Downriver Utility Wastewater Authority

Downriver Sewage Disposal System
Annual System Monitoring Report for 2020

May 28, 2021

Applied Science, Inc.

VEOLIA

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1) INTRODUCTION

The Downriver Sewage Disposal System (DSDS) annual system monitoring report for 2020 provides a summary of the best available flow monitoring data for January through December 2020.

This report supersedes and consolidates the information previously issued in the quarterly system monitoring reports for 2020. It is intended to provide the best available estimate of flow rates for the entire DSDS, each meter district and community during the dry and wet weather conditions that occurred in 2020. 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.

Figure 1-1 is a map of the DSDS showing the flow meter and level sensor locations, incremental meter districts, the interceptor and tunnel system, and the location of rain gauges that may be used to evaluate the wet weather monitoring data.

2) SYSTEM SUMMARY

Major findings from the DSDS 2020 system monitoring are presented in the following subsections: subsection A lists the noteworthy items which occurred, subsection B presents an overview of the DSDS performance, subsection C presents an overview of the controlled flow communities performance, and subsection D presents an overview of the non-controlled flow communities performance.

A) NOTEWORTHY ITEMS

1. On July 24, 2020 rain gauge R-14 and the roof of the fire station at the Willow Run Airport were blown off and damaged. The membrane roof of the fire station has been repaired and the conduit between the Telog panel inside the building and the rain gauge on the roof has been capped off. Rain gauge R-14 is owned and maintained by the Downriver Utility Wastewater Authority (DUWA) and they have elected to remove rain gauge R-14 from their rain gauge network. Nearby rain gauge R-18, located in Belleville, provides good spatial coverage of the western portion of the DSDS service area. Removal of rain gauge R-14 from the rain gauge network is not expected to have any adverse impact on the estimation of rainfall over the DSDS service area. Consequently, data from rain gauge R-14 is no longer available for use in the system monitoring reports.
2. Flow control of the Riverdrive Interceptor at Alkali Street commenced on December 4, 2020 to facilitate repairs to the Riverdrive Interceptor. From December 4, 2020 to December 18, 2020, a temporary flume was installed at a newly constructed shaft on 10th Street just north of Alkali Street. The flume was used to bypass wastewater through the new shaft while a gate was installed in the shaft. From January 5, 2021 through April 5, 2021, the new shaft has been used to bypass pump dry weather wastewater from the Riverdrive Interceptor to the Southgate-Wyandotte collection system. The wastewater has been bypass pumped on an as-needed basis to facilitate the repairs to the Riverdrive Interceptor. The bypass flow rate will be estimated and deducted from the downstream communities of Southgate and Wyandotte (January 5, 2021 to April 5, 2021) in the 2021 Q1 system monitoring report.

Rain Gage ID	Location	Address	Community
DTW	Detroit Wayne County Metropolitan Airport	Airport	Romulus
R-2	New Boston Yard Facility	19415 Sterling	New Boston
R-4	Sibley Yard Facility	21300 Sibley	Brownstown
R-6	Southgate-Wyandotte Pump Station #5	797 Central	Wyandotte
R-8	Goddard Basin Facility	20590 Goddard	Taylor
R-9	Wade-Trim Garage	25251 Northline	Taylor
R-10	Romulus City Hall	11111 Wayne	Romulus
R-14	Willow Run Airport	Willow Run Airport	Van Buren
R-15	Taylor Basin Facility	20195 Trolley	Taylor
R-16	Lincoln Park Retention Basin	91 Mill Street	Lincoln Park
R-17	Southgate DPW Facility	14719 Schaefer Court	Southgate
R-18	Belleville Fire Station	130 4th Street	Belleville

LEGEND

- RAIN GAGE LOCATION
- FLOW METER LOCATION (P-1)
- LOCAL FLOW METER LOCATION (TB-1)
- OTHER DEVICE LOCATION (PM-1)
- OVERFLOW TO TUNNEL
- LOCAL SEWER
- DSDS SANITARY INTERCEPTOR
- DOWNRIVER REGIONAL STORAGE AND TRANSPORT SYSTEM (DRSTS)
- SERVICE AREA BOUNDARY
- COMMUNITY BOUNDARY
- WET WEATHER FACILITY (COMMUNITY OWNED AND OPERATED)
- WET WEATHER FACILITY (COMMUNITY OWNED COUNTY OPERATED)
- PS — PUMP STATION
- PS — LOCAL PUMP STATION
- SANITARY TO DSDS INTERCEPTOR STORM WATER TO SWRDDD
- COMBINED SEWER AREA

DSDS	DOWNRIVER SEWAGE DISPOSAL SYSTEM
SWRDDD	SOUTHGATE-WYANDOTTE RELIEF DRAINS DRAINAGE DISTRICT
DWTF	DOWNRIVER WASTEWATER TREATMENT FACILITY
IPS	INFLUENT PUMP STATION
TPS	TUNNEL PUMP STATION
CSO	COMBINED SEWER OVERFLOW
RTB	RETENTION TREATMENT BASIN

GRAPHIC SCALE
4,000 0 4,000
1" = 4,000'

UPDATED: FEBRUARY 12, 2019

	DESCRIPTION	CHECKED	APRVD	DATE
F				
E				
D				
C				
B				
A	REVISIONS			

DESIGN D. WIEBE
DRAFTING D. HEROLD-J
CHECKED D. WIEBE
APPROVED K. RIDGWAY
ISSUE DATE AUG 2017

DUWA

DOWNRIVER
SEWAGE DISPOSAL SYSTEM

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INCREMENTAL METER DISTRICTS & INTERCEPTOR & METER LOCATIONS & RAIN GAGES FOR 2020 SYSTEM MONITORING PLAN

SCALE: 1" = 4000'
JOB No. ASI #1510
FILE No.

FIGURE 1-1

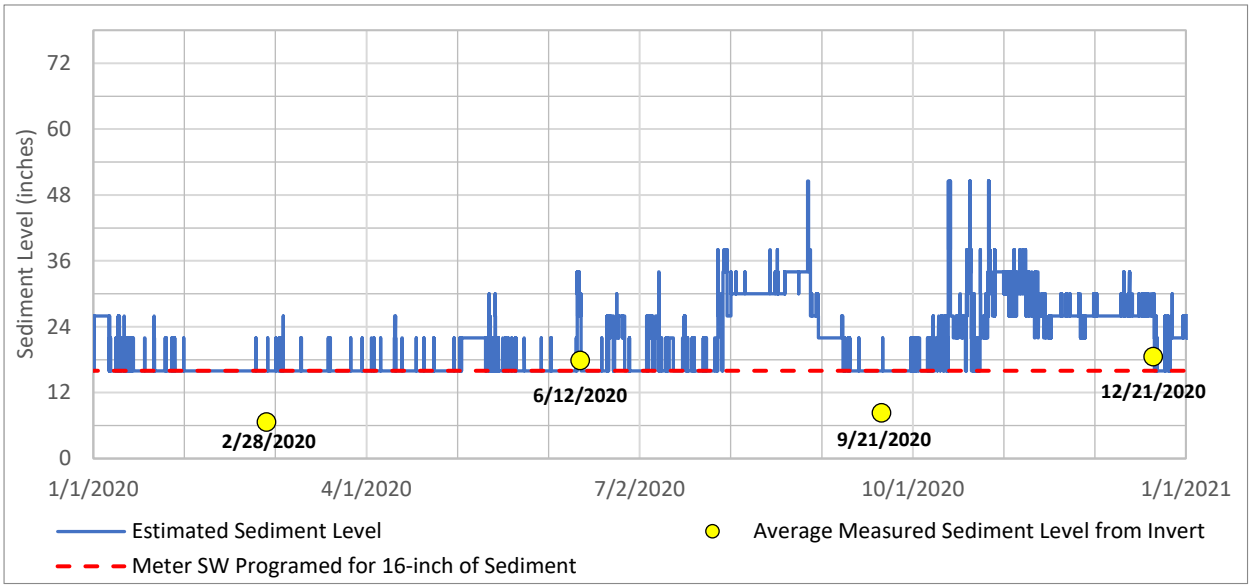
Feb 11, 2019 - 2:15pm
K:\DWGFiles\2015\1510\DSDS System Monitoring Plan.dwg

3. Four sediment profiles at Meter SW were measured in 2020. The average sediment depths of these profiles ranged from 7 to 19 inches relative to the pipe invert at the metering location. Figure 2-1 shows the estimated sediment depths at Meter SW and the average measured sediment depth for each profile. Detailed sediment profile measurements and the sediment estimation methodology are provided in Appendix E.

   The variability in the sediment profile measurements highlight the dynamic nature of sediment accretion/reduction at this location. The historical average sediment depth at Meter SW is about 16-inches. Meter SW is programmed to account for 16-inches of sediment which markedly improves the accuracy of the real-time flow meter data (in contrast to the previous meter programming which did not account for sediment).

   Since Veolia took over operations of the Downriver Wastewater Treatment Facility (DWTF), the Interceptor Pump Station (IPS) wet well has been pumped down more frequently. The frequent wet well drawdowns are assumed to have helped mobilize and clear the sediment from this location.

Figure 2-1
Sediment Profile Measurements and Estimated Sediment Levels at Meter SW



4. In 2020, dye-dilution testing was conducted for Meters PA-2, PA-3, PB-1, PD-2, RR-1, SW and TB-1. The data presented in this report reflects the results of these dye dilution tests. The results of dye tests currently in-effect for DSDS meters are presented in Appendix E. In addition, Appendix E provides a discussion of a review of the dye dilution test adjustment factors for Meters PA-2 and RR-1.

B) DSDS OVERVIEW

1. The total precipitation at the Detroit Metropolitan Wayne County Airport (DTW) for year 2020 was 38.73 inches, which is 5.26 inches above normal.

2. Over the last four years, the total precipitation at DTW was 16.46 inches above normal. The total annual precipitation at DTW has been above normal for each of the past four years. The total precipitation above normal at DTW from 2016 through 2019 were 1.22, 1.99, 10.34, and 2.91 inches, respectively.

3. There were ten (10) significant storms in 2020. 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 gauges used in the analysis for that storm. Table 2-1 lists the average rainfall depths over the DSDS service area for the significant storm events for 2020.

Table 2-1
Average Rainfall Depths for Significant Storms during 2020 in the DSDS Service Area

Significant Storm Event	Event Dates	Average Total Rainfall Depth Over the Service Area (inches)
1	1/10-12/2020	2.66
2	3/27-29/2020	2.12
3	5/17-19/2020	1.75
4	6/26-27/2020	1.34
5	7/10/2020	1.21
6	7/16/2020	1.05
7	7/19/2020	1.00
8	8/1-2/2020	1.57
9	8/28-29/2020	3.36
10	9/7-8/2020	2.34
11	10/20-23/2020	1.57

4. Of the significant storms, three (3) of the largest were also defined as a major storms. Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 million gallons per day (MGD). Significant Storm Events 1, 2 and 9 were also designated as Major Storm Events A, B and C, respectively, for year 2020.

5. The average rainfall depths and peak 24-hour rainfall depths at DTW for the significant/major storms are listed in Table 2-2.

Table 2-2
Rainfall Depths at DTW for Significant Storms during 2020 in the DSDS Service Area

Major Storm Event	Significant Storm Event	Event Dates	Peak 24-hour Rainfall Depth (inches)	Total Rainfall Depth (inches)
A	1	1/10-12/2020	2.16	2.56
B	2	3/27-29/2020	1.82	2.02
-	3	5/17-19/2020	1.79	1.93
-	4	6/26-27/2020	1.28	1.28
-	5	7/10/2020	2.05	2.05
-	6	7/16/2020	1.13	1.13
-	7	7/19/2020	1.02	1.02
-	8	8/1-2/2020	-	1.50
C	9	8/28-29/2020	3.28	3.28
-	10	9/7-8/2020	0.94	0.94
-	11	10/20-23/2020	0.71	1.53

Note: 1) Hourly precipitation data not available for DTW for Significant Storm Event 8.

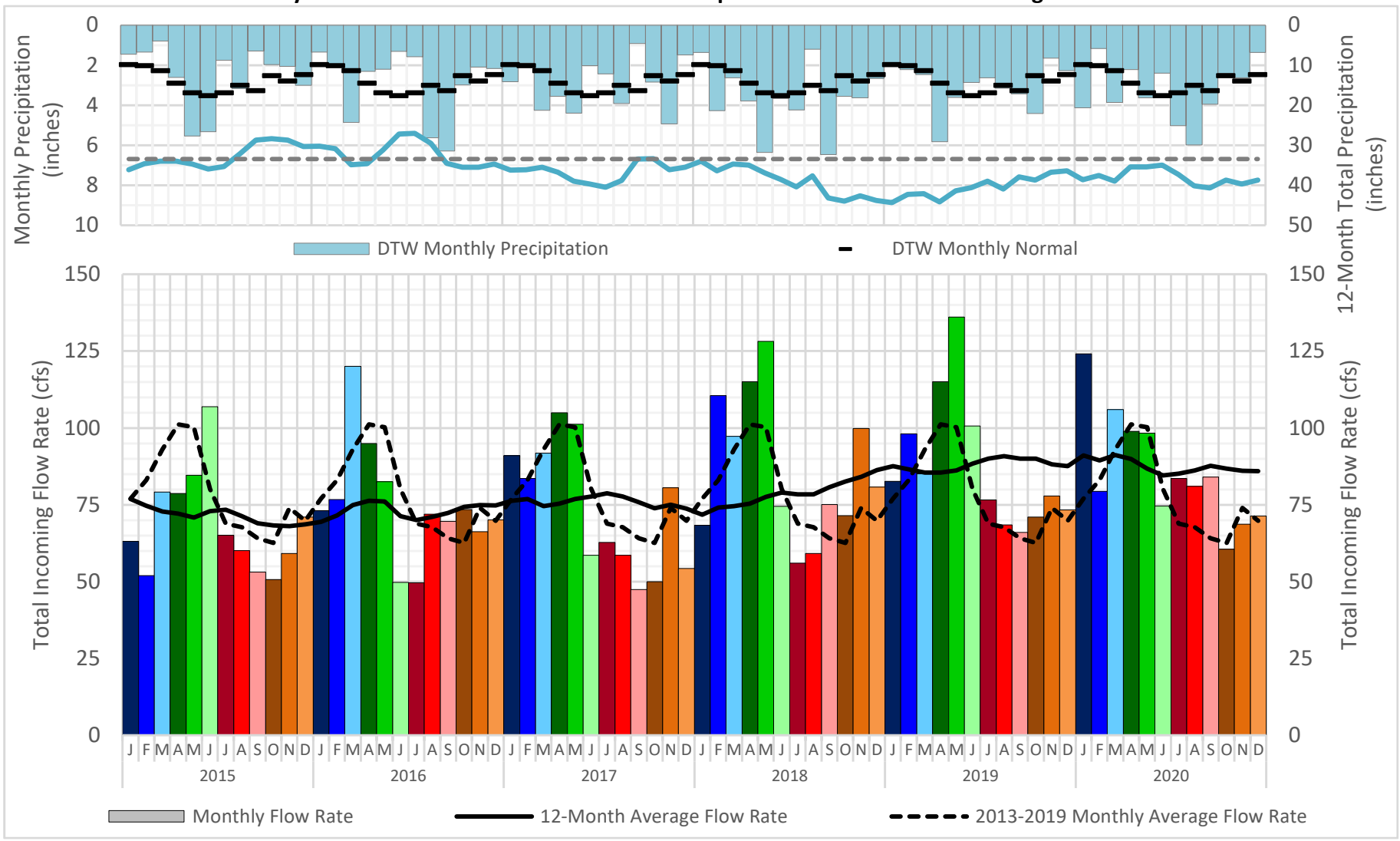
6. Figure 2-2 shows the long-term flow rate versus precipitation trends for the DSDS by month from 2015 through 2020. The incoming flow rate to the DWTF is based on the interceptor system flow meters, and the precipitation is at DTW.

   On the bottom graph, the vertical bars show the average monthly flow rate, the solid black line shows the 12-month rolling average flow rate, and the black dashed line shows the 2013-2019 average monthly flow rate (Significant improvements to the DSDS system monitoring plan were implemented in 2013. The dataset from 2013 through present provides a long-term high-quality dataset for comparison to current conditions.).

   On the top graph, the blue vertical bars show the monthly precipitation, the black markers show the monthly normal precipitation, the solid blue line shows the 12-month rolling total precipitation, and the grey dashed line shows the 12-month rolling total normal precipitation.

   This figure shows the expected seasonal variations in flow rates, and the trend between increased precipitation and increased flow rates in 2018 through 2020.

Figure 2-2
Monthly Influent Flow Rate to DWTF versus Precipitation at DTW for 2015 through 2020



7. Table 2-3 lists the average annual flow rate and total flow volume for years 2013 through 2020. The total incoming flow rate to the DWTF is based on the interceptor system flow meters. The DWTF flow rate is based on the IPS and TPS and includes recycle flow rate. The total influent volume to the DWTF for 2020 is slightly above the average of the last eight years.

Table 2-3
Average Annual Flow Rate and Total Volume for 2013 through 2020

Year	Total Precipitation at DTW (inches)	Average Flow Rate (cfs)		Total Flow Volume (MG)		Total Flow Volume (MCF)	
		Influent to DWTF	DWTF Including Recycle (IPS + TPS)	Influent to DWTF	DWTF Including Recycle (IPS + TPS)	Influent to DWTF	DWTF Including Recycle (IPS + TPS)
2013	39.90	79.77	84.25	18,820	19,880	2,515,000	2,657,000
2014	37.57	78.48	85.27	18,510	20,120	2,475,000	2,689,000
2015	30.32	68.72	79.47	16,210	18,750	2,167,000	2,506,000
2016	34.69	74.88	81.91	17,710	19,370	2,368,000	2,590,000
2017	35.46	73.75	80.41	17,400	18,970	2,326,000	2,536,000
2018	43.81	86.16	96.59	20,330	22,790	2,717,000	3,046,000
2019	36.38	87.53	92.35	20,650	21,790	2,760,000	2,912,000
2020	38.73	86.03	91.50	20,350	21,640	2,720,000	2,893,000
Average	37.11	79.41	86.47	18,750	20,410	2,506,000	2,729,000

Note: DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous years recycle flow has not been deducted from IPS+TPS data for 2020.

8. Figure 2-3 through 2-6 plot the quarterly average influent flow rate (interceptor system flow meters) to the DWTF versus the quarterly total precipitation at DTW for years 2013 through 2020. These figures show the seasonal variation of the DSDS flow rate versus precipitation. For all quarters in 2020, the influent flow rate to the DWTF was slightly above trend for the given precipitation.

Figure 2-3
Average Influent Flow Rate to DWTF versus Precipitation at DTW
Quarter 1 January – March for 2013 through 2020

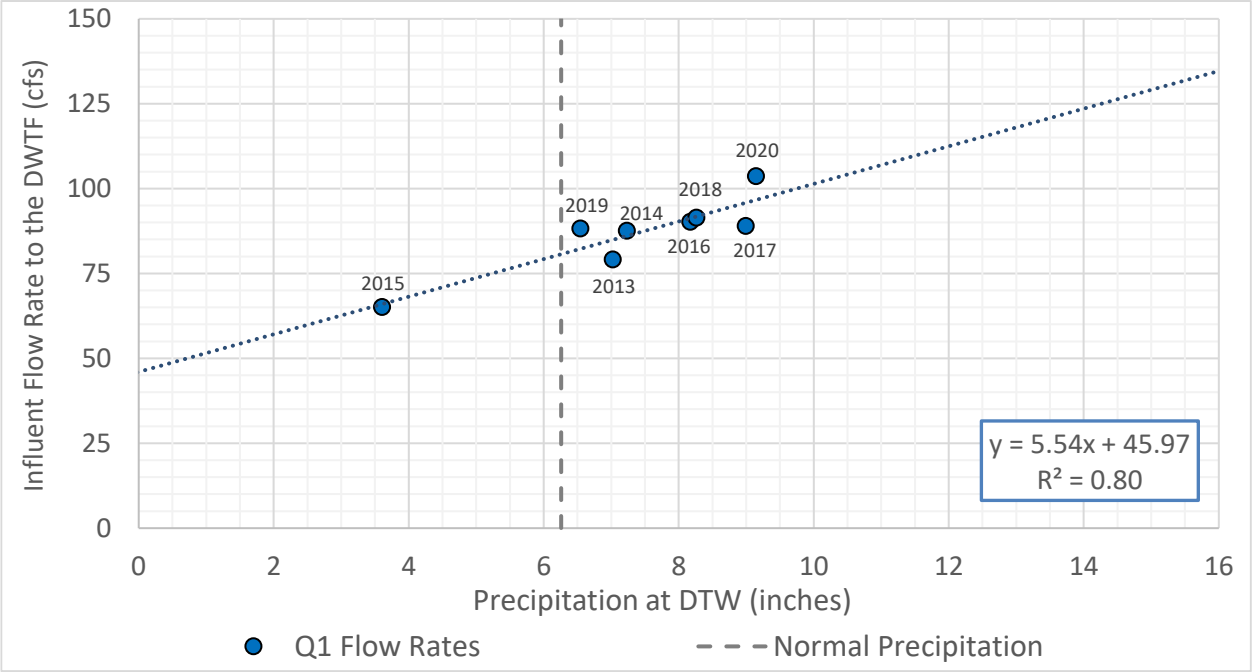


Figure 2-4
Average Influent Flow Rate to DWTF versus Precipitation at DTW
Quarter 2 April – June for 2013 through 2020

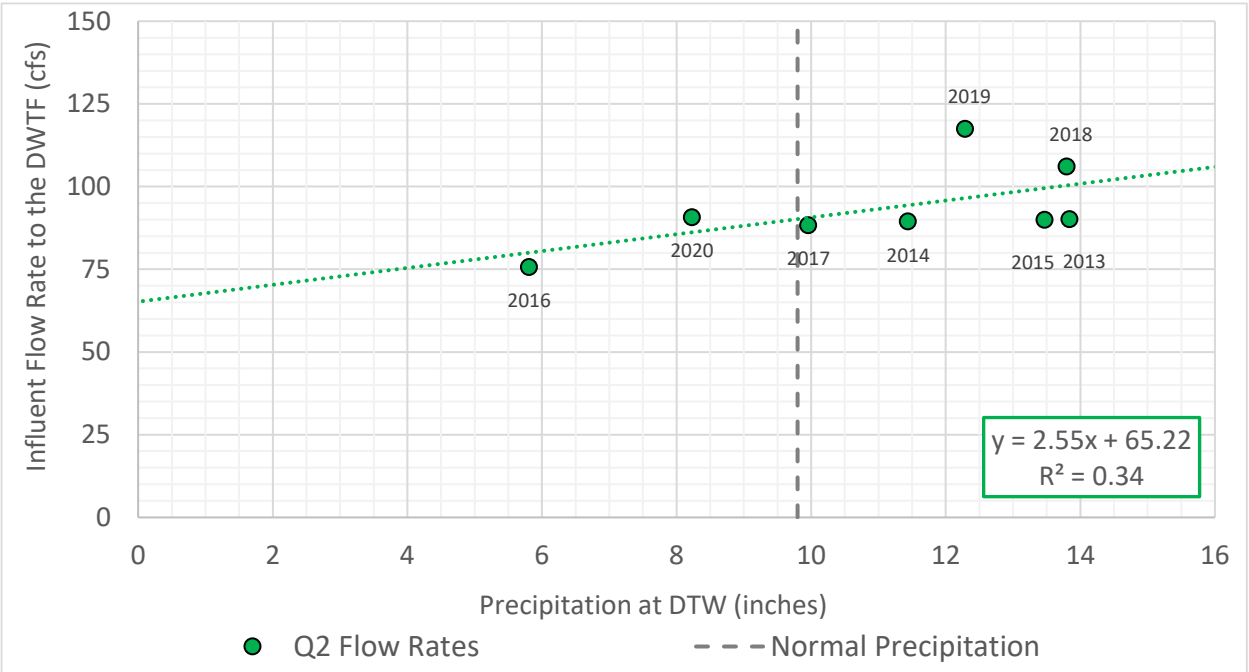


Figure 2-5
Average Influent Flow Rate to DWTF versus Precipitation at DTW
Quarter 3 July – September for 2013 through 2020

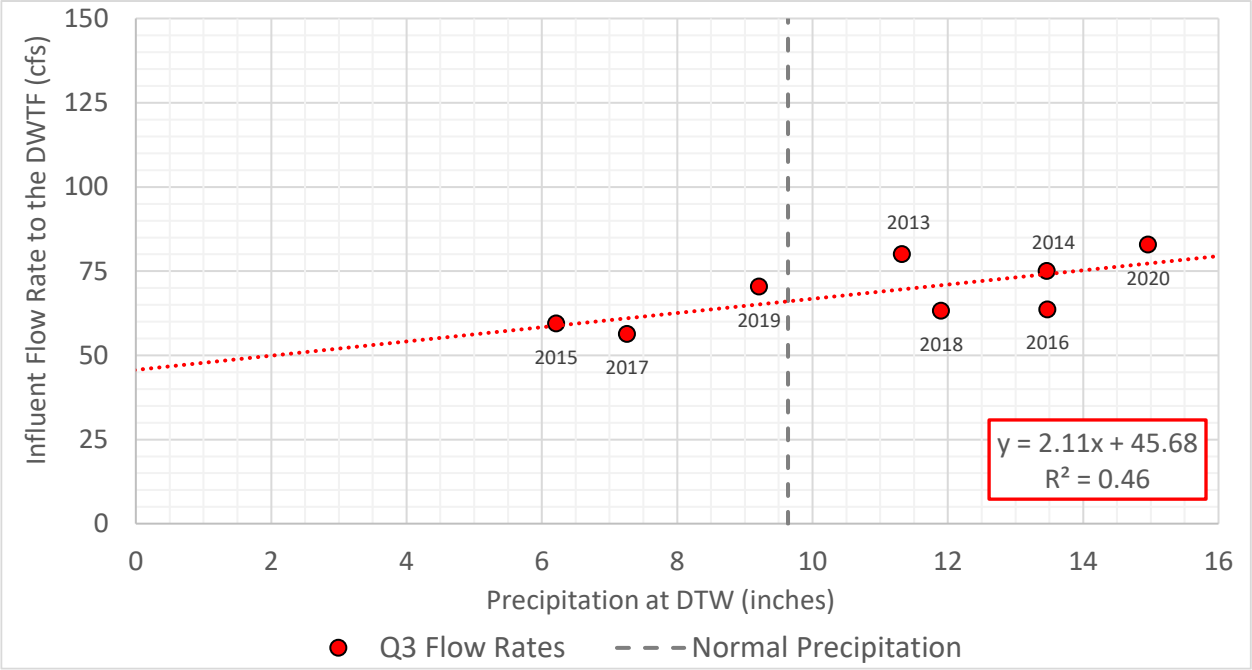
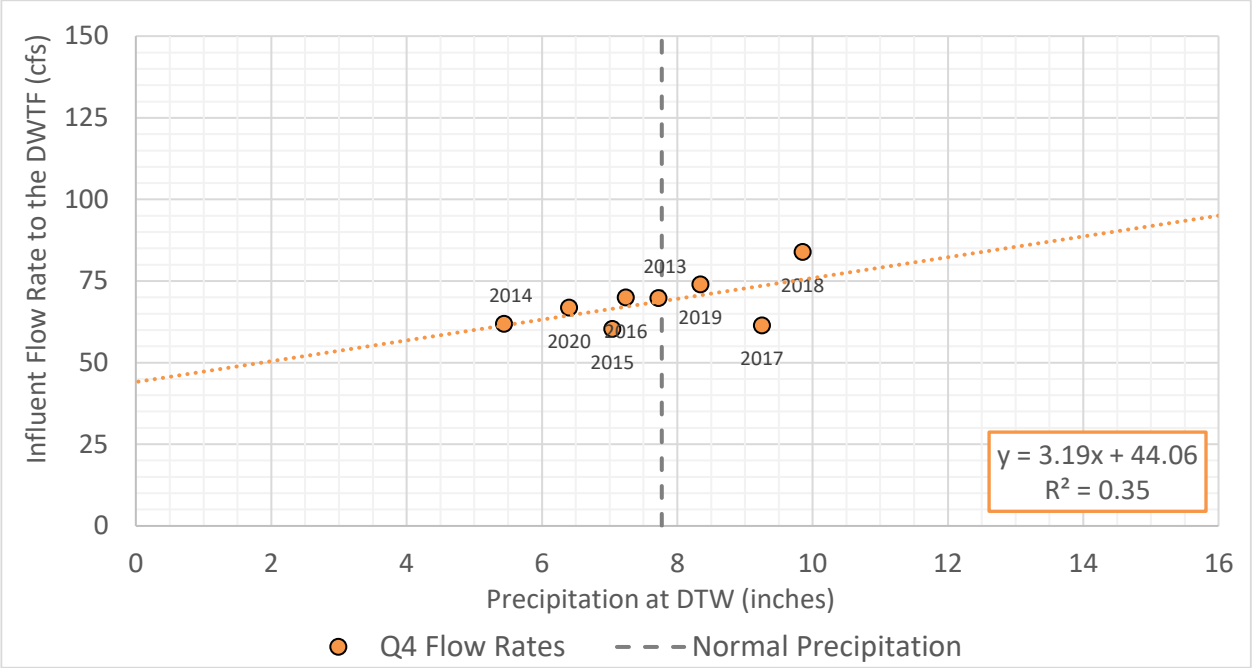


Figure 2-6
Average Influent Flow Rate to DWTF versus Precipitation at DTW
Quarter 4 October – December for 2013 through 2020



9. Figure 2-7 shows the long-term flow rate versus precipitation trends for the Controlled Flow Communities and Non-Controlled Flow Communities by month from 2015 through 2020. The flow rates are based on the interceptor system flow meters and the total precipitation is at DTW. On the bottom graph, the vertical bars show the average monthly flow rates and the solid lines show the 12-month rolling average flow rates. On the top graph, the blue vertical bars show the monthly precipitation, the black markers show the normal monthly precipitation, the solid blue line shows the 12-month rolling total precipitation, and the grey dashed line shows the 12-month rolling total normal precipitation. This figure shows the expected seasonal variations in flow rates, and the trend between increased precipitation and increased flow rates in 2018 through 2020.
10. Figure 2-7 shows the total flow contribution from the Controlled Flow Communities and Non-Controlled Flow Communities is generally about equal. On average, the Controlled Flow Communities contribute about 52% of the flow, and the Non-Controlled Flow Communities contribute about 48% of the flow. However, the Controlled Flow Communities can account for significantly more flow in the summer and fall months than the Non-Controlled Flow Communities. In particular, the Controlled Flow Communities contributed about 60% of the total flow for June through September 2019 and June through September 2020.
11. For each community, the average annual flow rate for years 2013 through 2020 are listed in Table 2-4 and shown in Figure 2-8.
12. Interceptor inflow and infiltration has not been estimated and deducted from community flow rates.

Figure 2-7
Monthly Influent Flow Rate to DWTF versus Precipitation at DTW for 2015 through 2020
by Controlled Flow and Non-Controlled Flow Communities

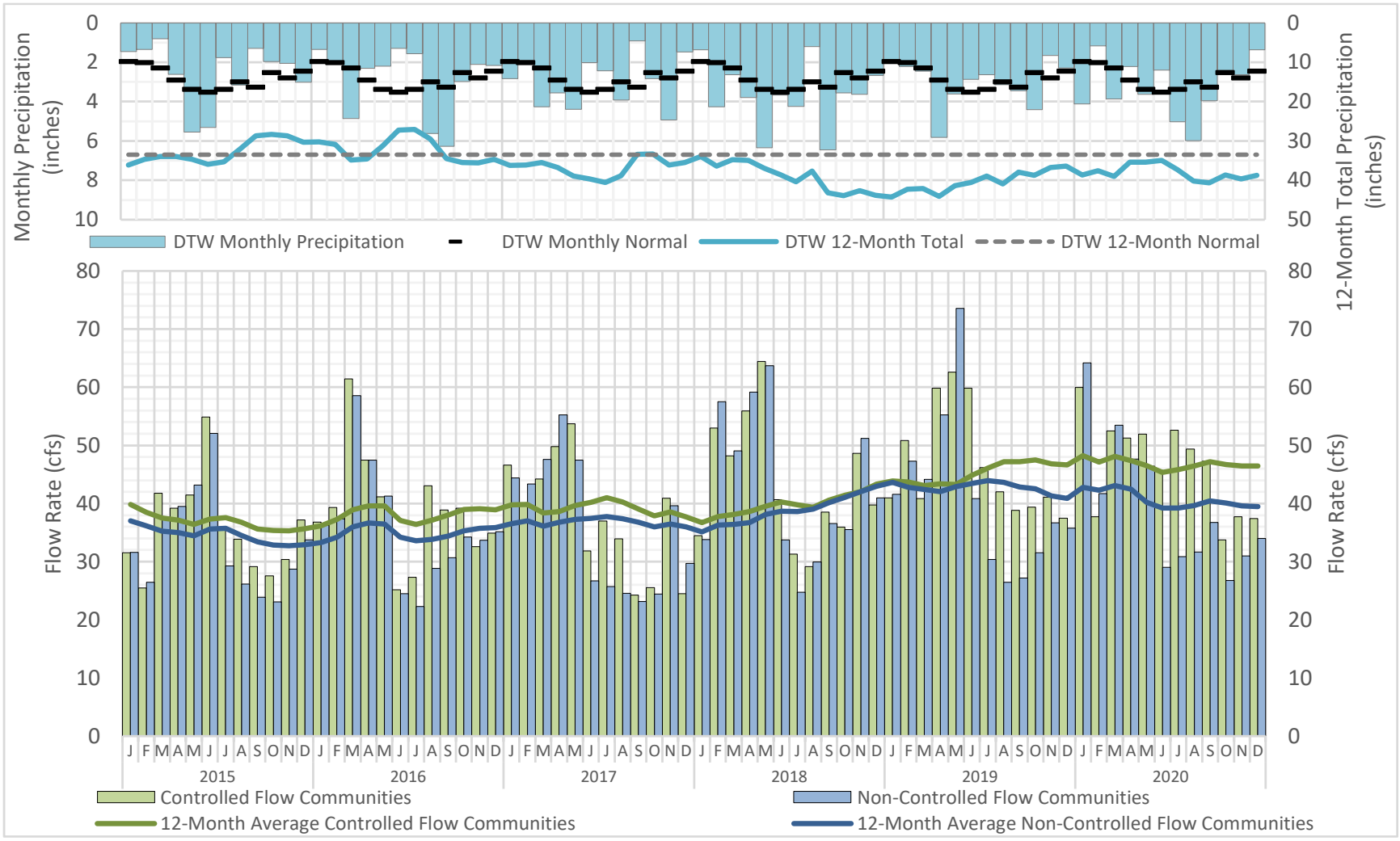
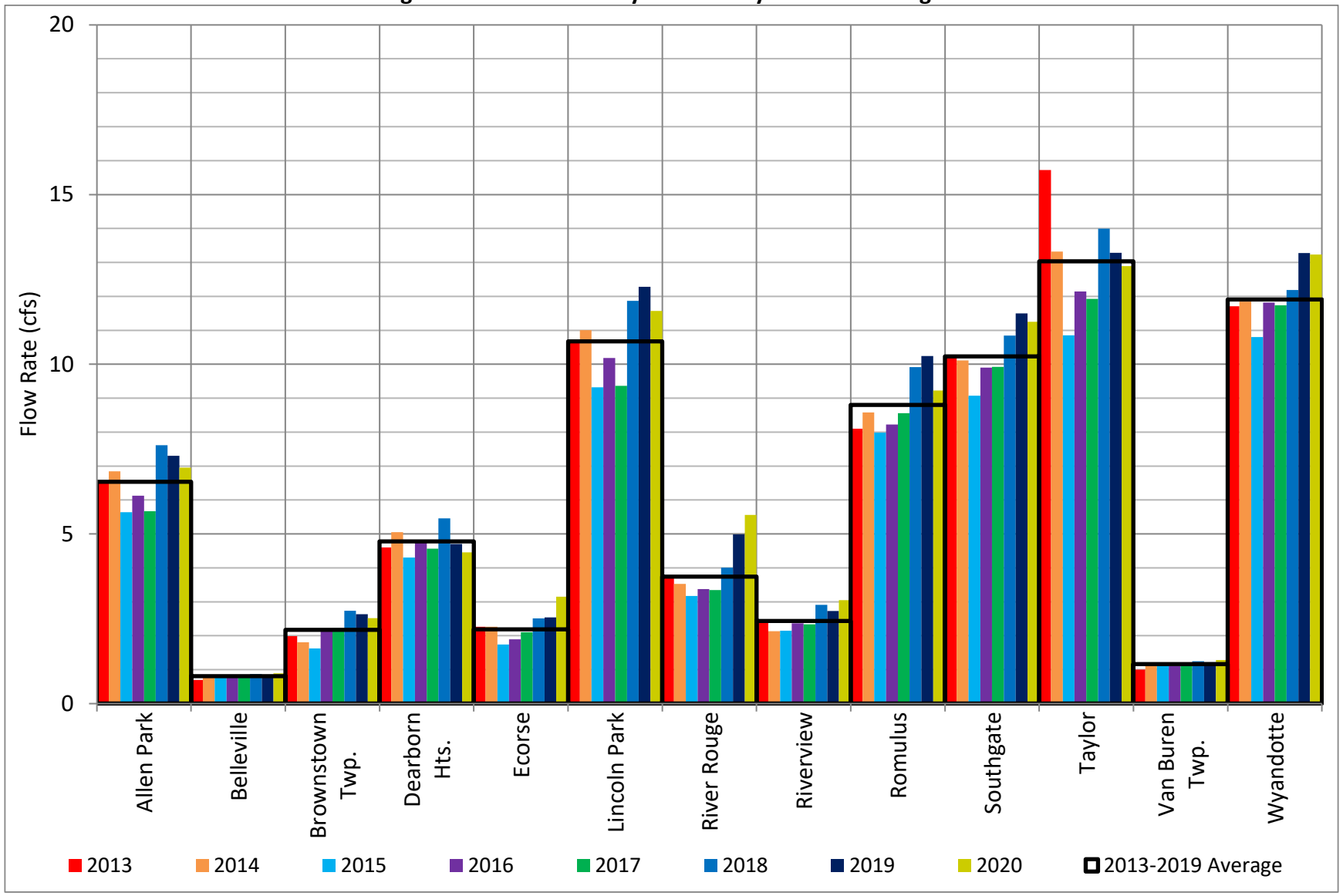


Table 2-4
Average Annual Flow Rate by Community for 2013 through 2020

Community	Average Flow Rate (cfs)								2013-2019 Average Flow Rate (cfs)
	2013	2014	2015	2016	2017	2018	2019	2020	
Allen Park	6.5	6.8	5.6	6.1	5.7	7.6	7.3	7.0	6.5
Belleville	0.7	0.8	0.8	0.8	0.8	0.9	0.8	0.9	0.8
Brownstown Twp.	2.0	1.8	1.6	2.2	2.2	2.7	2.6	2.5	2.2
Dearborn Hts.	4.6	5.1	4.3	4.8	4.6	5.5	4.7	4.5	4.8
Ecorse	2.3	2.3	1.7	1.9	2.1	2.5	2.5	3.1	2.2
Lincoln Park	10.7	11.0	9.3	10.2	9.4	11.9	12.3	11.6	10.7
River Rouge	3.8	3.5	3.2	3.4	3.3	4.0	5.0	5.6	3.7
Riverview	2.4	2.1	2.2	2.4	2.3	2.9	2.7	3.0	2.4
Romulus	8.1	8.6	8.0	8.2	8.6	9.9	10.2	9.2	8.8
Southgate	10.3	10.1	9.1	9.9	9.9	10.8	11.5	11.2	10.2
Taylor	15.7	13.3	10.9	12.1	11.9	14.0	13.3	12.9	13.0
Van Buren Twp.	1.0	1.2	1.2	1.1	1.2	1.2	1.2	1.3	1.2
Wyandotte	11.7	11.8	10.8	11.8	11.7	12.2	13.3	13.2	11.9
Total Incoming Flow Rate	79.8	78.5	68.7	74.9	73.8	86.2	87.5	86.0	78.5
DWTF Including Recycle (IPS + TPS)	84.3	85.3	79.5	81.9	80.4	96.6	92.4	91.5	85.8
Total Precipitation DTW (inches) =	39.90	37.57	30.32	34.69	35.46	43.81	36.38	38.73	36.88

Note: DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous years recycle flow has not been deducted from IPS+TPS data for 2020.

Figure 2-8
Average Annual Flow Rate by Community for 2013 through 2020



13. Reverse flow at Meter SW occurs as hydraulically necessary for emergency operating conditions and/or storms greater than the design storm. Table 2-5 lists the estimated volume of reverse flow through Meter SW for the significant storm events in 2020. Significant Storm Events 1, 2, 3, 9 and 10 were estimated to have review flow through Meter SW.

14. The DWTF primary and secondary treatment capacities are 150 and 125 MGD, respectively. The peak flow rate capacity of the DWTF is 225 MGD, with flow blending occurring at flow rates greater than 125 MGD. Under peak wet weather flow conditions, about 50 MGD receives both primary and secondary treatment, 100 MGD receives primary treatment only, and 75 MGD receives secondary treatment only. Table 2-5 lists the total volumes which bypassed primary and secondary treatment for each significant storm event.

Table 2-5
DWTF Primary and Secondary Treatment Bypass and Reverse Flow through Meter SW for Significant Storm Events for 2020

Major Storm Event	Significant Storm Event	Event Dates	Bypass of Primary Treatment (MG)	Bypass of Secondary Treatment (MG)	Reverse Flow through Meter SW (MG)
A	1	1/10-12/2020	75.7	131.5	4.4
B	2	3/27-29/2020	22.2	61.2	5.3
-	3	5/17-19/2020	0	16.2	5.6
-	4	6/26-27/2020	0	0	0
-	5	7/10/2020	0	0	0
-	6	7/16/2020	0	0	0
-	7	7/19/2020	0	0	0
-	8	8/1-2/2020	0	0	0
C	9	8/28-29/2020	0	35.5	0.7
-	10	9/7-8/2020	0	0	0.3
-	11	10/20-23/2020	0	0	0
Total			97.9	244.4	16.3

C) CONTROLLED FLOW COMMUNITIES OVERVIEW

1. The controlled flow communities are tributary to the Riverdrive Interceptor. Peak flow rates regulated to the MAFLs promotes good performance of the Riverdrive Interceptor without surcharging at the monitoring locations. The peak hourly flow rates and peak depths for the flow meters along the Riverdrive Interceptor for the significant storm events are listed in Table 2-6. The total wet weather MAFLs are also given and are used to check whether the incoming flow rates are being regulated properly. The total wet weather MAFLs at the flow meter locations are the sum of the MAFLs for the upstream communities.

   Flow rates above the MAFL which occur after the peak of the storm event during dewatering operations of the Lincoln Park equalization basin or the Southgate-Wyandotte Relief Drains Drainage District (SWRDDD) combined sewer overflow (CSO) retention treatment facility (RTF), and were coordinated with Veolia to minimize bypass operations at the DWTF and discharges to the Detroit River from SWRDDD, are not considered an exceedance.

Table 2-6
Peak Hourly Flow Rates and Depth for Controlled Flow Communities along the Riverdrive Interceptor for Significant Storms Events for 2020

Major Storm Event	Significant Storm Event	Peak Hourly Flow Rate (cfs)				Peak Depth (ft)			
		RR-1	EC-6	RD-1	SW+SWB	RR-1	EC-6	RD-1	SW
A	1	12.16	27.00	73.75	37.14	8.9	15.5	14.5	16.4
B	2	12.55	24.16	72.57	36.46	8.0	13.7	14.7	17.3
-	3	12.42	23.42	61.41	36.61	5.1	9.6	9.3	15.9
-	4	12.41	24.89	63.35	36.61	3.1	7.8	6.4	10.0
-	5	12.38	28.24	72.26	47.35	7.7	12.1	9.5	10.0
-	6	12.08	22.77	61.05	35.57	2.8	6.0	4.4	9.3
-	7	11.95	25.46	75.74	40.12	5.7	9.2	6.7	8.8
-	8	13.10	32.32	83.67	42.97	9.7	15.4	12.0	10.5
C	9	8.71	27.43	74.45	31.94	8.1	14.7	12.2	15.1
-	10	12.86	23.97	64.11	37.04	7.1	11.1	9.6	13.3
-	11	12.40	19.71	60.85	52.95	2.8	5.3	4.9	9.8
Total MAFL (cfs)		11.26	23.46	65.82	31.73				
					Pipe Diameter (ft)	3.0	4.5	6.0	6.5
					Manhole Depth (ft)	16.0	24.8	27.2	40.0

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%
XX.XX	Exceeds wet weather MAFL coordinated with Veolia
XX.XX	Wastewater level exceeded sewer crown

2. SWRDDD coordinated with Veolia to exceed the MAFL for Significant Storm Event 11 because additional treatment capacity was available at the DWTF. This action reduced the amount of CSO discharged to the Detroit River from SWRDDD for this event.

3. Surcharging was recorded at Meters RR-1, EC-6, RD-1 and SW along the Riverdrive Interceptor for every significant storm event except Significant Storm Event 6 and 11. For Significant Storm Events 6 and 11, surcharging was only recorded at Meters EC-6 and SW.

4. Incremental flow rates are estimated for storm events when the metered peak hourly flow rate exceeded the MAFL by 5% or more. Table 2-7 lists the estimated incremental peak hourly flow rates for the flow meters along the Riverdrive Interceptor for these storm events. Incremental flow rates are used to check whether the incoming flow rates are being regulated properly.

Table 2-7
Estimated Incremental Peak Hourly Flow Rates for Controlled Flow Communities along the Riverdrive Interceptor for Significant Storms Events for 2020

Major Storm Event	Significant Storm Event	Incremental Peak Hourly Flow Rate (cfs)			
		RR-1	EC-6	RD-1	SW+SWB
A	1	12.16	19.58	50.99	37.14
B	2	12.55	17.26	52.17	36.46
-	3	12.42	11.15	40.84	36.61
-	4	12.41	13.06	42.80	36.61
-	5	12.38	20.04	54.25	47.35
-	6	12.08	11.75	42.66	35.57
-	7	11.95	15.32	54.11	40.12
-	8	13.10	21.24	57.18	42.97
C	9	8.71	21.88	49.13	31.94
-	10	12.86	15.90	43.32	37.04
-	11	12.40	13.20	47.77	52.95
Incremental MAFL (cfs)		11.26	12.20	42.36	31.73

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%
XX.XX	Exceeds wet weather MAFL coordinated with Veolia

5. The Meter RR-1 district includes all of River Rouge. The flow rates estimated for the Meter RR-1 district exceeded the MAFL for every significant storm event in 2020 except Significant Storm Event 9. No flow meter exists on the pump station discharge pipe. The pumps are operated to maintain a maximum level in the Riverdrive Interceptor immediately downstream of the River Rouge CSO basin. This sometimes results in an exceedance of the MAFL.
6. The Meter EC-6 district includes all of the City of Ecorse and a portion of Lincoln Park. The incremental flow rates estimated for the Meter EC-6 district exceeded the MAFL for every significant storm event in 2020 except Significant Storm Events 3 and 6.
7. The Meter RD-1 district includes most of Allen Park and most of Lincoln Park. Flow rates above the MAFL which occur after the peak of the storm event during dewatering operations of the Lincoln Park equalization basin, and were coordinated with Veolia to minimize bypass operations at the DWTF, are not considered an exceedance. The incremental flow rates estimated for the Meter RD-1 district exceeded the MAFL for every significant storm event in 2020 except Significant Storm Event 3.
8. The Meter SW district serves the SWRDDD. The SWRDDD is a combined sewer area that includes part of Southgate and all of Wyandotte. Flow rates above the MAFL which occur after the peak of the storm event during dewatering operations of the SWRDDD CSO RTF, and were coordinated with Veolia to minimize bypass operations at the DWTF and discharges to the Detroit River from SWRDDD, are not considered an exceedance. The incremental flow rates estimated for the Meter SW district exceeded the MAFL for every significant storm event in 2020. As previously noted, SWRDDD was granted permission to exceed the MAFL for Significant Storm Event 11 because additional treatment capacity was available at the DWTF.
9. On September 29, 2020, the daily average dry weather flow rate from River Rouge decreased by about 1 cfs. The decrease in flow rate was supported by both meters RR-1 and EC-6. The reduction in flow rate may have been the result of correcting an issue such as a broken watermain, river inflow, etc. The exact cause for the reduction in flow rate is unknown at the time of this report.

D) NON-CONTROLLED FLOW COMMUNITIES OVERVIEW

1. The non-controlled flow communities are tributary to both the Pennsylvania Interceptor system and the Downriver Regional Storage and Transport System (DRSTS) and have allowable peak 96-hour volumes that were established for the 4.42-inch design storm. There were three major storm events in 2020. The estimated peak 96-hour total volumes for the 2020 major storm events are listed in Table 2-8.

   The City of Belleville and Van Buren Township are estimated to have exceeded their peak 96-hour total volumes by 0 to 20% during Major Storm Event A. The City of Allen Park (part) and City of Southgate (part) are estimated to have exceeded their peak 96-hour total volumes by more than 20% during Major Storm Event A. The City of Allen Park (part) and City of Southgate (part) are estimated to have exceeded their peak 96-hour total volumes by more than 20% during Major Storm Event B. None of the other Downriver non-controlled flow communities are estimated to have exceeded its peak 96-hour total volumes during these events.

Table 2-8
Peak 96-Hour Total Volumes for Non-Controlled Flow Communities
for Major Storms Events for 2020

Community	Total Volume (MG)			
	4.42 inch Design Storm	2020 Major Storm Events		
		A 1/10-12/2020 2.66 inches	B 3/27-29/2020 2.12 inches	C 8/28-29/2020 3.36 inches
Allen Park (part)	29.23	46.07	36.27	21.89
Belleville	4.86	5.20	4.74	2.28
Brownstown Twp.	20.90	14.74	13.83	7.78
Dearborn Heights	43.76	39.99	35.15	20.79
Riverview	28.30	24.64	23.19	16.32
Romulus	88.43	55.09	56.53	23.10
Southgate (part)	31.24	48.78	40.41	18.29
Taylor	164.45	128.24	97.72	56.88
Van Buren Twp.	7.04	7.44	6.78	3.26
Total	418.21	370.20	314.62	170.59

Legend:

XX.XX	Exceeds design storm volume by 0 to 20%
XX.XX	Exceeds design storm volume by > 20%

2. Monitoring devices indicated no issues with the DRSTS performance during all storm events for 2020.

3. Surcharging was recorded at flow meters P-1, PC-1 and RV-1 for Major Storm Events A and B, and at flow meter P-1 and PC-1 for Major Storm Event C.

4. Tunnel level sensors L-3, L-5, L-7 and L-8 recorded top of range for all three major storm events, except for level sensor L-3 which was out for service for Major Storm Event A. These levels indicate that the DRSTS storage volume was fully utilized for these major storm events.

5. Table 2-9 lists the monitored relief structures which discharged to the DRSTS for each significant storm event in 2020. At least one of the relief structures discharged into the DRSTS during each of the significant storm events in 2020. For Significant Storm Event 11, CHPO was the only relief structure estimated to discharge to the tunnel. For this event, only 0.01 MG was estimated to be discharge to the tunnel over a period of 1-hour.

Table 2-9
Downriver Regional Storage and Transport System Usage
for Significant Storm Events for 2020

Major Storm Event	Significant Storm Event	Event Dates	Meter									
			TPS	TSO	CHPO	CPO	PDO	ER-2	ER-1	APO-2	APO-1	PM-1
A	1	1/10-12/2020	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
B	2	3/27-29/2020	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
-	3	5/17-19/2020	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
-	4	6/26-27/2020	✓	✓	✓	×	×	×	×	✓	✓	×
-	5	7/10/2020	✓	×	✓	×	×	×	×	×	×	×
-	6	7/16/2020	✓	×	✓	×	×	×	×	×	×	×
-	7	7/19/2020	✓	✓	✓	✓	×	✓	✓	✓	✓	×
-	8	8/1-2/2020	✓	✓	✓	×	×	×	✓	✓	✓	×
C	9	8/28-29/2020	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
-	10	9/7-8/2020	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
-	11	10/20-23/2020	×	×	✓	×	×	×	×	×	×	×
Number of Overflow Events			10/11	8/11	11/11	6/11	1/11	6/11	7/11	8/11	8/11	5/11

Legend:

✓	Discharge to DRSTS
×	No discharge to DRSTS

6. Figures 2-9 and 2-10 plot the total 96-hour volume for the non-controlled flow communities versus precipitation for the major storm events from 2013 through 2020. Figure 2-9 shows the growing season events (those that occurred between May 1st and September 30th), and Figure 2-10 shows the non-growing season events (those that occurred between October 1st and April 30th). The 4.42-inch design storm volume is shown for comparison. The largest major storm event by total 96-hour volume occurred in the 2019 growing season.

Figure 2-9
Total 96-Hour Volume for the Non-Controlled Flow Communities for Major Storms Events
Growing Season from 2013 through 2020

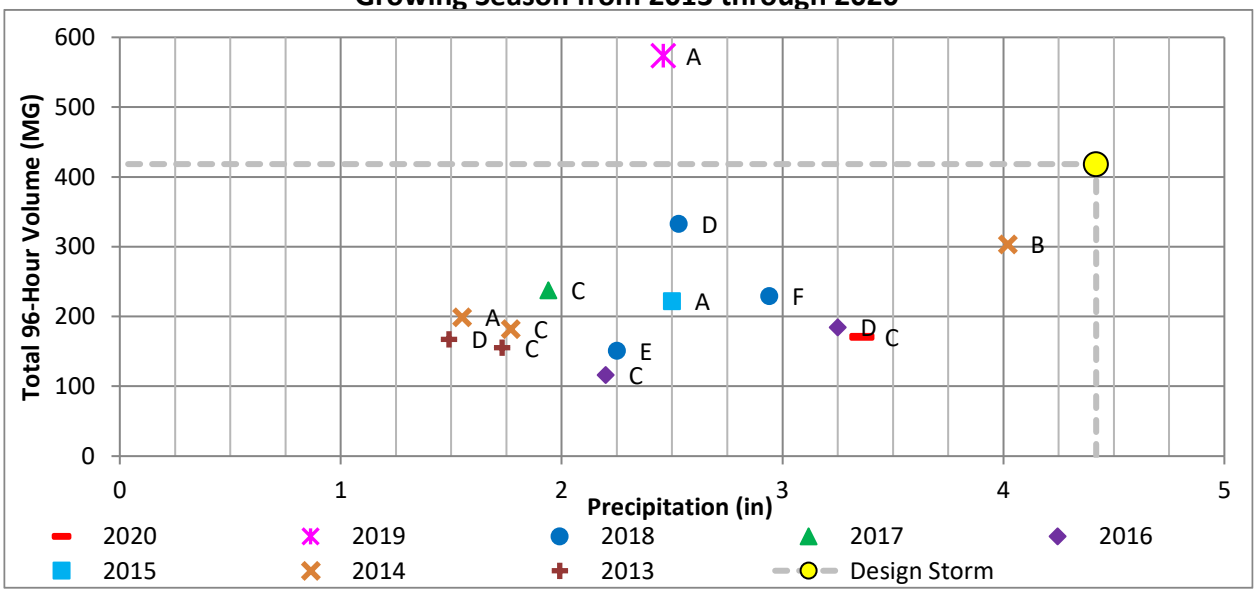
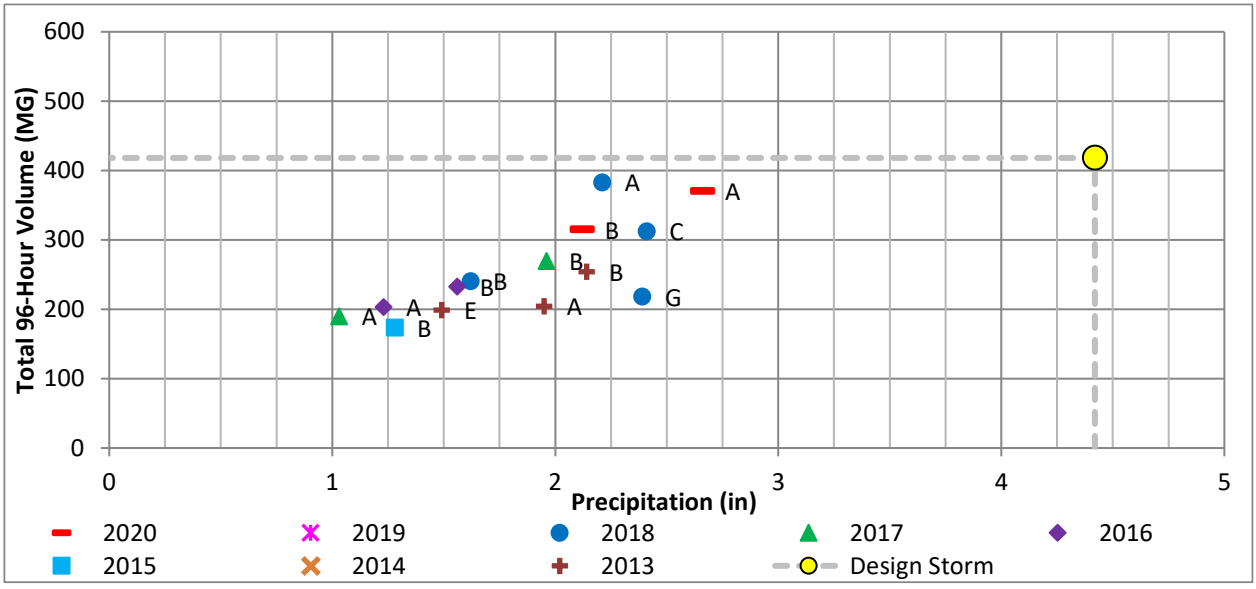


Figure 2-10
Total 96-Hour Volume for the Non-Controlled Flow Communities for Major Storms Events
Non-Growing Season from 2013 through 2020



7. The non-controlled flow communities have dry weather MAFLs. No community was estimated to have exceeded its dry weather MAFL on a total community basis for any month. The portion of Meter District PA-2 in Taylor was estimated to have exceeded its dry weather MAFL from January through May 2020. No portion of any meter district was estimated to have exceeded its dry weather MAFL for any month this quarter.

3) SUMMARY BY COMMUNITY

Table 3-1 presents the estimated average monthly flow rate for each community in the DSDS for each month in 2020. The average monthly flow rate includes all days – both dry and wet weather. Table 3-1 also shows the percentages for each community of the incoming flow rate to the DWTF. The estimated average monthly flow rates are plotted on Figure 3-1, and the percentages are plotted on Figure 3-2.

The incoming flow rate to the DWTF is based on the interceptor system flow meters. It is given on Table 3-1 along with the average monthly influent pumping rate at the DWTF. The DWTF influent pumping rate includes recycle flow rates where the incoming flow rate measured by the interceptor system meters does not include DWTF recycle flow rates. Therefore, it is expected that the incoming flow rate measured by the sum of the interceptor system meters will be slightly less than the DWTF influent flow rate.

DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS and TPS data.

The average monthly flow rates are subtotaled for controlled flow communities and for non-controlled flow communities. Tables 3-2 and 3-3 provide the breakdown of average monthly flow rates for controlled flow communities and non-controlled flow communities, respectively.

Table 3-1
Average Monthly Flow Rates by Community for 2020

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park	12.32	5.53	9.30	7.10	7.97	5.47	6.15	7.43	6.93	4.37	5.28	5.38	6.95
Belleville	1.40	1.19	1.27	1.03	0.99	0.72	0.69	0.70	0.78	0.63	0.64	0.69	0.89
Brownstown Twp.	3.46	2.75	3.20	2.76	2.78	2.16	2.14	2.22	2.17	1.92	2.20	2.38	2.51
Dearborn Hts.	7.98	4.39	5.81	5.70	5.65	2.93	3.18	3.19	4.86	2.75	3.28	3.70	4.45
Ecorse	3.54	3.13	2.94	3.48	3.37	3.53	3.74	3.47	2.83	2.42	2.32	2.96	3.15
Lincoln Park	17.93	9.54	13.50	12.34	13.08	10.14	11.45	12.09	11.56	7.90	9.35	9.61	11.57
River Rouge	5.94	4.34	5.80	6.43	6.90	6.08	7.04	7.17	7.36	3.54	3.39	2.67	5.56
Riverview	4.08	2.39	3.67	3.18	3.60	2.58	2.84	3.10	2.93	2.54	2.82	2.75	3.05
Romulus	13.57	11.65	12.61	13.02	10.78	6.75	6.89	6.40	7.52	6.04	7.44	7.99	9.21
Southgate	15.09	9.71	13.88	12.69	12.56	10.36	11.96	10.58	10.62	8.34	9.44	9.53	11.25
Taylor	21.76	12.68	17.06	14.92	15.02	9.37	10.44	10.22	12.61	8.82	10.05	11.48	12.88
Van Buren Twp.	2.01	1.70	1.82	1.48	1.42	1.03	0.99	1.00	1.11	0.90	0.91	0.99	1.28
Wyandotte	15.14	10.40	15.10	14.78	14.26	13.55	16.01	13.33	12.74	10.34	11.61	11.28	13.23
Subtotal Controlled Flow Communities	59.93	37.72	52.49	51.26	51.95	45.64	52.64	49.34	47.28	33.76	37.74	37.41	46.51
Subtotal Non-Controlled Flow Communities	64.31	41.68	53.48	47.66	46.41	29.02	30.89	31.57	36.76	26.76	30.97	33.98	39.48
Total Incoming Flow Rate	124.24	79.40	105.97	98.92	98.37	74.66	83.53	80.91	84.03	60.52	68.71	71.39	85.99
DWTF Including Recycle (IPS + TPS)	123.77	86.10	118.79	106.38	107.23	80.84	90.82	89.66	89.27	62.27	69.23	71.78	91.44
Recycle	-	-	-	-	9.32	8.10	9.41	9.39	6.85	4.03	3.72	3.91	4.60
Total Precipitation DTW (inches)	4.12	1.16	3.86	2.21	3.62	2.40	5.02	5.99	3.95	2.41	2.63	1.36	38.73
Normal Precipitation at DTW (inches)	1.96	2.02	2.28	2.90	3.38	3.52	3.37	3.00	3.27	2.52	2.79	2.46	33.47
Departure from Normal (inches)	+2.16	-0.86	+1.58	-0.69	+0.24	-1.12	+1.65	+2.99	+0.68	-0.11	-0.16	-1.10	+5.26

Percentage of Total Incoming Flow Rate by Community for 2020

Community	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park	9.9%	7.0%	8.8%	7.2%	8.1%	7.3%	7.4%	9.2%	8.3%	7.2%	7.7%	7.5%	8.0%
Belleville	1.1%	1.5%	1.2%	1.0%	1.0%	1.0%	0.8%	0.9%	0.9%	1.0%	0.9%	1.0%	1.0%
Brownstown Twp.	2.8%	3.5%	3.0%	2.8%	2.8%	2.9%	2.6%	2.7%	2.6%	3.2%	3.2%	3.3%	2.9%
Dearborn Hts.	6.4%	5.5%	5.5%	5.8%	5.7%	3.9%	3.8%	3.9%	5.8%	4.5%	4.8%	5.2%	5.1%
Ecorse	2.9%	3.9%	2.8%	3.5%	3.4%	4.7%	4.5%	4.3%	3.4%	4.0%	3.4%	4.1%	3.7%
Lincoln Park	14.4%	12.0%	12.7%	12.5%	13.3%	13.6%	13.7%	14.9%	13.8%	13.1%	13.6%	13.5%	13.4%
River Rouge	4.8%	5.5%	5.5%	6.5%	7.0%	8.1%	8.4%	8.9%	8.8%	5.9%	4.9%	3.7%	6.5%
Riverview	3.3%	3.0%	3.5%	3.2%	3.7%	3.5%	3.4%	3.8%	3.5%	4.2%	4.1%	3.9%	3.6%
Romulus	10.9%	14.7%	11.9%	13.2%	11.0%	9.0%	8.2%	7.9%	8.9%	10.0%	10.8%	11.2%	10.6%
Southgate	12.1%	12.2%	13.1%	12.8%	12.8%	13.9%	14.3%	13.1%	12.6%	13.8%	13.7%	13.3%	13.2%
Taylor	17.5%	16.0%	16.1%	15.1%	15.3%	12.5%	12.5%	12.6%	15.0%	14.6%	14.6%	16.1%	14.8%
Van Buren Twp.	1.6%	2.1%	1.7%	1.5%	1.4%	1.4%	1.2%	1.2%	1.3%	1.5%	1.3%	1.4%	1.5%
Wyandotte	12.2%	13.1%	14.3%	14.9%	14.5%	18.1%	19.2%	16.5%	15.2%	17.1%	16.9%	15.8%	15.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note:
1) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Figure 3-1
Total Incoming Flow for 2020

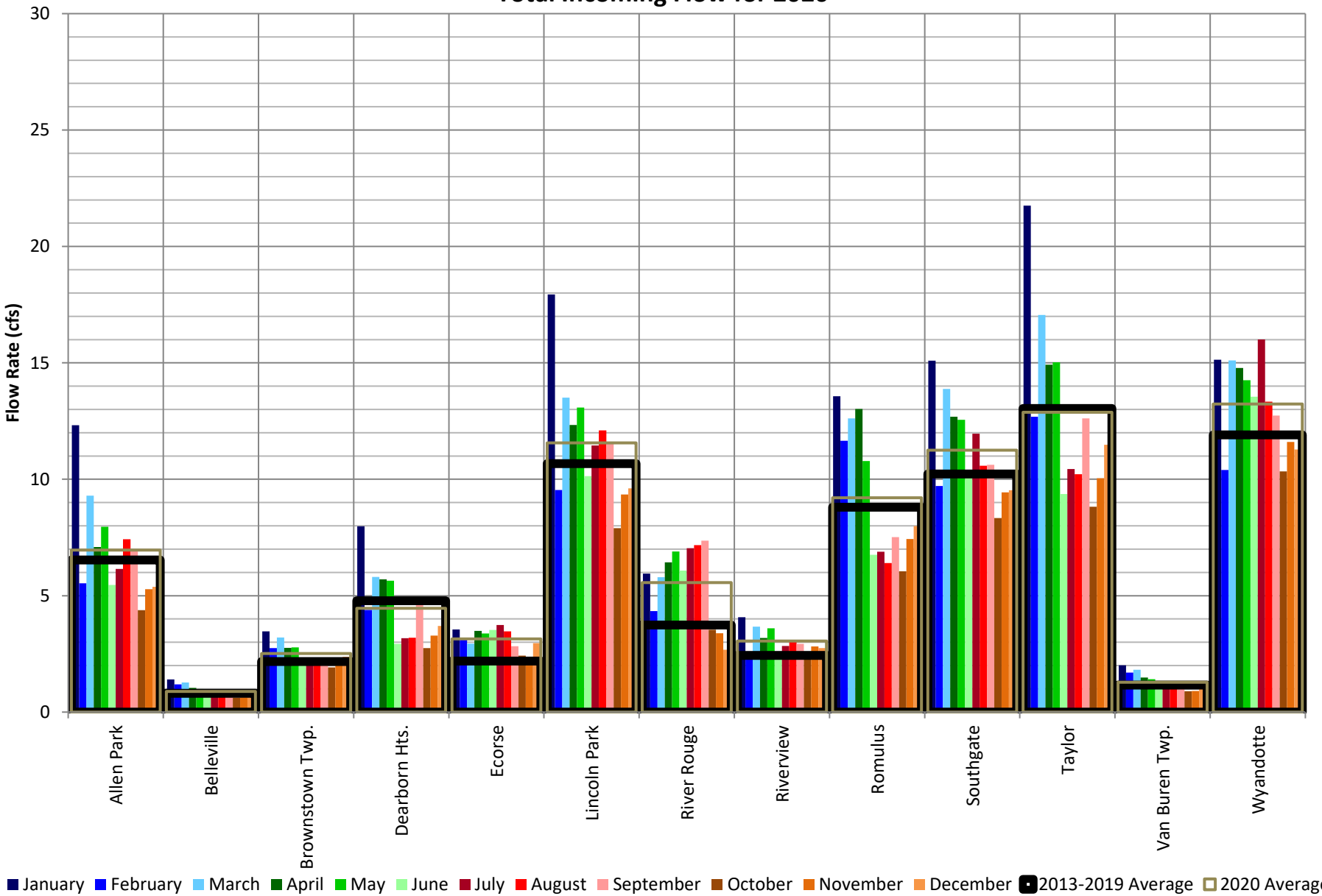


Figure 3-2
Percentage of Incoming Flow for 2020

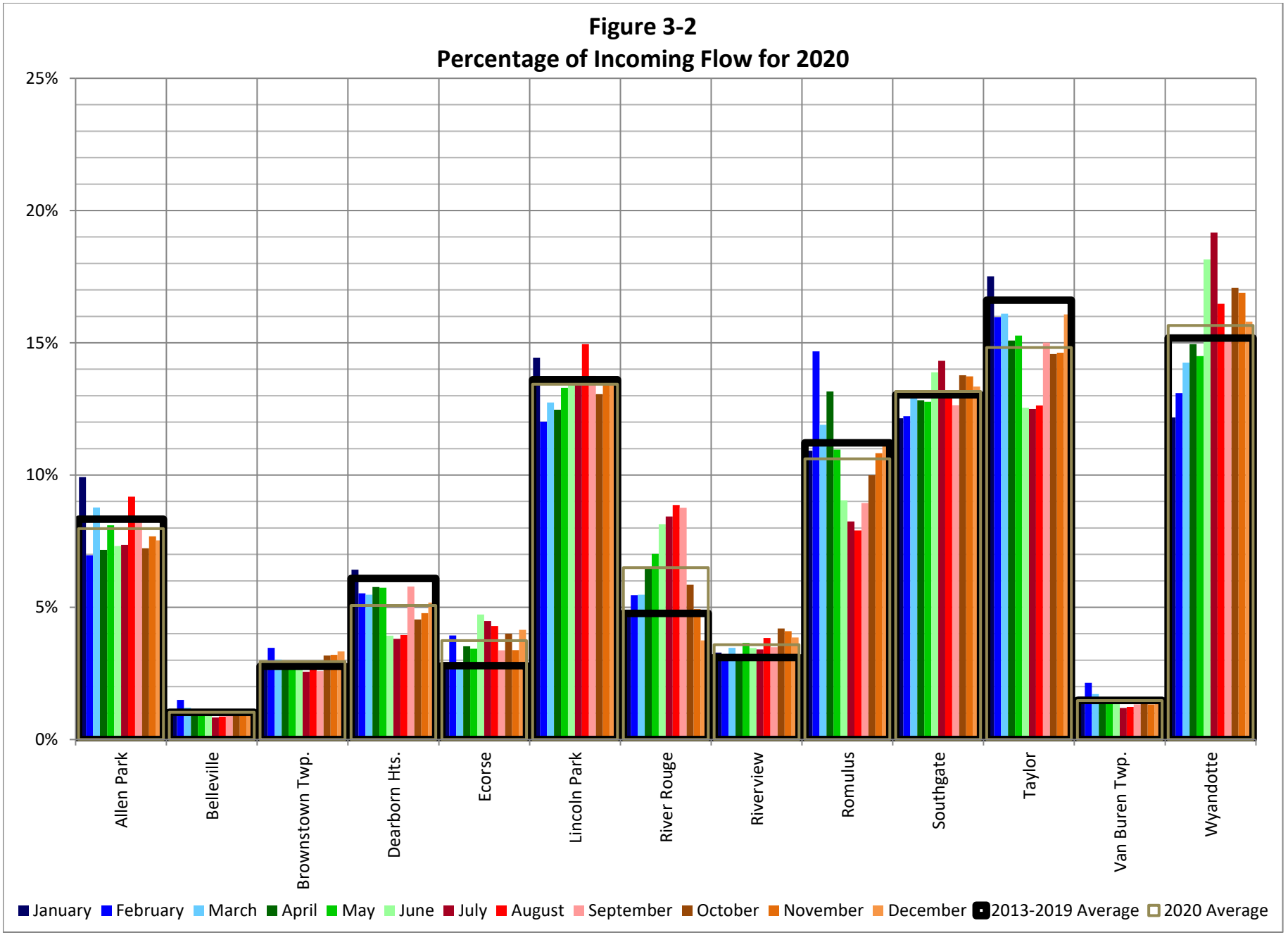


Table 3-2

Average Monthly Flow Rates for Controlled Flow Communities for 2020

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park (part)	8.74	4.39	6.53	5.79	6.21	4.62	5.27	5.67	5.52	3.67	4.46	4.46	5.45
Ecorse	3.54	3.13	2.94	3.48	3.37	3.53	3.74	3.47	2.83	2.42	2.32	2.96	3.15
Lincoln Park	17.93	9.54	13.50	12.34	13.08	10.14	11.45	12.09	11.56	7.90	9.35	9.61	11.56
River Rouge	5.94	4.34	5.80	6.43	6.90	6.08	7.04	7.17	7.36	3.54	3.39	2.67	5.56
Southgate - Wyandotte RDDD	23.76	16.33	23.71	23.21	22.39	21.27	25.13	20.93	20.00	16.23	18.22	17.71	20.77
Total	59.93	37.72	52.49	51.26	51.95	45.64	52.64	49.34	47.28	33.76	37.74	37.41	46.49
Total Precipitation DTW (inches)	4.12	1.16	3.86	2.21	3.62	2.40	5.02	5.99	3.95	2.41	2.63	1.36	38.73

Table 3-3

Average Monthly Flow Rates for Non-Controlled Flow Communities for 2020

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park (part)	3.58	1.14	2.77	1.30	1.75	0.84	0.88	1.76	1.42	0.70	0.82	0.92	1.50
Belleville	1.40	1.19	1.27	1.03	0.99	0.72	0.69	0.70	0.78	0.63	0.64	0.69	0.89
Brownstown Twp.	3.46	2.75	3.20	2.76	2.78	2.16	2.14	2.22	2.17	1.92	2.20	2.38	2.51
Dearborn Hts.	7.98	4.39	5.81	5.70	5.65	2.93	3.18	3.19	4.86	2.75	3.28	3.70	4.45
Riverview	4.08	2.39	3.67	3.18	3.60	2.58	2.84	3.10	2.93	2.54	2.82	2.75	3.05
Romulus	13.57	11.65	12.61	13.02	10.78	6.75	6.89	6.40	7.52	6.04	7.44	7.99	9.21
Southgate (part)	6.47	3.78	5.27	4.26	4.43	2.64	2.83	2.98	3.36	2.45	2.82	3.10	3.70
Taylor	21.76	12.68	17.06	14.92	15.02	9.37	10.44	10.22	12.61	8.82	10.05	11.48	12.88
Van Buren Twp.	2.01	1.70	1.82	1.48	1.42	1.03	0.99	1.00	1.11	0.90	0.91	0.99	1.28
Total	64.31	41.68	53.48	47.66	46.41	29.02	30.89	31.57	36.76	26.76	30.97	33.98	39.48
Total Precipitation DTW (inches)	4.12	1.16	3.86	2.21	3.62	2.40	5.02	5.99	3.95	2.41	2.63	1.36	38.73

4) DRY WEATHER SUMMARY

Tables 4-1 and 4-2 list the incremental monthly flow rates for each community summarized by meter district component. Incremental average daily flow rates are given along with an estimate of the average daily dry weather flow rates. The Year 2010 residential population is given on Tables 4-1 and 4-2 and it is used to estimate per-capita dry weather flow rates. Appendix A contains a set of tables that further support the monthly flow rates presented on Tables 3-1, 3-2, 3-3, 4-1 and 4-2. In addition, Tables 4-1 and 4-2 lists MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).

A single set of dry days was used to estimate the dry weather flow rates for all of the meters, with the number of dry days in each month listed in Table 5-1. Daily average flow rate traces for Meters P-2, PA-1, PB-1, PC-1, RD-1, and RV-1 were used for screening out dry and wet weather days. These meters 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. Details of the dry and wet weather day selection process are provided in the *Wayne County Downriver Sewage Disposal System - System Monitoring Plan* dated May 7, 2018.

Table 4-1
Monthly Incremental Flow Rates Summarized by Community

Community	Sewage Flow Meter Math	Meter District	Year 2010 Incremental Population	January 2020			February 2020			March 2020			April 2020			May 2020			June 2020			Dry Weather MAFLs for Controlled Flow Communities[1] (cfs)	Dry Weather MAFLs for Non-Controlled Flow Communities[1] (cfs)
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather			
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)		
Allen Park	3.8%([PC-1]+[CPO]+[CHPO]-[TB-1]) + 23.9%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 34.6%([RD-1]-[EC-6]) + ([APO-1] + [APO-2])	PC-1	1,019	0.41	0.23	149	0.23	0.22	142	0.30	0.22	136	0.26	0.23	148	0.25	0.19	121	0.15	0.14	88	-	0.43
		P-1	3,332	1.65	0.90	174	0.91	0.91	177	1.28	0.89	173	1.04	0.93	180	1.08	0.75	145	0.62	0.58	112	-	1.58
		RD-1	18,179	8.74	5.09	181	4.39	4.27	152	6.53	4.00	142	5.79	4.27	152	6.21	3.88	138	4.62	3.61	128	17.20	-
		APO-1 + APO-2	0	1.52	0.00	-	0.00	0.00	-	1.19	0.00	-	0.00	0.00	-	0.42	0.00	-	0.07	0.00	-	-	-
		Total	22,531	12.32	6.22	178	5.53	5.41	155	9.30	5.11	146	7.10	5.43	156	7.97	4.82	138	5.47	4.33	124	-	2.01
Belleville	41.1%[PA-4]	PA-4	3,993	1.40	1.10	178	1.19	1.19	193	1.27	1.15	186	1.03	0.98	159	0.99	0.87	141	0.72	0.72	117	-	1.32
Brownstown Twp.	97.5%[P-2] + 1.8%([PA-2]+[ER-1]-[PA-3]-[ER-2])	P-2	10,397	3.38	2.66	166	2.70	2.69	167	3.13	2.64	164	2.70	2.54	158	2.72	2.36	147	2.12	2.06	128	-	3.91
		PA-2	248	0.08	0.05	119	0.05	0.05	132	0.07	0.05	131	0.06	0.05	141	0.06	0.05	133	0.03	0.03	87	-	0.06
		Total	10,645	3.46	2.71	164	2.75	2.74	167	3.20	2.69	163	2.76	2.59	158	2.78	2.41	146	2.16	2.09	127	-	3.97
Dearborn Hts.	78.2%([TB-1]+[TSO])	TB-1	19,152	7.98	4.47	151	4.39	4.37	147	5.81	4.25	143	5.70	4.62	156	5.65	3.74	126	2.93	2.58	87	-	8.22
Ecorse	71.5%([EC-6]-[RR-1])	EC-6	9,515	3.54	2.60	176	3.13	3.12	212	2.94	2.54	173	3.48	3.55	241	3.37	3.48	236	3.53	3.55	241	9.20	-
Lincoln Park	28.5%([EC-6]-[RR-1]) + 65.4%([RD-1]-[EC-6])	EC-6	3,795	1.41	1.04	176	1.25	1.25	212	1.17	1.01	173	1.39	1.41	241	1.34	1.39	236	1.41	1.42	241	3.00	-
		RD-1	34,347	16.52	9.61	181	8.30	8.06	152	12.33	7.56	142	10.95	8.07	152	11.74	7.33	138	8.73	6.83	128	25.16	-
		Total	38,142	17.93	10.65	180	9.54	9.31	158	13.50	8.57	145	12.34	9.48	161	13.08	8.72	148	10.14	8.24	140	28.16	-
River Rouge	[RR-1]	RR-1	7,903	5.94	3.99	326	4.34	4.29	351	5.80	4.85	397	6.43	5.78	472	6.90	5.69	466	6.08	5.36	438	11.26	-
Riverview	[RV-1]	RV-1	12,486	4.08	2.35	121	2.39	2.34	121	3.67	2.33	121	3.18	2.78	144	3.60	2.62	135	2.58	2.33	121	-	3.61
Romulus	[DMA-1] + ([PA-3]+[ER-2]-[PA-4]-[DMA-1] + [DMA-2] + ([PD-2] - [DMA-2])	DMA-1	0	0.63	0.64	-	0.63	0.63	-	0.43	0.49	-	0.16	0.15	-	0.20	0.19	-	0.28	0.27	-	-	6.39
		PA-3	11,371	6.64	5.36	304	5.40	5.39	307	6.00	5.37	305	5.71	5.37	305	5.09	4.43	252	3.90	3.84	218	-	
		DMA-2	0	1.88	1.79	-	1.83	1.86	-	1.89	1.72	-	3.32	2.93	-	1.93	0.62	-	0.29	0.15	-	-	9.02
		PD-2	9,532	4.42	2.98	202	3.80	3.79	257	4.29	3.50	237	3.83	3.47	235	3.56	2.77	188	2.28	2.18	148	-	
		Total	20,904	13.57	10.77	333	11.65	11.68	361	12.61	11.08	343	13.02	11.92	368	10.78	8.01	248	6.75	6.43	199	-	15.41
Southgate	76.1%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 40%[PB-1] + 36.3%([SW]+[SWB]) + 1.4%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1])	P-1	10,637	5.27	2.87	174	2.92	2.92	177	4.10	2.84	173	3.30	2.96	180	3.46	2.39	145	1.96	1.84	112	-	3.65
		PB-1	4,459	1.10	0.76	110	0.81	0.80	116	1.09	0.83	120	0.90	0.80	116	0.91	0.70	102	0.64	0.60	87	-	1.42
		SW	14,752	8.63	5.71	250	5.93	5.65	248	8.61	6.61	290	8.43	6.74	295	8.13	6.30	276	7.72	6.41	281	11.52	-
		TPS+IPS	199	0.10	0.05	174	0.05	0.05	177	0.08	0.05	173	0.06	0.06	180	0.06	0.04	145	0.04	0.03	112	-	0.06
		Total	30,047	15.09	9.39	202	9.71	9.43	203	13.88	10.33	222	12.69	10.55	227	12.56	9.44	203	10.36	8.88	191	-	5.13
Taylor	2.5%[P-2] + 98.2%([PA-2]+[ER-1]-[PA-3]-[ER-2]) + 60%[PB-1] + 21.8%([TB-1]+[TSO]) + 96.2%([PC-1]+[CPO]+[CHPO]-[TB-1]) + ([PD-1]-[PD-2])	P-2	262	0.09	0.07	166	0.07	0.07	167	0.08	0.07	164	0.07	0.06	158	0.07	0.06	147	0.05	0.05	128	-	0.08
		PA-2	13,270	4.27	***2.44***	119	2.72	***2.72***	132	3.78	***2.69***	131	3.21	***2.90***	141	3.34	***2.73***	133	1.83	1.78	87	-	2.40
		PB-1	6,462	1.65	1.14	114	1.21	1.20	121	1.64	1.24	124	1.34	1.20	120	1.36	1.05	105	0.96	0.90	90	-	2.15
		TB-1	5,339	2.22	1.24	151	1.22	1.22	147	1.62	1.18	143	1.59	1.29	156	1.57	1.04	126	0.82	0.72	87	-	2.29
		PC-1	25,700	10.22	5.92	149	5.67	5.65	142	7.49	5.42	136	6.66	5.89	148	6.38	4.80	121	3.90	3.48	88	-	11.03
		PD-1	12,100	3.31	2.37	127	1.79	1.82	97	2.45	2.00	107	2.06	1.97	105	2.30	2.20	117	1.80	1.74	93	-	4.01
		Total	63,131	21.76	13.18	135	12.68	12.68	130	17.06	12.60	129	14.92	13.32	136	15.02	11.87	122	9.37	8.67	89	-	21.96
Van Buren Twp.	58.9%[PA-4]	PA-4	5,719	2.01	1.58	178	1.70	1.71	193	1.82	1.65	186	1.48	1.41	159	1.42	1.24	141	1.03	1.03	117	-	2.37
Wyandotte	63.7%([SW]+[SWB])	SW	25,883	15.14	10.01	250	10.40	9.91	248	15.10	11.60	290	14.78	11.82	295	14.26	11.06	276	13.55	11.24	281	20.21	-

Subtotal Controlled Flow Communities	114,374	59.93	38.03	215	37.72	36.55	207	52.49	38.18	216	51.26	41.64	235	51.95	39.14	221	45.64	38.42	217	97.55	-
Subtotal Non-Controlled Flow Communities	155,677	62.79	40.96	170	41.68	41.62	173	52.29	40.56	168	47.65	42.60	177	46.00	34.84	145	28.95	27.05	112	-	64.00
Total Incoming Flow	270,052	122.72	79.00	189	79.40	78.17	187	105.97	78.75	188	98.92	84.24	202	98.37	73.97	177	74.66	65.47	157	-	-
DWTF Including Recycle (IPS + TPS)	270,052	123.77	77.77	186	86.10	85.26	204	118.79	89.80	215	106.38	88.67	212	107.23	80.85	193	80.84	70.65	169	-	-
Recycle	-	-	-	-	-	-	-	-	-	-	-	-	-	9.32	9.22	-	8.10	7.76	-	-	-

Note:
1) Dry weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).
2) The MAFL for each community component of Meter Distict SW is population weighted. Southgate and Wyandotte have MAFLs of 7.67 and 24.06 cfs, respectively. Therefore, the combined MAFL is 31.73 cfs. The population weighted MAFL for Southgate and Wyandotte are allocated to be 11.52 and 20.21 cfs, respectively.
3) The meter district flow rates are split into community components based on relative 2010 residential population.
4) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Legend:

XX.XX (yellow)	Exceeds the weighted proportion of the dry weather MAFL by 0 to
XX.XX (orange)	Exceeds the weighted proportion of the dry weather MAFL by greater

Table 4-2
Monthly Incremental Flow Rates Summarized by Community

Community	Sewage Flow Meter Math	Meter District	Year 2010 Incremental Population	July 2020			August 2020			September 2020			October 2020			November 2020			December 2020			Dry Weather MAFLs for Controlled Flow Communities[1] (cfs)	Dry Weather MAFLs for Non-Controlled Flow Communities[1] (cfs)
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather			
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)		
Allen Park	3.8%([PC-1]+[CPO]+[CHPO]-[TB-1]) + 23.9%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 34.6%([RD-1]-[EC-6]) + ([APO-1] + [APO-2])	PC-1	1,019	0.18	0.14	87	0.16	0.10	65	0.21	0.15	95	0.14	0.12	77	0.16	0.13	84	0.19	0.18	115	-	0.43
		P-1	3,332	0.65	0.56	109	0.67	0.50	98	0.79	0.61	117	0.56	0.52	101	0.66	0.58	112	0.73	0.70	137	-	1.58
		RD-1	18,179	5.27	3.17	113	5.67	2.96	105	5.52	3.18	113	3.67	2.73	97	4.46	3.04	108	4.46	3.92	139	17.20	-
		APO-1 + APO-2	0	0.05	0.00	-	0.93	0.00	-	0.42	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	-	-
		Total	22,531	6.15	3.87	111	7.43	3.57	102	6.93	3.94	113	4.37	3.38	97	5.28	3.75	108	5.38	4.80	138	-	2.01
Belleville	41.1%[PA-4]	PA-4	3,993	0.69	0.68	111	0.70	0.62	100	0.78	0.70	113	0.63	0.61	99	0.64	0.62	100	0.69	0.69	111	-	1.32
Brownstown Twp.	97.5%[P-2] + 1.8%([PA-2]+[ER-1]-[PA-3]-[ER-2])	P-2	10,397	2.11	1.96	122	2.18	1.90	118	2.13	1.96	122	1.89	1.80	112	2.16	2.03	126	2.34	2.30	143	-	3.91
		PA-2	248	0.04	0.03	83	0.04	0.03	82	0.04	0.03	88	0.03	0.03	80	0.04	0.04	93	0.04	0.04	106	-	0.06
		Total	10,645	2.14	2.00	121	2.22	1.93	117	2.17	1.99	121	1.92	1.83	111	2.20	2.06	125	2.38	2.34	142	-	3.97
Dearborn Hts.	78.2%([TB-1]+[TSO])	TB-1	19,152	3.18	2.45	83	3.19	2.20	74	4.86	2.90	98	2.75	2.37	80	3.28	2.63	89	3.70	3.46	117	-	8.22
Ecorse	71.5%([EC-6]-[RR-1])	EC-6	9,515	3.74	3.70	252	3.47	2.93	199	2.83	2.91	198	2.42	2.37	161	2.32	2.24	152	2.96	2.89	196	9.20	-
Lincoln Park	28.5%([EC-6]-[RR-1]) + 65.4%([RD-1]-[EC-6])	EC-6	3,795	1.49	1.48	252	1.39	1.17	199	1.13	1.16	198	0.97	0.95	161	0.93	0.89	152	1.18	1.15	196	3.00	-
		RD-1	34,347	9.96	5.98	113	10.71	5.59	105	10.43	6.01	113	6.94	5.17	97	8.42	5.75	108	8.43	7.40	139	25.16	-
		Total	38,142	11.45	7.46	126	12.09	6.76	115	11.56	7.17	121	7.90	6.11	104	9.35	6.64	113	9.61	8.55	145	28.16	-
River Rouge	[RR-1]	RR-1	7,903	7.04	5.98	489	7.17	6.06	496	7.36	5.52	451	3.54	2.98	244	3.39	2.77	227	2.67	2.55	209	11.26	-
Riverview	[RV-1]	RV-1	12,486	2.84	2.21	114	3.10	2.33	121	2.93	2.28	118	2.54	2.18	113	2.82	2.19	114	2.75	2.57	133	-	3.61
Romulus	[DMA-1] + ([PA-3]+[ER-2]-[PA-4]-[DMA-1] + [DMA-2] + ([PD-2] - [DMA-2])	DMA-1	0	0.35	0.33	-	0.35	0.35	-	0.33	0.31	-	0.32	0.32	-	0.30	0.29	-	0.33	0.30	-	-	6.39
		PA-3	11,371	4.05	3.75	213	3.62	3.27	186	4.52	4.03	229	3.54	3.43	195	3.80	3.57	203	4.24	4.16	237	-	
		DMA-2	0	0.19	0.16	-	0.17	0.16	-	0.18	0.17	-	0.13	0.13	-	1.09	0.91	-	1.14	1.21	-	-	9.02
		PD-2	9,532	2.30	2.10	142	2.26	2.02	137	2.49	2.08	141	2.05	1.94	132	2.25	2.07	140	2.27	2.20	149	-	
		Total	20,904	6.89	6.34	196	6.40	5.80	179	7.52	6.58	203	6.04	5.83	180	7.44	6.84	212	7.99	7.87	243	-	15.41
Southgate	76.1%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 40%[PB-1] + 36.3%([SW]+[SWB]) + 1.4%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1])	P-1	10,637	2.08	1.80	109	2.14	1.61	98	2.51	1.93	117	1.80	1.66	101	2.09	1.84	112	2.32	2.25	137	-	3.65
		PB-1	4,459	0.71	0.61	88	0.80	0.60	87	0.80	0.66	96	0.61	0.57	82	0.69	0.60	87	0.74	0.70	102	-	1.42
		SW	14,752	9.12	6.81	298	7.60	5.53	242	7.26	5.53	242	5.89	4.31	189	6.61	4.71	207	6.43	5.33	233	11.52	-
		TPS+IPS	199	0.04	0.03	109	0.04	0.03	98	0.05	0.04	117	0.03	0.03	101	0.04	0.03	112	0.04	0.04	137	-	0.06
		Total	30,047	11.96	9.25	199	10.58	7.78	167	10.62	8.16	176	8.34	6.58	141	9.44	7.19	155	9.53	8.32	179	-	5.13
Taylor	2.5%[P-2] + 98.2%([PA-2]+[ER-1]-[PA-3]-[ER-2]) + 60%[PB-1] + 21.8%([TB-1]+[TSO]) + 96.2%([PC-1]+[CPO]+[CHPO]-[TB-1]) + ([PD-1]-[PD-2])	P-2	262	0.05	0.05	122	0.05	0.05	118	0.05	0.05	122	0.05	0.05	112	0.05	0.05	126	0.06	0.06	143	-	0.08
		PA-2	13,270	1.92	1.71	83	2.05	1.67	82	2.22	1.80	88	1.73	1.64	80	2.13	1.91	93	2.22	2.17	106	-	2.40
		PB-1	6,462	1.07	0.91	91	1.20	0.90	90	1.20	0.99	99	0.92	0.85	85	1.04	0.90	90	1.10	1.06	106	-	2.15
		TB-1	5,339	0.89	0.68	83	0.89	0.61	74	1.35	0.81	98	0.77	0.66	80	0.91	0.73	89	1.03	0.96	117	-	2.29
		PC-1	25,700	4.48	3.45	87	4.09	2.58	65	5.32	3.78	95	3.53	3.06	77	4.14	3.36	84	4.81	4.57	115	-	11.03
		PD-1	12,100	2.03	1.81	97	1.94	1.58	84	2.46	2.03	109	1.83	1.74	93	1.78	1.63	87	2.26	2.22	119	-	4.01
		Total	63,131	10.44	8.61	88	10.22	7.40	76	12.61	9.46	97	8.82	7.99	82	10.05	8.58	88	11.48	11.04	113	-	21.96
Van Buren Twp.	58.9%[PA-4]	PA-4	5,719	0.99	0.98	111	1.00	0.89	100	1.11	1.00	113	0.90	0.87	99	0.91	0.88	100	0.99	0.98	111	-	2.37
Wyandotte	63.7%([SW]+[SWB])	SW	25,883	16.01	11.95	298	13.33	9.71	242	12.74	9.70	242	10.34	7.57	189	11.61	8.27	207	11.28	9.34	233	20.21	-

Subtotal Controlled Flow Communities	114,374	52.64	39.08	221	49.34	33.96	192	47.28	34.00	192	33.76	26.08	147	37.74	27.68	156	37.41	32.58	184	97.55	-
Subtotal Non-Controlled Flow Communities	155,677	30.84	26.41	110	30.65	24.01	100	36.34	28.31	118	26.76	24.58	102	30.97	26.99	112	33.98	32.83	136	-	64.00
Total Incoming Flow	270,052	83.53	65.49	157	80.91	57.98	139	84.03	62.31	149	60.52	50.66	121	68.71	54.67	131	71.39	65.41	157	-	-
DWTF Including Recycle (IPS + TPS)	270,052	90.82	71.28	171	89.66	65.50	157	89.27	63.84	153	62.27	51.75	124	69.23	55.41	133	71.78	65.87	158	-	-
Recycle	-	9.41	8.45	-	9.39	8.77	-	6.85	4.72	-	4.03	3.97	-	3.72	3.56	-	3.91	3.95	-	-	-

Note:
1) Dry weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).
2) The MAFL for each community component of Meter Distict SW is population weighted. Southgate and Wyandotte have MAFLs of 7.67 and 24.06 cfs, respectively. Therefore, the combined MAFL is 31.73 cfs. The population weighted MAFL for Southgate and Wyandotte are allocated to be 11.52 and 20.21 cfs, respectively.
3) The meter district flow rates are split into community components based on relative 2010 residential population.
4) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Legend:

XX.XX	Exceeds the weighted proportion of the dry weather MAFL by 0 to
XX.XX	Exceeds the weighted proportion of the dry weather MAFL by greater

5) PRECIPITATION DATA

Table 5-1 lists the monthly precipitation at Metro Airport (DTW), the departure from normal, and the number of wet/dry days included for each month. Monthly precipitation data for the DSDS rain gauges for 2020 is summarized on Table 5-2. Daily precipitation data for the DSDS rain gauges for each month in 2020 is summarized on Tables 5-3 through 5-14. Data for the rain gauge at DTW is included in these tables. The total precipitation for 2020 at DTW was 38.73 inches, which is 5.26 inches above normal.

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 gauges used in the analysis for that storm. Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 MGD (271 cfs).

There were eleven significant storm events in 2020. The events were designated as Significant Storm Events 1 through 11 for year 2020. There were three major storm events in 2020. The events were designated as Major Storm Events A, B and C for year 2020. The precipitation data for the significant/major storm events are further summarized in Table 5-15 and Appendix B. None of these events equaled or exceeded the 25-year, 24-hour design storm rainfall total of 4.42 inches on which the DRSTS was based.

A quality assurance (QA) and quality control (QC) review of the DUWA rain gauge data was performed and involved a review of the maintenance logs and a comparison of the recorded precipitation to other nearby rain gauges. The maintenance logs identified rain gauge issues which were detected during site visits. In almost all cases these issues were resolved during the site visit. In general, when a rain gauge had an issue, it recorded zero precipitation. All rain gauge data with documented maintenance log issues were flagged.

Table 5-1
Dry/Wet Weather Count by Month and Monthly Precipitation at DTW for 2020

Month	Number of Dry Weather Days	Number of Wet Weather Days	Monthly Total Precipitation (in)	
			DTW[1]	Departure From Normal[2]
January	10	21	4.12	+2.16
February	26	3	1.16	-0.86
March	17	14	3.86	+1.58
April	14	16	2.21	-0.69
May	14	17	3.62	+0.24
June	20	10	2.40	-1.12
July	16	15	5.02	+1.65
August	15	16	5.99	+2.99
September	19	11	3.95	+0.68
October	21	10	2.41	-0.11
November	20	10	2.63	-0.16
December	19	11	1.36	-1.10
Total	211	154	38.73	+5.26

Note:
1) Detroit Metropolitan Wayne County Airport (DTW)
2) Normal is a period mean computed by the National Climatic Data Center (NCDC) for a National Weather Service (NWS) observing station from a period comprising three consecutive 10-year decadal periods (for example, 1981-2010)

Table 5-2
Monthly Precipitation for 2020

Date	Monthly Precipitation (inches)												DTW Monthly Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
January	3.73	3.86	3.40*	4.32	4.12	3.81	5.26	3.56	3.84	4.61	2.47	4.45	38	27	32
February	0.93	0.79	0.62*	1.02	1.16	0.82	1.44	0.82	0.77	1.39	1.19	1.19	34	19	27
March	3.86	3.87	4.57	3.90	3.86	4.22	5.01	3.93	3.69	4.27	4.32	4.20	49	33	41
April	2.35	2.03	2.27	0.74*	2.21	2.36	2.81	2.41	2.29	2.50	2.72	2.78	56	37	46
May	3.48	3.24	3.47	3.45	3.62	2.50	4.58	3.47	3.69	3.95	3.88	2.97	67	49	58
June	2.97	2.07	1.84	2.35	2.40	2.72	3.33	1.39*	1.77*	2.46	2.69	4.09	83	60	71
July	1.70*	3.24	0.22*	3.72*	5.02	5.00	4.89	3.63	3.87	5.26	5.00	5.20	87	68	78
August	-	6.49	3.82	5.24*	5.99	5.50	7.03	5.49	6.53	7.08	5.46	6.80	84	64	74
September	-	3.78	2.97	3.86	3.95	3.55	3.09	3.06	3.88	2.60	2.86	2.88	73	54	63
October	-	2.29	2.35	2.45	2.41	2.67	3.40	2.25	1.49*	2.68	2.74	2.75	60	42	51
Novembert	-	2.00	2.22	2.51	2.63	2.25	3.25	2.14	2.19	2.77	2.83	2.60	55	37	46
December	-	1.13	0.77*	1.22	1.36	1.23	1.25*	1.12	1.09	1.48	1.28	1.37	40	27	33
Total	19.02*	34.79	28.52*	34.78*	38.73	36.63	45.34*	33.27*	35.10*	41.05	37.44	41.28	63	45	54

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-3
Daily Precipitation for January 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
1/1/2020	0	0	0	0	T	0	0	0	0	0	0	0	38	26	32
1/2/2020	0	0	0	0	0	0	0	0	0	0	0	0	48	35	42
1/3/2020	0	0.10	0.10	0.10	0	0.10	0.10	0.10	0.11	0.10	0	0.10	45	39	42
1/4/2020	0	0	0.01	0	0.01	0.01	0.02	0.01	0.01	0.02	0	0.02	39	30	35
1/5/2020	0.02	0.02	0.02	0.03	0.04	0.04	0.04	0.01	0.03	0.03	0	0.04	39	30	35
1/6/2020	0	0	0	0	T	0	0	0	0	0	0	0	44	30	37
1/7/2020	0	0	0.01	0	0.03	0.01	0.01	0	0.01	0	0	0.01	43	27	35
1/8/2020	0	0	0.01	0.01	0.05	0	0.05	0	0	0.04	0	0.03	33	16	25
1/9/2020	0	0	0	0	T	0	0	0.02	0	0	0	0	49	16	33
1/10/2020	0.19	0.35	0.37	0.39	0.32	0.41	0.53	0.31	0.33	0.40	0	0.50	49	43	46
1/11/2020	2.28	2.13	2.19	2.41	2.06	1.94	2.53	2.08	2.17	2.21	0	2.21	55	33	44
1/12/2020	0.18	0.03	0.02	0.05	0.18	0.02	0.08	0.07	0.04	0.28	0	0.05	33	23	28
1/13/2020	0	0	0	0.01	0.01	0	0.01	0.02	0	0	0	0.01	38	27	33
1/14/2020	0	0	0	0	0	0	0	0	0	0	0	0	42	32	37
1/15/2020	0.03	0.01	0.01	0.02	0.03	0.01	0.04	0.02	0.03	0.03	0.90	0.02	40	28	34
1/16/2020	0	0	0	0	T	0	0	0	0	0	0	0	37	23	30
1/17/2020	0	0.03	0.08	0.01	T	0.04	0.04	0	0.01	0	0	0.02	27	18	23
1/18/2020	0.47	0.66	0.58	0.70	0.82	0.68	0.96	0.30	0.53	0.90	0.93	0.81	39	24	32
1/19/2020	0	0	0	0	0.01	0	0.01	0	0	0	0	0	26	15	21
1/20/2020	0	0	0	0	T	0	0	0	0	0	0	0	27	13	20
1/21/2020	0	0	0*	0	T	0	0	0	0	0	0	0	29	19	24
1/22/2020	0	0	0*	0	0	0	0	0	0	0	0	0	31	17	24
1/23/2020	0	0.01	0*	0.01	0	0.01	0.01	0.02	0.02	0.01	0	0.02	36	25	31
1/24/2020	0.47	0.47	0*	0.49	0.47	0.43	0.71	0.46	0.43	0.51	0.54	0.46	39	34	37
1/25/2020	0.06	0.05	0*	0.07	0.06	0.08	0.09	0.10	0.09	0.06	0.06	0.10	38	33	36
1/26/2020	0.03	0	0*	0.02	0.03	0.03	0.03	0.04	0.02	0.02	0.03	0.02	36	33	35
1/27/2020	0	0	0*	0	T	0	0	0	0	0	0	0	36	33	35
1/28/2020	0	0	0*	0	T	0	0	0	0.01	0	0.01	0.03	36	31	34
1/29/2020	0	0	0*	0	T	0	0	0	0	0	0	0	32	30	31
1/30/2020	0	0	0*	0	T	0	0	0	0	0	0	0	34	29	32
1/31/2020	0	0	0*	0	T	0	0	0	0	0	0	0	33	26	30
Total	3.73	3.86	3.40*	4.32	4.12	3.81	5.26	3.56	3.84	4.61	2.47	4.45	38	27	32

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-4
Daily Precipitation for February 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
2/1/2020	0.04	0.03	0*	0.04	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.06	35	23	29
2/2/2020	0	0	0*	0	T	0	0	0	0	0	0	0	53	33	43
2/3/2020	0	0	0*	0	0	0	0	0	0	0	0	0	52	31	42
2/4/2020	0	0	0*	0	0	0	0	0	0	0	0	0	38	32	35
2/5/2020	0.01	0.08	0*	0.05	0.10	0.11	0.15	0	0.06	0.10	0.09	0.12	32	23	28
2/6/2020	0.06	0.05	0*	0.09	0.10	0.04	0.12	0	0.04	0.15	0.10	0.07	29	24	27
2/7/2020	0.01	0.01	0*	0.02	0.02	0.01	0.01	0.20	0.02	0.02	0.01	0.01	35	27	31
2/8/2020	0.01	0	0*	0.01	0.04	0.01	0.01	0.06	0.02	0.01	0	0.02	29	25	27
2/9/2020	0.11	0.14	0*	0.16	0.17	0.14	0.18	0.04	0.10	0.22	0.23	0.19	35	23	29
2/10/2020	0	0	0*	0	0	0	0	0	0	0	0.01	0	36	32	34
2/11/2020	0	0	0	0	0	0	0	0	0	0	0	0	40	27	34
2/12/2020	0.02	0.02	0.02	0.02	0.03	0.02	0.04	0	0.01	0.02	0.02	0.01	35	24	30
2/13/2020	0.06	0.05	0.09	0.09	0.09	0.08	0.11	0.09	0.07	0.08	0.08	0.08	33	15	24
2/14/2020	0	0	0	0	0	0	0	0	0	0	0	0	21	4	13
2/15/2020	0	0	0	0	T	0	0	0.02	0	0	0	0	34	10	22
2/16/2020	0	0	0	0	0	0	0	0	0	0	0	0	42	30	36
2/17/2020	0.02	0.02	0	0.01	0.01	0.01	0.02	0.01	0.02	0	0	0.01	35	24	30
2/18/2020	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.03	0.01	0.02	0.02	0.01	41	28	35
2/19/2020	0	0	0	0	0	0	0	0	0	0	0	0	32	20	26
2/20/2020	0	0	0	0	0	0	0	0	0	0	0	0	27	16	22
2/21/2020	0.10	0	0	0	0	0	0	0	0	0	0	0	36	14	25
2/22/2020	0	0	0	0	0	0	0	0	0	0	0	0	47	24	36
2/23/2020	0	0	0	0	0	0	0	0	0	0	0	0	54	27	41
2/24/2020	0.08	0.15	0.12	0.14	0.10	0.14	0.21	0.15	0.11	0.15	0.12	0.17	50	32	41
2/25/2020	0.12	0.07	0.10	0.09	0.12	0.08	0.14	0.05	0.08	0.17	0.11	0.11	39	31	35
2/26/2020	0.27	0.16	0.27	0.28	0.31	0.11	0.35	0.05	0.18	0.40	0.35	0.33	32	24	28
2/27/2020	0	0	0	0	T	0	0.03	0.01	0	0	0	0	26	19	23
2/28/2020	0	0	0	0	T	0	0	0.06	0	0	0	0	29	21	25
2/29/2020	0	0	0	0	0	0	0	0.02	0	0	0	0	34	19	27
Total	0.93	0.79	0.62*	1.02	1.16	0.82	1.44	0.82	0.77	1.39	1.19	1.19	34	19	27

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-5
Daily Precipitation for March 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
3/1/2020	0	0	0	0	0	0	0	0	0	0	0	0	44	18	31
3/2/2020	0.23	0.36	0.49	0.26	0.29	0.50	0.61	0.40	0.24	0.46	0.47	0.53	53	39	46
3/3/2020	0	0	0	0	T	0	0	0.01	0	0	0	0	50	31	41
3/4/2020	0	0	0	0	T	0	0	0	0	0	0	0	48	31	40
3/5/2020	0.05	0.05	0.06	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	48	25	37
3/6/2020	0.02	0.01	0.01	0.01	0.02	0.03	0.05	0.05	0.03	0.04	0.03	0.04	37	30	34
3/7/2020	0	0	0	0	0	0	0	0	0	0	0	0	45	22	34
3/8/2020	0	0	0	0	0	0	0	0	0	0	0	0	61	33	47
3/9/2020	0.09	0.11	0.07	0.11	0.06	0.11	0.11	0.06	0.08	0.08	0.08	0.11	63	47	55
3/10/2020	0.16	0.07	0.13	0.10	0.13	0.16	0.14	0.07	0.12	0.12	0.15	0.13	54	35	45
3/11/2020	0	0	0	0	T	0	0	0	0	0	0	0	45	33	39
3/12/2020	0	0	0.03	0.02	0	0.02	0.02	0.02	0.03	0.06	0.01	0.06	50	38	44
3/13/2020	0	0	0	0.01	0.02	0	0	0	0	0	0	0.01	49	35	42
3/14/2020	0	0	0	0	0	0	0	0	0	0	0	0	37	31	34
3/15/2020	0	0	0	0	0	0	0	0	0	0	0	0	46	29	38
3/16/2020	0	0	0	0	T	0	0	0	0	0	0	0	47	25	36
3/17/2020	0	0	0	0	T	0	0	0	0	0	0	0	53	36	45
3/18/2020	0.42	0.47	0.60	0.49	0.50	0.57	0.69	0.56	0.45	0.60	0.64	0.60	46	32	39
3/19/2020	0.36	0.38	0.33	0.36	0.30	0.30	0.31	0.28	0.28	0.26	0.23	0.25	53	40	47
3/20/2020	0.01	0.01	0.04	0.01	0.04	0.02	0	0.01	0.01	0.01	0.01	0.01	65	30	48
3/21/2020	0	0	0	0	T	0	0	0	0	0	0	0	39	25	32
3/22/2020	0.06	0.09	0.09	0.10	0.10	0.10	0.17	0	0.10	0.11	0.12	0.11	39	21	30
3/23/2020	0.12	0.06	0.04	0.06	0.09	0.04	0.06	0.17	0.06	0.08	0.07	0.06	44	32	38
3/24/2020	0	0	0	0	0	0	0	0	0	0	0	0	43	36	40
3/25/2020	0	0	0	0	0	0	0	0.01	0	0	0	0	57	31	44
3/26/2020	0.25	0.24	0.22	0.26	0.23	0.22	0.26	0.23	0.24	0.22	0.23	0.23	60	41	51
3/27/2020	0.06	0.21	0.09	0.19	0.08	0.17	0.25	0.14	0.11	0.08	0.08	0.13	46	36	41
3/28/2020	1.76	1.74	2.23	1.83	1.82	1.75	2.13	1.70	1.73	1.92	2.02	1.65	51	40	46
3/29/2020	0.21	0.03	0.12	0.05	0.12	0.13	0.14	0.14	0.14	0.19	0.14	0.23	63	46	55
3/30/2020	0	0	0	0	T	0	0	0	0.01	0	0	0.01	48	41	45
3/31/2020	0.06	0.04	0.02	0	0.03	0.07	0.05	0.06	0.04	0.02	0.02	0.02	44	39	42
Total	3.86	3.87	4.57	3.90	3.86	4.22	5.01	3.93	3.69	4.27	4.32	4.20	49	33	41

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-6
Daily Precipitation for April 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
4/1/2020	0.01	0	0	0	T	0	0.01	0.01	0.01	0.01	0.01	0.01	50	40	45
4/2/2020	0	0	0	0	0	0	0	0.01	0	0	0	0	61	36	49
4/3/2020	0	0	0	0	0	0	0	0	0	0	0	0	65	35	50
4/4/2020	0	0	0	0	T	0	0	0	0	0	0	0	60	37	49
4/5/2020	0	0	0	0	0	0	0	0	0	0	0.01	0.01	58	40	49
4/6/2020	0	0	0	0*	0	0	0	0	0	0	0	0	57	34	46
4/7/2020	0.74	0.68	0.69	0*	0.63	0.67	0.67	0.76	0.71	0.74	0.78	0.87	71	43	57
4/8/2020	0.07	0.06	0.08	0*	0.07	0.08	0.15	0.11	0.11	0.09	0.09	0.12	72	50	61
4/9/2020	0.06	0	0.02	0*	0.05	0.03	0.02	0.05	0.01	0.05	0.04	0.04	50	34	42
4/10/2020	0	0	0	0*	0.01	0	0	0	0	0	0	0	47	32	40
4/11/2020	0	0	0	0*	0	0	0	0	0	0	0	0	58	30	44
4/12/2020	0.14	0.25	0.28	0*	0.22	0.32	0.38	0.30	0.27	0.30	0.34	0.31	61	45	53
4/13/2020	0.14	0.03	0.04	0*	0.05	0.03	0.03	0.02	0.03	0.03	0.04	0.03	55	35	45
4/14/2020	0	0	0	0*	T	0	0	0	0	0	0	0	44	29	37
4/15/2020	0.09	0.09	0.09	0*	0.12	0.10	0.17	0.13	0.10	0.14	0.14	0.16	40	27	34
4/16/2020	0	0	0	0*	T	0	0	0	0	0	0	0	44	25	35
4/17/2020	0.30	0.29	0.33	0*	0.35	0.32	0.42	0.30	0.28	0.34	0.41	0.36	36	31	34
4/18/2020	0	0	0	0*	0	0	0	0.01	0	0	0	0	54	27	41
4/19/2020	0	0	0	0*	0	0	0	0	0	0	0	0	64	34	49
4/20/2020	0	0.05	0.02	0*	0.03	0.03	0.04	0.02	0.03	0.02	0	0.02	58	30	44
4/21/2020	0.06	0	0.02	0*	0.02	0	0.01	0	0	0	0.03	0.01	48	30	39
4/22/2020	0.04	0.13	0.05	0*	0.09	0.16	0.18	0.16	0.14	0.17	0.09	0.13	38	27	33
4/23/2020	0.19	0.04	0.07	0*	0.07	0.01	0.02	0	0.03	0.02	0.11	0.02	44	35	40
4/24/2020	0	0	0	0*	0	0	0	0	0	0	0	0	59	44	52
4/25/2020	0	0	0	0*	T	0	0	0	0	0	0	0	55	37	46
4/26/2020	0	0	0	0*	T	0	0	0	0	0	0	0	62	46	54
4/27/2020	0	0.01	0	0*	T	0.01	0	0	0	0.01	0	0.01	63	37	50
4/28/2020	0.07	0	0.06	0.05	0.03	0.10	0.06	0.06	0.08	0.02	0.09	0.05	68	47	58
4/29/2020	0.17	0.12	0.12	0.13	0.14	0.16	0.21	0.16	0.16	0.23	0.23	0.25	69	55	62
4/30/2020	0.27	0.28	0.40	0.56	0.33	0.34	0.44	0.31	0.33	0.33	0.31	0.38	55	46	51
Total	2.35	2.03	2.27	0.74*	2.21	2.36	2.81	2.41	2.29	2.50	2.72	2.78	56	37	46

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-7
Daily Precipitation for May 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
5/1/2020	0	0	0	0	T	0	0	0	0	0	0.01	0	66	45	56
5/2/2020	0	0	0	0	T	0	0	0	0	0	0	0	80	52	66
5/3/2020	0	0	0	0	0	0	0	0	0	0	0	0	73	47	60
5/4/2020	0	0	0	0	0	0	0	0	0	0	0	0	59	41	50
5/5/2020	0	0	0	0	0	0	0	0	0	0	0	0	52	39	46
5/6/2020	0	0	0	0	0	0	0	0	0	0	0	0	61	38	50
5/7/2020	0	0	0	0	0	0	0	0	0	0	0	0	66	38	52
5/8/2020	0	0	0	0	T	0	0	0	0	0	0	0	46	31	39
5/9/2020	0	0	0	0	T	0	0	0	0	0	0	0	53	27	40
5/10/2020	0.46	0.43	0.49	0.45	0.37	0.41	0.61	0.50	0.46	0.58	0.49	0.47	61	33	47
5/11/2020	0.02	0	0.01	0.01	0.01	0.01	0.03	0.07	0.01	0	0.02	0.01	47	34	41
5/12/2020	0	0	0	0	T	0	0	0	0	0	0	0	60	34	47
5/13/2020	0	0	0	0	0	0	0	0	0*	0	0	0	57	32	45
5/14/2020	0.49	0.38	0.39	0.45	0.39	0.41	0.59	0.33	0.31	0.52	0.53	0.39	61	44	53
5/15/2020	0.59	0.60	0.59	0.54	0.52	0.58	0.50	0.53	0.62	0.34	0.47	0.46	72	57	65
5/16/2020	0	0	0	0	0	0.01	0	0	0	0	0	0	69	52	61
5/17/2020	0.25	0.22	0.12	0.14	0.11	0.10	0.14	0.10	0.09	0.13	0.07	0.11	60	53	57
5/18/2020	1.53	1.48	1.37	1.64	1.71	0.78	1.96	1.64	1.82	1.95	1.48	1.16	60	56	58
5/19/2020	0.06	0.04	0.11	0.08	0.11	0.03	0.09	0.05	0.08	0.05	0.09	0.07	69	55	62
5/20/2020	0	0	0	0	0	0	0	0	0	0	0	0	65	50	58
5/21/2020	0	0	0	0	0	0	0	0	0	0	0	0	68	54	61
5/22/2020	0.07	0.07	0.10	0.09	0.06	0.10	0.15	0.13	0.16	0.14	0.16	0.13	65	58	62
5/23/2020	0	0	0	0	0	0	0	0	0	0	0	0	72	58	65
5/24/2020	0	0	0.11	0	T	0	0.28	0	0	0.07	0.23	0	87	60	74
5/25/2020	0	0	0	0	0	0	0	0	0	0	0	0	85	65	75
5/26/2020	0	0	0	0	0	0	0	0	0	0	0	0	87	67	77
5/27/2020	0	0	0	0	0	0	0	0	0	0	0	0	80	65	73
5/28/2020	0	0	0.04	0	0.16	0	0.01	0	0.03	0	0.09	0.01	79	68	74
5/29/2020	0.01	0.02	0.14	0.05	0.18	0.07	0.22	0.12	0.11	0.17	0.24	0.16	74	60	67
5/30/2020	0	0	0	0	0	0	0	0	0	0	0	0	70	52	61
5/31/2020	0	0	0	0	0	0	0	0	0	0	0	0	65	45	55
Total	3.48	3.24	3.47	3.45	3.62	2.50	4.58	3.47	3.69	3.95	3.88	2.97	67	49	58

* Missing or suspect data

Table 5-8
Daily Precipitation for June 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
6/1/2020	0.09	0.09	0.03	0.10	0.11	0.12	0.13	0.15	0.17	0.14	0.16	0.16	74	47	61
6/2/2020	0	0	0.01	0	T	0	0	0	0	0	0	0	89	58	74
6/3/2020	0	0	0	0	0	0	0	0	0	0	0	0	83	68	76
6/4/2020	0	0	0	0	T	0	0	0	0	0	0	0	84	61	73
6/5/2020	0	0	0	0	0	0	0	0	0	0	0	0	89	65	77
6/6/2020	0	0	0	0	0	0	0	0	0	0	0	0	83	61	72
6/7/2020	0	0	0	0	0	0	0	0	0	0*	0	0	78	53	66
6/8/2020	0	0	0	0	0	0	0	0*	0	0*	0	0	81	55	68
6/9/2020	0	0	0	0	0.01	0	0	0	0	0	0	0.01	90	58	74
6/10/2020	0.50	0.25	0.01	0.20	0.19	0.14	0.29	0.18	0.17	0.23	0.57	0.51	91	68	80
6/11/2020	0	0	0	0	T	0	0	0	0	0	0	0	78	60	69
6/12/2020	0	0	0	0	0	0	0	0	0	0	0	0	74	56	65
6/13/2020	0	0	0	0	0	0	0	0	0	0	0	0	68	49	59
6/14/2020	0	0	0	0	0	0	0	0	0	0	0	0	70	46	58
6/15/2020	0	0	0.12*	0	0	0	0	0	0	0	0	0	76	50	63
6/16/2020	0	0	0	0	0	0	0	0	0	0	0	0	82	56	69
6/17/2020	0	0	0	0	0	0	0	0	0	0	0*	0	84	57	71
6/18/2020	0	0	0	0	0	0	0	0	0	0	0	0	87	61	74
6/19/2020	0	0	0	0	0.02	0.37	0.29*	0.11	0.04	0.01	0	0*	86	63	75
6/20/2020	0	0	0	0	0	0	0.04	0	0	0.02	0	0	90	64	77
6/21/2020	0	0	0	0	T	0	0	0	0	0	0.11	0.01	85	69	77
6/22/2020	0*	0*	0.03	0.02	0.03	0*	0.04	0.02	0.02	0.02	0.04	0.04	83	69	76
6/23/2020	0.48	0.54	0.54	0.69	0.75	0.92	1.00	0.91	0*	0.99	0.92	1.19	80	62	71
6/24/2020	0.11	0	0	0.02	0.01	0	0	0.01	0*	0	0	0	77	60	69
6/25/2020	0	0	0	0	0	0	0	0.01	0*	0	0	0	82	57	70
6/26/2020	1.52	0.86	0.82	1.06	1.01	0.96	0.83	0*	0.89	0.85	0.64	1.76	84	60	72
6/27/2020	0.27	0.33	0.28	0.26	0.27	0.21	0.71	0*	0.48	0.20	0.25	0.41	86	67	77
6/28/2020	0	0	0	0	0	0	0	0*	0	0	0	0	87	63	75
6/29/2020	0	0	0	0	0	0	0	0*	0	0	0	0	87	65	76
6/30/2020	0	0	0	0	0	0	0	0	0	0	0	0	87	64	76
Total	2.97	2.07	1.84	2.35	2.40	2.72	3.33	1.39*	1.77*	2.46	2.69	4.09	83	60	71

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-9
Daily Precipitation for July 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
7/1/2020	0	0	0	0	0	0	0	0	0	0	0	0	87	68	78
7/2/2020	0	0	0	0	0	0	0	0	0	0	0	0	90	67	79
7/3/2020	0	0	0	0	0	0	0.12	0.01	0	0.01	0.03	0	94	70	82
7/4/2020	0	0	0	0	0	0	0	0	0	0	0	0	90	72	81
7/5/2020	0	0	0	0	0	0	0	0	0	0	0	0	91	64	78
7/6/2020	0	0.75	0	0.03	T	0	0	0	0	0	0	0	92	72	82
7/7/2020	0	0	0.07	0*	0.57	0.51	0.68	0.47	0	0.50	0.21	0.74	95	68	82
7/8/2020	0.08	0	0	0*	t	0	0.16	0.02	0	0.77	0.01	0.17	92	71	82
7/9/2020	0	0	0	0*	0	0	0	0	0	0	0.01	0	92	72	82
7/10/2020	0.27	0.27	0*	0.88*	2.05	1.94	0.88	0.44	1.10	1.54	2.09	1.88	87	71	79
7/11/2020	0	0	0*	0	0	0	0	0.01	0.01	0	0.01	0.04	86	66	76
7/12/2020	0	0	0*	0	0	0	0	0	0	0	0	0	83	67	75
7/13/2020	0	0	0*	0	0	0	0	0	0	0	0	0	82	63	73
7/14/2020	0	0	0*	0	0	0	0	0	0	0	0	0	84	63	74
7/15/2020	0	0	0*	0	0	0	0	0	0	0	0	0	87	69	78
7/16/2020	0.71	0.86	0*	1.21	1.13	1.22	1.25	1.08	1.09	1.04	0.96	1.05	80	69	75
7/17/2020	0	0	0*	0	0	0	0	0	0.01	0	0	0	86	66	76
7/18/2020	0	0	0*	0	0	0	0	0	0	0	0	0	90	69	80
7/19/2020	0.63	1.05	0*	1.13	1.02	0.88	1.02	1.24	0.96	0.79	1.12	1.16	85	71	78
7/20/2020	0	0	0*	0	0	0	0	0	0	0	0	0	86	69	78
7/21/2020	0.01	0	0*	0	0	0	0	0	0	0	0	0	83	66	75
7/22/2020	0	0	0*	0	t	0	0.05	0.01	0.01	0	0.02	0	84	70	77
7/23/2020	0*	0	0*	0	0	0	0	0*	0.11	0.23*	0	0	85	69	77
7/24/2020	-	0.10	0	0*	0	0*	0*	0	0	0	0*	0	85	62	74
7/25/2020	-	0	0	0	0	0	0	0	0	0	0	0	87	66	77
7/26/2020	-	0	0	0	0	0	0	0	0	0	0	0	91	68	80
7/27/2020	-	0	0.14	0	t	0	0.10	0.19	0.10	0	0.33	0	86	71	79
7/28/2020	-	0	0	0.09	0	0	0	0	0	0.10	0	0*	86	65	76
7/29/2020	-	0.21*	0.01	0.38	0.25	0.45	0.63	0.16	0.38	0.28	0.10	0.06	86	69	78
7/30/2020	-	0	0	0	0	0	0	0	0.10	0	0.11	0.10	83	68	76
7/31/2020	-	0	0	0	0	0	0	0	0	0	0	0	77	71	74
Total	1.70*	3.24	0.22*	3.72*	5.02	5.00	4.89	3.63	3.87	5.26	5.00	5.20	87	68	78

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-10
Daily Precipitation for August 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
8/1/2020	-	0.23	0.21	0.19	0.30	0.21	0.37	0.24	0.22	0.46	0.61	0.41	81	64	73
8/2/2020	-	2.31	0.53	0.43	1.20	0.84	1.70	1.24	0.93	2.19	0.48	2.02	75	65	70
8/3/2020	-	0.22	0*	0.33	0.15	0.28	0.21	0.11*	0.04*	0.26	0.27	0.11	84	65	75
8/4/2020	-	0	0.24	0.11*	0.04	0.04*	0*	0.04	0.04	0	0	0.01	76	62	69
8/5/2020	-	0	0	0	0	0	0	0.01	0	0	0	0	75	57	66
8/6/2020	-	0	0	0	0	0	0	0	0	0	0	0*	79	58	69
8/7/2020	-	0*	0	0	0	0	0	0	0	0	0*	0	81	59	70
8/8/2020	-	0	0	0	0	0	0	0	0	0	0	0	84	62	73
8/9/2020	-	0	0	0	0	0	0	0	0	0	0	0	90	65	78
8/10/2020	-	0*	0	0	0	0	0	0	0	0*	0	0	89	71	80
8/11/2020	-	0	0	0	0	0	0	0	0	0	0	0	87	68	78
8/12/2020	-	0	0	0	0	0	0	0	0	0	0	0	85	61	73
8/13/2020	-	0	0	0	0	0	0	0	0	0	0	0	87	61	74
8/14/2020	-	0	0	0	t	0	0	0	0	0	0	0	86	69	78
8/15/2020	-	0	0.01	0.13	t	0	0	0.02	0.21	0	0.01	0	88	69	79
8/16/2020	-	0	0.35	0.48	0.85	0.37	0.78	0.35	0.70	0.51	0.57	0.55	83	65	74
8/17/2020	-	0*	0	0	0	0	0	0	0	0	0	0	83	62	73
8/18/2020	-	0	0	0	0	0	0	0	0	0	0	0	77	60	69
8/19/2020	-	0	0	0	0	0	0	0	0	0	0	0	78	57	68
8/20/2020	-	0	0	0	0	0	0	0	0	0	0	0	81	57	69
8/21/2020	-	0	0	0	0	0	0	0	0	0	0	0	88	60	74
8/22/2020	-	0	0	0	0	0	0	0	0	0	0	0	89	64	77
8/23/2020	-	0	0	0	0	0	0	0	0	0	0	0	90	66	78
8/24/2020	-	0.14	0.21	0.12	0.14	0.13	0.06	0.06	0	0.09	0.04	0.02	90	67	79
8/25/2020	-	0	0	0	0	0	0	0	0	0	0	0	86	71	79
8/26/2020	-	0.11	0.16	0.03	0.03	0.04	0.11	0.29	0.19	0.16	0.26	0.35	87	67	77
8/27/2020	-	0	0	0	0	0	0	0	0	0	0	0	94	73	84
8/28/2020	-	2.84	1.45	2.94	2.83	3.15	3.17	2.83	3.93	3.08	2.83	2.97	78	69	74
8/29/2020	-	0.64	0.66	0.48	0.45	0.44	0.63	0.30	0.27	0.33	0.39	0.36	80	61	71
8/30/2020	-	0	0	0	0	0	0	0	0	0	0	0	77	56	67
8/31/2020	-	0	0	0	0	0	0	0	0	0	0	0	79	61	70
Total	-	6.49	3.82	5.24	5.99	5.50	7.03	5.49	6.53	7.08	5.46	6.80	84	64	74

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-11
Daily Precipitation for September 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
9/1/2020	-	0.18	0.35	0.49	0.94	0.45	0.50	0.39	0.70	0.22	0.44	0.37	84	64	74
9/2/2020	-	0	0	0	0.01	0	0	0.01*	0*	0	0	0	82	62	72
9/3/2020	-	0	0	0	0	0	0	0	0	0	0	0	85	61	73
9/4/2020	-	0	0	0	0	0	0	0	0	0	0	0	75	56	66
9/5/2020	-	0	0	0	0	0	0	0	0	0	0	0	78	53	66
9/6/2020	-	0	0	0	t	0	0	0	0	0	0	0	73	53	63
9/7/2020	-	1.08	0.75	1.06	0.94	1.30	1.23	1.06	1.16	1.11	1.28	1.00	82	66	74
9/8/2020	-	1.88	1.37	1.67	1.58	1.29*	0.83	1.11	1.52	0.85	0.73*	0.98*	67	56	62
9/9/2020	-	0*	0.01*	0	t	0	0	0.01	0	0	0	0	70	58	64
9/10/2020	-	0	0.01	0*	t	0	0*	0	0	0*	0	0	65	57	61
9/11/2020	-	0	0	0	t	0	0	0	0	0	0*	0	67	56	62
9/12/2020	-	0	0	0	0	0	0	0	0	0	0	0	78	56	67
9/13/2020	-	0.40	0.28	0.34	0.23	0.28	0.30	0.28	0.19	0.24	0.26	0.29	76	59	68
9/14/2020	-	0	0	0	0	0	0	0	0	0	0	0	67	53	60
9/15/2020	-	0	0	0	0	0.01	0	0	0	0	0	0	71	49	60
9/16/2020	-	0	0	0	t	0	0	0	0	0	0	0	77	51	64
9/17/2020	-	0	0	0	t	0	0	0	0	0	0	0	69	52	61
9/18/2020	-	0	0	0	0	0	0	0	0	0	0	0	63	44	54
9/19/2020	-	0	0	0	0	0	0	0	0	0	0	0	64	38	51
9/20/2020	-	0	0	0	0	0	0	0	0	0	0	0	67	43	55
9/21/2020	-	0	0	0	0	0	0	0	0	0	0	0	70	45	58
9/22/2020	-	0	0	0	0	0	0	0	0	0	0	0	74	47	61
9/23/2020	-	0	0	0	0	0	0	0	0	0	0	0	80	51	66
9/24/2020	-	0	0	0	0	0	0	0	0	0	0	0	78	56	67
9/25/2020	-	0	0	0	0	0	0	0	0	0	0	0	79	53	66
9/26/2020	-	0	0	0	0	0	0	0	0	0	0	0	82	57	70
9/27/2020	-	0	0	0	t	0	0	0	0	0	0	0	80	63	72
9/28/2020	-	0.14	0.14	0.17	0.15	0.13	0.15	0.12	0.12	0.13	0.09	0.15	67	53	60
9/29/2020	-	0	0	0.01	0	0.01	0	0.01	0.01	0	0.01	0	62	47	55
9/30/2020	-	0.10	0.06	0.12	0.10	0.08	0.08	0.07	0.18	0.05	0.05	0.09	64	47	56
Total	-	3.78	2.97	3.86	3.95	3.55	3.09	3.06	3.88	2.60	2.86	2.88	73	54	63

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-12
Daily Precipitation for October 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
10/1/2020	-	0.04	0.09	0.04	0.03	0.11	0.11*	0.05	0.01	0.12*	0.10	0.08	63	44	54
10/2/2020	-	0	0	0	0	0*	0	0*	0*	0	0	0	57	39	48
10/3/2020	-	0	0	0	0	0	0	0	0	0	0	0	57	39	48
10/4/2020	-	0.12	0.12	0.13	0.12	0.16	0.16	0.13	0.14	0.14	0.12	0.14	56	43	50
10/5/2020	-	0	0	0.01	0	0	0	0.01	0	0	0	0	59	39	49
10/6/2020	-	0*	0*	0*	0	0	0	0	0	0	0	0*	70	46	58
10/7/2020	-	0	0	0	0	0	0	0	0	0	0*	0	73	50	62
10/8/2020	-	0	0	0	0	0	0	0	0	0	0	0	70	42	56
10/9/2020	-	0	0	0	0	0	0	0	0	0	0	0	77	43	60
10/10/2020	-	0	0	0	0	0	0	0	0	0	0	0	76	56	66
10/11/2020	-	0	0	0	0	0	0	0	0	0	0	0	65	53	59
10/12/2020	-	0.18	0.19	0.23	0.20	0.17	0.38	0.19	0.16	0.27	0.27	0.32	71	52	62
10/13/2020	-	0	0	0	0	0	0	0	0	0	0	0	68	44	56
10/14/2020	-	0	0	0	0	0	0	0	0	0	0	0	66	43	55
10/15/2020	-	0.03	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.04	66	44	55
10/16/2020	-	0	0	0	0	0	0	0	0	0	0	0	56	33	45
10/17/2020	-	0	0	0	t	0	0	0	0	0	0	0	56	35	46
10/18/2020	-	0.13	0.08	0.14	0.13	0.10	0.10	0.09	0.13	0.08	0.07	0.10	61	42	52
10/19/2020	-	0.26	0.22	0.27	0.24	0.22	0.22	0.22	0*	0.23	0.20	0.22	47	42	45
10/20/2020	-	0.06	0.09	0.05	0.05	0.09	0.07	0.07	0*	0.07	0.05	0.07	54	41	48
10/21/2020	-	0.29	0.34	0.35	0.38	0.45	0.50	0.37	0.05*	0.48	0.45	0.53	61	49	55
10/22/2020	-	0.68	0.75	0.64	0.62	0.83	1.06	0.74	0.62	0.79	0.87	0.72	60	47	54
10/23/2020	-	0.41	0.33	0.46	0.51	0.41	0.65	0.24	0.26	0.33	0.48	0.40	78	46	62
10/24/2020	-	0	0	0	0	0	0	0	0	0	0	0	50	38	44
10/25/2020	-	0	0	0	0	0	0	0	0	0	0	0	47	35	41
10/26/2020	-	0.01	0	0.01	0.01	0	0	0.01	0.01	0.02	0	0.02	48	41	45
10/27/2020	-	0.08	0.10	0.09	0.09	0.09	0.11	0.10	0.08	0.12	0.10	0.11	42	38	40
10/28/2020	-	0	0	0	0	0	0	0	0	0	0	0	55	40	48
10/29/2020	-	0	0	0	t	0	0	0	0	0	0	0	54	41	48
10/30/2020	-	0	0	0	0	0	0	0	0	0	0	0	41	36	39
10/31/2020	-	0	0	0	0	0	0	0	0	0	0	0	50	29	40
Total	-	2.29	2.35	2.45	2.41	2.67	3.40	2.25	1.49*	2.68	2.74	2.75	60	42	51

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-13
Daily Precipitation for November 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
11/1/2020	-	0.04	0.03	0.04	0.04	0.04	0.06	0.03	0.03	0.04	0.04	0.05	50	33	42
11/2/2020	-	0*	0*	0	0	0	0	0	0	0	0	0	48	28	38
11/3/2020	-	0	0	0*	0	0*	0	0*	0*	0	0	0	59	33	46
11/4/2020	-	0	0	0	0	0	0*	0	0	0*	0	0*	72	42	57
11/5/2020	-	0	0	0	0	0	0	0	0	0	0	0	66	52	59
11/6/2020	-	0	0	0	0	0	0	0	0	0	0	0	71	46	59
11/7/2020	-	0	0	0	0	0	0	0	0	0	0	0	71	46	59
11/8/2020	-	0	0	0	0	0	0	0	0	0	0	0	73	43	58
11/9/2020	-	0	0	0	0	0	0	0	0	0	0*	0	77	47	62
11/10/2020	-	0.34	0.19	0.28	0.21	0.30	0.47	0.21	0.25	0.37	0.36	0.37	77	57	67
11/11/2020	-	0.01	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.02	0.05	0.04	65	35	50
11/12/2020	-	0	0	0	0	0	0	0	0	0	0	0	50	30	40
11/13/2020	-	0	0	0	t	0	0	0	0	0	0	0	48	31	40
11/14/2020	-	0.04	0.08	0.08	0.08	0.09	0.10	0.07	0.07	0.09	0.10	0.08	47	25	36
11/15/2020	-	0.50	0.63	0.67	0.75	0.57	0.78	0.51	0.53	0.66	0.73	0.64	54	39	47
11/16/2020	-	0	0	0	t	0	0	0	0	0	0	0	46	37	42
11/17/2020	-	0	0	0.01	0.03	0	0	0.01	0.02	0.01	0.01	0.01	38	29	34
11/18/2020	-	0	0	0	0	0	0	0	0	0	0	0	43	24	34
11/19/2020	-	0	0	0	0	0	0	0	0	0	0	0	63	37	50
11/20/2020	-	0	0	0	0	0	0	0	0	0	0	0	67	45	56
11/21/2020	-	0	0	0	0	0	0	0	0	0	0	0	47	36	42
11/22/2020	-	0.51	0.60	0.60	0.59	0.59	0.91	0.56	0.53	0.59	0.64	0.56	40	33	37
11/23/2020	-	0.02	0.02	0.01	0.01	0.01	0.02	0.03	0	0.14	0.01	0	47	31	39
11/24/2020	-	0.12	0.08	0.12	0.11	0.08	0.11	0.07	0.10	0.10	0.10	0.08	41	27	34
11/25/2020	-	0.26	0.36	0.43	0.43	0.28	0.30	0.23	0.28	0.32	0.30	0.29	50	40	45
11/26/2020	-	0.09	0.07	0.07	0.08	0.11	0.12	0.11	0.12	0.12	0.16	0.18	51	45	48
11/27/2020	-	0	0	0	t	0	0	0	0	0	0	0	46	36	41
11/28/2020	-	0	0	0	0	0	0	0	0	0	0	0	46	29	38
11/29/2020	-	0	0	0	0	0	0	0	0	0	0	0	50	32	41
11/30/2020	-	0.07	0.13	0.17	0.27	0.14	0.35	0.28	0.23	0.31	0.33	0.30	42	29	36
Total	-	2.00	2.22	2.51	2.63	2.25	3.25	2.14	2.19	2.77	2.83	2.60	55	37	46

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-14
Daily Precipitation for December 2020

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
12/1/2020	-	0	0.03	0.01	0.11	0.05	0.28	0.01	0.04	0	0.12	0.10	36	26	31
12/2/2020	-	0	0	0.09	0	0	0.10	0.17	0	0.19	0	0.11	44	30	37
12/3/2020	-	0*	0*	0*	0	0	0	0	0	0	0	0	44	30	37
12/4/2020	-	0	0	0	0	0	0*	0*	0	0*	0	0*	46	36	41
12/5/2020	-	0	0	0	0	0	0	0	0	0	0	0	38	26	32
12/6/2020	-	0	0	0	0	0	0	0	0	0	0	0	33	24	29
12/7/2020	-	0	0	0	0	0*	0	0	0*	0	0	0	35	26	31
12/8/2020	-	0	0	0	0	0	0	0	0	0	0	0	38	23	31
12/9/2020	-	0	0	0	0	0	0	0	0	0	0	0	43	34	39
12/10/2020	-	0	0	0	0	0	0	0	0	0	0	0	49	25	37
12/11/2020	-	0.01	0	0	t	0	0	0	0	0	0	0	51	30	41
12/12/2020	-	0.65	0.42	0.54	0.51	0.51	0*	0.43	0.53	0.48	0.51	0.46	58	36	47
12/13/2020	-	0	0	0	t	0	0*	0	0	0	0	0	36	31	34
12/14/2020	-	0	0	0	0	0	0*	0	0	0	0	0	35	24	30
12/15/2020	-	0	0	0	0	0	0	0	0	0	0	0	29	20	25
12/16/2020	-	0.06	0.08	0.05	0.13	0.08	0.12	0.01	0.06	0.04	0.04	0.06	31	25	28
12/17/2020	-	0.01	0.02	0.08	0.06	0.03	0.04	0.02	0.04	0.04	0.03*	0.05	31	26	29
12/18/2020	-	0	0	0	t	0	0	0.07	0	0.12	0	0	32	25	29
12/19/2020	-	0	0	0	0.01	0	0.04	0	0	0.03	0.02	0.02	37	27	32
12/20/2020	-	0	0.01	0.01	t	0.01	0	0.01	0.01	0.01	0.01	0	40	28	34
12/21/2020	-	0.09	0.07	0.10	0.09	0.11	0.08	0.09	0.08	0.10	0.10	0.10	39	31	35
12/22/2020	-	0	0	0	t	0	0	0	0	0	0	0	40	33	37
12/23/2020	-	0.04	0.04	0.05	0.04	0.08	0.04	0.06	0.05	0.04	0.03	0.04	50	35	43
12/24/2020	-	0.01	0.02	0.01	0.02	0	0.03	0.01	0.01	0.02	0.03	0.03	51	21	36
12/25/2020	-	0	0.08	0	0.11	0.11	0.21	0	0.04	0	0.11	0.15	24	19	22
12/26/2020	-	0	0*	0.01	t	0	0	0	0	0	0	0	28	20	24
12/27/2020	-	0.05	0*	0.05	0.04	0.03	0.03	0.09	0.03	0.18	0.03	0.03	41	21	31
12/28/2020	-	0.02	0*	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	44	25	35
12/29/2020	-	0.05	0*	0	0.05	0.02	0.03	0	0.01	0	0.04	0.03	31	21	26
12/30/2020	-	0.14	0*	0.20	0.17	0.18	0.22	0.13	0.17	0.21	0.19	0.17	43	28	36
12/31/2020	-	0	0*	0	0	0	0	0	0	0	0	0	33	22	28
Total	-	1.13	0.77*	1.22	1.36	1.23	1.25*	1.12	1.09	1.48	1.28	1.37	40	27	33

Legend

* Missing or suspect data

Notes:

1) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table 5-15
Summary of Precipitation Data for Significant Storm Events

Period: 1/1/2020 through 12/31/2020

Significant Event No.[1]	Major Storm Event[2]	DWTF Peak Hourly Flow Rate (cfs)	Start Date	Stop Date	Preceding Week Rainfall (inches)	Event Precipitation Depth (inches)				Coefficient of Variation[4]
						Minimum	Average[3]	Maximum	Std. Dev	
1	A	393	1/10/2020	1/12/2020	0.15	2.37	2.66	3.14	0.23	9%
2	B	313	3/27/2020	3/29/2020	0.41	1.97	2.12	2.51	0.18	9%
3	-	234	5/17/2020	5/19/2020	1.45	0.91	1.75	2.19	0.37	21%
4	-	176	6/26/2020	6/27/2020	0.78	0.89	1.34	2.05	0.34	25%
5	-	197	7/10/2020	7/10/2020	0.53	0.27	1.21	2.09	0.72	59%
6	-	180	7/16/2020	7/16/2020	1.22	0.71	1.05	1.25	0.16	15%
7	-	196	7/19/2020	7/19/2020	1.06	0.63	1.00	1.24	0.18	18%
8	-	184	8/1/2020	8/2/2020	0.39	0.62	1.57	2.65	0.73	47%
9	C	268	8/28/2020	8/29/2020	0.25	2.11	3.36	4.20	0.51	15%
10	-	232	9/7/2020	9/8/2020	0.46	1.96	2.34	2.96	0.36	15%
11	-	147	10/20/2020	10/23/2020	0.38	0.93	1.57	2.24	0.32	21%

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 gauges used in the analysis for that storm.
2) Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 MGD (271 cfs).
3) The average precipitation value is an arithmetic average of the collection of point gauges listed on Table B-1.
4) The coefficient of variation 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 coefficient of variation means the storm event was spatially uniform over the district, high coefficient of variation means the storm event was highly variable over the district.
5) Major Storm Event C had a peak hourly influent flow rate to the DWTF of 268 cfs, which is slightly less than the 271 cfs limit required for classification as a major storm event. However, there was bypass of secondary treatment during this event and HGLs in the interceptor system were significant. Therefore, this even was includes as a major storm event.

6) PEAK FLOW RATES FOR CONTROLLED FLOW COMMUNITIES

Tables 6-1, 6-2 and 6-3 list the peak hourly flow rates for the flow meters along the Riverdrive Interceptor for each significant/major storm event. The wet weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017) are also given. These MAFLs are used to check whether or not the incoming flow rates are being regulated properly for the significant/major storm events. Exceedences of the MAFLs are highlighted (if any).

Incremental peak hourly flow rates are estimated if the total peak hourly flow rates for the flow meters exceed the MAFLs by 5% or more. Tables 6-4, 6-5 and 6-6 list the incremental peak hourly flow rates for the flow meters along the Riverdrive Interceptor for these events. The incremental wet weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017) are also given. Exceedences of the incremental MAFLs are highlighted (if any).

Appendix D includes hydrographs at select locations for the major storm events.

Table 6-1
Peak Hourly Flow Rates by Meter for Controlled Flow Communities

Meter =		RR-1		EC-6		RD-1		SW	
Total Flow Formula =		[RR-1]		[EC-6]		[RD-1]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		River Rouge, Ecorse, & Lincoln Park (part)		River Rouge, Ecorse, Lincoln Park (part), & Allen Park (part)		Southgate (part) & Wyandotte	
Total Wet Weather MAFL =		11.26 cfs		23.46 cfs		65.82 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches	Start of First Exceedence	1/12/20 18:40	--	1/11/20 10:05	--	1/11/20 9:00	--	1/10/20 20:45	--
	End of Last Exceedence	1/14/20 5:55	--	1/12/20 8:20	--	1/12/20 8:05	--	1/14/20 15:55	--
	Total Time of Exceedence	35:00	--	17:50	--	8:25	--	35:50	--
	Total Volume Above MAFL	--	0.52 MG	--	0.63 MG	--	0.56 MG	--	1.09 MG
	Peak Hourly Flow Rate	--	12.16 cfs	1/11/20 11:00	27.00 cfs	1/11/20 12:10	73.75 cfs	1/11/20 23:15	37.15 cfs
Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches	Start of First Exceedence	3/29/20 14:00	--	3/28/20 10:20	--	3/28/20 5:45	--	3/28/20 0:05	--
	End of Last Exceedence	3/31/20 7:05	--	3/28/20 14:30	--	3/28/20 8:20	--	3/31/20 3:55	--
	Total Time of Exceedence	40:55	--	4:00	--	2:40	--	7:25	--
	Total Volume Above MAFL	--	0.94 MG	--	0.03 MG	--	0.33 MG	--	0.27 MG
	Peak Hourly Flow Rate	--	12.55 cfs	--	24.16 cfs	--	72.57 cfs	--	36.46 cfs
Significant Storm Event 3 May 17-19, 2020 1.75 inches	Start of First Exceedence	5/18/20 16:55	--	--	--	--	--	5/17/20 13:55	--
	End of Last Exceedence	5/21/20 20:25	--	--	--	--	--	5/21/20 8:15	--
	Total Time of Exceedence	60:50	--	--	--	--	--	17:15	--
	Total Volume Above MAFL	--	0.75 MG	--	--	--	--	--	1.27 MG
	Peak Hourly Flow Rate	--	12.42 cfs	--	23.42 cfs	--	61.41 cfs	--	36.61 cfs
Significant Storm Event 4 June 26-27, 2020 1.34 inches	Start of First Exceedence	6/27/20 0:45	--	6/27/20 1:30	--	--	--	6/26/20 22:10	--
	End of Last Exceedence	6/28/20 8:25	--	6/27/20 4:10	--	--	--	6/28/20 2:50	--
	Total Time of Exceedence	31:45	--	2:45	--	--	--	6:40	--
	Total Volume Above MAFL	--	0.50 MG	--	0.05 MG	--	--	--	0.49 MG
	Peak Hourly Flow Rate	--	12.41 cfs	--	24.89 cfs	--	63.35 cfs	--	36.62 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-2
Peak Hourly Flow Rates by Meter for Controlled Flow Communities

Meter =		RR-1		EC-6		RD-1		SW	
Total Flow Formula =		[RR-1]		[EC-6]		[RD-1]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		River Rouge, Ecorse, & Lincoln Park (part)		River Rouge, Ecorse, Lincoln Park (part), & Allen Park (part)		Southgate (part) & Wyandotte	
Total Wet Weather MAFL =		11.26 cfs		23.46 cfs		65.82 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 5 July 10, 2020 1.21 inches	Start of First Exceedence	7/11/20 0:35	--	7/10/20 18:40	--	7/10/20 18:45	--	7/10/20 13:15	--
	End of Last Exceedence	7/12/20 8:20	--	7/11/20 5:30	--	7/11/20 2:05	--	7/10/20 18:35	--
	Total Time of Exceedence	27:00	--	10:55	--	5:20	--	5:25	--
	Total Volume Above MAFL	--	0.50 MG	--	0.82 MG	--	0.27 MG	--	1.34 MG
	Peak Hourly Flow Rate	--	12.38 cfs	--	28.24 cfs	--	72.26 cfs	--	47.35 cfs
Significant Storm Event 6 July 16, 2020 1.05 inches	Start of First Exceedence	7/16/20 10:05	--	--	--	--	--	7/16/20 5:30	--
	End of Last Exceedence	7/17/20 4:20	--	--	--	--	--	7/16/20 7:05	--
	Total Time of Exceedence	18:20	--	--	--	--	--	1:25	--
	Total Volume Above MAFL	--	0.21 MG	--	--	--	--	--	0.06 MG
	Peak Hourly Flow Rate	--	12.08 cfs	--	22.77 cfs	--	61.05 cfs	--	35.58 cfs
Significant Storm Event 7 July 19, 2020 1.00 inches	Start of First Exceedence	7/19/20 16:35	--	7/19/20 13:50	--	7/19/20 13:50	--	7/19/20 14:40	--
	End of Last Exceedence	7/20/20 14:40	--	7/19/20 20:45	--	7/19/20 17:10	--	7/20/20 10:50	--
	Total Time of Exceedence	21:00	--	5:10	--	3:25	--	8:15	--
	Total Volume Above MAFL	--	0.19 MG	--	0.11 MG	--	0.48 MG	--	0.89 MG
	Peak Hourly Flow Rate	--	11.95 cfs	--	25.46 cfs	--	75.74 cfs	--	40.12 cfs
Significant Storm Event 8 August 1-2, 2020 1.57 inches	Start of First Exceedence	8/2/20 4:20	--	8/2/20 4:45	--	8/2/20 5:00	--	8/1/20 11:50	--
	End of Last Exceedence	8/5/20 9:30	--	8/2/20 14:25	--	8/2/20 8:45	--	8/4/20 22:00	--
	Total Time of Exceedence	63:15	--	9:45	--	3:50	--	35:55	--
	Total Volume Above MAFL	--	1.79 MG	--	0.54 MG	--	1.23 MG	--	1.93 MG
	Peak Hourly Flow Rate	--	13.10 cfs	--	32.32 cfs	--	83.67 cfs	--	42.97 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-3
Peak Hourly Flow Rates by Meter for Controlled Flow Communities

Meter =		RR-1		EC-6		RD-1		SW	
Total Flow Formula =		[RR-1]		[EC-6]		[RD-1]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		River Rouge, Ecorse, & Lincoln Park (part)		River Rouge, Ecorse, Lincoln Park (part), & Allen Park (part)		Southgate (part) & Wyandotte	
Total Wet Weather MAFL =		11.26 cfs		23.46 cfs		65.82 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches	Start of First Exceedence	--	--	8/28/20 3:55	--	8/28/20 6:20	--	8/28/20 4:20	--
	End of Last Exceedence	--	--	8/28/20 21:55	--	8/28/20 12:25	--	8/28/20 4:20	--
	Total Time of Exceedence	--	--	16:30	--	6:10	--	0:05	--
	Total Volume Above MAFL	--	--	--	0.78 MG	--	0.75 MG	--	0.00 MG
	Peak Hourly Flow Rate	--	8.71 cfs	--	27.43 cfs	--	74.45 cfs	--	31.95 cfs
Significant Storm Event 10 September 7-8, 2020 2.34 inches	Start of First Exceedence	9/7/20 3:15	--	9/7/20 3:05	--	--	--	9/8/20 3:30	--
	End of Last Exceedence	9/11/20 13:10	--	9/8/20 9:50	--	--	--	9/10/20 21:30	--
	Total Time of Exceedence	82:30	--	3:10	--	--	--	8:05	--
	Total Volume Above MAFL	--	1.33 MG	--	0.02 MG	--	--	--	0.33 MG
	Peak Hourly Flow Rate	--	12.86 cfs	--	23.97 cfs	--	64.11 cfs	--	37.04 cfs
Significant Storm Event 11 October 20-23, 2020 1.57 inches	Start of First Exceedence	10/22/20 11:10	--	--	--	--	--	10/21/20 1:20	--
	End of Last Exceedence	10/24/20 3:20	--	--	--	--	--	10/25/20 17:10	--
	Total Time of Exceedence	10:15	--	--	--	--	--	70:20	--
	Total Volume Above MAFL	--	0.17 MG	--	--	--	--	--	13.15 MG
	Peak Hourly Flow Rate	--	12.40 cfs	--	19.71 cfs	--	60.85 cfs	--	52.95 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%
XX.XX	Exceeds wet weather MAFL coordinated with Veolia

Table 6-4

Incremental Peak Hourly Flow Rates by Meter District for Controlled Flow Communities

Meter District =		RR-1		EC-6		RD-1		SW	
Incremental Flow Formula =		[RR-1]		[EC-6] - [RR-1r]		[RD-1] - [EC-6r]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		Ecorse & Lincoln Park (part)		Lincoln Park (part) & Allen Park (part)		Southgate (part) & Wyandotte	
Incremental Wet Weather MAFL =		11.26 cfs		12.20 cfs		42.36 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches	Start of First Exceedence	1/12/20 18:40	--	1/11/20 9:40	--	1/11/20 8:05	--	1/10/20 20:45	--
	End of Last Exceedence	1/14/20 5:55	--	1/12/20 9:35	--	1/12/20 7:55	--	1/14/20 15:55	--
	Total Time of Exceedence	35:00	--	24:00	--	9:25	--	35:50	--
	Total Volume Above MAFL	--	0.52 MG	--	2.55 MG	--	0.97 MG	--	1.09 MG
	Peak Hourly Flow Rate	--	12.16 cfs	1/11/20 17:30	19.58 cfs	1/11/20 9:15	50.99 cfs	1/11/20 23:15	37.15 cfs
Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches	Start of First Exceedence	3/29/20 14:00	--	3/28/20 6:10	--	3/28/20 3:15	--	3/28/20 0:05	--
	End of Last Exceedence	3/31/20 7:05	--	3/29/20 7:35	--	3/28/20 9:30	--	3/31/20 3:55	--
	Total Time of Exceedence	40:55	--	16:05	--	6:20	--	7:25	--
	Total Volume Above MAFL	--	0.94 MG	--	0.99 MG	--	0.80 MG	--	0.27 MG
	Peak Hourly Flow Rate	--	12.55 cfs	--	17.26 cfs	--	52.17 cfs	--	36.46 cfs
Significant Storm Event 3 May 17-19, 2020 1.75 inches	Start of First Exceedence	5/18/20 16:55	--	--	--	--	--	5/17/20 13:55	--
	End of Last Exceedence	5/21/20 20:25	--	--	--	--	--	5/21/20 8:15	--
	Total Time of Exceedence	60:50	--	--	--	--	--	17:15	--
	Total Volume Above MAFL	--	0.75 MG	--	--	--	--	--	1.27 MG
	Peak Hourly Flow Rate	--	12.42 cfs	--	11.15 cfs	--	40.84 cfs	--	36.61 cfs
Significant Storm Event 4 June 26-27, 2020 1.34 inches	Start of First Exceedence	6/27/20 0:45	--	6/26/20 23:30	--	6/26/20 23:40	--	6/26/20 22:10	--
	End of Last Exceedence	6/28/20 8:25	--	6/27/20 3:55	--	6/26/20 23:50	--	6/28/20 2:50	--
	Total Time of Exceedence	31:45	--	3:20	--	0:15	--	6:40	--
	Total Volume Above MAFL	--	0.50 MG	--	0.03 MG	--	0.00 MG	--	0.49 MG
	Peak Hourly Flow Rate	--	12.41 cfs	--	13.06 cfs	--	42.80 cfs	--	36.62 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-5

Incremental Peak Hourly Flow Rates by Meter District for Controlled Flow Communities

Meter District =		RR-1		EC-6		RD-1		SW	
Incremental Flow Formula =		[RR-1]		[EC-6] - [RR-1r]		[RD-1] - [EC-6r]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		Ecorse & Lincoln Park (part)		Lincoln Park (part) & Allen Park (part)		Southgate (part) & Wyandotte	
Incremental Wet Weather MAFL =		11.26 cfs		12.20 cfs		42.36 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 5 July 10, 2020 1.21 inches	Start of First Exceedence	7/11/20 0:35	--	7/10/20 18:30	--	7/10/20 18:20	--	7/10/20 13:15	--
	End of Last Exceedence	7/12/20 8:20	--	7/11/20 5:20	--	7/10/20 20:05	--	7/10/20 18:35	--
	Total Time of Exceedence	27:00	--	10:55	--	1:50	--	5:25	--
	Total Volume Above MAFL	--	0.50 MG	--	1.34 MG	--	0.27 MG	--	1.34 MG
	Peak Hourly Flow Rate	--	12.38 cfs	--	20.04 cfs	--	54.25 cfs	--	47.35 cfs
Significant Storm Event 6 July 16, 2020 1.05 inches	Start of First Exceedence	7/16/20 10:05	--	--	--	7/16/20 8:30	--	7/16/20 5:30	--
	End of Last Exceedence	7/17/20 4:20	--	--	--	7/16/20 8:45	--	7/16/20 7:05	--
	Total Time of Exceedence	18:20	--	--	--	0:20	--	1:25	--
	Total Volume Above MAFL	--	0.21 MG	--	--	--	0.00 MG	--	0.06 MG
	Peak Hourly Flow Rate	--	12.08 cfs	--	11.75 cfs	--	42.66 cfs	--	35.58 cfs
Significant Storm Event 7 July 19, 2020 1.00 inches	Start of First Exceedence	7/19/20 16:35	--	7/19/20 13:25	--	7/19/20 13:40	--	7/19/20 14:40	--
	End of Last Exceedence	7/20/20 14:40	--	7/19/20 19:00	--	7/19/20 16:50	--	7/20/20 10:50	--
	Total Time of Exceedence	21:00	--	5:40	--	3:15	--	8:15	--
	Total Volume Above MAFL	--	0.19 MG	--	0.21 MG	--	0.57 MG	--	0.89 MG
	Peak Hourly Flow Rate	--	11.95 cfs	--	15.32 cfs	--	54.11 cfs	--	40.12 cfs
Significant Storm Event 8 August 1-2, 2020 1.57 inches	Start of First Exceedence	8/2/20 4:20	--	8/2/20 4:40	--	8/2/20 4:55	--	8/1/20 11:50	--
	End of Last Exceedence	8/5/20 9:30	--	8/2/20 16:25	--	8/2/20 8:45	--	8/4/20 22:00	--
	Total Time of Exceedence	63:15	--	11:50	--	3:55	--	35:55	--
	Total Volume Above MAFL	--	1.79 MG	--	1.75 MG	--	0.99 MG	--	1.93 MG
	Peak Hourly Flow Rate	--	13.10 cfs	--	21.24 cfs	--	57.18 cfs	--	42.97 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-6

Incremental Peak Hourly Flow Rates by Meter District for Controlled Flow Communities

Meter District =		RR-1		EC-6		RD-1		SW	
Incremental Flow Formula =		[RR-1]		[EC-6] - [RR-1r]		[RD-1] - [EC-6r]		[SW]+[SWB]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		Ecorse & Lincoln Park (part)		Lincoln Park (part) & Allen Park (part)		Southgate (part) & Wyandotte	
Incremental Wet Weather MAFL =		11.26 cfs		12.20 cfs		42.36 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches	Start of First Exceedence	--	--	8/28/20 3:35	--	8/28/20 4:10	--	8/28/20 4:20	--
	End of Last Exceedence	--	--	8/29/20 8:15	--	8/28/20 12:25	--	8/28/20 4:20	--
	Total Time of Exceedence	--	--	27:30	--	5:10	--	0:05	--
	Total Volume Above MAFL	--	--	--	3.48 MG	--	0.39 MG	--	0.00 MG
	Peak Hourly Flow Rate	--	8.71 cfs	--	21.88 cfs	--	49.13 cfs	--	31.95 cfs
Significant Storm Event 10 September 7-8, 2020 2.34 inches	Start of First Exceedence	9/7/20 3:15	--	9/7/20 2:40	--	9/8/20 8:50	--	9/8/20 3:30	--
	End of Last Exceedence	9/11/20 13:10	--	9/8/20 11:05	--	9/8/20 8:55	--	9/10/20 21:30	--
	Total Time of Exceedence	82:30	--	3:35	--	0:10	--	8:05	--
	Total Volume Above MAFL	--	1.33 MG	--	0.11 MG	--	0.00 MG	--	0.33 MG
	Peak Hourly Flow Rate	--	12.86 cfs	--	15.90 cfs	--	43.32 cfs	--	37.04 cfs
Significant Storm Event 11 October 20-23, 2020 1.57 inches	Start of First Exceedence	10/22/20 11:10	--	10/23/20 16:10	--	10/22/20 12:25	--	10/21/20 1:20	--
	End of Last Exceedence	10/24/20 3:20	--	10/23/20 16:45	--	10/23/20 17:15	--	10/25/20 17:10	--
	Total Time of Exceedence	10:15	--	0:40	--	8:40	--	70:20	--
	Total Volume Above MAFL	--	0.17 MG	--	0.01 MG	--	0.66 MG	--	13.15 MG
	Peak Hourly Flow Rate	--	12.40 cfs	--	13.20 cfs	--	47.77 cfs	--	52.95 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%
XX.XX	Exceeds wet weather MAFL coordinated with Veolia

7) WET WEATHER VOLUMES FOR NON-CONTROLLED FLOW COMMUNITIES

The peak 96-hour wet weather volumes for the non-controlled flow communities during the major storm events were estimated using the flow monitoring data set. These volumes were compared to those for the 4.42-inch storm event used in the design of the Downriver tunnel system as given on Table 7-1. Exceedences of the peak 96-hour volumes allocated to each community during the major storm events during this reporting period are highlighted (if any). Table 7-2 lists the peak 96-hour incremental volumes for each community by meter district component. Table 7-3 lists the peak 96-hour incremental volumes for each meter district by community component. Table 7-4 lists the peak hourly flow rates and 96-hour volumes at each meter, and Table 7-5 lists the peak hydraulic grade lines at each meter for the major storm event.

8) METER DATA SUMMARY

The flow monitoring data were reviewed and edited as summarized on Table 8-1. The flow monitoring data is summarized in more detail in Appendix C. This appendix includes: charts detailing data and meter maintenance issues that occurred during these months, and average daily flow rate plots for each meter. Data for each meter was carried through the analysis with the following exceptions:

- A rating curve is used to estimate flow rate for Meter RV-1 under extremely low flow rate conditions.
- Flow rates are recalculated to account for sediment deposits for Meter SW. Details of the flow rate recalculation are provided in the Wayne County Downriver Sewage Disposal System Annual System Monitoring Report for 2013.
- The incremental flow rates for Meter TPS + IPS and P-1 districts cannot be confidently and accurately calculated because they are too small relative to the total flow rate. Therefore, the incremental flow rates for the Meter TPS+IPS and P-1 districts were estimated using a ratio of each district's incremental population to the cumulative population of the upstream meters (Meters PC-1, PD-1, PB-1, PA-2 and P-2) multiplied by the sum of the cumulative district flow rates for Meters PC-1, PD-1, PB-1, PA-2 and P-2.
- Overflows to the DRSTS were calculated using the level sensor data and the previously developed ratings curves except for Meter TSO. The flow rates calculated with the area-velocity measurements were used for Meter TSO.

Table 7-1
Peak 96 Hour Total Volumes for Non-Controlled Flow Communities

Community	Total Volume (MG)			
	4.42 inch Design Storm	Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches	Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches	Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches
Allen Park (part)	29.23	46.07	36.27	21.89
Belleville	4.86	5.20	4.74	2.28
Brownstown Twp.	20.90	14.74	13.83	7.78
Dearborn Heights	43.76	39.99	35.15	20.79
Riverview	28.30	24.64	23.19	16.32
Romulus	88.43	55.09	56.53	23.10
Southgate (part)	31.24	48.78	40.41	18.29
Taylor	164.45	128.24	97.72	56.88
Van Buren Twp.	7.04	7.44	6.78	3.26
Total	418.21	370.20	314.62	170.59

Legend:

XX.XX	Exceeds design storm volume by 0 to 20%
XX.XX	Exceeds design storm volume by > 20%

Table 7-2
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Community

Community	Meter District	Year 2010 Incremental Population	Peak 96 Hour Incremental Volume (MG)		
			Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches	Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches	Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches
Allen Park	PC-1	1,019	2.77	1.74	1.05
	P-1	3,332	13.36	10.64	4.39
	RD-1	18,179	41.62	38.49	32.90
	APO-1 + APO-2	0	29.95	23.89	16.46
	Total	22,531	87.70	74.77	54.79
Belleville	PA-4	3,993	5.20	4.74	2.28
Brownstown Twp.	P-2	10,397	14.30	13.39	7.60
	PA-2	248	0.44	0.44	0.17
	Total	10,645	14.74	13.83	7.78
Dearborn Hts.	TB-1	19,152	39.99	35.15	20.79
Ecorse	EC-6	9,515	15.76	13.71	11.17
Lincoln Park	EC-6	3,795	6.29	5.47	4.46
	RD-1	34,347	78.64	72.73	62.16
	Total	38,142	84.93	78.20	66.62
River Rouge	RR-1	7,903	25.83	25.87	23.12
Riverview	RV-1	12,486	24.64	23.19	16.32
Romulus	DMA-1	0	1.61	0.61	0.92
	PA-3	11,371	25.95	24.78	13.21
	DMA-2	0	6.22	10.51	0.57
	PD-2	9,532	21.31	20.63	8.40
	Total	20,904	55.09	56.53	23.10
Southgate	P-1	10,637	42.63	33.97	14.00
	PB-1	4,459	5.35	5.78	3.85
	SW	14,752	32.06	33.55	31.45
	TPS+IPS	199	0.80	0.66	0.44
	Total	30,047	80.84	73.96	49.74
Taylor	P-2	262	0.36	0.34	0.19
	PA-2	13,270	23.37	23.75	9.28
	PB-1	6,462	8.03	8.67	5.77
	TB-1	5,339	11.15	9.80	5.79
	PC-1	25,700	69.79	43.92	26.50
	PD-1	12,100	15.55	11.25	9.34
	Total	63,131	128.24	97.72	56.88
Van Buren Twp.	PA-4	5,719	7.44	6.78	3.26
Wyandotte	SW	25,883	56.25	58.86	55.18

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

Table 7-3
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches		Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches		Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)	Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)	Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	29.9	29.9	23.9	23.9	16.5	16.5
DMA-1	[DMA-1]	Romulus	0	100.0%	1.6	1.6	0.6	0.6	0.9	0.9
DMA-2	[DMA-2]	Romulus	0	100.0%	6.2	6.2	10.5	10.5	0.6	0.6
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	22.0	15.8	19.2	13.7	15.6	11.2
		Lincoln Park	3,795	28.5%		6.3		5.5		4.5
		Total	13,310	100%		22.0		19.2		15.6
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	56.0	13.4	44.6	10.6	18.4	4.4
		Southgate	10,637	76.1%		42.6		34.0		14.0
		Total	13,969	100%		56.0		44.6		18.4
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	14.7	14.3	13.7	13.4	7.8	7.6
		Taylor	262	2.5%		0.4		0.3		0.2
		Total	10,659	100%		14.7		13.7		7.8
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	23.8	0.4	24.2	0.4	9.5	0.2
		Taylor	13,270	98.2%		23.4		23.7		9.3
		Total	13,517	100%		23.8		24.2		9.5
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	25.9	25.9	24.8	24.8	13.2	13.2
PA-4	[PA-4]	Belleville	3,993	41.1%	12.6	5.2	11.5	4.7	5.5	2.3
		Van Buren Twp.	5,719	58.9%		7.4		6.8		3.3
		Total	9,712	100%		12.6		11.5		5.5
PB-1	[PB-1]	Southgate	4,459	40.0%	13.4	5.4	14.5	5.8	9.6	3.8
		Taylor	6,462	60.0%		8.0		8.7		5.8
		Total	10,921	100%		13.4		14.5		9.6
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	72.6	2.8	45.7	1.7	27.6	1.1
		Taylor	25,700	96.2%		69.8		43.9		26.5
		Total	26,719	100%		72.6		45.7		27.6
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	15.5	15.5	11.2	11.2	9.3	9.3
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	21.3	21.3	20.6	20.6	8.4	8.4
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	120.3	41.6	111.2	38.5	95.1	32.9
		Lincoln Park	34,347	65.4%		78.6		72.7		62.2
		Total	52,526	100%		120.3		111.2		95.1
RR-1	[RR-1]	River Rouge	7,903	100.0%	25.8	25.8	25.9	25.9	23.1	23.1
RV-1	[RV-1]	Riverview	12,486	100.0%	24.6	24.6	23.2	23.2	16.3	16.3
SW	[SW]+[SWB]	Southgate	14,752	36.3%	88.3	32.1	92.4	33.5	86.6	31.5
		Wyandotte	25,883	63.7%		56.2		58.9		55.2
		Total	40,635	100%		88.3		92.4		86.6
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	51.1	40.0	45.0	35.2	26.6	20.8
		Taylor	5,339	21.8%		11.1		9.8		5.8
		Total	24,491	100%		51.1		45.0		26.6
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.8	0.8	0.7	0.7	0.4	0.4

Notes:

1) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

2) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate.

Table 7-4
Peak Flow Rates for Major Storm Events

System	Meter	Location	Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches				Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches				Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches			
			Peak Hour		Peak 96 Hour		Peak Hour		Peak 96 Hour		Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)	Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)	Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	1/11/20 10:35	16.0	1/11/20 22:35	36.4	3/30/20 2:50	16.0	3/29/20 0:45	37.9	8/28/20 11:45	15.7	8/30/20 23:55	26.4
	PC-1	Pelham Interceptor North of Goddard Road	1/11/20 9:05	28.1	1/11/20 23:30	65.5	3/28/20 5:25	27.3	3/28/20 15:20	64.6	8/28/20 6:50	31.8	8/28/20 4:00	49.4
	DMA-2	Goddard near Harrison	1/12/20 13:30	2.7	1/12/20 12:55	6.2	3/28/20 11:10	4.1	3/31/20 23:55	10.5	8/28/20 11:20	0.8	8/28/20 5:50	0.6
	PD-2	Goddard Interceptor West of Inkster Road	1/11/20 13:10	23.6	1/11/20 8:50	27.5	3/28/20 8:35	19.5	3/28/20 6:15	31.1	8/28/20 12:35	11.7	8/28/20 6:50	9.0
	PD-1	Goddard Interceptor West of Allen Road	1/11/20 14:50	32.7	1/11/20 8:35	40.7	3/28/20 9:40	27.5	3/28/20 5:20	42.4	8/28/20 11:00	16.5	8/28/20 3:40	18.3
	PB-1	Northline Interceptor West of Fordline Road	1/11/20 12:40	15.4	1/10/20 22:30	13.4	3/28/20 7:10	16.1	3/28/20 1:30	14.5	8/28/20 10:50	11.7	8/28/20 3:30	9.6
	PA-4	Eureka Interceptor near Hannan Road	1/11/20 19:35	7.4	1/11/20 19:00	12.6	3/28/20 9:30	7.1	3/28/20 4:00	11.5	8/28/20 11:45	4.6	8/28/20 9:20	5.5
	DMA-1	Detroit Metropolitan Airport	1/11/20 12:00	1.2	1/12/20 22:00	1.6	3/28/20 6:55	0.5	3/28/20 0:00	0.6	8/28/20 8:50	0.7	8/28/20 0:00	0.9
	PA-3	Eureka Interceptor at Inkster Road	1/11/20 12:30	17.4	1/11/20 9:35	33.5	3/28/20 7:25	17.0	3/28/20 5:15	31.6	8/28/20 18:35	11.7	8/28/20 9:00	19.6
	PA-2	Eureka Interceptor at Allen Road	1/11/20 12:45	29.9	1/11/20 10:05	51.5	3/28/20 7:00	29.6	3/28/20 2:55	50.6	8/28/20 18:40	23.3	8/28/20 6:35	29.0
	PA-1	Eureka Interceptor West of Fordline Road	1/11/20 12:40	41.7	1/11/20 8:10	60.5	3/28/20 7:30	40.9	3/28/20 2:35	55.8	8/28/20 19:00	32.2	8/28/20 6:10	33.2
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	1/11/20 13:50	13.7	1/11/20 1:20	14.7	3/28/20 8:05	15.0	3/28/20 2:25	13.7	8/28/20 18:50	8.6	8/28/20 0:00	7.8
	P-1	Pennsylvania Interceptor East of Fort Street	1/11/20 12:15	136.5	1/11/20 3:45	218.5	3/28/20 7:45	135.6	3/28/20 3:45	218.8	8/28/20 21:10	106.9	8/28/20 5:35	131.7
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	1/11/20 12:05	39.7	1/10/20 21:20	24.6	3/28/20 7:00	43.9	3/28/20 0:40	23.2	8/28/20 18:15	31.8	8/28/20 4:10	16.3
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	1/12/20 20:55	12.1	1/11/20 1:20	25.8	3/30/20 0:00	12.5	3/28/20 1:25	25.9	8/28/20 4:10	8.7	8/30/20 23:55	23.1
	EC-6	Riverdrive Interceptor South of Southfield Road	1/11/20 11:00	27.0	1/11/20 1:40	47.9	3/28/20 12:00	24.2	3/28/20 2:30	45.1	8/28/20 6:30	27.4	8/28/20 3:40	38.7
	RD-1	Riverdrive Interceptor North of Northline Road	1/11/20 12:10	73.8	1/11/20 2:00	168.1	3/28/20 6:50	72.6	3/28/20 2:35	156.3	8/28/20 11:35	74.4	8/28/20 4:00	133.8
	SW + SWB	Southgate-Wyandotte Connection	1/11/20 23:15	37.1	1/11/20 23:15	88.3	3/31/20 19:45	44.7	3/29/20 1:30	92.4	8/28/20 4:20	31.9	8/30/20 23:55	86.6
Tunnel Connection Meters	TSO	At Pelham Basin	1/11/20 20:55	33.9	1/11/20 9:05	14.8	3/29/20 4:30	17.1	3/28/20 3:50	7.1	8/28/20 12:20	1.9	8/28/20 3:35	0.2
	APO-1	Belmont and Rosedale	1/11/20 12:25	≥ 55.8	1/11/20 9:45	11.0	3/28/20 8:40	≥ 55.8	3/28/20 6:05	7.0	8/28/20 11:20	21.7	8/28/20 4:20	4.0
	APO-2	Belmont and Quandt	1/11/20 10:50	≥ 46.8	1/11/20 9:25	19.0	3/28/20 6:15	≥ 46.8	3/28/20 5:45	16.9	8/28/20 6:20	≥ 46.8	8/28/20 4:00	12.5
	CHPO	Pelham Road South of R.R.	1/11/20 13:05	147.9	1/11/20 7:30	26.5	3/28/20 8:05	109.1	3/28/20 3:50	14.7	8/28/20 10:20	14.2	8/28/20 5:20	3.9
	CPO	Pelham Road North of Haskell	1/11/20 13:05	143.3	1/11/20 8:25	17.0	3/28/20 8:15	66.7	3/28/20 4:55	4.2	8/28/20 10:40	14.9	8/28/20 5:50	0.7
	PDO	Allen Road and Goddard	1/11/20 14:05	52.9	1/11/20 13:10	2.4	3/28/20 0:00	0.0	11/25/37 0:00	0.0	8/28/20 0:00	0.0	11/25/37 0:00	0.0
	ER-2	Eureka Road and Inkster	1/11/20 14:35	7.6	1/11/20 12:35	6.7	3/28/20 10:50	7.9	3/28/20 7:50	5.3	8/28/20 17:50	0.4	8/28/20 17:40	0.0
	ER-1	Allen Road and Eureka Road	1/11/20 15:45	12.7	1/11/20 11:25	12.5	3/28/20 12:55	13.2	3/28/20 6:00	10.5	8/28/20 23:45	0.8	8/28/20 14:45	0.1
	PM-1	Pennsylvania Ave. at Fordline	1/11/20 14:30	187.5	1/11/20 12:30	23.2	3/28/20 8:00	186.4	3/28/20 6:45	11.6	8/28/20 17:40	15.1	8/28/20 12:35	0.8
DWTF	IPS + TPS	DWTF Influent	1/11/20 14:00	393.0	1/11/20 0:00	602.9	3/28/20 8:00	312.5	3/28/20 0:00	552.5	8/28/20 18:35	268.0	8/28/20 0:00	413.1

Notes:

1) Wastewater levels at meters APO-1 and APO-2 exceeded the level sensors top of range. Consequently, the peak hourly flow rates for these meters could not be estimated from level and the peak 96-hour volumes were estimated. Meters APO-1 and APO-2 estimate flow from Allen Park to the DRSTS. The total 96-hour volume from Allen Park's other flow meter districts (P-1, PC-1 and RD-1) were compared to the total 96-hour volume from the 4.42-inch design storm and were used to estimate the total 96-hour volume from meters APO-1 and APO-2 for this event.

Table 7-5
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Significant Storm Event 1 Major Storm Event A January 10-12, 2020 2.66 inches				Significant Storm Event 2 Major Storm Event B March 27,-29 2020 2.12 inches				Significant Storm Event 9 Major Storm Event C August 28-29, 2020 3.36 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)		Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)		Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.9	565.0	4.5	1/11/20 13:35 - 1/11/20 15:40	≥8.6	≥573.6	⊘	3/28/20 9:25	7.5	572.5	◉	8/28/20 11:20	4.2	569.1	○
	PD-2	Goddard Interceptor West of Inkster Road	623.3	598.3	4.5	1/11/20 14:00	2.7	601.0	○	3/28/20 8:55	2.2	600.6	○	8/28/20 13:15	1.6	599.9	○
	PD-1	Goddard Interceptor West of Allen Road	602.2	575.5	4.0	1/11/20 14:35	2.8	578.4	○	3/28/20 9:45	2.6	578.1	○	8/28/20 11:10	2.0	577.5	○
	PB-1	Northline Interceptor West of Fordline Road	596.1	569.5	3.0	1/11/20 13:00	2.1	571.7	○	3/28/20 7:35	2.1	571.6	○	8/28/20 11:15	1.8	571.3	○
	PA-4	Eureka Interceptor near Hannan Road	656.9	635.1	3.5	1/11/20 19:55	1.6	636.7	○	3/28/20 10:20	1.6	636.7	○	8/28/20 12:30	1.2	636.3	○
	PA-3	Eureka Interceptor at Inkster Road	622.6	601.0	3.5	1/11/20 12:45	2.4	603.4	○	3/28/20 7:45	2.4	603.4	○	8/28/20 19:10	1.9	602.9	○
	PA-2	Eureka Interceptor at Allen Road	601.5	576.2	4.0	1/11/20 14:00	3.9	580.1	○	3/28/20 8:45	3.9	580.1	○	8/28/20 19:15	2.6	578.8	○
	PA-1	Eureka Interceptor West of Fordline Road	594.9	570.4	4.0	1/11/20 12:50	3.0	573.4	○	3/28/20 7:45	3.0	573.4	○	8/28/20 19:15	2.5	572.9	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.9	577.3	3.0	1/11/20 13:55	2.0	579.4	○	3/28/20 8:40	2.2	579.6	○	8/28/20 19:10	1.5	578.9	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.4	545.4	6.5	1/11/20 13:20 - 1/11/20 16:50	≥12.1	≥557.5	⊘	3/28/20 8:50 - 3/28/20 10:40	≥12.0	≥557.4	⊘	8/28/20 18:50	9.4	554.8	◉
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.3	544.1	3.5	1/11/20 14:55	12.8	556.9	◉	3/28/20 9:15	14.2	558.3	◉	8/28/20 18:50	9.2	553.3	◉
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.2	566.2	3.0	1/11/20 14:25	8.9	575.1	◉	3/28/20 9:35	8.0	574.2	◉	8/28/20 12:15	8.1	574.3	◉
	EC-6	Riverdrive Interceptor South of Southfield Road	579.3	554.5	4.5	1/11/20 14:20	15.5	570.0	◉	3/28/20 7:05	13.7	568.2	◉	8/28/20 12:10	14.7	569.3	◉
	RD-1	Riverdrive Interceptor North of Northline Road	577.8	550.7	6.0	1/11/20 13:45	14.5	565.1	◉	3/28/20 9:25	14.7	565.4	◉	8/28/20 12:55	12.2	562.9	◉
	SW	On Southgate-Wyandotte Connection	578.0	538.0	6.5	1/11/20 13:45	16.4	554.4	◉	3/28/20 9:20	17.3	555.3	◉	8/28/20 18:40	15.1	553.1	◉
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.2	585.3	4.0	1/11/20 21:10	2.5	587.8	○	3/29/20 4:50	1.9	587.2	○	8/28/20 12:30	0.8	586.2	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.6	565.5	3.0	1/11/20 12:25 - 1/11/20 16:50	≥10.2	≥575.7	⊘	3/28/20 8:40 - 3/28/20 10:00	≥10.2	≥575.7	⊘	8/28/20 6:50	9.8	575.3	◉
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.2	571.0	3.0	1/11/20 10:50 - 1/11/20 16:35	≥4.8	≥575.8	⊘	3/28/20 6:15 - 3/28/20 9:40	≥4.9	≥575.9	⊘	8/28/20 6:20 - 8/28/20 12:10	≥4.7	≥575.7	⊘
	CHPO	Pelham Interceptor South of R.R.	603.0	566.5	4.5	1/11/20 13:30	9.9	576.3	◉	3/28/20 8:25	6.7	573.1	◉	8/28/20 10:50	4.3	570.8	○
	CPO	Pelham Interceptor North of Haskell Road	601.5	568.0	4.5	1/11/20 13:30	10.1	578.1	◉	3/28/20 8:40	5.7	573.7	◉	8/28/20 11:05	4.5	572.5	◉
	PDO	Goddard Interceptor at Allen Road	602.0	570.0	4.0	1/11/20 14:35	5.4	575.3	◉	3/28/20 9:20	3.5	573.4	○	8/28/20 11:10	0.7	570.7	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.7	591.5	4.5	1/11/20 14:50	1.3	592.8	○	3/28/20 10:55	1.4	592.8	○	8/28/20 18:10	0.4	591.9	○
	ER-1	Eureka Relief Sewer at Allen Road	602.8	560.5	4.5	1/11/20 15:10	6.6	567.1	◉	3/28/20 9:25	4.9	565.4	◉	8/29/20 0:05	0.2	560.7	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.1	548.9	6.5	1/11/20 14:50	12.7	561.6	◉	3/28/20 8:25	13.5	562.4	◉	8/28/20 0:00	0.0	548.9	○
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.6	543.0	7.0	-	-	-	-	3/28/20 8:50 - 3/28/20 12:40	≥9.1	≥552.1	⊘	8/28/20 14:00 - 8/28/20 20:35	≥9.1	≥552.1	⊘
	L-5	Pelham and Champaign	601.3	546.8	7.0	1/11/20 12:20 - 1/12/20 6:10	≥9.9	≥556.7	⊘	3/28/20 8:05 - 3/28/20 13:50	≥9.8	≥556.6	⊘	8/28/20 12:35 - 8/28/20 20:55	≥9.8	≥556.6	⊘
	L-7	Rosedale and Belmont	593.2	552.9	6.5	1/11/20 13:00 - 1/12/20 3:50	≥10.0	≥562.9	⊘	3/28/20 7:55 - 3/28/20 11:20	≥10.0	≥562.9	⊘	8/28/20 12:15 - 8/28/20 16:55	≥9.6	≥562.5	⊘
	L-8	Pennsylvania Ave. at Fordline	592.2	537.5	7.5	1/11/20 13:10 - 1/12/20 20:20	≥7.3	≥544.8	⊘	3/28/20 8:35 - 3/28/20 17:45	≥7.3	≥544.8	⊘	8/28/20 12:00 - 8/29/20 8:00	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.5	NA	1/11/20 13:40	16.0	544.5	○	3/28/20 9:05	22.2	550.6	○	8/28/20 13:35	20.4	548.8	○
	TPS	Tunnel Pump Station Wet Well	-	524.7	NA	1/11/20 14:55	24.0	548.7	○	3/28/20 9:30	25.0	549.7	○	8/28/20 13:35	20.2	544.9	○

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

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 8-1
Meter Data Review and Fixes for 2020 Q4

Meter	Start	Stop	Description of the Problem	Dry Period	Wet Period	Fix
CPO	6/17/2020	7/17/2020	Conduit supporting ultrasonic level sensor rusted through and broke	X	X	The conduit was repaired/replaced and the level sensor calibrated Correlation to Meter CHPO
CHPO	10/1/2020	10/13/2020	Unable to communicate with device due to phoneline issue, and Power-Up Cold Start issue once communications restored.	X		Phoneline was repaired and device reprogrammed. Flow rate assumed to be zero.
L-3	1/4/2020	1/12/2020	No data. Data downloaded locally once per month.	X	X	No fix
L-5	10/21/2020	11/6/2020	No data due to battery being dead upon arrival at site. Data downloaded locally once per month.	X	X	No fix
	12/9/2020	12/31/2020		X	X	
L-8	11/29/2021	12/14/2020	Device recorded a depth of zero feet for a period of about sixteen days. Data downloaded locally once per month and there was no issue during service visit.	X	X	No fix
P-1	5/30/2020	6/4/2020	Bad velocity data	X		Rating curve to depth
	9/7/2020	9/10/2020	Metering cabinet lost power		X	A fuse in the cabinet was replaced Correlation to sum of upstream Meters [P-2] + [PA-1] + [PB-1] + [PC-1] + [PD-1]
	11/15/2020	11/16/2020	Meter lost power for about 12-hours	X	X	Diurnal pattern
PC-1	6/27/2020	7/7/2020	Electrical outlet failed	X	X	Electrical outlet replaced Correlation to Meter P-1
	7/14/2020	7/21/2020	Conduit supporting ultrasonic level sensor rusted through and broke	X	X	The conduit was repaired/replaced and the level sensor calibrated. Flow rate recalculated with secondary level sensor values.
	10/10/2020	10/17/2020	Intermittent periods of bad velocity data.	X		Bad velocity data likely caused by debris on velocity sensor. Issue resolved itself before corrective maintenance was performed. Flow rate estimated with rating curve to depth data.
	11/3/2020	11/10/2020		X		
PM-1	8/1/2020	9/7/2020	The UPS tripped causing the level sensor to lose power	X	X	The level sensor was plugged directly into the electrical outlet Depth correlation to Meter P-1
	9/7/2020	9/10/2020		X	X	Depth correlation to Meter RV-1
	9/10/2020	9/18/2020		X	X	Depth correlation to Meter P-1
RR-1	1/1/2020	1/7/2020	Water intrusion in the meter	X	X	Meter was replaced Correlation to Meter EC-6
	3/2/2020	3/5/2020	Data unavailable due to a monitor malfunction	X	X	Meter was replaced Correlation to Meter EC-6

Appendix A

Additional Monthly Summary Tables

Table A-1

Incremental Flow Rates Summarized by Meter District with Community Components

Meter District	Community	Year 2010 Incremental Population	Meter District Percentage	January 2020			February 2020			March 2020			April 2020			May 2020			June 2020		
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	Dearborn Heights	19,152	78.2%	7.98	4.47		4.39	4.37		5.81	4.25		5.70	4.62		5.65	3.74		2.93	2.58	
	Taylor	5,339	21.8%	2.22	1.24	151	1.22	1.22	147	1.62	1.18	143	1.59	1.29	156	1.57	1.04	126	0.82	0.72	87
	Total	24,491	100.0%	10.21	5.71		5.61	5.59		7.43	5.43		7.29	5.91		7.22	4.78		3.75	3.30	
PC-1	Allen Park	1,019	3.8%	0.41	0.23		0.23	0.22		0.30	0.22		0.26	0.23		0.25	0.19		0.15	0.14	
	Taylor	25,700	96.2%	10.22	5.92	149	5.67	5.65	142	7.49	5.42	136	6.66	5.89	148	6.38	4.80	121	3.90	3.48	88
	Total	26,719	100.0%	10.63	6.15		5.90	5.88		7.79	5.64		6.92	6.13		6.63	4.99		4.06	3.62	
DMA-2	Romulus	0	100.0%	1.88	1.79	--	1.83	1.86	--	1.89	1.72	--	3.32	2.93	--	1.93	0.62	--	0.29	0.15	--
PD-2	Romulus	9,532	100.0%	4.42	2.98	202	3.80	3.79	257	4.29	3.50	237	3.83	3.47	235	3.56	2.77	188	2.28	2.18	148
PD-1	Taylor	12,100	100.0%	3.31	2.37	127	1.79	1.82	97	2.45	2.00	107	2.06	1.97	105	2.30	2.20	117	1.80	1.74	93
PB-1[1]	Taylor	6,462	60.0%	1.65	1.14	114	1.21	1.20	121	1.64	1.24	124	1.34	1.20	120	1.36	1.05	105	0.96	0.90	90
	Southgate	4,459	40.0%	1.10	0.76	110	0.81	0.80	116	1.09	0.83	120	0.90	0.80	116	0.91	0.70	102	0.64	0.60	87
	Total	10,921	100.0%	2.75	1.90	112	2.02	2.01	119	2.74	2.06	122	2.24	2.01	119	2.27	1.75	104	1.60	1.50	89
PA-4	Belleville	3,993	41.1%	1.40	1.10		1.19	1.19		1.27	1.15		1.03	0.98		0.99	0.87		0.72	0.72	
	Van Buren Twp	5,719	58.9%	2.01	1.58	178	1.70	1.71	193	1.82	1.65	186	1.48	1.41	159	1.42	1.24	141	1.03	1.03	117
	Total	9,712	100.0%	3.41	2.67		2.89	2.90		3.09	2.80		2.52	2.39		2.41	2.11		1.75	1.76	
DMA-1	Romulus (Airport)	0	100.0%	0.63	0.64	--	0.63	0.63	--	0.43	0.49	--	0.16	0.15	--	0.20	0.19	--	0.28	0.27	--
PA-3	Romulus	11,371	100.0%	6.64	5.36	304	5.40	5.39	307	6.00	5.37	305	5.71	5.37	305	5.09	4.43	252	3.90	3.84	218
PA-2	Taylor	13,270	98.2%	4.27	2.44		2.72	2.72		3.78	2.69		3.21	2.90		3.34	2.73		1.83	1.78	
	Brownstown Twp	248	1.8%	0.08	0.05	119	0.05	0.05	132	0.07	0.05	131	0.06	0.05	141	0.06	0.05	133	0.03	0.03	87
	Total	13,517	100.0%	4.35	2.49		2.77	2.77		3.85	2.74		3.27	2.96		3.40	2.78		1.87	1.81	
P-2	Brownstown Twp	10,397	97.5%	3.38	2.66		2.70	2.69		3.13	2.64		2.70	2.54		2.72	2.36		2.12	2.06	
	Taylor	262	2.5%	0.09	0.07	166	0.07	0.07	167	0.08	0.07	164	0.07	0.06	158	0.07	0.06	147	0.05	0.05	128
	Total	10,659	100.0%	3.47	2.73		2.77	2.76		3.21	2.71		2.77	2.60		2.79	2.42		2.18	2.11	
P-1	Allen Park	3,332	23.9%	1.65	0.90		0.91	0.91		1.28	0.89		1.04	0.93		1.08	0.75		0.62	0.58	
	Southgate	10,637	76.1%	5.27	2.87	174	2.92	2.92	177	4.10	2.84	173	3.30	2.96	180	3.46	2.39	145	1.96	1.84	112
	Total	13,969	100.0%	6.92	3.77		3.83	3.83		5.38	3.73		4.34	3.88		4.54	3.14		2.58	2.41	
RV-1	Riverview	12,486	100.0%	4.08	2.35	121	2.39	2.34	121	3.67	2.33	121	3.18	2.78	144	3.60	2.62	135	2.58	2.33	121
RR-1	River Rouge	7,903	100.0%	5.94	3.99	326	4.34	4.29	351	5.80	4.85	397	6.43	5.78	472	6.90	5.69	466	6.08	5.36	438
EC-6	Ecorse	9,515	71.5%	3.54	2.60		3.13	3.12		2.94	2.54		3.48	3.55		3.37	3.48		3.53	3.55	
	Lincoln Park	3,795	28.5%	1.41	1.04	176	1.25	1.25	212	1.17	1.01	173	1.39	1.41	241	1.34	1.39	236	1.41	1.42	241
	Total	13,310	100.0%	4.96	3.63		4.37	4.37		4.12	3.55		4.87	4.96		4.72	4.86		4.93	4.97	
RD-1	Allen Park	18,179	34.6%	8.74	5.09		4.39	4.27		6.53	4.00		5.79	4.27		6.21	3.88		4.62	3.61	
	Lincoln Park	34,347	65.4%	16.52	9.61	181	8.30	8.06	152	12.33	7.56	142	10.95	8.07	152	11.74	7.33	138	8.73	6.83	128
	Total	52,526	100.0%	25.26	14.70		12.69	12.33		18.86	11.56		16.74	12.34		17.95	11.21		13.36	10.44	
SW + SWB	Southgate	14,752	36.3%	8.63	5.71		5.93	5.65		8.61	6.61		8.43	6.74		8.13	6.30		7.72	6.41	
	Wyandotte	25,883	63.7%	15.14	10.01	250	10.40	9.91	248	15.10	11.60	290	14.78	11.82	295	14.26	11.06	276	13.55	11.24	281
	Total	40,635	100.0%	23.76	15.72		16.33	15.56		23.71	18.21		23.21	18.56		22.39	17.37		21.27	17.65	
APO-1 + APO-2	Allen Park	0	100.0%	1.52	0.00	--	0.00	0.00	--	1.19	0.00	--	0.00	0.00	--	0.42	0.00	--	0.07	0.00	--
TPS+IPS	Southgate	199	100.0%	0.10	0.05	174	0.05	0.05	177	0.08	0.05	173	0.06	0.06	180	0.06	0.04	145	0.04	0.03	112
Subtotal Controlled Flow Communities		114,374	42.4%	59.93	38.03	215	37.72	36.55	207	52.49	38.18	216	51.26	41.64	235	51.95	39.14	221	45.64	38.42	217
Subtotal Non-Controlled Flow Communities		155,677	57.6%	64.31	40.96	170	41.68	41.62	173	53.48	40.56	168	47.66	42.60	177	46.41	34.84	145	29.02	27.05	112
Total Incoming Flow		270,052	100.0%	124.24	79.00	189	79.40	78.17	187	105.97	78.75	188	98.92	84.24	202	98.37	73.97	177	74.66	65.47	157
DWTF Including Recycle (IPS + TPS)		270,052	100.0%	123.77	77.77	186	86.10	85.26	204	118.79	89.80	215	106.38	88.67	212	107.23	80.85	193	80.84	70.65	169
Recycle		0	-	-	-	-	-	-	-	-	-	-	-	-	-	9.32	9.22	-	8.10	7.76	-

Notes:

1) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate.

2) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Table A-1

Incremental Flow Rates Summarized by Meter District with Community Components

Meter District	Community	Year 2010 Incremental Population	Meter District Percentage	July 2020 Total	July 2020 Dry Weather		August 2020 Total	August 2020 Dry Weather		September 2020 Total	September 2020 Dry Weather		October 2020 Total	October 2020 Dry Weather		November 2020 Total	November 2020 Dry Weather		December 2020 Total	December 2020 Dry Weather	
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
	Dearborn Heights	19,152	78.2%	3.18	2.45		3.19	2.20		4.86	2.90		2.75	2.37		3.28	2.63		3.70	3.46	
TB-1	Taylor	5,339	21.8%	0.89	0.68	83	0.89	0.61	74	1.35	0.81	98	0.77	0.66	80	0.91	0.73	89	1.03	0.96	117
	Total	24,491	100.0%	4.06	3.13		4.08	2.82		6.21	3.71		3.52	3.03		4.20	3.36		4.73	4.42	
	Allen Park	1,019	3.8%	0.18	0.14		0.16	0.10		0.21	0.15		0.14	0.12		0.16	0.13		0.19	0.18	
PC-1	Taylor	25,700	96.2%	4.48	3.45	87	4.09	2.58	65	5.32	3.78	95	3.53	3.06	77	4.14	3.36	84	4.81	4.57	115
	Total	26,719	100.0%	4.66	3.59		4.25	2.68		5.54	3.93		3.67	3.18		4.30	3.49		5.00	4.76	
DMA-2	Romulus	0	100.0%	0.19	0.16	--	0.17	0.16	--	0.18	0.17	--	0.13	0.13	--	1.09	0.91	--	1.14	1.21	--
PD-2	Romulus	9,532	100.0%	2.30	2.10	142	2.26	2.02	137	2.49	2.08	141	2.05	1.94	132	2.25	2.07	140	2.27	2.20	149
PD-1	Taylor	12,100	100.0%	2.03	1.81	97	1.94	1.58	84	2.46	2.03	109	1.83	1.74	93	1.78	1.63	87	2.26	2.22	119
	Taylor	6,462	60.0%	1.07	0.91	91	1.20	0.90	90	1.20	0.99	99	0.92	0.85	85	1.04	0.90	90	1.10	1.06	106
PB-1[1]	Southgate	4,459	40.0%	0.71	0.61	88	0.80	0.60	87	0.80	0.66	96	0.61	0.57	82	0.69	0.60	87	0.74	0.70	102
	Total	10,921	100.0%	1.78	1.52	90	1.99	1.50	89	2.00	1.66	98	1.54	1.42	84	1.73	1.49	88	1.84	1.76	104
	Belleville	3,993	41.1%	0.69	0.68		0.70	0.62		0.78	0.70		0.63	0.61		0.64	0.62		0.69	0.69	
PA-4	Van Buren Twp	5,719	58.9%	0.99	0.98	111	1.00	0.89	100	1.11	1.00	113	0.90	0.87	99	0.91	0.88	100	0.99	0.98	111
	Total	9,712	100.0%	1.69	1.67		1.70	1.51		1.89	1.70		1.53	1.49		1.55	1.50		1.67	1.67	
DMA-1	Romulus (Airport)	0	100.0%	0.35	0.33	--	0.35	0.35	--	0.33	0.31	--	0.32	0.32	--	0.30	0.29	--	0.33	0.30	--
PA-3	Romulus	11,371	100.0%	4.05	3.75	213	3.62	3.27	186	4.52	4.03	229	3.54	3.43	195	3.80	3.57	203	4.24	4.16	237
	Taylor	13,270	98.2%	1.92	1.71		2.05	1.67		2.22	1.80		1.73	1.64		2.13	1.91		2.22	2.17	
PA-2	Brownstown Twp	248	1.8%	0.04	0.03	83	0.04	0.03	82	0.04	0.03	88	0.03	0.03	80	0.04	0.04	93	0.04	0.04	106
	Total	13,517	100.0%	1.96	1.74		2.09	1.71		2.26	1.83		1.76	1.67		2.17	1.95		2.26	2.21	
	Brownstown Twp	10,397	97.5%	2.11	1.96		2.18	1.90		2.13	1.96		1.89	1.80		2.16	2.03		2.34	2.30	
P-2	Taylor	262	2.5%	0.05	0.05	122	0.05	0.05	118	0.05	0.05	122	0.05	0.05	112	0.05	0.05	126	0.06	0.06	143
	Total	10,659	100.0%	2.16	2.01		2.23	1.95		2.18	2.01		1.94	1.85		2.22	2.08		2.40	2.35	
	Allen Park	3,332	23.9%	0.65	0.56		0.67	0.50		0.79	0.61		0.56	0.52		0.66	0.58		0.73	0.70	
P-1	Southgate	10,637	76.1%	2.08	1.80	109	2.14	1.61	98	2.51	1.93	117	1.80	1.66	101	2.09	1.84	112	2.32	2.25	137
	Total	13,969	100.0%	2.74	2.36		2.81	2.12		3.30	2.54		2.36	2.19		2.75	2.42		3.05	2.95	
RV-1	Riverview	12,486	100.0%	2.84	2.21	114	3.10	2.33	121	2.93	2.28	118	2.54	2.18	113	2.82	2.19	114	2.75	2.57	133
RR-1	River Rouge	7,903	100.0%	7.04	5.98	489	7.17	6.06	496	7.36	5.52	451	3.54	2.98	244	3.39	2.77	227	2.67	2.55	209
	Ecorse	9,515	71.5%	3.74	3.70		3.47	2.93		2.83	2.91		2.42	2.37		2.32	2.24		2.96	2.89	
EC-6	Lincoln Park	3,795	28.5%	1.49	1.48	252	1.39	1.17	199	1.13	1.16	198	0.97	0.95	161	0.93	0.89	152	1.18	1.15	196
	Total	13,310	100.0%	5.24	5.18		4.86	4.10		3.96	4.07		3.39	3.31		3.25	3.14		4.14	4.04	
	Allen Park	18,179	34.6%	5.27	3.17		5.67	2.96		5.52	3.18		3.67	2.73		4.46	3.04		4.46	3.92	
RD-1	Lincoln Park	34,347	65.4%	9.96	5.98	113	10.71	5.59	105	10.43	6.01	113	6.94	5.17	97	8.42	5.75	108	8.43	7.40	139
	Total	52,526	100.0%	15.23	9.15		16.38	8.55		15.94	9.19		10.61	7.90		12.88	8.79		12.89	11.32	
	Southgate	14,752	36.3%	9.12	6.81		7.60	5.53		7.26	5.53		5.89	4.31		6.61	4.71		6.43	5.33	
SW + SWB	Wyandotte	25,883	63.7%	16.01	11.95	298	13.33	9.71	242	12.74	9.70	242	10.34	7.57	189	11.61	8.27	207	11.28	9.34	233
	Total	40,635	100.0%	25.13	18.77		20.93	15.25		20.00	15.22		16.23	11.88		18.22	12.99		17.71	14.67	
APO-1 + APO-2	Allen Park	0	100.0%	0.05	0.00	--	0.93	0.00	--	0.42	0.00	--	0.00	0.00	--	0.00	0.00	--	0.00	0.00	--
TPS+IPS	Southgate	199	100.0%	0.04	0.03	109	0.04	0.03	98	0.05	0.04	117	0.03	0.03	101	0.04	0.03	112	0.04	0.04	137

Subtotal Controlled Flow Communities	114,374	42.4%	52.64	39.08	221	49.34	33.96	192	47.28	34.00	192	33.76	26.08	147	37.74	27.68	156	37.41	32.58	184
Subtotal Non-Controlled Flow Communities	155,677	57.6%	30.89	26.41	110	31.57	24.01	100	36.76	28.31	118	26.76	24.58	102	30.97	26.99	112	33.98	32.83	136
Total Incoming Flow	270,052	100.0%	83.53	65.49	157	80.91	57.98	139	84.03	62.31	149	60.52	50.66	121	68.71	54.67	131	71.39	65.41	157
DWTF Including Recycle (IPS + TPS)	270,052	100.0%	90.82	71.28	171	89.66	65.50	157	89.27	63.84	153	62.27	51.75	124	69.23	55.41	133	71.78	65.87	158
Recycle	0	-	9.41	8.45	-	9.39	8.77	-	6.85	4.72	-	4.03	3.97	-	3.72	3.56	-	3.91	3.95	-

Notes:
1) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate.
2) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Table A-2
Incremental Flow Rates by Meter District

Meter District	Incremental Meter District Formula	Year 2010 Incremental Population	January 2020			February 2020			March 2020			April 2020			May 2020			June 2020		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	[TB-1]+[TSO]	24,491	10.21	5.71	151	5.61	5.59	147	7.43	5.43	143	7.29	5.91	156	7.22	4.78	126	3.75	3.30	87
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	26,719	10.63	6.15	149	5.90	5.88	142	7.79	5.64	136	6.92	6.13	148	6.63	4.99	121	4.06	3.62	88
DMA-2	[DMA-2]	0	1.88	1.79	-	1.83	1.86	-	1.89	1.72	-	3.32	2.93	-	1.93	0.62	-	0.29	0.15	-
PD-2	[PD-2] - [DMA-2]	9,532	4.42	2.98	202	3.80	3.79	257	4.29	3.50	237	3.83	3.47	235	3.56	2.77	188	2.28	2.18	148
PD-1	[PD-1]-[PD-2]+[PDO]	12,100	3.31	2.37	127	1.79	1.82	97	2.45	2.00	107	2.06	1.97	105	2.30	2.20	117	1.80	1.74	93
PB-1	[PB-1]	10,921	2.75	1.90	112	2.02	2.01	119	2.74	2.06	122	2.24	2.01	119	2.27	1.75	104	1.60	1.50	89
PA-4	[PA-4]	9,712	3.41	2.67	178	2.89	2.90	193	3.09	2.80	186	2.52	2.39	159	2.41	2.11	141	1.75	1.76	117
DMA-1	[DMA-1]	0	0.63	0.64	-	0.63	0.63	-	0.43	0.49	-	0.16	0.15	-	0.20	0.19	-	0.28	0.27	-
PA-3	[PA-3]+[ER-2] -[PA-4]-[DMA-1]	11,371	6.64	5.36	304	5.40	5.39	307	6.00	5.37	305	5.71	5.37	305	5.09	4.43	252	3.90	3.84	218
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	13,517	4.35	2.49	119	2.77	2.77	132	3.85	2.74	131	3.27	2.96	141	3.40	2.78	133	1.87	1.81	87
P-2	[P-2]	10,659	3.47	2.73	166	2.77	2.76	167	3.21	2.71	164	2.77	2.60	158	2.79	2.42	147	2.18	2.11	128
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	13,969	6.92	3.77	174	3.83	3.83	177	5.38	3.73	173	4.34	3.88	180	4.54	3.14	145	2.58	2.41	112
RV-1	[RV-1]	12,486	4.08	2.35	121	2.39	2.34	121	3.67	2.33	121	3.18	2.78	144	3.60	2.62	135	2.58	2.33	121
RR-1	[RR-1]	7,903	5.94	3.99	326	4.34	4.29	351	5.80	4.85	397	6.43	5.78	472	6.90	5.69	466	6.08	5.36	438
EC-6	[EC-6]-[RR-1]	13,310	4.96	3.63	176	4.37	4.37	212	4.12	3.55	173	4.87	4.96	241	4.72	4.86	236	4.93	4.97	241
RD-1	[RD-1]-[EC-6]	52,526	25.26	14.70	181	12.69	12.33	152	18.86	11.56	142	16.74	12.34	152	17.95	11.21	138	13.36	10.44	128
APO-1 + APO-2	[APO-1]+[APO-2]	0	1.52	0.00	-	0.00	0.00	-	1.19	0.00	-	0.00	0.00	-	0.42	0.00	-	0.07	0.00	-
SW+SWB	[SW]+[SWB]	40,635	23.76	15.72	250	16.33	15.56	248	23.71	18.21	290	23.21	18.56	295	22.39	17.37	276	21.27	17.65	281
TPS+IPS[1]	Population Ratio of Meter District P-1	199	0.10	0.05	174	0.05	0.05	177	0.08	0.05	173	0.06	0.06	180	0.06	0.04	145	0.04	0.03	112

Notes:
1) ([TPS+IPS] Inc. Flow Rate) = (TPS-IPS Inc. Pop. / P-1 Inc. Pop.) x ([P-1] Inc. Flow Rate)

Table A-2
Incremental Flow Rates by Meter District

Meter District	Incremental Meter District Formula	Year 2010 Incremental Population	July 2020			August 2020			September 2020			October 2020			November 2020			December 2020		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	[TB-1]+[TSO]	24,491	4.06	3.13	83	4.08	2.82	74	6.21	3.71	98	3.52	3.03	80	4.20	3.36	89	4.73	4.42	117
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	26,719	4.66	3.59	87	4.25	2.68	65	5.54	3.93	95	3.67	3.18	77	4.30	3.49	84	5.00	4.76	115
DMA-2	[DMA-2]	0	0.19	0.16	-	0.17	0.16	-	0.18	0.17	-	0.13	0.13	-	1.09	0.91	-	1.14	1.21	-
PD-2	[PD-2] - [DMA-2]	9,532	2.30	2.10	142	2.26	2.02	137	2.49	2.08	141	2.05	1.94	132	2.25	2.07	140	2.27	2.20	149
PD-1	[PD-1]-[PD-2]+[PDO]	12,100	2.03	1.81	97	1.94	1.58	84	2.46	2.03	109	1.83	1.74	93	1.78	1.63	87	2.26	2.22	119
PB-1	[PB-1]	10,921	1.78	1.52	90	1.99	1.50	89	2.00	1.66	98	1.54	1.42	84	1.73	1.49	88	1.84	1.76	104
PA-4	[PA-4]	9,712	1.69	1.67	111	1.70	1.51	100	1.89	1.70	113	1.53	1.49	99	1.55	1.50	100	1.67	1.67	111
DMA-1	[DMA-1]	0	0.35	0.33	-	0.35	0.35	-	0.33	0.31	-	0.32	0.32	-	0.30	0.29	-	0.33	0.30	-
PA-3	[PA-3]+[ER-2] -[PA-4]-[DMA-1]	11,371	4.05	3.75	213	3.62	3.27	186	4.52	4.03	229	3.54	3.43	195	3.80	3.57	203	4.24	4.16	237
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	13,517	1.96	1.74	83	2.09	1.71	82	2.26	1.83	88	1.76	1.67	80	2.17	1.95	93	2.26	2.21	106
P-2	[P-2]	10,659	2.16	2.01	122	2.23	1.95	118	2.18	2.01	122	1.94	1.85	112	2.22	2.08	126	2.40	2.35	143
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	13,969	2.74	2.36	109	2.81	2.12	98	3.30	2.54	117	2.36	2.19	101	2.75	2.42	112	3.05	2.95	137
RV-1	[RV-1]	12,486	2.84	2.21	114	3.10	2.33	121	2.93	2.28	118	2.54	2.18	113	2.82	2.19	114	2.75	2.57	133
RR-1	[RR-1]	7,903	7.04	5.98	489	7.17	6.06	496	7.36	5.52	451	3.54	2.98	244	3.39	2.77	227	2.67	2.55	209
EC-6	[EC-6]-[RR-1]	13,310	5.24	5.18	252	4.86	4.10	199	3.96	4.07	198	3.39	3.31	161	3.25	3.14	152	4.14	4.04	196
RD-1	[RD-1]-[EC-6]	52,526	15.23	9.15	113	16.38	8.55	105	15.94	9.19	113	10.61	7.90	97	12.88	8.79	108	12.89	11.32	139
APO-1 + APO-2	[APO-1]+[APO-2]	0	0.05	0.00	-	0.93	0.00	-	0.42	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
SW+SWB	[SW]+[SWB]	40,635	25.13	18.77	298	20.93	15.25	242	20.00	15.22	242	16.23	11.88	189	18.22	12.99	207	17.71	14.67	233
TPS+IPS[1]	Population Ratio of Meter District P-1	199	0.04	0.03	109	0.04	0.03	98	0.05	0.04	117	0.03	0.03	101	0.04	0.03	112	0.04	0.04	137

Notes:
1) ([TPS+IPS] Inc. Flow Rate) = (TPS-IPS Inc. Pop. / P-1 Inc. Pop.) x ([P-1] Inc. Flow Rate)

Table A-3
Monthly Flow Rates by Meter for 2020

System	Meter	Location	Year 2010 Cumulative Population	Average Flow Rates (cfs)												
				January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Tunnel (Non-Controlled)	TB-1	Taylor Basin	24,491	9.45	5.61	7.07	7.29	7.13	3.74	4.06	4.07	6.19	3.52	4.20	4.73	5.59
	PC-1	Pelham Interceptor North of Goddard Road	51,210	17.70	11.51	13.91	14.17	13.35	7.75	8.66	8.09	11.44	7.18	8.50	9.73	11.00
	DTW Pond 3 West	Detroit Metro Airport	0	1.95	1.45	1.65	3.50	1.91	0.16	0.00	0.00	0.00	0.00	1.07	1.00	1.05
	DMA-2	Detroit Metro Airport	0	1.88	1.83	1.89	3.32	1.93	0.29	0.19	0.17	0.18	0.13	1.09	1.14	1.17
	PD-2	Goddard Interceptor West of Inkster Road	9,532	6.30	5.63	6.18	7.15	5.50	2.57	2.49	2.43	2.67	2.18	3.34	3.42	4.15
	PD-1	Goddard Interceptor West of Allen Road	21,632	9.49	7.42	8.63	9.21	7.80	4.37	4.52	4.37	5.14	4.01	5.12	5.67	6.31
	PB-1	Northline Interceptor West of Fordline Road	10,921	2.75	2.02	2.74	2.24	2.27	1.60	1.78	1.99	2.00	1.54	1.73	1.84	2.04
	PA-4	Eureka Interceptor near Hannan Road	9,712	3.41	2.89	3.09	2.52	2.41	1.75	1.69	1.70	1.89	1.53	1.55	1.67	2.17
	DMA-1	Detroit Metro Airport Connection to the Eureka Interceptor	0	0.63	0.63	0.43	0.16	0.20	0.28	0.35	0.35	0.33	0.32	0.30	0.33	0.36
	PA-3	Eureka Interceptor at Inkster Road	21,084	10.17	8.91	9.26	8.36	7.61	5.93	6.08	5.67	6.70	5.39	5.64	6.24	7.16
	PA-2	Eureka Interceptor at Allen Road	34,601	13.96	11.64	12.85	11.56	10.91	7.79	8.04	7.75	8.93	7.15	7.81	8.50	9.74
	PA-1	Eureka Interceptor West of Fordline Road	38,730	15.13	11.88	13.70	12.27	11.57	7.84	8.22	8.19	9.50	7.48	8.06	8.94	10.23
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	10,659	3.47	2.77	3.21	2.77	2.79	2.18	2.16	2.23	2.18	1.94	2.22	2.40	2.53
	P-1	Pennsylvania Interceptor East of Fort Street	142,992	53.13	39.19	46.14	44.29	41.26	26.27	27.89	27.21	32.98	24.18	28.12	31.19	35.16
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	12,486	4.08	2.39	3.67	3.18	3.60	2.58	2.84	3.10	2.93	2.54	2.82	2.75	3.05
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet	7,903	5.94	4.34	5.80	6.43	6.90	6.08	7.04	7.17	7.36	3.54	3.39	2.67	5.56
	EC-6	Riverdrive Interceptor South of Southfield Road	21,213	10.90	8.71	9.92	11.31	11.62	11.01	12.28	12.03	11.33	6.93	6.64	6.81	9.96
	RD-1	Riverdrive Interceptor North of Northline Road	73,739	36.17	21.39	28.77	28.05	29.57	24.37	27.51	28.41	27.27	17.54	19.51	19.70	25.72
	SW	On Southgate-Wyandotte Connection	40,635	20.94	16.32	22.20	21.81	20.43	17.69	20.99	18.76	18.14	14.68	15.54	16.42	18.68
	SWB	Southgate-Wyandotte Basin	0	2.82	0.01	1.51	1.41	1.96	3.58	4.14	2.17	1.86	1.54	2.68	1.29	2.09
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	0	0.76	0.00	0.36	0.00	0.09	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.10
	APO-1	Allen Park Connection to Tunnel at Belmont and Rosedale Road	0	0.55	0.00	0.35	0.00	0.08	0.02	0.01	0.24	0.09	0.00	0.00	0.00	0.11
	APO-2	Allen Park Connection to Tunnel at Belmont and Quandt Road	0	0.98	0.00	0.84	0.00	0.33	0.06	0.03	0.69	0.32	0.00	0.00	0.00	0.27
	CHPO	Pelham Interceptor Connection to Tunnel North of Haskell Road	0	1.53	0.00	0.74	0.03	0.37	0.05	0.06	0.20	0.20	0.00	0.00	0.00	0.27
	CPO	Pelham Interceptor Connection to Tunnel South of R.R.	0	0.85	0.00	0.21	0.00	0.04	0.00	0.00	0.03	0.09	0.00	0.00	0.00	0.10
	PDO	Goddard Interceptor Connection to Tunnel at Allen Road	0	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	ER-2	Eureka Relief Sewer Extention Connection to Tunnel at Inkster Road	0	0.51	0.01	0.26	0.03	0.08	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.08
	ER-1	Eureka Relief Sewer Connection to Tunnel at Allen Road	0	1.07	0.04	0.52	0.09	0.17	0.00	0.00	0.01	0.06	0.00	0.00	0.00	0.17
	PM-1	Pennsylvania Interceptor Connection to Tunnel at Fordline Road	0	1.16	0.00	0.58	0.00	0.40	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.18
DWTF	P-1+RD-1+RV-1+SW+SWB +Tunnel Connections	End of Interceptor System Meters	269,853	124.14	79.35	105.89	98.85	98.30	74.62	83.49	80.87	83.98	60.49	68.67	71.35	85.92
	DWTF Including Recycle (IPS + TPS)	DWTF	270,052	123.77	86.10	118.79	106.38	107.23	80.84	90.82	89.66	89.27	62.27	69.23	71.78	91.43
	Recycle	End of Interceptor System Meters	0	-	-	-	-	9.32	8.10	9.41	9.39	6.85	4.03	3.72	3.91	4.58

Notes:

1) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Table A-4
Average Flow Rates by Meter

System	Meter	Year 2010 Cumulative Population	January 2020			February 2020			March 2020			April 2020			May 2020			June 2020		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
Tunnel (Non-Controlled)	TB-1	24,491	9.45	5.71	151	5.61	5.59	147	7.07	5.43	143	7.29	5.91	156	7.13	4.78	126	3.74	3.30	87
	PC-1	51,210	17.70	11.86	150	11.51	11.47	145	13.91	11.07	140	14.17	12.04	152	13.35	9.77	123	7.75	6.92	87
	DTW Pond 3 West	0	1.95	1.97	-	1.45	1.45	-	1.65	1.16	-	3.50	2.98	-	1.91	0.45	-	0.16	0.00	-
	DMA-2	0	1.88	1.79	-	1.83	1.86	-	1.89	1.72	-	3.32	2.93	-	1.93	0.62	-	0.29	0.15	-
	PD-2	9,532	6.30	4.77	323	5.63	5.65	383	6.18	5.22	354	7.15	6.39	434	5.50	3.39	230	2.57	2.32	158
	PD-1	21,632	9.49	7.15	213	7.42	7.47	223	8.63	7.22	216	9.21	8.37	250	7.80	5.58	167	4.37	4.06	121
	PB-1	10,921	2.75	1.90	112	2.02	2.01	119	2.74	2.06	122	2.24	2.01	119	2.27	1.75	104	1.60	1.50	89
	PA-4	9,712	3.41	2.67	178	2.89	2.90	193	3.09	2.80	186	2.52	2.39	159	2.41	2.11	141	1.75	1.76	117
	DMA-1	0	0.63	0.64	-	0.63	0.63	-	0.43	0.49	-	0.16	0.15	-	0.20	0.19	-	0.28	0.27	-
	PA-3	21,084	10.17	8.67	266	8.91	8.91	273	9.26	8.65	265	8.36	7.91	242	7.61	6.73	206	5.93	5.86	180
	PA-2	34,601	13.96	11.16	208	11.64	11.65	218	12.85	11.38	213	11.56	10.87	203	10.91	9.51	178	7.79	7.68	143
	PA-1	38,730	15.13	11.38	190	11.88	11.87	198	13.70	11.83	197	12.27	11.42	191	11.57	9.77	163	7.84	7.64	128
	P-2	10,659	3.47	2.73	166	2.77	2.76	167	3.21	2.71	164	2.77	2.60	158	2.79	2.42	147	2.18	2.11	128
	P-1[1]	142,992	53.13	38.56	174	39.19	39.18	177	46.14	38.17	173	44.29	39.76	180	41.26	32.18	145	26.27	24.68	112
	RV-1	12,486	4.08	2.35	121	2.39	2.34	121	3.67	2.33	121	3.18	2.78	144	3.60	2.62	135	2.58	2.33	121
Riverdrive (Controlled)	RR-1	7,903	5.94	3.99	326	4.34	4.29	351	5.80	4.85	397	6.43	5.78	472	6.90	5.69	466	6.08	5.36	438
	EC-6	21,213	10.90	7.62	232	8.71	8.66	264	9.92	8.41	256	11.31	10.74	327	11.62	10.56	322	11.01	10.33	315
	RD-1	73,739	36.17	22.32	196	21.39	20.99	184	28.77	19.97	175	28.05	23.08	202	29.57	21.77	191	24.37	20.77	182
	SW (with sludge depth)	40,635	20.94	15.46	246	16.32	15.55	247	22.20	17.99	286	21.81	18.56	295	20.43	17.34	276	17.69	15.99	254
	SWB	0	2.82	0.26	-	0.01	0.01	-	1.51	0.23	-	1.41	0.00	-	1.96	0.03	-	3.58	1.66	-
Tunnel Connection Meters	TSO	0	0.76	0.00	-	0.00	0.00	-	0.36	0.00	-	0.00	0.00	-	0.09	0.00	-	0.00	0.00	-
	APO-1	0	0.55	0.00	-	0.00	0.00	-	0.35	0.00	-	0.00	0.00	-	0.08	0.00	-	0.02	0.00	-
	APO-2	0	0.98	0.00	-	0.00	0.00	-	0.84	0.00	-	0.00	0.00	-	0.33	0.00	-	0.06	0.00	-
	CHPO	0	1.53	0.00	-	0.00	0.00	-	0.74	0.00	-	0.03	0.00	-	0.37	0.00	-	0.05	0.00	-
	CPO	0	0.85	0.00	-	0.00	0.00	-	0.21	0.00	-	0.00	0.00	-	0.04	0.00	-	0.00	0.00	-
	PDO	0	0.12	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	ER-2	0	0.51	0.00	-	0.01	0.01	-	0.26	0.00	-	0.03	0.00	-	0.08	0.00	-	0.00	0.00	-
	ER-1	0	1.07	0.00	-	0.04	0.04	-	0.52	0.01	-	0.09	0.00	-	0.17	0.00	-	0.00	0.00	-
	PM-1	0	1.16	0.00	-	0.00	0.00	-	0.58	0.00	-	0.00	0.00	-	0.40	0.00	-	0.00	0.00	-
	Total	0	7.00	0.00	-	0.04	0.04	-	3.59	0.01	-	0.12	0.00	-	1.50	0.00	-	0.13	0.00	-
DWTF	P-1+RV-1+RD-1+SW+SWB +Tunnel Connections	269,853	124.14	78.94	189	79.35	78.12	187	105.89	78.69	188	98.85	84.18	202	98.30	73.93	177	74.62	65.43	157
	IPS+TPS	270,052	123.77	77.77	186	86.10	85.26	204	118.79	89.80	215	106.38	88.67	212	107.23	80.85	193	80.84	70.65	169
	Recycle	0	-	-	-	-	-	-	-	-	-	-	-	-	9.32	9.22	-	8.10	7.76	-

Notes:
1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + PA-2 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])
2) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Table A-4
Average Flow Rates by Meter

System	Meter	Year 2010 Cumulative Population	July 2020			August 2020			September 2020			October 2020			November 2020			December 2020		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
Tunnel (Non-Controlled)	TB-1	24,491	4.06	3.13	83	4.07	2.82	74	6.19	3.71	98	3.52	3.03	80	4.20	3.36	89	4.73	4.42	117
	PC-1	51,210	8.66	6.72	85	8.09	5.50	69	11.44	7.64	96	7.18	6.21	78	8.50	6.85	86	9.73	9.18	116
	DTW Pond 3 West	0	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	1.07	0.92	-	1.00	1.14	-
	DMA-2	0	0.19	0.16	-	0.17	0.16	-	0.18	0.17	-	0.13	0.13	-	1.09	0.91	-	1.14	1.21	-
	PD-2	9,532	2.49	2.26	153	2.43	2.18	148	2.67	2.24	152	2.18	2.07	141	3.34	2.98	202	3.42	3.41	231
	PD-1	21,632	4.52	4.07	122	4.37	3.76	112	5.14	4.27	128	4.01	3.81	114	5.12	4.61	138	5.67	5.63	168
	PB-1	10,921	1.78	1.52	90	1.99	1.50	89	2.00	1.66	98	1.54	1.42	84	1.73	1.49	88	1.84	1.76	104
	PA-4	9,712	1.69	1.67	111	1.70	1.51	100	1.89	1.70	113	1.53	1.49	99	1.55	1.50	100	1.67	1.67	111
	DMA-1	0	0.35	0.33	-	0.35	0.35	-	0.33	0.31	-	0.32	0.32	-	0.30	0.29	-	0.33	0.30	-
	PA-3	21,084	6.08	5.74	176	5.67	5.12	157	6.70	6.04	185	5.39	5.24	161	5.64	5.36	164	6.24	6.13	188
	PA-2	34,601	8.04	7.48	140	7.75	6.83	128	8.93	7.87	147	7.15	6.90	129	7.81	7.31	136	8.50	8.34	156
	PA-1	38,730	8.22	7.43	124	8.19	6.92	116	9.50	8.11	135	7.48	7.09	118	8.06	7.32	122	8.94	8.59	143
	P-2	10,659	2.16	2.01	122	2.23	1.95	118	2.18	2.01	122	1.94	1.85	112	2.22	2.08	126	2.40	2.35	143
	P-1[1]	142,992	27.89	24.17	109	27.21	21.66	98	32.98	26.00	117	24.18	22.37	101	28.12	24.76	112	31.19	30.21	137
	RV-1	12,486	2.84	2.21	114	3.10	2.33	121	2.93	2.28	118	2.54	2.18	113	2.82	2.19	114	2.75	2.57	133
Riverdrive (Controlled)	RR-1	7,903	7.04	5.98	489	7.17	6.06	496	7.36	5.52	451	3.54	2.98	244	3.39	2.77	227	2.67	2.55	209
	EC-6	21,213	12.28	11.17	340	12.03	10.17	310	11.33	9.59	292	6.93	6.30	192	6.64	5.91	180	6.81	6.60	201
	RD-1	73,739	27.51	20.31	178	28.41	18.72	164	27.27	18.78	165	17.54	14.20	124	19.51	14.70	129	19.70	17.91	157
	SW (with sludge depth)	40,635	20.99	17.50	278	18.76	15.13	241	18.14	15.09	240	14.68	11.75	187	15.54	11.63	185	16.42	14.53	231
	SWB	0	4.14	1.27	-	2.17	0.11	-	1.86	0.13	-	1.54	0.13	-	2.68	1.36	-	1.29	0.14	-
Tunnel Connection Meters	TSO	0	0.00	0.00	-	0.01	0.00	-	0.02	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	APO-1	0	0.01	0.00	-	0.24	0.00	-	0.09	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	APO-2	0	0.03	0.00	-	0.69	0.00	-	0.32	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	CHPO	0	0.06	0.00	-	0.20	0.00	-	0.20	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	CPO	0	0.00	0.00	-	0.03	0.00	-	0.09	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	PDO	0	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	ER-2	0	0.00	0.00	-	0.00	0.00	-	0.03	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	ER-1	0	0.00	0.00	-	0.01	0.00	-	0.06	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	PM-1	0	0.00	0.00	-	0.04	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	Total	0	0.12	0.00	-	1.22	0.00	-	0.79	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
DWTF	P-1+RV-1+RD-1+SW+SWB +Tunnel Connections	269,853	83.49	65.46	157	80.87	57.95	139	83.98	62.28	149	60.49	50.63	121	68.67	54.64	131	71.35	65.37	157
	DWTF Including Recycle (IPS + TPS)	270,052	90.82	71.28	171	89.66	65.50	157	89.27	63.84	153	62.27	51.75	124	69.23	55.41	133	71.78	65.87	158
	Recycle	0	9.41	8.45	-	9.39	8.77	-	6.85	4.72	-	4.03	3.97	-	3.72	3.56	-	3.91	3.95	-

Notes:
1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + PA-2 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])
2) DWTF recycle flows have been metered since April 2020. To provide a consistent comparison to previous months recycle flow has not been deducted from IPS+TPS.

Appendix B

Precipitation Data for Significant/Major Storm Events

Table B-1
Rainfall Event Summary Table

Significant Storm Event 1
Start Date: 1/10/2020
Stop Date: 1/12/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.39	0.62	0.80	1.55	1.81	2.30	2.65	2.65	2.64
R18	0.38	0.63	0.81	1.54	1.76	2.19	2.51	2.51	2.51
R02	0.52	0.79	1.01	1.65	1.84	2.22	2.58	2.58	2.58
R10	0.55	0.83	1.02	1.70	1.95	2.42	2.85	2.85	2.85
DTW	0.54	0.75	0.93	1.55	1.75	2.16	2.56	2.56	2.56
R09	0.48	0.67	0.85	1.40	1.59	1.98	2.37	2.37	2.37
R04	0.52	0.83	1.07	1.71	2.00	2.54	3.13	3.14	3.14
R08	0.50	0.73	0.91	1.43	1.70	2.09	2.43	2.47	2.39
R15	0.59	0.84	1.03	1.54	1.78	2.17	2.54	2.54	2.54
R17	0.52	0.79	1.01	1.61	1.90	2.39	2.89	2.89	2.89
R06	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R16	0.49	0.72	0.94	1.51	1.73	2.25	2.76	2.76	2.76
Minimum (in):	0.38	0.62	0.80	1.40	1.59	1.98	2.37	2.37	2.37
Average (in):	0.50	0.75	0.94	1.56	1.80	2.25	2.66	2.67	2.66
Maximum (in):	0.59	0.84	1.07	1.71	2.00	2.54	3.13	3.14	3.14
								Standard Deviation (in):	0.23
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	9%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	1	1	2	2	1	2
R18	< 1	< 1	< 1	< 1	< 1	1	1	< 1	1
R02	< 1	< 1	< 1	1	1	2	2	1	2
R10	< 1	< 1	< 1	2	2	2	3	2	3
DTW	< 1	< 1	< 1	< 1	< 1	1	2	< 1	2
R09	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R04	< 1	< 1	< 1	2	2	3	4	3	4
R08	< 1	< 1	< 1	< 1	< 1	1	1	< 1	1
R15	< 1	< 1	< 1	< 1	< 1	1	2	< 1	2
R17	< 1	< 1	< 1	1	1	2	3	2	3
R06	-	-	-	-	-	-	-	-	-
R16	< 1	< 1	< 1	< 1	< 1	2	2	2	2
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Average:	< 1	< 1	< 1	1	1	2	2	1	2
Maximum:	< 1	< 1	< 1	2	2	3	4	3	4

- 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 B-2
Rainfall Event Summary Table

Significant Storm Event 2
Start Date: 3/27/2020
Stop Date: 3/29/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.78	1.07	1.16	1.41	1.70	1.85	2.03	2.03	2.02
R18	0.67	1.02	1.19	1.44	1.73	1.83	1.98	1.98	1.97
R02	0.87	1.28	1.44	1.74	2.05	2.23	2.44	2.44	2.43
R10	0.66	0.99	1.17	1.42	1.72	1.90	2.07	2.07	2.07
DTW	0.47	0.92	1.14	1.36	1.64	1.82	2.02	2.02	2.02
R09	0.59	0.94	1.10	1.34	1.59	1.83	2.05	2.05	2.05
R04	0.85	1.36	1.51	1.82	2.17	2.28	2.52	2.52	2.51
R08	0.67	0.92	1.06	1.29	1.53	1.75	1.98	1.98	1.98
R15	0.70	0.95	1.06	1.28	1.51	1.77	1.98	1.99	1.97
R17	0.65	1.08	1.23	1.48	1.79	1.92	2.19	2.19	2.19
R06	0.71	1.20	1.36	1.61	1.90	2.02	2.24	2.24	2.23
R16	0.66	0.92	1.08	1.30	1.54	1.70	2.01	2.02	2.01
Minimum (in):	0.47	0.92	1.06	1.28	1.51	1.70	1.98	1.98	1.97
Average (in):	0.69	1.05	1.21	1.46	1.74	1.91	2.13	2.13	2.12
Maximum (in):	0.87	1.36	1.51	1.82	2.17	2.28	2.52	2.52	2.51
								Standard Deviation (in):	0.18
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	9%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	1	2	2	2	2	1	< 1	2
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	2	2	2	3	2	2	< 1	3
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1	1
R06	< 1	1	1	1	1	< 1	< 1	< 1	1
R16	< 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	2	2	2	3	2	2	< 1	3

-	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 B-3
Rainfall Event Summary Table

Significant Storm Event 3
Start Date: 5/17/2020
Stop Date: 5/19/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.37	0.51	0.65	0.98	1.37	1.56	1.83	1.84	1.83
R18	0.38	0.54	0.82	1.15	1.41	1.49	1.73	1.74	1.74
R02	0.36	0.57	0.64	0.97	1.20	1.42	1.59	1.60	1.60
R10	0.45	0.68	0.74	1.08	1.39	1.65	1.84	1.86	1.86
DTW	0.25	0.43	0.55	0.90	1.40	1.79	1.93	1.93	1.93
R09	0.18	0.24	0.32	0.46	0.71	0.79	0.91	0.91	0.91
R04	0.56	0.67	0.72	1.10	1.74	1.97	2.16	2.19	2.19
R08	0.35	0.43	0.58	0.88	1.36	1.65	1.79	1.79	1.79
R15	0.32	0.44	0.59	0.96	1.49	1.84	1.99	1.99	1.99
R17	0.45	0.55	0.60	1.07	1.59	1.96	2.13	2.13	2.13
R06	0.34	0.43	0.55	0.82	1.21	1.53	1.64	1.64	1.64
R16	0.22	0.30	0.40	0.54	0.87	1.18	1.34	1.34	1.34
Minimum (in):	0.18	0.24	0.32	0.46	0.71	0.79	0.91	0.91	0.91
Average (in):	0.35	0.48	0.60	0.91	1.31	1.57	1.74	1.75	1.75
Maximum (in):	0.56	0.68	0.82	1.15	1.74	1.97	2.16	2.19	2.19
								Standard Deviation (in):	0.37
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	21%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 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 B-4
Rainfall Event Summary Table

Significant Storm Event 4
Start Date: 6/26/2020
Stop Date: 6/27/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.81	0.93	1.25	1.75	1.79	1.79	1.79	1.79	1.79
R18	0.59	0.68	0.92	1.19	1.19	1.19	1.19	1.19	1.19
R02	0.60	0.72	0.88	1.08	1.09	1.10	1.10	1.10	1.08
R10	0.51	0.70	0.95	1.29	1.32	1.32	1.32	1.32	1.32
DTW	0.56	0.76	1.00	1.26	1.27	1.28	1.28	1.28	1.28
R09	0.57	0.66	0.85	1.15	1.17	1.17	1.17	1.17	1.17
R04	0.65	0.75	1.12	1.53	1.54	1.54	1.54	1.54	1.54
R08	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R15	0.43	0.63	0.89	1.37	1.37	1.37	1.37	1.37	1.37
R17	0.61	0.69	0.86	1.04	1.05	1.05	1.05	1.05	1.05
R06	0.45	0.53	0.74	0.87	0.89	0.89	0.89	0.89	0.89
R16	1.01	1.22	1.65	2.05	2.05	2.17	2.17	2.17	2.05
Minimum (in):	0.43	0.53	0.74	0.87	0.89	0.89	0.89	0.89	0.89
Average (in):	0.62	0.75	1.01	1.33	1.34	1.35	1.35	1.35	1.34
Maximum (in):	1.01	1.22	1.65	2.05	2.05	2.17	2.17	2.17	2.05
								Standard Deviation (in):	0.34
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	25%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1	2
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	-	-	-	-	-	-	-	-	-
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	1	1	3	4	2	1	< 1	< 1	4
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1	1
Maximum:	1	1	3	4	2	1	< 1	< 1	4

-	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 B-5
Rainfall Event Summary Table

Significant Storm Event 5
Start Date: 7/10/2020
Stop Date: 7/10/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.18	0.21	0.21	0.21	0.27	0.27	0.27	0.27	0.27
R18	0.12	0.23	0.23	0.25	0.27	0.27	0.27	0.27	0.27
R02	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R10	0.33	0.43	0.43	0.47	0.88	0.88	0.88	0.88	0.88
DTW	1.24	1.46	1.50	1.59	2.05	2.05	2.05	2.05	2.05
R09	1.59	1.66	1.67	1.76	1.94	1.94	1.94	1.94	1.94
R04	0.48	0.48	0.66	0.70	0.88	0.88	0.88	0.88	0.88
R08	0.20	0.22	0.25	0.31	0.44	0.45	0.45	0.45	0.44
R15	0.74	0.76	0.78	0.87	1.10	1.11	1.11	1.11	1.10
R17	1.09	1.10	1.10	1.22	1.54	1.54	1.54	1.54	1.54
R06	1.89	1.89	1.89	2.06	2.09	2.10	2.10	2.10	2.09
R16	1.56	1.57	1.57	1.70	1.88	1.92	1.92	1.92	1.87
Minimum (in):	0.12	0.21	0.21	0.21	0.27	0.27	0.27	0.27	0.27
Average (in):	0.86	0.91	0.94	1.01	1.21	1.22	1.22	1.22	1.21
Maximum (in):	1.89	1.89	1.89	2.06	2.09	2.10	2.10	2.10	2.09
								Standard Deviation (in):	0.72
								Coefficient of Variation:	59%

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

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	-	-	-	-	-	-	-	-	-
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	3	3	2	1	2	< 1	< 1	< 1	3
R09	8	4	3	2	2	< 1	< 1	< 1	8
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
R06	18	7	5	4	2	1	< 1	< 1	18
R16	7	3	2	2	1	< 1	< 1	< 1	7
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	4	2	1	1	< 1	< 1	< 1	< 1	4
Maximum:	18	7	5	4	2	1	< 1	< 1	18

- 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 B-6
Rainfall Event Summary Table

Significant Storm Event 6
Start Date: 7/16/2020
Stop Date: 7/16/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.25	0.42	0.59	0.70	0.71	0.71	0.71	0.71	0.71
R18	0.36	0.47	0.63	0.79	0.86	0.86	0.86	0.86	0.86
R02	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R10	0.44	0.55	0.71	1.00	1.21	1.21	1.21	1.21	1.21
DTW	0.48	0.61	0.73	0.97	1.13	1.13	1.13	1.13	1.13
R09	0.51	0.62	0.75	0.99	1.22	1.22	1.22	1.22	1.22
R04	0.66	0.76	0.86	1.10	1.25	1.25	1.25	1.25	1.25
R08	0.44	0.53	0.65	0.86	1.08	1.08	1.08	1.08	1.08
R15	0.38	0.51	0.64	0.89	1.09	1.09	1.10	1.10	1.08
R17	0.55	0.63	0.74	0.89	1.04	1.04	1.04	1.04	1.04
R06	0.67	0.74	0.81	0.89	0.96	0.96	0.96	0.96	0.96
R16	0.51	0.59	0.70	0.93	1.05	1.05	1.05	1.05	1.05
Minimum (in):	0.25	0.42	0.59	0.70	0.71	0.71	0.71	0.71	0.71
Average (in):	0.48	0.58	0.71	0.91	1.05	1.05	1.06	1.06	1.05
Maximum (in):	0.67	0.76	0.86	1.10	1.25	1.25	1.25	1.25	1.25
								Standard Deviation (in):	0.16
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	15%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	-	-	-	-	-	-	-	-	-
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 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 B-7
Rainfall Event Summary Table

Significant Storm Event 7
Start Date: 7/19/2020
Stop Date: 7/19/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.63	0.63	0.63	0.63	0.63	0.63	0.64	0.64	0.63
R18	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
R02	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R10	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
DTW	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
R09	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
R04	1.00	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
R08	1.04	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
R15	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.97	0.91
R17	0.78	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
R06	1.07	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
R16	1.11	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Minimum (in):	0.63	0.63	0.63	0.63	0.63	0.63	0.64	0.64	0.63
Average (in):	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum (in):	1.13	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
								Standard Deviation (in):	0.18
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	18%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R02	-	-	-	-	-	-	-	-	-
R10	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
DTW	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R08	1	1	< 1	< 1	< 1	< 1	< 1	< 1	1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
R16	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Maximum:	2	1	< 1	< 1	< 1	< 1	< 1	< 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 B-8
Rainfall Event Summary Table

Significant Storm Event 8
Start Date: 8/1/2020
Stop Date: 8/2/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	-	-	-	-	-	-	-	-	-
R18	1.37	1.88	2.20	2.22	2.31	2.53	2.66	2.76	2.54
R02	0.37	0.41	0.43	0.45	0.53	0.73	0.77	0.98	0.74
R10	0.26	0.28	0.29	0.33	0.43	0.61	0.87	1.06	0.62
DTW	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	1.50
R09	0.71	0.75	0.75	0.79	0.83	1.04	1.23	1.37	1.05
R04	1.22	1.54	1.59	1.63	1.70	2.07	2.07	2.28	2.07
R08	1.09	1.15	1.16	1.19	1.24	1.48	1.48	1.63	1.48
R15	0.75	0.77	0.77	0.86	0.92	1.14	1.15	1.23	1.14
R17	1.79	2.09	2.11	2.14	2.19	2.65	2.65	2.91	2.65
R06	0.25	0.35	0.46	0.61	0.61	1.09	1.09	1.36	1.09
R16	1.57	1.82	1.92	1.94	2.02	2.43	2.43	2.54	2.43
Minimum (in):	0.25	0.28	0.29	0.33	0.43	0.61	0.77	0.98	0.62
Average (in):	0.94	1.10	1.17	1.22	1.28	1.58	1.64	1.81	1.57
Maximum (in):	1.79	2.09	2.20	2.22	2.31	2.65	2.66	2.91	2.65
								Standard Deviation (in):	0.73
								Coefficient of Variation:	47%

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

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	-	-	-	-	-	-	-	-	-
R18	4	7	9	5	4	3	2	2	9
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	-	-	-	-	-	-	-	-	-
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	3	3	2	1	< 1	1	< 1	< 1	3
R08	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	14	11	7	4	3	4	2	2	14
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	8	6	5	3	2	3	1	< 1	8
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	3	3	3	2	1	1	< 1	< 1	4
Maximum:	14	11	9	5	4	4	2	2	14

\- 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.
3) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table B-9
Rainfall Event Summary Table

Significant Storm Event 9
Start Date: 8/28/2020
Stop Date: 8/29/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	-	-	-	-	-	-	-	-	-
R18	0.99	1.50	1.95	2.50	2.84	3.48	3.48	3.48	3.48
R02	0.47	0.63	0.65	0.77	1.27	2.10	2.11	2.11	2.11
R10	1.14	1.52	1.95	2.54	2.89	3.42	3.42	3.42	3.42
DTW	0.96	1.31	1.40	2.37	2.75	3.28	3.28	3.28	3.28
R09	0.59	1.14	1.51	2.24	2.64	3.58	3.59	3.59	3.58
R04	0.99	1.00	1.81	1.94	2.93	3.79	3.80	3.80	3.79
R08	0.83	1.00	1.15	2.18	2.68	3.12	3.13	3.13	3.13
R15	1.15	1.24	1.98	2.55	3.57	4.20	4.20	4.20	4.20
R17	0.93	1.05	1.05	1.44	2.25	3.41	3.41	3.41	3.41
R06	0.84	0.85	1.31	1.46	2.47	3.22	3.22	3.22	3.22
R16	0.92	1.00	1.29	1.94	2.61	3.32	3.33	3.33	3.32
Minimum (in):	0.47	0.63	0.65	0.77	1.27	2.10	2.11	2.11	2.11
Average (in):	0.89	1.11	1.46	1.99	2.63	3.36	3.36	3.36	3.36
Maximum (in):	1.15	1.52	1.98	2.55	3.57	4.20	4.20	4.20	4.20
								Standard Deviation (in):	0.51
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	15%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	-	-	-	-	-	-	-	-	-
R18	1	3	5	8	9	14	7	5	14
R02	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1	1
R10	2	3	5	9	9	13	7	4	13
DTW	< 1	2	1	7	8	10	5	4	10
R09	< 1	< 1	2	5	6	16	8	6	16
R04	1	< 1	4	3	10	21	11	8	21
R08	< 1	< 1	< 1	5	7	8	4	3	8
R15	2	1	5	9	25	34	18	12	34
R17	< 1	< 1	< 1	< 1	3	12	7	4	12
R06	< 1	< 1	< 1	< 1	5	9	5	3	9
R16	< 1	< 1	< 1	3	6	10	6	4	10
Minimum:	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1	1
Average:	1	1	2	5	8	14	7	5	14
Maximum:	2	3	5	9	25	34	18	12	34

\- 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.
3) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table B-10
Rainfall Event Summary Table

Significant Storm Event 10
Start Date: 9/7/2020
Stop Date: 9/8/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	-	-	-	-	-	-	-	-	-
R18	1.11	1.55	1.69	1.87	1.88	1.88	2.96	2.96	2.96
R02	0.67	1.18	1.24	1.36	1.37	1.37	2.12	2.13	2.12
R10	1.07	1.42	1.52	1.65	1.67	1.67	2.73	2.73	2.73
DTW	0.88	1.33	1.48	1.56	1.58	1.58	2.52	2.52	2.52
R09	1.21	1.30	1.30	1.30	1.30	1.30	2.59	2.59	2.59
R04	1.15	1.22	1.23	1.23	1.23	1.23	2.06	2.06	2.06
R08	0.97	1.06	1.06	1.11	1.11	1.11	2.17	2.18	2.17
R15	1.10	1.36	1.42	1.50	1.52	1.52	2.68	2.68	2.67
R17	0.97	1.11	1.11	1.11	1.11	1.11	1.96	1.96	1.96
R06	1.12	1.28	1.28	1.28	1.28	1.29	2.01	2.01	2.01
R16	0.90	1.00	1.00	1.00	1.00	1.00	1.98	1.98	1.98
Minimum (in):	0.67	1.00	1.00	1.00	1.00	1.00	1.96	1.96	1.96
Average (in):	1.01	1.26	1.30	1.36	1.37	1.37	2.34	2.35	2.34
Maximum (in):	1.21	1.55	1.69	1.87	1.88	1.88	2.96	2.96	2.96
								Standard Deviation (in):	0.36
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	15%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	-	-	-	-	-	-	-	-	-
R18	2	3	3	3	1	< 1	3	2	3
R02	< 1	1	< 1	< 1	< 1	< 1	< 1	< 1	1
R10	2	2	2	1	< 1	< 1	2	1	2
DTW	< 1	2	2	1	< 1	< 1	2	< 1	2
R09	3	2	< 1	< 1	< 1	< 1	2	1	3
R04	2	1	< 1	< 1	< 1	< 1	< 1	< 1	2
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	2	2	1	< 1	< 1	< 1	2	1	2
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	2	1	< 1	< 1	< 1	< 1	< 1	< 1	2
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	1	2	1	1	< 1	< 1	1	1	2
Maximum:	3	3	3	3	1	< 1	3	2	3

\- 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.
3) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Table B-11
Rainfall Event Summary Table

Significant Storm Event 11
Start Date: 10/20/2020
Stop Date: 10/23/2020

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	-	-	-	-	-	-	-	-	-
R18	0.40	0.41	0.41	0.63	0.72	0.73	1.14	1.41	1.41
R02	0.25	0.33	0.40	0.73	0.82	0.82	1.15	1.47	1.47
R10	0.43	0.44	0.46	0.59	0.71	0.71	1.17	1.46	1.46
DTW	0.48	0.50	0.51	0.55	0.71	0.71	1.22	1.53	1.53
R09	0.37	0.41	0.41	0.75	0.94	0.96	1.36	1.73	1.73
R04	0.63	0.65	0.74	1.05	1.10	1.11	1.75	2.24	2.24
R08	0.21	0.26	0.37	0.66	0.84	0.84	1.14	1.38	1.37
R15	0.25	0.26	0.34	0.54	0.67	0.67	0.93	0.93	0.93
R17	0.33	0.35	0.46	0.75	0.84	0.84	1.30	1.63	1.63
R06	0.47	0.54	0.62	0.86	0.90	0.90	1.38	1.81	1.81
R16	0.38	0.40	0.40	0.65	0.81	0.81	1.27	1.67	1.67
Minimum (in):	0.21	0.26	0.34	0.54	0.67	0.67	0.93	0.93	0.93
Average (in):	0.38	0.41	0.47	0.71	0.82	0.83	1.26	1.57	1.57
Maximum (in):	0.63	0.65	0.74	1.05	1.10	1.11	1.75	2.24	2.24
								Standard Deviation (in):	0.32
X.XX*	Missing or suspect data (not used).							Coefficient of Variation:	21%

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	-	-	-	-	-	-	-	-	-
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 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.

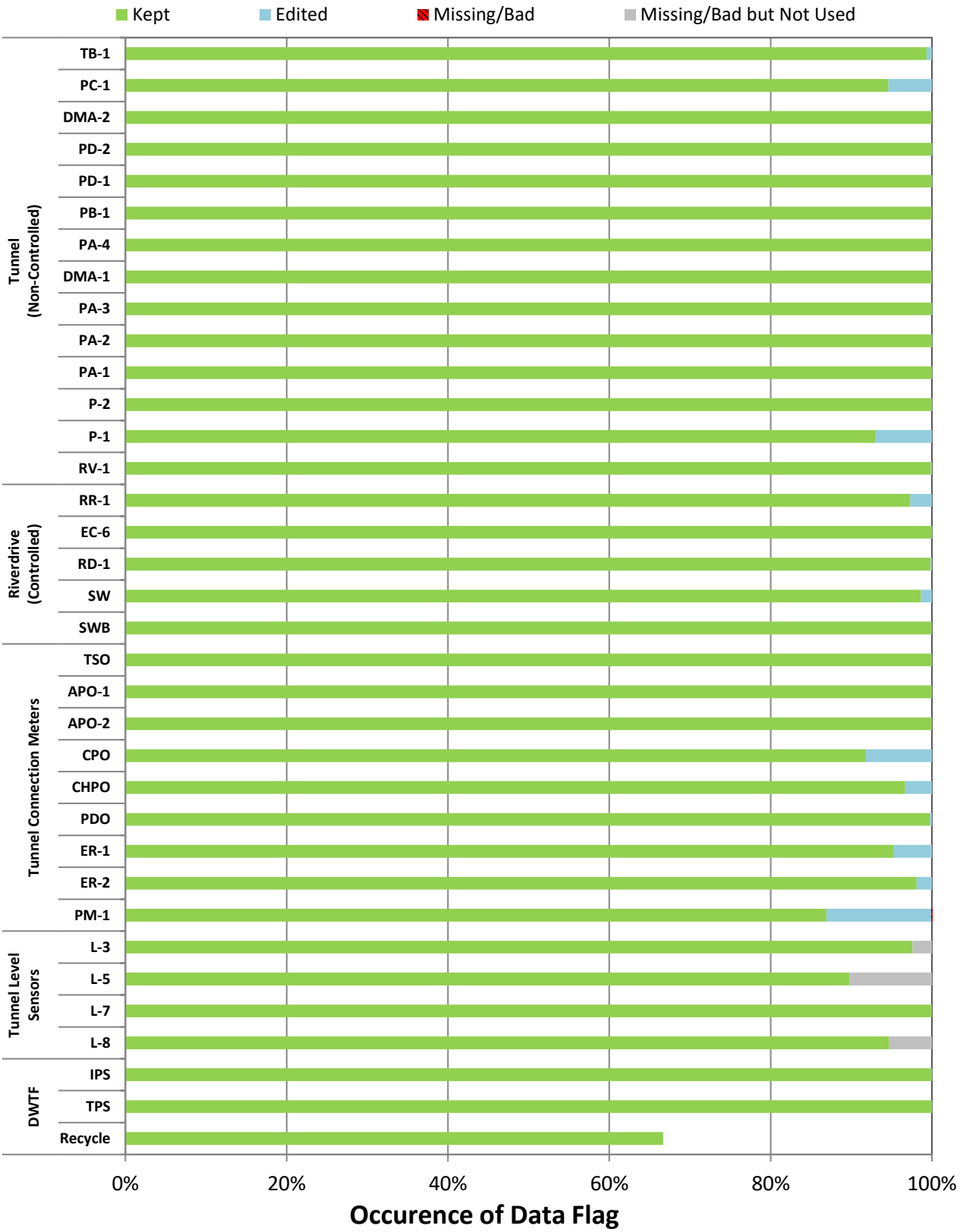
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

3) Rain gauge R-14 removed from rain gauge network on July 24, 2020.

Appendix C

Meter Data Summaries

Figure C-1
2020 Data Flags

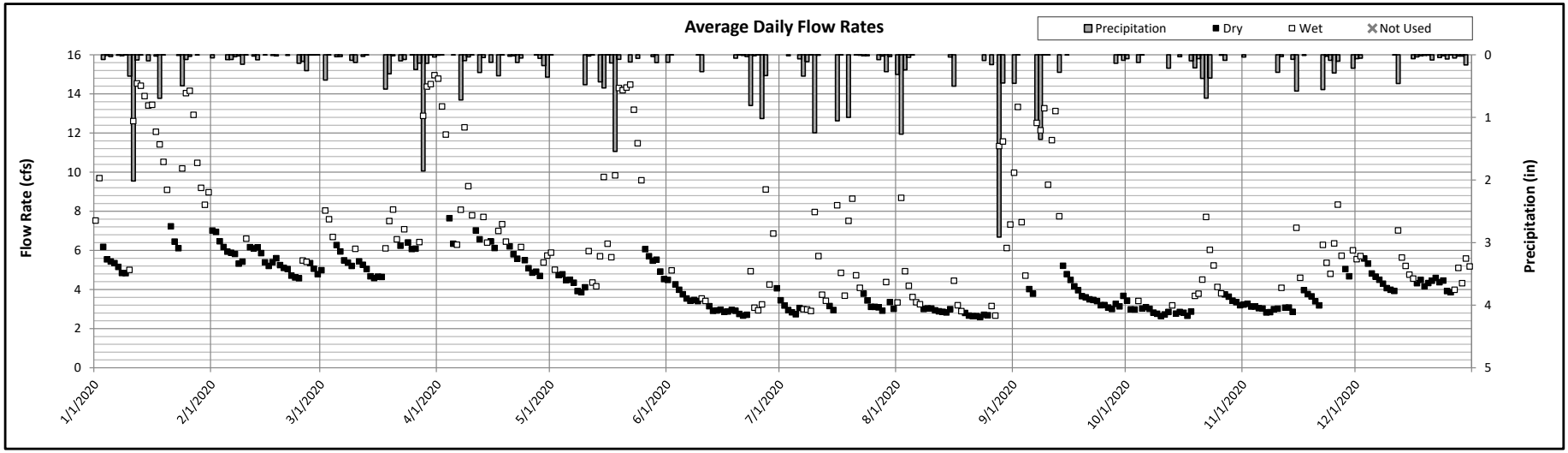


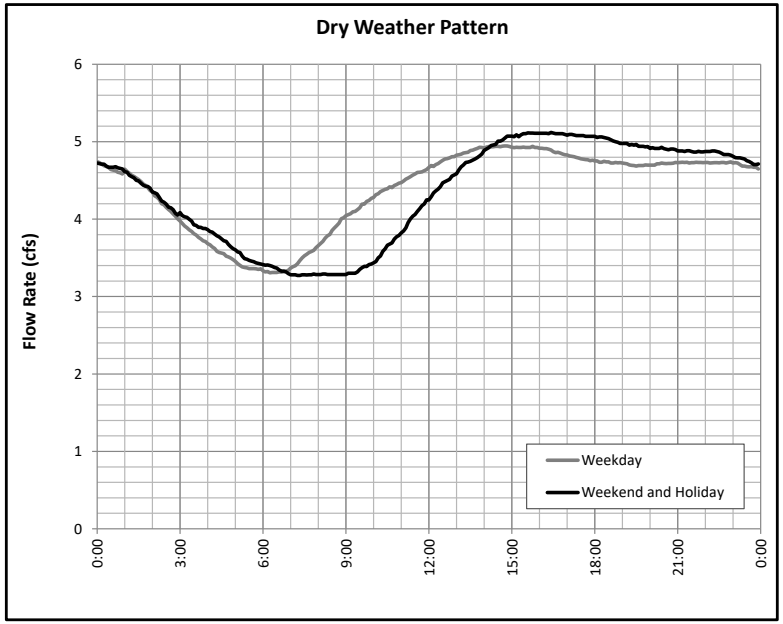
Note: 1) DWTF recycle flows have been metered since April 2020.

Figure C-2
Meter Report

Meter: TB-1 **Location: Taylor Basin** **Period: 1/1/2020 through 12/31/2020**

Type: Magmeter **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	9.5	189.3	5.7	114.4	10	21
Feb-20	5.6	105.2	5.6	104.7	26	3
Mar-20	7.1	141.7	5.4	108.8	17	14
Apr-20	7.3	141.3	5.9	114.6	14	16
May-20	7.1	142.9	4.8	95.8	14	17
Jun-20	3.7	72.6	3.3	64.0	20	10
Jul-20	4.1	81.4	3.1	62.7	16	15
Aug-20	4.1	81.6	2.8	56.5	15	16
Sep-20	6.2	120.0	3.7	72.0	19	11
Oct-20	3.5	70.5	3.0	60.7	21	10
Nov-20	4.2	81.3	3.4	65.1	20	10
Dec-20	4.7	94.8	4.4	88.6	19	11

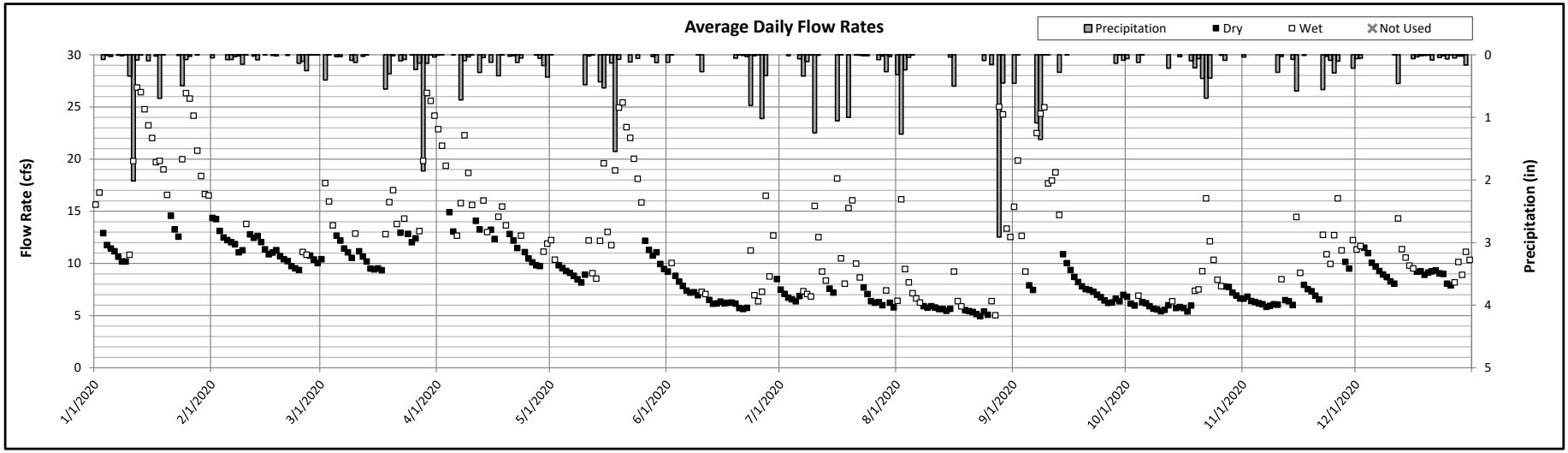
Statistics for Major Wet Weather Events

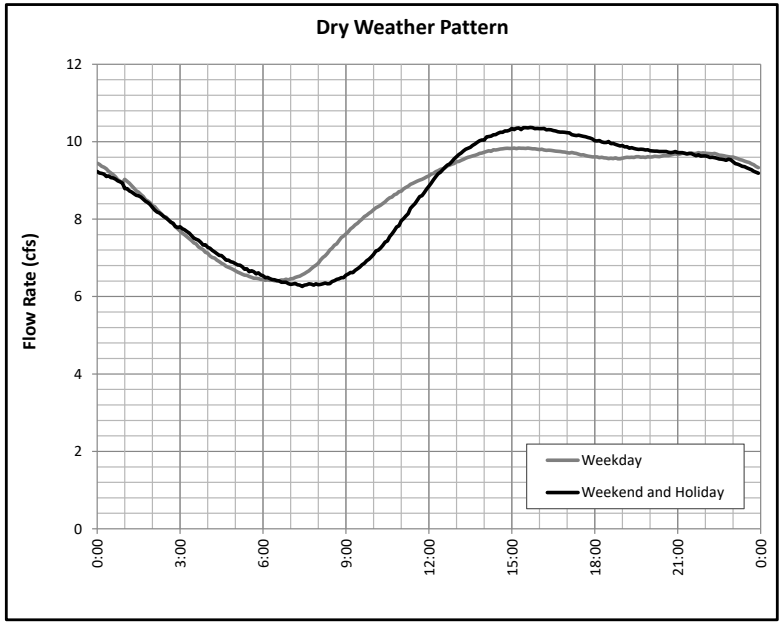
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	16.0	1/11/2020 10:35	-	-
B	2.12	3/27/2020	3/29/2020	16.0	3/30/2020 2:50	-	-
C	3.36	8/28/2020	8/29/2020	15.7	8/28/2020 11:45	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-3
Meter Report

Meter: PC-1 | **Location: Pelham Interceptor North of Goddard Road** | **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	17.7	354.6	11.9	237.6	10	21
Feb-20	11.5	215.7	11.5	214.9	26	3
Mar-20	13.9	278.6	11.1	221.8	17	14
Apr-20	14.2	274.8	12.0	233.4	14	16
May-20	13.4	267.6	9.8	195.7	14	17
Jun-20	7.7	150.2	6.9	134.1	20	10
Jul-20	8.7	173.4	6.7	134.6	16	15
Aug-20	8.1	162.0	5.5	110.2	15	16
Sep-20	11.4	221.7	7.6	148.2	19	11
Oct-20	7.2	143.9	6.2	124.3	21	10
Nov-20	8.5	164.8	6.9	132.8	20	10
Dec-20	9.7	195.0	9.2	183.9	19	11

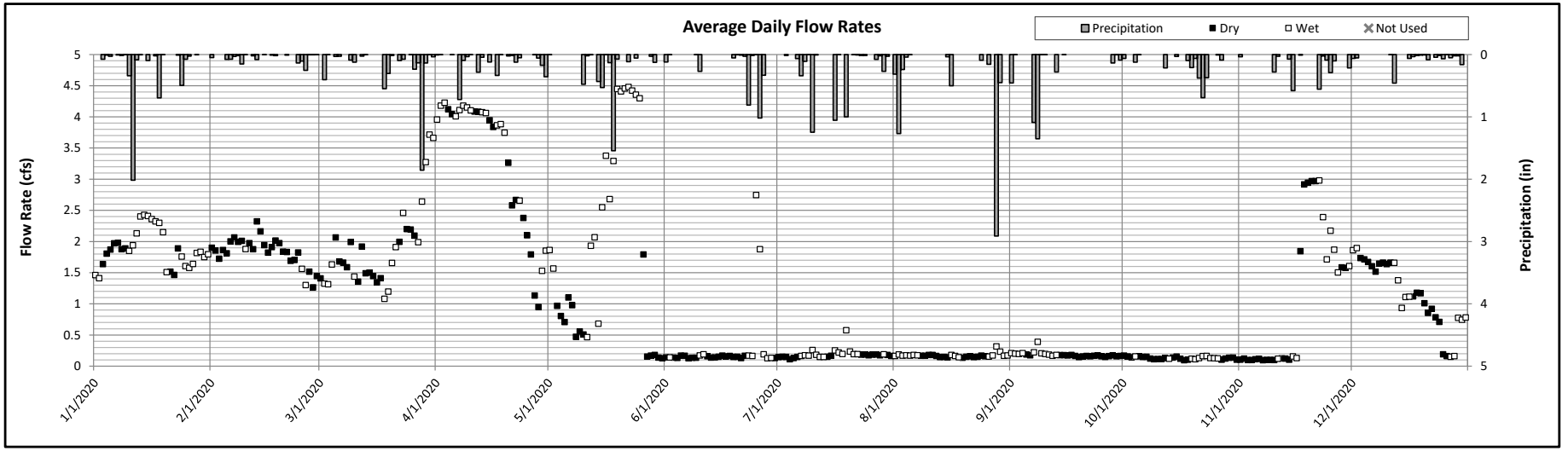
Statistics for Major Wet Weather Events

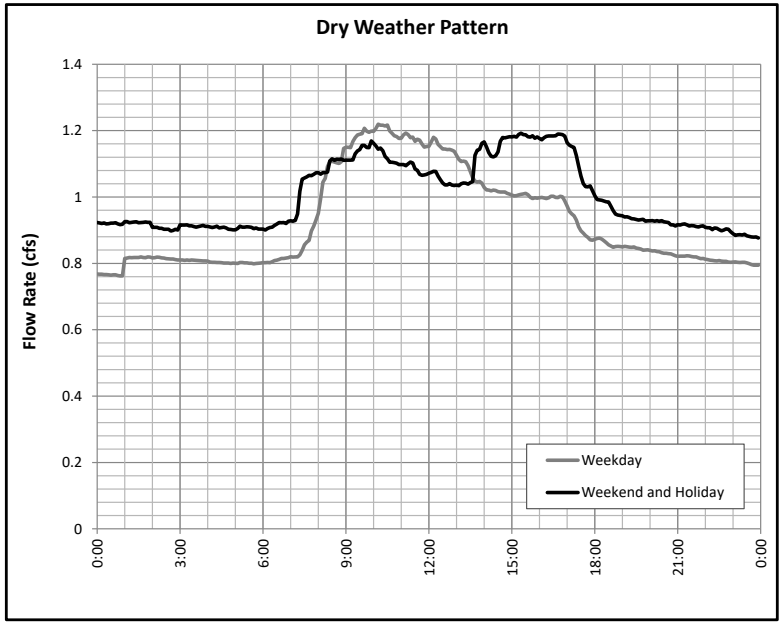
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	28.1	1/11/2020 9:05	≥8.6	1/11/20 13:35 - 1/11/20 15:40
B	2.12	3/27/2020	3/29/2020	27.3	3/28/2020 5:25	7.5	3/28/2020 9:25
C	3.36	8/28/2020	8/29/2020	31.8	8/28/2020 6:50	4.2	8/28/2020 11:20
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-4
Meter Report

Meter: DMA-2 **Location: Detroit Metro Airport** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	1.9	37.7	1.8	35.8	10	21
Feb-20	1.8	34.3	1.9	34.8	26	3
Mar-20	1.9	37.9	1.7	34.6	17	14
Apr-20	3.3	64.3	2.9	56.7	14	16
May-20	1.9	38.8	0.6	12.4	14	17
Jun-20	0.3	5.7	0.1	2.8	20	10
Jul-20	0.2	3.8	0.2	3.2	16	15
Aug-20	0.2	3.4	0.2	3.1	15	16
Sep-20	0.2	3.5	0.2	3.2	19	11
Oct-20	0.1	2.6	0.1	2.6	21	10
Nov-20	1.1	21.2	0.9	17.6	20	10
Dec-20	1.1	22.9	1.2	24.2	19	11

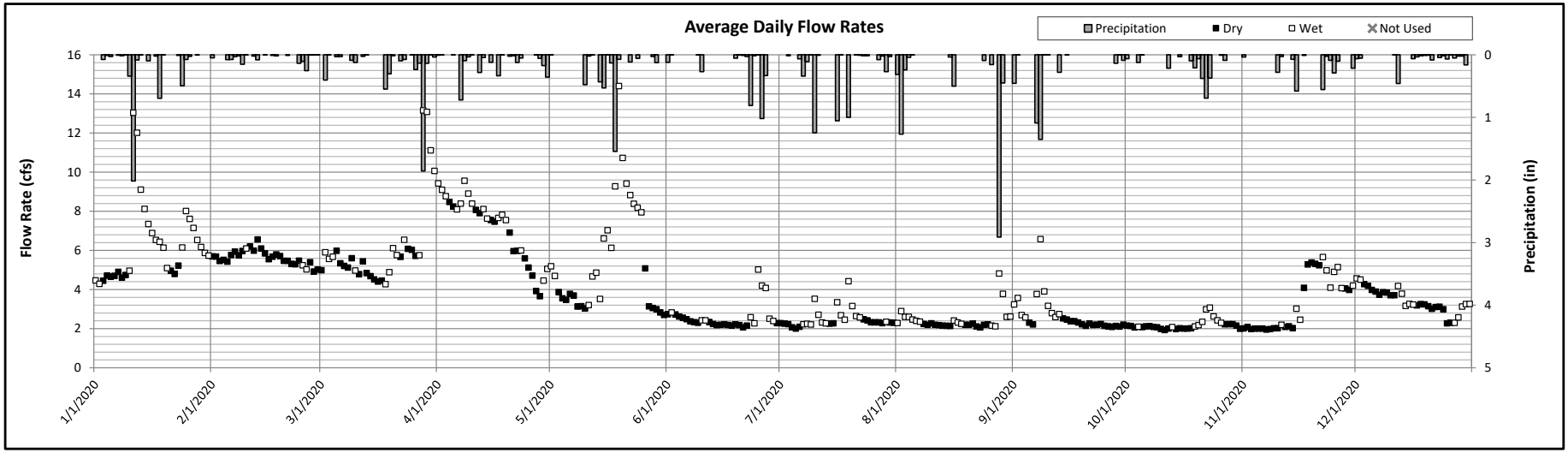
Statistics for Major Wet Weather Events

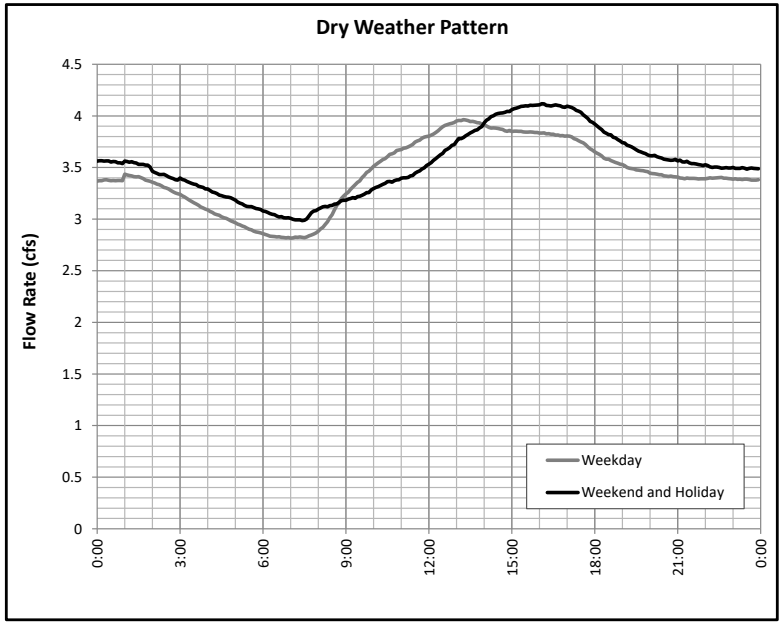
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	2.7	1/12/2020 13:30	1.1	1/12/2020 13:50
B	2.12	3/27/2020	3/29/2020	4.1	3/28/2020 11:10	1.6	3/27/2020 7:10
C	3.36	8/28/2020	8/29/2020	0.8	8/28/2020 11:20	0.6	8/28/2020 11:45
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-5
Meter Report

Meter: PD-2 | **Location: Goddard Interceptor West of Inkster Road** | **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	6.3	126.2	4.8	95.6	10	21
Feb-20	5.6	105.5	5.6	105.9	26	3
Mar-20	6.2	123.8	5.2	104.6	17	14
Apr-20	7.1	138.6	6.4	124.0	14	16
May-20	5.5	110.1	3.4	67.8	14	17
Jun-20	2.6	49.9	2.3	45.1	20	10
Jul-20	2.5	49.9	2.3	45.3	16	15
Aug-20	2.4	48.7	2.2	43.7	15	16
Sep-20	2.7	51.8	2.2	43.5	19	11
Oct-20	2.2	43.8	2.1	41.5	21	10
Nov-20	3.3	64.8	3.0	57.8	20	10
Dec-20	3.4	68.5	3.4	68.3	19	11

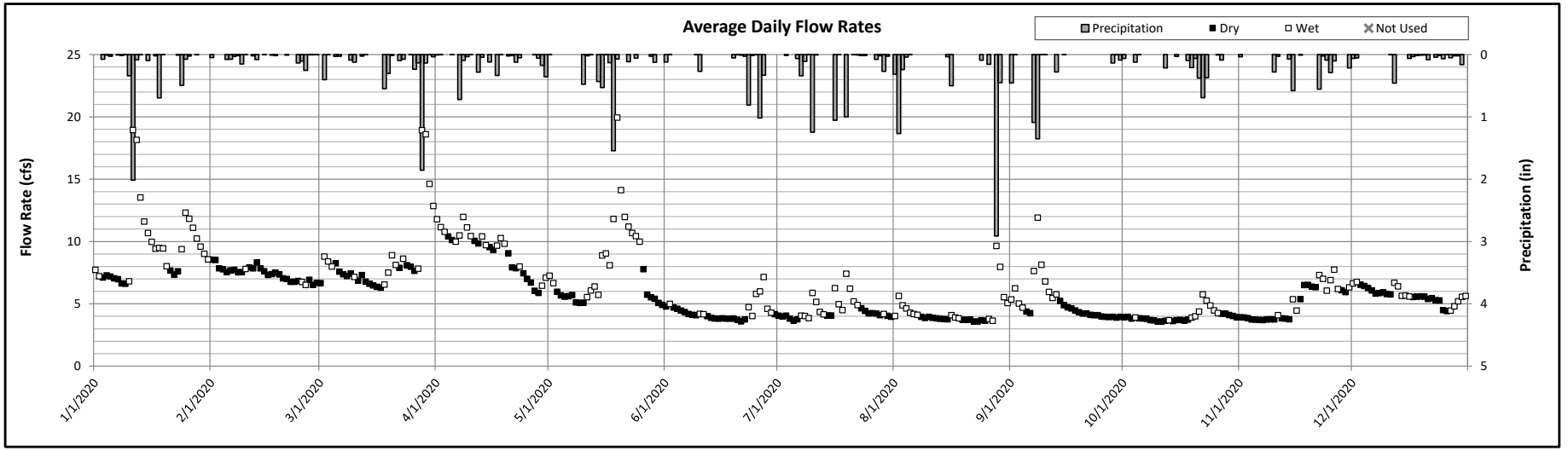
Statistics for Major Wet Weather Events

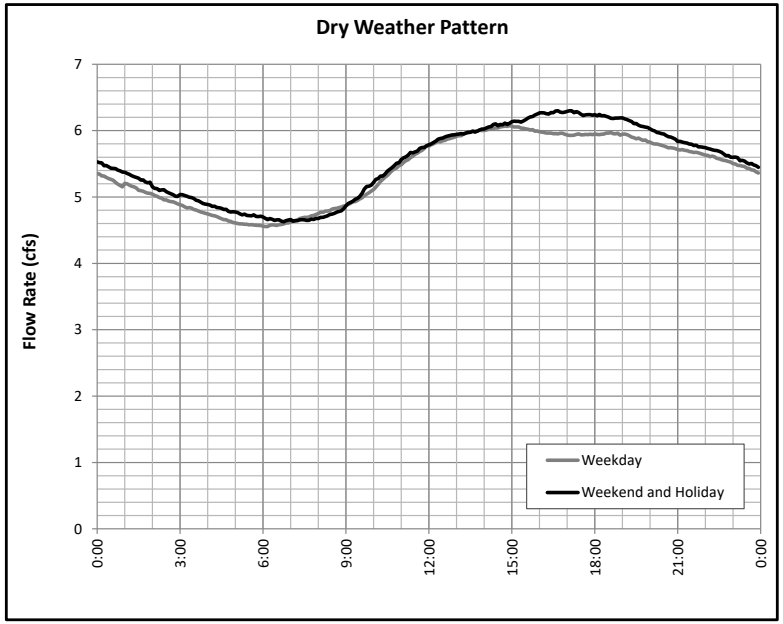
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	23.6	1/11/2020 13:10	2.7	1/11/2020 14:00
B	2.12	3/27/2020	3/29/2020	19.5	3/28/2020 8:35	2.2	3/28/2020 8:55
C	3.36	8/28/2020	8/29/2020	11.7	8/28/2020 12:35	1.6	8/28/2020 13:15
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-6
Meter Report

Meter: PD-1 | **Location: Goddard Interceptor West of Allen Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	9.5	190.2	7.1	143.2	10	21
Feb-20	7.4	139.1	7.5	140.0	26	3
Mar-20	8.6	172.9	7.2	144.6	17	14
Apr-20	9.2	178.5	8.4	162.2	14	16
May-20	7.8	156.3	5.6	111.8	14	17
Jun-20	4.4	84.7	4.1	78.7	20	10
Jul-20	4.5	90.6	4.1	81.6	16	15
Aug-20	4.4	87.6	3.8	75.4	15	16
Sep-20	5.1	99.6	4.3	82.9	19	11
Oct-20	4.0	80.4	3.8	76.4	21	10
Nov-20	5.1	99.3	4.6	89.4	20	10
Dec-20	5.7	113.7	5.6	112.8	19	11

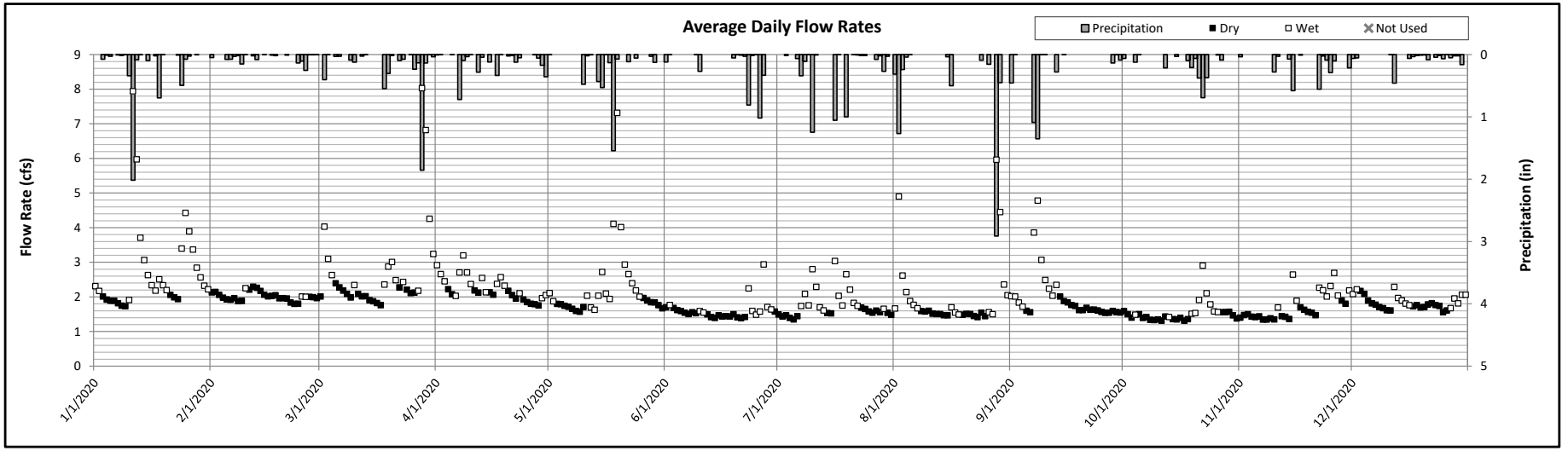
Statistics for Major Wet Weather Events

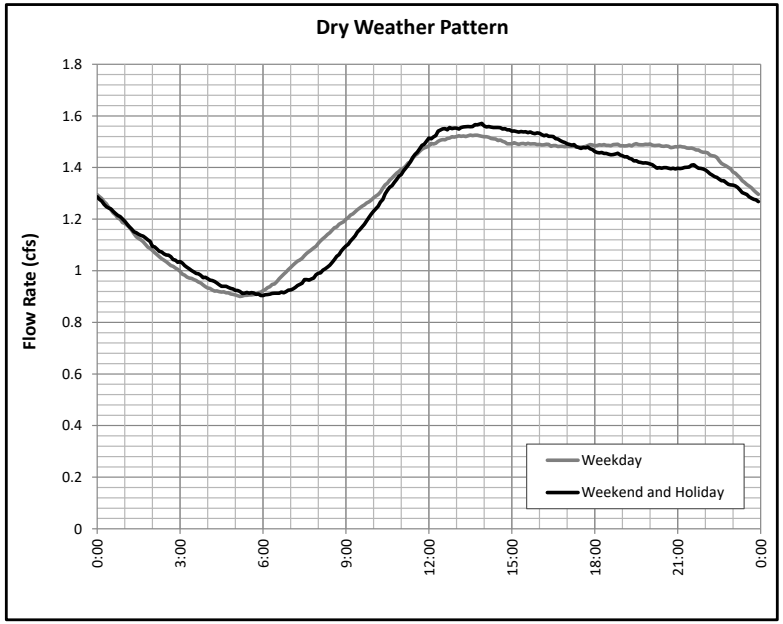
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	32.7	1/11/2020 14:50	2.8	1/11/2020 14:35
B	2.12	3/27/2020	3/29/2020	27.5	3/28/2020 9:40	2.6	3/28/2020 9:45
C	3.36	8/28/2020	8/29/2020	16.5	8/28/2020 11:00	2.0	8/28/2020 11:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-7
Meter Report

Meter: PB-1 | **Location: Northline Interceptor West of Fordline Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	2.7	55.1	1.9	38.0	10	21
Feb-20	2.0	37.8	2.0	37.6	26	3
Mar-20	2.7	54.8	2.1	41.4	17	14
Apr-20	2.2	43.4	2.0	38.9	14	16
May-20	2.3	45.4	1.8	35.1	14	17
Jun-20	1.6	31.1	1.5	29.1	20	10
Jul-20	1.8	35.6	1.5	30.4	16	15
Aug-20	2.0	39.9	1.5	30.1	15	16
Sep-20	2.0	38.7	1.7	32.1	19	11
Oct-20	1.5	30.8	1.4	28.5	21	10
Nov-20	1.7	33.5	1.5	29.0	20	10
Dec-20	1.8	36.9	1.8	35.3	19	11

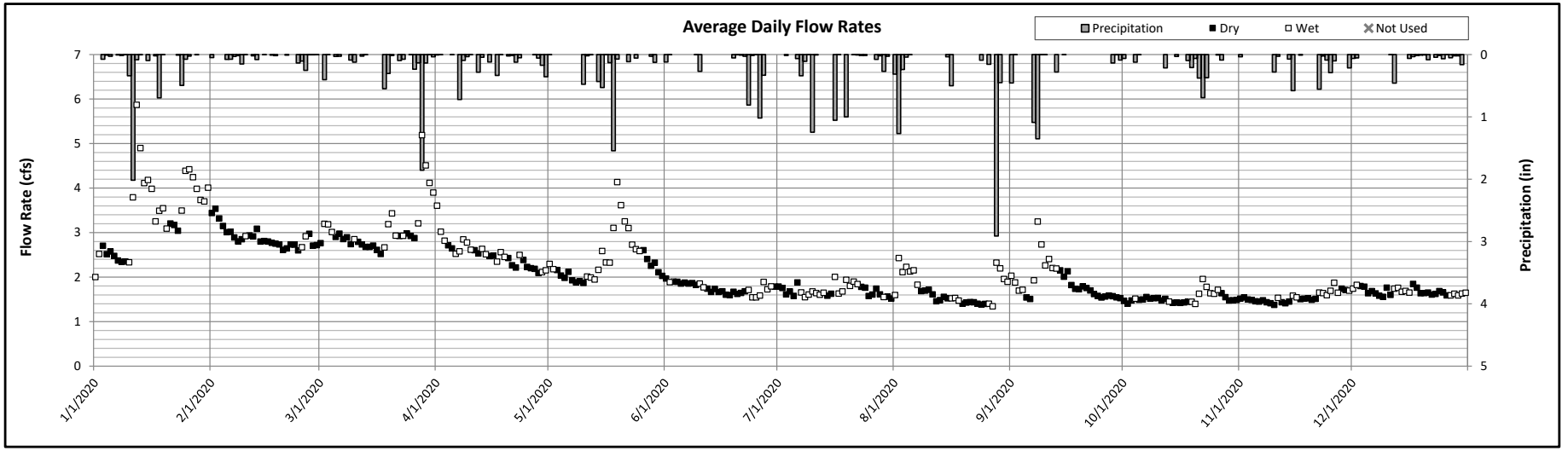
Statistics for Major Wet Weather Events

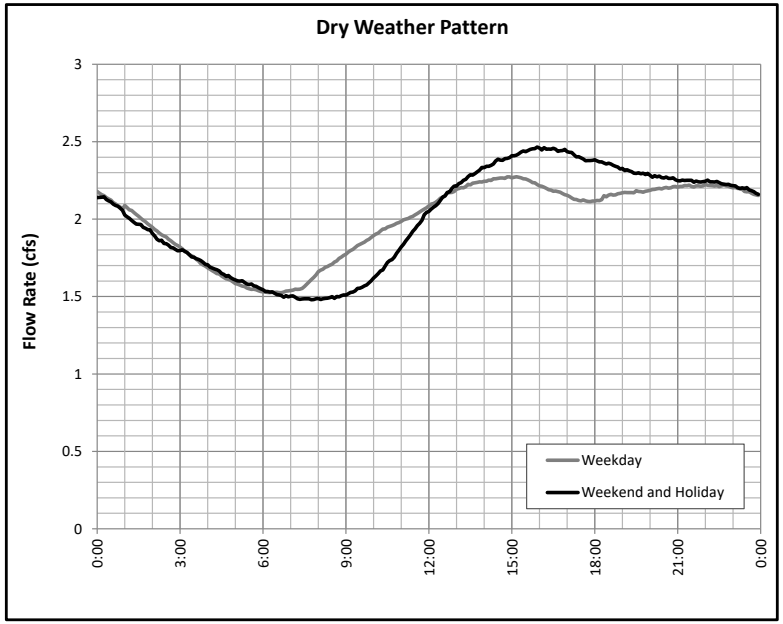
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	15.4	1/11/2020 12:40	2.1	1/11/2020 13:00
B	2.12	3/27/2020	3/29/2020	16.1	3/28/2020 7:10	2.1	3/28/2020 7:35
C	3.36	8/28/2020	8/29/2020	11.7	8/28/2020 10:50	1.8	8/28/2020 11:15
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-8
Meter Report

Meter: PA-4 | **Location: Eureka Interceptor near Hannan Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	3.4	68.4	2.7	53.6	10	21
Feb-20	2.9	54.2	2.9	54.3	26	3
Mar-20	3.1	61.9	2.8	56.0	17	14
Apr-20	2.5	48.8	2.4	46.3	14	16
May-20	2.4	48.2	2.1	42.4	14	17
Jun-20	1.7	33.9	1.8	34.0	20	10
Jul-20	1.7	33.8	1.7	33.4	16	15
Aug-20	1.7	34.1	1.5	30.2	15	16
Sep-20	1.9	36.6	1.7	33.1	19	11
Oct-20	1.5	30.6	1.5	29.8	21	10
Nov-20	1.5	30.0	1.5	29.0	20	10
Dec-20	1.7	33.5	1.7	33.4	19	11

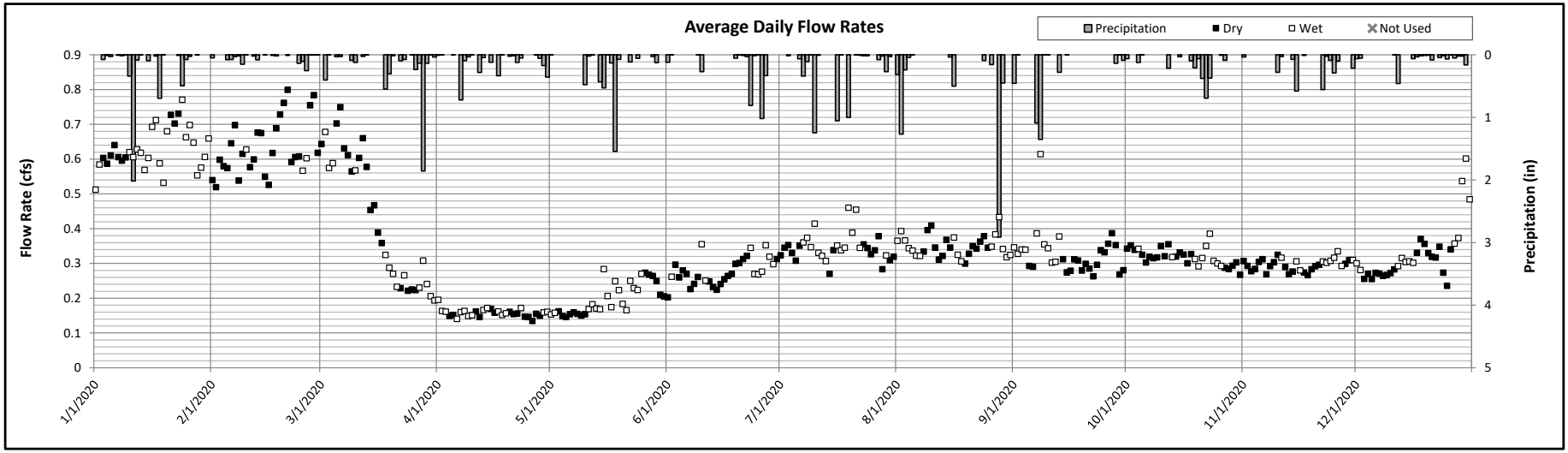
Statistics for Major Wet Weather Events

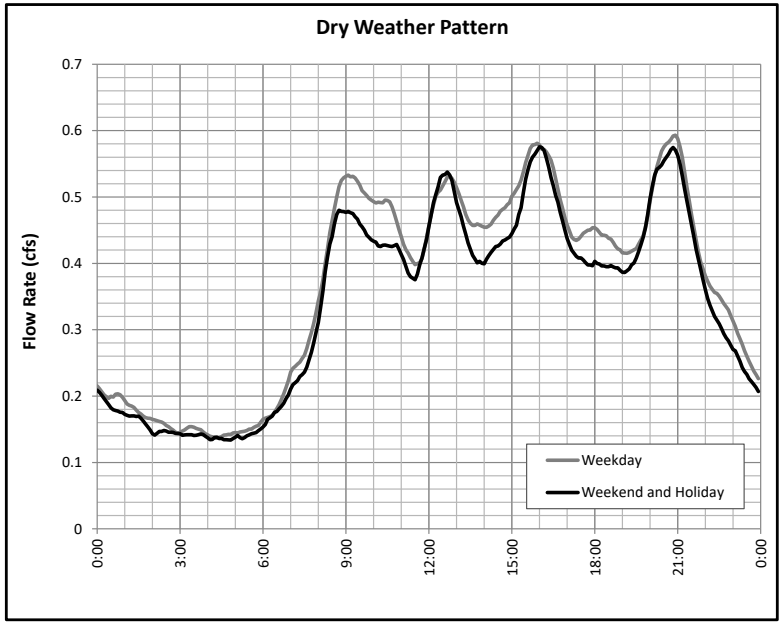
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	7.4	1/11/2020 19:35	1.6	1/11/2020 19:55
B	2.12	3/27/2020	3/29/2020	7.1	3/28/2020 9:30	1.6	3/28/2020 10:20
C	3.36	8/28/2020	8/29/2020	4.6	8/28/2020 11:45	1.2	8/28/2020 12:30
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-9
Meter Report

Meter: DMA-1 **Location: Detroit Metro Airport outlet at Eureka** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	0.6	12.6	0.6	12.8	10	21
Feb-20	0.6	11.8	0.6	11.9	26	3
Mar-20	0.4	8.6	0.5	9.8	17	14
Apr-20	0.2	3.0	0.2	3.0	14	16
May-20	0.2	4.0	0.2	3.9	14	17
Jun-20	0.3	5.4	0.3	5.2	20	10
Jul-20	0.3	6.9	0.3	6.6	16	15
Aug-20	0.3	7.0	0.3	7.0	15	16
Sep-20	0.3	6.4	0.3	5.9	19	11
Oct-20	0.3	6.4	0.3	6.4	21	10
Nov-20	0.3	5.7	0.3	5.6	20	10
Dec-20	0.3	6.5	0.3	5.9	19	11

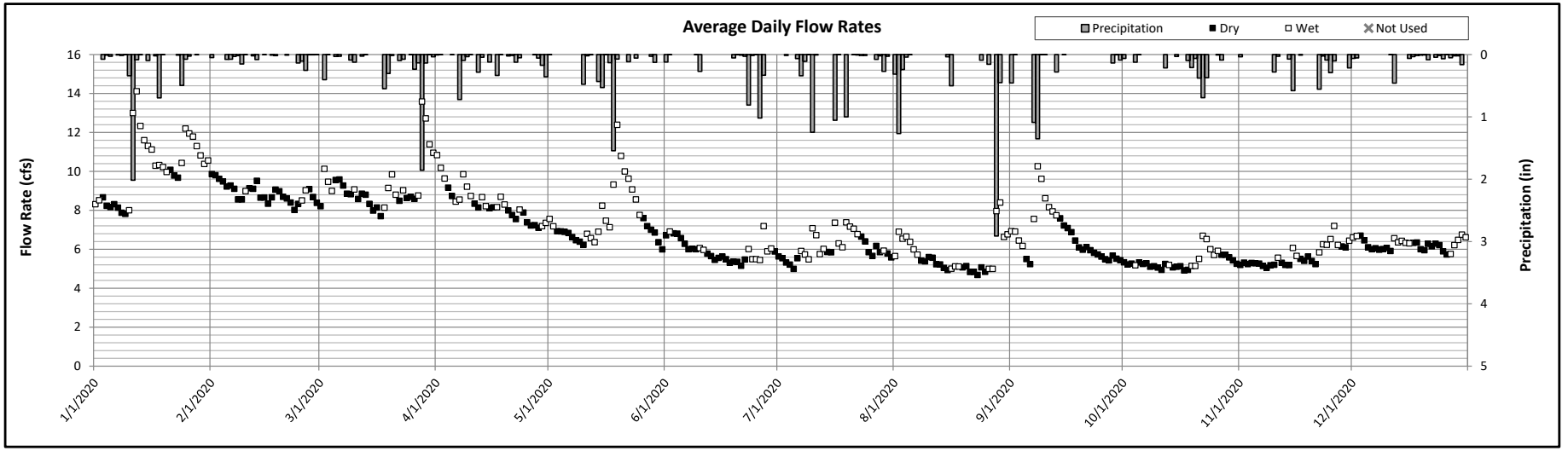
Statistics for Major Wet Weather Events

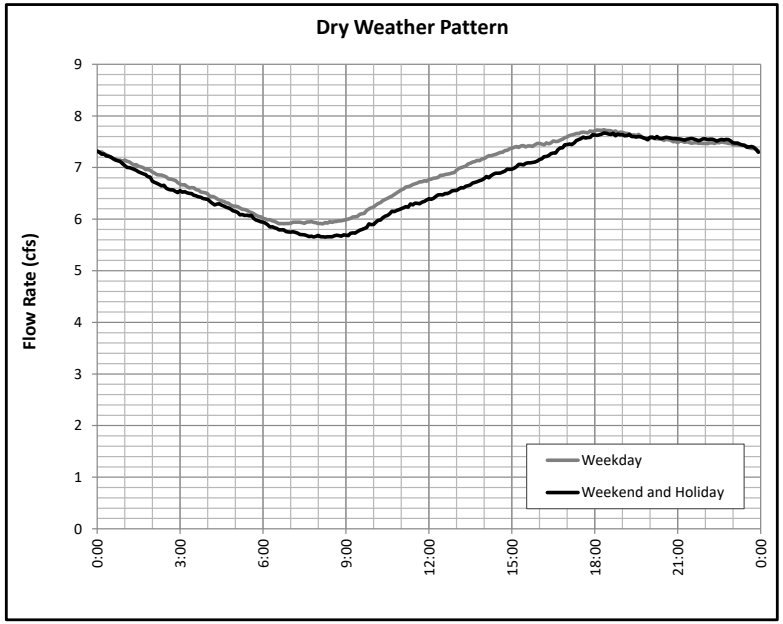
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	1.2	1/11/2020 12:00	1.1	1/11/2020 16:05
B	2.12	3/27/2020	3/29/2020	0.5	3/28/2020 6:55	0.8	3/28/2020 9:50
C	3.36	8/28/2020	8/29/2020	0.7	8/28/2020 8:50	0.5	8/28/2020 13:35
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-10
Meter Report

Meter: PA-3 | **Location: Eureka Interceptor at Inkster Road** | **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	10.2	203.7	8.7	173.8	10	21
Feb-20	8.9	166.9	8.9	167.0	26	3
Mar-20	9.3	185.5	8.7	173.3	17	14
Apr-20	8.4	162.1	7.9	153.4	14	16
May-20	7.6	152.5	6.7	134.9	14	17
Jun-20	5.9	114.9	5.9	113.7	20	10
Jul-20	6.1	121.9	5.7	115.1	16	15
Aug-20	5.7	113.5	5.1	102.6	15	16
Sep-20	6.7	130.0	6.0	117.1	19	11
Oct-20	5.4	107.9	5.2	104.9	21	10
Nov-20	5.6	109.4	5.4	104.0	20	10
Dec-20	6.2	125.1	6.1	122.8	19	11

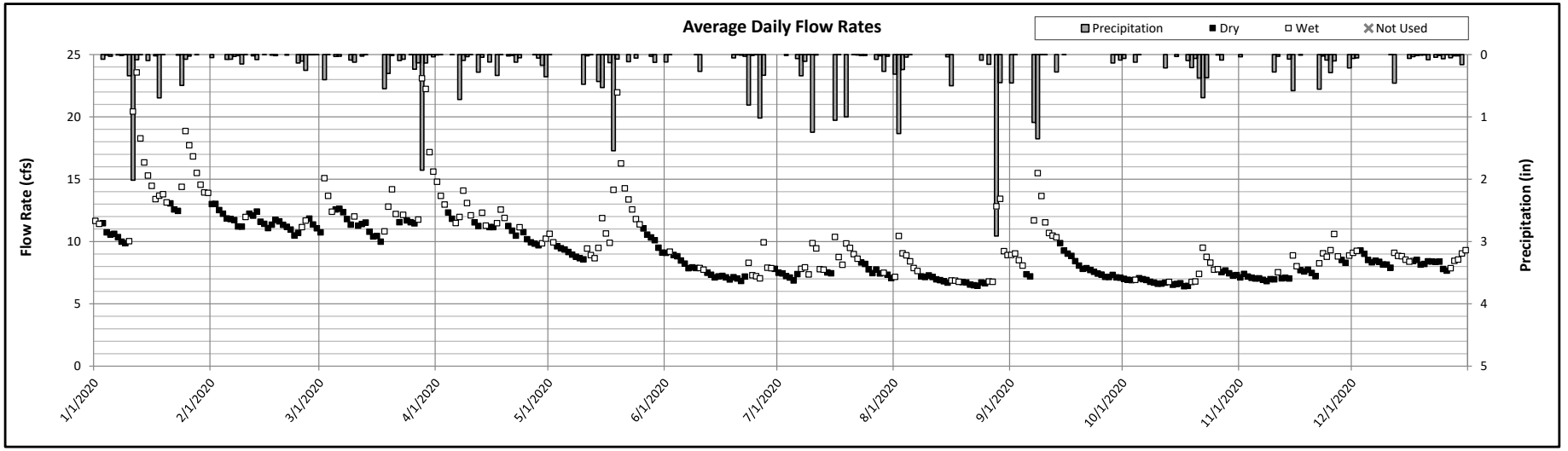
Statistics for Major Wet Weather Events

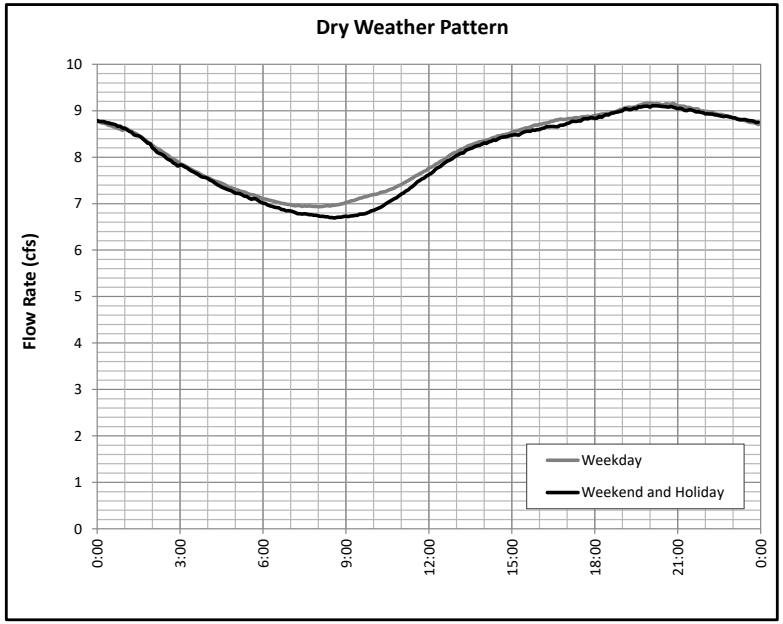
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	17.4	1/11/2020 12:30	2.4	1/11/2020 12:45
B	2.12	3/27/2020	3/29/2020	17.0	3/28/2020 7:25	2.4	3/28/2020 7:45
C	3.36	8/28/2020	8/29/2020	11.7	8/28/2020 18:35	1.9	8/28/2020 19:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-11
Meter Report

Meter: PA-2 | **Location: Eureka Interceptor at Allen Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	14.0	279.6	11.2	223.6	10	21
Feb-20	11.6	218.2	11.6	218.3	26	3
Mar-20	12.9	257.6	11.4	228.0	17	14
Apr-20	11.6	224.2	10.9	210.7	14	16
May-20	10.9	218.6	9.5	190.5	14	17
Jun-20	7.8	151.1	7.7	148.9	20	10
Jul-20	8.0	161.1	7.5	149.9	16	15
Aug-20	7.7	155.3	6.8	136.8	15	16
Sep-20	8.9	173.2	7.9	152.6	19	11
Oct-20	7.1	143.2	6.9	138.3	21	10
Nov-20	7.8	151.4	7.3	141.7	20	10
Dec-20	8.5	170.3	8.3	167.0	19	11

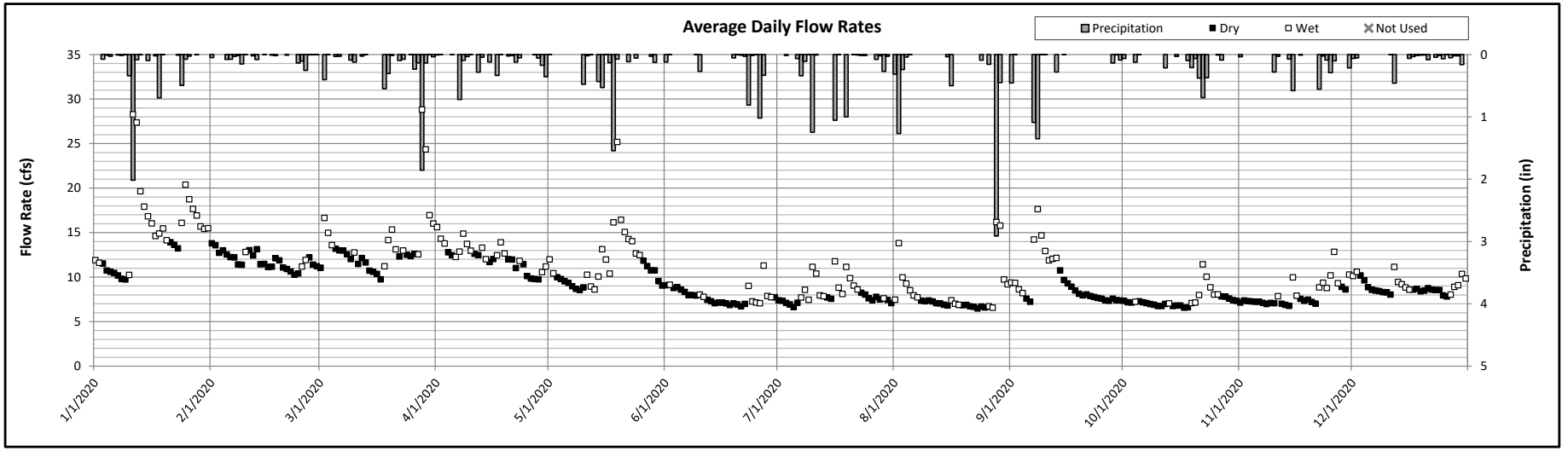
Statistics for Major Wet Weather Events

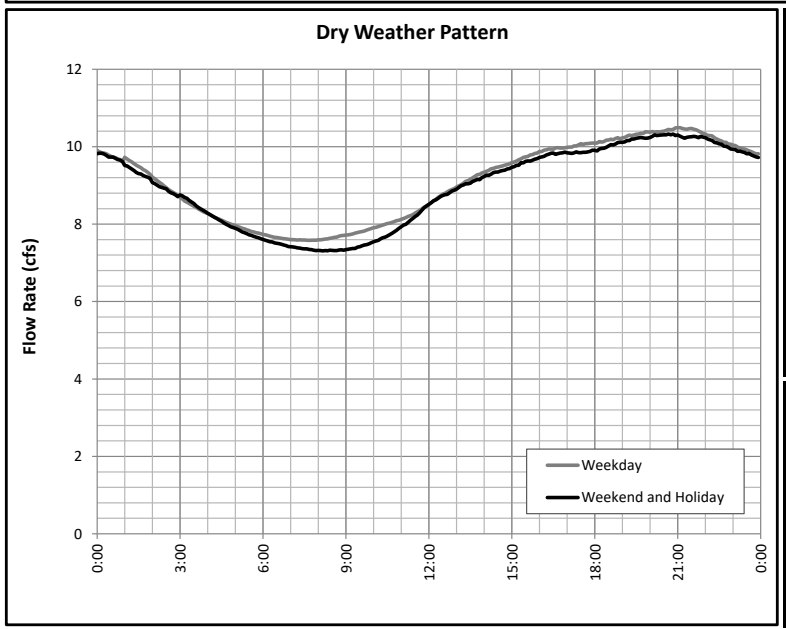
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	29.9	1/11/2020 12:45	3.9	1/11/2020 14:00
B	2.12	3/27/2020	3/29/2020	29.6	3/28/2020 7:00	3.9	3/28/2020 8:45
C	3.36	8/28/2020	8/29/2020	23.3	8/28/2020 18:40	2.6	8/28/2020 19:15
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-12
Meter Report

Meter: PA-1 | **Location: Eureka Interceptor West of Fordline Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	15.1	303.1	11.4	228.0	10	21
Feb-20	11.9	222.7	11.9	222.6	26	3
Mar-20	13.7	274.4	11.8	237.1	17	14
Apr-20	12.3	237.9	11.4	221.5	14	16
May-20	11.6	231.9	9.8	195.8	14	17
Jun-20	7.8	152.0	7.6	148.1	20	10
Jul-20	8.2	164.7	7.4	148.8	16	15
Aug-20	8.2	164.1	6.9	138.7	15	16
Sep-20	9.5	184.2	8.1	157.2	19	11
Oct-20	7.5	149.8	7.1	142.1	21	10
Nov-20	8.1	156.2	7.3	142.0	20	10
Dec-20	8.9	179.2	8.6	172.0	19	11

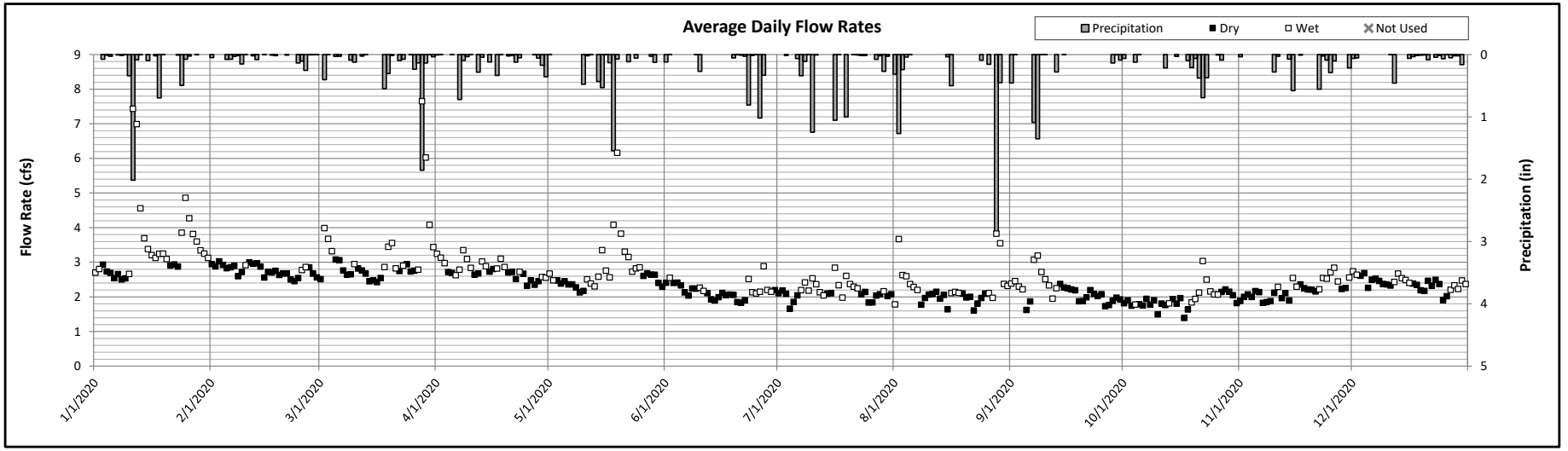
Statistics for Major Wet Weather Events

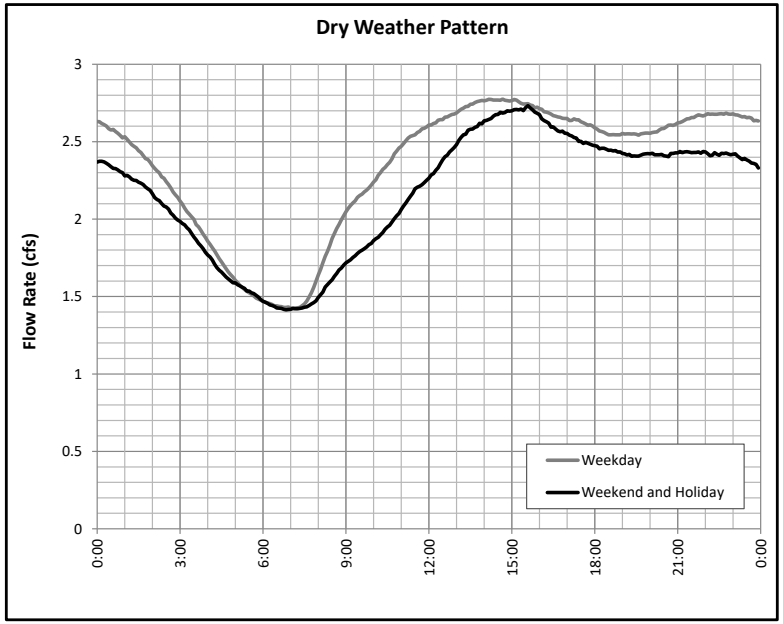
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	41.7	1/11/2020 12:40	3.0	1/11/2020 12:50
B	2.12	3/27/2020	3/29/2020	40.9	3/28/2020 7:30	3.0	3/28/2020 7:45
C	3.36	8/28/2020	8/29/2020	32.2	8/28/2020 19:00	2.5	8/28/2020 19:15
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-13
Meter Report

Meter: P-2 | **Location: Pennsylvania Interceptor East of Dix-Toledo Road** | **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	3.5	69.5	2.7	54.7	10	21
Feb-20	2.8	51.9	2.8	51.7	26	3
Mar-20	3.2	64.3	2.7	54.2	17	14
Apr-20	2.8	53.7	2.6	50.5	14	16
May-20	2.8	55.8	2.4	48.5	14	17
Jun-20	2.2	42.2	2.1	40.9	20	10
Jul-20	2.2	43.2	2.0	40.4	16	15
Aug-20	2.2	44.8	1.9	39.1	15	16
Sep-20	2.2	42.4	2.0	39.0	19	11
Oct-20	1.9	38.8	1.8	37.0	21	10
Nov-20	2.2	43.0	2.1	40.3	20	10
Dec-20	2.4	48.0	2.4	47.2	19	11

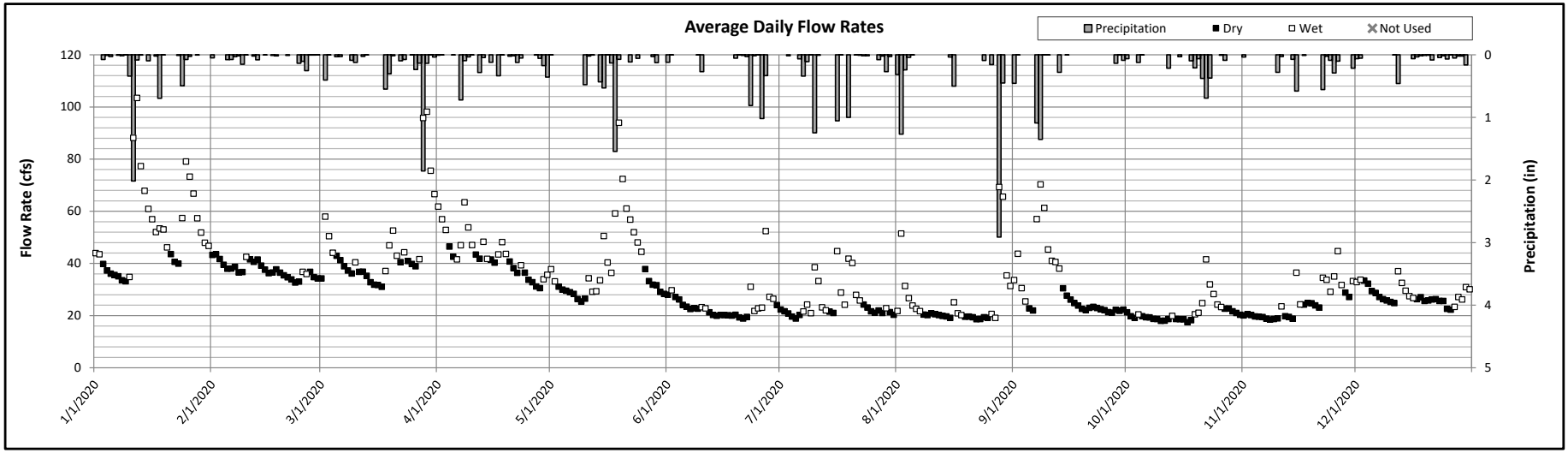
Statistics for Major Wet Weather Events

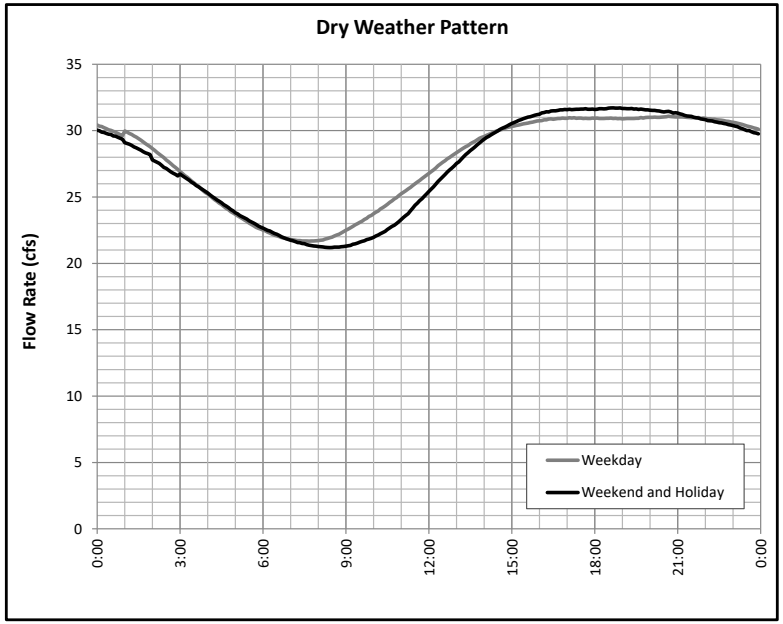
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	13.7	1/11/2020 13:50	2.0	1/11/2020 13:55
B	2.12	3/27/2020	3/29/2020	15.0	3/28/2020 8:05	2.2	3/28/2020 8:40
C	3.36	8/28/2020	8/29/2020	8.6	8/28/2020 18:50	1.5	8/28/2020 19:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-14
Meter Report

Meter: P-1 | **Location: Pennsylvania Interceptor East of Fort Street** | **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	52.8	1057.2	37.4	750.1	10	21
Feb-20	37.7	706.7	37.6	705.2	26	3
Mar-20	45.8	918.3	36.9	738.7	17	14
Apr-20	43.1	836.3	38.3	742.0	14	16
May-20	39.7	794.9	29.9	598.1	14	17
Jun-20	24.0	465.7	22.0	427.0	20	10
Jul-20	25.2	504.1	21.3	426.1	16	15
Aug-20	25.9	518.0	19.7	393.9	15	16
Sep-20	31.0	601.7	23.4	453.5	19	11
Oct-20	21.5	430.3	19.5	391.3	21	10
Nov-20	25.2	487.9	21.4	415.7	20	10
Dec-20	27.8	557.9	26.6	533.6	19	11

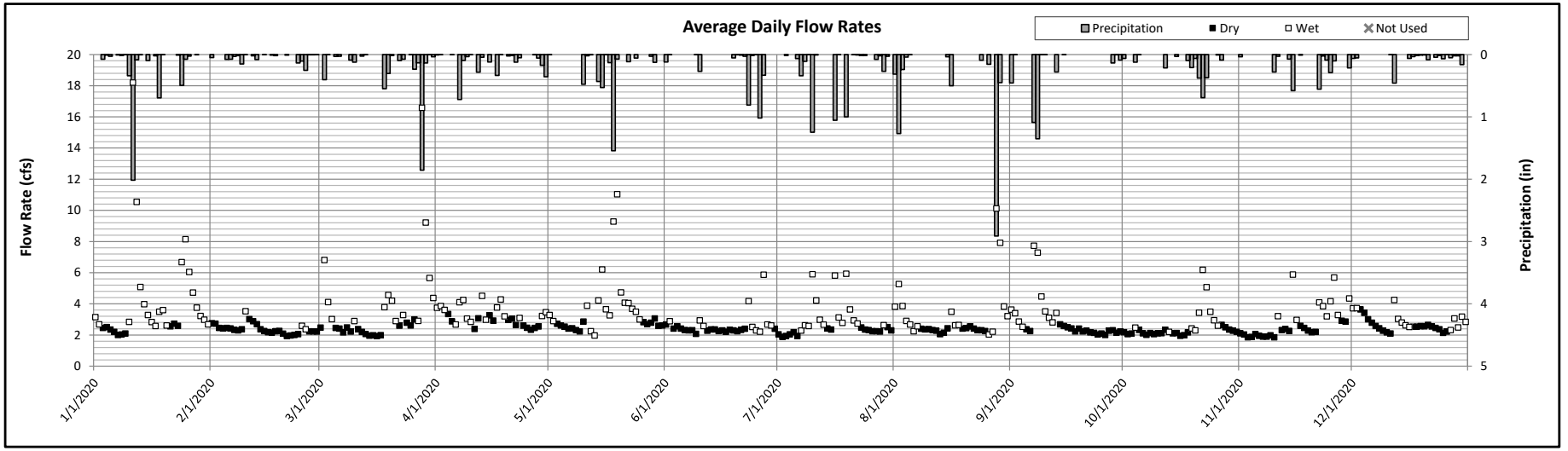
Statistics for Major Wet Weather Events

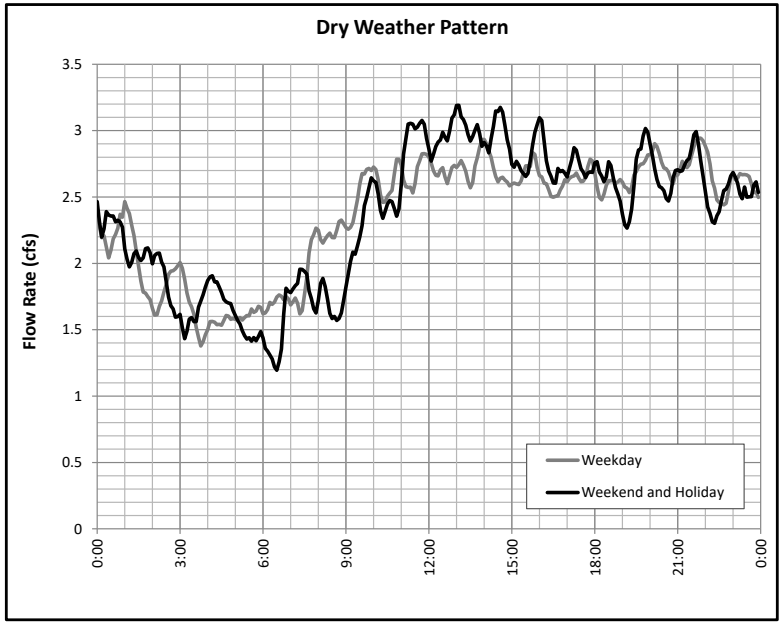
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	136.5	1/11/2020 12:15	≥12.1	1/11/20 13:20 - 1/11/20 16:50
B	2.12	3/27/2020	3/29/2020	135.6	3/28/2020 7:45	≥12.0	3/28/20 8:50 - 3/28/20 10:40
C	3.36	8/28/2020	8/29/2020	106.9	8/28/2020 21:10	9.4	8/28/2020 18:50
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-15
Meter Report

Meter: RV-1 | **Location: Pennsylvania Interceptor West of Jefferson Avenue** | **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	4.1	81.7	2.3	47.0	10	21
Feb-20	2.4	44.8	2.3	43.9	26	3
Mar-20	3.7	73.6	2.3	46.7	17	14
Apr-20	3.2	61.7	2.8	53.8	14	16
May-20	3.6	72.1	2.6	52.4	14	17
Jun-20	2.6	50.0	2.3	45.3	20	10
Jul-20	2.8	57.0	2.2	44.3	16	15
Aug-20	3.1	62.2	2.3	46.7	15	16
Sep-20	2.9	56.8	2.3	44.1	19	11
Oct-20	2.5	50.9	2.2	43.6	21	10
Nov-20	2.8	54.6	2.2	42.5	20	10
Dec-20	2.8	55.1	2.6	51.5	19	11

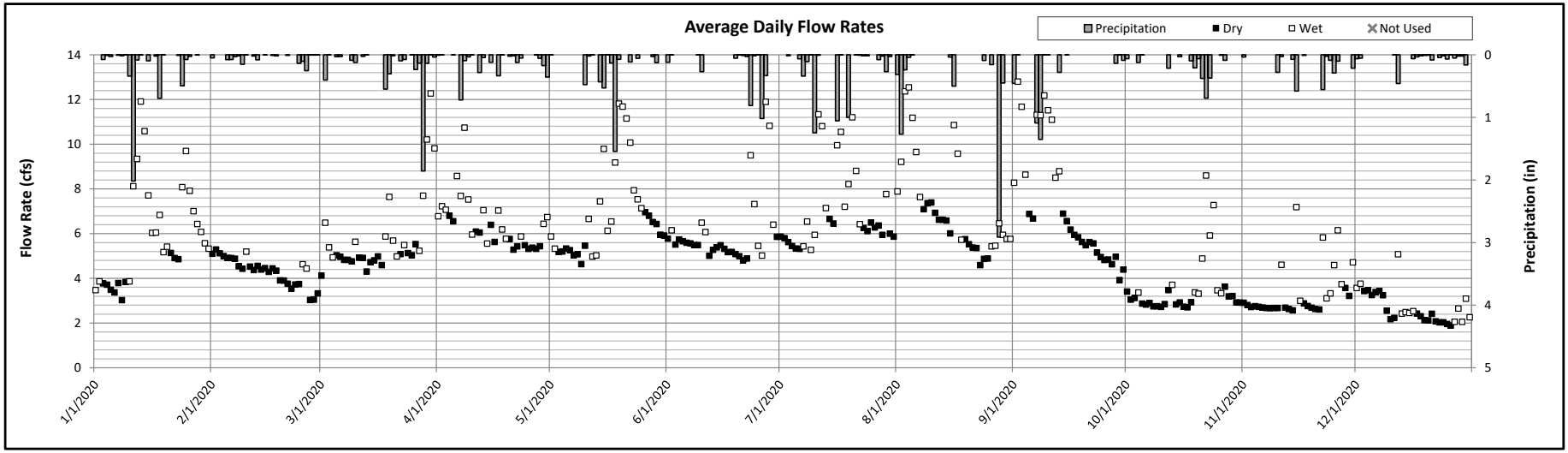
Statistics for Major Wet Weather Events

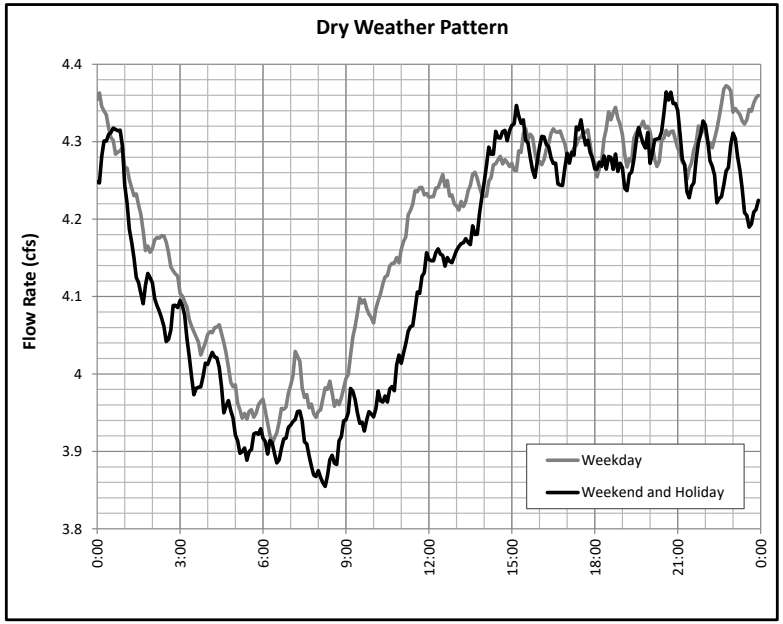
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	39.7	1/11/2020 12:05	12.8	1/11/2020 14:55
B	2.12	3/27/2020	3/29/2020	43.9	3/28/2020 7:00	14.2	3/28/2020 9:15
C	3.36	8/28/2020	8/29/2020	31.8	8/28/2020 18:15	9.2	8/28/2020 18:50
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-16
Meter Report

Meter: RR-1 **Location: 17th Street near Visger Road** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	5.9	119.1	4.0	79.9	10	21
Feb-20	4.3	81.3	4.3	80.4	26	3
Mar-20	5.8	116.2	4.9	97.2	17	14
Apr-20	6.4	124.8	5.8	112.0	14	16
May-20	6.9	138.3	5.7	114.1	14	17
Jun-20	6.1	117.8	5.4	103.9	20	10
Jul-20	7.0	141.1	6.0	119.9	16	15
Aug-20	7.2	143.7	6.1	121.5	15	16
Sep-20	7.4	142.8	5.5	107.0	19	11
Oct-20	3.5	71.0	3.0	59.8	21	10
Nov-20	3.4	65.7	2.8	53.8	20	10
Dec-20	2.7	53.6	2.6	51.1	19	11

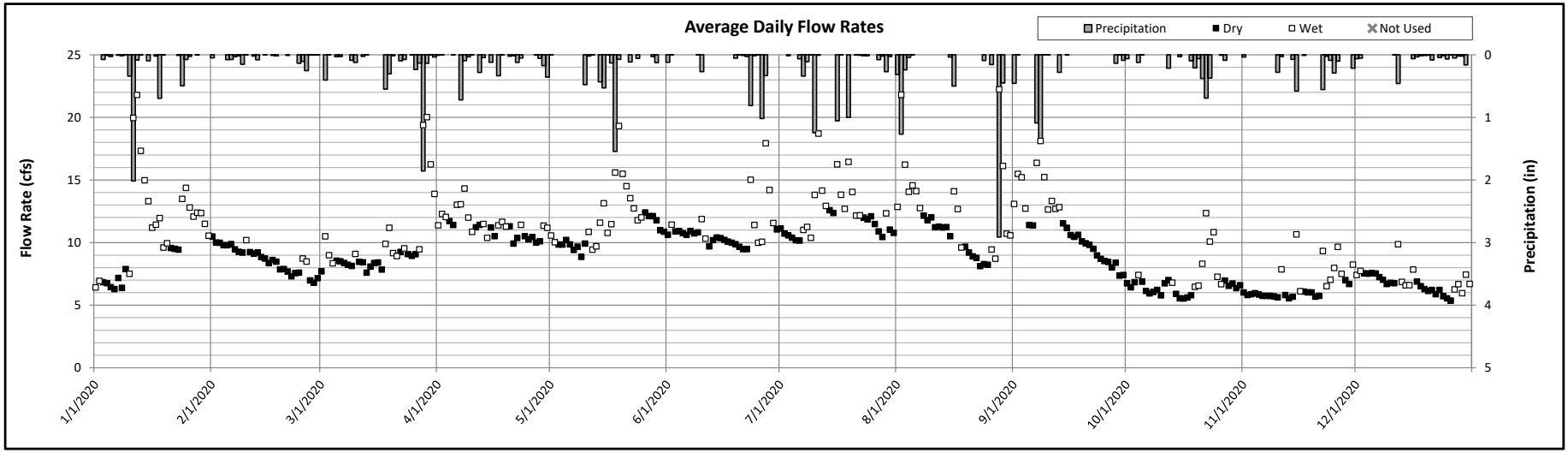
Statistics for Major Wet Weather Events

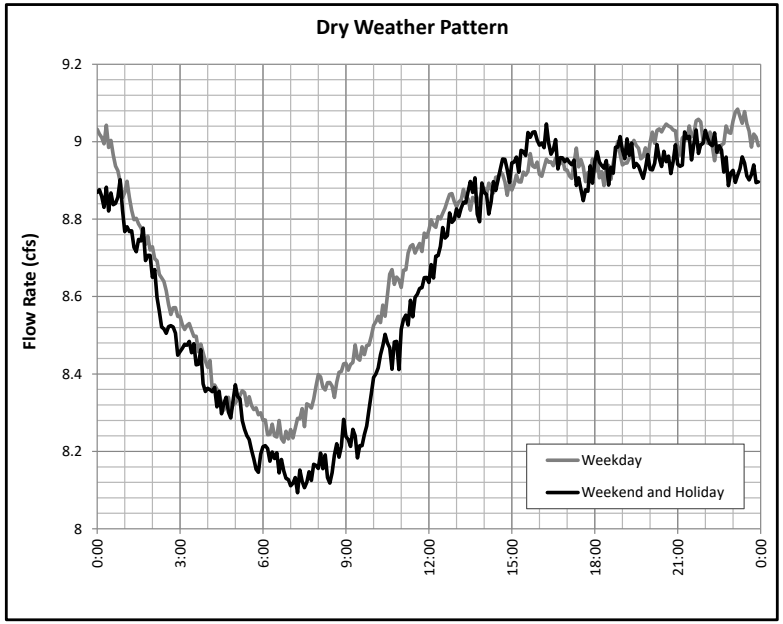
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	12.1	1/12/2020 20:55	8.9	1/11/2020 14:25
B	2.12	3/27/2020	3/29/2020	12.5	3/30/2020 0:00	8.0	3/28/2020 9:35
C	3.36	8/28/2020	8/29/2020	8.7	8/28/2020 4:10	8.1	8/28/2020 12:15
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-17
Meter Report

Meter: EC-6 **Location: Riverdrive Interceptor South of Southfield Road** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	10.9	218.4	7.6	152.7	10	21
Feb-20	8.7	163.2	8.7	162.3	26	3
Mar-20	9.9	198.7	8.4	168.4	17	14
Apr-20	11.3	219.3	10.7	208.2	14	16
May-20	11.6	232.8	10.6	211.5	14	17
Jun-20	11.0	213.5	10.3	200.3	20	10
Jul-20	12.3	246.1	11.2	223.7	16	15
Aug-20	12.0	241.0	10.2	203.7	15	16
Sep-20	11.3	219.7	9.6	186.0	19	11
Oct-20	6.9	138.9	6.3	126.2	21	10
Nov-20	6.6	128.6	5.9	114.6	20	10
Dec-20	6.8	136.5	6.6	132.1	19	11

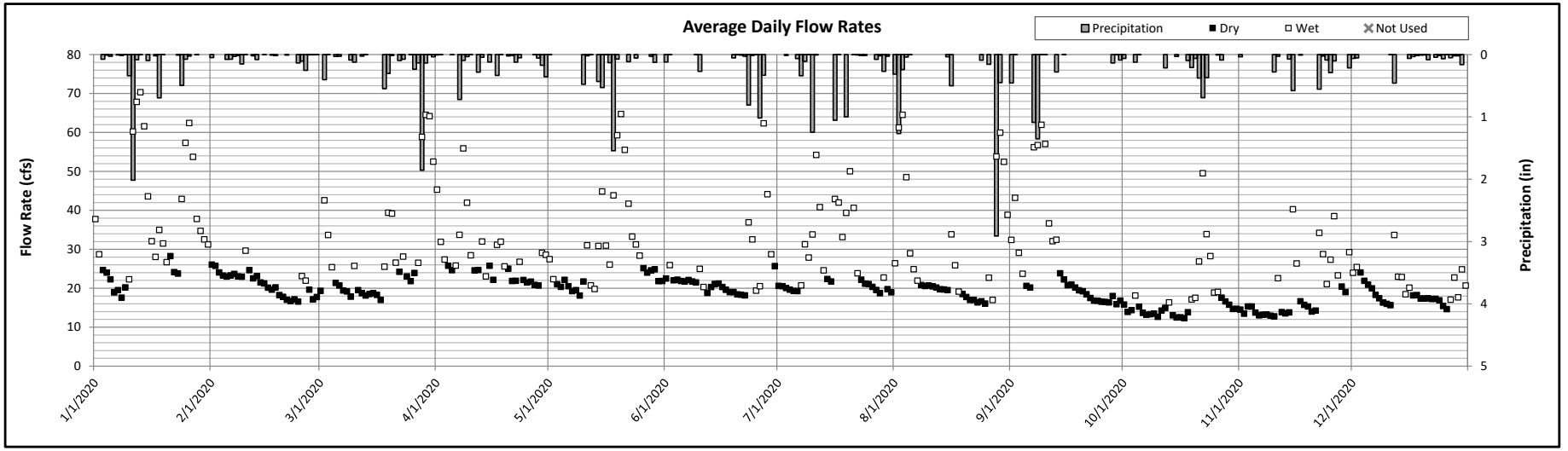
Statistics for Major Wet Weather Events

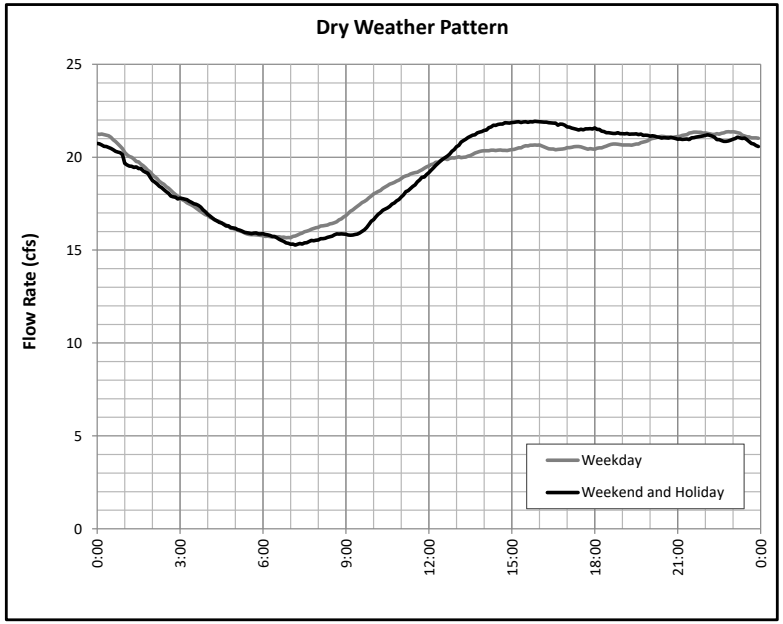
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	27.0	1/11/2020 11:00	15.5	1/11/2020 14:20
B	2.12	3/27/2020	3/29/2020	24.2	3/28/2020 12:00	13.7	3/28/2020 7:05
C	3.36	8/28/2020	8/29/2020	27.4	8/28/2020 6:30	14.7	8/28/2020 12:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-18
Meter Report

Meter: RD-1 **Location: Riverdrive Interceptor North of Northline Road** **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	36.2	724.6	22.3	447.1	10	21
Feb-20	21.4	401.0	21.0	393.4	26	3
Mar-20	28.8	576.5	20.0	400.1	17	14
Apr-20	28.0	543.9	23.1	447.4	14	16
May-20	29.6	592.4	21.8	436.1	14	17
Jun-20	24.4	472.5	20.8	402.7	20	10
Jul-20	27.5	551.1	20.3	407.0	16	15
Aug-20	28.4	569.1	18.7	375.0	15	16
Sep-20	27.3	528.8	18.8	364.1	19	11
Oct-20	17.5	351.4	14.2	284.5	21	10
Nov-20	19.5	378.4	14.7	285.0	20	10
Dec-20	19.7	394.7	17.9	358.9	19	11

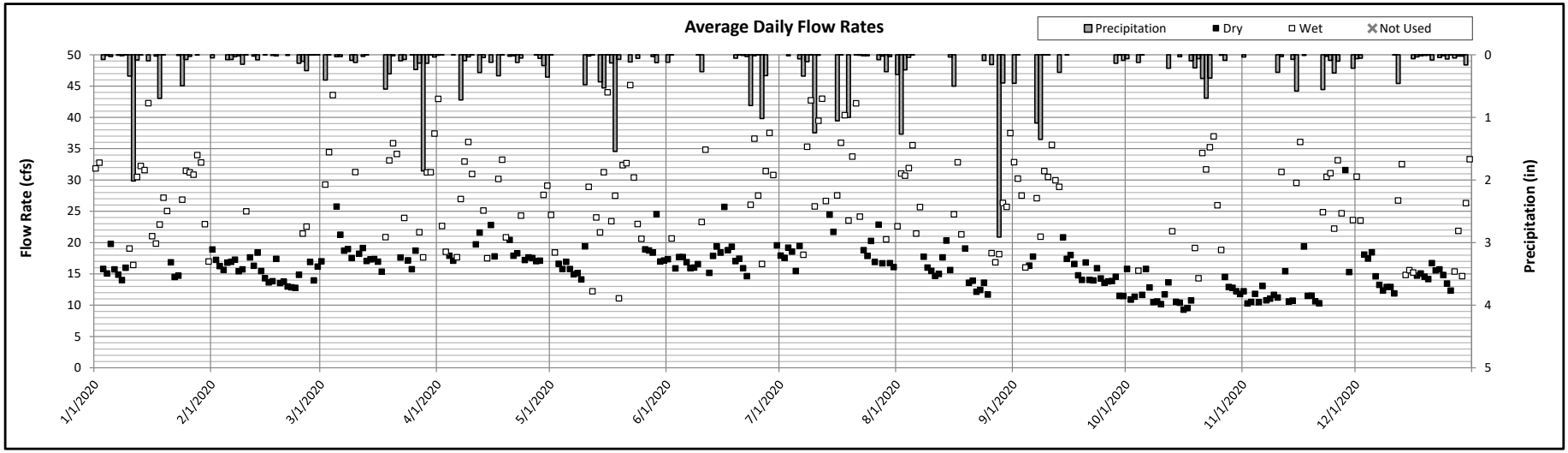
Statistics for Major Wet Weather Events

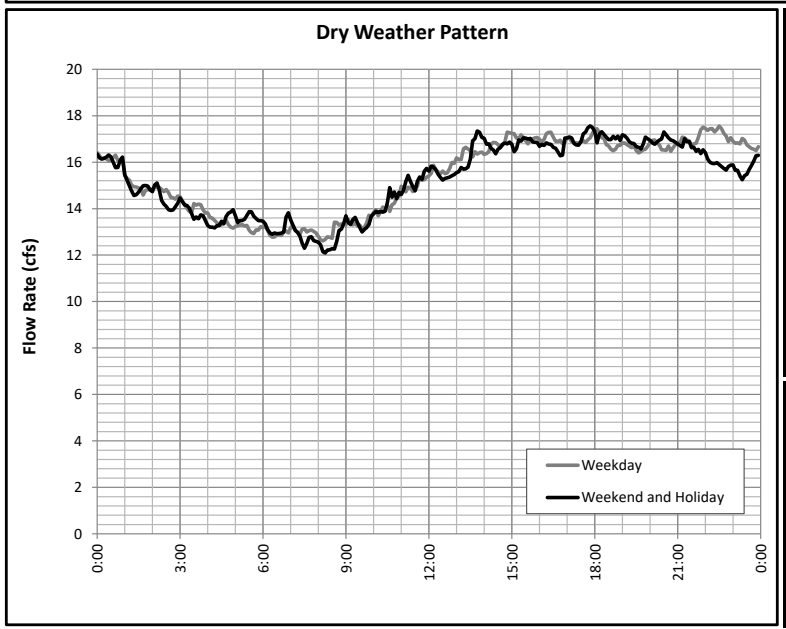
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	73.8	1/11/2020 12:10	14.5	1/11/2020 13:45
B	2.12	3/27/2020	3/29/2020	72.6	3/28/2020 6:50	14.7	3/28/2020 9:25
C	3.36	8/28/2020	8/29/2020	74.4	8/28/2020 11:35	12.2	8/28/2020 12:55
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-19
Meter Report

Meter: [SW] + [SWB] **Location: Southgate / Wyandotte** **Period: 1/1/2020 through 12/31/2020**

Type: Accusonic 7510 (SW) & Telog 3314 (SWB) **System Meter Type: Total for SWDDD**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	23.8	476.1	15.7	314.9	10	21
Feb-20	16.3	306.0	15.6	291.7	26	3
Mar-20	23.7	475.1	18.2	364.9	17	14
Apr-20	23.2	450.0	18.6	359.9	14	16
May-20	22.4	448.5	17.4	348.0	14	17
Jun-20	21.3	412.4	17.6	342.2	20	10
Jul-20	25.1	503.5	18.8	376.0	16	15
Aug-20	20.9	419.3	15.2	305.4	15	16
Sep-20	20.0	387.8	15.2	295.2	19	11
Oct-20	16.2	325.1	11.9	238.0	21	10
Nov-20	18.2	353.3	13.0	251.8	20	10
Dec-20	17.7	354.8	14.7	293.9	19	11

Statistics for Major Wet Weather Events

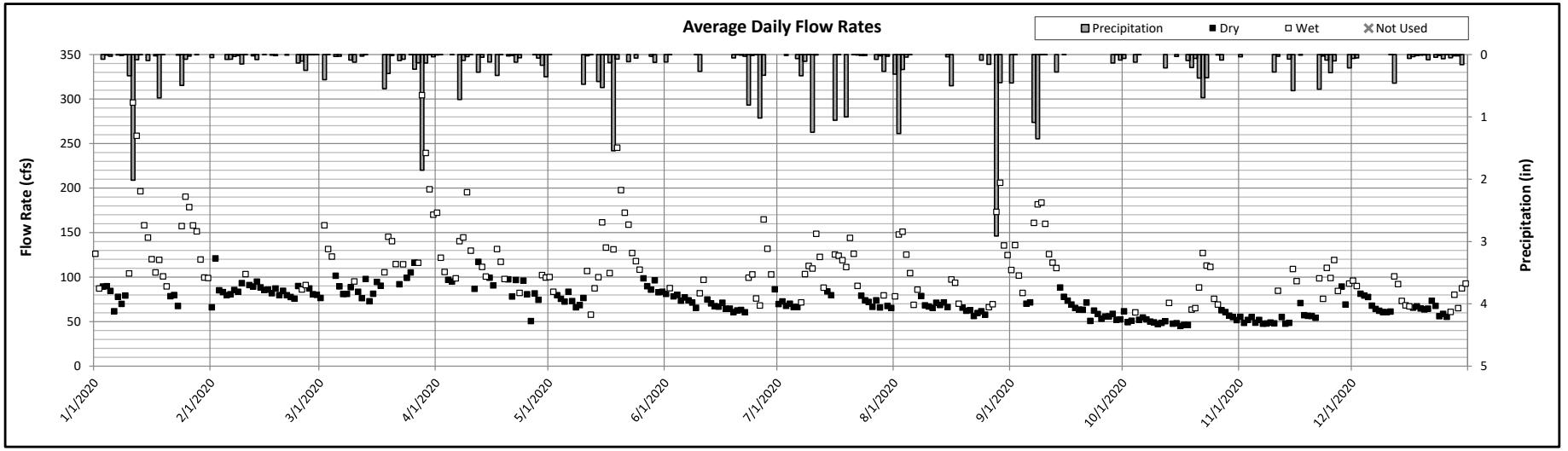
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	37.1	1/11/2020 23:15	16.4	1/11/2020 13:45
B	2.12	3/27/2020	3/29/2020	44.7	3/31/2020 19:45	17.3	3/28/2020 9:20
C	3.36	8/28/2020	8/29/2020	31.9	8/28/2020 4:20	15.1	8/28/2020 18:40
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

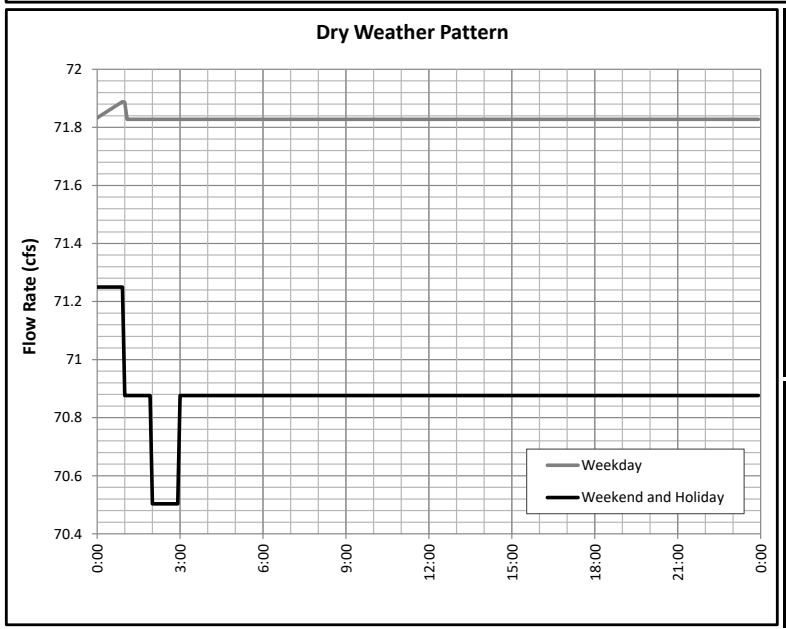
Figure C-20
Meter Report

Meter: [IPS] + [TPS]
Type: Magmeters

Location: Main Influent Pump Station and Tunnel Pump Station
System Meter Type: DWTF

Period: 1/1/2020 through 12/31/2020





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-20	123.8	2479.8	77.8	1558.2	10	21
Feb-20	86.1	1613.8	85.3	1598.0	26	3
Mar-20	118.8	2380.0	89.8	1799.2	17	14
Apr-20	106.4	2062.6	88.7	1719.3	14	16
May-20	107.2	2148.4	80.8	1619.8	14	17
Jun-20	80.8	1567.4	70.7	1369.9	20	10
Jul-20	90.8	1819.5	71.3	1428.0	16	15
Aug-20	89.7	1796.4	65.5	1312.3	15	16
Sep-20	89.3	1730.9	63.8	1237.8	19	11
Oct-20	62.3	1247.6	51.7	1036.8	21	10
Nov-20	69.2	1342.2	55.4	1074.3	20	10
Dec-20	71.8	1438.1	65.9	1319.8	19	11

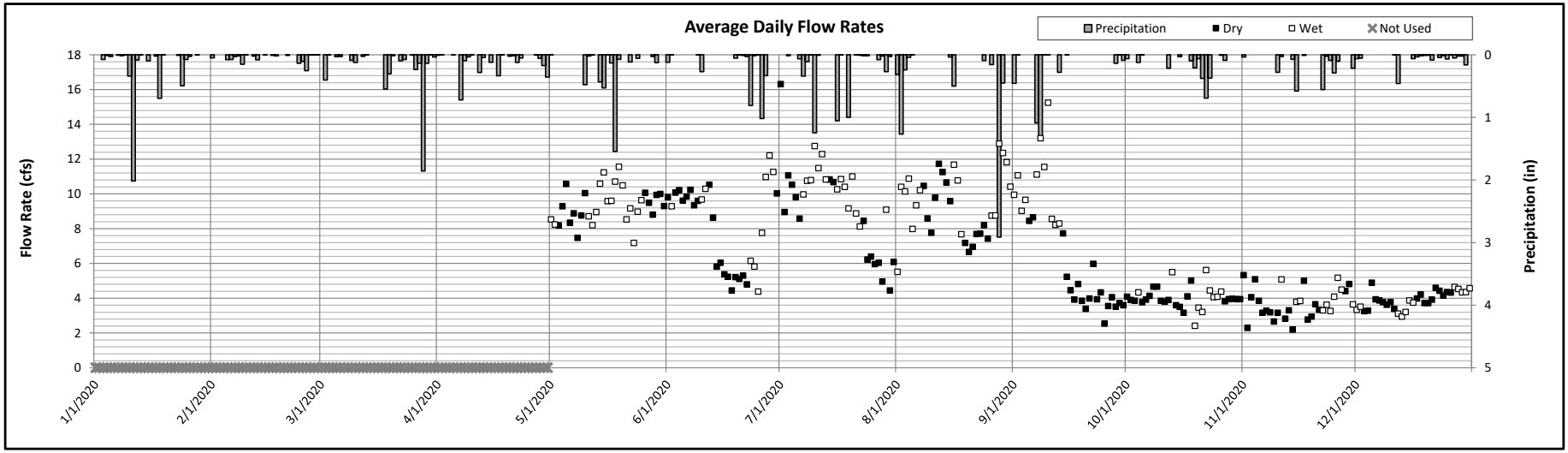
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	393.0	1/11/2020 14:00	24.0	1/11/2020 14:55
B	2.12	3/27/2020	3/29/2020	312.5	3/28/2020 8:00	25.0	3/28/2020 9:30
C	3.36	8/28/2020	8/29/2020	268.0	8/28/2020 18:35	20.2	8/28/2020 13:35
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-21
Meter Report

Meter: DWTF Recycle **Location: Main Influent Pump Station** **Period: 1/1/2020 through 12/31/2020**

Type: HydroRanger 200 **System Meter Type: Parshall Flume**



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-20	-	-	-	-	0	0
Feb-20	-	-	-	-	0	0
Mar-20	-	-	-	-	0	0
Apr-20	-	-	-	-	0	0
May-20	9.3	186.7	9.2	184.8	14	17
Jun-20	8.1	157.0	7.8	150.4	20	10
Jul-20	9.4	188.6	8.5	169.4	16	15
Aug-20	9.4	188.2	8.8	175.8	15	16
Sep-20	6.8	132.8	4.7	91.5	19	11
Oct-20	4.0	80.7	4.0	79.6	21	10
Nov-20	3.7	72.1	3.6	69.1	20	10
Dec-20	3.9	78.4	4.0	79.2	19	11

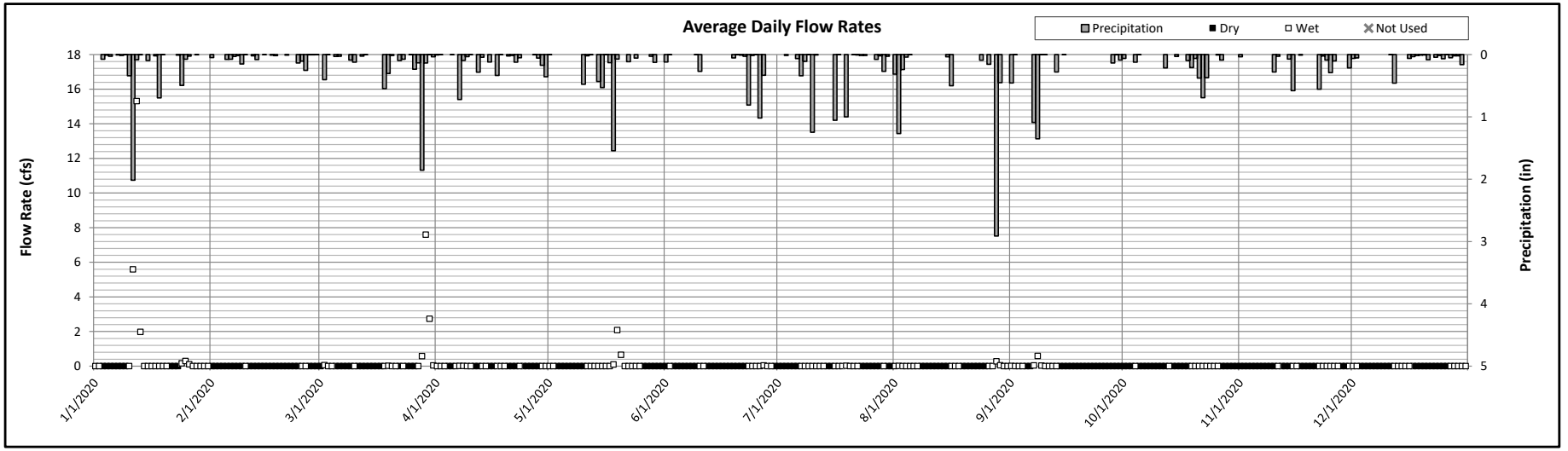
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	-	-	-	-
B	2.12	3/27/2020	3/29/2020	-	-	-	-
C	3.36	8/28/2020	8/29/2020	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-22
Meter Report

Meter: TSO **Location: At Pelham Basin** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ **System Meter Type: Tunnel System Flow Meter**



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-20	0.8	15.1	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.4	7.1	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.1	1.8	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.0	0.0	0.0	16	15
Aug-20	0.0	0.2	0.0	0.0	15	16
Sep-20	0.0	0.4	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

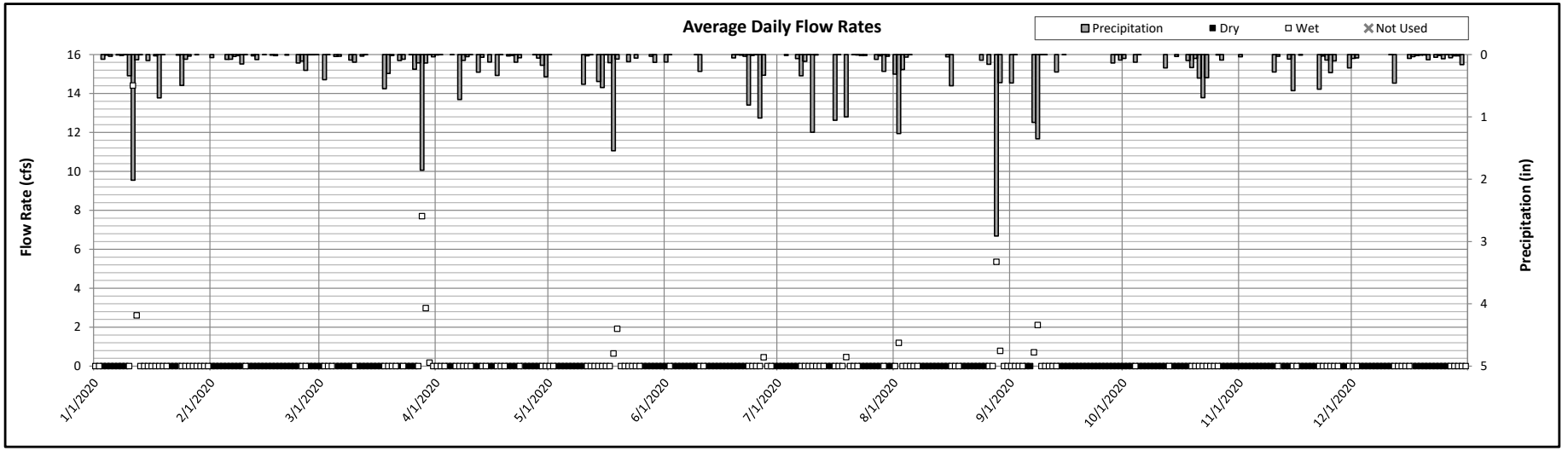
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	33.9	1/11/2020 20:55	2.5	1/11/2020 21:10
B	2.12	3/27/2020	3/29/2020	17.1	3/29/2020 4:30	1.9	3/29/2020 4:50
C	3.36	8/28/2020	8/29/2020	1.9	8/28/2020 12:20	0.8	8/28/2020 12:30
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-23
Meter Report

Meter: APO-1 **Location: Belmont and Rosedale** **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	0.5	11.0	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.4	7.0	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.1	1.7	0.0	0.0	14	17
Jun-20	0.0	0.3	0.0	0.0	20	10
Jul-20	0.0	0.3	0.0	0.0	16	15
Aug-20	0.2	4.7	0.0	0.0	15	16
Sep-20	0.1	1.8	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

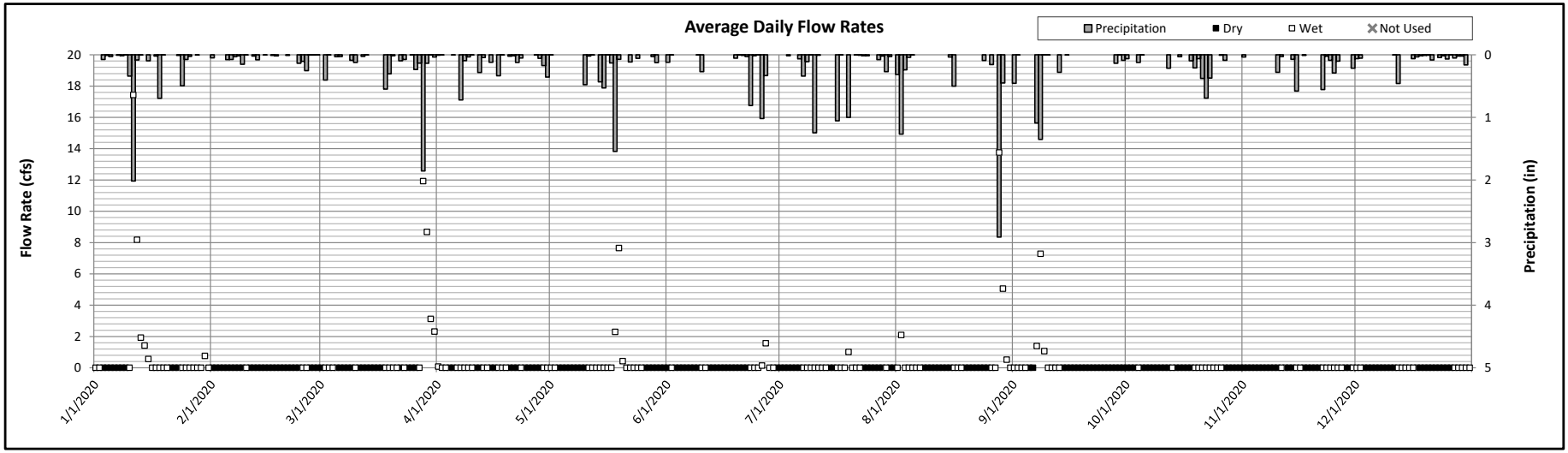
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	≥ 55.8	1/11/2020 12:25	≥10.2	1/11/20 12:25 - 1/11/20 16:50
B	2.12	3/27/2020	3/29/2020	≥ 55.8	3/28/2020 8:40	≥10.2	3/28/20 8:40 - 3/28/20 10:00
C	3.36	8/28/2020	8/29/2020	21.7	8/28/2020 11:20	9.8	8/28/2020 6:50
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-24
Meter Report

Meter: APO-2 **Location: Belmont and Quandt** **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	1.0	19.5	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.8	16.8	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.3	6.7	0.0	0.0	14	17
Jun-20	0.1	1.1	0.0	0.0	20	10
Jul-20	0.0	0.7	0.0	0.0	16	15
Aug-20	0.7	13.8	0.0	0.0	15	16
Sep-20	0.3	6.3	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

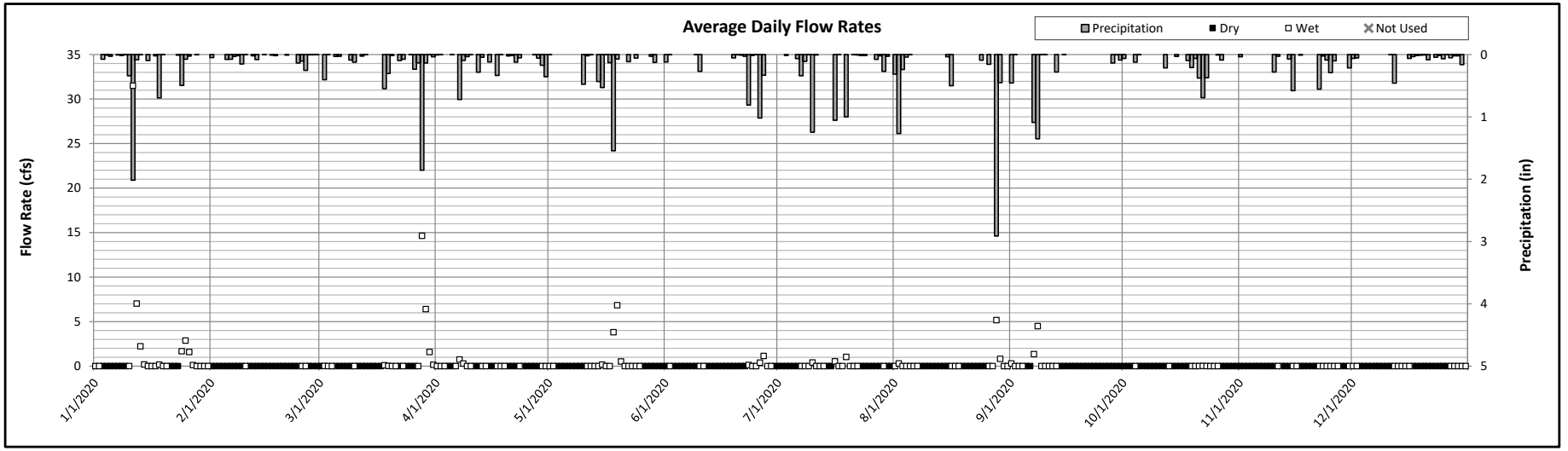
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	≥ 46.8	1/11/2020 10:50	≥4.8	1/11/20 10:50 - 1/11/20 16:35
B	2.12	3/27/2020	3/29/2020	≥ 46.8	3/28/2020 6:15	≥4.9	3/28/20 6:15 - 3/28/20 9:40
C	3.36	8/28/2020	8/29/2020	≥ 46.8	8/28/20 6:20	≥4.7	8/28/20 6:20 - 8/28/20 12:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-25
Meter Report

Meter: CHPO **Location: Pelham Road North of Haskell** **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	1.5	30.6	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.7	14.8	0.0	0.0	17	14
Apr-20	0.0	0.7	0.0	0.0	14	16
May-20	0.4	7.3	0.0	0.0	14	17
Jun-20	0.1	1.1	0.0	0.0	20	10
Jul-20	0.1	1.3	0.0	0.0	16	15
Aug-20	0.2	4.0	0.0	0.0	15	16
Sep-20	0.2	4.0	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

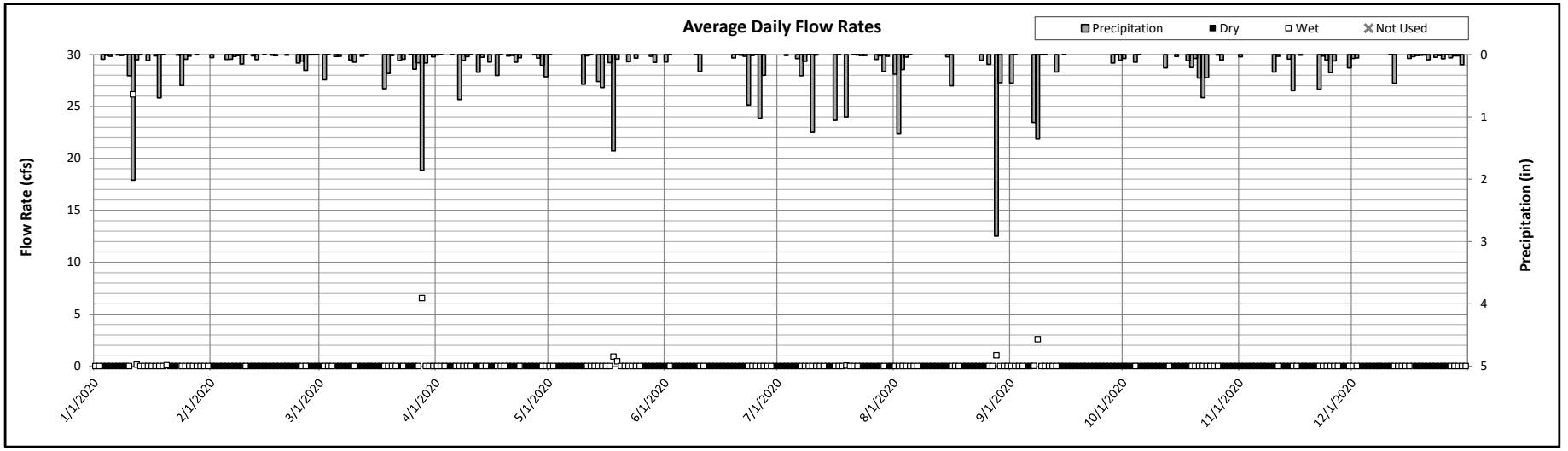
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	147.9	1/11/2020 13:05	9.9	1/11/2020 13:30
B	2.12	3/27/2020	3/29/2020	109.1	3/28/2020 8:05	6.7	3/28/2020 8:25
C	3.36	8/28/2020	8/29/2020	14.2	8/28/2020 10:20	4.3	8/28/2020 10:50
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-26
Meter Report

Meter: CPO **Location: Pelham Road South of R.R.** **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	0.9	17.0	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.2	4.2	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.0	0.9	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.0	0.0	0.0	16	15
Aug-20	0.0	0.7	0.0	0.0	15	16
Sep-20	0.1	1.7	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

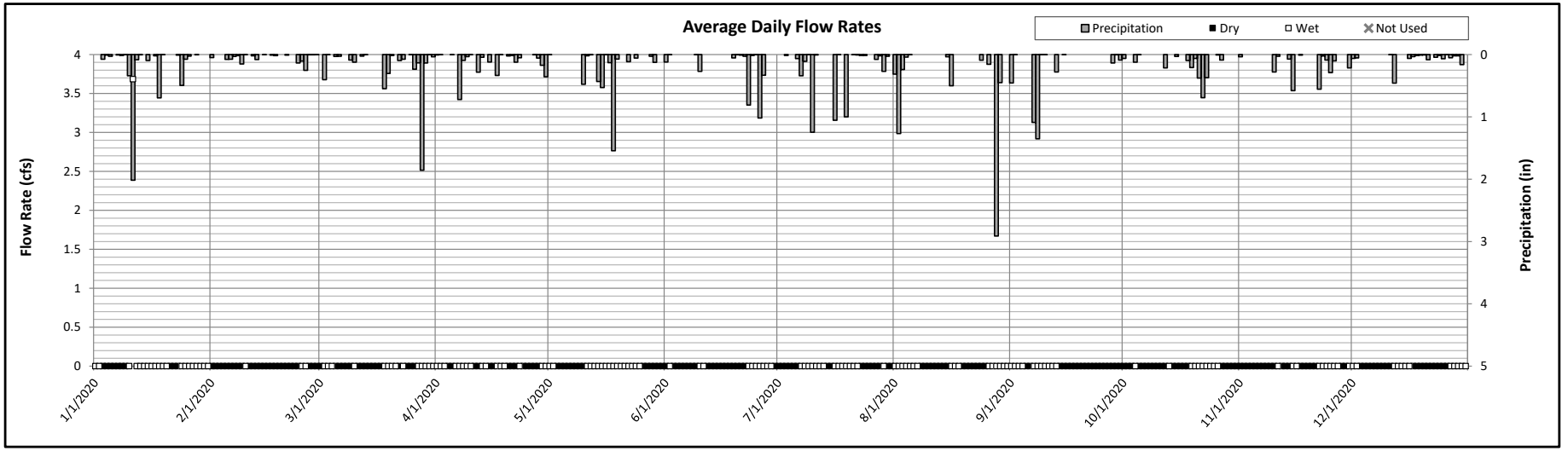
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	143.3	1/11/2020 13:05	10.1	1/11/2020 13:30
B	2.12	3/27/2020	3/29/2020	66.7	3/28/2020 8:15	5.7	3/28/2020 8:40
C	3.36	8/28/2020	8/29/2020	14.9	8/28/2020 10:40	4.5	8/28/2020 11:05
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-27
Meter Report

Meter: PDO | **Location: Allen Road and Goddard** | **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	0.1	2.4	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.0	0.0	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.0	0.0	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.0	0.0	0.0	16	15
Aug-20	0.0	0.0	0.0	0.0	15	16
Sep-20	0.0	0.0	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

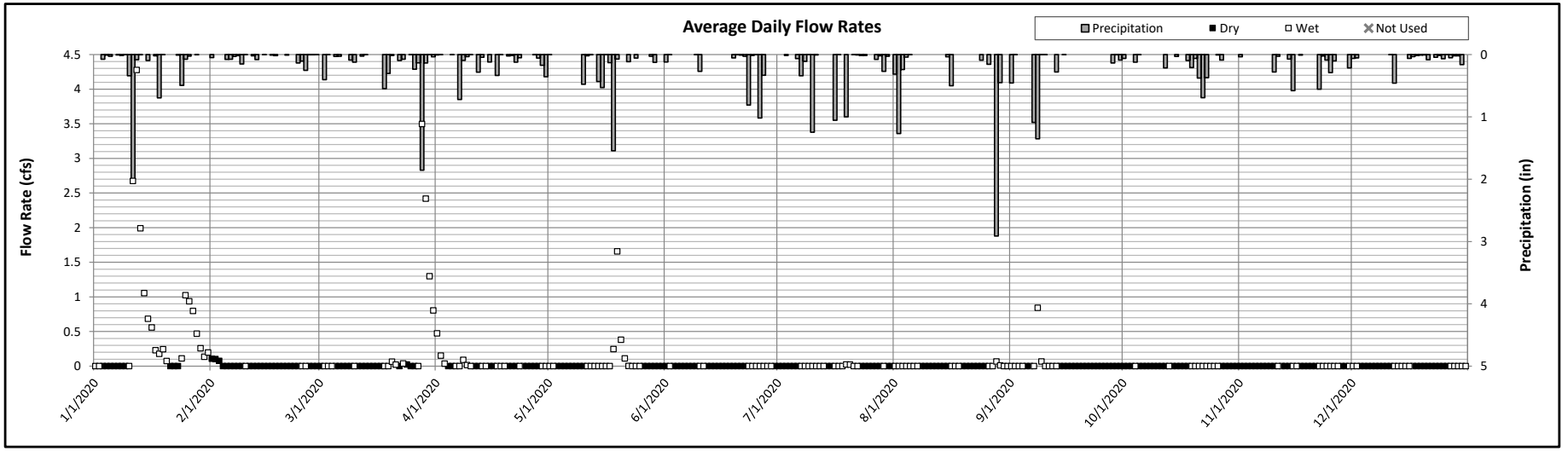
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	52.9	1/11/2020 14:05	5.4	1/11/2020 14:35
B	2.12	3/27/2020	3/29/2020	0.0	3/28/2020 0:00	3.5	3/28/2020 9:20
C	3.36	8/28/2020	8/29/2020	0.0	8/28/2020 0:00	0.7	8/28/2020 11:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-28
Meter Report

Meter: ER-2 **Location: Eureka Road and Inkster** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ **System Meter Type: Tunnel System Flow Meter**



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-20	0.5	10.3	0.0	0.0	10	21
Feb-20	0.0	0.2	0.0	0.2	26	3
Mar-20	0.3	5.3	0.0	0.0	17	14
Apr-20	0.0	0.5	0.0	0.0	14	16
May-20	0.1	1.5	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.0	0.0	0.0	16	15
Aug-20	0.0	0.0	0.0	0.0	15	16
Sep-20	0.0	0.6	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

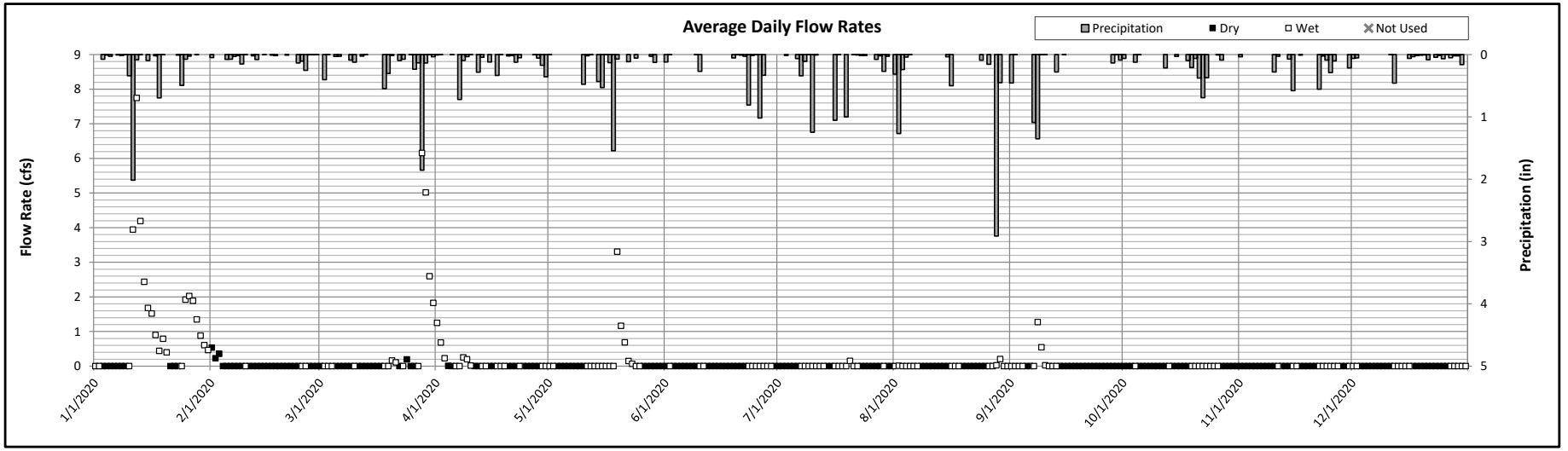
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	7.6	1/11/2020 14:35	1.3	1/11/2020 14:50
B	2.12	3/27/2020	3/29/2020	7.9	3/28/2020 10:50	1.4	3/28/2020 10:55
C	3.36	8/28/2020	8/29/2020	0.4	8/28/2020 17:50	0.4	8/28/2020 18:10
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-29
Meter Report

Meter: ER-1 **Location: Allen Road and Eureka Road** **Period: 1/1/2020 through 12/31/2020**

Type: ADS Triton+ **System Meter Type: Tunnel System Flow Meter**



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-20	1.1	21.4	0.0	0.0	10	21
Feb-20	0.0	0.7	0.0	0.8	26	3
Mar-20	0.5	10.4	0.0	0.2	17	14
Apr-20	0.1	1.7	0.0	0.0	14	16
May-20	0.2	3.5	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.1	0.0	0.0	16	15
Aug-20	0.0	0.2	0.0	0.0	15	16
Sep-20	0.1	1.2	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

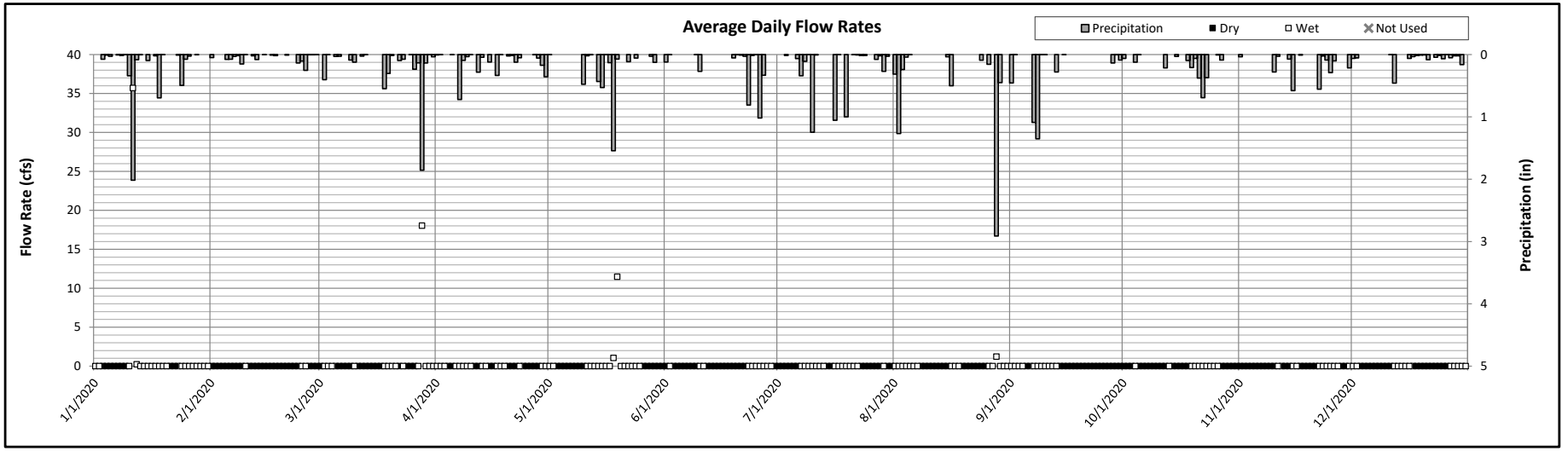
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	12.7	1/11/2020 15:45	6.6	1/11/2020 15:10
B	2.12	3/27/2020	3/29/2020	13.2	3/28/2020 12:55	4.9	3/28/2020 9:25
C	3.36	8/28/2020	8/29/2020	0.8	8/28/2020 23:45	0.2	8/29/2020 0:05
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Figure C-30
Meter Report

Meter: PM-1 **Location: Pennsylvania Ave. at Fordline** **Period: 1/1/2020 through 12/31/2020**

Type: Telog 3307 **System Meter Type: Tunnel Diversion Chamber Level Sensor**



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-20	1.2	23.2	0.0	0.0	10	21
Feb-20	0.0	0.0	0.0	0.0	26	3
Mar-20	0.6	11.6	0.0	0.0	17	14
Apr-20	0.0	0.0	0.0	0.0	14	16
May-20	0.4	8.1	0.0	0.0	14	17
Jun-20	0.0	0.0	0.0	0.0	20	10
Jul-20	0.0	0.0	0.0	0.0	16	15
Aug-20	0.0	0.8	0.0	0.0	15	16
Sep-20	0.0	0.0	0.0	0.0	19	11
Oct-20	0.0	0.0	0.0	0.0	21	10
Nov-20	0.0	0.0	0.0	0.0	20	10
Dec-20	0.0	0.0	0.0	0.0	19	11

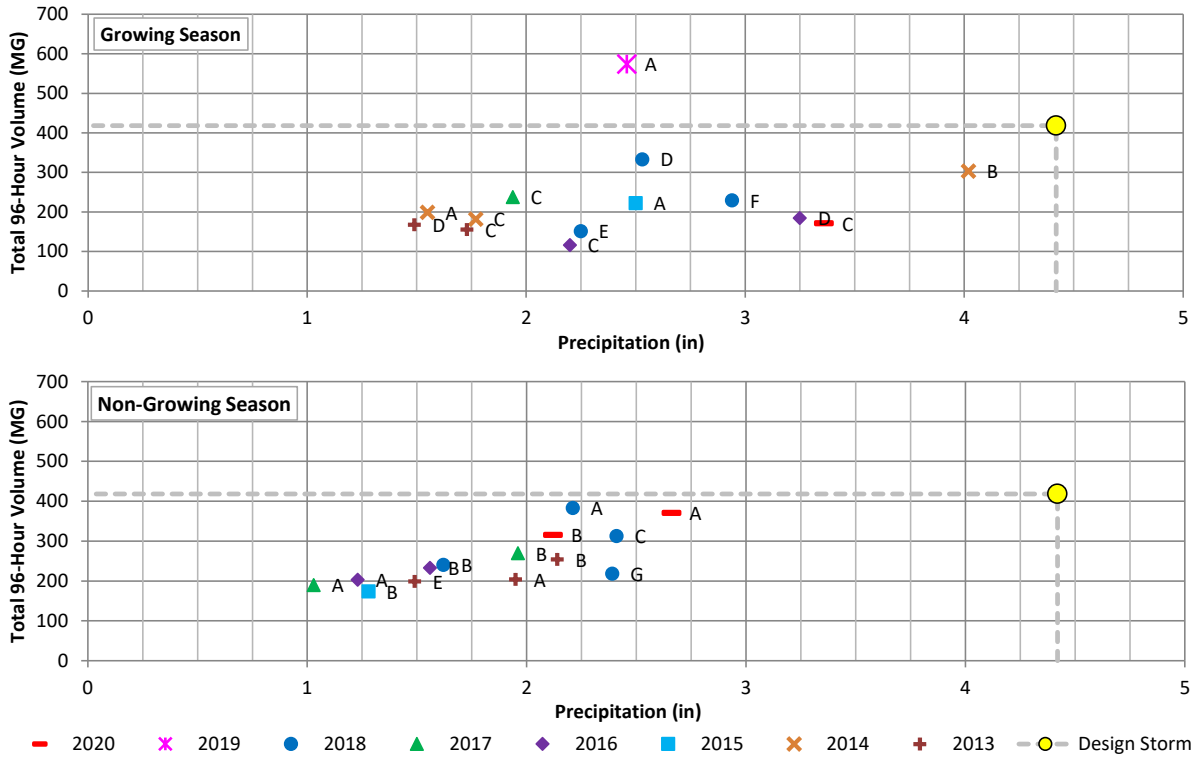
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.66	1/10/2020	1/12/2020	187.5	1/11/2020 14:30	12.7	1/11/2020 14:50
B	2.12	3/27/2020	3/29/2020	186.4	3/28/2020 8:00	13.5	3/28/2020 8:25
C	3.36	8/28/2020	8/29/2020	15.1	8/28/2020 17:40	0.0	8/28/2020 0:00
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Appendix D

Major Storm Event Wet Weather Summary Figures

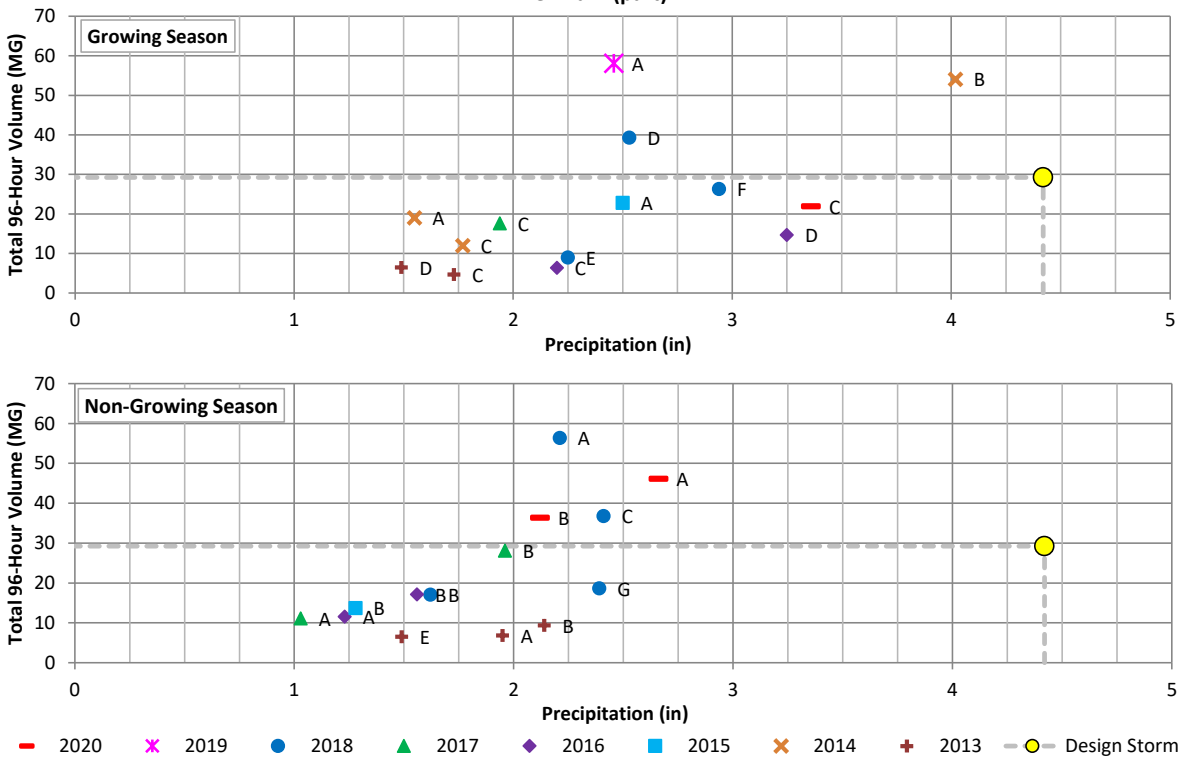
Figure D-1
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Sum of All Non-Controlled Communities



Major Storm Event		Sum of All Non-Controlled Communities	
		DTW Precipitation (in)	96-hour Volume (MG)
2013	A	1.95	204.09
	B	2.14	254.06
	C	1.73	155.58
	D	1.49	167.49
	E	1.49	198.64
2014	A	1.55	199.00
	B	4.02	303.24
	C	1.77	181.86
2015	A	2.50	222.10
	B	1.28	173.53
2016	A	1.23	203.08
	B	1.56	232.53
	C	2.20	116.28
	D	3.25	184.44
2017	A	1.03	189.85
	B	1.96	269.24
	C	1.94	237.78
2018	A	2.21	383.06
	B	1.62	240.58
	C	2.41	312.53
	D	2.53	333.10
	E	2.25	151.20
	F	2.94	229.20
	G	2.39	218.15
2019	A	2.46	573.77
2020	A	2.66	370.20
	B	2.12	314.62
	C	3.36	170.59
Design Storm		4.42	418.21

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

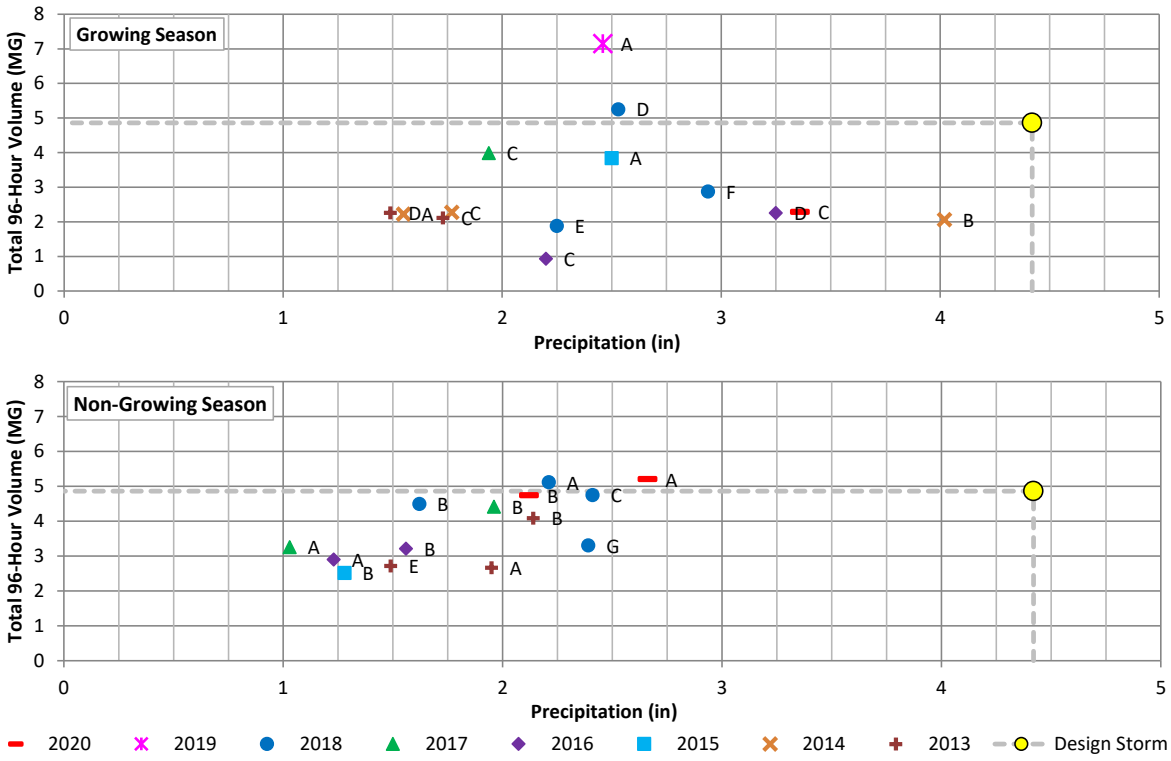
Figure D-2
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Allen Park (part)



Major Storm Event		Allen Park (part) DTW Precipitation (in)	Allen Park (part) 96-hour Volume (MG)
2013	A	1.95	6.83
	B	2.14	9.35
	C	1.73	4.64
	D	1.49	6.47
	E	1.49	6.47
2014	A	1.55	19.02
	B	4.02	54.05
	C	1.77	11.98
2015	A	2.50	22.77
	B	1.28	13.71
2016	A	1.23	11.52
	B	1.56	17.14
	C	2.20	6.35
	D	3.25	14.64
2017	A	1.03	11.11
	B	1.96	28.07
	C	1.94	17.62
2018	A	2.21	56.35
	B	1.62	17.04
	C	2.41	36.76
	D	2.53	39.31
	E	2.25	8.98
	F	2.94	26.34
	G	2.39	18.62
2019	A	2.46	58.07
2020	A	2.66	46.07
	B	2.12	36.27
	C	3.36	21.89
Design Storm		4.42	29.23

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

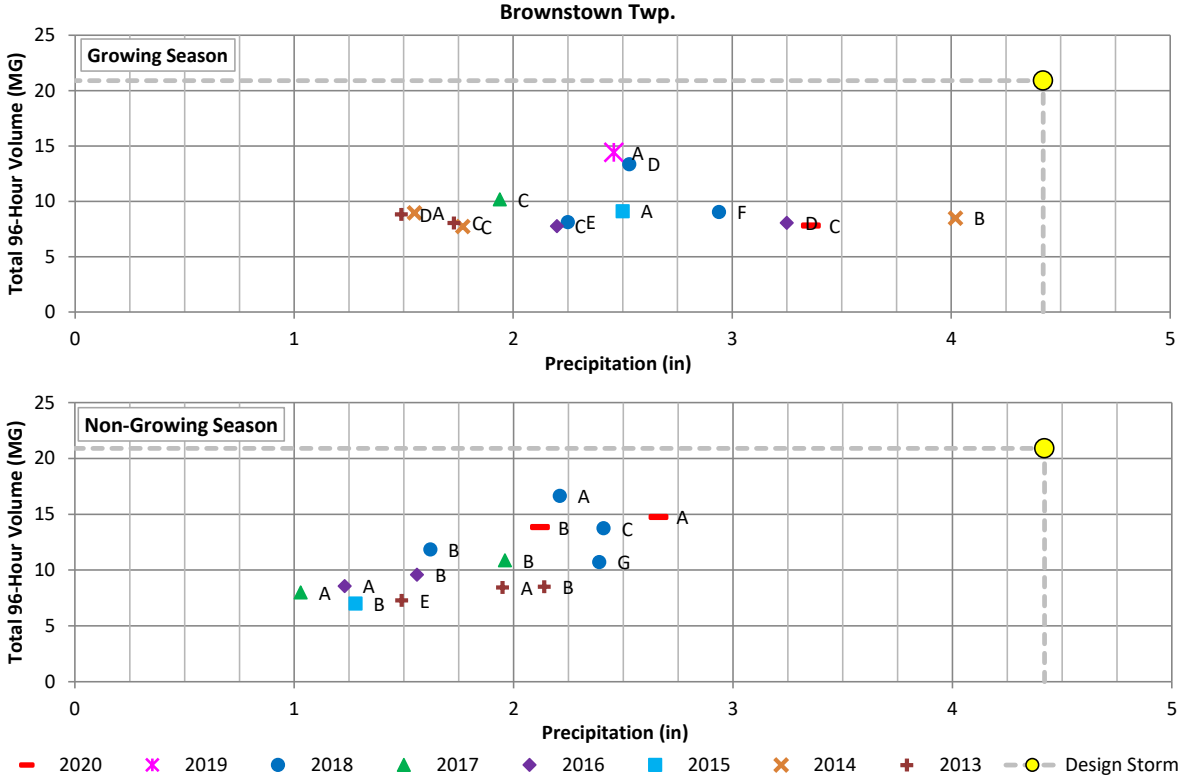
Figure D-3
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Belleville



Major Storm Event		Belleville DTW Precipitation (in)	Belleville 96-hour Volume (MG)
2013	A	1.95	2.66
	B	2.14	4.08
	C	1.73	2.11
	D	1.49	2.26
	E	1.49	2.72
2014	A	1.55	2.22
	B	4.02	2.06
	C	1.77	2.27
2015	A	2.50	3.84
	B	1.28	2.51
2016	A	1.23	2.90
	B	1.56	3.21
	C	2.20	0.93
	D	3.25	2.25
2017	A	1.03	3.25
	B	1.96	4.41
	C	1.94	3.99
2018	A	2.21	5.11
	B	1.62	4.49
	C	2.41	4.75
	D	2.53	5.25
	E	2.25	1.88
	F	2.94	2.87
	G	2.39	3.30
2019	A	2.46	7.15
2020	A	2.66	5.20
	B	2.12	4.74
	C	3.36	2.28
Design Storm		4.42	4.86

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

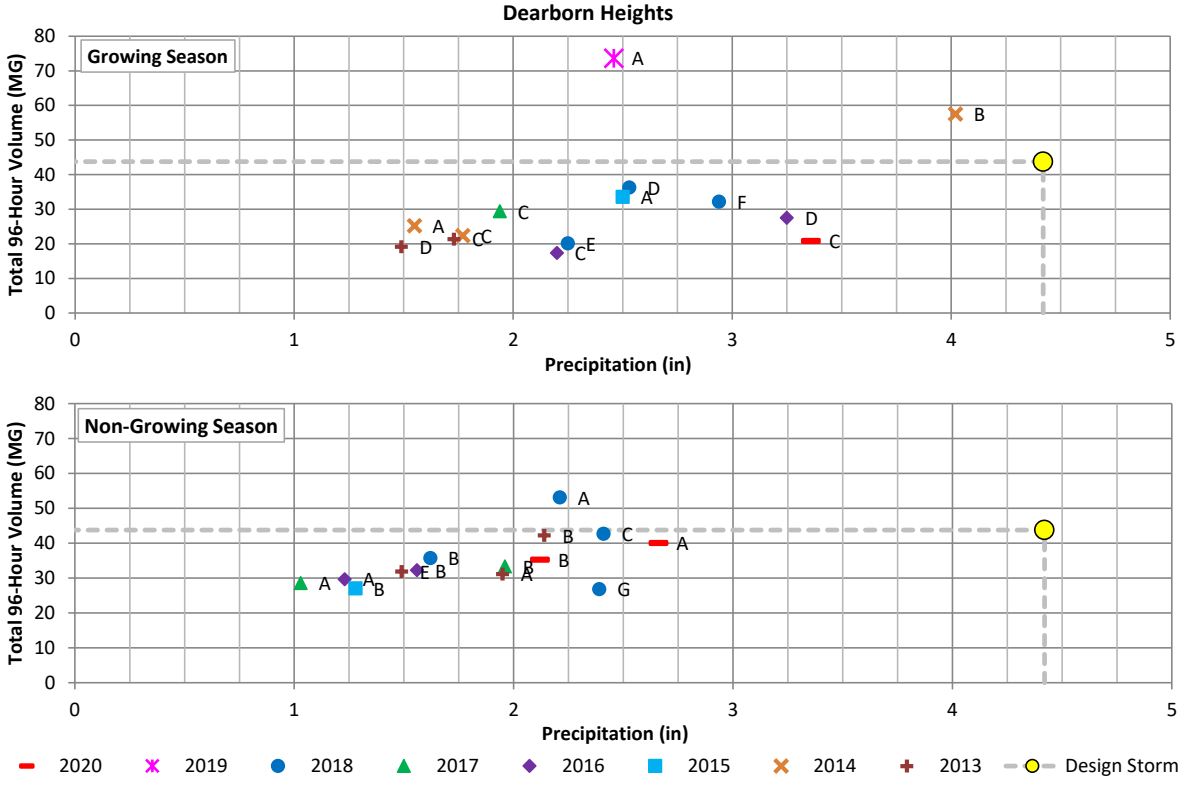
Figure D-4
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Brownstown Twp.



Major Storm Event		Brownstown Twp. DTW Precipitation (in)	Brownstown Twp. 96-hour Volume (MG)
2013	A	1.95	8.42
	B	2.14	8.49
	C	1.73	8.05
	D	1.49	8.81
	E	1.49	7.29
2014	A	1.55	8.95
	B	4.02	8.47
	C	1.77	7.73
2015	A	2.50	9.10
	B	1.28	6.99
2016	A	1.23	8.57
	B	1.56	9.58
	C	2.20	7.75
	D	3.25	8.04
2017	A	1.03	7.98
	B	1.96	10.87
	C	1.94	10.17
2018	A	2.21	16.65
	B	1.62	11.83
	C	2.41	13.74
	D	2.53	13.36
	E	2.25	8.11
	F	2.94	9.04
	G	2.39	10.70
2019	A	2.46	14.41
2020	A	2.66	14.74
	B	2.12	13.83
	C	3.36	7.78
Design Storm		4.42	20.90

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

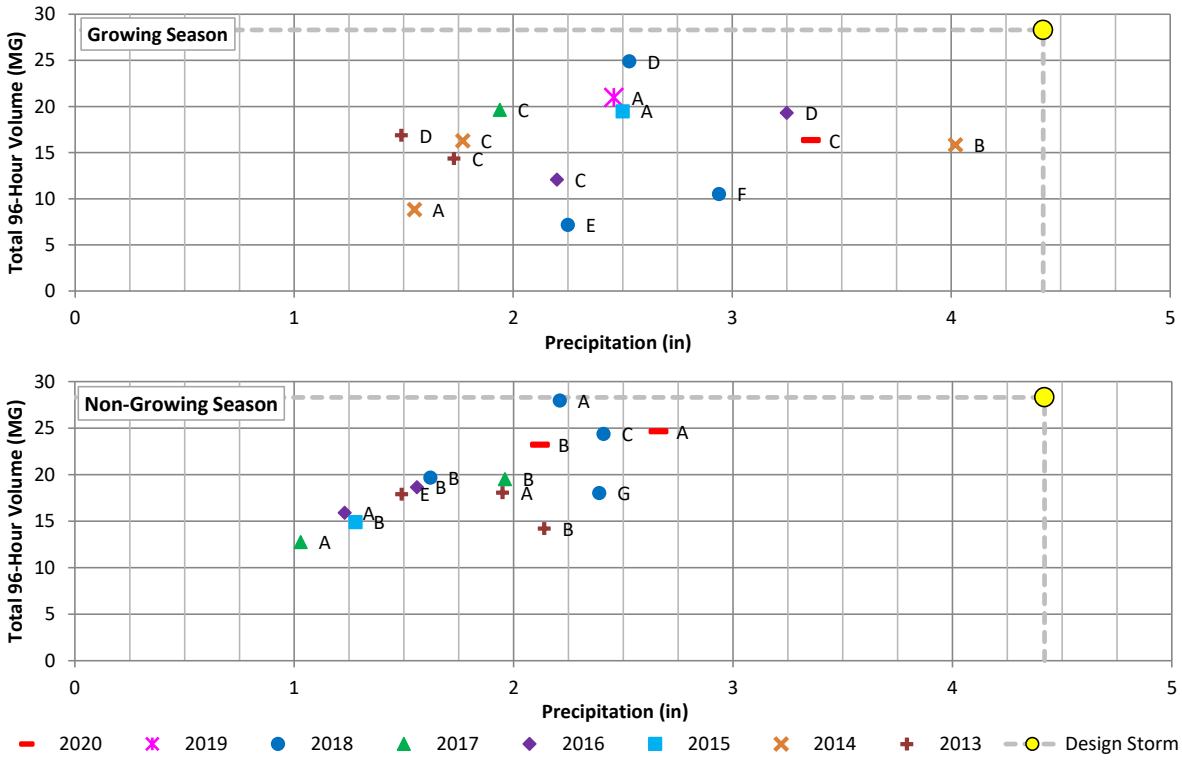
Figure D-5
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Dearborn Heights



Major Storm Event		Dearborn Heights DTW Precipitation (in)	Dearborn Heights 96-hour Volume (MG)
2013	A	1.95	31.13
	B	2.14	42.18
	C	1.73	21.35
	D	1.49	19.18
	E	1.49	31.85
2014	A	1.55	25.21
	B	4.02	57.54
	C	1.77	22.36
2015	A	2.50	33.56
	B	1.28	27.04
2016	A	1.23	29.65
	B	1.56	32.22
	C	2.20	17.36
	D	3.25	27.50
2017	A	1.03	28.55
	B	1.96	33.33
	C	1.94	29.38
2018	A	2.21	53.10
	B	1.62	35.72
	C	2.41	42.69
	D	2.53	36.29
	E	2.25	20.13
	F	2.94	32.16
	G	2.39	26.80
2019	A	2.46	73.63
2020	A	2.66	39.99
	B	2.12	35.15
	C	3.36	20.79
Design Storm		4.42	43.76

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

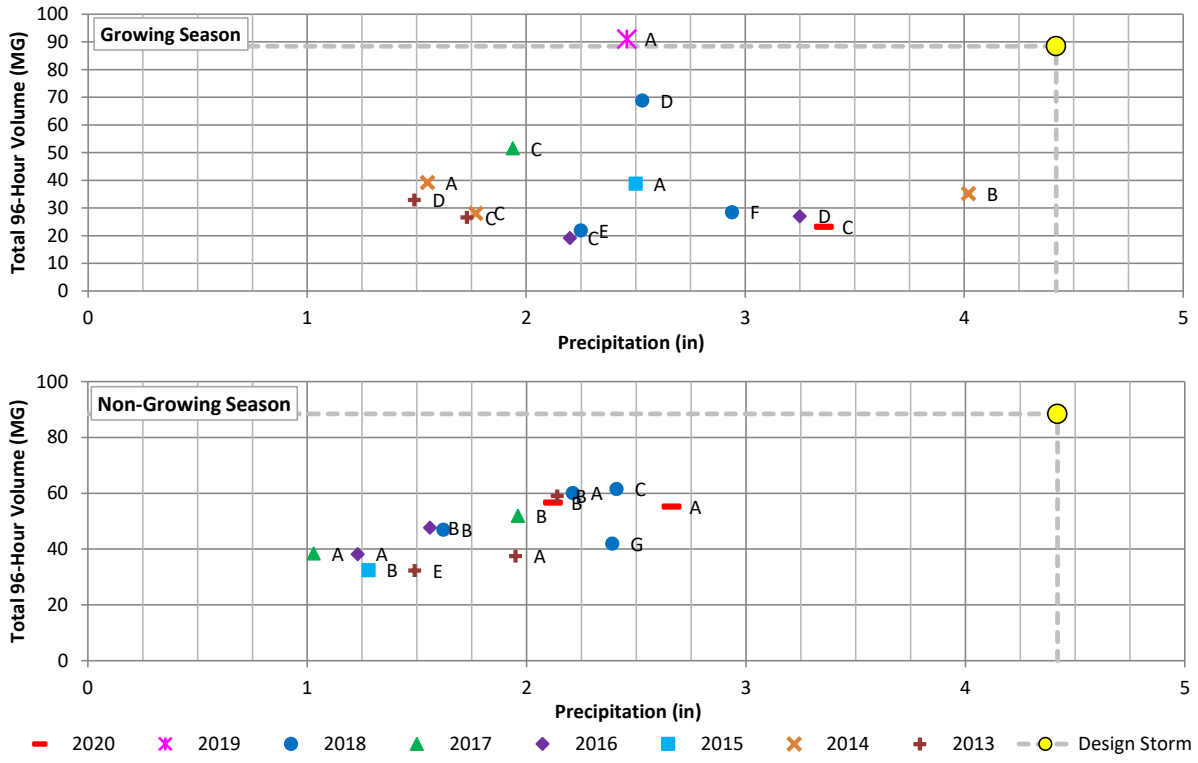
Figure D-6
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Riverview



Major Storm Event		Riverview	
		DTW Precipitation (in)	96-hour Volume (MG)
2013	A	1.95	18.06
	B	2.14	14.19
	C	1.73	14.36
	D	1.49	16.87
	E	1.49	17.91
2014	A	1.55	8.83
	B	4.02	15.84
	C	1.77	16.29
2015	A	2.50	19.48
	B	1.28	14.89
2016	A	1.23	15.88
	B	1.56	18.65
	C	2.20	12.07
	D	3.25	19.31
2017	A	1.03	12.73
	B	1.96	19.51
	C	1.94	19.63
2018	A	2.21	27.97
	B	1.62	19.66
	C	2.41	24.38
	D	2.53	24.89
	E	2.25	7.18
	F	2.94	10.51
	G	2.39	18.01
2019	A	2.46	20.97
2020	A	2.66	24.64
	B	2.12	23.19
	C	3.36	16.32
Design Storm		4.42	28.30

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

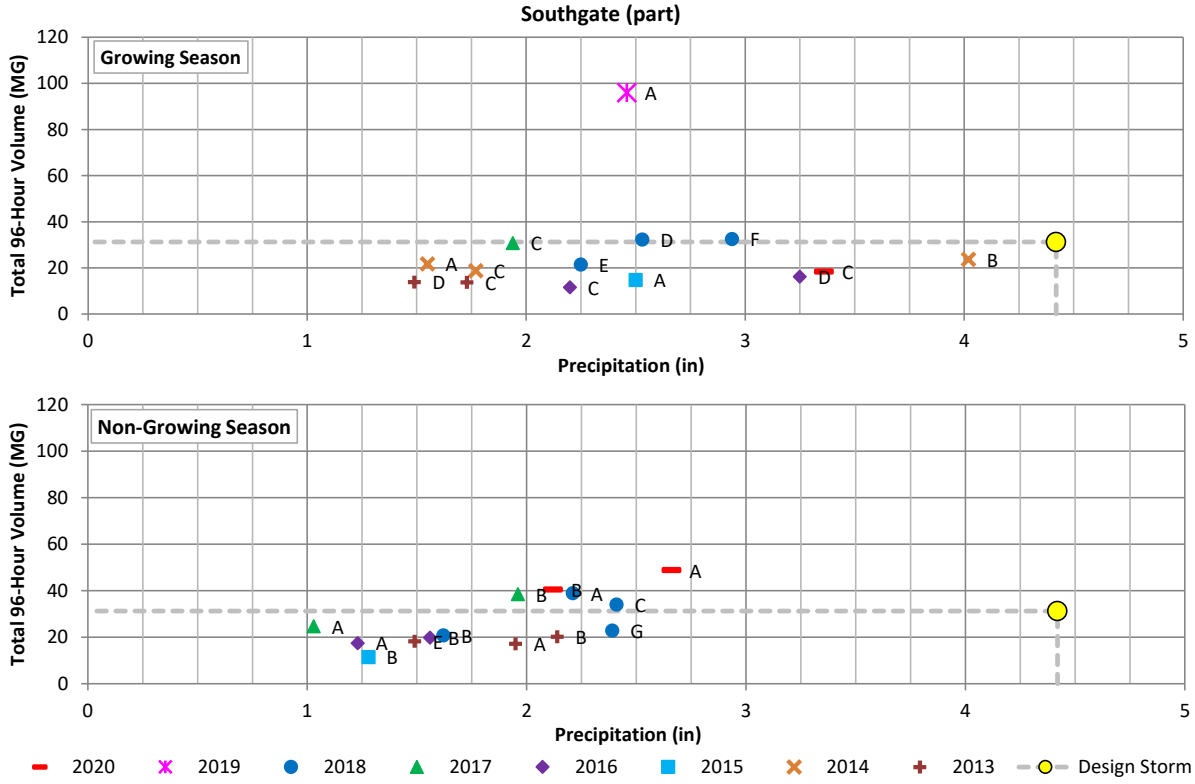
Figure D-7
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Romulus



Major Storm Event		Romulus DTW Precipitation (in)	Romulus 96-hour Volume (MG)
2013	A	1.95	37.45
	B	2.14	59.02
	C	1.73	26.57
	D	1.49	32.88
	E	1.49	32.32
2014	A	1.55	39.20
	B	4.02	35.18
	C	1.77	28.09
2015	A	2.50	38.82
	B	1.28	32.41
2016	A	1.23	38.16
	B	1.56	47.64
	C	2.20	19.10
	D	3.25	27.02
2017	A	1.03	38.42
	B	1.96	51.94
	C	1.94	51.53
2018	A	2.21	60.07
	B	1.62	46.91
	C	2.41	61.49
	D	2.53	68.83
	E	2.25	21.89
	F	2.94	28.48
	G	2.39	41.89
2019	A	2.46	91.05
2020	A	2.66	55.09
	B	2.12	56.53
	C	3.36	23.10
Design Storm		4.42	88.43

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

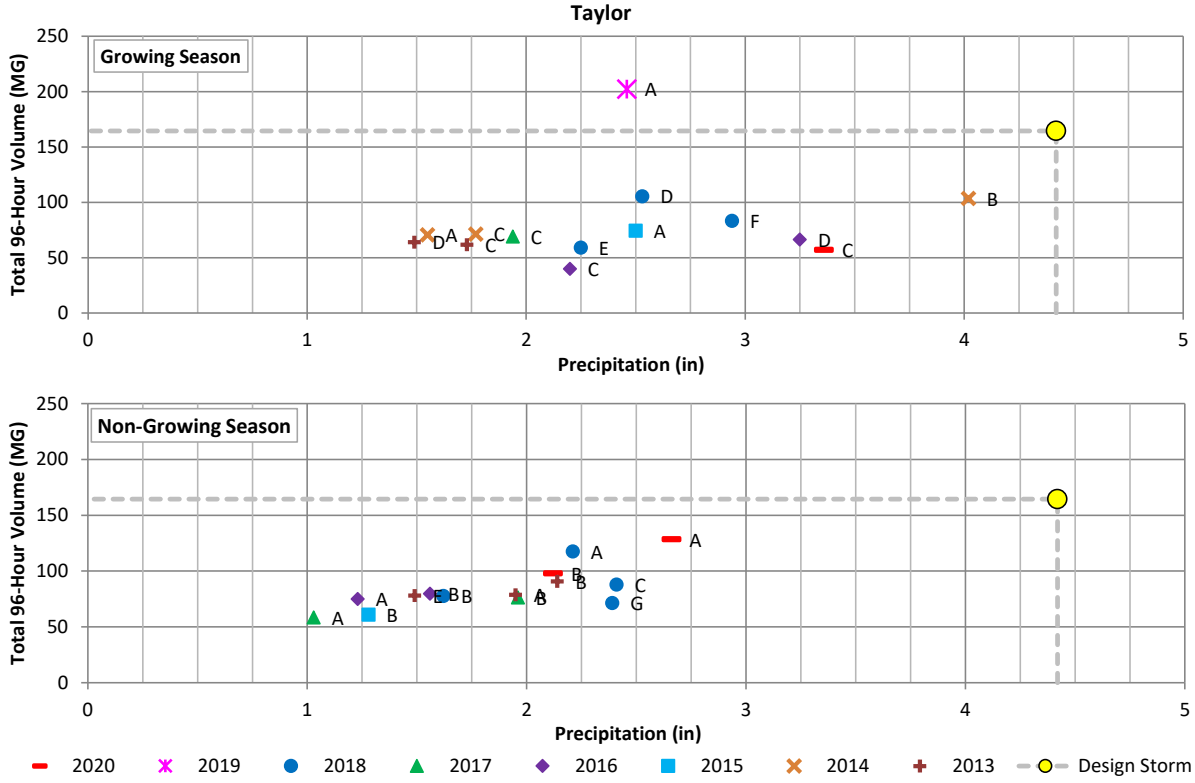
Figure D-8
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Southgate (part)



Major Storm Event		Southgate (part) DTW Precipitation (in)	Southgate (part) 96-hour Volume (MG)
2013	A	1.95	17.09
	B	2.14	20.21
	C	1.73	13.71
	D	1.49	13.86
	E	1.49	18.16
2014	A	1.55	21.73
	B	4.02	23.64
	C	1.77	18.70
2015	A	2.50	14.73
	B	1.28	11.43
2016	A	1.23	17.41
	B	1.56	19.81
	C	2.20	11.53
	D	3.25	16.18
2017	A	1.03	24.66
	B	1.96	38.45
	C	1.94	30.75
2018	A	2.21	38.86
	B	1.62	20.78
	C	2.41	34.04
	D	2.53	32.25
	E	2.25	21.41
	F	2.94	32.45
	G	2.39	22.82
2019	A	2.46	96.00
2020	A	2.66	48.78
	B	2.12	40.41
	C	3.36	18.29
Design Storm		4.42	31.24

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

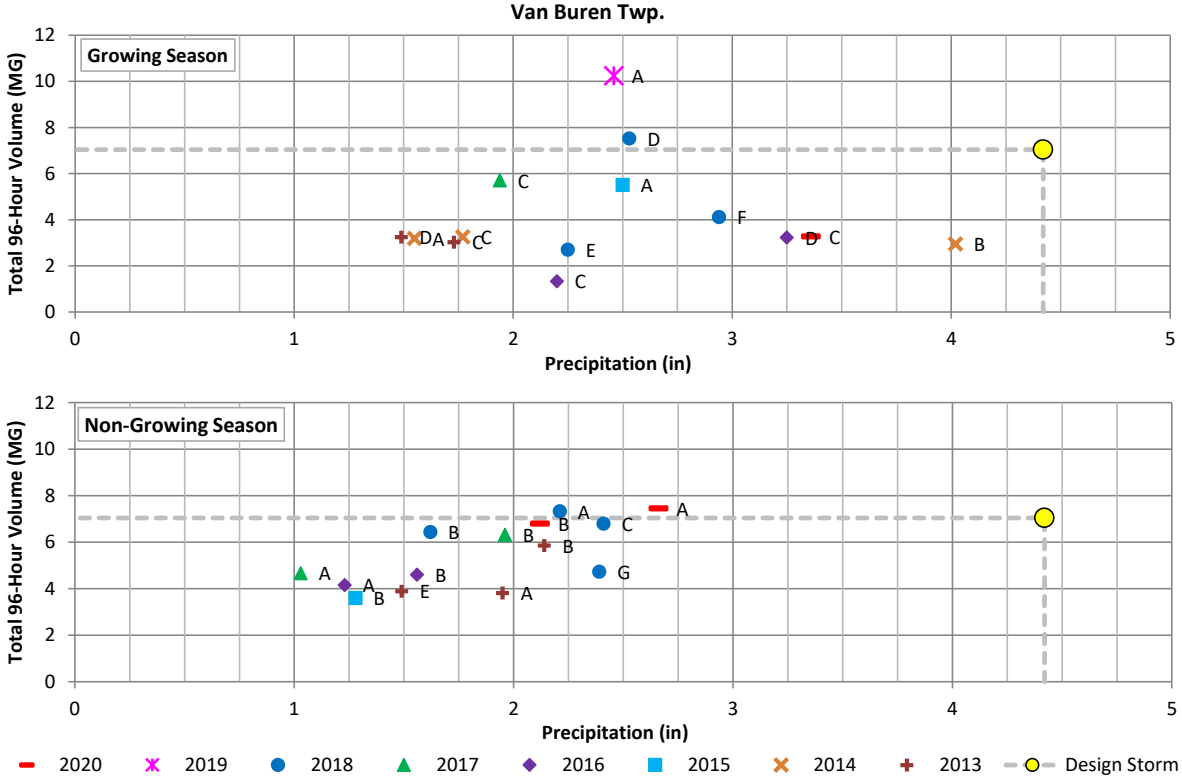
Figure D-9
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Taylor



Major Storm Event		Taylor DTW Precipitation (in)	Taylor 96-hour Volume (MG)
2013	A	1.95	78.64
	B	2.14	90.69
	C	1.73	61.76
	D	1.49	63.93
	E	1.49	78.04
2014	A	1.55	70.66
	B	4.02	103.51
	C	1.77	71.19
2015	A	2.50	74.29
	B	1.28	60.95
2016	A	1.23	74.83
	B	1.56	79.66
	C	2.20	39.85
	D	3.25	66.28
2017	A	1.03	58.48
	B	1.96	76.34
	C	1.94	69.01
2018	A	2.21	117.61
	B	1.62	77.72
	C	2.41	87.89
	D	2.53	105.41
	E	2.25	58.92
	F	2.94	83.23
	G	2.39	71.27
2019	A	2.46	202.23
2020	A	2.66	128.24
	B	2.12	97.72
	C	3.36	56.88
Design Storm		4.42	164.45

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-10
Total 96-Hour Volume versus Precipitation for Major Storm Events for 2013 through 2020
Van Buren Twp.



Major Storm Event		Van Buren Twp. DTW Precipitation (in)	Van Buren Twp. 96-hour Volume (MG)
2013	A	1.95	3.81
	B	2.14	5.85
	C	1.73	3.03
	D	1.49	3.24
	E	1.49	3.89
2014	A	1.55	3.19
	B	4.02	2.95
	C	1.77	3.26
2015	A	2.50	5.51
	B	1.28	3.60
2016	A	1.23	4.16
	B	1.56	4.60
	C	2.20	1.34
	D	3.25	3.22
2017	A	1.03	4.66
	B	1.96	6.32
	C	1.94	5.71
2018	A	2.21	7.32
	B	1.62	6.43
	C	2.41	6.80
	D	2.53	7.52
	E	2.25	2.70
	F	2.94	4.12
	G	2.39	4.73
2019	A	2.46	10.24
2020	A	2.66	7.44
	B	2.12	6.78
	C	3.36	3.26
Design Storm		4.42	7.04

Notes:
1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-11
Downriver Wastewater Treatment Facility
Major Storm Event A - January 10-12, 2020

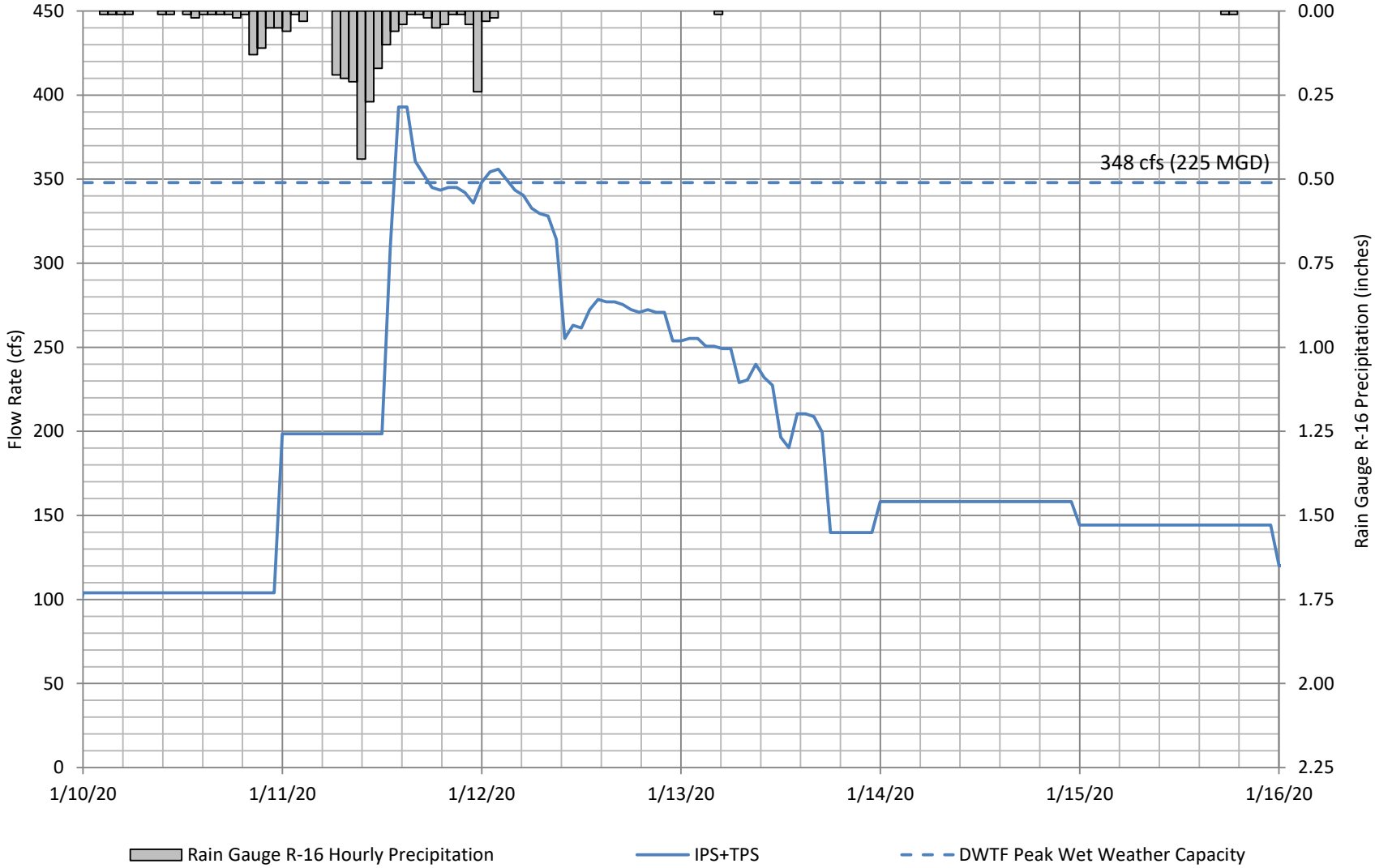


Figure D-12
Riverdrive Interceptor
Major Storm Event A - January 10-12, 2020

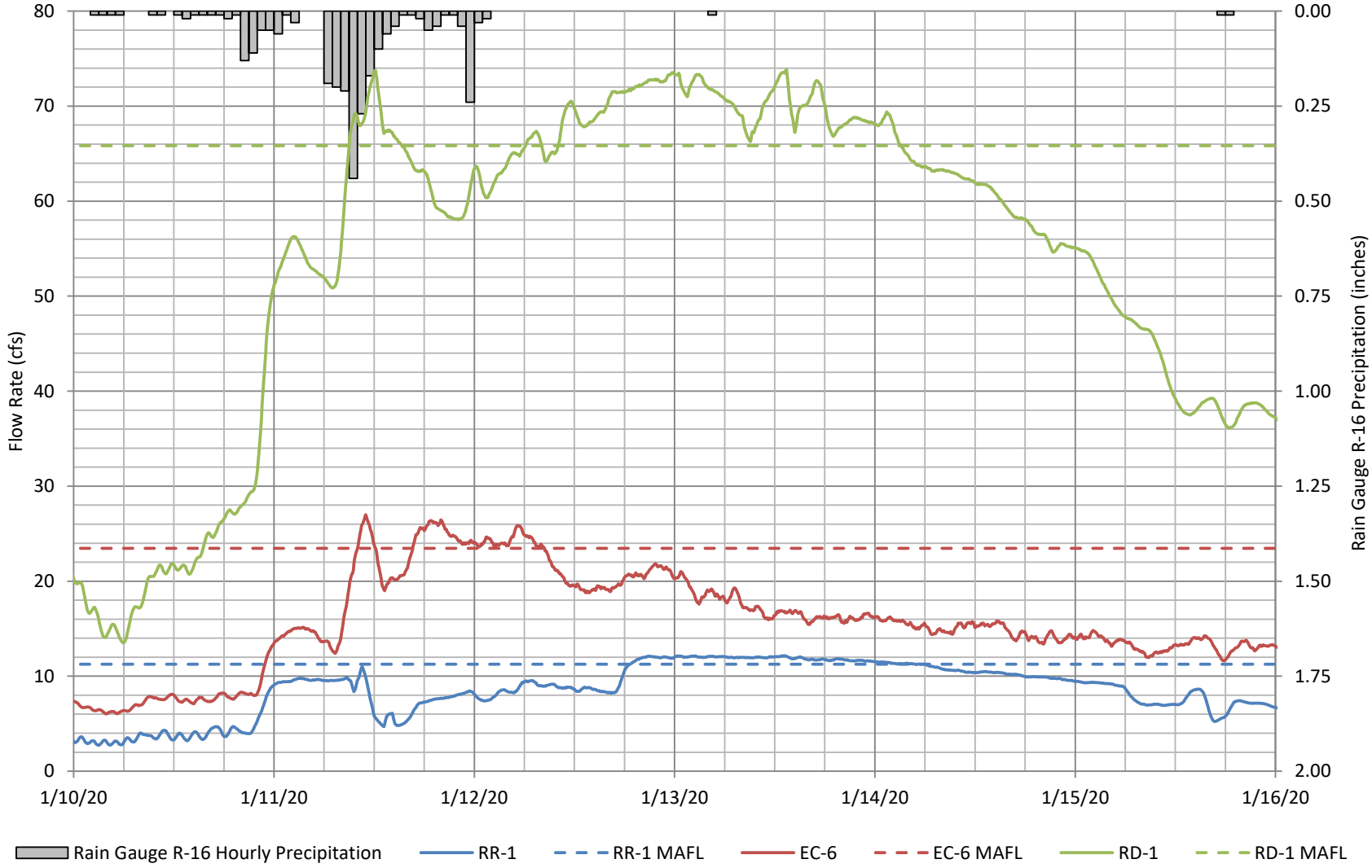


Figure D-13
Riverdrive Interceptor
Major Storm Event A - January 10-12, 2020

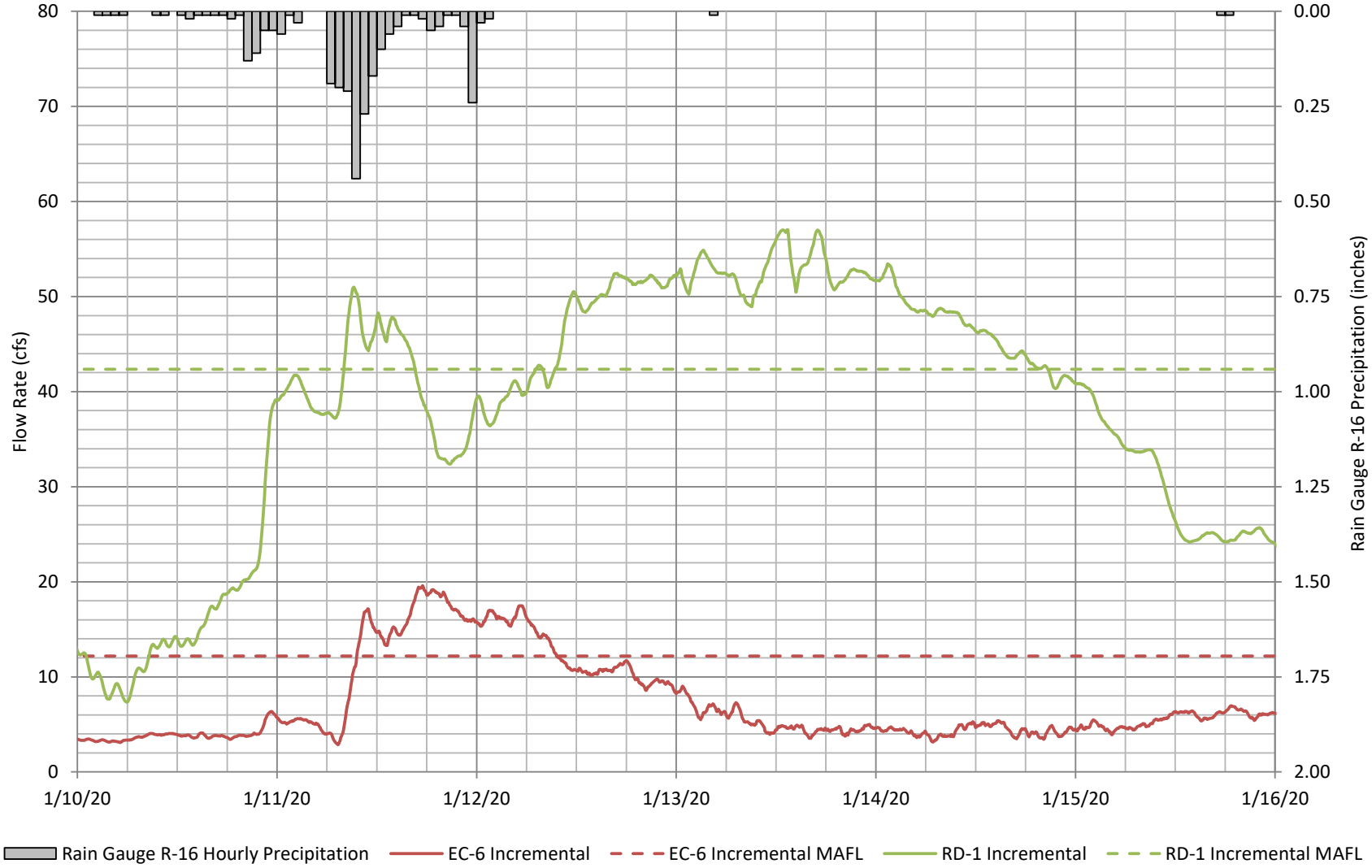


Figure D-14
SWRDDD Connection
Major Storm Event A - January 10-12, 2020

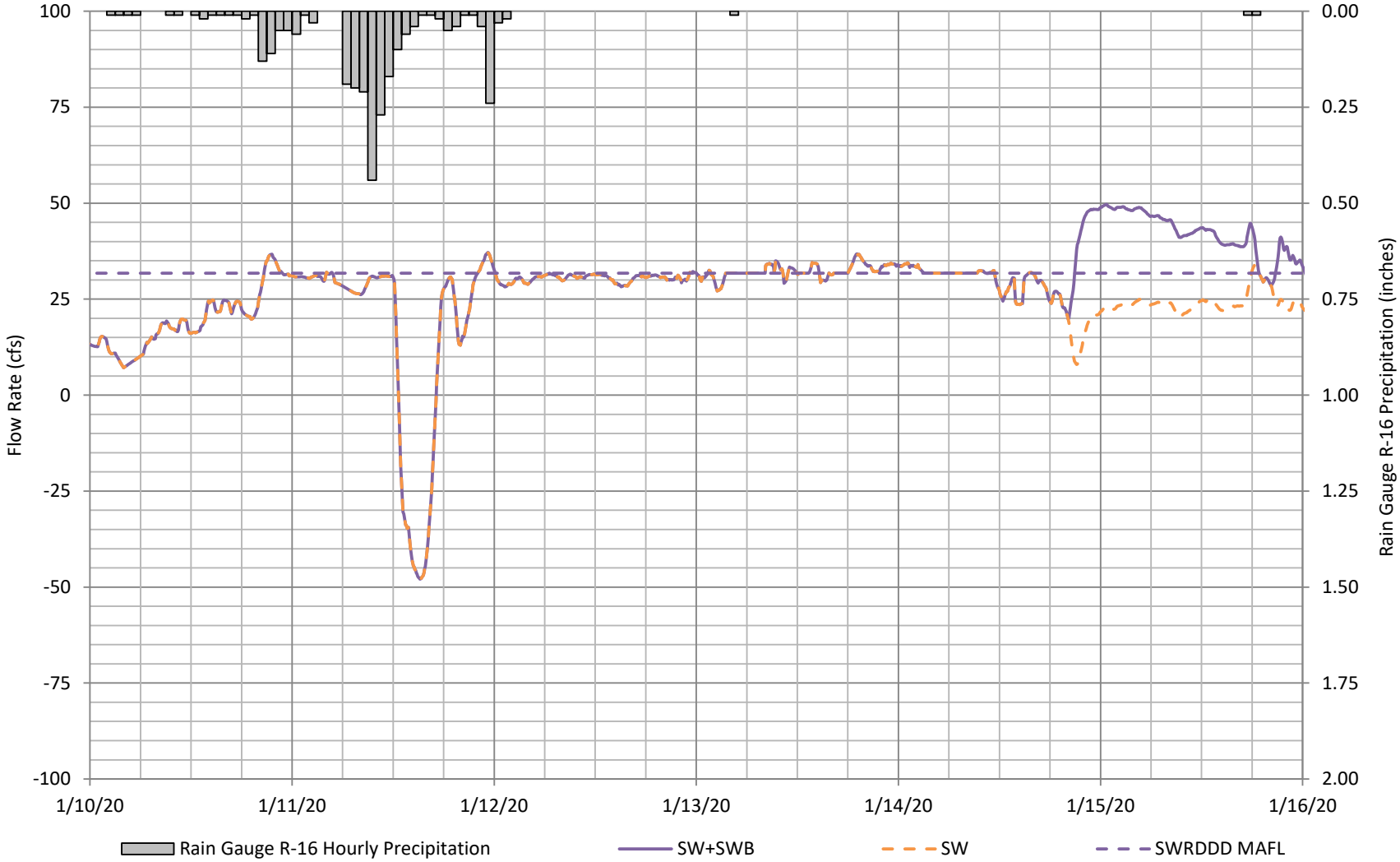


Figure D-15
Downriver Wastewater Treatment Facility
Major Storm Event B - March 27-29, 2020

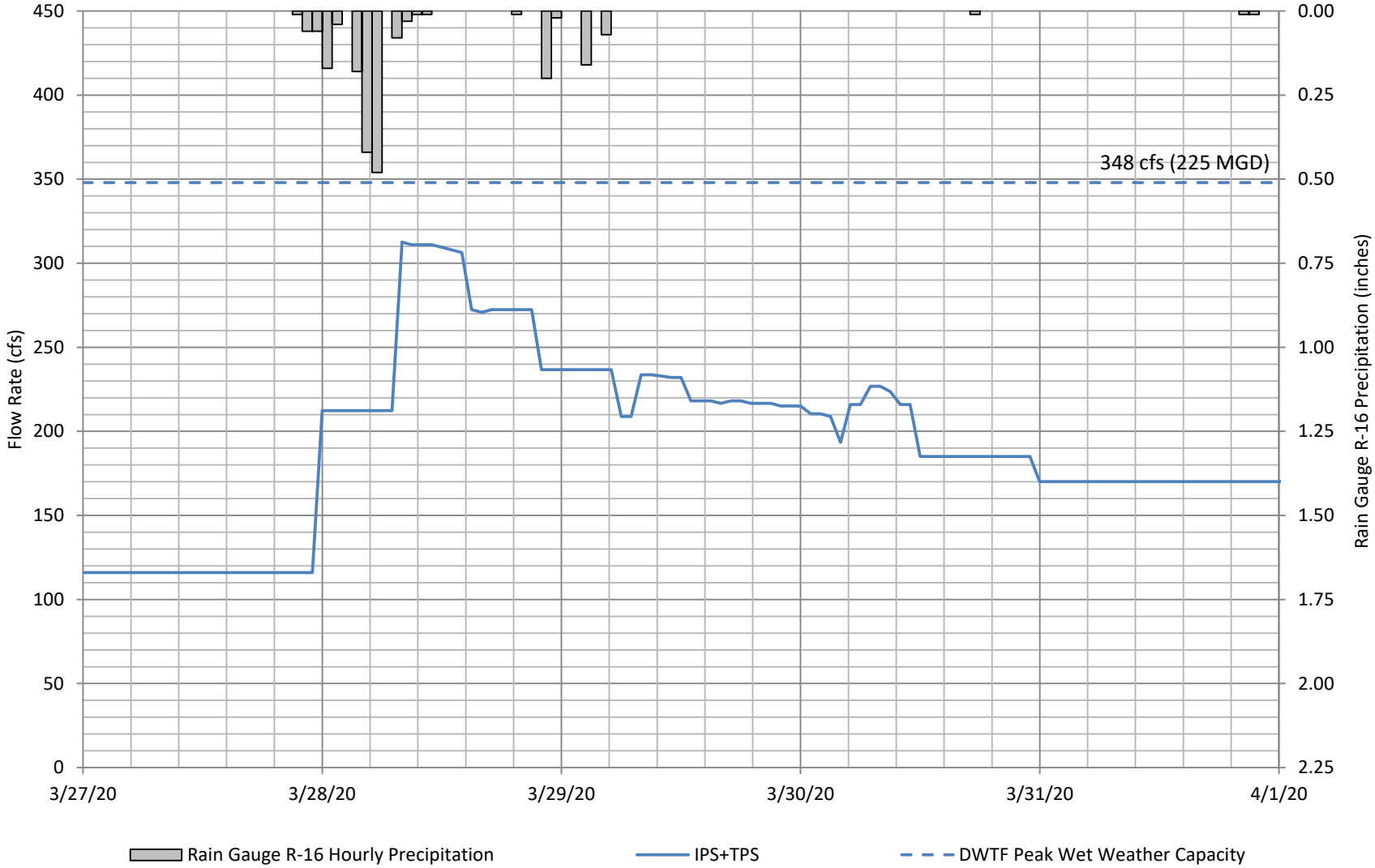


Figure D-16
Riverdrive Interceptor
Major Storm Event B - March 27-29, 2020

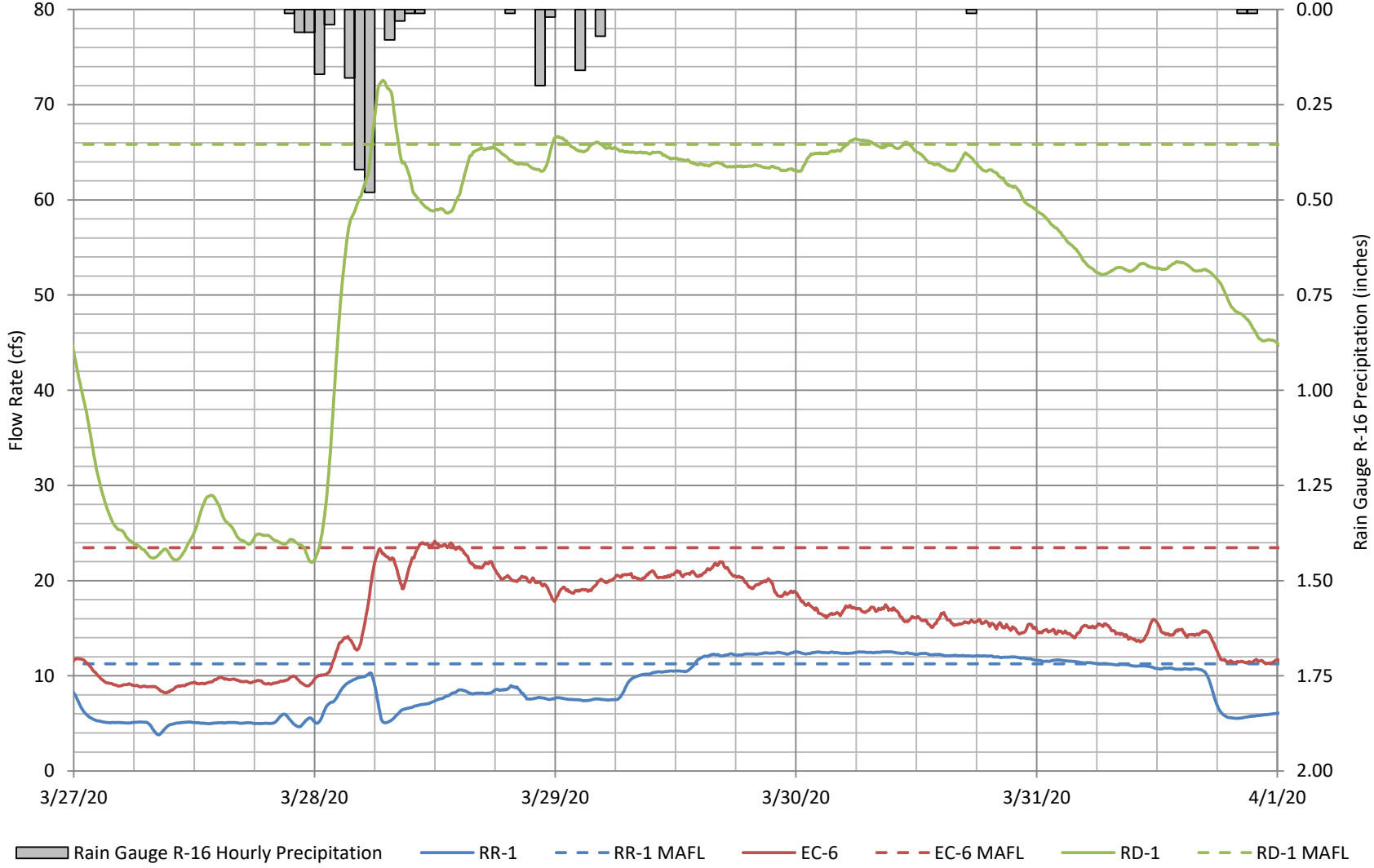


Figure D-17
Riverdrive Interceptor
Major Storm Event B - March 27-29, 2020

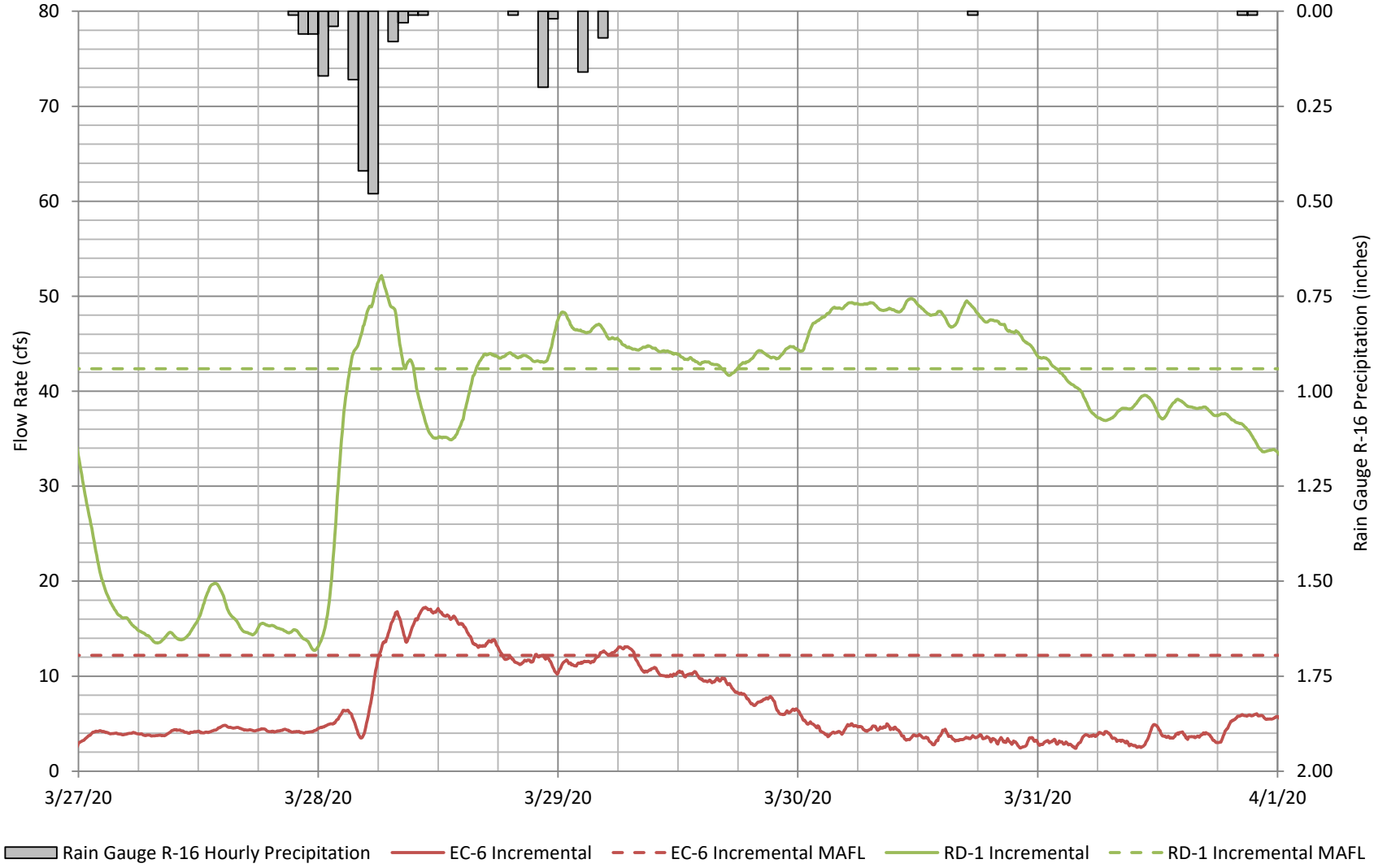


Figure D-18
SWRDDD Connection
Major Storm Event B - March 27-29, 2020

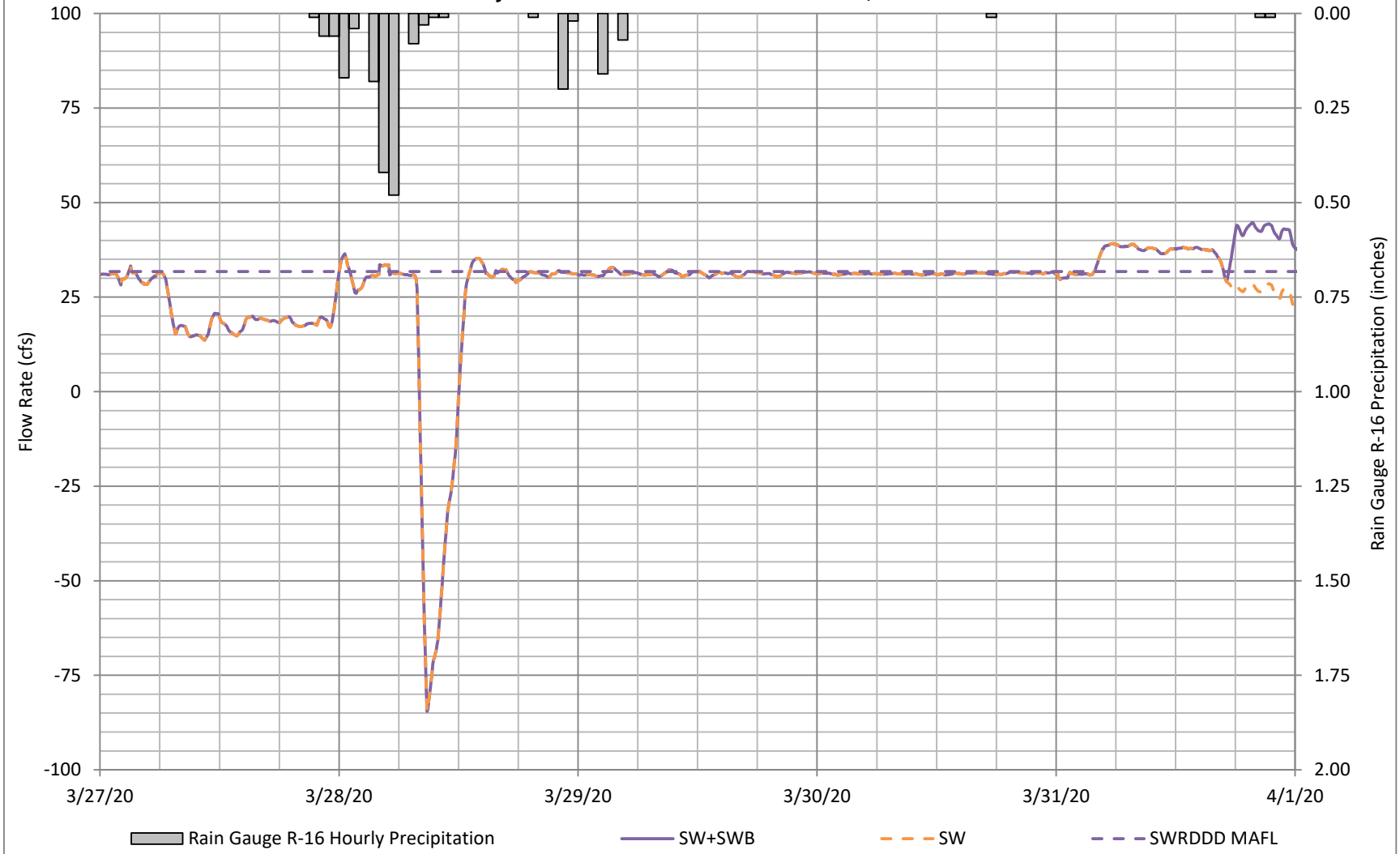


Figure D-19
Downriver Wastewater Treatment Facility
Major Storm Event C - August 27-28, 2020

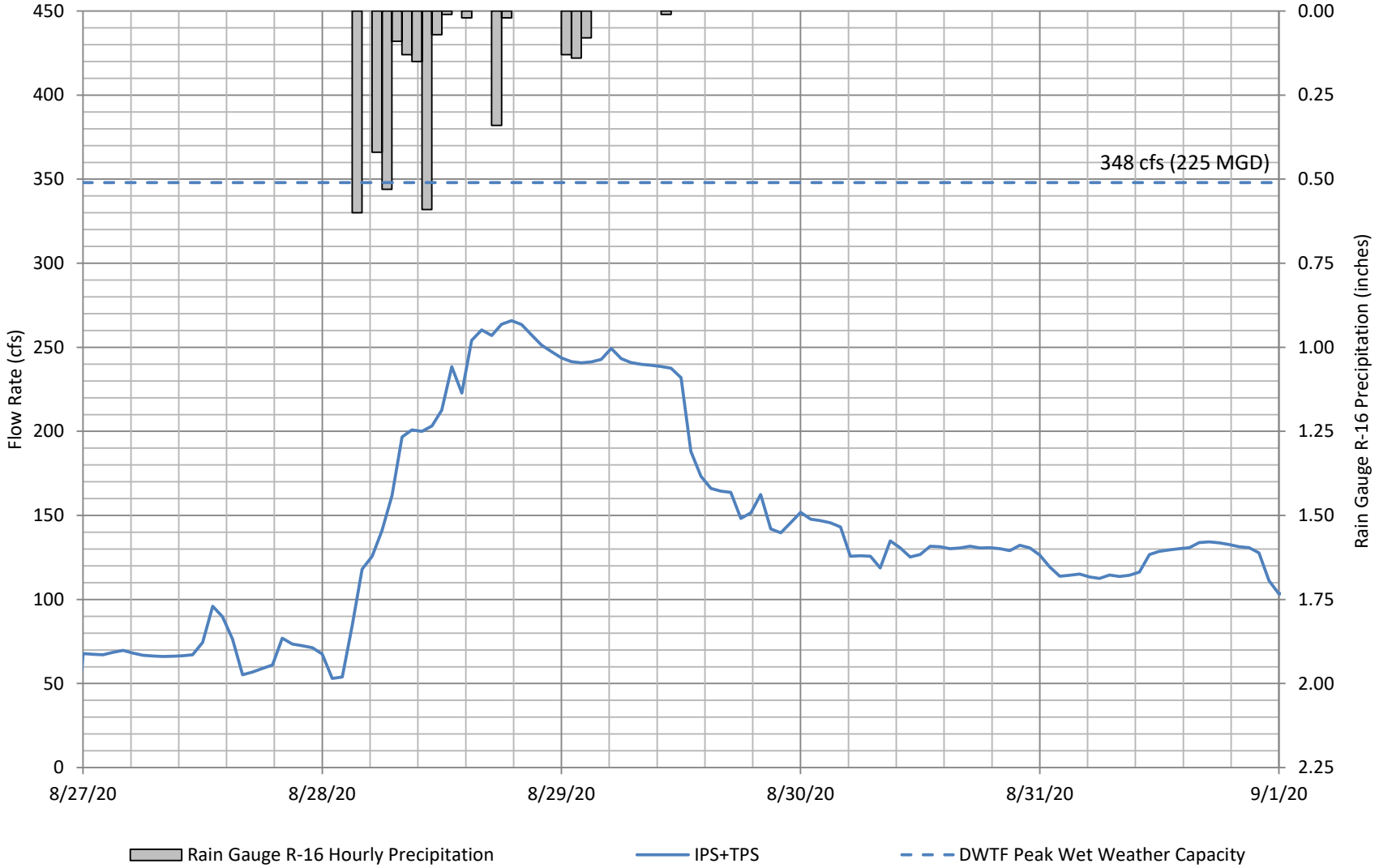


Figure D-20
Riverdrive Interceptor
Major Storm Event C - August 27-28, 2020

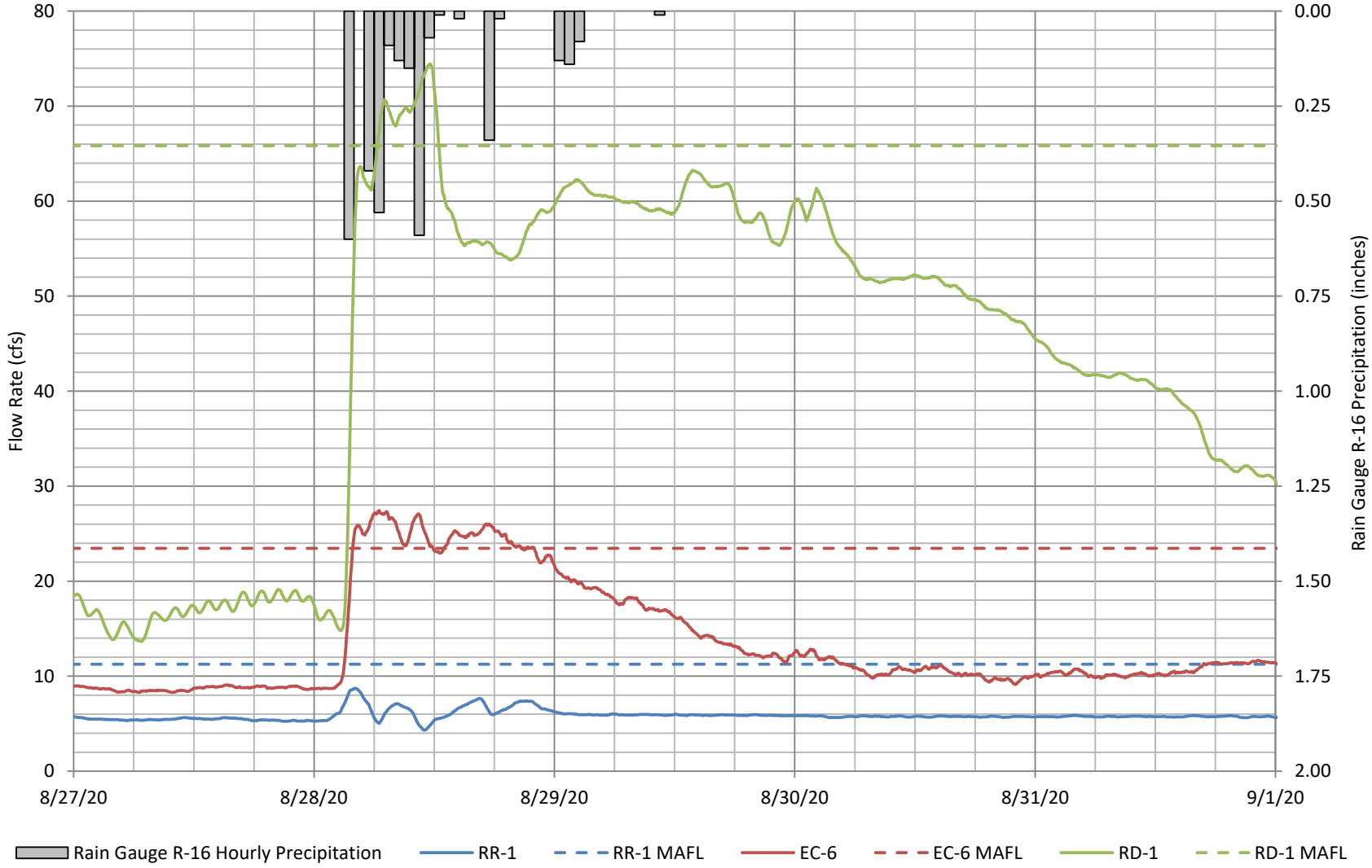


Figure D-21
Riverdrive Interceptor
Major Storm Event C- August 27-28, 2020

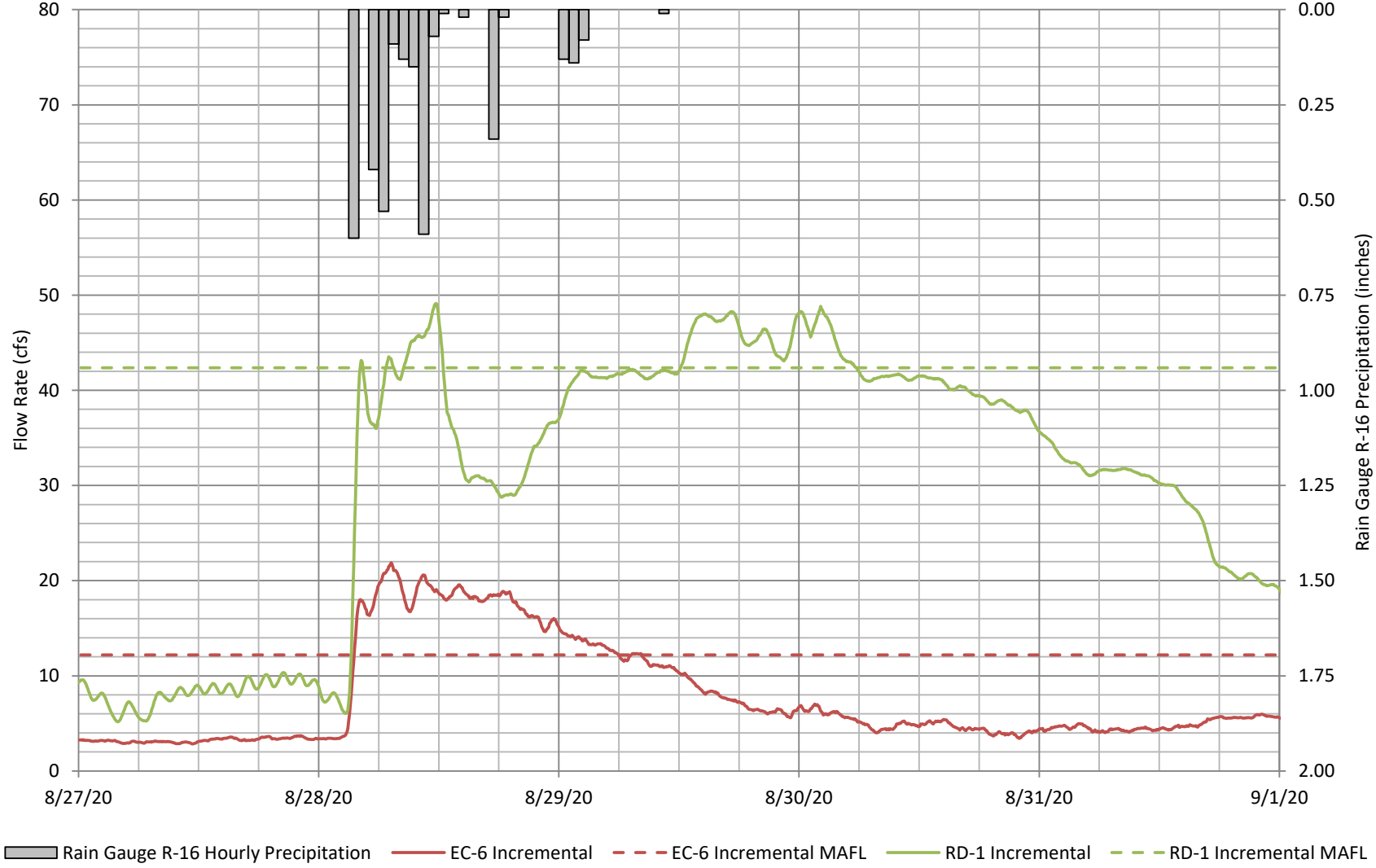
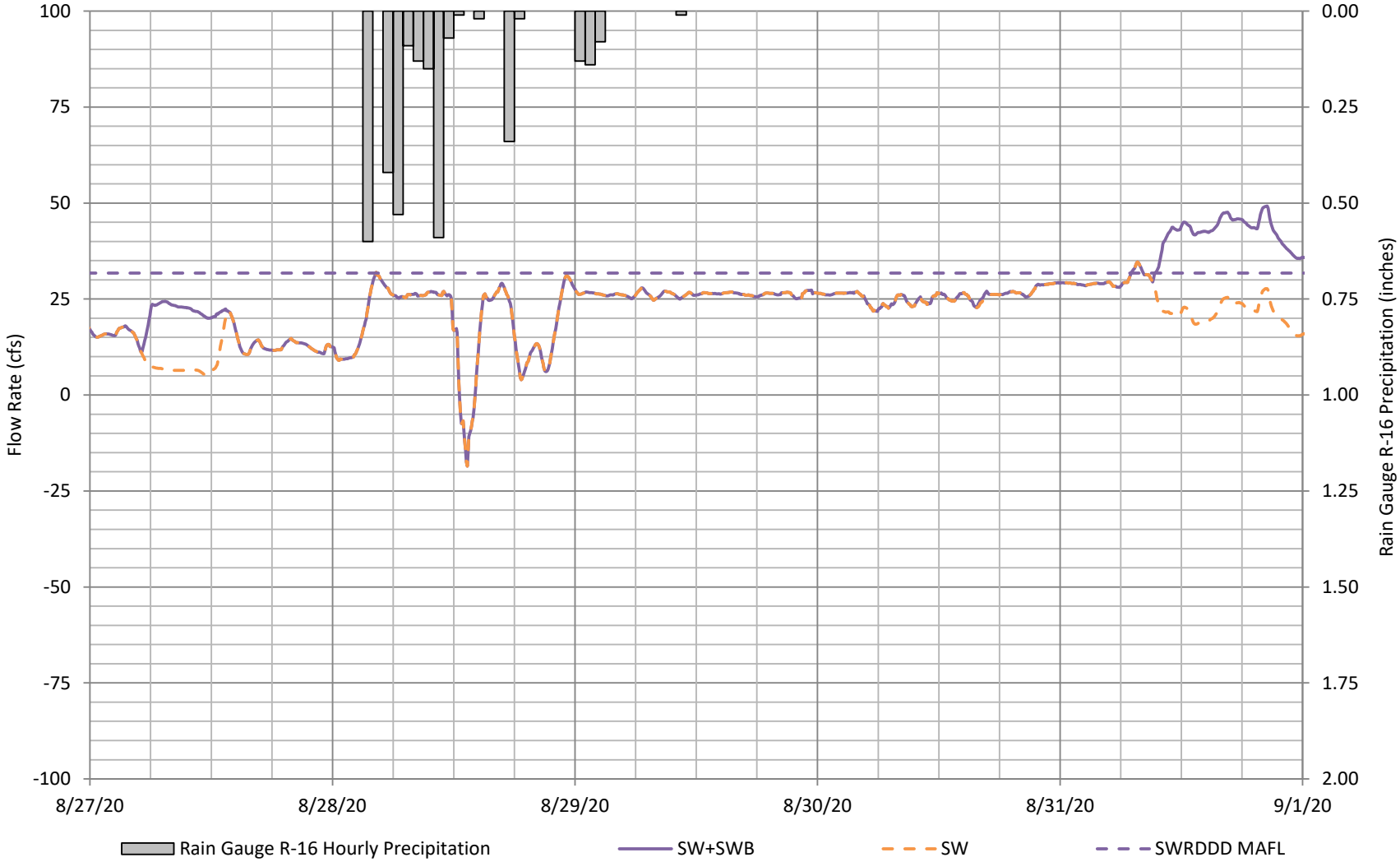


Figure D-22
SWRDDD Connection
Major Storm Event C - August 27-28, 2020



Appendix E

Sediment at Meter SW

Methodology for Estimating Sediment Depth at Meter SW using Flow Meter Velocity Paths

Meter SW has four levels of crossed path velocity sensors, for a total of eight velocity sensors. As the sediment depth at Meter SW increases, the lower velocity paths become buried in sediment or blinded by sediment suspended in the flow, and the sensors record zero velocity. The estimated sediment depth at Meter SW is based on which velocity sensors are recording zero velocity. Table E-1 lists the estimated sediment depths at Meter SW based on the sensors recording zero velocity.

When all eight velocity sensors are working, the estimated sediment depth is 1.33 ft. This depth is the average sludge depth from previous sludge profiles measurements in 2015 and is estimated to be a minimum sludge depth at this location. When one of the lowest velocity path sensors (sensors 1 or 2) records zero velocity, it is estimated that the sludge depth is at the velocity path 1 height of 1.83 feet. When both velocity path sensors (sensors 1 and 2) record zero velocity, it is estimated that the sludge depth is halfway between velocity path 1 and velocity path 2 at 2.17 feet. The same logic applies to velocity paths 2, 3, and 4 to estimate higher sediment depths.

Sediment depths are estimated for each 5-minute meter recording interval. Typically, the increased flow rates and velocities during a storm event will reduce the sludge depth at Meter SW, uncovering the buried velocity paths, which results in a lower estimated sludge depth and higher flow rate.

Table E-1

Estimated Sediment Depths at Meter SW Based on Velocity Sensor Data

Velocity Path	Velocity Path Height (ft)	Velocity Sensor	Sensors Recording Zero Velocity								
1	1.83	1	-	1 or 2	1 & 2	1 & 2	1 & 2	1 & 2	1 & 2	1 & 2	1 & 2
		2									
2	2.50	3	-	-	-	3 or 4	3 & 4	3 & 4	3 & 4	3 & 4	3 & 4
		4									
3	3.17	5	-	-	-	-	-	5 or 6	5 & 6	5 & 6	5 & 6
		6									
4	5.25	7	-	-	-	-	-	-	-	7 or 8	7 & 8
		8									
Estimated Sediment Depth (ft)			1.33	1.83	2.17	2.50	2.84	3.17	3.67	5.25	5.88

On September 18, 2019 Meter SW was reprogrammed to account for 16-inches of sediment. There is a long-term record of sediment profiles at this location which support an assumed stable depth of sediment of 16-inches. This programming change greatly improved the real-time flow rate readings for Meter SW. This is important because Meter SW is used to control a gate which throttles the SWRDDD flow rate to its contract capacity of 20.5 MGD.

At the end of each calendar month, the flow rate for Meter SW is recalculated using the estimated sediment depths. The recalculated flow rate is the best estimate of Meter SW flow rates.

Sediment Profile Measurements

Sediment profiles at the Meter SW location have been taken since 2013. These profiles measure the sediment depth every 6 inches across the pipe cross section. Table E-2 lists the sediment profile measurements. The equivalent sediment level from invert is also listed for each measurement. This value represents the depth of sediment from the pipe invert if the sediment was perfectly flat (horizontal). Figure E-1 shows the pipe cross section at Meter SW with the sediment profiles from 2013 to date.

Four sediment profiles at Meter SW were measured in 2020. The average sediment depth of these profiles ranged from 7 to 19 inches relative to the pipe invert at the metering location. The variability in the sediment profile measurements highlight the dynamic nature of sediment accretion/reduction at this location. The historical average sediment depth at Meter SW is about 16-inches.

Since Veolia took over operations of the Downriver Wastewater Treatment Facility (DWTF), the Interceptor Pump Station (IPS) wet well has been pumped down more frequently. The frequent wet well drawdowns are assumed to have helped mobilize and clear the sediment from this location.

Table E-2
Meter SW Sediment Profile Measurements

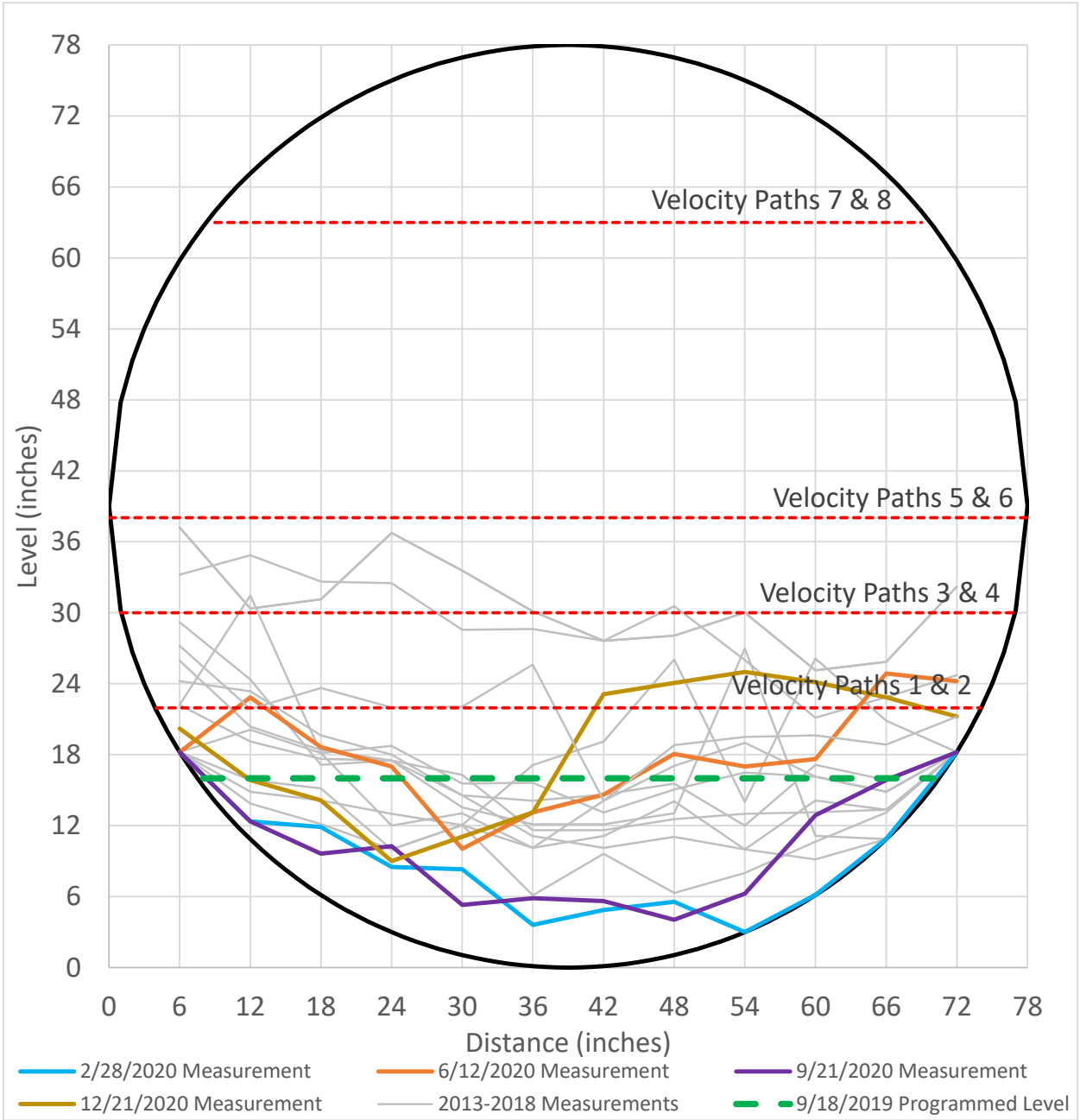
Date	Equivalent Sediment Level from Invert		Distance from Pipe Wall (inches)											
			6	12	18	24	30	36	42	48	54	60	66	72
	(inches)	(feet)	Sediment Level from Invert (inches)											
12/19/2013	21.3	1.8	27.2	21.9	23.6	22.0	22.1	25.6	14.1	18.8	19.5	19.6	18.9	21.2
5/9/2014	30.6	2.5	37.2	30.4	31.1	36.8	33.6	30.1	27.6	28.1	30.0	25.1	25.9	32.2
7/25/2014	30.6	2.5	37.2	30.4	31.1	36.8	33.6	30.1	27.6	28.1	30.0	25.1	25.9	32.2
9/24/2014	17.8	1.5	22.2	31.5	18.1	18.8	15.6	15.6	13.1	15.1	16.5	16.1	14.9	18.2
2/27/2015	28.6	2.4	33.2	34.9	32.6	32.5	28.6	28.6	27.6	30.6	26.0	21.1	22.9	24.7
5/27/2015	15.8	1.3	22.2	19.1	17.6	17.5	13.6	12.1	12.1	13.1	27.0	11.1	10.9	18.2
8/26/2015	17.0	1.4	24.2	23.4	19.6	18.0	14.6	14.1	14.6	15.6	12.0	17.1	15.9	18.2
11/20/2015	15.6	1.3	26.0	20.4	18.4	17.5	16.3	11.6	11.6	12.6	13.0	13.1	13.4	18.2
11/18/2016	10.7	0.9	18.2	14.9	14.1	13.0	12.1	6.1	9.6	6.3	8.0	10.6	13.1	18.2
12/21/2016	14.7	1.2	29.2	24.4	17.1	17.5	14.6	11.1	10.1	11.1	10.0	9.1	10.9	18.2
5/24/2017	14.0	1.2	18.2	13.9	12.1	10.0	12.1	10.1	14.1	17.1	19.0	16.1	14.9	18.2
8/23/2017	17.5	1.5	18.2	15.9	15.1	10.0	12.1	17.1	19.1	26.1	14.0	26.1	20.9	18.2
2/13/2018	13.7	1.1	18.2	20.1	18.1	12.0	13.1	10.1	11.1	14.1	10.0	14.1	13.4	18.2
2/28/2020	6.6	0.6	18.2	12.4	11.9	8.5	8.3	3.6	4.9	5.6	3.0	6.1	10.9	18.2
6/12/2020	17.9	1.5	18.2	22.9	18.6	17.0	10.1	13.1	14.6	18.1	17.0	17.6	24.9	24.2
9/21/2020	8.3	0.7	18.2	12.4	9.6	10.3	5.3	5.9	5.6	4.1	6.3	12.9	15.9	18.2
12/21/2020	18.5	1.5	20.2	15.9	14.1	9.0	11.1	13.1	23.1	24.1	25.0	24.1	22.9	21.2
Assumed	16.0	1.3	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0

Legend

Equivalent sediment level less than meter programmed level of 16 inches

Equivalent sediment level greater than meter programmed level of 16 inches

Figure E-1
Sediment Profiles at Meter SW from 2013 through 2020



Appendix F

Dye-Dilution Test Adjustment Factors

Table F-1
Downriver Sewage Disposal System
Dye Dilution Test Summary

Meter	Date	Adjustment Factor	Period Adjustment Factor
DMA-1	8/30/2018	0.85	0.85
DMA-2	9/24/2014	0.86	0.98
	8/1/2018	1.09	
EC-6	2/18/2014	0.70	0.70
P-1	9/16/2013	0.99	0.98
	8/7/2018	0.96	
P-2	9/18/2017	1.01	1.01
PA-1	11/6/2013	0.93	0.93
PA-2	9/18/2017	0.94	0.98
	1/24/2020	1.02	
PA-3	1/29/2020	0.96	0.96
PA-4	4/4/2018	0.90	0.90
PB-1	1/23/2020	1.14	1.14
PC-1	9/25/2014	0.93	0.93
	8/9/2018	0.93	
PD-1	8/18/2015	0.76	0.76
	7/31/2018	0.76	
PD-2	1/30/2020	0.99	0.99
RD-1	4/6/2018	1.02	1.02
RR-1	2/19/2014	0.97	1.06
	1/28/2020	1.16	
RV-1	12/11/2019	1.00	1.00
SW	11/12/2013	1.00 (with sediment accounted for)	1.00
	1/27/2020	1.00 (with sediment accounted for)	
TB-1	11/10/2014	1.05	1.01
	1/28/2020	0.97	

Detailed Review of Possible Adjustment Factor Trends

Meter PA-2

The January 23, 2020 dye dilution test of Meter PA-2 has an adjustment factor of 1.02. This adjustment factor is slightly higher than the previous two tests. The September 18, 2017 dye dilution test has an adjustment factor of 0.94 and the November 4, 2013 Lithium dilution test has an adjustment factor of 0.86. The adjustment factors for Meter PA-2 appear to be trending higher over time, which prompted a review of the meter data to determine if a period break is warranted.

The first check for a Meter PA-2 period break is a review of the Meter PA-2 velocity and depth data. Figure F-1 shows a scatter graph of hourly average velocity versus hourly average depth from July 2013 through June 2020. Each calendar year of data is shown as a separate series. This figure shows that the meter performance and depth versus velocity trend has remained relatively consistent over the past 7-years. No significant increases or decreases in velocity or depth were noted during the review of this data.

The average velocity and depth values from the three dye/Lithium test periods are also plotted on this figure. The 2017 and 2020 dye dilution tests values plot near the middle of the scatter data, which is an indication that the test results are applicable to the typical average meter data. The 2013 Lithium test plots near the bottom of the scatter. While the 2013 adjustment factor is valid for the test period, plotting near the bottom of the scatter may suggest that the adjustment factor for this test may understate flow rates for other periods.

The second check for a Meter PA-2 period break is a review of the Meter PA-2 flow rate relative to the upstream and downstream Eureka Interceptor flow meters (PA-1, PA-3, and PA-4). Figure F-2 shows a 60-day rolling average flow rate for these flow meters along the Eureka Interceptor. Figure F-3 shows the 60-day rolling average flow rate for Meter PA-2 as a fraction of the other flow meter flow rates; the fraction relative to Meter PA-4 was not shown since this meter has a relatively low flow rate compared to Meter PA-2. The values shown in Figures F-2 and F-3 are processed flow rates without adjustment factors applied. ADS flow meters were installed at Meters PA-1 and PA-2 in late June 2013 and became the official dataset on July 1, 2013. Data prior to July 1, 2013 is not shown for these meters. The Accusonic flow meter at PA-3 was salvaged on June 25, 2019 to repair Meter SW. Data post June 25, 2019 is not shown for Meter PA-3.

From March 2014 through June 2020, the PA-2/PA-1 (blue line) fraction has remained relatively consistent between 0.8 and 1.0. Similarly, from August 2014 through June 2020, the PA-2/PA-3 (gray line) fraction has remained relatively consistent between 1.4 and 1.6. Meter PA-4 is upstream of Meter PA-3 and the trend is similar to the PA-2/PA-3 trend, but this comparison is less useful as Meter PA-4 flow is much smaller than Meter PA-2 flow. These figures show that Meter PA-2 has been performing similarly to the other Eureka Interceptor flow meters over the past 6-years.

For August through November 2013, the PA-2/PA-1 and PA-2/PA-3 fractions are higher than the other periods. The 2013 Lithium test was performed during this time. The 2013 low

adjustment factor also supports that Meter PA-2 may have been reading high during this period.

Through review of the meter data it was determined that no period breaks are warranted. However, it is recommended that the 2013 Lithium dilution test result not be included in the period adjustment factor from January 1, 2020 onwards. The 2013 test is over 7-years old and may not provide the most accurate adjustment factor for present metering conditions. It is recommended that the frequency of dye tests for Meter PA-2 be increased to improve the accuracy of the period adjustment factor.

Meter PA-2 data from 2013 through 2019 will remain unchanged. Meter PA-2 data from January 1, 2020 onwards will use the 2017 and 2020 tests to compute a period adjustment factor of 0.98 which will be applied to the data.

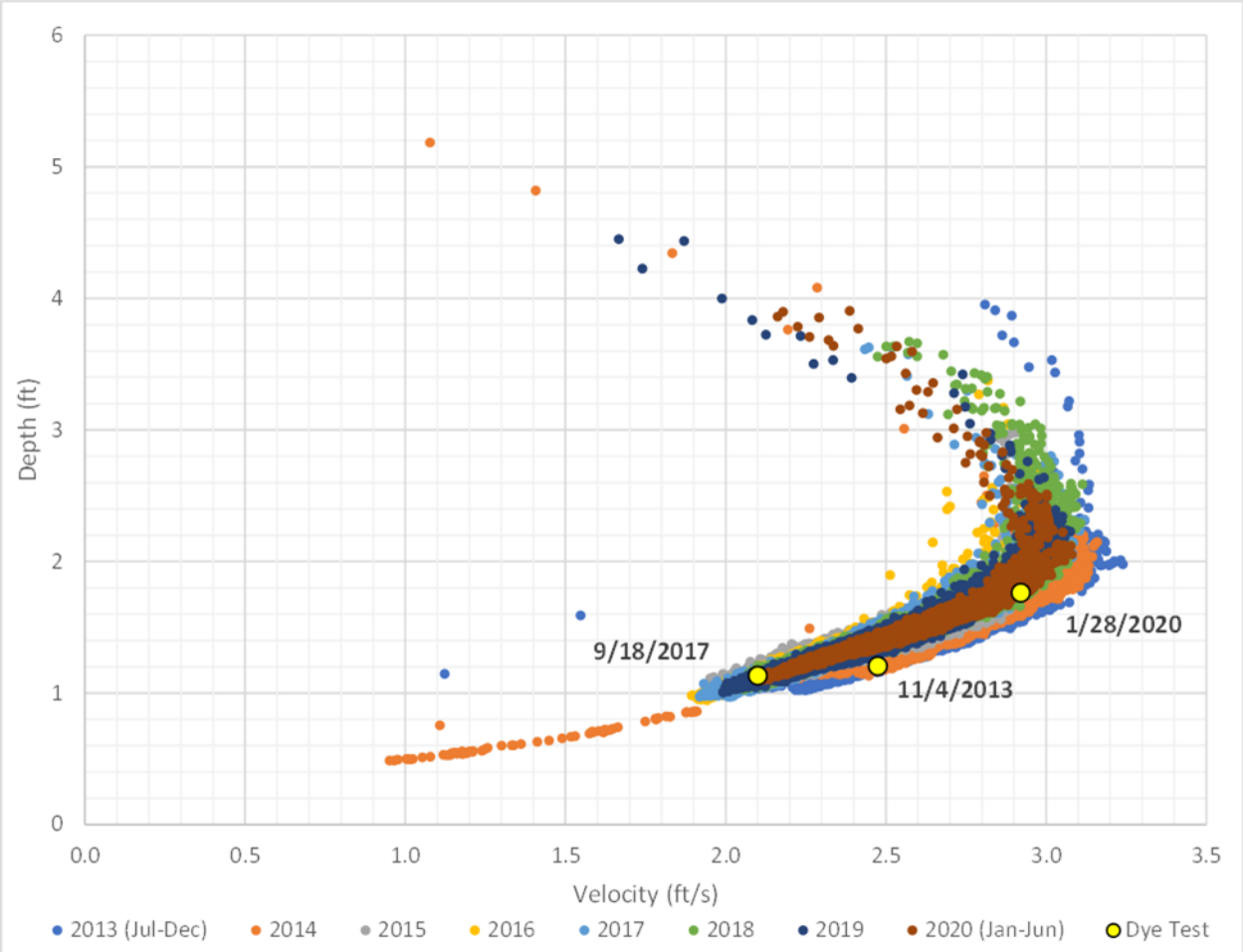


Figure F-1: Meter PA-2 Scatter Graph of Velocity versus Depth from July 2013 through June 2020

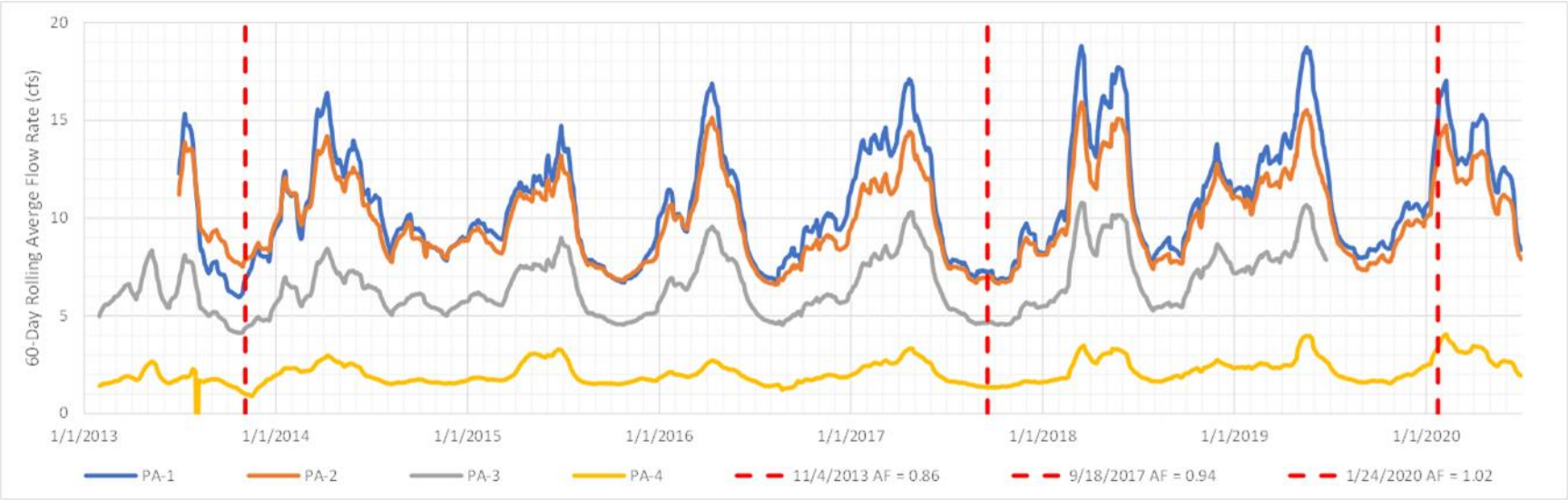


Figure F-2: 60-Day Rolling Average Flow Rate for Flow Meters along the Eureka Interceptor

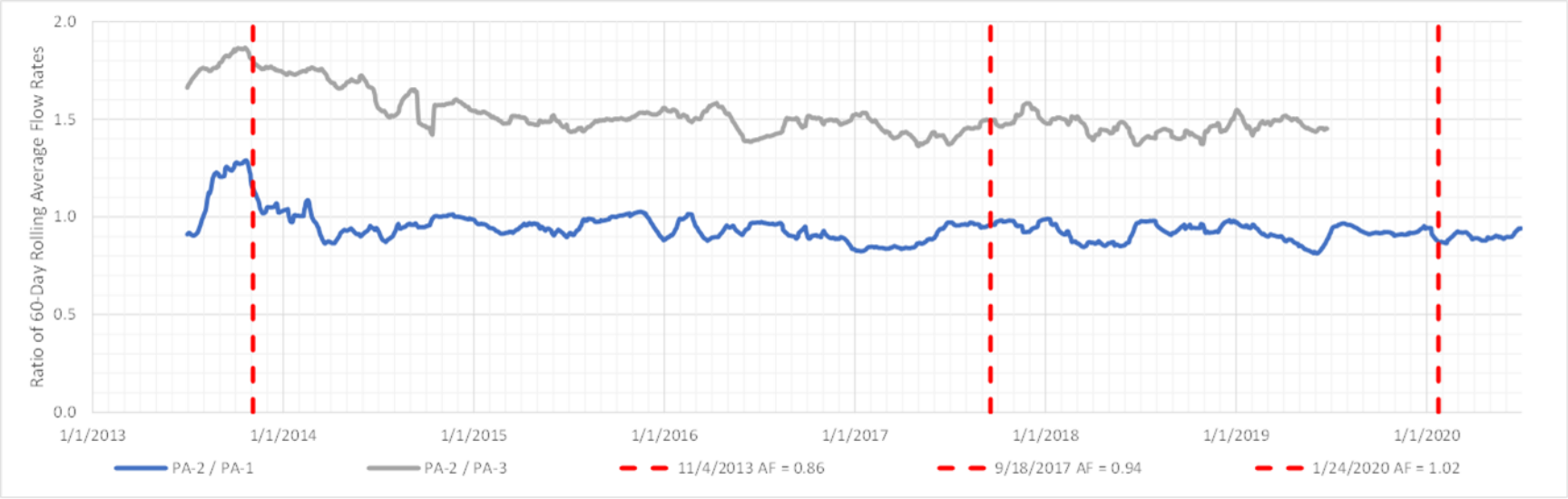


Figure F-3: Ratio of 60-Day Rolling Average Flow Rates for Flow Meters along the Eureka Interceptor

Meter RR-1

The January 28, 2020 dye dilution test of Meter RR-1 has an adjustment factor of 1.16. This adjustment factor is higher than the previous test on February 19, 2014 dye dilution test, which has an adjustment factor of 0.97. The adjustment factors for Meter RR-1 appear to be trending higher over time, which prompted a review of the meter data to determine if a period break is warranted.

The first check for a Meter RR-1 period break is a review of the Meter RR-1 velocity and depth data. Figure F-4 shows a scatter graph of hourly average velocity versus hourly average depth from February 6, 2014 (meter installation) through June 2020. Each calendar year of data is shown as a separate series. This figure shows that the meter performance and depth versus velocity trend has remained relatively consistent over the past 6-years. No significant increases or decreases in velocity or depth were noted during the review of this data.

The average velocity and depth values from the two dye test periods are also plotted on this figure. The 2014 and 2020 dye dilution tests values plot near the middle of the scatter data, which is an indication that the test results are applicable to the typical average meter data.

The second check for a Meter RR-1 period break is a review of the Meter RR-1 flow rate relative to the downstream River Drive Interceptor flow meters (EC-6 and RD-1). Figure F-5 shows a 60-day rolling average flow rate for these flow meters along the River Drive Interceptor. Figure F-6 shows the 60-day rolling average flow rate for Meter RR-1 as a fraction of the other flow meter flow rates. The values shown in Figures F-5 and F-6 are processed flow rates without adjustment factors applied. An ADS flow meter was installed at Meter EC-6 in late June 2013 and became the official dataset on July 1, 2013. Data prior to July 1, 2013 is not shown for this meter.

From February 2014 through June 2020, the RR-1/EC-6 (orange line) fraction has remained relatively consistent between 0.3 and 0.45. Similarly, from February 2014 through June 2020, the RR-1/RD-1 (gray line) fraction has remained relatively consistent between 0.15 and 0.25. These figures show that Meter RR-1 has been performing similarly to the other River Drive Interceptor flow meters over the past 6-years. However, these figures also show a considerable variability in these relationships. This variability is believed to be, in part, due to actual operations, such as the operation of the River Rouge CSO RTB and the Lincoln Park EQ Basin. This variability could also be, in part, an indication of variability in the measurement of flow rate at one or more of these meters.

Through review of the meter data it was determined that no period breaks are warranted. It is recommended that the frequency of dye tests for Meter RR-1 be increased to improve the accuracy of the period adjustment factor.

Meter RR-1 data from installation to present will remain unchanged and will have an adjustment factor of 1.06. Additional testing will help refine this adjustment factor on a go-forward basis.

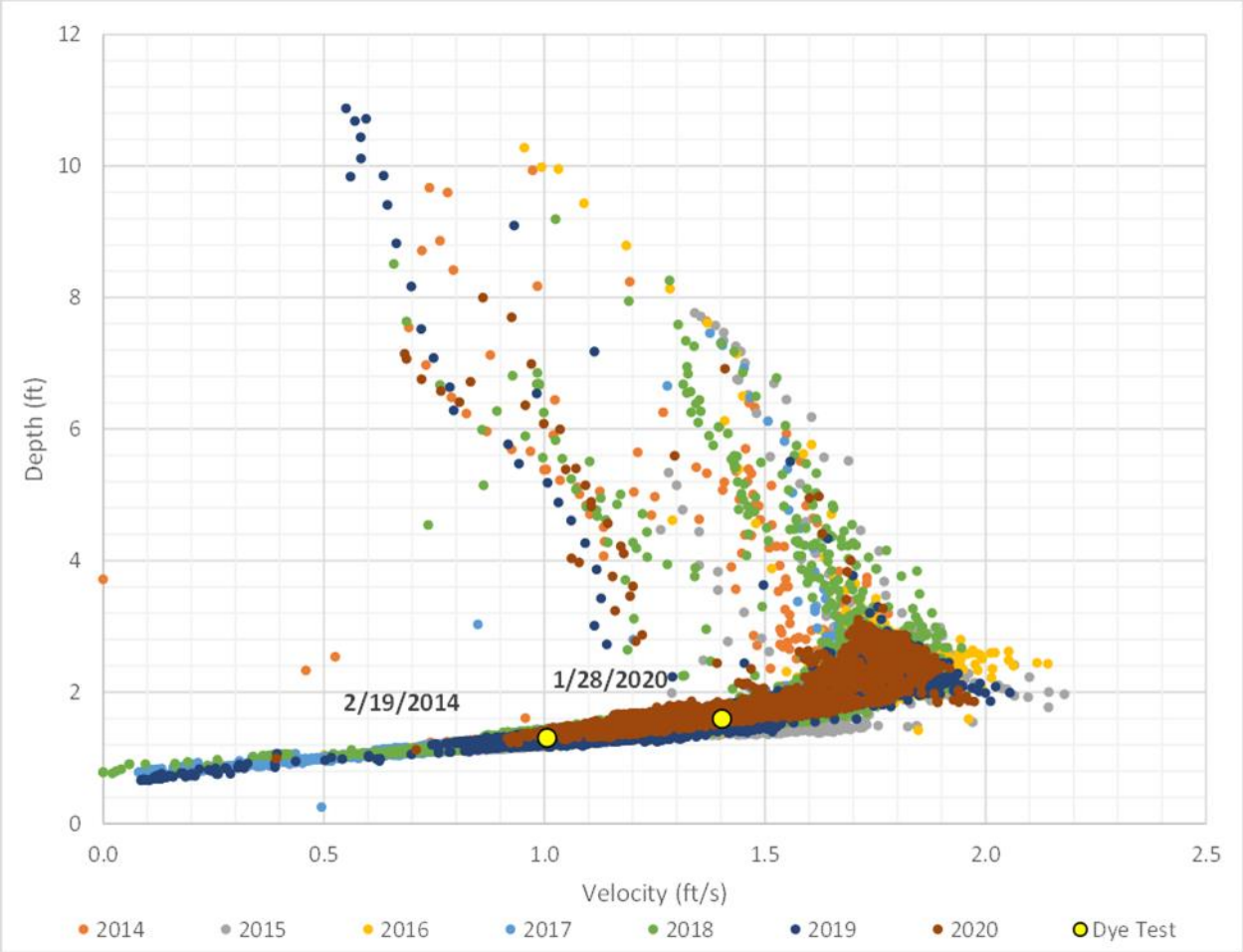


Figure F-4: Meter RR-1 Scatter Graph of Velocity versus Depth from February 2014 through June 2020

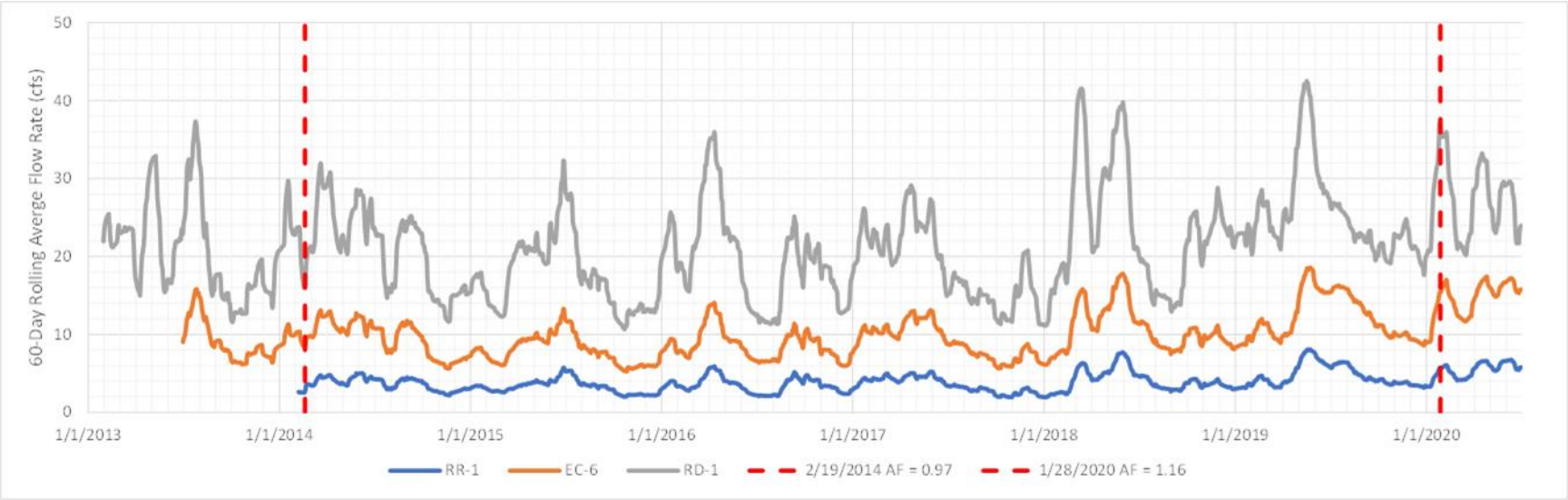


Figure F-5: 60-Day Rolling Average Flow Rate for Flow Meters along the River Drive Interceptor

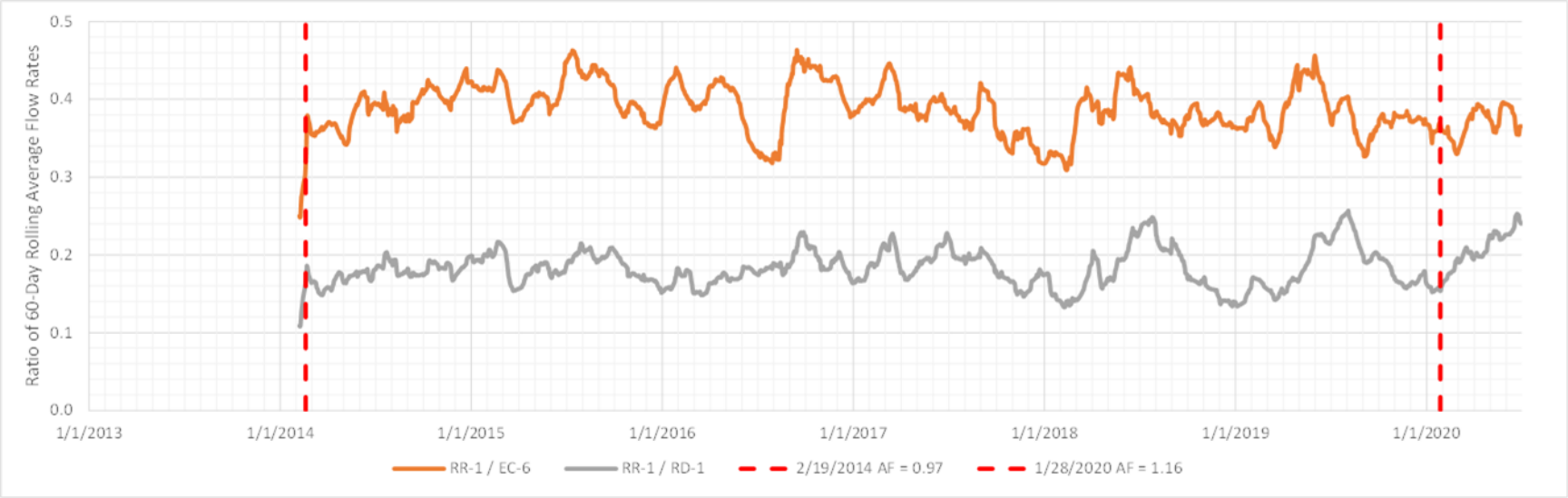


Figure F-6: Ratio of 60-Day Rolling Average Flow Rates for Flow Meters along the River Drive Interceptor