City of Wilmington
Water, Sewer, Streets & Alleys Committee
Wednesday, February 10, 2016 at 6:00 p.m.

Location & Time

Council Chamber
Wilmington City Hall
1165 S. Water Street
6:00 p.m. 02/10/16

Water, Sewer, Streets & Alleys Committee Members

Frank Studer, Co-Chair
Kevin Kirwin, Co-Chair
Joe Van Duyne
Larry Hall
John Persic, Jr.

Agenda

1. Call to Order
2. Approval of the January 13, 2016 Meeting Minutes
3. New Business
   a. Review Flow Metering and I/I Investigation Report prepared by Strand Associates and Discuss Future Plans
4. Review Budget Reports
   a. Water Operations
   b. Sewer Operations
   c. Public Works Department
   d. MFT
5. Adjournment

Posting Date
2/5/2016 10:21 AM jjz

CITY OF WILMINGTON
WATER, SEWER, STREETS & ALLEYS COMMITTEE
Wednesday, January 13, 2016, 6:00 p.m.
Wilmington City Hall, Council Chambers
1165 S. Water Street

In Attendance
Committee Members
Co-Chair, Alderman Frank Studer
Co-Chair, Alderman Kevin Kirwin
Alderman Joe Van Duyne
Alderman Larry Hall
Alderman John Persic, Jr.

Other City Officials
City Administrator, Tony Graff
City Accountant Kim Doglio
City Engineer, Colby Zemaitis
Superintendent of Public Works Gary Van Duyne
Executive Secretary Joie Ziller

The meeting of the Water, Sewer, Streets and Alleys Committee was called to order at 6:06 p.m. by Alderman Studer.

Previous Meeting Minutes – December 9, 2015
The minutes were reviewed. **Alderman L. Hall made a motion and Alderman Kirwin seconded to accept December 9, 2015 Committee meeting minutes as written and have them placed on file.**

Upon voice vote, THE MOTION CARRIED unanimously 5-0.

New Business
1. **Review/Approve Quotes for new VFD, breaker and line reactor for Stewart Street Lift Station**

The Committee reviewed the two quotes provided for this project.

Alderman Kirwin made a motion and Alderman L. Hall seconded to approve the Xylem Water Solutions USA, Inc. for the VFD, breaker and line reactor for Stewart Street Lift Station and bring them to City Council for a full vote at the January 19, 2016 City Council meeting.

Upon voice vote, THE MOTION CARRIED unanimously 5-0.

2. **Review/Approve ComEd Estimate for New Streetlight Installations**

City Engineer Zemaitis presented the Committee with quotes from ComEd to install 3 new street signs; 1 on Margarite Street, 1 on Eula Street and 1on Buchanan Street at the Police Department exit. The Committee suggested that perhaps this is something the Public Works Department could do to keep the cost a bit lower. City Engineer Zemaitis and Superintendent Van Duyne will

work on a cost the City to do this project and bring it back to the Committee for review and approval.

Review Budget Reports

Water Operations: The Committee reviewed the budget reports as presented.

Sewer Operations: The Committee reviewed the budget reports as presented.

Public Works: The Committee reviewed the budget reports as presented.

Adjournment

With no further business before the Committee, Alderman Studer made a motion and it was seconded by Alderman Persic to adjourn. Upon voice vote, THE MOTION CARRIED unanimously and the meeting was adjourned at 6:42 p.m.

Respectfully submitted,

Joie Ziller
Executive Secretary

Strand Associates, Inc.®
910 West Wingra Drive
Madison, WI 53715
(P) 608-251-4843
(F) 608-251-8655

December 30, 2015

Mr. Colby Zemaitis, P.E.
City of Wilmington
1165 S. Water Str.
Wilmington, IL 60481

Re: Flow Metering and I/I Investigation

Dear Mr. Zemaitis:

Enclosed are three copies of the Flow Metering and I/I Investigation Report.

Please call with questions.

Sincerely,

STRAND ASSOCIATES, INC.®

Timothy R. Juskiewicz, P.E., C.F.M.

Enclosure: Report

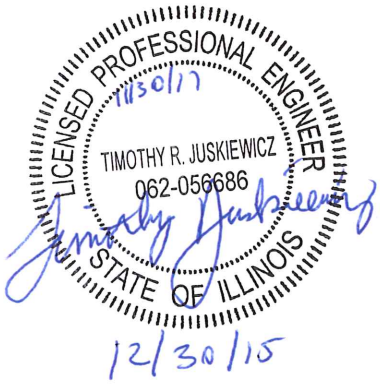
TRJ:plh\R:\JOL\Documents\Reports\Archive\2015\Wilmington, IL\FlowMtrg-I-I.6085020.TJR.Nov2015\Report\Report.docx\123015

DRAFT FINAL-(12/30/15)

Report for

City of Wilmington, Illinois

Flow Metering and Inflow/Infiltration (I/I) Investigation



Prepared by:

STRAND ASSOCIATES, INC.®
IDFPR No. 184-001273
1170 South Houbolt Road
Joliet, IL 60431
www.strand.com

December 2015

STRAND ASSOCIATES®

TABLE OF CONTENTS

PURPOSE

The City of Wilmington (City) owns and maintains its own separate sanitary sewer system. A separate sanitary sewer system is one in which a dedicated storm sewer system conveys rainwater while the sanitary sewer system is dedicated solely for conveying wastewater.

The original wastewater treatment plant (WWTP) was located along the banks of the Kankakee River at the west end of Stewart Street. The City constructed a new WWTP approximately one-half mile east of the original WWTP in 2007. Additionally, a new gravity sewer, new pumping station, and a new force main were constructed at the original WWTP location to pump all the sewerage collected by the City's sanitary sewer system to the new WWTP location. The new pumping station is called the Stewart Street Pumping Station (Stewart Street PS). Flow rates at the Stewart Street PS have been well above the daily average flow during larger wet weather events over the past few years.

This suggests the presence of significant infiltration/inflow (I/I) within the City's sanitary sewer system. Inflow is defined as clear water entering the sanitary sewer system because of rainfall or surface runoff from sources such as roof leaders, yard or area drains, foundation drains, manhole covers, and cross connections with storm sewers. Infiltration is clear water entering the sanitary sewer system because of high ground or surface waters. Infiltration usually enters through defective sewer joints, cracked or broken sewer, or manhole walls.

The purpose of this study was to collect flow metering data in each of the major sewer basins tributary to the Stewart Street PS for evaluation of I/I characteristics. The flow data was then used to prioritize areas for further I/I investigations.

SCOPE

The scope of the Flow Metering and I/I Investigation includes the following:

- Installation of flow meters for a period of 9 weeks from September 23, 2015, to December 2, 2015.
- Installation of one rain gauge to collect rainfall data for comparison to the metered flow of the system.
- Weekly download and analysis of the raw flow metering and rainfall data to check the quality of data collected.
- Compilation and evaluation of flow and rainfall data and analysis of existing sanitary sewer system flow characteristics.
- Conclusions and recommendations for continued investigations.

ABBREVIATIONS

City	City of Wilmington
FM	flow meter
FPA	facility planning area
ft	feet
gpm	gallons per minute
I/I	inflow/infiltration

PS pumping station
RG rain gauge
WWTP wastewater treatment plant

EXISTING COLLECTION SYSTEM AND FLOW METERING LOCATIONS

There are three sewer basins tributary to the Stewart Street PS. A 15-inch sewer collects wastewater from the northern part of the City. The 15-inch sewer runs west along Kankakee River Drive prior to running south along the Kankakee River through the original WWTP site. Additionally, a 21-inch sewer collects flow from the southern part of the City. This sewer flows under Forked Creek to the original WWTP site. The 15- and 21-inch sewers combine in a manhole on the original WWTP site and a 24-inch interceptor then flows to the Stewart Street PS.

An additional 10-inch sewer collects sewerage from the eastern portion of the City. This sewer flows west along Stewart Street before combining with the 24-inch interceptor described above and ultimately into the Stewart Street Lift Station. Figure 1 shows the location of each sewer described above as well as the locations of each flow meter described below. Table 1 provides an inventory of the flow metering locations and the upstream pipe sizes (flow meter sizes).

Meter	Meter Location	Sewer Size (inches)
Kankakee River Drive–15 inch	Manhole in front yard of home at intersection of Charlotte Street and West Kankakee River Drive at 22301 West Kankakee River Drive.	15
Original Plant–15 inch	One manhole upstream of the confluence manhole, east of abandoned sludge drying beds. This meter was relocated part way through the metering period one manhole north of original location.	15
Stewart Street–21 inch	In grass south of original WWTP and confluent manhole.	21
Stewart Street Near Pumping Station–10 inch	In gravel, just north of Stewart Street and new the Stewart Street PS.	10

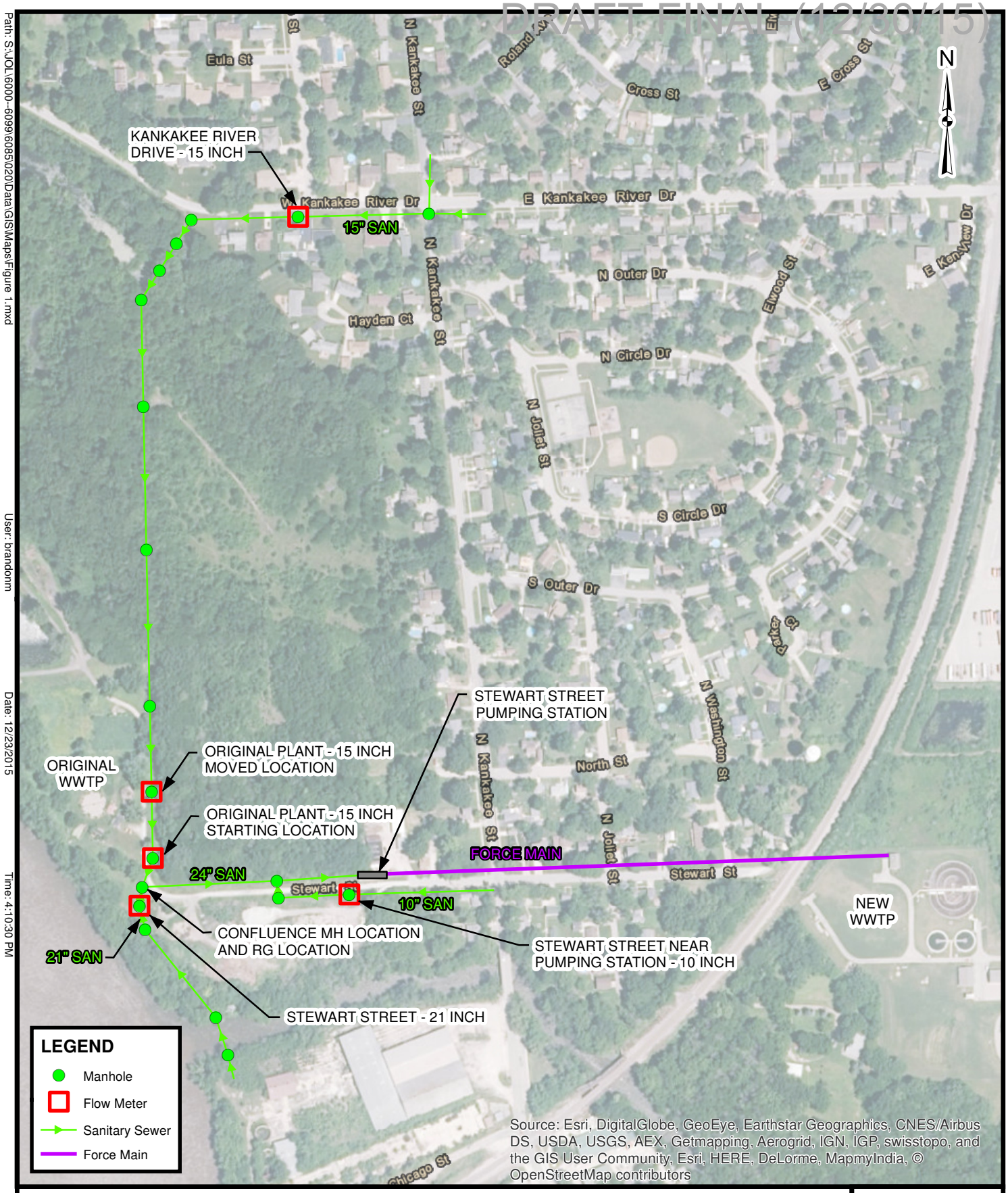
Table 1 Flow Meter Locations

RAIN GAUGE LOCATION

Rainfall data was collected from one rain gauge installed west of the Stewart Street PS at the original WWTP site on the lid of the confluence manhole. The rain gauge location is also shown in Figure 1. Rainfall totals were also taken from a gauge at the WWTP as a backup to this rain gauge.

FLOW MONITORING OPERATIONS

The flow monitoring operations began September 23, 2015, with installation of four ISCO 2150 area-velocity flow meters and one ISCO 674 tipping-bucket rain gauge. Figures 2 and 3 show



LOCATION MAP

SANITARY SEWER FLOW MONITORING AND STUDY
CITY OF WILMINGTON
WILMINGTON, ILLINOIS

STRAND ASSOCIATES®

FIGURE 1
6085.020

photographs of the equipment used. The flow meters used a pressure transducer to detect the water level and a Doppler radar to detect velocity of the sewer flow over the top of a sensor set at or near the bottom of the sewer pipe entering a selected flow metering manhole. The diameter and shape of the sewer were programmed into the flow meter, and the level reading was converted within the flow meter into a cross-sectional area of flow. Flow was calculated from velocity readings multiplied by the flow meter's calculated area. Figure 4 shows a typical installation.

Figure 2 ISCO Flow Meter

Figure 3 ISCO Tipping-Bucket Rain Gauge

After the initial installation, each flow meter and rain gauge was visited on a weekly basis. The stored data was downloaded from the meters and gauges to a laptop, and a visual check of the data and site conditions was made to confirm meters were operating correctly. Throughout the flow monitoring period, if operational problems were found with the meters, a manhole entry was made to correct the problem.

Figure 4 Flow Meter Installation

Following each week's data collection, a more thorough evaluation of the data was performed. This evaluation included a mass balance of flows comparing upstream and downstream data to confirm meters were working properly relative to each other.

The meters were removed December 2, 2015.

RAINFALL DATA ANALYSIS

There were 13 individual rainfall events over the three-month period. However, more than 0.10 inches of rain was required for an event to be considered for analysis. There were many smaller events during the study period. The 13 rainfall events are detailed in Table 2. The distributions over the monitoring period are shown in Figure 5.

Only one rain gauge was required based on the size of the City's collection system. Rainfall data was collected by the rain gauge for each of the 13 rainfall events. The rainfall intensity for the most intense portion of the rainfall event was used to estimate a recurrence interval according to the *Rainfall Frequency Atlas of the Midwest* by Huff and Angel. The recurrence interval is a theoretical interpretation of how often a similar rainfall event is expected to occur. For example, a two-month rainfall event is one that would be expected to occur six times a year.

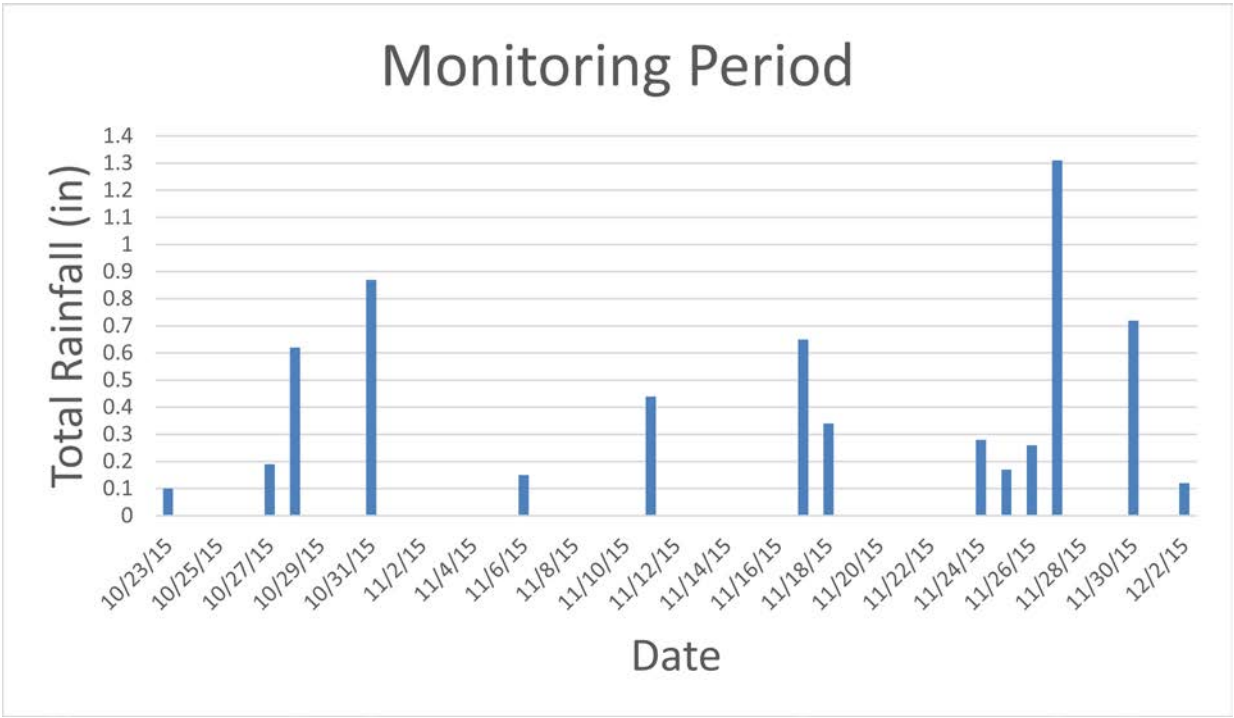


Figure 5 Rainfall Events

Date	Total Rainfall (inches)	Total Duration (hrs)	Maximum Rainfall Intensity	Maximum Rainfall Recurrence Interval
10/23/15	0.1	4.5	.02 inches in 15 min	<2 months, 15 minutes
10/27/15	0.83	24	.69 inches in 18 hr	<2 months, 18 hours
10/31/15	0.87	9.25	.87 inches in 12 hr	<2 months, 12 hours
11/6/15	0.15	0.75	.07 inches in 15 min	<2 months, 15 minutes
11/11/15	0.44	2.5	.33 inches in 15 min	2 months, 15 minutes
11/17/15	0.65	9.25	.52 inches in 3 hr	<2 months, 3 hours
11/18/15	0.34	8.75	.14 inches in 1 hr	<2 months, 1 hour
11/24/15	0.28	20.25	.26 inches in 6 hr	<2 months, 6 hours
11/25/15	0.17	9.5	.14 inches in 3 hr	<2 months, 3 hours
11/26/15	0.26	11.5	.11 inches in 1 hr	<2 months, 1 hour
11/27/15	1.31	16	1.26 inches in 12 hr	2.3 months, 12 hours
11/30/15	0.72	14.5	.66 inches in 12 hr	<2 months, 12 hours

Table 2 Rainfall Event Details

Unfortunately, none of the events were very intense during the flow monitoring period. The November 27 event was the most intense with a maximum rainfall recurrence interval of just above two months based on an event length of 12 hours.

It is worth noting that although no single event was very intense, the cumulative wet weather period from November 24 through the end of the flow metering period did have a recurrence interval of four months based on total rainfall over 10 days.

The October 31, November 27, and November 30 events were used for the wet weather analysis. These events were selected because they represent three of the four highest total rainfall events, most of the meters were properly calibrated and functioning during each event, and the wet weather response was most pronounced during these events.

FLOW METERING EVALUATIONS

The following discussion summarizes each metering location, the data collected, and I/I concerns identified based on the three study rainfall events.

The following evaluation is best considered in conjunction with the dry and wet weather flow analyses. Appendix A also presents graphical data from each rainfall event and the resultant flow response at each meter.

A. Kankakee River Drive–15 Inch

Overall, this meter collected good data throughout the flow monitoring period. It must be noted that this meter did need to be recalibrated and eventually replaced during the flow metering period. This was required to reconcile a mass balance issue with the meter located immediately downstream. See the

Original Plant–15-inch meter discussion below. Recalibrations took place on October 23 and November 4. The meter was then replaced on November 11. The recalibrations and meter replacement had a minimal effect on the data being collected at this location.

B. Original Plant–15 Inch

This metering location encountered problems during the flow metering program. The issues began as a result of significant sediment within the upstream sewer. When sediment deposits over the flow metering probe, the meter is unable to read velocity. Without a velocity reading, the meter is unable to calculate flow. The City jetted this sewer in an attempt to alleviate the problem; however, jetting the sewer was not effective. As a result, the meter was relocated one manhole upstream on October 23. Once the meter was relocated, the data being collected at this location was significantly lower than the meter immediately upstream. It is important to note that flows increase as flow moves downstream. Therefore, the flows at the meter at this location should always be higher than the flows upstream at the Kankakee River Drive–15-inch meter. Lower flow readings suggested an issue with meter calibration or that there is a significant pipe failure and there is flow leaving the sewer and seeping into the surrounding ground. However, exfiltration is unlikely. The meter was recalibrated on November 4 and November 11 to correct the mass balance issue described above. The data collected at this meter during the October 31 event was deemed inaccurate and not used for the wet weather analyses discussed later in this report.

C. Stewart Street–21 Inch

Overall, this meter collected very good data and was fully functional during each of the study rainfall events. Furthermore, there was a wet weather reaction during each event.

D. Stewart Street–10 Inch

Overall, this meter collected good data as well. The flow metering data does suggest that this meter was affected by the operation of the pumping station because of its proximity. This is evidenced by fluctuations in flow throughout the day, which presumably corresponds to the pumps turning on and off. This did not affect the quality of the data however.

DRY WEATHER ANALYSIS

A dry weather flow analysis was performed to determine the baseline flow characteristics of each flow metering location.

Flow Meter	Dry Weather Flow (gpm)		
	Minimum	Average	Maximum
Kankakee River Drive–15 inch	32	41	48
Original Plant–15 inch	3	18	27
Stewart Street–21 inch	233	342	412
Stewart Street Near Lift Station–10 inch	48	58	74

Table 3 Dry Weather Flow Analysis

To determine the dry weather flow, each dry weather day of flow collected by each meter was compiled and averaged together to determine an average daily flow. For a day to be considered a “dry” day, it had to satisfy two criteria: (1) it had to have less than 0.10 inches of rain and (2) there had to be at least 48 hours of dry weather (less than 0.10 inches of rain) preceding it. Table 3 shows the results of the dry weather flow analysis.

The first rainfall event did not occur until October 23, which was a month after the beginning of the flow monitoring period. As a result, there was a very good dry weather period available to determine the dry weather baseline flows at each flow metering location.

It is necessary to isolate the flows of each individual basin accurately analyze each flow metering basin. This is accomplished by subtracting any flow metering basins which are located upstream of another metering basin. This is the case with the Kankakee River Drive–15 inch and the Original Plant–15-inch meters. Since the Original Plant–15-inch flow meter is located downstream of the Kankakee River Drive–15-inch meter (see Figure 1), the flow metering data collected at the upstream meter was subtracted from the data collected at the downstream meter to isolate any flows associated with the downstream metering basin. This was done for both the dry weather and wet weather analyses.

It is important to note the dry weather flows associated with the Original Plant–15-inch meter. There are limited building services (only two houses) between the Original Plant–15-inch meter and the Kankakee River Drive–15-inch meeting location. As a result, one would expect the dry weather flows in the Original Plant–15-inch basin to be close to zero. However, the average dry weather flow at the Original Plant–15-inch meter was 18 gpm. This suggests there is an additional source of flow between the Kankakee River Drive–15 inch and Original Plant–15-inch metering locations, most likely as a result of I/I. Refer to the *Conclusions and Recommendations Section* for more information.

WET WEATHER ANALYSIS

A wet weather flow analysis was performed for each flow metering location for each of the rain events on October 27, October 31, and November 27.

There were two analyses performed on each flow metering basin. The first was determining a peaking factor for each flow metering location. This analysis is generally a measure of inflow problems. When there are inflow problems, it will cause flows to peak quickly to multiple times higher than the average dry weather flows.

As previously discussed, to identify the inflow specific to the Original Plant–15-inch flow metering location, inflow from the upstream flow metering location was subtracted from the downstream meter for both wet weather flow analyses. Therefore, the peaking factors and I/I volumes (discussed later in this section) for this meter is specific only to the meter itself. The results of the peaking factor analysis can be found in Table 4.

Metering Location	Average Dry Weather Flow (gpm)	October 31, 2015		November 27, 2015		November 30, 2015	
		Peak Flow (gpm)	Peaking Factor	Peak Flow (gpm)	Peaking Factor	Peak Flow (gpm)	Peaking Factor
Kankakee River Street–15 inch	41	110	2.70	289	7.10	206	5.05
Original Plant–15 inch	18	N/A	N/A	104	5.75	191	10.60
Stewart Street–21 inch	342	947	2.77	3091	9.02	2811	8.21
Stewart Street Near Lift Station–10 inch	58	144	2.50	317	5.49	432	7.48

Table 4 Inflow Analysis

For the second analysis, an I/I volume per inch-diameter-square mile was developed for each flow metering basin. This analysis included any inflow combined with infiltration upstream of each flow metering basin. As a result, it is not strictly an infiltration-only analysis. However, basins with high infiltration tend to be isolated using this analysis. Infiltration issues normally are characterized by elevated flows over a longer period of time as clear water seeps into the sewer system over time.

For this analysis, the volume of I/I was calculated by summing the flows higher than the average daily flow for the metering location from the beginning of the rainfall event until the sewer returned to normal flow levels.

The overall volume of I/I is directly influenced by the surface area of pipe in the ground. Taking this into account in comparing metering locations, the volume was converted to a volume in thousands of gallons per inch-diameter of sewer. Normally, this type of analysis takes into account the length of pipe in the ground as well as the diameter. Thus, the resulting volume would be presented in thousands of gallons per inch-diameter-mile of pipe. Unfortunately, there is limited mapping available and it was difficult to accurately determine the exact length of pipe in each flow metering basin. As a result, the analysis was simplified by using the approximate land area of each basin. Table 5 shows the results of this analysis.

Metering Location	October 31, 2015		November 27, 2015		November 30, 2015	
	I/I volume (1,000 gallons)	I/I Rate (1,000 gal/in-dia-mi^2)	I/I volume (1,000 gallons)	I/I Rate (1,000 gal/in-dia-mi^2)	I/I volume (1,000 gallons)	I/I Rate (1,000 gal/in-dia-mi^2)
Kankakee River Street–15 inch	71	21.52	707	214.24	416	126.06
Original Plant–15 inch	N/A	N/A	11	8.87	17	13.70
Stewart Street–21 inch	821	12.39	1914	28.88	995	15.01
Stewart Street Near Lift Station–10 inch	99	90.00	879	799.09	501	455.45

Table 5 Infiltration Analysis

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be made based on the results and analyses described above:

1. The flow meter located on the 15-inch sewer on the Original WWTP site was inconsistent with the metering data located upstream. As a result, the results and analyses performed above for this meter only are not reliable.

2. The 21-inch sewer flowing from the south portion of the City consistently had the highest peaking factor during the three study events suggesting significant sources of inflow are present.

3. Both the Kankakee River Drive–15-inch meter and the 10-inch Stewart Street meter appear to have high amounts of infiltration. This is evidenced by the high amount of I/I volume per inch diameter of sewer per square mile of basin size.

4. It is our understanding the City is concerned with I/I on the 15-inch sewer between the Kankakee River Drive–15-inch and Original WWTP–15-inch meters when the Kankakee River is high. When the river is high, the groundwater is also high and the hydrostatic pressure caused by the higher levels could result in higher I/I rates. Unfortunately, the Kankakee River was not high during the flow monitoring period, so this phenomena was not captured in the flow metering data. However, the fact the dry weather flows at the downstream meter, were higher than the upstream meter despite only two building laterals providing additional flow, suggests there was I/I getting into the 15-inch sewer. We also noted active I/I while installing and relocating the Original WWTP–15-inch meter.

5. There are sources of I/I in multiple basins tributary to the Stewart Street Lift Station.

Based on the conclusions above, we recommend the City do the following.

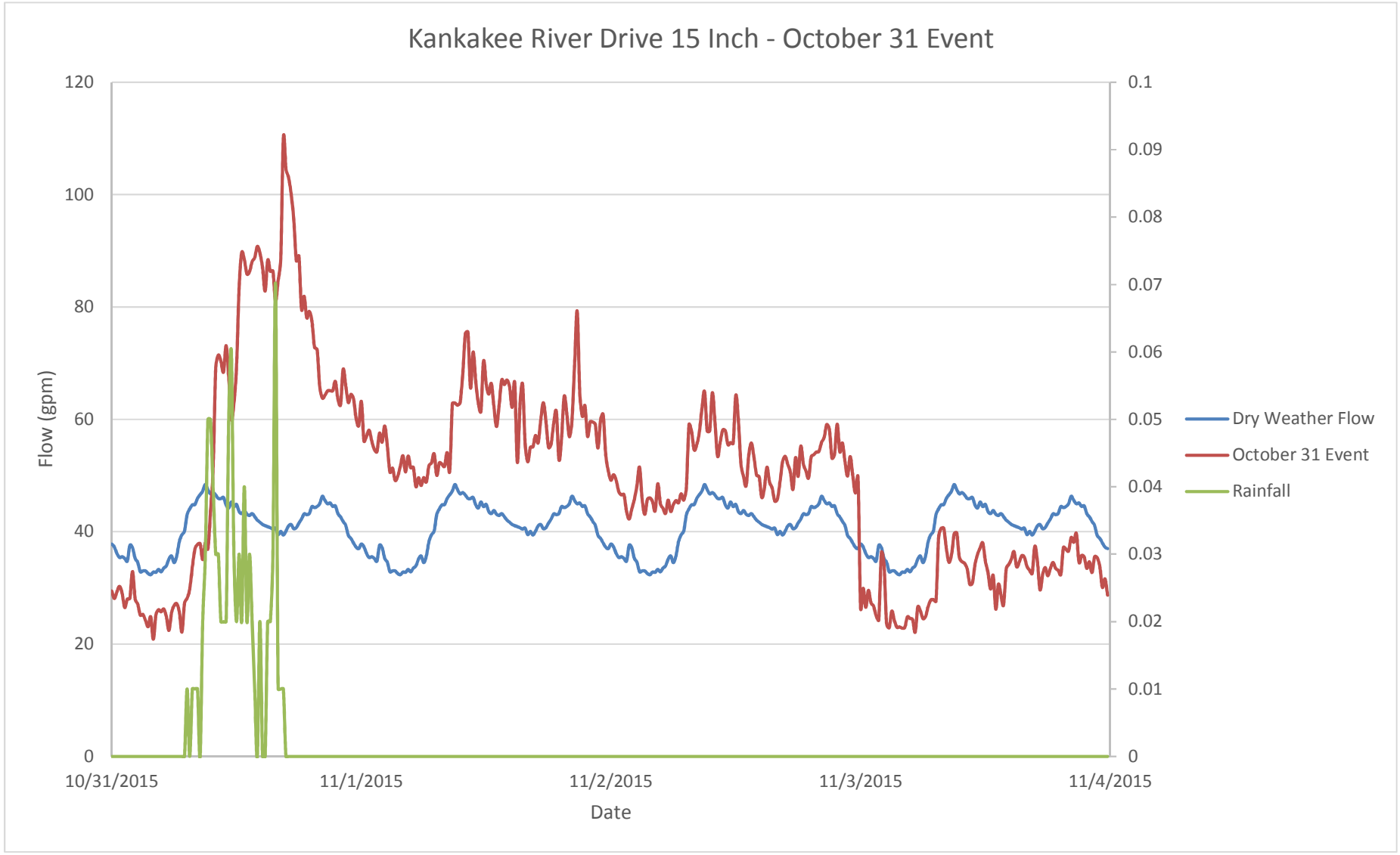
1. The City should perform additional flow metering south of Forked Creek in an attempt to further isolate the source of inflow from across the creek. Further isolating the source of the inflow will allow the City to be more cost-effective when investigating to identify the sources of inflow as the area for investigation could be much smaller than investigating the entire basin.

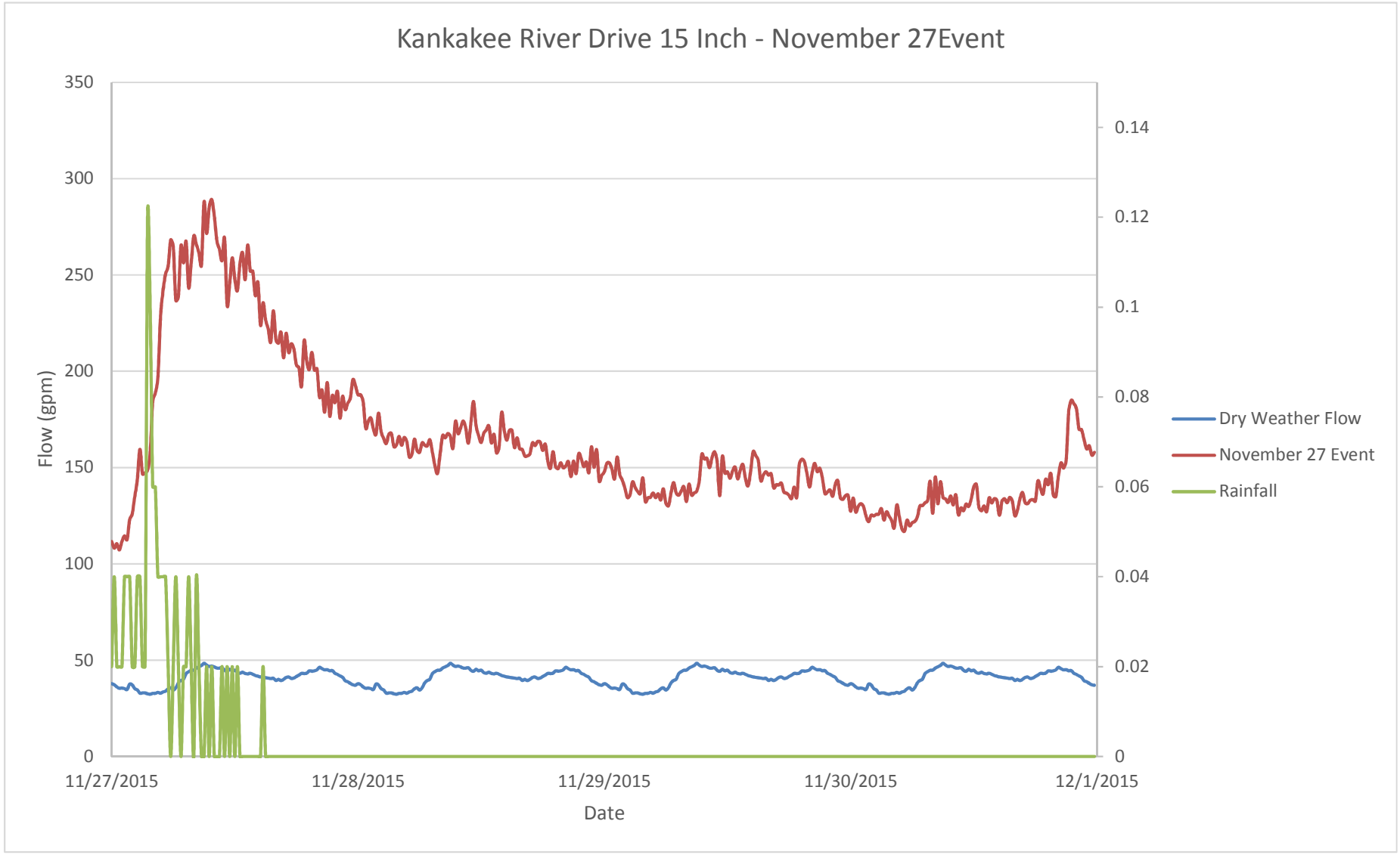
   It is important to note that inflow can be more of an issue for the City because of high peaks at the WWTP potentially causing permit violations. In addition, sources of inflow tend to be easier to locate and less expensive to correct.

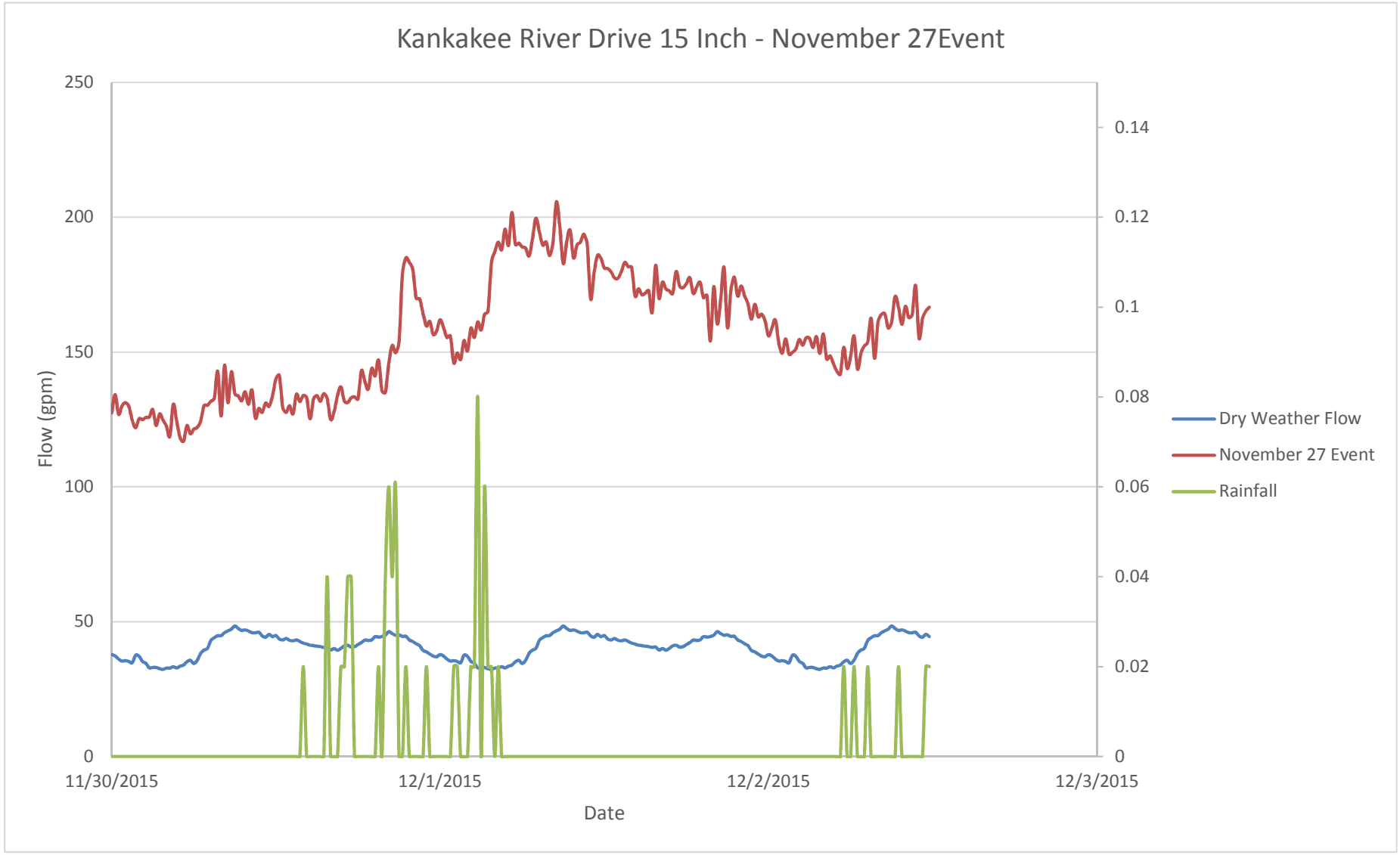
2. The City should perform I/I field investigations in the area tributary to the Stewart Street–10-inch and the Kankakee River Drive–15-inch flow metering locations in an attempt to locate and repair sources of I/I. I/I field investigations generally include smoke testing and manhole inspections. The results of the smoke testing could be used to further identify areas for televising and/or dye testing.

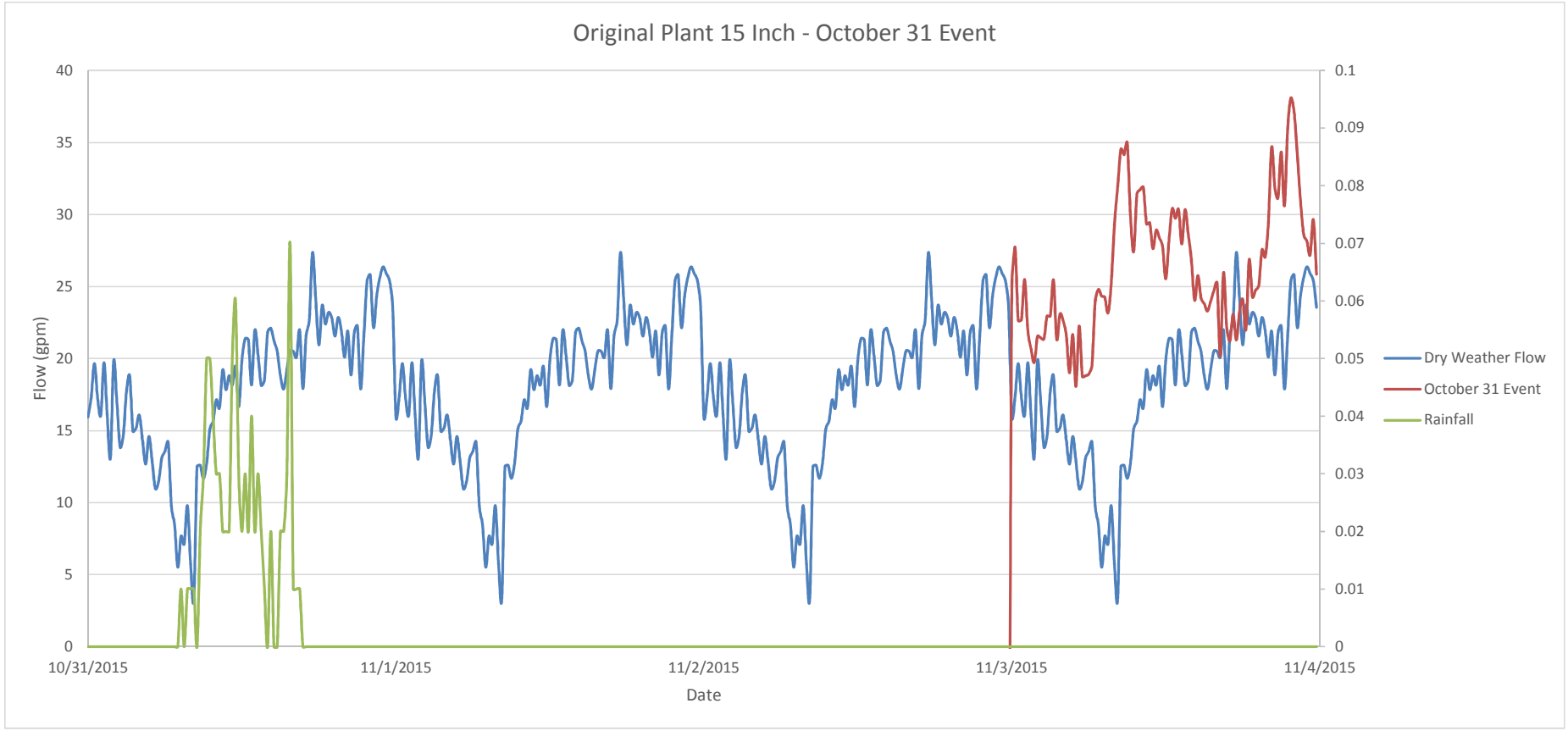
3. Although there is limited flow metering data available regarding I/I coming from the original WWTP site, we recommend the City televise this 15-inch sewer. Televising the sewer could accomplish a number of things. First, it would allow the City to assess the condition of the existing sewer to determine whether it needs replacing or lining to avoid catastrophic failure. Second, it could locate sources of infiltration (wet weather) or exfiltration (dry weather). This could include separated joints, breaks in the sewer, or even improperly abandoned connections to the old WWTP.

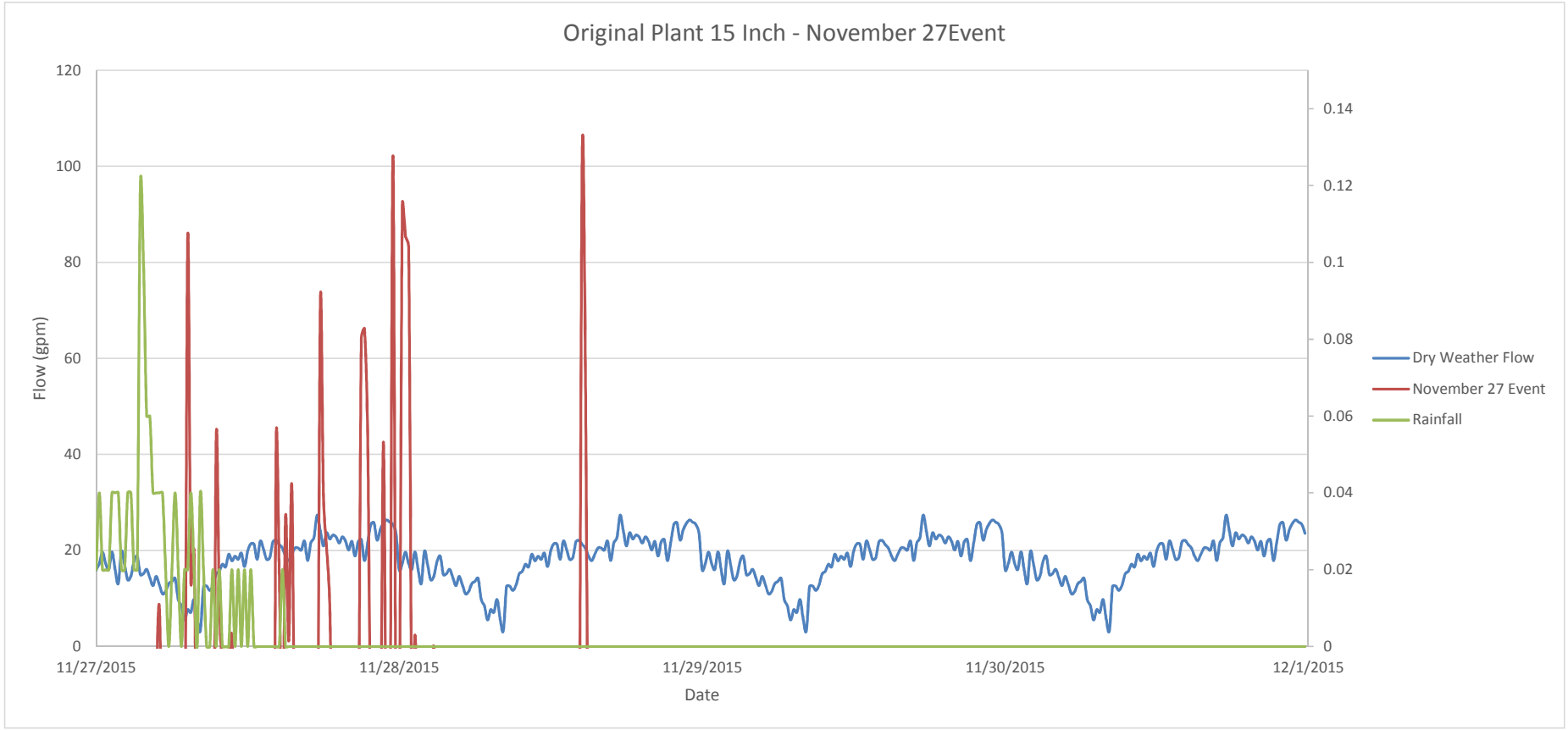
APPENDIX A
WET WEATHER RESPONSE GRAPHS

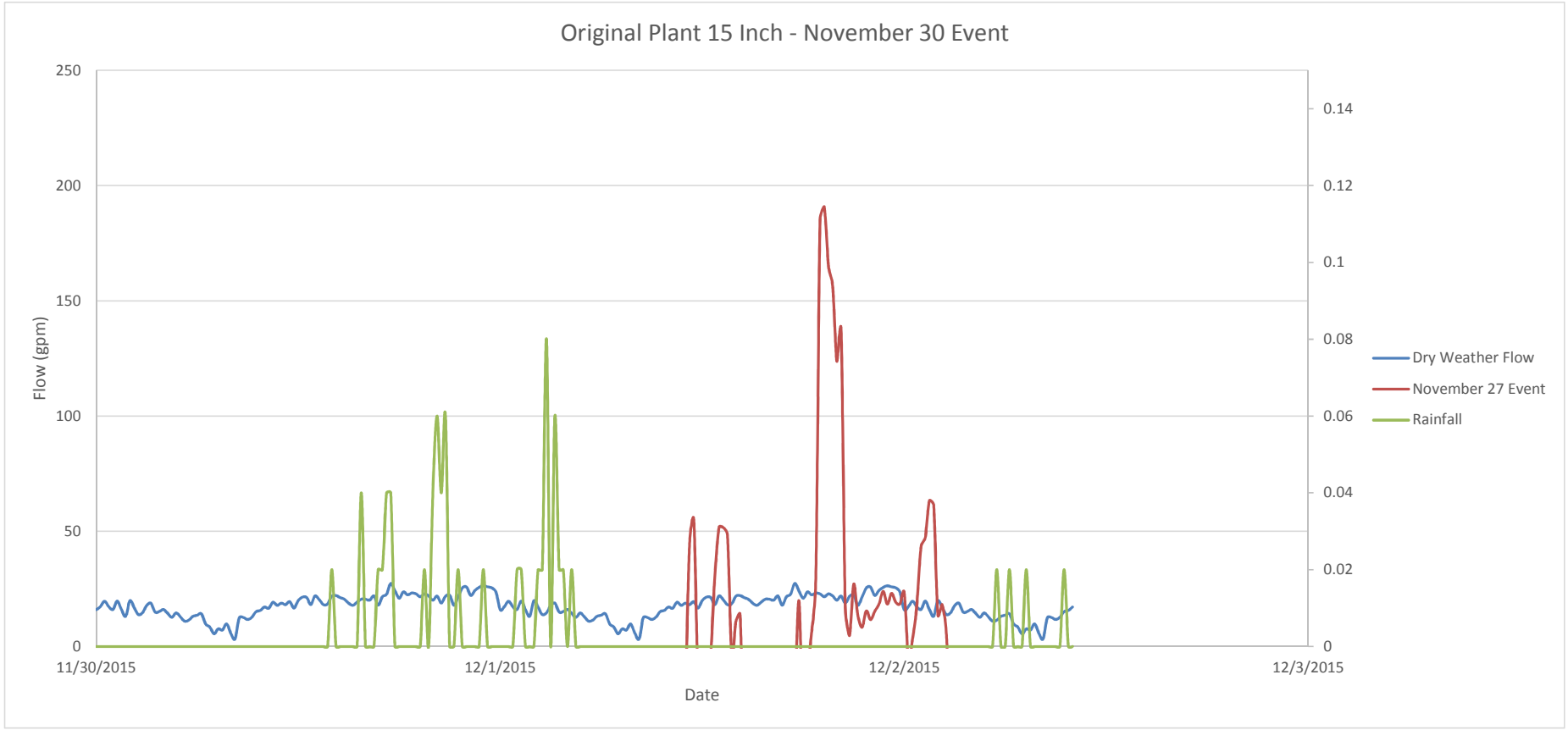

Kankakee River Drive 15 Inch - October 31 Event
Flow (gpm)
120
100
80
60
40
20
0
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/31/2015
11/1/2015
11/2/2015
11/3/2015
11/4/2015
Date
Dry Weather Flow
October 31 Event
Rainfall


Kankakee River Drive 15 Inch - November 27Event
Flow (gpm)
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/27/2015
11/28/2015
11/29/2015
11/30/2015
12/1/2015
Date
Dry Weather Flow
November 27 Event
Rainfall

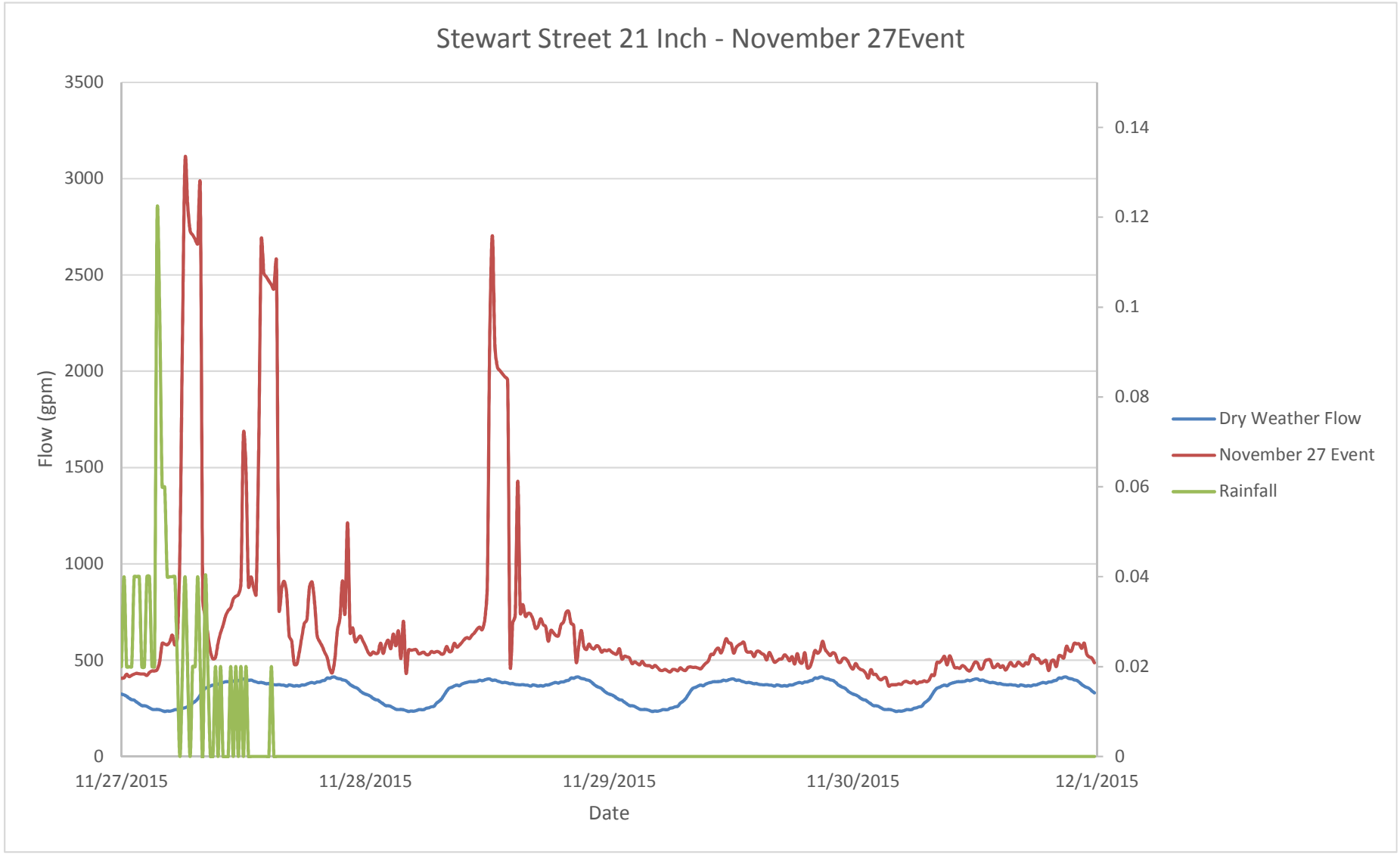

Kankakee River Drive 15 Inch - November 27Event
250
200
150
100
50
0
Flow (gpm)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/30/2015
12/1/2015
12/2/2015
12/3/2015
Date
Dry Weather Flow
November 27 Event
Rainfall

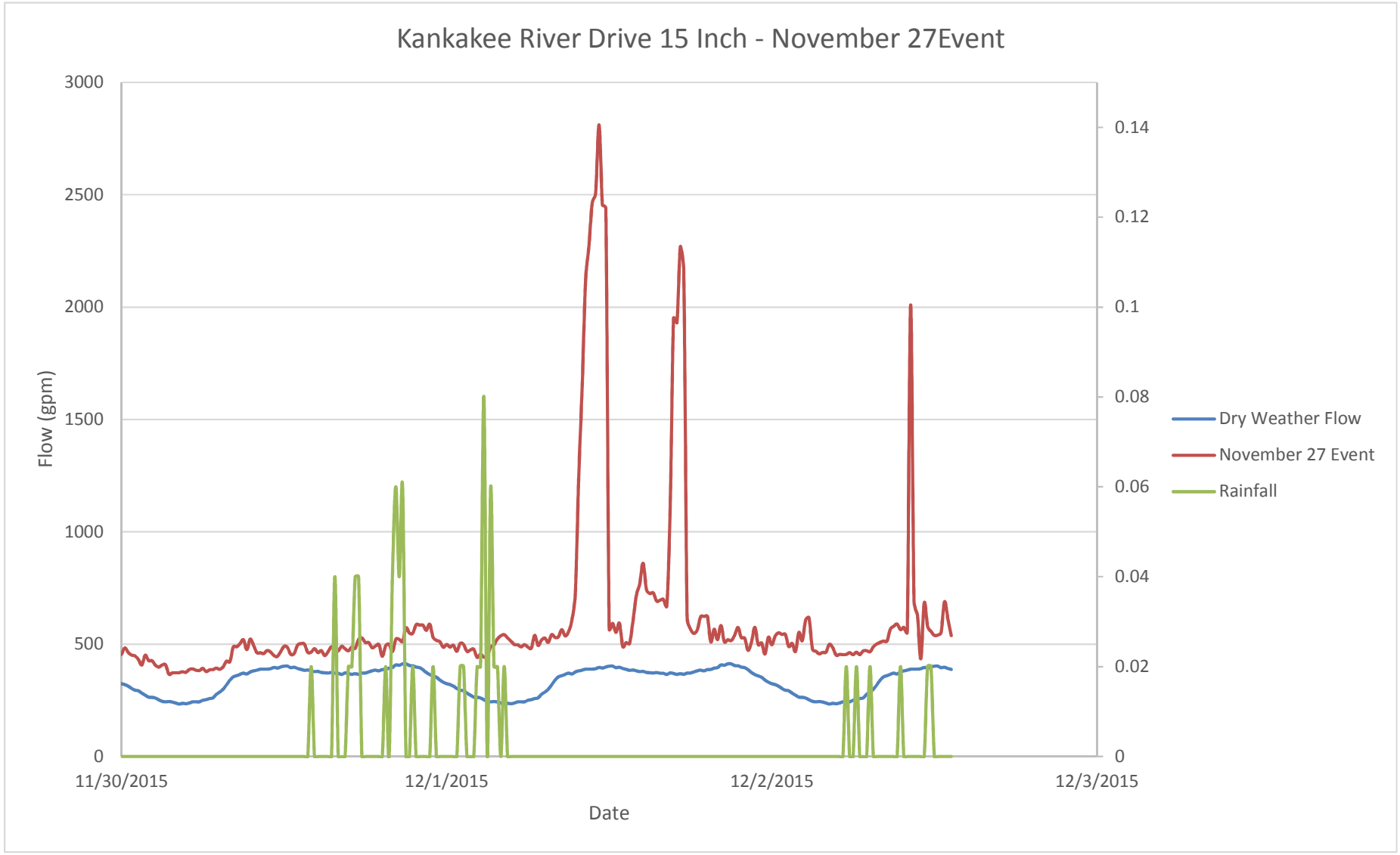

Original Plant 15 Inch - October 31 Event
Flow (gpm)
40
35
30
25
20
15
10
5
0
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/31/2015
11/1/2015
11/2/2015
11/3/2015
11/4/2015
Date
Dry Weather Flow
October 31 Event
Rainfall

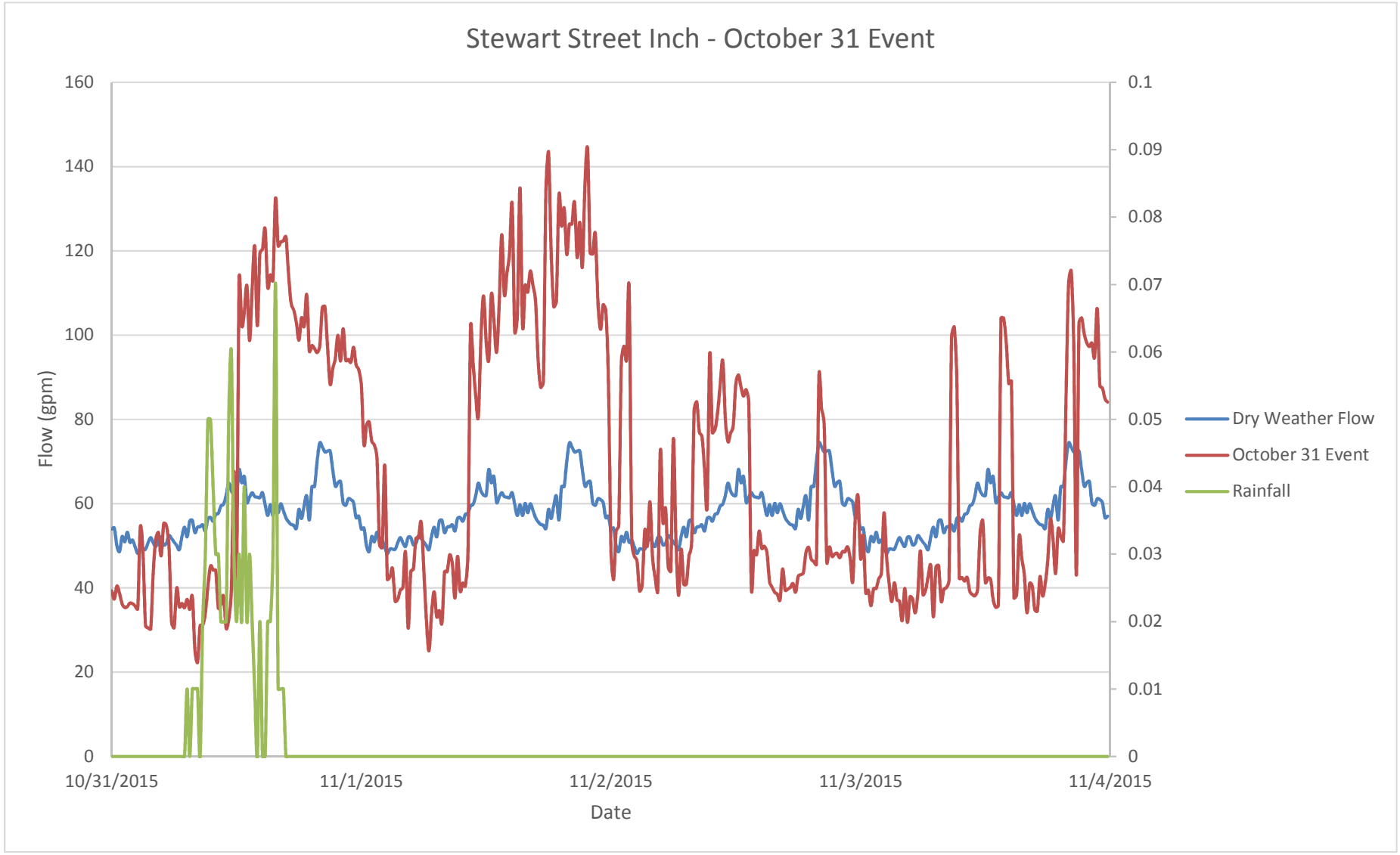

Original Plant 15 Inch - November 27Event
Flow (gpm)
120
100
80
60
40
20
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/27/2015
11/28/2015
11/29/2015
11/30/2015
12/1/2015
Date
Dry Weather Flow
November 27 Event
Rainfall

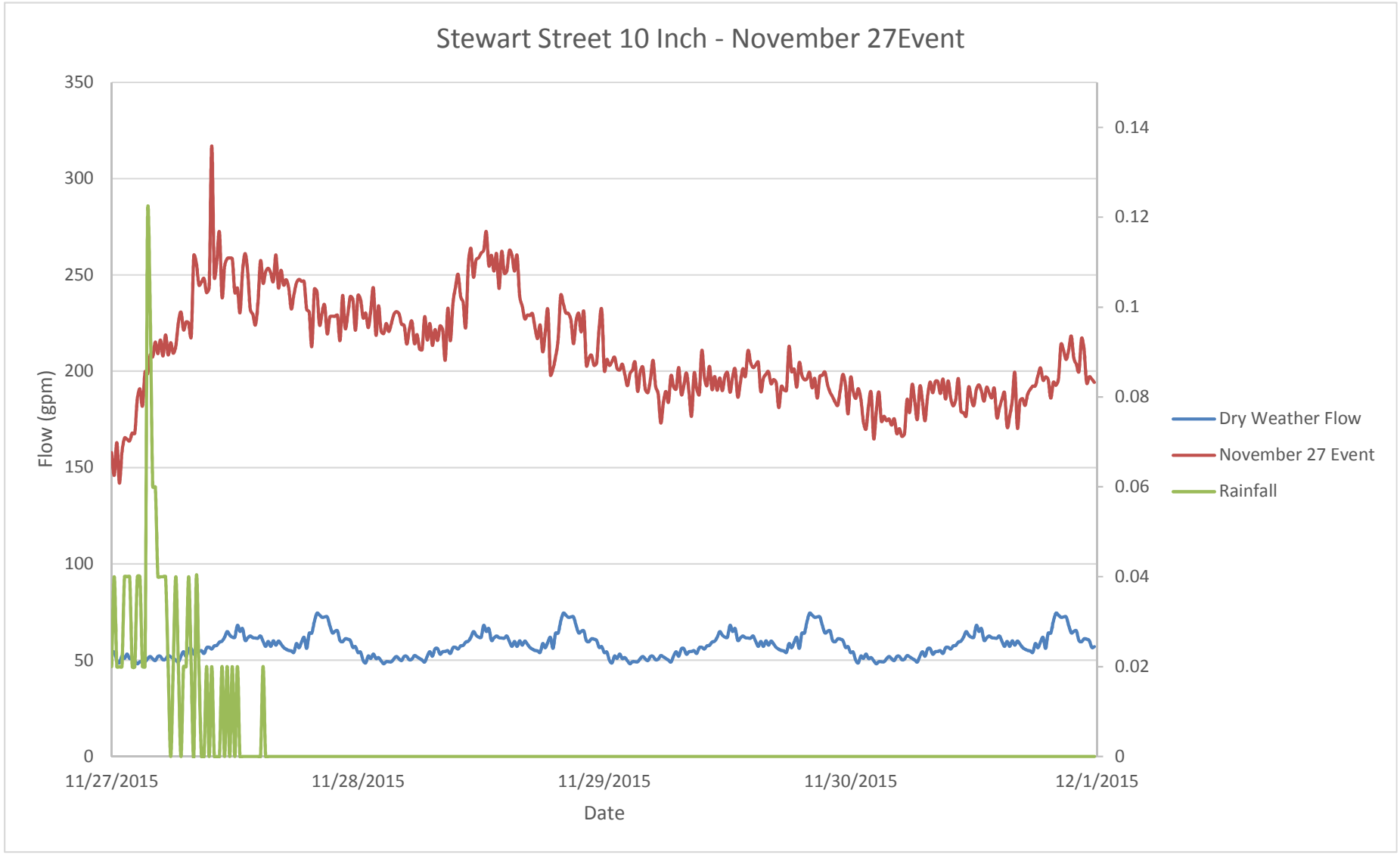

Original Plant 15 Inch - November 30 Event
Flow (gpm)
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/30/2015
12/1/2015
12/2/2015
12/3/2015
Date
Dry Weather Flow
November 27 Event
Rainfall

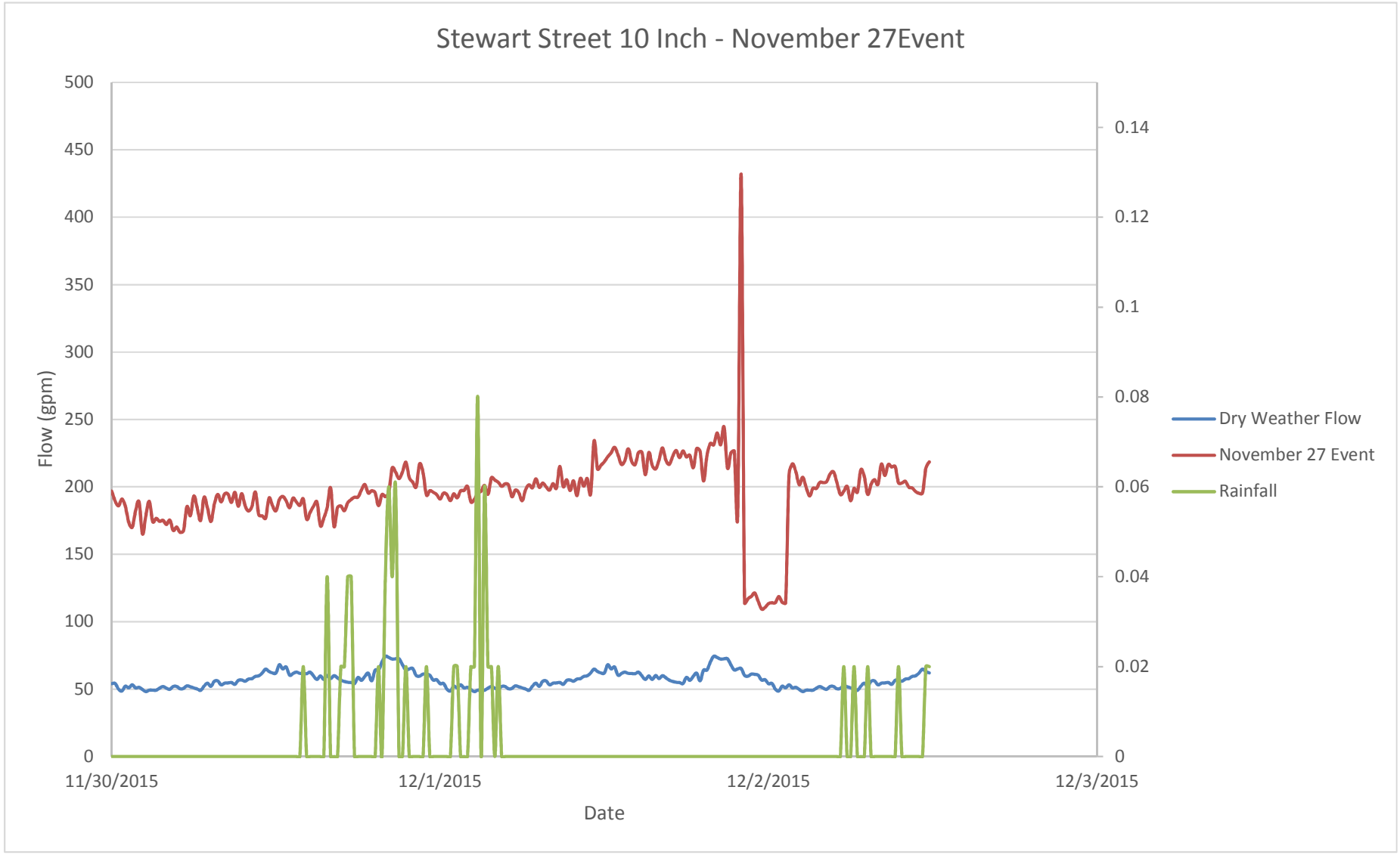

Stewart Street 21 inch- October 31 Event
Flow (gpm)
1000
900
800
700
600
500
400
300
200
100
0
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/31/2015
11/1/2015
11/2/2015
11/3/2015
11/4/2015
Date
Dry Weather Flow
October 31 Event
Rainfall


Stewart Street 21 Inch - November 27Event
Flow (gpm)
3500
3000
2500
2000
1500
1000
500
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/27/2015
11/28/2015
11/29/2015
11/30/2015
12/1/2015
Date
Dry Weather Flow
November 27 Event
Rainfall


Kankakee River Drive 15 Inch - November 27Event
Flow (gpm)
3000
2500
2000
1500
1000
500
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/30/2015
12/1/2015
12/2/2015
12/3/2015
Date
Dry Weather Flow
November 27 Event
Rainfall


Stewart Street Inch - October 31 Event
Flow (gpm)
160
140
120
100
80
60
40
20
0
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/31/2015
11/1/2015
11/2/2015
11/3/2015
11/4/2015
Date
Dry Weather Flow
October 31 Event
Rainfall


Stewart Street 10 Inch - November 27Event
Flow (gpm)
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/27/2015
11/28/2015
11/29/2015
11/30/2015
12/1/2015
Date
Dry Weather Flow
November 27 Event
Rainfall


Stewart Street 10 Inch - November 27Event
Flow (gpm)
500
450
400
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/30/2015
12/1/2015
12/2/2015
12/3/2015
Date
Dry Weather Flow
November 27 Event
Rainfall

Water Operations
For the Month Ended January 31, 2016

Account Number	Description	2016 Budget	DEC BALANCE	JAN ACTIVITY	JAN 2016 YTD	Avail/ Uncollect	% Avail/ Uncollect
4555	Water Base Fees	163,500.00	111,614.81	13,723.76	125,338.57	38,161.43	23.34
4590	Water Service Fees	800,000.00	545,794.48	61,806.33	607,600.81	192,399.19	24.05
4620	Water Meter Fees	44,000.00	16,670.10	-	16,670.10	27,329.90	62.11
4850	Interest Income Earned	50.00	6.78	-	6.78	43.22	86.44
4860	Other Misc Income	10,000.00	3,300.00	400.00	3,700.00	6,300.00	63.00
4870	Other Misc Reimbursements	7,000.00	3,929.46	395.82	4,325.28	2,674.72	38.21
	Revenue	1,024,550.00	681,315.63	76,325.91	757,641.54	266,908.46	26.05
6010	Salaries Payroll Expense	385,000.00	254,099.27	25,614.37	279,713.64	105,286.36	27.35
6011	FICA Payment Payroll Expense	36,000.00	22,339.35	2,561.76	24,901.11	11,098.89	30.83
6013	SUTA Employee Payroll Expense	3,500.00	-	750.95	750.95	2,749.05	78.54
6014	IMRF - Water Dept	48,000.00	25,854.05	8,825.44	34,679.49	13,320.51	27.75
6015	Overtime Wages Payroll Expense	45,000.00	23,754.03	7,096.81	30,850.84	14,149.16	31.44
6335	Computer Maint.& Prog. Fees	12,000.00	7,747.61	1,544.73	9,292.34	2,707.66	22.56
6360	Dues, Subscrp. & Memberships	800.00	258.80	-	258.80	541.20	67.65
6380	Employee Health & Life Ins Exp	74,000.00	41,683.59	5,702.40	47,385.99	26,614.01	35.96
6460	Legal Services Fees	2,000.00	74.00	-	74.00	1,926.00	96.30
6470	Property & Equip Ins Fees	60,000.00	-	60,000.00	60,000.00	-	-
6510	Maintenance - Equipment Exp	22,000.00	16,640.70	2,074.54	18,715.24	784.76	3.57
6520	Maint-Fire Hydrants Exp	1,000.00	186.09	44.02	230.11	769.89	76.99
6530	Maintenance - Grnds/Bldg Exp	7,000.00	4,444.56	1,743.40	6,187.96	812.04	11.60
6540	Maint-Pumping System Exp	4,000.00	1,020.74	1,466.24	2,486.98	1,513.02	37.83
6610	Maint-Water Mains Exp	18,500.00	8,335.74	2,637.06	10,972.80	7,527.20	40.69
6620	Maint-Water Meters Exp	6,500.00	5,007.00	-	5,007.00	1,493.00	22.97
6625	Maint-Water Serv Lines Exp	5,500.00	3,258.15	-	3,258.15	2,241.85	40.76
6640	Maint-Vehicles Exp	5,000.00	1,753.26	2.17	1,755.43	3,244.57	64.89
6650	Notices/Legal Publications Exp	700.00	-	-	-	700.00	100.00
6670	Other Professional Services Ex	18,500.00	9,836.26	793.00	10,629.26	7,870.74	42.54
6710	Rental of Equipment Exp	5,000.00	-	-	-	5,000.00	100.00
6730	Sludge Disposal Expense	12,000.00	2,371.20	6,800.00	9,171.20	2,828.80	23.57
6760	Telephone Services Exp	5,000.00	2,016.12	505.52	2,521.64	2,478.36	49.57
6770	Training & Mileage Expenses	2,000.00	384.25	449.00	833.25	1,166.75	58.34
6810	Utilities Expense	65,000.00	35,233.19	2,197.71	37,430.90	27,569.10	42.41
6930	Gasoline, Oil & Tolls Expense	10,000.00	4,083.39	279.81	4,363.20	5,636.80	56.37
6960	Office Supplies & Postage Exp	5,000.00	2,393.96	799.80	3,193.76	1,806.24	36.12
6965	Postage	8,000.00	4,658.96	760.60	5,419.56	2,580.44	32.26
6970	Oper Supplies and Tools Exp	12,000.00	7,828.82	1,051.82	8,880.64	3,119.36	25.99
6975	Back Flow Preventers Exp	6,000.00	-	2,000.00	2,000.00	4,000.00	66.67
7010	Uniforms Expense	3,500.00	259.42	83.97	343.39	3,156.61	90.19
7030	Water Treatment Chemicals Exp	90,000.00	37,483.33	4,947.67	42,431.00	47,569.00	52.85
7160	Misc Expense	2,000.00	1,193.87	-	1,193.87	806.13	40.31

Account Number	Description	2016 Budget	DEC BALANCE	JAN ACTIVITY	JAN 2016 YTD	Avail/ Uncollect	% Avail/ Uncollect
7321	Leased Equipment	3,500.00	1,645.37	109.00	1,754.37	1,745.63	49.88
7340	Utility Meter Expense	38,000.00	15,766.15	3,838.46	19,604.61	18,395.39	48.41
7360	Expensed Equipment	2,500.00	675.13	897.00	1,572.13	927.87	37.11
7928	Wtr IEPA Loan#2 Princ	12,900.00	-	-	-	12,900.00	100.00
7929	Wtr IEPA Loan#2 - Interest	7,100.00	-	-	-	7,100.00	100.00
7932	IEPA Loan Principle Payment	23,300.00	11,544.91	-	11,544.91	11,755.09	50.45
7934	IEPA Loan Interest Payment	5,500.00	2,724.00	-	2,724.00	2,776.00	50.47
7940	Service Fees Expense	6,500.00	4,111.63	555.51	4,667.14	1,832.86	28.20
8020	Transfers to Other Funds	69,000.00	24,664.16	-	24,664.16	44,335.84	64.25
	Expense	1,148,800.00	585,331.06	146,132.76	731,463.82	414,836.18	36.11
	Profit or (Loss)	(124,250.00)	95,984.57	(69,806.85)	26,177.72	YTD PROFIT	

Sewer Operations
For the Month Ended January 31, 2016

Account Number	Description	2016 Budget	DEC BALANCE	JAN ACTIVITY	JAN 2016 YTD	Avail/ Uncollect	% Avail/ Uncollect
4555	WWTP Debt Service Revenue	970,000.00	634,182.40	77,681.78	711,864.18	258,135.82	26.61
4560	Sewer Service Fees	795,000.00	534,913.33	63,993.58	598,906.91	196,093.09	24.67
4570	Sewer Capacity User Fees	110,000.00	118,093.74	13,640.00	131,733.74	(21,733.74)	(19.76)
4850	Interest Income Earned	50.00	24.34	-	24.34	25.66	51.32
4860	Other Misc Income	500.00	100.00	1,727.02	1,827.02	(1,327.02)	(265.40)
4870	Other Misc Reimbursements	7,500.00	24,402.06	615.82	25,017.88	(17,517.88)	(233.57)
	Revenue	1,883,050.00	1,311,715.87	157,658.20	1,469,374.07	413,675.93	21.97
6010	Salaries Payroll Expense	293,000.00	185,919.02	23,312.90	209,231.92	83,768.08	28.59
6011	FICA Payment Payroll Expense	26,500.00	14,748.36	1,933.58	16,681.94	9,818.06	37.05
6013	SUTA Employee Payroll Expense	3,000.00	-	566.43	566.43	2,433.57	81.12
6014	IMRF - Sewer Dept	36,400.00	18,428.91	5,169.92	23,598.83	12,801.17	35.17
6015	Overtime Wages Payroll Expense	20,000.00	6,773.31	2,295.53	9,068.84	10,931.16	54.66
6335	Computer Maint.& Prog. Fees	15,000.00	5,638.49	1,306.00	6,944.49	8,055.51	53.70
6360	Dues, Subscrp. & Memberships	1,400.00	298.80	-	298.80	1,101.20	78.66
6380	Employee Health & Life Ins Exp	84,000.00	45,462.31	6,369.34	51,831.65	32,168.35	38.30
6390	Engineering Services	30,000.00	20,600.00	3,900.00	24,500.00	5,500.00	18.33
6460	Legal Services Fees	1,000.00	898.25	-	898.25	101.75	10.18
6470	Property & Equip Ins Fees	51,500.00	-	51,500.00	51,500.00	-	-
6510	Maintenance - Equipment Exp	21,350.00	5,431.86	-	5,431.86	15,638.14	73.25
6530	Maintenance - Grnds/Bldg Exp	14,350.00	8,258.63	889.82	9,148.45	5,201.55	36.25
6560	Maint-Sewers Exp	40,000.00	21,740.53	848.60	22,589.13	8,926.79	22.32
6561	Maintenance Sewers - Process	112,000.00	91,305.11	-	91,305.11	14,766.45	13.18
6640	Maint-Vehicles Exp	5,000.00	3,687.44	-	3,687.44	1,312.56	26.25
6650	Notices/Legal Publications Exp	800.00	-	-	-	800.00	100.00
6670	Other Professional Services Ex	20,000.00	15,478.80	478.80	15,957.60	4,042.40	20.21
6710	Rental of Equipment Exp	11,000.00	7,750.00	-	7,750.00	3,250.00	29.55
6730	Sludge Disposal Expense	28,500.00	13,245.01	3,255.76	16,500.77	11,999.23	42.10
6760	Telephone Services Exp	5,500.00	2,432.30	652.97	3,085.27	2,414.73	43.90
6770	Training & Mileage Expenses	4,100.00	841.60	300.00	1,141.60	2,958.40	72.16
6810	Utilities Expense	100,000.00	52,054.20	13,117.34	65,171.54	34,828.46	34.83
6930	Gasoline, Oil & Tolls Expense	14,000.00	2,368.39	163.72	2,532.11	11,467.89	81.91
6960	Office Supplies	6,000.00	3,943.52	897.00	4,840.52	1,159.48	19.32
6965	Postage	8,000.00	4,654.29	741.20	5,395.49	2,604.51	32.56
6970	Oper Supplies and Tools Exp	17,600.00	8,316.79	1,508.79	9,825.58	7,774.42	44.17
6985	Sewer Chemicals Expense	45,000.00	17,874.06	293.47	18,167.53	25,768.73	57.26
7010	Uniforms Expense	3,000.00	725.37	-	725.37	2,274.63	75.82
7160	Misc Expense	1,000.00	230.71	-	230.71	769.29	76.93
7320	Equipment Purchases Exp	13,000.00	7,688.85	-	7,688.85	5,311.15	40.86
7321	Leased Equipment	3,500.00	1,645.37	109.00	1,754.37	1,745.63	49.88
7360	Expensed Equipment	2,500.00	828.14	309.72	1,137.86	1,362.14	54.49
7932	IEPA Loan Principle Payment	641,500.00	641,071.23	-	641,071.23	428.77	0.07

Account Number	Description	2016 Budget	DEC BALANCE	JAN ACTIVITY	JAN 2016 YTD	Avail/ Uncollect	% Avail/ Uncollect
7934	IEPA Loan Interest Payment	261,500.00	261,042.49	-	261,042.49	457.51	0.17
7940	Service Fees Expense	6,500.00	4,103.59	555.50	4,659.09	1,840.91	28.32
8020	Transfers to Other Funds	85,000.00	-	-	-	85,000.00	100.00
	Expense	2,032,500.00	1,475,485.73	120,475.39	1,595,961.12	420,782.62	20.70
	Profit or (Loss)	(149,450.00)	(163,769.86)	37,182.81	(126,587.05)	YTD LOSS	

General Ledger
PW Exp vs Budget JAN16

User: kim
Printed: 02/04/2016 - 9:17
Periods: 09-09
Fiscal Year: 2016
JE Number: 000000

City of Wilmington
1165 S. Water St.
Wilmington, IL 60481
815-476-2175

Account Number	Description	Budgeted Amount	Period Amount	YTD Amount	YTD Var	Encumbered Amt	Available	% Avail
6010	Salaries Payroll Expense	262,500.00	20,179.71	185,633.90	76,866.10	0.00	76,866.10	29.28
6012	City Engineer Payroll Expense	34,500.00	2,640.00	24,506.30	9,993.70	0.00	9,993.70	28.97
6015	Overtime Wages Payroll Expense	22,000.00	2,160.83	11,467.78	10,532.22	0.00	10,532.22	47.87
6020	P-T Wages Payroll Exp	21,500.00	0.00	21,230.00	270.00	0.00	270.00	1.26
6335	Computer Maint.& Prog. Fees	1,500.00	119.98	119.98	1,380.02	0.00	1,380.02	92.00
6360	Dues, Subscrp. & Memberships	300.00	0.00	179.00	121.00	0.00	121.00	40.33
6380	Employee Health & Life Ins Exp	90,000.00	6,224.18	55,737.85	34,262.15	0.00	34,262.15	38.07
6390	Engineering Services	1,000.00	0.00	0.00	1,000.00	0.00	1,000.00	100.00
6440	JULIE Service Fees	2,000.00	0.00	0.00	2,000.00	0.00	2,000.00	100.00
6460	Legal Services Fees	1,000.00	0.00	0.00	1,000.00	0.00	1,000.00	100.00
6480	Maint-Bridges Fees	4,000.00	810.00	2,252.49	1,747.51	0.00	1,747.51	43.69
6500	Maint-Curbs & Gutters Exp	2,000.00	0.00	504.00	1,496.00	0.00	1,496.00	74.80
6510	Maintenance - Equipment Exp	22,000.00	4,905.13	17,390.89	4,609.11	0.00	4,609.11	20.95
6535	Maint-Parking Lots Exp	2,000.00	0.00	0.00	2,000.00	0.00	2,000.00	100.00
6570	Maint-Sidewalks Exp	3,000.00	0.00	505.00	2,495.00	0.00	2,495.00	83.17
6580	Maint-Storm Sewers Exp	8,000.00	0.00	5,290.14	2,709.86	0.00	2,709.86	33.87
6590	Maint-Streets Exp	26,000.00	3,704.14	19,674.68	6,325.32	0.00	6,325.32	24.33
6640	Maint-Vehicles Exp	30,000.00	1,884.55	7,392.53	22,607.47	0.00	22,607.47	75.36
6650	Notices/Legal Publications Exp	1,200.00	0.00	869.80	330.20	0.00	330.20	27.52
6710	Rental of Equipment Exp	7,500.00	0.00	6,300.00	1,200.00	0.00	1,200.00	16.00
6740	Street Light Electricity Exp	88,000.00	7,363.02	64,433.25	23,566.75	0.00	23,566.75	26.78
6760	Telephone Services Exp	3,000.00	360.27	1,760.72	1,239.28	0.00	1,239.28	41.31
6770	Training & Mileage Expenses	2,000.00	517.00	606.99	1,393.01	0.00	1,393.01	69.65
6780	Tree and Weed Removal Exp	5,000.00	0.00	3,989.69	1,010.31	0.00	1,010.31	20.21
6930	Gasoline, Oil & Tolls Expense	35,000.00	2,036.18	18,301.34	16,698.66	0.00	16,698.66	47.71
6960	Office Supplies & Postage Exp	2,200.00	0.00	109.89	2,090.11	0.00	2,090.11	95.01
6965	Postage	500.00	0.00	316.67	183.33	0.00	183.33	36.67
6970	Oper Supplies and Tools Exp	15,000.00	536.15	10,831.52	4,168.48	0.00	4,168.48	27.79
6990	Sign Replacement Expense	9,990.00	0.00	2,503.01	7,486.99	0.00	7,486.99	74.94
7010	Uniforms Expense	6,000.00	297.50	4,381.12	1,618.88	0.00	1,618.88	26.98
7160	Misc & Contingency Expense	500.00	0.00	136.67	363.33	0.00	363.33	72.67
7320	Equipment Purchases Exp	10,000.00	0.00	0.00	10,000.00	0.00	10,000.00	100.00
7323	Equip Loan - Princ	36,500.00	0.00	36,320.57	179.43	0.00	179.43	0.49
7324	Equip Loan - Interest	5,700.00	0.00	5,583.73	116.27	0.00	116.27	2.04
7360	Office Furniture and Equip Exp	1,000.00	0.00	37.18	962.82	0.00	962.82	96.28
8020	Transfers to Other Funds	22,710.00	0.00	22,703.00	7.00	0.00	7.00	0.03

Account Number	Description	Budgeted Amount	Period Amount	YTD Amount	YTD Var	Encumbered Amt	Available	% Avail
	Report Totals:	785,100.00	53,738.64	531,069.69	254,030.31	0.00	254,030.31	32.36

General Ledger
MFT Exp vs Budget JAN16

User: kim
Printed: 02/04/2016 - 9:16
Periods: 09-09
Fiscal Year: 2016
JE Number: 000000

City of Wilmington
1165 S. Water St.
Wilmington, IL 60481
815-476-2175

Account Number	Description	Budgeted Amount	Period Amount	YTD Amount	YTD Var	Encumbered Amt	Available	% Avail
6596	Misc. MFT Projects - Prior Yrs	340,000.00	274,335.36	274,335.36	65,664.64	0.00	65,664.64	19.31
6983	Salt & Cinders Expense	30,000.00	0.00	0.00	30,000.00	0.00	30,000.00	100.00
	Report Totals:	370,000.00	274,335.36	274,335.36	95,664.64	0.00	95,664.64	25.86