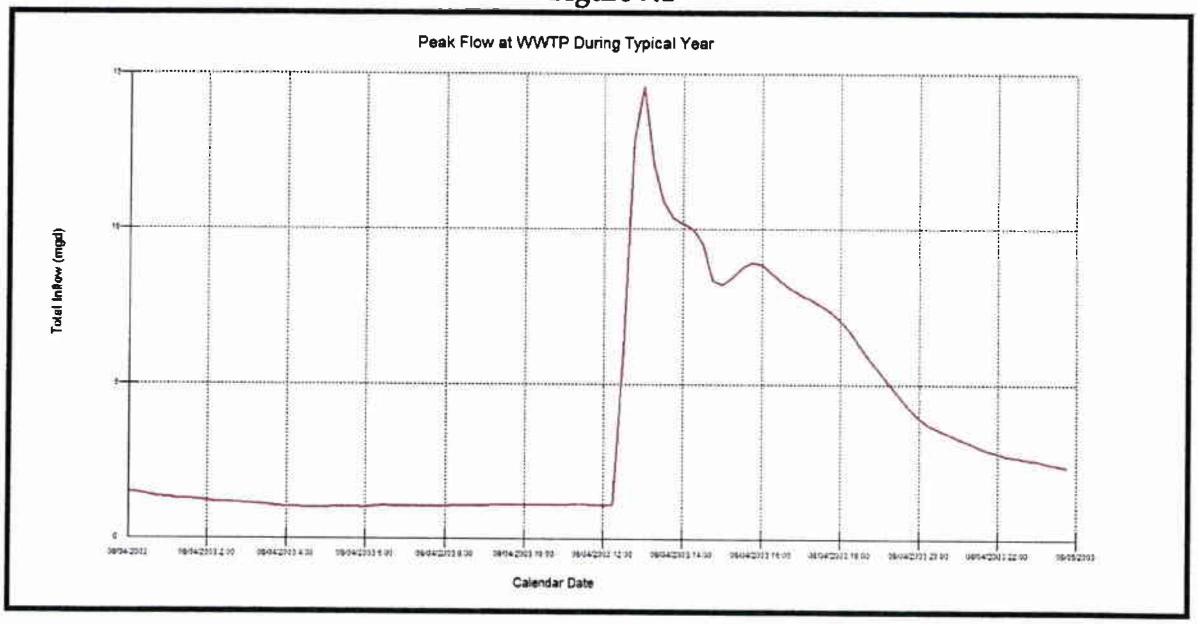
Design Hydrograph
Typical Year Peak Flow
Figure 7.1



7.1.2 Peak Hourly Flow (PHF)

PHF was also estimated based on SWMM modeling.

7.1.3 Peak Daily Flow (PDF)

Application of design rain event to the SWMM model resulted in a PDF of 6.97 MGD.

7.1.4 Maximum Monthly Average Flow (MMAF)

MMAF is a critical design parameter for evaluating WWTP treatment capacity. As discussed under Section 6.2.1, monthly average flows have not exceeded 2.0 MGD over the past five (5) years. The maximum monthly average flow (MMAF) observed over the past five (5) years is 1.412 MGD. This is consistent with the H&H model, which provided a MMAF of 1.72 MGD.

Therefore, the maximum month average flow design capacity of 2.0 MGD will be maintained. This value still provides a 1.4 factor of safety over the MMAF from the last five (5) years, and 1.2 factor of safety over the MMAF from the model simulation.

Projected growth was also included in the design MMAF, but no significant growth is projected for the City for the next 30 years.

No hydraulic re-rate will be required for the alternatives set forth in this report.

7.1.5 Annual Average Flow (AAF)

AAF of 1.0 MGD was estimated based on the typical year rainfall distribution applied to the SWMM model and is consistent with the AAF reported in the Chapter 94 Report.

7.2 DESIGN MASS LOADINGS

Design mass loadings were developed based on review of existing WWTP loading data with respect to industry standard typical values. It must be noted that by significantly increasing percent capture, there may be an increase in mass loadings. However, given the fact that the City's current loads are far below the WWTP's design capacity, it is reasonable to conclude that no organic re-rate will be necessary. Industry standard loadings for low to medium strength sewage and combined sewage were evaluated with respect to WWTP influent data available from the recent NPDES Permit Renewal.

Design Mass Loadings
Table 7.2

Parameter	Design Concentration (mg/L)	Design Loading (lb/day)
BOD	167	2,780
TSS	210	3,503

7.3 DESIGN EFFLUENT LIMITS

No new design effluent limits are required for the alternatives in this report.

7.4 ALTERNATIVES EVALUATION

7.4.1 Development of Alternatives

Alternatives were developed for evaluation with the primary focus of providing treatment to 85 percent of CSS flow captured during rain events on an annual average basis. In order to meet the 85 percent criteria, a hydraulic re-rate will not be required. During the development of each alternative, it was high priority to maintain as much of the existing processes as possible. Three (3) alternatives were developed for detailed evaluation.

1. Alternative 1 – Continue operation of existing processes and construct new CSO bypass treatment facilities. This alternative utilizes the existing WWTP up to peak flows of 2.5 MGD. Peak flows above 2.5 MGD will receive CSO bypass treatment. This alternative includes construction of new headworks facilities, influent pump station, and CSO bypass treatment facilities, as well as the installation of new clarifier equipment to maximize efficiency. Additionally, this alternative includes CSS

upgrades required to convey the 10-year, 24-hour design storm to the WWTP. The following items are included in Alternative 1.

- CSS upgrades.
- New automatic bar screen and by-pass channel with static screen.
- New headworks building.
- New raw sewage pump station and controls.
- New raw sewage pump station piping and valve vault.
- New pump flow meter.
- Site gravity and force main piping.
- New CSO bypass treatment.
- Upgrade final clarifier equipment to maximize efficiency.

2. Alternative 2 – Pump to McKeesport WWTP and build new peak flow storage facilities. This alternative includes construction of a new raw sewage pump station, with new headworks facilities, to convey all flow up to 2.5 MGD to the MACM WWTP. All flow above 2.5 MGD will be pumped by separate storm pumps and stored in a newly constructed storage facility. It should be noted that the MACM WWTP does not currently have the capacity to accept an additional 2.5 MGD flow, and upgrade costs for the WWTP are not included. Additionally, this alternative includes CSS upgrades required to convey the 10-year, 24-hour design storm to the pump station. The following items are included in Alternative 2.

- CSS upgrades.
- New automatic bar screen and by-pass channel with static screen.
- New headworks building.
- New raw sewage pump station and controls.
- Average flow pumps and storm pumps.
- New raw sewage pump station piping and valve vault.
- New pump flow meter.
- Site gravity and force main piping.
- Force main piping to the MACM WWTP.
- Force main piping to storage facility.
- New storage facility and land acquisition.

3. Alternative 3 – Continue operation of existing processes and construct new peak flow storage facilities. This alternative utilizes the existing WWTP up to peak flows of 2.5 MGD. Peak flows above 2.5 MGD will be pumped by separate storm pumps and stored in a newly constructed storage facility. This alternative also includes construction of new headworks facilities, as well as the installation of new clarifier equipment to maximize efficiency. Additionally, this alternative includes CSS upgrades required to convey the 10-year, 24-hour design storm to the WWTP. The following items are included in Alternative 3.

- CSS upgrades.
- New automatic bar screen and by-pass channel with static screen.
- New headworks building.
- New raw sewage pump station and controls.
- Average flow pumps and storm pumps.
- New raw sewage pump station piping and valve vault.
- New pump flow meter.
- Site gravity and force main piping.
- Force main piping to storage facility.
- New storage facility and land acquisition.
- Upgrade final clarifier equipment to maximize efficiency

Existing final clarifier plans and proposed upgrade equipment for alternatives 1 and 3 can be found in Appendix N.

7.4.2 Evaluation of Alternatives

The following sections summarize design considerations associated with each alternative. Both Alternatives 1 and 3 will meet the current permit requirements and will not require a design capacity re-rate. Alternative 2 may require new facilities and/or a design capacity re-rate at the MACM WWTP, but those issues will only be investigated if Alternative 2 proves to be the preferred alternative for the City of Duquesne. Table 7.3 lists the advantages and disadvantages associated with each alternative.

Alternatives Comparison
Table 7.3

Alternative No.	Alternative	Advantages	Disadvantages
1	CSO Bypass Treatment	1. Maintain existing WWTP processes with minor upgrades 2. Bypass protects WWTP biology during peak flow events 3. Provides screening, primary treatment and disinfection in small footprint 4. Able to handle peak flows much higher than the WWTP design capacity 5. Low power requirement and no moving parts	1. No biological treatment for bypass 2. Additional O&M costs for influent pump station
2	Pump Station To MACM WWTP	1. Operation and maintenance of WWTP eliminated. 2. Lower manpower requirement.	1. Flow storage facilities still required 2. MACM WWTP capacity restrictions may require upgrades and a re-rate 3. Large pump station will require various sized pumps
3	Flow Storage Facilities	1. Maintain existing WWTP processes with minor upgrades 2. Protects WWTP biology during peak flow events 3. Biological treatment of all flow	1. Site restrictions require additional land acquisition 2. Pump station and force main required to convey flow to storage tank 3. Large pump station will require various sized pumps 4. Additional O&M costs for pump station

7.4.2.1 Alternative 1 – CSO Bypass Treatmeant

Alternative 1 includes three main components:

1. Construction of a new headworks facility with mechanical screening and a raw sewage pump station.
2. Construction of CSO bypass treatment facilities to provide screening, primary treatment, and disinfection to peak wet weather flows above the current WWTP capacity of 2.5 MGD.
3. Installation of new final clarifier equipment to maximize efficiency.

A process flow diagram associated with Alternative 1 is included in Appendix O. A site plan associated with Alternative 1 is included in Appendix P. Calculations associated with Alternative 1 are included in Appendix Q.

A mechanical bar screen, sized for 14.57 MGD, is recommended prior to the new raw sewage pump station. This screen will protect the new pump station pumps, eliminate static screen cleaning requirement, and remove more fibrous materials from the flow stream than the existing static screens are capable of. Automatic bar screen clear openings of 1/4 inch are recommended. A by-pass channel with a static bar screen is recommended so that the automatic bar screen can be taken out of service for maintenance. This screen will be sized for at least 14.57 MGD. A static screen is proposed in order to reduce cost and required footprint. However, it is important to note that the larger clear openings in the static screen, required to reduce blinding potential, will increase flow storage basin cleaning requirements.

The existing WWTP influent comes in at grade, and as such, pumping is not currently required. However, in order to achieve 85% capture, a free discharge boundary condition must be maintained at the WWTP. Additionally, the CSO bypass treatment facilities can be constructed above grade at a lower cost. Therefore, an influent pump station is proposed. The station will handle both average and peak flow, pumping to either the WWTP or CSO bypass treatment facilities based on rate of flow. This will be accomplished by installing two (2) sets of pumps, average flow and storm pumps. All flow up to 2.5 MGD will be pumped to the head of the WWTP to then be conveyed through the existing treatment processes. As wet weather flows increase and the wet well level rises due to lack of capacity in the average flow pumps, the storm pumps will activate and pump to the CSO bypass treatment facilities.

This station will be located adjacent to the existing building and will require new gravity sewers to reroute influent flow. In addition to the structure and pumps, new pump controls and associated electrical equipment will be included. Also, new pump discharge flow meters are recommended, located in an adjacent underground valve vault. This flow meter is used for DEP reporting; therefore, accuracy is critical.

Flows over 2.5 MGD will be conveyed by the storm pumps to CSO bypass treatment facilities which will provide screening, grit removal, primary treatment, and disinfection. CSO treatment technologies, such as Hydro International's Storm King, achieve up to 50% total suspended solids reduction and 30% BOD reduction, while also providing under 200 cfu/100 ml fecal concentrations, screening to 4mm solids, grit removal, and high rate disinfection using sodium hypochlorite.

The technology uses tangential flow patterns within the unit to allow solids to settle out by gravity. Flow is introduced tangentially into the side of the Storm King causing the contents to rotate slowly about the vertical axis.

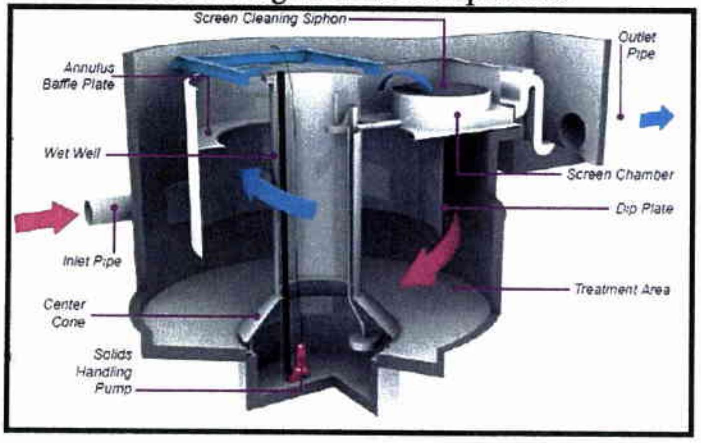
The flow spirals down the perimeter allowing the solids to settle out. This process is aided by rotary forces, shear forces and drag forces at the boundary layer on the wall and base of the vessel.

The internal components direct the main flow away from the perimeter and back up the middle of the vessel as a broad spiraling column, rotating at a slower velocity than the outer downward flow. By the time the flow reaches the top of the vessel, it is virtually free of settleable solids and is discharged to the outlet channel. Prior to discharge, the overflow passes through the swirl cleanse screen.

The swirl cleanse screen captures all floatables and neutrally buoyant material greater than 4mm. The air regulated siphon provides an effective backwash mechanism to prevent the screen from blinding.

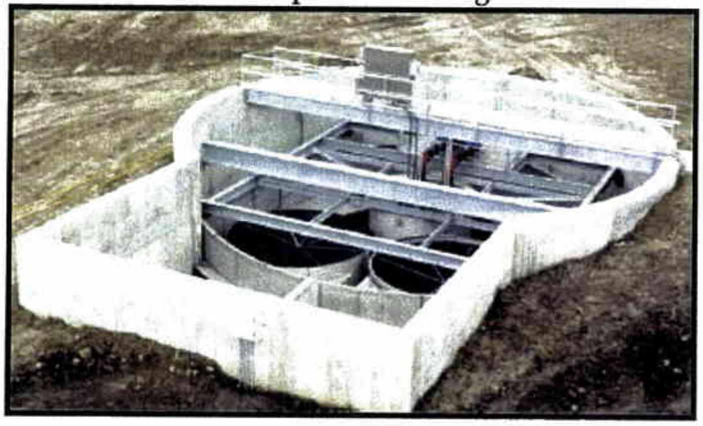
The collected solids and floatables are then discharged by gravity or pumped out from the base of the unit to the sanitary sewer.

Figure 7.2
Storm King Internal Components



It is important to note that mass balance calculations were performed to verify that effluent limits would be met when biologically treated flow and CSO treated flows were combined prior to the WWTP outfall. These calculations can be found in Appendix O.

Photograph 7.1
Example Storm King



Flow from the CSO bypass treatment facilities will then be combined with the flow from the existing plant effluent, downstream of the existing chlorine contact tanks.

All sludge handling processes will remain as they currently exist.

7.4.2.2 <u>Alternative 2 – Pump Station to MACM WWTP</u>

Alternative 2 includes the following main components:

1. Construction of a new raw sewage pump station, including normal flow and peak flow pump capacity.
2. Construction of a new force main to the MACM WWTP.
3. Construction of a new wet weather storage facility.
4. Construction of a new force main to the storage facility.

A process flow diagram associated with Alternative 2 is included in Appendix R. Site plans associated with Alternative 2 are included in Appendix S.

Alternative 2 includes the same headworks and pump station as Alternative 1. In this alternative, the existing WWTP will be decommissioned and the average flow pumps will convey flow through an estimated 12-inch diameter force main spanning 16,400 linear feet. The force main will require a 90-ft road bore, 100-ft road bore, and 1100-ft road, railroad, and river bore. The proposed force main alignment is included in Appendix T.

The wet weather storm pumps will have the same operation as in Alternative 1, but will pump through an estimated 24-inch diameter force main spanning 2,000 linear feet. The proposed location of the flow storage facilities is on a portion of a property currently owned by U.S. Steel on Parcel 304-K-400. The site is located south west of the Duquesne WWTP. Land acquisition negotiations would need explored prior to determining final storage facility location.

Figure 7.3
US Steel Parcel 304-K-400

The H&H modeling for the 1-year, 24-hour design storm yielded a storage capacity requirement of 1.87 MG. Therefore, a 104-foot diameter by 33-foot high above ground storage tank is recommended, having a storage capacity of 2 MG. The tank will include a cover, aeration system, stairs and access platforms, and automatic cleaning nozzle system.

Following wet weather events, the storage facilities would drain back into the existing sewers in the area that flow by gravity back to the pump station.

7.4.2.3 Alternative 3 – Existing WWTP and Flow Storage Facilities

Alternative 3 includes the following main components:

1. Construction of a new raw sewage pump station, including normal flow and peak flow pump capacity.
2. Construction of a new wet weather storage facility.
3. Construction of a new force main to the storage facility.
4. Installation of new final clarifier equipment to maximize efficiency.

A process flow diagram associated with Alternative 3 is included in Appendix U. A site plan associated with Alternative 3 is included in Appendix V.

Alternative 3 is a combination of Alternatives 1 and 2. Similar to Alternative 1, this alternative maintains the existing WWTP and processes, with the exception of clarifier efficiency improvements. It also plans for new headworks and raw sewage pump station, but the pump station would be similar to that in Alternative 2. Average flow pumps would pump to the existing WWTP, while storm pumps would convey peak flows to the same proposed storage facilities as in Alternative 2.

7.4.2.4 Cost Evaluation

Study level total project cost estimates were completed for the evaluated alternatives. The costs are as summarized in Table 7.4 below. Detailed cost estimates are included in Appendix W.

WWTP Upgrade Costs
Table 7.4

Alternative	Year 2014 Construction Cost	Year 2014 Total Project Cost
Alt 1 – CSO Bypass Treatment	$5,939,000	$7,424,000
Alt 2 – Pump to MACM WWTP	$12,408,000	$15,511,000
Alt 3 – Flow Storage Tank	$10,325,000	$12,907,000

7.4.2.5 Financial Capability Assessment

Given the magnitude of upgrades required relative to the low number of rate payers, it was necessary to complete a financial capability assessment in accordance with EPA guidance document, "Combined Sewer Overflows-Guidance for Financial Capability Assessment and Schedule Development." This assessment provides a means of determining whether or not the proposed Alternatives are affordable. All three (3) were determined to be "High Burden", but Alternative 1 has a significantly lower impact on the City. The projected additional cost per household and overall residential indicator associated with each Alternative are as follows.

Project Affordability
Table 7.5

Alternative	Additional Cost per Household per Year	Residential Indicator
Alt 1 – CSO Bypass Treatment	$292	3.79
Alt 2 – Pump to MACM WWTP	$501	4.91
Alt 3 – Flow Storage Tank	$443	4.63

As seen in Table 7.5, construction of CSO bypass treatment facilities will cost each customer $151 less per year, or $12.58 per month, over the second lowest cost option in Alternative 3.

Financial Capability Assessment Worksheets are included for Alternatives 1, 2, and 3 in Appendices X, Y, and Z respectively.

7.4.2.6 Recommended Alternative

A detailed evaluation of the proposed alternatives led to the recommendation of Alternative 1 for City's LTCP upgrades. The total estimated project cost is $7,424,000. This alternative is recommended for the following reasons:

- Alternative 2 project cost is $8,087,000 more than the recommended Alternative 1, while Alternative 3 project cost is $5,483,000 more.
- The existing WWTP is in good operating condition for average flows, and Alternative 1 allows the WWTP to continue operation under these conditions.

Alternative 1 is recommended. However, given the "High Burden" classification associated with this work, completion of the proposed upgrades on a typical project timeline is not feasible. Project financing will drive the schedule for implementing Alternative 1 upgrades.

8.0 PROJECT PLANNING

The following LTCP schedule is proposed.

LTCP Schedule
Table 8.1

Milestone	Date
Submit draft LTCP	September 1, 2014
Submit final LTCP with MACM ACT 537	November 1, 2015
DEP approval of LTCP and ACT 537	January 1, 2016
Obtain funding for design related services	January 1, 2017
Begin design of upgrades	January 1, 2017
Apply for Part II Permit for upgrades	July 1, 2018
Receive Part II Permit for upgrades	January 1, 2019
Obtain funding for construction	January 1, 2021
Begin construction for CSS upgrades	March 1, 2021
Complete construction	March 1, 2023
Submit post construction compliance monitoring plan	September 1, 2023

*DEP LTCP approval and Part II Permit dates are beyond the control of the City and KLH, therefore schedule dates will be adjusted based on actual DEP milestone completion dates.

9.0 SUMMARY AND CONCLUSIONS

In order to address the "presumption" approach percent capture criteria the following upgrades are recommended:

- Construct Alternative 1 – New headworks, raw sewage pump station, and CSO bypass treatment facilities, and upgrade existing final clarifier equipment to maximize efficiency.

Flow monitoring and SWMM modeling was completed for the City's CSS. It was determined that two (2) sewer improvements are required within the system to allow for conveyance of the peak core flow, 85% capture, and no manhole overflows given 10-year, 24-hour rain event, and a free discharge at the WWTP.

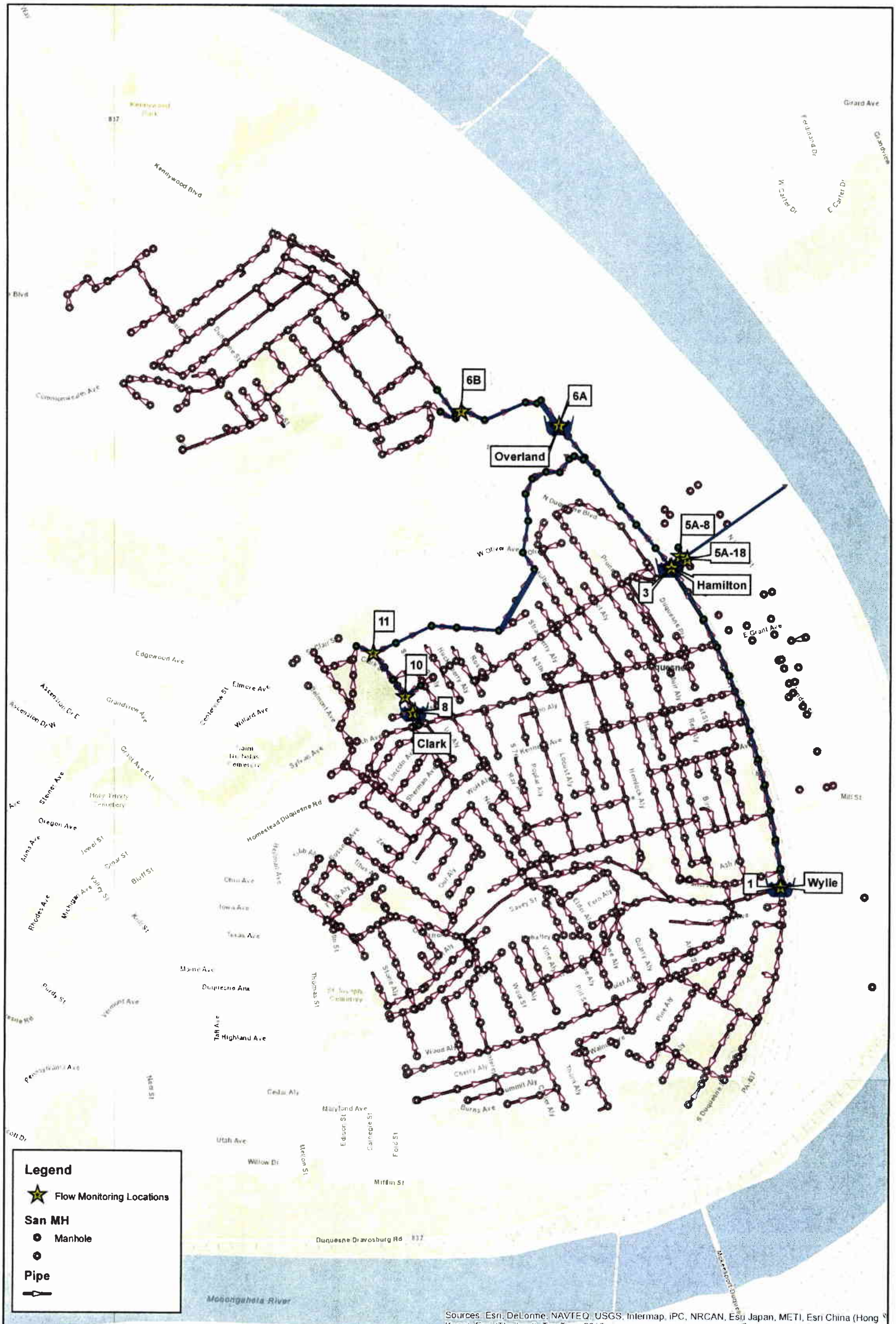
The first required conveyance system upgrade is a parallel relief sewer downstream of CSO 005 between William Avenue and Mulberry Way, from Manhole DU3107M to DU3097M. The relief sewer is estimated to be 715-feet length, and 15-inch diameter, to ensure no flooding during the 10-year, 24-hour design rain event.

The second required conveyance system upgrade is a parallel relief sewer upstream of CSO 004 along the railroad, from Manhole DU4299M to CSO 004. In addition to the relief sewer, the lids on Manholes DU4299M and DU4298M will need bolted down to prevent flooding. The relief sewer is estimated to be 310-feet length, and 15-inch diameter, to ensure no flooding during the 10-year, 24-hour design rain event.

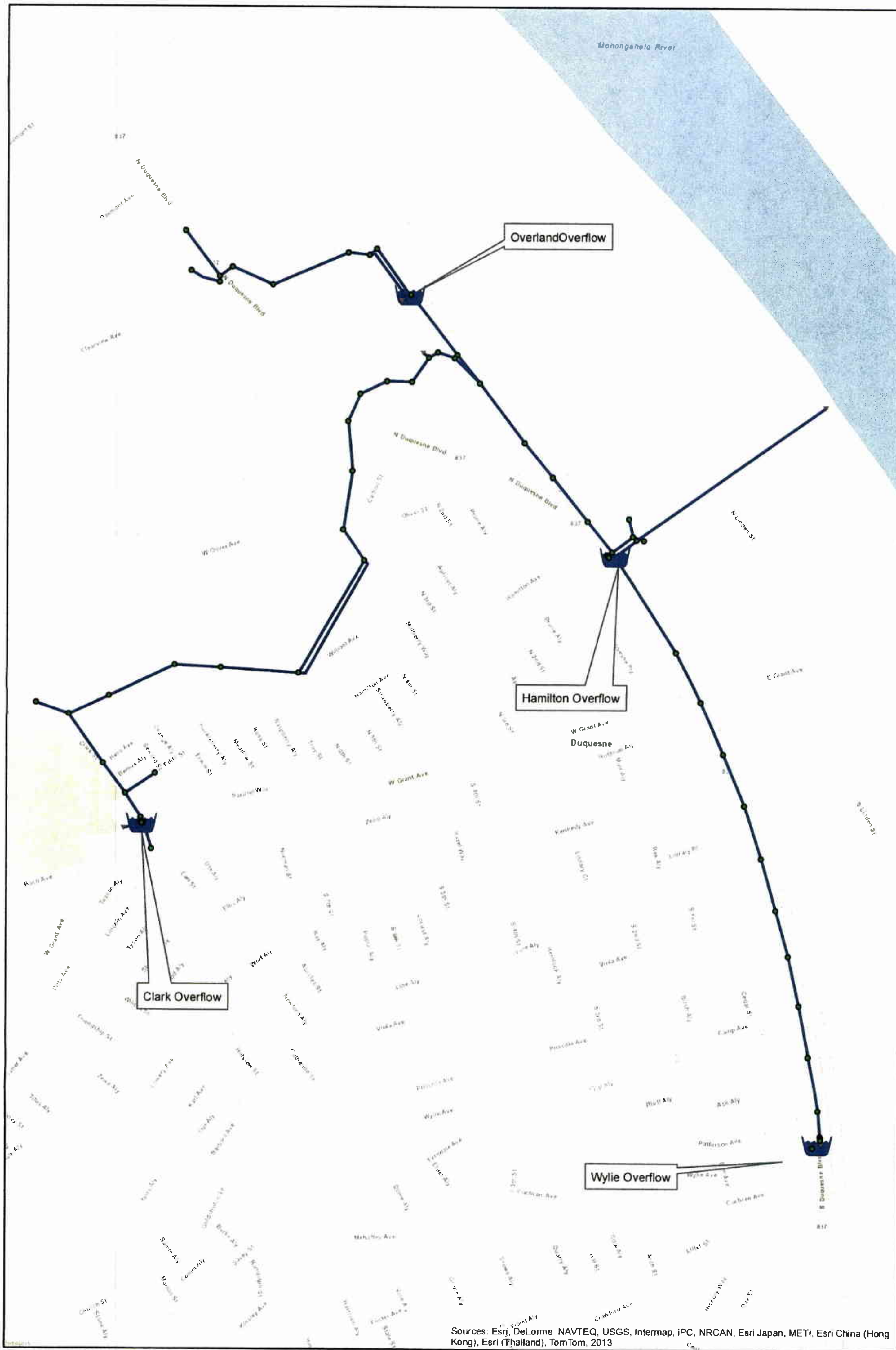
The work associated with Alternative 1 has an estimated total project cost of $7,424,000.

Appendix A

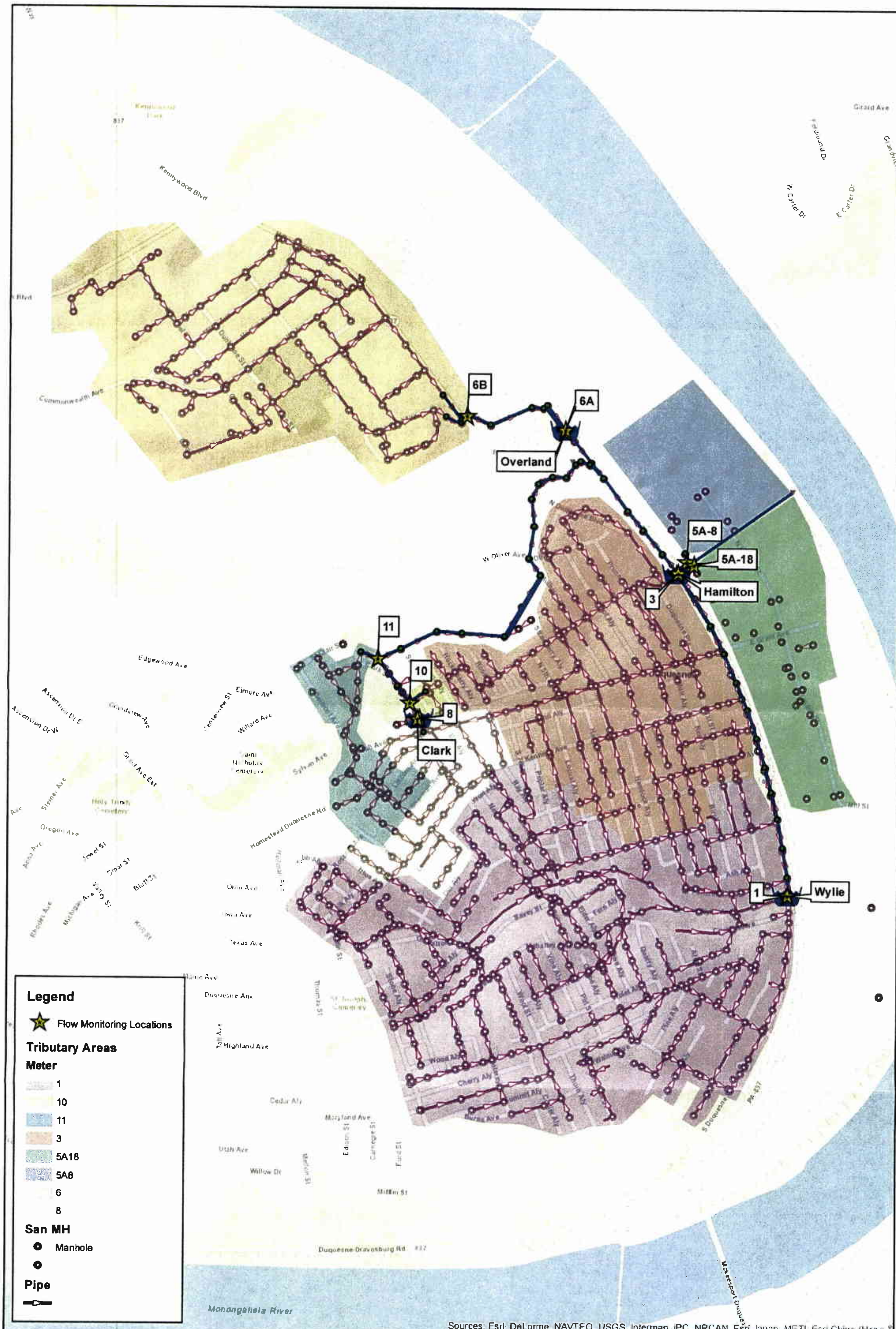
System Map
CSO Location Map
Tributary Area Map



220-53 Exhibit	0 625 1,250 Feet	CITY OF DUQUESNE ALLEGHENY COUNTY, PENNSYLVANIA SYSTEM MAP	KLH ENGINEERS, INC



220-53 Exhibit	0 350 700 Feet Author: Ross Voltwein Date: 8/25/2014 NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet Projection: Lambert Conformal Conic	**CITY OF DUQUESNE** **ALLEGHENY COUNTY, PENNSYLVANIA** **CSO LOCATIONS**	KLH ENGINEERS, INC.



220-53 Exhibit

0 625 1,250
Feet

CITY OF DUQUESNE
ALLEGHENY COUNTY, PENNSYLVANIA
TRIBUTARY AREAS MAP

KLH ENGINEERS, INC.

Appendix B

Duquesne Survey Field Book

SOKKIA

220-53
AS OF
11/11/13

MADE IN CHINA

220 MACM

SOKKIA

TRANSIT
FIELD BOOK

220
MACM

No. 8152-00

(1)

220-65

DRAVOSBURG / DU[illegible]

AT 527 & LTR RAILS

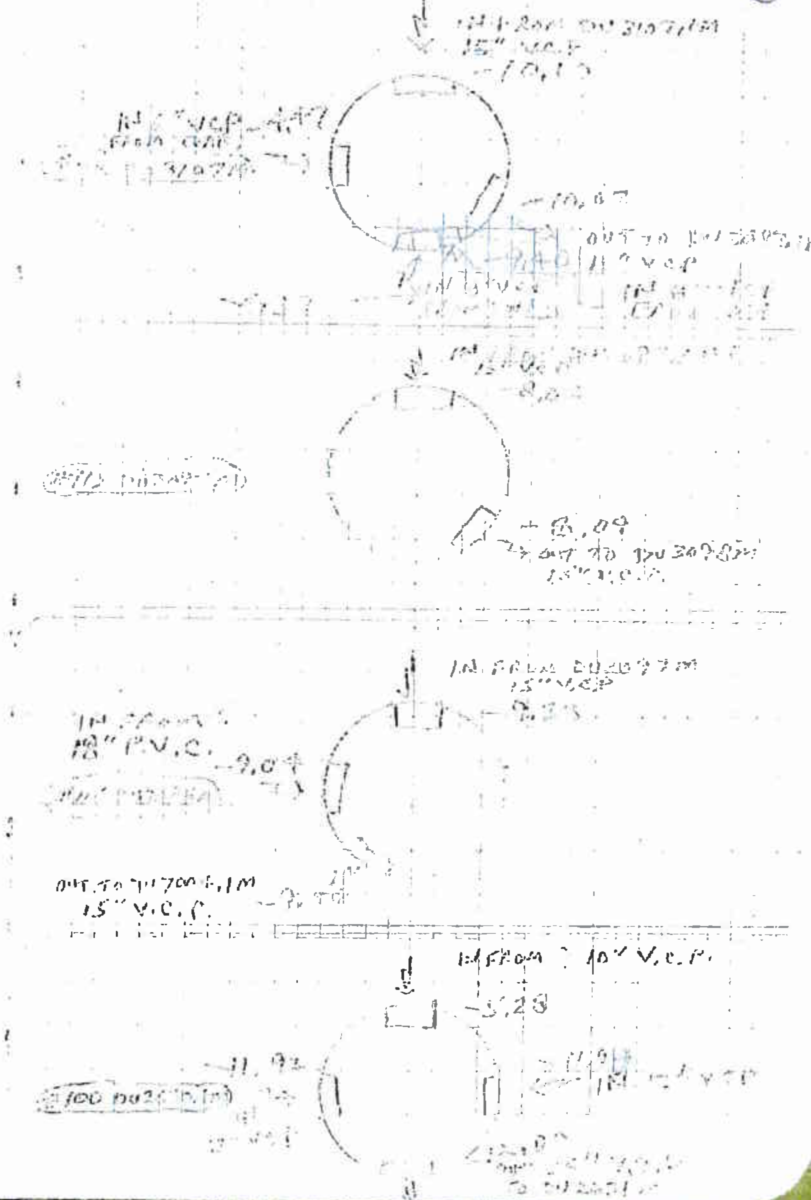
BOB COBB 412-[illegible]

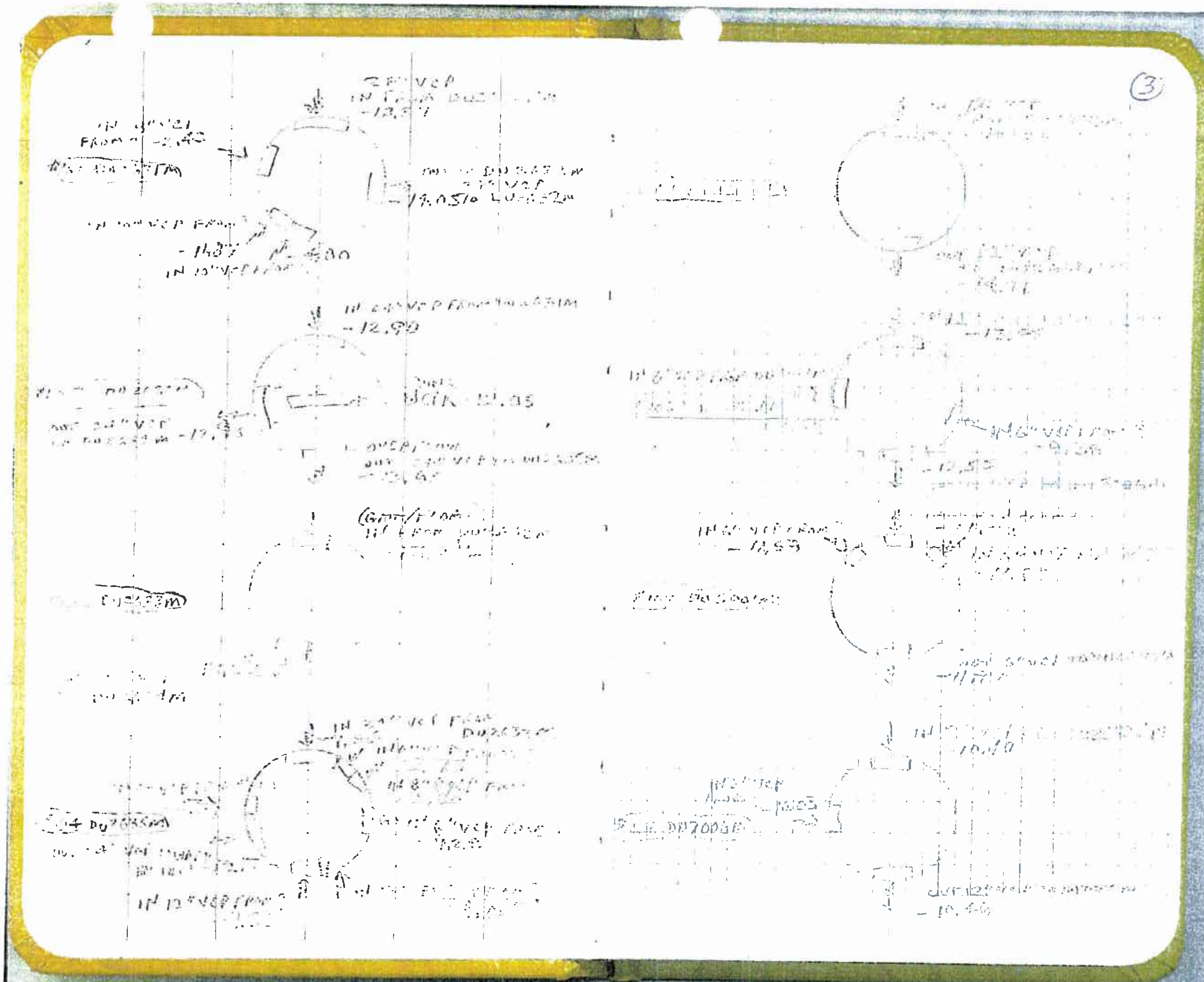
220-5?

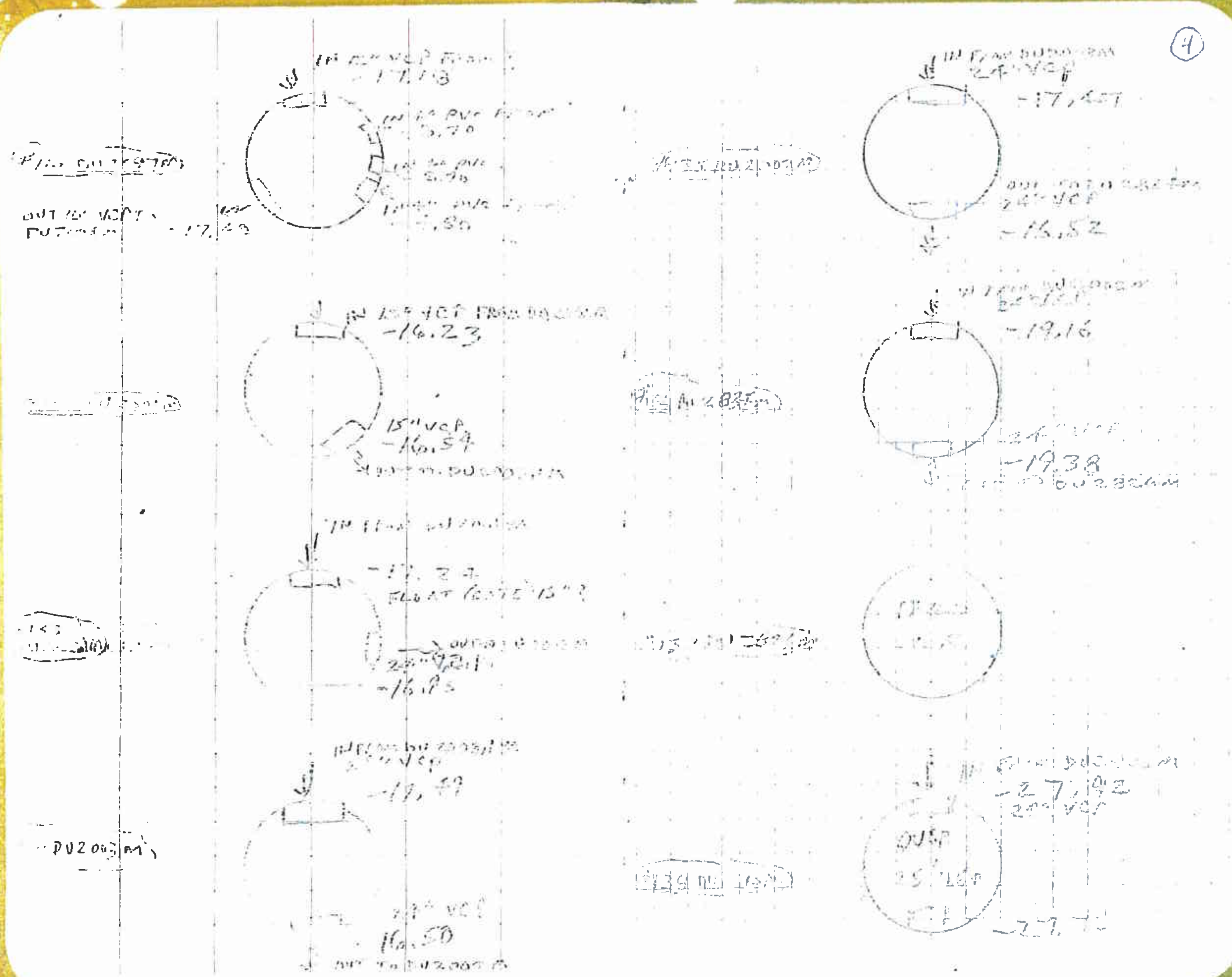
VPS LOCATIONS (5" TOPO POINT, AH=5.905')

[illegible]	[illegible]	DU2[illegible]
101	"	DU2631 m
102	"	DU2632 m
[illegible]	"	DU26[illegible]
[illegible]	"	DU2635 m
[illegible]	"	[illegible]
[illegible]	"	DU 2[illegible] m
107		DU5001 m
108	"	DU700[illegible]
109	"	DU7004 m
110	"	DU25[illegible]
111	"	DU50[illegible]
112	"	DU310[illegible]
11[illegible]	"	DU3097 m
[illegible]	"	[illegible]

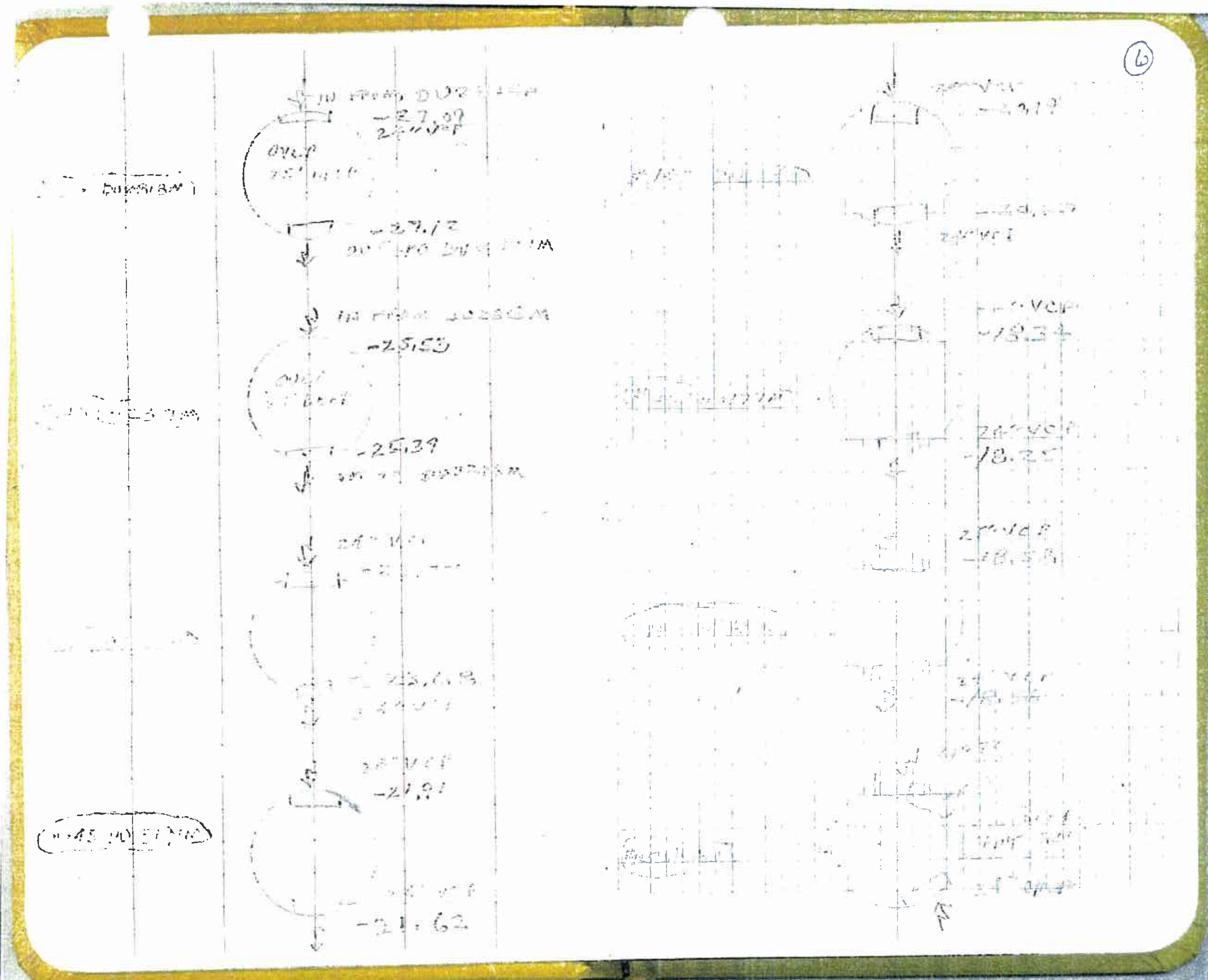
(2)




3
-12.90
-11.55

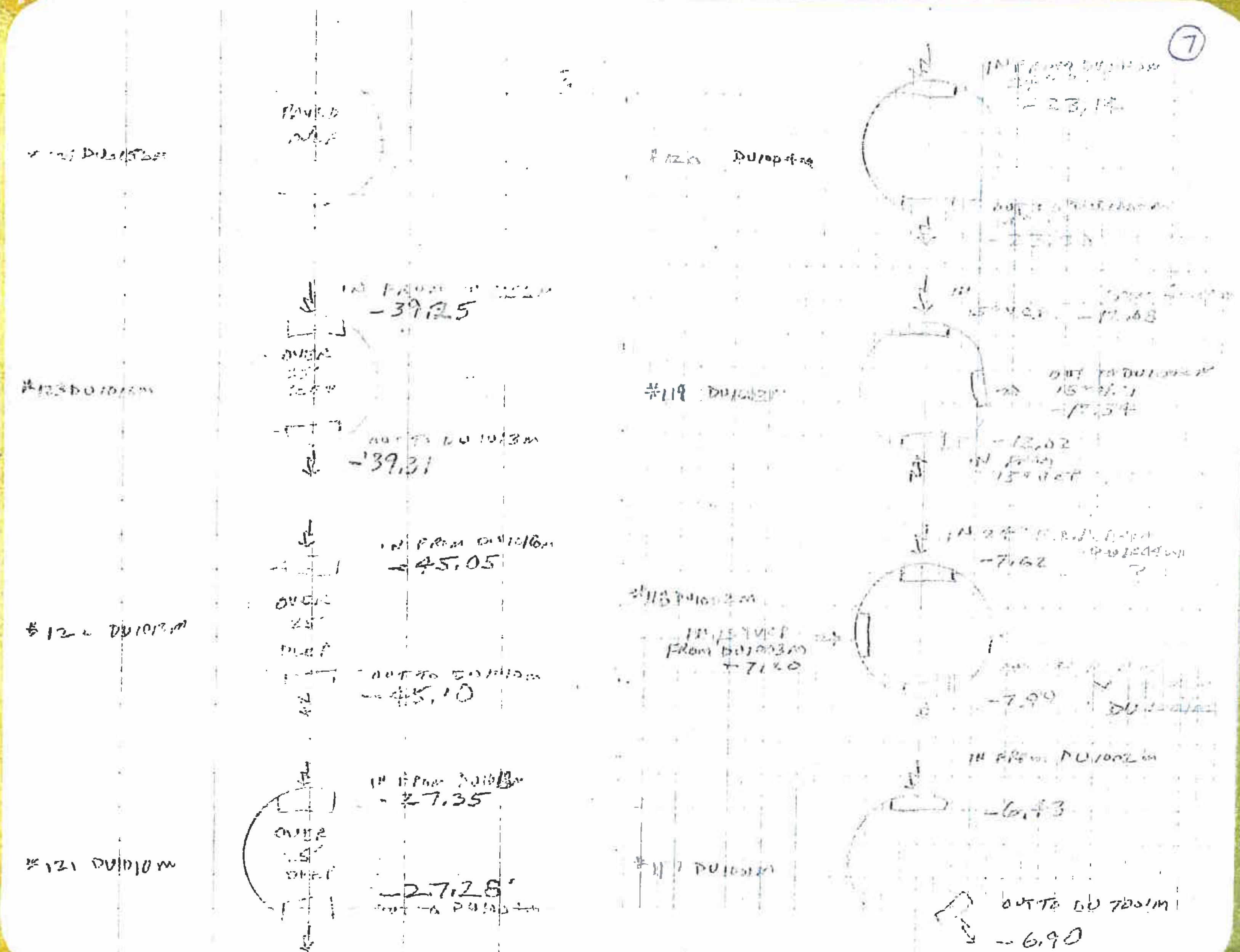

-17.457
-16.52
-16.23
15" VCP
-16.54
-19.16
-19.38
-17.24
-27.92
16.50
PU2003MH

[illegible]	220-53	[illegible]	
[illegible]		[illegible] TAPE [illegible]	
	[illegible]	[illegible]	([illegible])
		[illegible]	([illegible])
		[illegible]	
		[illegible]	
		[illegible]	
		[illegible] M	
[illegible]		D1100 [illegible]	
		[illegible]	
		[illegible] M	
		[illegible]	
[illegible]		[illegible]	* ([illegible])
		UNKNOWN [illegible]	
126		[illegible]	
		[illegible]	
		[illegible]	
		[illegible]	
		[illegible] 65	

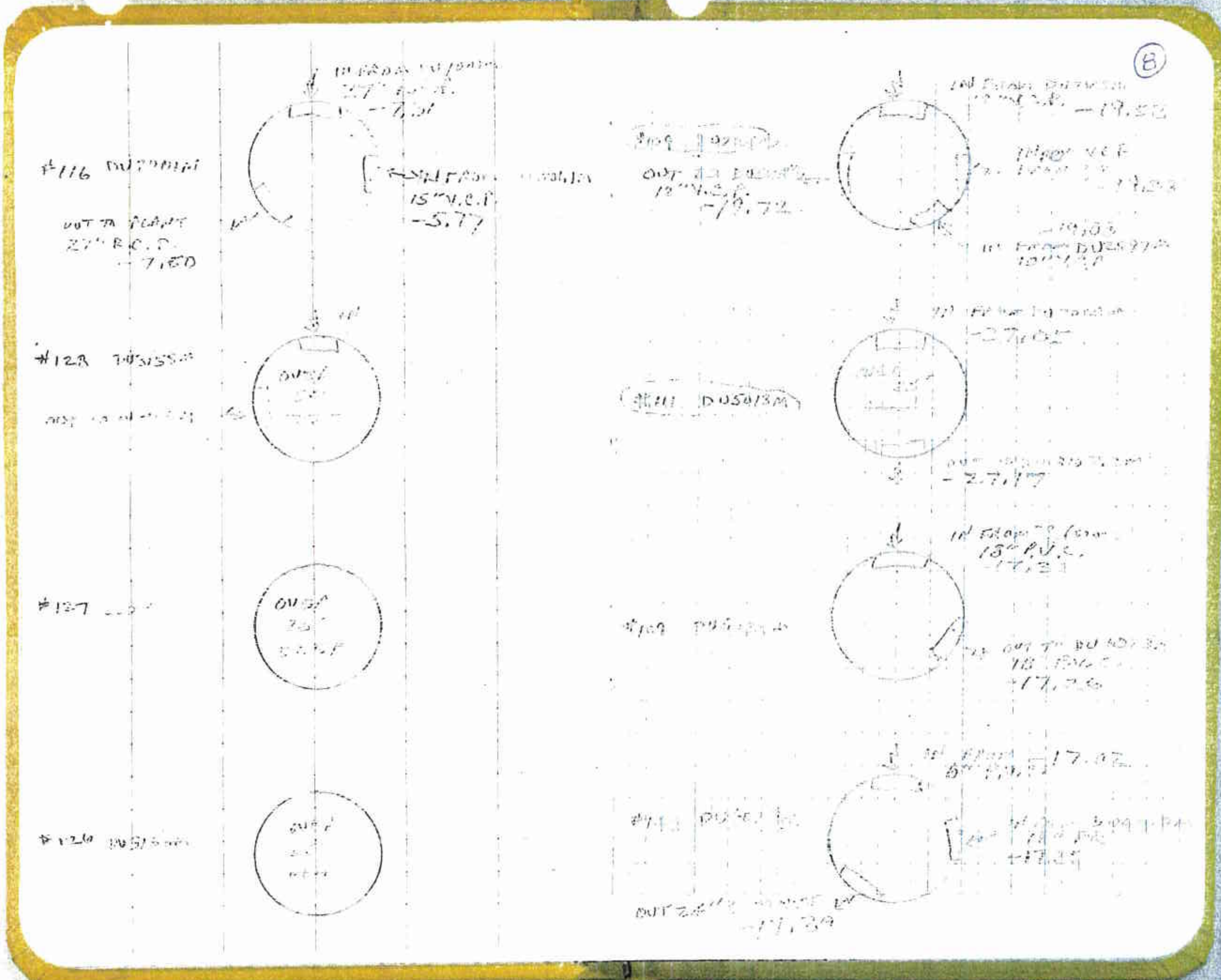


6
-27.09
-27.17
-25.53
-25.39
-23.68
24" VCP
-21.91
-21.62
24" VCP
-18.34
24" VCP
-18.25

7



PAVED OVER
-39.25
OUT TO DU 1013m
-39.31
IN FROM DU1016m
-45.05
-45.10
IN FROM DU1013m
-27.35
-27.28
-23.14
-12.02
-7.62
+7.40
-7.99
IN FROM DU1002m
-6.43
OUT TO DU 7001m
-6.90



8
#116
OUT TO PLANT
27" R.C.P.
-7.80
27" R.C.P.
-7.31
15" V.C.P.
-5.77
#128
#127
#126
#109
12" V.C.P.
-19.72
-19.52
-19.03
10" V.C.P.
#111 DU5013M
-27.05
-27.17
18" P.V.C.
-17.21
-17.26
#110
17.02
-17.35
-17.39

[illegible]-13

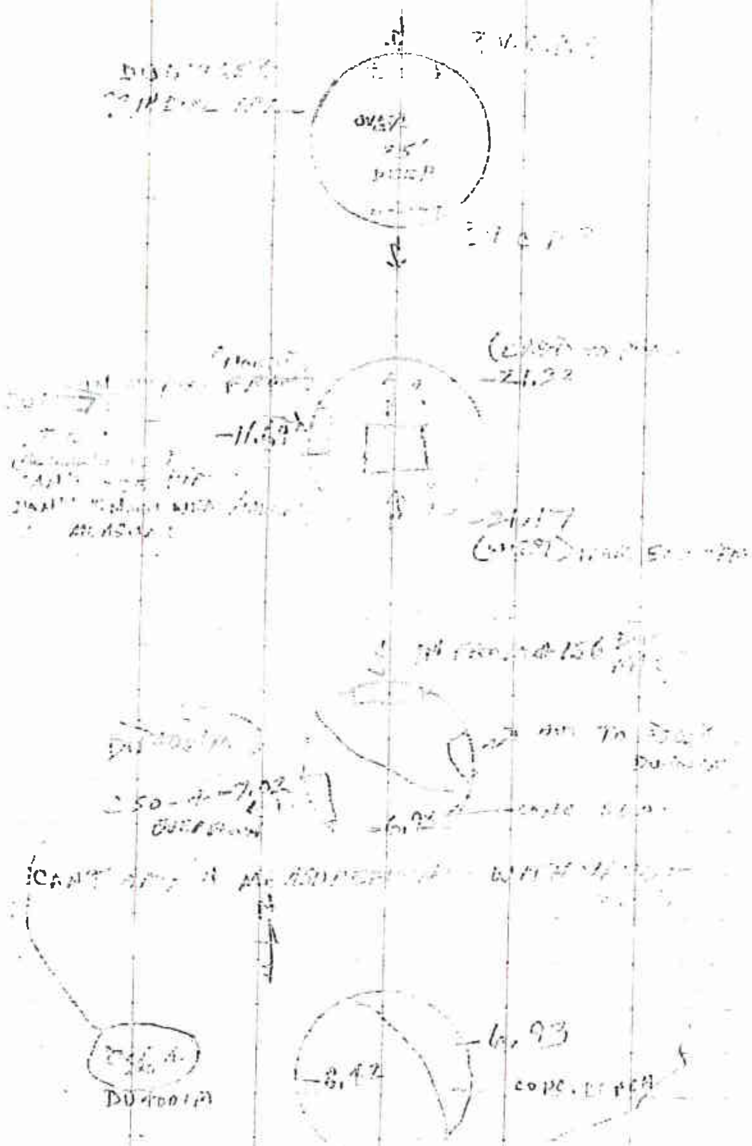
(Cont.) 220-513 [illegible] 083713

70°F [illegible]

CREW: MARK [illegible]

(9)

152	[illegible]	DU2001PM
153		DU2003.1PM
154		[illegible]
155		[illegible]
156		[illegible]2B34
157		[illegible] POWER [illegible]
[illegible]		[illegible]815 [illegible]
159		DU [illegible]81BM
160		[illegible]
161		DU [illegible]
[illegible]		[illegible]
		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		DU [illegible]


-6.93
-8.42

(11)

[illegible]			
	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible], A[illegible]	
120		[illegible]	DU6023PA

(11-05-13)

(cont.) [illegible]

(SKETCHED BY [illegible])

[illegible]	SAHMH	DU [illegible]
150	"	DU [illegible]
151	"	DU 4004 [illegible] M
152	"	DU 4006.1M
153	"	DU 4006 M
154	"	DU 4033M
155	"	DU 4037M
156	"	DU ?
157	"	DU 42[illegible]

(11-0[illegible])

158	SAHMH	DU 3[illegible]M PANEL [illegible]

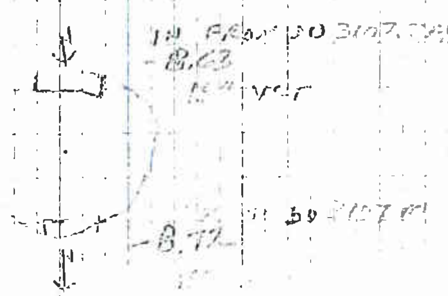
(11-07-13)

159	SAHMH	DU 3[illegible] M.

SO'[illegible]

[illegible] W.
[illegible] E.

#159 DU3107.1M



Appendix C

Drnach Meter Site Inspection Forms

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name	Duquesne Flow
Manhole Identification	M-1
Surveyor's Name	Alexander Matscherz
Site Description	Underneath Route 837 / S Duquesne Avenue
Street	520 S Duquesne Avenue
Date	August 29, 2013

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	Yes

At Grade:	X	Below:		Above:	

Diameter (in.): (Unable to measure)

DS Rim to Invert (in): 163

Interior

Brick:		Precast:	X	Other:	

Ladder Present:	No	Safe:	

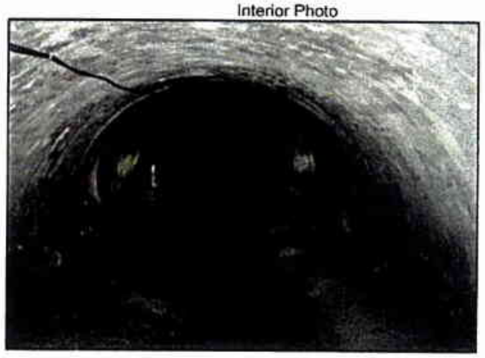
Infiltration Observed

Describe:

Inlets

Size:		Pipe Material:	Notes:
60	inch	Concrete	Egg shape
30	inch	VCP	
24	inch	VCP	
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
18	inch	Concrete	Metering point
72	inch	Weir	Wylie CSO

GPS Information

Accuracy:	Elevation:	Latitude:	Longitude:
20 feet	764 feet	40.367374	79.84229

Notes

Additional pictures of chamber inlets, and overflow point included.

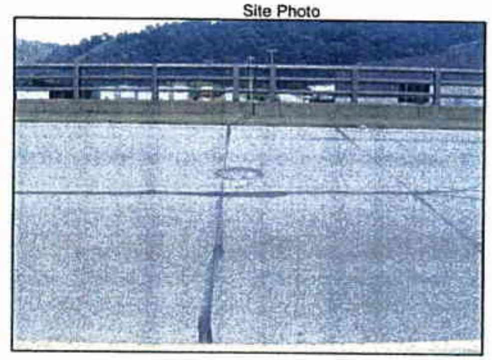
Unable to take outside picture of manhole due to road construction. Outside picture used is from Google Earth.

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name	Duquesne Flow
Manhole Identification	M-3
Surveyor's Name	Alexander Matscherz
Site Description	Underneath Route 837 / Duquesne Boulevard.
Street	130 Duquesne Boulevard
Date	August 29, 2013

Site Photo



Frame And Cover

Cover:	Solid	Pick holes:	Yes		
At Grade:	X	Below:		Above:	

Diameter (in.):	(Unable to measure)		
DS Rim to Invert (in):	324 (approx)		
Ladder Present:	No	Safe:	

Interior

Brick:	X	Precast:		Other:	

Infiltration Observed

Describe:

Inlets

Size:		Pipe Material:	Notes:
54	inch	Brick	Egg shape
30	inch	Concrete	Storm
48	inch	Brick	Egg shape
	inch		
	inch		

Interior Photo

Outlets

Size:		Pipe Material:	Notes:
18	inch	Concrete	Metering point
67	inch	Brick	Egg shape overflow pipe

GPS Information

Accuracy:	Elevation:	Latitude:	Longitude:
20 feet	773 feet	40.375663	79.846372

Notes

Additional pictures of chamber, storm line, and overflow pipe included.

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name Duquesne Flow

Site Description
In grass behind American Textile Co. gravel parking lot.

Manhole Identification M-5A 18" Upstream

Street
10 N Linden Street

Surveyor's Name
Alexander Matscherz

Date
August 29, 2013

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	No

At Grade:	X	Below:		Above:	

Diameter (in.): 28.75

DS Rim to Invert (in): 214

Interior

Brick:		Precast:	X	Other:	

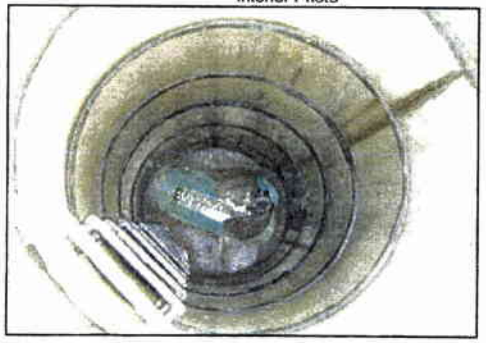
Ladder Present:	Yes	Safe:	Yes

Infiltration Observed Describe:

Inlets

Size:		Pipe Material:	Notes:
18	inch	VCP	
	inch		
	inch		
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
18	inch	PVC	Metering point
	inch		

GPS Information

Accuracy:	Elevation:	Latitude:	Longitude:
20 feet	759 feet	40.37587	79.845852

Notes One manhole upstream from the original M-5A 18" location.

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name	Duquesne Flow

Site Description

In grass behind American Textile Co. gravel parking lot.

Manhole Identification	M-5A 8" / M-5A 18"

Street

10 N Linden Street

Surveyor's Name

Alexander Matscherz

Date

August 29, 2013

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	No
At Grade: X	Below:	Above:	

Diameter (in.):	28.5
DS Rim to Invert (in):	212

Interior

Brick:	Precast: X	Other:

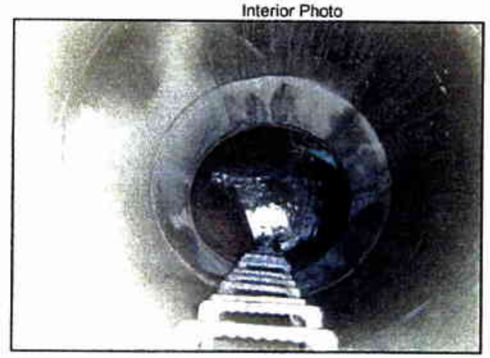
Ladder Present:	Yes	Safe:	Yes

Infiltration Observed Describe:

Inlets

Size:		Pipe Material:	Notes:
18	inch	PVC	Metering point
8	inch	PVC	Metering point
	inch		
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
21	inch	Concrete	
	inch		

GPS Information

Accuracy:	20 feet	Elevation:	760 feet	Latitude:	40.375982	Longitude:	79.84609

Notes

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name: Duquesne Flow

Manhole Identification: M-6

Surveyor's Name: Alexander Matscherz

Site Description: Inlet to Overland CSO chamber.

Street: Next to Railroad tracks.

Date: August 29, 2013

Frame And Cover

Cover:	Solid	Pick holes:	No
At Grade:	Below:	Above:	X

Diameter (in.):	31.5
DS Rim to Bench (in):	84

Site Photo

Interior

Brick:	Precast: X	Other:

Ladder Present:	Yes	Safe:	Yes

Infiltration Observed

Describe:

Interior Photo

Inlets

Size:	Pipe Material:	Notes:
15 inch	Concrete	Metering point
inch		
inch		
inch		
inch		

Outlets

Size:	Pipe Material:	Notes:
15 inch	Concrete	CSO
9x9 inch	Concrete	Rectangular

GPS Information

Accuracy:	20 feet	Elevation:	760 feet	Latitude:	40.379271	Longitude:	79.85026

Notes

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name: Duquesne Flow

Manhole Identification: M-8

Surveyor's Name: Alexander Matscherz

Site Description: Middle of road at intersection of Clark Street and Parallel Way.

Street: Clark Street and Parallel Way

Date: August 29, 2013

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	Yes

At Grade:	X	Below:		Above:	

Diameter (in.):	23
DS Rim to Bench (in):	161

Interior

Brick:	X	Precast:		Other:	

Ladder Present:	No	Safe:	

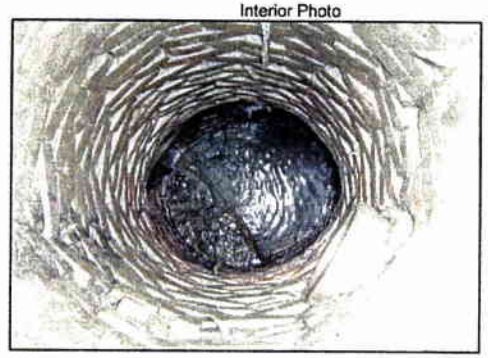
Infiltration Observed

Describe:

Inlets

Size:		Pipe Material:	Notes:
24	inch	VCP	Metering point
	inch		
	inch		
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
24	inch	VCP	
	inch		

GPS Information

Accuracy:	Elevation:	Latitude:	Longitude:
20 feet	914 feet	40.371694	79.855026

Notes

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name	Duquesne Flow
Manhole Identification	M-10
Surveyor's Name	Alexander Matscherz
Date	August 29, 2013

Site Description

Near the edge of the road at the intersection of Clark Street and Edith Avenue.

Street

Clark Street and Edith Avenue

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	Yes
At Grade: X	Below:	Above:	

Diameter (In.):	26.5		
DS Rim to Invert (in):	163	To metering point:	114

Interior

Brick:	Precast:	X	Other:

Ladder Present:	Yes	Safe:	Yes

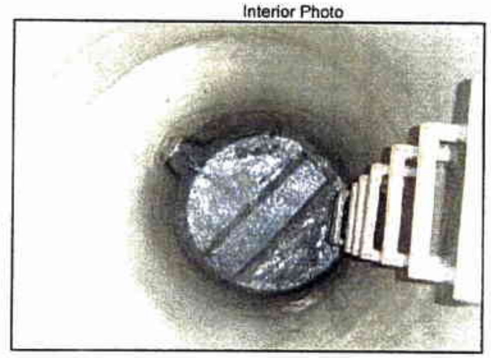
Infiltration Observed

Describe:

Inlets

Size:		Pipe Material:	Notes:
8	inch	VCP	Metering point
12	inch	VCP	
8	inch	VCP	Storm
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
12	inch	VCP	
	inch		

GPS Information

Accuracy:	20 feet	Elevation:	912 feet	Latitude:	40.372105	Longitude:	79.855397

Notes

DRNACH ENVIRONMENTAL, INC.

MANHOLE INSPECTION FORM

Project Name	Duquesne Flow
Site Description	Inside Mckee Asphalt Paving equipment storage lot.
Manhole Identification	M-11
Street	125 Clark Street
Surveyor's Name	Alexander Matscherz
Date	August 29, 2013

Site Photo

Frame And Cover

Cover:	Solid	Pick holes:	Yes

At Grade:	X	Below:		Above:

Diameter (in.):	26.5
DS Rim to Invert (in):	235

Interior

Brick:	Precast:	X	Other:	

Ladder Present:	Yes	Safe:	No

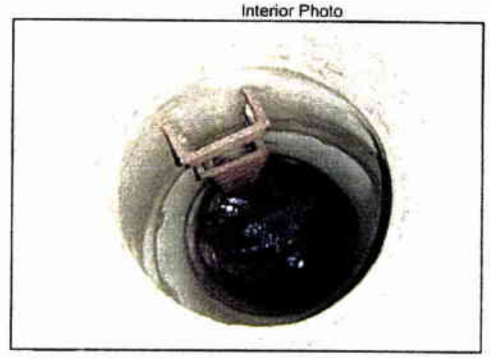
Infiltration Observed

Describe:

Inlets

Size:		Pipe Material:	Notes:
12	inch	VCP	Metering point
12	inch	VCP	
	inch		
	inch		
	inch		

Interior Photo



Outlets

Size:		Pipe Material:	Notes:
15	inch	VCP	
	inch		

GPS Information

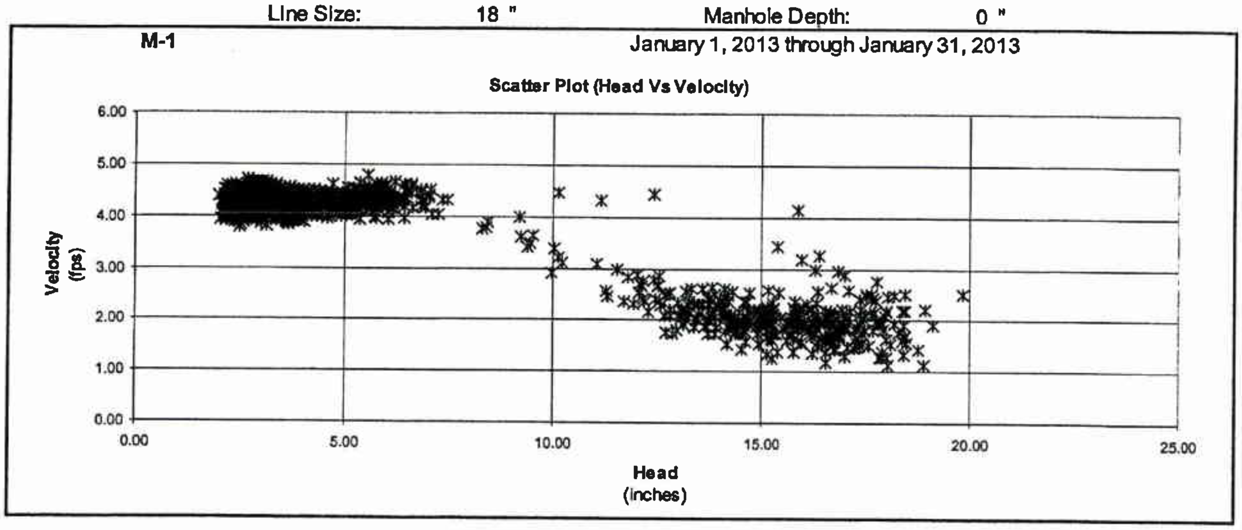
Accuracy:	20 feet	Elevation:	919 feet	Latitude:	40.373216	Longitude:	79.856479

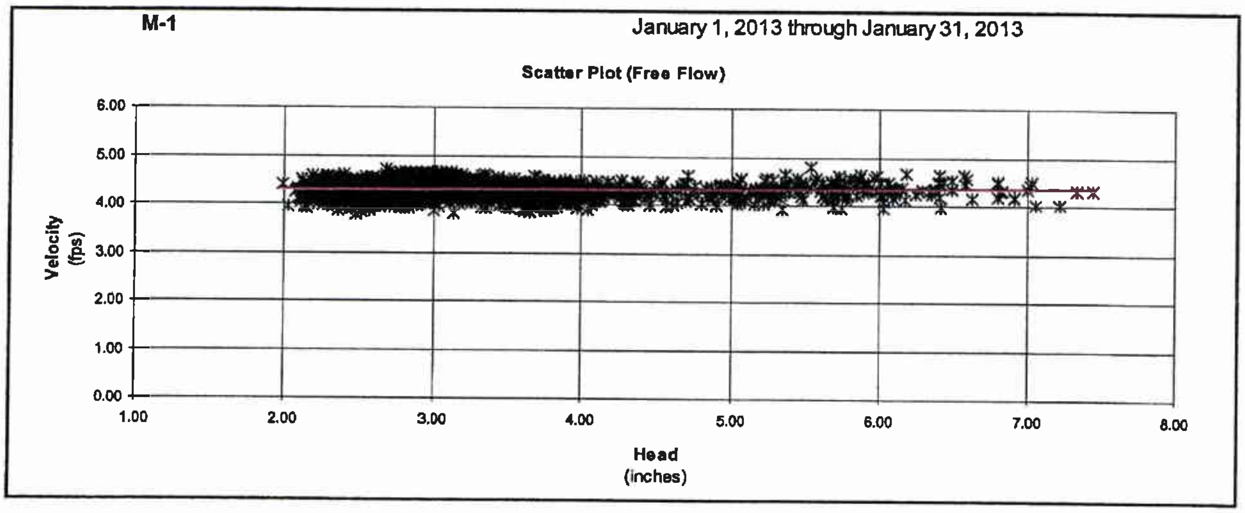
Notes

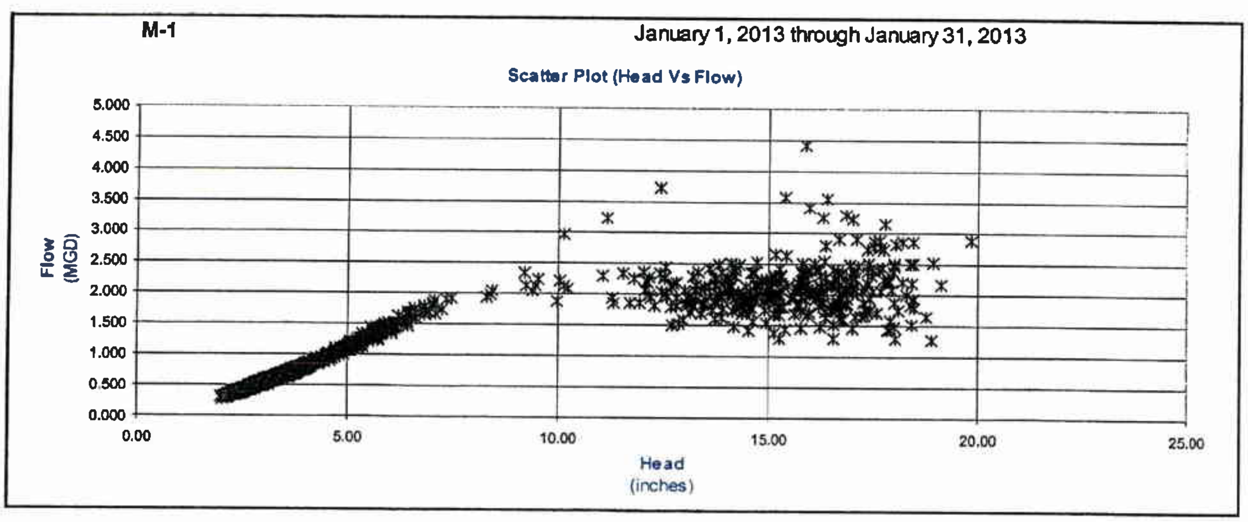
APPENDIX D

DRNACH SCATTERGRAPHS

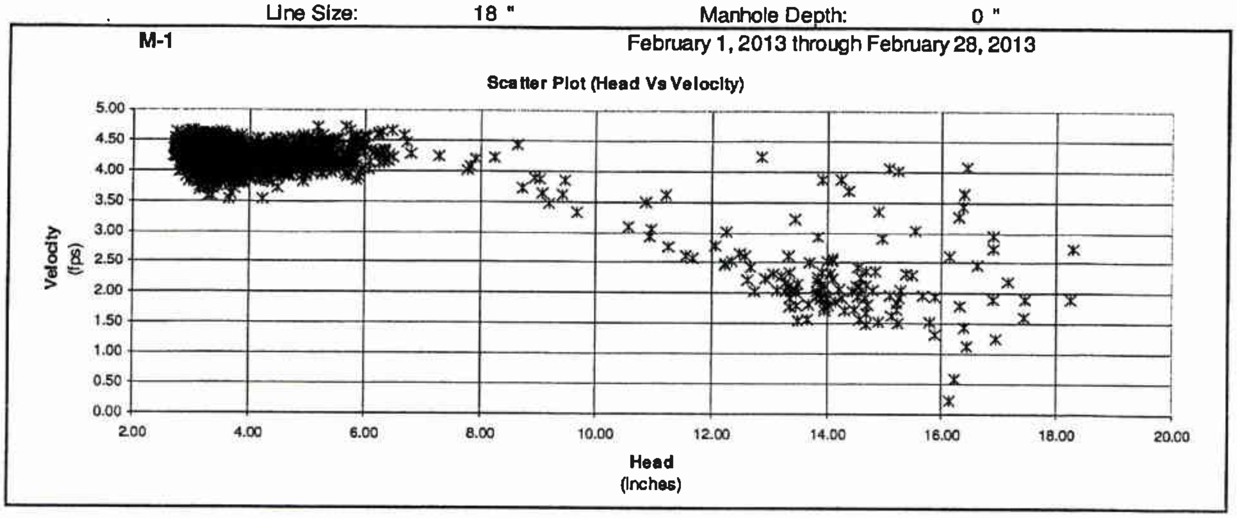
Line Size: 18 " Manhole Depth: 0 "

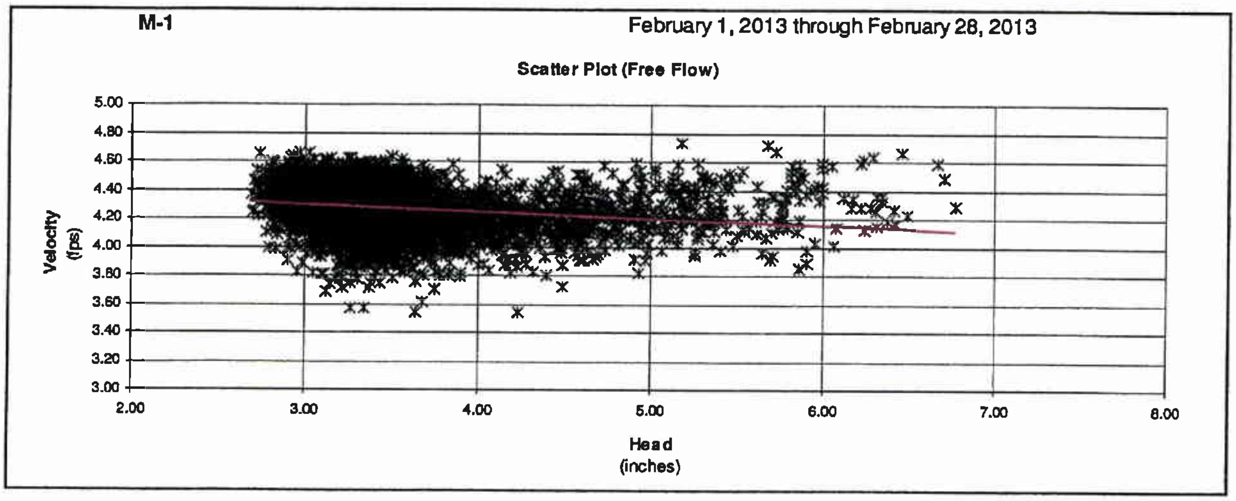


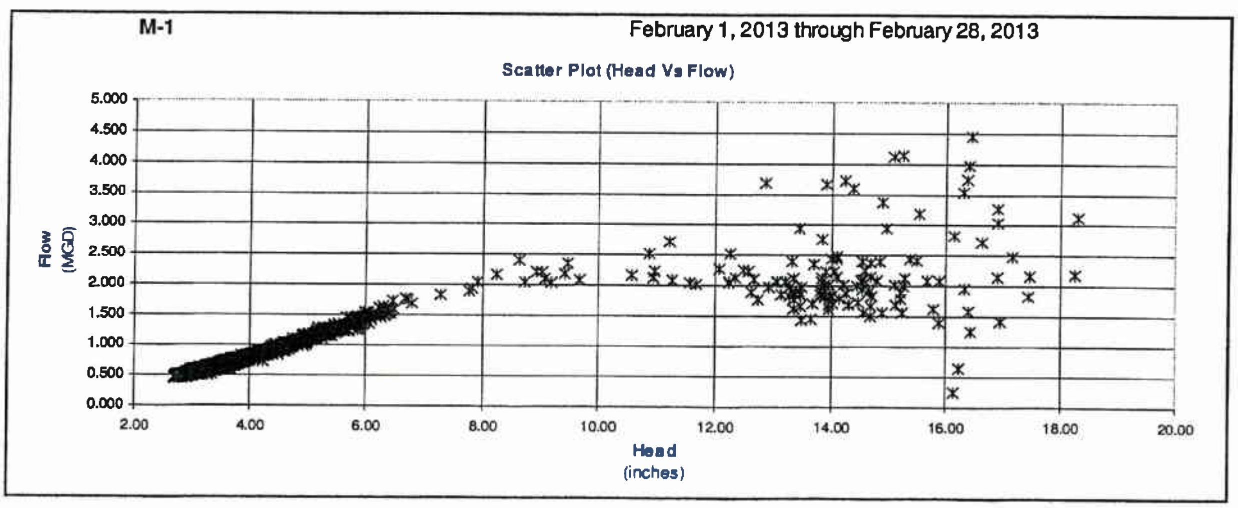




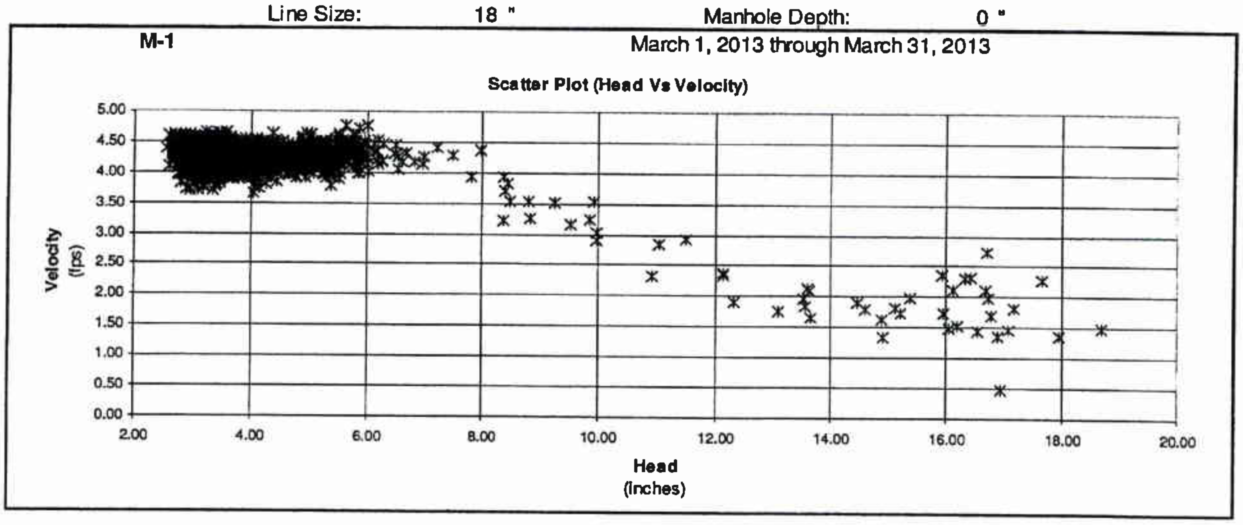
Line Size: 18 "   Manhole Depth: 0 "

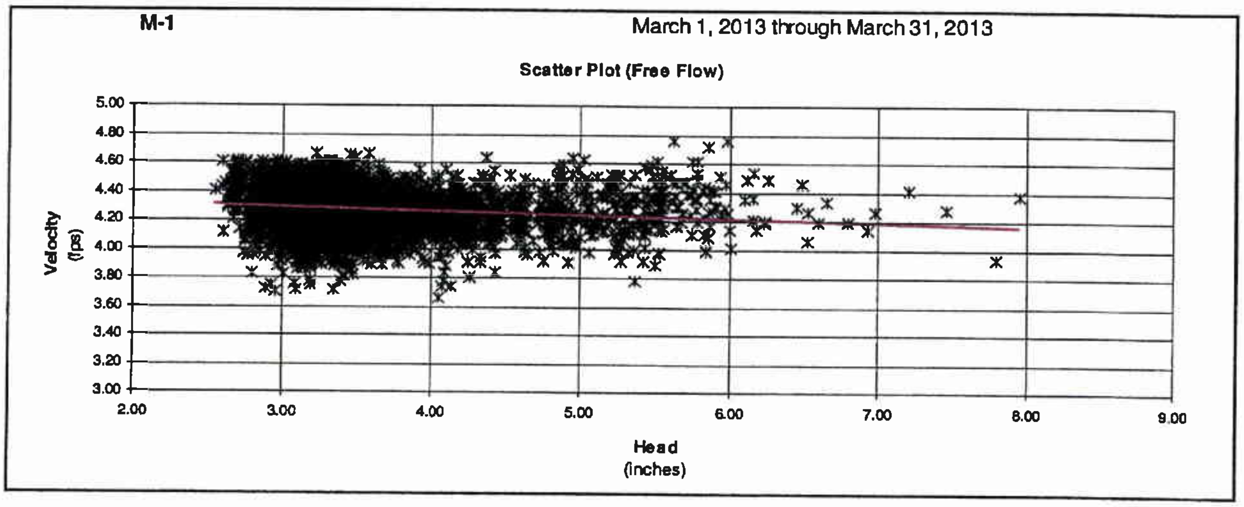


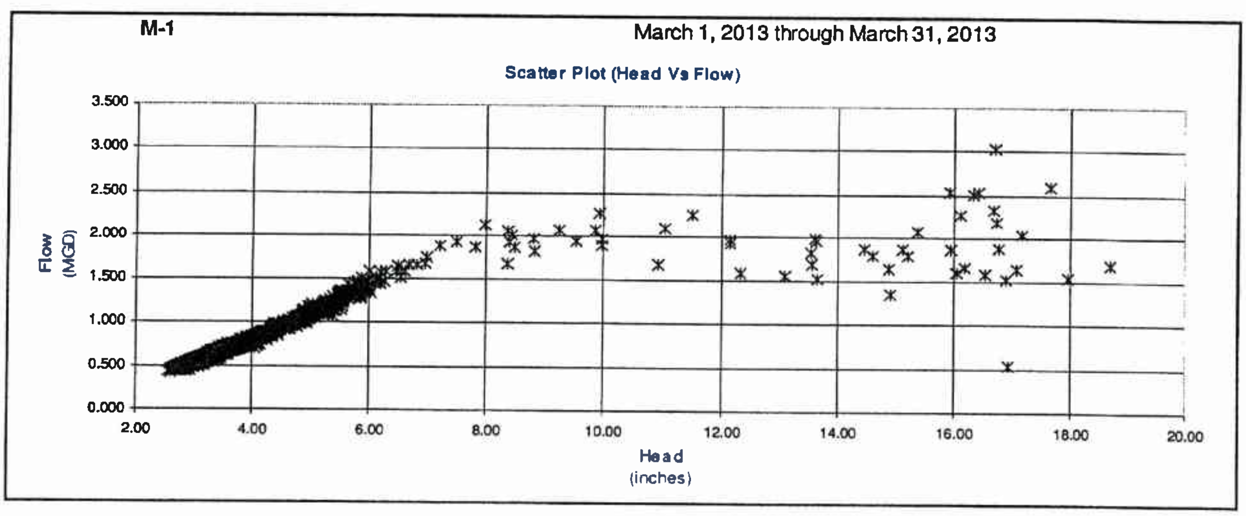




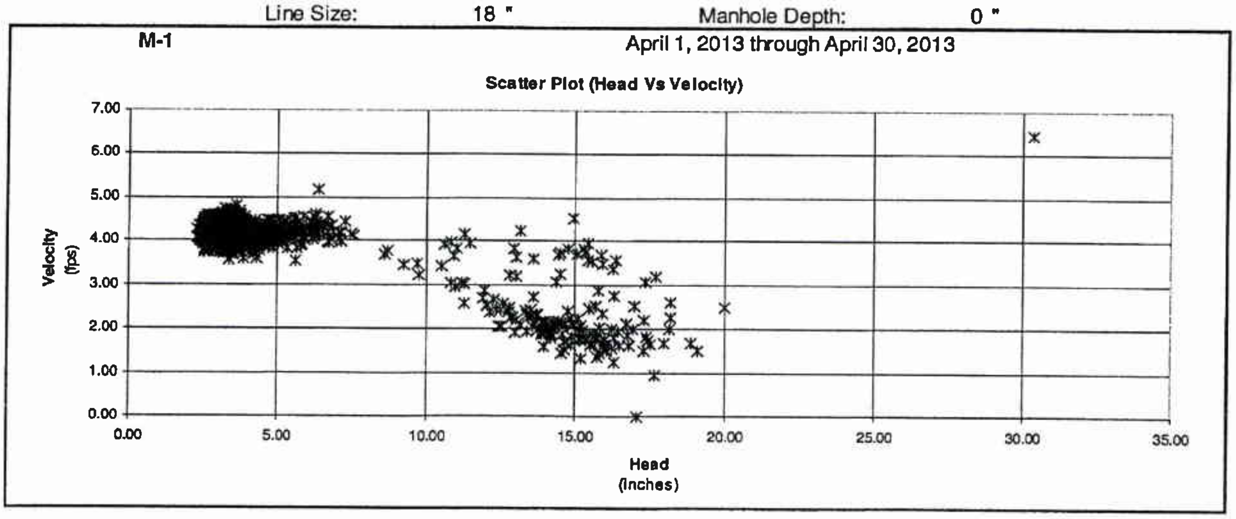
Line Size: 18 " Manhole Depth: 0 "

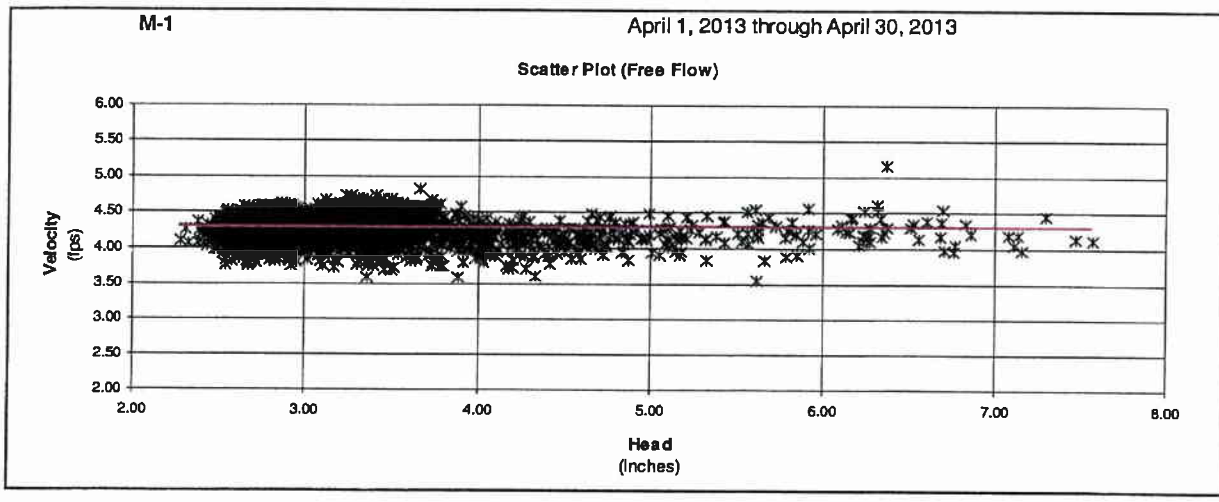


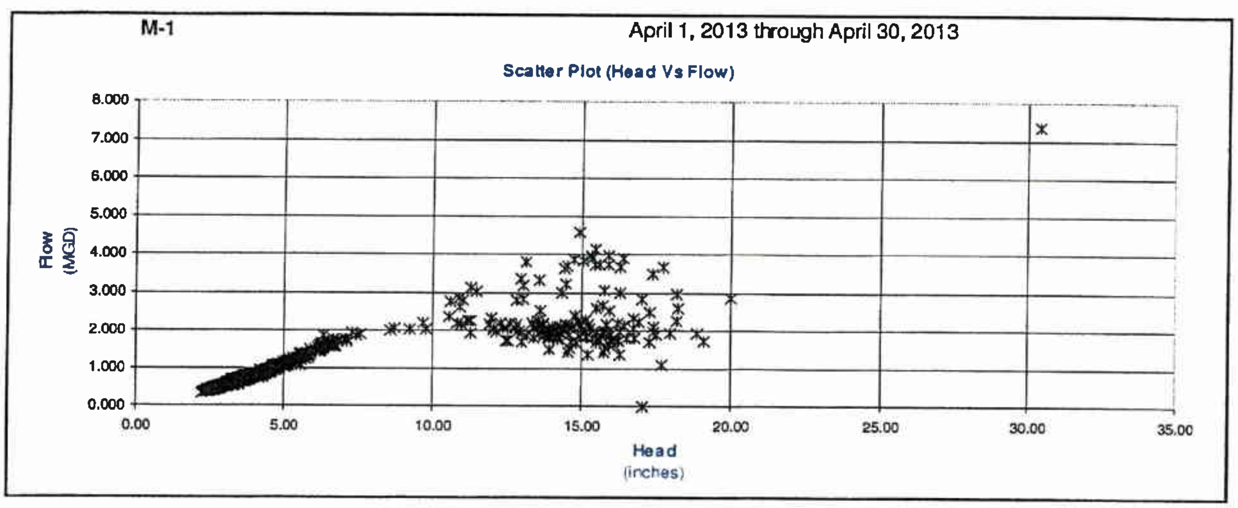




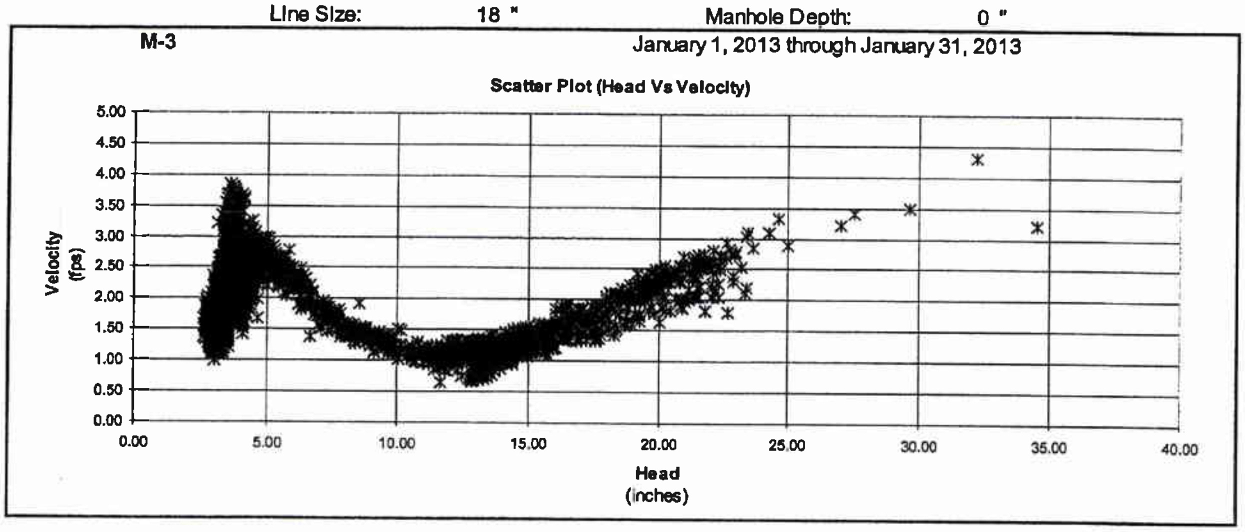
Line Size: 18 " Manhole Depth: 0 "

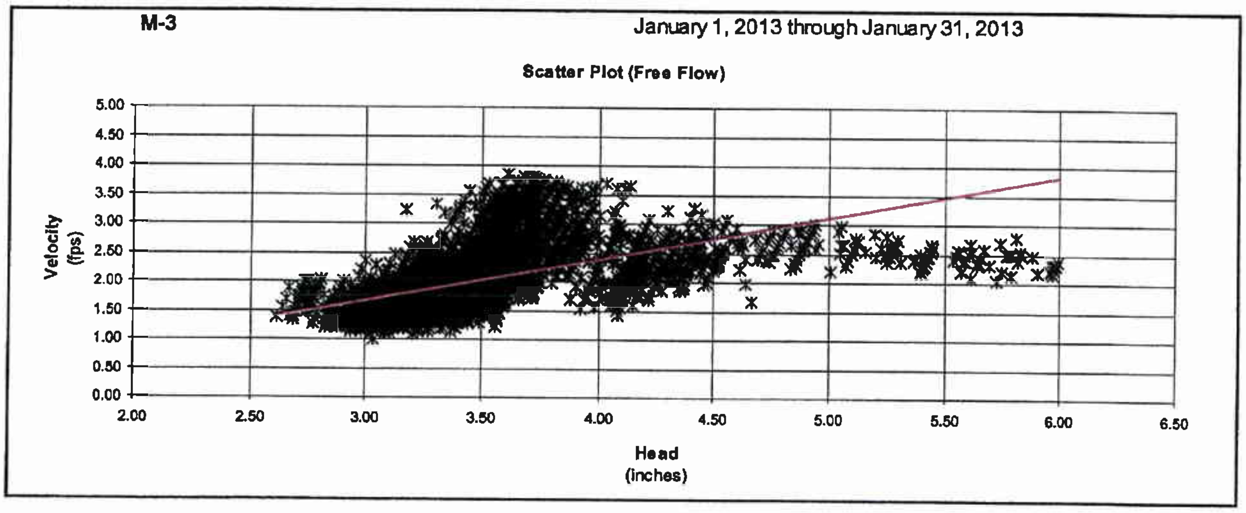


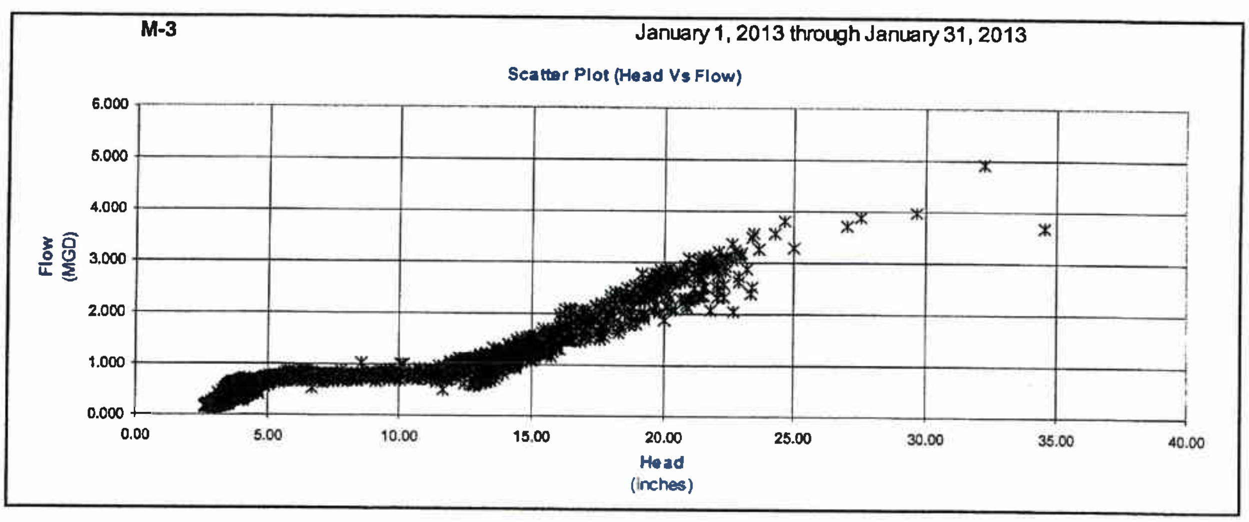




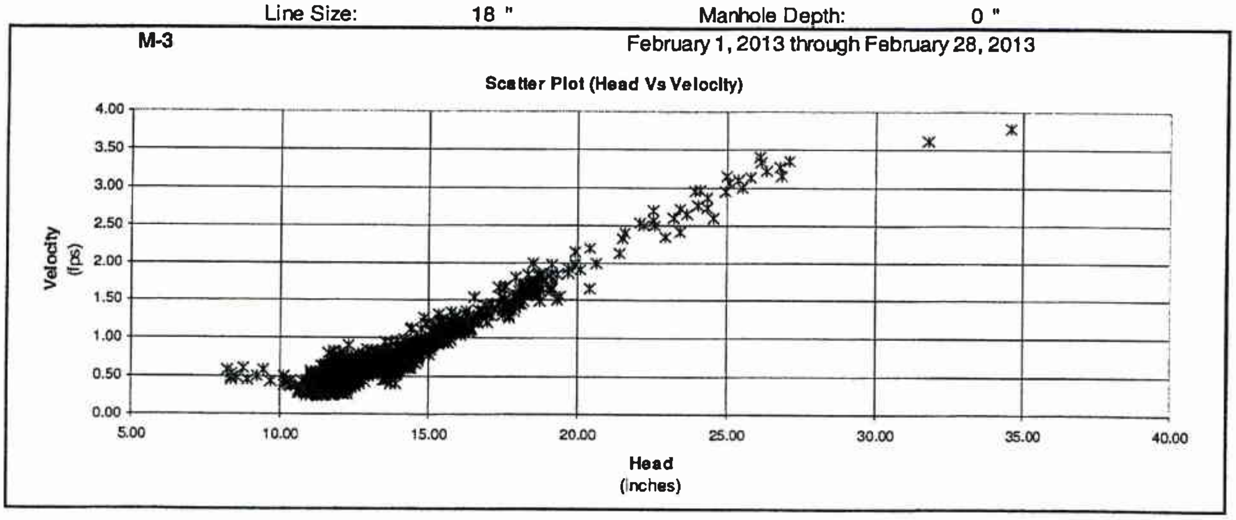
Line Size: 18 " Manhole Depth: 0 "

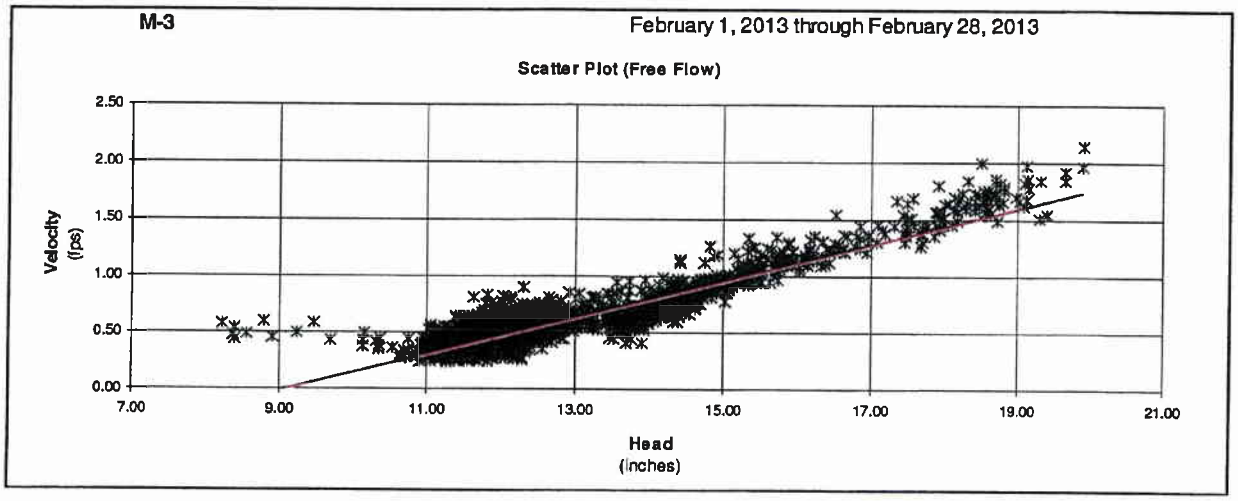


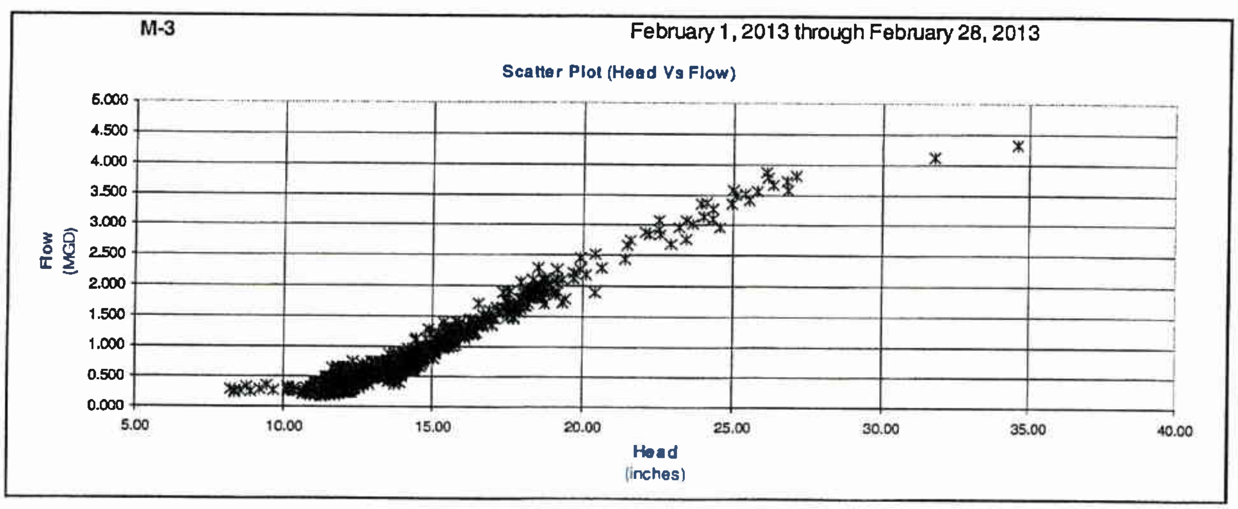




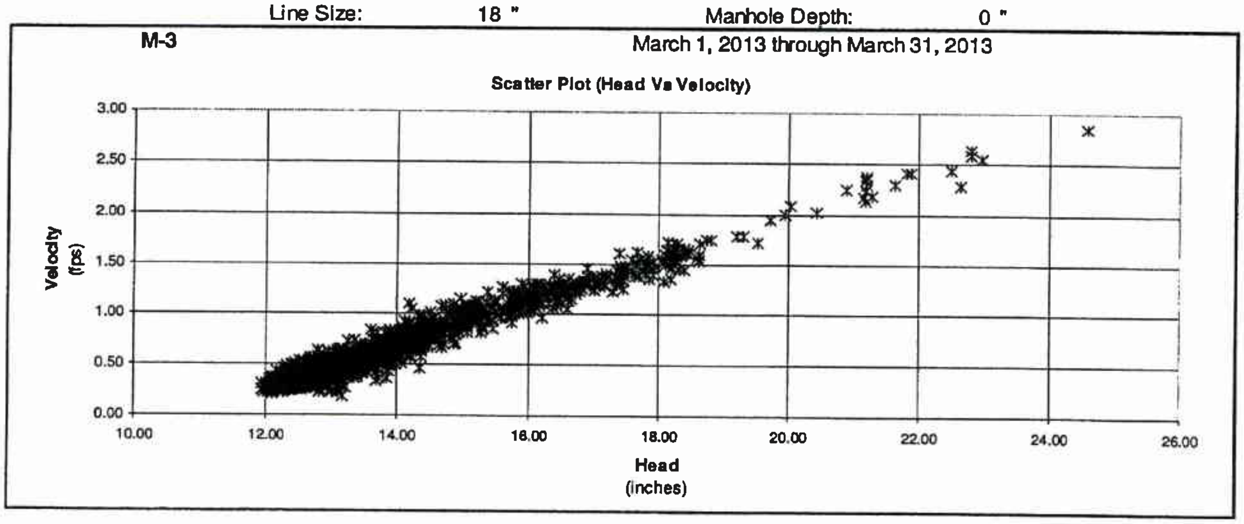
Line Size: 18 " Manhole Depth: 0 "

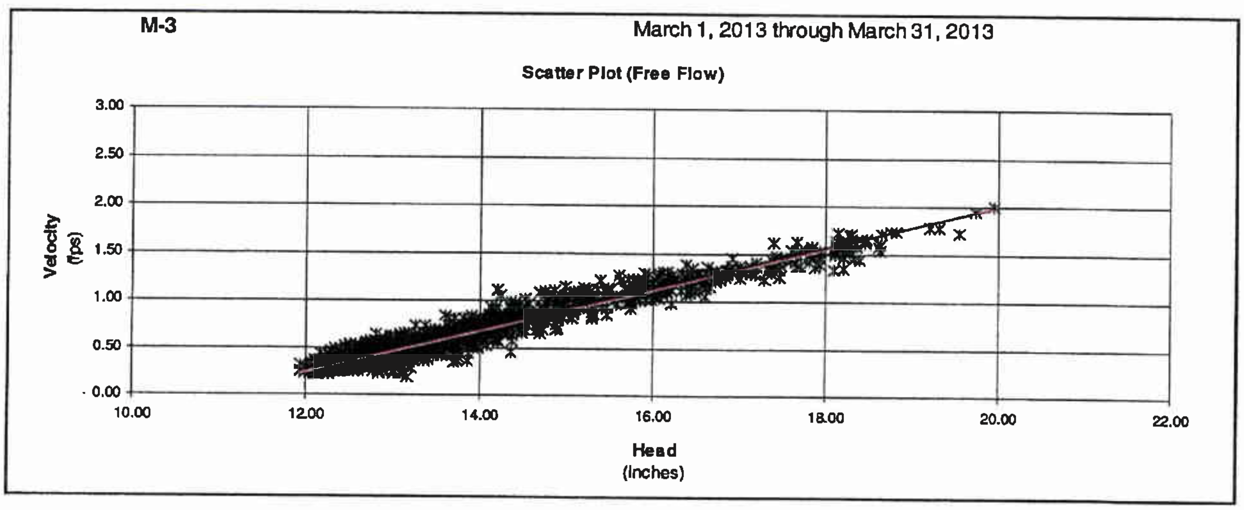


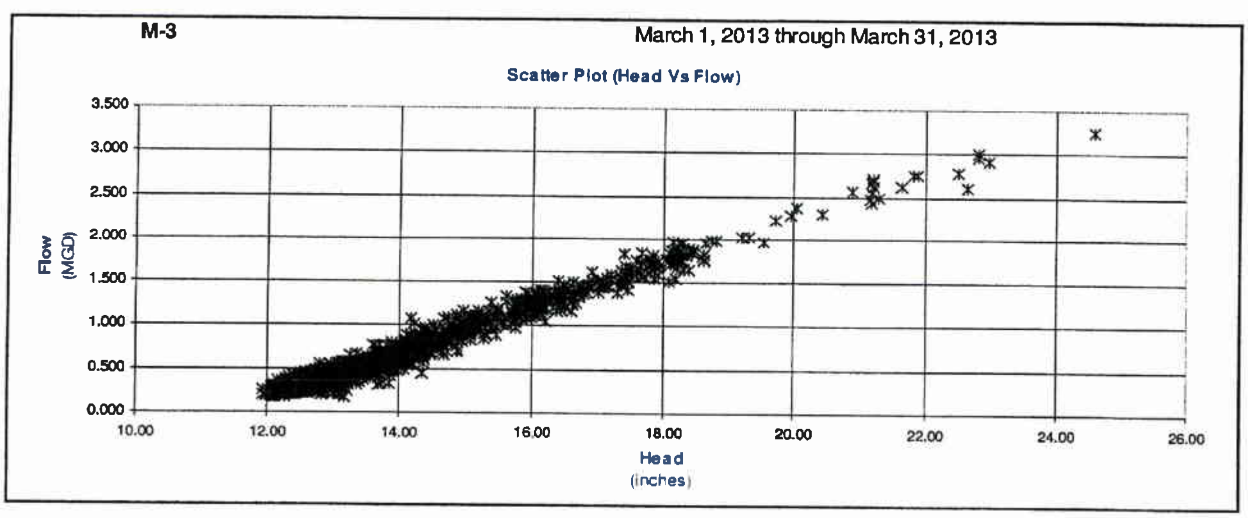




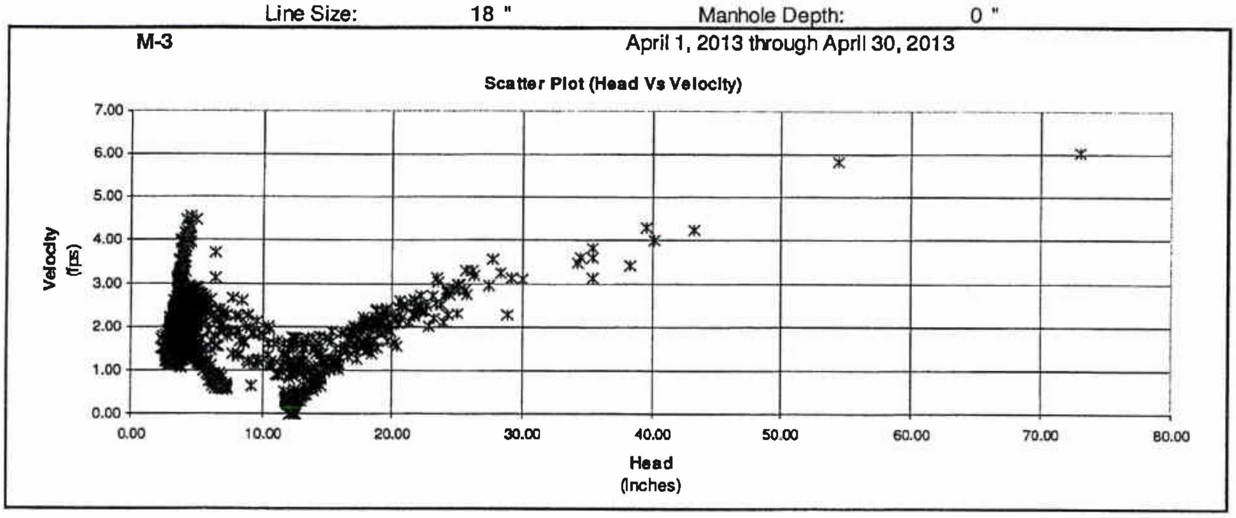
Line Size: 18 "   Manhole Depth: 0 "

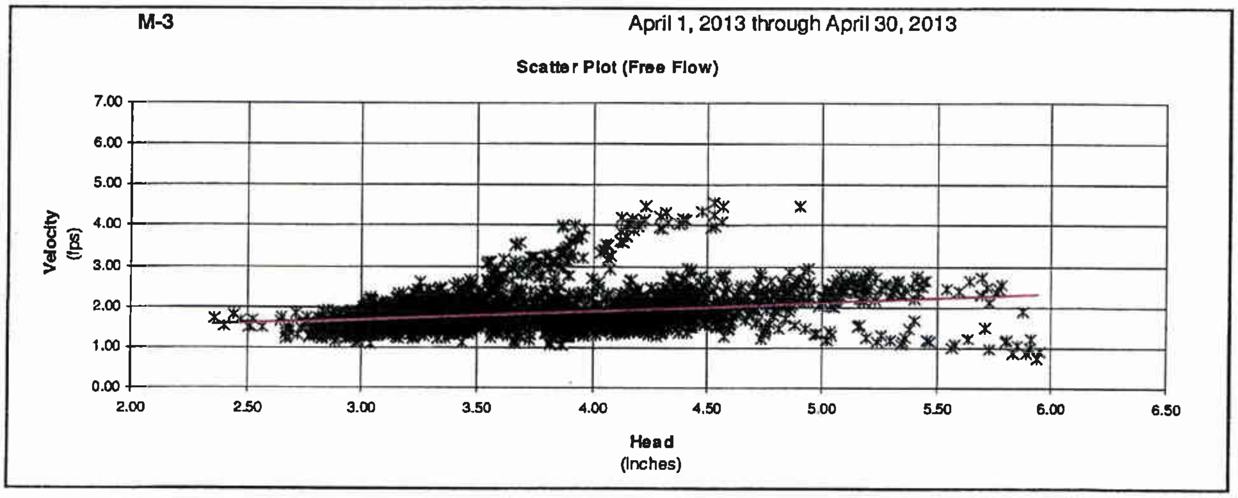


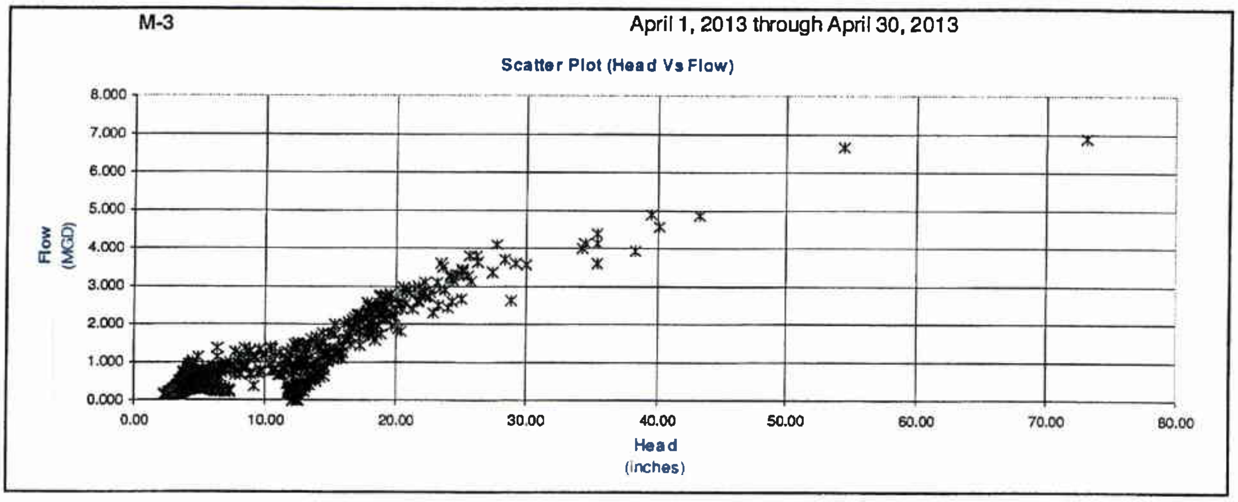




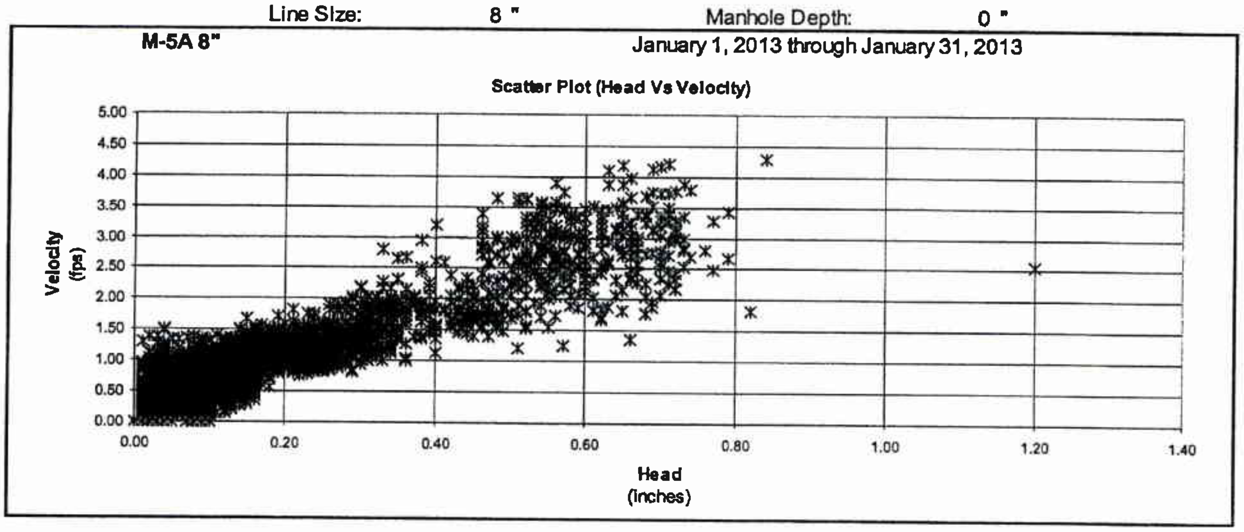
Line Size: 18 " Manhole Depth: 0 "

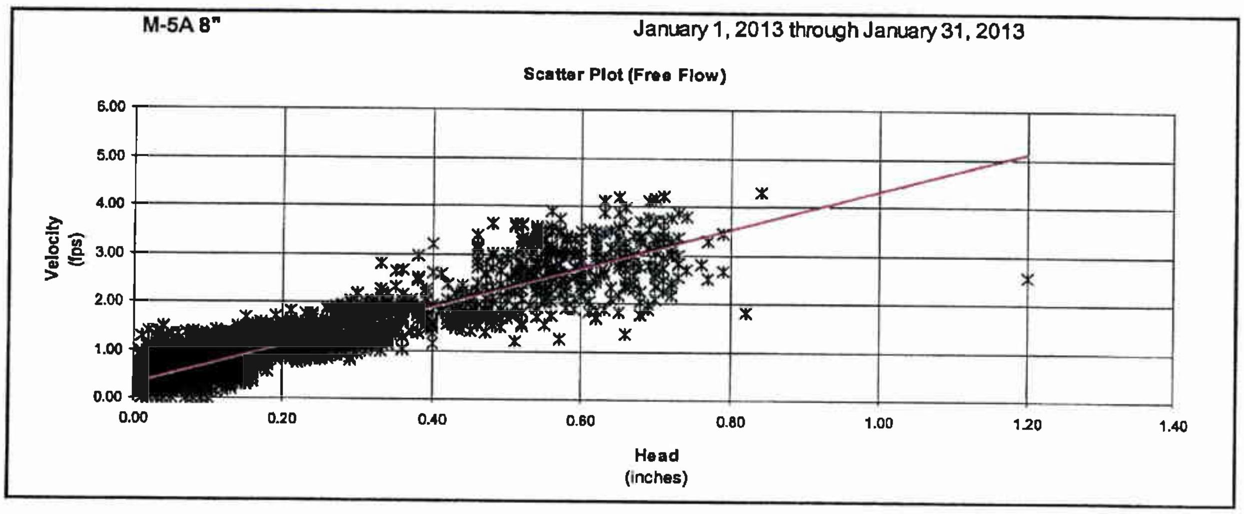


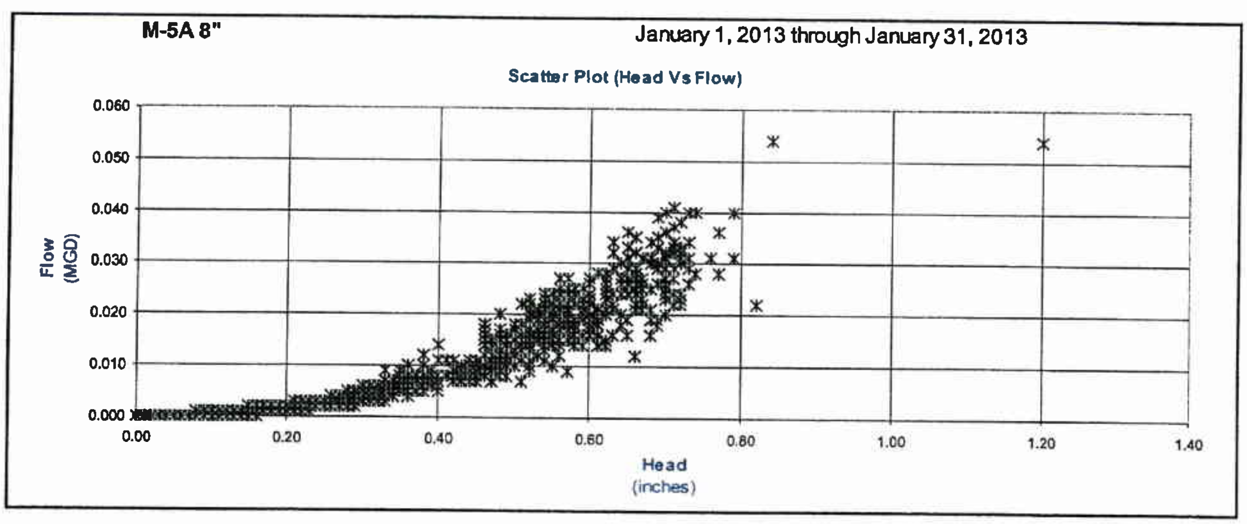




Line Size: 8 " Manhole Depth: 0 "



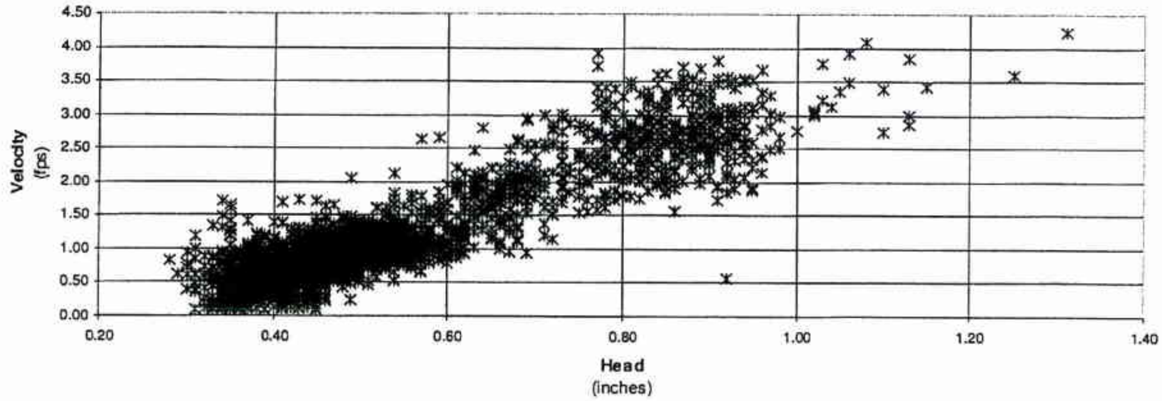




Line Size: 8 "   Manhole Depth: 0 "

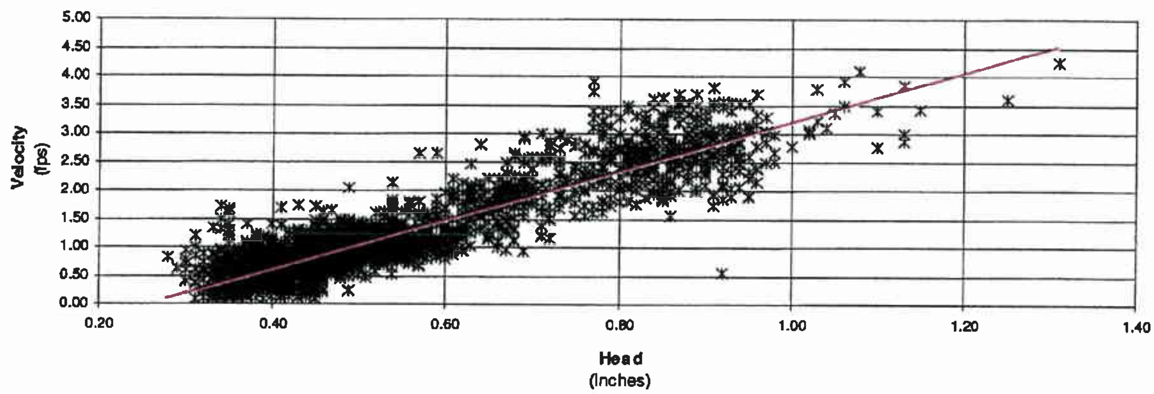
M-5A 8"   February 1, 2013 through February 28, 2013

Scatter Plot (Head Vs Velocity)



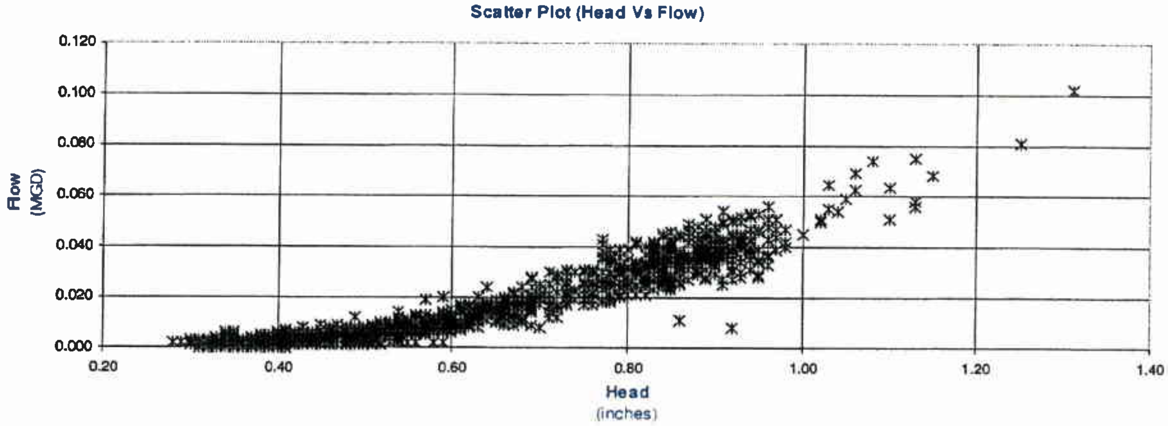
M-5A 8"   February 1, 2013 through February 28, 2013

Scatter Plot (Free Flow)

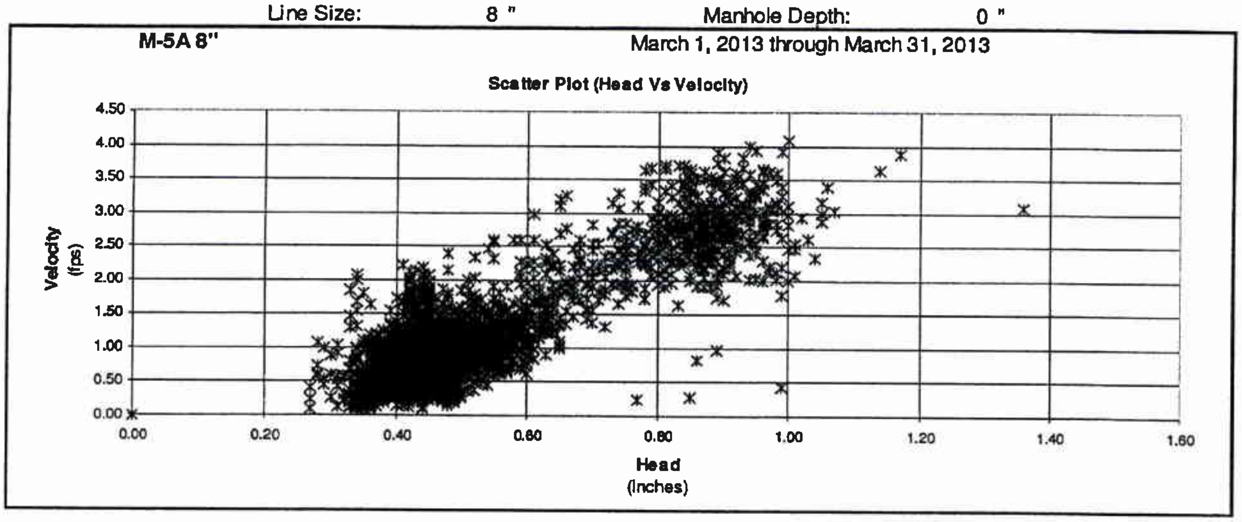


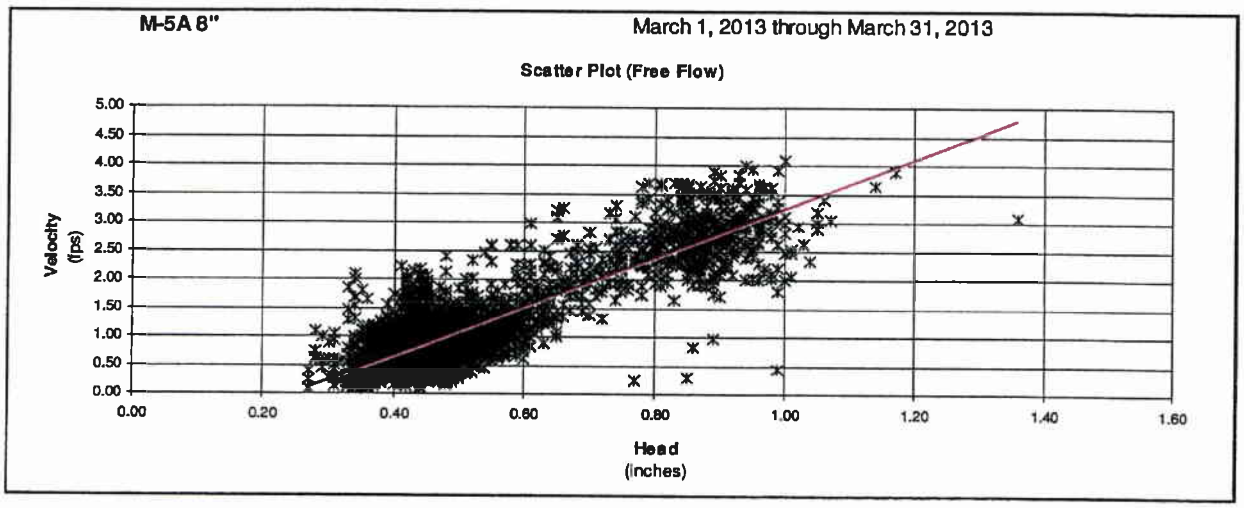
M-5A 8"   February 1, 2013 through February 28, 2013

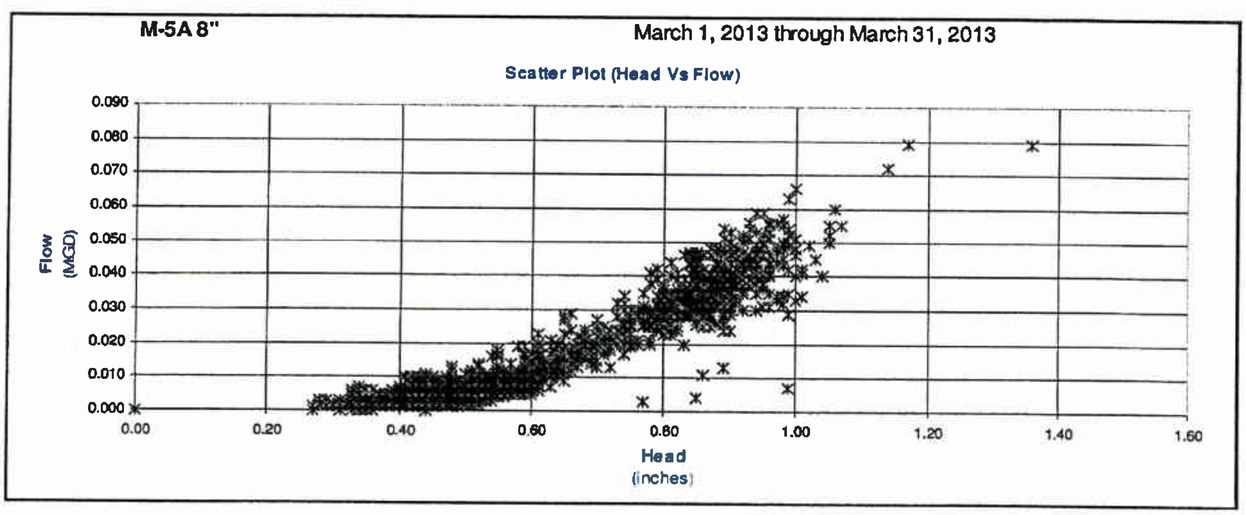
Scatter Plot (Head Vs Flow)



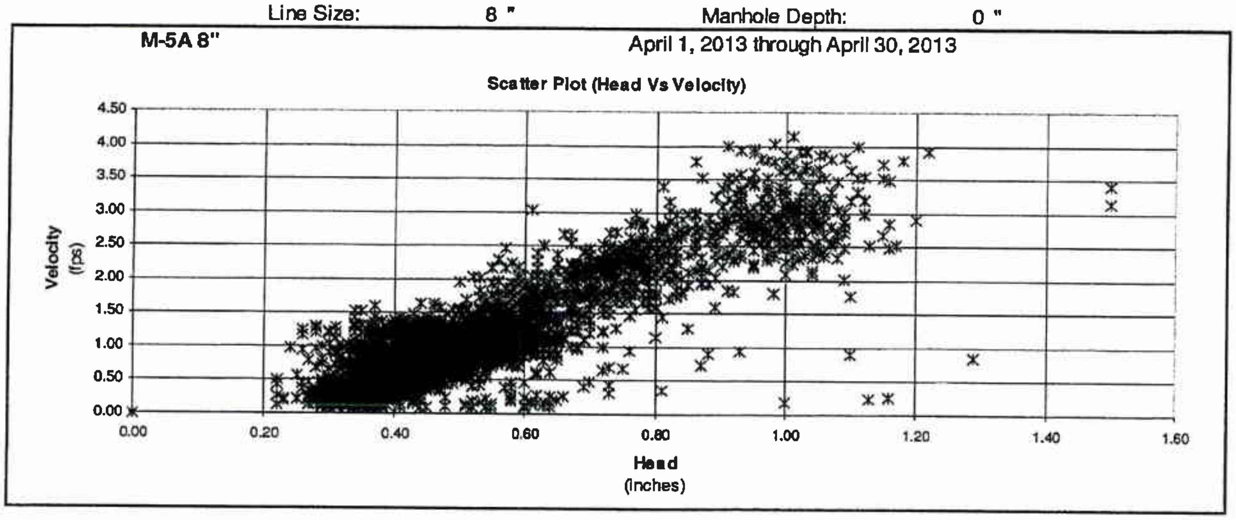
Line Size: 8 " Manhole Depth: 0 "

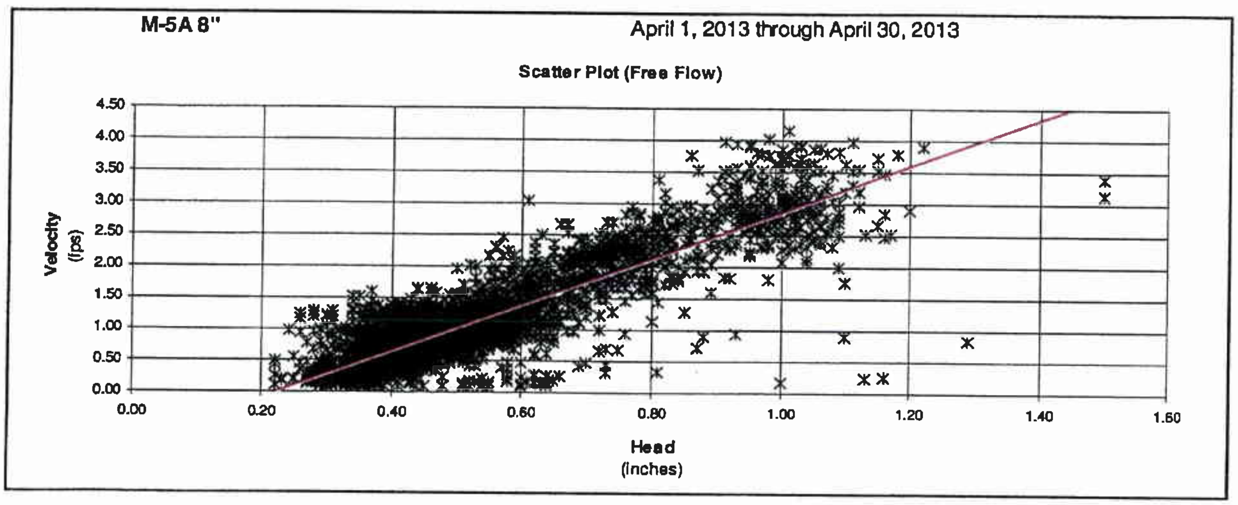


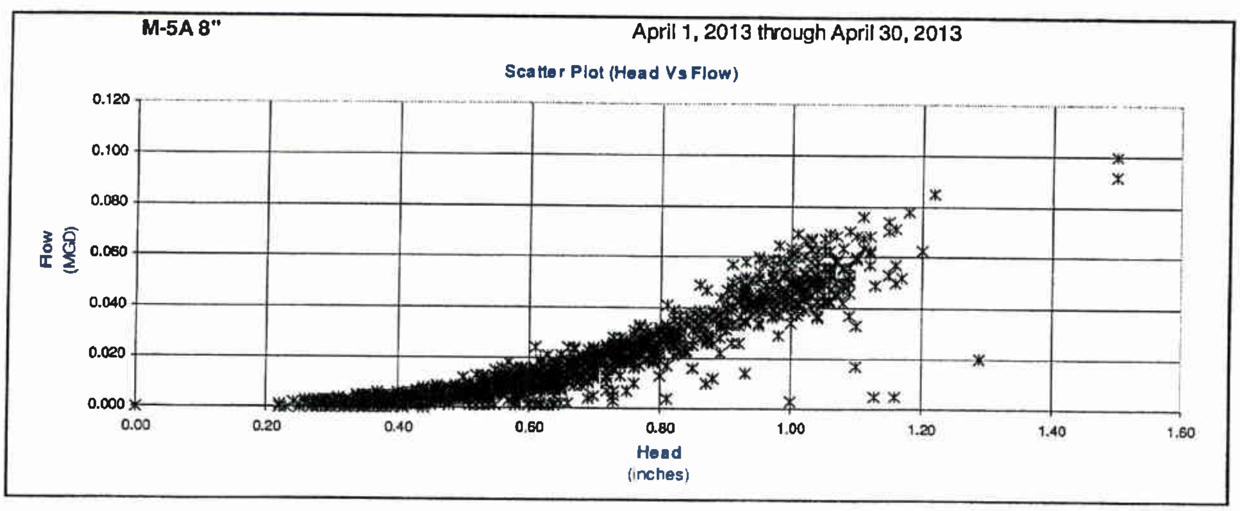




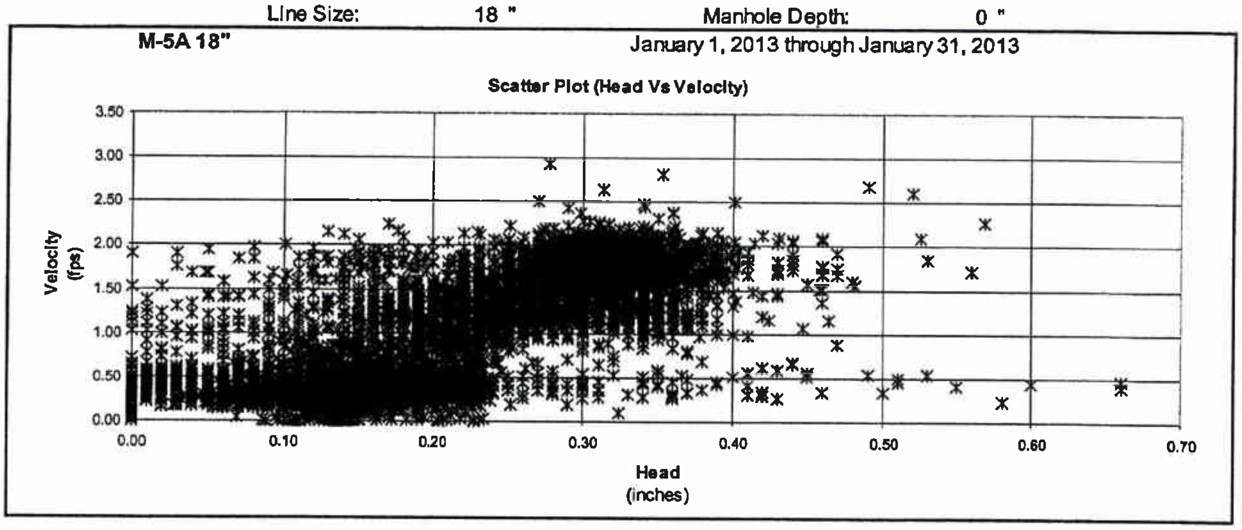
Line Size: 8 " Manhole Depth: 0 "

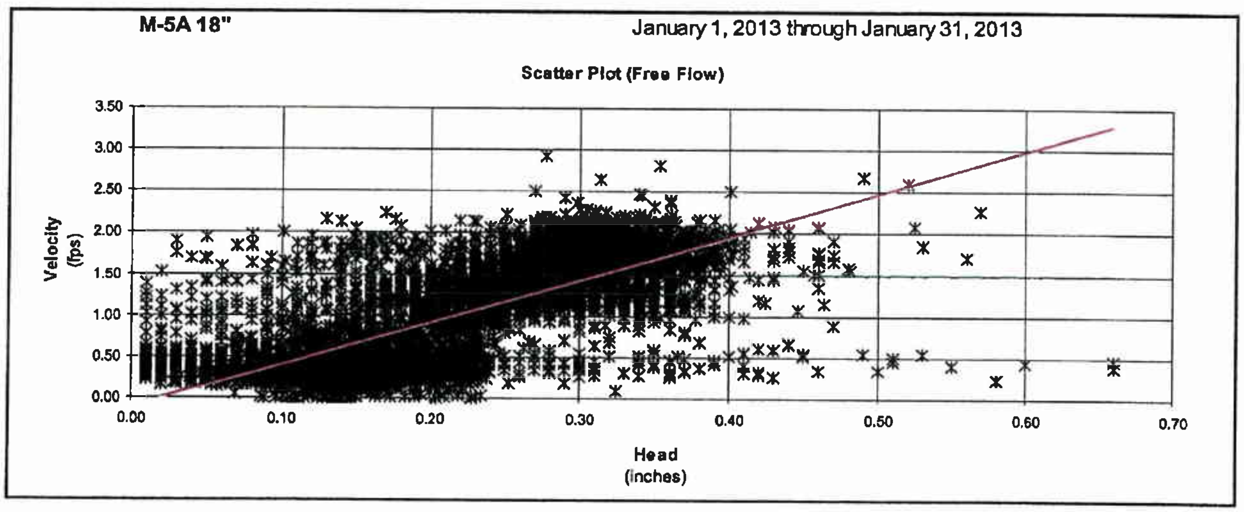


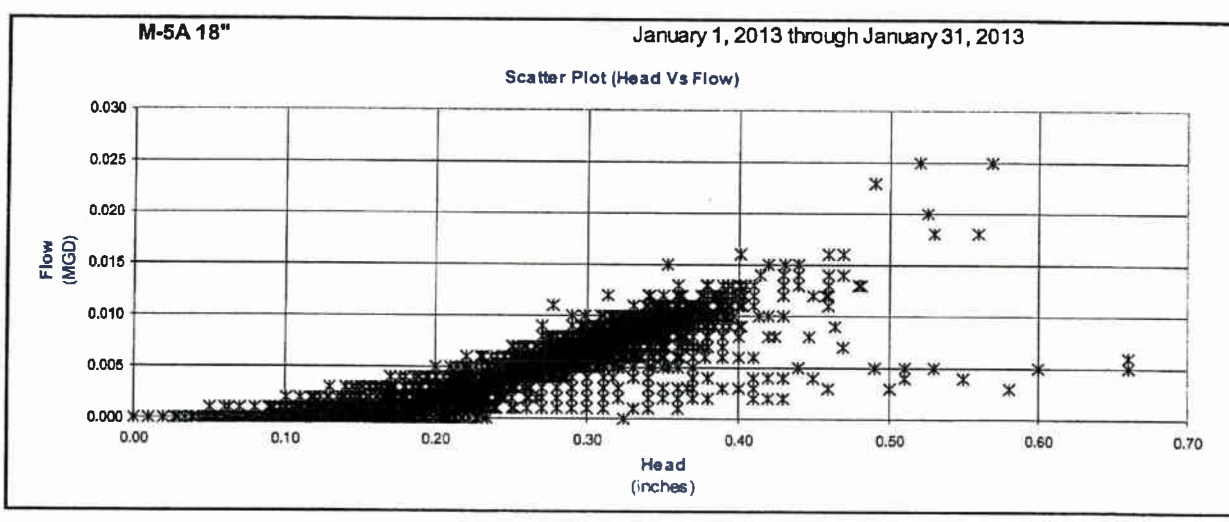




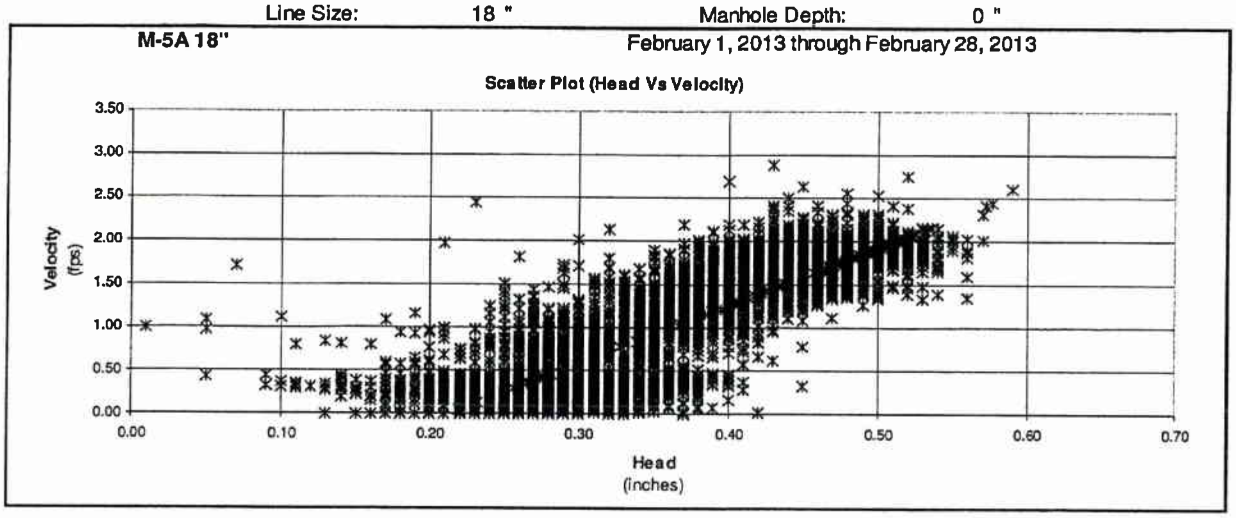
Line Size: 18 " Manhole Depth: 0 "

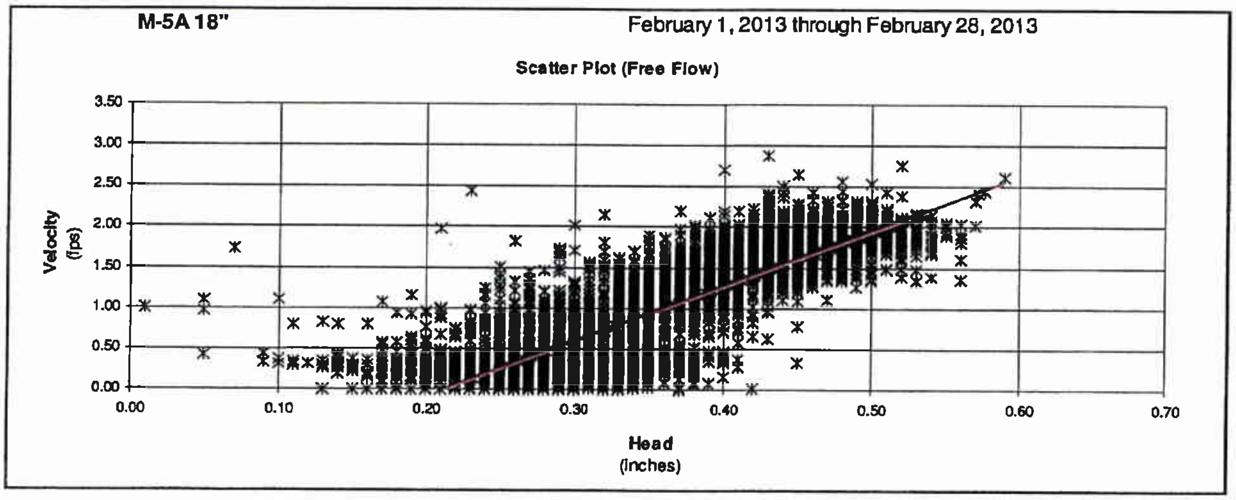


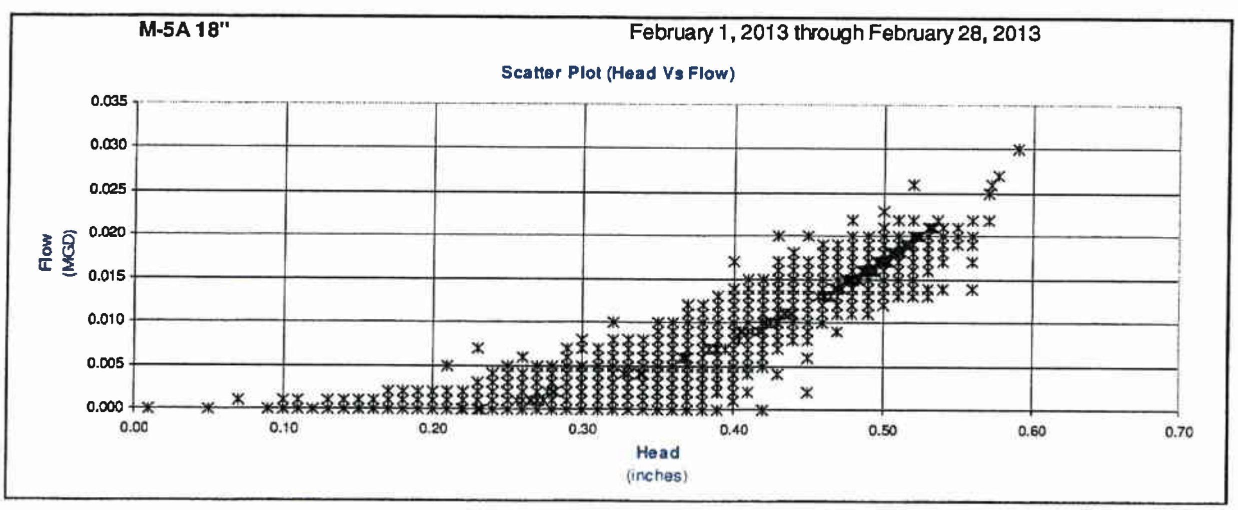




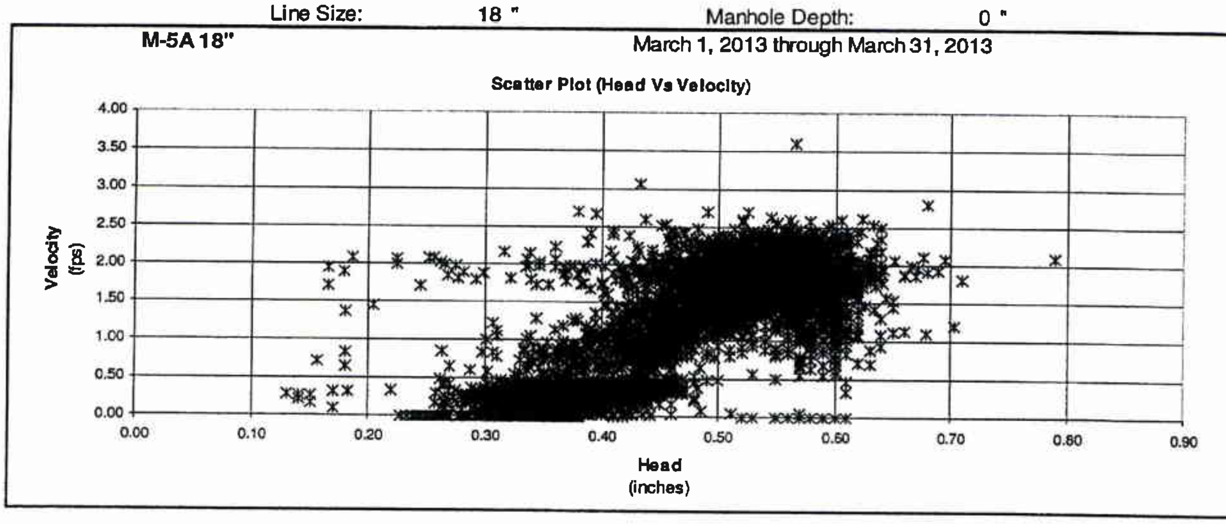
Line Size: 18 " Manhole Depth: 0 "

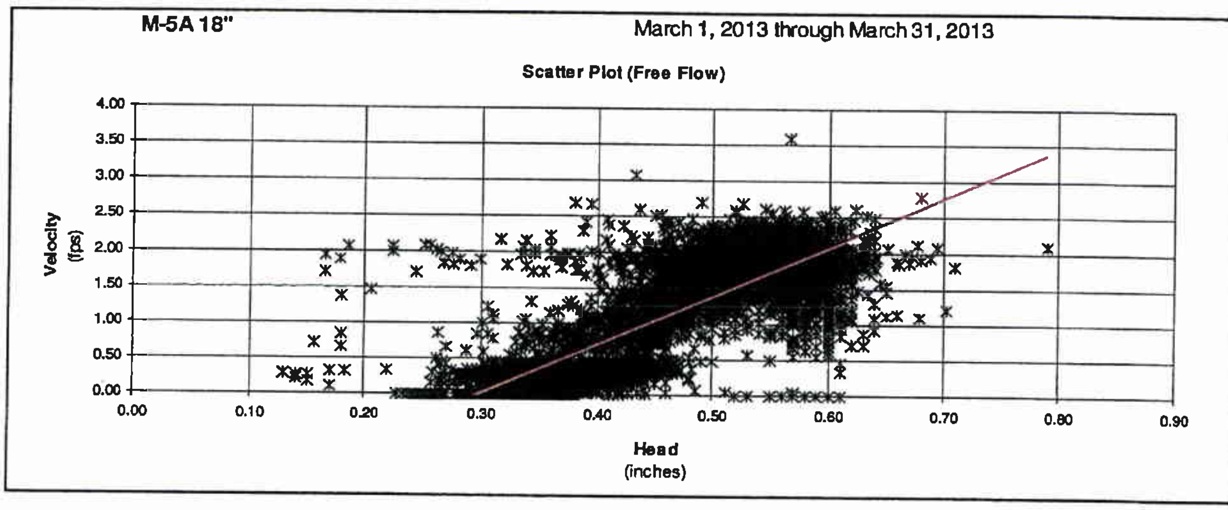


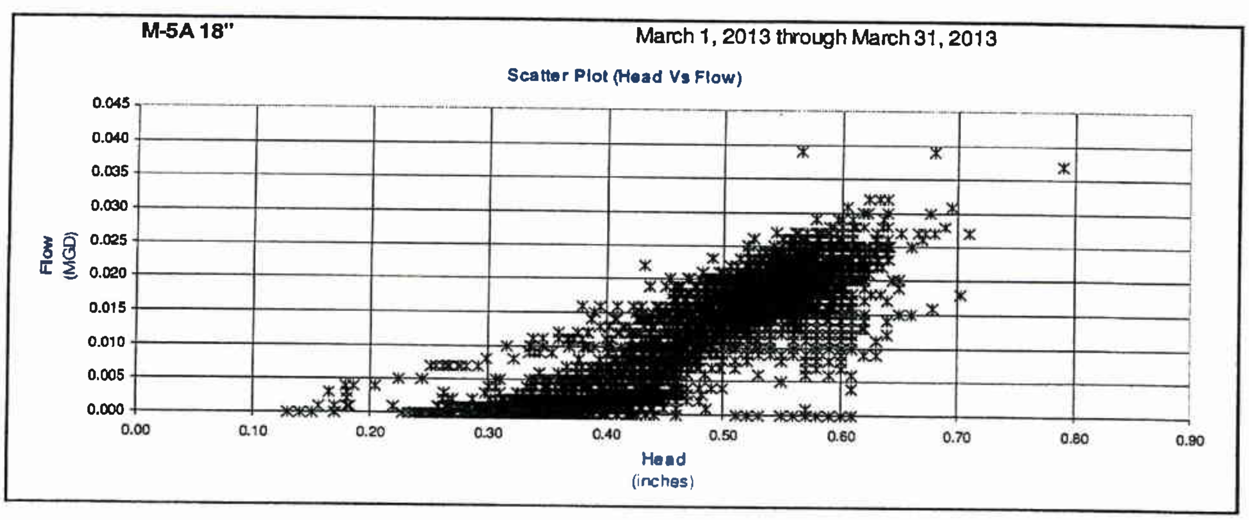




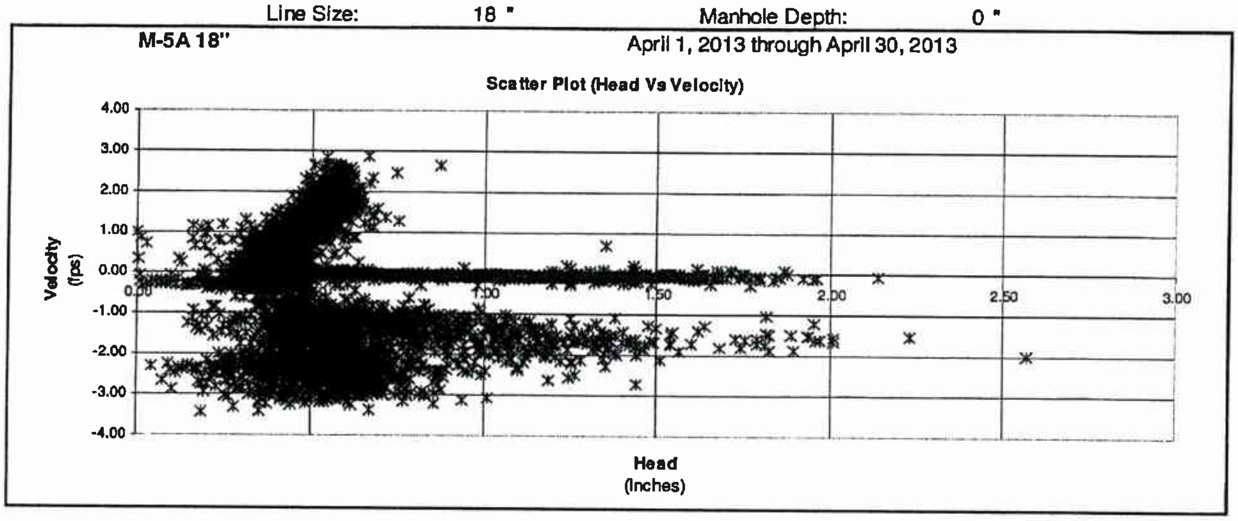
Line Size: 18 "　　Manhole Depth: 0 "

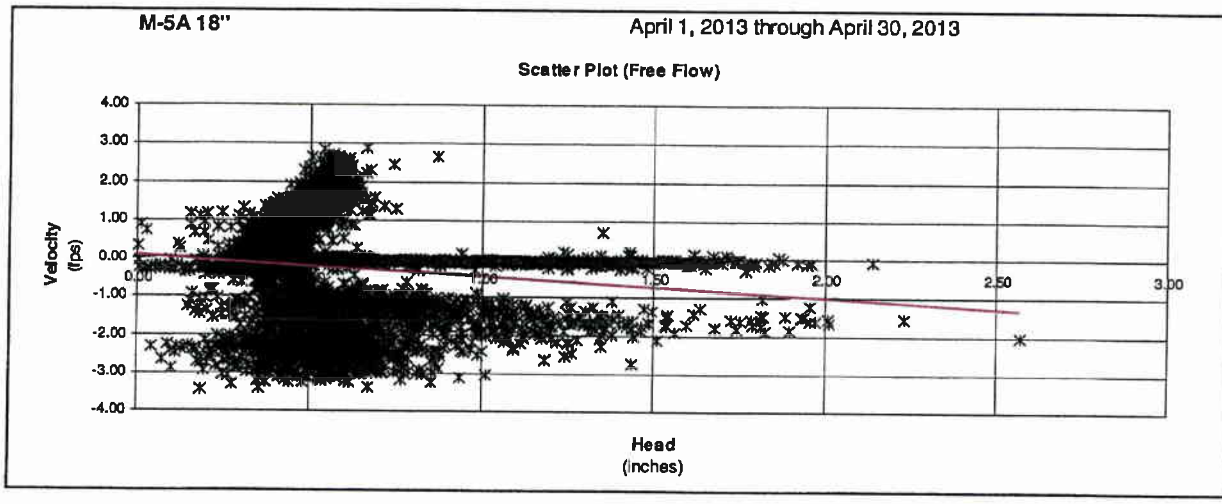


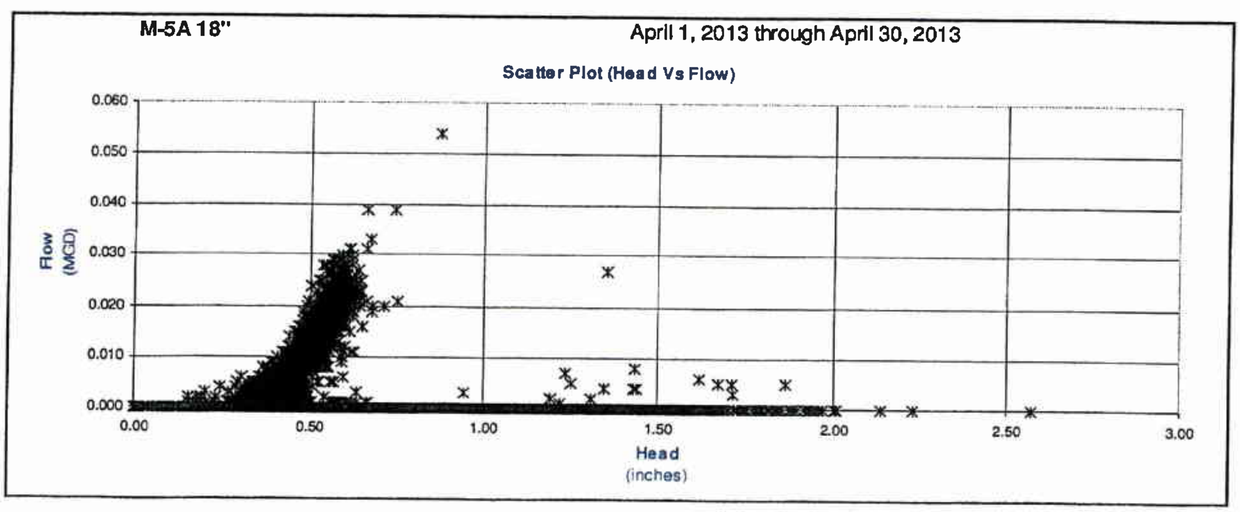




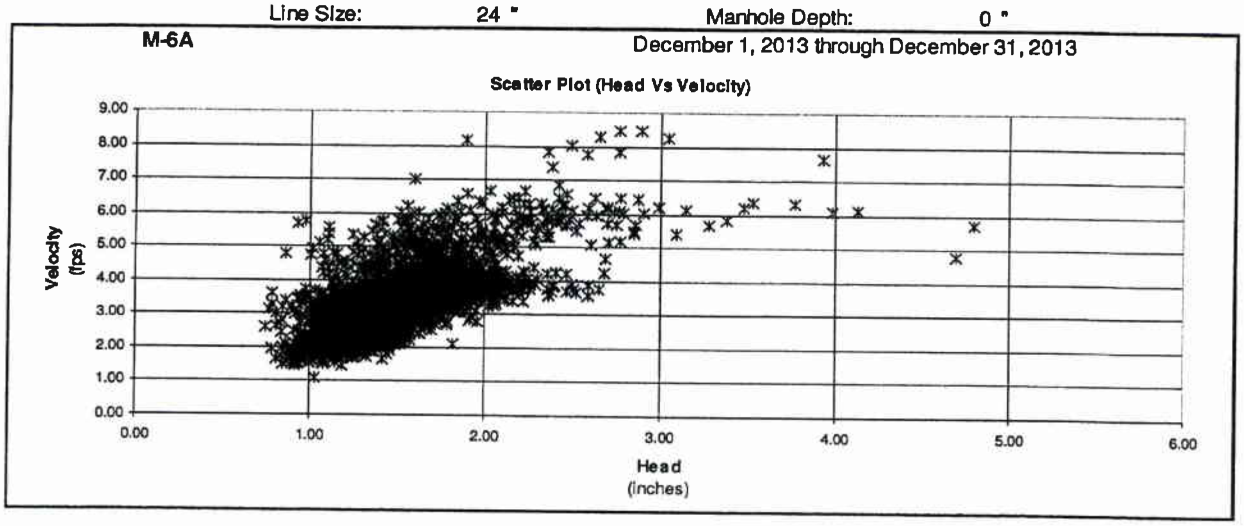
Line Size: 18 " Manhole Depth: 0 "

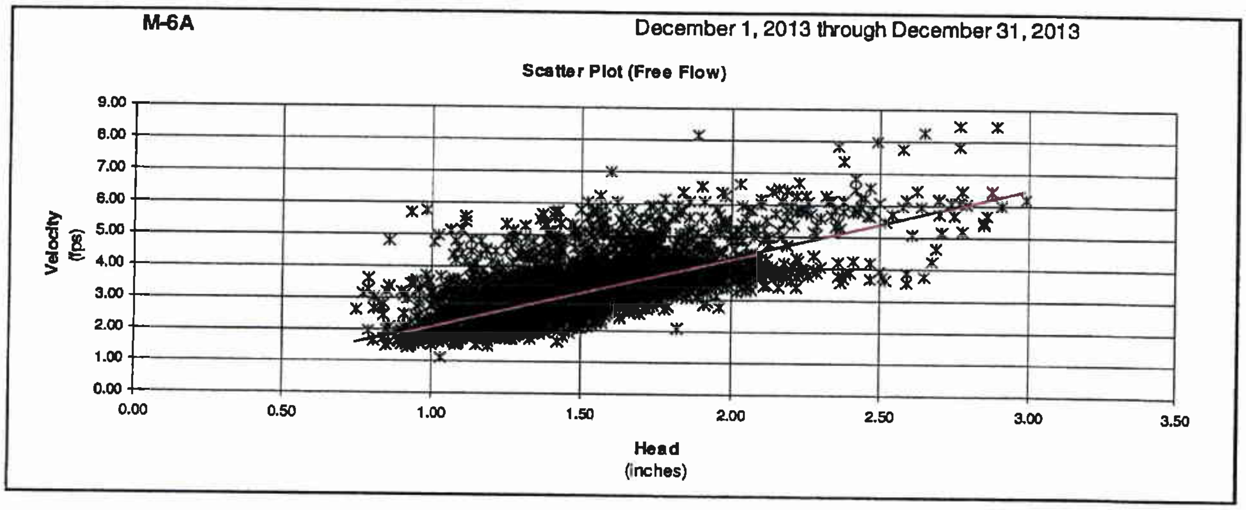


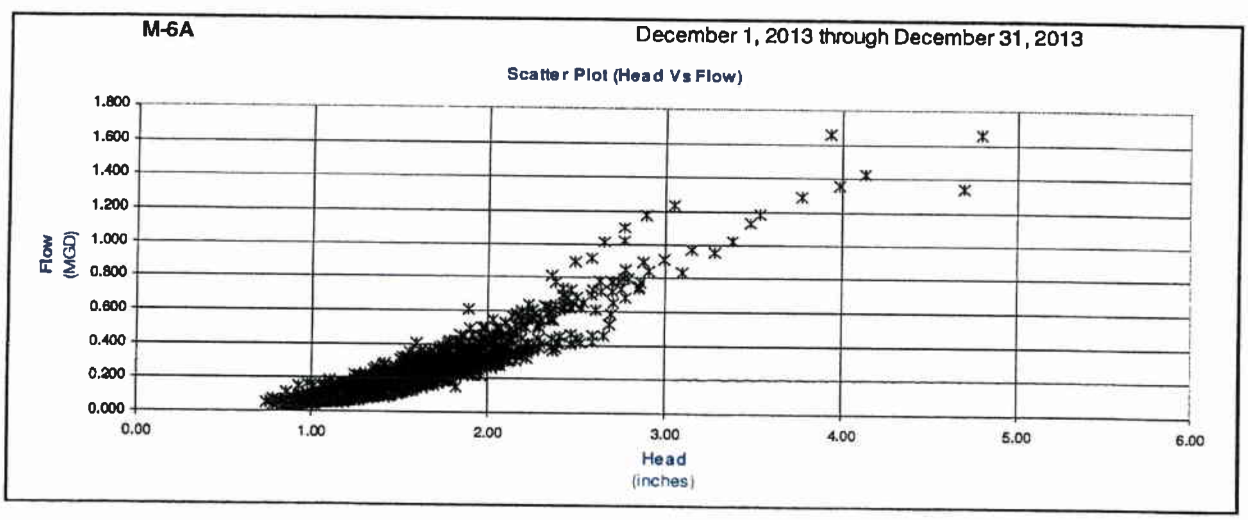




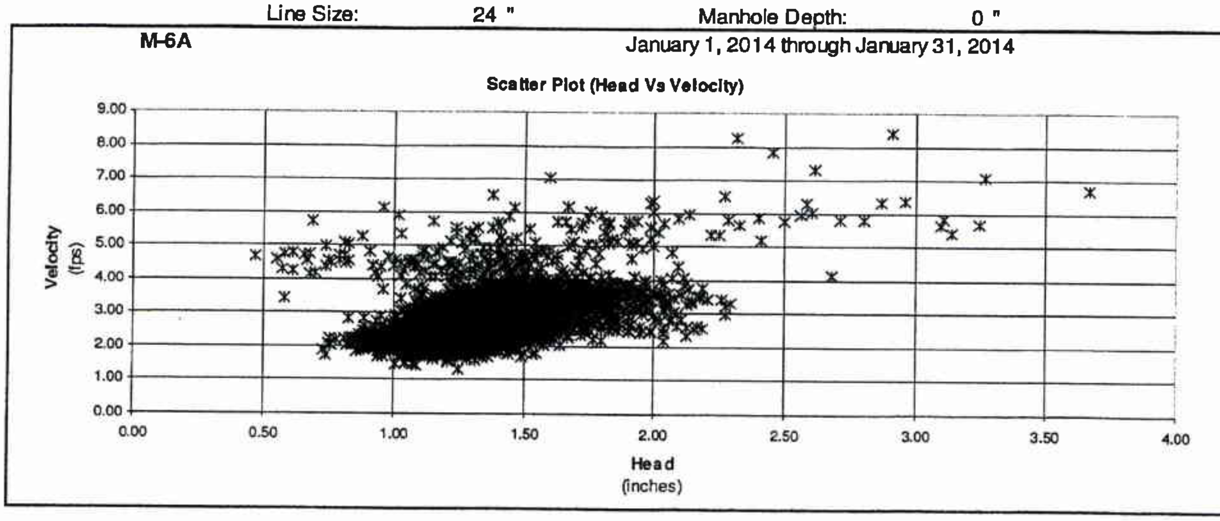
Line Size: 24 " Manhole Depth: 0 "

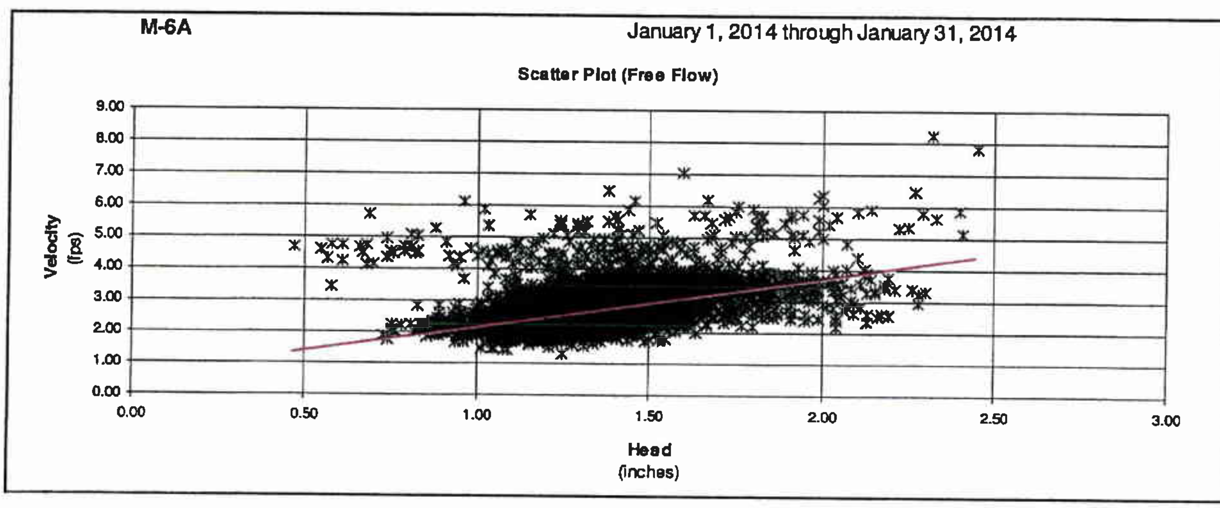


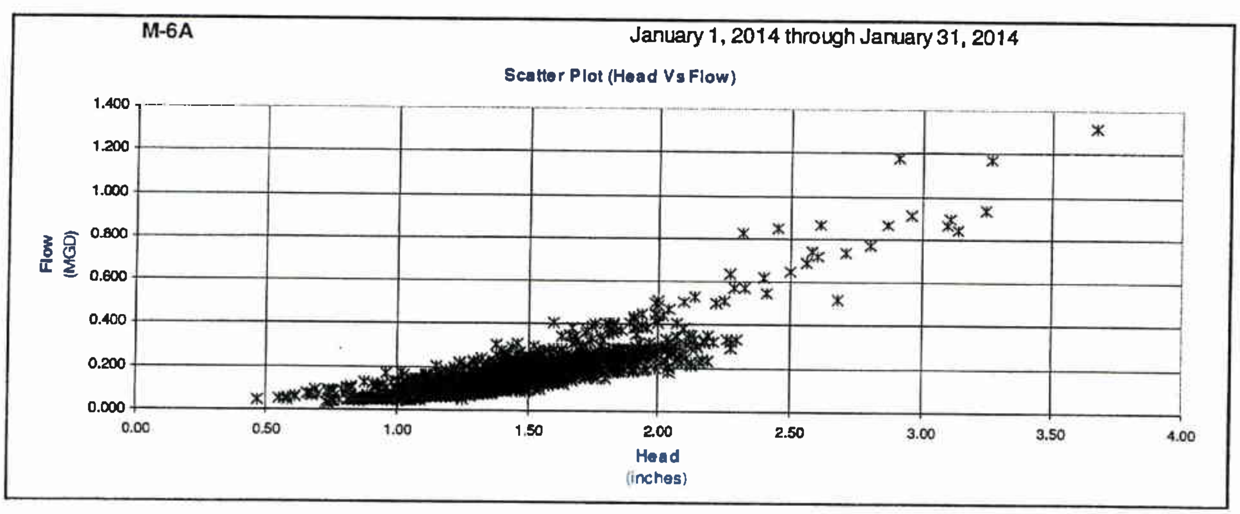




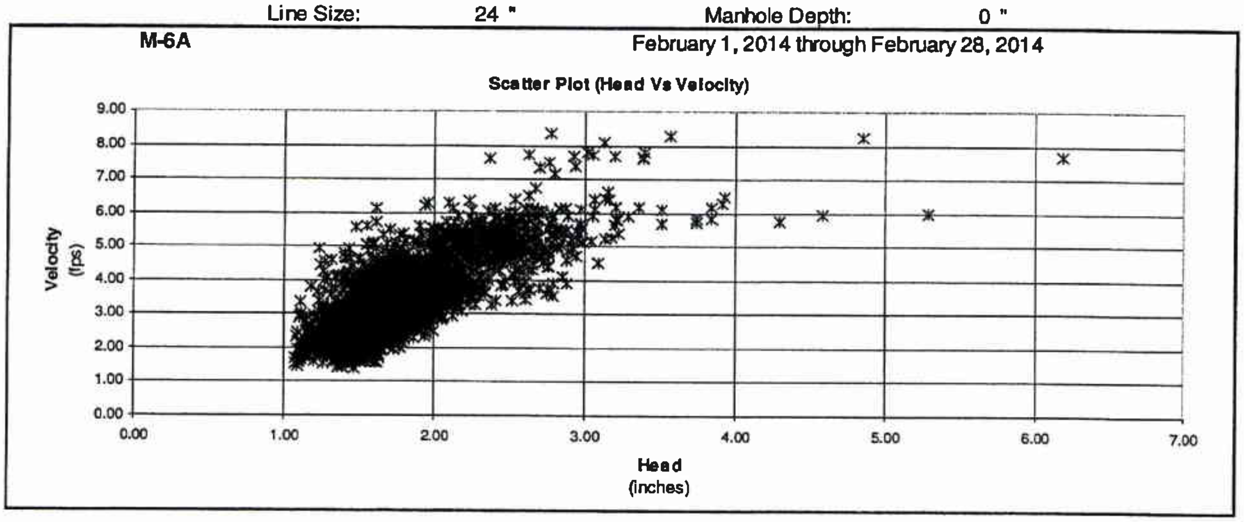
Line Size: 24 " Manhole Depth: 0 "

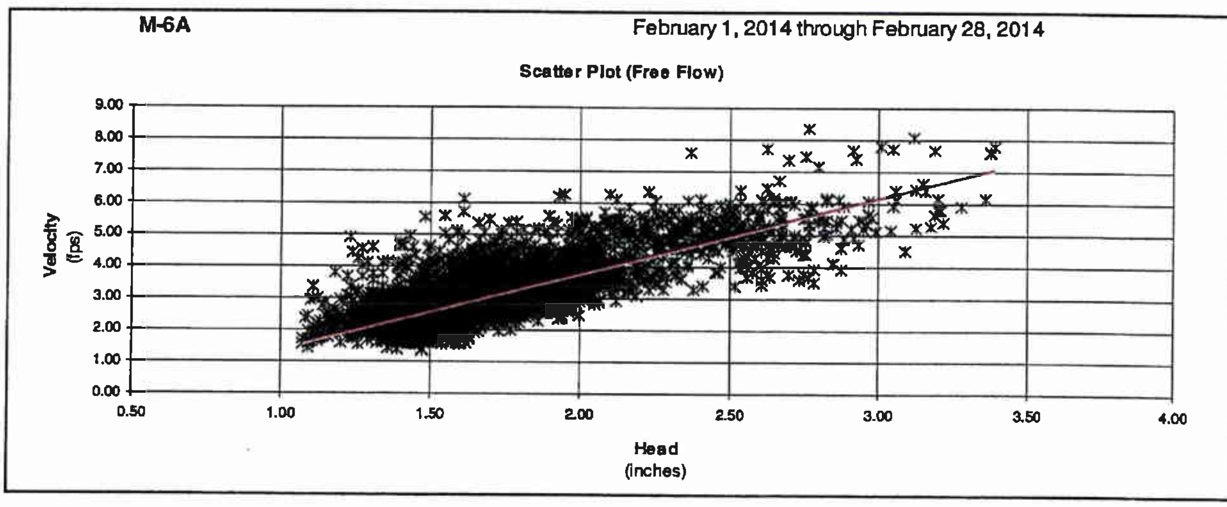


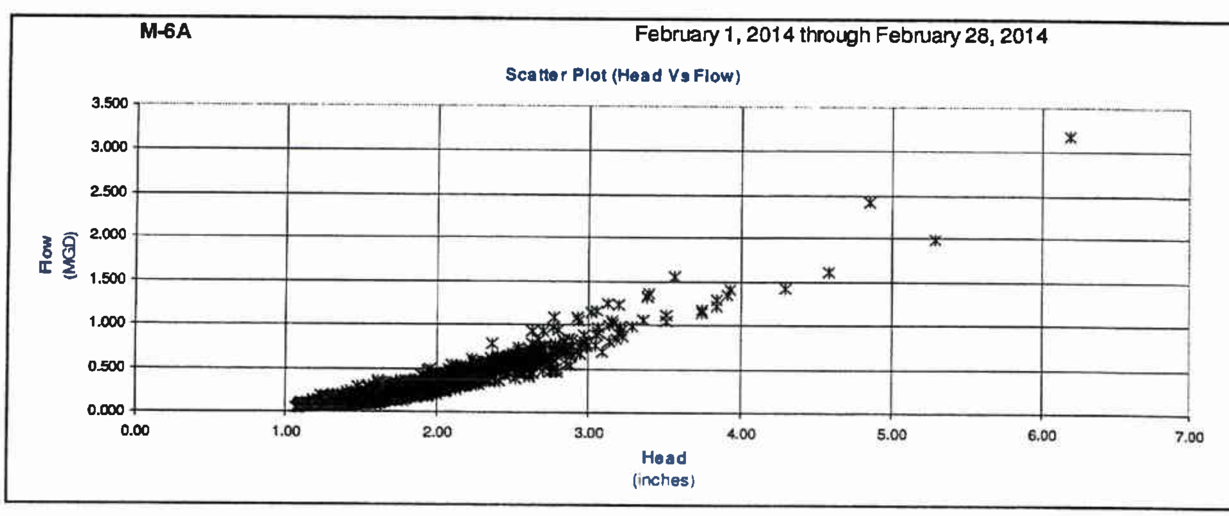




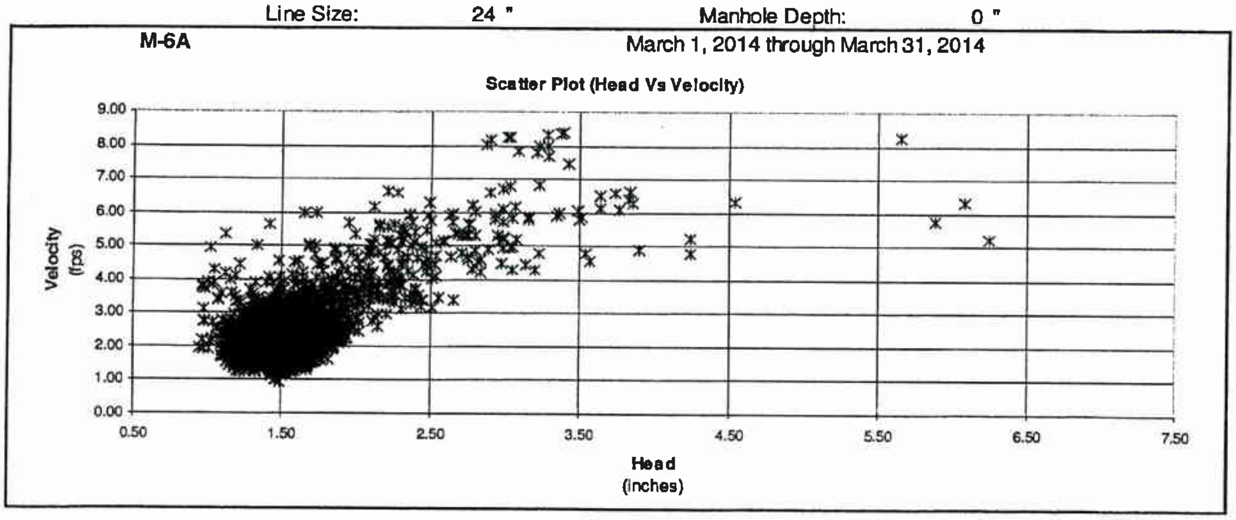
Line Size: 24 " Manhole Depth: 0 "

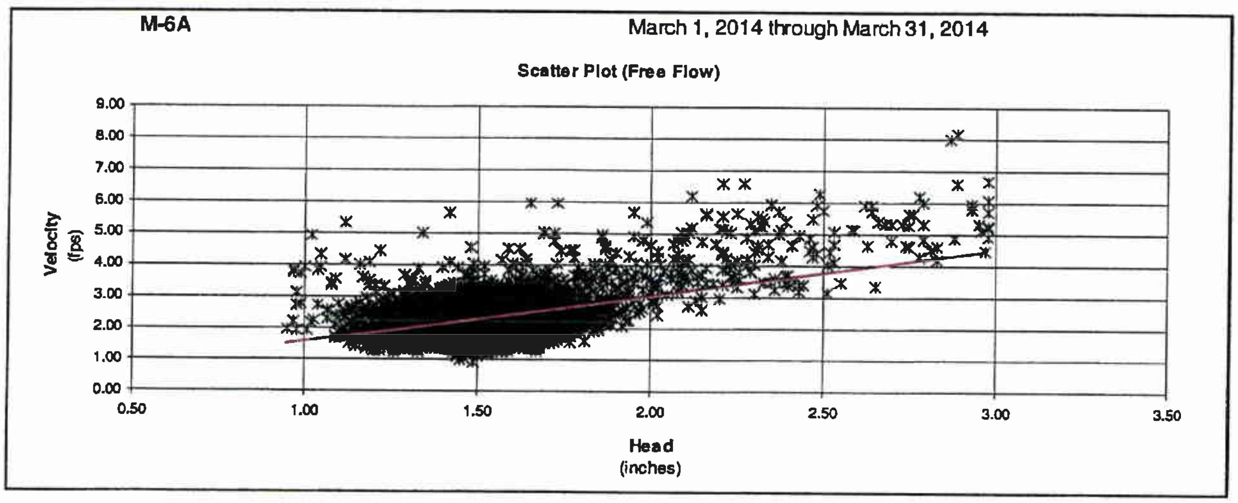


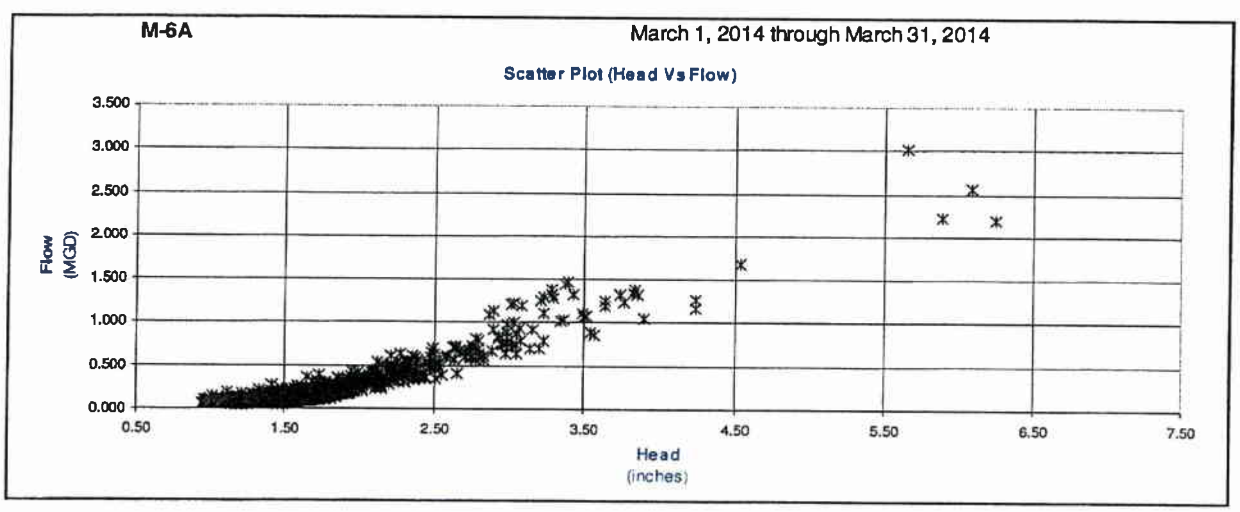




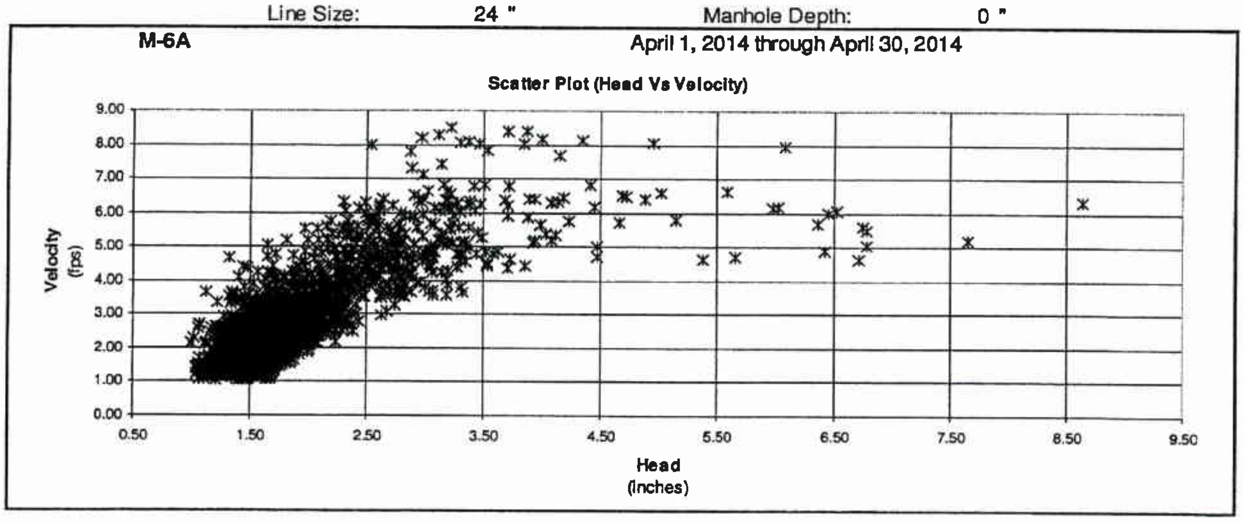
Line Size: 24 " Manhole Depth: 0 "

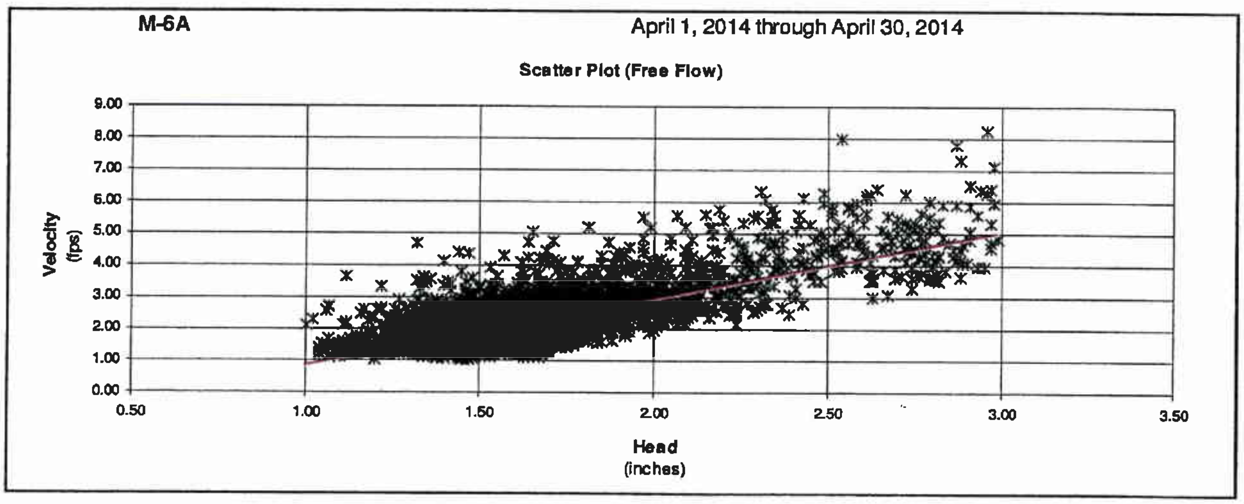


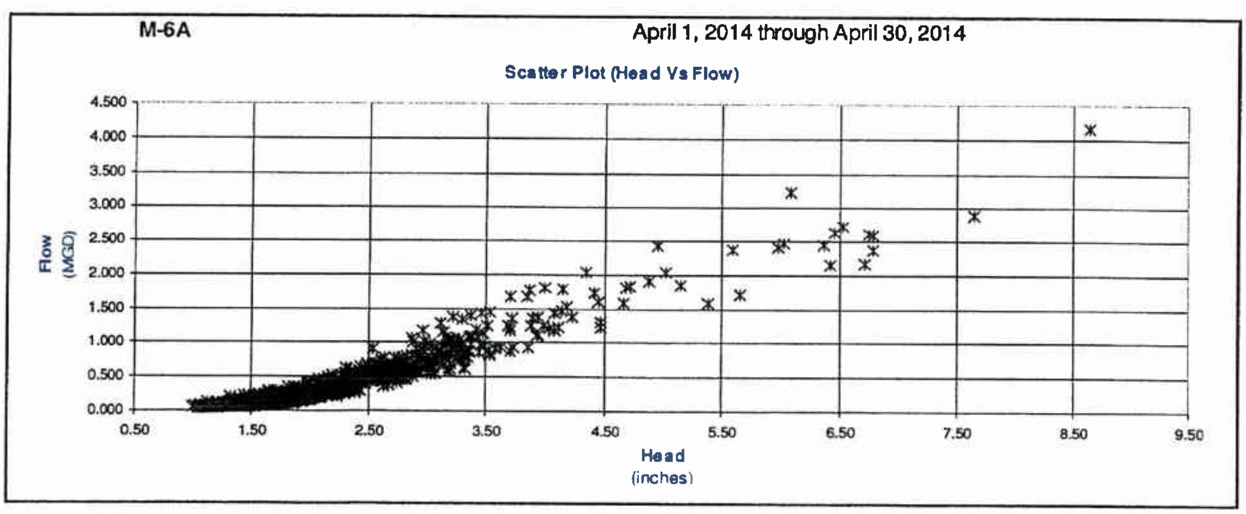




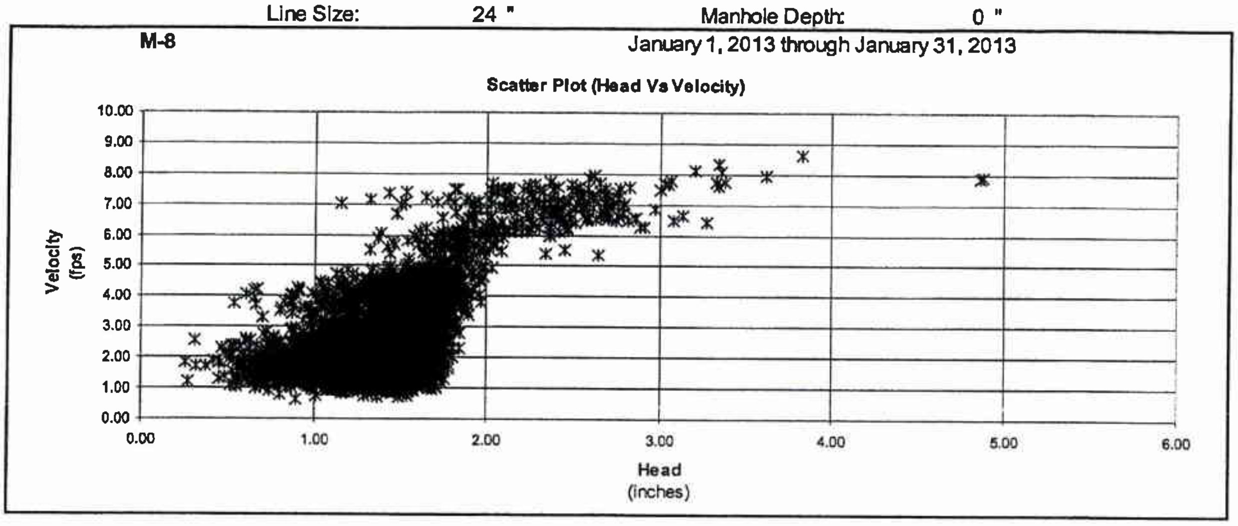
Line Size: 24 " Manhole Depth: 0 "

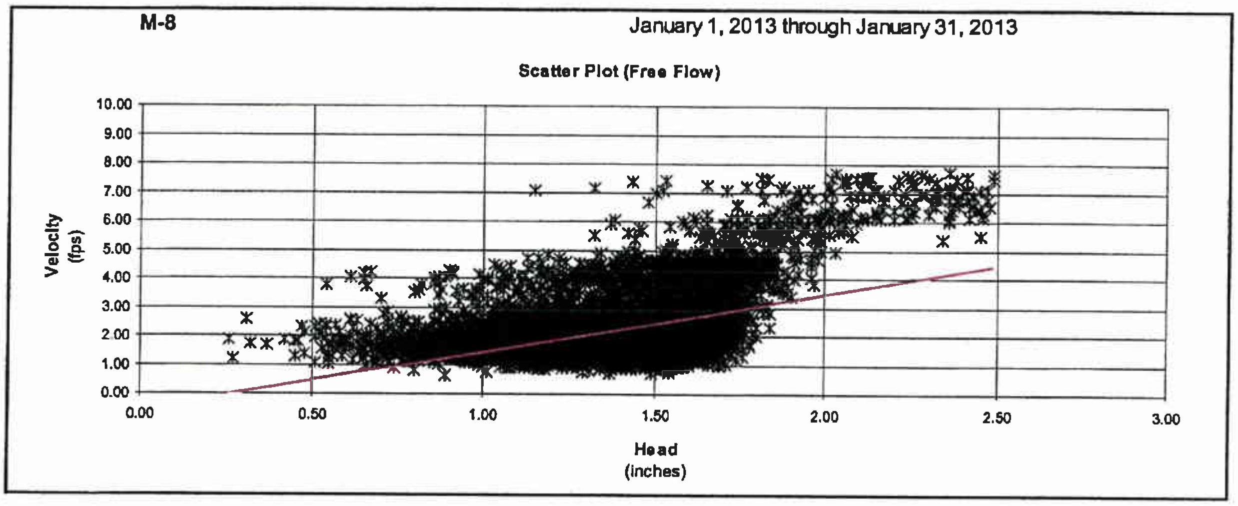


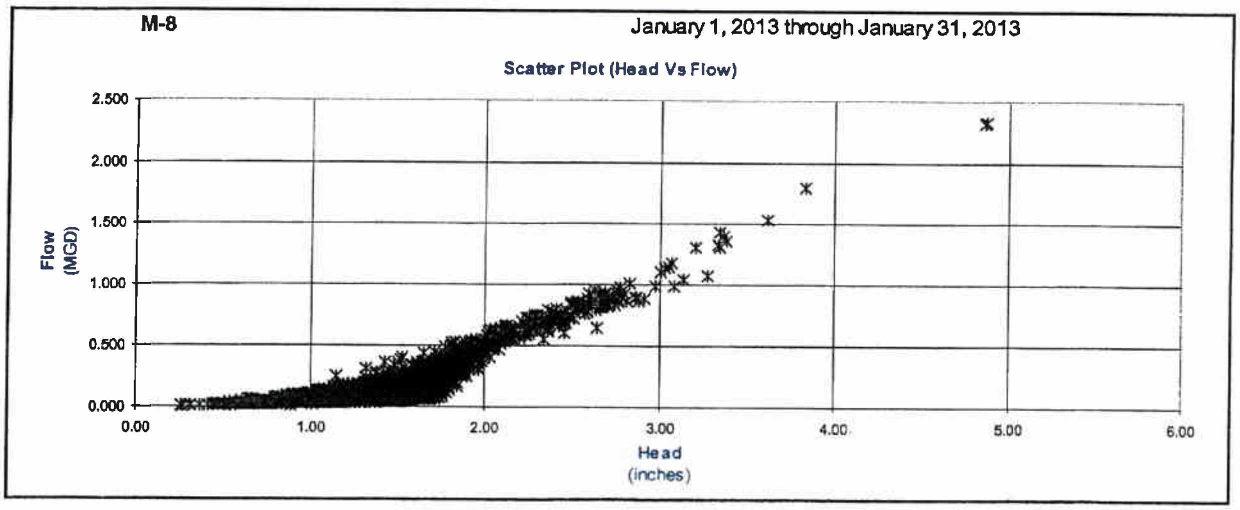




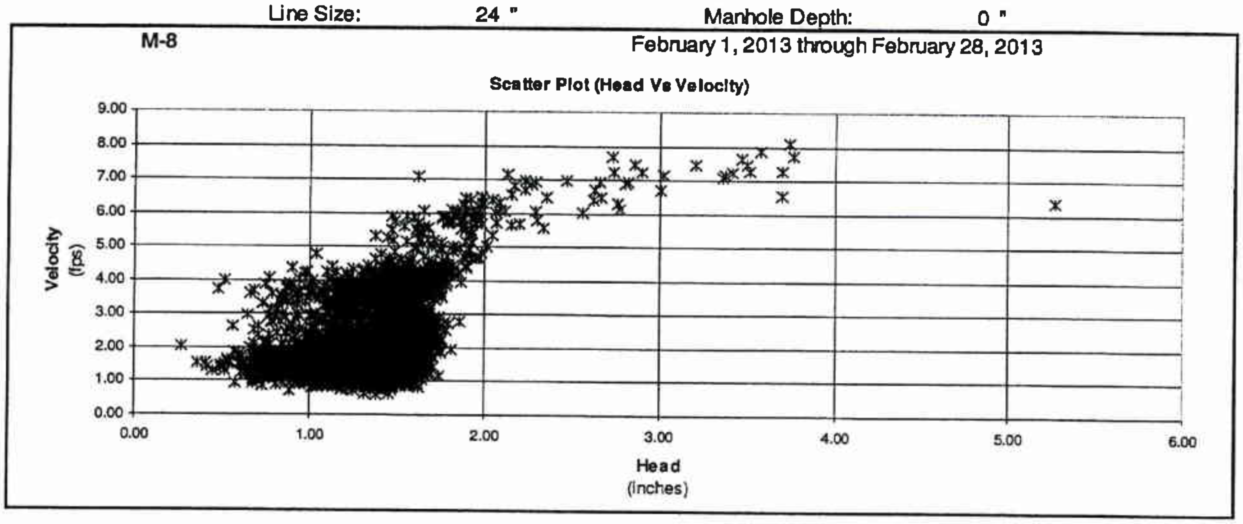
Line Size: 24 " Manhole Depth: 0 "

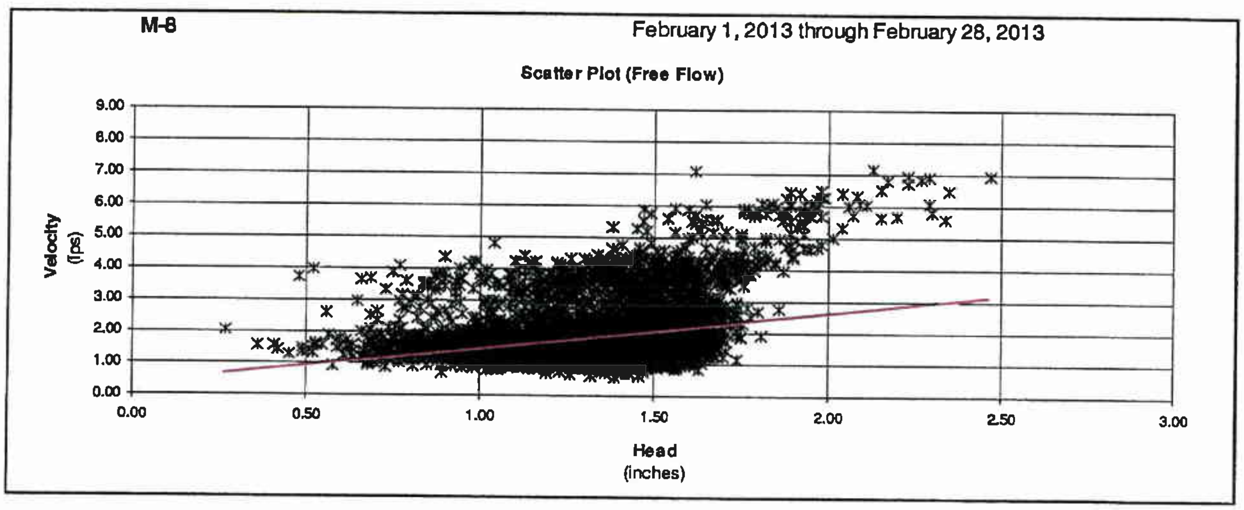


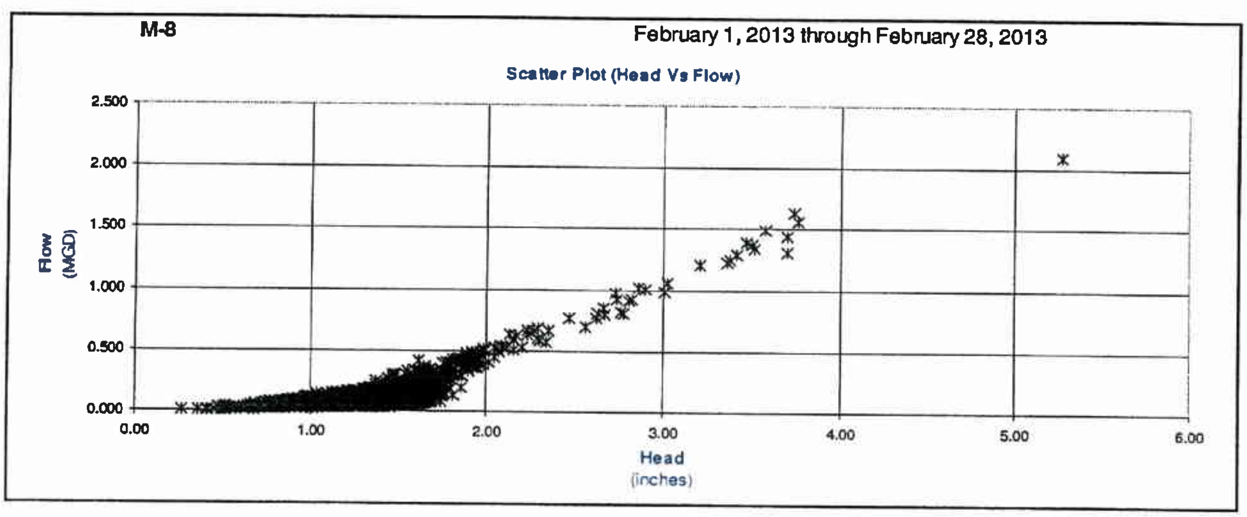




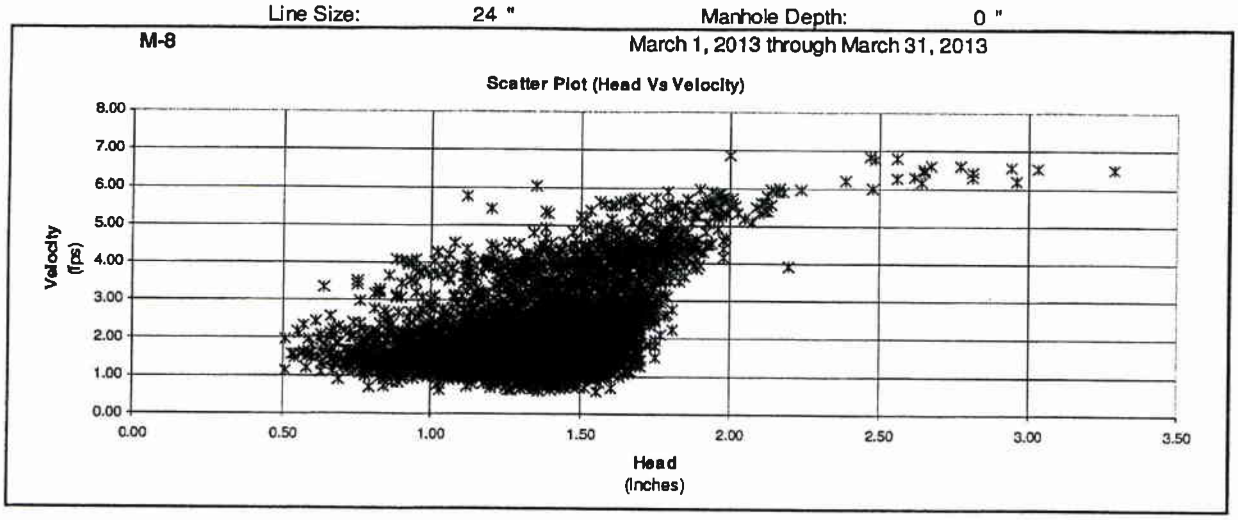
Line Size: 24 " Manhole Depth: 0 "

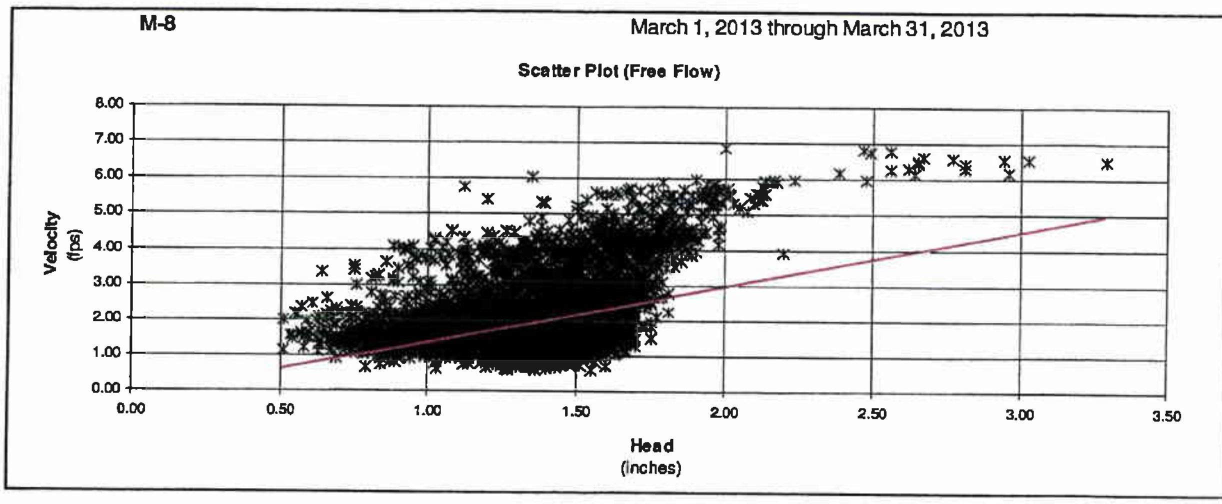


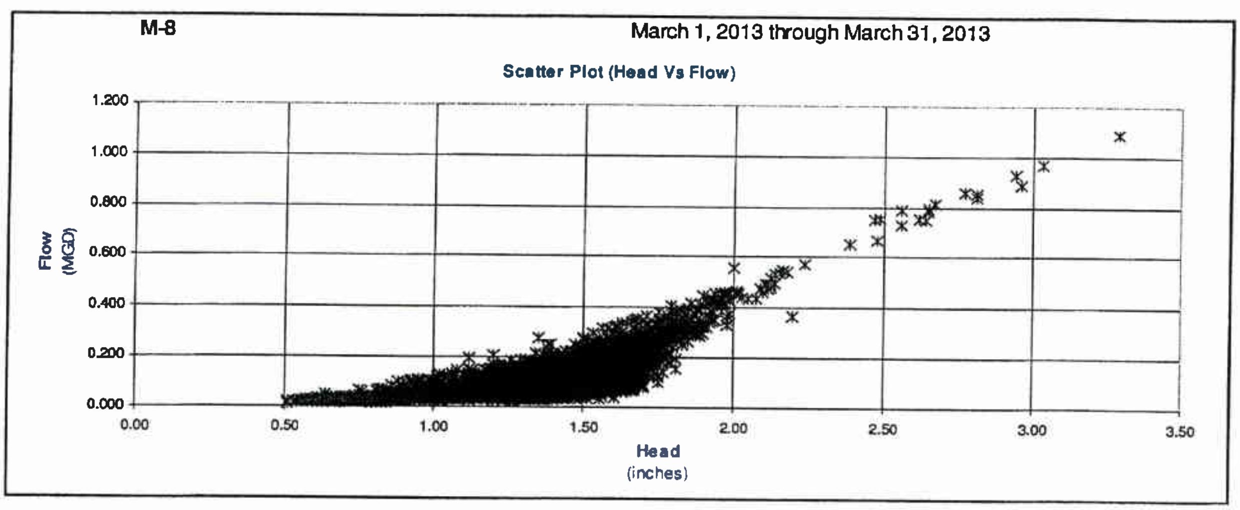




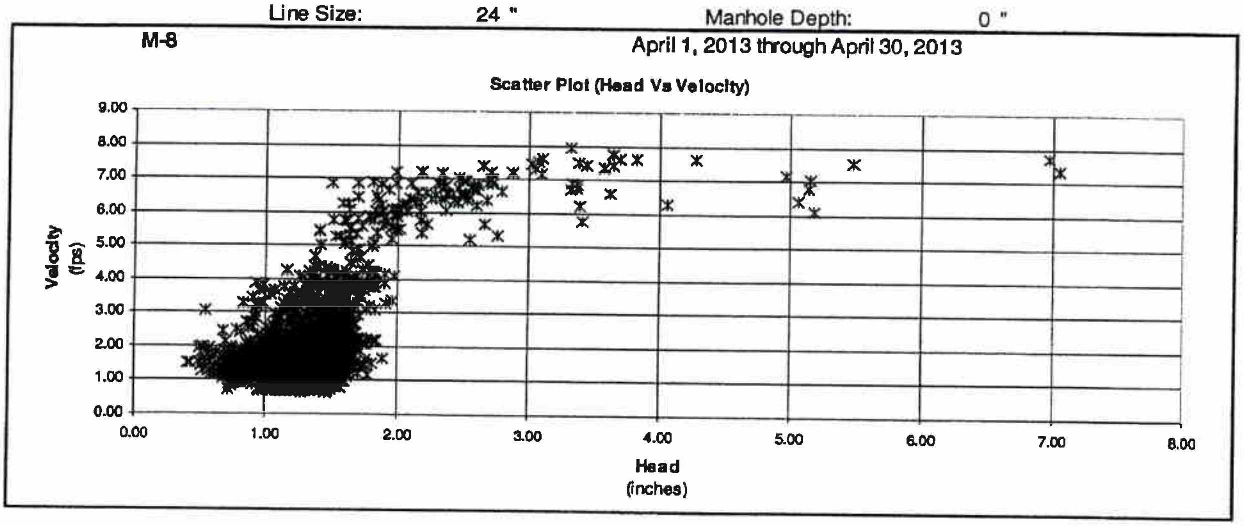
Line Size: 24 " Manhole Depth: 0 "

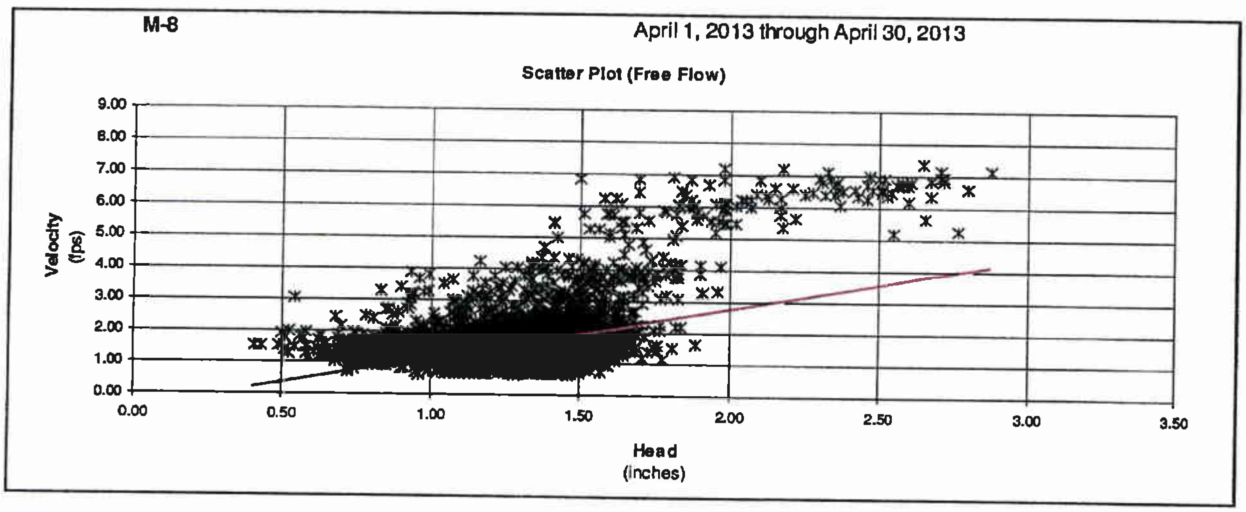


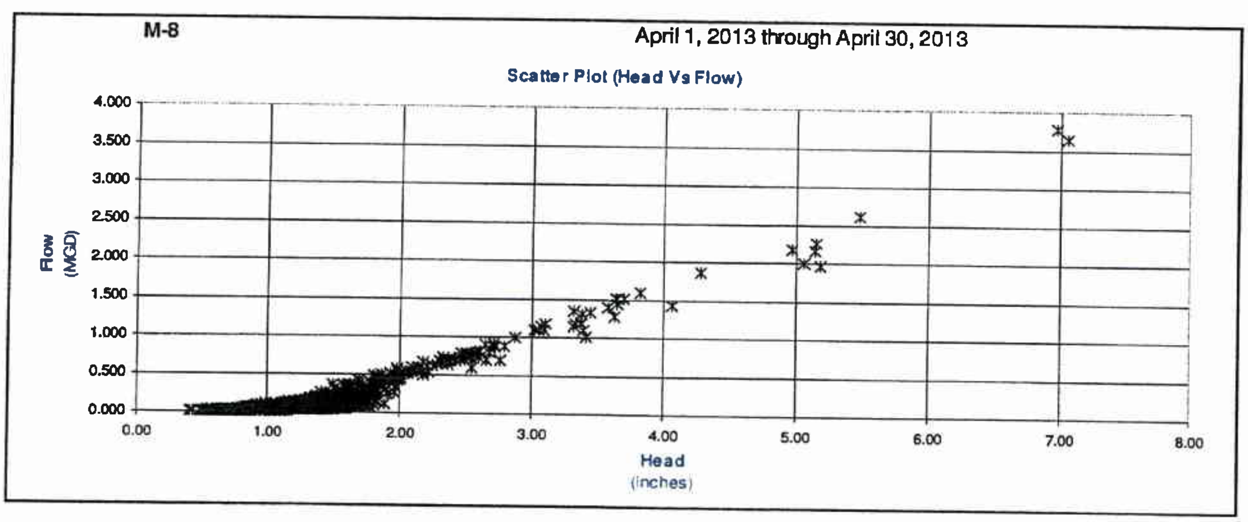




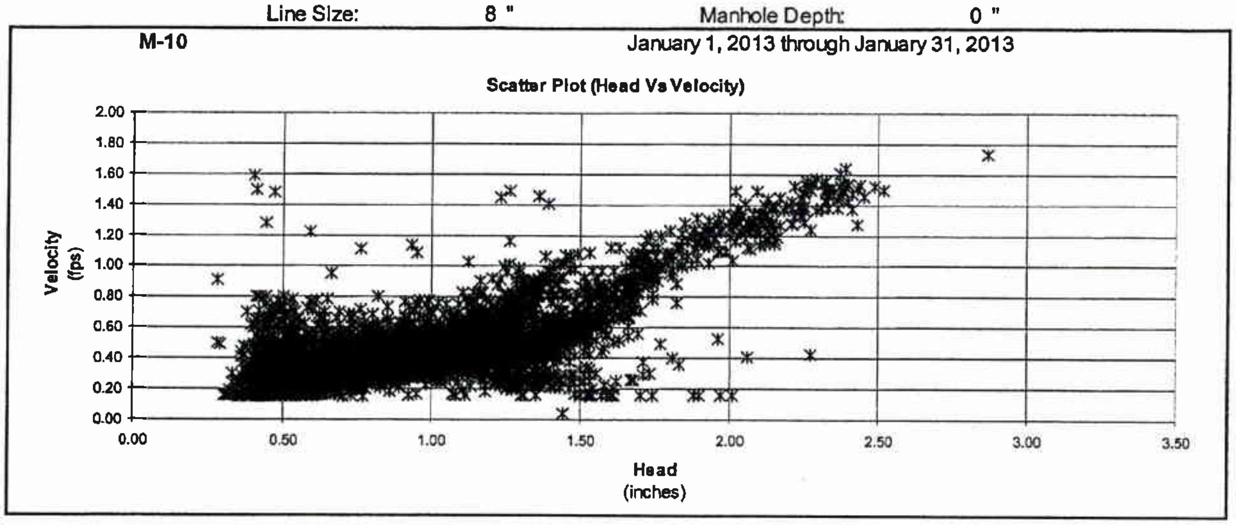
Line Size: 24 "   Manhole Depth: 0 "

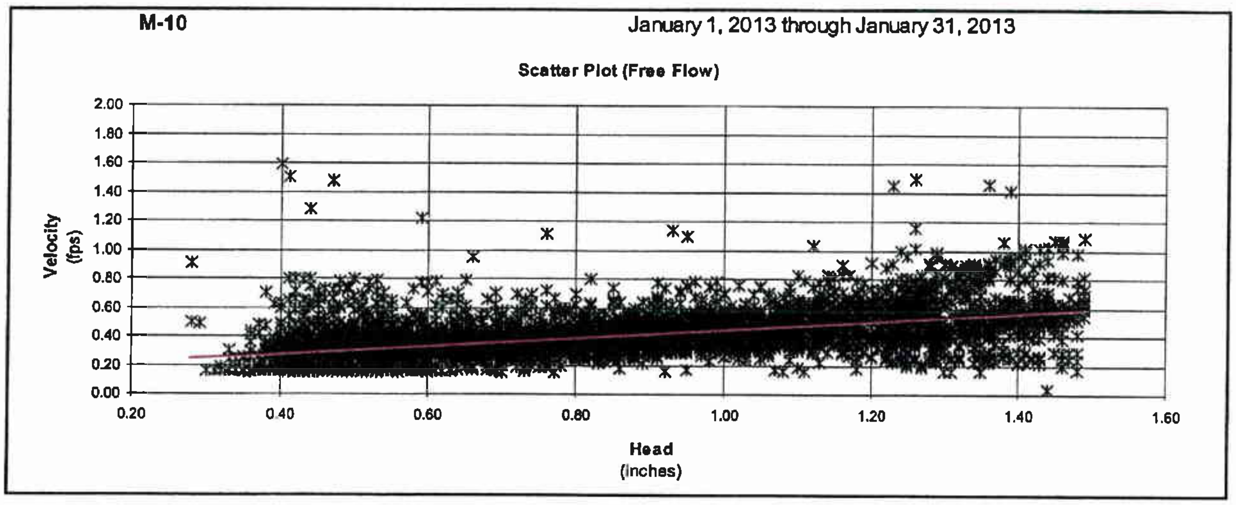


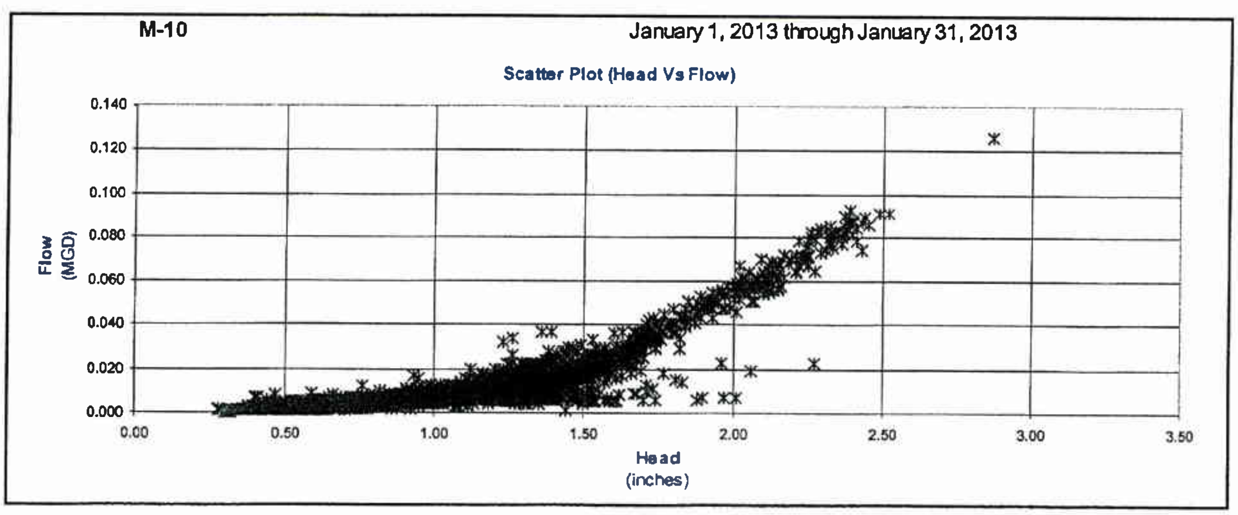




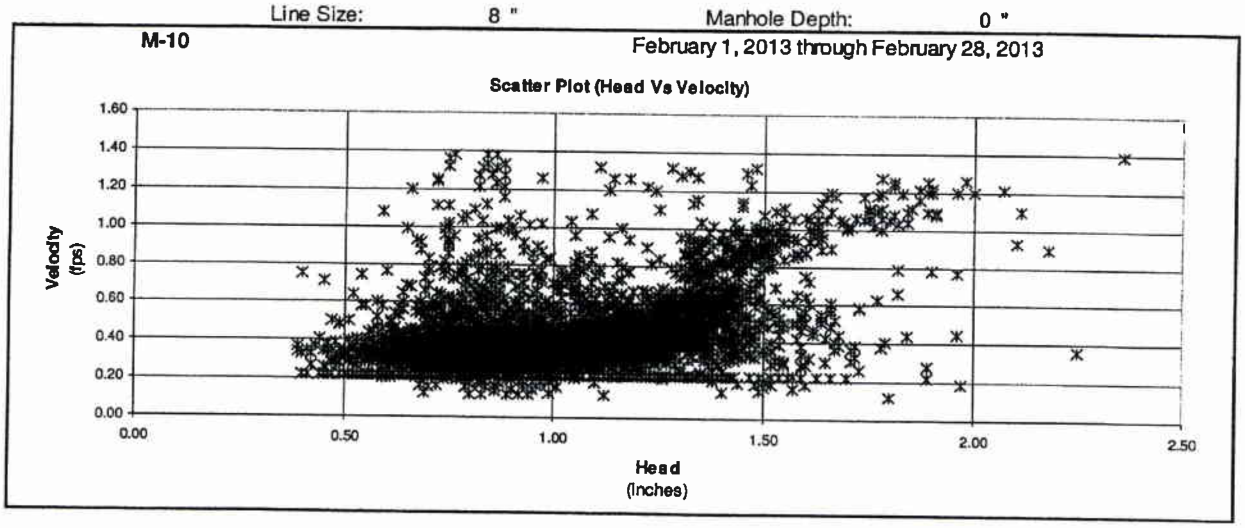
Line Size: 8 " Manhole Depth: 0 "

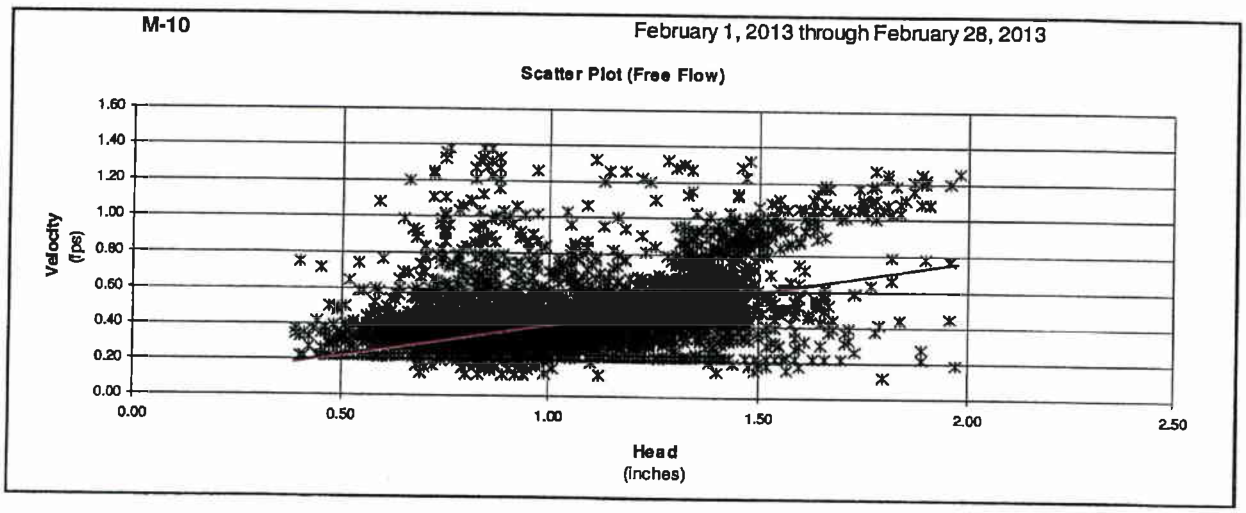


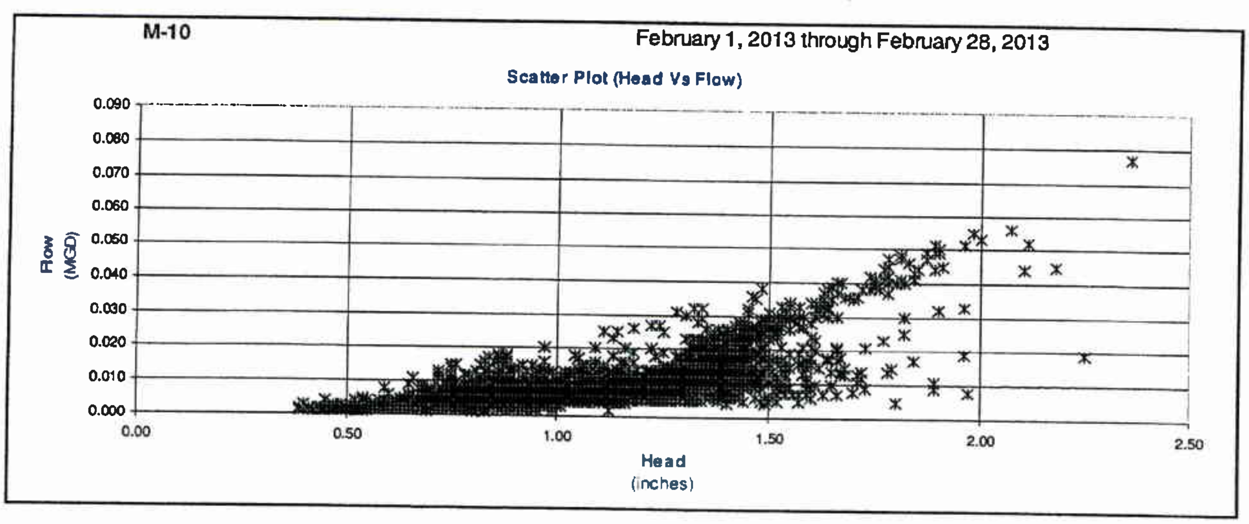




Line Size: 8 " Manhole Depth: 0 "

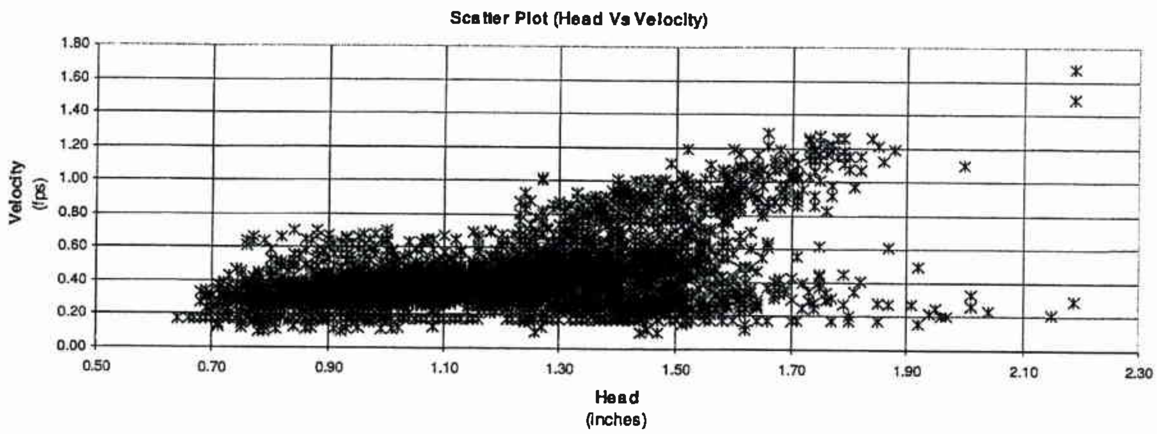




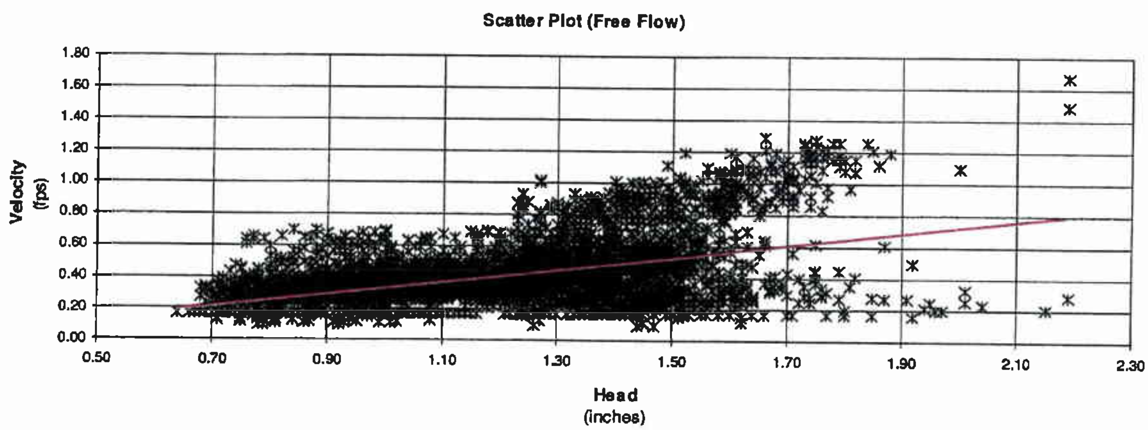


Line Size: 8 " Manhole Depth: 0 "

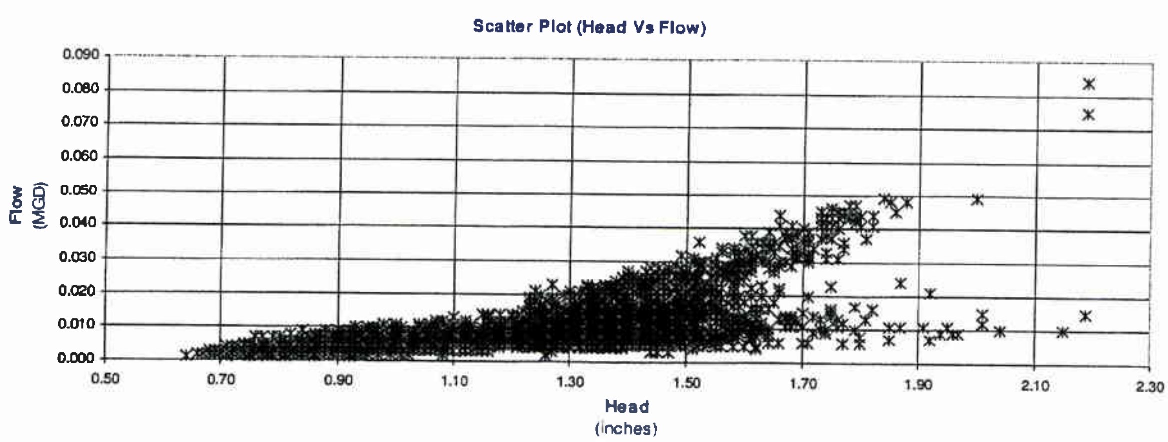
M-10 March 1, 2013 through March 31, 2013



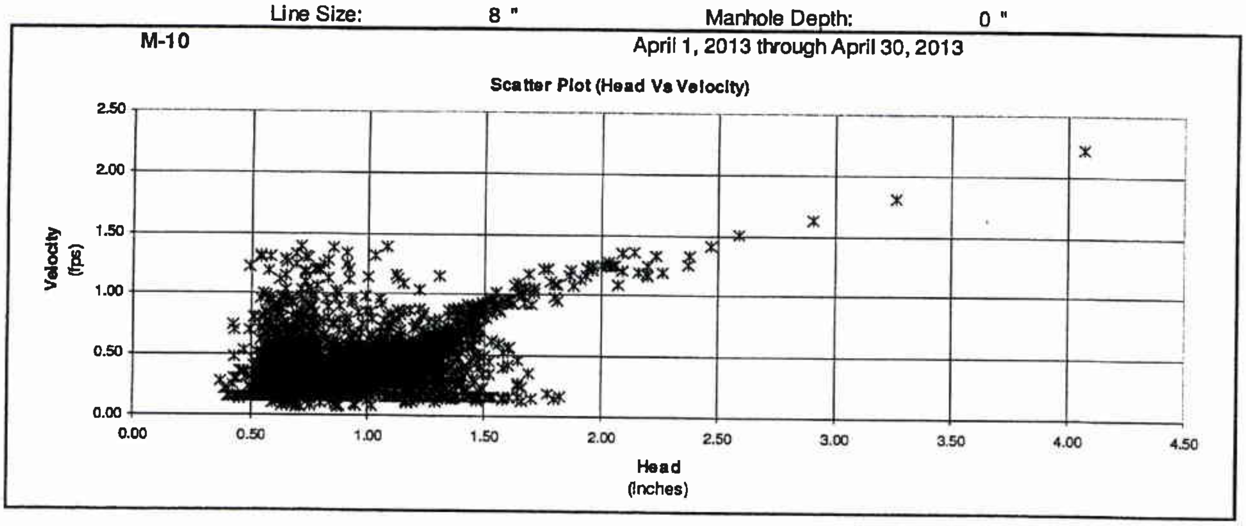
M-10 March 1, 2013 through March 31, 2013

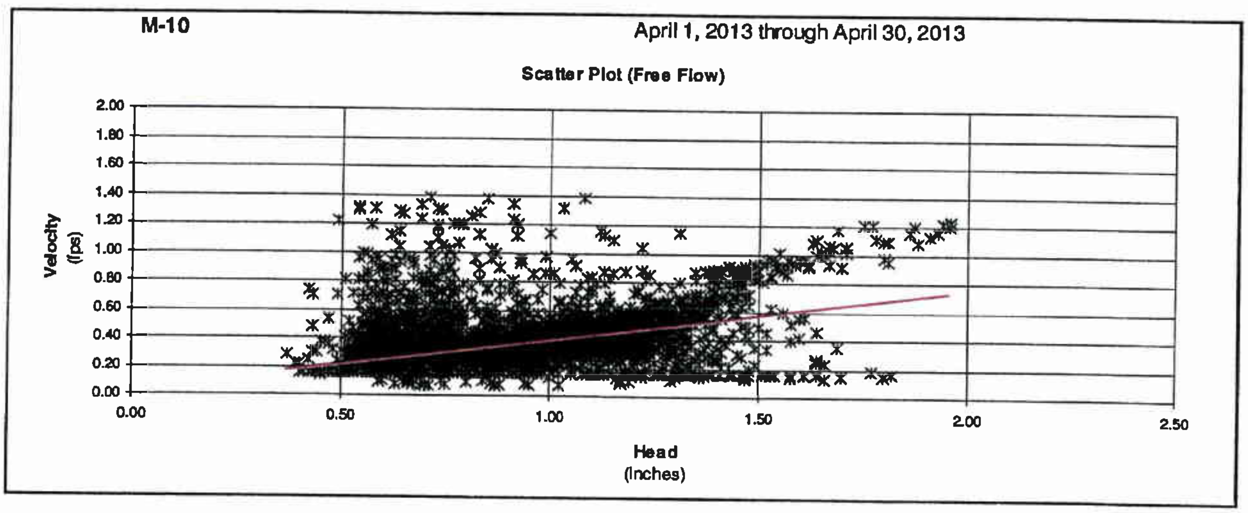


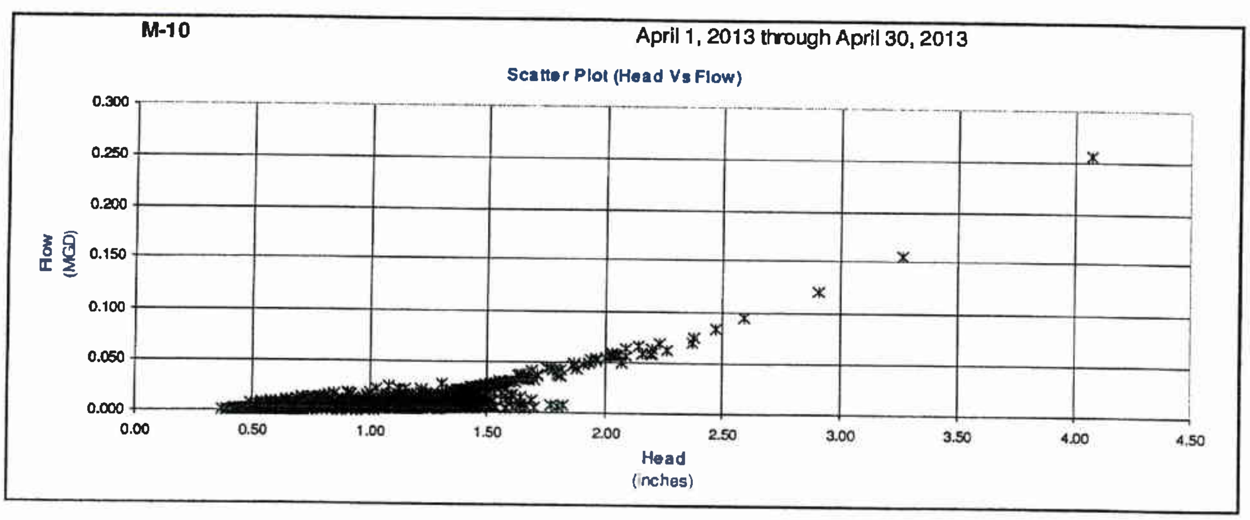
M-10 March 1, 2013 through March 31, 2013



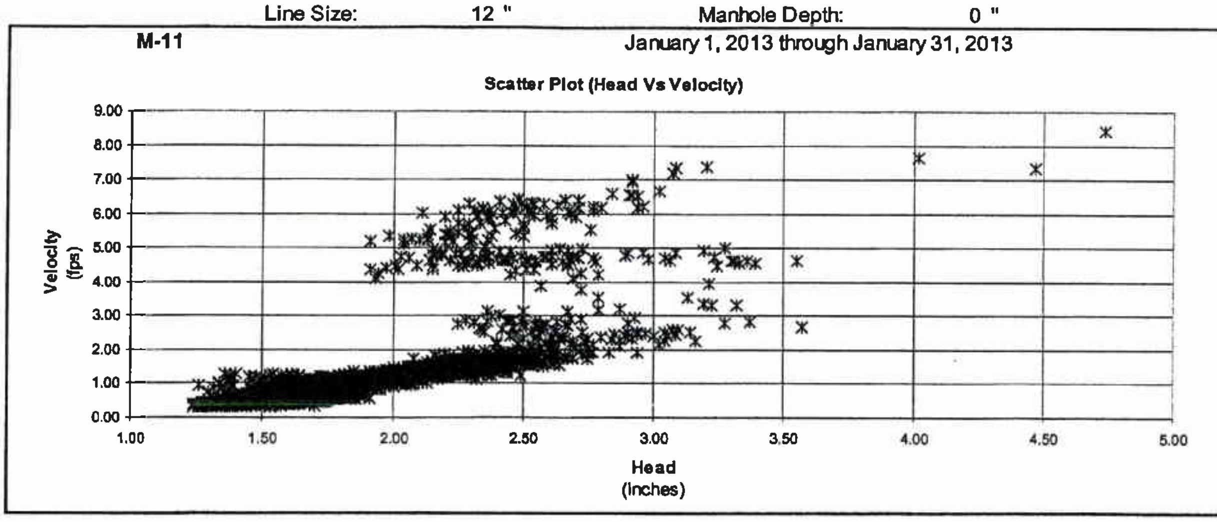
Line Size: 8 " Manhole Depth: 0 "

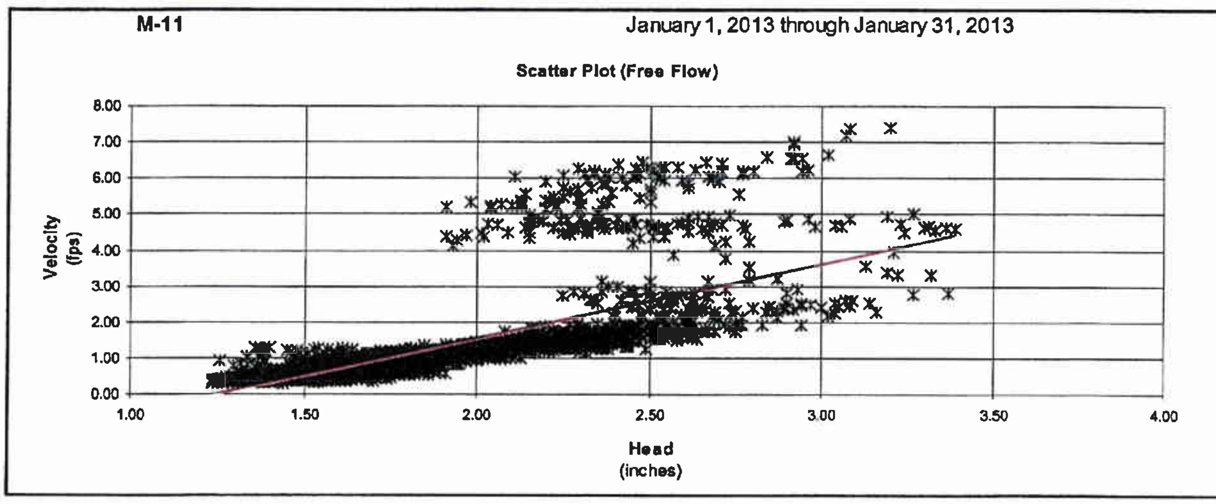


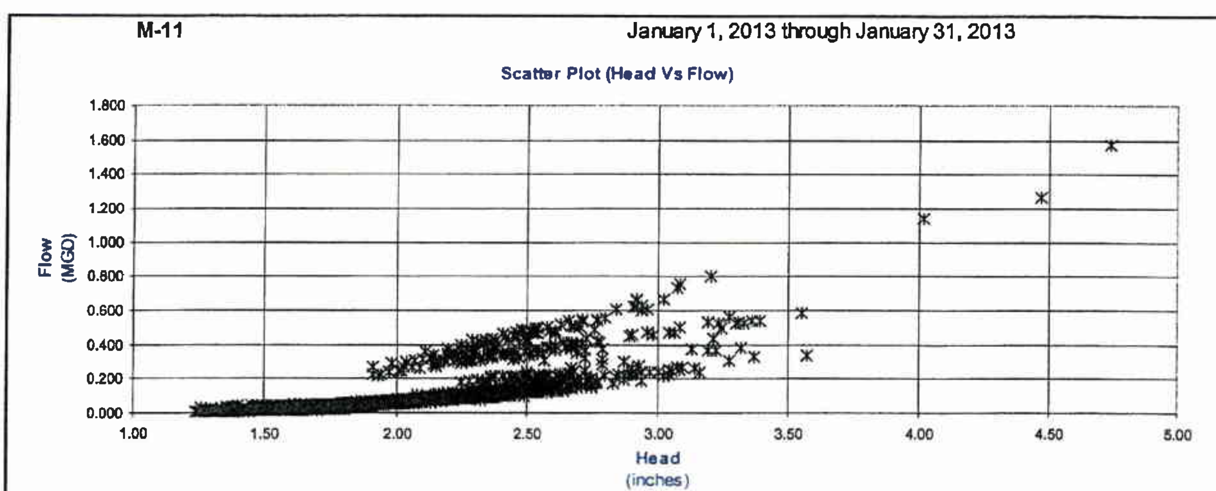




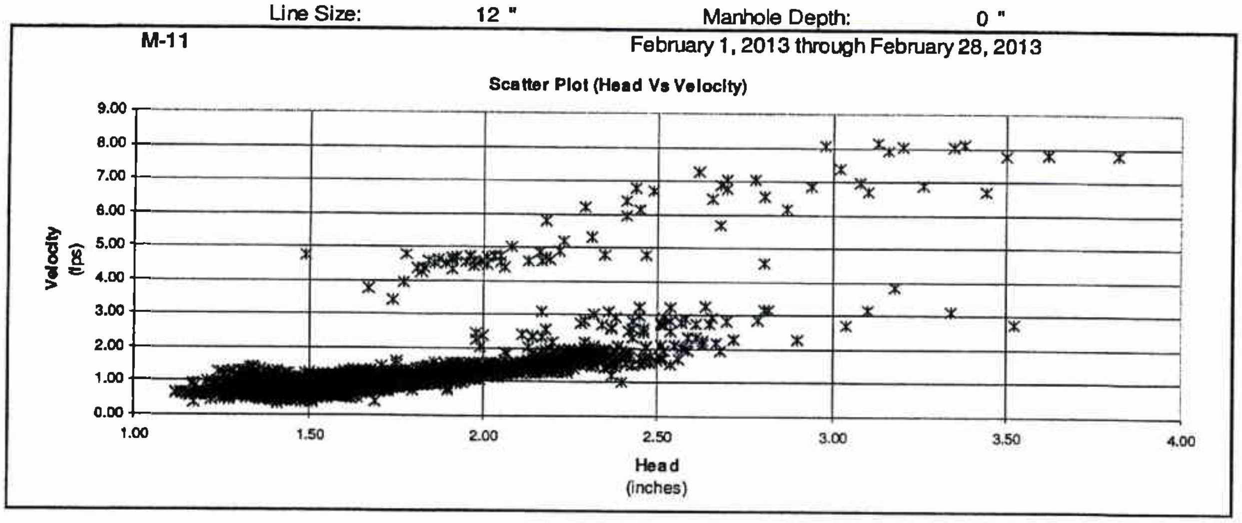
Line Size: 12 " Manhole Depth: 0 "

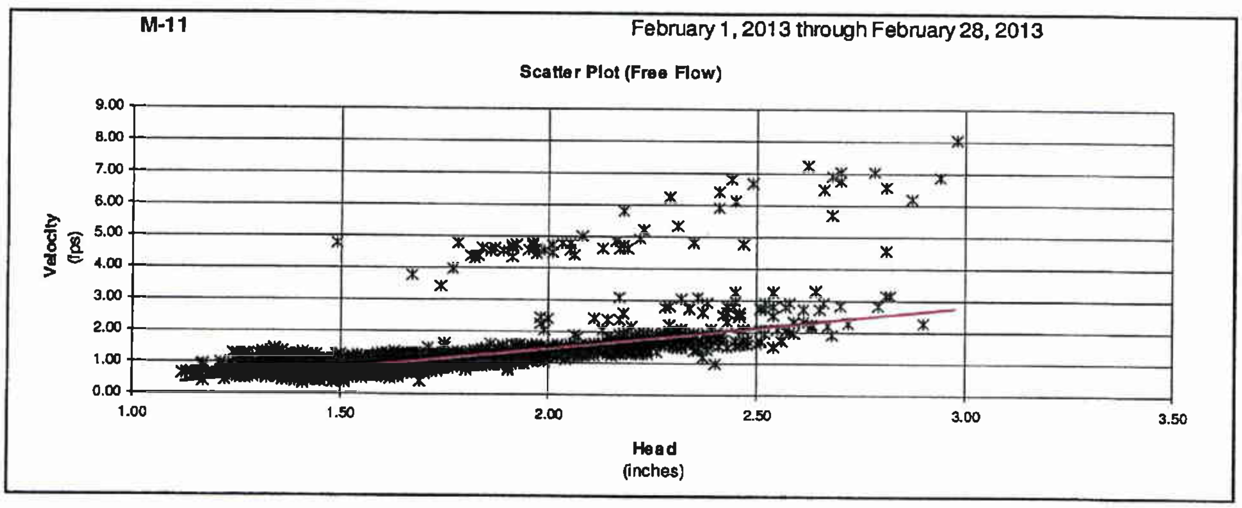


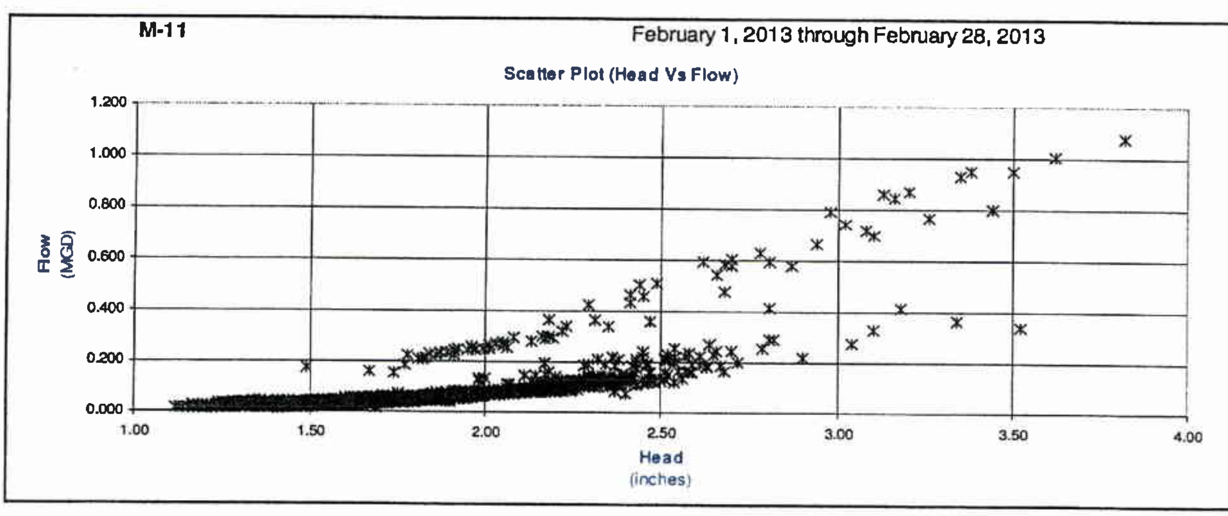




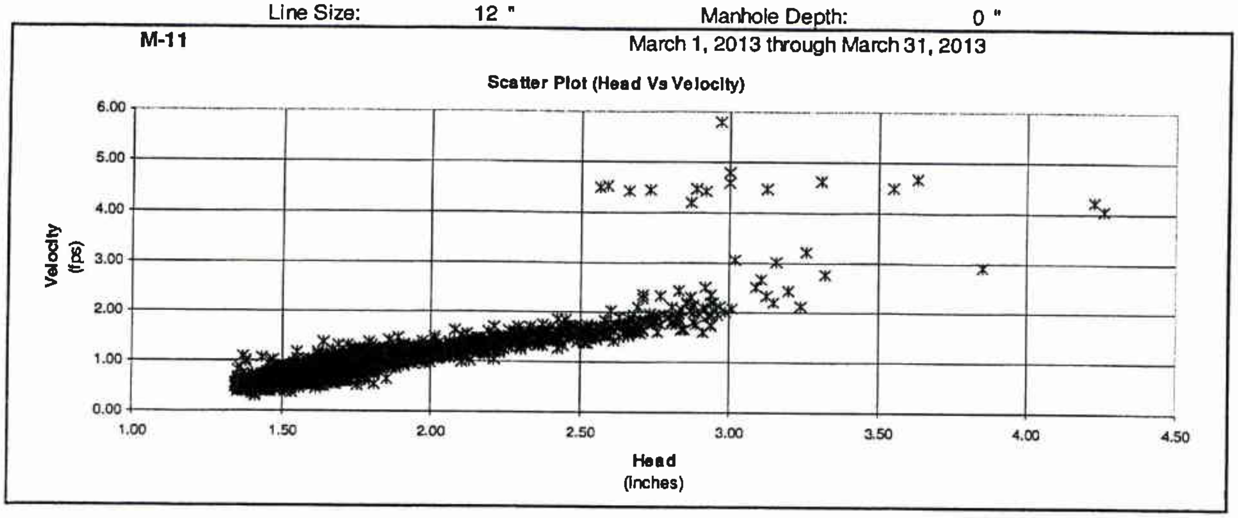
Line Size: 12 "   Manhole Depth: 0 "

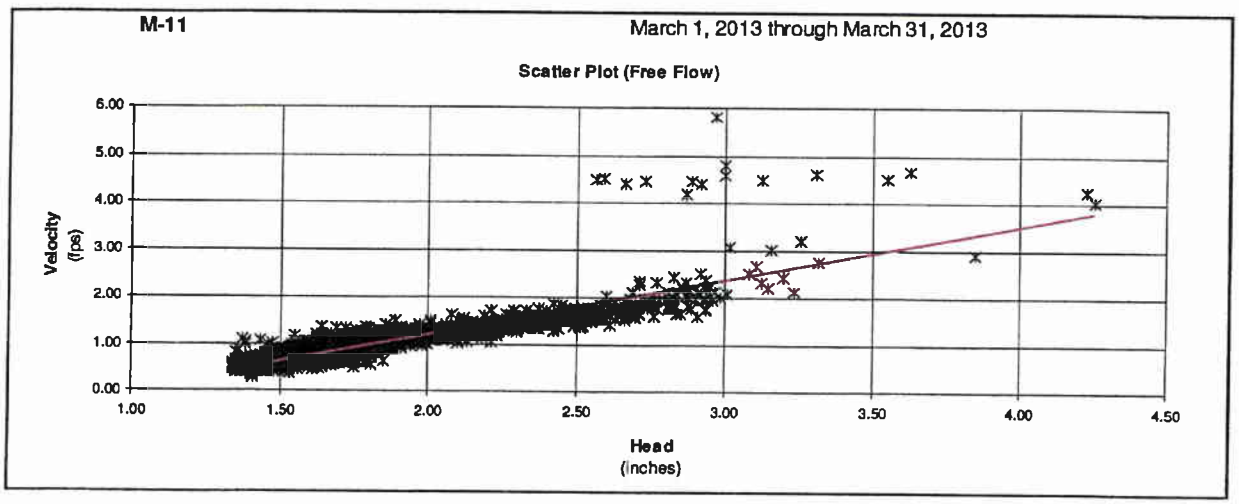


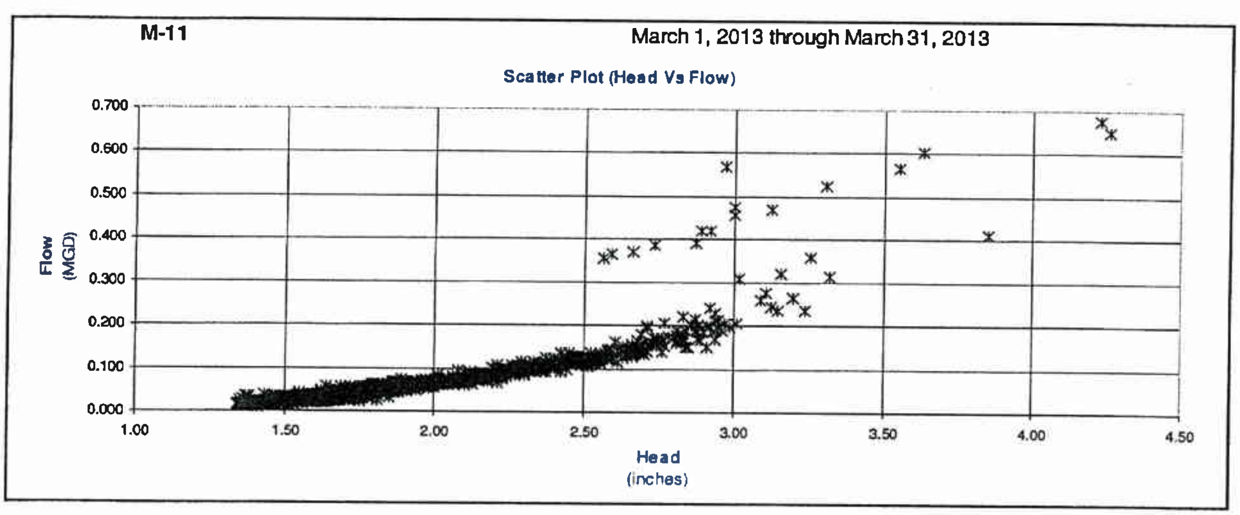




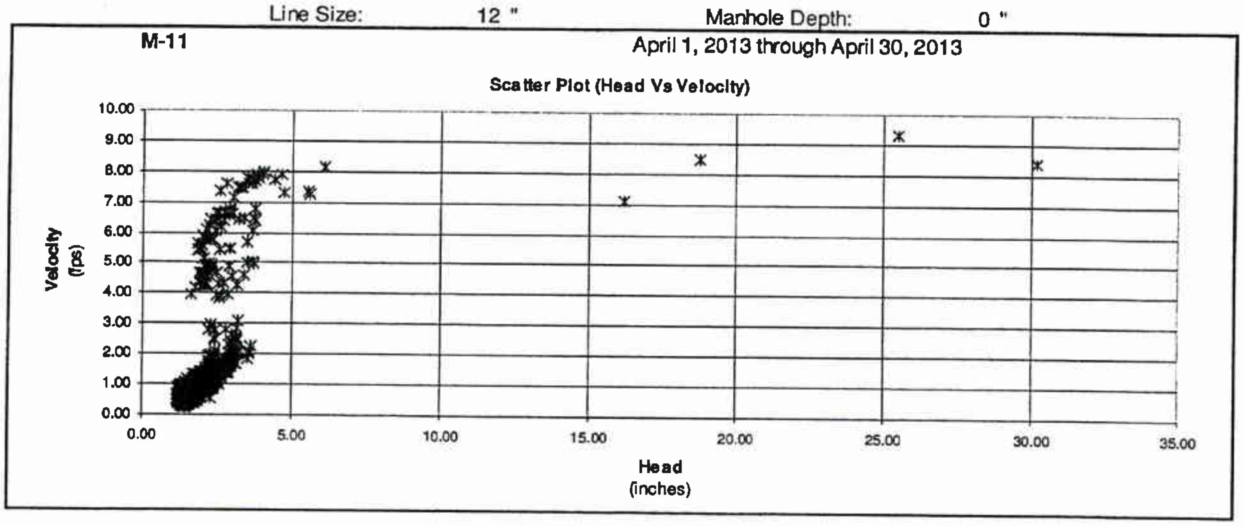
Line Size: 12 " Manhole Depth: 0 "

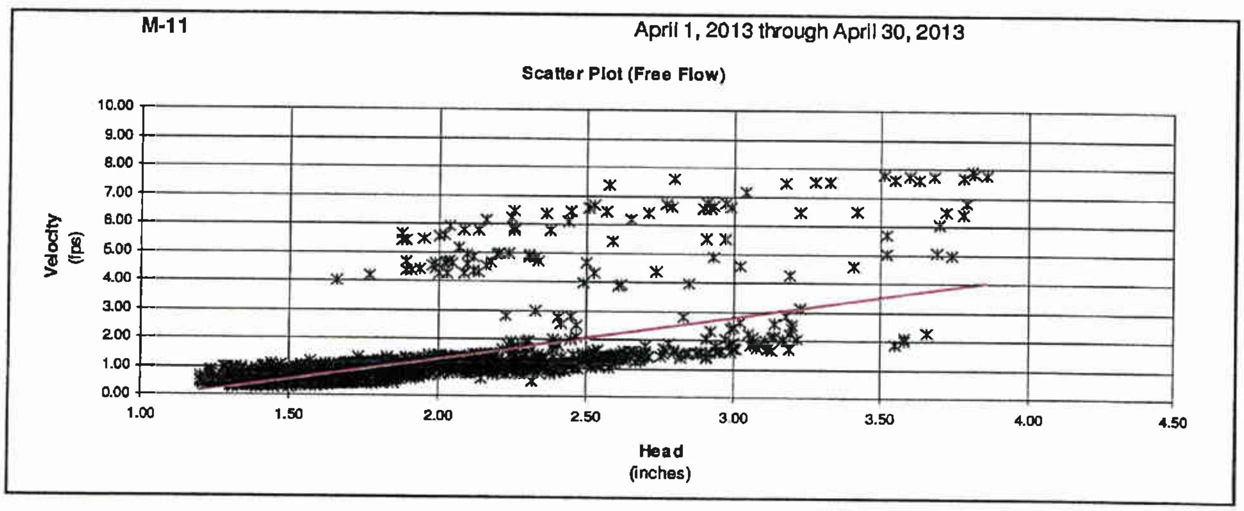


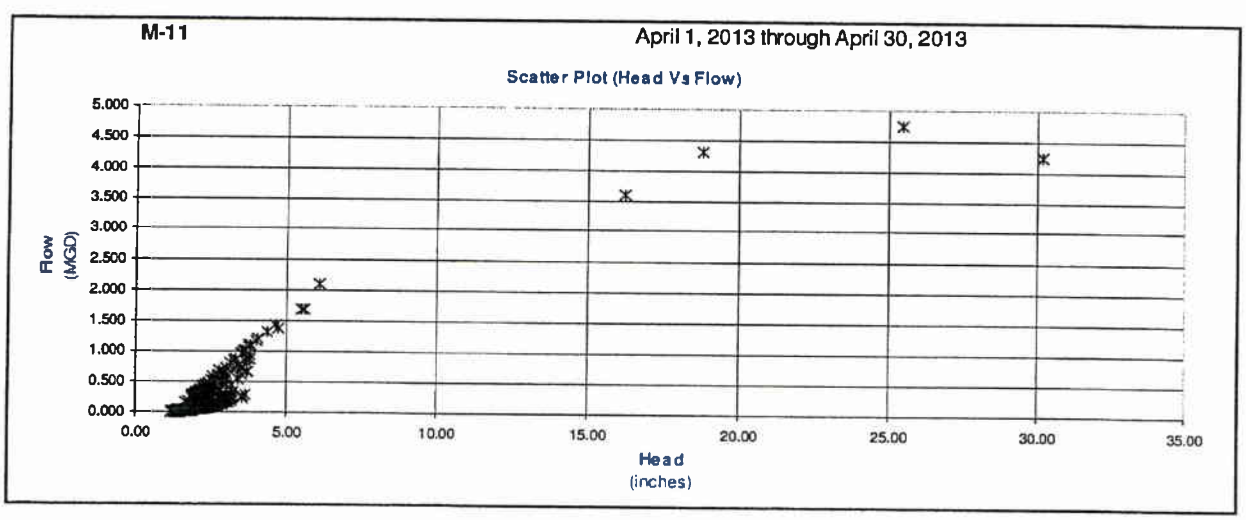




Line Size: 12 " Manhole Depth: 0 "

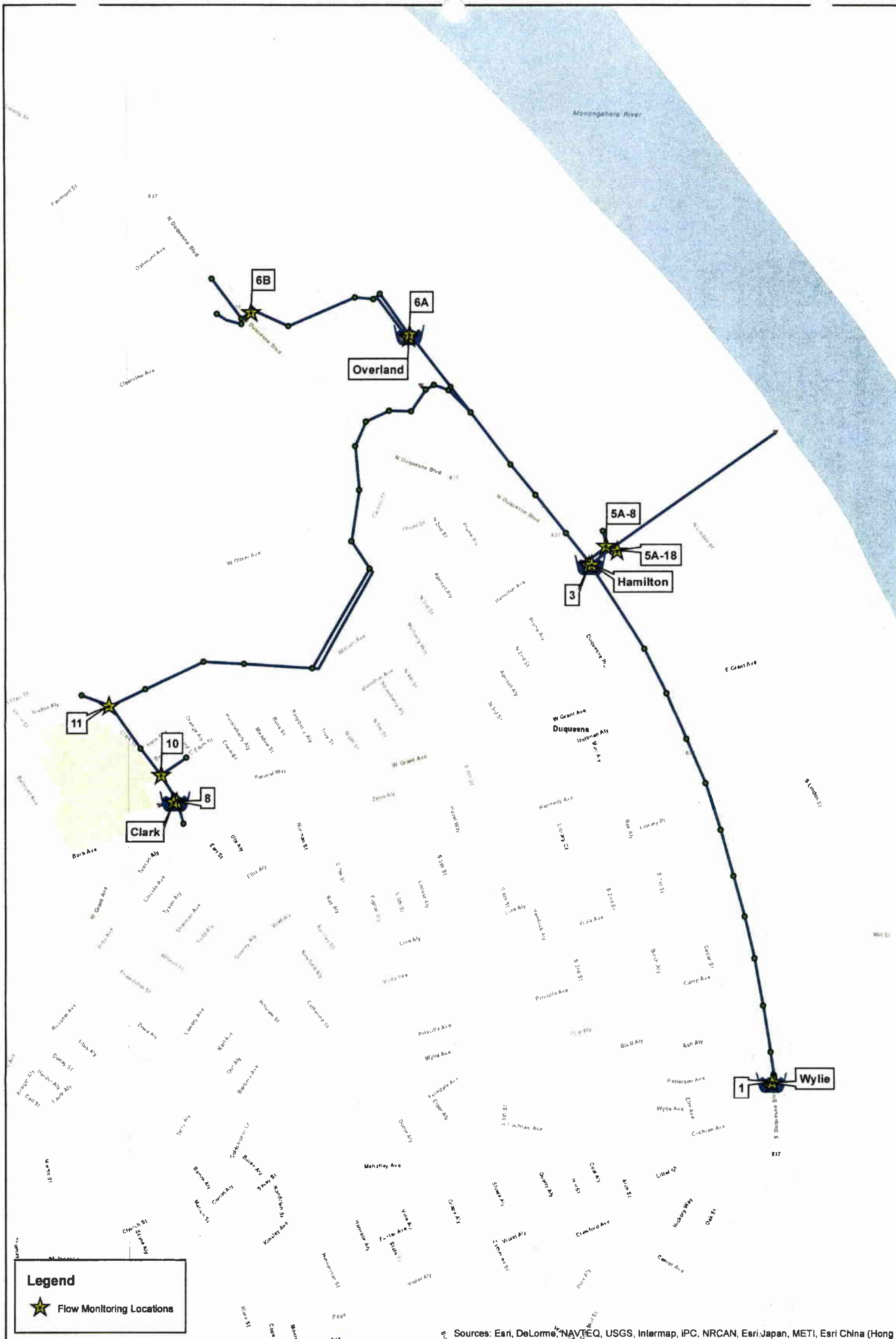






APPENDIX E

DUQUESNE MODEL SYSTEM MAP



220-53 Exhibit	0 400 800 Feet Author: Ross Vollwein Date: 8/25/2014 NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet Projection: Lambert Conformal Conic	**CITY OF DUQUESNE** **ALLEGHENY COUNTY, PENNSYLVANIA** **MODEL SYSTEM MAP**	KLH ENGINEERS, INC

APPENDIX F

DUQUESNE MODEL PHYSICAL CHARACTERISTICS (LIST)

Sewer Pipe

Conduit ID	Length [FT]	Manning N	Upstream Offset [FT]	Downstream Offset [FT]	Avg. Loss Coefficient	Flap Gate	Shape Type	Diameter [FT]	Diameter [in]
DU3107.1M-DU3107M	404.446	0.013	0	0	0.05	No	0: Circular	1.25	15
DU3107M-DU3097M	677.064	0.013	0	0	0.05	No	0: Circular	1.25	15
DU3097M-DU3098M	193.602	0.013	0	0.23	0.05	No	0: Circular	1.25	15
DU3098M-DU7004.1M	304.536	0.013	0	0	0.05	No	0: Circular	1.25	15
DU2630.1M-DU2631M	142.469	0.013	0	0.68	0.05	No	0: Circular	2	24
DU2631M-DU2632M	10.926	0.013	0	0.05	0.05	No	0: Circular	2	24
DU2633M-DU2634M	22.749	0.013	0	0	0.05	No	0: Circular	1	12
DU2632M-DU2635M	98.262	0.013	1	0.61	0.05	No	0: Circular	2	24
DU2634M-DU2632.1M	146.504	0.013	0	0	0.05	No	0: Circular	1	12
DU2632.1M-DU7006M	194.134	0.013	0	0.06	0.05	No	0: Circular	1	12
DU5001M-DU2632.1M	184.802	0.013	0	4.01	0.05	No	0: Circular	0.667	8
DU2597M-DU7004M	180.481	0.013	0	0.64	0.05	No	0: Circular	0.833	10
DU2005M-DU2001M	33.277	0.013	0	0.31	0.05	No	0: Circular	1.5	18
DU2001M-DU2003.1M	8.034	0.013	0	0	0.05	No	0: Circular	1.5	18
DU2003M-DU2002M	8.562	0.013	0.99	0	0.05	No	0: Circular	2	24
DU2002M-DU2834M	134.57	0.013	0.95	0.22	0.05	No	0: Circular	2	24
DU2834M-DU2826M	280.964	0.013	0	0	0.05	No	0: Circular	2	24
DU2826M-DU2815M	276.073	0.013	0	0	0.05	No	0: Circular	2	24
DU2815M-DU2818M	253.784	0.013	0	0	0.05	No	0: Circular	2	24
DU2818M-DU2821M	247.916	0.013	0	0	0.05	No	0: Circular	2	24
DU2821M-DU3206M	281.67	0.013	0	0	0.05	No	0: Circular	2	24
DU3206M-DU3191M	287.806	0.013	0.09	0	0.05	No	0: Circular	2	24
DU3191M-DU3184M	285.165	0.013	0.29	0.11	0.05	No	0: Circular	2	24
DU3184M-DU3177M	292.981	0.013	0	0	0.05	No	0: Circular	2	24
DU3177M-DU3168M	289.641	0.013	0.09	0	0.05	No	0: Circular	2	24
DU1010M-DU1004M	385.645	0.013	0	0.16	0.05	No	0: Circular	2	24
DU1004M-DU1002M	184.942	0.013	0	0.37	0.05	No	0: Circular	2	24
DU1003M-DU1002M	22.244	0.013	0	0	0.05	No	0: Circular	1.25	15
DU1004M-DU1003M	188.332	0.013	0	0.26	0.05	No	0: Circular	1.25	15
DU1002M-DU1001M	90.628	0.013	0	0	0.05	No	0: Circular	2	24
DU1001M-DU7001M	54.73	0.013	0	0.19	0.05	No	0: Circular	2.25	27
DU7001.1M-DU7001M	153.015	0.013	0	1.73	0.05	No	0: Circular	1.25	15
DU3155M-DU3156M	29.396	0.013	0	0	0.05	No	0: Circular	2	24
DU7006M-DU7004M	312.329	0.013	0	0.19	0.05	No	0: Circular	1	12
DU7004M-DU5013M	229.189	0.013	0	0	0.05	No	0: Circular	1	12
DU5013M-DU3107.2M	379.103	0.013	0	0	0.05	No	0: Circular	1	12
DU6029M-DU6028M	60.75	0.013	0.09	0.14	0.05	No	0: Circular	1.5	18
DU6025M-DU6028M	93.83	0.013	0	0.37	0.05	No	0: Circular	0.5	6
DU3168M-DU3156M	618.144	0.013	0.02	0	0.05	No	0: Circular	2	24
DU3157M-DU3158M	28.557	0.013	0	0.21	0.05	No	0: Circular	2	24
DU6028M-DU3156M	134.748	0.013	0	0	0.05	No	0: Circular	2	24
CSO4-DU1003M	393.575	0.013	0	0	0.05	No	0: Circular	1.25	15
DU-3107.2M-DU3107.1M	239.012	0.013	0	0	0.05	No	0: Circular	1.25	15
DU7004.1M-DU7003M	259.859	0.013	0	0	0.05	No	0: Circular	1.25	15
DU7003M-DU7002M	155.957	0.013	0	0	0.05	No	0: Circular	1.25	15
DU7002M-DU7001.2M	151.969	0.013	0	0	0.05	No	0: Circular	1.25	15
DU7001.2M-DU7001.1M	128.784	0.013	0	0	0.05	No	0: Circular	1.25	15
DU1013M-DU1010M	232.082	0.013	0	0	0.05	No	0: Circular	2	24
DU1016M-DU1013M	290.065	0.013	0	0	0.05	No	0: Circular	2	24
DU3158M-CSO3	8.298	0.013	0	1.25	0.05	No	0: Circular	2	24
CSO3-DU3155M	18.312	0.013	0	0.21	0.05	No	0: Circular	2	24
DU3156M-DU1016M	202.8	0.013	0	0	0.05	No	0: Circular	2	24
DU6177S-DU3157M	144.734	0.013	0.85	0	0.05	No	0: Circular	5.583	67
CSO_OVERFLOW	16.068	0.013	0.9	0	0.05	No	0: Circular	1.25	15
DU4006.1M-DU4006M	159.788	0.013	0	0.2	0.05	No	0: Circular	0.667	8
DU4006M-DU4033M	28.597	0.013	0	0.5	0.05	No	0: Circular	1	12
DU4037MDU4033M	295.539	0.013	2.29	4.64	0.05	No	0: Circular	0.833	10
DU4033M-DU4004M	83.84	0.013	0	0	0.05	No	0: Circular	1.5	18
DU4004M-DU4003M	229.718	0.013	0.05	0.08	0.05	No	0: Circular	1.5	18
DU4003M-DU4002.1	426.975	0.013	0	0.38	0.05	No	0: Circular	2	24
DU4002.1M-DU4299M	110.782	0.013	0	0	0.05	No	0: Circular	1.25	15
DU4299M-DU4298M	49.195	0.013	0.15	0.4	0.05	No	0: Circular	1.25	15
DU4298M-DU4001M	301.049	0.013	0	1.1	0.05	No	0: Circular	1.25	15
TO_WWTP	38.873	0.013	0	0	0.05	No	0: Circular	2.25	27
DU2006M-DU2005M	27.376	0.013			0.05	No	0: Circular	1.5	18
DU6177S-CSO3OUTFALL	1,199.59	0.013			0.05	No	0: Circular	2	24
CDT-67	6.427	0.013	0	0	0.05	No	0: Circular	1	12
BYPASS1	714.632	0.013			0.05	No	0: Circular	1.25	15
BYPASS2	308.65	0.013		1.1	0.05	No	0: Circular	1.25	15

Manholes

Junction ID	Invert Elevation [FT]	Rim Elevation [FT]	Surcharge Depth [FT]
DU6028M	741.772	759.162	0
DU3168M	744.744	763.324	0
DU3177M	744.802	763.142	0
DU3191M	745.526	767.436	0
CSO-4	751.7	760.443	0
DU3184M	745.193	765.493	0
DU3206M	745.91	769.68	0
DU2821M	746.452	771.842	0
DU2818M	746.604	773.724	0
DU2815M	747.091	774.841	0
DU2826M	747.385	771.829	0
DU2834M	747.685	767.065	0
DU2002M	747.174	764.644	0
DU2003M	747.117	764.607	0
DU2003.1M	747.331	764.571	0
DU2001M	747.911	764.451	0
DU6177S	738.262	759.582	0
DU6029M	744.121	761.471	0
DU3155M	741.098	771.048	0
CSO-3	741.058	770.958	0
DU3158M	742.02	770.892	0
DU3156M	741.095	771	0
DU1016M	739.793	779.103	50
DU1013M	739.45	784.55	0
DU1010M	739.003	766.283	0
DU1004M	738.21	758.237	0
DU1003M	738.01	755.771	0
DU1002M	737.86	745.85	0
DU1001M	737.77	744.67	0
DU7001M	737.43	744.93	0
DU7003M	794	804.07	0
DU3098M	813.618	823.62	0
DU3097M	814.902	822.992	0
DU3107M	816.551	826.651	50
DU5013M	887.802	914.972	0
DU2597M	900.876	918.356	50
DU7004M	896.082	915.802	0
DU7006M	898.125	909.385	0
DU5001M	904.191	916.161	0
DU2632.1M	898.237	911.887	0
DU2634M	898.291	913.501	0
DU2633M	898.307	911.807	0
DU2631M	899.006	913.056	0
DU2630.1M	903.042	915.042	0
DU7002M	791	801.18	0
DU3107.2M	844.977	854.977	0
DU3107.1M	817.972	826.691	50
DU7004.1M	805	815.33	0
DU7001.1M	747	757.26	0
DU7001.2M	749	759.49	0
DU6025M	742.56	758.56	50
DU4299M	758.114	763.234	50
DU4298M	754.563	761.313	50
DU4037M	846.398	862.238	0
DU4033M	838.446	856.886	0
DU4006M	840.084	856.944	0
DU4006.1M	859.088	867.348	0
DU4004M	835.573	855.553	0
DU4003M	806.596	814.076	0
DU4002.1M	801.901	814.181	0
DU2006M	752.289	762.8	0
JCT-38	898.35	911.8	0

Outfalls

Outfall ID	Type	Invert Elevation [FT]
CSO2	0: Free	723.91
WWTP	0: Free	730
JCT-20	0: Free	735
CSO3-OUTFALL	0: Free	727.16
DU2635M		889.607

CSOs

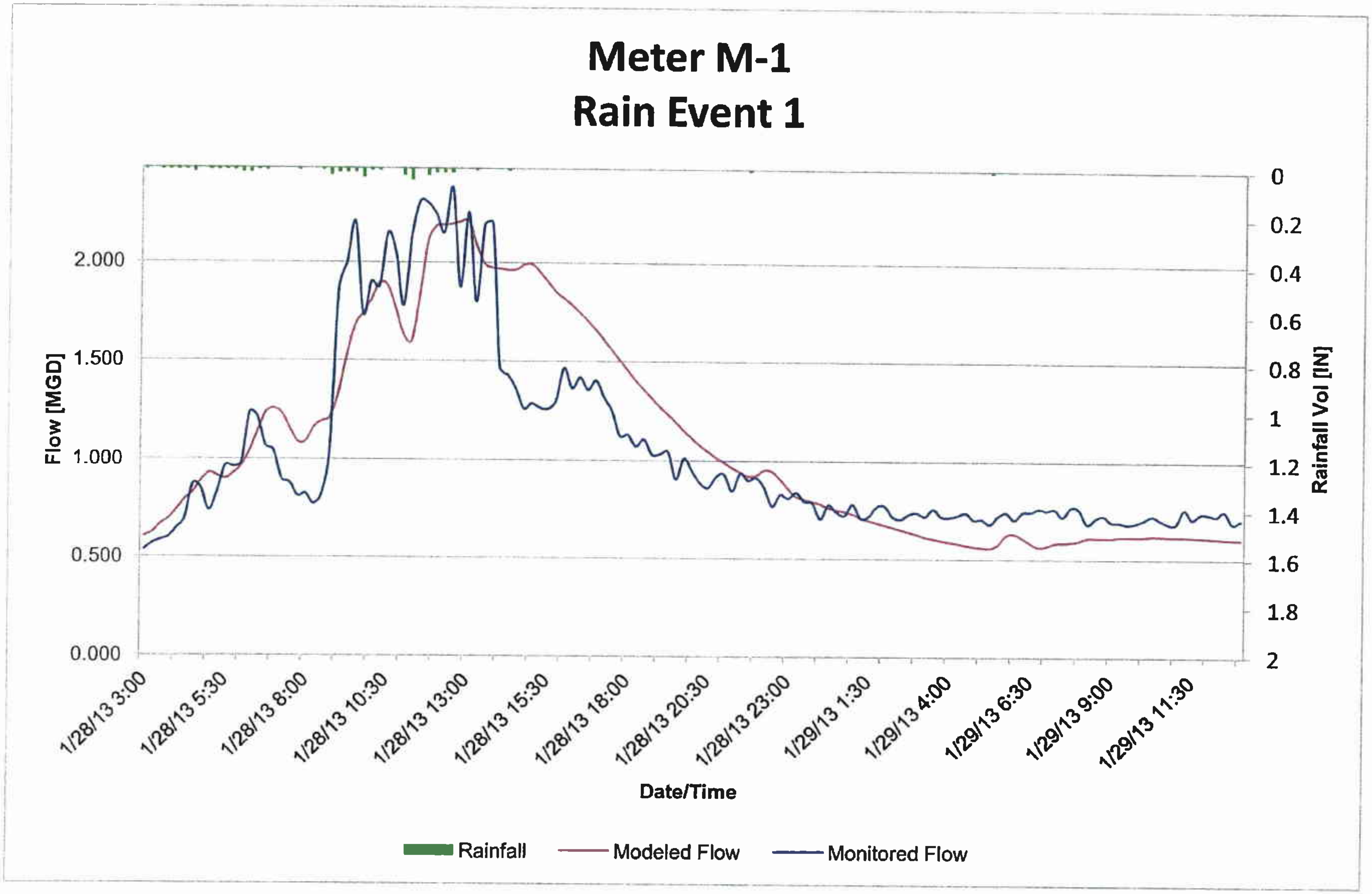
Storage ID	Invert Elevation [FT]	Maximum Depth [FT]	Shape Type	Shape Curve ID
DU3157M	742.298	28.79	1: Tabular	HAMILTON_CHAMBER
DU2005M	750.314	15	1: Tabular	WYLIE_CHAMBER
DU4001M	751.716	6.93	0: Functional	OVERLAND_CHAMBER
DU2632M	898.8	6	1: Tabular	CLARK_CHAMBER

APPENDIX G

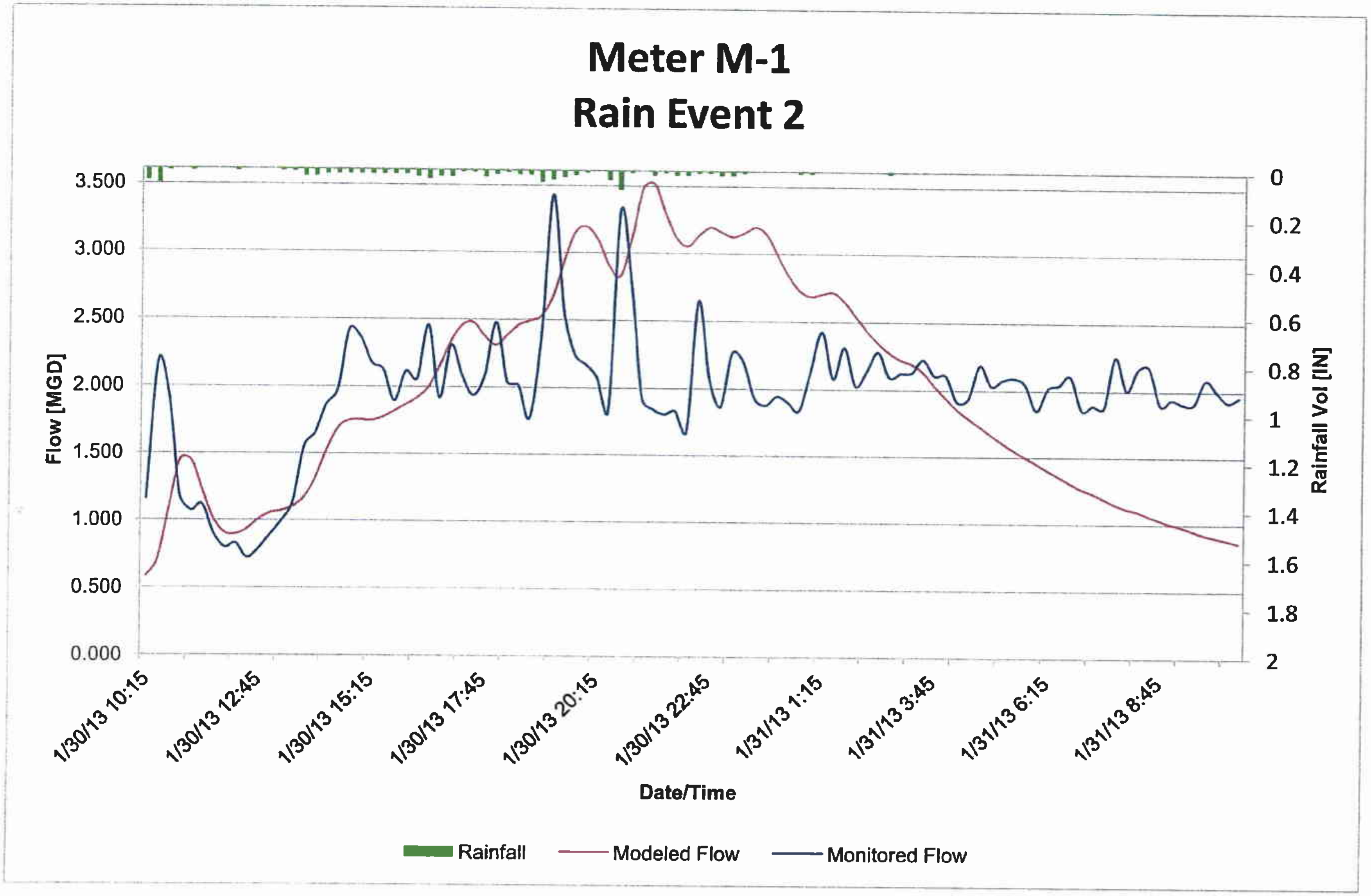
MONITORED VS. MODELED HYDROGRAPHS

M-1
SUMMER MODEL
RAIN EVENTS

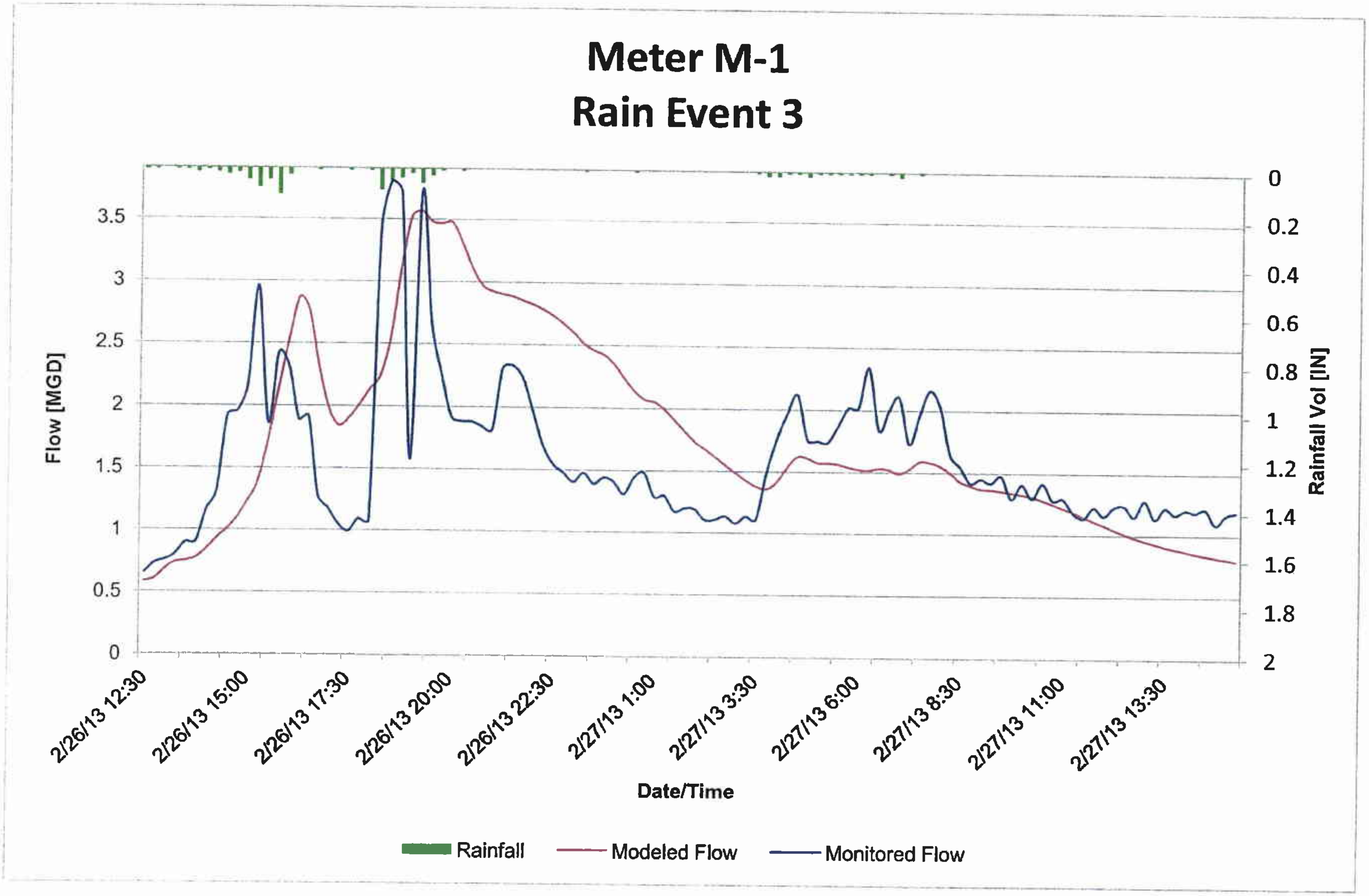
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	2.21	2.38	6.96%	Mod LOW	0.687	0.678	1.27%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	3.52	3.43	2.37%	Mod HIGH	1.424	1.238	13.06%	Mod HIGH
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	3.57	3.81	6.38%	Mod LOW	1.169	1.108	5.23%	Mod HIGH
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	3.08	1.98	35.53%	Mod HIGH	0.950	0.457	51.86%	Mod HIGH
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	3.47	2.44	29.59%	Mod HIGH	0.368	0.240	34.81%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	7.17	4.32	39.76%	Mod HIGH	0.615	0.416	32.41%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	3.576	3.589	0.35%	Mod LOW	0.475	0.295	37.89%	Mod HIGH



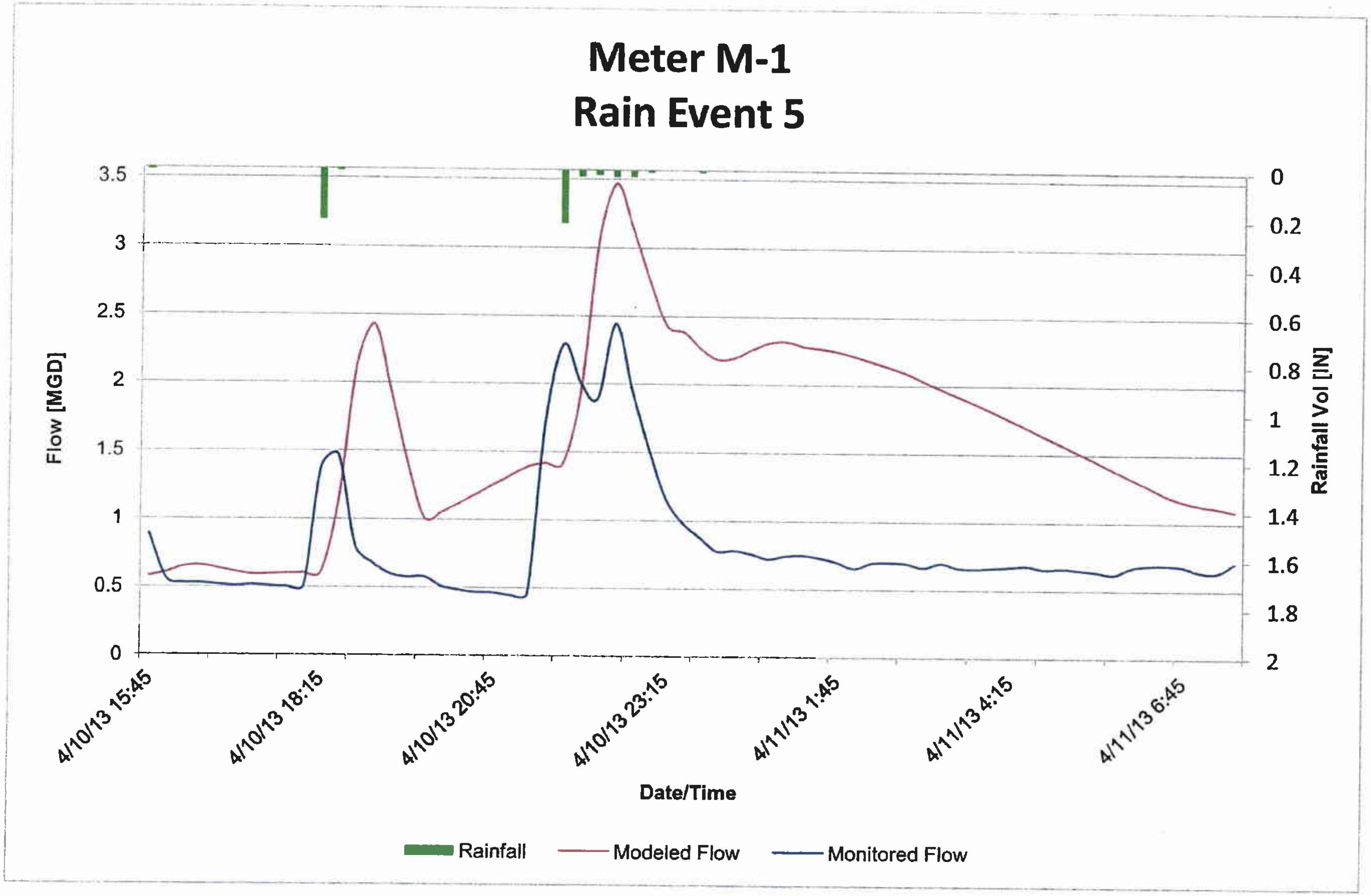
Meter M-1
Rain Event 1
Flow [MGD]
2.000
1.500
1.000
0.500
0.000
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



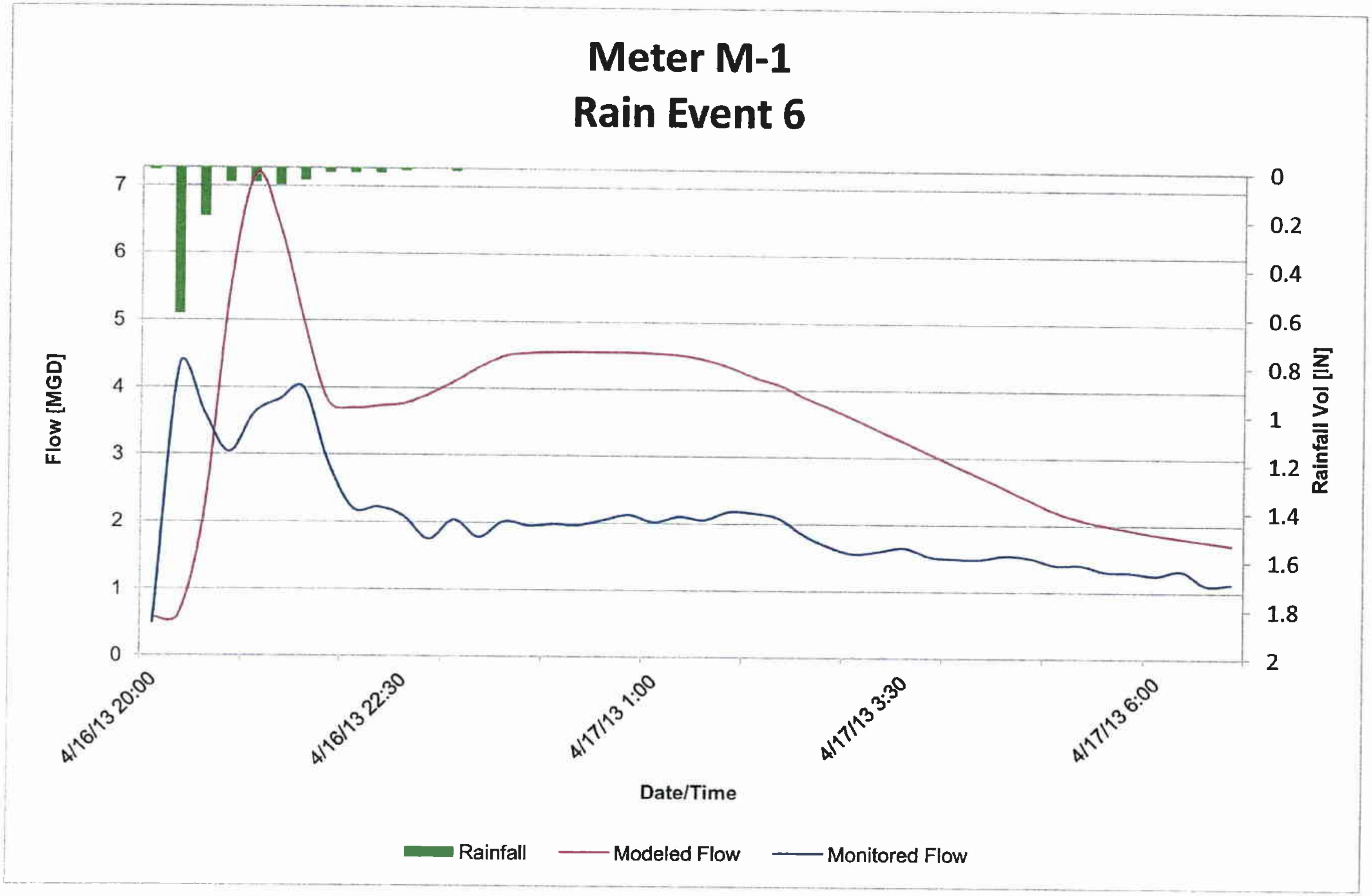
Meter M-1
Rain Event 2
Flow [MGD]
Rainfall Vol [IN]
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



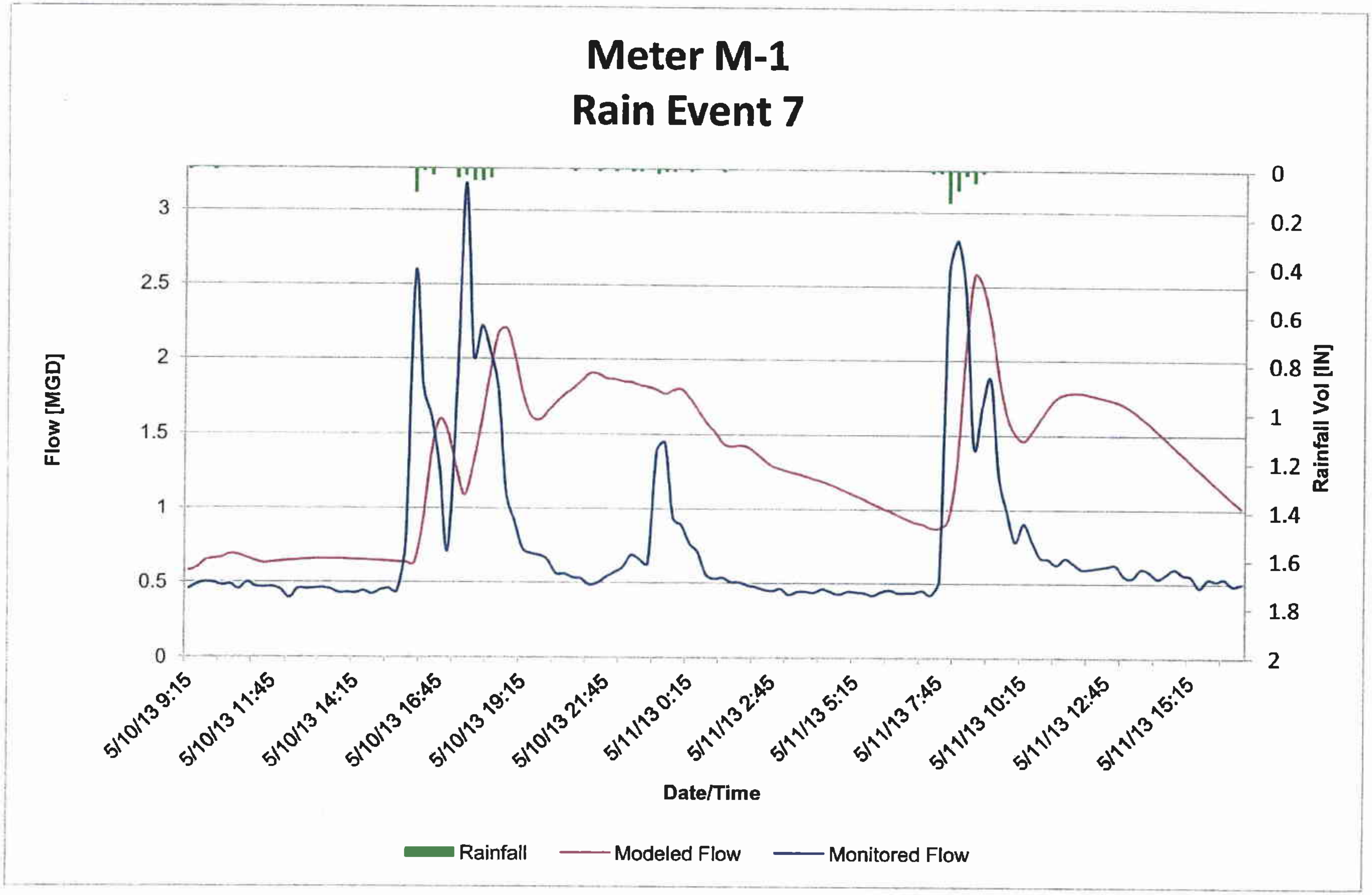
Meter M-1
Rain Event 3
Flow [MGD]
Rainfall Vol [IN]
0
0.5
1
1.5
2
2.5
3
3.5
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



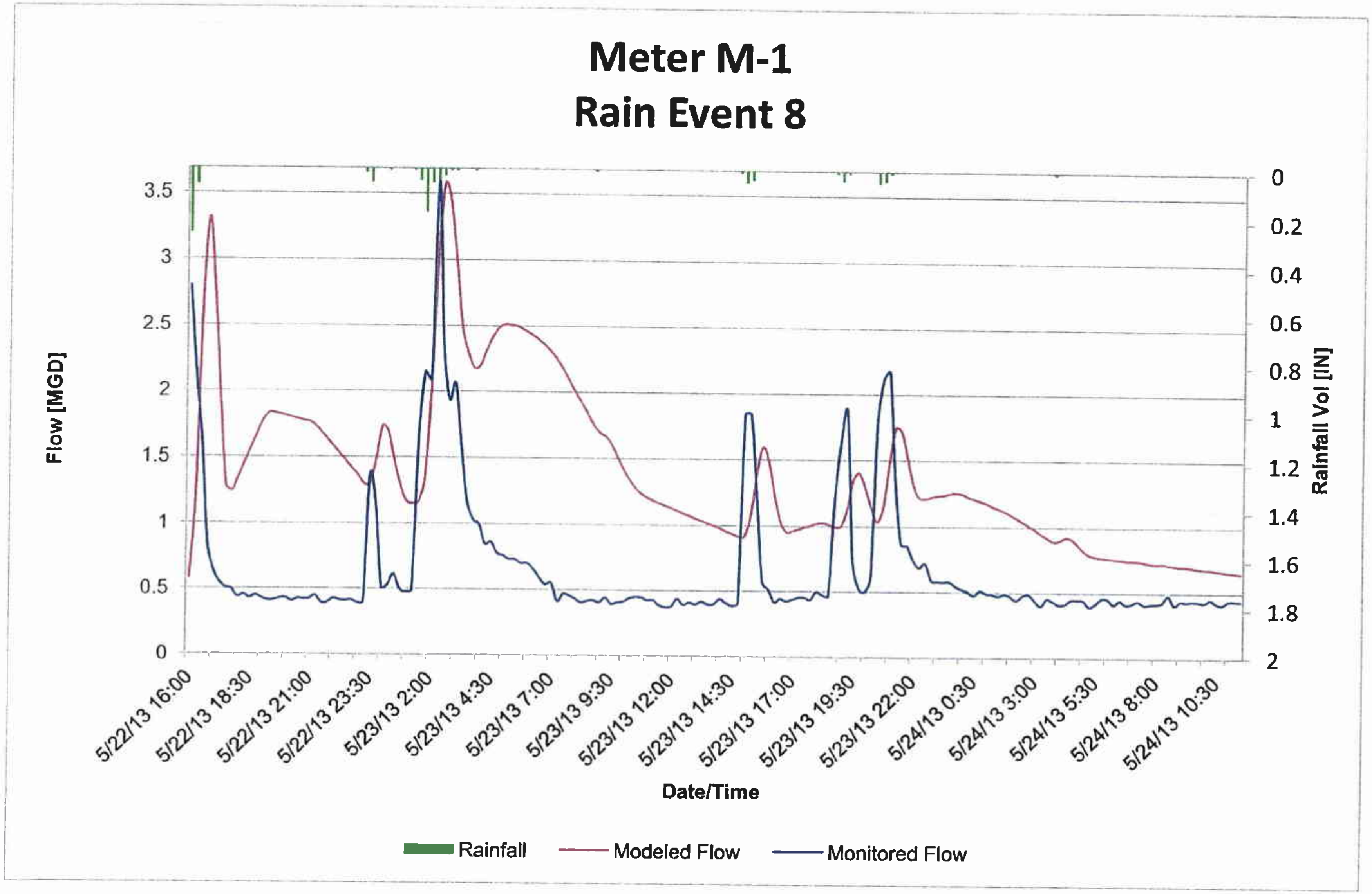
Meter M-1
Rain Event 5
Flow [MGD]
3.5
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



Meter M-1
Rain Event 6
Flow [MGD]
Rainfall Vol [IN]
0
1
2
3
4
5
6
7
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



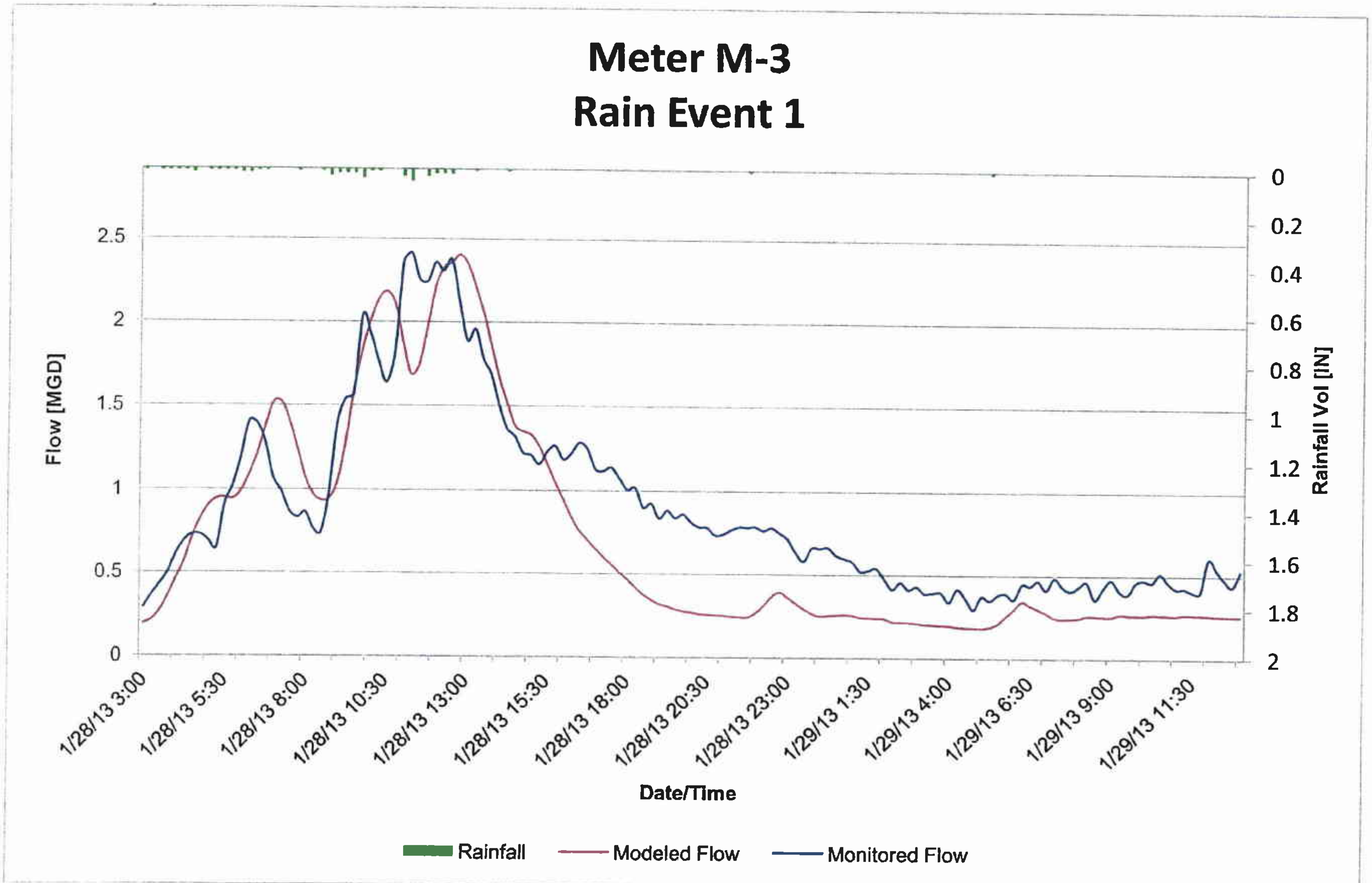
Meter M-1
Rain Event 7
Flow [MGD]
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow



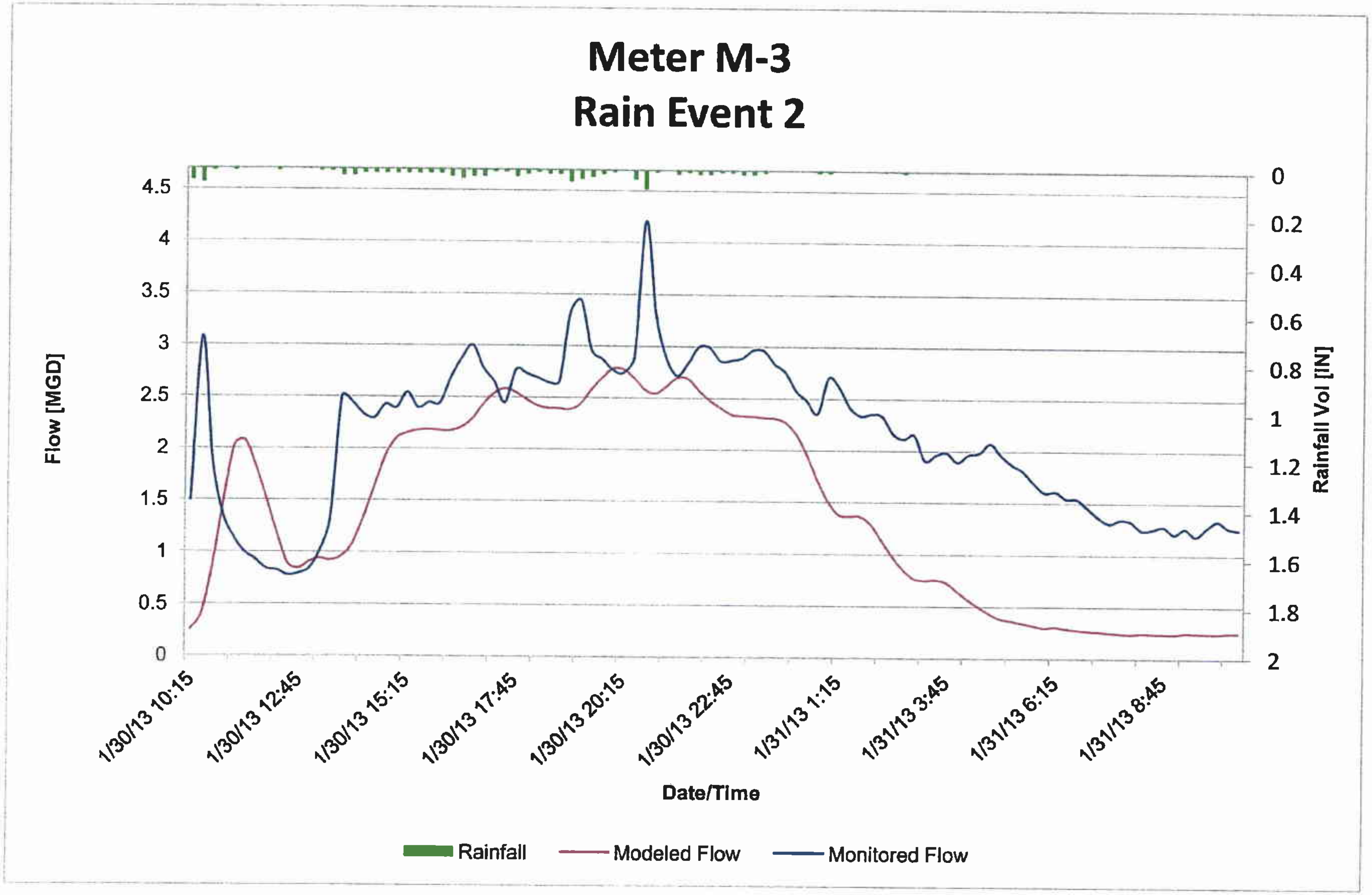
Meter M-1
Rain Event 8
Flow [MGD]
Rainfall Vol [IN]
3.5
3
2.5
2
1.5
1
0.5
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

M-3
SUMMER MODEL
RAIN EVENTS

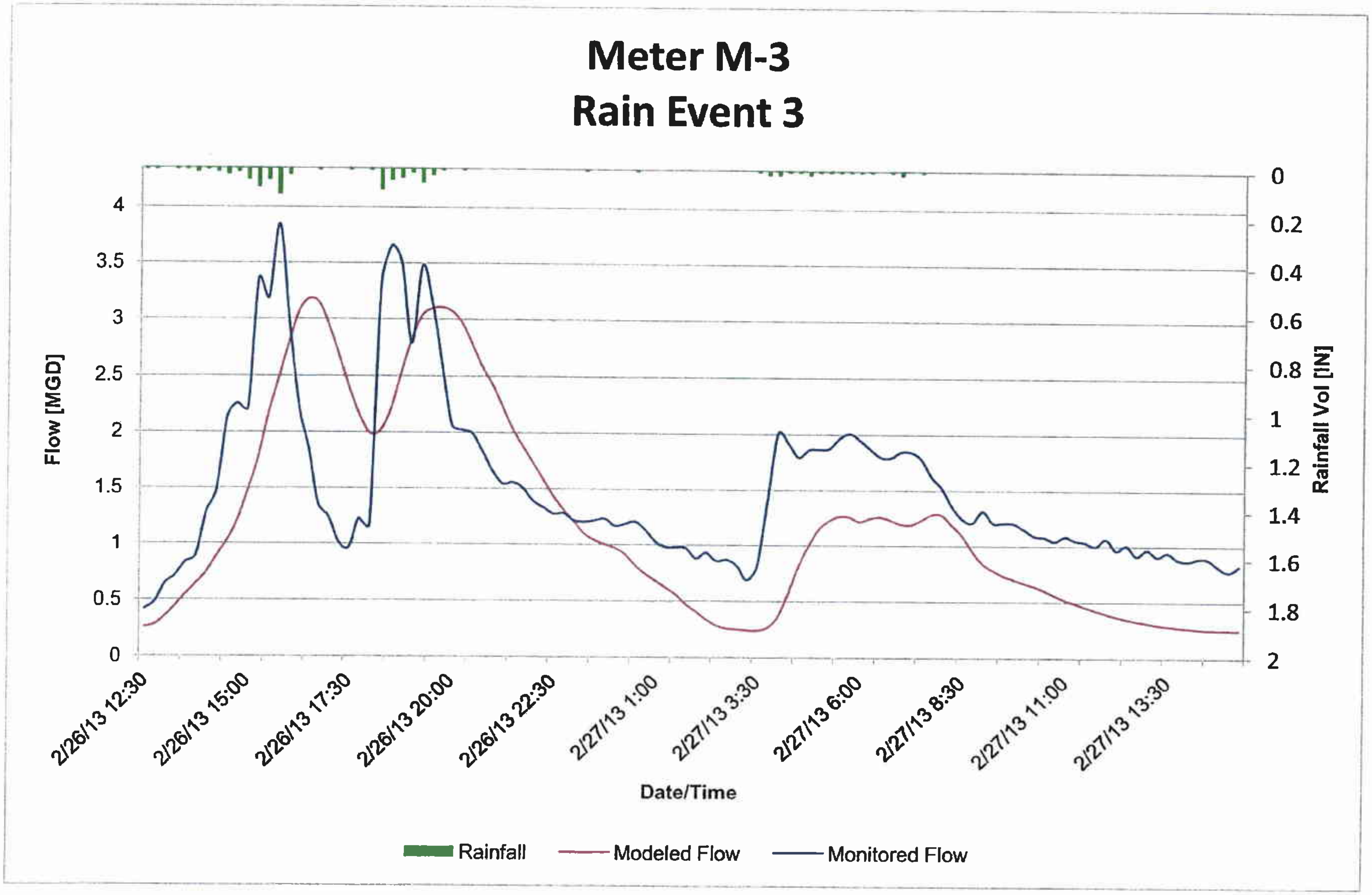
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	2.41	2.42	0.54%	Mod LOW	0.664	0.651	1.86%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	2.78	4.20	33.77%	Mod LOW	1.238	1.554	20.29%	Mod LOW
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	3.19	3.85	17.18%	Mod LOW	0.972	1.133	14.15%	Mod LOW
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	3.25	1.90	41.72%	Mod HIGH	0.753	0.558	25.98%	Mod HIGH
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	3.22	4.24	24.10%	Mod LOW	0.339	0.274	19.20%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	4.35	5.71	23.78%	Mod LOW	0.507	0.446	11.99%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	3.21	4.127	22.22%	Mod LOW	0.371	0.339	8.72%	Mod HIGH



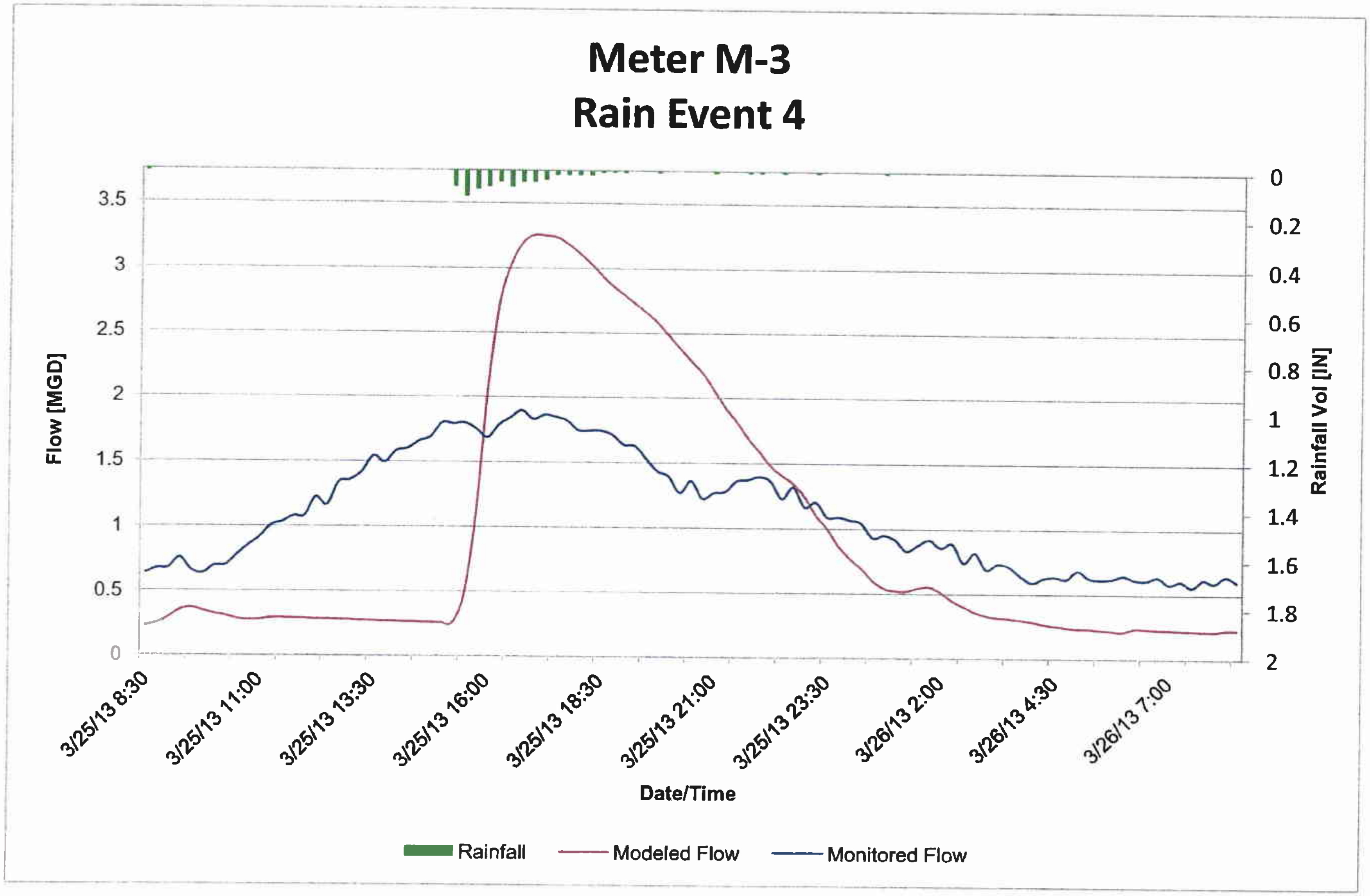
Meter M-3
Rain Event 1
Flow [MGD]
Rainfall Vol [IN]
0
0.5
1
1.5
2
2.5
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

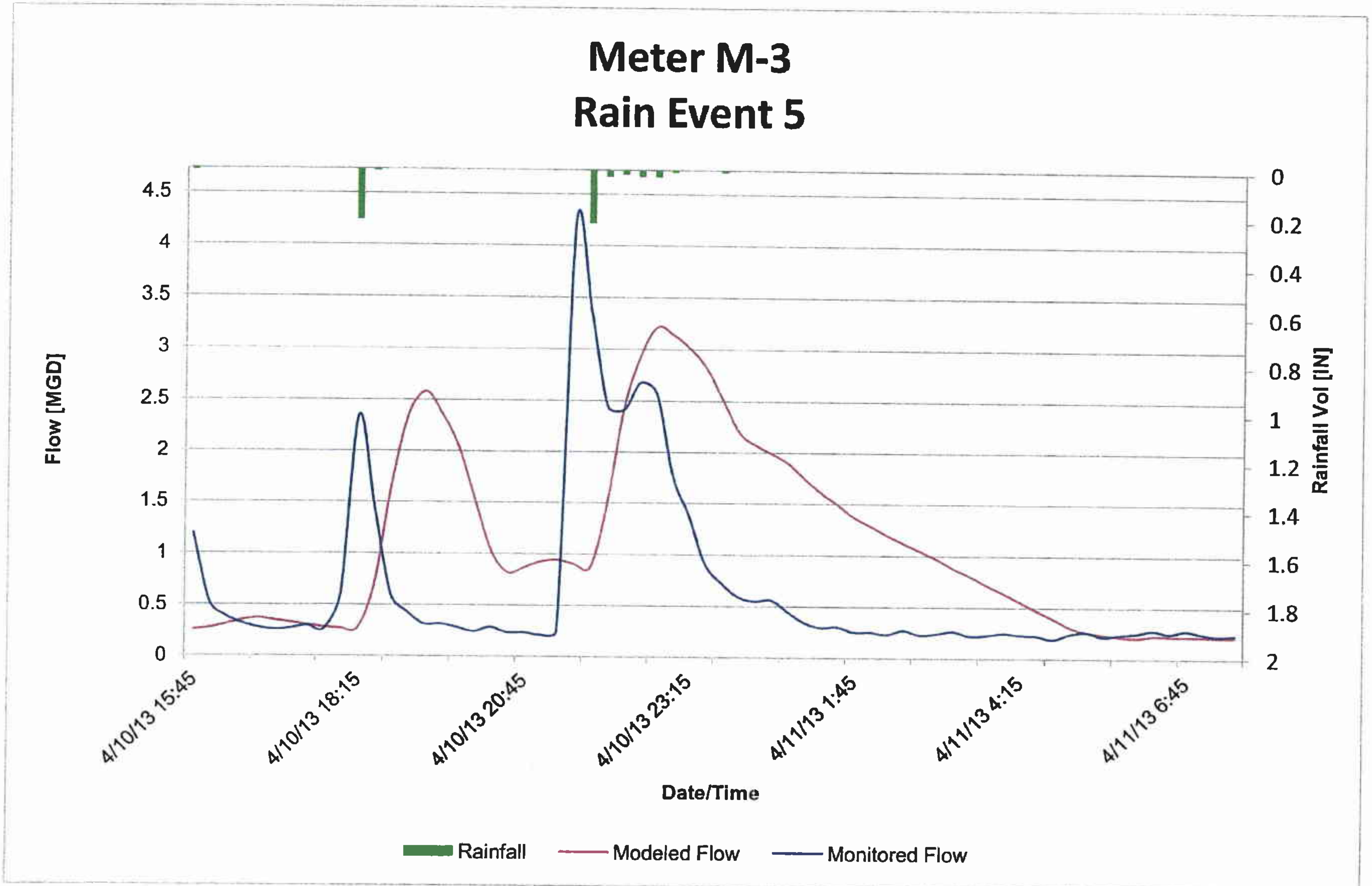


Meter M-3
Rain Event 2
Flow [MGD]
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow

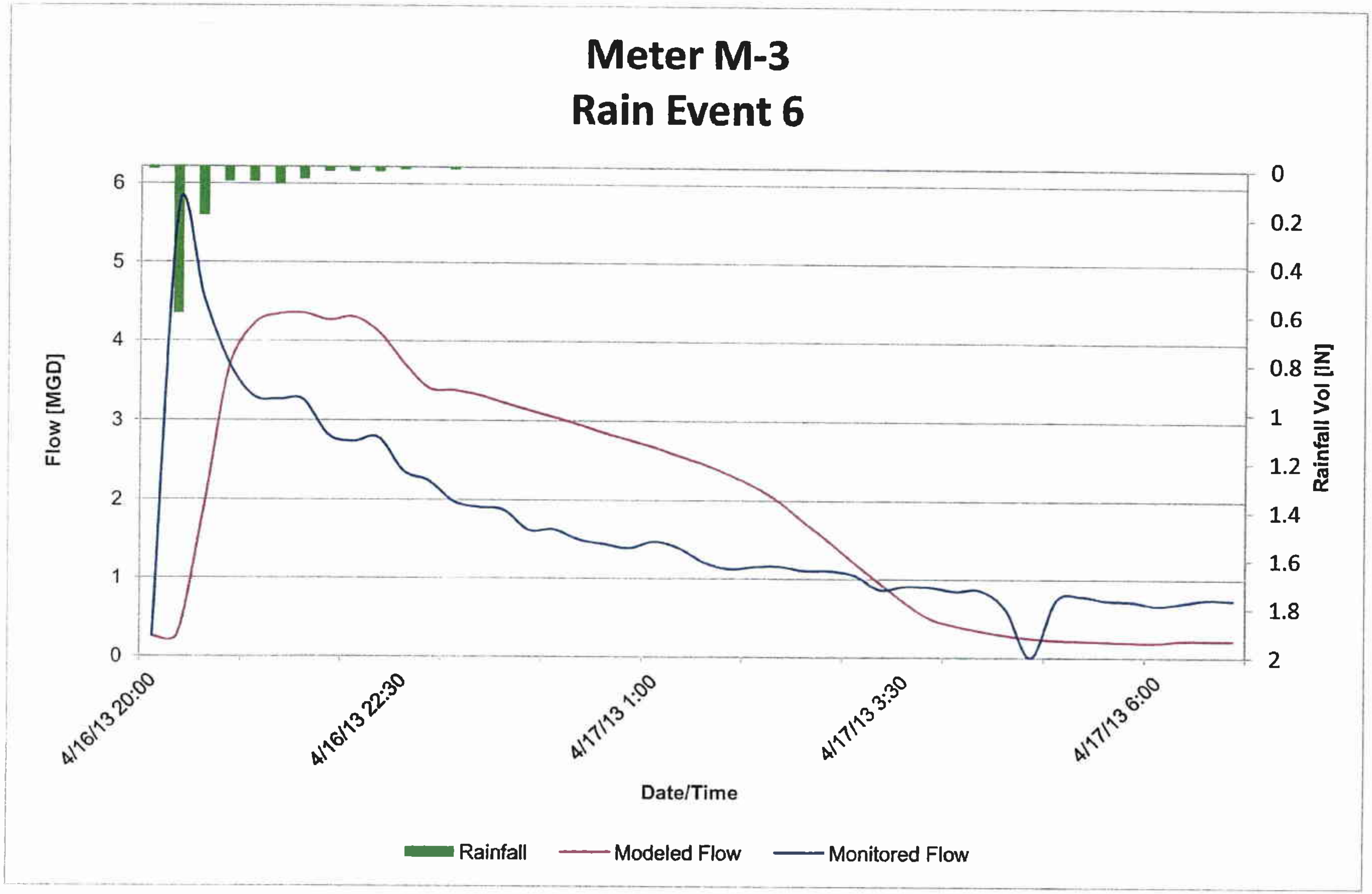


Meter M-3
Rain Event 3
Flow [MGD]
4
3.5
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

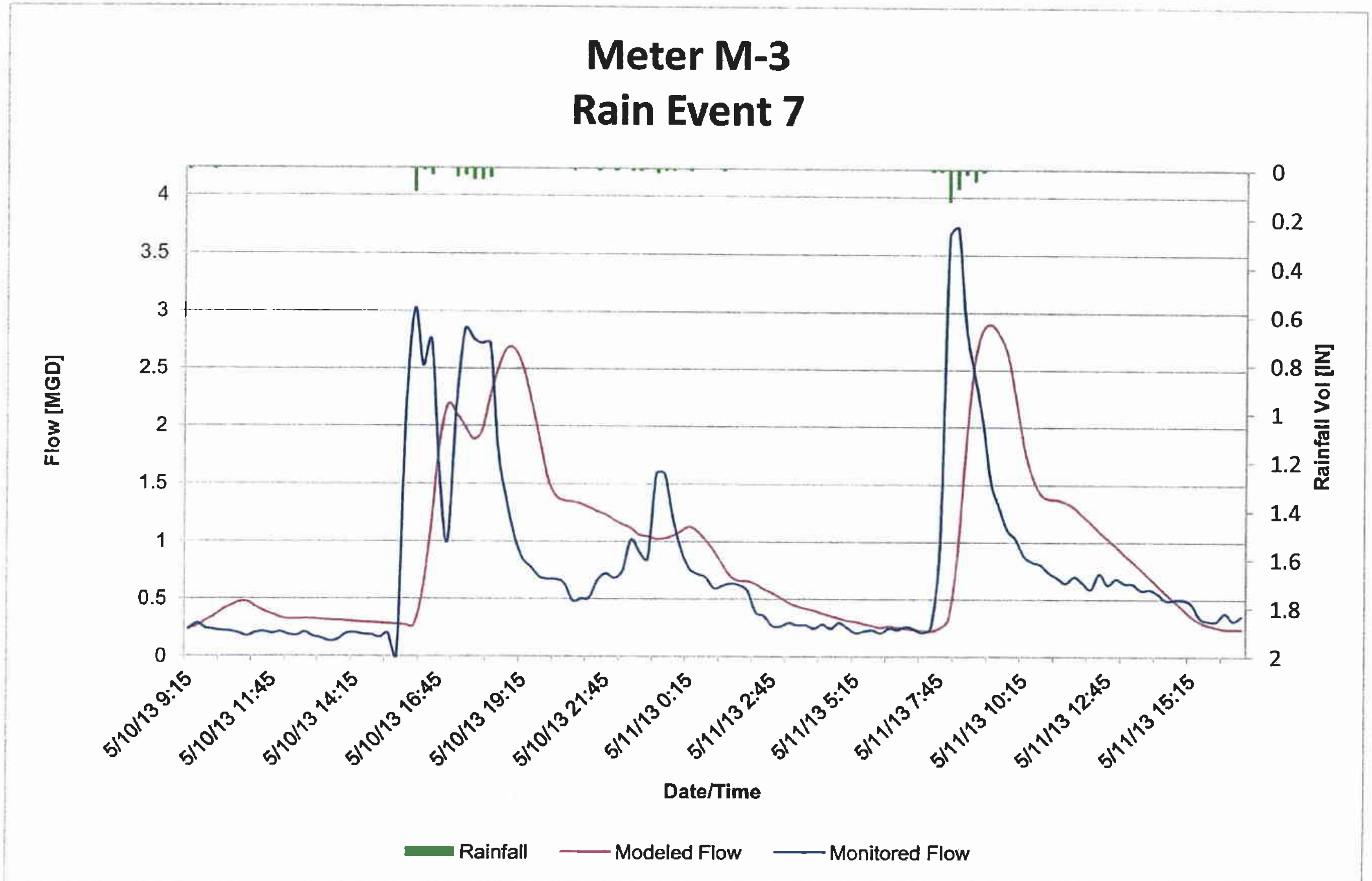

Meter M-3
Rain Event 4
Flow [MGD]
Rainfall Vol [IN]
3.5
3
2.5
2
1.5
1
0.5
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



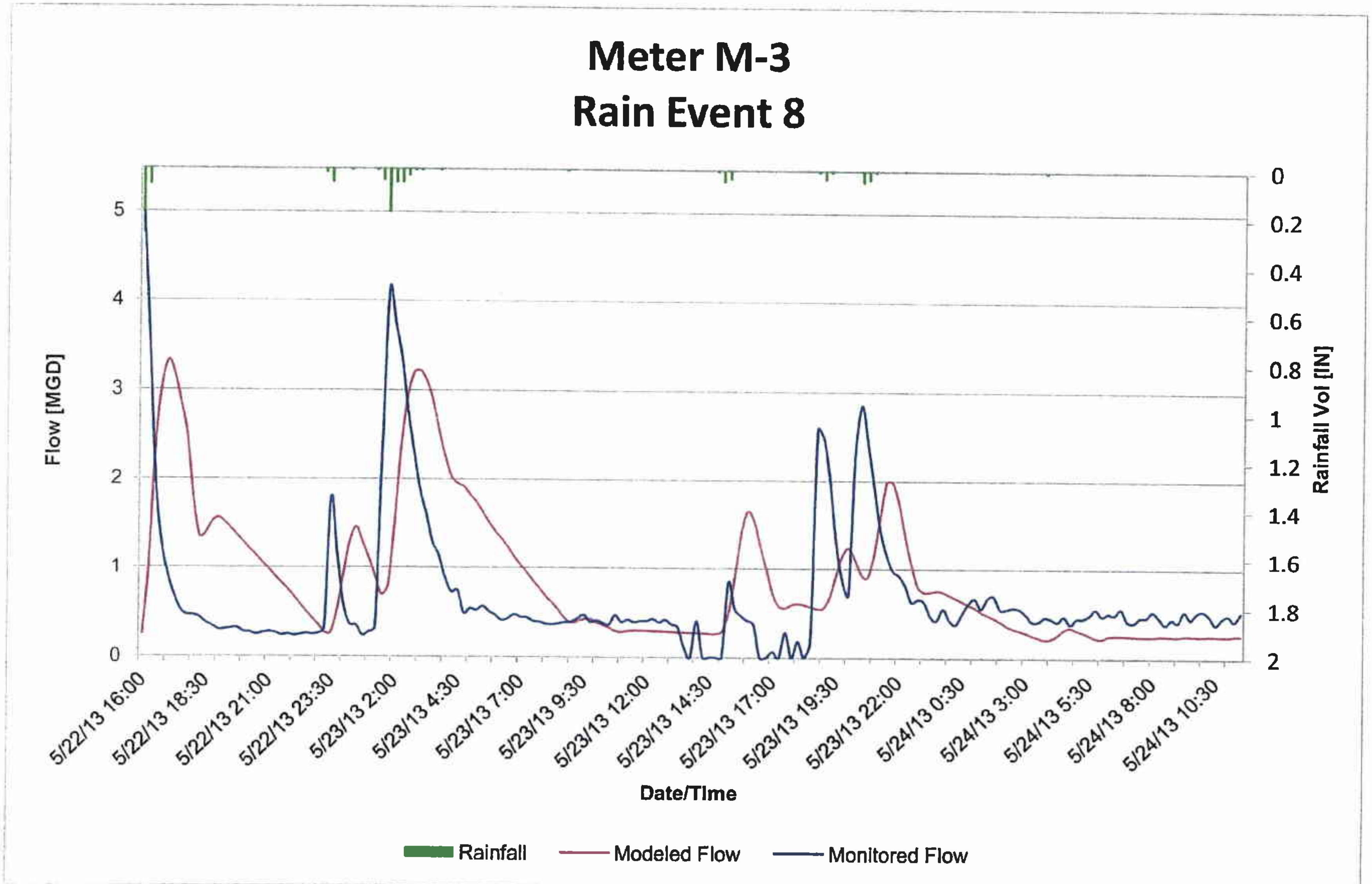
Meter M-3
Rain Event 5
Flow [MGD]
Rainfall Vol [IN]
Date/Time
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Rainfall
Modeled Flow
Monitored Flow



Meter M-3
Rain Event 6
Flow [MGD]
6
5
4
3
2
1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



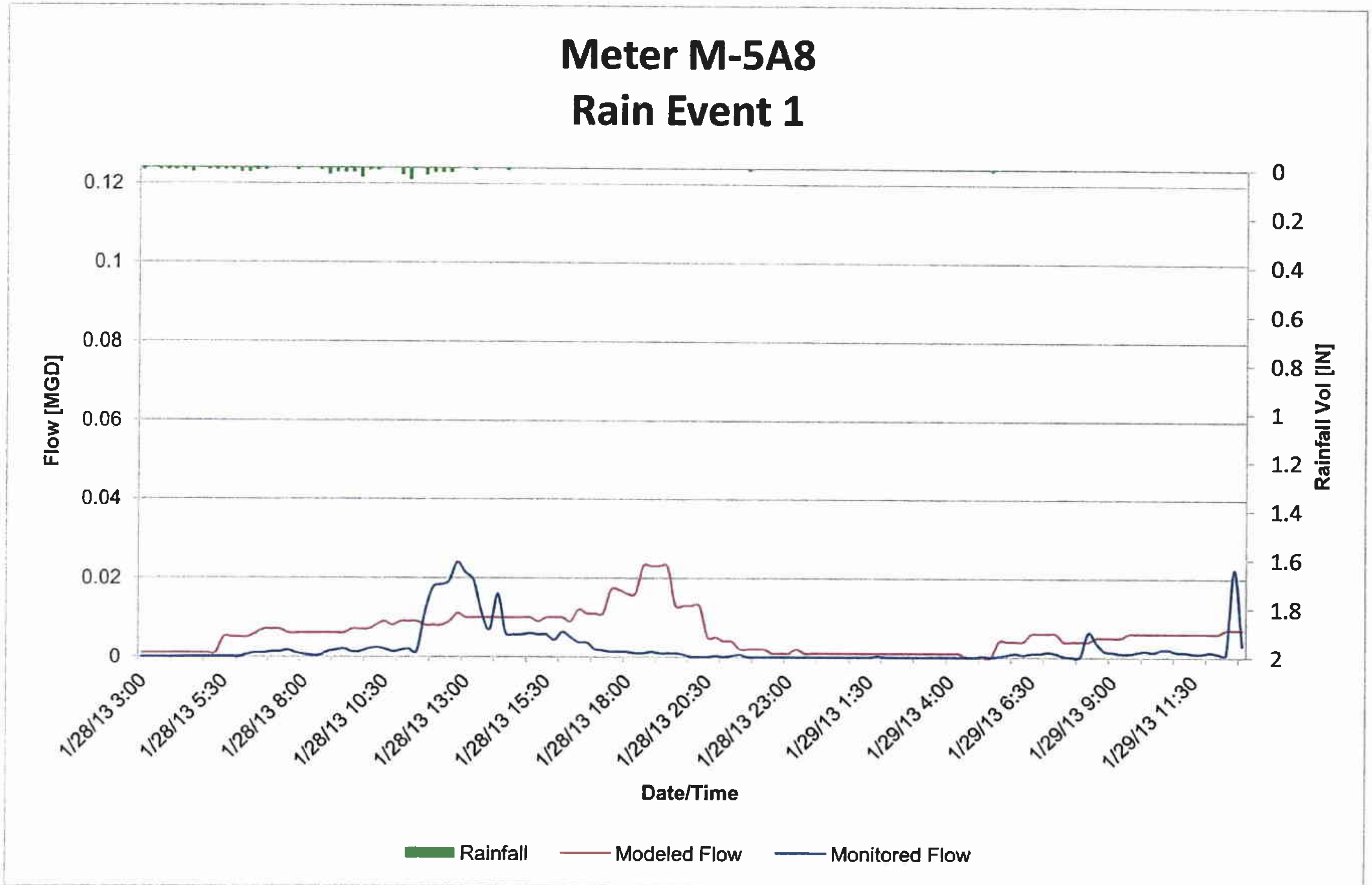
Meter M-3
Rain Event 7
Flow [MGD]
Rainfall Vol [IN]
4
3.5
3
2.5
2
1.5
1
0.5
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow



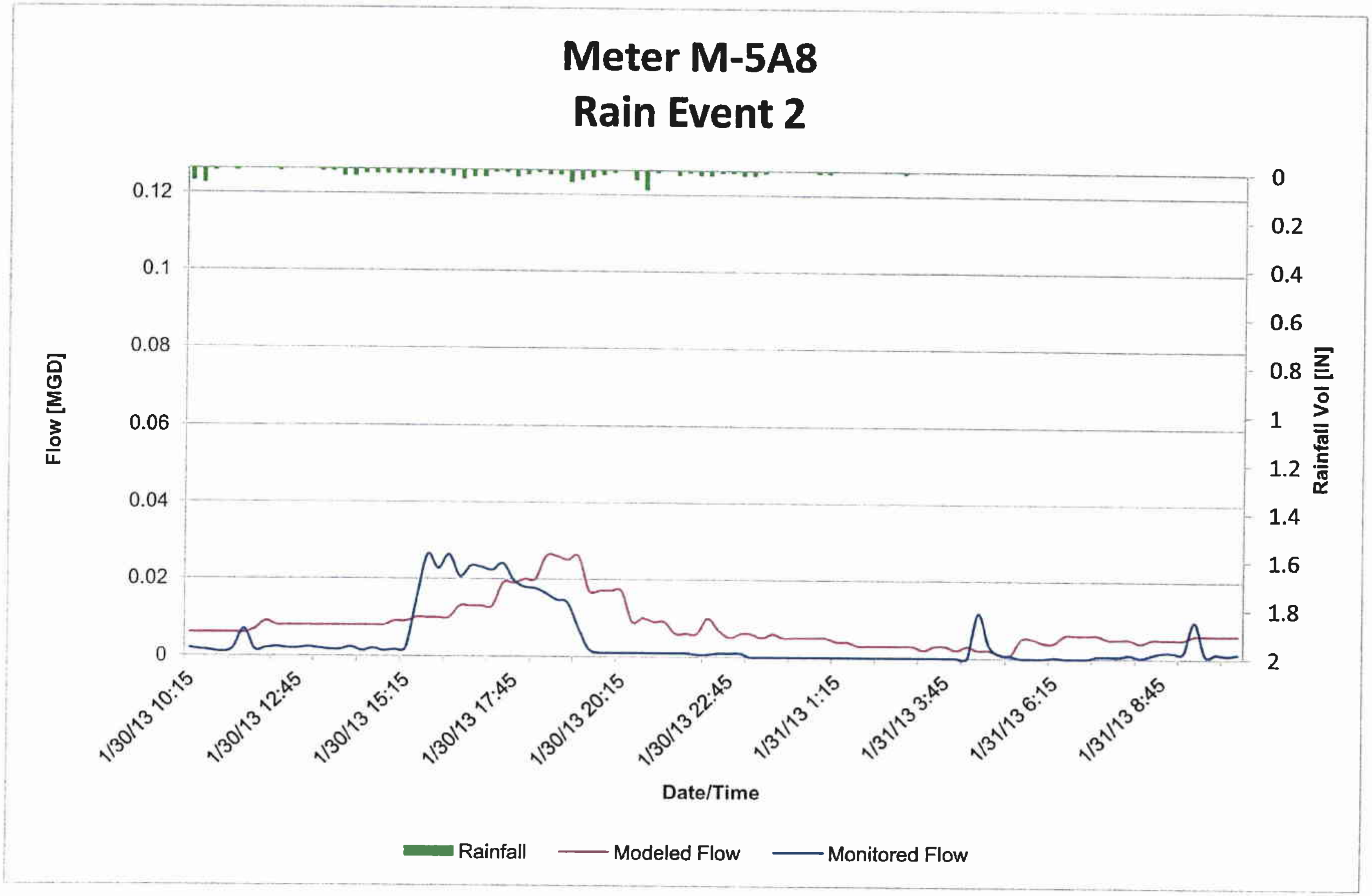
Meter M-3
Rain Event 8
Flow [MGD]
Rainfall Vol [IN]
0
1
2
3
4
5
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

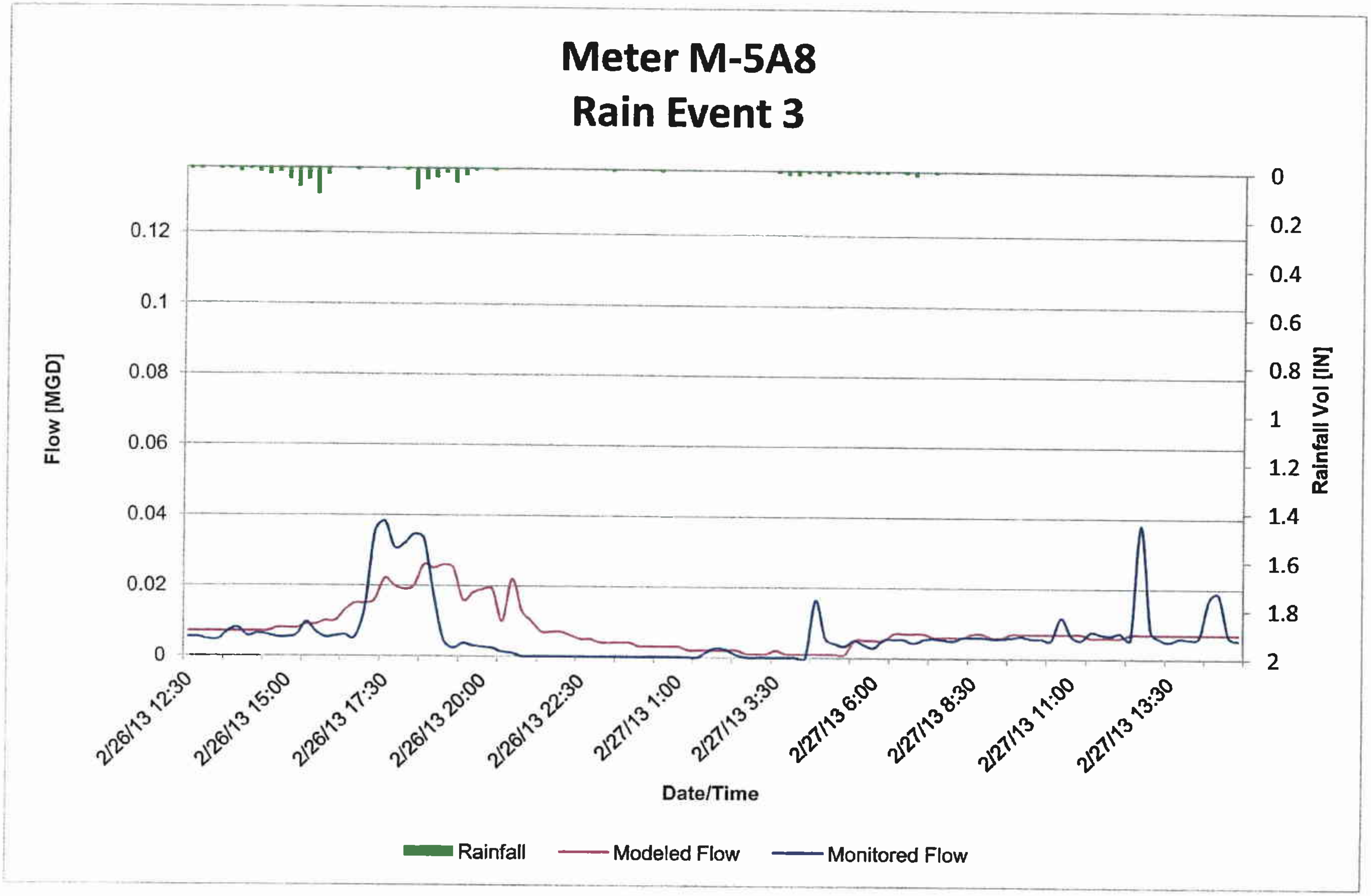
M-5A8
SUMMER MODEL
RAIN EVENTS

No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	0.02	0.02	4.17%	Mod LOW	0.003	0.002	31.82%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	0.03	0.03	1.27%	Mod LOW	0.006	0.004	40.35%	Mod HIGH
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	0.03	0.04	32.17%	Mod LOW	0.006	0.005	20.93%	Mod HIGH
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	0.03	0.05	42.38%	Mod LOW	0.005	0.005	6.54%	Mod LOW
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	0.02	0.06	60.48%	Mod LOW	0.002	0.001	47.73%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	0.03	0.02	1.33%	Mod HIGH	0.002	0.001	58.53%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	0.009	0.040	77.50%	Mod LOW	0.001	0.000	55.56%	Mod HIGH

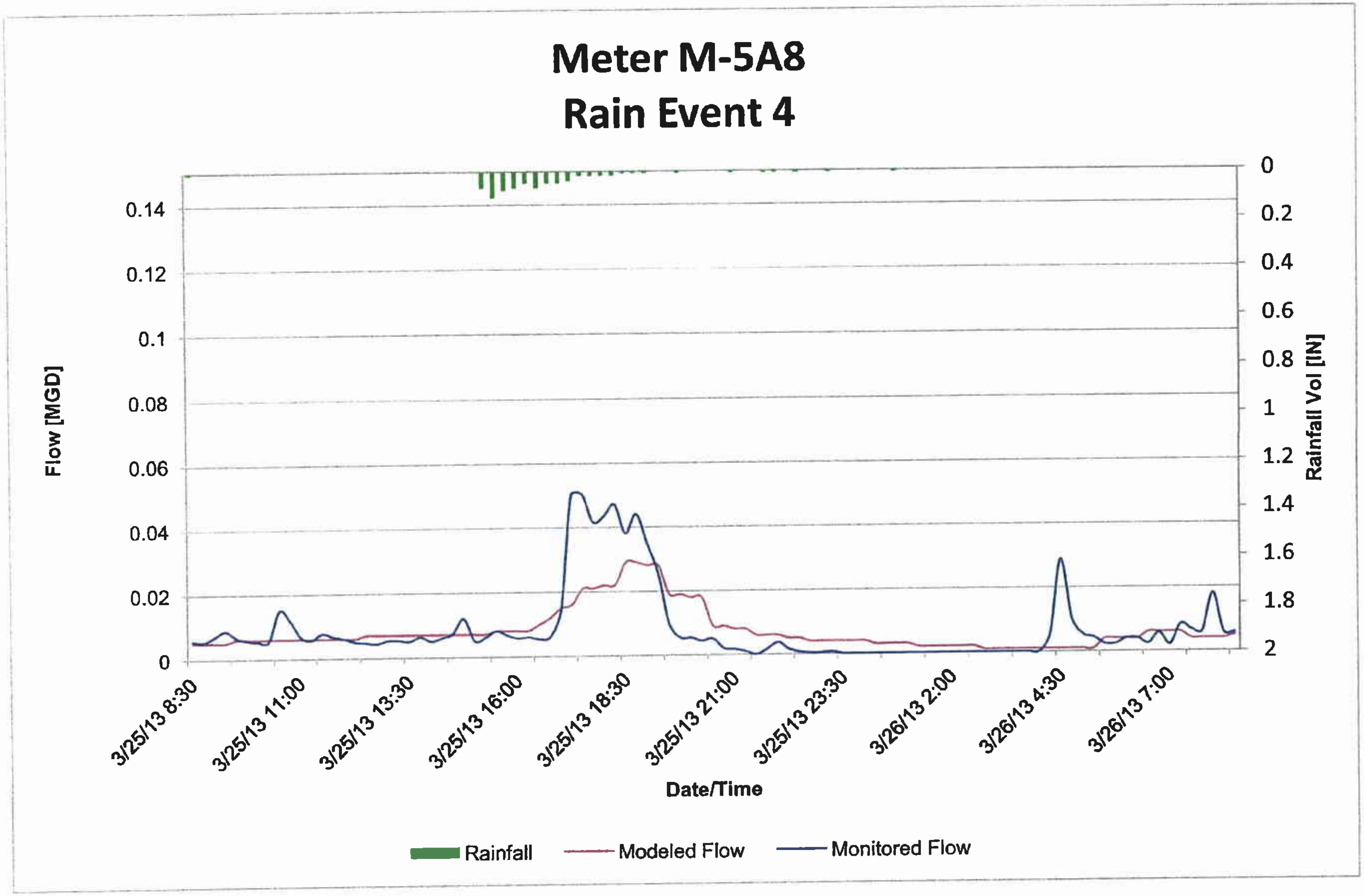


Meter M-5A8
Rain Event 1
0.12
0.1
0.08
0.06
0.04
0.02
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

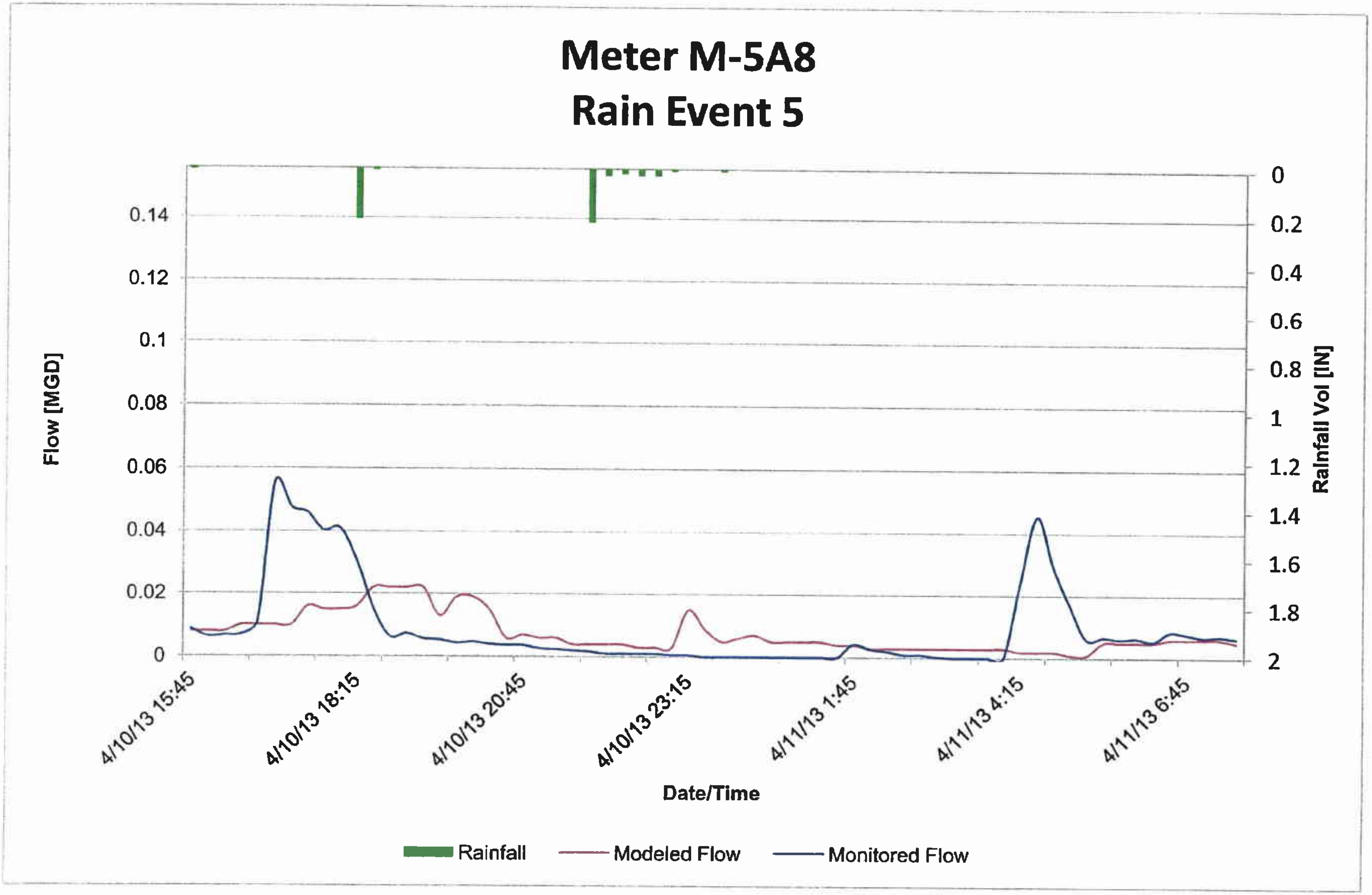

Meter M-5A8
Rain Event 2
Flow [MGD]
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



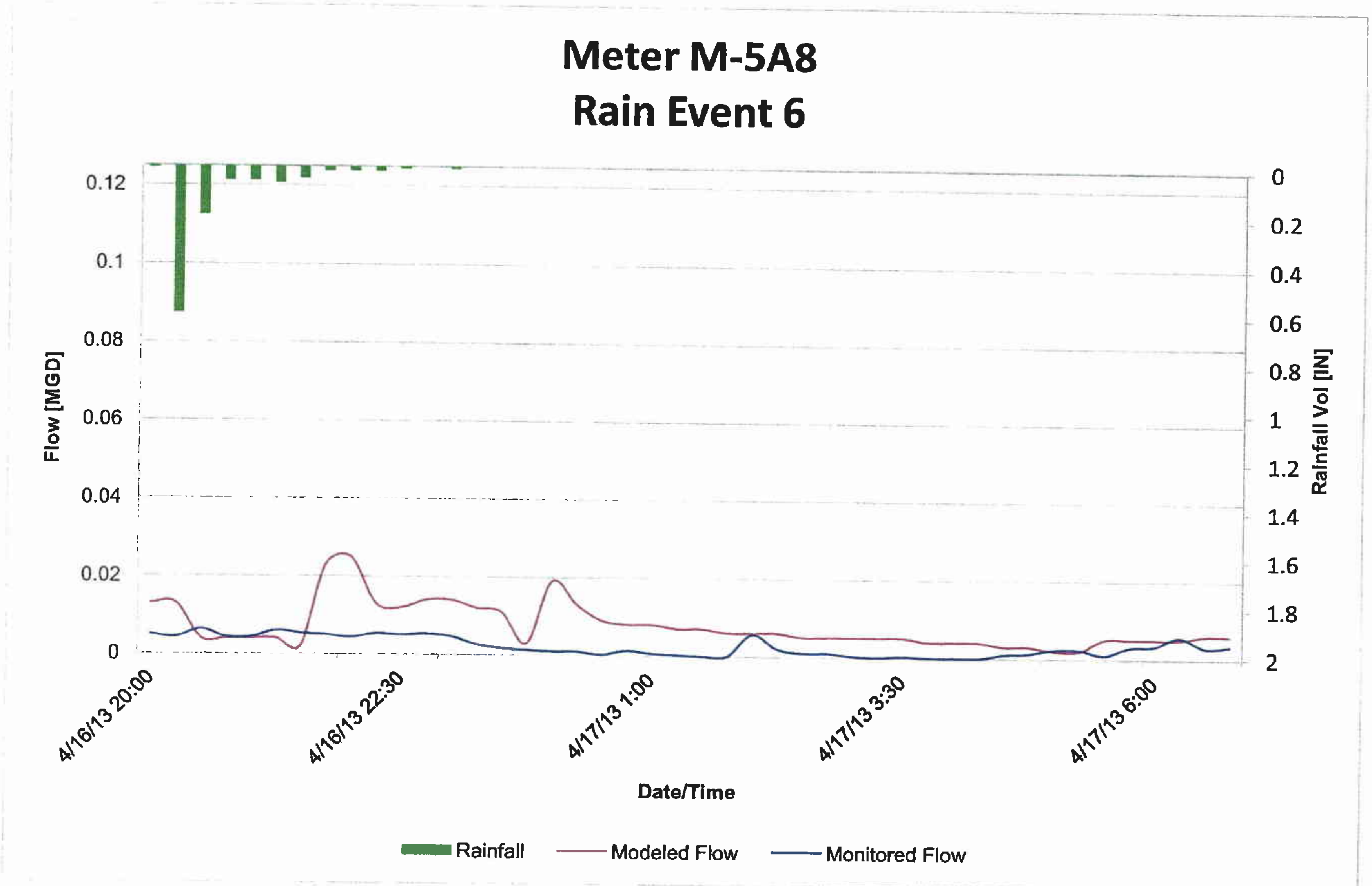
Meter M-5A8
Rain Event 3
Flow [MGD]
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

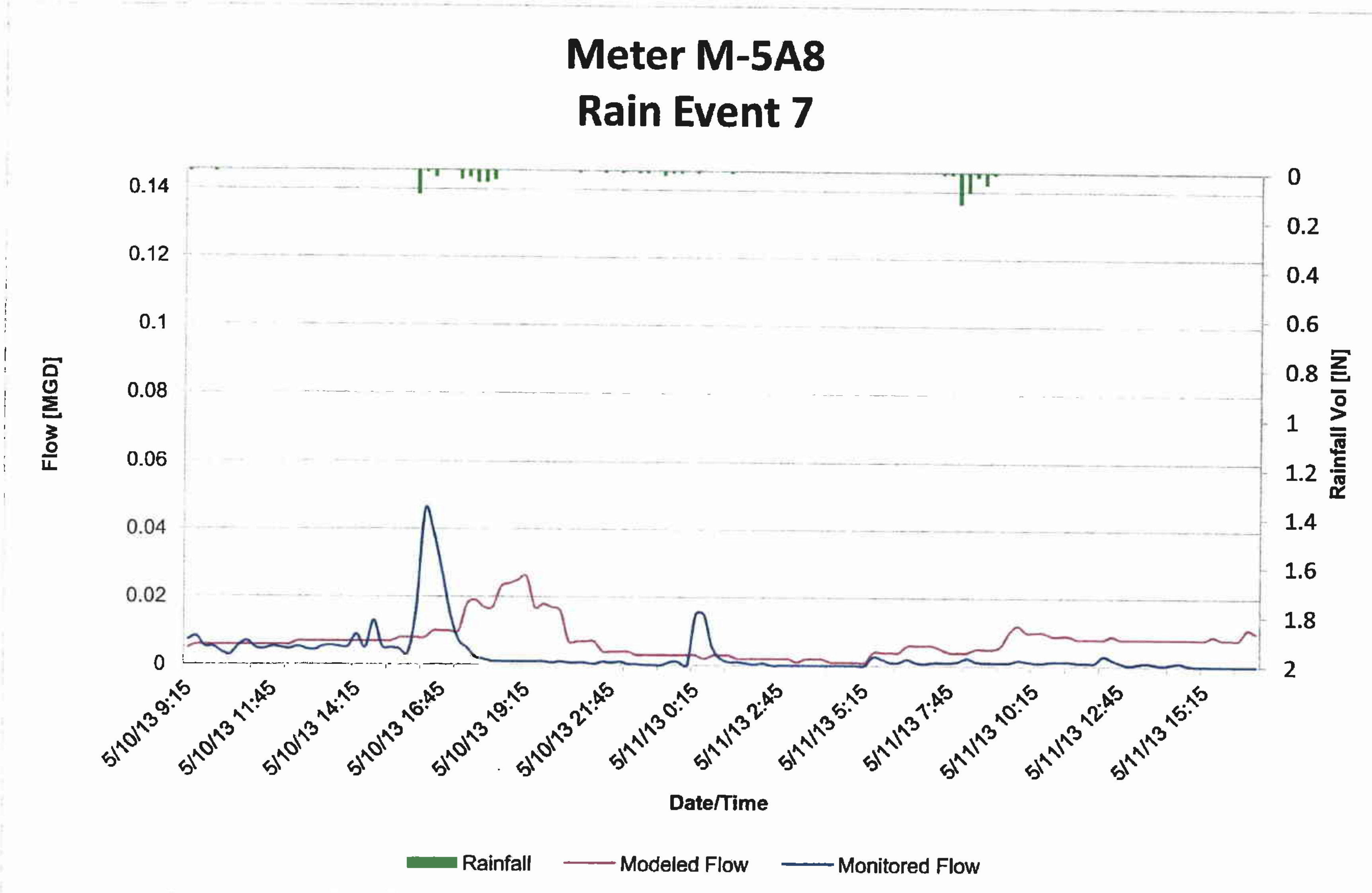


Meter M-5A8
Rain Event 4
Flow [MGD]
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow

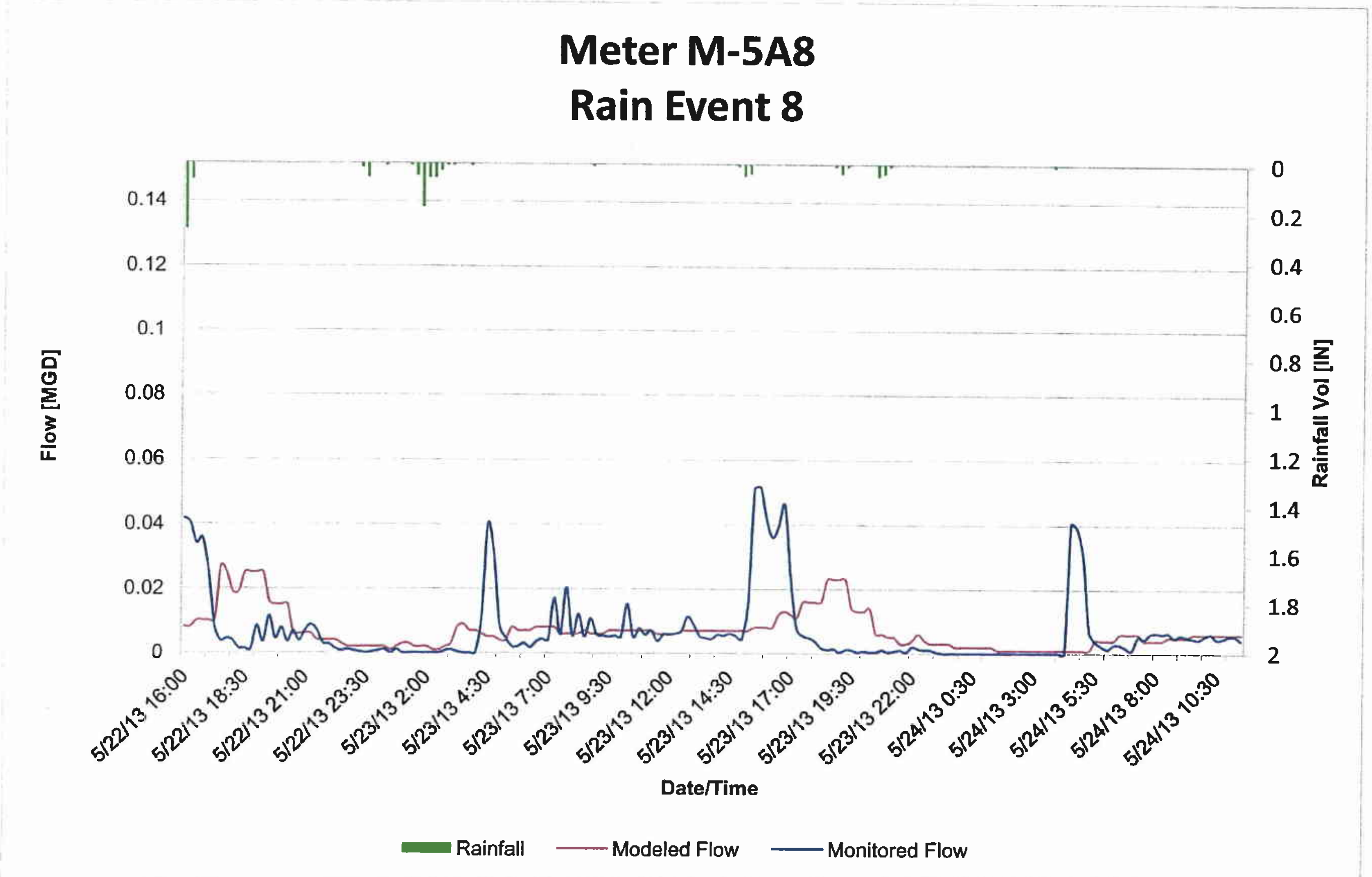


Meter M-5A8
Rain Event 5
Flow [MGD]
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow


Meter M-5A8
Rain Event 6
0.12
0.1
0.08
0.06
0.04
0.02
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



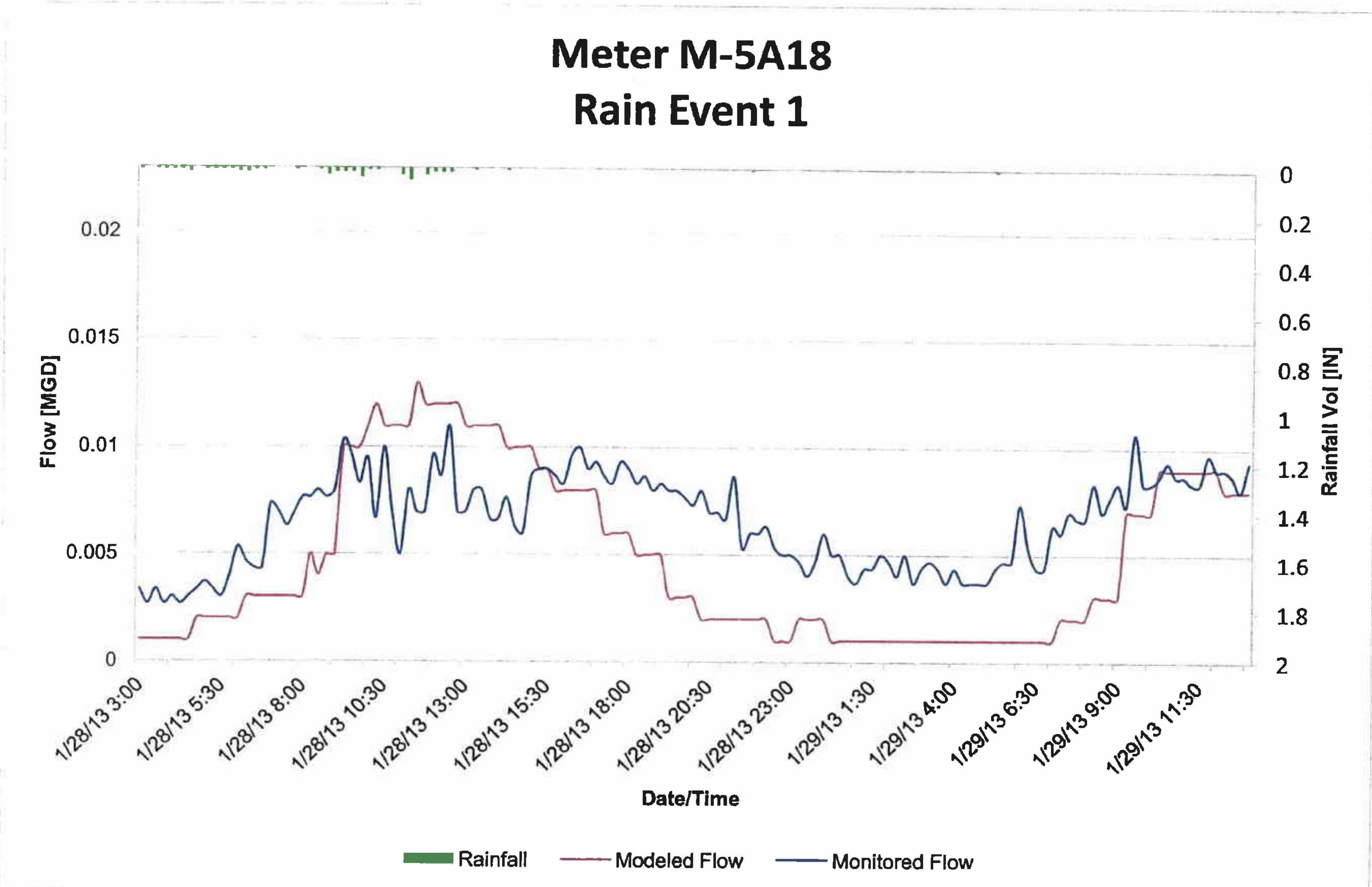
Meter M-5A8
Rain Event 7
Flow [MGD]
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow



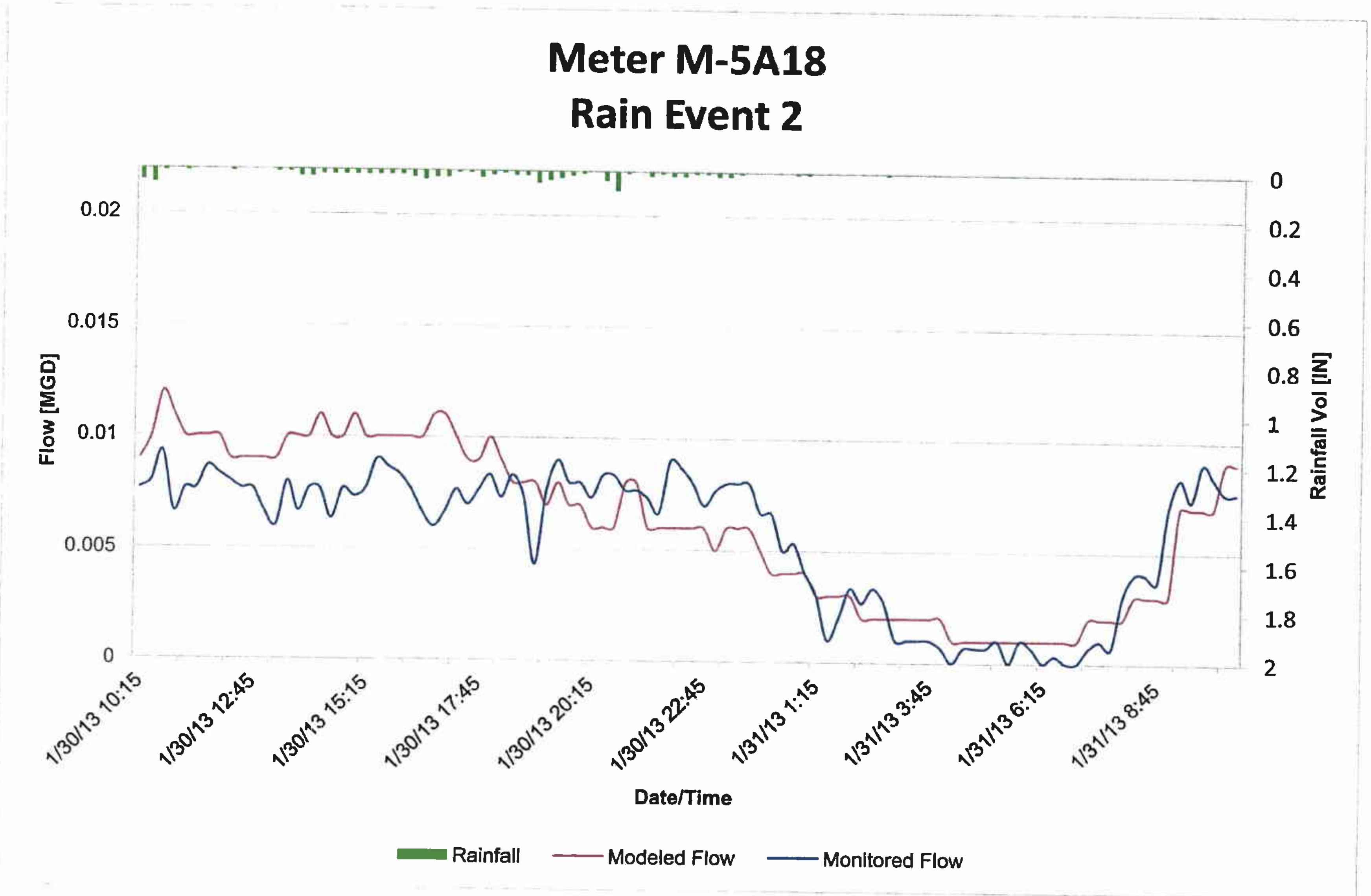
Meter M-5A8
Rain Event 8
Flow [MGD]
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

M5A-18
SUMMER MODEL
RAIN EVENTS

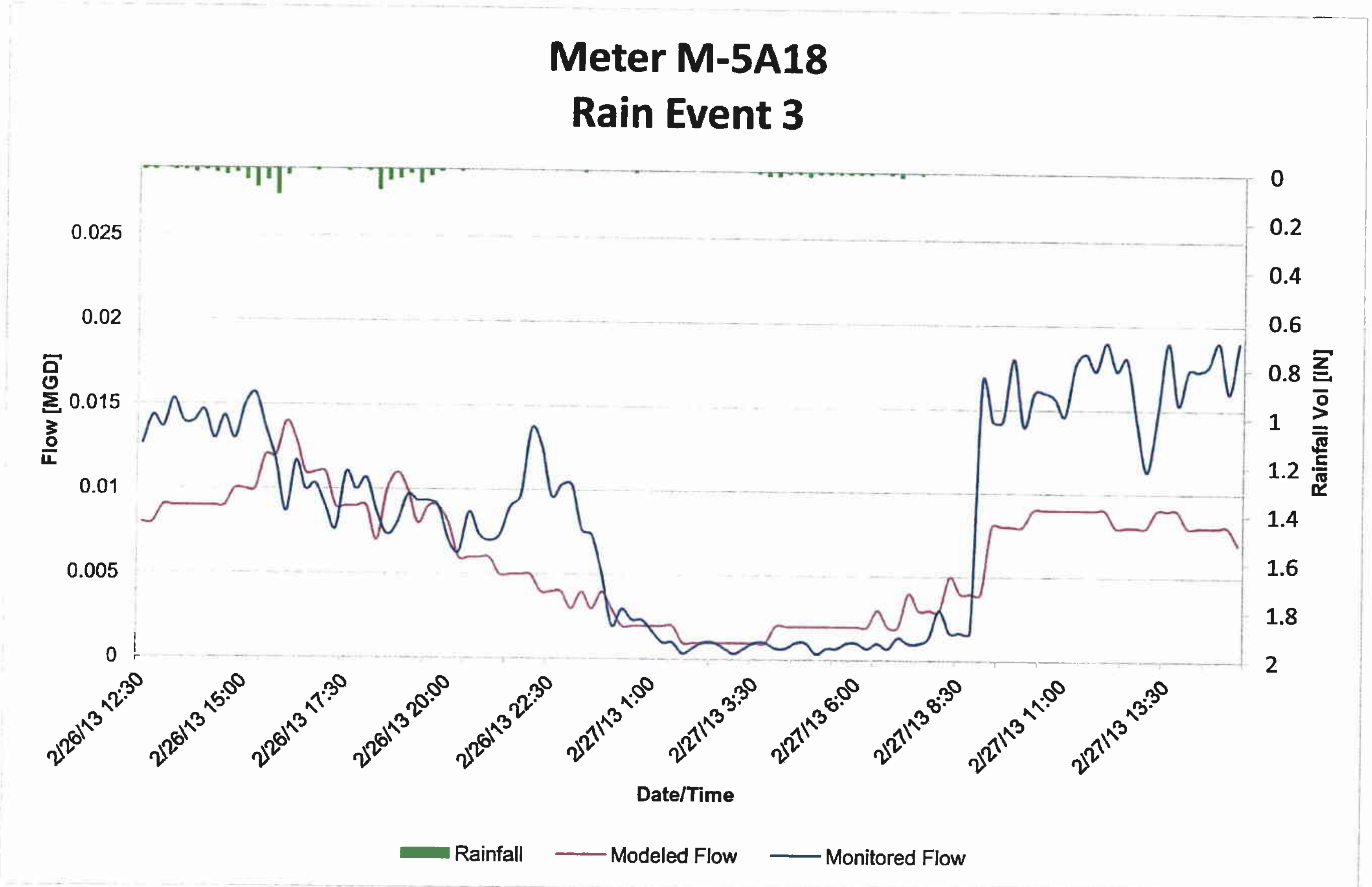
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	0.01	0.01	15.38%	Mod HIGH	0.003	0.003	3.80%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	0.01	0.01	22.22%	Mod HIGH	0.005	0.004	10.42%	Mod HIGH
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	0.01	0.02	26.32%	Mod LOW	0.004	0.004	10.00%	Mod LOW
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	0.01	0.03	53.85%	Mod LOW	0.003	0.007	60.56%	Mod LOW
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	0.01	0.03	63.41%	Mod LOW	0.001	0.003	62.62%	Mod LOW
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	0.02	0.01	65.28%	Mod HIGH	0.002	0.000	88.64%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	0.009	0.005	44.44%	Mod HIGH	0.001	0.000	81.14%	Mod HIGH

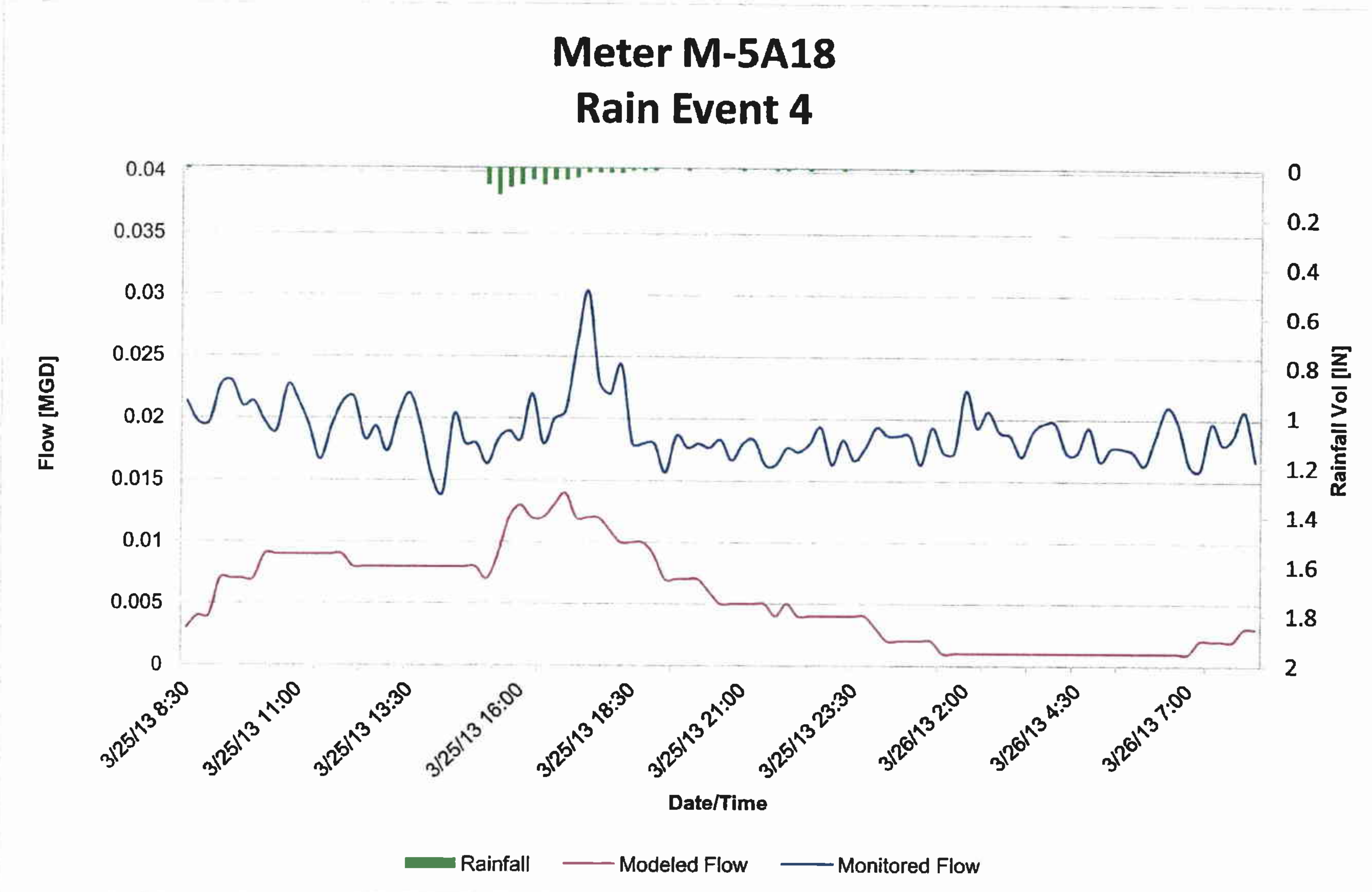


Meter M-5A18
Rain Event 1
Flow [MGD]
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

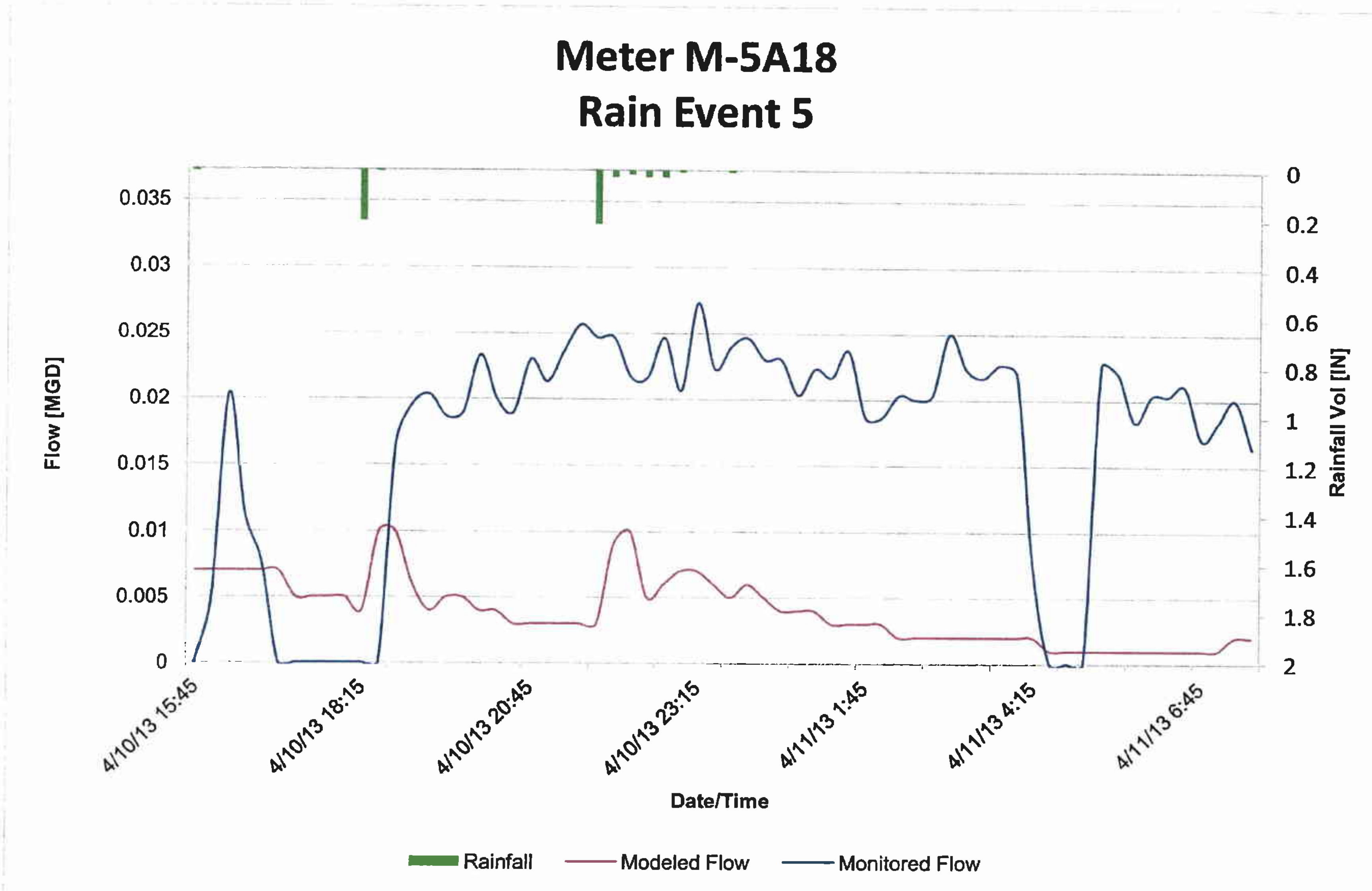


Meter M-5A18
Rain Event 2
Flow [MGD]
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow

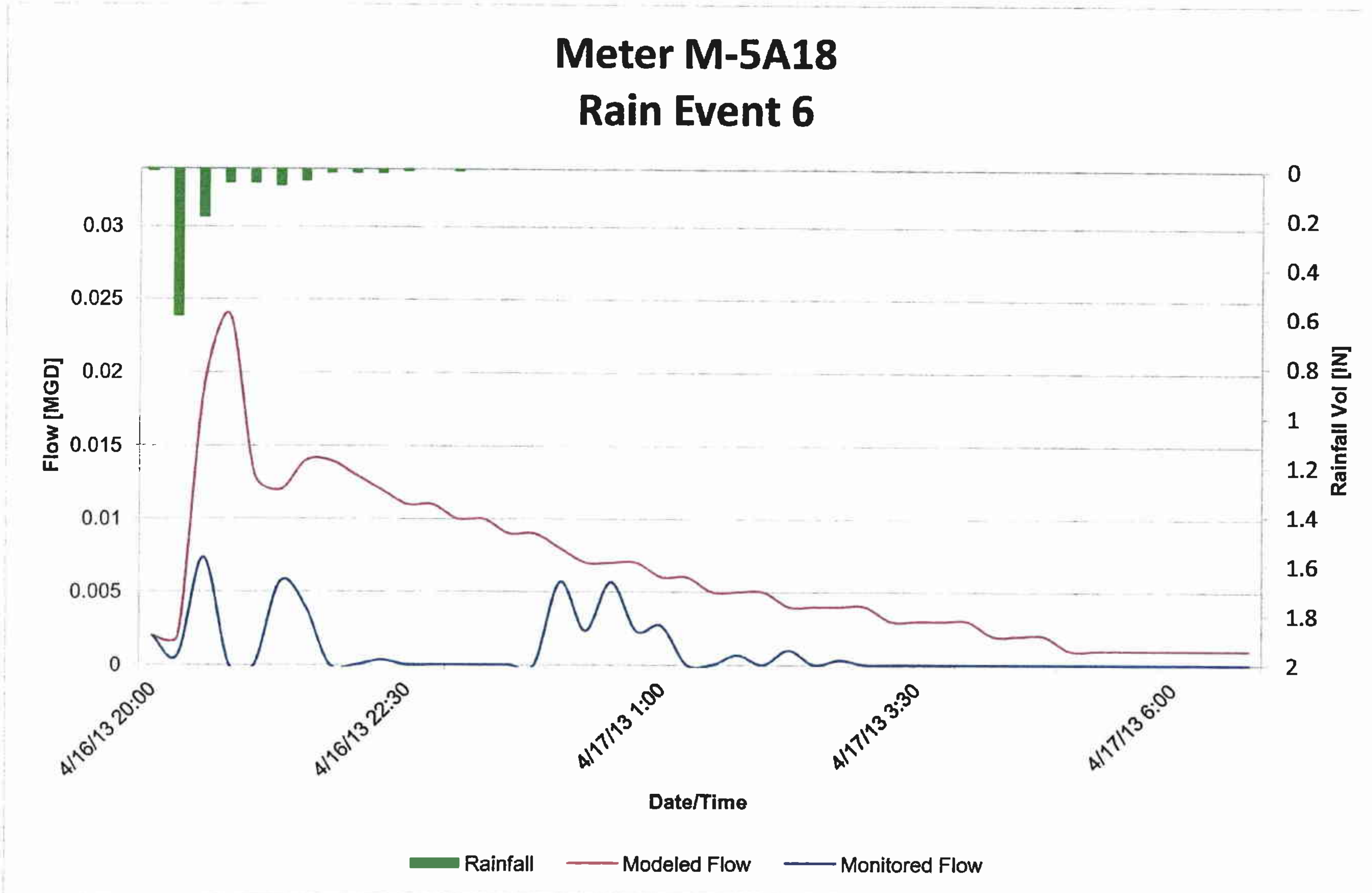

Meter M-5A18
Rain Event 3
Flow [MGD]
0.025
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



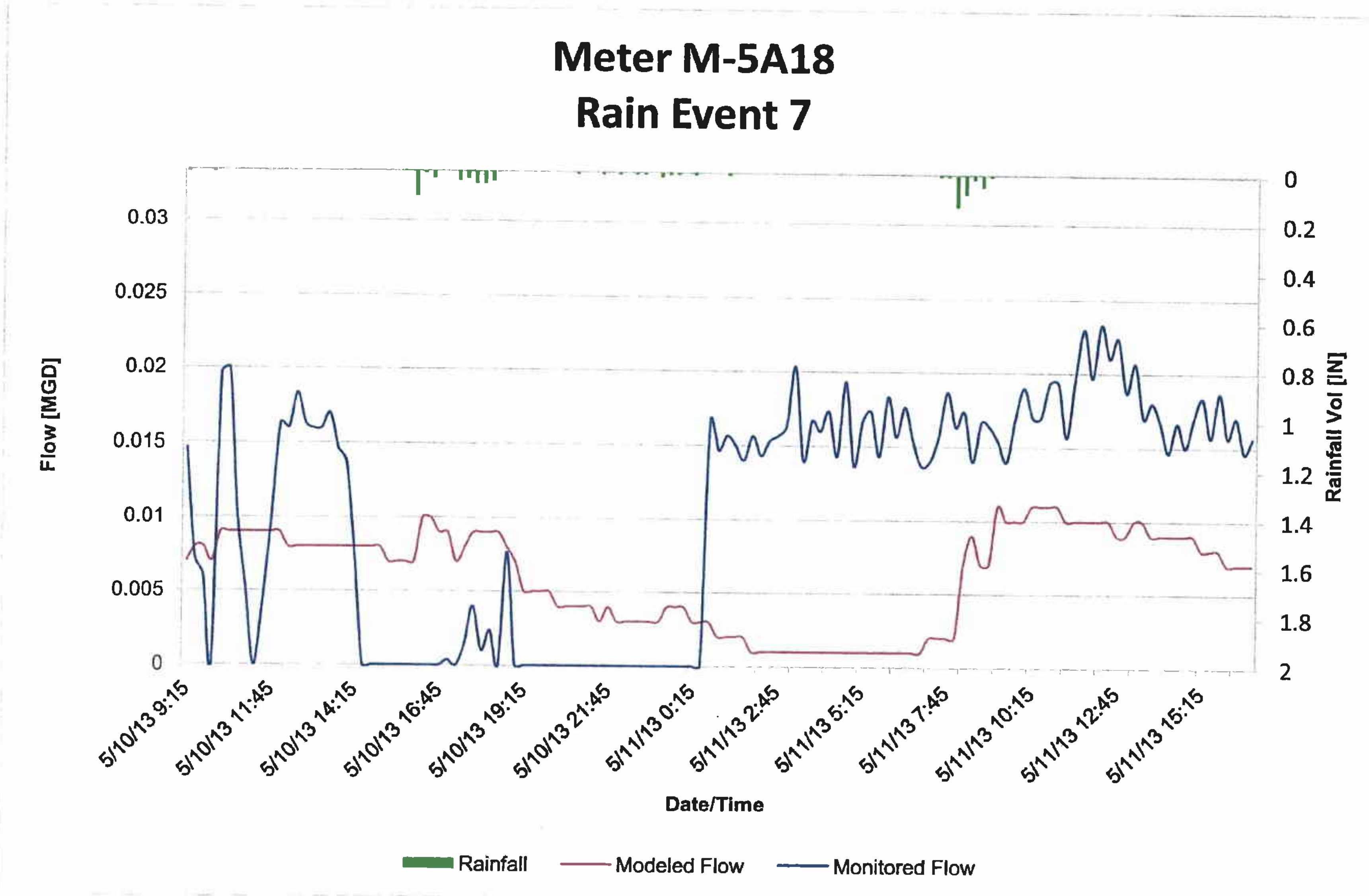
Meter M-5A18
Rain Event 4
Flow [MGD]
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



Meter M-5A18
Rain Event 5
Flow [MGD]
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow

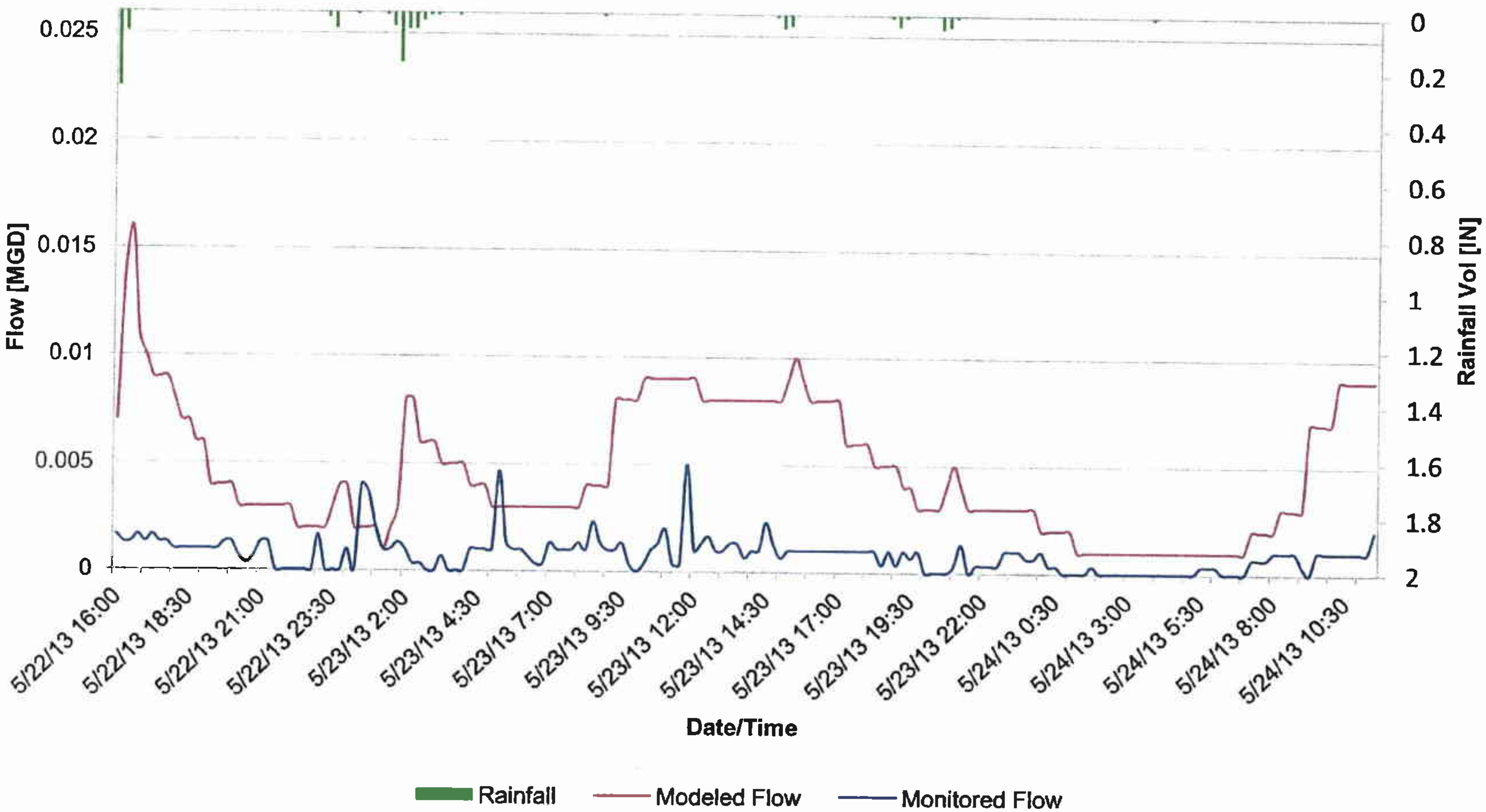


Meter M-5A18
Rain Event 6
Flow [MGD]
0.03
0.025
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



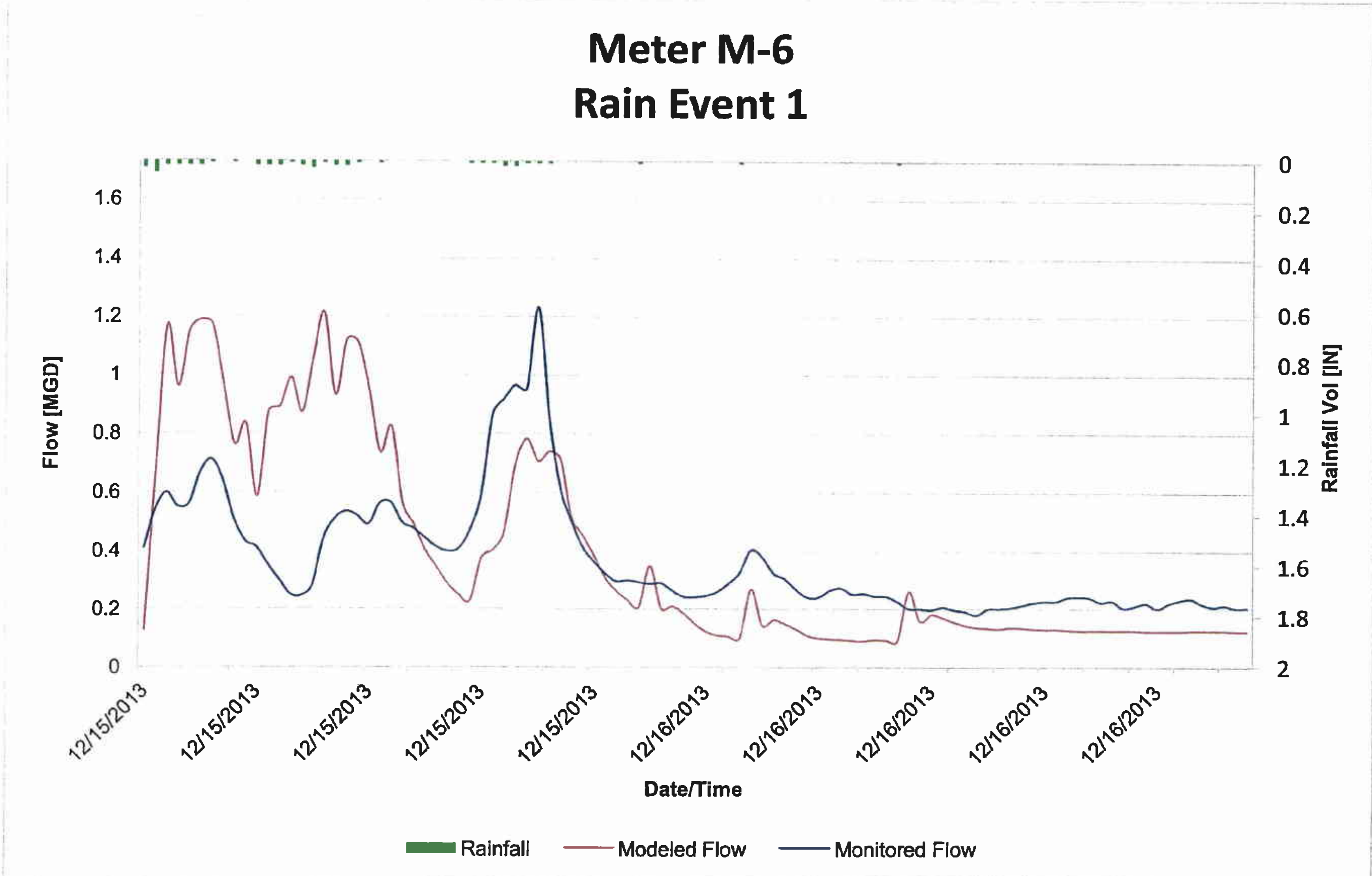
Meter M-5A18
Rain Event 7
Flow [MGD]
0.03
0.025
0.02
0.015
0.01
0.005
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow

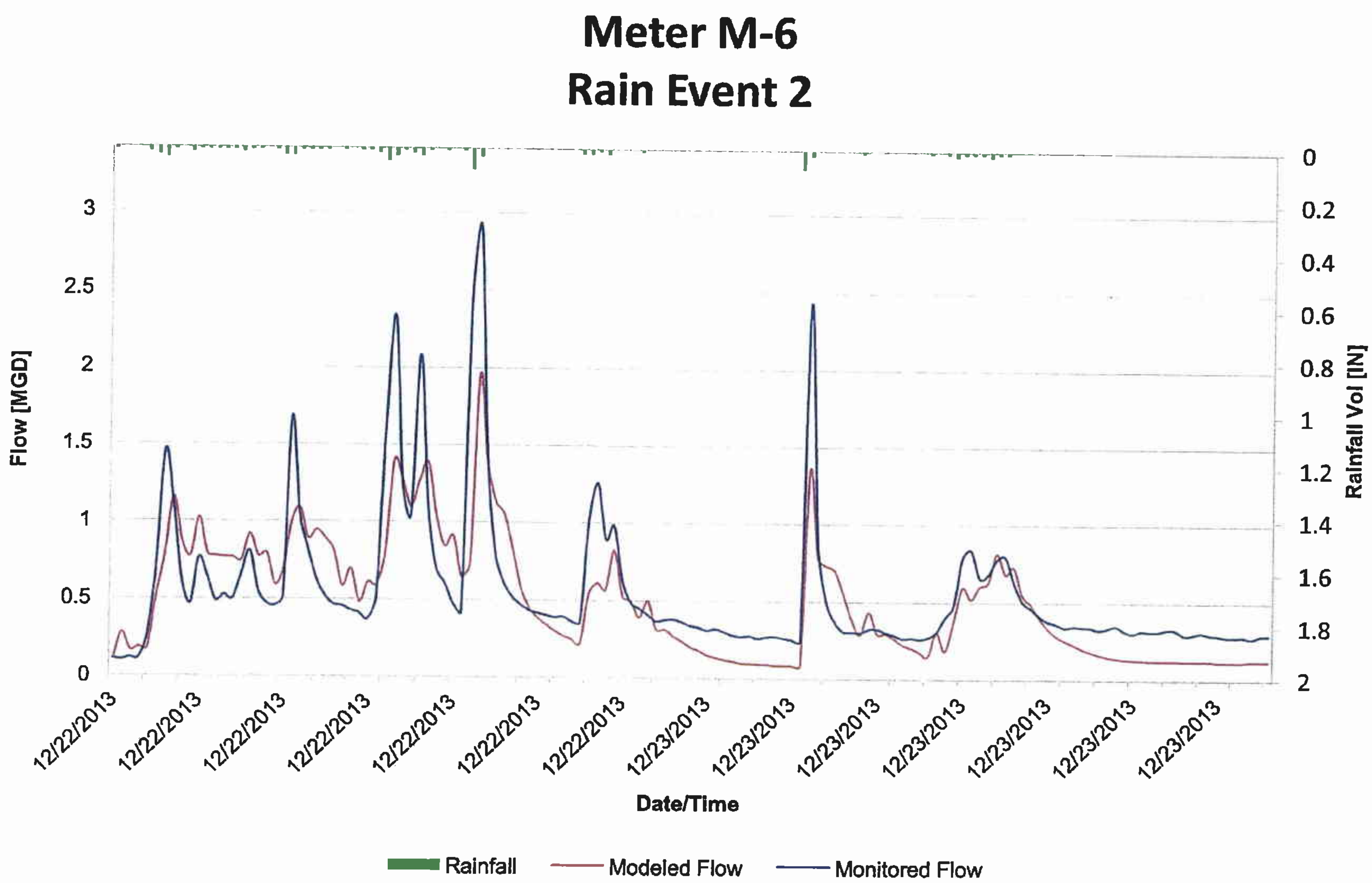
Meter M-5A18
Rain Event 8



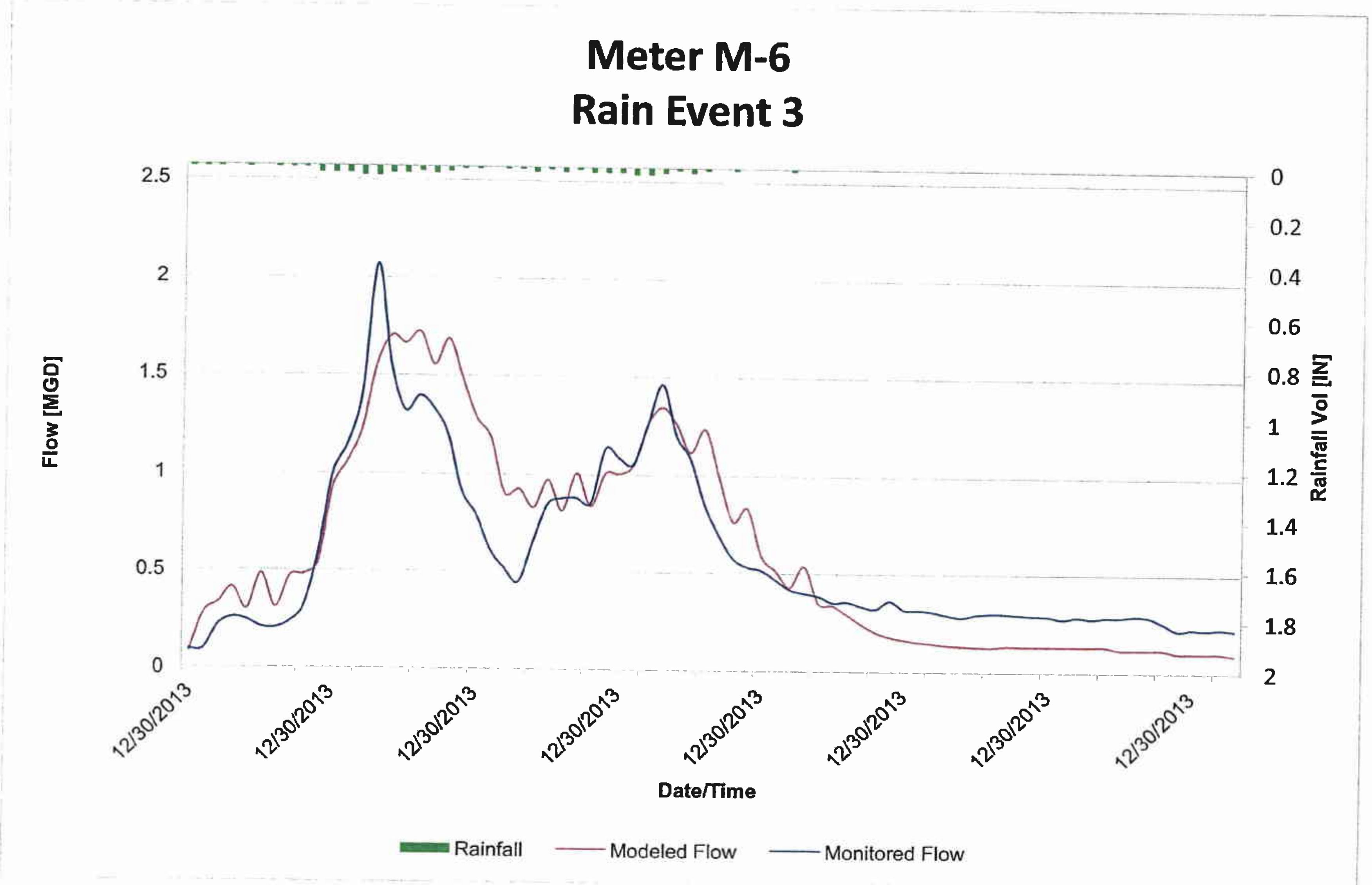
M-6
SUMMER MODEL
RAIN EVENTS

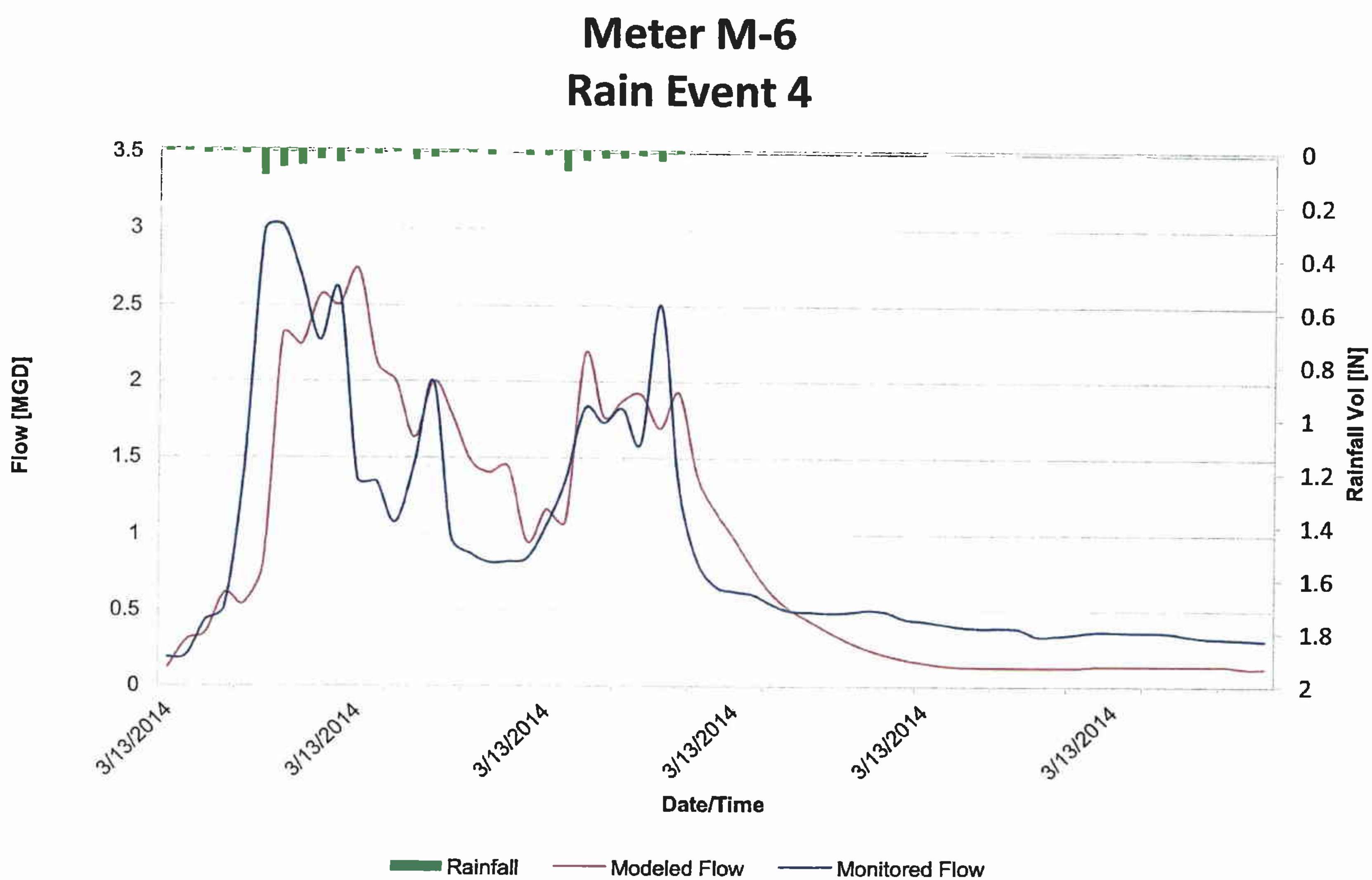
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	12/15/13 13:00	12/16/13 11:30	0.50	0.20	1.22	1.23	1.46%	Mod LOW	0.303	0.231	23.82%	Mod HIGH
2	12/22/13 6:45	12/23/13 14:45	0.95	0.32	1.95	2.91	32.98%	Mod LOW	0.546	0.588	7.06%	Mod LOW
3	12/30/13 6:00	12/30/13 22:15	0.67	0.16	1.72	2.07	16.82%	Mod LOW	0.425	0.364	14.37%	Mod HIGH
4	3/13/14 8:00	3/13/14 20:30	0.84	0.40	2.73	3.02	9.45%	Mod LOW	0.479	0.444	7.37%	Mod HIGH
5	3/30/14 12:00	3/31/14 11:00	0.78	0.16	1.87	1.98	6.03%	Mod LOW	0.491	0.401	18.22%	Mod HIGH
6	4/3/14 5:30	4/3/14 15:00	0.50	0.28	2.77	2.96	6.21%	Mod LOW	0.283	0.237	16.12%	Mod HIGH
7	4/5/14 7:45	4/6/14 0:15	0.65	0.44	2.65	3.069	13.66%	Mod LOW	0.342	0.387	11.66%	Mod LOW


Meter M-6
Rain Event 1
Flow [MGD]
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
12/15/2013
12/15/2013
12/15/2013
12/15/2013
12/15/2013
12/16/2013
12/16/2013
12/16/2013
12/16/2013
12/16/2013
Date/Time
Rainfall
Modeled Flow
Monitored Flow



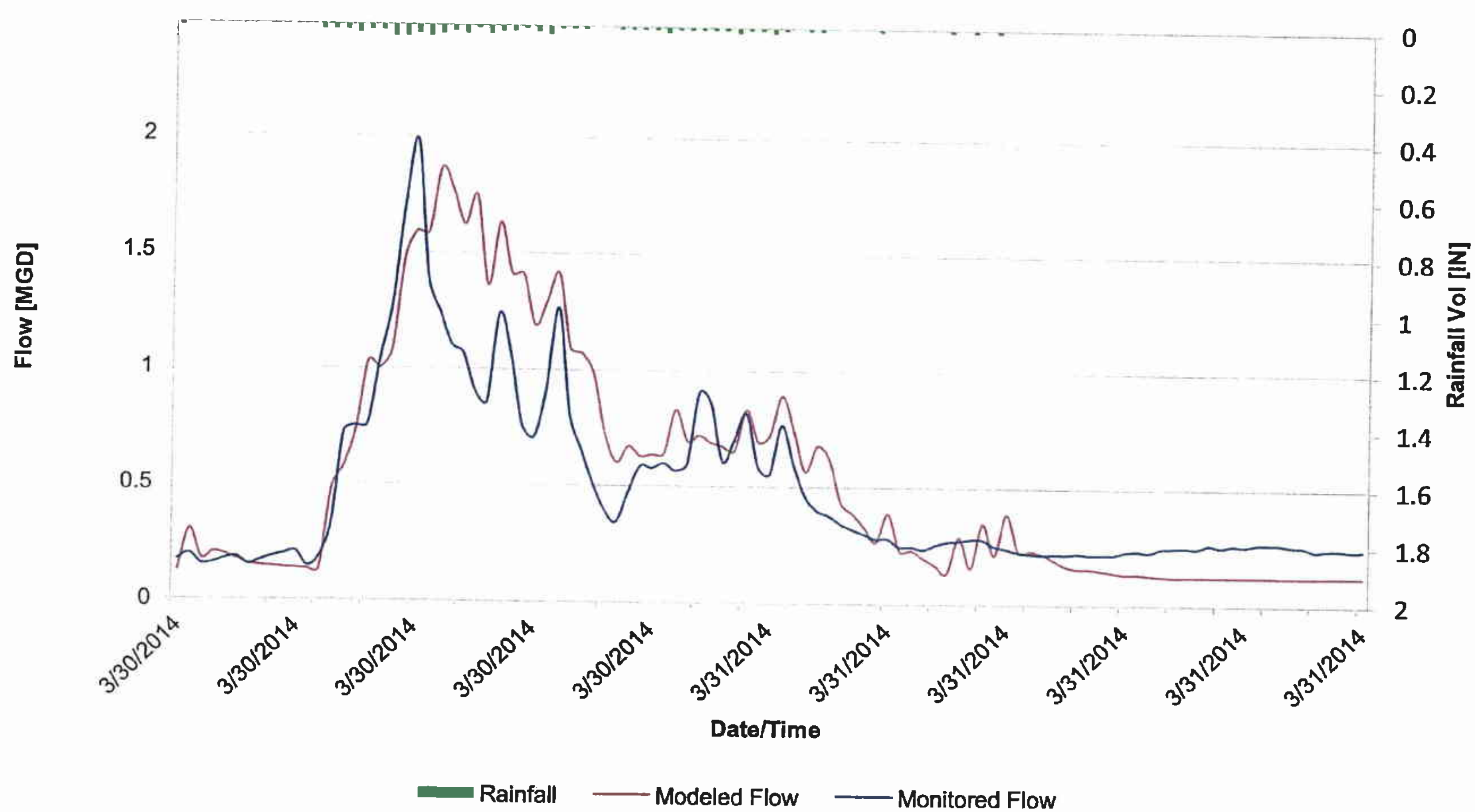
Meter M-6
Rain Event 2
Flow [MGD]
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
12/22/2013
12/22/2013
12/22/2013
12/22/2013
12/22/2013
12/22/2013
12/22/2013
12/23/2013
12/23/2013
12/23/2013
12/23/2013
12/23/2013
12/23/2013
12/23/2013
Date/Time
Rainfall
Modeled Flow
Monitored Flow

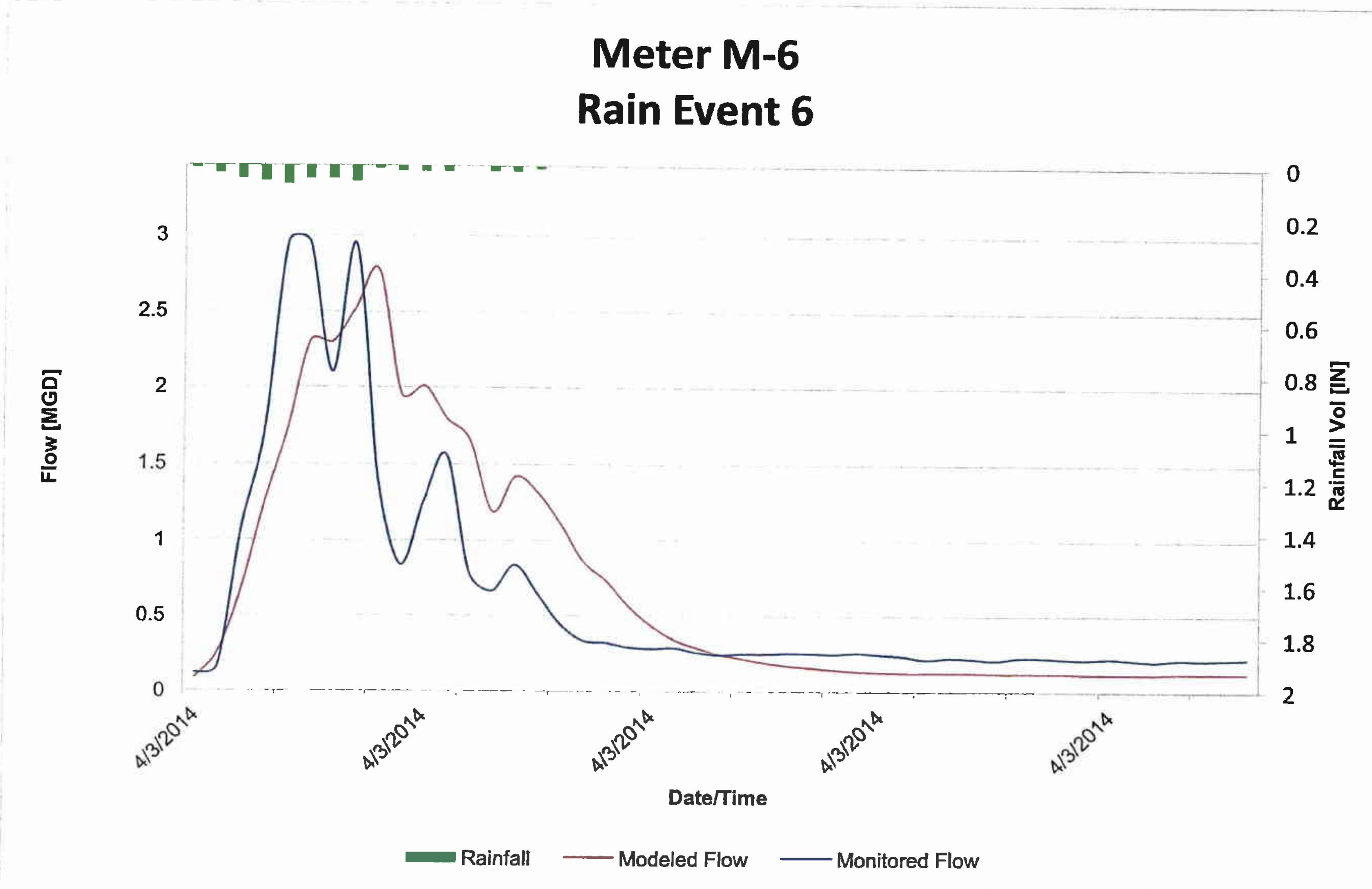

Meter M-6
Rain Event 3
Flow [MGD]
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
12/30/2013
12/30/2013
12/30/2013
12/30/2013
12/30/2013
12/30/2013
12/30/2013
12/30/2013
Date/Time
Rainfall
Modeled Flow
Monitored Flow



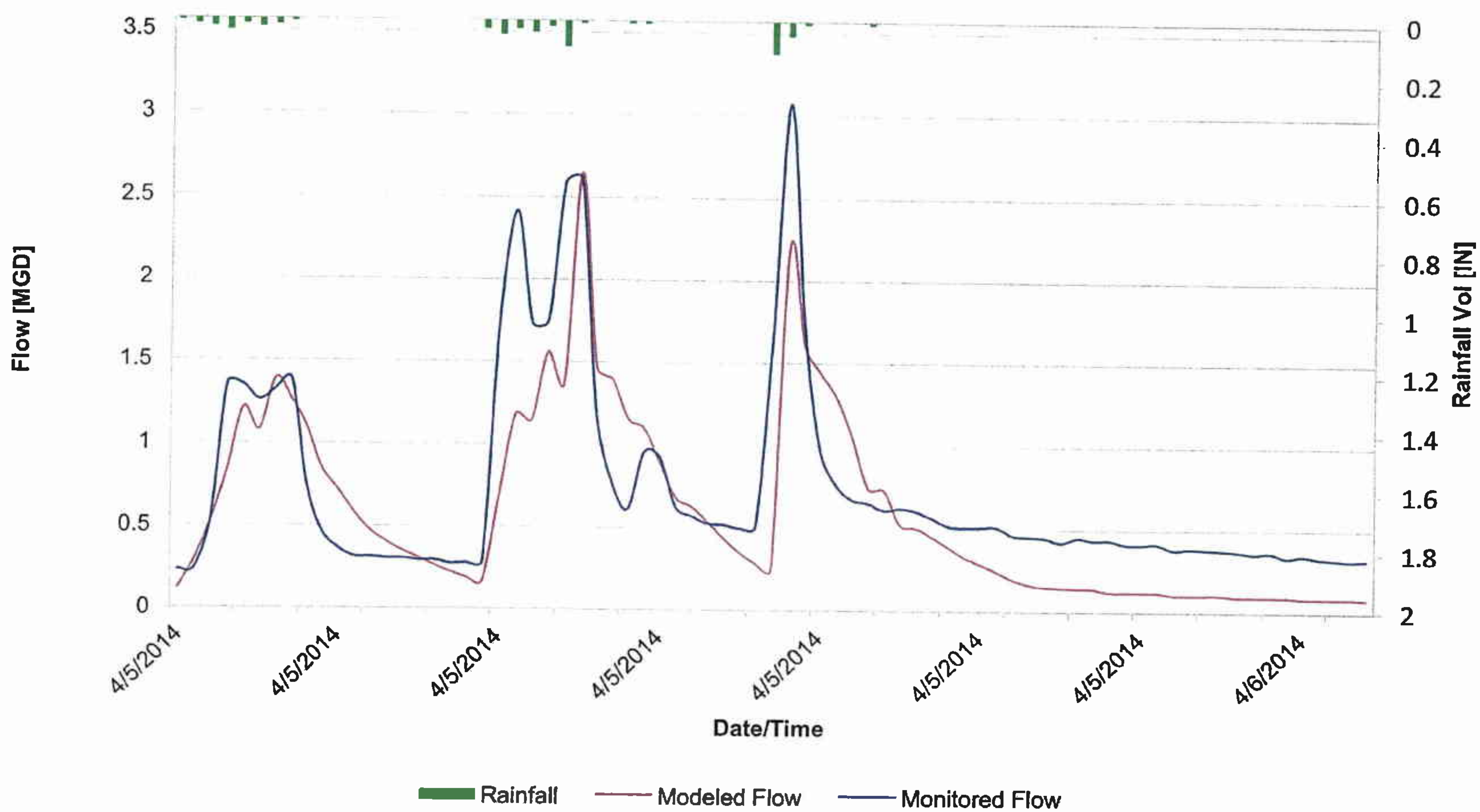
Meter M-6
Rain Event 4
3.5
3
2.5
2
1.5
1
0.5
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
3/13/2014
3/13/2014
3/13/2014
3/13/2014
3/13/2014
3/13/2014
Date/Time
Rainfall
Modeled Flow
Monitored Flow

Meter M-6
Rain Event 5

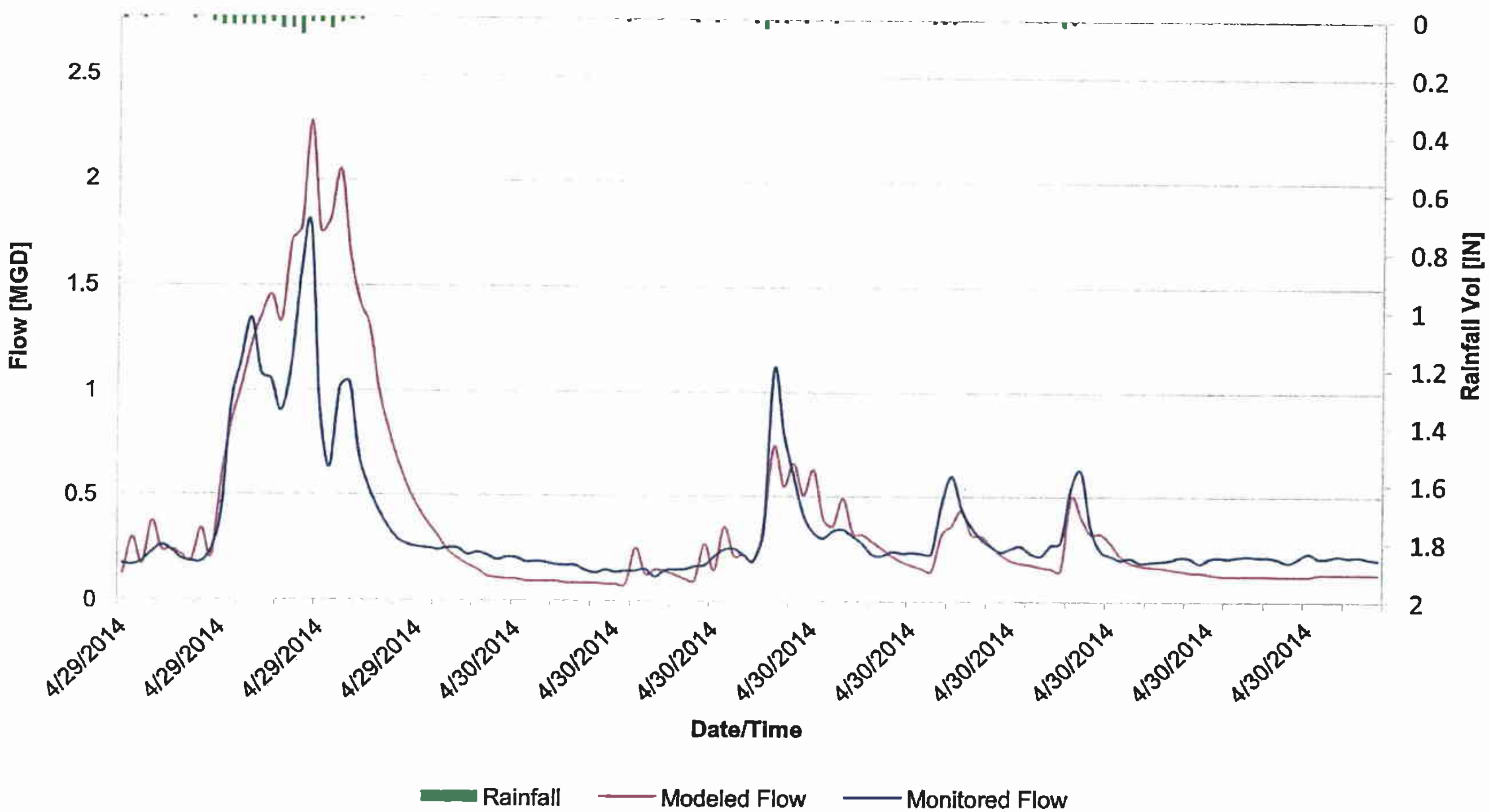



Meter M-6
Rain Event 6
Flow [MGD]
3
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/3/2014
4/3/2014
4/3/2014
4/3/2014
4/3/2014
Date/Time
Rainfall
Modeled Flow
Monitored Flow

Meter M-6
Rain Event 7

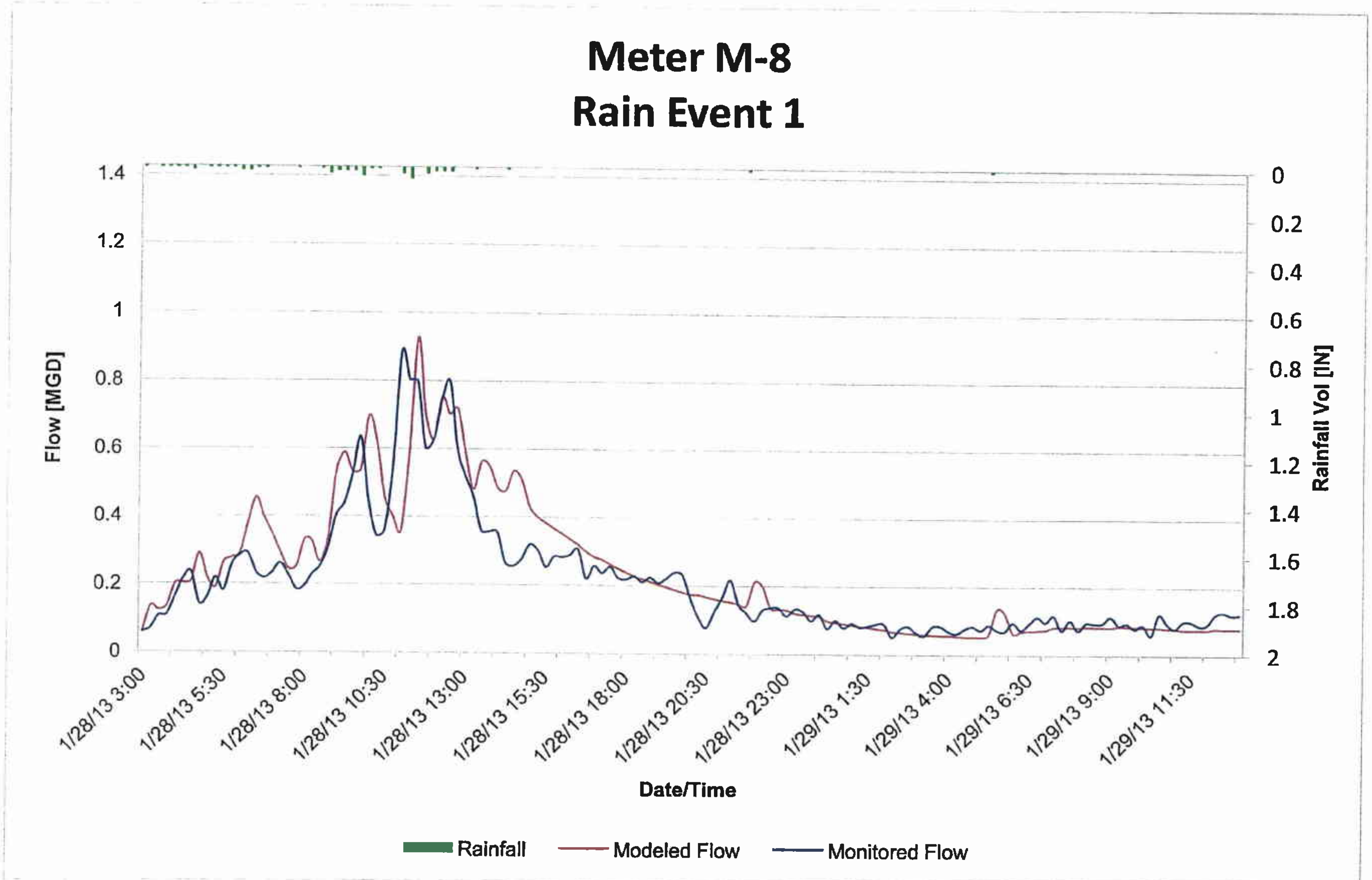


Meter M-6
Rain Event 8

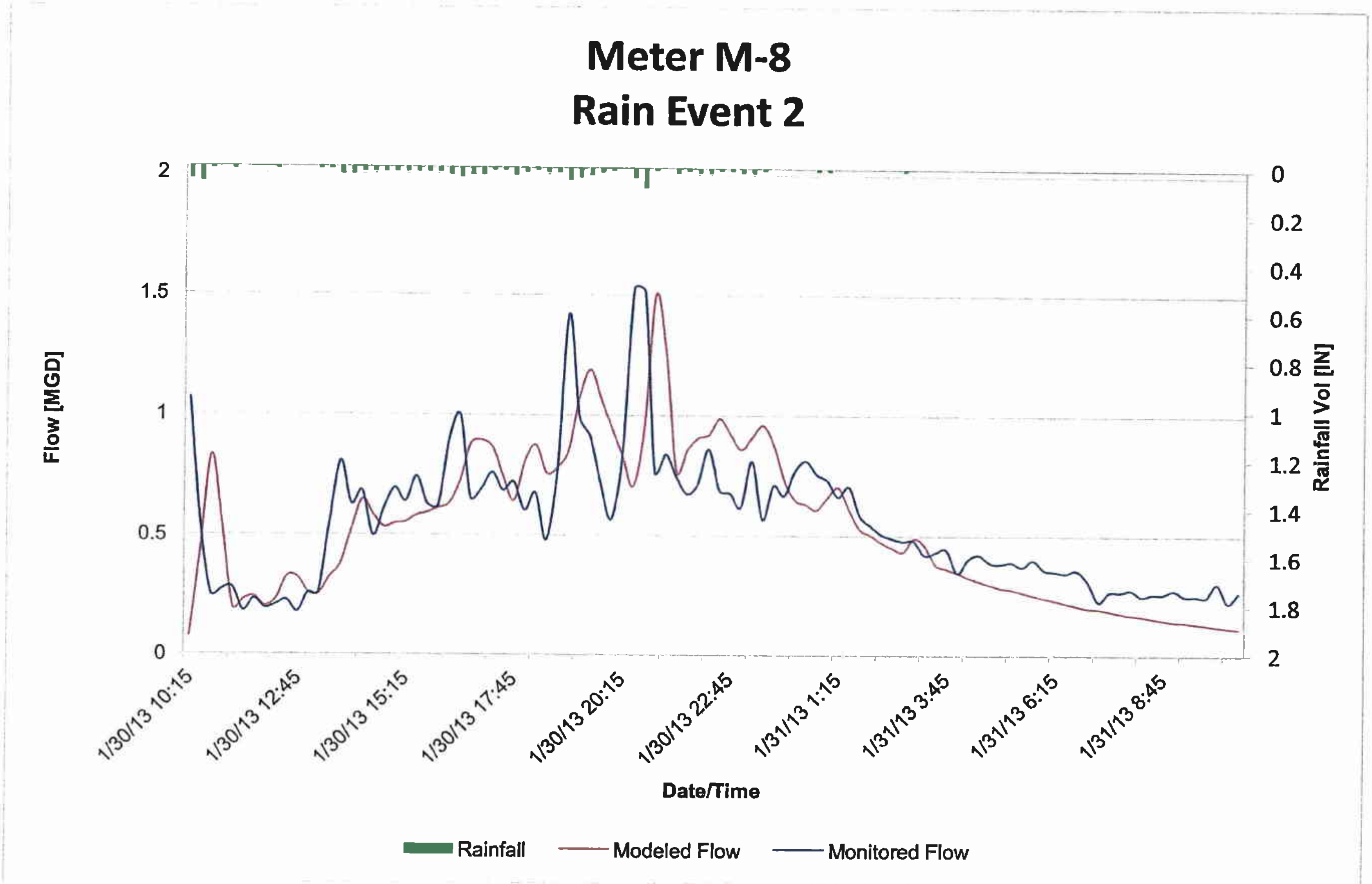


M-8
SUMMER MODEL
RAIN EVENTS

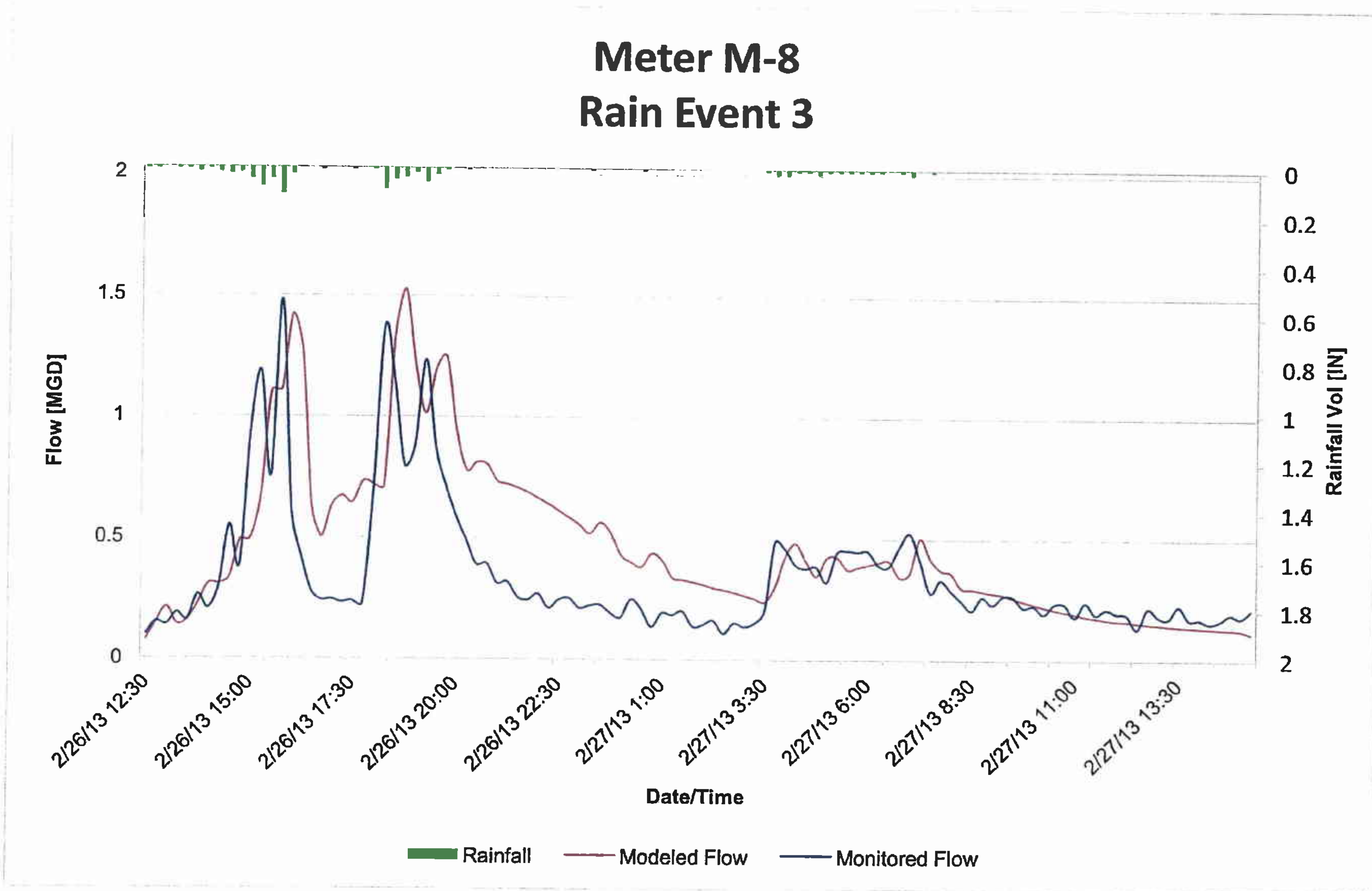
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	0.93	0.89	4.53%	Mod HIGH	0.202	0.174	14.24%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	1.50	1.53	1.79%	Mod LOW	0.440	0.425	3.20%	Mod HIGH
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	1.53	1.48	2.84%	Mod HIGH	0.362	0.287	20.70%	Mod HIGH
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	1.39	0.46	66.81%	Mod HIGH	0.302	0.128	57.61%	Mod HIGH
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	1.93	2.16	10.62%	Mod LOW	0.142	0.052	63.26%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	5.36	2.44	54.38%	Mod HIGH	0.293	0.148	49.30%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	1.914	2.267	15.57%	Mod LOW	0.160	0.101	36.84%	Mod HIGH



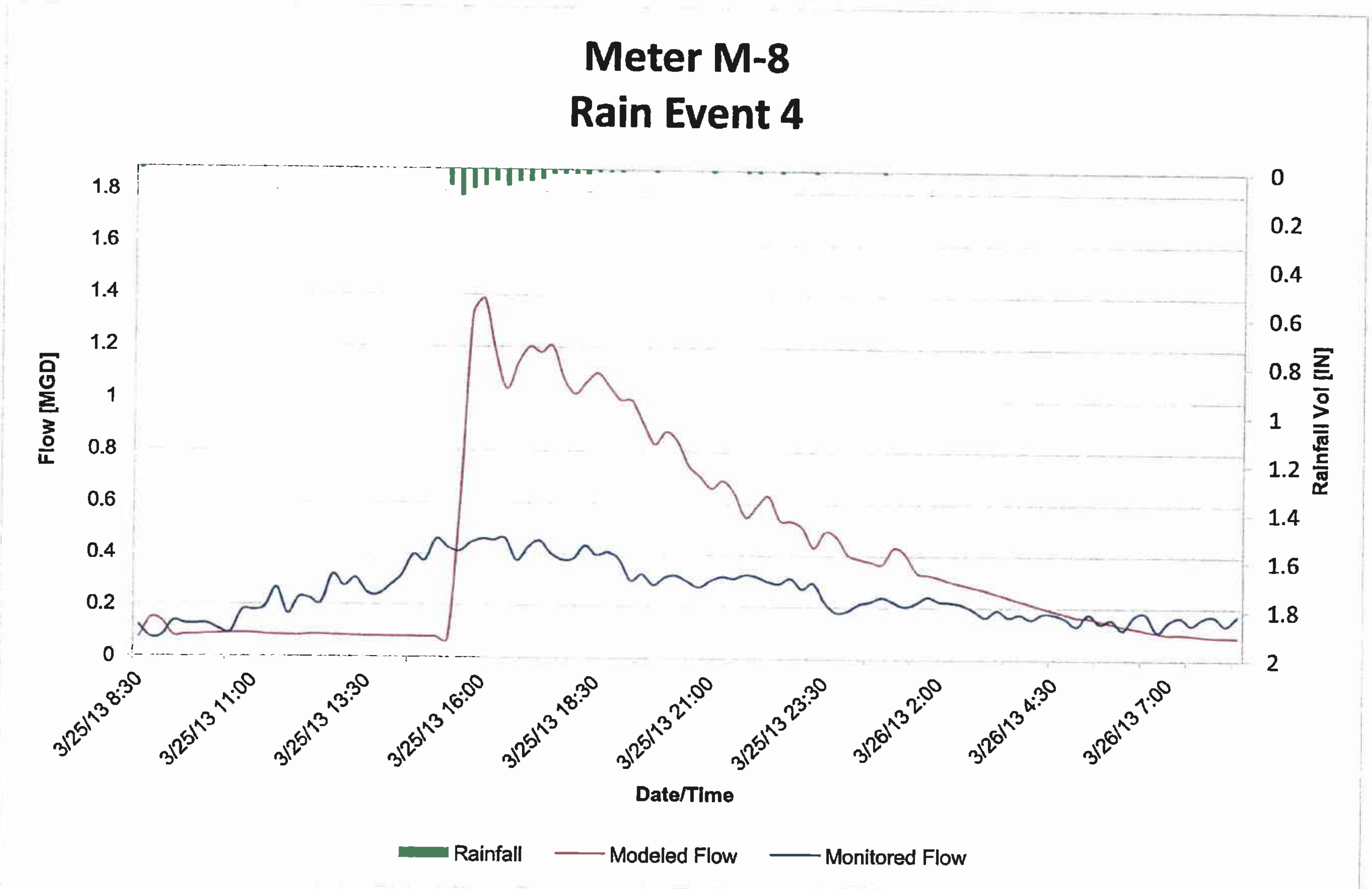
Meter M-8
Rain Event 1
Flow [MGD]
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



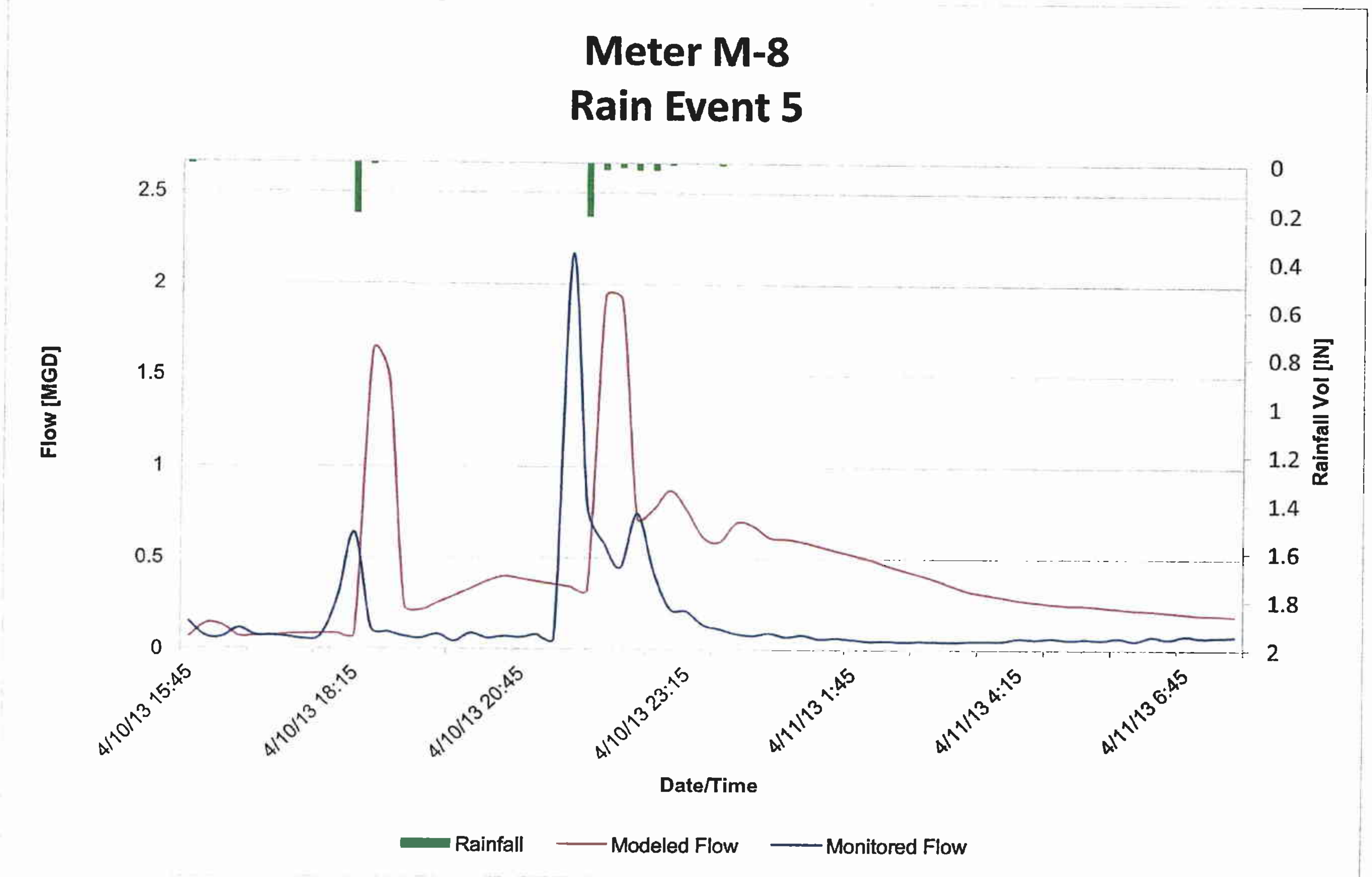
Meter M-8
Rain Event 2
Flow [MGD]
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



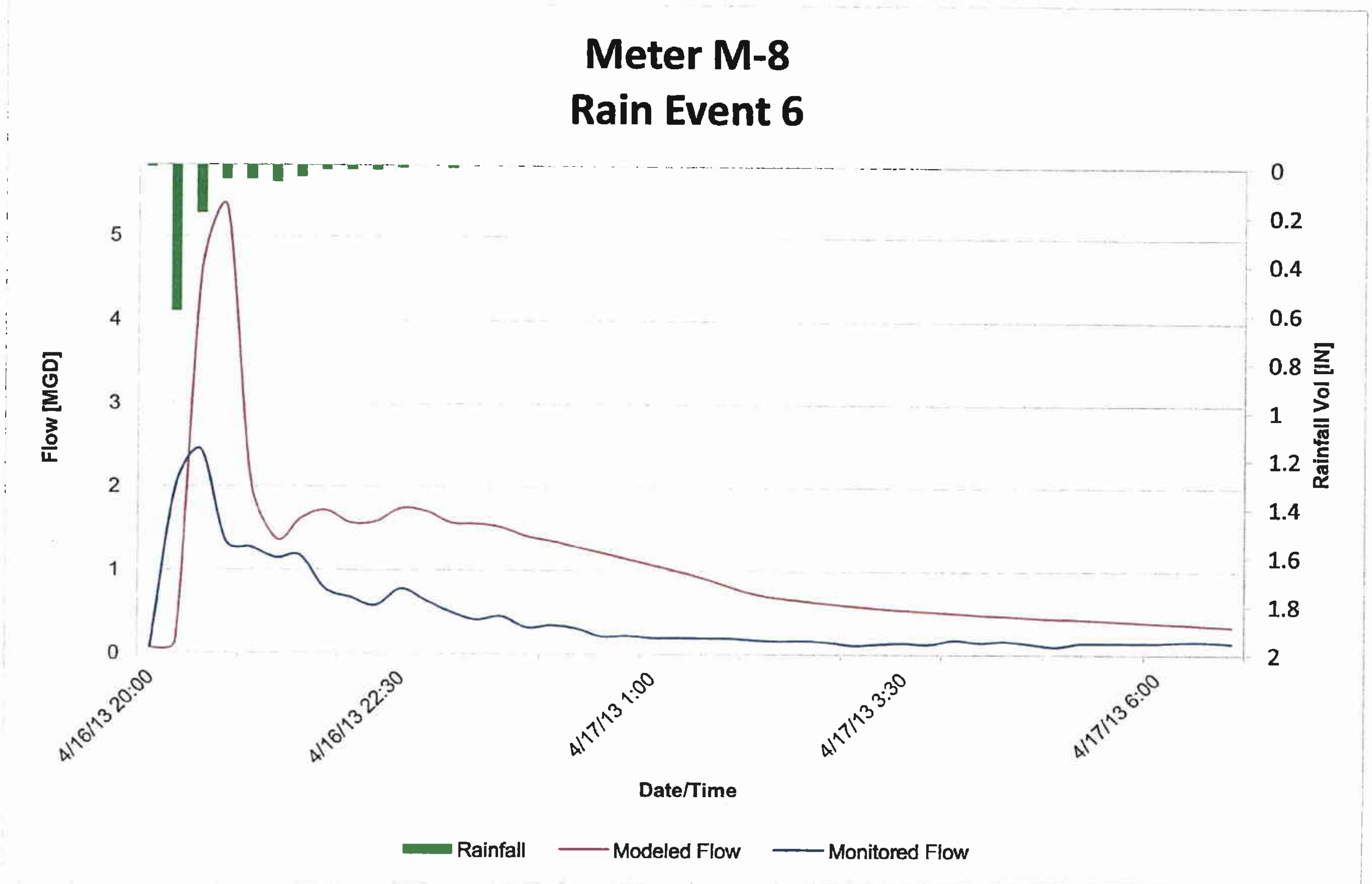
Meter M-8
Rain Event 3
2
1.5
1
0.5
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

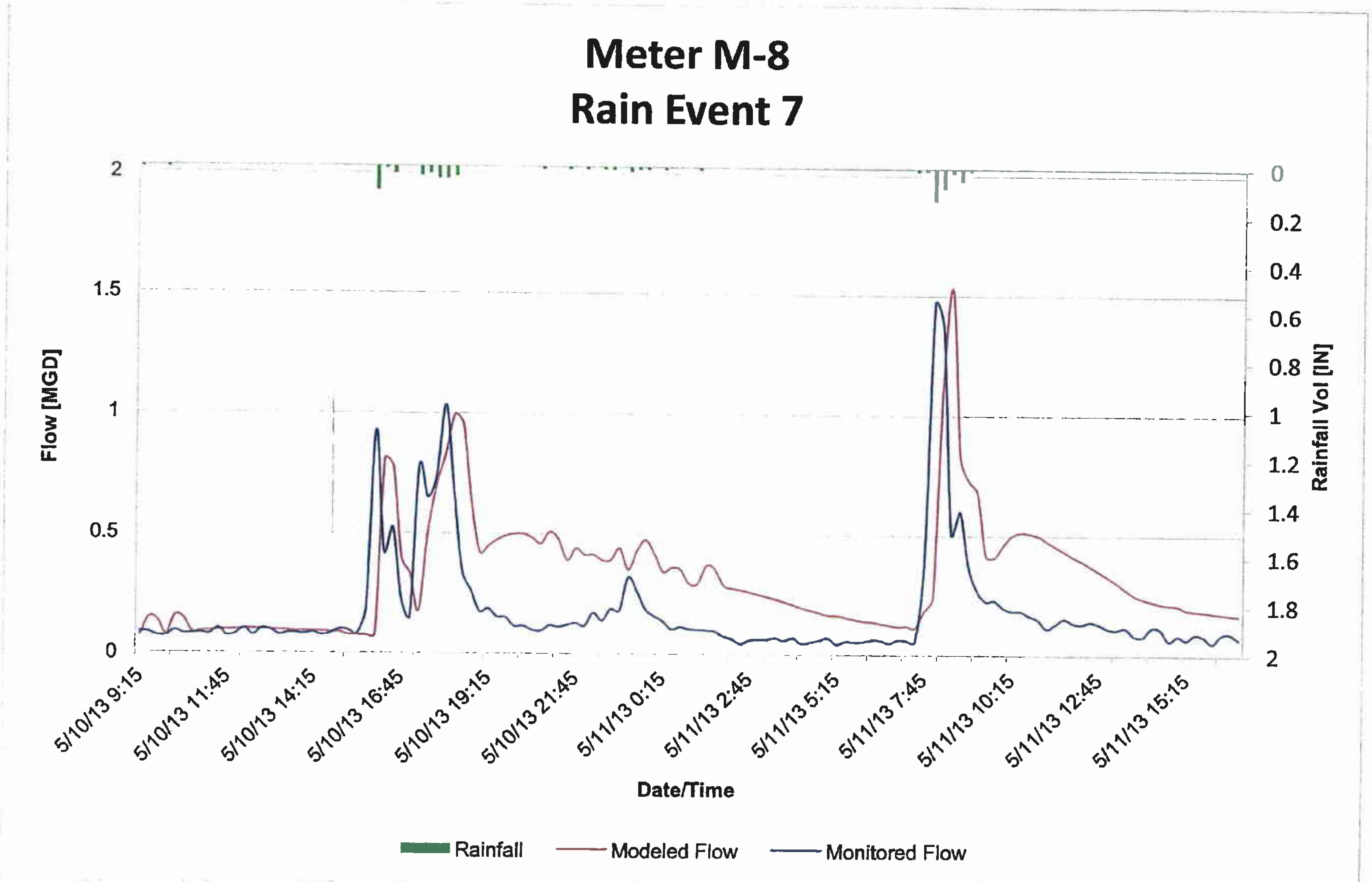


Meter M-8
Rain Event 4
Flow [MGD]
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow

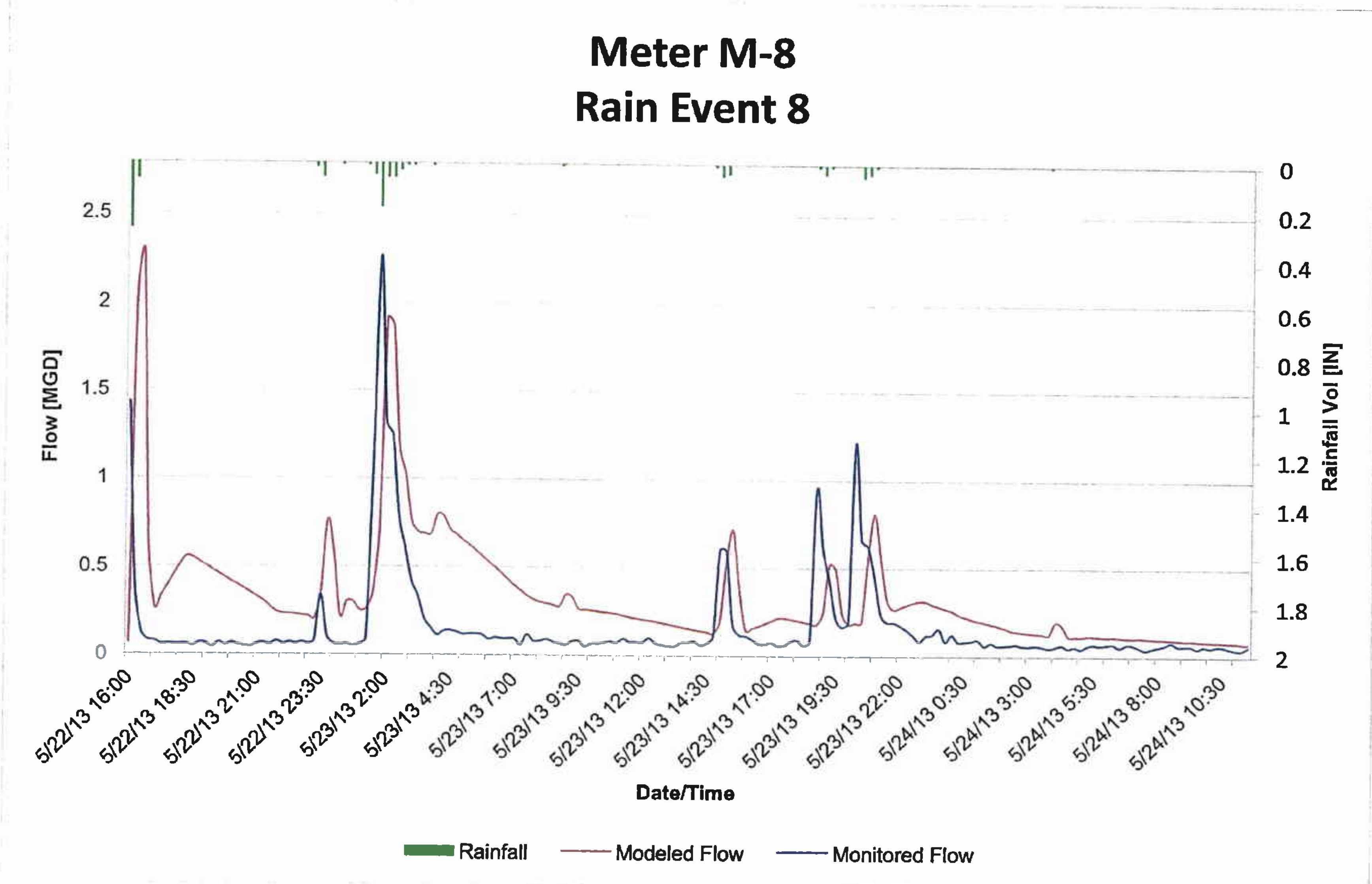


Meter M-8
Rain Event 5
Flow [MGD]
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow


Meter M-8
Rain Event 6
Flow [MGD]
0
1
2
3
4
5
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



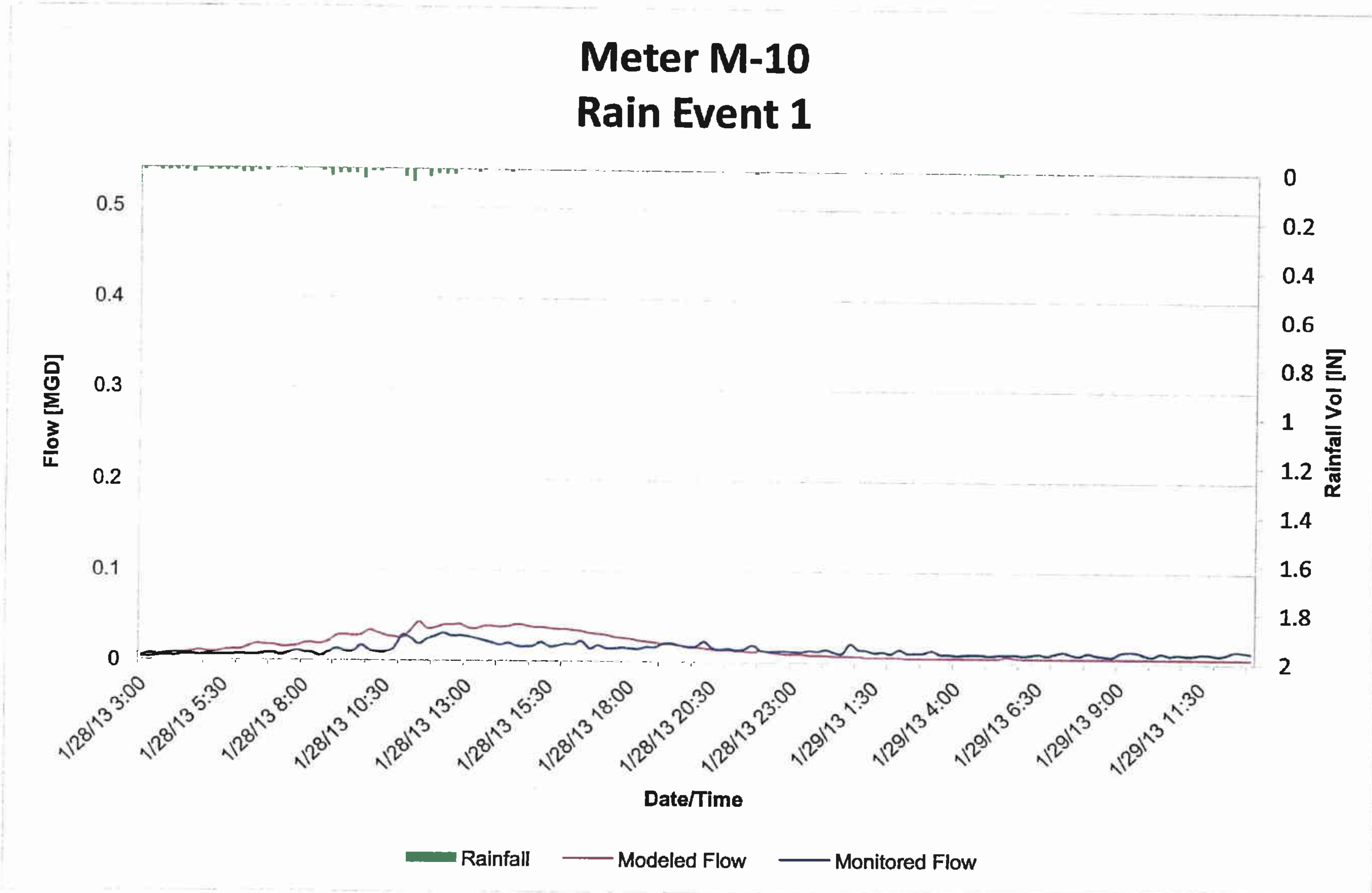
Meter M-8
Rain Event 7
Flow [MGD]
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow



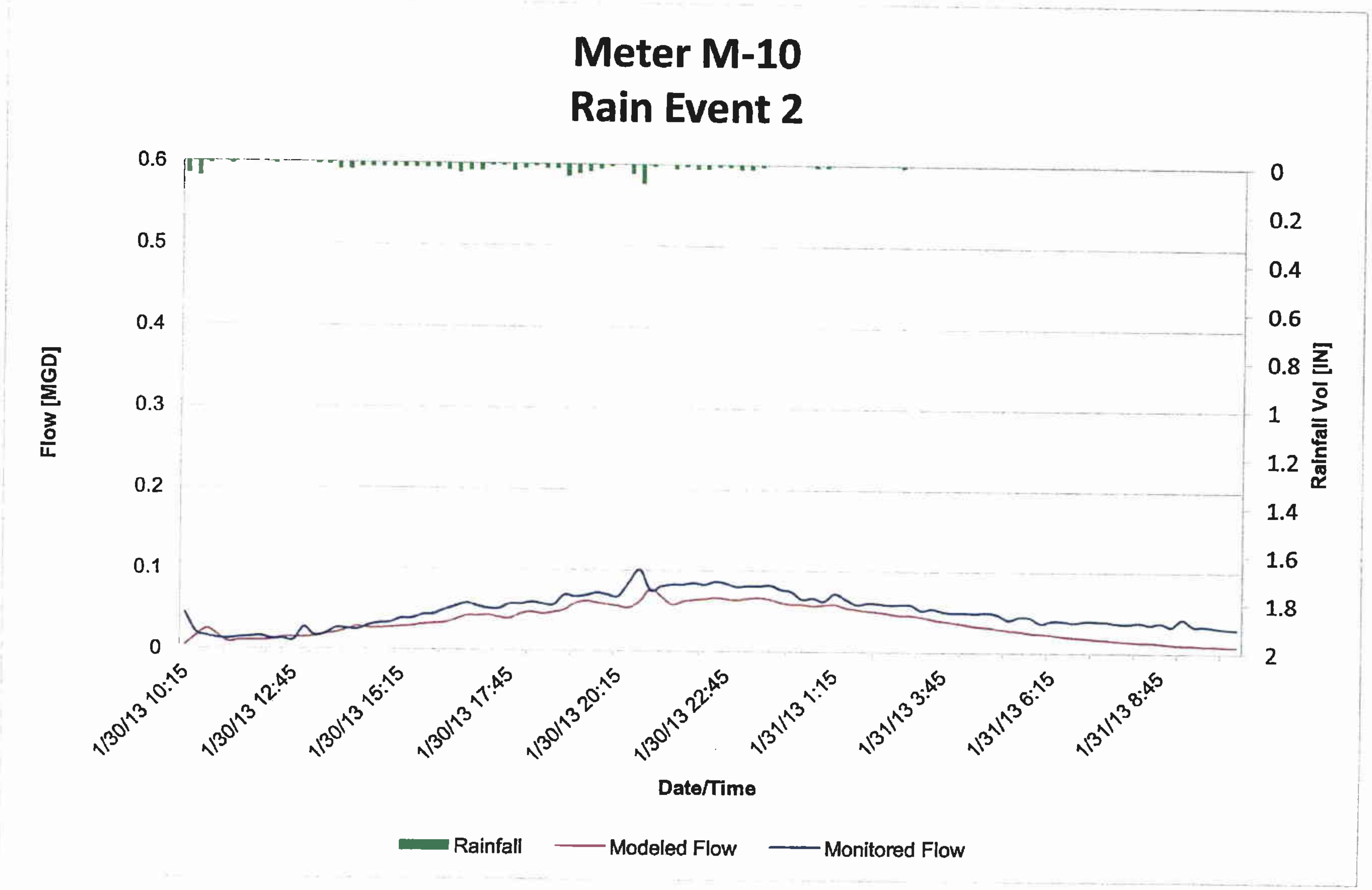
Meter M-8
Rain Event 8
Flow [MGD]
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

M-10
SUMMER MODEL
RAIN EVENTS

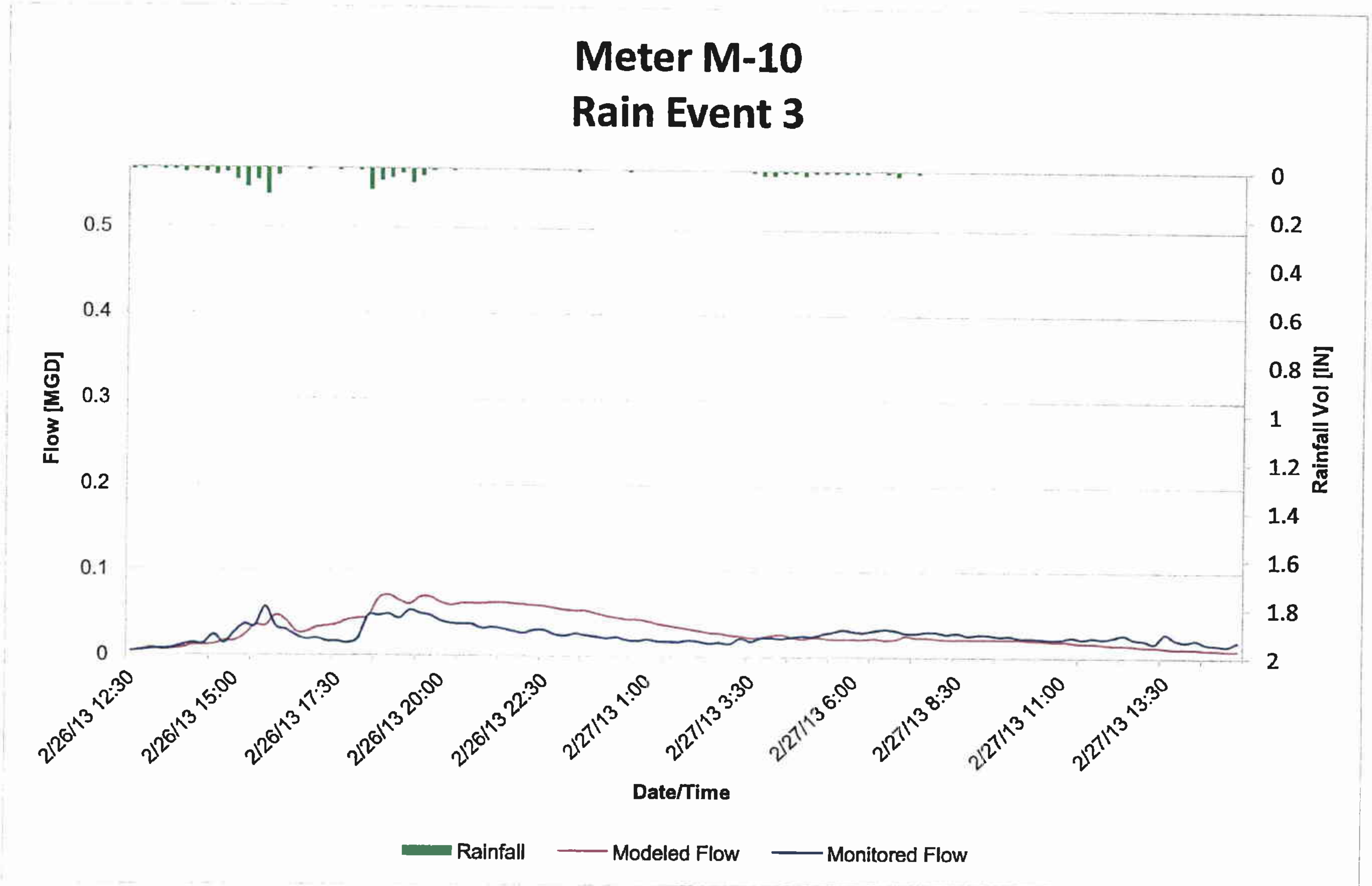
No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	0.04	0.03	27.78%	Mod HIGH	0.011	0.006	44.98%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	0.08	0.10	24.50%	Mod LOW	0.026	0.034	21.69%	Mod LOW
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	0.07	0.06	20.00%	Mod HIGH	0.020	0.016	17.41%	Mod HIGH
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	0.07	0.05	29.29%	Mod HIGH	0.018	0.013	26.34%	Mod HIGH
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	0.07	0.06	14.16%	Mod HIGH	0.006	0.002	70.36%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	0.14	0.17	18.34%	Mod LOW	0.011	0.009	21.22%	Mod HIGH
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	0.066	0.069	4.35%	Mod LOW	0.008	0.005	39.42%	Mod HIGH



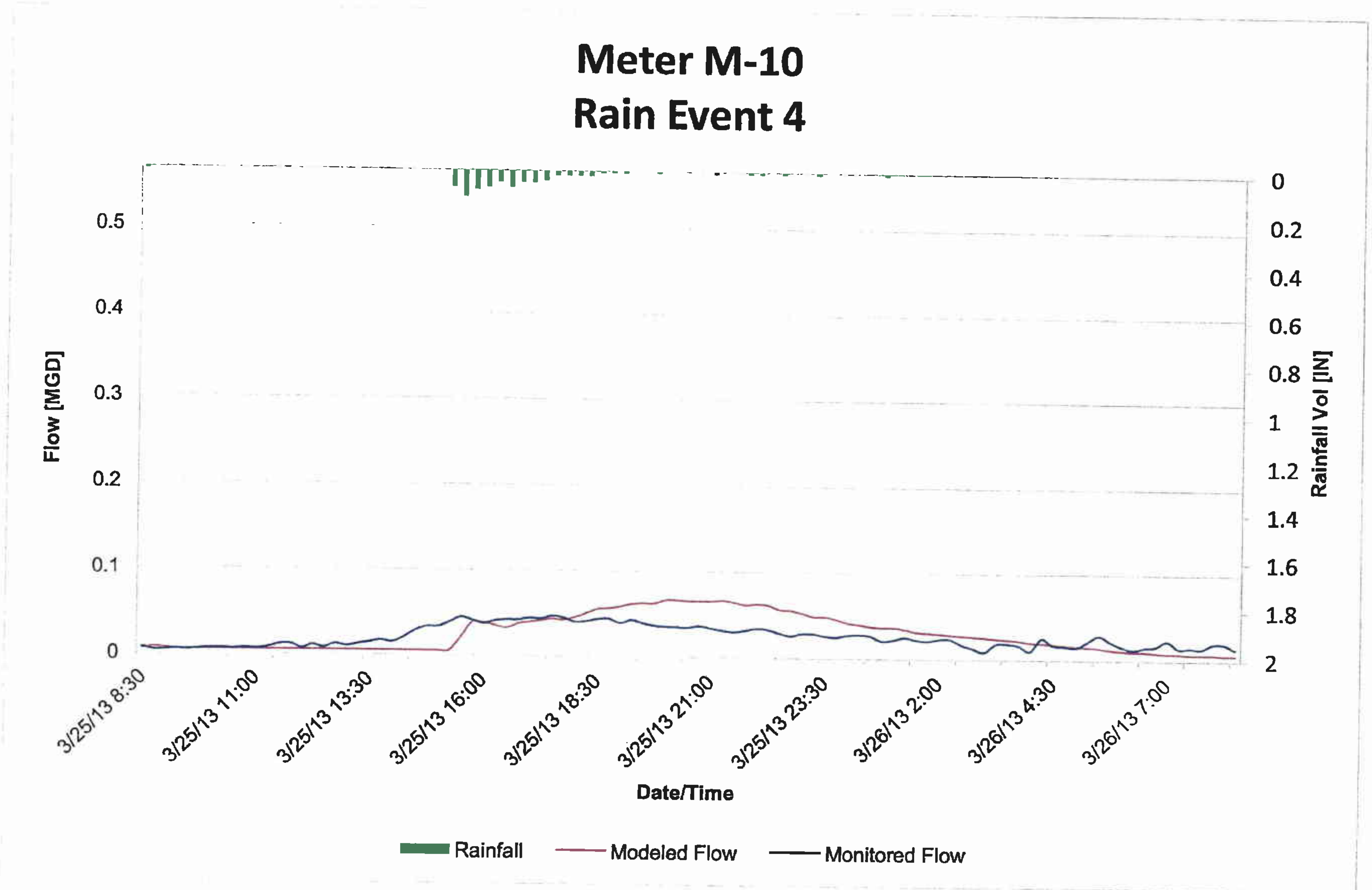
Meter M-10
Rain Event 1
Flow [MGD]
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



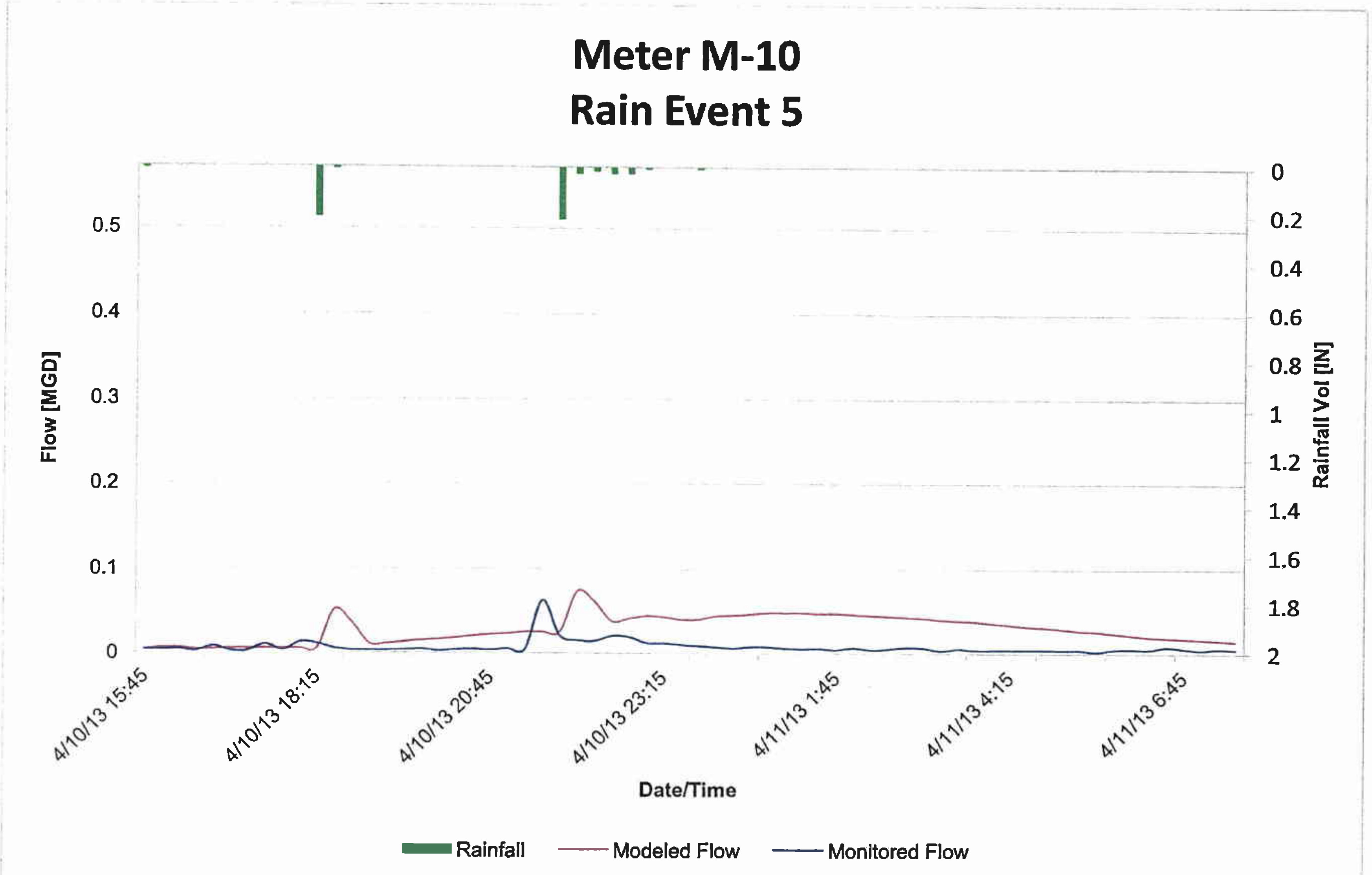
Meter M-10
Rain Event 2
0.6
0.5
0.4
0.3
0.2
0.1
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



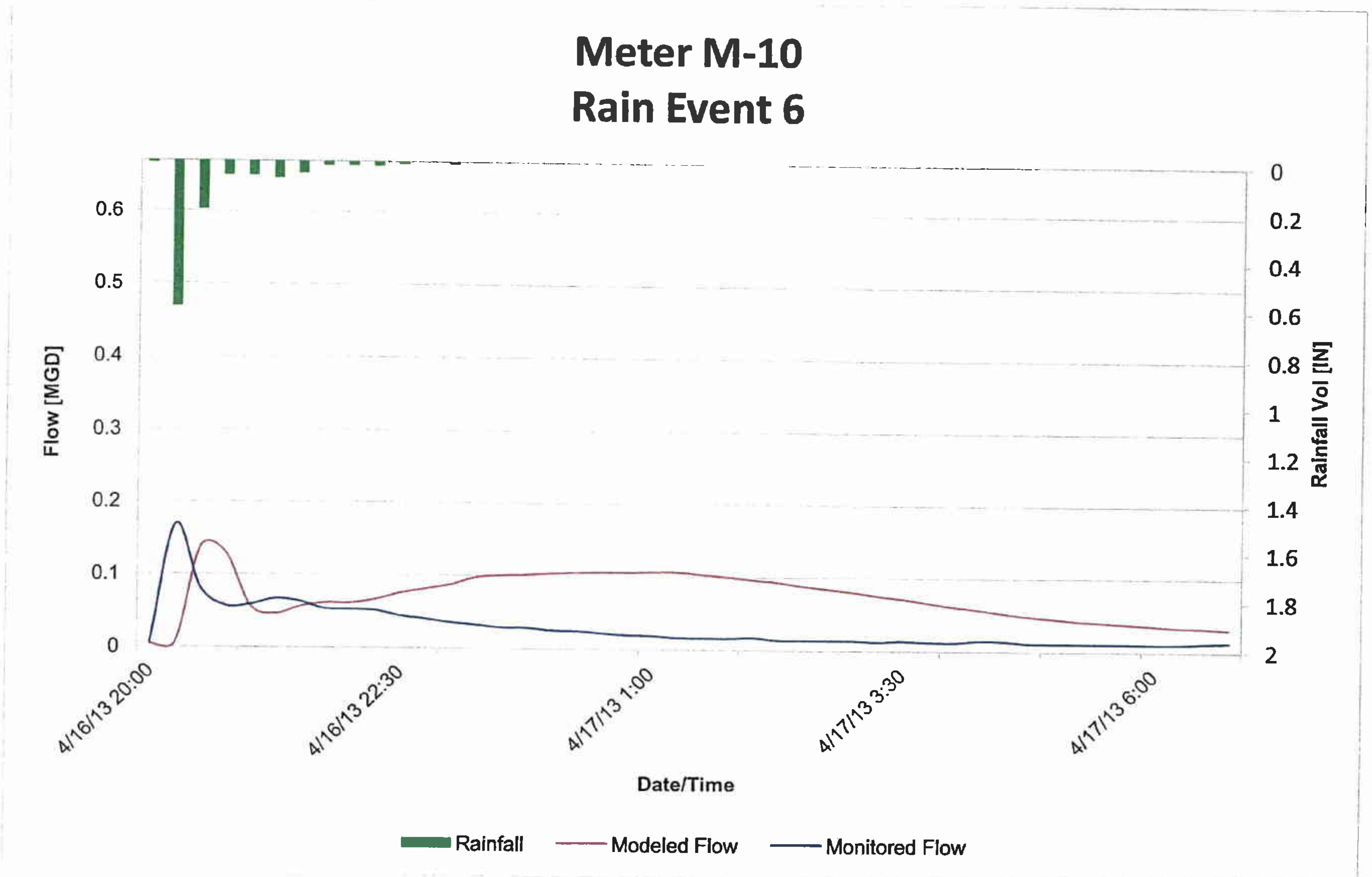
Meter M-10
Rain Event 3
Flow [MGD]
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



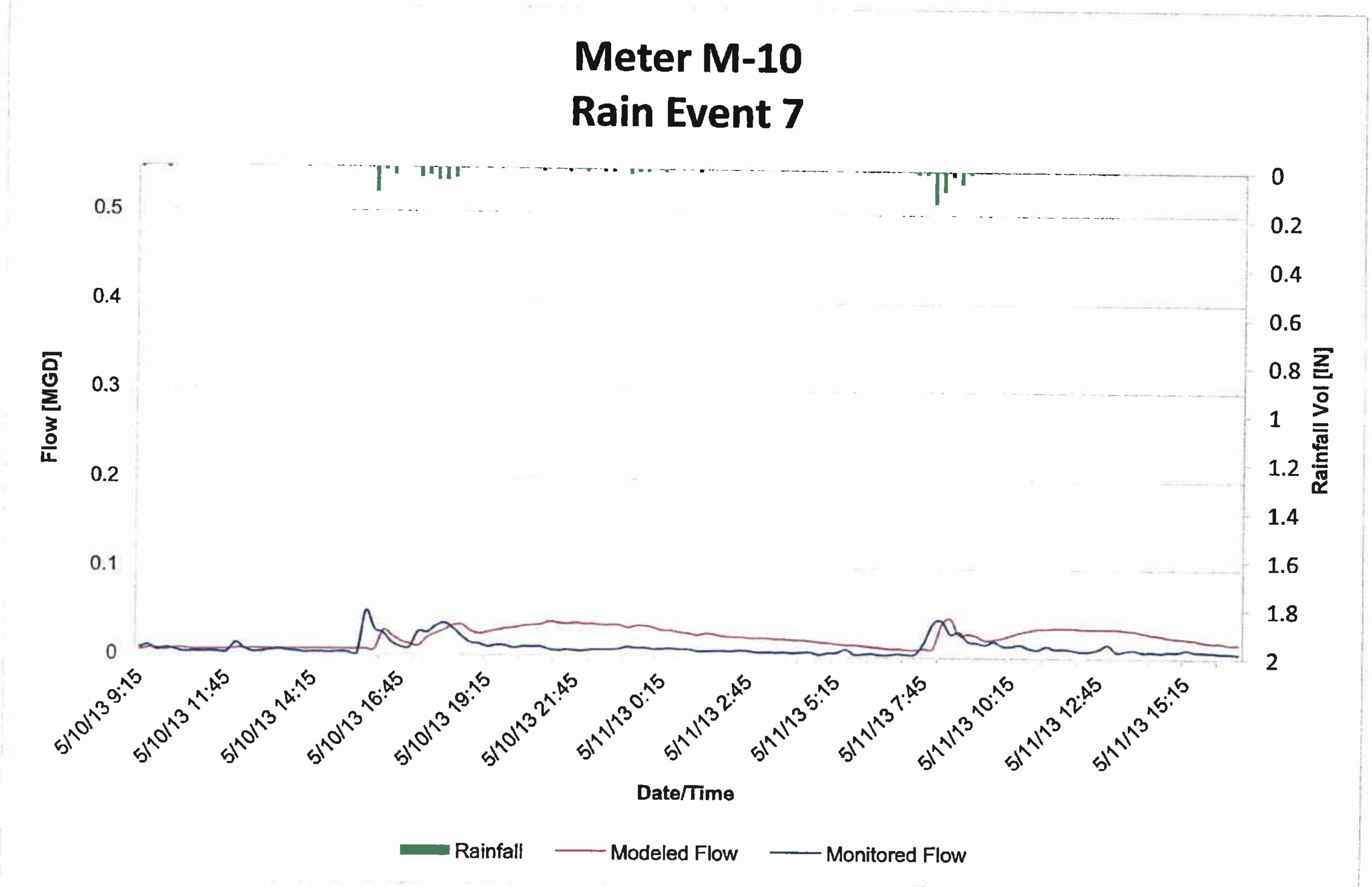
Meter M-10
Rain Event 4
Flow [MGD]
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



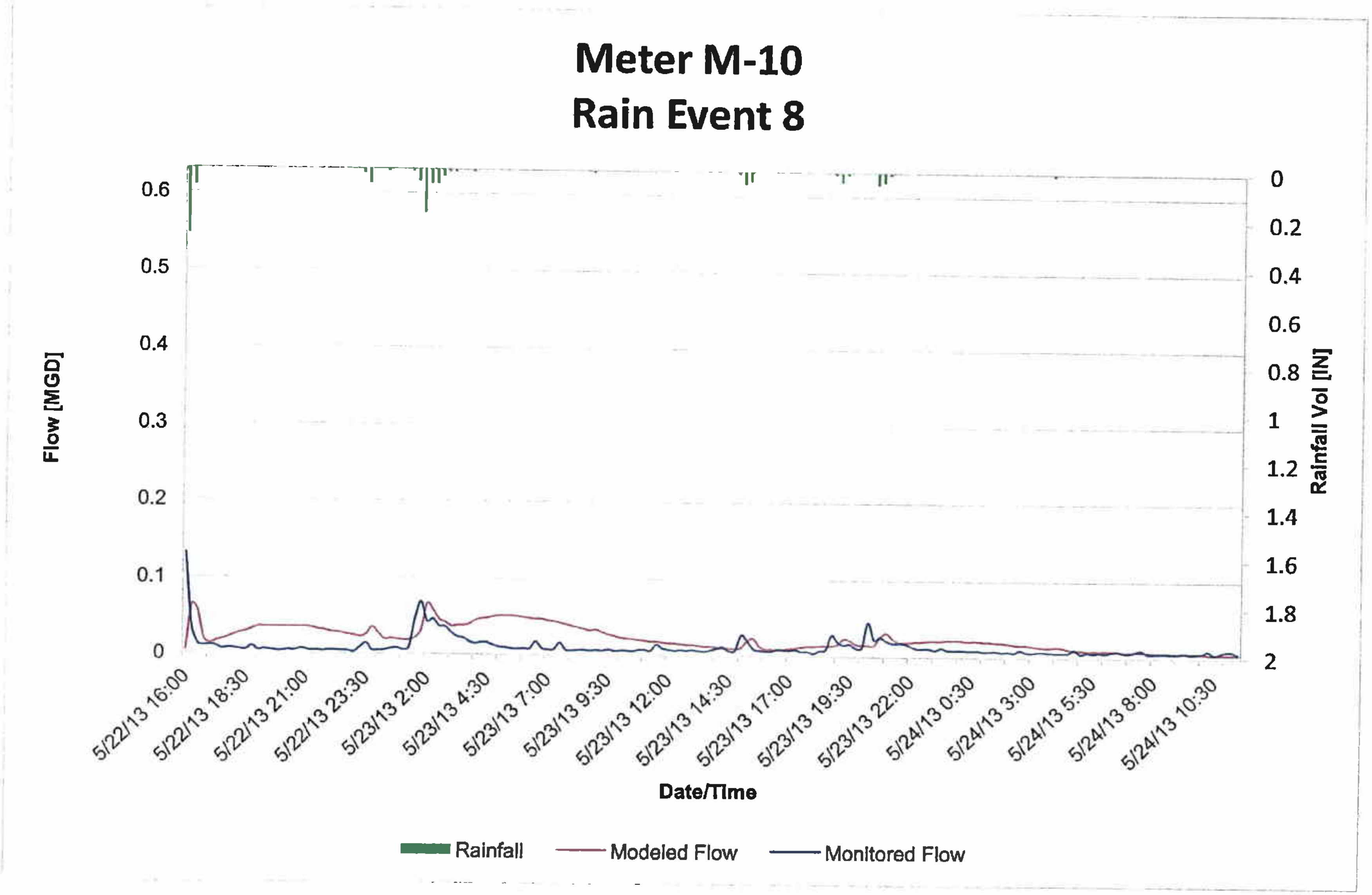
Meter M-10
Rain Event 5
Flow [MGD]
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



Meter M-10
Rain Event 6
Flow [MGD]
0.6
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



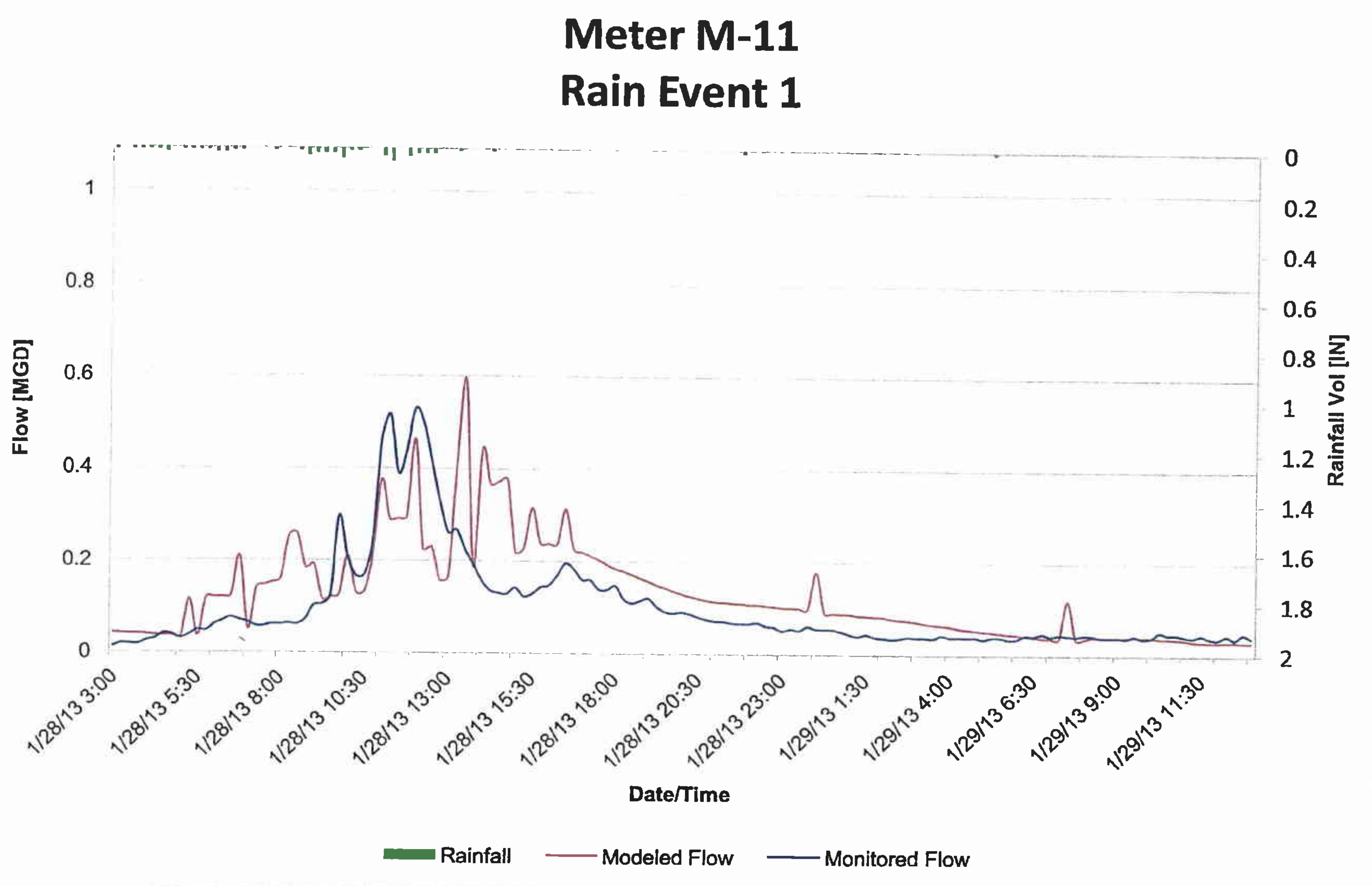
Meter M-10
Rain Event 7
Flow [MGD]
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow

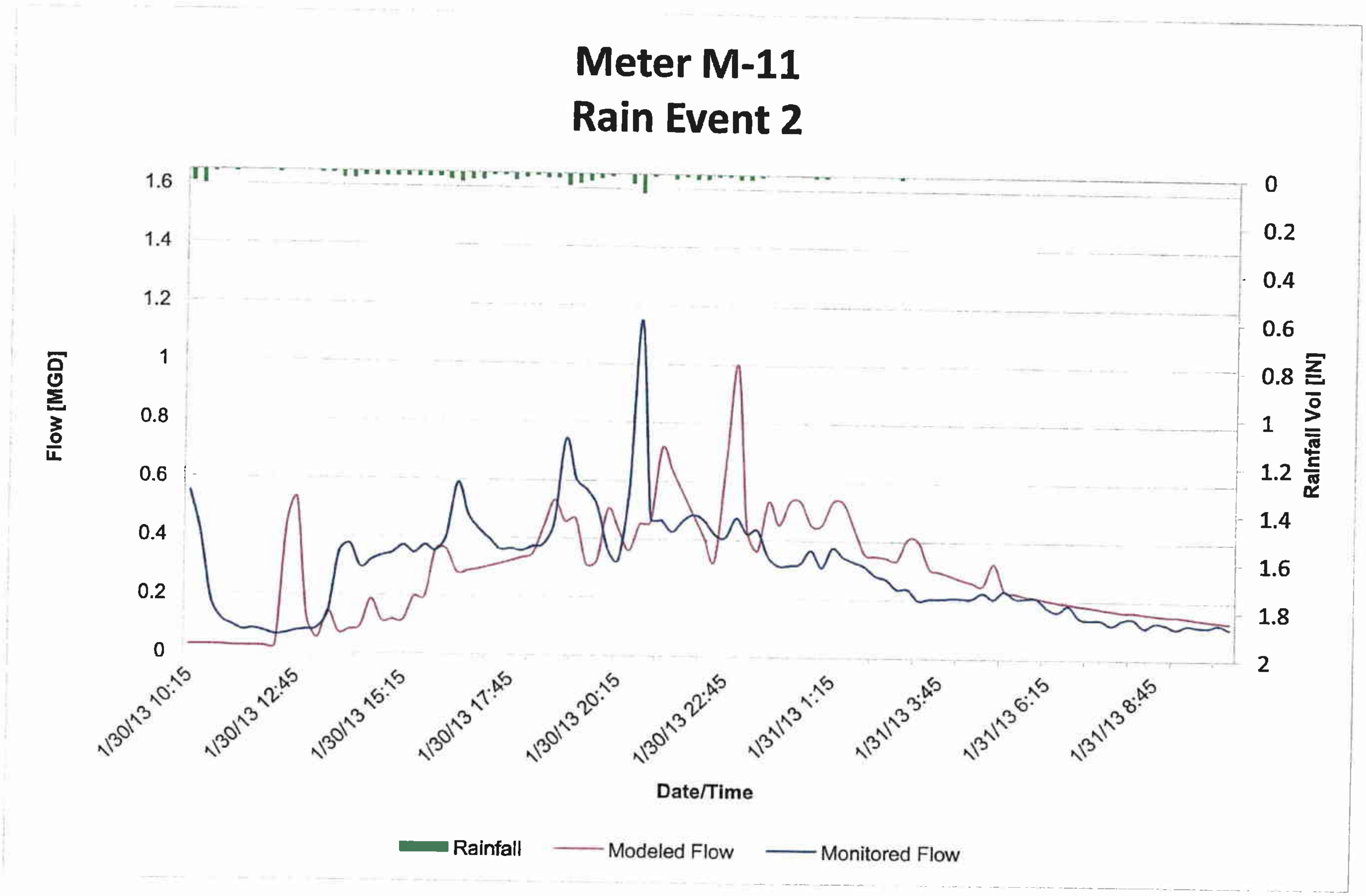


Meter M-10
Rain Event 8
Flow [MGD]
0.6
0.5
0.4
0.3
0.2
0.1
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

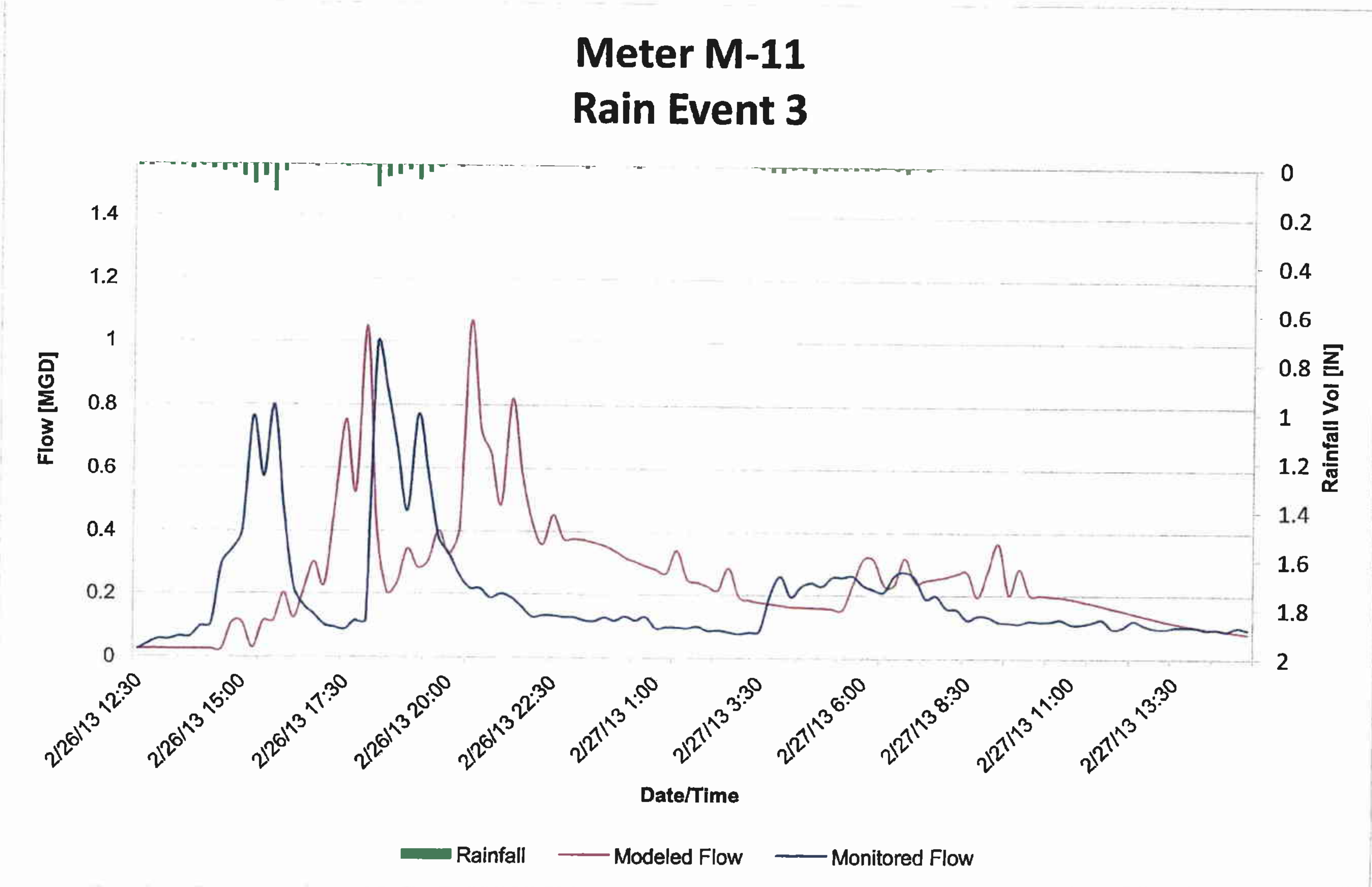
M-11
SUMMER MODEL
RAIN EVENTS

No.	Start Date	End Date	Total Rain	Max Int	Peak MOD Flow	Peak MON Flow	% Difference		Modeled Volume	Monitored Volume	% Difference	
1	1/28/13 3:00	1/28/13 20:00	0.53	0.20	0.59	0.53	10.27%	Mod HIGH	0.088	0.077	12.28%	Mod HIGH
2	1/30/13 10:15	1/31/13 8:30	1.08	0.32	1.00	1.15	13.24%	Mod LOW	0.210	0.235	10.60%	Mod LOW
3	2/26/13 12:30	2/27/13 13:15	1.01	0.44	1.06	0.99	6.85%	Mod HIGH	0.160	0.165	2.83%	Mod LOW
4	3/25/13 15:15	3/26/13 6:30	0.77	0.44	0.95	0.23	76.16%	Mod HIGH	0.141	0.053	62.75%	Mod HIGH
5	4/10/13 15:45	4/11/13 5:30	0.58	0.88	1.98	1.18	40.48%	Mod HIGH	0.043	0.034	21.21%	Mod HIGH
6	4/16/13 20:00	4/17/13 4:45	1.13	2.40	4.18	4.20	0.45%	Mod LOW	0.090	0.159	43.37%	Mod LOW
7	5/22/13 23:15	5/23/13 14:30	0.52	0.72	1.638	1.623	0.92%	Mod HIGH	0.067	0.062	7.63%	Mod HIGH

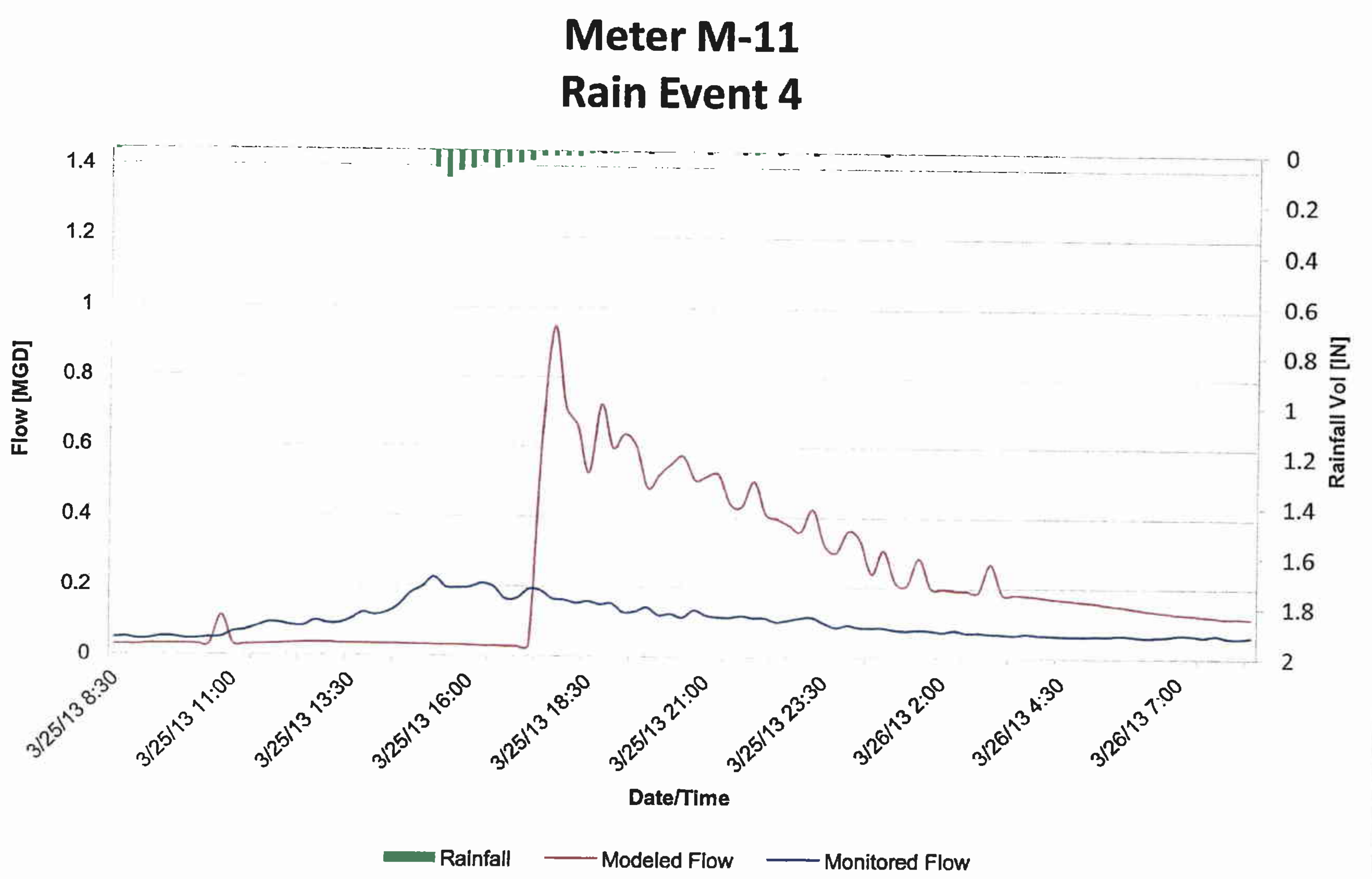

Meter M-11
Rain Event 1
Flow [MGD]
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/28/13 3:00
1/28/13 5:30
1/28/13 8:00
1/28/13 10:30
1/28/13 13:00
1/28/13 15:30
1/28/13 18:00
1/28/13 20:30
1/28/13 23:00
1/29/13 1:30
1/29/13 4:00
1/29/13 6:30
1/29/13 9:00
1/29/13 11:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



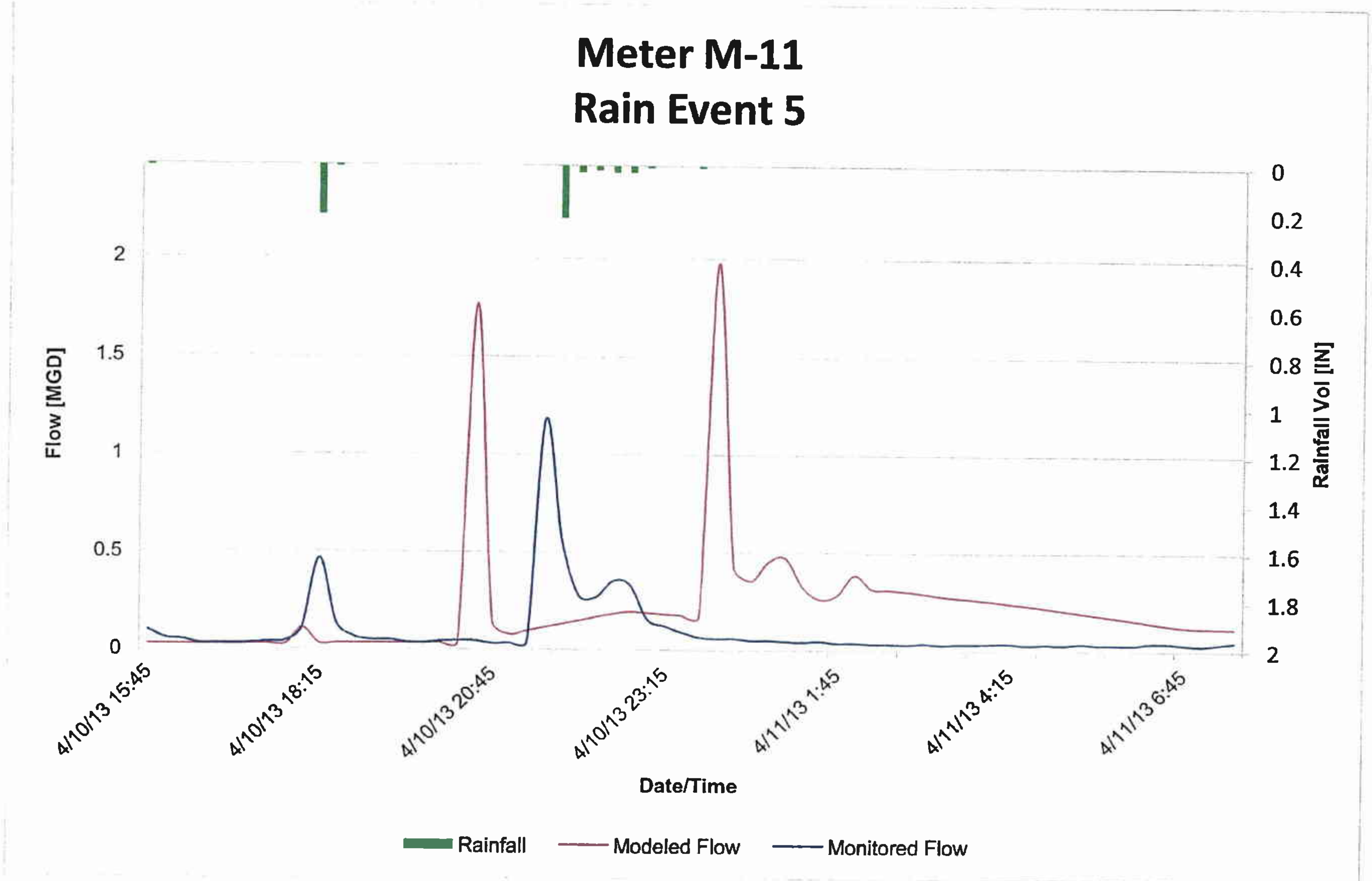
Meter M-11
Rain Event 2
Flow [MGD]
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1/30/13 10:15
1/30/13 12:45
1/30/13 15:15
1/30/13 17:45
1/30/13 20:15
1/30/13 22:45
1/31/13 1:15
1/31/13 3:45
1/31/13 6:15
1/31/13 8:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



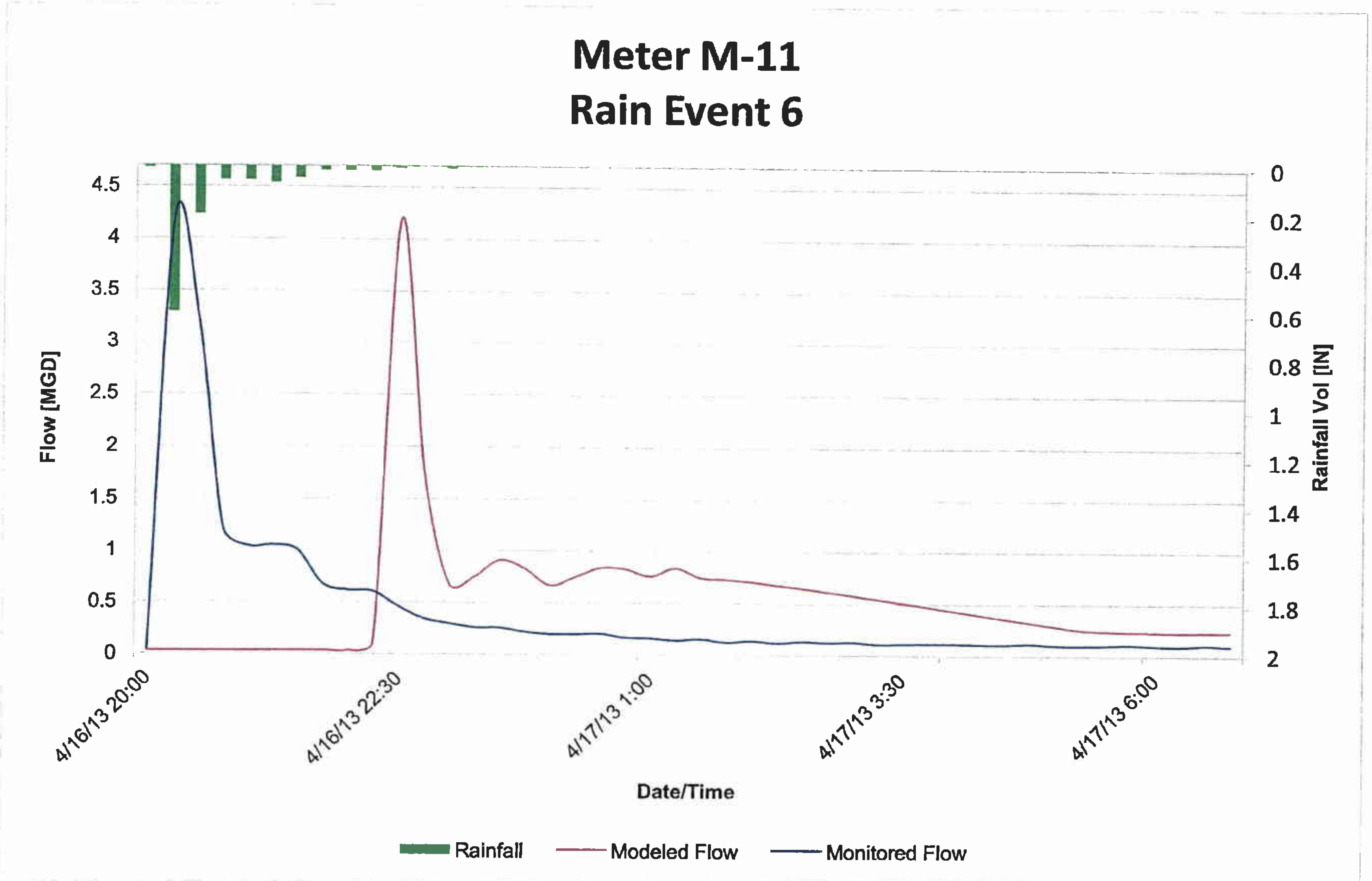
Meter M-11
Rain Event 3
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
2/26/13 12:30
2/26/13 15:00
2/26/13 17:30
2/26/13 20:00
2/26/13 22:30
2/27/13 1:00
2/27/13 3:30
2/27/13 6:00
2/27/13 8:30
2/27/13 11:00
2/27/13 13:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow



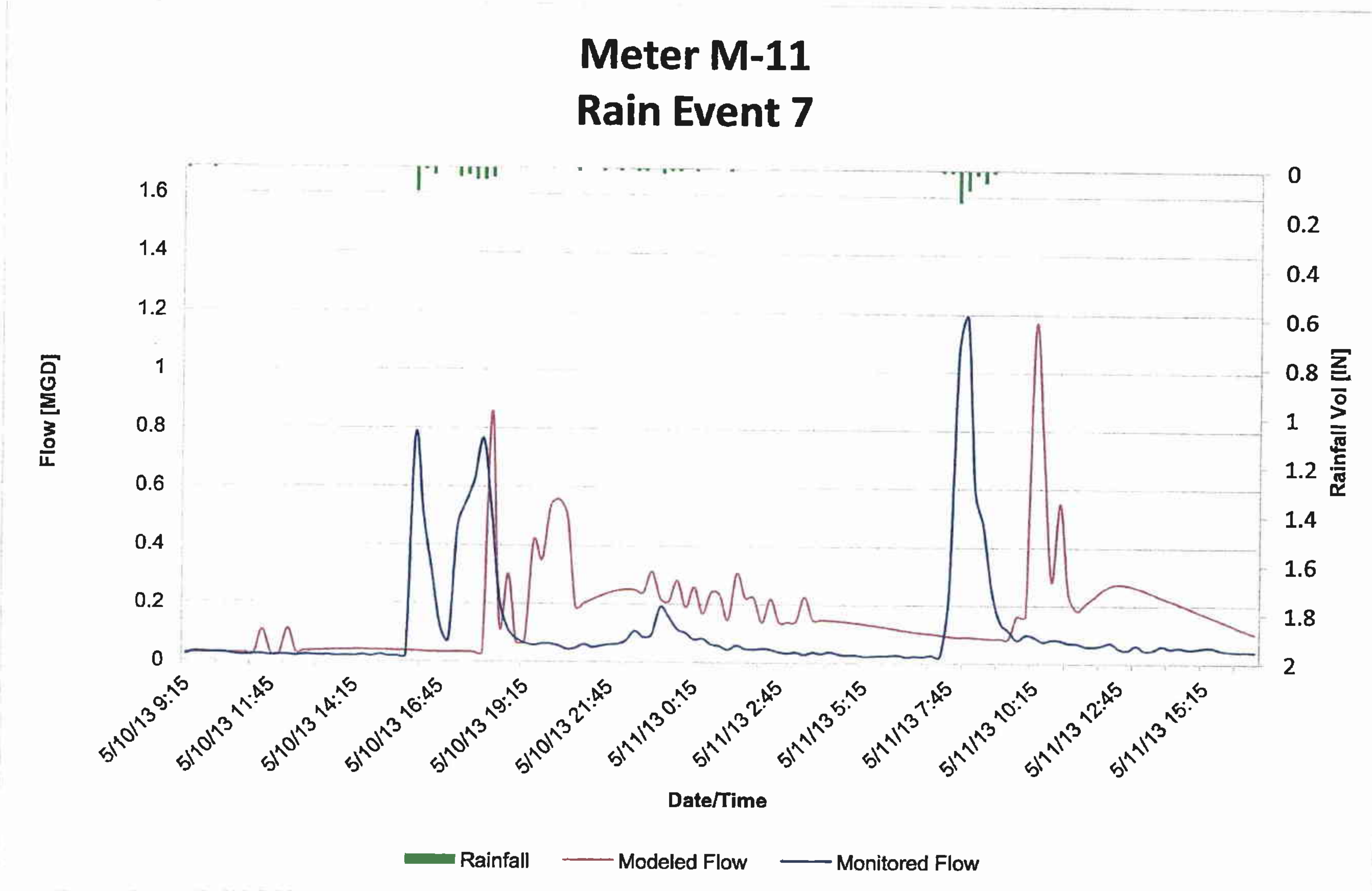
Meter M-11
Rain Event 4
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Flow [MGD]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Rainfall Vol [IN]
3/25/13 8:30
3/25/13 11:00
3/25/13 13:30
3/25/13 16:00
3/25/13 18:30
3/25/13 21:00
3/25/13 23:30
3/26/13 2:00
3/26/13 4:30
3/26/13 7:00
Date/Time
Rainfall
Modeled Flow
Monitored Flow



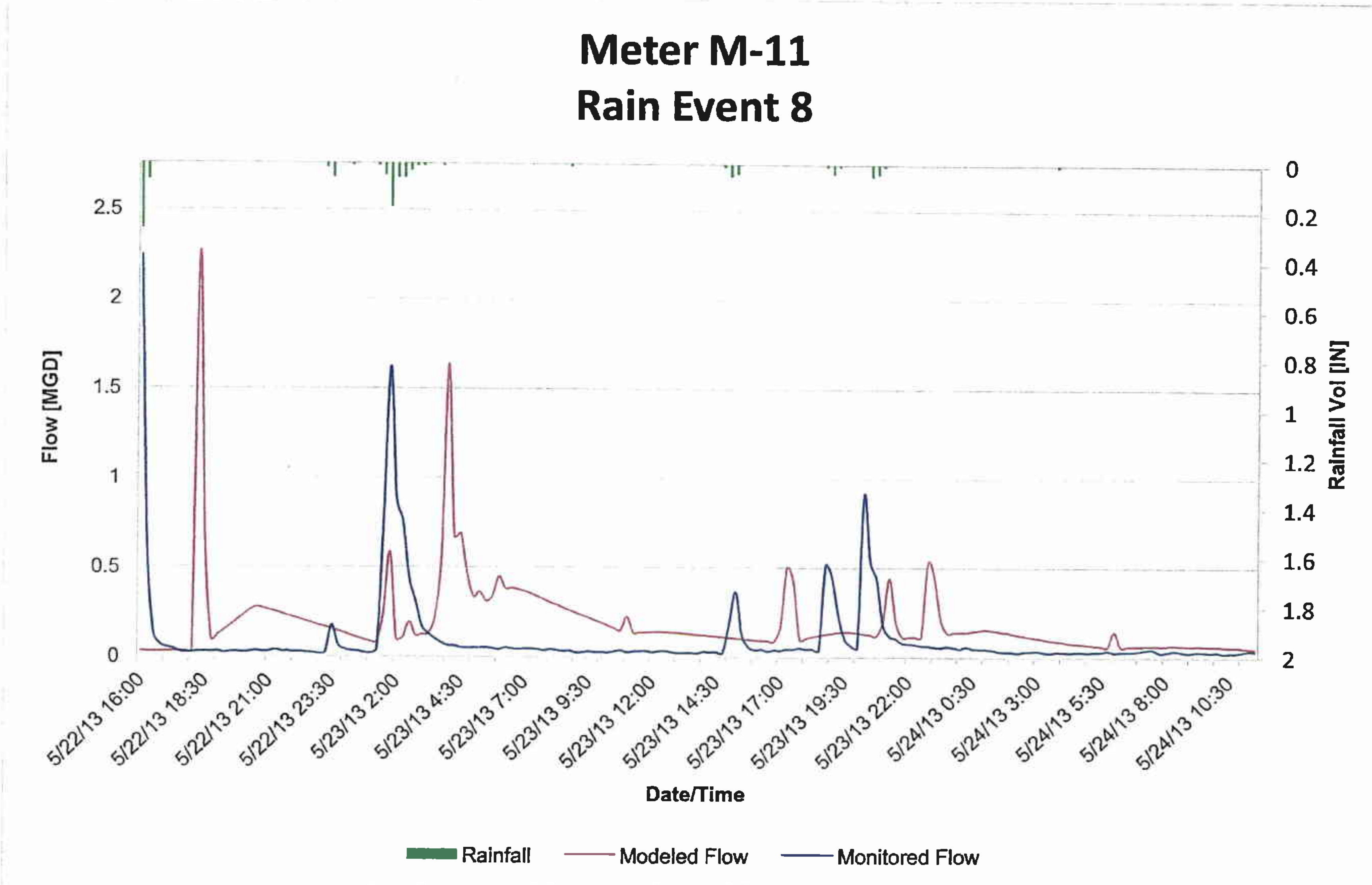
Meter M-11
Rain Event 5
Flow [MGD]
0
0.5
1
1.5
2
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/10/13 15:45
4/10/13 18:15
4/10/13 20:45
4/10/13 23:15
4/11/13 1:45
4/11/13 4:15
4/11/13 6:45
Date/Time
Rainfall
Modeled Flow
Monitored Flow



Meter M-11
Rain Event 6
Flow [MGD]
Rainfall Vol [IN]
Date/Time
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
4/16/13 20:00
4/16/13 22:30
4/17/13 1:00
4/17/13 3:30
4/17/13 6:00
Rainfall
Modeled Flow
Monitored Flow



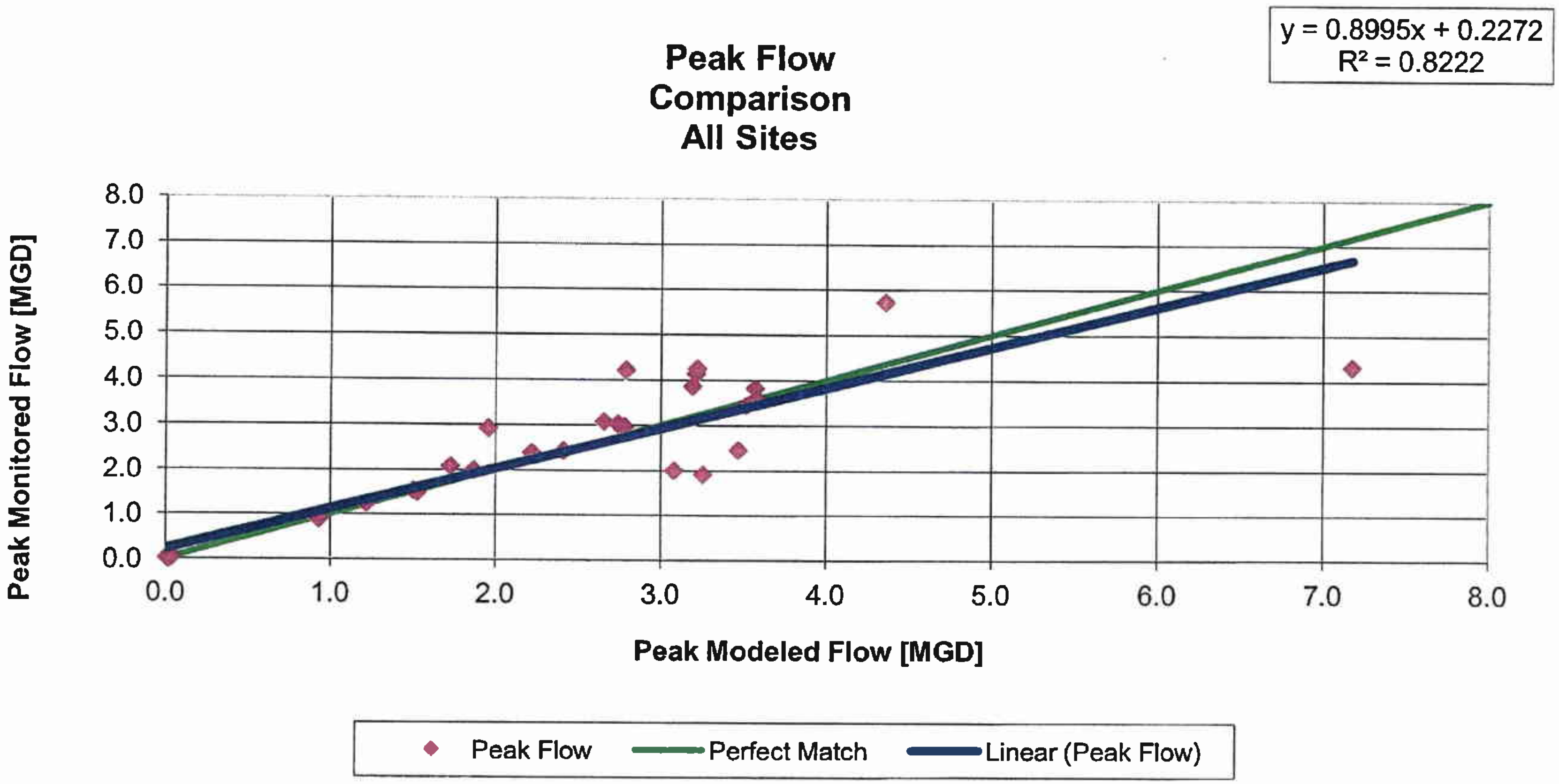
Meter M-11
Rain Event 7
Flow [MGD]
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/10/13 9:15
5/10/13 11:45
5/10/13 14:15
5/10/13 16:45
5/10/13 19:15
5/10/13 21:45
5/11/13 0:15
5/11/13 2:45
5/11/13 5:15
5/11/13 7:45
5/11/13 10:15
5/11/13 12:45
5/11/13 15:15
Date/Time
Rainfall
Modeled Flow
Monitored Flow



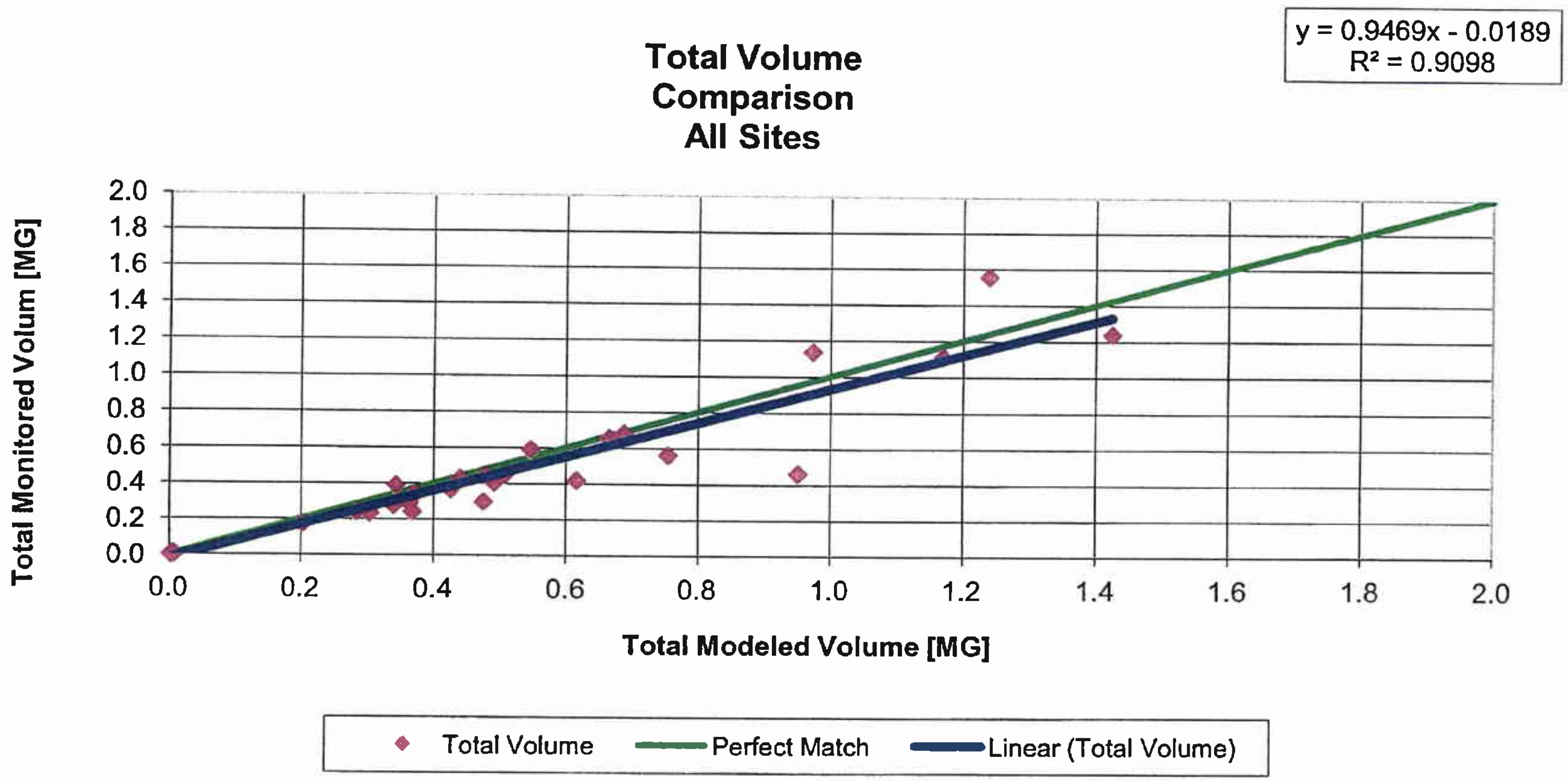
Meter M-11
Rain Event 8
Flow [MGD]
2.5
2
1.5
1
0.5
0
Rainfall Vol [IN]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
5/22/13 16:00
5/22/13 18:30
5/22/13 21:00
5/22/13 23:30
5/23/13 2:00
5/23/13 4:30
5/23/13 7:00
5/23/13 9:30
5/23/13 12:00
5/23/13 14:30
5/23/13 17:00
5/23/13 19:30
5/23/13 22:00
5/24/13 0:30
5/24/13 3:00
5/24/13 5:30
5/24/13 8:00
5/24/13 10:30
Date/Time
Rainfall
Modeled Flow
Monitored Flow

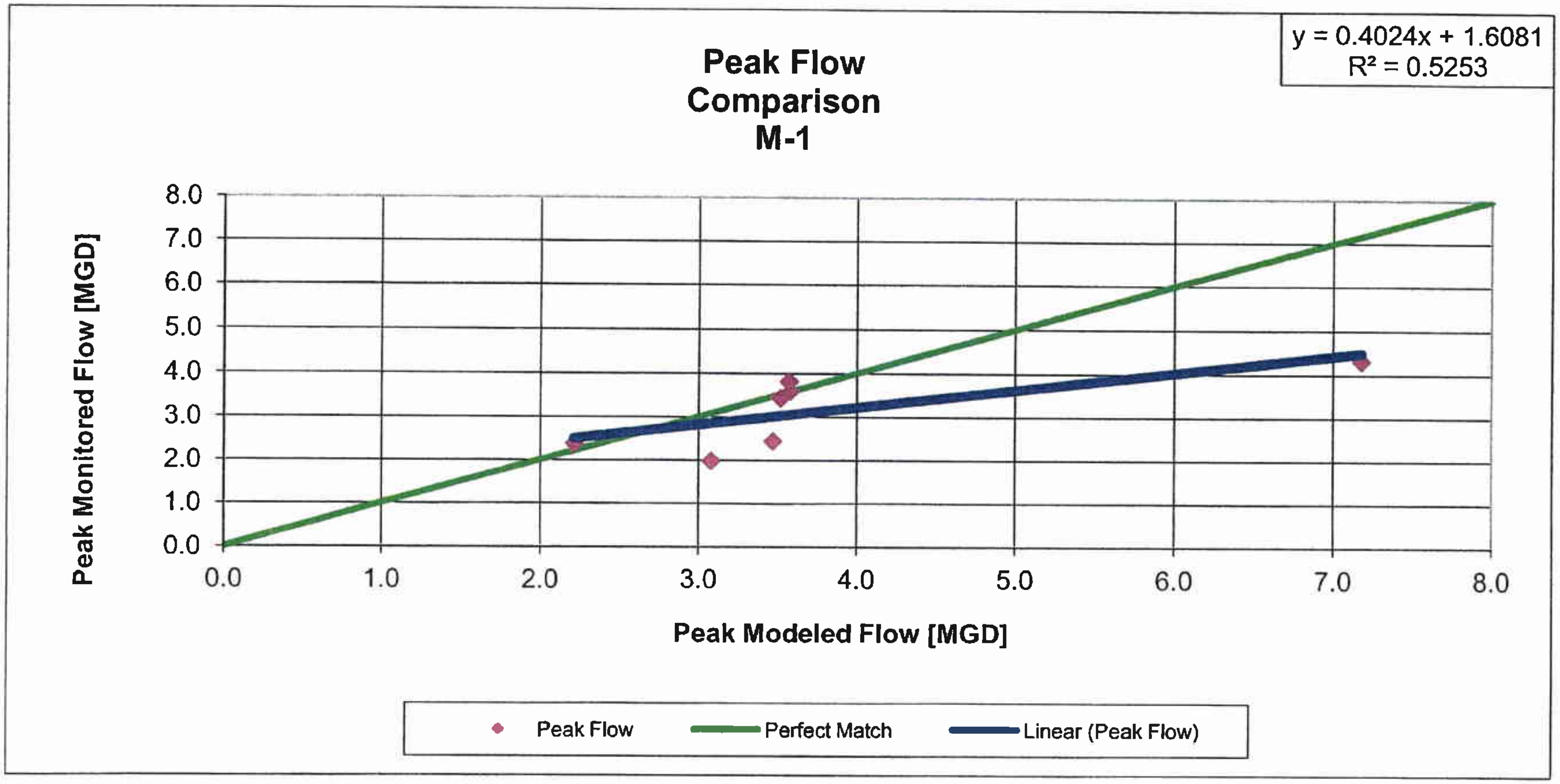
APPENDIX H

MONITORED VS. MODELED REGRESSION PLOTS

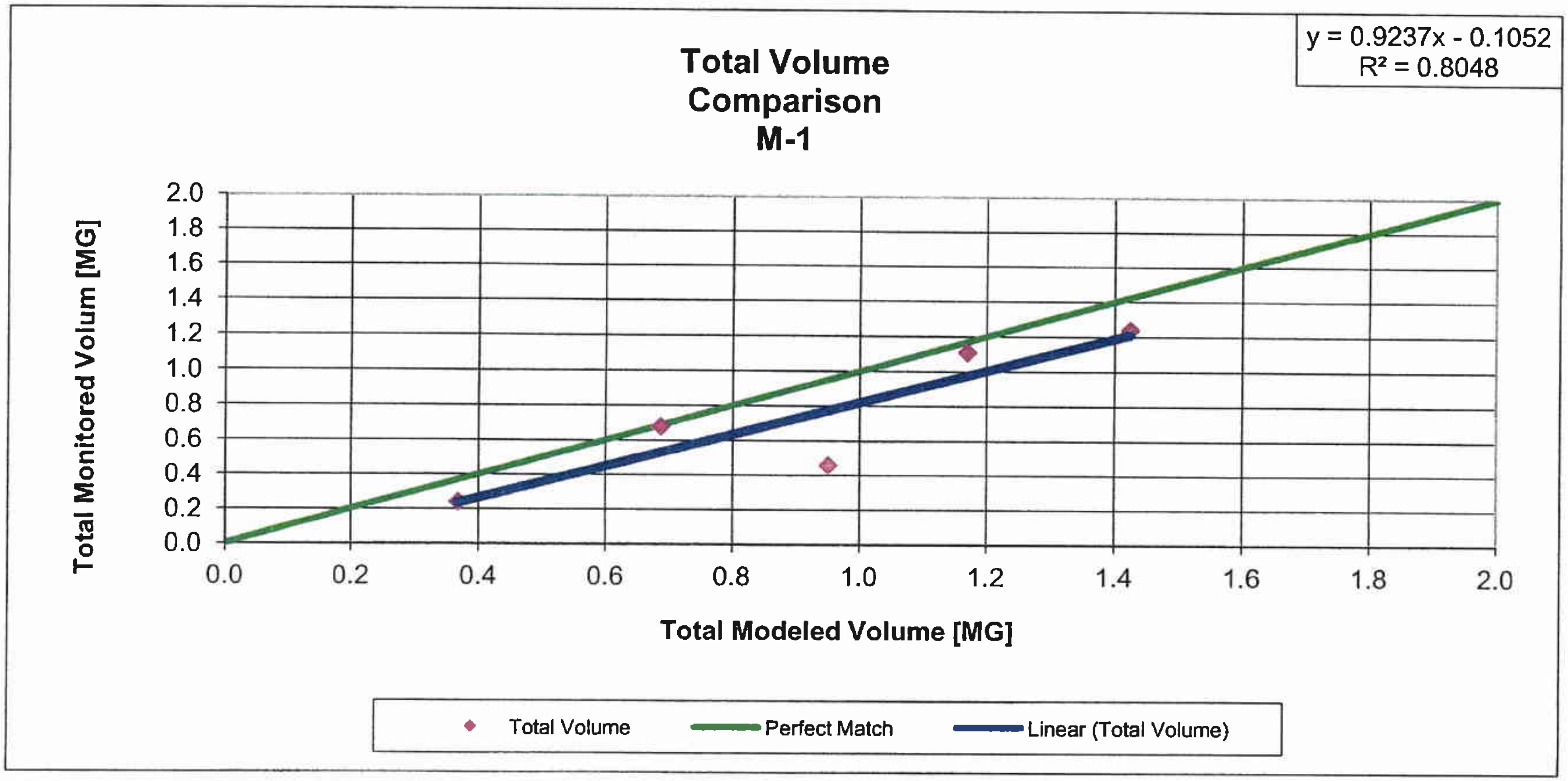


y = 0.8995x + 0.2272
R² = 0.8222
Peak Flow
Comparison
All Sites
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Peak Monitored Flow [MGD]
Peak Modeled Flow [MGD]
Peak Flow
Perfect Match
Linear (Peak Flow)

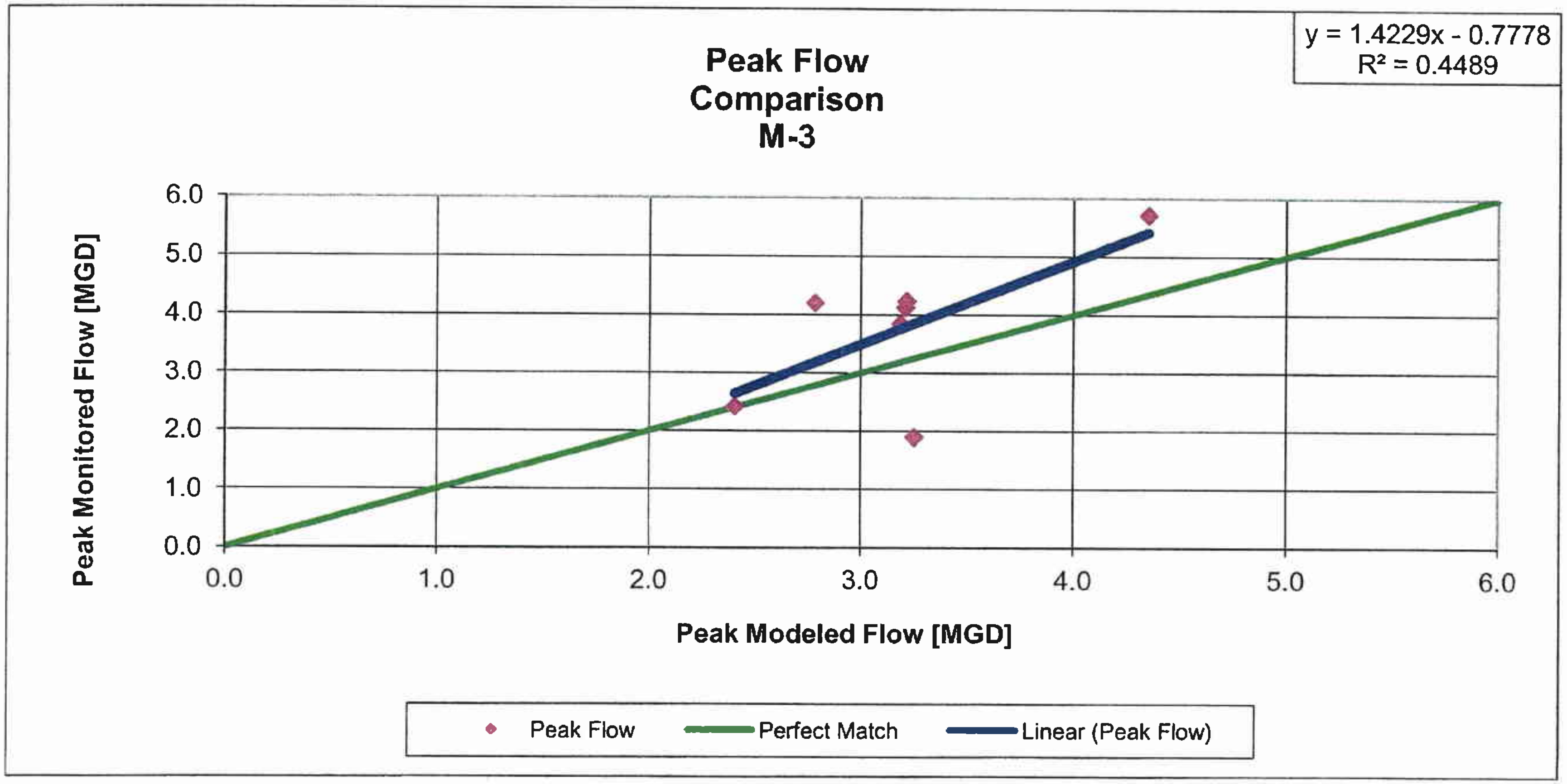

y = 0.9469x - 0.0189
R² = 0.9098
Total Volume
Comparison
All Sites
Total Monitored Volum [MG]
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Total Modeled Volume [MG]
Total Volume
Perfect Match
Linear (Total Volume)



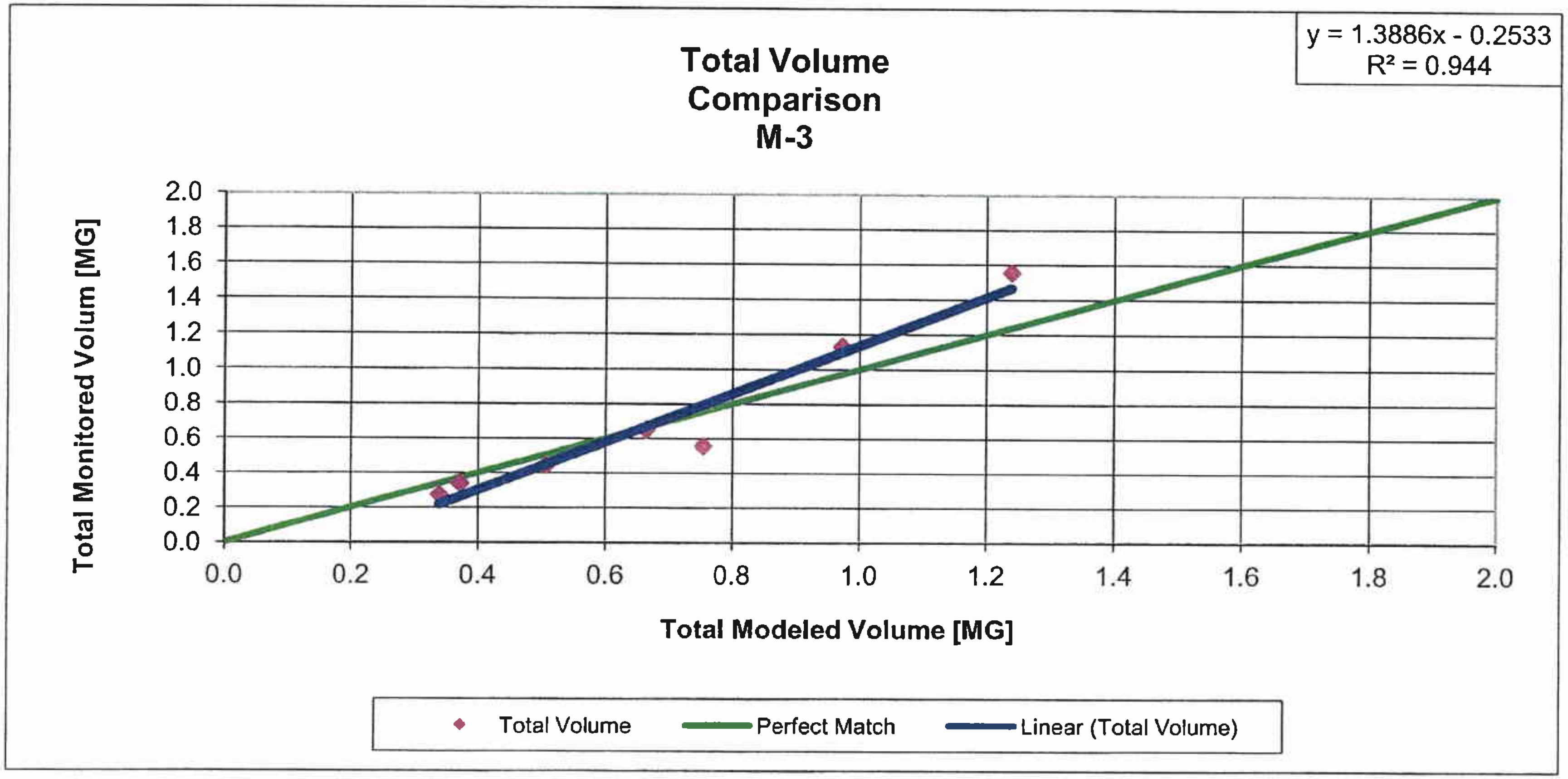
y = 0.4024x + 1.6081
R² = 0.5253
Peak Flow
Comparison
M-1
Peak Monitored Flow [MGD]
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Peak Modeled Flow [MGD]
Peak Flow
Perfect Match
Linear (Peak Flow)



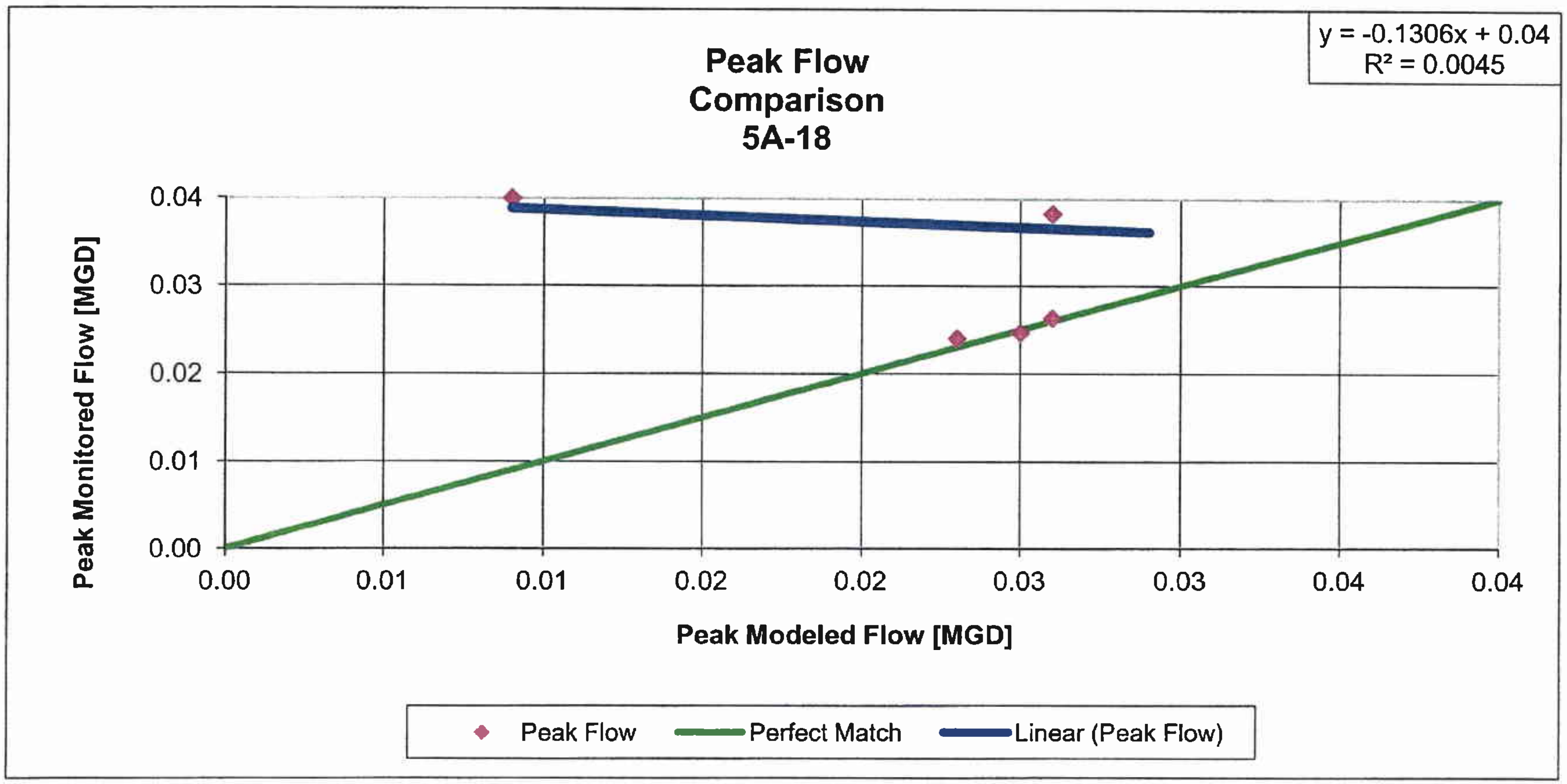
Total Volume
Comparison
M-1
y = 0.9237x - 0.1052
R² = 0.8048
Total Monitored Volum [MG]
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Total Modeled Volume [MG]
Total Volume
Perfect Match
Linear (Total Volume)



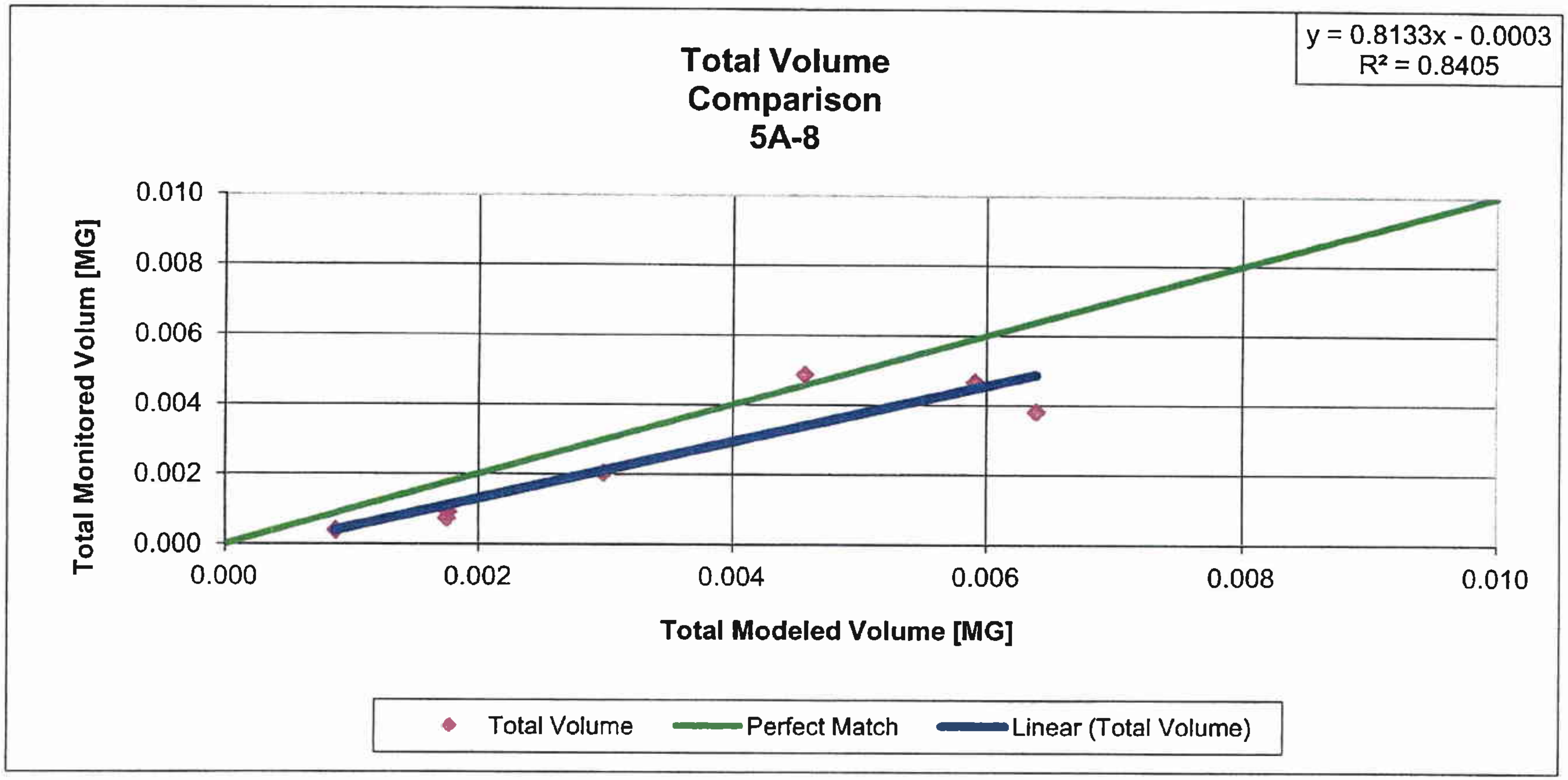
y = 1.4229x - 0.7778
R² = 0.4489
Peak Flow
Comparison
M-3
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Peak Monitored Flow [MGD]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
Peak Modeled Flow [MGD]
Peak Flow
Perfect Match
Linear (Peak Flow)



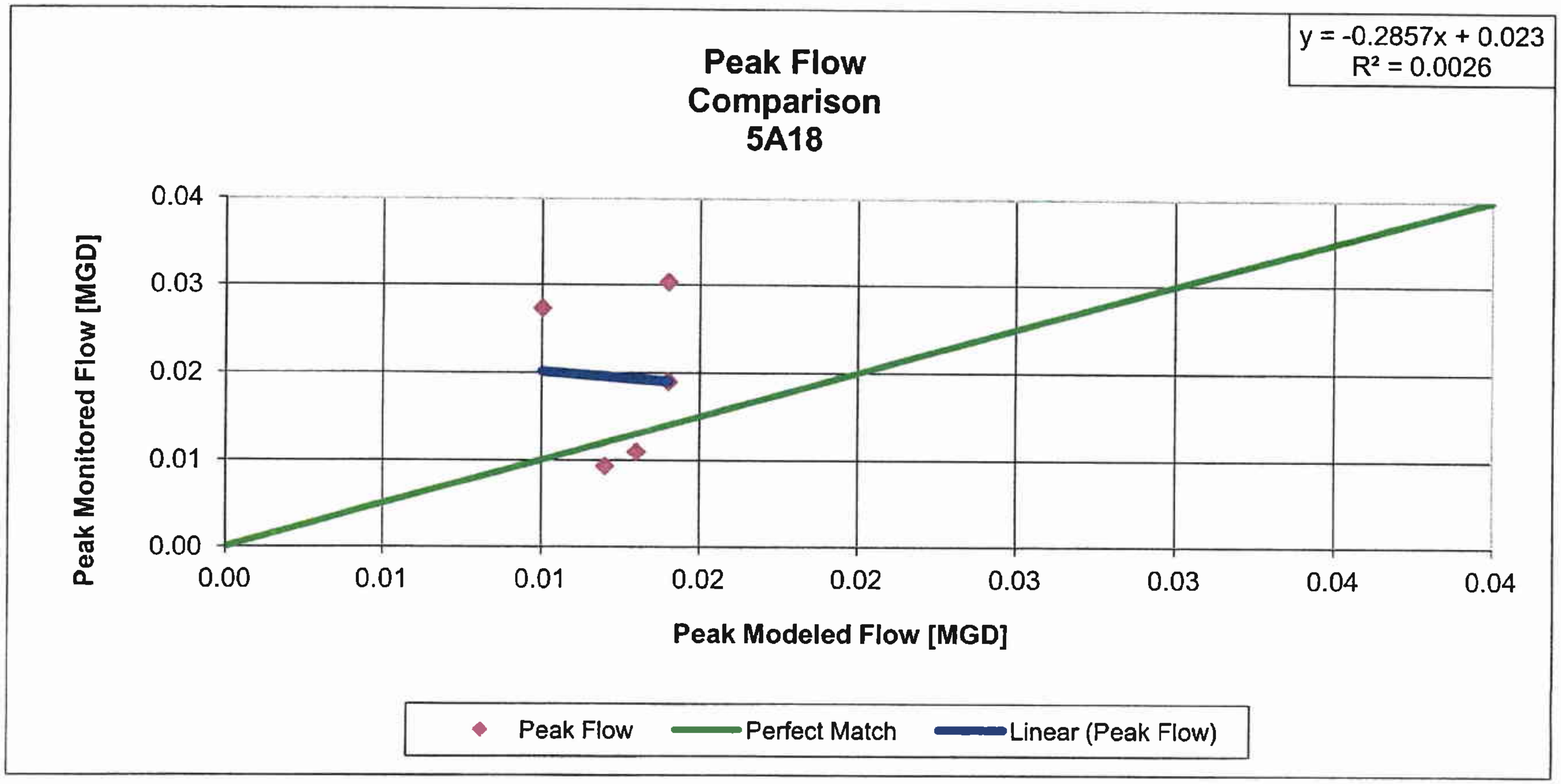
y = 1.3886x - 0.2533
R² = 0.944
Total Volume
Comparison
M-3
Total Monitored Volum [MG]
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Total Modeled Volume [MG]
Total Volume
Perfect Match
Linear (Total Volume)



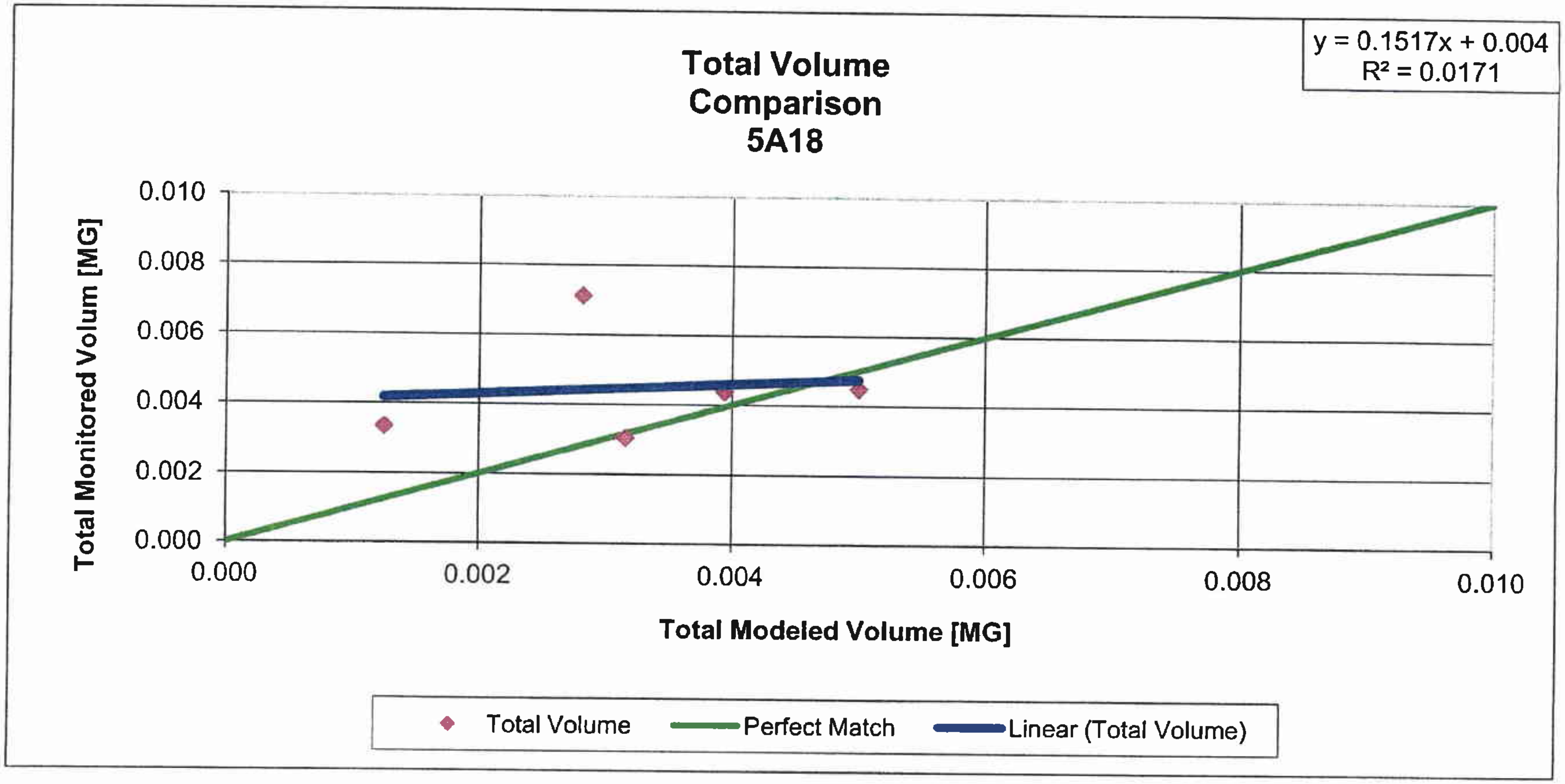
Peak Flow
Comparison
5A-18
y = -0.1306x + 0.04
R² = 0.0045
0.04
0.03
0.02
0.01
0.00
Peak Monitored Flow [MGD]
0.00
0.01
0.01
0.02
0.02
0.03
0.03
0.04
0.04
Peak Modeled Flow [MGD]
Peak Flow
Perfect Match
Linear (Peak Flow)



y = 0.8133x - 0.0003
R² = 0.8405
Total Volume
Comparison
5A-8
0.010
0.008
0.006
0.004
0.002
0.000
Total Monitored Volum [MG]
0.000
0.002
0.004
0.006
0.008
0.010
Total Modeled Volume [MG]
Total Volume
Perfect Match
Linear (Total Volume)



y = -0.2857x + 0.023
R² = 0.0026
Peak Flow
Comparison
5A18
0.04
0.03
0.02
0.01
0.00
Peak Monitored Flow [MGD]
0.00
0.01
0.01
0.02
0.02
0.03
0.03
0.04
0.04
Peak Modeled Flow [MGD]
Peak Flow
Perfect Match
Linear (Peak Flow)



Total Volume
Comparison
5A18
y = 0.1517x + 0.004
R² = 0.0171
Total Monitored Volum [MG]
0.010
0.008
0.006
0.004
0.002
0.000
0.000
0.002
0.004
0.006
0.008
0.010
Total Modeled Volume [MG]
Total Volume
Perfect Match
Linear (Total Volume)