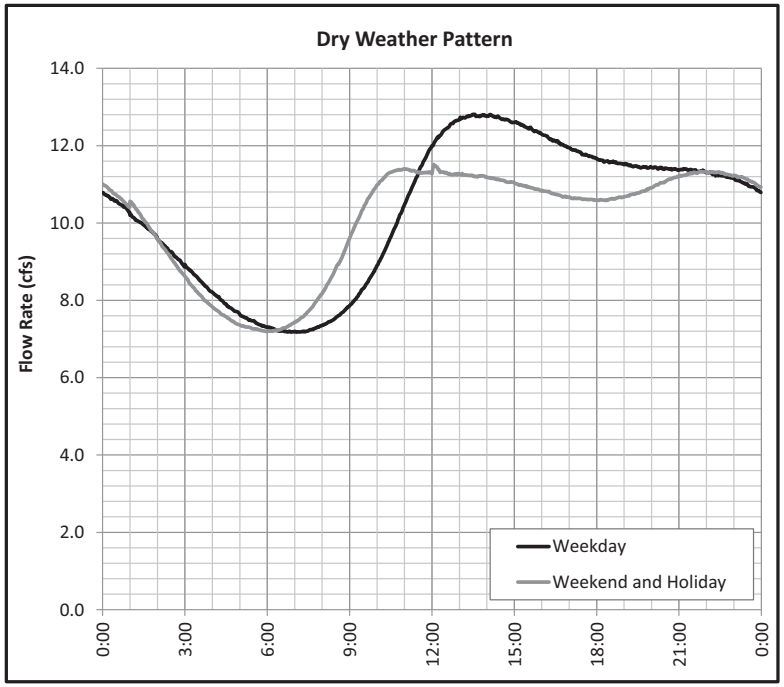
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	52.29	2/20/18 6:35	8.26	2/21/18 11:40
2	1.22	3/1/2018	3/2/2018	39.57	3/1/18 15:00	3.47	3/2/18 19:35
3	2.30	4/14/2018	4/16/2018	48.32	4/15/18 19:20	10.91	4/16/18 16:15
4	1.24	5/2/2018	5/4/2018	28.86	5/3/18 11:45	2.95	5/3/18 11:40
5	2.21	5/11/2018	5/12/2018	46.81	5/12/18 14:35	11.00	5/13/18 22:15
6	2.15	7/31/2018	8/1/2018	41.03	8/1/18 1:20	10.00	8/1/18 3:05
7	1.76	9/20/2018	9/20/2018	46.60	9/20/18 10:20	12.01	9/20/18 11:15
8	2.08	9/24/2018	9/26/2018	44.02	9/25/18 23:05	11.24	9/25/18 23:00
9	1.35	10/6/2018	10/7/2018	40.56	10/6/18 19:10	8.73	10/6/18 20:50
10	1.81	10/31/2018	11/2/2018	39.49	11/1/18 22:25	5.66	11/2/18 4:55

Meter: LV-Basin
Interceptor Manhole ID: RVI 12-12

Location: Inkster Road and Oakley Street
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	9.7	194.5	9.3	186.9	25	6
Feb-18	13.2	238.4	9.9	180.0	17	11
Mar-18	14.1	282.4	12.7	255.4	21	10
Apr-18	15.0	291.6	13.5	262.6	20	10
May-18	16.7	335.4	13.5	270.3	15	16
Jun-18	9.4	181.3	9.3	180.9	22	8
Jul-18	7.0	140.5	6.9	138.9	28	3
Aug-18	7.8	156.1	7.3	147.2	21	10
Sep-18	8.1	156.7	6.8	132.5	11	19
Oct-18	10.8	215.5	9.6	193.0	22	9
Nov-18	12.7	246.9	12.1	234.6	20	10
Dec-18	11.6	233.3	11.3	226.2	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	28.62	2/22/18 1:50	11.75	2/20/18 18:10
2	1.22	3/1/2018	3/2/2018	23.52	3/2/18 19:50	4.75	3/2/18 20:20
3	2.30	4/14/2018	4/16/2018	29.66	4/17/18 11:15	13.59	4/15/18 20:25
4	1.24	5/2/2018	5/4/2018	19.21	5/4/18 8:20	3.75	5/3/18 11:15
5	2.21	5/11/2018	5/12/2018	32.18	5/12/18 11:40	13.61	5/12/18 17:00
6	2.15	7/31/2018	8/1/2018	21.81	8/1/18 2:35	4.57	8/1/18 4:05
7	1.76	9/20/2018	9/20/2018	21.11	9/20/18 9:15	7.64	9/20/18 11:45
8	2.08	9/24/2018	9/26/2018	19.85	9/25/18 21:20	5.47	9/26/18 1:10
9	1.35	10/6/2018	10/7/2018	20.47	10/6/18 12:40	3.95	10/6/18 13:25
10	1.81	10/31/2018	11/2/2018	19.81	11/1/18 22:15	4.10	11/1/18 23:35

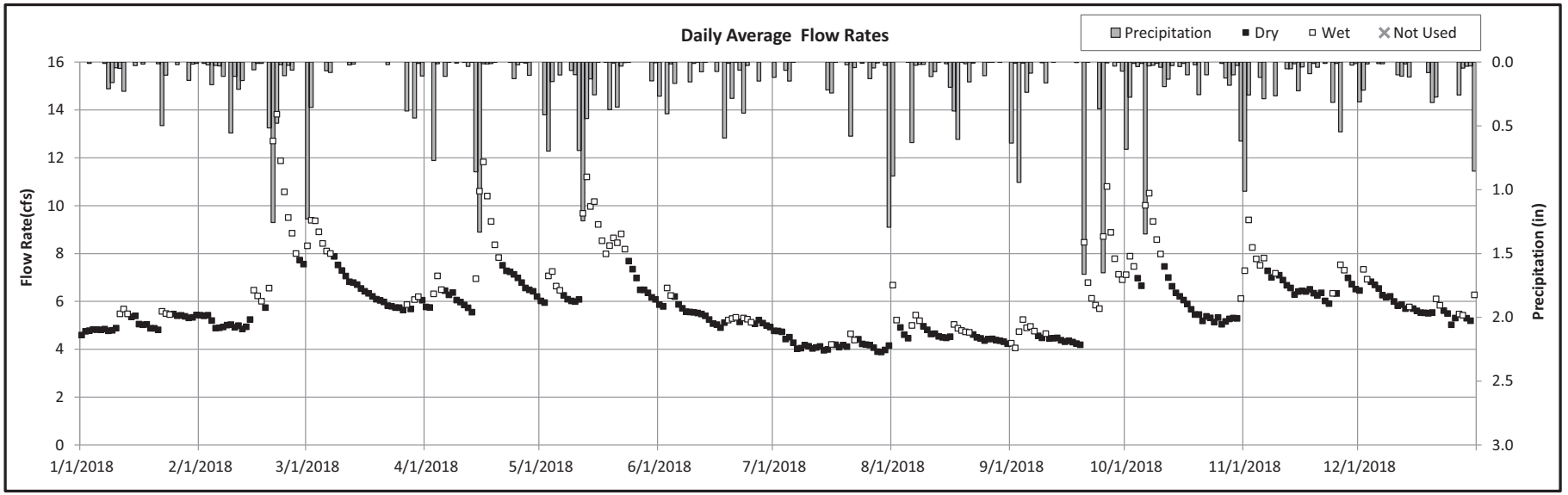
Rouge Valley Sewage Disposal System

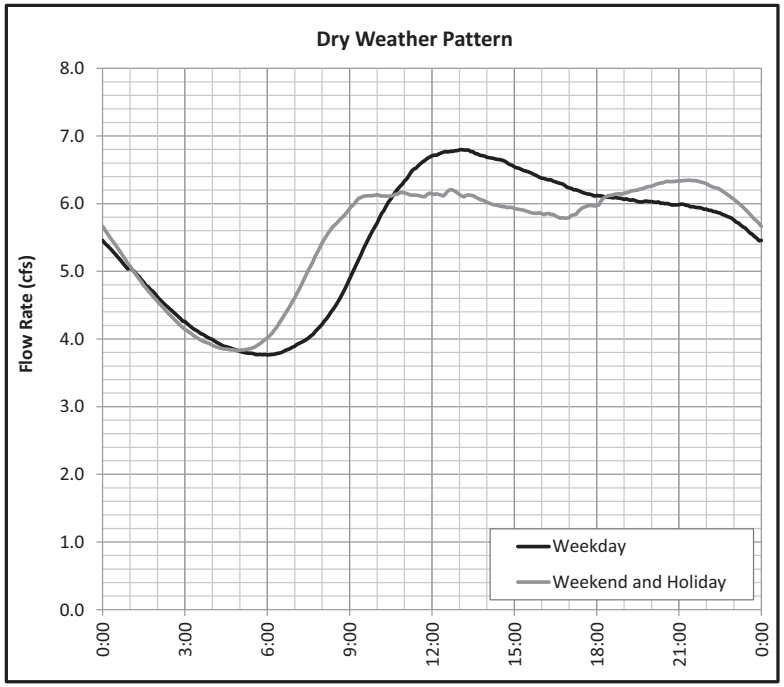
Annual Meter Report

Meter: WE-14
Interceptor Manhole ID: --

Location: Hines Drive West of Merriman
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	5.1	102.8	5.0	100.9	25	6
Feb-18	6.9	124.5	5.4	98.0	17	11
Mar-18	6.9	137.5	6.4	127.9	21	10
Apr-18	7.1	138.0	6.4	124.4	20	10
May-18	7.5	150.3	6.4	128.1	15	16
Jun-18	5.4	105.0	5.4	104.2	22	8
Jul-18	4.2	84.5	4.2	84.1	28	3
Aug-18	4.7	94.8	4.5	90.7	21	10
Sep-18	5.6	109.1	4.4	84.9	11	19
Oct-18	6.6	131.3	5.8	116.7	22	9
Nov-18	6.9	134.0	6.5	126.9	20	10
Dec-18	5.9	118.2	5.8	116.5	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	17.27	2/21/18 8:20	7.71	2/20/18 18:50
2	1.22	3/1/2018	3/2/2018	10.59	3/2/18 19:10	1.85	3/2/18 19:05
3	2.30	4/14/2018	4/16/2018	14.34	4/15/18 19:25	7.79	4/15/18 19:35
4	1.24	5/2/2018	5/4/2018	8.24	5/3/18 8:40	1.59	5/4/18 9:15
5	2.21	5/11/2018	5/12/2018	12.68	5/13/18 5:30	5.27	5/13/18 10:05
6	2.15	7/31/2018	8/1/2018	10.69	8/1/18 0:15	1.97	8/1/18 0:45
7	1.76	9/20/2018	9/20/2018	16.87	9/20/18 9:10	5.53	9/20/18 11:55
8	2.08	9/24/2018	9/26/2018	15.68	9/25/18 20:15	3.50	9/25/18 22:55
9	1.35	10/6/2018	10/7/2018	12.39	10/6/18 11:55	2.22	10/6/18 19:40
10	1.81	10/31/2018	11/2/2018	10.18	11/2/18 10:15	1.82	11/2/18 8:10

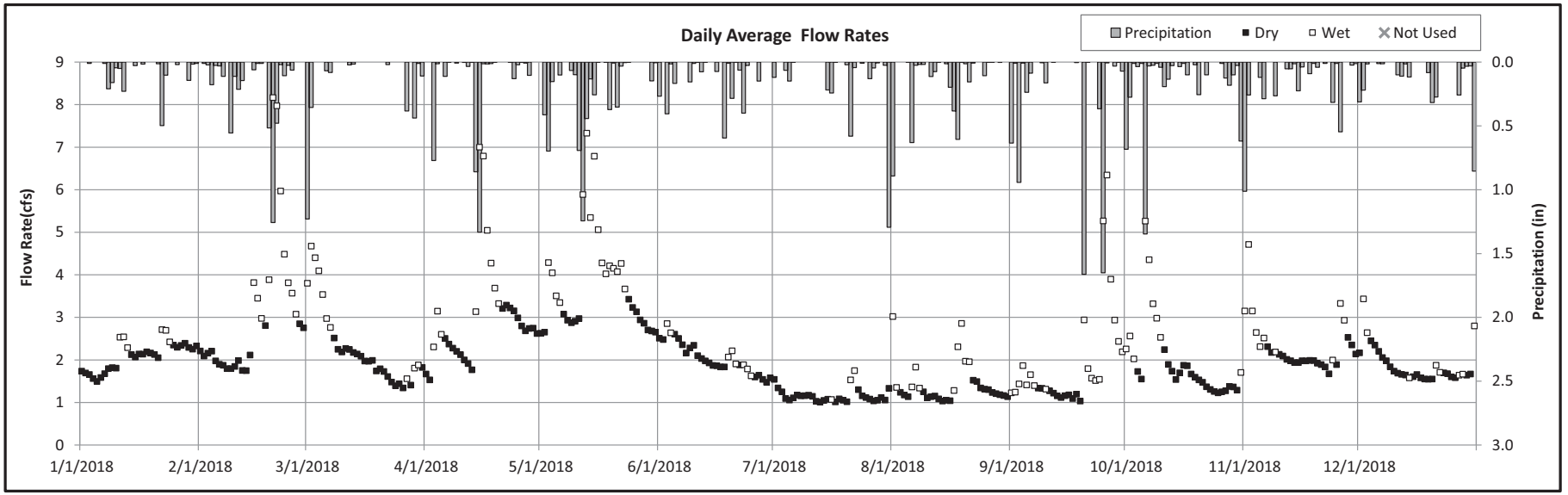
Rouge Valley Sewage Disposal System

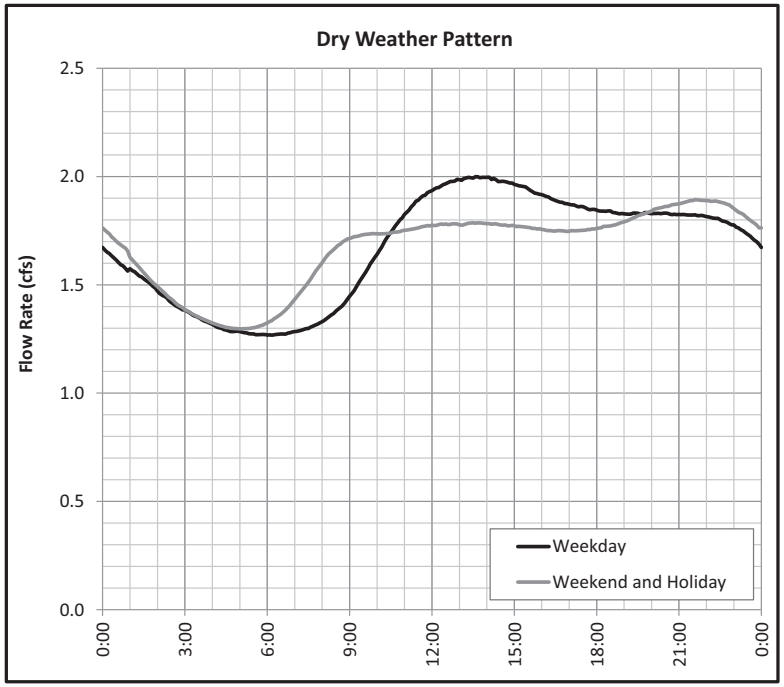
Annual Meter Report

Meter: WE-28
Interceptor Manhole ID: --

Location: Merriman Road and Lower Rouge River
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.1	42.1	2.0	40.1	25	6
Feb-18	3.1	56.2	2.1	38.1	17	11
Mar-18	2.3	45.9	1.9	37.7	21	10
Apr-18	3.0	58.8	2.5	48.2	20	10
May-18	3.8	76.2	2.9	58.3	15	16
Jun-18	2.0	39.6	2.0	39.1	22	8
Jul-18	1.2	23.3	1.1	22.7	28	3
Aug-18	1.4	28.8	1.2	24.1	21	10
Sep-18	1.9	36.8	1.2	23.0	11	19
Oct-18	2.0	39.4	1.5	31.0	22	9
Nov-18	2.3	45.0	2.0	39.4	20	10
Dec-18	1.9	37.7	1.8	35.8	23	8

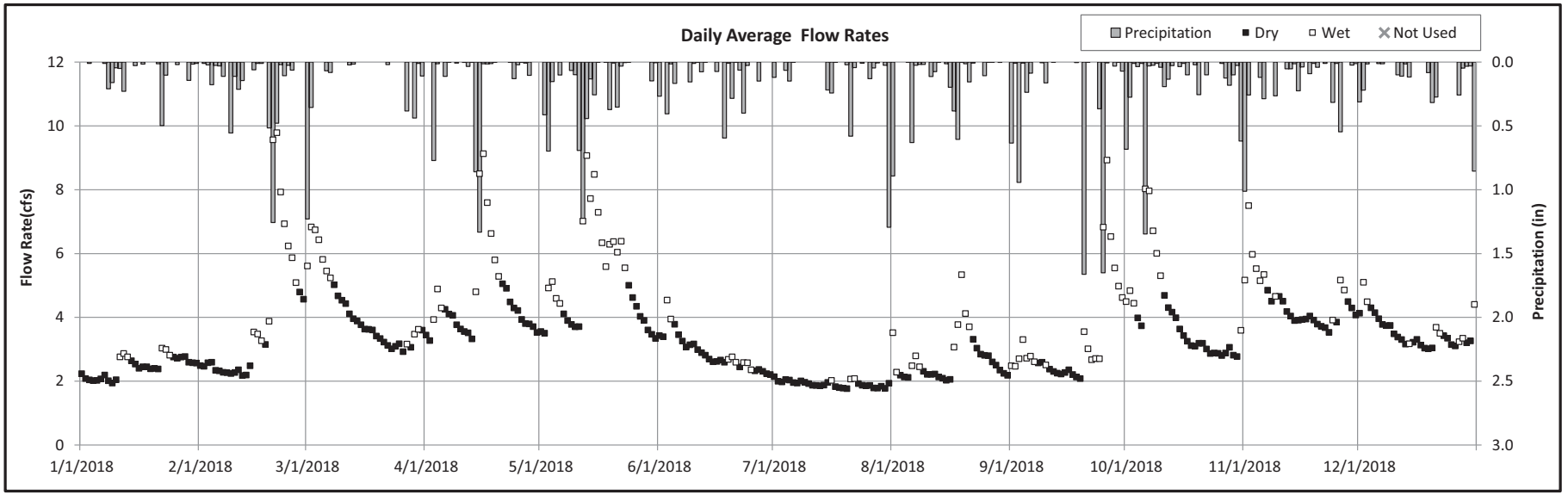
Statistics for Significant Wet Weather Events

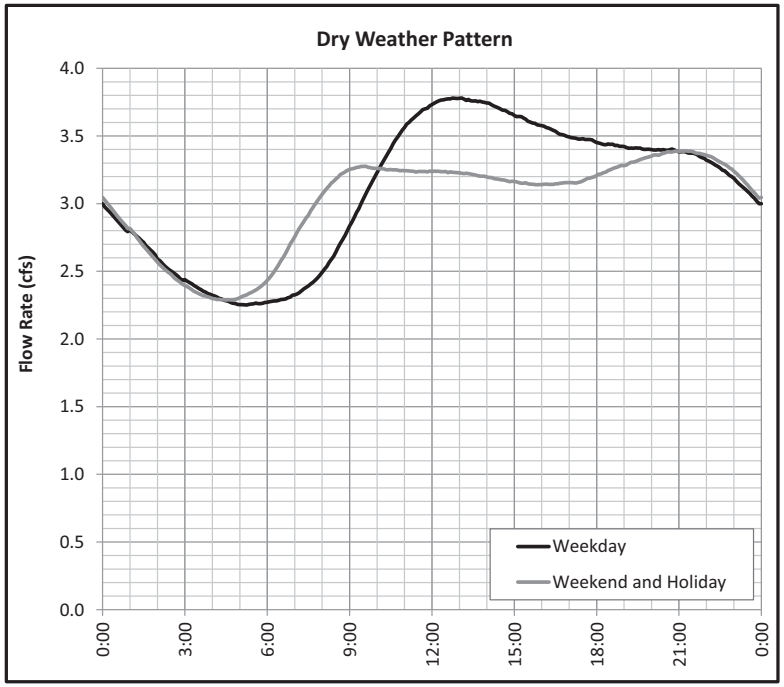
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	9.76	2/20/18 4:35	1.56	2/20/18 4:50
2	1.22	3/1/2018	3/2/2018	5.61	3/1/18 12:50	1.08	3/1/18 13:00
3	2.30	4/14/2018	4/16/2018	9.49	4/15/18 20:55	1.48	4/15/18 20:00
4	1.24	5/2/2018	5/4/2018	4.94	5/3/18 16:25	0.97	5/2/18 23:40
5	2.21	5/11/2018	5/12/2018	9.30	5/13/18 6:00	1.45	5/13/18 5:25
6	2.15	7/31/2018	8/1/2018	8.84	8/1/18 0:15	1.49	8/1/18 0:50
7	1.76	9/20/2018	9/20/2018	6.98	9/20/18 9:30	1.26	9/20/18 10:05
8	2.08	9/24/2018	9/26/2018	9.12	9/25/18 20:10	1.47	9/25/18 20:55
9	1.35	10/6/2018	10/7/2018	8.31	10/6/18 11:35	1.34	10/6/18 12:00
10	1.81	10/31/2018	11/2/2018	6.07	11/2/18 2:35	1.13	11/1/18 22:45

Meter: WE-25
Interceptor Manhole ID: --

Location: Thinbark Road at Lower Rouge River
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.5	49.3	2.4	47.3	25	6
Feb-18	4.0	71.8	2.7	48.5	17	11
Mar-18	4.2	83.7	3.7	73.6	21	10
Apr-18	4.6	90.1	3.9	76.2	20	10
May-18	5.2	103.2	3.9	78.2	15	16
Jun-18	2.9	55.9	2.8	55.0	22	8
Jul-18	1.9	38.4	1.9	38.1	28	3
Aug-18	2.7	54.2	2.4	48.0	21	10
Sep-18	3.3	64.0	2.3	44.7	11	19
Oct-18	4.0	80.8	3.3	67.1	22	9
Nov-18	4.5	87.2	4.1	79.3	20	10
Dec-18	3.6	71.2	3.4	69.1	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	11.36	2/21/18 12:10	2.58	2/21/18 10:55
2	1.22	3/1/2018	3/2/2018	7.88	3/2/18 17:35	1.36	3/2/18 18:05
3	2.30	4/14/2018	4/16/2018	11.83	4/15/18 17:10	2.93	4/15/18 20:40
4	1.24	5/2/2018	5/4/2018	5.65	5/4/18 8:20	1.13	5/4/18 7:20
5	2.21	5/11/2018	5/12/2018	10.49	5/13/18 8:55	2.02	5/13/18 8:50
6	2.15	7/31/2018	8/1/2018	6.80	8/1/18 2:00	1.26	8/1/18 2:10
7	1.76	9/20/2018	9/20/2018	6.40	9/20/18 9:35	1.20	9/20/18 8:30
8	2.08	9/24/2018	9/26/2018	11.59	9/25/18 21:00	2.87	9/25/18 22:05
9	1.35	10/6/2018	10/7/2018	10.27	10/6/18 19:20	1.94	10/6/18 20:00
10	1.81	10/31/2018	11/2/2018	8.38	11/2/18 5:15	1.47	11/2/18 5:40

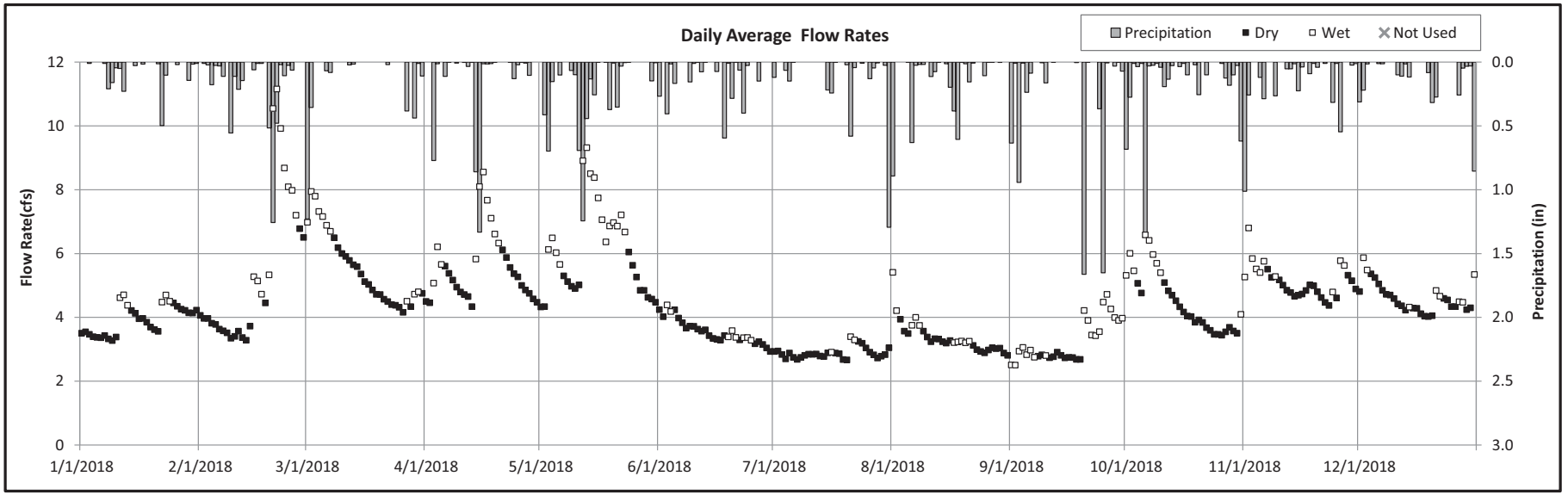
Rouge Valley Sewage Disposal System

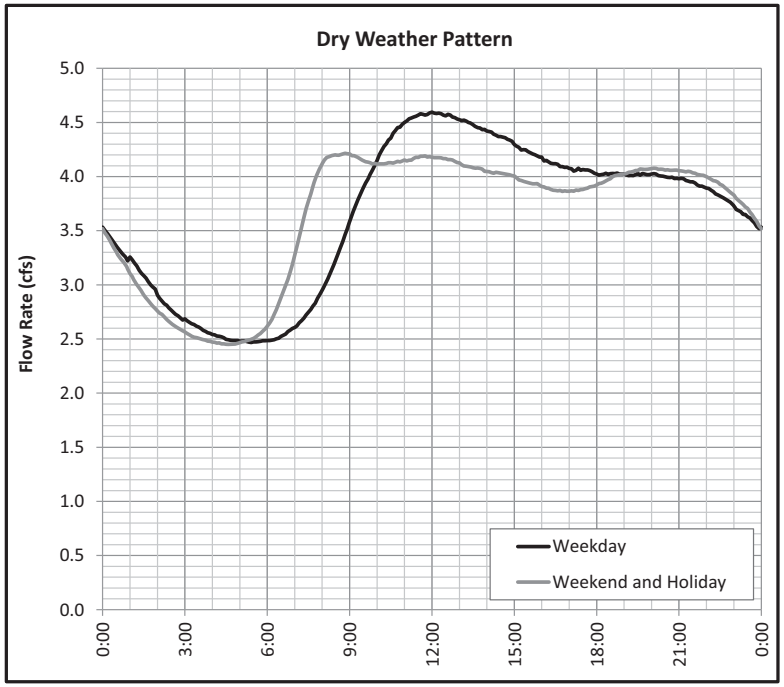
Annual Meter Report

Meter: LV-4
Interceptor Manhole ID: --

Location: Alpine Road and 5 Mile Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	3.9	78.9	3.8	75.9	25	6
Feb-18	5.5	98.7	4.0	73.1	17	11
Mar-18	5.5	110.9	5.1	101.9	21	10
Apr-18	5.6	108.2	5.0	97.3	20	10
May-18	6.1	122.4	4.9	99.2	15	16
Jun-18	3.6	68.9	3.5	68.5	22	8
Jul-18	2.9	57.8	2.9	57.2	28	3
Aug-18	3.4	67.5	3.2	64.1	21	10
Sep-18	3.2	62.4	2.8	53.6	11	19
Oct-18	4.5	90.5	4.0	81.1	22	9
Nov-18	5.1	99.3	4.9	94.7	20	10
Dec-18	4.6	92.3	4.5	90.1	23	8

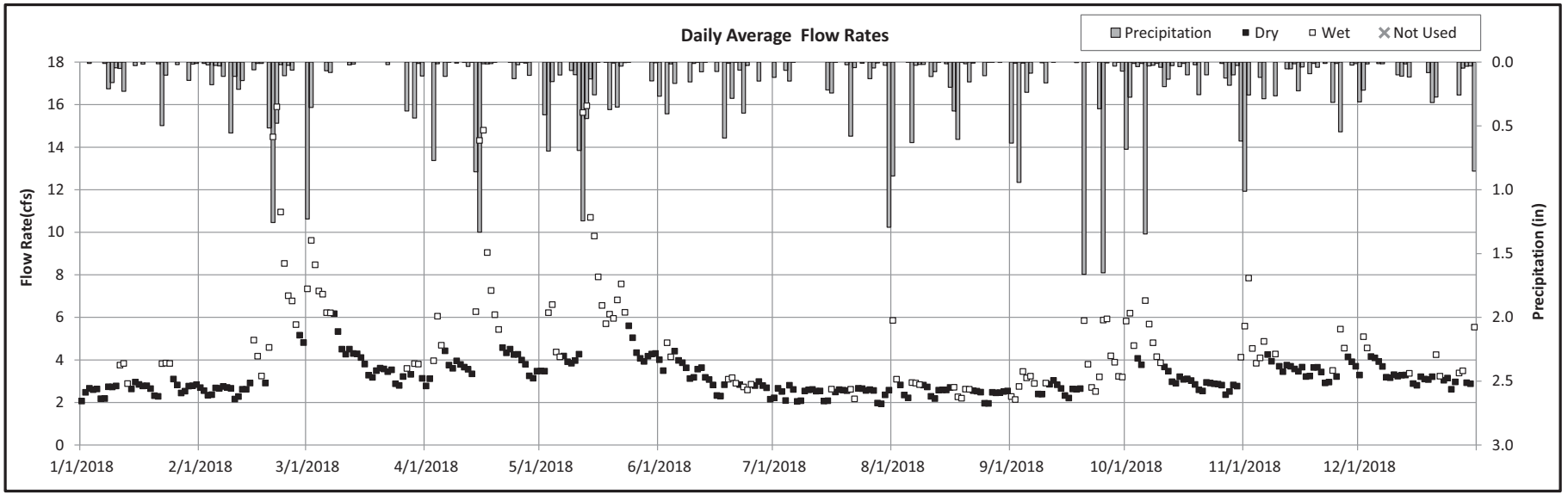
Statistics for Significant Wet Weather Events

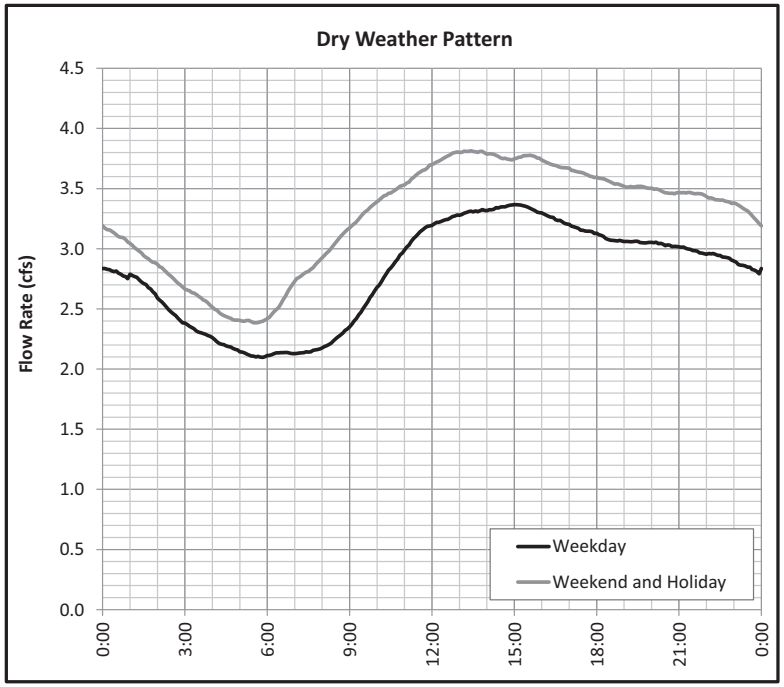
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	10.96	2/21/18 23:55	2.39	2/20/18 5:10
2	1.22	3/1/2018	3/2/2018	7.98	3/2/18 18:10	2.01	3/1/18 13:35
3	2.30	4/14/2018	4/16/2018	8.75	4/15/18 15:30	2.51	4/15/18 18:45
4	1.24	5/2/2018	5/4/2018	6.80	5/3/18 8:40	1.83	5/3/18 9:00
5	2.21	5/11/2018	5/12/2018	9.49	5/12/18 12:45	2.52	5/12/18 12:55
6	2.15	7/31/2018	8/1/2018	7.08	8/1/18 0:45	2.09	8/1/18 1:15
7	1.76	9/20/2018	9/20/2018	6.48	9/20/18 8:40	2.27	9/20/18 9:20
8	2.08	9/24/2018	9/26/2018	5.58	9/25/18 19:45	1.89	9/25/18 20:30
9	1.35	10/6/2018	10/7/2018	7.77	10/6/18 10:30	1.86	10/6/18 11:00
10	1.81	10/31/2018	11/2/2018	7.41	11/1/18 22:15	1.82	11/2/18 2:40

Meter: LV-11
Interceptor Manhole ID: --

Location: Lyndon Road and Inkster Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.8	56.5	2.6	52.5	25	6
Feb-18	4.8	87.3	2.9	52.0	17	11
Mar-18	4.6	93.1	3.8	77.0	21	10
Apr-18	5.1	99.1	3.8	73.2	20	10
May-18	6.1	122.2	4.2	83.9	15	16
Jun-18	3.2	61.9	3.2	61.3	22	8
Jul-18	2.4	48.7	2.4	48.7	28	3
Aug-18	2.6	52.8	2.5	49.3	21	10
Sep-18	3.2	61.8	2.6	50.3	11	19
Oct-18	3.6	72.5	3.0	60.2	22	9
Nov-18	4.0	77.5	3.6	69.3	20	10
Dec-18	3.5	69.3	3.2	64.8	23	8

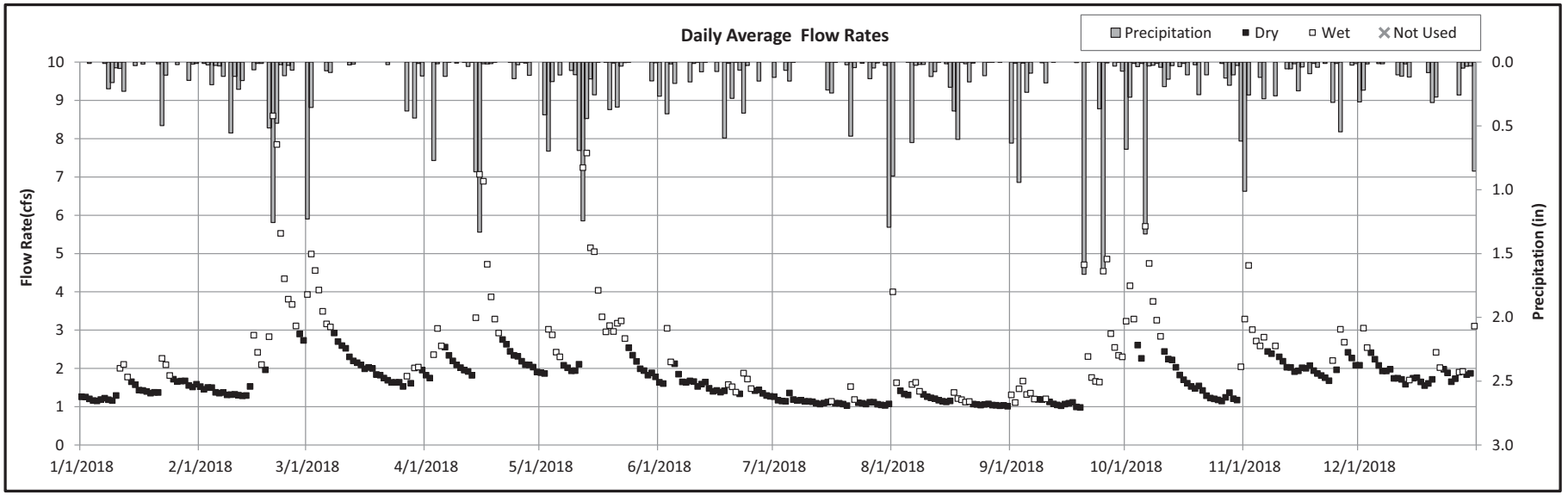
Statistics for Significant Wet Weather Events

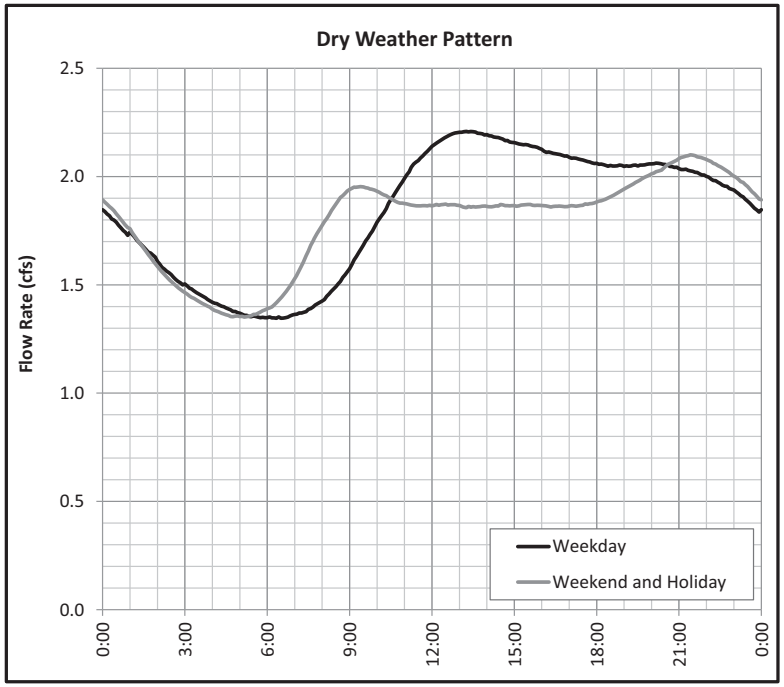
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	18.21	2/21/18 12:55	6.83	2/20/18 18:25
2	1.22	3/1/2018	3/2/2018	11.59	3/1/18 15:25	1.27	3/1/18 16:05
3	2.30	4/14/2018	4/16/2018	23.53	4/15/18 20:40	8.83	4/15/18 18:40
4	1.24	5/2/2018	5/4/2018	8.30	5/3/18 11:50	1.07	5/3/18 12:10
5	2.21	5/11/2018	5/12/2018	22.01	5/12/18 14:40	8.45	5/12/18 17:40
6	2.15	7/31/2018	8/1/2018	13.49	8/1/18 1:35	1.36	8/1/18 1:55
7	1.76	9/20/2018	9/20/2018	12.17	9/20/18 8:30	2.94	9/20/18 12:05
8	2.08	9/24/2018	9/26/2018	14.33	9/25/18 20:45	1.41	9/25/18 21:25
9	1.35	10/6/2018	10/7/2018	8.73	10/6/18 22:00	1.09	10/6/18 22:30
10	1.81	10/31/2018	11/2/2018	10.62	11/1/18 22:35	1.22	11/1/18 23:15

Meter: LV-14
Interceptor Manhole ID: --

Location: West of Cavell South of Ann Arbor Trail
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.5	30.4	1.4	28.0	25	6
Feb-18	2.6	47.9	1.6	28.7	17	11
Mar-18	2.4	48.9	2.0	40.6	21	10
Apr-18	2.8	53.8	2.2	41.9	20	10
May-18	3.0	59.2	2.0	40.5	15	16
Jun-18	1.6	31.3	1.5	29.7	22	8
Jul-18	1.1	22.7	1.1	22.4	28	3
Aug-18	1.3	26.1	1.1	23.0	21	10
Sep-18	1.8	34.9	1.1	20.9	11	19
Oct-18	2.2	44.5	1.6	32.7	22	9
Nov-18	2.4	45.7	2.1	39.8	20	10
Dec-18	2.0	39.4	1.8	36.9	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	15.29	2/20/18 4:45	4.82	2/20/18 19:10
2	1.22	3/1/2018	3/2/2018	7.00	3/1/18 12:55	1.04	3/1/18 13:25
3	2.30	4/14/2018	4/16/2018	11.10	4/15/18 19:25	5.30	4/15/18 20:05
4	1.24	5/2/2018	5/4/2018	4.59	5/3/18 8:55	0.86	5/3/18 9:15
5	2.21	5/11/2018	5/12/2018	11.17	5/12/18 12:50	5.36	5/13/18 9:20
6	2.15	7/31/2018	8/1/2018	14.75	8/1/18 0:50	2.08	8/1/18 2:00
7	1.76	9/20/2018	9/20/2018	15.46	9/20/18 8:15	4.36	9/20/18 11:55
8	2.08	9/24/2018	9/26/2018	15.96	9/25/18 20:25	3.32	9/25/18 23:10
9	1.35	10/6/2018	10/7/2018	9.02	10/6/18 3:40	1.37	10/6/18 4:10
10	1.81	10/31/2018	11/2/2018	6.46	11/2/18 2:00	0.79	11/2/18 12:10

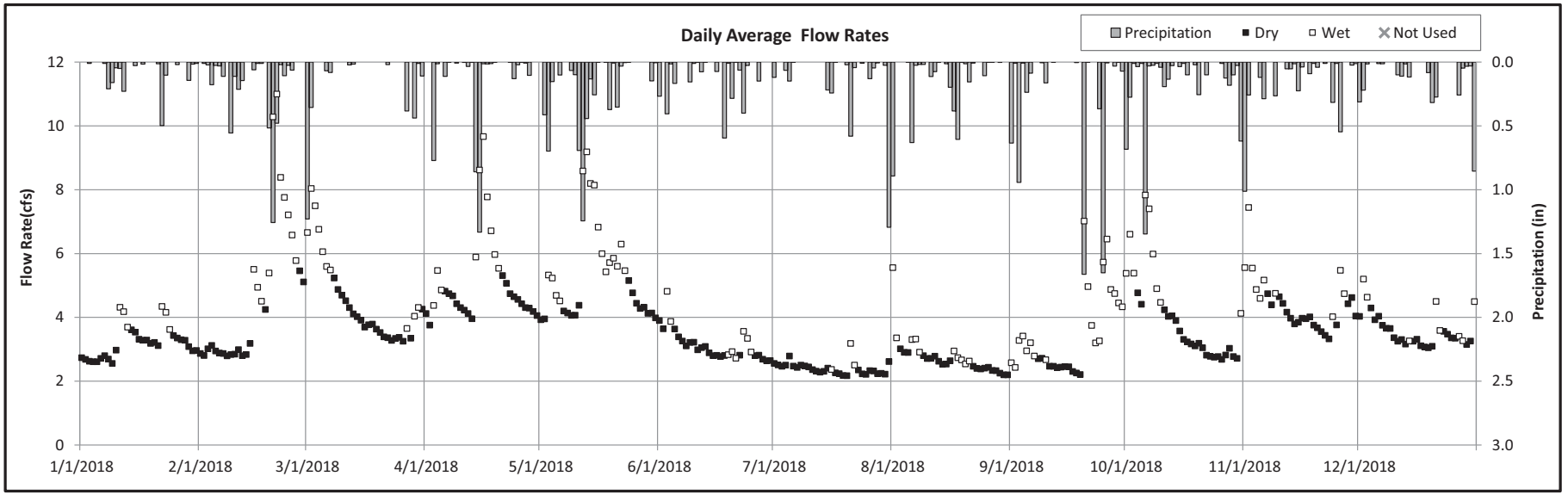
Rouge Valley Sewage Disposal System

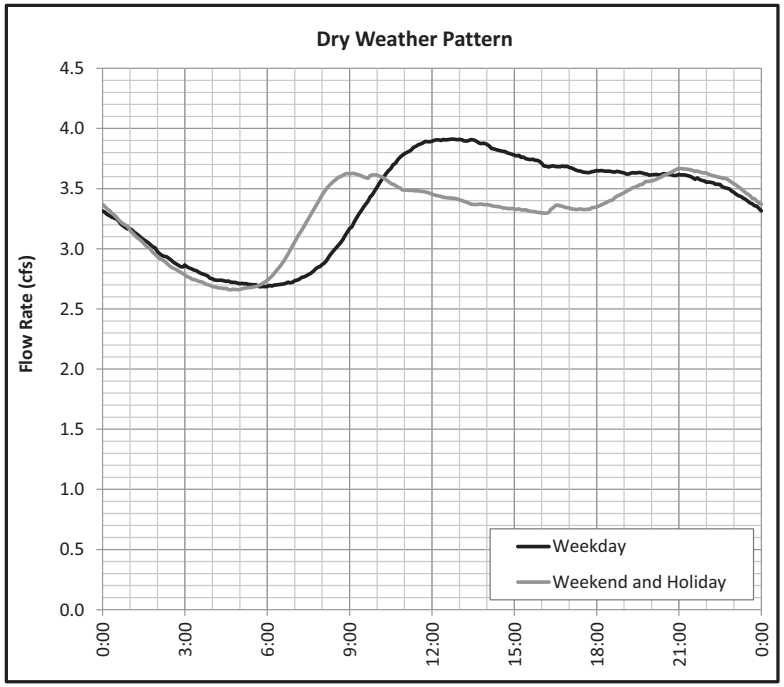
Annual Meter Report

Meter: LV-15
Interceptor Manhole ID: --

Location: Merriman Road at Geraldine Street
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	3.2	64.7	3.0	60.8	25	6
Feb-18	4.7	85.9	3.3	59.1	17	11
Mar-18	4.5	90.3	3.9	77.9	21	10
Apr-18	5.1	99.2	4.4	86.0	20	10
May-18	5.3	106.6	4.3	85.3	15	16
Jun-18	3.1	60.7	3.0	59.0	22	8
Jul-18	2.4	48.1	2.4	47.5	28	3
Aug-18	2.8	55.2	2.5	51.0	21	10
Sep-18	3.4	66.5	2.4	47.4	11	19
Oct-18	4.0	80.9	3.3	66.6	22	9
Nov-18	4.4	85.7	4.0	78.0	20	10
Dec-18	3.6	72.2	3.5	69.2	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	13.71	2/21/18 3:10	7.07	2/20/18 21:20
2	1.22	3/1/2018	3/2/2018	9.45	3/1/18 12:25	1.93	3/1/18 13:50
3	2.30	4/14/2018	4/16/2018	12.51	4/16/18 5:35	6.62	4/16/18 1:15
4	1.24	5/2/2018	5/4/2018	7.27	5/3/18 8:35	1.65	5/3/18 9:05
5	2.21	5/11/2018	5/12/2018	10.71	5/13/18 2:50	4.48	5/13/18 12:10
6	2.15	7/31/2018	8/1/2018	12.97	8/1/18 0:00	3.67	8/1/18 2:50
7	1.76	9/20/2018	9/20/2018	13.14	9/20/18 9:45	5.98	9/20/18 12:45
8	2.08	9/24/2018	9/26/2018	14.00	9/25/18 19:35	4.56	9/25/18 23:00
9	1.35	10/6/2018	10/7/2018	10.56	10/6/18 3:15	2.28	10/6/18 13:40
10	1.81	10/31/2018	11/2/2018	9.36	11/2/18 2:00	2.09	11/2/18 3:45

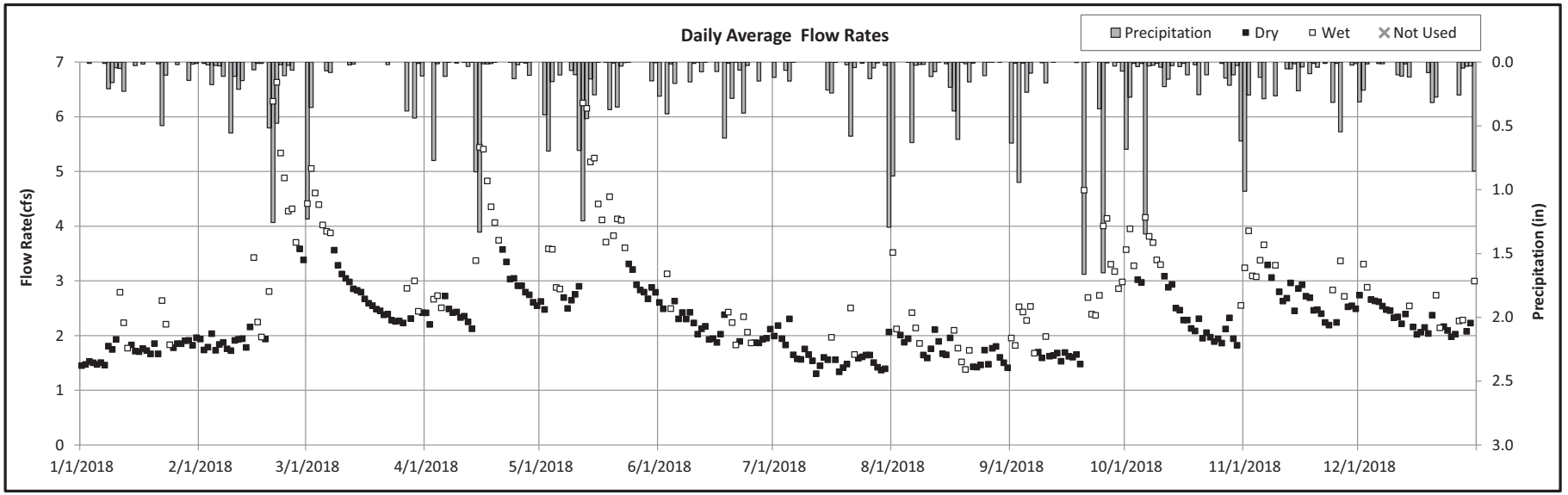
Rouge Valley Sewage Disposal System

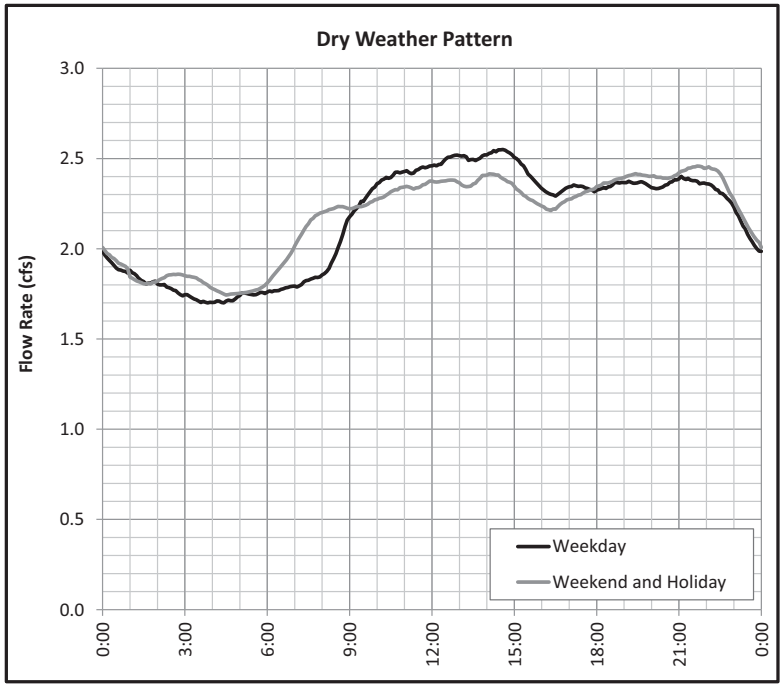
Annual Meter Report

Meter: LV-16
Interceptor Manhole ID: --

Location: 8914 Farmington Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.8	36.4	1.7	34.3	25	6
Feb-18	2.9	52.3	2.1	37.3	17	11
Mar-18	3.0	60.9	2.7	53.2	21	10
Apr-18	3.1	59.7	2.7	51.6	20	10
May-18	3.6	71.2	2.8	56.1	15	16
Jun-18	2.2	42.6	2.2	41.8	22	8
Jul-18	1.7	33.6	1.6	32.8	28	3
Aug-18	1.8	36.3	1.7	34.0	21	10
Sep-18	2.3	45.4	1.6	31.4	11	19
Oct-18	2.7	53.3	2.3	46.3	22	9
Nov-18	2.8	55.0	2.6	51.0	20	10
Dec-18	2.4	47.8	2.3	45.9	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	8.25	2/21/18 9:50	1.48	2/21/18 11:05
2	1.22	3/1/2018	3/2/2018	6.29	3/1/18 21:00	1.12	3/1/18 21:35
3	2.30	4/14/2018	4/16/2018	7.99	4/15/18 17:10	1.35	4/15/18 18:10
4	1.24	5/2/2018	5/4/2018	4.96	5/4/18 6:25	0.98	5/4/18 0:55
5	2.21	5/11/2018	5/12/2018	8.28	5/12/18 13:20	1.55	5/12/18 14:15
6	2.15	7/31/2018	8/1/2018	7.99	8/1/18 0:00	1.36	8/1/18 0:45
7	1.76	9/20/2018	9/20/2018	12.21	9/20/18 7:10	2.66	9/20/18 7:35
8	2.08	9/24/2018	9/26/2018	8.96	9/25/18 19:35	1.71	9/25/18 20:20
9	1.35	10/6/2018	10/7/2018	5.49	10/6/18 8:45	1.05	10/7/18 0:00
10	1.81	10/31/2018	11/2/2018	5.59	11/1/18 17:30	1.06	11/1/18 18:00

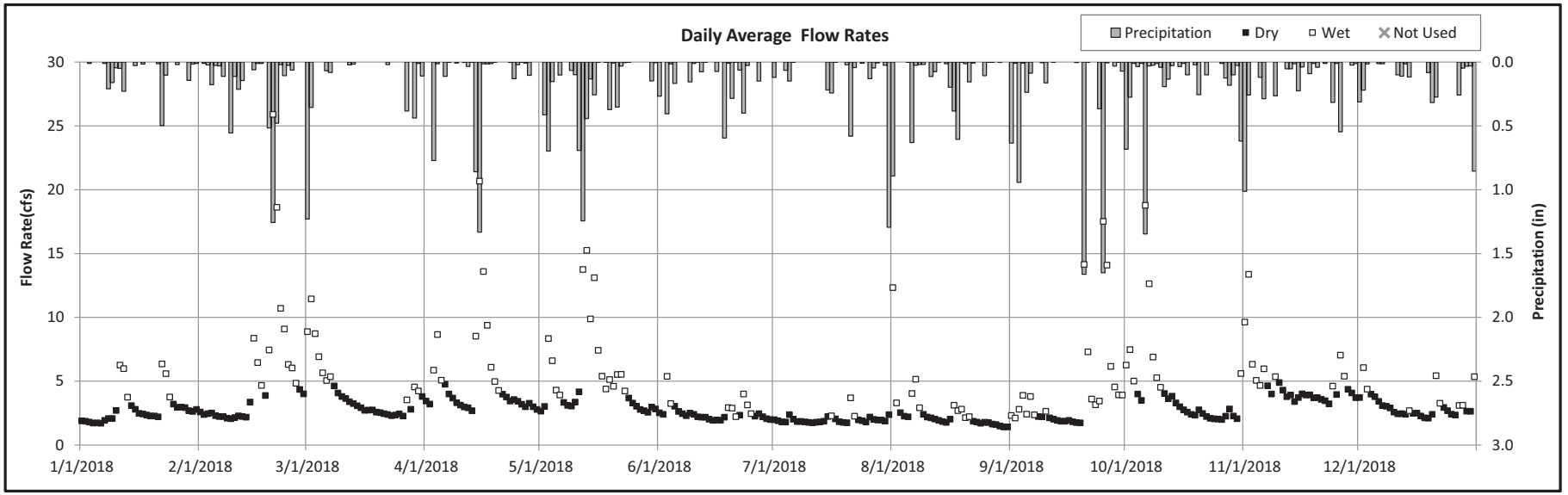
Rouge Valley Sewage Disposal System

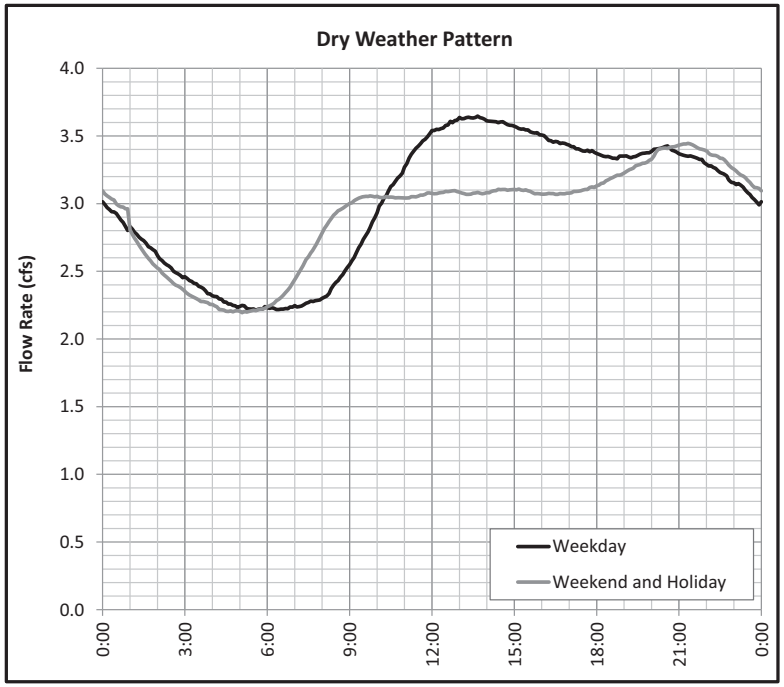
Annual Meter Report

Meter: M-1
Interceptor Manhole ID: --

Location: Middlebelt Road North of Rush
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.9	58.8	2.4	47.6	25	6
Feb-18	5.5	99.3	2.7	48.1	17	11
Mar-18	4.1	82.1	3.0	59.8	21	10
Apr-18	5.1	99.8	3.4	65.3	20	10
May-18	5.3	105.8	3.1	62.0	15	16
Jun-18	2.5	49.2	2.3	44.1	22	8
Jul-18	2.0	40.1	1.9	38.5	28	3
Aug-18	2.6	51.9	1.9	37.8	21	10
Sep-18	4.2	81.0	1.9	37.7	11	19
Oct-18	4.3	85.7	2.7	54.8	22	9
Nov-18	4.8	94.0	3.9	75.7	20	10
Dec-18	3.1	62.4	2.7	55.0	23	8

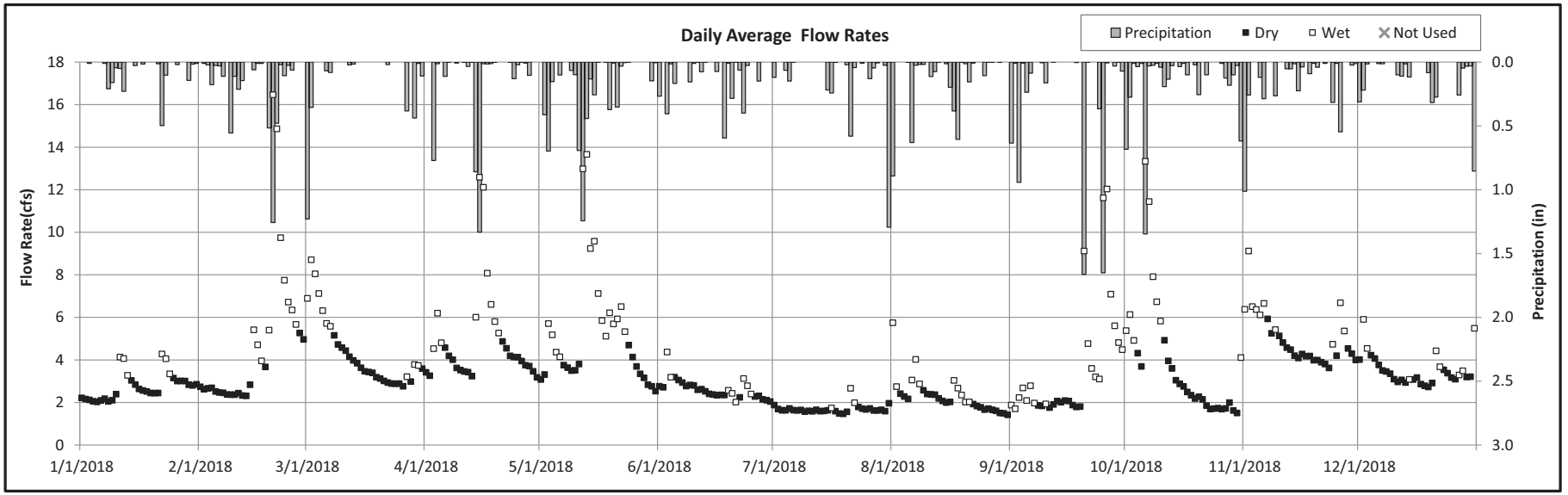
Statistics for Significant Wet Weather Events

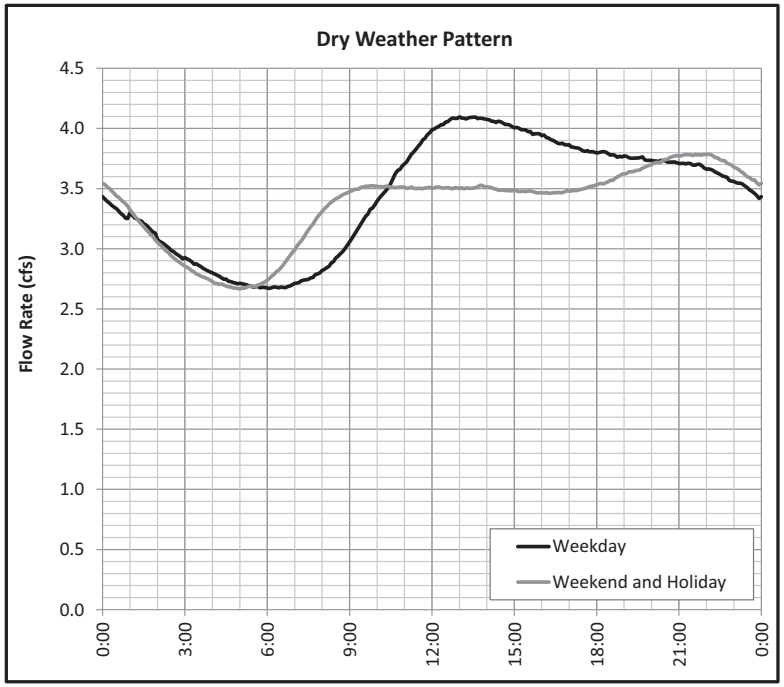
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	49.98	2/20/18 4:20	10.18	2/21/18 9:20
2	1.22	3/1/2018	3/2/2018	17.32	3/1/18 12:35	4.43	3/1/18 14:30
3	2.30	4/14/2018	4/16/2018	28.69	4/15/18 18:00	9.74	4/15/18 19:55
4	1.24	5/2/2018	5/4/2018	10.35	5/2/18 23:15	2.28	5/3/18 0:10
5	2.21	5/11/2018	5/12/2018	22.22	5/13/18 4:55	10.19	5/13/18 5:15
6	2.15	7/31/2018	8/1/2018	38.05	8/1/18 0:55	10.42	8/1/18 1:05
7	1.76	9/20/2018	9/20/2018	37.32	9/20/18 9:25	9.87	9/20/18 10:10
8	2.08	9/24/2018	9/26/2018	36.06	9/25/18 20:45	9.46	9/25/18 21:05
9	1.35	10/6/2018	10/7/2018	30.19	10/6/18 19:20	8.43	10/6/18 19:30
10	1.81	10/31/2018	11/2/2018	18.59	11/2/18 3:25	6.86	11/2/18 4:40

Meter: M-2
Interceptor Manhole ID: --

Location: Merriman Road South of Hines Drive
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.8	55.6	2.5	50.4	25	6
Feb-18	4.9	87.9	2.9	52.1	17	11
Mar-18	4.3	86.6	3.6	71.5	21	10
Apr-18	4.9	96.0	3.8	74.2	20	10
May-18	5.3	106.1	3.4	69.0	15	16
Jun-18	2.6	50.7	2.5	49.0	22	8
Jul-18	1.7	33.9	1.6	32.9	28	3
Aug-18	2.3	46.4	2.0	39.4	21	10
Sep-18	3.6	69.6	1.9	37.0	11	19
Oct-18	3.9	78.7	2.5	51.0	22	9
Nov-18	5.0	97.4	4.4	84.7	20	10
Dec-18	3.5	70.6	3.3	65.7	23	8

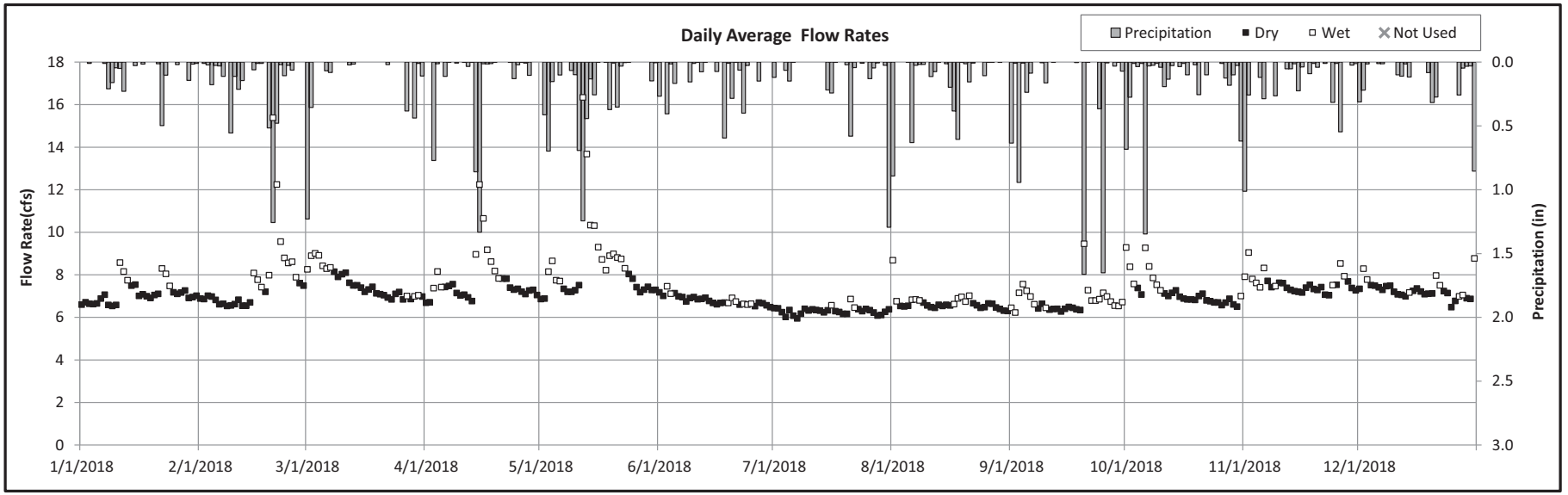
Statistics for Significant Wet Weather Events

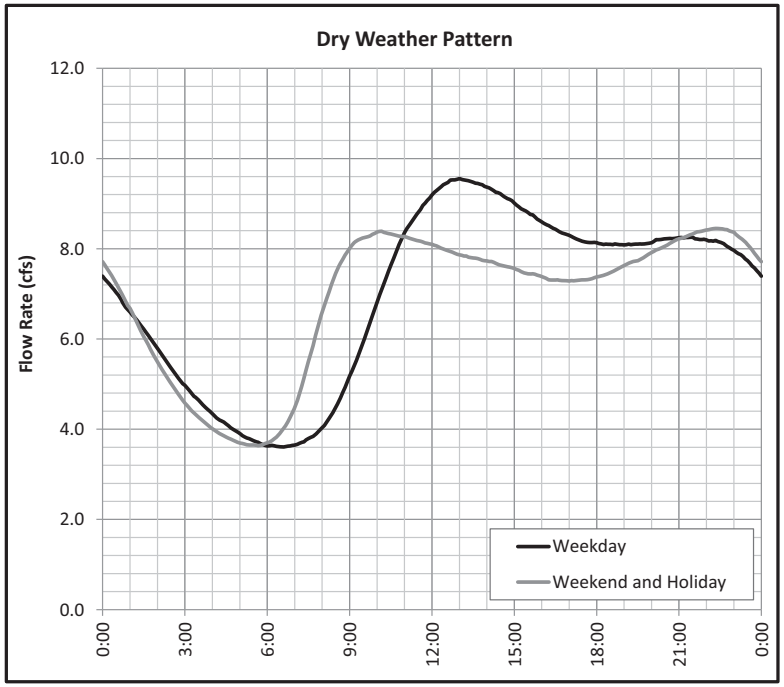
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	22.92	2/20/18 6:25	7.36	2/20/18 19:10
2	1.22	3/1/2018	3/2/2018	11.55	3/2/18 18:15	1.77	3/2/18 19:10
3	2.30	4/14/2018	4/16/2018	18.44	4/15/18 16:05	7.85	4/15/18 19:40
4	1.24	5/2/2018	5/4/2018	8.23	5/3/18 8:55	1.38	5/2/18 23:35
5	2.21	5/11/2018	5/12/2018	20.00	5/12/18 12:50	1.89	5/15/18 3:05
6	2.15	7/31/2018	8/1/2018	10.20	8/1/18 0:25	2.34	8/1/18 1:15
7	1.76	9/20/2018	9/20/2018	19.57	9/20/18 9:55	5.77	9/20/18 12:15
8	2.08	9/24/2018	9/26/2018	23.15	9/25/18 21:50	4.84	9/25/18 22:55
9	1.35	10/6/2018	10/7/2018	19.40	10/6/18 19:40	2.81	10/6/18 20:25
10	1.81	10/31/2018	11/2/2018	11.14	11/2/18 2:00	1.89	11/2/18 2:25

Meter: BG-1
Interceptor Manhole ID: NT 25

Location: 8 Mile Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	7.2	143.4	6.9	139.1	25	6
Feb-18	7.8	141.3	6.8	123.9	17	11
Mar-18	7.6	152.0	7.3	147.0	21	10
Apr-18	7.8	150.5	7.2	139.9	20	10
May-18	8.5	169.9	7.3	146.9	15	16
Jun-18	6.8	132.0	6.8	131.7	22	8
Jul-18	6.3	126.1	6.3	125.4	28	3
Aug-18	6.7	133.8	6.5	130.6	21	10
Sep-18	6.8	131.2	6.4	124.3	11	19
Oct-18	7.2	144.8	6.9	138.1	22	9
Nov-18	7.6	146.7	7.4	143.0	20	10
Dec-18	7.3	146.2	7.2	143.6	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	17.87	2/20/18 4:50	-	-
2	1.22	3/1/2018	3/2/2018	10.55	3/1/18 21:15	-	-
3	2.30	4/14/2018	4/16/2018	18.97	4/15/18 18:25	-	-
4	1.24	5/2/2018	5/4/2018	10.43	5/3/18 10:25	-	-
5	2.21	5/11/2018	5/12/2018	21.91	5/12/18 12:35	-	-
6	2.15	7/31/2018	8/1/2018	13.09	8/1/18 2:10	-	-
7	1.76	9/20/2018	9/20/2018	19.51	9/20/18 10:15	-	-
8	2.08	9/24/2018	9/26/2018	9.13	9/25/18 20:50	-	-
9	1.35	10/6/2018	10/7/2018	12.72	10/6/18 11:20	-	-
10	1.81	10/31/2018	11/2/2018	11.53	11/1/18 19:50	-	-

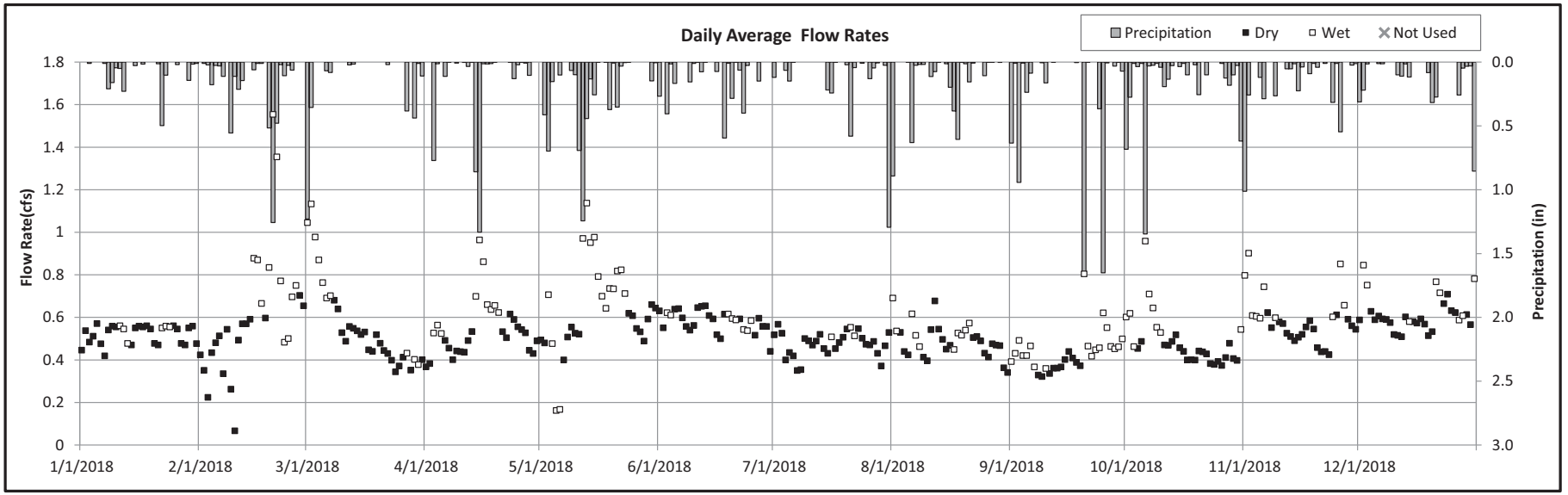
Rouge Valley Sewage Disposal System

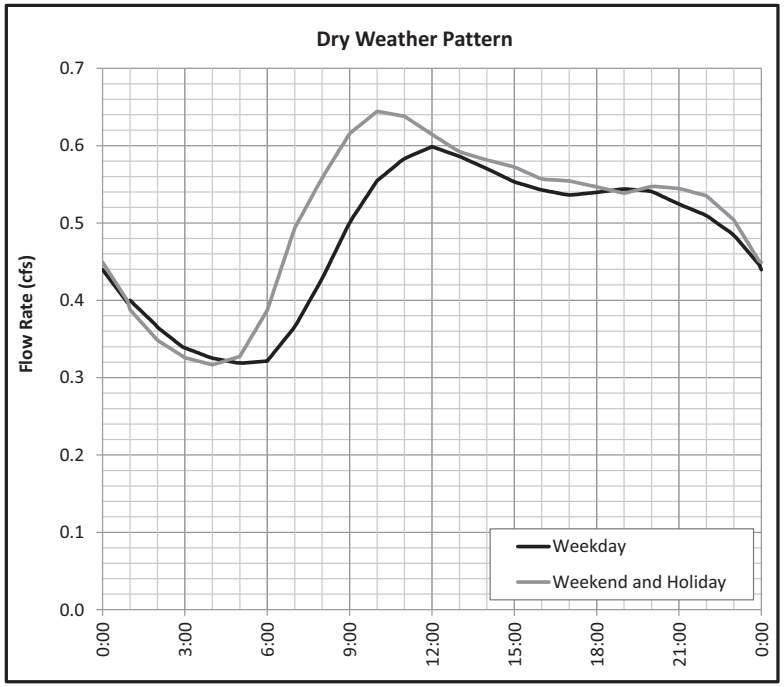
Annual Meter Report

Meter: A
Interceptor Manhole ID: --

Location: Sheldon Road South of North Territorial
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.5	10.4	0.5	10.3	25	6
Feb-18	0.6	11.1	0.5	8.3	17	11
Mar-18	0.6	11.3	0.5	9.6	21	10
Apr-18	0.5	10.6	0.5	9.4	20	10
May-18	0.6	12.7	0.5	10.9	15	16
Jun-18	0.6	11.3	0.6	11.2	22	8
Jul-18	0.5	9.5	0.5	9.4	28	3
Aug-18	0.5	9.9	0.5	9.4	21	10
Sep-18	0.4	8.4	0.4	7.2	11	19
Oct-18	0.5	9.8	0.4	8.7	22	9
Nov-18	0.6	11.4	0.5	10.3	20	10
Dec-18	0.6	12.3	0.6	11.7	23	8

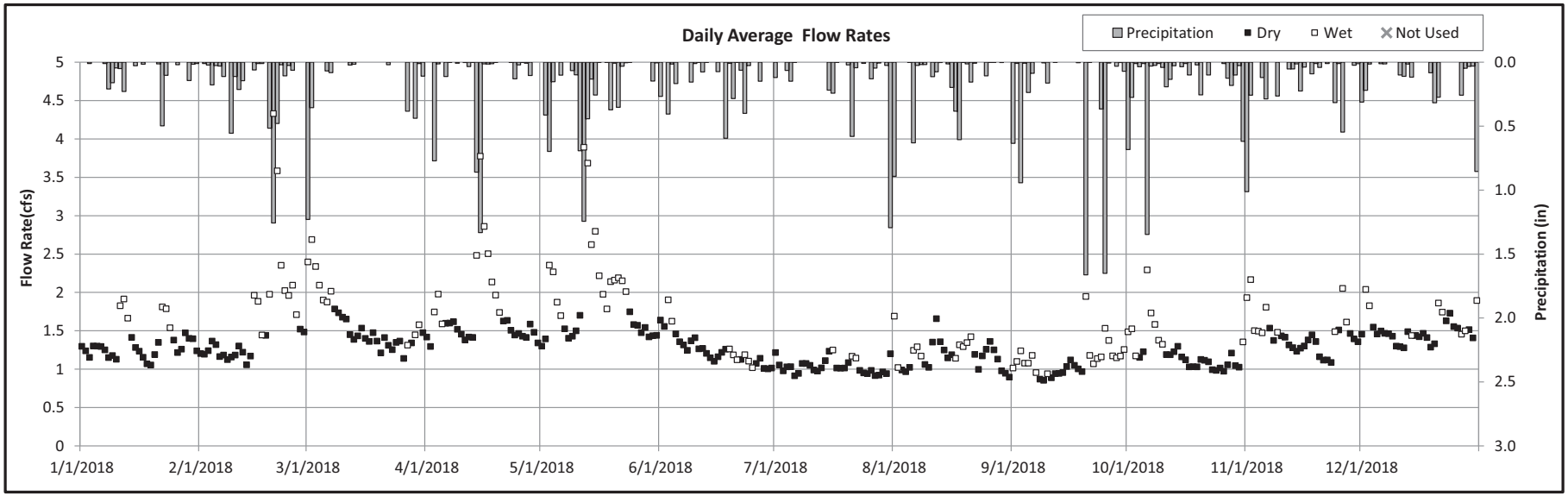
Statistics for Significant Wet Weather Events

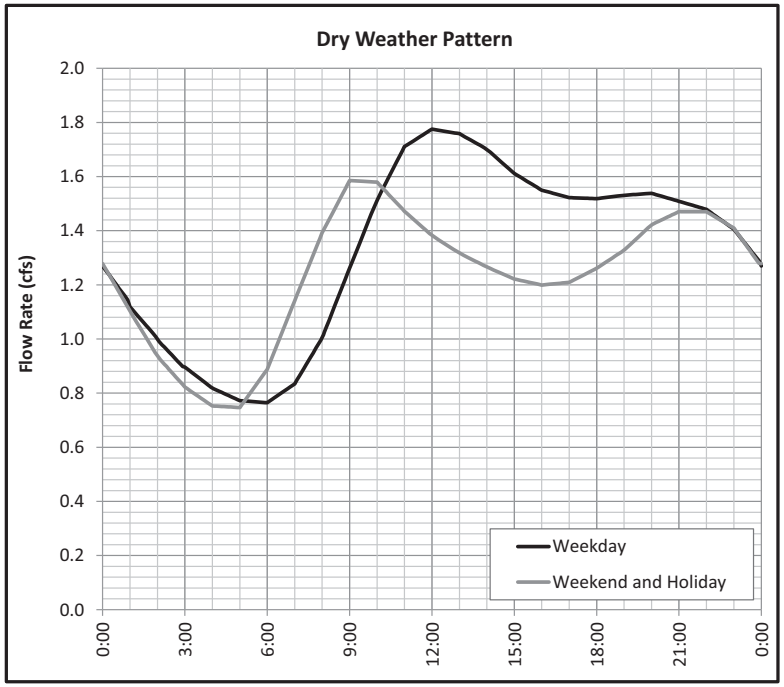
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	2.88	2/20/18 3:45	0.92	2/20/18 4:30
2	1.22	3/1/2018	3/2/2018	1.57	3/1/18 12:40	0.84	3/1/18 13:00
3	2.30	4/14/2018	4/16/2018	1.29	4/15/18 11:20	1.08	4/15/18 14:55
4	1.24	5/2/2018	5/4/2018	0.95	5/3/18 9:05	0.82	5/3/18 10:05
5	2.21	5/11/2018	5/12/2018	1.39	5/12/18 12:35	0.93	5/12/18 12:35
6	2.15	7/31/2018	8/1/2018	1.43	8/1/18 1:10	0.91	8/1/18 1:55
7	1.76	9/20/2018	9/20/2018	2.34	9/20/18 8:10	1.16	9/20/18 9:05
8	2.08	9/24/2018	9/26/2018	1.07	9/25/18 19:50	0.90	9/25/18 11:10
9	1.35	10/6/2018	10/7/2018	1.31	10/6/18 11:30	1.14	10/6/18 3:30
10	1.81	10/31/2018	11/2/2018	1.43	11/1/18 21:35	1.18	11/2/18 2:50

Meter: B
Interceptor Manhole ID: --

Location: Sheldon Road North of Ann Arbor Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.4	27.1	1.3	25.1	25	6
Feb-18	1.7	30.1	1.3	22.7	17	11
Mar-18	1.6	32.1	1.4	28.7	21	10
Apr-18	1.7	33.9	1.5	28.7	20	10
May-18	1.9	38.9	1.5	30.0	15	16
Jun-18	1.3	24.4	1.2	24.1	22	8
Jul-18	1.0	20.8	1.0	20.5	28	3
Aug-18	1.2	24.0	1.2	23.1	21	10
Sep-18	1.1	21.5	1.0	18.7	11	19
Oct-18	1.2	24.6	1.1	22.1	22	9
Nov-18	1.5	28.1	1.3	25.7	20	10
Dec-18	1.5	30.5	1.5	29.1	23	8

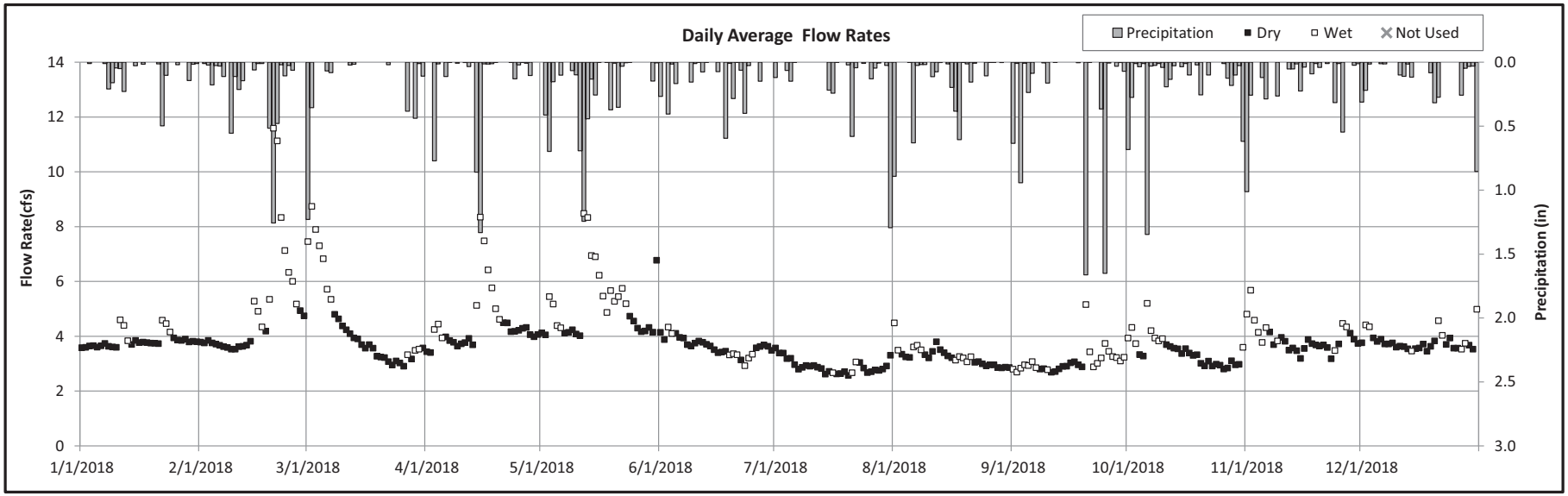
Statistics for Significant Wet Weather Events

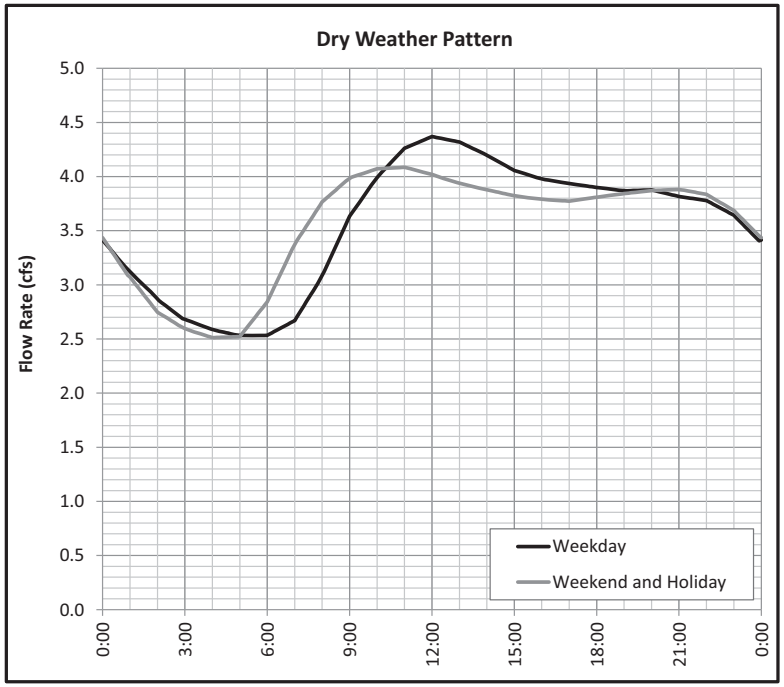
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	6.90	2/20/18 3:55	1.02	2/20/18 4:45
2	1.22	3/1/2018	3/2/2018	3.67	3/1/18 12:40	0.75	3/1/18 13:20
3	2.30	4/14/2018	4/16/2018	6.14	4/15/18 14:30	0.98	4/15/18 15:05
4	1.24	5/2/2018	5/4/2018	3.24	5/3/18 8:00	0.73	5/3/18 8:45
5	2.21	5/11/2018	5/12/2018	5.60	5/12/18 11:35	0.92	5/12/18 12:40
6	2.15	7/31/2018	8/1/2018	3.95	8/1/18 1:20	0.83	8/1/18 2:00
7	1.76	9/20/2018	9/20/2018	5.42	9/20/18 8:10	0.96	9/20/18 9:00
8	2.08	9/24/2018	9/26/2018	2.55	9/25/18 19:50	0.66	9/25/18 20:15
9	1.35	10/6/2018	10/7/2018	3.08	10/6/18 11:30	0.68	10/6/18 12:10
10	1.81	10/31/2018	11/2/2018	3.36	11/1/18 21:35	0.70	11/1/18 22:25

Meter: C
Interceptor Manhole ID: --

Location: Ann Arbor Road West of Lilley Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	3.8	77.1	3.7	74.8	25	6
Feb-18	5.0	91.1	3.8	69.6	17	11
Mar-18	4.4	87.6	3.6	72.5	21	10
Apr-18	4.5	87.1	4.0	77.0	20	10
May-18	5.2	103.2	4.4	88.1	15	16
Jun-18	3.6	70.3	3.7	71.3	22	8
Jul-18	2.9	58.1	2.9	58.3	28	3
Aug-18	3.3	65.3	3.2	63.3	21	10
Sep-18	3.1	59.5	2.9	55.6	11	19
Oct-18	3.5	69.2	3.2	64.2	22	9
Nov-18	3.9	75.7	3.7	71.4	20	10
Dec-18	3.8	76.1	3.7	73.7	23	8

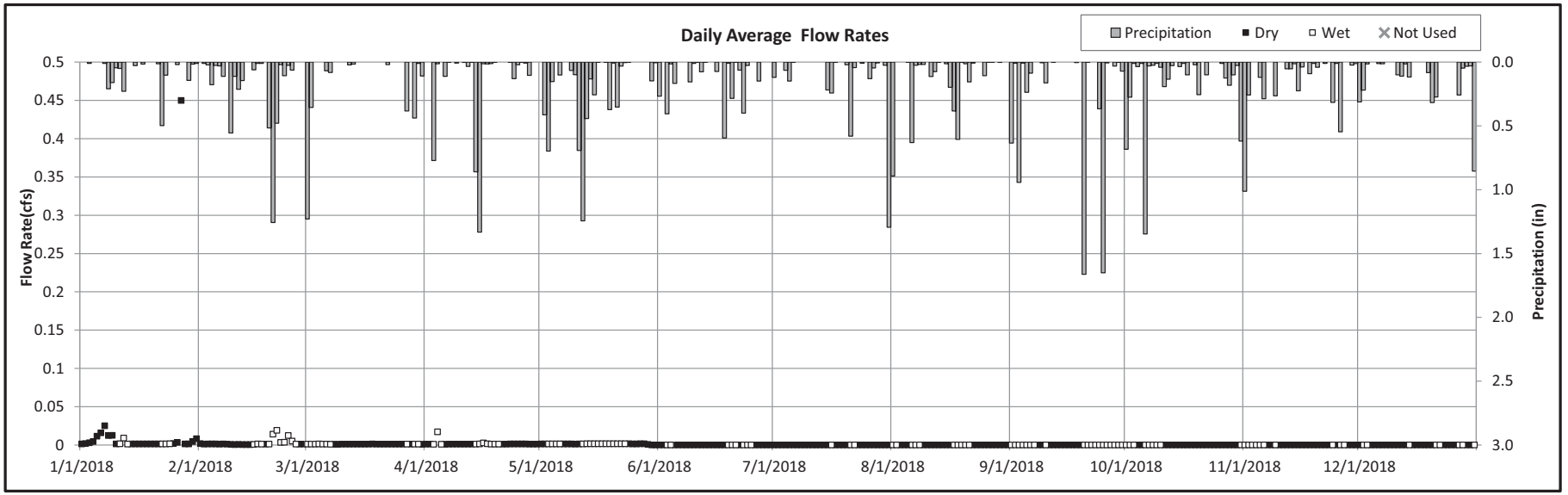
Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	20.28	2/20/18 4:10	1.37	2/20/18 5:00
2	1.22	3/1/2018	3/2/2018	11.65	3/1/18 12:55	1.03	3/1/18 13:30
3	2.30	4/14/2018	4/16/2018	12.49	4/15/18 14:40	1.26	4/15/18 15:00
4	1.24	5/2/2018	5/4/2018	6.96	5/3/18 8:20	0.92	5/3/18 9:00
5	2.21	5/11/2018	5/12/2018	11.40	5/12/18 11:40	1.19	5/12/18 12:00
6	2.15	7/31/2018	8/1/2018	7.88	8/1/18 1:20	1.03	8/1/18 2:00
7	1.76	9/20/2018	9/20/2018	10.69	9/20/18 8:15	1.15	9/20/18 9:00
8	2.08	9/24/2018	9/26/2018	5.33	9/25/18 19:30	0.79	9/25/18 20:00
9	1.35	10/6/2018	10/7/2018	6.93	10/6/18 11:40	0.87	10/6/18 12:00
10	1.81	10/31/2018	11/2/2018	6.55	11/1/18 21:35	0.83	11/1/18 22:00

Meter: FE-19
Interceptor Manhole ID: --

Location: Haggerty Road North of Michigan Avenue
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.4	0.0	0.5	25	6
Feb-18	0.0	0.1	0.0	0.0	17	11
Mar-18	0.0	0.0	0.0	0.0	21	10
Apr-18	0.0	0.0	0.0	0.0	20	10
May-18	0.0	0.0	0.0	0.0	15	16
Jun-18	0.0	0.0	0.0	0.0	22	8
Jul-18	0.0	0.0	0.0	0.0	28	3
Aug-18	0.0	0.0	0.0	0.0	21	10
Sep-18	0.0	0.0	0.0	0.0	11	19
Oct-18	0.0	0.0	0.0	0.0	22	9
Nov-18	0.0	0.0	0.0	0.0	20	10
Dec-18	0.0	0.0	0.0	0.0	23	8

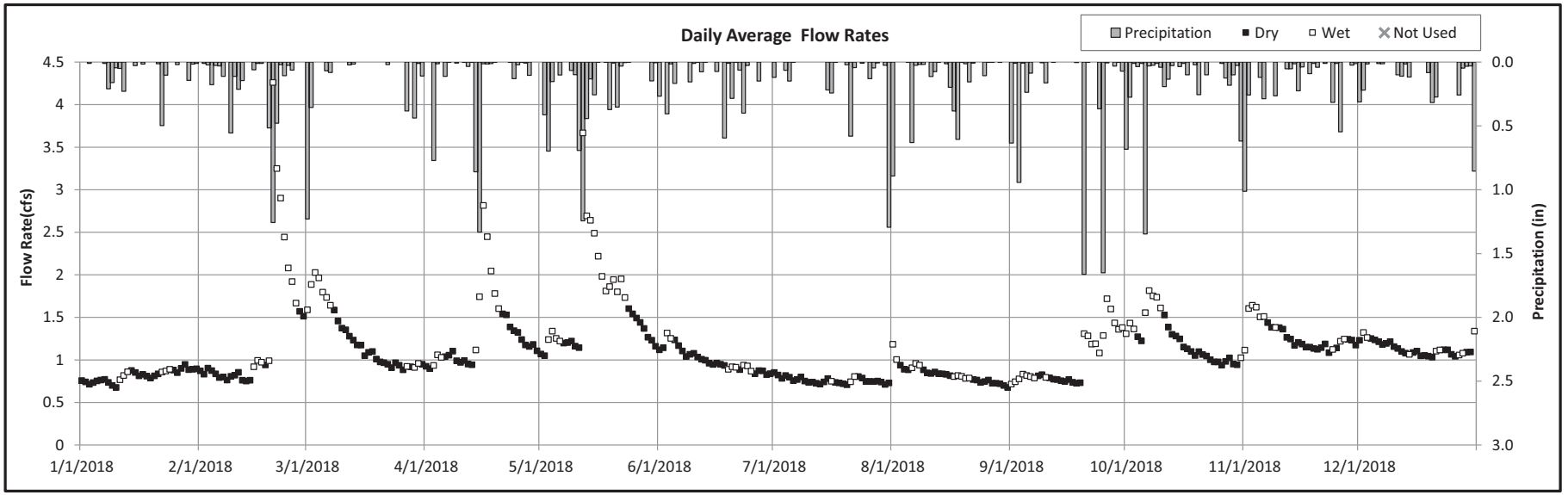
Statistics for Significant Wet Weather Events

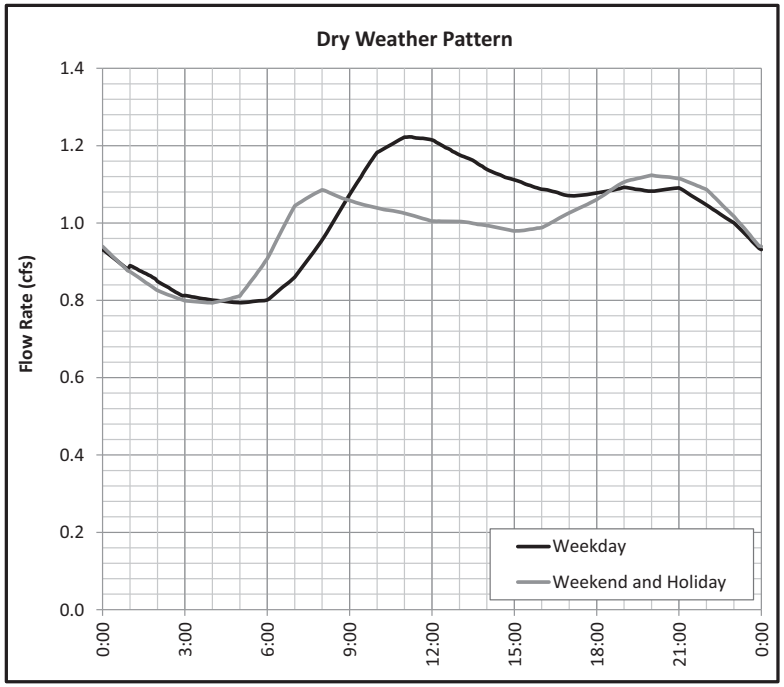
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	0.16	2/20/18 21:05	-	-
2	1.22	3/1/2018	3/2/2018	0.00	-	-	-
3	2.30	4/14/2018	4/16/2018	0.03	4/16/18 13:05	-	-
4	1.24	5/2/2018	5/4/2018	0.00	-	-	-
5	2.21	5/11/2018	5/12/2018	0.00	-	-	-
6	2.15	7/31/2018	8/1/2018	0.00	-	-	-
7	1.76	9/20/2018	9/20/2018	0.00	-	-	-
8	2.08	9/24/2018	9/26/2018	0.00	-	-	-
9	1.35	10/6/2018	10/7/2018	0.00	-	-	-
10	1.81	10/31/2018	11/2/2018	0.00	-	-	-

Meter: FE-22
Interceptor Manhole ID: RVI 10-11

Location: Eckles Road and Joy Road
Interceptor Branch: Middle Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.8	16.3	0.8	16.2	25	6
Feb-18	1.4	24.4	0.9	16.4	17	11
Mar-18	1.2	25.0	1.1	22.2	21	10
Apr-18	1.3	25.5	1.1	22.1	20	10
May-18	1.6	32.9	1.3	25.6	15	16
Jun-18	1.0	19.3	1.0	19.3	22	8
Jul-18	0.8	15.2	0.8	15.2	28	3
Aug-18	0.8	16.6	0.8	16.0	21	10
Sep-18	1.0	19.1	0.8	14.8	11	19
Oct-18	1.2	24.7	1.1	22.4	22	9
Nov-18	1.3	24.8	1.2	23.6	20	10
Dec-18	1.1	22.7	1.1	22.5	23	8

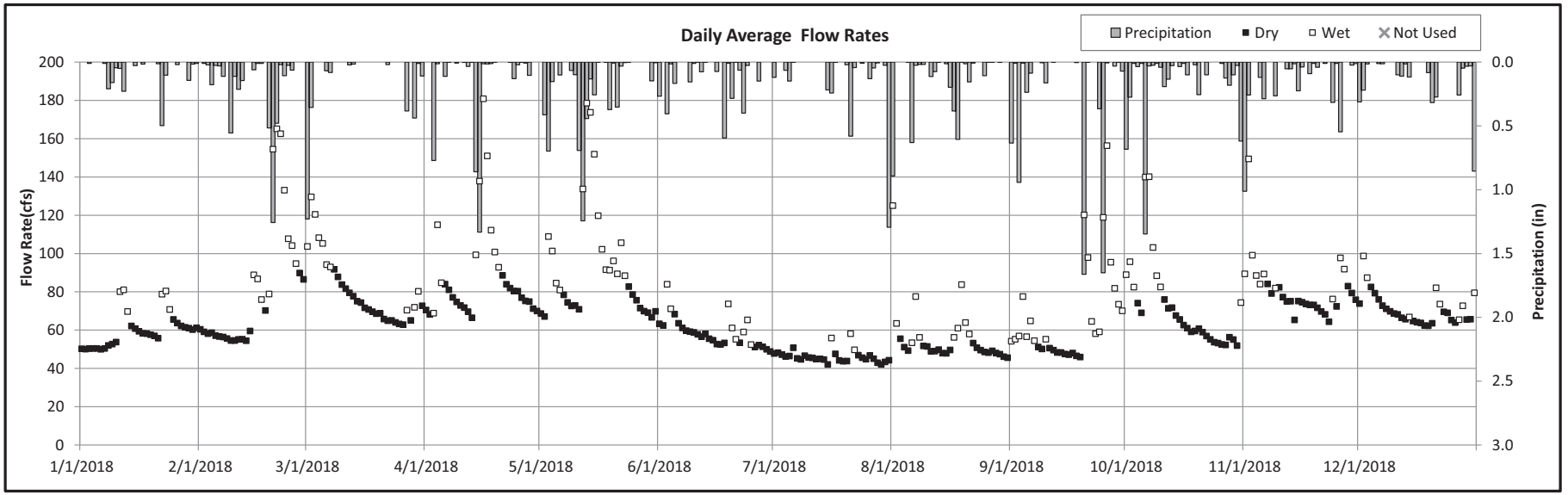
Statistics for Significant Wet Weather Events

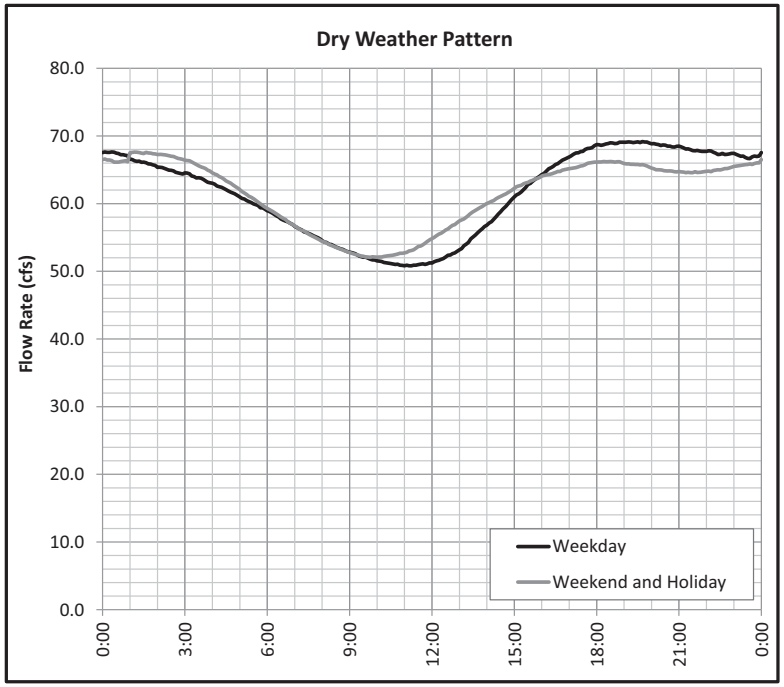
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	10.92	2/20/18 16:55	1.35	2/20/18 17:25
2	1.22	3/1/2018	3/2/2018	2.11	3/2/18 18:50	0.62	3/2/18 18:45
3	2.30	4/14/2018	4/16/2018	3.11	4/16/18 17:40	0.71	4/15/18 21:00
4	1.24	5/2/2018	5/4/2018	1.55	5/3/18 17:00	0.56	5/3/18 21:10
5	2.21	5/11/2018	5/12/2018	10.67	5/12/18 14:45	1.38	5/12/18 15:40
6	2.15	7/31/2018	8/1/2018	1.66	8/1/18 13:45	0.64	8/1/18 14:20
7	1.76	9/20/2018	9/20/2018	1.83	9/20/18 18:30	0.59	9/20/18 20:10
8	2.08	9/24/2018	9/26/2018	2.04	9/26/18 19:10	0.62	9/26/18 6:40
9	1.35	10/6/2018	10/7/2018	2.13	10/7/18 18:45	0.65	10/7/18 10:55
10	1.81	10/31/2018	11/2/2018	1.88	11/3/18 10:15	0.62	11/3/18 10:25

Meter: WC-S-1A
Interceptor Manhole ID: RVI 2-02

Location: Oakwood Boulevard east of Dix Street
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	60.5	1211.5	56.6	1133.2	25	6
Feb-18	81.9	1482.0	61.3	1108.4	17	11
Mar-18	80.7	1616.1	72.6	1453.9	21	10
Apr-18	88.7	1720.6	76.0	1472.8	20	10
May-18	93.1	1864.9	72.5	1453.5	15	16
Jun-18	58.8	1140.9	56.5	1096.1	22	8
Jul-18	46.3	927.0	45.4	909.3	28	3
Aug-18	56.0	1122.2	49.4	990.4	21	10
Sep-18	66.8	1294.5	48.4	939.3	11	19
Oct-18	72.2	1446.8	61.1	1223.5	22	9
Nov-18	81.3	1576.1	74.6	1446.0	20	10
Dec-18	70.9	1421.3	68.4	1370.5	23	8

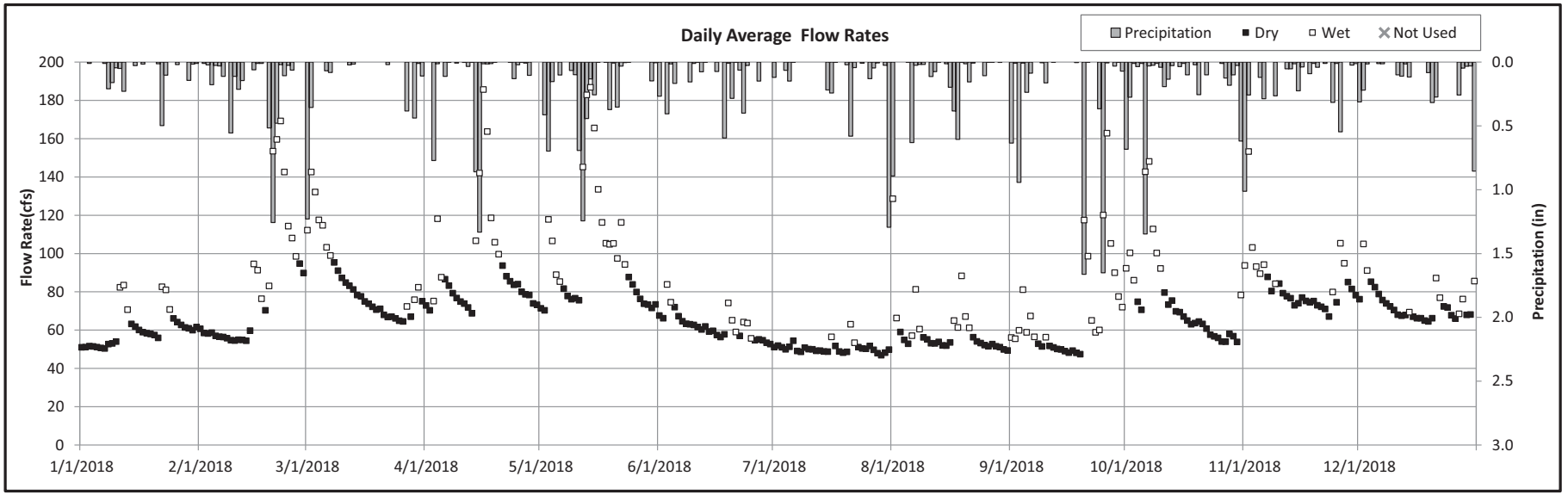
Statistics for Significant Wet Weather Events

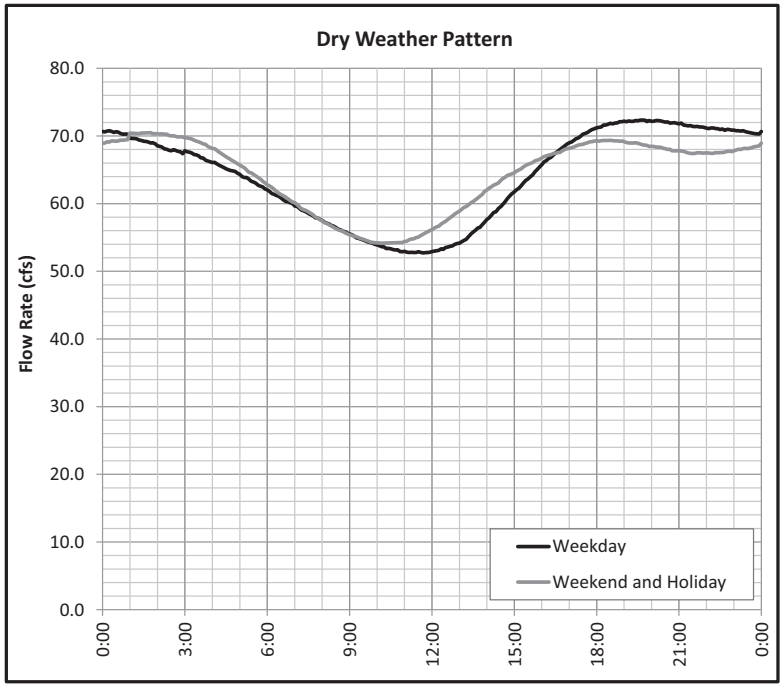
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	173.41	2/22/18 3:30	22.01	2/20/18 14:15
2	1.22	3/1/2018	3/2/2018	144.55	3/2/18 23:15	9.32	3/1/18 19:20
3	2.30	4/14/2018	4/16/2018	190.70	4/16/18 13:30	21.33	4/15/18 15:00
4	1.24	5/2/2018	5/4/2018	139.61	5/3/18 14:40	11.79	5/3/18 2:55
5	2.21	5/11/2018	5/12/2018	186.80	5/13/18 19:55	19.62	5/13/18 6:00
6	2.15	7/31/2018	8/1/2018	172.72	8/1/18 3:20	18.38	8/1/18 2:30
7	1.76	9/20/2018	9/20/2018	182.51	9/20/18 14:50	18.89	9/20/18 10:25
8	2.08	9/24/2018	9/26/2018	186.91	9/26/18 5:20	19.72	9/25/18 22:30
9	1.35	10/6/2018	10/7/2018	176.21	10/7/18 2:35	22.69	10/6/18 16:20
10	1.81	10/31/2018	11/2/2018	169.53	11/2/18 9:30	17.35	11/2/18 0:55

Meter: WC-S-1
Interceptor Manhole ID: MR I 05B

Location: Fort Street and Bayside Street
Interceptor Branch: Lower Rouge

Period: 1/1/2018 through 12/31/2018





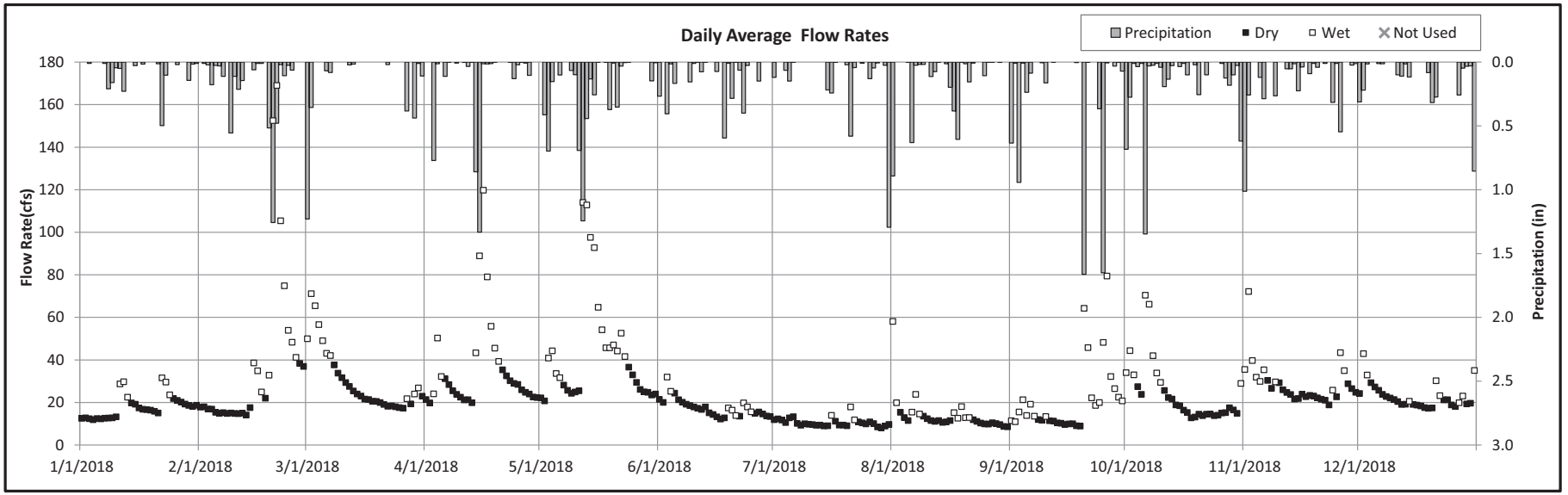
Monthly Statistics

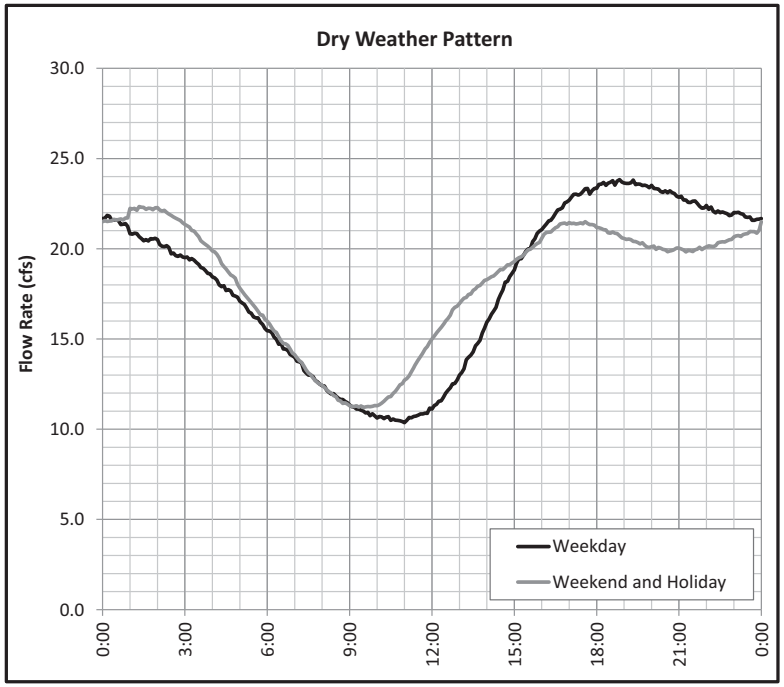
Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	61.2	1226.4	57.1	1143.4	25	6
Feb-18	83.6	1512.4	61.7	1117.1	17	11
Mar-18	84.9	1701.0	75.2	1507.6	21	10
Apr-18	92.6	1796.4	78.8	1528.6	20	10
May-18	100.0	2003.7	76.6	1534.3	15	16
Jun-18	62.3	1207.2	60.4	1170.2	22	8
Jul-18	50.6	1014.3	49.9	999.3	28	3
Aug-18	59.8	1197.6	53.2	1065.4	21	10
Sep-18	68.9	1336.2	49.9	967.1	11	19
Oct-18	76.1	1524.6	63.9	1280.5	22	9
Nov-18	84.3	1633.9	76.9	1490.2	20	10
Dec-18	73.8	1477.9	70.7	1417.5	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	182.46	2/22/18 3:15	-	-
2	1.22	3/1/2018	3/2/2018	162.94	3/2/18 21:40	-	-
3	2.30	4/14/2018	4/16/2018	193.28	4/17/18 0:30	-	-
4	1.24	5/2/2018	5/4/2018	140.12	5/3/18 20:15	-	-
5	2.21	5/11/2018	5/12/2018	200.12	5/14/18 6:05	-	-
6	2.15	7/31/2018	8/1/2018	193.34	8/1/18 4:05	-	-
7	1.76	9/20/2018	9/20/2018	187.87	9/20/18 18:15	-	-
8	2.08	9/24/2018	9/26/2018	189.94	9/26/18 7:25	-	-
9	1.35	10/6/2018	10/7/2018	182.91	10/6/18 10:55	-	-
10	1.81	10/31/2018	11/2/2018	170.65	11/2/18 11:05	-	-

Meter: WC-S-2 + WC-S-3 **Location: Ford Road West of Evergreen Road & Southfield Road and Mercury Drive** **Period: 1/1/2018 through 12/31/2018**
Interceptor Manhole ID: MR 1A-C2 & MRIR 1-01B **Interceptor Branch: Middle Rouge**





Monthly Statistics

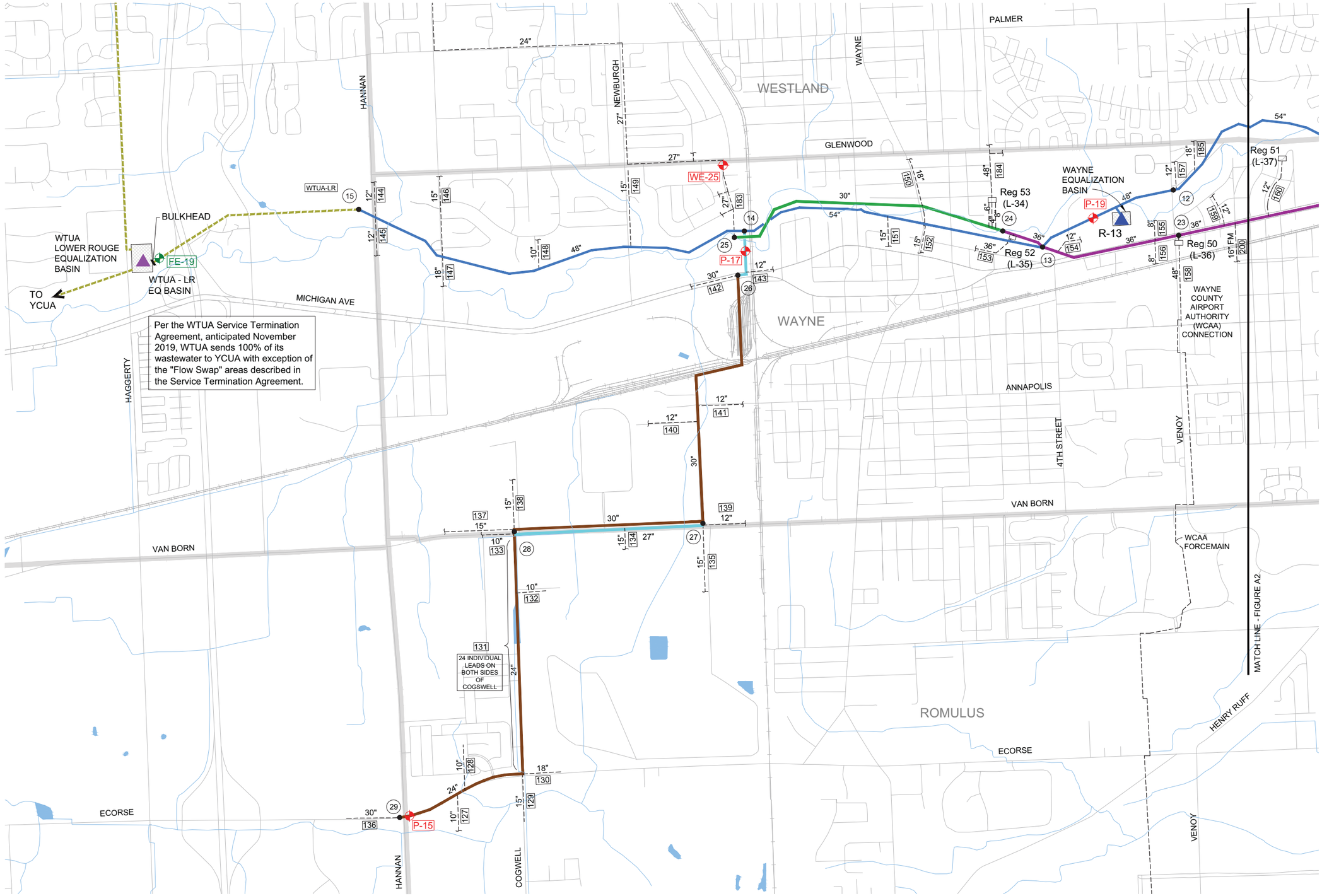
Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	18.2	365.0	16.0	320.0	25	6
Feb-18	39.1	706.8	18.7	338.2	17	11
Mar-18	30.2	604.7	23.1	463.8	21	10
Apr-18	36.2	702.4	25.4	493.4	20	10
May-18	43.7	876.2	26.2	525.1	15	16
Jun-18	17.5	339.0	16.7	323.3	22	8
Jul-18	10.5	210.8	10.1	202.3	28	3
Aug-18	14.0	281.4	11.1	221.8	21	10
Sep-18	21.1	408.8	10.4	200.8	11	19
Oct-18	24.5	491.6	17.2	345.0	22	9
Nov-18	28.7	556.1	24.1	467.8	20	10
Dec-18	22.8	457.7	20.9	418.9	23	8

Statistics for Significant Wet Weather Events

Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	2.25	2/19/2018	2/21/2018	190.85	2/20/18 18:50	-	-
2	1.22	3/1/2018	3/2/2018	85.64	3/1/18 16:30	-	-
3	2.30	4/14/2018	4/16/2018	165.63	4/15/18 21:20	-	-
4	1.24	5/2/2018	5/4/2018	56.57	5/4/18 4:45	-	-
5	2.21	5/11/2018	5/12/2018	177.52	5/12/18 15:40	-	-
6	2.15	7/31/2018	8/1/2018	119.33	8/1/18 5:15	-	-
7	1.76	9/20/2018	9/20/2018	129.80	9/20/18 13:40	-	-
8	2.08	9/24/2018	9/26/2018	133.43	9/26/18 1:30	-	-
9	1.35	10/6/2018	10/7/2018	115.56	10/6/18 18:00	-	-
10	1.81	10/31/2018	11/2/2018	93.34	11/2/18 6:10	-	-

Appendix A

System Reach Maps



ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

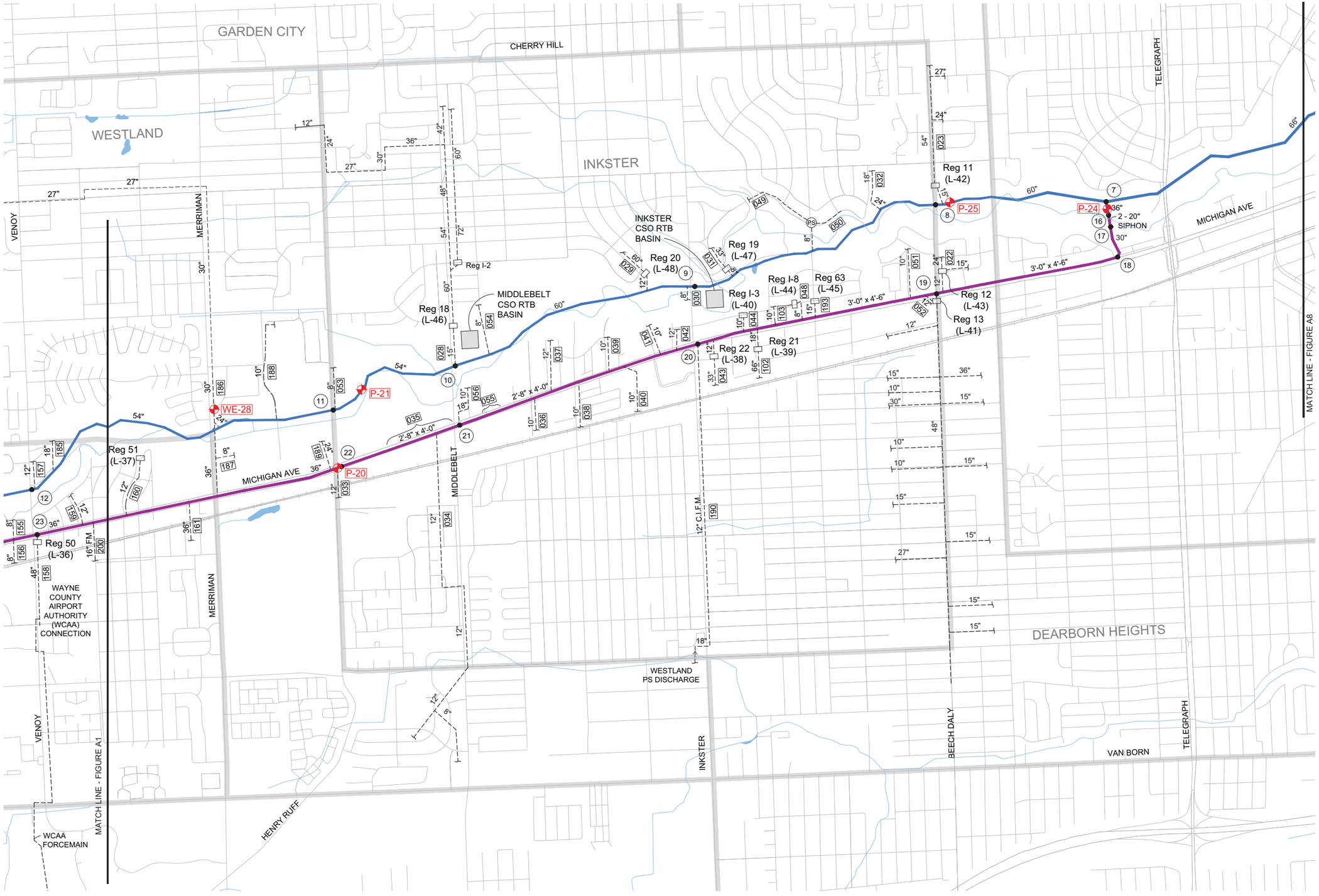
LOWER ROUGE INTERCEPTOR SCHEMATIC HANNAN TO VENOY

SYSTEM MONITORING PLAN

FIGURE A1 OF 8

REVISION DATE: NOVEMBER 4, 2019

K:\DWG\Files\2015\1510\R\SDS SYSTEM MONITORING PLAN (to WWTP).dwg Nov 04, 2019 - 9:58am



N
W E
S

GRAPHIC SCALE
1,000 0 1,000
1" = 1,000'

LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- WAYNE INTERCEPTOR (WI-1)
- ROUGE VALLEY INTERCEPTOR (RVI)
- COMMUNITY BOUNDARY
- RETENTION TREATMENT BASIN (RTB)

ROUGE VALLEY SEWAGE DISPOSAL SYSTEM
LOWER ROUGE INTERCEPTOR SCHEMATIC
VENOY TO TELEGRAPH

SYSTEM MONITORING PLAN
FIGURE A2 OF 8

REVISION DATE: NOVEMBER 4, 2019

K:\DWGFiles\2015\15108\RVSDS SYSTEM MONITORING PLAN (to WWTP).dwg Nov 04, 2019 - 9:59am

WTUA "Flow Swap" areas under the Service Termination Agreement are conveyed to RVSDS via line connections 93 and 94.

NORTHVILLE

NOVI

NORTHVILLE TWP.

EIGHT MILE

SEVEN MILE

SIX MILE

FIVE MILE

BULKHEAD

BECK

SHELDON

HAGGERTY

42" 096

BG-1

8" 095

15" 094

10"

10" 092

18" 093

8" 089

12" 090

8" 091

42"

36"

42"

48"

77

76

75

74

73

R-11
(POST- 11/16/18)

P-1

MATCH LINE - FIGURE A4

N

W

E

S

GRAPHIC SCALE
1,000 0 1,000
1" = 1,000'

LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- PARKWAY INTERCEPTOR (PWI)
- PARKWAY INTERCEPTOR (PWI) (TRANSFERRED TO WTUA 8-12-2011)
- NORTH ARM INTERCEPTOR (NAI)
- HURON-ROUGE SEWAGE DISPOSAL SYSTEM (HRSDS) (OWNED BY OAKLAND COUNTY)
- WTUA INTERCEPTOR SYSTEM
- COMMUNITY BOUNDARY

ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

MIDDLE ROUGE INTERCEPTOR SCHEMATIC
NORTHVILLE TO 5 MILE ROAD

SYSTEM MONITORING PLAN
FIGURE A3 OF 8

REVISION DATE: NOVEMBER 4, 2019

K:\DWGFiles\2015\1510\RV\SDS SYSTEM MONITORING PLAN (to WWTP).dwg Nov 04, 2019 - 10:17am

MATCH LINE - FIGURE A3

FIVE MILE

P-1

72

R-11
(PRE- 9/12/18)

48"

42"

WILCOX

71

70

48"

10"
097

PLYMOUTH

A

24"

PLYMOUTH TWP.

12"
098

18"
099

18"

18"
100

48"

BULKHEAD

66

30"

36"

65

P-3

69

WEIR

36"

P-26

18"
058

PLYMOUTH

HINES

64

30"

10"
059

42"

21"
060

68

63

24"

18"

18"

12"

SCHOOLCRAFT

12"

LIVONIA

City of Plymouth "Flow Swap" areas under the pending Service Termination Agreement are conveyed by WTUA Interceptor System to YCUA and are metered by WTUA Meters A, B, and C.

ANN ARBOR TRAIL

WTUA "Flow Swap" areas under the Service Termination Agreement are conveyed to RVSDS via line connections 102, 103, 194, and 195.

18"
061

NEWBURGH

30"

B

30"

C

JOY

8"
103

55

48"

FE-22

8"
102

10"
070

10"
071

10"
072

JOY

BULKHEAD

10"
194

12" FM
WTUA-MR

15"
195

10"
162

12"
163

15"
164

WTUA
MIDDLE ROUGE
EQUALIZATION
BASIN

WTUA - MR
EQ BASIN

Per the WTUA Service Termination Agreement, anticipated November 2019, WTUA sends 100% of its wastewater to YCUA with exception of the "Flow Swap" areas described in the Service Termination Agreement.

TO
YCUA

MATCH LINE - FIGURE A5

N
W
E
S

GRAPHIC SCALE
1,000 0 1,000
1" = 1,000'

LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- PARKWAY INTERCEPTOR (PWI)
- PARKWAY INTERCEPTOR (PWI) (TRANSFERRED TO WTUA 8-12-2011)
- ROUGE VALLEY INTERCEPTOR (RVI)
- ROUGE VALLEY INTERCEPTOR (RVI) (TRANSFERRED TO WTUA 8-12-2011)
- MIDDLE ROUGE INTERCEPTOR RELIEF (MRIR)
- NORTH ARM INTERCEPTOR (NAI)
- WTUA INTERCEPTOR SYSTEM
- COMMUNITY BOUNDARY
- EQUALIZATION BASIN

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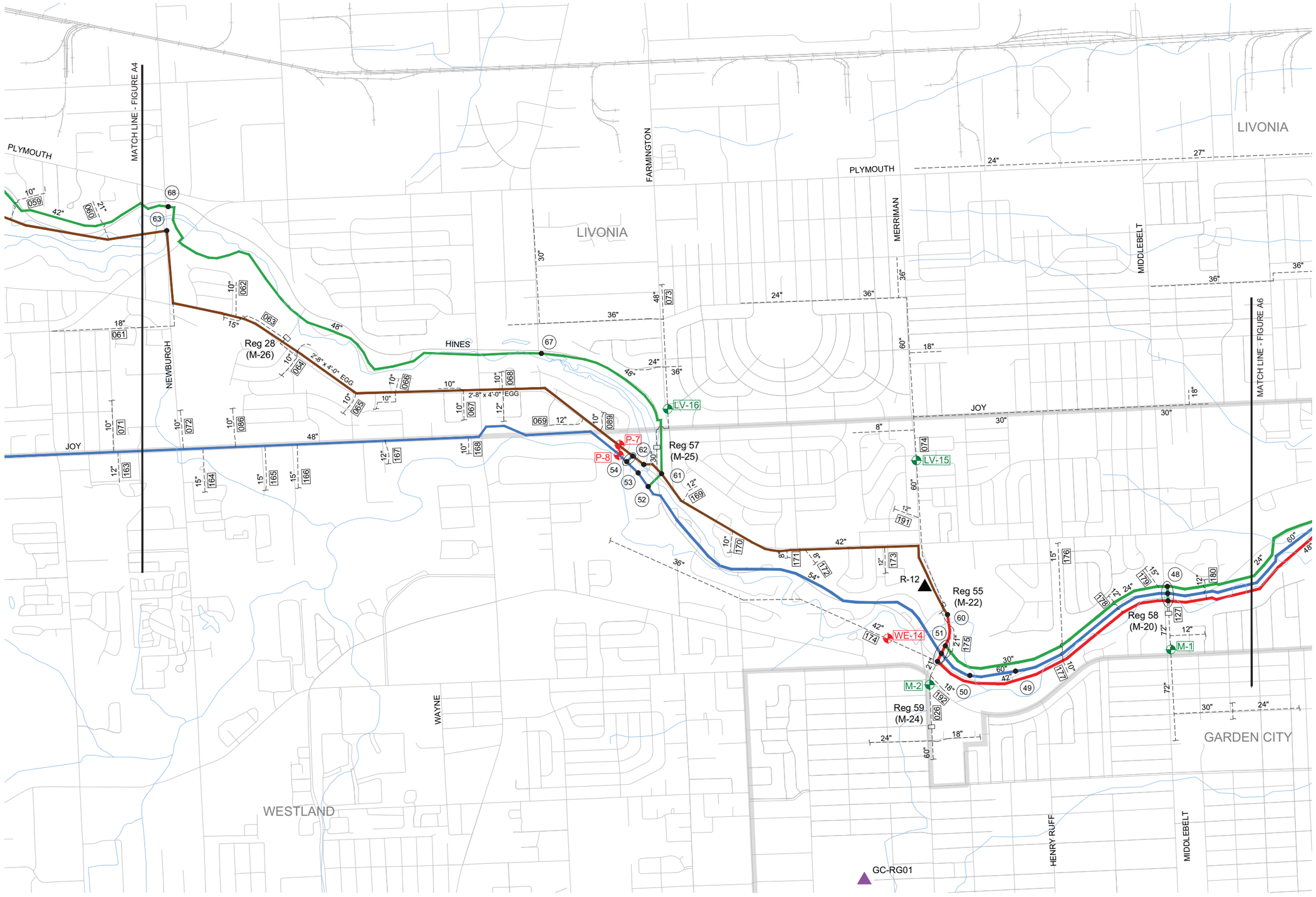
ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

MIDDLE ROUGE INTERCEPTOR SCHEMATIC
5 MILE ROAD TO NEWBURGH

SYSTEM
MONITORING PLAN
FIGURE A4 OF 8

REVISION DATE: NOVEMBER 4, 2019



LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- PARKWAY INTERCEPTOR (PWI)
- MIDDLE ROUGE PARKWAY INTERCEPTOR EXTENSION (MRPIE)
- ROUGE VALLEY INTERCEPTOR (RVI)
- MIDDLE ROUGE INTERCEPTOR RELIEF (MRIR)
- COMMUNITY BOUNDARY

ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

MIDDLE ROUGE INTERCEPTOR SCHEMATIC NEWBURGH TO MIDDLEBELT

SYSTEM MONITORING PLAN

FIGURE A5 OF 8

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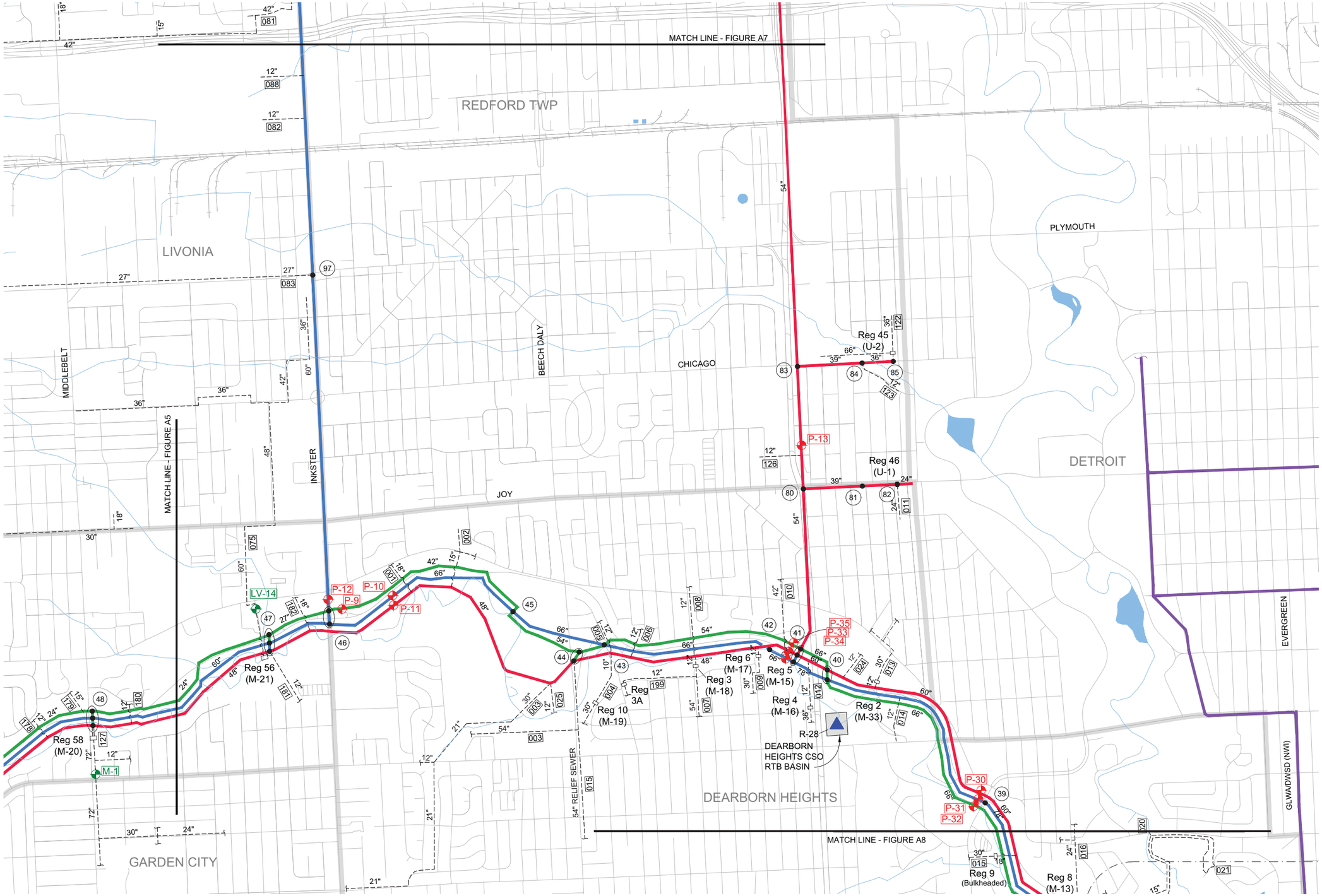

LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- MIDDLE ROUGE PARKWAY INTERCEPTOR EXTENSION (MRPIE)
- ROUGE VALLEY INTERCEPTOR (RVI)
- MIDDLE ROUGE INTERCEPTOR RELIEF (MRIR)
- GLWA/DWSD INTERCEPTOR
- COMMUNITY BOUNDARY
- RETENTION TREATMENT BASIN (RTB)

GLWA	GREAT LAKES WATER AUTHORITY
DWSD	DETROIT WATER AND SEWERAGE DEPT

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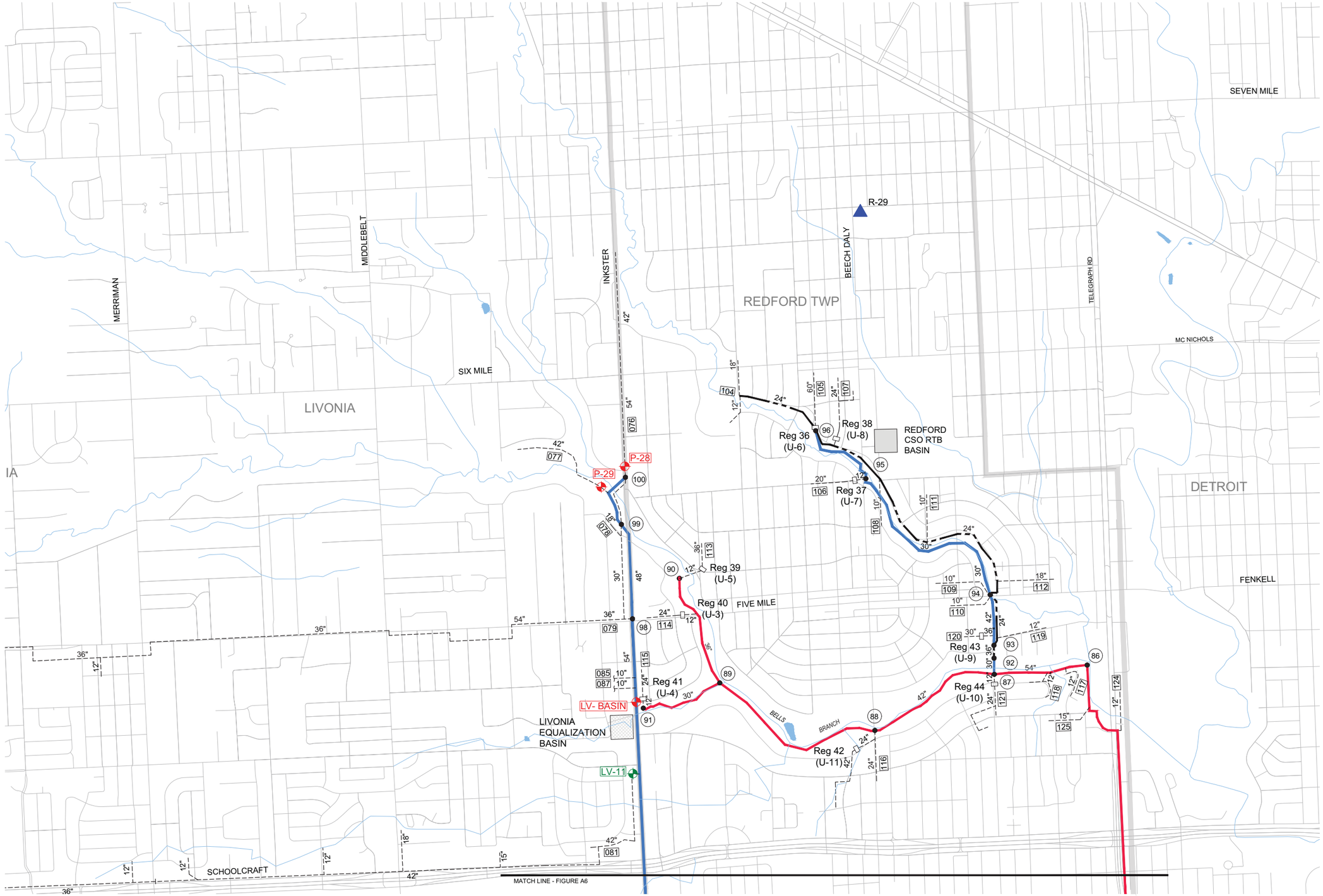
ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

MIDDLE ROUGE INTERCEPTOR SCHEMATIC MIDDLEBELT TO OUTER DRIVE

SYSTEM MONITORING PLAN

FIGURE A6 OF 8

REVISION DATE: NOVEMBER 4, 2019



LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- MIDDLE ROUGE PARKWAY INTERCEPTOR EXTENSION (MRPIE)
- ROUGE VALLEY INTERCEPTOR (RVI)
- LOLA VALLEY INTERCEPTOR
- COMMUNITY BOUNDARY
- RETENTION TREATMENT BASIN (RTB)
- EQUALIZATION BASIN

ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

MIDDLE ROUGE INTERCEPTOR SCHEMATIC INKSTER AND REDFORD ARMS

SYSTEM MONITORING PLAN

FIGURE A7 OF 8

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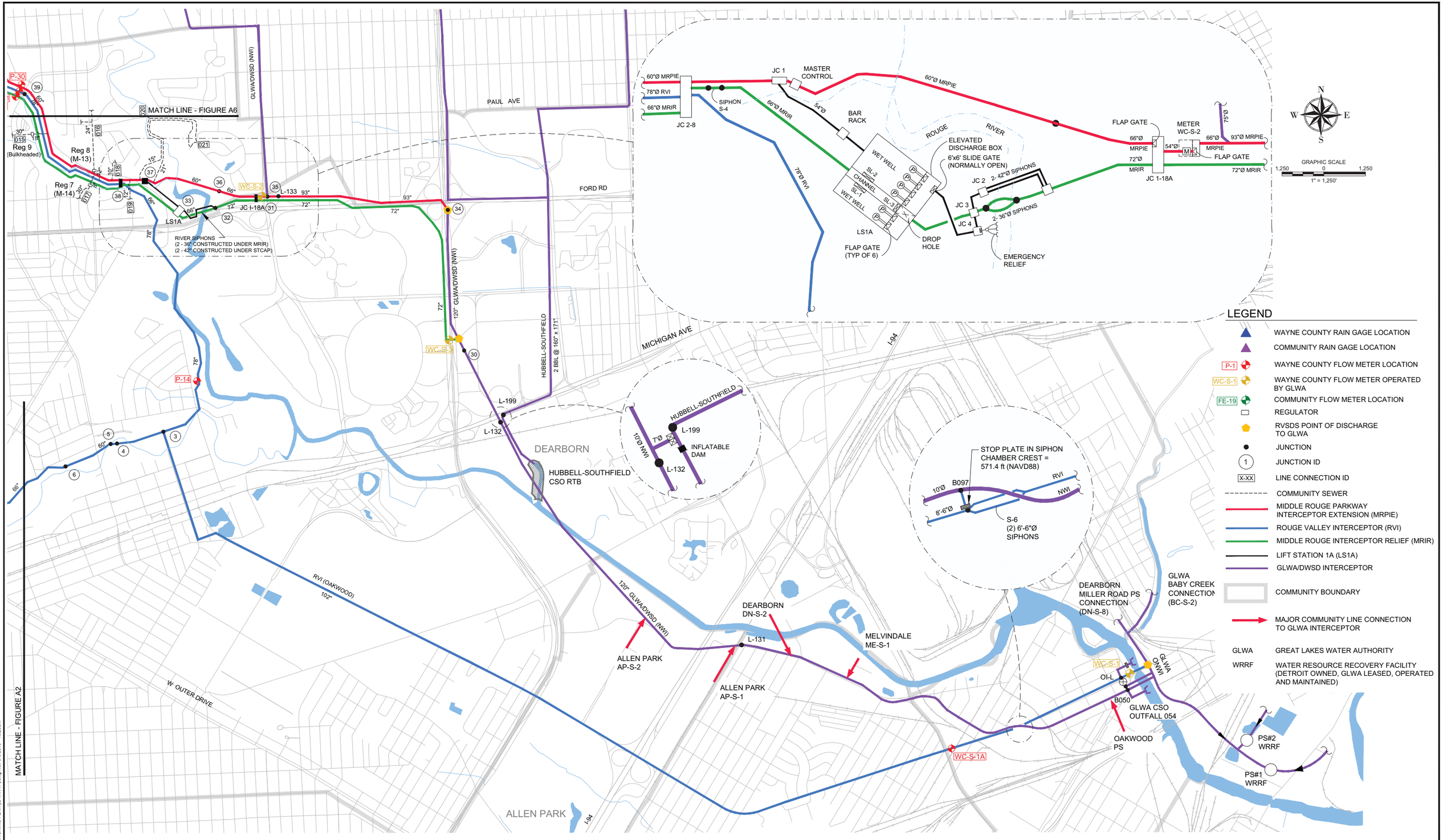

LEGEND

- WAYNE COUNTY RAIN GAGE LOCATION
- COMMUNITY RAIN GAGE LOCATION
- P-1 — WAYNE COUNTY FLOW METER LOCATION
- WC-S-1 — WAYNE COUNTY FLOW METER OPERATED BY GLWA
- FE-19 — COMMUNITY FLOW METER LOCATION
- REGULATOR
- RVSDS POINT OF DISCHARGE TO GLWA
- JUNCTION
- 1 — JUNCTION ID
- X-XX — LINE CONNECTION ID
- COMMUNITY SEWER
- MIDDLE ROUGE PARKWAY INTERCEPTOR EXTENSION (MRPIE)
- ROUGE VALLEY INTERCEPTOR (RVI)
- MIDDLE ROUGE INTERCEPTOR RELIEF (MRIR)
- LIFT STATION 1A (LS1A)
- GLWA/DWSD INTERCEPTOR
- COMMUNITY BOUNDARY
- MAJOR COMMUNITY LINE CONNECTION TO GLWA INTERCEPTOR

GLWA	GREAT LAKES WATER AUTHORITY
WRRF	WATER RESOURCE RECOVERY FACILITY (DETROIT OWNED, GLWA LEASED, OPERATED AND MAINTAINED)

ROUGE VALLEY SEWAGE DISPOSAL SYSTEM

INTERCEPTOR SYSTEM SCHEMATIC DOWNSTREAM END OF SYSTEM

SYSTEM MONITORING PLAN

FIGURE A8 OF 8

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