DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY

DC CLEAN RIVERS PROJECT

ENVIRONMENTAL IMPACT BOND FINAL REPORT

December 2020

Prepared for:

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Executive Summary

ES.1 Purpose

The District of Columbia Water and Sewer Authority (DC Water) issued an Environmental Impact Bond (EIB) with a principal of $25M to fund the implementation of Rock Creek Project 1 (RC-A) as part of the DC Clean Rivers Project (DCCR). RC-A is a project to construct green infrastructure (GI) as part of DC Water's program to control combined sewer overflows (CSOs). The EIB is the *Public Utility Subordinate Lien Multimodal Revenue Bonds Series 2016B.* The Purchasers of the bond are Goldman Sachs Urban Investment Group (GSUIG) Real Estate Member LLC and Calvert Social Investment Foundation Inc. The EIB requires that the degree of runoff reduction provided by the project be calculated by DC Water and presented in a Final Report. Depending on the degree of runoff reduction, the EIB specifies that a 'Risk Share Payment,' 'Outcome Payment' or no payment may be due. This document is the Final Report documenting the runoff reduction calculated per the EIB.

ES.2 Pre-Construction Predictions in 2016 Private Placement Agreement

As part of the development of the EIB, DC Water prepared a Technical Memorandum predicting the reasonable expected range in runoff reduction, titled Environmental Impact Bond Technical Evaluation Memorandum, dated September 13, 2016. Wet weather volume was calculated as all flow greater than twice the long-term average dry weather flow, and runoff reduction volume is the difference between the post-construction and pre-construction wet weather volumes during the average year normalized to impervious acres treated. Given the schedule for the bond, only three months of pre-construction monitoring data was available to prepare the memo. After preparation of the Technical Memorandum for the Private Placement Agreement, pre-construction monitoring continued and a full 12 months of data was collected.

Based on model simulations and sensitivity analysis, annual wet weather flows (WWF) normalized to impervious acre treated at 1.2" were calculated with GI in place. To account for variations in the simulated model parameters, a factor of 5% was added to the 95th percentile runoff reduction results and a factor of 5% was subtracted from the 5th percentile runoff reduction results. These adjusted results represent the approved ranges used for the 5th and 95th percentile in the 2016 Technical Memorandum as shown below.

- Adjusted annual average wet weather flow reduction (MG/impervious acre treated at 1.2"), 95th percentile is 41.3%
- Adjusted annual average wet weather flow reduction (MG/impervious acre treated at 1.2"), 5th percentile is 18.6%

Based on the foregoing, the EIB established the following outcome ranges.

EIB Outcome Ranges

Tier	Runoff Reduction	Payments
1	Greater than 41.3%	DC Water pays Outcome Payment of $3,300,319.00 to Purchasers
2	18.6% to 41.3%	No Outcome Payment or Risk Share Payment
3	Less than 18.6%	Purchasers pay Risk Share Payment of $3,300,319.00 to DC Water

ES.3 Rock Creek Project A

The drainage areas managed by the constructed GI practices in the study area based on “impervious CDA excluding the practice areas” is summarized below.

2019 Constructed - CDA (Excluding Practice Area) Summary

Practice Type	Number of Practices	Acres Managed
Curb Extension Bioretention (CBR)	1	0.09
Planter Bioretention (PBR)	28	2.72
Alley Permeable Pavement (APP)	41	7.45
Parking Lane Permeable Pavement (PPP)	7	1.11
Challenge Parks	1	1.30
Kennedy Street	31	6.52
Total	**109**	**19.20**

ES.4 Post-Construction Assessment

By March 2019, DC Water completed the construction of the first Rock Creek GI project, at which point post-construction monitoring was initiated to evaluate the effectiveness of GI.

- Post-construction monitoring for sewershed flows, rainfall and groundwater data was conducted for 19 months
- Post-construction monitoring for GI practice water levels was conducted for 17.5 months

The modeling approach as defined in the 2016 EIB document assumes that the hydrologic and hydraulic characteristics of the sewershed do not change from pre- to post-construction periods. This assumption needs to be valid to calculate the wet weather volume reduction during post-construction due to GI. The following were observed based on the monitoring and modeling data:

- Increase in wet weather response in 2019/2020 compared to 2016
  There was an increase in wet weather response in the sewershed meters in 2019/2020 compared to preconstruction data in 2016. This is supported by:

    - Rainfall conditions – the post-construction period was substantially wetter with more than 70” of rain in 19 months, compared to the pre-construction period with 34.5” of rain in 12 months. In addition, the post-construction period included much more intense rain events with 28 events with an intensity of 2”/hr or more compared to 7 such events in pre-construction period.

  - RC-A metering data – for all events, the runoff per inch of rain measured by the sewershed meters increased in post-construction compared to pre-construction. Runoff per inch of rain increased from 0.69 mg/inch in preconstruction to 0.83 mg/inch after construction for all rain events. Notably, the runoff for events less than 1” of rainfall decreased from 0.75 mg/inch pre-construction to 0.73 mg/inch post-construction, suggesting GI practices are having an impact, even during an overall wetter period. For events larger than 1” of rainfall, wet weather response increased substantially from 0.58 mg/inch pre-construction to 0.94 mg/inch post-construction.

  - Department of Energy and Environment (DOEE) Control Shed Data – DC Water obtained flow data from a nearby Rock Creek sewershed monitored by DOEE. This was a control sewershed used by DOEE for their Riversmart GI program where monitoring data was available in 2015-2016 as well as 2019-2020. No GI was constructed in the shed so it remained effectively unchanged throughout the period. For rainfall events larger than one inch of rain, the shed produced substantially more runoff in 2019-2020 (0.17 mg/inch) than in 2015-2016 (0.09 mg/inch). The control shed’s system response (mg/inch of rain) has increased, independent from GI, for the periods comparable to RC-A’s pre- and post-construction periods.

  - Anacostia River Tunnel Performance Data – Analysis of the Anacostia Tunnel capture data shows that there was a substantial increase in wet weather response in 2019 and that different calibration periods can yield different representations of the sewershed wet weather response, depending on the rainfall conditions used for baseline assessment.

- Change in Peak Flow Rates observed in the RC-A Shed
  - Given the schedule for the bond, three months of pre-construction monitoring data were used to calibrate the 2016 EIB Model and prepare the Technical Memorandum in the Private Placement Agreement. During this period, relatively low intensity storms occurred and the observed peak flow rate in the sewershed meters was 13.9 mgd (combined for meters 049-1 and 049-2).
  - In accordance with its goals, DC Water kept the sewershed meters in place for a full 12 months of preconstruction monitoring. During this period, more intense storms occurred and peak flows in the sewershed meters reached approximately 24 mgd. However, modeling based on sewershed runoff and pipe capacity predicted peak flows should have been more than 100 mgd. The difference was attributed to flows bypassing catch basins in the shed and thereby exiting the shed to enter the sewershed at a downstream location that would not be captured by the flow meters. As a result of this, the model was updated by introducing the street network to account for the inlet bypassing.
  - After construction of GI, peak flows in the sewershed meters were observed to increase to about 72 mgd during intense storms. The increase in peak flows after construction was theorized to have been caused by a) additional flow paths from the surface into the sewer system due to the new GI facilities and b) increase in wet weather response due to the extremely wet climate period.

Flow bypassing inlets during preconstruction would have conveyed flows out of the sewershed, and these flow volumes would therefore not have been measured in the sewershed meters. Flow bypassing with some flows leaving the shed makes it impossible to perform a true mass balance on wet weather volume. Given this and the substantially different wet weather response between pre-construction and post-construction, means it is not possible to use this approach to make a reasonable assessment of system performance using the sewer meters. As a result, DC Water assessed performance using the water level meters in each individual practice. It is practical to calibrate the modeled filling and emptying of the GI practices to the observed data and then use this to calculate net reduction in wet weather volume. Given the requirements of the Private Placement Agreement, DC Water has calculated the wet weather reduction using the sewer meters. This calculation is included in the body of this report as required. However, given the metering and system response limitations described above, the sewer meter approach is inadequate, is not representative of actual performance, and therefore should no longer be the basis for conclusions relating to runoff reduction from the installed GI. The alternate approach, utilizing practice level data to calculate wet weather flow reductions, is demonstrated to be technically sound and more representative of actual project performance.

ES.5 Findings

Calculating wet weather reduction using the water levels in the GI practices is a more technically sound and representative approach. It is DC Water’s recommended approach for assessing performance. Using the GI practice water levels approach, the predicted runoff reduction is estimated at 19.56% which falls within Tier 2 outcome range established in the EIB as shown below.

EIB Outcome Ranges

Tier	Runoff Reduction	Payments
1	Greater than 41.3%	DC Water pays Outcome Payment of $3,300,319.00 to Purchasers
2	18.6% to 41.3%	No Outcome Payment or Risk Share Payment
3	Less than 18.6%	Purchasers pay Risk Share Payment of $3,300,319.00 to DC Water

ES.6 Lessons Learned for Future Projects

One of the purposes of the initial project constructed in the Rock Creek sewershed was to evaluate the effectiveness of GI using adaptive management. This means developing different design and construction methods, learning based on the results and revising subsequent projects using the lessons learned. It also means learning the best way to monitor and assess performance. Since Rock Creek Project A was the first large scaled GI project constructed within the District, significant information has been learned in terms of design, construction and monitoring approaches that have added to DC Water’s body of knowledge and expertise related to GI. This information has already been beneficial to DC Water’s GI program, as lessons learned from RC-A, and early concerns related to performance, were able to be addressed in the subsequent Potomac River Project A (PR-A). Based on these improvements, performance was demonstrated to be as predicted.

A summary of lessons learned that will be considered on future projects are summarized below

- Porous Pavement Facilities (Alleys and Parking Lane)
    - Maximizing the space between the pavers to promote higher infiltration, reduced clogging and easier maintenance.

  - Providing pretreatment grooves upstream of alleys to allow sediment to settle out that would otherwise clog the alley surface while reducing the velocity of stormwater entering the facility to promote higher percolation rates at the surface
  - Evaluating constructing a catch basin in upper reaches of the alley to remove sediment and distribute clean flow to alley surface
  - Flattening the “V” shape in the alley center to increase surface area for infiltration and to limit the concentration of stormwater through the center of the alley
  - Siting porous alleys in subdrainage areas less susceptible to high sediment loads
  - Constructing a maintenance/access point at end of the porous pavement facility to facilitate underdrain and orifice cleaning while providing a dedicated monitoring location
  - Evaluating checkdam spacing and the cost/benefits of including long porous pavement facilities
  - Considering increasing facility area in proportion to contributing drainage area size to lower the hydraulic and sediment load on the facilities

- Bioretention
  - Maximizing cost effectiveness of bioretention facilities by pursuing open space bioretention facilities that allow for larger facilities treating larger drainage areas
  - Installing bioretention facilities closer to intersections instead of midblock to limit parking impacts
  - Considering high slope gutter entrances or longer entrances into bioretention to reduce flow bypassing along the gutter

- All facilities
  - Improving valves/orifices at underdrain outlets to provide higher retention times in facilities, while allowing access for underdrain cleaning
  - Selection of monitoring sites to reduce stormwater flow bypassing inlets and exiting the monitored shed
  - Considering placing practices in series to promote sediment removal in upstream practices that are easier to maintain
  - Considering monitoring at site-level GI facilities in lieu of monitoring an entire sewershed to measure performance

Collectively, the information gained through the performance monitoring and the resulting optimization allowed DC Water to be responsive, make corrections, and ensure a future for GI at DC Water. The knowledge gained through this experience will be extremely beneficial to, and will be incorporated into, subsequent GI projects as DC Water continues to optimize and improve its GI program for CSO control in the Nation’s Capital.

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1 Introduction

1.1 Purpose

The District of Columbia Water and Sewer Authority (DC Water) issued an Environmental Impact Bond (EIB) with a principal of $25M to fund the implementation of Rock Creek Project 1 (RC-A) as part of the DC Clean Rivers Project (DCCR). RC-A is a project to construct Green Infrastructure (GI) as part of DC Water's program to control combined sewer overflows (CSOs). The EIB is the *Public Utility Subordinate Lien Multimodal Revenue Bonds Series 2016B.* The Purchasers of the bond are Goldman Sachs Urban Investment Group (GSUIG) Real Estate Member LLC and Calvert Social Investment Foundation Inc. The EIB requires that the degree of runoff reduction provided by the project be calculated by DC Water and presented in a Final Report. Depending on the degree of runoff reduction, the EIB specifies that a 'Risk Share Payment,' 'Outcome Payment' or no payment may be due. This document is the Final Report documenting the runoff reduction calculated per the EIB.

1.2 Environmental Impact Bond Requirements

The EIB is based upon an innovative "pay for success" model that leverages private capital to support "interventions" that produce measurable outcomes. Payment is predicated, to a certain degree, on the proven success of the intervention as measured by a rigorous evaluation. Traditionally, such contracts, also known as Social Impact Bonds, have been used to address critical social issues like recidivism or homelessness. Unlike previous social impact bonds in the United States, DC Water's EIB is structured as a true bond rather than an operating loan and expands the range of pay for success projects to include environmental interventions. Since GI had never been constructed on a large-scale within the District of Columbia prior to this project, and there was a lack of reliable data regarding the performance of GI. Financing RC-A through the EIB allowed DC Water to better manage or hedge a portion of the risk associated with GI.

By structuring a contingent payment based upon the effectiveness of GI, DC Water focused on outcomes (reducing stormwater runoff) in addition to outputs (building the required number of acres). The EIB establishes a replicable and scalable approach to financing GI for other communities across the country that are considering approaches to managing stormwater runoff and the water quality problem of CSOs.

As part of the development of the EIB, DC Water prepared a Technical Memorandum predicting the reasonable expected range in runoff reduction. This Technical Memorandum is Exhibit D of the Private Placement Agreement, which is included as Appendix A of this Report. The Private Placement Agreement requires the following:

- The Project will be evaluated based on the magnitude of Runoff Reduction.
- After the Project is placed in operation, the Authority will perform at least 12-months of post-construction monitoring. The Post-Construction Monitoring Period will start no later than 3 months after Authority certifies to EPA the project has been placed in operation.
- Post-Construction Runoff Reduction will be calculated in the same manner and method as used to obtain the results of the pre-construction monitoring period.

- Prior to conclusion of post-construction monitoring, Purchasers and DC Water will select an Independent Validator.
- The EIB specifies a Mandatory Tender date, which is April 1, 2021
- The Final Report is due not later than 90 days before Mandatory Tender date (April 1, 2021 minus 90 days = January 1, 2021). The Private Placement Agreement also indicates that the Final Report is due within 180 days of the conclusion of post-construction monitoring. Per DC Water's October 5, 2020 letter to the Purchasers, post-construction monitoring concluded September 30, 2020. Therefore, the requirement to submit the Final Report no later than 90 days before mandatory tender date is the earlier deadline than takes precedence.
- Independent Validator's opinion is due no later than 45 days after submittal of the Final Report.
- Both parties have 30 days from receipt of Independent Validators opinion to confirm or dispute the opinion.
- The Outcome and Risk Share Payments specified in the EIB are as follows:

Tier	Runoff Reduction	Payments
1	Greater than 41.3%	DC Water pays Outcome Payment of $3,300,319.00 to Purchasers
2	18.6% to 41.3%	No Outcome Payment or Risk Share Payment
3	Less than 18.6%	Purchasers pay Risk Share Payment of $3,300,319.00 to DC Water

The same individual retained during development of the EIB was once again selected by both the Purchasers and DC Water to conduct an independent validation of the Final Report. Ms. Melissa J. Simpson, PE, of WSP was selected and confirmed by letter dated October 14, 2020.

1.3 DC Clean Rivers Project

DC Water is implementing a Long-Term Control Plan (LTCP or DC Clean Rivers Project, DCCR) to control CSOs to the District of Columbia's (District) waterways. DCCR is comprised of a variety of projects to control CSOs, including pumping station rehabilitations, targeted sewer separation, GI, and a system of underground storage/conveyance tunnels. DCCR is being implemented in accordance with a first amendment to the Consent Decree (Amended Consent Decree), entered on January 14, 2016, which amends and supersedes the 2005 Consent Decree (Consent Decree) and incorporates GI, in a hybrid green-gray solution, to control CSOs while improving quality of life in the District.

2 Summary of Pre-Construction Predictions from 2016

2.1 Introduction

As part of the development of the EIB, DC Water prepared a Technical Memorandum predicting the reasonable expected range in runoff reduction, titled *Environmental Impact Bond Technical Evaluation Memorandum*, dated September 13, 2016. Wet weather volume was calculated as all flow greater than twice the long-term average dry weather flow, and runoff reduction volume was the difference between the post-construction and pre-construction wet weather volumes during the average year normalized to impervious acres treated. This Technical Memorandum is Exhibit D of the Private Placement Agreement. The complete Private Placement Agreement is included as Appendix A of this Report. This section summarizes the methodology and results described in the preconstruction technical memorandum.

2.1.1 Monitoring

The runoff quantity for existing conditions was determined prior to the installation of GI control measures in RC-A. The pre-construction monitoring program required the installation of a rain gage and flow measuring devices at predetermined locations at each project site (see Figure 2-2). Pre-construction monitoring was performed over a 12-month period. During this 12-month period, available collection system meter data were gathered to estimate the sanitary portion of the dry weather flow, and groundwater elevations at monitoring wells were recorded to evaluate the relationship to infiltration

Given the schedule for the bond, only a portion of the pre-construction monitoring was completed and a subset of the anticipated 12 months of data was used to prepare the initial report, as shown in Table 2-1 below.

Table 2-1. RC-A Pre-Construction Monitoring Schedule

Monitoring Type	Timeframe	Duration (months)	Remarks
Total Pre-Construction Monitoring Period	1/22/2016 - 1/22/2017	12	
Pre-Construction Monitoring Data Available for EIB Technical Memorandum	3/1/2016 – 6/2/2016	3	A valid calibration of the 2016 EIB model could not be achieved due to a couple of high intensity events that occurred during the 1/22/2016-2/29/2016 period. Hence data from this time period was excluded from EIB calibration.

Note: The updated pre-construction model achieved valid calibration for those events initially excluded from EIB calibration. (Refer to Section 4.3).

2.1.2 Rain Gages

One tipping bucket rain gage was installed within the RC-A area to measure local rainfall depths and intensities. The meter was located at Washington Latin School, as shown in Figure 2-1.

Figure 2-1.. RC-A Rain Gage at Washington Latin School

2.1.3 Flow Meters

Four flow meters were installed within the RC-A project area. The flow meters were area-velocity meters that were used to measure mean velocity in a pipe and measure depth of flow in the pipe. The sensor transmits a continuous ultrasonic wave, then measures the frequency shift of returned echoes reflected by air bubbles or particles in the flow. The meters assess instantaneous depth-averaged velocity and flow depth, and record data every five minutes. Flow rate was calculated using velocity and depth (as measured by the meter), and pipe shape information. Flow meters were located as shown in Figure 2-2.

To improve the accuracy of results, flow meters were calibrated to on-site conditions. Meters were visited regularly and at any point where review of data suggested that a calibration was in order. Flow depth and velocity were calibrated to replicate observed conditions at the site of the meter during the calibration and documented in the calibration records included in Appendix C.

Flow meter locations were selected to capture runoff from a variety of pre- and post-construction locations. Table 2-2 describes the flow meter purposes and drainage area to each meter. Site reports for the meters are located in Appendix C.

Table 2-2. RC-A Flow Meters

Meter	Purpose	Drainage Area (Acres)
RC-A 049-1	Quantify total runoff reduction from RC-A	103[1]
RC-A 049-2	Quantify total runoff reduction from RC-A	19
RC-A 049-3	Monitor runoff from a specific group of GI practices	0.9
RC-A 049-4	Monitor runoff from a specific group of GI practices	1.2

Note: The drainage area for 049-1 was updated to 117 acres as part of pre-construction model updates performed in 2019-2020. Figure 2-2 shows the drainage areas based on the assumptions made during preparation of the 2016 technical memorandum. Updated drainage area is depicted in Figure 4-1. Refer to Section 4.2.1, for the updates to the pre-construction model.

2.1.4 Groundwater Monitoring

For the RC-A project, seven groundwater monitoring wells were installed and monitored for a period of one year. Throughout field investigations, observations were reported regarding groundwater, infiltration, obstructing layers, and soil classification to provide information critical for design. Groundwater monitoring wells were typically placed at a depth of seven feet with a five-foot screen. They were visited monthly for inspection and data collection.

Figure 2-2 shows the drainage areas based on the assumptions made during preparation of the 2016 technical memorandum.

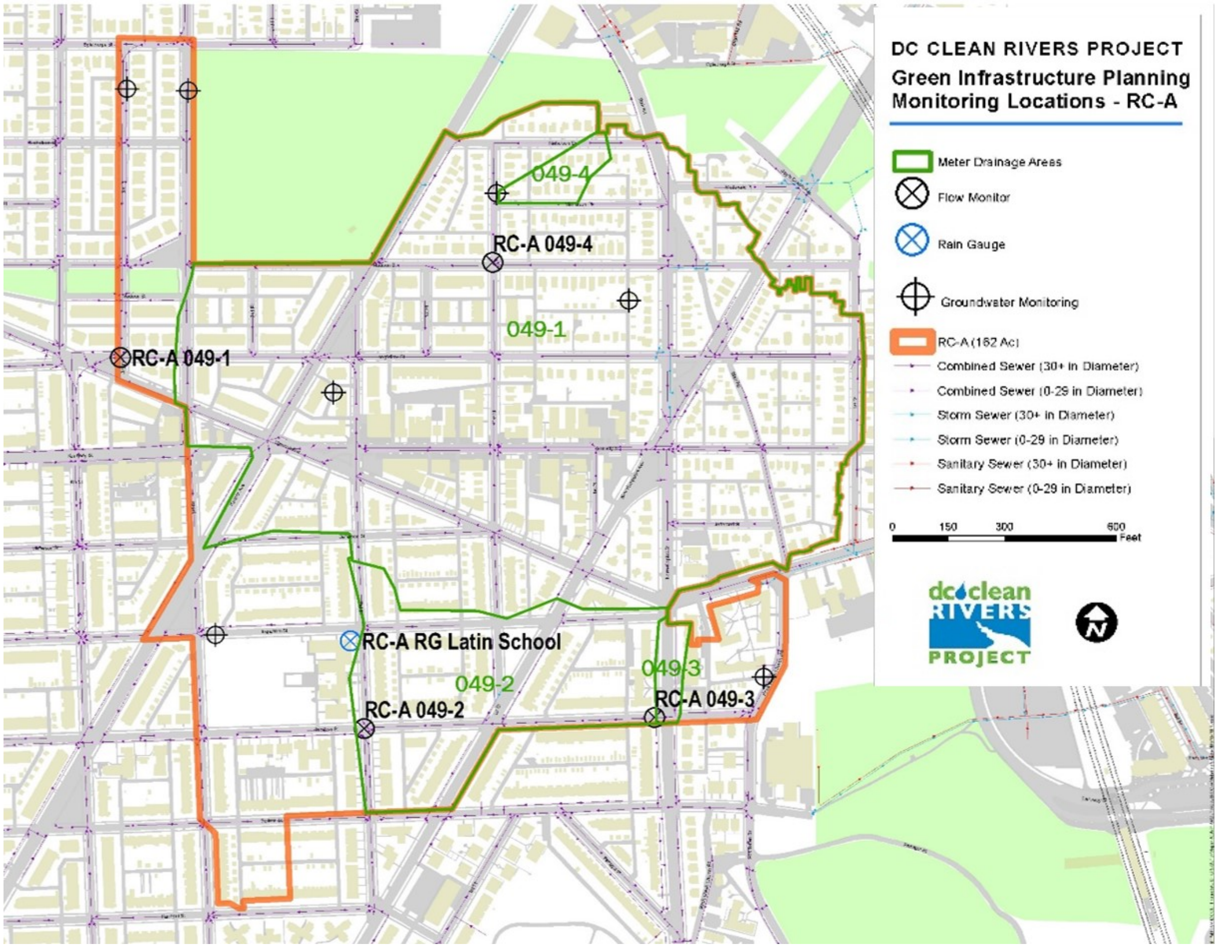


Figure 2-2. Pre- and Post-Construction Monitoring Locations

2.2 Definition of Average Rainfall Year

EPA's CSO Control Policy (1994) requires the effectiveness of CSO controls to be evaluated on a "system-wide, annual average basis." Identification of annual average rainfall conditions is thus a fundamental step in the LTCP process. Once selected, the average rainfall conditions become the basis for modeling the sewer system and receiving waters to evaluate the occurrence of CSOs, their impact on receiving waters, and the efficacy of CSO controls. 2016 EIB established the evaluation of GI performance using the same basis (average year rainfall conditions).

Historical rainfall records from various gages in and around the District of Columbia were reviewed. The most comprehensive and useful records were those from Ronald Reagan Washington National Airport, which is located on the western bank of the Potomac in Virginia, approximately three miles from the White House and downtown Washington, DC. Continuous hourly records are available for 50 years at this location, from 1949 to 1998. Due to the availability of continuous hourly data, this gage was used as the basis for establishing existing rainfall conditions.

The rainfall characteristics of individual years and groups of successive years were compared to the annual average rainfall statistics for the 50-year period of record. Three -year periods were singled out and utilized since they offer a broader range of rainfall events than a single year, while allowing for reasonable computational time for modeling. Based on the evaluation, the single year 1990 and the three-year period 1988 through 1990 were identified as representative of annual average conditions. Because of the robust number and variety of storms available in a three-year period, as opposed to a one-year period, the period 1988 through 1990 was used as the average rainfall condition that was used for modeling to support development of the LTCP. The rainfall that occurred during 1988 through 1990 consequently serves as the basis for evaluating the occurrence and impact of CSOs, and the efficacy of controls on a “system-wide, annual average basis.”

The rainfall characteristics of 1988 through 1990 were compared against the long-term average rainfall characteristics in Table 2-3.

Table 2-3. Rainfall Statistics

Statistic	Long Term Average[1]	Average of 1988-1990
Annual Rainfall (inches)	38.95	40.97
No. Events > 0.05 inches	74	71
Average Storm Duration (Hours)[2]	9.9	10.1
Average Storm Maximum Hourly Intensity (in/hr)	0.15	0.16

[1] Ronald Reagan Washington National Airport hourly data, 1949-1998

[2] Individual events separated by a minimum of 6 hours with no rain

2.3 Model Scope and Calibration

A continuous hydrologic Storm Water Management Model (SWMM) was developed to simulate runoff under pre-GI conditions and to estimate the runoff reduction expected under future conditions with GI implemented. The model included subcatchments representing runoff in the RC-A project area, the sewer network conveying the flow to the outlets of the RC-A project area and the GI practices planned for RC-A.

Based on the metering data collected (from January 2016 through June 2016), the RC-A model was calibrated to predict runoff and flow from the sewershed. The model calibration was summarized in DC Water’s Technical Memorandum, Environmental Impact Bond Technical Evaluation Memorandum (2016) which is Exhibit D of the Private Placement Agreement, included as Appendix A of this Report.

2.4 Conditions prior to Green Infrastructure

The existing conditions model uses the identical model application that was calibrated as described above. The model is applied for the 1988-1990 average year period to predict flow vs. time for the RC-A area. The total volume of flow, including runoff and dry-weather flow as measured at meters RCA-049-1 and RCA-049-2 (see Figure 2-2) and restricted to wet-weather event periods (as described above) for 1988-1990, is the total Existing Condition Runoff modeled in gallons per average year. This forms a baseline from which to measure runoff reductions expected under GI implementation.

Stormwater runoff is calculated as all flow greater than twice the long-term average dry weather flow.

2.5 Predicted Conditions after Green Infrastructure

The RC-A model for the EIB was used to predict the annual average runoff reduction expected under GI implementation. This was a prediction based on the best representation of the planned GI at the time and was not a calibrated model to the constructed GI. The 2016 effort was meant to be the best prediction of the planned runoff volume reduction expected if GI was implemented as planned.

The difference between the Predicted Conditions and Existing Conditions annual average runoff yields the Predicted Runoff Reduction.

The 2016 EIB looked at number of GI parameters and assumed “best”, “expected” and “worst” possible values for those parameters as described below.

- **Best Case**: GI performs at the high end of accepted parameters. This is the predicted results if, for example, soil is highly permeable, soil media has high conductivity, and the void ratio of media is high.
- **Expected Case**: GI performs as indicated in design drawings and using average assumptions for parameters not specified in the design.
- **Worst Case**: GI performs at the low end of accepted parameters. This is the predicted results if, for example, soil is less permeable, soil media has a low conductivity, and void ratios are low.

Table 2-4 shows the predicted results from the three model simulations. In the table, GI is referred as LID which stands for Low Impact Development.

Table 2-4. Wet Weather Flow for 1988-1990 (MG/average year)

	RC-A-49-1		**RC-A-49-2**		**Combined**	
	WW Flow (MG)	Reduction	WW Flow (MG)	Reduction	Total Flow (MG)	Reduction
NO LID	37.06	---	6.58	---	43.65	---
LID best case	23.52	36.54%	2.85	56.66%	26.38	39.57%
LID base	26.81	27.66%	3.77	42.69%	30.59	29.93%
LID worst case	30.70	17.18%	4.51	31.46%	35.21	19.33%

2.5.1 Sensitivity Analysis Results

As part of the 2016 EIB, a basic sensitivity analysis was performed by identifying the best and worst case parameters for four sensitive parameters. These values are used as a guide to predict the expected range of runoff reduction caused by Gl implementation. Building on this analysis, a Monte Carlo simulation was developed. In the Monte Carlo simulation, ranges of values were used for a number of inputs. The model was run many times using combinations of input data from within the acceptable ranges. Model results for average annual runoff reduction fell within a range as determined by the Monte Carlo simulation. This provided an interval of confidence in the model results and highlighted which parameters would have a high influence on the variation of average annual runoff. The SWMM variables identified for sensitivity were randomly sampled using either a normal or lognormal distribution, and each set of randomly sampled sensitivity parameters were used as inputs for the 1000 sequential SWMM model simulations. The resulting simulated runoff reduction was reported as a distribution of values.

Table 2-5 shows the assumptions used for the sensitivity parameters in developing the Monte Carlo Analysis.

Table 2-5. Monte Carlo Simulation Parameters

	Monte Carlo Simulation			
	Highest 95%-ile	**Mean**	**Lowest 95%-ile**	**Distribution**
Curb Extension and Planter Bioretention				
Soil Porosity (frac)	0.47	0.33	0.19	Normal
Soil Infiltration Capacity (in/hr)	1.6	1	0.4	Normal
Storage Void Ratio (frac)	0.77	0.67	0.57	Normal
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.02	Log-Normal
Permeable Pavement in Parking Lane and Alley				
Storage Void Ratio (frac)	0.77	0.67	0.57	Normal
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.02	Log-Normal

The results of the 2016 Monte Carlo analysis are shown below.

Table 2-6 shows the annual wet weather flow (WWF) calculated with GI in place. Table 2-7 shows the annual wet weather flow normalized to impervious acre treated at 1.2". Normalization was performed because the quantity of Gl constructed may vary somewhat from the as-designed plans due to utility conflicts or other modifications to the facilities that might be required during construction to accommodate actual conditions encountered in the field.

Table 2-6. Annual Wet Weather Flow (MG/average year)

		Meter RC-A-49-1	**Meter RC-A-49-2**	**Total**	**Percent Reduction**
	No LID	37.06	6.58	43.65	
LID	95th Percentile	24.53	3.29	27.82	36.3%
	Mean	26.77	3.71	30.47	30.2%
	5th Percentile	29.25	4.09	33.33	23.6%

Table 2-7. Annual Avg. WWF Reduction (MG/avg. year per Impervious Acre Treated at 1.2")

	Meter RC-A-49-1	**Meter RC-A-49-2**	**Total**	**Percent Reduction**	**Range**
95th Percentile	0.75	0.63	0.72	36.3%	
Mean	0.61	0.55	0.60	30.2%	13%
5th Percentile	0.47	0.48	0.47	23.6%	

To account for variation in the other SWMM parameters that are not accounted for in the Monte Carlo analysis, a factor of 5% was added to the 95th percentile runoff reduction results and a factor of 5% was subtracted from the 5th percentile runoff reduction results. These adjusted results are shown in Table 2-8 and represent the approved ranges used for the 5th and 95th percentile in the 2016 Technical Memorandum.

Table 2-8. Adjusted Annual Avg. WWF Reduction (MG/Impervious Acre Treated at 1.2")

	Percent Reduction	Range
Adjusted 95th Percentile	41.3%	23%
Adjusted 5th Percentile	18.6%	

Note: Reference Table 2-7 for values (mean, 95th percentile, and 5th percentile) prior to adjustment.

Based on the foregoing, the EIB established the following outcome ranges shown in Table 2-9:

Table 2-9. EIB Outcome Ranges

Tier	Runoff Reduction	Payments
1	Greater than 41.3%	DC Water pays Outcome Payment of $3,300,319.00 to Purchasers
2	18.6% to 41.3%	No Outcome Payment or Risk Share Payment
3	Less than 18.6%	Purchasers pay Risk Share Payment of $3,300,319.00 to DC Water

There are two ways to account for the drainage area managed by GI practices based on the methodology used. The Table 2-10 and Table 2-11 provides the drainage area summary from 2016 Request for Proposals (RFP) design drawings based on both the methodologies - “impervious Contributing Drainage Area (CDA) excluding the practice areas” (footprints) and “Practice Volumes”. The 2016 EIB calculation is based on “impervious Contributing Drainage Area (CDA) excluding the practice areas” (i.e. 22.05 acres) as shown in Figure 2-10.

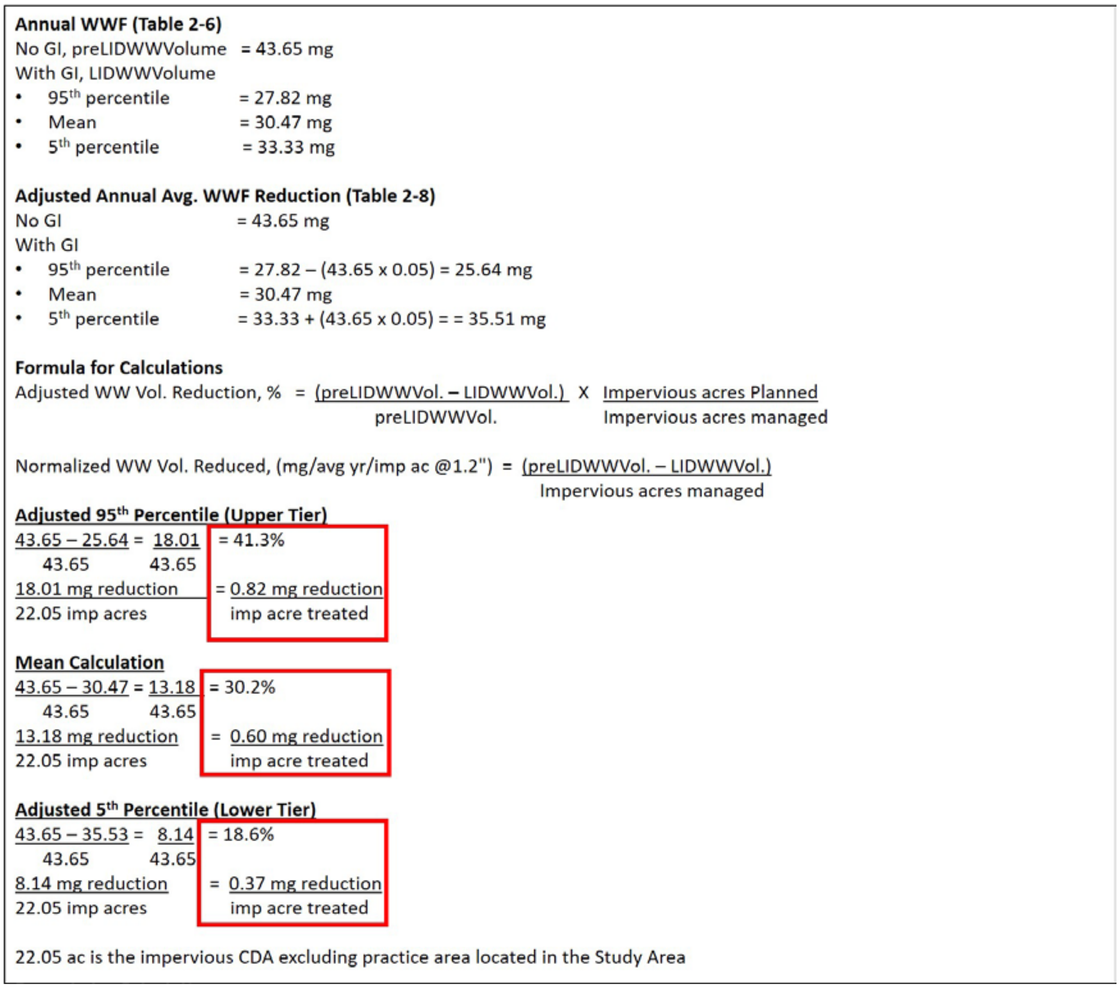
Table 2-10. 2016 Design – Impervious CDA (Excluding Practice Area) Summary

	Designed (Project Area)		Metered (Study Area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	6	0.70	1	0.26
Planter Bioretention (PBR)	46	8.76	38	6.69
Alley Permeable Pavement (APP)	65	17.49	55	12.92
Parking Lane Permeable Pavement (PPP)	23	3.71	11	2.18
RC-A Subtotal	**140**	**30.67**	**105**	**22.05**

Table 2-11. 2016 Design - Practice Volume Summary

	Design (Project Area)		Metered (Study Area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	4	0.30	1	0.07
Planter Bioretention (PBR)	46	4.77	36	3.37
Alley Permeable Pavement (APP)	65	15.18	52	10.98
Parking Lane Permeable Pavement (PPP)	23	3.83	11	2.14
RC-A Subtotal	**140**	**24.09**	**100**	**16.57**

The wet weather volumes, impervious acres and calculation basis used for the predictions included in the EIB Tech Memo are shown in Figure 2-3 (refer to Table 4-4 of EIB Tech Memo in Appendix A).



Annual WWF (Table 2-6)

No GI, preLIDWWVolume = 43.65 mg

With GI, LIDWWVolume

- 95th percentile = 27.82 mg
- Mean = 30.47 mg
- 5th percentile = 33.33 mg

Adjusted Annual Avg. WWF Reduction (Table 2-8)

No GI = 43.65 mg

With GI

- 95th percentile = 27.82 – (43.65 x 0.05) = 25.64 mg
- Mean = 30.47 mg
- 5th percentile = 33.33 + (43.65 x 0.05) = = 35.51 mg

Formula for Calculations

$$\text{Adjusted WW Vol. Reduction, \%} = \frac{\text{(preLIDWWVol. – LIDWWVol.)}}{\text{preLIDWWVol.}} \times \frac{\text{Impervious acres Planned}}{\text{Impervious acres managed}}$$

$$\text{Normalized WW Vol. Reduced, (mg/avg yr/imp ac @1.2")} = \frac{\text{(preLIDWWVol. – LIDWWVol.)}}{\text{Impervious acres managed}}$$

Adjusted 95th Percentile (Upper Tier)

$$\frac{43.65 - 25.64}{43.65} = \frac{18.01}{43.65} = 41.3\%$$

$$\frac{\text{18.01 mg reduction}}{\text{22.05 imp acres}} = \frac{\text{0.82 mg reduction}}{\text{imp acre treated}}$$

Mean Calculation

$$\frac{43.65 - 30.47}{43.65} = \frac{13.18}{43.65} = 30.2\%$$

$$\frac{\text{13.18 mg reduction}}{\text{22.05 imp acres}} = \frac{\text{0.60 mg reduction}}{\text{imp acre treated}}$$

Adjusted 5th Percentile (Lower Tier)

$$\frac{43.65 - 35.53}{43.65} = \frac{8.14}{43.65} = 18.6\%$$

$$\frac{\text{8.14 mg reduction}}{\text{22.05 imp acres}} = \frac{\text{0.37 mg reduction}}{\text{imp acre treated}}$$

22.05 ac is the impervious CDA excluding practice area located in the Study Area

Figure 2-3. Wet Weather Volume Reduction Calculation - EIB Tech Memo

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3 Rock Creek Green Infrastructure Project (RC-A)

3.1 RC-A

The Rock Creek sewershed is comprised of 2,329 total acres, of which approximately 52% is impervious (1,215 impervious acres). In an average year of rainfall, CSO 049, which drains the Rock Creek sewershed, is predicted to discharge 39.73 million gallons of combined sewage to Rock Creek. Table 3-1summarizes the Rock Creek sewershed area characteristics for CSO 049.

Table 3-1. Rock Creek Sewershed Area

	CSO 049
Total Sewershed Area	2,329 acres
Impervious Area	1,215 acres

As part of the Amended Consent Decree, DC Water was required to construct Rock Creek Project No 1 as part of its plan to control CSO 049. This project was located along the eastern edge of the Rock Creek GI Area, shown on Figure 3-1 and includes approximately 162 acres (132 acres in the study area) and is approximately 40% impervious.

The project boundary was selected for the following reasons:

- Feasibility of design and construction
- Availability and feasibility of monitoring locations
- Representative land use characteristics typical of Rock Creek GI Area

3.1.1 Kennedy Street – GI Streetscape

DC Water launched the GI Challenge Streetscape Project, engaging firms to design innovative, cost effective, replicable, and high performing green infrastructure practices to be implemented on the 100 block of Kennedy Street NW, in the heart of the RC-A project area. This project was ultimately made part of the larger Kennedy Street Revitalization Project, a partnership between DC Water, the District of Columbia Mayor's Office, and the District Department of Transportation (DDOT). The GI practices implemented through this project included bioretention (rain gardens), permeable parking lanes, permeable sidewalk pavers, and landscape infiltration gaps. New street trees, traffic calming measures, and stormwater-related educational art were also included in the project. Kennedy Street was implemented utilizing a design-bid-build project delivery method and followed District GI design standards that were customized for site conditions and innovative applications of GI. The Kennedy Street GI Streetscape Project also referred to as Rock Creek Project B (RC-B) within this report, was completed in 2018. This showcase project is a frequent stop for groups interested in learning more about DC Water’s GI program, as well as a location utilized for in-field training for local residents participating in the National Green Infrastructure Certification Program (NGICP) training that DC Water runs in partnership with the University of the District of Columbia. Figure 3-2 shows the location of this project within the Rock Creek sewershed.

3.1.2 Green Infrastructure Challenge Parks

DC Water constructed two GI parks in the fall of 2018 under the RC-A contract to showcase a variety of revealed stormwater management practices including bioretention facilities, porous flexible pavement, stone lined swales, as well as natural boulders for creative play, painted paths and steppingstones, pedestrian bridges, and new trees. The GI Challenge Parks project incorporated the same goals of the GI Streetscape of engaging firms to design innovative, cost effective, replicable, and high performing green infrastructure practices, but in this instance focused on implementation of GI in two triangle parks located at Kansas Avenue and 2nd Street NW and Kansas Avenue and 3rd Street NW. Figure 3-2 shows the location of the two parks within the Rock Creek sewershed. Both parks were implemented utilizing a design-bid-build project delivery method and followed District GI design standards that were customized for site conditions and innovative applications of GI.

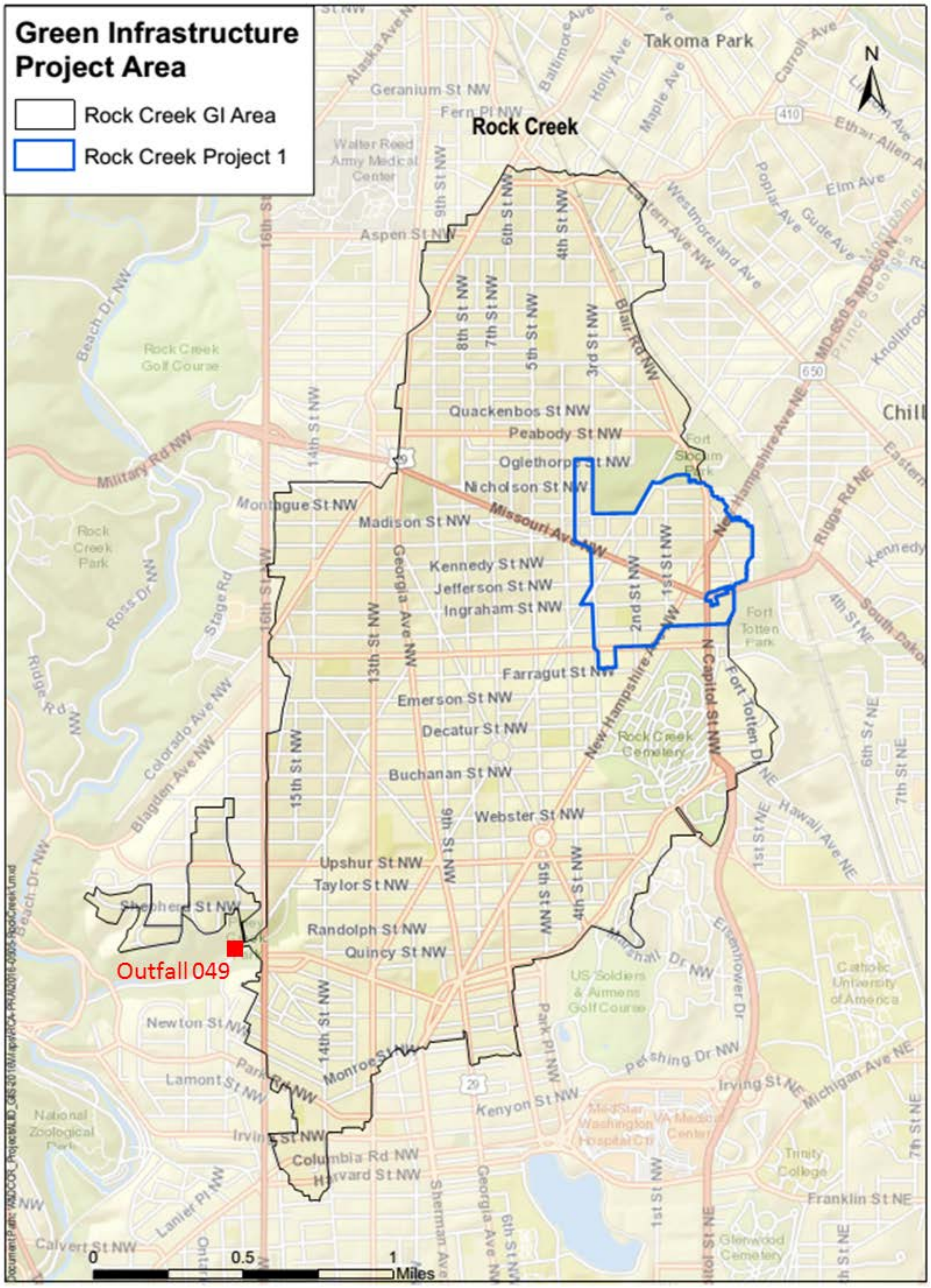

Figure 3-1. Rock Creek GI Area and Rock Creek Project A

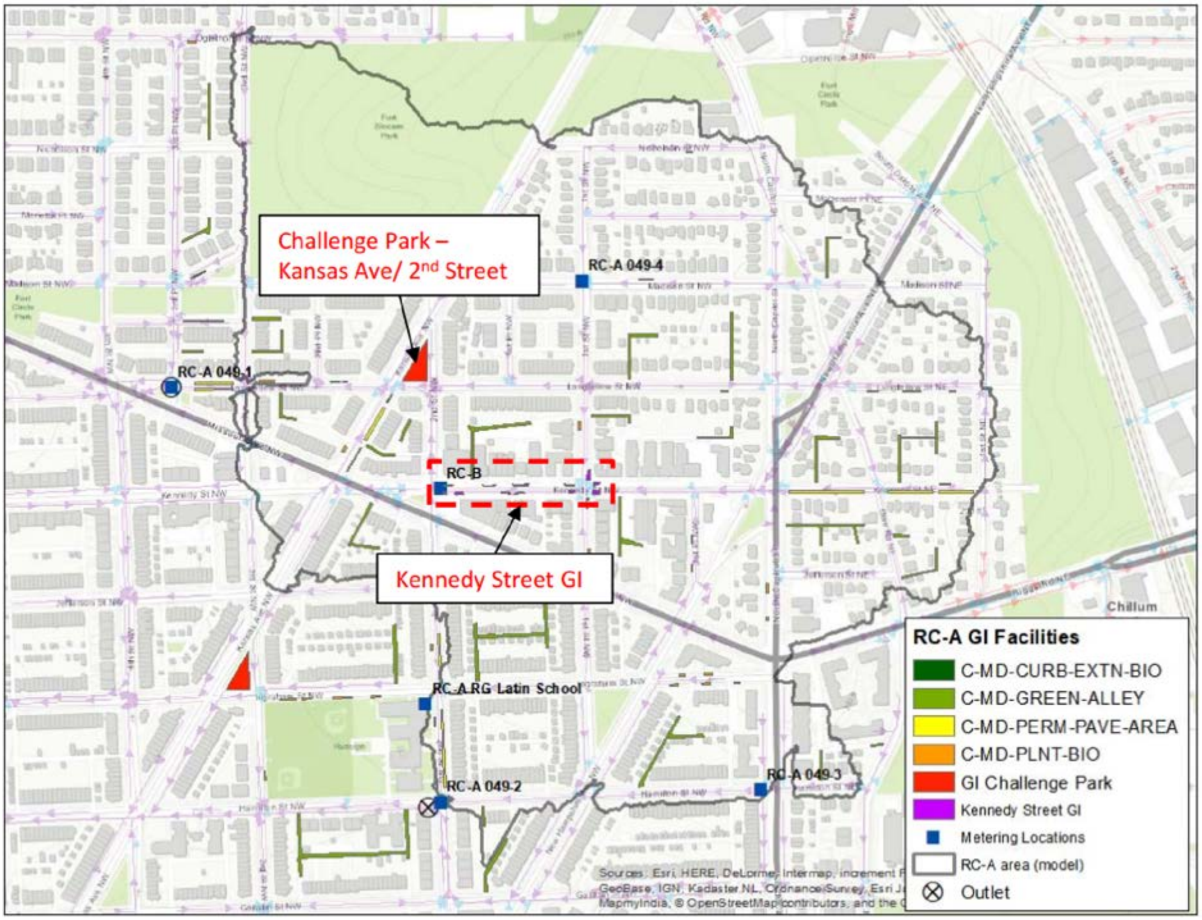

Figure 3-2. Installed RC-A GI practices

3.2 Managed Acres Summary

The drainage area managed by the constructed GI practices is summarized in this section using both the methodologies - “impervious CDA excluding the practice areas” and “Practice Volumes”.

Table 3-2 and Table 3-3 shows the drainage areas managed based on “impervious CDA excluding the practice areas” methodology to compare 2016 RFP designed facilities and 2019 constructed facilities. In addition to RC-A project practices, the table includes Kennedy Street project practices and the GI Challenge Park located within the metered area as shown in Figure 3 2.

Table 3-2. 2016 Design - Impervious CDA (Excluding Practice Area) Summary

	Design (Project Area)		Metered (Study Area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	6	0.70	1	0.26
Planter Bioretention (PBR)	46	8.76	38	6.69
Alley Permeable Pavement (APP)	65	17.49	55	12.92
Parking Lane Permeable Pavement (PPP)	23	3.71	11	2.18
RC-A subtotal	**140**	**30.67**	**105**	**22.05**
Challenge Parks	#N/A	#N/A	#N/A	#N/A
Kennedy Street	#N/A	#N/A	#N/A	#N/A
Total	**140**	**30.67**	**105**	**22.05**

Table 3-3. 2019 Constructed - Impervious CDA (Excluding Practice Area) Summary

	Constructed (Project Area)		Metered (Study Area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	2	0.24	1	0.09
Planter Bioretention (PBR)	36	3.92	28	2.72
Alley Permeable Pavement (APP)	51	10.90	41	7.45
Parking Lane Permeable Pavement (PPP)	10	1.59	7	1.11
RC-A subtotal	**99**	**16.65**	**77**	**11.37**
Challenge Parks	2	1.89	1	1.30
Kennedy Street	31	6.52	31	6.52
Total	**132**	**25.06**	**109**	**19.20**

As shown in Table 3-3 and Figure 3-2, the Kennedy Street practices and one Challenge Park are located within the study area. As the wet weather volumes estimated at the meter locations is resulting from all the GI located in the study area, the “impervious CDA excluding practice areas” of 19.20 acres will be used in the calculations. Hence, to be consistent with the EIB calculation methodology, the planned acreage of 22.05 acres and implemented acreage of 19.20 acres are used in the calculations shown in Figure 4-12 and Figure 4-17 using the drainage areas based on “impervious CDA excluding practice areas”.

Table 3-4 and Table 3-5 shows the drainage areas managed based on "practice volume" methodology to compare the 2016 RFP designed facilities and 2019 constructed facilities.

Table 3-4. 2016 Design - Practice Volume Summary

	Design (Project Area)		Metered (Study Area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	4	0.30	1	0.07
Planter Bioretention (PBR)	46	4.77	36	3.37
Alley Permeable Pavement (APP)	65	15.18	52	10.98
Parking Lane Permeable Pavement (PPP)	23	3.83	11	2.14
RC-A subtotal	**140**	**24.09**	**100**	**16.57**
Challenge Parks	#N/A	#N/A	#N/A	#N/A
Kennedy Street	#N/A	#N/A	#N/A	#N/A
Total	**140**	**24.09**	**100**	**16.57**

Table 3-5. 2019 Constructed – Practice Volume Summary

	Constructed (Project Area)		Metered (Study area)	
Practice Type	**Number of Practices**	**Acres Managed**	**Number of Practices**	**Acres Managed**
Curb Extension Bioretention (CBR)	2	0.26	1	0.08
Planter Bioretention (PBR)	36	4.40	28	3.00
Alley Permeable Pavement (APP)	51	15.09	41	11.01
Parking Lane Permeable Pavement (PPP)	10	2.45	7	1.75
RC-A Subtotal	**99**	**22.20**	**77**	**15.85**
Challenge Parks	2	1.91	1	1.31
Kennedy Street	31	2.69	31	2.69
Total	**132**	**26.8**	**109**	**19.85**

The differences between RC-A facilities planned per the 2016 RFP and GI facilities constructed per the 2019 construction set are described below.

- CBR-1602 and CBR-1603 were eliminated as facilities due to DDOT's concerns. PPP-1612 and PPP-1613 were extended to compensate for the removal of the above CBR facilities.
- PBR-1710 was eliminated and PBR-1707 was added as a facility to compensate.

- CBR-1704 was adjusted to make it more conducive to roadway standards; however, these changes did not modify facility storage parameters significantly.
- APP-4005 was made smaller.
- 17 APP facilities were adjusted to be standard alleys.
- The two GI Challenge Park designs were substantially changed to accommodate comments from the Commission of Fine Arts. To the extent possible, the facility volume managed was kept consistent.

As shown in Table 3-4 and Table 3-5, fewer GI practices were constructed (under RC-A). However, the practices have a larger storage volume with a goal of increasing the cost effectiveness of GI and improving the constructability.

3.2.1 Improvements Made After Construction (Retrofits)

To improve the stormwater capture of the GI practices, DC Water made several retrofits to each facility shortly after completion of RC-A facilities. Within a few months of operation, it was observed, as well as detected in the GI practice level monitoring data (refer to Section 4.1), that GI practices were releasing water back into the combined sewer system at a higher rate than what was noted during the performance testing and specified in the design. The seal on the flapper-style gates began to fail, allowing higher volumes of water to be released faster than the target drawdown rate of 48 hours. To correct this issue, the Flow Restriction Device (FRD) flapper gates in all GI practices were replaced with either a mechanical plug (Figure 3-3. Flow Restriction Device - Mechanical Plug) or a straight fit gate (Figure 3-4. Flow Restriction Device - Straight Fit Gate), both with orifices. Mechanical plugs were installed in the most downstream end of the facility, while the straight fit gates were installed in all the upstream cells. This permits maintenance crews to easily remove the gates when flushing the underdrain systems, where the most downstream cell is used as a sump to collect the sediment to be pumped out. This retrofit allows water to be retained longer within the facility to reach the target drawdown time of 48 hours per the design guidance.

Figure 3-3. Flow Restriction Device - Mechanical Plug

Figure 3-4. Flow Restriction Device - Straight Fit Gate

In addition, during high intensity storm events, stormwater runoff was observed to be flowing down the center of the permeable pavement alley and out of the drainage area when adequate storage was still available in the subsurface. To increase the volume of water entering each subsurface cell of the facility, FRD access solid cast iron lid covers within Alley Permeable Pavement facilities of RC-A facilities were replaced with slotted cast iron grate covers, and a stainless-steel filter basket inserted into the riser pipe to protect the facility from sedimentation and debris. This modification increased the volume of water reaching the aggregate storage, similar to the Enhanced Infiltration Risers (EIRs) in the bioretention practices, and thereby reduced the bypassing of flows during larger storm events.

These retrofits were implemented between November 1, 2019 and January 31, 2020.

3.2.2 Maintenance

Upon substantial completion of the construction of the RC-A facilities, the contractor was contractually obligated to an initial one-year initial maintenance period. After this initial one-year period ended in December 2019, DC Water assumed responsibility for maintenance of all RC-A facilities as part of an overall GI Maintenance Contract covering all GI constructed as part of the DC Clean Rivers Project.

The required maintenance tasks for all RC-A facilities include two categories:

- Preventative Maintenance (PM), which include all routine maintenance tasks as outlined in the GI Maintenance Contract and certain as-needed maintenance tasks such as watering during drought conditions and pruning during excessively wet conditions.
- Corrective Maintenance (CM), which include work requested as a direct result of documented needs assessed during PM inspections or work requested for emergency repairs resulting from damage to facilities.

For the routine preventative maintenance, Table 3-6 below provides an overview of typical maintenance frequencies and activities for all the RC-A facilities:

Table 3-6. Typical Preventive Maintenance Frequencies for RC-A GI Facilities

Project/Facility Type	Frequency	Maintenance Activities
RC-A - Curb Extension Bioretention (CBR) and Planter Bioretention (PBR)	Monthly	Trash, weed, leaves, debris, and dead plant removal. Inspect for erosion. Check for missing signs. Remove sediment. Inspect cleanout, underdrains, and dry well grate inlets and note any standing water.
	Quarterly	Inspection of system for hydraulic function, mitigation of clogging. Replace gravel or river rock in eroded areas.
	Annually	Trim grasses and perennials, prune shrubs.
RC-A - Alley Permeable Pavement (APP) and Parking Lane Permeable Pavement (PPP)	Monthly	Vacuum sweep and remove debris from enhanced infiltration baskets. Inspection and removal of trash, leaves, sediment, and weeds.
	Quarterly	Inspect structures for blockages and sediment and inspection and correction of settlement or heaving.
	Annually	Inspect the surface and underdrain system by flushing to verify flow and exfiltration. Repair any damaged or displaced pavers.

Upon completion of monthly preventative maintenance, the maintenance contractor was responsible for submitting monthly reports indicating work performed and any recommendations for corrective maintenance. DC Water conducted verification inspections of each GI facility in RC-A to confirm satisfactory completion of all preventative maintenance tasks and provided an independent assessment of overall facility conditions. Inspection and maintenance procedures, requirements, and frequencies continue to be adjusted through an adaptive management approach based on ongoing experiences with maintaining the GI facilities.

Table 3-7 below provides a list of all RC-A facilities and the maintenance dates for performing preventative maintenance beginning December 2019, when DC Water assumed maintenance responsibilities from the Contractor.

Table 3-7. List of RC-A Facilities and Maintenance Dates

Facility ID	Dec 2019	Jan 2020	Feb 2020	Mar 2020	April 2020	May 2020	June 2020	July 2020	Aug 2020	Sept 2020	Oct 2020
APP-0601	12/3	1/28	2/29	3/3	4/13	5/19	6/17	7/20	8/18	9/22	10/19
APP-1001	12/3	---	2/29	3/3	4/13	5/19	6/17	7/20	8/18	9/22	10/19
APP-1410-A &B	12/3	1/31	2/16	3/2	4/17	5/22	6/19	7/22	8/20	9/24	10/23
APP-1608	12/3	1/31	2/29	3/12	4/13	5/19	6/17	7/21	8/18	9/22	10/20

Facility ID	**Dec 2019**	**Jan 2020**	**Feb 2020**	**Mar 2020**	**April 2020**	**May 2020**	**June 2020**	**July 2020**	**Aug 2020**	**Sept 2020**	**Oct 2020**
APP-1609-A & B	12/3	---	2/3	3/12	4/14	5/19	6/17	7/21	8/18	9/22	10/20
APP-1610	12/6	---	2/29	---	4/13	5/19	6/17	7/20	8/18	9/22	10/19
APP-1614-A & B	12/6	---	2/29	3/12	4/14	5/19	6/17	7/23	8/19	9/22	10/20
APP-1701	12/6	1/30	2/29	3/20	4/14	5/19	6/17	7/21	8/18	9/22	10/20
APP-1702-B	12/6	1/30	2/29	3/12	4/14	5/19	6/17	7/21	8/18	9/22	10/20
APP-1901	12/6	1/30	2/12	3/20	4/17	5/20	6/30	7/21	8/18	9/25	10/22
APP-1908-A & B	12/6	1/30	2/12	3/20	4/17	5/20	6/30	7/21	8/18	9/25	10/22
APP-2004	12/6	1/29	2/12	3/20	4/17	5/20	6/30	7/21	8/18	9/25	10/22
APP-2006-A & B	12/3	1/30	2/12	3/20	4/17	5/20	6/30	7/21	8/18	9/25	10/22
APP-2303-A & B	12/3	1/29	2/29	3/14	4/16	5/23	6/18	7/22	8/19	9/24	10/21
APP-2409-A & B	12/3	1/29	2/29	3/20	4/14	5/19	6/18	7/21	8/18	9/23	10/20
APP-2502-A & B	12/3	1/23	2/12	3/20	4/14	5/20	6/18	7/23	8/19	9/23	10/21
APP-2603-A & B	12/3	---	2/29	3/13	4/17	5/22	6/20	7/23	8/21	9/24	10/26
APP-2604-A, B, C, & D	12/3	1/29	2/15	3/13	4/16	5/22	6/20	7/23	8/21	9/24	10/22
APP-2701-A, C, D & E	12/3	1/31	2/29	3/13	4/16	5/23	6/19	7/23	8/21	9/24	10/20
APP-2703	12/6	---	2/29	3/3	4/16	5/23	6/19	7/23	8/21	9/24	10/20
APP-3008-A &B	12/6	---	2/19	3/11	4/16	5/21	6/18	7/22	8/20	9/23	10/21
APP-3301	12/6	1/29	2/29	3/3	4/16	5/23	6/19	7/23	8/21	9/24	10/20
APP-3509	12/6	1/30	2/19	3/20	4/16	5/21	6/18	7/22	8/19	9/23	10/21
APP-3608-A & B	12/6	---	2/29	3/11	4/16	5/21	6/18	7/22	8/20	9/23	10/21
APP-3901	12/6	1/23	2/29	3/13	4/14	5/21	6/19	7/22	8/20	9/24	10/23
APP-4005-A & B	12/6	1/30	2/19	3/20	4/16	5/21	6/20	7/22	8/20	9/23	10/22
APP-4102-A & B	12/6	1/30	2/19	3/20	4/16	5/21	6/20	7/22	8/20	9/23	10/22
APP-4205	12/6	---	2/19	3/11	4/14	---	6/19	7/22	8/20	9/23	10/21
APP-4301-A & B	12/6	1/23	2/29	3/13	4/15	5/21	6/19	7/22	8/20	9/24	10/23
APP-4403	12/6	1/23	2/29	3/13	4/14	5/21	6/19	7/22	8/20	9/24	10/21
APP-4803	12/6	---	2/19	3/11	4/15	5/21	6/19	7/22	8/20	9/23	10/21
CBR-1002	12/5	---	2/4	3/3	4/1	---	6/4	7/1	8/5	9/14	10/5
CBR-1704	12/5	1/22	2/4	3/4	4/3	5/5	6/5	7/2	8/5	9/9	10/8
PBR-0201	12/5	1/24	2/4	3/6	4/1	5/7	6/4	7/1	8/5	9/4	10/5
PBR-0407	12/5	---	2/4	3/4	4/7	5/7	6/4	7/1	8/5	9/4	10/5
PBR-1309	12/5	1/16	2/6	3/5	4/7	5/12	6/4	7/8	8/31	9/9	10/9
PBR-1615	12/5	1/17	2/27	3/5	4/1	5/7	6/4	7/1	8/25	9/9	10/8
PBR-1707	12/5	---	2/4	3/4	4/7	5/5	6/5	7/2	8/5	9/11	10/9
PBR-1709	12/5	1/17	2/6	3/5	4/1	5/5	6/4	7/1	8/24	9/9	10/9
PBR-1713	12/5	1/31	2/6	3/6	4/1	5/5	6/4	7/1	8/24	9/9	10/8
PBR-1802	12/5	1/22	2/4	3/4	4/6	5/11	6/10	7/8	8/24	9/14	10/8

Facility ID	**Dec 2019**	**Jan 2020**	**Feb 2020**	**Mar 2020**	**April 2020**	**May 2020**	**June 2020**	**July 2020**	**Aug 2020**	**Sept 2020**	**Oct 2020**
PBR-1902	12/5	1/17	2/27	3/5	4/6	5/11	6/4	7/8	8/24	9/14	10/7
PBR-2102	12/5	---	2/5	3/10	4/1	5/5	6/9	7/9	8/6	9/11	10/7
PBR-2104	12/5	---	2/17	3/12	4/1	5/4	6/9	7/9	8/6	9/11	10/7
PBR-2105	12/5	---	2/17	3/12	4/1	5/5	6/9	7/9	8/6	9/11	10/8
PBR-2405	12/12	---	2/5	3/10	4/7	5/12	6/12	7/10	8/12	9/15	10/8
PBR-2501	12/12	1/22	2/4	3/4	4/7	5/12	6/12	7/10	8/12	9/15	10/8
PBR-2503	12/12	---	2/17	3/12	4/7	5/12	6/10	7/10	8/12	9/14	10/7
PBR-2709	12/12	---	2/5	3/6	4/1	5/4	6/9	7/9	8/5	9/11	10/6
PBR-2911	12/12	---	2/4	3/4	4/2	5/8	6/5	7/7	8/10	9/4	10/8
PBR-3104	12/12	---	2/17	3/12	4/7	5/12	6/10	7/10	8/12	9/14	10/8
PBR-3202	12/5	1/16	2/27	3/5	4/8	5/12	6/12	7/13	8/1	9/15	10/8
PBR-3206	12/5	---	2/5	3/6	4/21	5/12	6/12	7/13	9/1	9/14	10/6
PBR-3401	12/5	1/17	2/5	3/5	4/2	5/8	6/5	7/2	8/7	9/3	10/6
PBR-3501	12/5	1/31	2/6	3/31	4/2	5/8	6/5	7/2	8/7	9/3	10/6
PBR-3502	12/5	1/16	2/5	3/5	4/2	5/8	6/5	7/2	8/7	9/4	10/6
PBR-3503	12/5	1/17	2/5	3/5	4/2	5/7	6/5	7/7	8/10	9/4	10/6
PBR-3508	12/5	1/17	2/5	3/5	4/2	5/8	6/5	7/2	8/7	9/3	10/7
PBR-3601	12/5	---	2/6	3/6	4/3	5/8	6/10	7/8	8/11	9/9	10/7
PBR-3602	12/5	---	2/5	3/6	4/3	5/8	6/10	7/8	8/11	9/8	10/7
PBR-3603	12/6	1/17	2/5	3/5	4/3	5/11	6/10	7/8	8/11	9/8	10/7
PBR-3606	12/6	1/31	2/5	3/5	4/3	5/11	6/10	7/8	8/11	9/8	10/7
PBR-3701	12/6	---	2/4	3/4	4/3	5/11	6/10	7/9	8/11	9/8	10/7
PBR-3702	12/6	---	2/5	3/6	4/3	5/11	6/10	7/9	8/11	9/8	10/7
PBR-3703	12/3	---	2/4	3/4	4/3	5/11	6/10	7/9	8/11	9/8	10/7
PBR-3706	12/3	---	2/5	3/10	4/3	5/11	6/10	7/9	8/11	9/8	10/7
PBR-3804	12/3	---	2/10	3/4	4/3	5/11	6/10	7/9	8/11	9/8	10/6
PBR-4002	12/3	---	2/4	3/4	4/3	5/7	6/5	7/7	8/10	9/3	10/6
PBR-4105	12/3	1/16	2/5	3/4	4/2	5/7	6/5	7/7	8/10	9/9	10/20
PPP-1611	12/26	---	2/20	3/31	---	5/23	6/29	7/24	8/21	9/25	10/19
PPP-1612	12/26	1/28	2/20	3/31	---	5/19	6/17	7/20	8/21	9/22	10/23
PPP-1613	12/26	1/28	2/20	3/31	---	5/23	6/30	7/24	8/21	9/25	10/23
PPP-1708-A&B	12/26	1/28	2/20	3/31	---	5/22	6/30	7/24	8/21	9/25	10/20
PPP-2608	12/26	1/29	2/20	3/31	---	5/23	6/20	7/23	8/21	9/25	10/20
PPP-2705-A &B	12/26	---	2/20	3/31	---	5/23	6/19	7/23	8/21	9/25	10/23
PPP-3504	12/26	1/29	---	3/31	---	5/31	6/30	7/24	8/21	9/25	10/23
PPP-4211	12/26	1/31	2/20	3/31	---	5/31	6/30	7/24	8/21	9/25	10/23

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4 Post-Construction Assessment

4.1 Post-Construction Monitoring

By March 2019, DC Water completed the design and construction of RC-A, at which point post-construction monitoring was initiated to evaluate the effectiveness of GI in meeting the Amended Consent Decree requirements and project performance determinations required for the EIB.

Consistent with pre-construction monitoring, data collection for post-construction monitoring included rainfall monitoring, flow monitoring and groundwater monitoring. In addition, individual GI practice-specific water level data were collected.

Table 4-1 below provides an overview of the monitoring schedule.

Table 4-1. RC-A Monitoring Schedule

Monitoring Type	Timeframe	Duration (months)	Total Rainfall (in)
Pre-Construction Monitoring – Sewershed, Rainfall & Groundwater	1/22/16 – 1/22/17	12	34.5
Post-Construction Monitoring – Sewershed, Rainfall & Groundwater	3/1/19 – 9/30/20	19	79.34
Post-Construction Monitoring – GI Practice[1]	4/19/19 – 9/30/20	17.5	73.71

[1] Initially the practice level monitoring was conducted at a representative sample of practice types. Beginning March 12, 2020, water level monitoring was extended to all the constructed RC-A practices in the study area (excluding Kennedy Street and Challenge Park GI).

The sewershed monitoring locations are tabulated in Table 4-2 and shown in Figure 4-1. The two major outlets from RC-A were monitored by meters 049-1 and 049-2 during both pre- and post-construction periods. The 049-1 metered area consisted of 117 acres (86% of the total RC-A area) and is approximately 39% impervious. The 049-2 metered area consisted of 19 acres (14% of the total RC-A area) and is approximately 45% impervious.

Table 4-2. RC-A Flow Meters

Meter	Purpose / Usage	Drainage Area (Acres)	Monitored during Pre-construction	Monitored during Post-construction
RC-A 049-1	Quantify total stormwater reduction from RC-A	117	YES	YES
RC-A 049-2	Quantify total stormwater reduction from RC-A	19	YES	YES
RC-A 049-3	Monitor runoff from a specific group of GI practices[1]	0.9	YES	YES
RC-A 049-4	Monitor runoff from a specific group of GI practices[1]	1.2	YES	YES

[1] Meters were not used for pre- or post-construction model calibration due to data quality issues and insufficient drainage area size (signal-to-noise ratio).

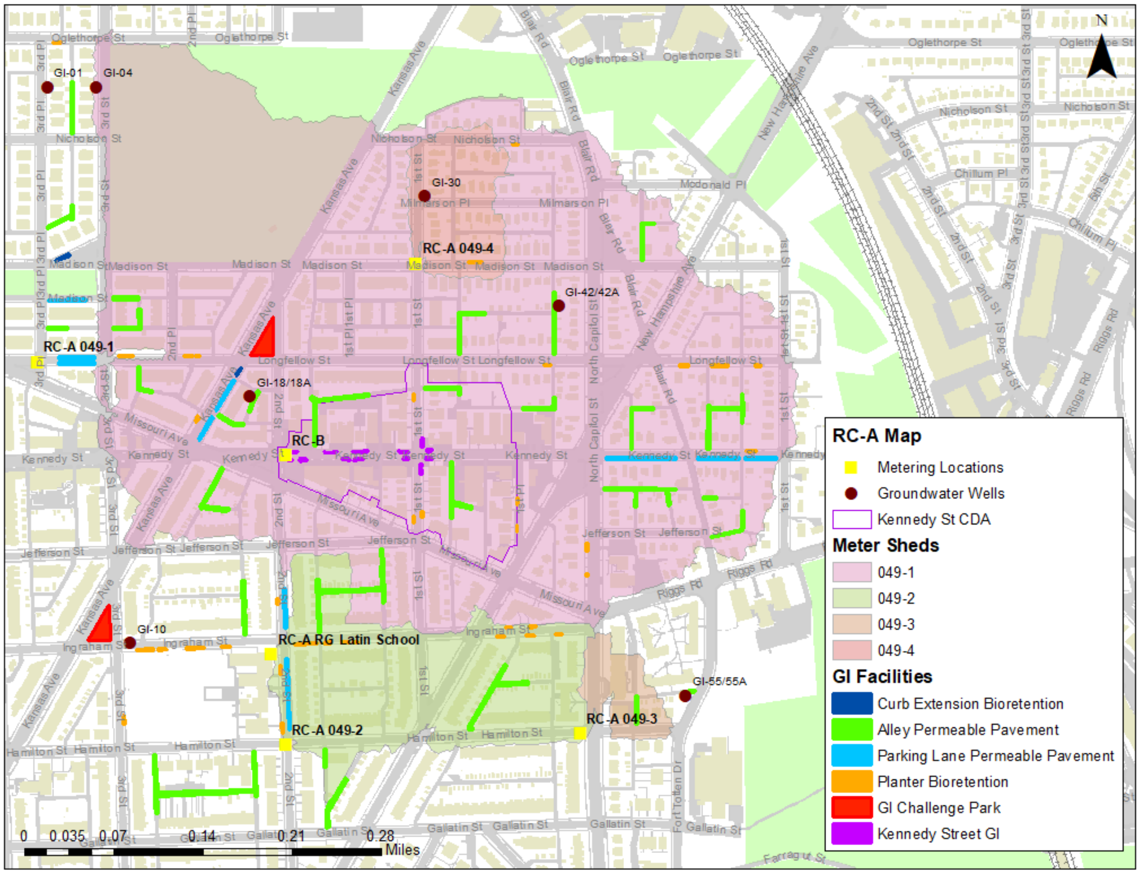


Figure 4-1. RC-A Monitoring Locations

In addition, practice level monitoring was conducted to observe the water levels in the GI practices. Water depth sensors were installed in the most downstream well of all the RC-A facilities (excluding Challenge Park and Kennedy Street GI) located in the study area (77 facilities) and data is collected at 5 minute interval. The GI practices located in the study area can be seen in Figure 4-1

Groundwater monitoring locations are shown in Figure 4-1. Three monitoring wells (RCAGI-18, RCAGI-42, and RCAGI-55) used for pre-construction monitoring were replaced as they were sited within the footprint of the GI facilities constructed. Replacement wells RCAGI-18A, RCAGI-42A, and RCAGI-55A were located in the immediate vicinity of their primary locations. The range of groundwater depths below surface observed at each location is tabulated in Table 4-3 below.

Table 4-3. Groundwater Levels

Monitoring Well	Pre-Construction				Post-Construction			
	Lowest GW (ft below grade)	Highest GW (ft below grade)	Average (ft below grade)	Median (ft below grade)	Lowest GW (ft below grade)	Highest GW (ft below grade)	Average (ft below grade)	Median (ft below grade)
RCAGI-01	>7.0	5.98	6.48	6.41	6.78	4.68	5.58	5.54
RCAGI-04	>7.0	5.89	6.68	6.97	>7.0	5.12	6.28	6.35
RCAGI-10	>7.0	4.4	6.4	6.84	>7.0	5.65	6.58	6.68
RCAGI-18/ 18(A)	>7.0	>7.0	>7.0	>7.0	>10.0	9.38	9.97	>10
RCAGI-30	>7.0	5.82	6.71	>7.0	>7.0	5.15	6.37	6.56
RCAGI-42/ 42(A)	>7.0	3.86	6.56	>7.0	9.8	6.78	8.58	8.48
RCAGI-55/ 55(A)	>7.0	>7.0	>7.0	>7.0	9.7	2.51	7.05	6.75

Note: All values with a ">" symbol reference the groundwater well inverts during the dry periods. Pre-construction wells were all installed with a depth of 7 ft. below the surface. All of the replacement wells (A) installed during the post-construction period were installed with a 10 ft. depth.

During the pre-construction period, the observed groundwater levels across all wells ranged from 7.0 feet below the surface to 3.9 feet below the surface. During the post-construction period, the observed levels ranged from 10.0 feet to 2.5 feet below the surface. (Note that some post-construction replacement wells were deeper than their pre-construction counterparts). As the RC-A and Kennedy Street green infrastructure practice depths range from 3.75 feet to 2.0 feet below the surface, there is some potential intersection between green infrastructure practices and groundwater levels during post-construction period. This potential for intrusion is likely to occur only at facilities in the immediate proximity of the groundwater well GI-55A.

4.2 Observations Based on RC-A Monitoring Data

Based on the review of the data collected during pre- and post-construction monitoring periods, the following observation were made for the rainfall characteristics and system response.

- Even after accounting for the differences in duration of the pre-construction monitoring period (12 months) and the post-construction period (19 months), larger, intense rainfall events occurred during the post-construction period. The number of events with peak intensity of 2 inches per hour or greater is four times greater than in the pre-construction period as shown in Table 4-4.

Table 4-4. Rainfall Statistics

Sewershed	RC-A	
Monitoring Period	1/1/2016-1/1/2017 (Pre-Construction)	3/1/2019-9/30/2020 (Post-Construction)
No. of Events	70	118
Total Rainfall (inches)	34.5	70.28
Events < 0.25”	3.76” (ents)	5.88” (36 events)
Events between 0.25” - 0.5”	7.8” (23 events)	12.34” (34 events)
Events between 0.5” - 1.0”	19.82” (14 events)	17.31” (27 events)
Events between 1.0” - 1.5”	3.4” (3 events)	12.19” (11 events)
Events between 1.5” - 2.0”	5.57” (3 events)	8.38” (5 events)
Events > 2.0”	4.15” (2 events)	14.18” (5 events)
Max intensity between 1.0”/hr – 2.0”/hr	7 events	20 events
Max intensity > 2.0”/hr	7 events	28 events

- The RC-A system response data is show in Table 4-5 and Figure 4-2.

Table 4-5. System Response - RC-A

Sewershed	RC-A	
Monitoring Period	1/1/2016-1/1/2017 (Pre-Construction)	3/1/2019-9/30/2020 (Post-Construction)
No. of Events	70	118
Total Rainfall (inches)	34.5	70.28
MG WW volume per inch of rain (all events)	0.69	0.83
MG WW volume per inch of rain (events < 1")	0.75	0.73
MG WW volume per inch of rain (events >= 1")	0.58	0.94

  - From the table, the system response during the post-construction period is indicative of the increased wet weather flow volumes when compared with the pre-construction period for all events.
  - Despite an overall increase in wet weather volume response per inch of rainfall, the response for events smaller than 1” decreased from pre- to post-construction (0.75 mg/ inch of rain to 0.73 mg/inch of rain), indicating that GI practices are having an impact, even during an overall wetter period.
  - The reduced system response from 0.75 mg/inch of rain to 0.58 mg/inch of rain for the events > 1” during the pre-construction period indicates potential issues such as flow bypassing the inlets at peak intensities. This phenomenon is not observed during the post-construction conditions. It is possible that additional inlets in the system by the introduction of GI seems to have eliminated the flow bypassing issue from the pre-construction conditions.

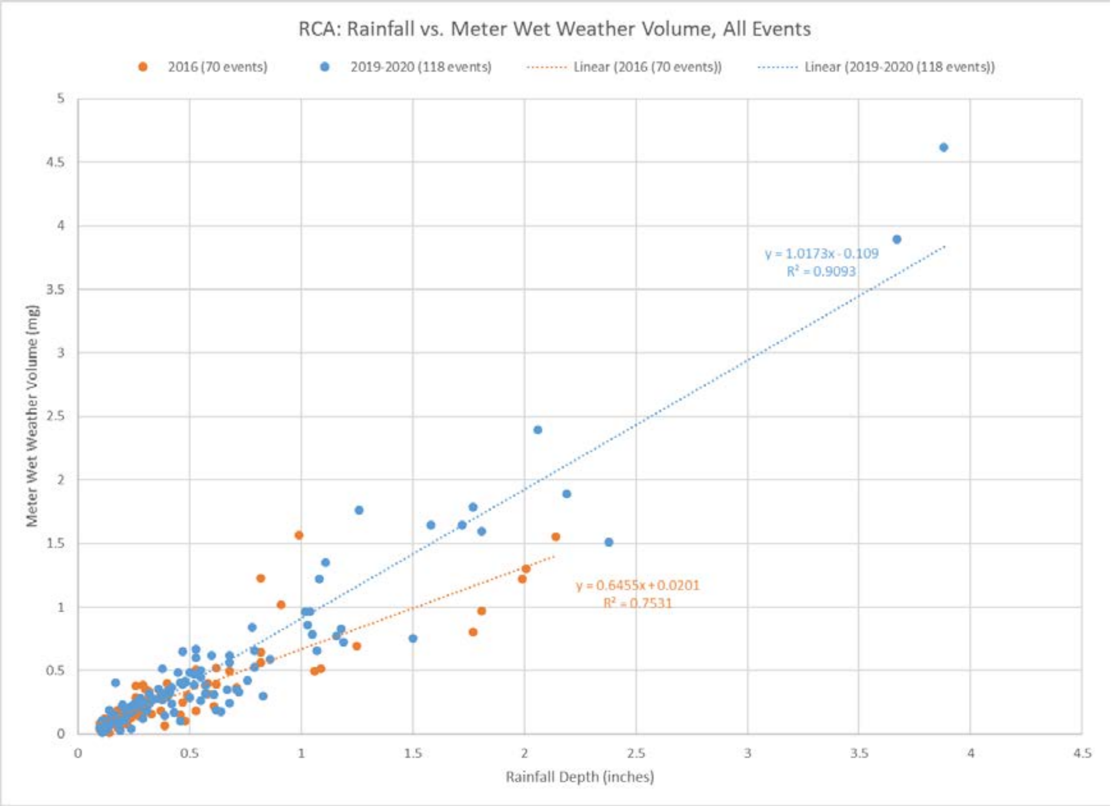


Figure 4-2. System Response Comparison Plot

- Controlshed Methodology
  A controlshed provides an opportunity to compare rainfall and flow response across separate periods for an area without any green infrastructure installations. The control shed had no GI installed and was unchanged during the monitoring period. Rainfall and flow data from the District Department of Energy and Environment's (DOEE's) RiverSmart LID Program are used for this analysis. The RiverSmart controlshed is in the Piney Branch sewershed at approximately 2,400 feet southwest of the RC-A shed as shown in Figure 4-3. It is 10.4 acres and 60% impervious.

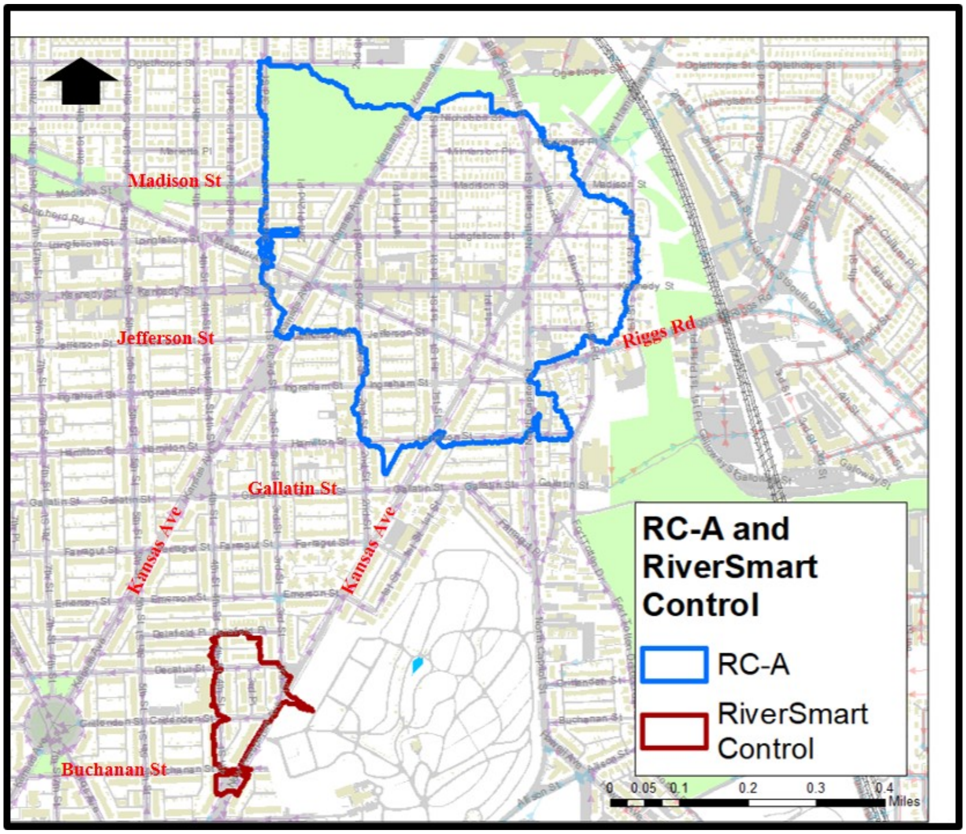


Figure 4-3. RC-A and Controlshed Location Map

Table 4-6 and Figure 4-4 present the data to compare the rainfall and system response (mg/inch of rain) for the durations comparable to RC-A's pre- and post-construction periods. In terms of flow per inch of rainfall, increased system response can be observed between the 2015 – 2016 and 2019- – 2020 periods for all rainfall event sizes.

Table 4-6. Rainfall and System Response – RiverSmart Controlshed

Sewershed	DOEE RiverSmart - Control	
Monitoring Period	6/1/2015 – 5/31/2016	6/1/2019 – 6/30/2020
No. of Events	20[1]	64
Total Rainfall (inches)	6.55[1]	29.81
Events < 0.25"	1.63" (1 event)	4.6" (27 events)
Events between 0.25" - 0.5"	1.58" (4 events)	5.63" (16 events)
Events between 0.5" - 1.0"	2.32" (4 events)	9.24" (14 events)
Events between 1.0" - 1.5"	1.02" (1 event)	4.83" (4 events)
Events between 1.5" - 2.0"	0" (0 events)	3.19" (2 events)
Events > 2.0"	0" (0 events)	2.32" (1 event)
Max intensity between 1.0"/hr – 2.0"/hr	1	6
Min max intensity > 2.0"/hr	0	7

Sewershed	DOEE RiverSmart - Control	
MG WWF per inch of rain (all events)	0.12	0.15
MG WWF per inch of rain (events < 1")	0.12	0.14
MG WWF per inch of rain (events ≥ 1")	0.09	0.17

Note: The number of viable events during the RiverSmart Control 2015-2016 monitoring period was reduced significantly due to persistent data quality issues. This resulted in only 20 events that are summarized in the table.

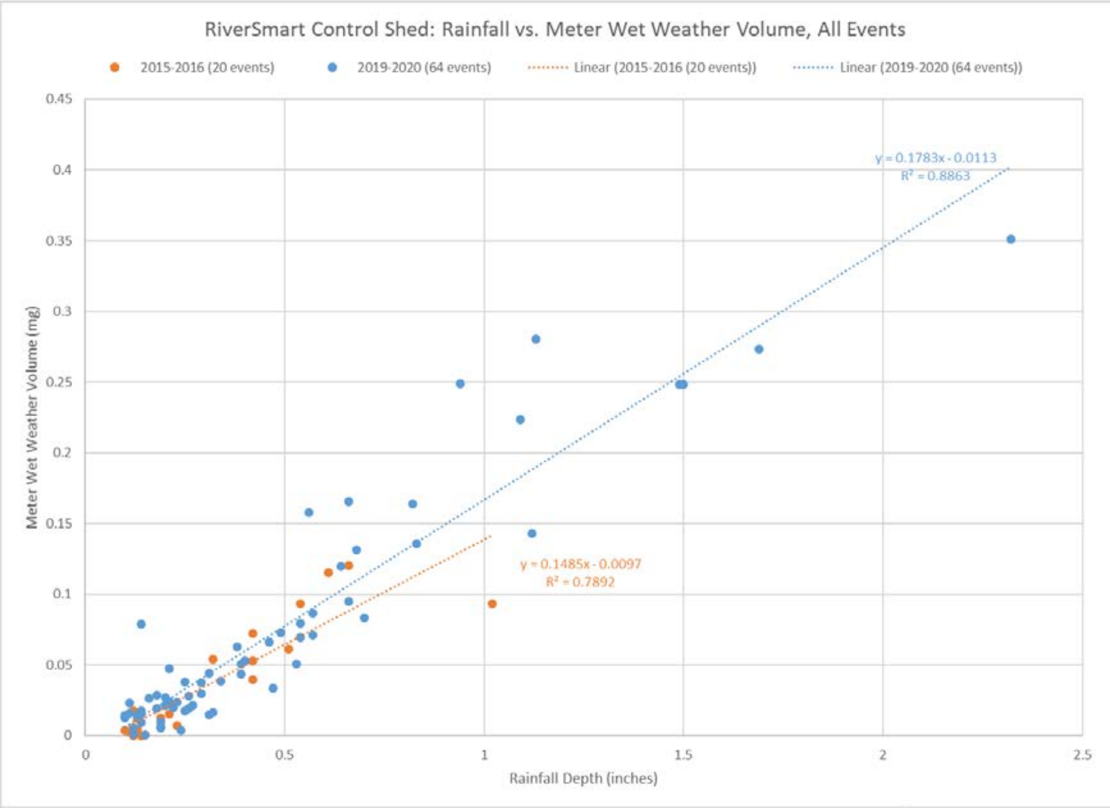


Figure 4-4. RiverSmart Control Shed. Riversmart - System Response

- Anacostia River Tunnel Capture Variability with Rainfall

  The tunnel capture data (mg of tunnel inflow and overflow per inch of rainfall) for DCCR's Anacostia River Tunnel system is analyzed and presented in Figure 4-5 and Table 4-7, to show the variability in tunnel capture with rainfall.

  The following observations can be made.

  - The tunnel capture information (mg/inch of rain) varies significantly depending on the period chosen, i.e., 2018 – 2020 versus 2018, 2019 and 2020. Selection of different periods for pre- and post-construction monitoring can yield different results based on the rainfall conditions observed during the monitoring periods. This indicates the importance of the model calibration period on its applicability to the future predictions. Different calibration periods can give different answers. The variation can be significant when analyzing small differences.

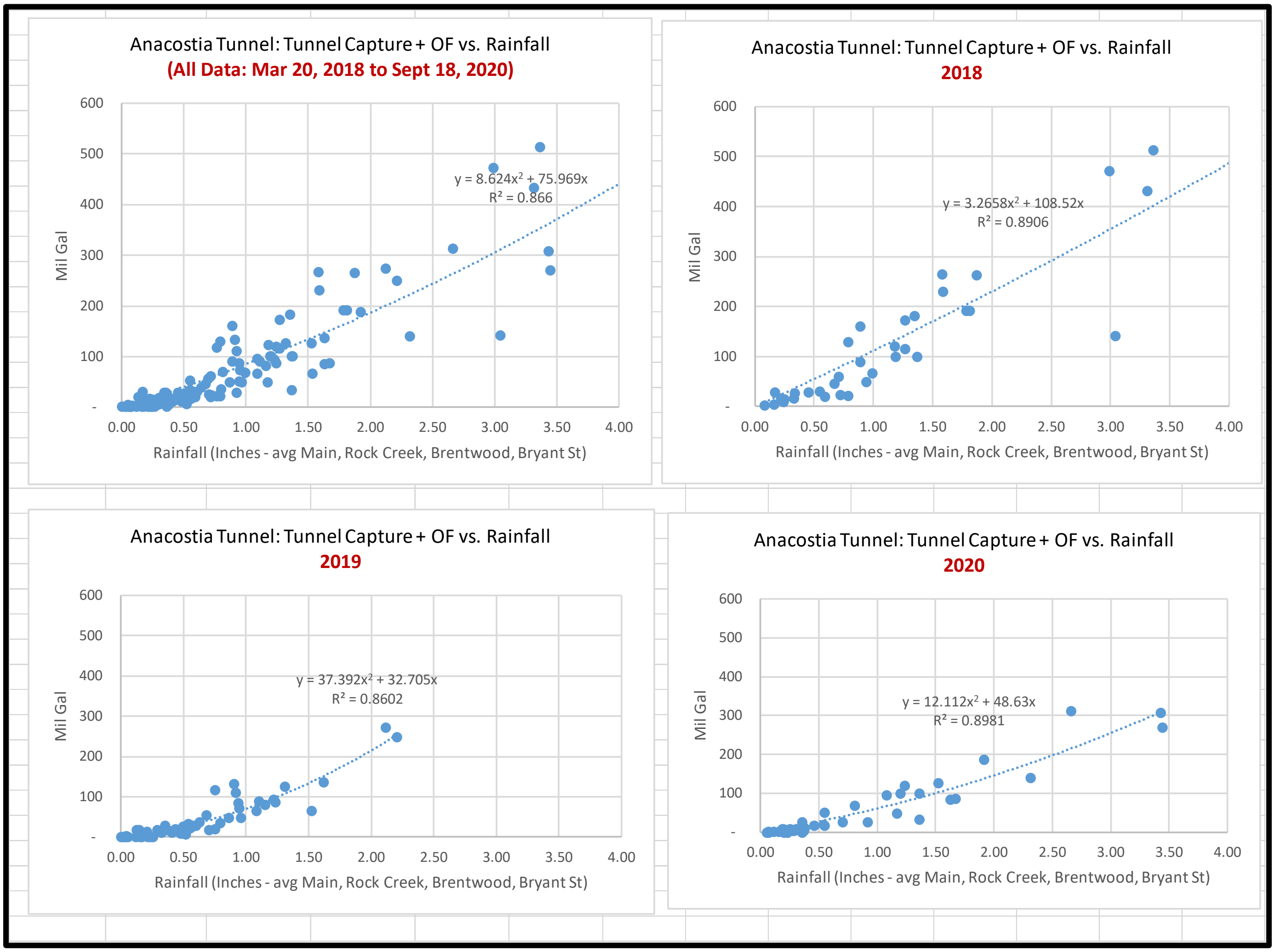


Figure 4-5. Anacostia River Tunnel Capture

Tunnel capture for different periods of analysis is presented in Table 4-7 below.

Table 4-7. Tunnel Capture Summary

Parameter	Total Normalized Rainfall (in/yr)	Total Capture, Q (MG) for Rain Events (0.5" thru 2.0")			
Rainfall		**0.5"**	**0.75"**	**1.0"**	**2.0"**
2018-2020	47	40	62	85	186
2018	62	55	83	112	230

Parameter	Total Normalized Rainfall (in/yr)	Total Capture, Q (MG) for Rain Events (0.5” thru 2.0”)			
2019	42	26	46	70	215
2020	52	27	43	61	146

4.2.1 Observations Summary

By March 2019, DC Water completed the construction of the first Rock Creek GI project, at which point post-construction monitoring was initiated to evaluate the effectiveness of GI.

- Post-construction monitoring for sewershed flows, rainfall and groundwater data was conducted for 19 months
- Post-construction monitoring for GI practice water levels was conducted for 17.5 months

The modeling approach as defined in the 2016 EIB document assumes that the hydrologic and hydraulic characteristics of the sewershed do not change from pre- to post-construction periods. This assumption needs to be valid to calculate the wet weather volume reduction during post-construction due to GI. The following were observed based on the monitoring and modeling data:

- <u>Increase in wet weather response in 2019/2020 compared to 2016</u>
  There was an increase in wet weather response in the sewershed meters in 2019/2020 compared to preconstruction data in 2016. This is supported by:

    - <u>Rainfall conditions</u> – the post-construction period was substantially wetter with more than 70” of rain in 19 months, compared to the pre-construction period with 34.5” of rain in 12 months. In addition, the post-construction period included much more intense rain events with 28 events with an intensity of 2”/hr or more compared to 7 such events in pre-construction period.

    - <u>RC-A metering data</u> – for all events, the runoff per inch of rain measured by the sewershed meters increased in post-construction compared to pre-construction. Runoff per inch of rain increased from 0.69 mg/inch in preconstruction to 0.83 mg/inch after construction for all rain events. Notably, the runoff for events less than 1” of rainfall decreased from 0.75 mg/inch pre-construction to 0.73 mg/inch post-construction, suggesting GI practices are having an impact, even during an overall wetter period. For events larger than 1” of rainfall, wet weather response increased substantially from 0.58 mg/inch pre-construction to 0.94 mg/inch post-construction.

    - <u>Department of Energy and Environment (DOEE) Control Shed Data</u> – DC Water obtained flow data from a nearby Rock Creek sewershed monitored by DOEE. This was a control sewershed used by DOEE for their Riversmart GI program where monitoring data was available in 2015-2016 as well as 2019-2020. No GI was constructed in the shed so it remained effectively unchanged throughout the period. For rainfall events larger than one inch of rain, the shed produced substantially more runoff in 2019-2020 (0.17 mg/inch) than in 2015-2016 (0.09 mg/inch). The control shed’s system response (mg/inch of rain) has increased, independent from GI, for the periods comparable to RC-A’s pre- and post-construction periods.

    - <u>Anacostia River Tunnel Performance Data</u> – Analysis of the Anacostia Tunnel capture data shows that there was a substantial increase in wet weather response in 2019 and that different calibration periods can yield different representations of the sewershed wet weather response, depending on the rainfall conditions used for baseline assessment.

- <u>Change in Peak Flow Rates observed in the RC-A Shed</u>
    - Given the schedule for the bond, three months of pre-construction monitoring data were used to calibrate the 2016 EIB Model and prepare the Technical Memorandum in the Private Placement Agreement. During this period, relatively low intensity storms occurred and the observed peak flow rate in the sewershed meters was 13.9 mgd (combined for meters 049-1 and 049-2).
    - In accordance with its goals, DC Water kept the sewershed meters in place for a full 12 months of preconstruction monitoring. During this period, more intense storms occurred and peak flows in the sewershed meters reached approximately 24 mgd. However, modeling based on sewershed runoff and pipe capacity predicted peak flows should have been more than 100 mgd. The difference was attributed to flows bypassing catch basins in the shed and thereby exiting the shed to enter the sewershed at a downstream location that would not be captured by the flow meters. As a result of this, the model was updated by introducing the street network to account for the inlet bypassing.
    - After construction of GI, peak flows in the sewershed meters were observed to increase to about 72 mgd during intense storms. The increase in peak flows after construction was theorized to have been caused by a) additional flow paths from the surface into the sewer system due to the new GI facilities and b) increase in wet weather response due to the extremely wet climate period.

Flow bypassing inlets during preconstruction would have conveyed flows out of the sewershed, and these flow volumes would therefore not have been measured in the sewershed meters. Flow bypassing with some flows leaving the shed makes it impossible to perform a true mass balance on wet weather volume. Given this and the substantially different wet weather response between pre-construction and post-construction, means it is not possible to use this approach to make a reasonable assessment of system performance using the sewer meters. As a result, DC Water assessed performance using the water level meters in each individual practice. It is practical to calibrate the modeled filling and emptying of the GI practices to the observed data and then use this to calculate net reduction in wet weather volume. Given the requirements of the Private Placement Agreement, DC Water has calculated the wet weather reduction using the sewer meters. This calculation is included in the body of this report as required. However, given the metering and system response limitations described above, the sewer meter approach is inadequate, is not representative of actual performance, and therefore should no longer be the basis for conclusions relating to runoff reduction from the installed GI. The alternate approach, utilizing practice level data to calculate wet weather flow reductions, is demonstrated to be technically sound and more representative of actual project performance.

4.3 Updated Pre-Construction Model (2020)

Following GI construction and post-construction flow monitoring, the predicted conditions model (developed during the 2016 EIB) was updated and re-calibrated to the flow monitoring data due to several factors:

- The predicted conditions model's calibration period was limited to the available pre-construction monitoring data at that time; a three-month period in the first half of 2016. Data continued to be collected throughout 2016.
- Comparison of the model results from the original 2016 calibrated pre-construction model with metering data for the largest and most intense events outside of the original calibration period indicated capped peak flows and reduced volumes, which indicated inlet bypassing within RC-A.
- To account for those high intensity events and capped peak flow conditions that occurred outside of the original calibration period, the 2016 EIB model was updated extensively by adopting the detailed subcatchment delineations and pipe network from the DC Water InfoWorks model.
- The revised RC-A model, based on the InfoWorks inputs, was further expanded to include an idealized street network, with flows routed first onto the streets and then to collection system inlets. Inlet flow capture rate was calibrated based on the metering data and number of inlets per subshed, to simulate inlet bypass during larger events.
- The updated pre-construction model allowed for calibration against the period of Jan – Feb 2016 which was excluded in the original 2016 EIB pre-construction calibration.

The post-construction modeling with GI practices used the lumped practice approach that was consistent with the approach taken for the existing SWMM model. With the finer-scale subcatchments from InfoWorks, the lumped practice approach for the updated RC-A model also ended up being conducted on a finer scale. In the lumped practice approach, GI practices of similar type are represented as one element within a SWMM subcatchment. A schematic of this "lumped practice" modeling approach is shown in Figure 4-6. The red block in the figure represents lumped GI.

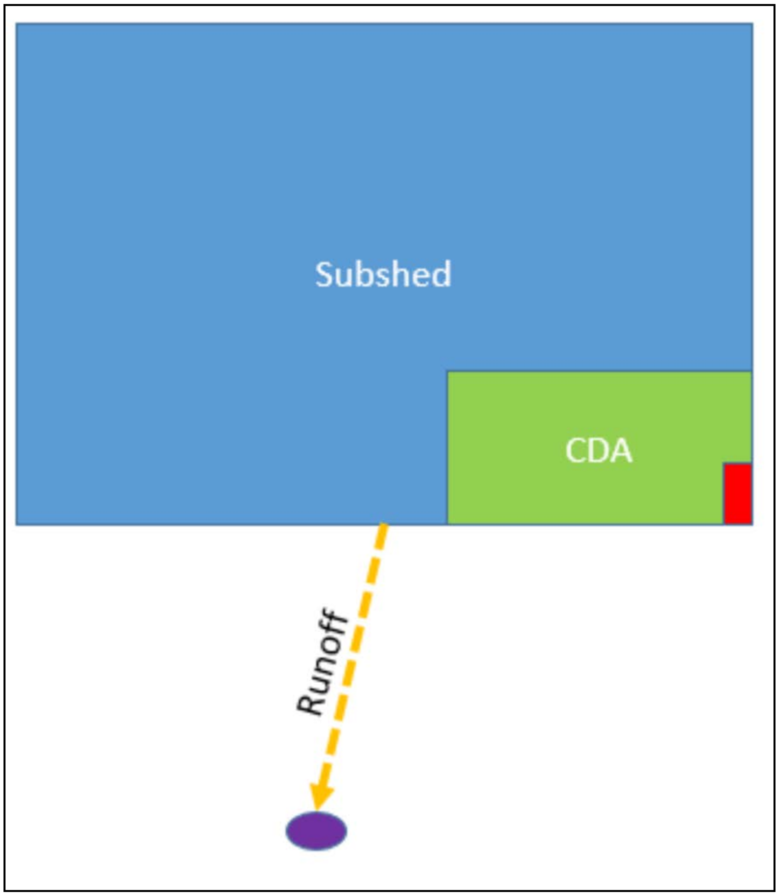


Figure 4-6. Lumped Practice Modeling Approach

A model calibration is an iterative process to adjust the model parameters until a reasonable match is achieved for wet weather volume and peaks between model predictions and observed metered data. In an ideal scenario, in a 1-to-1 plot between model prediction and metered data, the model predictions will perfectly match the metered data and all events would line up along the 1- l line with the R-squared value 1.00.

4.3.1 Calibration

The model setup and major calibration parameters for the updated model in comparison to the 2016 EIB model are shown in Table 4-8.

Table 4-8. Model Parameter Overview

Model Parameter	2016 EIB Model (Pre-Construction)	Updated Pre-Construction Model
Model inventory	10 subcatchments 5,000 feet of sewer pipe	75 subcatchments 22,000 feet of sewer pipe Parts of street network with SW sewer inlets
% Impervious cover	43.3%	39.9%
Saturated infiltration	0.125 inch/hour	0.5 inch/hour

Model Parameter	2016 EIB Model (Pre-Construction)	Updated Pre-Construction Model
Rooftop connection	Not directly modeled; included in impervious coverage	Disconnected rooftops draining to pervious areas
GI settings (for post-construction model)	• Design practice parameters • Design CDA • 22.05 **PLANNED** acres (impervious CDA excluding practice areas)	• Calibrated practice parameters • CDA reduced to 25% of planned impervious CDA • 19.20 **INSTALLED** acres (impervious CDA excluding practice areas) including Kennedy Street GI and 2nd Street GI Park

For updated pre-construction model calibration, Figure 4-7 and Figure 4-8 show 1-to-1 plots for wet weather event volumes and peak flows. Overall modeled predictions match event volumes well for meters 049-1 and 049-2 combined with the regression close to the 1-to-1 line and an R-squared value of 0.85. The overall wet weather volume match is acceptable with a total difference of 7%. Peak flow response is more variable in the 1-to-1 plots; more variability with peak flows than with volumes is typical for collection system modeling, and reflects the difficulty in precisely quantifying the actual flow paths and peak flow response by the collection system. Some wet weather events were excluded due to meter outages or data quality concerns, for example inconsistencies between observed rainfall depth and event peak flow rates or event volumes.

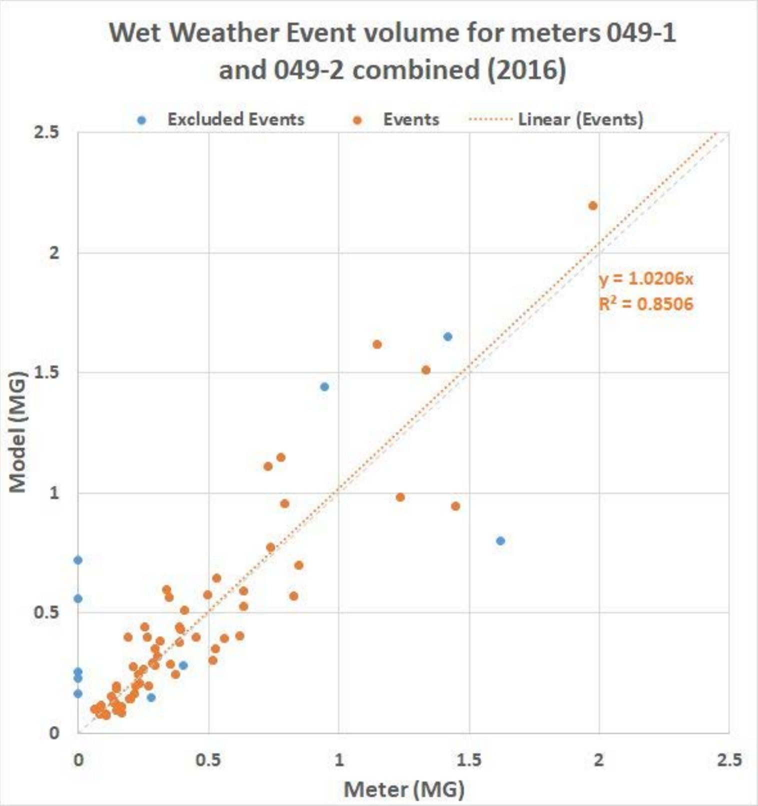


Figure 4-7. RC-A Pre-Construction Event Volumes, 049-1 and 049-2 Combined

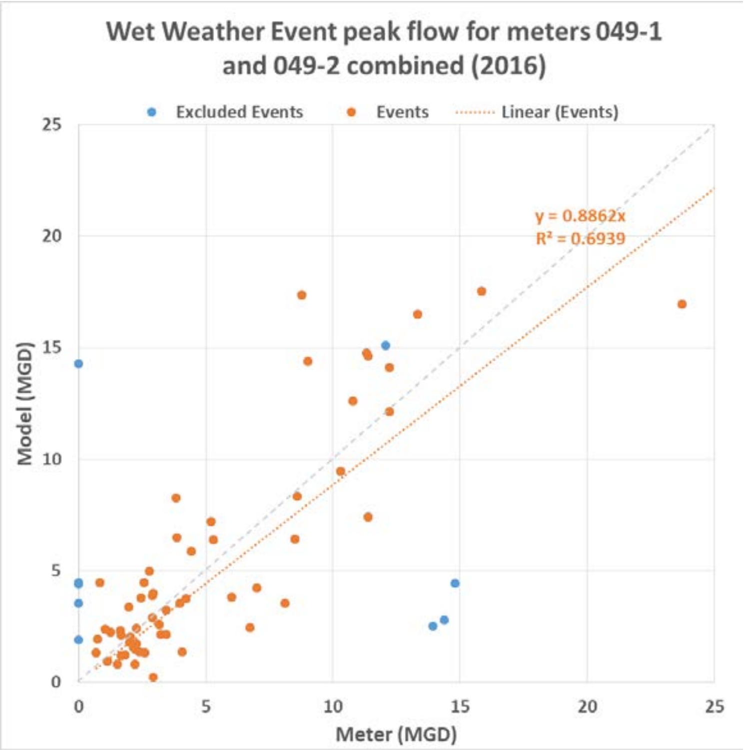


Figure 4-8. RC-A Pre-Construction Event Peak Flows, 049-1 and 049-2 Combined

A calibrated pre-construction model is the starting step for the post-construction calibration effort. Figure 4-9 shows the model/meter calibration comparison between 2016 EIB model and updated pre-construction model. Based on the R2 value, the updated model shows improved calibration for the high intensity events that occurred in the later part of 2016.

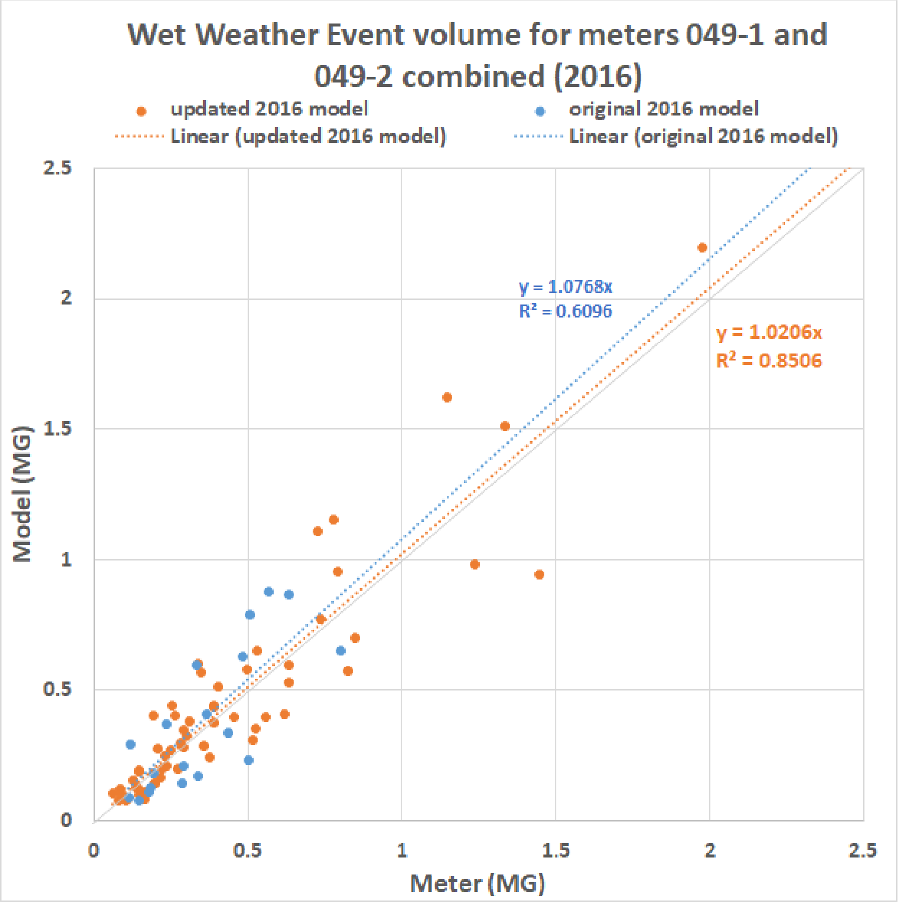


Figure 4-9. Comparison Plot for 2016 EIB Model and 2016 Updated Model

4.4 Sewershed-Based Post-Construction Model Results

4.4.1 Calibration

This Section documents the efforts and observations made during calibration of the post-construction sewershed based model.

Figure 4-10 and Figure 4-11 show 1-to-1 plots for wet weather event volumes and peak flows for the combined flows from metering locations 049-1 and 049-2. Timeframes in the figures correspond to various stages of practice rehabilitation and in-practice monitoring as described below.

- 3/1/19 – 10/31/19: Period before practice retrofits (calibration period)
- 11/1/19 – 1/31/20: Period of ongoing practice retrofits (not modeled)
- 2/1/20 – 09/30/20: Period after practice retrofits completed (model application period)

For the calibration period, 3/1/2019 – 10/31/2019, overall modeled predictions for meters 049-1 and 049-2 combined show a regression coefficient of 0.91, with individual wet weather events tightly around the 1-to-1 line and an R-squared value of 0.89. The overall wet weather volume match shows the model is under-predicting by 14%. Peak flow response is more variable in the 1-to-1 plots with the model significantly under-predicting the observations for larger events. This is due to the model calibration which accounts for the flow capping issue observed during the 2016 pre-construction condition. This is no longer observed during the post-construction period.

A complete set of event hydrographs are provided in Appendix B. The hydrograph comparisons for individual events show a great variability in metered sewer response for rainfall events of similar size. A better-fitting model calibration to the observed wet weather flow volumes and peak flows during the post-construction calibration period was not possible with the established model approach (accepting all runoff and sewer parameters from the pre-construction calibration and ONLY calibrating GI parameters). The model is under-predicting both wet weather flow volumes and peak flows even without accounting for any GI (pre-construction model applied to 2019 rainfall). This tendency of the model under-predicting wet weather observations at the sewer meter locations increases even further for the application period of 02/01/20 – 09/30/20 after completion of the practice rehabilitations. See Figure 4-10 and Figure 4-11.

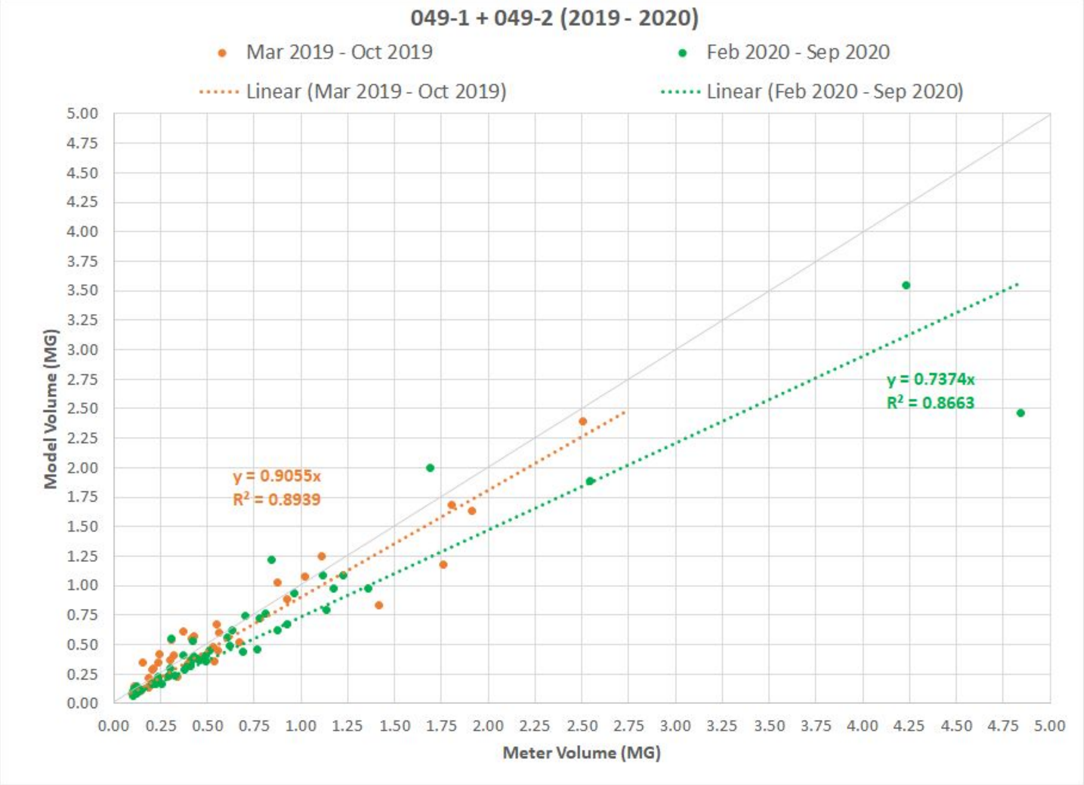


Figure 4-10. Post-Construction Event Volumes, 049-1 and 049-2 Combined

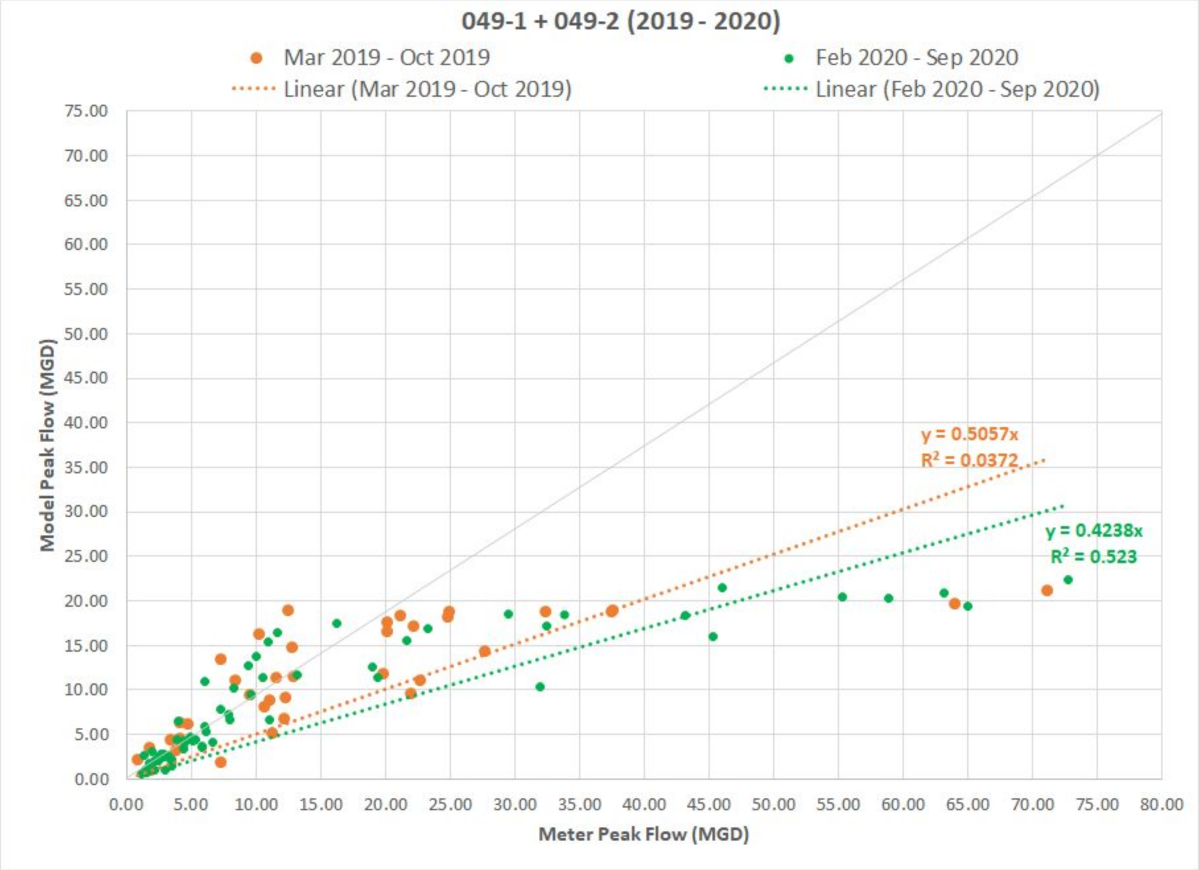


Figure 4-11. Post-Construction Event Peak Flows, 049-1 and 049-2 Combined

The conclusions made in the earlier section are further evidence that a valid model calibration could not be reached to the observed data collected during pre- and post-construction periods. Hence, the GI practice-based model is evaluated in section 4.5 for the assessment of GI performance.

4.4.2 Results

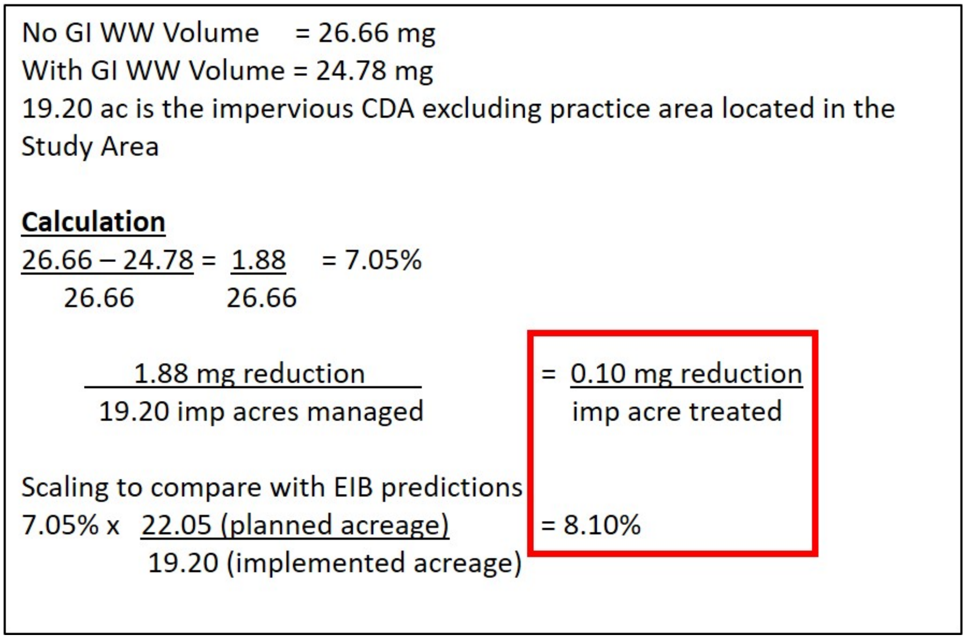
Results from the sewershed-based post-construction model as required by the EIB are presented in Table 4-9 below. WWF volumes are defined as occurring when predicted flows in the sewer are exceeding two times average dry weather flow rate. The reduction in WWF volumes per average year were calculated by taking the difference between pre- and post-construction WWF volumes and dividing by the number of impervious acres treated at 1.2” to determine the WWF reduction in million gallons per average year per impervious acres treated at 1.2”.

Table 4-9. Post-Construction Results - Sewershed Model

Sewershed	WWF Volume Pre-Construction (MG)	WWF Volume Post-Construction (MG)	Predicted Volume Reduction Using Monitoring Data, Normalized to Impervious Acres Treated (%)	Predicted Volume Reduction Before Construction, Normalized to Impervious Acres Treated (%)
Average Year Rainfall Conditions (1988, 1989, 1990)				
RC-A	26.66[1]	24.78	8.10%	30.2%

Note: This wet weather volume is based on the updated pre-construction model calibration. Refer to Section 4.3.

Consistent with the calculation methodology used for EIB predictions (refer to Section 3.2 and Figure 2-3), the wet weather volume reductions estimated for post-construction conditions are shown in Figure 4-12.



No GI WW Volume = 26.66 mg
With GI WW Volume = 24.78 mg
19.20 ac is the impervious CDA excluding practice area located in the Study Area

Calculation

$$\frac{26.66 - 24.78}{26.66} = \frac{1.88}{26.66} = 7.05\%$$

$$\frac{1.88 \text{ mg reduction}}{19.20 \text{ imp acres managed}} = \boxed{\frac{0.10 \text{ mg reduction}}{\text{imp acre treated}}}$$

Scaling to compare with EIB predictions

$$7.05\% \times \frac{22.05 \text{ (planned acreage)}}{19.20 \text{ (implemented acreage)}} = \boxed{8.10\%}$$

Figure 4-12. Wet Weather Volume Reduction Calculation – Sewershed Model

Flow bypassing inlets during preconstruction would have conveyed flows out of the sewershed, and these flow volumes would therefore not have been measured in the sewershed meters. Flow bypassing with some flows leaving the shed makes it impossible to perform a true mass balance on wet weather volume. Given this and the substantially different wet weather response between pre-construction and post-construction, means it is not possible to use this approach to make a reasonable assessment of system performance using the sewer meters. While DC Water has calculated the wet weather reduction using the sewer meters (as required), this approach is not representative of actual performance given the metering and system response limitations describe previously, and should be discarded. Calculating wet weather reduction using the water levels in the GI practices is a more technically sound and representative approach and is described below.

4.5 GI Practice-Level Based Post-Construction Model Results

As explained in Section 4.4, a valid model calibration could not be reached for the observed pre- and post-construction monitoring data for sewershed meters. To better assess the performance of the GI, the post-construction model has been calibrated to the practice level monitoring data.

4.5.1 Calibration

The sewershed based post-construction model, which included constructed GI parameters, is used as the baseline. Modeled water levels for the GI (lumped) practices were compared with the observed in-practice water levels. GI model parameters were adjusted until a match between the modeled and observed in-practice water levels were achieved.

Initially the practice level monitoring was conducted at a representative sample of practice types and later extended to all RC-A facilities. Table 4-10 summarizes the maximum water levels observed at the four GI practices (PBR-3503, APP-3608, APP-4105, PPP-4211) which were monitored before and post retrofit timeframes.

Table 4-10. Maximum Observed Practice Water Levels

		Maximum Water Level (in)	
Practice ID	**Type**	**Pre-Retrofit 4/19/19 – 10/31/19**	**Post-Retrofit 2/1/20 – 9/30/20**
3503-A01	PBR	1.03	46.32
3503-A02	PBR	1.55	53.94
3503-A03	PBR	6.14	60.14
3503-A04	PBR	4.56	58.60
3608-A01	APP	0.65	31.32
3608-A02	APP	0.82	31.00
3608-A03	APP	0.89	29.64
3608-A04	APP	24.38	29.39
3608-A05	APP	1.51	37.09
3608-A06	APP	5.64	38.30
3608-A07	APP	29.52	39.67
3608-A08	APP	12.19	50.23
4105-A01	APP	1.49	31.54
4105-A02	APP	1.69	43.15
4105-A03	APP	11.1	53.58
4105-A04	APP	14.38	55.46
4211-A01	PPP	1.09	29.99
4211-A02	PPP	1.26	29.63
4211-A03	PPP	1.54	23.96
4211-A04	PPP	11.03	29.97
4211-A05	PPP	5.68	24.70
4211-A06	PPP	9.7	23.96

		Maximum Water Level (in)	
Practice ID	**Type**	**Pre-Retrofit** **4/19/19 – 10/31/19**	**Post-Retrofit** **2/1/20 – 9/30/20**
4211-A07	PPP	0.98	19.08
4211-A08	PPP	8	18.54
4211-A09	PPP	13.37	15.64
4211-A10	PPP	6.67	13.59
4211-A11	PPP	10.87	11.75
4211-A12	PPP	8.7	5.74

As shown in the table above, the observed practice water levels have significantly increased, which indicates a significant increase in performance for all four initially-monitored practices after the practice rehabilitations had been completed.

Beginning March 12, 2020, water level monitoring was extended to all the constructed RC-A practices in the study area. For the model calibration, averaged water level observations for each practice type were compared to the average modeled water levels for each practice type as shown in Figure 4-13 through Figure 4-15. The shaded areas in the plots show the range of observed water levels for each practice type. As the water level sensors were installed in the underdrains at 3” above the facility inverts, readings below that depth were not measured.

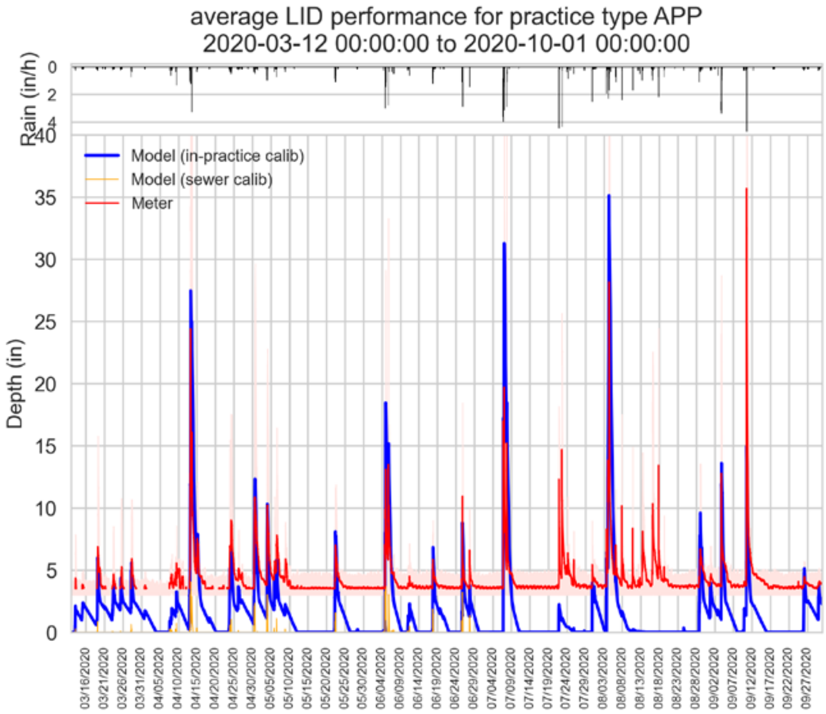


Figure 4-13. Post-Construction Model Calibration – APP

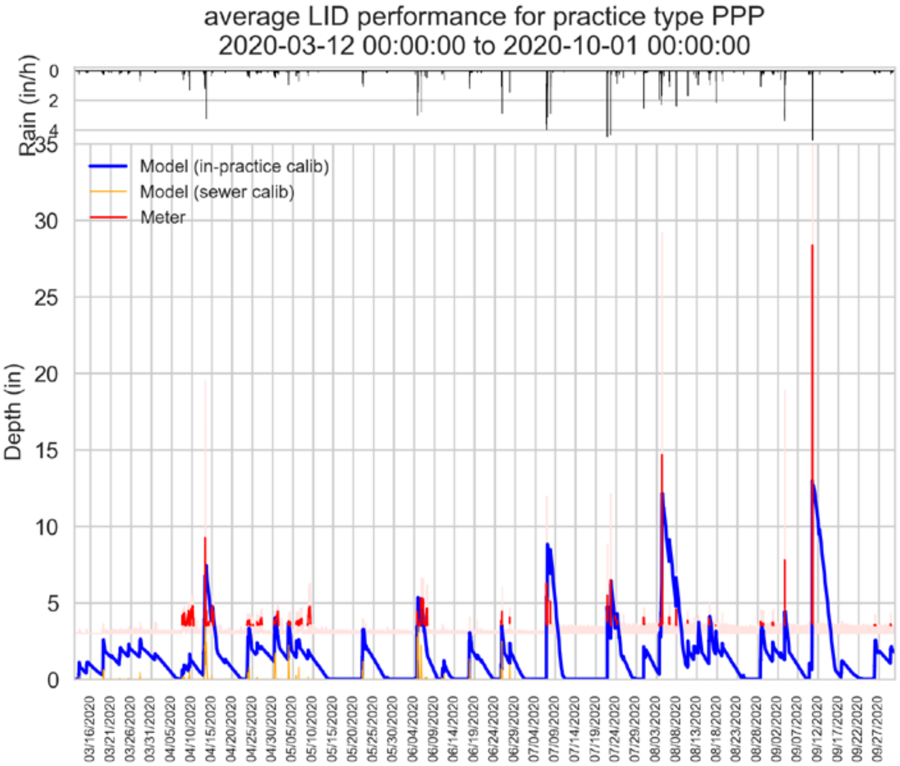


Figure 4-14. Post-Construction Model Calibration - PPP

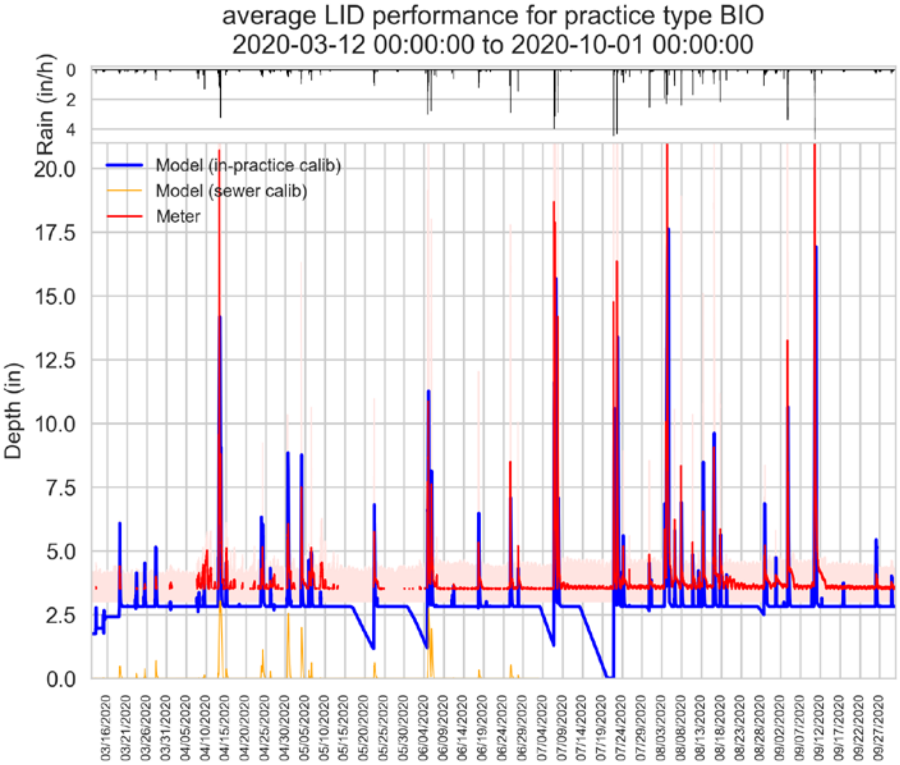


Figure 4-15. Post-Construction Model Calibration - BIO

Figure 4-16 shows the resulting 1-to-1 comparison plot for both sewershed and GI practice models observed at the metered locations (combined flows from 049-1 and 049-2). The plot shows that there is no difference in calibration of both the models for wet weather volumes, since GI practices slowly release the flows back into the sewers via underdrains.

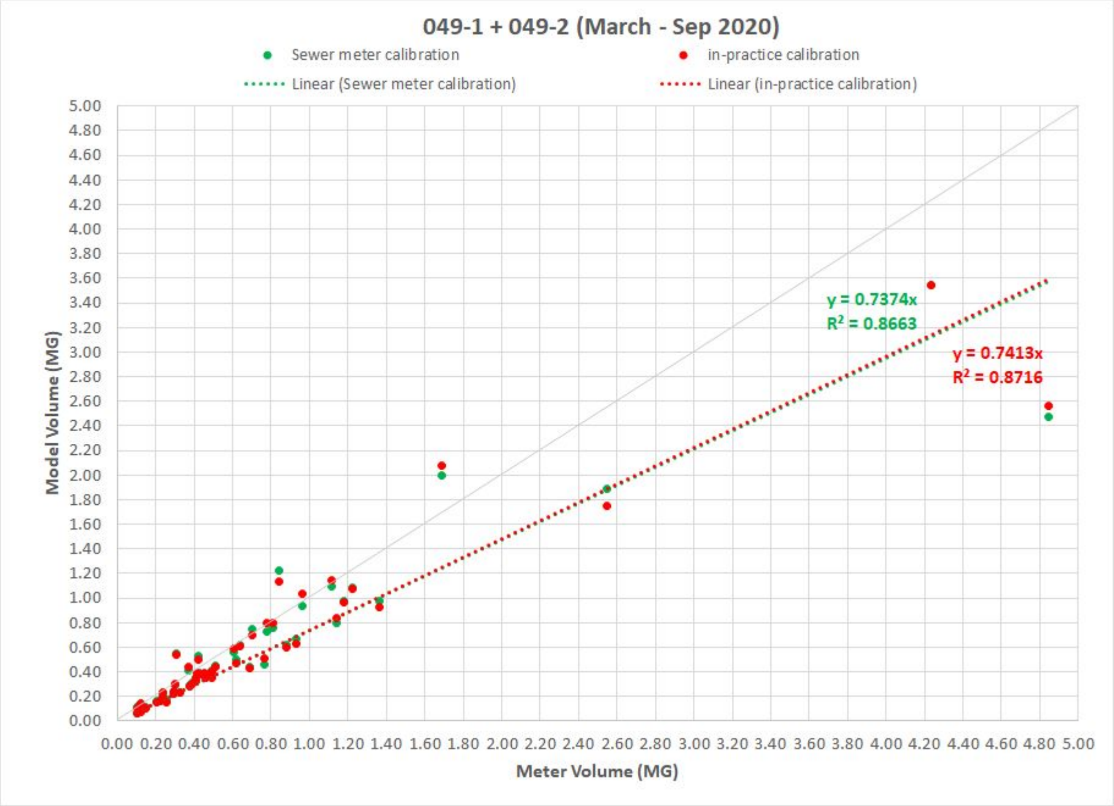


Figure 4-16. Comparison Between Sewershed and In-Practice Models at Meter Locations

The following tables (Table 4-11 through Table 4-13) show the adjusted GI model parameters for all practice types. GI practices at Kennedy Street (as PPP, BIO practice types) and Challenge Park (as BIO practice type) are represented separately from the RC-A facilities in the model. The calibration parameters derived based on practice level monitoring for RC-A facilities are applied to GI practices at Kennedy Street and Challenge Park. A complete set of event hydrographs are included in Appendix B.

Table 4-11. APP Model Parameter Calibration

Parameter	Design values	Sewer model calibration (pre-retrofits)	In-practice calibration (post-retrofits)
Underdrain orifice size (in)	0.25	6	0.36
% of CDA inflow (impervious)	100%	10%	81%
% of CDA inflow (pervious)	100%	0%	57%
storage layer porosity	0.4	0.25	0.4
Surface permeability (in/h)	100	100	8

Table 4-12. PPP Model Parameter Calibration

Parameter	Design values	Sewer model calibration (pre-retrofits)	In-practice calibration (post-retrofits)
Surface clogging	10 years	10 years	1.5 monthly Monthly cleaning interval
Underdrain orifice size (in)	0.25	6	4.3
% of CDA inflow (impervious)	100%	10%	29%
% of CDA inflow (pervious)	100%	0%	17%
Storage layer porosity	0.4	0.25	0.4

Table 4-13. PBR Model Parameter Calibration

Parameter	Design values	Sewer model calibration (pre-retrofits)	In-practice calibration (post-retrofits)
Underdrain orifice size (in)	0.25	6	0.58
% of CDA inflow (impervious)	100	25%	83%
% of CDA inflow (pervious)	100	0%	59%
Storage layer porosity	0.4	0.18	0.4

Post retrofits (March 2020 – September 2020), the in-practice water level data indicated that number of practices (especially the APP practices) are effectively storing stormwater flow for large events. Both data and model indicated that most of the stored volume gets released into the collection system via underdrains – infiltration and evaporation processes appear to be negligible. The green infrastructure practices act as detention elements, releasing flows back into the sewer at a later time, and at lower peak magnitudes.

4.5.2 Results

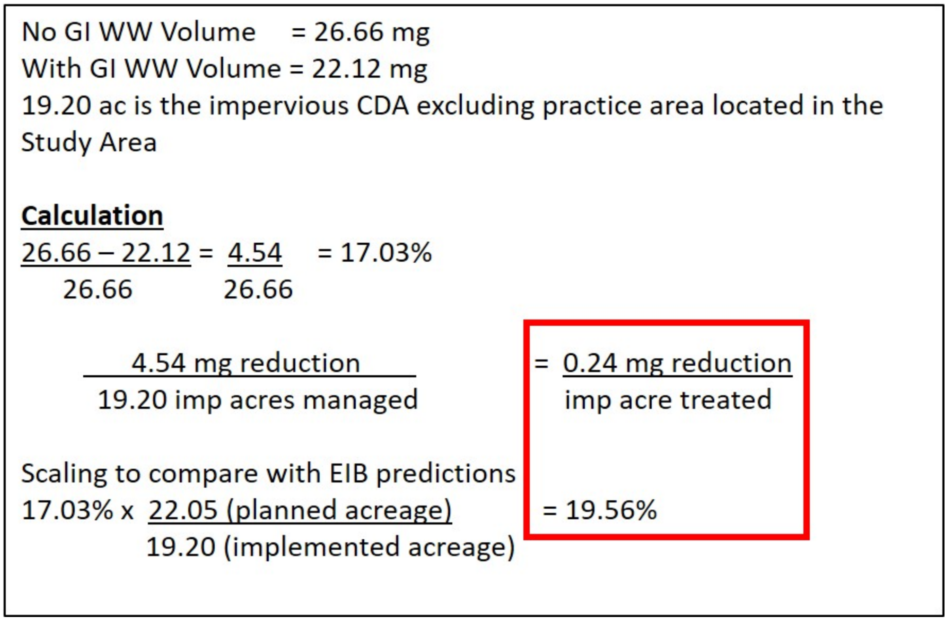
Results from the GI practice based post-construction model for the average year rainfall conditions (1988, 1989, and 1990) are presented in Table 4-14 below. Wet weather flow (WWF) volumes are defined as occurring when predicted flows in the sewer are exceeding two times the average dry weather flow rate. The reduction in WWF volumes per average year was calculated by taking the difference between pre- and post-construction WWF volumes and dividing by the number of impervious acres treated at 1.2” to determine the WWF reduction in million gallons per average year per impervious acres treated at 1.2”.

Table 4-14. Post-Construction Results - GI Practice Model

Sewershed	WWF Volume Pre-Construction (MG)	WWF Volume Post-Construction (MG)	Predicted Volume Reduction Using Monitoring Data, Normalized to Impervious Acres Treated (%)	Predicted Volume Reduction Before Construction, Normalized to Impervious Acres Treated (%)
RC-A	26.66	22.12	19.56%	30.2%

Consistent with the calculation methodology used for EIB predictions (refer to Section 3.2, Figure 2-3), the post-construction wet weather volumes and percent reduction are computed as shown in Figure 4-17.

The GI practice model is calibrated to the observed water levels in the practices. However, the wet weather volumes in the model are estimated at the meter locations resulted from all the GI practices located in the study area which includes Kennedy Street and GI challenge Parks in addition to RC-A facilities. Hence the usage of 19.20 acres in the calculation is appropriate (Refer to Table 3-3).



No GI WW Volume = 26.66 mg
With GI WW Volume = 22.12 mg
19.20 ac is the impervious CDA excluding practice area located in the Study Area

Calculation

$$\frac{26.66 - 22.12}{26.66} = \frac{4.54}{26.66} = 17.03\%$$

$$\frac{\text{4.54 mg reduction}}{\text{19.20 imp acres managed}} = \frac{\text{0.24 mg reduction}}{\text{imp acre treated}}$$

Scaling to compare with EIB predictions

$$17.03\% \times \frac{\text{22.05 (planned acreage)}}{\text{19.20 (implemented acreage)}} = 19.56\%$$

Figure 4-17. Wet Weather Volume Reduction Calculation – GI Practice Model

5 Findings

5.1 Runoff Reduction

Calculating wet weather reduction using the water levels in the GI practices is a more technically sound and representative approach. It is our recommended approach for assessing performance. Using the GI practice water level approach, the predicted runoff reduction is estimated at 19.56% which falls within Tier 2 outcome range established in the EIB as shown in Table 5-1 below.

Table 5-1. EIB Outcome Ranges

Tier	Runoff Reduction	Payments
1	Greater than 41.3%	DC Water pays Outcome Payment of $3,300,319.00 to Purchasers
2	18.6% to 41.3%	No Outcome Payment or Risk Share Payment
3	Less than 18.6%	Purchasers pay Risk Share Payment of $3,300,319.00 to DC Water

5.2 Lessons Learned

One of the purposes of the initial project constructed in the Rock Creek sewershed was to evaluate the effectiveness of GI using adaptive management. This means developing different design and construction methods, learning based on the results and revising subsequent projects using the lessons learned. It also means learning the best way to monitor and assess performance. Since Rock Creek Project A was the first large scaled GI project constructed within the District, significant information has been learned in terms of design, construction and monitoring approaches that have added to DC Water's body of knowledge and expertise related to GI. This information has already been beneficial to DC Water's GI program, as lessons learned from RC-A, and early concerns related to performance, were able to be addressed in the subsequent Potomac River Project A (PR-A). Based on these improvements, performance was demonstrated to be as predicted.

A summary of lessons learned that will be considered on future projects are summarized below:

- Porous Pavement Facilities (Alleys and Parking Lane)
    - Maximizing the space between the pavers to promote higher infiltration, reduced clogging and easier maintenance
    - Providing pretreatment grooves upstream of alleys to allow sediment to settle out that would otherwise clog the alley surface while reducing the velocity of stormwater entering the facility to promote higher percolation rates at the surface
    - Evaluating constructing a catch basin in upper reaches of the alley to remove sediment and distribute clean flow to alley surface
    - Flattening the "V" shape in the alley center to increase surface area for infiltration and to limit the concentration of stormwater through the center of the alley
    - Siting porous alleys in subdrainage areas less susceptible to high sediment loads
    - Constructing a maintenance/access point at the end of the porous pavement facility to facilitate underdrain and orifice cleaning while providing a dedicated monitoring location
    - Evaluating checkdam spacing and the cost/benefits of including long porous pavement facilities

  - Considering increasing facility area in proportion to contributing drainage area size to lower the hydraulic and sediment load on the facilities

- Bioretention
  - Maximizing cost effectiveness of bioretention facilities by pursuing open space bioretention facilities that allow for larger facilities treating larger drainage areas
  - Installing bioretention facilities closer to intersections instead of midblock to limit parking impacts
  - Considering high slope gutter entrances or longer entrances into bioretention to reduce flow bypassing along the gutter

- All facilities
  - Improving valves/orifices at underdrain outlets to provide higher retention times in facilities, while allowing access for underdrain cleaning
  - Selection of monitoring sites to reduce stormwater flow bypassing inlets and exiting the monitored shed
  - Considering placing practices in series to promote sediment removal in upstream practices that are easier to maintain
  - Considering monitoring at site-level GI facilities in lieu of monitoring an entire sewershed to measure performance

Collectively, the information gained through the performance monitoring and the resulting optimization allowed DC Water to be responsive, make corrections, and ensure a future for GI at DC Water. The knowledge gained through this experience will be extremely beneficial to, and will be incorporated into, subsequent GI projects as DC Water continues to optimize and improve its GI program for CSO control in the Nation’s Capital.

Appendix A Private Placement Agreement

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PRIVATE PLACEMENT AGREEMENT

$25,000,000
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds)

This Private Placement Agreement, dated September 28, 2016 (as amended, modified or restated from time to time, this "Agreement"), is entered into by and between the District of Columbia Water and Sewer Authority (the "Authority"), and GSUIG Real Estate Member LLC and Calvert Social Investment Foundation, Inc., each a purchaser of the Bonds described herein (and together with their designees, successors and assigns, collectively, the "Purchasers"). Terms used but not defined herein are used as defined in the Indenture identified below.

RECITALS

WHEREAS, the Authority entered into a Consent Decree on March 23, 2005, in Consolidated Civil Action No. 1:00CV00183TFH before the United States District Court for the District of Columbia to implement its Long Term Control Plan ("LTCP") to control combined sewer overflows (CSOs) into the Anacostia River, Potomac River, and Rock Creek tributaries ("2005 Consent Decree"); and,

WHEREAS, the Authority, the District of Columbia ("District"), the U.S. Environmental Protection Agency ("EPA"), and the U.S. Department of Justice have agreed to a modification of the 2005 Consent Decree on January 14, 2016, amending the LTCP to include the installation of green infrastructure practices in the Rock Creek sewershed and the Potomac River sewershed ("Modified Consent Decree"); and,

WHEREAS, the Authority issued a Request for Proposal ("RFP"), Design and Construction (Design-Build) Services for Green Infrastructure ("GI"), Contract No. 150210 – Rock Creek Project A (Division RC-A), dated July 1, 2016, as amended and supplemented by various Addenda to the RFP ("Addenda"), to procure a qualified service provider to construct GI practices to manage the volume of runoff equivalent to 1.2" of rain falling on a minimum of 20 equivalent impervious acres for the Rock Creek Green Infrastructure Project A ("Project" or "RC-A"); and,

WHEREAS, in order to finance a portion of the costs of the Project, the Authority intends to issue its Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds) (the "Bonds"), which will be issued under the Indenture; and

WHEREAS, the Authority wishes to incorporate a "pay for success" model as an innovative financing mechanism for the Project by making a portion of the payments related to the Bonds contingent upon the effectiveness of GI in managing stormwater runoff in RC-A; and, WHEREAS, the Authority entered into a Memorandum of Agreement with the District on May 20, 2015, to create a Green Jobs Program (the "Green Jobs Program") to train and certify District residents to perform construction, inspection, and maintenance work on green infrastructure facilities pursuant to the Modified Consent Decree ("Green Jobs MOA"); and,

WHEREAS, the Purchasers, through their investment in the Bonds, are interested in supporting the Authority's Green Jobs Program; and,

NOW THEREFORE, the Parties to this Contract, in consideration of the mutual promises, covenants and stipulations set forth herein, agree as follows:

1. **Definitions**. In addition to the terms defined in the recitals and elsewhere in this Agreement and the Indenture, the following terms shall have the following meanings unless the context or use indicates a different meaning:

a. "1.2" Retention Standard" means the volume of water runoff produced by 1.2" of rain falling on an impervious surface.

b. "Notice to Proceed" means the Design-Build firm selected by the Authority as a result of its RFP is authorized by the Authority to commence the construction of the Project.

c. "Outcome Payment" means the amount due from the Authority to the Purchasers in the event of a Tier 1 Outcome as defined in Section 10.

d. "Project" or "RC-A" means the Rock Creek Green Infrastructure Project A, as defined in the RFP and Addenda, and attached as Exhibit C hereto.

e. "Purchaser Letter" means a letter substantially in the form attached as Exhibit B hereto.

f. "Risk Share Payment" means the amount due from the Purchasers to the Authority in the event of a Tier 3 Outcome as defined in Section 10.

g. "Runoff" means the annual wet weather volume as expressed in millions of gallons per average year.

h. "Runoff Reduction" means the percentage reduction of Runoff in RC-A per impervious acre treated to manage the volume of runoff produced by 1.2" of rain as compared to the existing conditions Runoff in RC-A as defined in Section 9.

i. "Technical Memorandum" means the Environmental Impact Bond Technical Evaluation Memorandum dated September 13, 2016, issued by the Authority and accepted and agreed to by the Purchasers, and attached as Exhibit D hereto.

j. "Mandatory Tender Date" means April 1, 2021.

2. **Purchase and Sale of Bonds**. On the terms and conditions and on the basis of the representations, warranties, covenants and agreements set forth herein, the Purchasers hereby agree to purchase from the Authority, and the Authority hereby agrees to sell and deliver to the Purchasers, all (but not less than all) of $25,000,000 aggregate principal amount of the District of Columbia Water and Sewer Authority Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds), of which $23,000,000 of the Bonds shall be purchased by GSUIG Real Estate Member LLC and $2,000,000 of the Bonds shall be purchased by Calvert Social Investment Foundation, Inc. The proceeds of the Bonds will be used to (i) pay a portion of the costs of the Project, and (ii) pay costs of issuing the Bonds. The purchase price of the Bonds will be $25,000,000, representing the aggregate principal amount of the Bonds. The Bonds will mature on the dates and in the amounts and will bear interest and will be subject to redemption prior to maturity as set forth in Exhibit A hereto.

3. **Bond Authorization**. The Bonds shall be issued under and pursuant to provisions of the laws of the United States of America and the District, including particularly, an act of the Council of the District entitled the "Water and Sewer Authority Establishment and Department of Public Works Reorganization Act of 1996," as amended, codified at District of Columbia Official Code Ann. Sections 34-2201.01 *et seq.*, and the acts amendatory thereof and supplemental thereto (the "Act"), and an act of the United States Congress entitled the "District of Columbia Water and Sewer Authority Act of 1996" (Public Law 104-184), as amended (the "Federal Act"), and all proceedings necessary to authorize and provide for the issuance of the Bonds, including a resolution adopted by the Board of Directors of the Authority, dated September 1, 2016 (the "Resolution"), and the Master Indenture of Trust, dated as of April 1, 1998 (the "Master Indenture"), between the Authority and Wells Fargo Bank, N.A., as trustee (the "Trustee"), as amended and supplemented, including by the Twenty-First Supplemental Indenture of Trust, dated as of the Closing Date (as defined below) (the "Twenty-First Supplemental Indenture," and together with the Master Indenture as previously amended and supplemented, the "Indenture"), between the Authority and the Trustee, substantially in the forms previously delivered to us.

4. **Closing**. At 10:00 a.m. New York City Time on September 29, 2016, or at such other time and date as may be agreed upon by the Authority and the Purchasers (the "Closing Date"), the Authority will, subject to the terms and conditions hereof, deliver the Bonds to the Purchasers in definitive form, duly executed and authenticated, together with the other documents hereinafter required, and, subject to the terms and conditions hereof, the Purchasers will accept such delivery and pay the purchase price of the Bonds as set forth in Section 2 hereof in federal funds to the order of the Authority (the "Closing"). The Authority shall be under no obligation to deliver any of the Bonds unless the Purchasers shall have paid the purchase price for all the Bonds. The Bonds shall be so issued and registered to and held by the Purchasers, or as otherwise directed by the Purchasers. The Closing will occur at the offices of Squire Patton Boggs (US) LLP, Washington, D.C., or such other place as may be agreed on by the Authority and the Purchasers.

5. **Representations, Warranties and Covenants of the Authority**. The Authority hereby represents, warrants, covenants and agrees as follows:

a. The Authority is, and at the Closing Date will be, a duly organized and validly existing corporate body and independent authority of the District established under the laws of the United States and the District, including the Act and the Federal Act, with the full legal right, power and authority to (i) adopt the Resolution, (ii) execute, deliver and perform its obligations under this Agreement, the Indenture, and the Certificate of Award of the Authority establishing the purchase price, maturities, interest rates, redemption provisions and other terms of the Bonds, dated the date hereof (the "Certificate of Award" and, together with this Agreement and the Indenture, the "Bond Documents"), (iii) perform its obligations under the Water Sales Agreement, dated as of July 31, 1997, between the Authority and the United States of America, acting through the Secretary of the Army (the "Water Sales Agreement") and the Blue Plains Intermunicipal Agreement of 2012 between the District; Fairfax County, Virginia; Montgomery County, Maryland; Prince George's County, Maryland; and the Washington Suburban Sanitary Commission (the "IMA," and together with the Water Sales Agreement, the "System Agreements"), (iv) sell, issue and deliver the Bonds to the Purchasers as provided herein, and (v) carry out and consummate the transactions contemplated by the Resolution, the Bond Documents and the System Agreements; and the Authority has complied, and at the Closing Date will be in compliance, in all respects, with the Act and the Federal Act and with the obligations on its part in connection with the issuance of the Bonds contained in the Bonds and Bond Documents.

b. The Authority (i) has duly and validly adopted the Resolution, (ii) has authorized the execution and delivery of the Bond Documents, (iii) is authorized to execute, issue, sell and deliver the Bonds, (iv) is authorized to appoint, and has appointed, Wells Fargo Bank, N.A., as Trustee, (v) is authorized to apply and will apply the proceeds of the Bonds as provided in and subject to all of the terms and provisions of the Resolution, including the payment or reimbursement of the Authority expenses incurred in connection with the negotiation, sale, issuance and delivery of the Bonds to the extent required by Section 14, and (vi) has taken or will take on or before the Closing Date, all action necessary or appropriate for (a) execution, issuance, sale and delivery of the Bonds to the Purchasers, (b) approval, execution and delivery of and the performance by the Authority of its obligations contained in the Bonds and the Bond Documents, and (c) the consummation by it of all other transactions contemplated by the Bond Documents and any and all such other agreements and documents as may be required to be executed, delivered or received by the Authority in order to carry out, give effect to, and consummate those transactions.

c. The adoption of the Resolution, the execution and delivery of the Bond Documents, the execution, issuance, sale and delivery of the Bonds and the performance by the Authority of its obligations hereunder and thereunder, and the performance by the Authority of its obligations under the System Agreements are within the corporate powers of the Authority and are not in conflict with and will not constitute a breach, default or result in a violation of (i) the Act, (ii) any federal constitutional or federal or District statutory provision, including the Federal Act, (iii) any agreement or other instrument to which the Authority is a party, or (iv) any order, rule, regulation, decree or ordinance of any court of competent jurisdiction, government or governmental authority having jurisdiction over the Authority or its property.

d. The District has authorized the Authority to use all of the property and assets of the water distribution and wastewater collection, treatment and disposal systems of the Authority (the "System"), uninterrupted by the District, for as long as any revenue bonds of the Authority, including the Bonds, remain outstanding. The Authority has the full legal right, power and authority to operate the System and to collect and pledge the Revenues therefrom in accordance with the Indenture.

e. The Resolution or other appropriate actions adopted or taken by the Authority establishing the current rates, fees and charges for services of the System have been duly adopted or taken and are in full force and effect.

f. The System Agreements and all other agreements, permits, licenses, consents, approvals, actions, consent decrees and settlement orders material to the operation and management of the System, including the collection of the Revenues, are in full force and effect as of the date hereof and will be on the Closing Date, and the Authority is not and will not be in default thereunder or in breach thereof. The System Agreements have been duly authorized, executed and delivered by the Authority and constitute valid and binding obligations of the Authority enforceable in accordance with their respective terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally and subject, as to enforceability, to general principles of equity.

g. The Bonds, when issued, delivered to the Purchasers and paid for, in accordance with the Act, the Resolution, the Indenture and this Agreement, will have been duly authorized, executed, issued and delivered by the Authority and will constitute valid and binding obligations of the Authority, enforceable against the Authority in accordance with their terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium and similar laws affecting creditors' rights generally and subject, as to enforceability, to general principles of equity. The Bonds are not a pledge of and do not involve the faith and credit or the taxing power of the District, and the District shall not be liable thereon.

h. This Agreement constitutes, and, upon execution and delivery by the Authority and the other parties thereto, each of the other Bond Documents will constitute, the valid, binding and enforceable obligation of the Authority in accordance with their respective terms, subject to applicable bankruptcy, insolvency, and similar laws affecting creditors' rights generally and subject, as to enforceability, to general principles of equity.

i. The Authority is not in material breach of or material default under any applicable constitutional provision or law of the United States, the District or any applicable judgment or decree, or any loan agreement, indenture, bond, note, resolution, agreement or other instrument to which it is a party or to which it or any of its property or assets is otherwise subject, and no event has occurred and is continuing which, with the passage of time or the giving of notice, or both, would constitute a default or event of default under any such instrument; and the execution and delivery of the Bonds and the Bond Documents and the adoption of the Resolution, and compliance with the provisions contained therein and herein, and in the System Agreements, do not conflict with or constitute a breach of or default under any constitutional provision, law, administrative regulation, judgment, decree, loan agreement, indenture, bond, note, resolution, agreement, or other instrument to which it is a party or any of its property or assets are otherwise subject, nor will any such execution, delivery, adoption, or compliance result in the creation or imposition of any lien, charge, or other security interest or encumbrance of any nature whatsoever upon any of its property or assets or under the terms of any such law, regulation or instrument, except as provided by the Bonds.

j. All authorizations, approvals, licenses, permits, consents and orders of any governmental authority, legislative body, board, agency or commission having jurisdiction of the matter have been duly obtained or, with respect to the issuance of the Bonds, will be obtained prior to the issuance of the Bonds, which are required for the due authorization by or which would constitute a condition precedent to or the absence of which would materially adversely affect the due performance by the Authority of its obligations in connection with the issuance of the Bonds and under this Agreement, except for such approvals, consents and orders as may be required under the Blue Sky or securities laws of any state in connection with the sale of the Bonds.

k. There is no litigation, action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, government agency, public board or body, pending or, to the best knowledge of the Authority, threatened against the Authority (i) affecting or seeking to prohibit, restrain or enjoin the issuance, sale or delivery of the Bonds or the collection of the Revenues pledged to the payment of the principal of and interest on the Bonds, (ii) in any way contesting or affecting any authority for the issuance of the Bonds or the validity, enforceability, due authorization, execution or delivery of the Bonds, including this Agreement and the other Bond Documents, or the validity or enforceability of the System Agreements, nor, to the best knowledge of the Authority, is there any basis therefor, wherein an unfavorable decision, ruling or finding would materially adversely affect the validity or enforceability of the Bonds or the Bond Documents, (iii) questioning the tax-exempt status of the Bonds under the laws of the District, (iv) affecting or in any way contesting the corporate existence or powers of the Authority or the titles of the officers of the Authority to their respective offices, or (v) except as described in writing delivered to the Purchase by the Authority, which may result in any material adverse change in the business or the financial condition or the financial prospects of the Authority.

l. The audited financial statements of the Authority for the years ended September 30, 2014, and September 30, 2015, including the statements of net position; revenues, expenses and changes in net position; and cash flows for the fiscal year ended on such date, as previously delivered by the Authority to the Purchasers, are true, complete and correct and fairly present the financial condition of the Authority as of such date and the results of its operations for such fiscal years. There has been no material adverse change in the financial condition of the Authority since September 30, 2015, except as described by the Authority in writing delivered to the Purchasers.

m. The Authority has not been notified of any listing or proposed listing by the Internal Revenue Service to the effect that the Authority is a bond issuer whose arbitrage certificates may not be relied upon.

n. Any certificate signed by an authorized delegate of the Authority in connection with the transactions described in this Agreement will be deemed a representation, warranty, covenant and agreement by the Authority to the Purchasers as to the statements made therein.

o. Prior to the Closing, the Authority will not take any action within or under its control that will cause any adverse change of a material nature in the Authority's financial position, or its results of operations or condition, financial or otherwise.

p. The Authority will not, prior to the Closing, offer or issue any bonds, notes or other obligations for borrowed money or incur any material liabilities, direct or contingent, except in the ordinary course of business, without the prior approval of the Purchasers.

6. **Conditions to Obligations of Purchasers at Closing**. The Purchasers have entered into this Agreement in reliance on the representations, warranties, covenants and agreements of the Authority contained herein, and in reliance on the representations, warranties, covenants and agreements to be contained in the documents and instruments to be delivered at the Closing and on the performance by the Authority of its obligations hereunder, as of the Closing Date. Accordingly, the Purchasers' obligations under this Agreement to purchase, to accept delivery of and to pay for the Bonds are conditioned on the performance by the Authority of its obligations to be performed hereunder and the delivery of such documents and instruments enumerated herein in form and substance reasonably satisfactory to the Purchasers, at or before the Closing, and are also subject to the following additional conditions:

a. The representations, warranties, covenants and agreements of the Authority contained herein are true, complete and correct on the date hereof and on and as of the Closing Date, as if made on the Closing Date;

b. The provisions of the Act and the Federal Act, as in effect on the date of this Agreement, shall be in full force and effect and shall not have been amended, except as to amendments which, in the reasonable opinion of the Purchasers, are not adverse to the interest of the Purchasers;

c. At the time of the Closing, the Resolution is in full force and effect in accordance with its terms and has not been amended, modified or supplemented;

d. At the time of the Closing, all official action of the Authority relating to the Bonds, the Bond Documents and the System Agreements are in full force and effect in accordance with their respective terms and have not been amended, modified or supplemented, except in each case as may have been agreed to by the Purchasers;

e. At the time of the Closing the Authority will perform or will have performed all of its obligations required under, specified in or contemplated by this Agreement, the Resolution and the Indenture, to be performed prior to the Closing; and

f. At or before the Closing, the Purchasers will have received true and correct copies of each of the following documents:

i. A certified copy of the Resolution;

ii. Counterparts of each of the fully executed Bond Documents and the System Agreements;

iii. The approving opinion of Bond Counsel, dated the Closing Date, in form and substance satisfactory to the Purchasers, and a reliance letter with respect to such opinion addressed to Wells Fargo Bank, N.A., as Trustee;

iv. An opinion, dated the Closing Date, of the General Counsel to the Authority, substantially in the form of Exhibit E hereto;

v. A Tax Compliance Certificate of the Authority, with attachments, dated the Closing Date;

vi. One or more certificates of the Authority, dated the Closing Date, (A) to the effect that the representations, warranties, covenants and agreements of the Authority herein are true and correct on and as of the Closing Date as if made on the Closing Date, and that the Authority has performed all obligations to be performed hereunder as of the Closing Date; (B) to the effect that the Bond Documents, the Bonds and the System Agreements have not been modified, amended or repealed after the date hereof without the written consent of the Purchasers; and (C) to the effect that no material change has occurred with respect to the System from the period from the date of this Agreement through the Closing Date; and

vii. Such additional legal opinions, certificates, instruments and other documents as the Purchasers may reasonably request to evidence the truth and accuracy, as of the Closing Date, of the Authority's representations, warranties, covenants and agreements contained herein and the due performance or satisfaction by the Authority on or prior to the Closing Date of all the agreements then to be performed and conditions then to be satisfied by it.

g. At the time of the Closing, the Authority will have received a legal enforceability opinion of the Purchasers' legal counsel substantially in the form of Exhibit F hereto.

All the opinions, letters, certificates, instruments and other documents mentioned above or elsewhere in this Agreement will be deemed to be in compliance with the provisions hereof if, but only if, they are in form and substance satisfactory to the Purchasers.

7. **Obligations upon Cancellation**. If the Authority is unable to satisfy the conditions to the obligations of the Purchasers to purchase, to accept the delivery of and to pay for the Bonds contained in this Agreement, or if the obligations of the Purchasers to purchase, to accept delivery of and to pay for the Bonds is terminated for any reason permitted by this Agreement, this Agreement will terminate and neither the Purchasers nor the Authority will be under any further obligation hereunder, except that the Authority and the Purchasers shall pay their respective expenses as set forth in Section 14.

8. **Project Construction**. The Authority shall be responsible for the construction of the Project in accordance with the requirements contained in the RFP and Addenda and in compliance with the Modified Consent Decree. The Parties recognize and agree that certain changes to the Project will occur in the normal course of construction due to various factors including, but not limited to, third party requirements, unanticipated site conditions, and design and construction modifications to improve the performance of the Project. The Authority will use its best efforts to cause changes to be consistent with the Modified Consent Decree requirement to manage 20 impervious acres to the 1.2" Retention Standard. Such changes will be summarized in the monthly construction reports provided to the Purchasers as described in Section 11 and will be documented in the Record Drawing completed after the Project has been placed into operation. The Authority will provide the Purchasers with the Record Drawing of the Project within 30 days of its receipt.

9. **Project Evaluation**. The Authority and the Purchasers agree that the Project will be evaluated on the basis of the Runoff Reduction. The Authority and the Purchasers further agree that the evaluation will be carried out and the Runoff Reduction will be calculated in accordance with the methodology described in the Technical Memorandum. The Authority and the Purchasers acknowledge and agree as follows:

a. Pre-Construction Monitoring. The Authority has been performing pre-construction monitoring since January 2016. The results of the pre-construction monitoring during the periods identified in the Technical Memorandum have been used by the Authority to determine the existing conditions Runoff in the RC-A area prior to the beginning of construction of the Project and to estimate the Runoff Reduction expected under future conditions after completion of the Project.

b. Post-Construction Monitoring. After the Project is placed into operation, the Authority will perform at least 12-months of post-construction monitoring (the "Post-Construction Monitoring Period"). The Post-Construction Monitoring Period will start no later than 3 months after the Authority certifies to the EPA and the Purchasers that the project has been placed into operation. The Authority will provide notice to the Purchasers of the conclusion of the Post-Construction Monitoring Period. The results developed during the Post-Construction Monitoring Period will be used by the Authority to determine the actual conditions Runoff and the corresponding Runoff Reduction related to the Project in the same manner and method that the results of the pre-construction monitoring were used by the Authority to determine the runoff qualities for existing conditions.

c. Right of Inspection. During the Post-Construction Monitoring Period and prior to the issuance of the Final Report by the Authority described in paragraph (d) below, and at their own expense, the Purchasers may undertake an independent evaluation of the Project to ascertain whether it was constructed in material compliance with the design of the Project as described in Section 8 and the requirements of the Modified Consent Decree.

d. Final Report. The Authority will issue a report to the Purchasers and the Independent Validator documenting the calculation of the Runoff Reduction within 180 days of the conclusion of the Post-Construction Monitoring Period ("Final Report"). The results contained in the Final Report will serve as the basis for determining the effectiveness of the Project, as described below, in Section 10.

e. Independent Validator. Prior to the conclusion of the Post-Construction Monitoring Period, the Purchasers and the Authority will select, subject to mutual consent of the Parties not to be unreasonably withheld, an independent third-party to validate the results contained in the Final Report ("Independent Validator"). The Independent Validator will issue an opinion as to whether the Authority's calculation of the Runoff Reduction complies with the methodology described in the Technical Memorandum in all material respects. The payment of an Outcome Payment or Risk Share Payment shall be conditioned upon receipt of the Independent Validator's opinion confirming such compliance. The parties agree that the Independent Validator shall deliver its opinion to the Authority and to the Purchasers at the same time. The Independent Validator's opinion shall be due no later than 45 days after submittal of the Final Report (the "Final Report Due Date"), but any failure by the Independent Validator to deliver its opinion by the Final Report Due Date shall not affect any right or obligation of the Authority or the Purchasers to pay or receive the Outcome Payment or Risk Share Payment, as the case may be; provided however, that unless the Authority shall have failed to deliver a Final Report by 90 days prior to the Mandatory Tender Date (with the consequence of such failure specified in Section 10.e.), if the Independent Validator fails to deliver its opinion on or before the Mandatory Tender Date, then:

i. Subject to paragraphs (ii.) and (iii.) below, the Authority shall make payment on the Mandatory Tender Date to the Trustee, for the benefit of the Purchasers, of all Principal and Interest due on the Bonds without any addition to or reduction from that payment related to the Outcome Payment or Risk Share Payment; and

ii. If the Final Report had indicated a Tier 3 Outcome, then promptly on the Mandatory Tender Date, the Purchasers shall provide the Trustee (either as Trustee or in a separate custodial role) an irrevocable direction to withhold from any payment the Purchasers receive under clause (i) above the full amount of the potential Risk Share Payment and to deposit that amount in escrow (the "Risk Share Escrow Deposit") and to hold that amount in escrow unless and until it is either required to be disbursed to the Authority or released back to the Purchasers, pursuant to clause (iv) below, at such time as it is determined that the Risk Share Payment is or is not payable to the Authority, and if, for any reason, the Trustee declines or fails to do so, then the Purchasers shall make the same escrow arrangements and give effect to them with a third-party custodian acceptable to the Authority; and

iii. If the Final Report had indicated a Tier 1 Outcome, then promptly on the Mandatory Tender Date, the Authority shall (a) pay to the Trustee the full amount owed under (i) above plus the full amount of the potential Outcome Payment and (b) provide to the Trustee (either as Trustee or in a separate custodial role) an irrevocable direction to deposit the Outcome Payment in escrow (the "Outcome Payment Escrow Deposit") and to hold the Outcome Payment Escrow Deposit in escrow unless and until it is either required to be disbursed to the Purchasers or released back to the Authority, pursuant to clause (iv) below, at such time as it is determined that the Outcome Payment is or is not payable to the Purchasers, and if, for any reason, the Trustee declines or fails to give effect to those escrow arrangements, then the Authority shall make the same escrow arrangements and give effect to them with third-party custodian acceptable to the Purchasers; and

iv. At such time after the Mandatory Tender Date as both parties have received the Independent Validator's opinion, then, within thirty (30) days of such receipt, (a) if the opinion confirms that the Authority owes the Outcome Payment to the Purchasers, the Trustee shall release the Outcome Payment Escrow Deposit to the Purchasers in accordance with the Purchasers' payment instructions; provided, however, that is the opinion determines that the Authority does not owe the Outcome Payment to the Purchasers, the Trustee shall release the outcome Payment Escrow Deposit to the Authority in accordance with the Authority's payment instructions, or (b) if the opinion confirms that the Purchasers owe the Risk Share Payment to the Authority, the Trustee shall release the Risk Share Escrow Deposit to the Authority in accordance with the Authority's payment instructions; provided, however, that if the opinion determines that the Purchasers do not owe the Risk Share Payment to the Authority, the Trustee shall release the Risk Share Escrow Deposit to the Purchasers in accordance with the Purchasers' payment instructions; and

v. If for any reason the Independent Validator has not delivered its opinion within 45 days after the Mandatory Tender Date, then either (a) the Authority and the Purchasers shall agree upon a later date by which the Independent Validator's opinion shall be due, (b) the Authority and the Purchasers shall appoint a new Independent Validator that will have an additional 45 days (or such other period of time as the Authority and the Purchasers may agree upon) to render an opinion, or (c) the Authority and the Purchasers shall agree that neither the Outcome Payment nor the Risk Share Payment shall be payable.

10. **Performance Tiers, Outcome Payment and Risk Share Payment**. The Purchasers shall be entitled to receive the Outcome Payment from the Authority, and the Authority shall be entitled to receive the Risk Share Payment from the Purchasers based on the results of the project evaluation:

a. The effectiveness of the Project will be determined by the Authority based upon the results contained in the Final Report as corresponding to one of three (3) Performance Tiers.

i. Tier 1. A "Tier 1 Outcome" will be a Runoff Reduction greater than 41.3%;

ii. Tier 2. A "Tier 2 Outcome" will be a Runoff Reduction ranging from 18.6% to 41.3%; or

iii. Tier 3. A "Tier 3 Outcome" will be a Runoff Reduction less than 18.6%.

b. Subject to Section 9.e., on the Mandatory Tender Date, the Authority will make a payment of any and all amounts due to the Purchasers of the Bonds under this Agreement.

i. Tier 1. The Authority will make a payment of any and all amounts due to the Purchasers, including Principal, Interest and Outcome Payment.

ii. Tier 2: The Authority will make a payment of any and all amounts due to the Purchasers, including Principal and Interest.

iii. Tier 3: The Authority will make a single net payment of any and all amounts due to the Purchasers, including Principal and Interest less Risk Share Payment due to the Authority. The single net payment will constitute full payment of principal and interest due on the Bonds, and shall in no event constitute an Event of Default.

c. The amount of the Outcome Payment will be $3,300,319.00, and the amount of the Risk Share payment will be $3,300,319.00.

d. Any Outcome Payment or Risk Share Payment, whether contingent or actual, shall not constitute or be treated as principal of or interest on the Series 2016B Bonds for any purpose of the Indenture, including, without limitation, the Rate Covenant or any conditions for the issuance of Bonds or Subordinate Debt. An Outcome Payment will not constitute Senior Debt or Subordinate Debt under the Master Indenture. An Outcome Payment will be secured by a promise to pay from Net Revenues that is subordinate to the pledge of Net Revenues that secures the Outstanding Senior Debt and any other Senior Debt that the Authority may issue from time to time in the future, and subordinate to the pledge of Net Revenues that secures the Outstanding Subordinate Debt and other Subordinate Debt that the Authority may issue from time to time in the future.

e. Project Delays. If the Authority fails to deliver the Final Report on or before 180 days after the conclusion of the Post-Construction Monitoring Period, the Authority shall have an additional period of time extending to 90 days prior to the Mandatory Tender Date to submit the Final Report. The Independent Validator shall then issue an opinion confirming the Runoff Reduction contained in the Final Report. If the Authority fails to deliver a Final Report by 90 days prior to the Mandatory Tender Date, the Parties hereby agree that the effectiveness of the Project will be established as Tier 1 and an Outcome Payment will become due at the Mandatory Tender Date.

11. **Reporting.** The Authority will provide to the Purchasers reports on the status of the Project in accordance with the following:

a. Construction Progress. Beginning with the third full month after the Authority has issued a Notice to Proceed for construction of the Project, and every month thereafter until the conclusion of the Post-Construction Monitoring Period, the Authority will provide monthly construction progress reports to the Purchasers within 30 days of the end of each month. In no event shall the Authority's failure to timely provide any such reports be deemed an Event of Default with respect to the Bonds or affect the payment of an Outcome Payment or Risk Share Payment.

i. Beginning six months after the Authority has issued a Notice to Proceed for construction of the Project, and every three-month period thereafter until the conclusion of the Post-Construction Monitoring Period, the Purchasers may schedule a conference call with the Authority at a mutually agreeable and convenient time to review the monthly construction progress reports and discuss construction progress. In no event shall the Authority's failure to timely schedule any such conference calls be deemed an Event of Default with respect to the Bonds or affect the payment of an Outcome Payment or Risk Share Payment.

ii. Beginning six months after the Authority has issued a Notice to Proceed for construction of the Project, and every six-month period thereafter until the Project is placed into operation, the Purchasers may also conduct a site visit at a mutually agreeable and convenient time of the Project to inspect construction progress. During the Post-Construction Monitoring Period, the Purchasers may also conduct a site visit on a quarterly (three-month period) basis at a mutually agreeable and convenient time of the Project to inspect maintenance of the green infrastructure practices. In no event shall the failure of a site visit to occur be deemed an Event of Default with respect to the Bonds or affect the payment of an Outcome Payment or Risk Share Payment.

b. Green Jobs. Pursuant to the Green Jobs MOA, the Authority is required to submit on a biannual basis a progress report to the District ("Green Jobs Report"). Within 15 days of the submission of the Green Jobs Report to the District, the Authority shall provide a copy of the Green Jobs Report to the Purchasers until the Mandatory Tender Date. In no event shall the Authority's failure to timely provide any such reports be deemed an Event of Default with respect to the Bonds or affect the payment of an Outcome Payment or Risk Share Payment.

12. **Publicity**. The Authority and the Purchasers together shall jointly develop a plan for the public announcement, including the date of the announcement, of the Bonds to include press releases, fact sheets and other supporting materials. Following the public announcement of the Bonds, the Parties may engage in publicity efforts, such as media requests, press conferences, press statements, interviews, presentations, and blog posts, provided that the Parties may only share information contained in the press release, fact sheet, and other supporting materials including this Agreement and exhibits thereto. These materials may be modified with unanimous consent of the Parties, which consent shall not be unreasonably withheld. Except as otherwise required by law or regulation, the Parties shall advise each other of media inquiries relating to the Bonds and provide advance notice of any planned public communications that specifically relate to the Bonds.

13. **No Advisory or Fiduciary Role**. The Authority acknowledges and agrees that (i) the transactions contemplated by this Agreement are arm's length, commercial transactions between the Authority and the Purchasers in which the Purchasers are each acting solely as a principal and are not acting as an agent, a municipal advisor, financial advisor or fiduciary to the Authority, (ii) the Purchasers have not assumed any advisory or fiduciary responsibility to the Authority with respect to the transactions contemplated hereby and the discussions, conferences, negotiations, undertakings and procedures leading thereto (irrespective of whether the Purchasers or its affiliates have provided other services or are currently providing other services to the Authority on other matters), (iii) the only obligations the Purchasers have to the Authority with respect to the transaction contemplated hereby expressly are set forth in this Agreement, (iv) the Authority has consulted its own financial and/or municipal, legal, accounting, tax, and other advisors, as applicable, to the extent it has deemed appropriate, and (v) this Agreement expresses the entire relationship between the parties hereto.

14. **Expenses**. The Authority shall reimburse the Purchasers for up to $200,000 for expenses incurred in connection with their purchase of the Bonds, provided such expenses are documented in reasonable detail to the satisfaction of the Authority, including, but not limited to, legal and other professional advisory fees, travel, closing costs, and other such out-of-pocket expenses. The Authority shall pay the costs of the Independent Validator.

15. **Notices**. Any notice or other communication to be given to the Authority or the Purchasers under this Agreement may be given by delivering the same in writing to:

The Authority: District of Columbia Water and Sewer Authority
5000 Overlook Avenue, SW
Washington, DC 20032
Attention: Chief Financial Officer

The Purchaser: GSUIG Real Estate Member LLC
200 West Street
New York, New York 10282
Attention: Michael Lohr

with a copy to: GSUIG Real Estate Member LLC
200 West Street
New York, New York 10282
Attention: Urban Investment Group Portfolio Manager

with a copy to: gs-uig-portfolio-manager@gs.com

with a copy to: gs-uig-docs@gs.com

The Purchaser: Calvert Social Investment Foundation, Inc.
7315 Wisconsin Avenue NW
Suite 1000W
Bethesda, Maryland 20814
Attention: Beth Bafford

with a copy to: Calvert Social Investment Foundation, Inc.,
7315 Wisconsin Avenue NW
Suite 1000W
Bethesda, Maryland 20814
Attention: Sheila Saxton

with a copy to: Orrick, Herrington & Sutcliffe LLP
1152 15th Street NW
Washington, D.C. 20005
Attention: Darrin L. Glymph, Esq.

16. **Successors and Assigns**. During the Initial Period, (i) the Purchasers shall not sell, assign or transfer the Series 2016B Bonds or any interest therein without the written consent of the Authority, (ii) the Purchasers shall not sell, assign or transfer its right to receive any Outcome Payment or its obligation to make any Risk Share Payment, or any interest in either, without the written consent of the Authority, and (iii) the Authority shall not sell, assign or transfer its right to receive any Risk Share Payment or its obligation to make any Outcome Payment, or any interest in either, without the written consent of the Purchasers. During any subsequent Interest Period, the Holder of any Series 2016B Bond may sell, assign or transfer any Series 2016B Bond at the times, in the manner and subject to the conditions and requirements of the Indenture.

17. **Parties in Interest; Survival of Representations and Warranties.** This Agreement, when accepted in accordance with the provisions hereof, shall constitute the entire agreement between the Authority and the Purchasers and is made solely for the benefit of the Authority and the Purchasers (including the successors or assigns of the Authority or the Purchasers) and no other person will acquire or have any right hereunder or by virtue hereof. All of the Authority's and Purchaser's representations, warranties, covenants and agreements contained in this Agreement will remain operative and full force and effect regardless of (a) any investigations made by or on behalf of the Purchasers, or (b) delivery of and payment for the Bonds pursuant to this Agreement.

18. **Agreement among the Purchasers**. The Purchaser holding a majority in principal amount of the Bonds then Outstanding shall, after the Closing Date, have the exclusive right to provide consents and approvals and exercise and enforce all privileges and rights available to a Purchaser under this Agreement and any of the related Bond Documents; provided, that, the approval of all Purchasers shall be required for any consent, approval or remedy relating to the Mandatory Tender Date or the interest rate on the Bonds. Notwithstanding anything herein to the contrary, this Section shall not apply to any changes to Section 10 of this Agreement nor the publicity rights provided in Section 12 of this Agreement.

19. **Exhibits**. All exhibits referenced in this Agreement and attached to it shall constitute part of this Agreement and shall be incorporated by reference into the Agreement.

20. **Effective Date**. This Agreement will become effective on and as of the date stated in the preamble of this Agreement.

21. **Execution in Counterparts**. This Agreement may be executed in counterparts each of which shall be regarded as an original and all of which shall constitute one and the same document.

22. **Finder**. The Authority represents and warrants that no finder or other agent of a finder has been employed or consulted by it in connection with this transaction.

23. **Severability**. If any provision of this Agreement shall be held invalid by any court of competent jurisdiction, such holding shall not invalidate any other provision hereof and this Agreement shall be construed and enforced as if such illegal provision had not been contained herein.

24. **Governing Law**. This Agreement shall be governed by and construed in accordance with the laws of the District of Columbia.

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

By: Mark T Kim
Name: Mark T. Kim
Title: Chief Financial Officer

PURCHASERS:

GSUIG REAL ESTATE MEMBER LLC

By: M Anadu
Name: Margaret Anadu
Title: Authorized Signatory

CALVERT SOCIAL INVESTMENT FOUNDATION, INC.

By:____________________________________
Name: Catherine Godschalk
Title: Vice President, Investments

24. **Governing Law**. This Agreement shall be governed by and construed in accordance with the laws of the District of Columbia.

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

By:______________________________
Name: Mark T. Kim
Title: Chief Financial Officer

PURCHASERS:

GSUIG REAL ESTATE MEMBER LLC

By:______________________________
Name: Margaret Anadu
Title: Authorized Signatory

CALVERT SOCIAL INVESTMENT FOUNDATION, INC.

By:______________________________
Name: Catherine Godschalk
Title: Vice President, Investments

EXHIBIT A

$25,000,000
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B
(Environmental Impact Bonds)
(Initial Long-Term Rate Period)

Term Bonds

$25,000,000 Term Bonds due October 1, 2046 Priced to Yield 100.00%
(the Bonds shall initially bear interest at a Long-Term Rate of 3.43%)

TERMS OF REDEMPTION

OPTIONAL REDEMPTION AND MANDATORY TENDER

The Bonds are subject to redemption prior to maturity, in whole on April 1, 2021 at a redemption price equal to par, together with accrued interest to the redemption date.

The Bonds are subject to mandatory tender for purchase by the Tender Agent at the Purchase Price on April 1, 2021.

MANDATORY SINKING FUND REDEMPTION

The Bonds are required to be redeemed prior to maturity on October 1 in years and amounts upon payment of 100% of the principal amount thereof plus interest accrued to the redemption date, as follows:

Year	October 1 Redemption Amount
2043	$6,250,000
2044	$6,250,000
2045	$6,250,000
2046*	$6,250,000

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* stated maturity

EXHIBIT B

Form of Purchaser Acknowledgement Letter

September 29, 2016

District of Columbia Water and Sewer Authority
5000 Overlook Avenue, S.W.
Washington, D.C. 20032

Re: $25,000,000 District of Columbia Water and Sewer Authority Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds)

GSUIG Real Estate Member LLC and Calvert Social Investment Foundation, Inc., each a purchaser (collectively, the "Purchasers") of the bonds described above (the "Bonds") issued by the District of Columbia Water and Sewer Authority (the "Issuer"). This letter is delivered pursuant to the requirements of the Master Indenture of Trust, dated as of April 1, 1998 (the "Master Indenture"), between the Issuer and Wells Fargo Bank, N.A., as trustee (the "Trustee"), as amended and supplemented, including by the Twenty-First Supplemental Indenture of Trust, dated as of the Closing Date (the "Twenty-First Supplemental Indenture," and together with the Master Indenture as previously amended and supplemented, the "Indenture"), between the Issuer and the Trustee, substantially in the forms previously delivered to the Purchaser. Capitalized terms used but not defined herein have the meanings set forth in the Private Placement Agreement, dated September 28, 2016 (the "Private Placement Agreement"), between the Issuer and the Purchasers.

The Purchasers hereby make the following representations and warranties to the Issuer in connection with the Purchasers' purchase of the Bonds:

1. The Purchasers have sufficient knowledge and experience in financial and business matters, including purchase and ownership of municipal tax-exempt and taxable obligations to be able to evaluate the risks and merits represented by the purchase of the Bonds.

2. The Purchasers have authority to purchase the Bonds and to execute this letter and any other instruments and documents required to be executed by the Purchasers in connection with the purchase of the Bonds.

3. GSUIG Real Estate Member LLC is a [____________] organized under the laws of [__________] and is able to bear the economic risks of purchasing the Bonds and Calvert Social Investment Foundation, Inc. is a [____________] organized under the laws of [__________] and is able to bear the economic risks of purchasing the Bonds

4. The Purchasers understand that the Bonds are secured in the manner set forth in the Indenture and have received and reviewed to their satisfaction a copy of the Indenture.

5. The Purchasers understand (a) the circumstances under which, time at which and amount in which the Issuer may be obligated to pay the Purchasers an Outcome Payment and the unsecured nature of any such payment obligation, and (b) the circumstances under which, time at which and amount in which the Purchasers may be obligated to pay the Issuer a Risk Share Payment, and the means by which such payment would be effected.

6. The Purchasers understand that an official statement, prospectus, offering circular, offering memorandum or other comprehensive offering statement has not been provided with respect to the Bonds and that, as of the date hereof, there is no existing or future obligation on the part of the Issuer to provide information of the sort included in the documents described in this sentence. The Purchasers have made its own independent investigation of the facts and circumstances surrounding the Issuer, the System and the Bonds and is not relying on the Issuer, its agents or its employees with respect to the sufficiency and scope of such investigation. The Purchasers are relying upon the accuracy of the representations and warranties of the Issuer made in the Private Placement Agreement.

7. The Purchasers acknowledge that they have has reviewed information, including financial statements and other financial information, regarding the Issuer and the System, and have had the opportunity to ask questions and receive answers from knowledgeable individuals concerning the Issuer, the System, the Bonds and the security therefor, so that they have been able to make an informed decision to purchase the Bonds; provided, however, that this letter shall not constitute a waiver of any rights or remedies the Purchasers may have with respect to (a) any untrue information it may have received or (b) any misconduct or fraud on the part of representatives of the Issuer resulting in a failure to provide requested information for review by the Purchasers.

8. The Bonds are being acquired by the Purchasers for their own account, respectively, and not with a present view toward resale, transfer or distribution; provided, however, that the Purchasers reserve the right to sell, transfer or distribute the Bonds, but agrees that any such sale, transfer or distribution by the Purchasers shall be subject to the restrictions set forth in the Indenture or the Private Placement Agreement.

9. The provisions of the Private Placement Agreement, the Indenture and this letter are not, and should not be deemed to be, dispositive of the character of the debt for any legal, accounting or regulatory purposes.

Dated September 29, 2016

GSUIG REAL ESTATE MEMBER LLC

By:____________________________________
Name: Margaret Anadu
Title: Authorized Signatory

CALVERT SOCIAL INVESTMENT FOUNDATION, INC.

By:____________________________________
Name: Catherine Godschalk
Title: Vice President, Investments

[Signature Page of Purchasers Acknowledgement Letter]

EXHIBIT C
Request for Proposal
Design-Build Services for Green Infrastructure, Rock Creek Project A (Division RC-A)
Contract No: 150210 dated July 1, 2016

EXHIBIT D

Technical Memorandum

DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY

DC CLEAN RIVERS PROJECT

ENVIRONMENTAL IMPACT BOND TECHNICAL EVALUATION MEMORANDUM

FINAL

September 13, 2016

Prepared for:

dc
water is life

Prepared by:

dc clean
RIVERS
PROJECT
RESTORING OUR RIVERS
PROTECTING OUR DISTRICT

Program Consultants Organization
Blue Plains Advanced Wastewater Treatment Plant
5000 Overlook Avenue, SW
Washington, DC 20032

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1 Introduction

1.1 Purpose

The purpose of this document is to describe the approach used to collect data, establish a methodology, and develop tools used to evaluate the effectiveness of Rock Creek Project 1 ("RC-A") as part of the DC Clean Rivers Project (DCCR). An Environmental Impact Bond (EIB) is proposed to raise capital for the project. The methodology described has been used to make baseline predictions for the runoff reductions due to RC-A green infrastructure (GI) installations and establishes an approach for evaluation of actual reductions after the GI is constructed.

1.2 Environmental Impact Bond

The EIB will finance the design, construction and maintenance of RC-A which is required to manage the volume of runoff produced by 1.2" of rain falling on 20 impervious acres in the Rock Creek sewershed. Through the EIB, the Issuer and Purchaser intend to develop a pay-for-success model to achieve certain environmental outcomes associated with GI. In doing so, the EIB is structured to pay a variable total rate of return dependent upon the effectiveness of GI to manage stormwater runoff in RC-A. Greater efficacy may result in an Outcome Payment to the Purchaser that increases the total rate of return on the EIB, and lesser efficacy may result in a Risk Sharing Payment to DC Water that reduces the total rate of return on the EIB.

1.3 DC Clean Rivers Project

The District of Columbia Water and Sewer Authority (DC Water) is implementing a LTCP to control combined sewer overflows (CSOs) to the District of Columbia's (District) waterways. DCCR is comprised of a variety of projects to control CSOs, including pumping station rehabilitations, targeted sewer separation, GI, and a system of underground storage/conveyance tunnels. DCCR is being implemented in accordance with a first amendment to the Consent Decree (Amended Consent Decree), entered on January 14, 2016, which amends and supersedes the 2005 Consent Decree (Consent Decree) and incorporates GI, in a hybrid green-gray solution, to control CSOs while improving the quality of life in the District.

1.4 Rock Creek Green Infrastructure Project RC-A

The Rock Creek sewershed is comprised of 2,329 total acres, of which 52% is impervious (1,215 impervious acres). In an average year, the CSO 049 outfall structure, which drains the Rock Creek sewershed, discharges 39.73 million gallons of combined sewage to Rock Creek. Table 1-1 summarizes the Rock Creek sewershed area characteristics for CSO 049.

Table 1-1. Rock Creek Sewershed Area

	CSO 049
Total Sewershed Area	2,329 acres
Impervious Area	1,215 acres
Impervious Area to be Managed	365 acres

Source: DC Water (2016).

As part of the Amended Consent Decree, GI will be constructed in the CSO 049 drainage area in Rock Creek, sized to manage the volume of runoff produced by 1.2" of rain falling on 365 impervious acres (30% of the impervious acres) in the sewershed. GI controls will be constructed to manage the stormwater volume required in the Amended Consent Decree primarily in the public right-of way (ROW), allowing for some implementation on publicly-owned land outside of the ROW and on private property.

The first Rock Creek GI project is located along the eastern edge of the Rock Creek GI Area, shown on Figure 1-1, and includes approximately 162 acres. This project boundary was selected for the following reasons:

- Feasibility of design and construction
- Availability and feasibility of monitoring locations
- Representative land use characteristics typical of Rock Creek GI Area

The project area is mostly residential in nature, comprised of 55 city blocks of row houses mostly within the Brightwood Park and Manor Park neighborhoods of northwest Washington, DC. The project area is bounded by Oglethorpe Street NW and Gallatin Street NW to the north and south, respectively, and 1st Street NE and 3rd Place NW to the east and west, respectively. Existing conditions data has been collected (i.e., topographic survey information) from which the surface characteristics of the sewershed were defined and refined.

The GI control measures used within RC-A include bioretention and permeable pavement in the ROW and downspout disconnection on private properties. Bioretention facilities collect runoff in shallow, vegetated depressions. They then filter and temporarily store the runoff before allowing it to infiltrate into in-situ soils or conveying it to a suitable outlet (such as an existing sewer or stormwater pipe). Permeable pavement systems will be used to replace (or in lieu of) traditional impervious pavements as they offer similar functionality with respect to vehicle and pedestrian traffic. Facilities will include perforated underdrains tied to the existing underground sewer infrastructure.

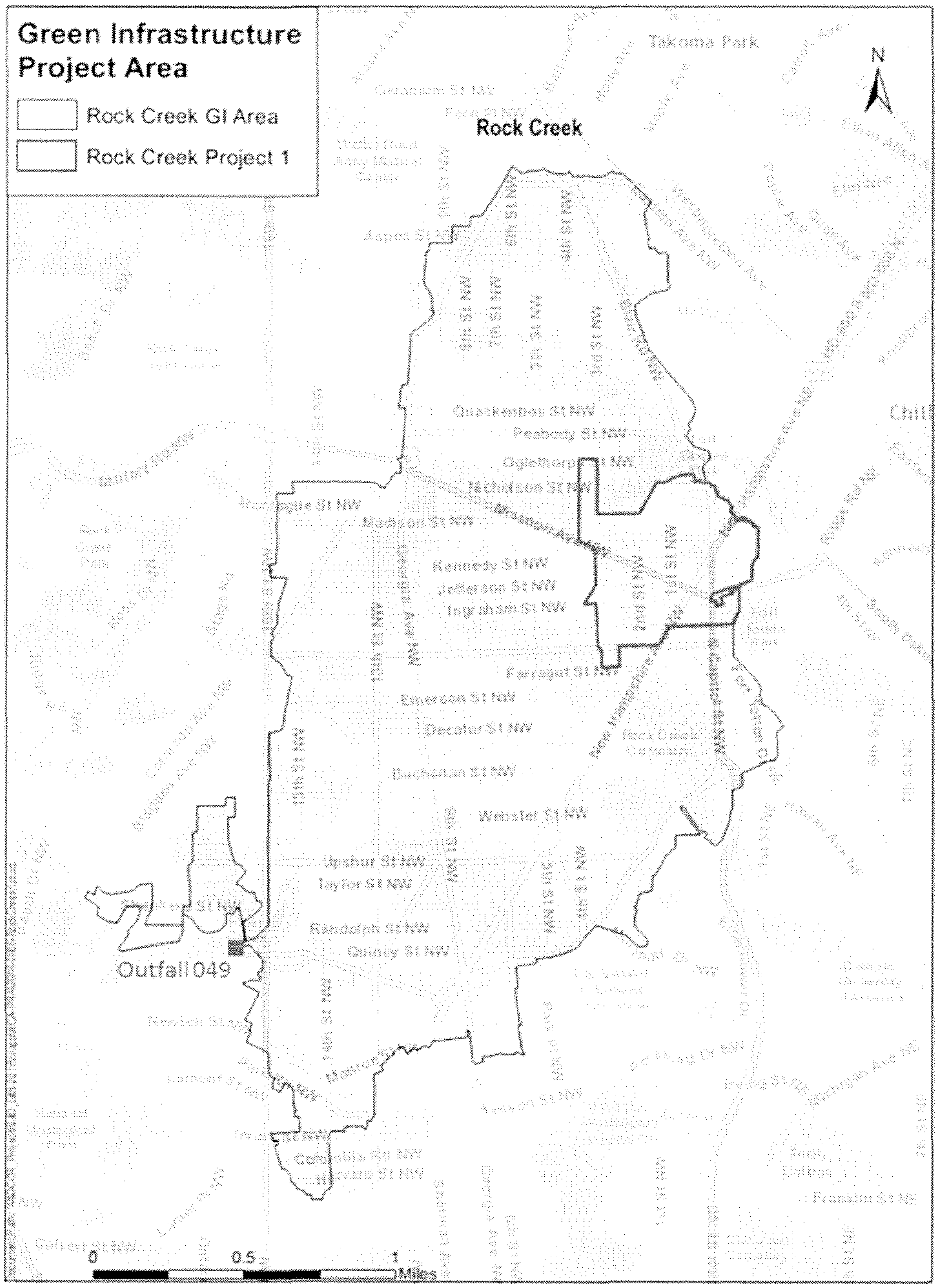

Figure 1-1. Rock Creek GI Area and Rock Creek Project A

2 Analysis Approach

2.1 Pre-construction Monitoring

The runoff quantities for existing conditions will be determined prior to the installation of GI control measures in RC-A. The pre-construction monitoring program requires installation of a rain gauge and flow measuring devices at predetermined locations at each project site (see Figure 2-2). Pre-construction monitoring will be performed over a 12-month period. During this 12-month period, available collection system meter data will be gathered to estimate the sanitary portion of the dry weather flow, and groundwater elevations at monitoring wells will be recorded to evaluate the relationship to infiltration. A portion of the monitoring has been completed and has been used to establish baseline runoff projections. Pre-construction monitoring is a necessary step to ground-truth the runoff model to real-world observations and will be used in model calibration.

Given the schedule for the bond, only a portion of the preconstruction monitoring has been completed and a subset of the anticipated 12 months of data has been used to prepare this report.

2.1.1 Rain Gages

One tipping bucket rain gage was installed within the RC-A area to capture local rainfall. The meter is located at Washington Latin School, as shown in Figure 2-1.

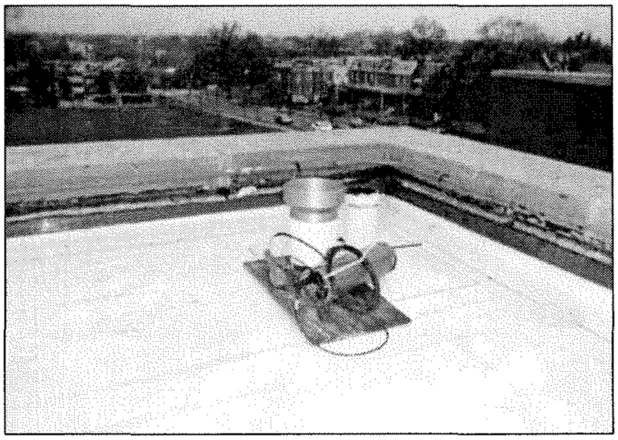

Figure 2-1. RC-A Rain Gage at Washington Latin School

2.1.2 Flow Meters

Four flow meters were installed within the RC-A project area. The flow meters are area-velocity meters that are used to measure mean velocity in a pipe and measure depth of flow in the pipe. The sensor transmits a continuous ultrasonic wave, then measures the frequency shift of returned echoes reflected by air bubbles or particles in the flow. The meters produce instantaneous depth-averaged velocity and flow depth, and records data every 5 minutes. Flow rate is calculated using velocity and depth (as measured by the meter), and pipe shape information. Flow meters are located as shown in Figure 2-2.

Flow meters must be calibrated to on-site conditions. Meters are visited regularly and at any point where review of data suggests that a calibration is in order. Flow depth and velocity are calibrated to replicate observed conditions at the site of the meter during the calibration.

Flow meter locations were selected to capture runoff from a variety of pre- and post-construction locations. Table 2-1 describes the flow meter purposes and drainage area to each meter. Site reports for the meters are located in Appendix A.

Table 2-1. RC-A Flow Meters

Meter	Purpose	Drainage Area (ac)
RC-A 049-1	Quantify total runoff reduction from RC-A	103
RC-A 049-2	Quantify total runoff reduction from RC-A	19
RC-A 049-3	Monitor runoff from a specific group of GI practices	0.9
RC-A 049-4	Monitor runoff from a specific group of GI practices	1.2

2.1.3 Groundwater Monitoring

For the RC-A project, seven groundwater monitoring wells have been installed, which will be monitored for a period of one year. Throughout field investigations, observations have been reported regarding groundwater, infiltration, obstructing layers, and soil classification to provide information critical for design. Groundwater monitoring wells are typically placed at a depth of seven feet with a five foot screen. They are visited monthly for inspection and data collection. A typical well installation diagram is shown in Appendix B.

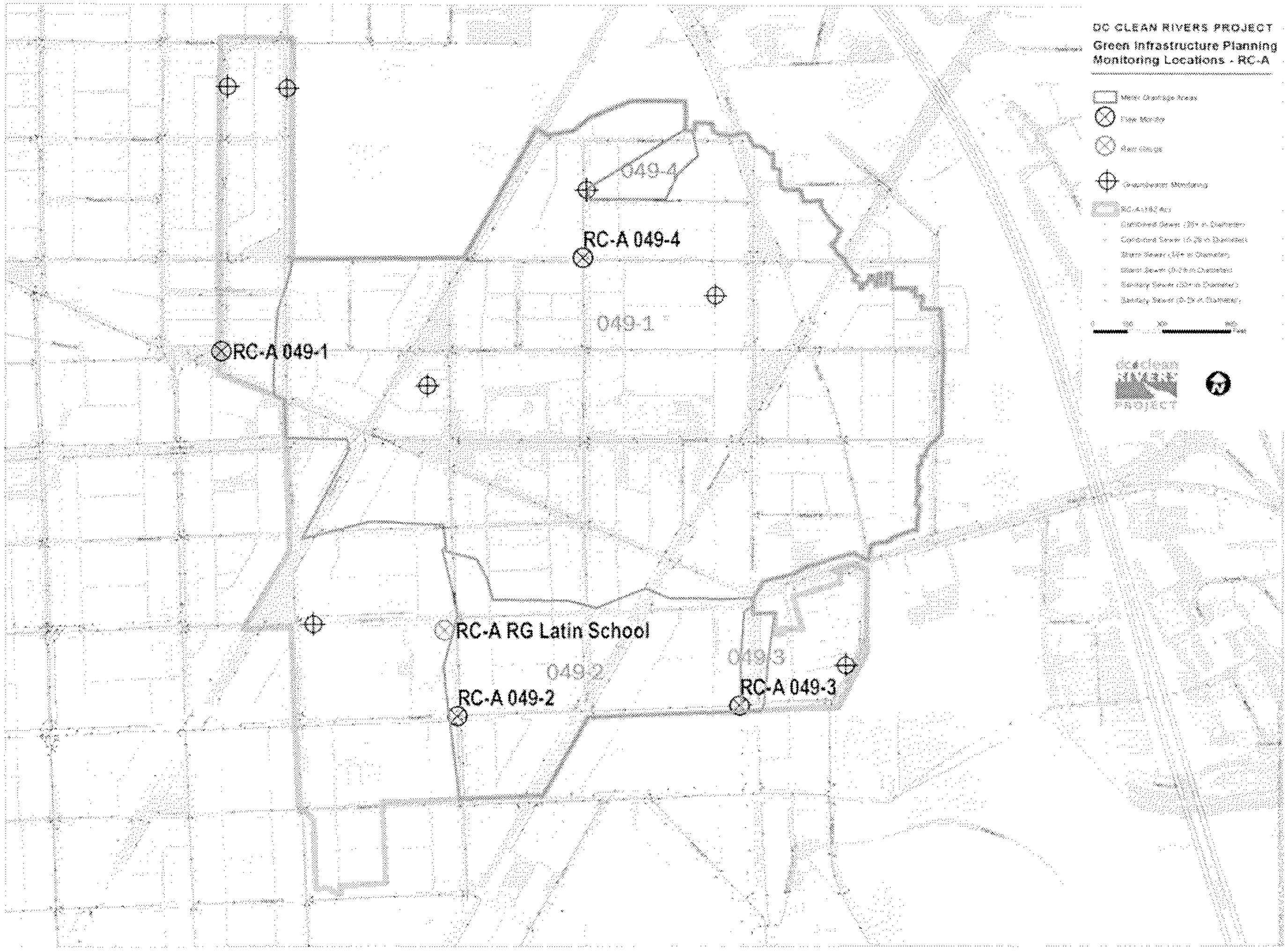

Figure 2-2. Pre- and Post-Construction Monitoring Locations for Rock Creek Project A

Source: DCCR

2.2 Definition of Average Rainfall Year

EPA's CSO Control Policy (1994) requires the effectiveness of CSO controls to be evaluated on a "system-wide, annual average basis." Identification of annual average rainfall conditions is thus a fundamental step in the LTCP process. Once selected, the average rainfall conditions will become the basis for modeling the sewer system and receiving waters to evaluate the occurrence of CSOs, their impact on receiving waters, and the efficacy of CSO controls.

Historical rainfall records from various gages in and around the District of Columbia were reviewed. The most comprehensive and useful records were those from Ronald Reagan Washington National Airport, which is located on the western bank of the Potomac in Virginia, approximately 3 miles from the White House and downtown Washington, DC. Continuous hourly records are available for 50 years at this location from 1949 to 1998. Due to the availability of continuous hourly data, this gage was used as the basis for establishing existing rainfall conditions.

The rainfall characteristics of individual years and groups of successive years were compared to the annual average rainfall statistics for the 50-year period of record. In particular, 3-year periods were singled out and reviewed favorably since they offer a broader range of rainfall events than a single year, while allowing for reasonable computational time for modeling. Based on the evaluation, the single year 1990 and the 3-year period 1988 to 1990 were identified as representative of annual average conditions. Because of the robust number and variety of storms available in a 3-year period, as opposed to a 1-year period, the period 1988 to 1990 was used as the average rainfall condition that will be used for modeling to support development of the LTCP. The rainfall that occurred during 1988 to 1990 will serve as the basis for evaluating the occurrence and impact of CSOs, and the efficacy of controls on a "system-wide, annual average basis."

The rainfall characteristics of 1988 to 1990 are compared against the long-term average rainfall characteristics in Table 2-2.

Table 2-2. Rainfall Statistics

Statistic	Long Term Average[1]	Average of 1988-1990
Annual Rainfall (inches)	38.95	40.97
No. Events > 0.05 inches	74	71
Average Storm Duration (Hours)[2]	9.9	10.1
Average Maximum Intensity (in/hr)	0.15	0.16
Maximum Intensity (in/hr)	1.30	1.29

[1] Ronald Reagan Washington National Airport hourly data, 1949-1998

[2] Individual events separated by a minimum of 6 hours with no rain

2.3 Model Development

2.3.1 Model Scope

A continuous hydrologic runoff model was developed to simulate runoff under existing, pre-GI conditions and to estimate the runoff reduction expected under future conditions with GI implemented. The runoff model is an application of the EPA SWMM5 model. SWMM5 is the current version of the most widely applied urban stormwater model across the world. Recent extensions of SWMM5 include specific GI applications. EPA's long-term support to the development and application of SWMM5 and earlier SWMM models underscores its acceptance in applications to support regulatory programs. SWMM5 is the model used for the range of GI-related modeling for the DCCR.

The model includes subcatchments representing runoff in the RC-A project area, the sewer network conveying the flow to the outlets of the RC-A project area and the GI practices planned for RC-A.

2.3.2 Model Calibration

Based on the metering data collected, the RC-A model was calibrated to predict runoff and flow from the sewershed. The model calibration is summarized in Section 3.

2.3.3 Representation of GI

GI practices are represented in SWMM5 as "LID controls." SWMM5 is a lumped parameter model that assumes uniformity across a single modeled sewershed. This means that LID controls were designed to represent the total of all GI practices contained within the modeled sewershed instead of representing each GI practice separately. This is common practice in a lumped parameter model and appropriate for this resolution of model. GI practices in SWMM5 are grouped into bioretention and pervious pavement based on their general design and purpose. Based on the planned GI design for RC-A, and delineated drainage to each type of planned GI practice, flow is routed to the appropriate practice on an area-weighted basis. Practices are represented in SWMM5 based on contract design drawings. In SWMM5, runoff from the surface to be treated by an LID control is routed to the control before entering the sewer system. Runoff not entering an LID control flows directly to the hydraulic model. SWMM5 represents LID controls as shown in Figure 2-3. All LID controls use the same framework, with runoff entering the LID through the surface layer and passing to other layers or out of the LID control through evapotranspiration (ET), overflow, underdrain, or infiltration based on parameters defined for each GI practice.

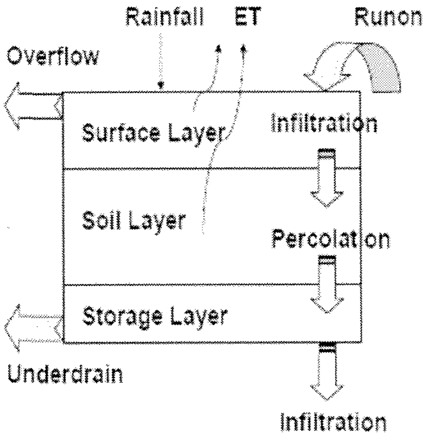

Figure 2-3. SWMM5 LID Control Representation

Infiltration from each of the LID controls into the underlying soil is assumed to occur at a rate equal to the Horton method minimum infiltration rate for the subsewershed within which it is contained. This is a conservative assumption and accounts for probable soil compaction under the LID control. Soil infiltration is a parameter that was varied and analyzed under the sensitivity analysis described below. Each LID control has a simulated underdrain represented as presented in the design documents. Underdrain outflow is assumed to flow directly into the collection system.

2.4 Calculation of Stormwater Runoff Volume

2.4.1 Event Descriptions

CSOs are caused by peak flows exceeding the diversion or treatment capacity of the system. Wet weather events were therefore defined as the time period when predicted flows in the sewer exceeded two times average dry weather flow rates. The value of two times dry weather flow was selected because it is the original basis of design for the complete treatment capacity of the Blue Plains Advanced Wastewater Treatment Plant in the *Blue Plains Feasibility Study* (Final Report, 1984, Greeley and Hansen). Further, it is a common factor used to differentiate flow regimes in the sanitary engineering industry. Figure 2-4 illustrates the approach utilized.

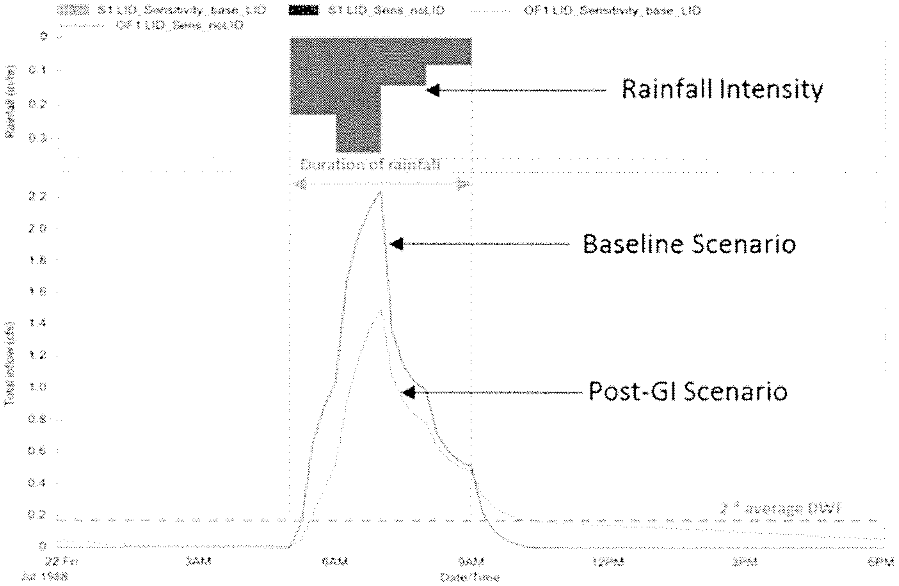

Figure 2-4. Stormwater Runoff Event Definition

2.4.2 Methodology

Several model simulations will be used to develop the predicted runoff reduction and actual runoff reduction expected from the RC-A project.

2.4.2.1 Existing Conditions

The existing conditions model uses the identical model application that was calibrated as described above. The model is applied for the 1988-1990 average year period to predict flow vs. time for the RC-A area. The total volume of flow, including runoff and dry-weather flow, as measured at meters

RCA-049-1 and RCA-049-2 (see Figure 2-2), and restricted to wet-weather event periods (as described above) for 1988-1990 is the total Existing Condition Runoff measured in gallons per average year. This forms a baseline from which to measure runoff reductions expected under GI implementation.

Stormwater runoff is calculated as all flow greater than twice the long-term average dry weather flow.

2.4.2.2 Predicted Conditions after Green Infrastructure

The model was used to predict the annual average runoff reduction expected under GI implementation. GI was represented in the model as described above. This is a prediction based on our best representation of the planned GI and is not a calibrated model. This is meant to be our best prediction of the planned runoff volume reduction expected if GI is implemented as planned.

The difference between the Predicted Conditions and Existing Conditions annual average runoff yields the Predicted Runoff Reduction.

Three scenarios were simulated to bracket the accepted range of expected results:

- **Best Case**: GI performs at the high end of accepted parameters. This is the predicted results if, for example, soil is highly permeable, soil media has high conductivity, and void ratio of media is high.
- **Expected Case**: GI performs as indicated in design drawings and using average assumptions for parameters not specified in the design.
- **Worst Case**: GI performs at the low end of accepted parameters. This is the predicted results if, for example, soil is less permeable, soil media has a low conductivity, and void ratios are low.

Table 2-3 shows the SWMM GI coefficients that are used in the expected case scenario and the basis for selecting these coefficients.

Table 2-3: SWMM GI Parameterization for Expected Case Scenario

		Description	Curb Extention Bioretention	Planter Bioretention	Permeable Alley	Permeable Pavement in Parking Lane	Basis
surface	**Storage Depth (in)**	Depth of surface storage	6.96	6.96	0.1	0.1	Design
	Vegetated Volume (frac)	Space occupied by vegitation	0	0	0	0	Accepted Value
	Surface Roughness (n)	Manning's roughness	0.1	0.1	0.1	0.1	Accepted Value
	Surface Slope	Surface Slope	0	0	0.026	0.035	Design
Pavement	**Thickness (in)**	Pavement thickness	-	-	6	5	Design
	Void Ratio	Pavement void ratio	-	-	0.2	0.2	Accepted Value
	Imp. Surface Fraction	Used for modular systems	-	-	0	0	Design
	Permeability	Permeability rate	-	-	100	100	Accepted Value
	Clogging Factor	Pavement clogging	-	-	949	656	Assume ~10% annual clogging
Soil	**Thickness (in)**	Media thickness	24	24	-	-	Design
	Porosity (frac)	Porosity	0.33	0.33	-	-	Design
	Field Capacity (frac)	Green and Ampt soil parameter	0.1	0.1	-	-	Accepted Value
	Wilting Point (frac)	Green and Ampt soil parameter	0.05	0.05	-	-	Accepted Value
	Conductivity (in/hr)	Media design conductivity	1	1	-	-	Design
	Conductivity Slope	Green and Ampt soil parameter	7	7	-	-	Accepted Value
	Suction Head (in)	Green and Ampt soil parameter	1.4	1.4	-	-	Accepted Value
Storage	**Height (in)**	Storage depth	21	21	36	37	Design
	Void Ratio	Void ratio	0.67	0.67	0.67	0.67	Design
	Infiltration (in/hr)	Bottom infiltration rate	0.125	0.125	0.125	0.125	Calibrated
	Clogging Factor	Bottom clogging	217	561	53	45	Assume ~10% clogging per year
Drain	**Drain Coeff (in/hr)**	Non-linear coefficient	0.18	0.18	0.18	0.20	Design
	Drain Exponent	Non-linear coefficient	0.50	0.50	0.50	0.50	Design
	Drain Offset (in)	Height of drain from bottom	3	3	3	3	Design

Of the listed parameters, the following parameters were identified as highly sensitive and were varied in the best and worst case scenario:

- Soil Porosity
- Soil Infiltration Capacity
- Storage Void Ratio
- Storage Bottom Infiltration

While the Storage Clogging Factor is identified as a sensitive model parameter, it was not varied as part of the sensitivity analysis. The Storage Clogging Factor is set to a value that reflects approximately 10% clogging in one year of service. While this is a sensitive parameter, proper maintenance of GI practices, as required by contract, gives confidence in setting this parameter constant.

Model coefficients that define GI were varied between minimum and maximum expected ranges, based on literature values and the RC-A GI design documents, and the resulting expected difference in average annual runoff reported in Section 4. The range of sensitive values used is shown in Table 2-4.

Table 2-4: Range of Sensitive Values Evaluated

	Best Case	Base Case	Worst Case
Curb Extension and Planter Bioretention			
Soil Porosity (frac)	0.45	0.33	0.15
Soil Infiltration Capacity (in/hr)	1.8	1	0.6
Storage Void Ratio (frac)	0.8	0.67	0.6
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.02
Permeable Pavement in Parking Lane and Alley			
Storage Void Ratio (frac)	0.8	0.67	0.6
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.01

Soil porosity varies from the minimum and maximum soil porosity expected due to variabilities in installation, supply, and inherent soil conditions. Soil infiltration capacity varies from the minimum to maximum soil infiltration capacity (or wet conductivity) that can be expected from a bioengineered soil media. The storage void ratio (defined as porosity / (1-porosity)) varies based on expected variance caused by installation and handling. The storage bottom infiltration is the native soil infiltration rate. Local infiltration tests have shown infiltration rates much higher than indicated here. 1.8 in/hour was selected as the best case because it matches the soil infiltration capacity. Any rate higher than the soil infiltration capacity will not be fully utilized as runoff will be restricted in the soil layer before reaching the storage layer.

The DCCR GI design includes a rapid draining system that routes ponded flow directly to the storage layer of the practice. This was not explicitly represented in the SWMM model. For the evaluation time period of 1988-1990, rainfall and runoff are not intense enough to regularly utilize the rapid draining system. As a result, not modeling this practice does not have a significant impact on annual wet weather volume managed. The practice can have an impact on the number of CSO events during short duration intense rain events and it is for that reason that it was included in the design.

2.4.2.3 Actual Conditions after Green Infrastructure

Following GI construction and post-construction flow monitoring, the predicted conditions model will be calibrated to flow monitoring data. Flow meters will be placed in the same locations as pre-construction monitoring. The annual average runoff will be calculated as was done for the previous scenarios. The difference between the actual conditions and predicted conditions for annual average runoff yields the deviation between predicted and actual runoff. The final report will present these results.

2.4.3 Sensitivity Analysis

There are several sources of uncertainty inherent in hydrologic and hydraulic modeling. The model is a representation of real-world conditions and can only be as accurate as the data used to create it. This model will depend on spatial elevation data, sewer data, and GI designs. Additionally, there are inherent errors when translating real-world conditions to the model representation. Hydrologic processes such as infiltration and evaporation use empirical formulas developed over years of study, but still are simply a representation of what is happening. These inherent errors make calibration necessary to build confidence in a model.

This model will be calibrated to the pre-construction flow monitoring to represent existing conditions. The Predicted Conditions model is a forecast model that will not be calibrated, but will rely on our best representations of the predicted GI. In order to evaluate the sensitivity of annual runoff to changes in model parameters, a sensitivity analysis will be performed.

A basic sensitivity analysis was performed by identifying the best and worst case parameters for 4 sensitive parameters as described in Section 2.4.2.2. These values are used as a guide to predict the expected range of runoff reduction cause by GI implementation.

Building on this analysis, a Monte Carlo simulation was developed. In a Monte Carlo simulation, ranges of values are used for a number of inputs. The model is run many times using combinations of input data from within the acceptable ranges. Model results for average annual runoff reduction will fall within a range as determined by the Monte Carlo simulation. This will provide an interval of confidence in the model results and highlight what parameters have a high influence on the variation of average annual runoff.

The SWMM variables identified for sensitivity were randomly sampled using either a normal or log-normal distribution as indicated, and each set of randomly sampled sensitivity parameters were used as inputs for 1000 sequential SWMM model simulations. The resulting simulated runoff reduction is reported as a distribution of values.

The parameters shown in Table 2-5 were identified as sensitivity parameters earlier in our analysis, and shown are the assumption used in developing the Monte Carlo analysis. The standard deviations were chosen to capture the minimum and maximum values expected to be encountered for the parameter listed. All other SWMM parameters were held at the values described in Section 2.4.2.2.

The variance in parameters is based on the variance calculated in the best case and worst case analysis. Some parameter ranges may differ slightly due to the inherent properties of the statistical distribution. A normal distribution requires that the 95th percentile confidence interval be centered on the mean.

Table 2-5: Monte Carlo Simulation Parameters

	Monte Carlo Simulation			
	Highest 95%-ile	**Mean**	**Lowest 95%-ile**	**Distribution**
Curb Extension and Planter Bioretention				
Soil Porosity (frac)	0.47	0.33	0.19	Normal
Soil Infiltration Capacity (in/hr)	1.6	1	0.4	Normal
Storage Void Ratio (frac)	0.77	0.67	0.57	Normal
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.02	Log-Normal
Permeable Pavement in Parking Lane and Alley				
Storage Void Ratio (frac)	0.77	0.67	0.57	Normal
Storage Bottom Infiltration (in/hr)	1.8	0.125	0.02	Log-Normal

3 Pre-Construction Calibration

3.1 Calibration Period

Flow and rainfall monitoring data were available for a time frame of January 22nd, 2016 until June 2nd, 2016. However flow monitoring data for January and February was determined to unreliable for calibration purposes and also includes 2 significant snowfall events. Therefore the model calibration time period chosen was March 1st, 2016 through June 2nd, 2016.

All rainfall events were used in the calibration except those which were not expected to produce a flow meter response similar to the average-year climate period, which this model will be applied to. The following are examples of events that are typically excluded from calibration:

- Events that produce runoff that exceeds the capacity of the sewer system
- Events that produce snow accumulation
- Events that occur when metering or rain gage equipment is out-of-service or requires maintenance
- Events that occur during repairs to the sewer system or where damage to the sewer system has occurred

3.2 Rainfall

The rain gage used for this project was installed at the corner of Ingraham Street and 2nd Street, NE (see Figure 2-2). A total sum of 8.14 inches of total rainfall was observed during the calibration period.

The rainfall data was compared to another local rainfall gage close-by and determined to be consistent (difference of 7% in total rainfall volume).

There were 19 rainfall events with a total rainfall depth > 0.1 inch and a minimum inter-event time (dry time) of 3 hours which were used for the model calibration as shown in Table 3-1.

Table 3-1: Observed Rainfall Events

Event #	Start Date / Time	Duration (h)	Max Rain (in/hr)	Mean Rain (in/hr)	Total Rain (in)
1	3/2/2016 0:25	4.83	0.12	0.03931	0.19
2	3/13/2016 20:05	10.5	0.24	0.03524	0.37
3	3/19/2016 12:20	10.5	0.12	0.02667	0.28
4	3/28/2016 0:00	10.08	0.24	0.02876	0.29
5	4/7/2016 7:10	5.67	0.96	0.1094	0.62
6	4/7/2016 16:45	2.92	0.72	0.08914	0.26
7	4/9/2016 5:25	7.67	0.12	0.01696	0.13
8	4/28/2016 8:35	5.75	0.24	0.04696	0.27
9	4/30/2016 21:55	15.5	0.36	0.04581	0.71
10	5/2/2016 18:40	4.75	1.2	0.1305	0.62
11	5/3/2016 20:50	6.58	0.36	0.02734	0.18
12	5/6/2016 5:55	13.5	0.12	0.05037	0.68
13	5/11/2016 12:15	6.08	0.12	0.02301	0.14
14	5/14/2016 15:25	3.33	0.24	0.042	0.14
15	5/17/2016 8:40	11.17	0.12	0.02866	0.32
16	5/21/2016 5:40	5.5	0.48	0.08909	0.49
17	5/21/2016 23:35	31.58	0.24	0.01266	0.4
18	5/23/2016 15:00	5.5	0.12	0.02909	0.16
19	5/29/2016 17:00	7.75	0.96	0.07871	0.61

3.3 Flow Monitoring

Flow monitoring in the RC-A area was done in 4 locations as shown on Figure 2-2. Only Meters RC-A 049-1 and RC-A 049-2 (which are the 2 downstream meters) were used for this calibration due to their location. Meter RC-A 049-1 covers an area of about 103 acres and meter RC-A 049-2 an area of about 19 acres.

Meter results were quality checked and considered of an adequate quality. Meter RC-A 049-1 provides usable data throughout the whole calibration period. Meter RC-A 049-2 had a meter outage from April 12th to May 11th due to problems with both the depth and the velocity sensor.
A dry-weather flow analysis showed an average dry-weather flow (DWF) of 0.25 MGD for meter RC-A 049-1 and 0.08 MGD for meter RC-A 049-2. Dry weather flow patterns (diurnal curves) have been developed based on the available metering data individually for both meter sheds (see Figure 3-1 and Figure 3-2).

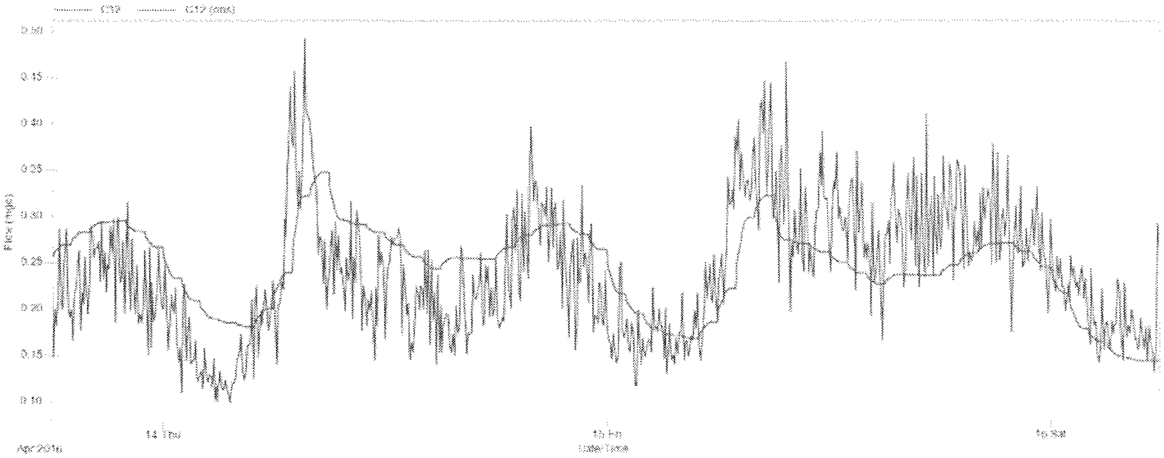

Figure 3-1: Model - data comparison for DWF at meter location RC-A 049-1

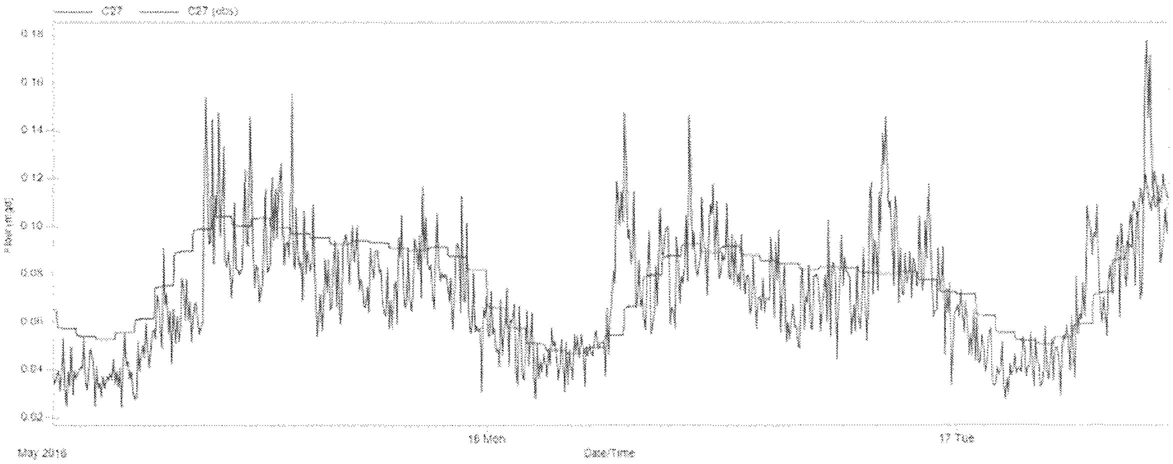

Figure 3-2: Model - data comparison for DWF at meter location RC-A 049-2

The highest observed wet weather flow is 31.03 MGD for RC-A 049-1 and 2.04 MGD for RC-A 049-2 during the chosen calibration period. The total observed Wet Weather Flow (WWF) volume for RC-A 049-1 during the calibration period was 4.85 MG and 0.74 MG (estimated due to partial meter outage) at RC-A 049-2.

3.4 Calibration Methodology

The model was setup using the available data basis and supplemented by textbook values appropriate for the conditions of the RC-A model area.

Based on field surveys, it was estimated that 11% of impervious area within RC-A is attributed to rooftops that were disconnected from the combined sewer system. These rooftops were modeled as impervious area draining to pervious area. The remaining rooftop area was assumed to drain to the combined sewer system.

The runoff model was then calibrated to match the volume, flow peak and general shape of the wet weather flow events. This was done within the PC-SWMM environment using visual hydrograph comparisons for individual wet weather events (general shape) as well statistical comparisons using 1:1 plots (linear regression (R squared) and Nash-Sutcliffe model efficiency coefficient (NSE)). PC-SWMM is an interface of the EPA SWMM5 model engine that provides pre-processing, post-processing, and data analysis tools. The parameters chosen for calibration are shown below in Table 3-2.

Table 3-2: Runoff Parameter Calibration

Parameter	Basis	Calibration parameter
Area of subshed (ac)	Calculated based on GIS	NO
Width of subshed (ft)	Calculated based on GIS	YES (within accepted range)
Slope (%)	Calculated based on GIS	YES (within accepted range)
Imperviousness (%)	Calculated based on GIS and decreased by disconnected roof top area	NO
Impervious area roughness	Textbook value	YES (within accepted range)
Pervious area roughness	Textbook value	YES (within accepted range)
Depression storage Impervious area (in)	Textbook value	YES (within accepted range)
Depression storage Pervious area (in)	Textbook value	YES (within accepted range)
No depression storage for Impervious area (%)	Textbook value	YES (within accepted range)
Maximum Infiltration Rate (in/hr)	Textbook value based on SSUGRO HSG	YES (within accepted range)
Minimum Infiltration Rate (in/hr)	Textbook value based on SSUGRO HSG	YES (within accepted range)
Decay Constant (1/hr)	Textbook value	NO
Drying Time (days)	Textbook value	NO

The parameter with the biggest impact on the calibration was the selected soil infiltration rate. The SSUGRO (Soil Survey Geographic database) which was used for the initial parameterization shows the majority of the RC-A model area within HSG (hydrologic soil group) class D (dense soils with low infiltration capacity and high runoff potential) but was then later recalibrated to an approximately equivalent of an HSG class B soil (soils with medium density and moderately low runoff potential). This was still deemed within an accepted range based on local soil boring infiltration tests.

3.5 Calibration Results

The model was calibrated at meter locations RC-A 049-1 and verified at RC-A 049-2 for the wet weather events outlined in

Table 3-1. Meter events 8 - 12 were excluded from the analysis for RC-A 049-2 due to a meter outage during that time. Calibration plots for meter RC-A 049-1 are shown in Figure 3-3 through Figure 3-8 below.

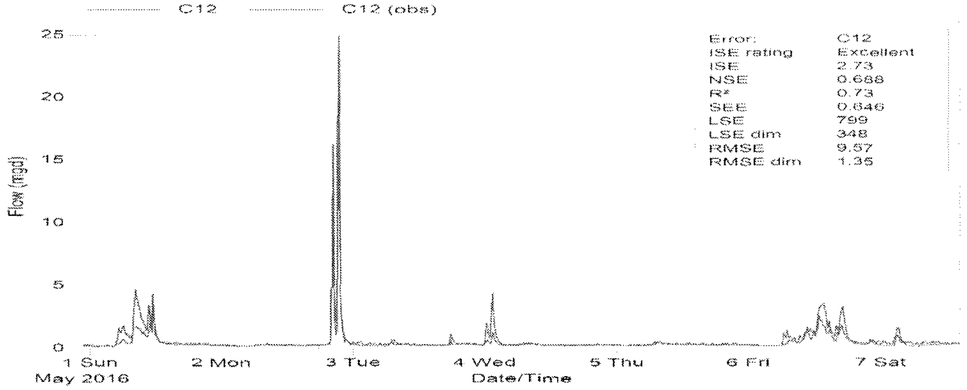

Figure 3-3: Example hydrograph comparison at meter RC-A 049-1

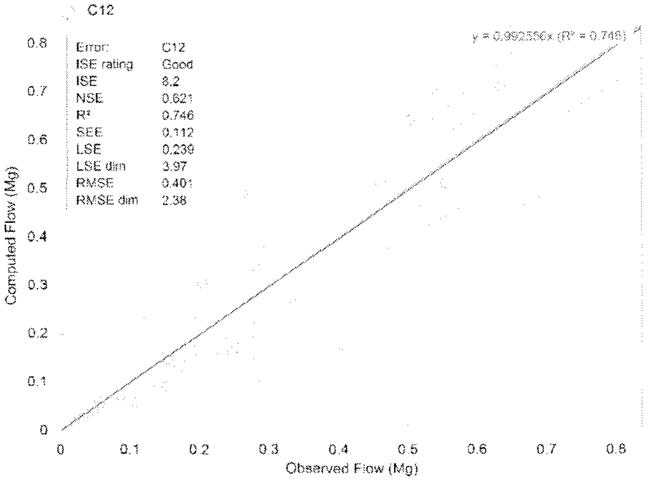

Figure 3-4: 1-1 Plot comparison for wet weather event flow volumes at meter RC-A 049-1

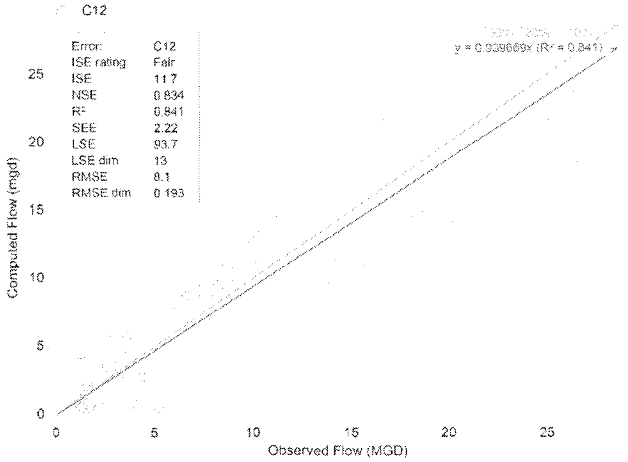

Figure 3-5: 1-1 Plot comparison for wet weather event peak flows at meter RC-A 049-1

Calibration plots for meter RC-A 049-2 are shown in Figure 3-6 to Figure 3-8 below.

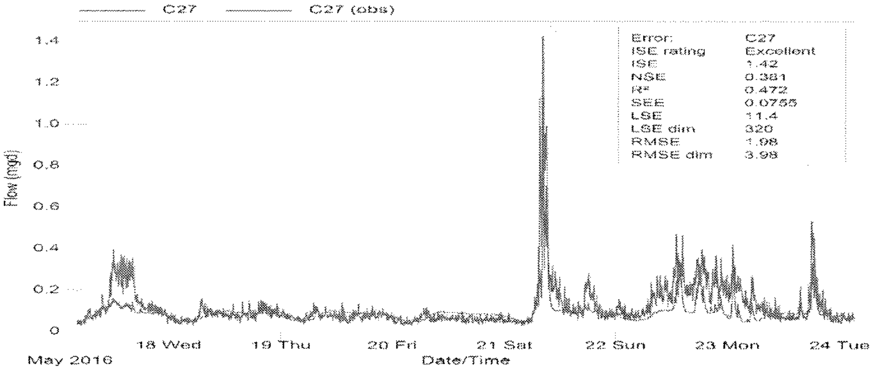

Figure 3-6: Example hydrograph comparison at meter RC-A 049-2

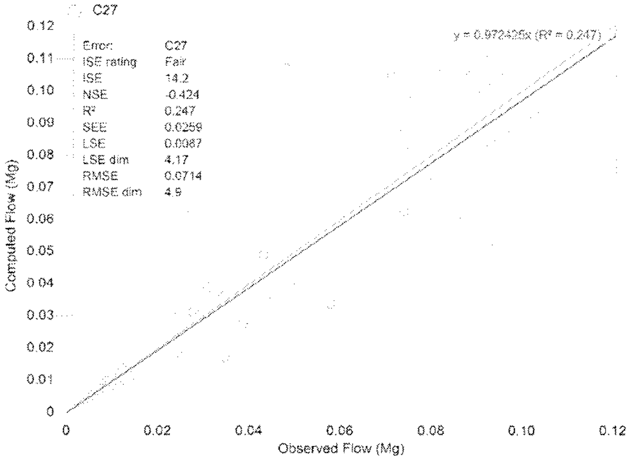

Figure 3-7: 1-1 Plot comparison for wet weather event flow volumes at meter RC-A 049-2

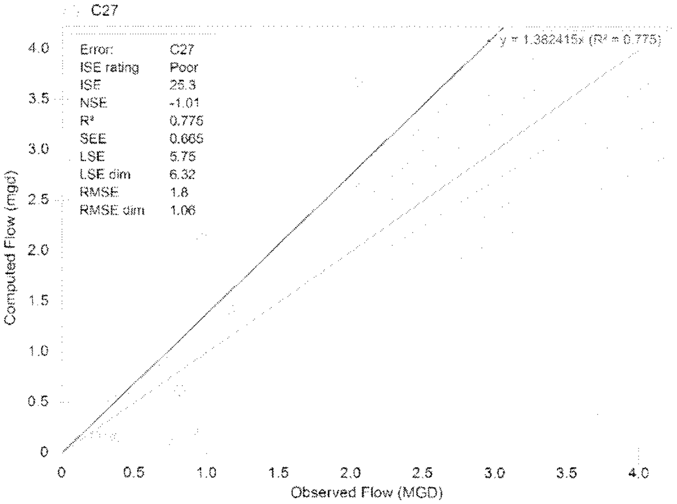

Figure 3-8: 1-1 Plot comparison for wet weather event peak flows at meter RC-A 049-2

4 Post-Construction Predictions

4.1 Predicted Runoff Reduction

The GI parametrization described in Section 2 was applied to the calibrated model, resulting in a model meant to forecast runoff reduction after GI installation occurs.

Three scenarios were simulated to bracket the accepted range of expected results:

- Best Case: GI performs at the high end of accepted parameters. This is the predicted result if, for example, soil is highly permeable, soil media has high conductivity, and void ratio of media is high.
- Expected Case: GI performs as indicated in design drawings and using average assumptions for parameters not specified in the design.
- Worst Case: GI performs at the low end of accepted parameters. This is the predicted result if, for example, soil is less permeable, soil media has a low conductivity, and void ratios are low.

Table 4-1 shows predicted results from the three model simulations.

Table 4-1: Wet Weather Flow for 1988-1990 (MG/average year)

	RC-A-49-1		RC-A-49-2		Combined	
	WW flow (MG)	reduction	WW flow (MG)	reduction	WW flow (MG)	reduction
NO LID	37.06	---	6.58	---	43.65	---
LID best case	23.52	36.54%	2.85	56.66%	26.38	39.57%
LID base	26.81	27.66%	3.77	42.69%	30.59	29.93%
LID worst case	30.70	17.18%	4.51	31.46%	35.21	19.33%

The LID best case and LID worst case were compared to the confidence interval evaluation below to confirm the results of that process.

4.2 Sensitivity Analysis Results

The results of the Monte Carlo analysis are shown below.

Table 4-2 shows the annual wet weather flow calculated with LID in place. Table 4-3 shows the annual wet weather flow normalized to impervious acre treated at 1.2". Normalization was performed because the quantity of GI actually constructed may vary somewhat from the as-designed plans due to utility conflicts or other modifications to the facilities that may be required during construction to accommodate actual conditions encountered in the field.

The frequency distribution of the 1000 SWMM model simulations in shown in Figure 4-1and Figure 4-2.

Table 4-2: Annual Wet-Weather Flow (MG/average year)

		Meter RC-A-49-1	Meter RC-A-49-2	Total	Percent Reduction
	No LID	37.06	6.58	43.65	
LID	95th Percentile	24.53	3.29	27.82	36.3%
	Mean	26.77	3.71	30.47	30.2%
	5th Percentil	29.25	4.09	33.33	23.6%

Table 4-3: Annual Avg. WWF Reduction (MG/avg. year per Impervious Acre Treated at 1.2")

	Meter RC-A-49-1	Meter RC-A-49-2	Total	Percent Reduction	Range
95th Percentile	0.75	0.63	0.72	36.3%	13%
Mean	0.61	0.55	0.60	30.2%	
5th Percentile	0.47	0.48	0.47	23.6%	

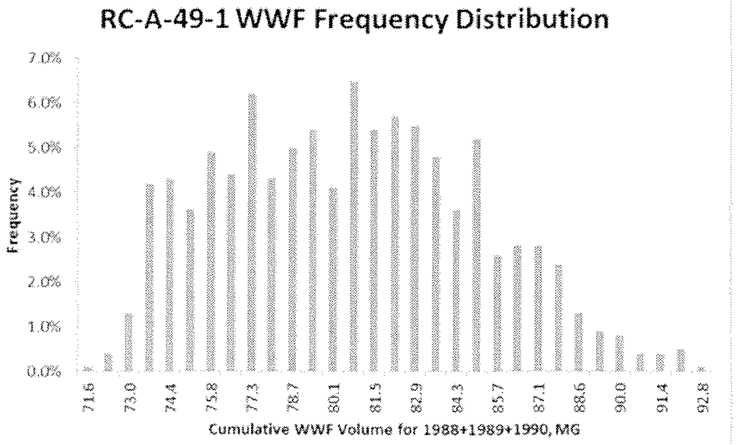

Figure 4-1: RC-A-49-1 Wet Weather Flow Frequency Distribution

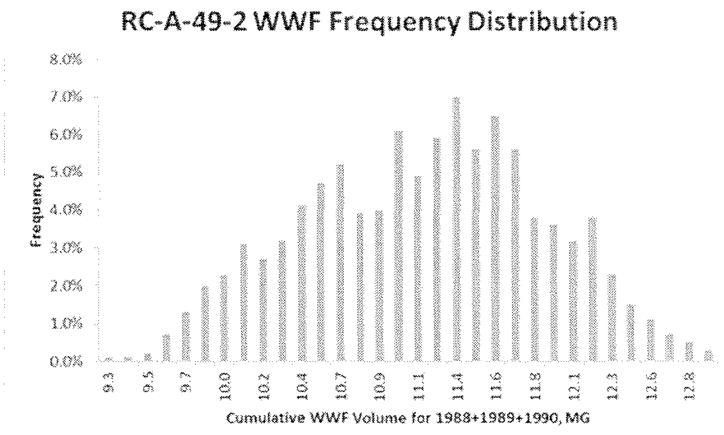

Figure 4-2: RC-A-49-2 Wet Weather Flow Frequency Distribution

The confidence interval analysis varied the four parameters listed in Section 2. In order to account for variation in the other SWMM parameters that are not accounted for in the Monte Carlo analysis, a factor of 5% was added to the 95th percentile runoff reduction results and a factor of 5% was subtracted from the 5th percentile runoff reduction results. This additional factor was based on DC Water's engineering judgment regarding the overall accuracy of data collection, modeling, and the ability to make predictions of this nature. These adjusted results are shown in Table 4-4 and these results are the recommended ranges to use for the 5th and 95th percentile ranges.

Table 4-4: Adjusted Annual Avg. WWF Reduction (MG/Impervious Acre Treated at 1.2")

	Percent Reduction	Range
Adjusted 95th Percentile	41.3%	23%
Adjusted 5th Percentile	18.6%	

Note: Reference Table 4-3 for values (mean, 95th percentile, and 5th percentile) prior to adjustment

4.3 Approach to Evaluation Post-Construction Data

Following GI construction and post-construction monitoring, the same methodology presented will be used to quantify the actual post-construction runoff reduction achieved with GI installed. The following summarizes the approach to quantifying WWF reduction after construction:

- Post-construction monitoring will be performed for 12 months and will consist of the following:
  - A rain gage will be installed in the sewer shed and flow meters will be installed in the existing sewers. The equipment will be installed at the same locations used for pre-construction monitoring unless this is infeasible for some reason. In that case, equipment will be installed as close as is practical to the pre-construction locations.
  - Groundwater elevations will be monitored at wells installed prior to construction to assess overall groundwater levels
- The GI in the model will be configured to represent as-built conditions.

- The model will be run for the post construction monitoring period rainfall and will be calibrated to the flow meter data collected.
- After the model is calibrated, it will be run using the rainfall in the average year period (1988-1990) to predict the WWF volume in an average year defined as occurring when predicted flows in the sewer exceeded two times average dry weather flow rates as described in this memorandum.
- The reduction in WWF volume per average year will be calculated by taking the difference between the pre- and post-construction WWF volume. This reduction in WWF volume will be divided by the number of impervious acres treated at 1.2" to determine the WWF reduction in million gallon per average year per impervious acre treated at 1.2". The resulting percent reduction in WWF will be computed and compared to the pre-construction predicted range.

Appendix A Flow Meter Installation Reports

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Site Name/Manhole # 049-1 Primary: ☒ Alternate: ☐

Investigation Date: 12/15/15 Time: 13:40 Crew Members: CL/MH

Installation Date: 12/29/15 Time: 13:15 Crew Members: CL/MM

Address/Location: Intersection of Longfellow Street NW and 3rd Place NW

Latitude: N 38°57' 28" Longitude: W 77°1' 1"

Weather Conditions: Wet [✓ Dry]

CSL Services, Inc.

Hydraulic Conditions

Influent Flow:

Velocity 2.70 ft/sec

Depth 1.50 in

Turbulence Amplitude:

- ☐ Less than 0.25"
- ☑ 0.25" to 0.75"
- ☐ 0.75" to 1.5"
- ☐ 1.5" to 3"
- ☐ Greater than 3"

Sewer Line Characteristics:

	Influent 1	Influent 2	Influent 3	Effluent
Height	4' 3"	12"	15"	4' 3"
Width	4' 3"	12"	15"	4' 3"
Material	Concrete	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☑ No Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☑ No evidence visible
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: ____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☑ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 13' 9"

Structural Integrity of Manhole:

☐ Good ☑ Fair ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

☑ Yes ☐ No ☐ Maybe

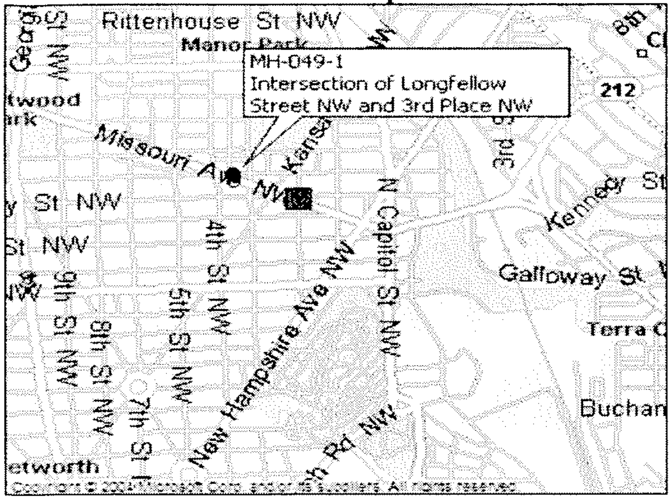
Sensor Configuration:

(Please include Serial Numbers when possible)

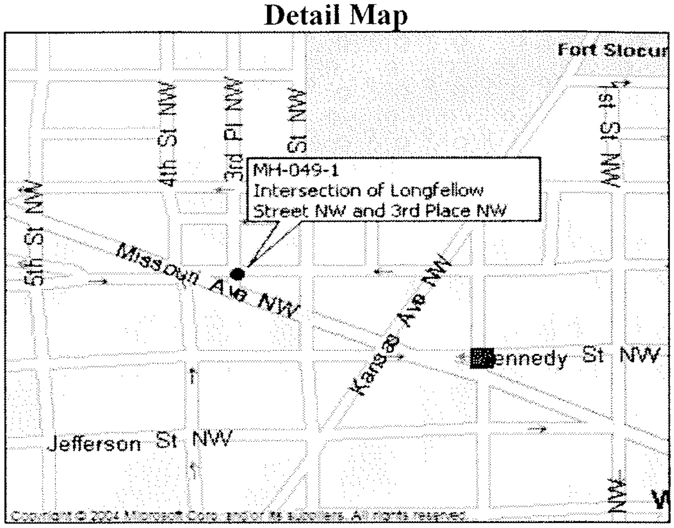
Level	Primary: Flowav
	Redundant:
Velocity	Primary: Flowav
	Redundant:
Meter Logger	Telog

Comments:

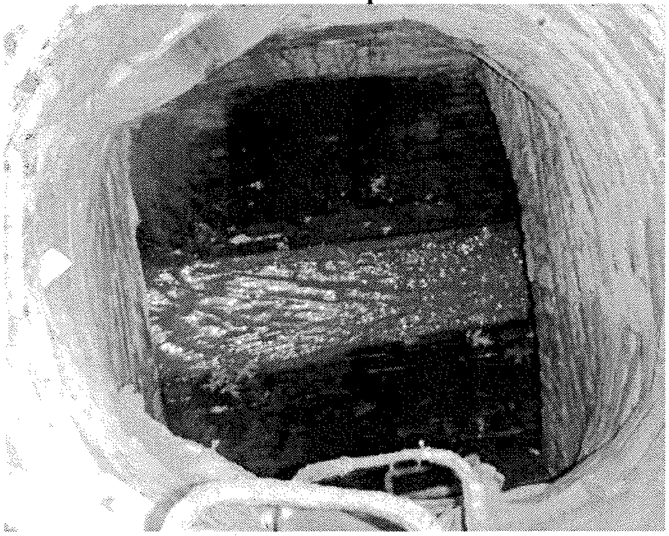
Area Map



Detail Map



View from top of MH

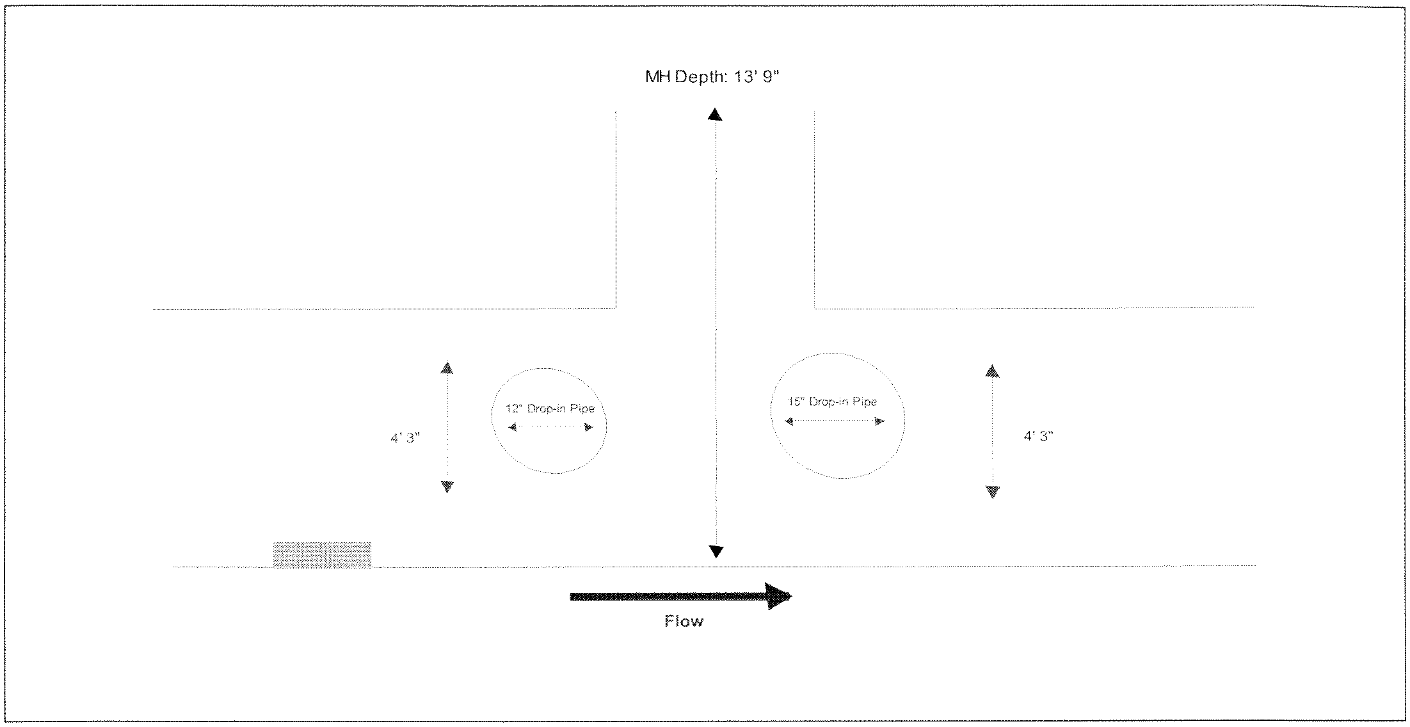


Site Overview

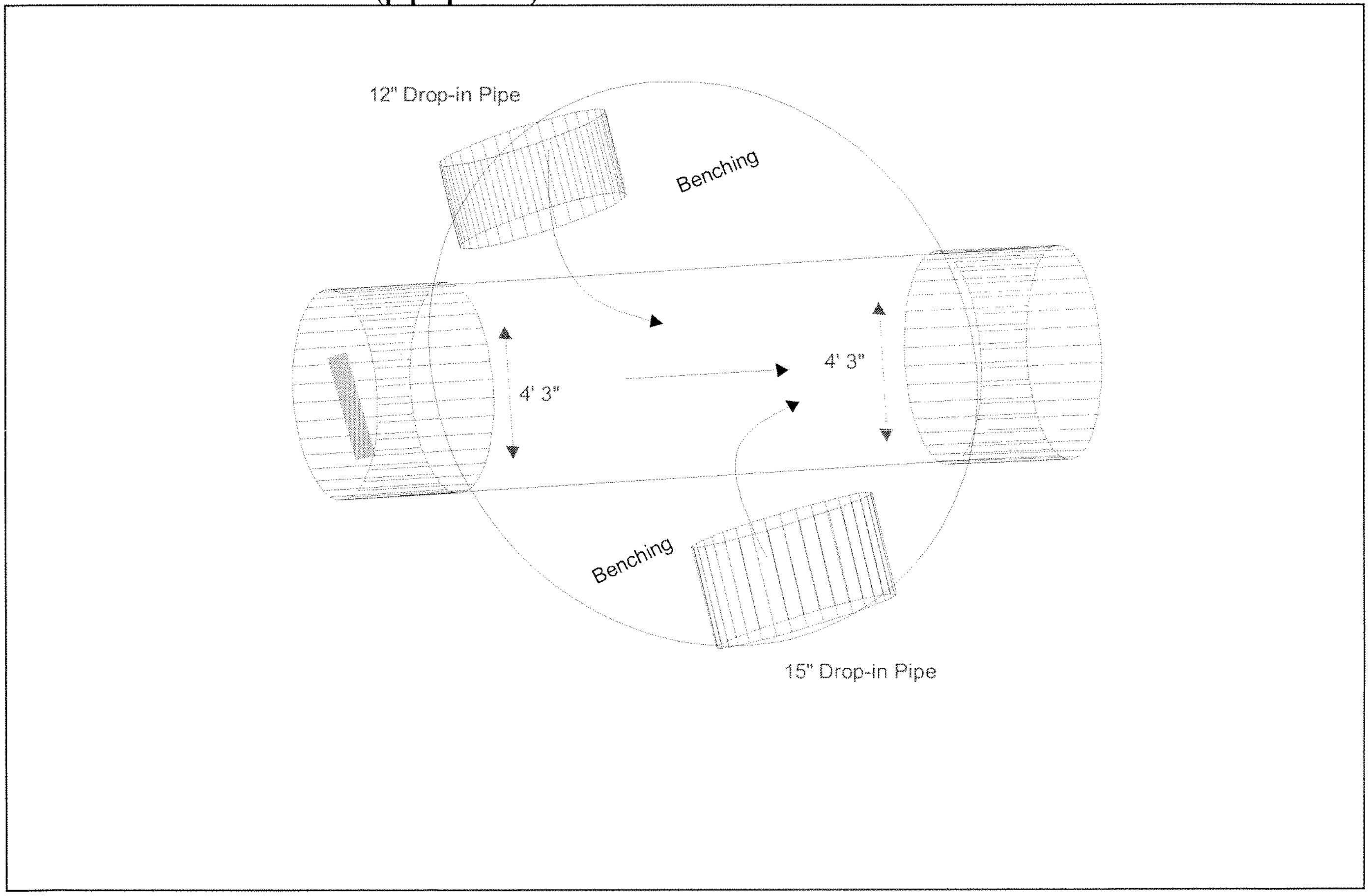
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

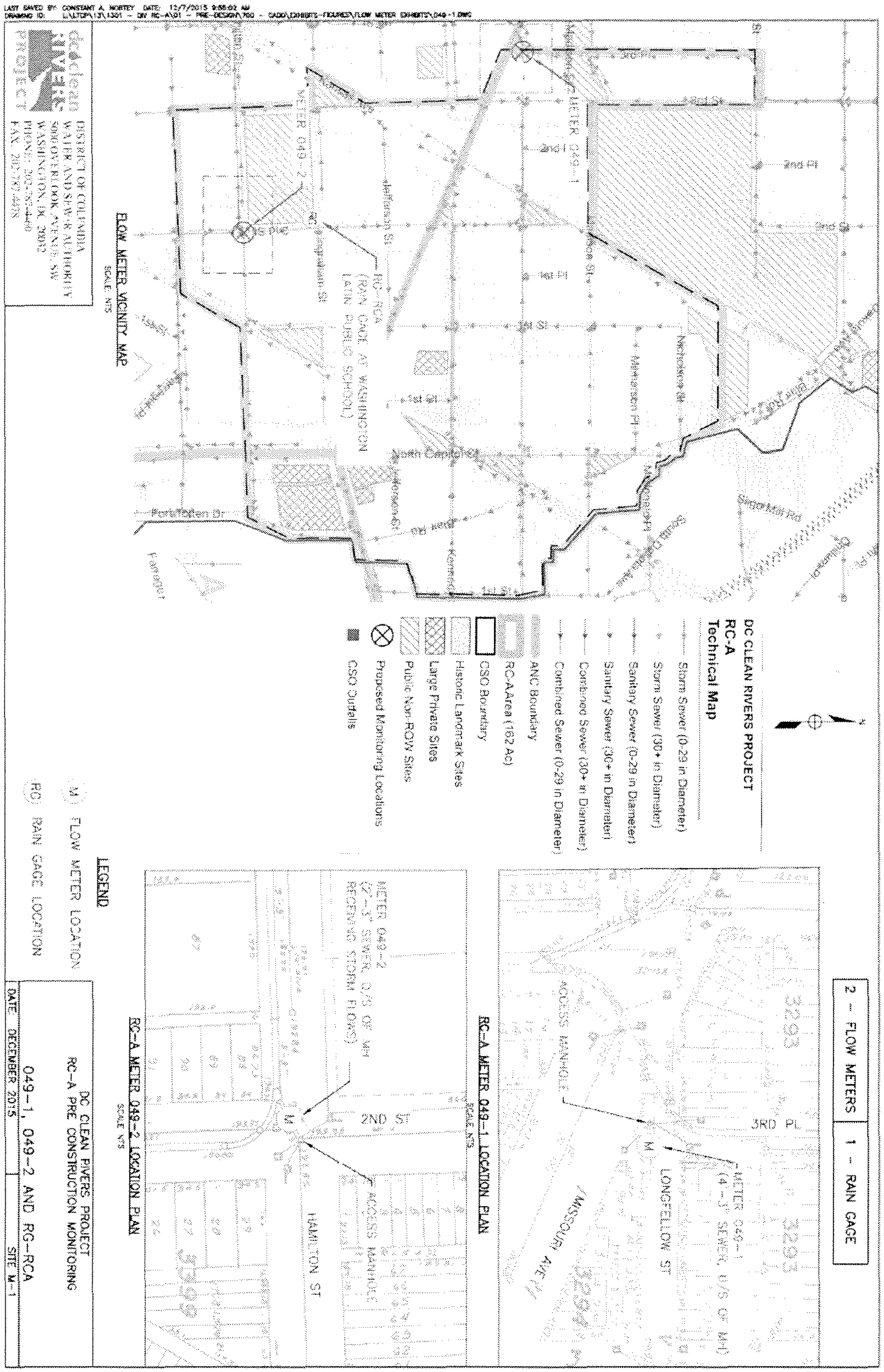


Dimension Structure Detail (pipe profile)



Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



Site Name/Manhole # 049-2 Primary: ☒ Alternate: ☐

Investigation Date: 12/16/15 Time: 7:40 Crew Members: CL/MH

Installation Date: 12/29/15 Time: 15:30 Crew Members: CL/MM

Address/Location: Intersection of Hamilton Street NW and 2nd Street NW

Latitude: N 38°57'11.9" Longitude: W 77°00' 48.7"

Weather Conditions: Wet [✓ Dry]

CSL Services, Inc.

Hydraulic Conditions

Influent Flow:

Velocity 1.50 ft/sec

Depth 1.25 in

Turbulence Amplitude:

- ☐ Less than 0.25"
- ☐ [✓ 0.25" to 0.75"]
- ☐ 0.75" to 1.5"
- ☐ 1.5" to 3"
- ☐ Greater than 3"

Sewer Line Characteristics: *Inf. #6: 15" Dry Pipe at top*

	Infl 1	Infl 2	Infl 3	Infl 4	Infl 5	Effluent
Height	24.75"	18"	15"	12"	15"	36"
Width	24.75"	18"	15"	12"	15"	24"
Material	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round	Round	Oval

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: ____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *Not during rush hour traffic hours*

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 13' 10"

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ [✓ Influent] ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

☐ [✓ Yes] ☐ No ☐ Maybe

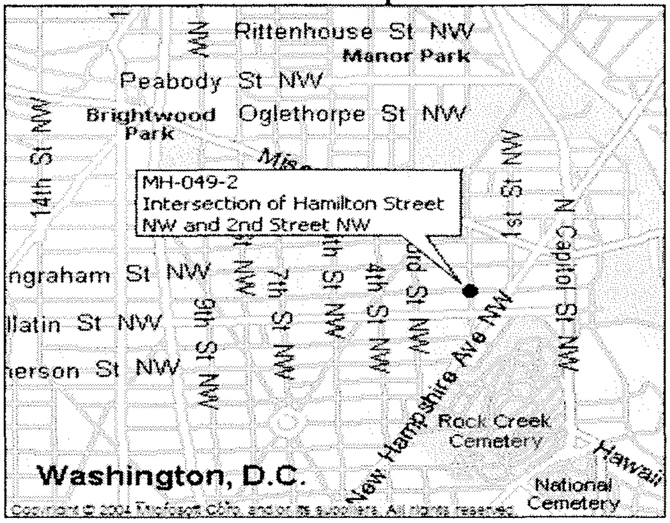
Sensor Configuration:

(Please include Serial Numbers when possible)

Level	Primary: Flowav	
	Redundant:	
Velocity	Primary: Flowav	
	Redundant:	
Meter Logger	Telog	

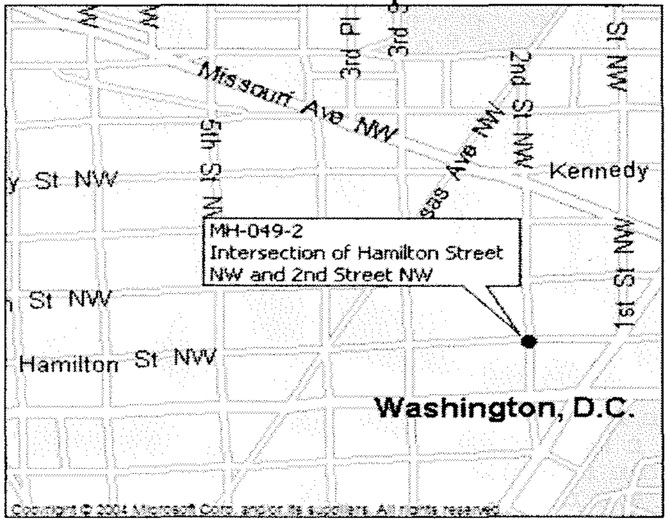
Comments:

Area Map



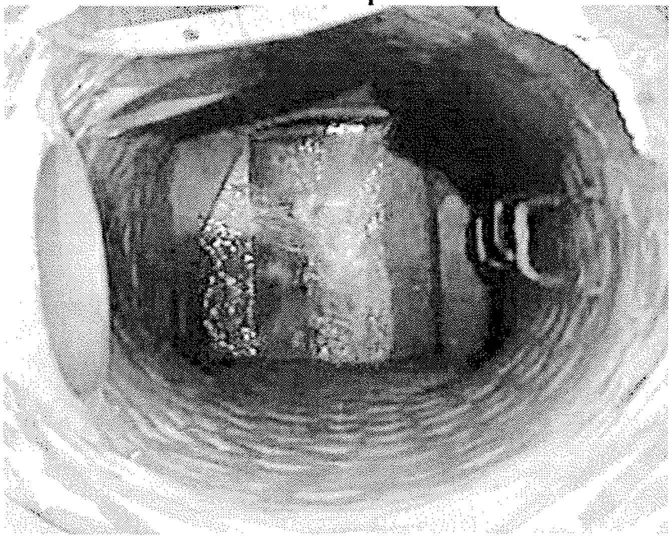
MH-049-2
Intersection of Hamilton Street NW and 2nd Street NW

Detail Map



MH-049-2
Intersection of Hamilton Street NW and 2nd Street NW

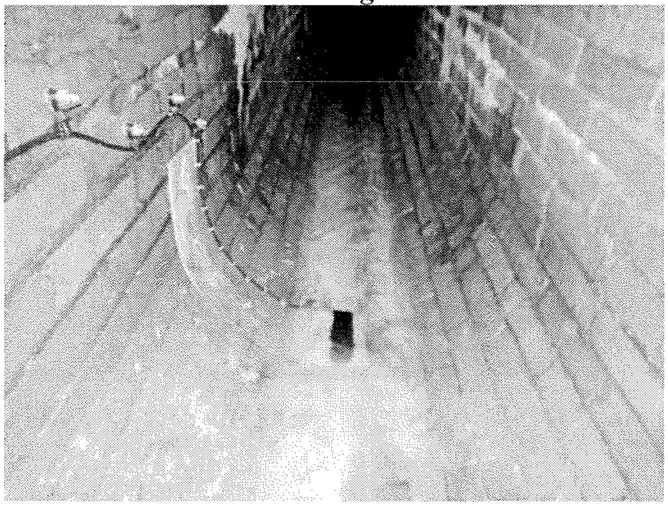
View from top of MH



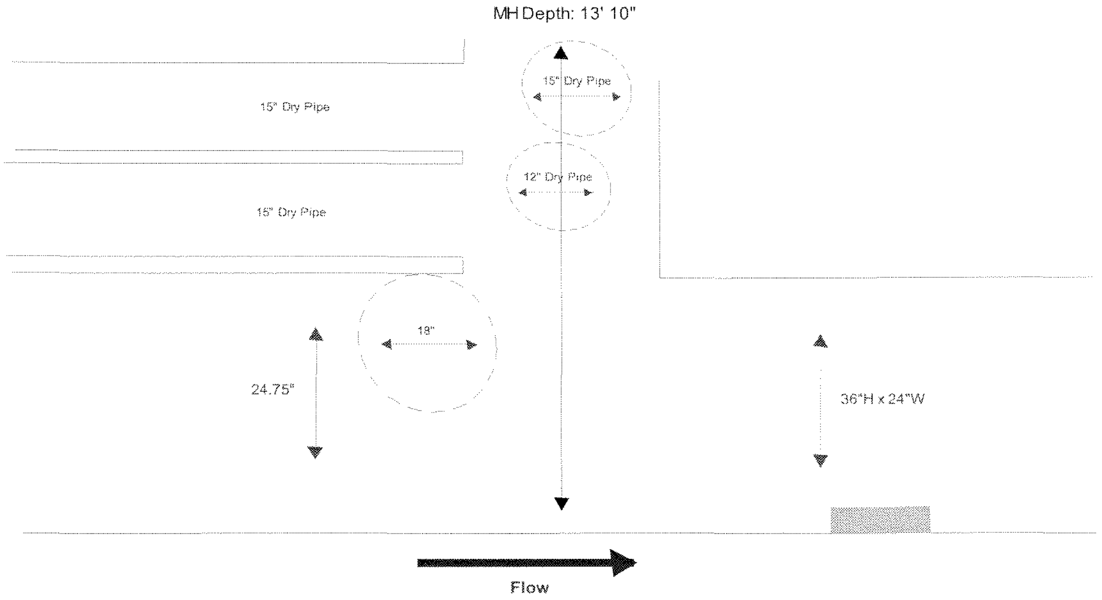
Site Overview

View of flow through influent line

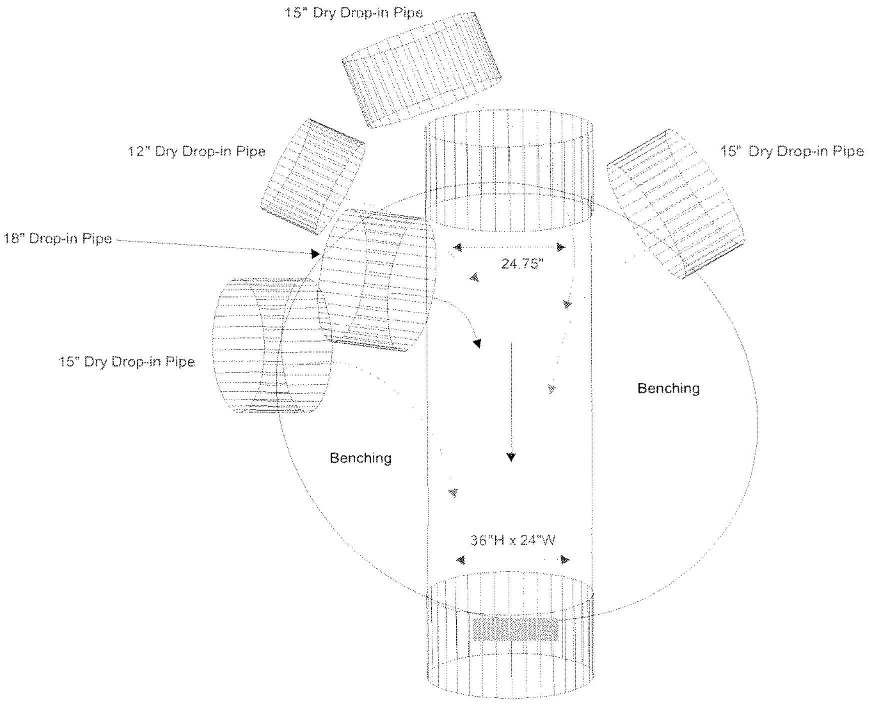
View of flow through effluent line



Dimensional Structure Profile View (profile sketch showing location of sensors)

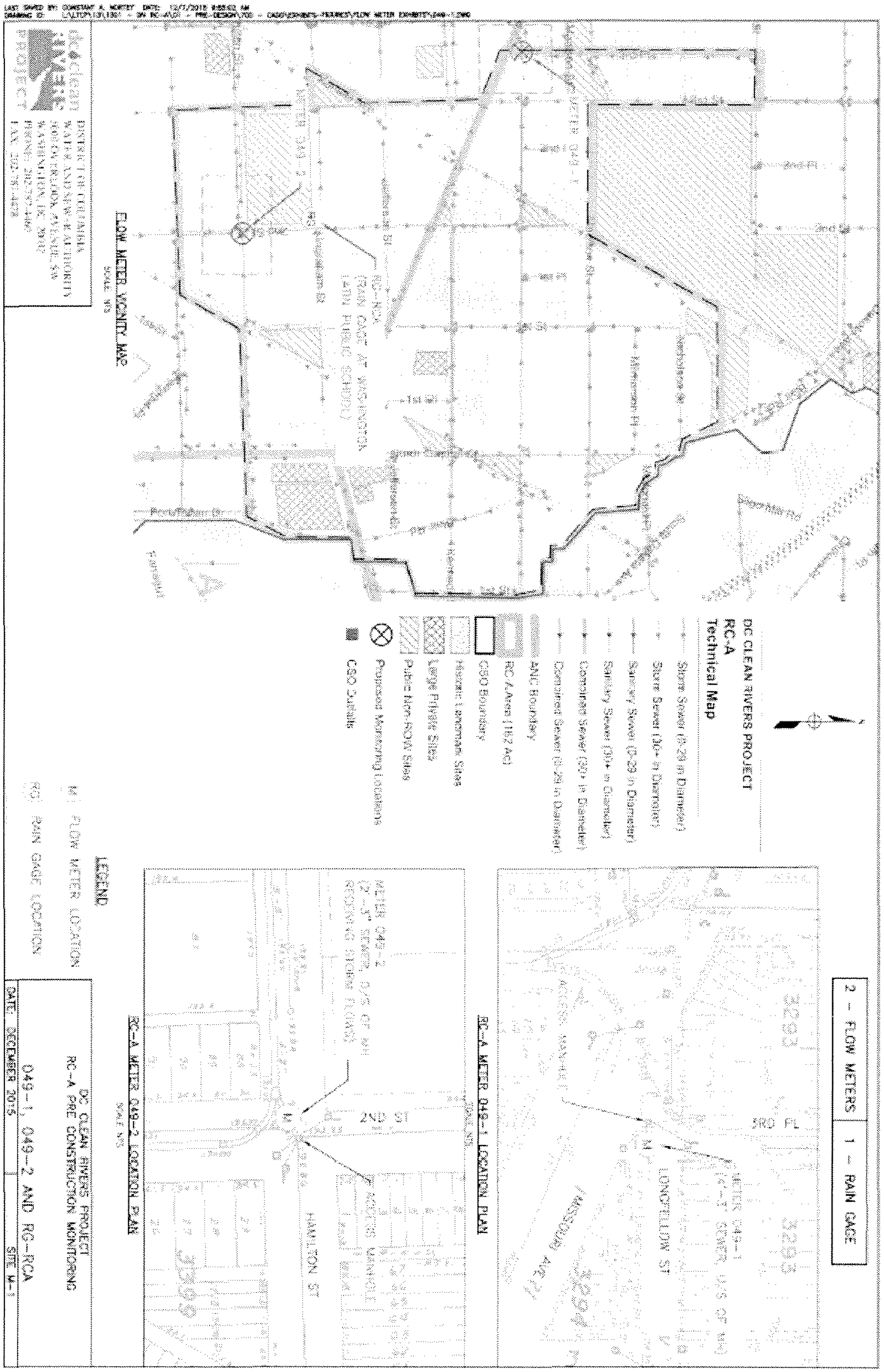


Dimension Structure Detail (pipe profile)



Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



Site Name/Manhole # 049-3 Primary: ☒ Alternate: ☐

Investigation Date: 1/6/16 Time: 12:20 Crew Members: CL/MH

Installation Date: 1/20/16 Time: 10:15 Crew Members: CL/MH

Address/Location: 6 Hamilton St NW (in the crosswalk)

Latitude: N 38° 57’ 12.4” Longitude: W 77° 00’ 33.5”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 0.40 ft/sec

Depth 1.25 in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Influent 3	Effluent
Height	15”	12”’	15”	15”
Width	15”	12”	15”	15”
Material	Clay	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round

Sediment Present: *US*

☐ [✓ Yes] Hard packed: ____________ in. deep

☐ No Soft: 0.25 in. deep

Surcharge / Backwater Influence:

- ☐ No evidence visible
- ☐ Remains in pipe
- ☐ [✓ 3 ft from rim]
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: ____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *in crosswalk at traffic light, use cones*

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 11’ 9”

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

☐ [✓ Yes] ☐ No ☐ Maybe

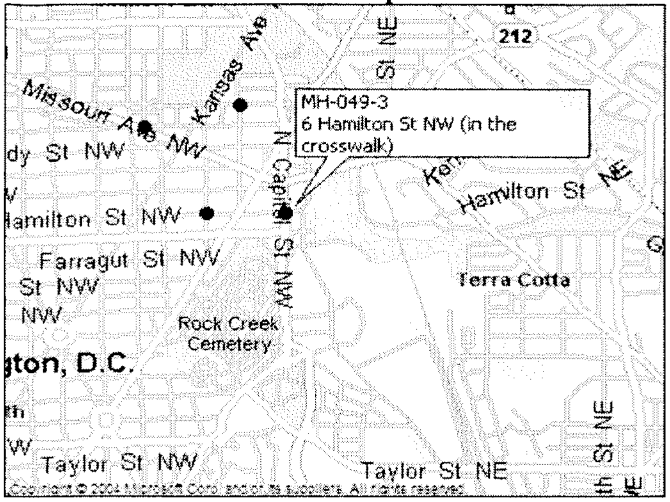
Sensor Configuration:

(Please include Serial Numbers when possible)

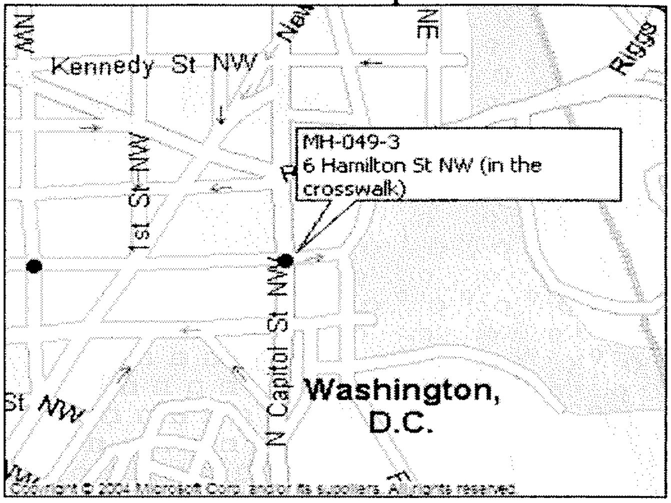
Level	Primary:	Isco A/V
	Redundant:	
Velocity	Primary:	Isco A/V
	Redundant:	
Meter Logger	Telog	

Comments:

Area Map


MH-049-3
6 Hamilton St NW (in the crosswalk)

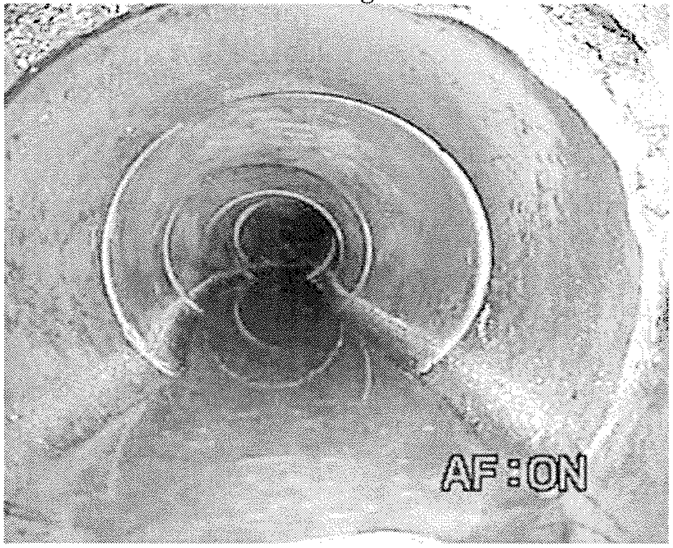
Detail Map


MH-049-3
6 Hamilton St NW (in the crosswalk)

View from top of MH

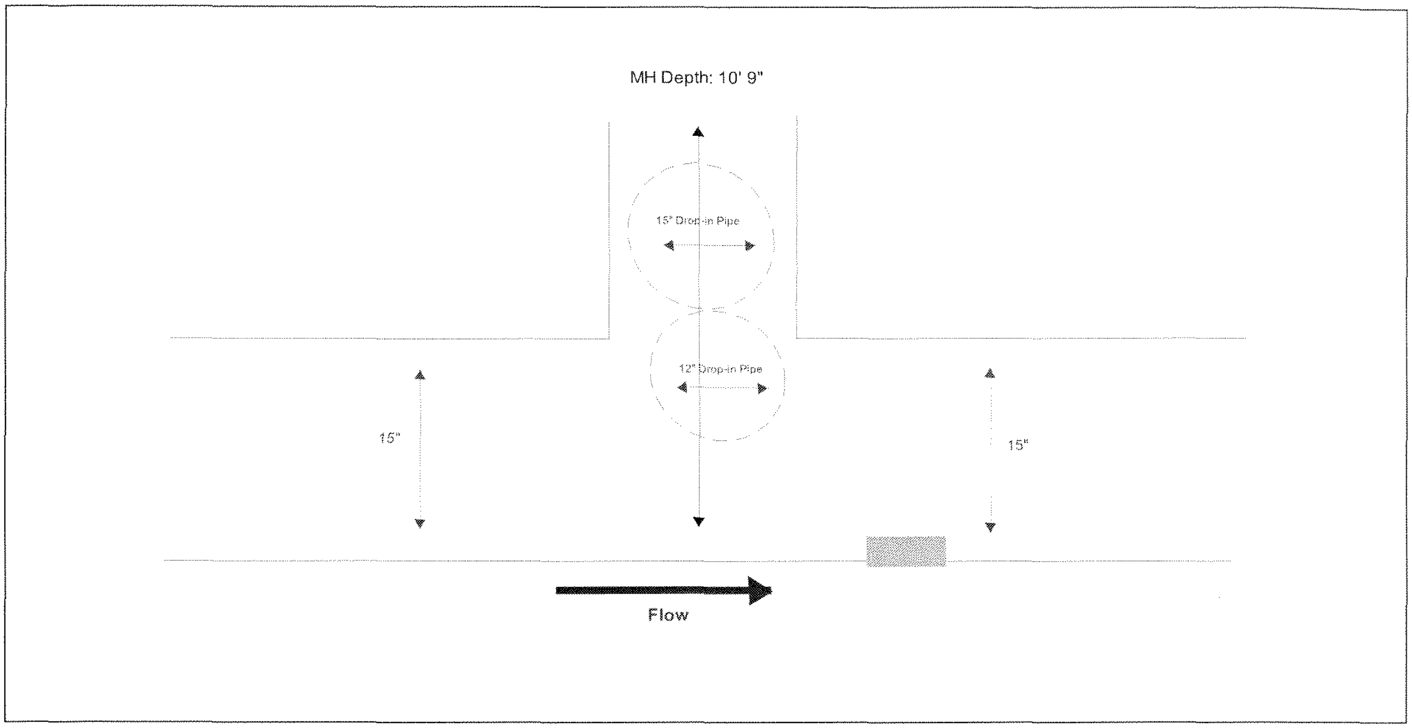
Site Overview

View of flow through influent line

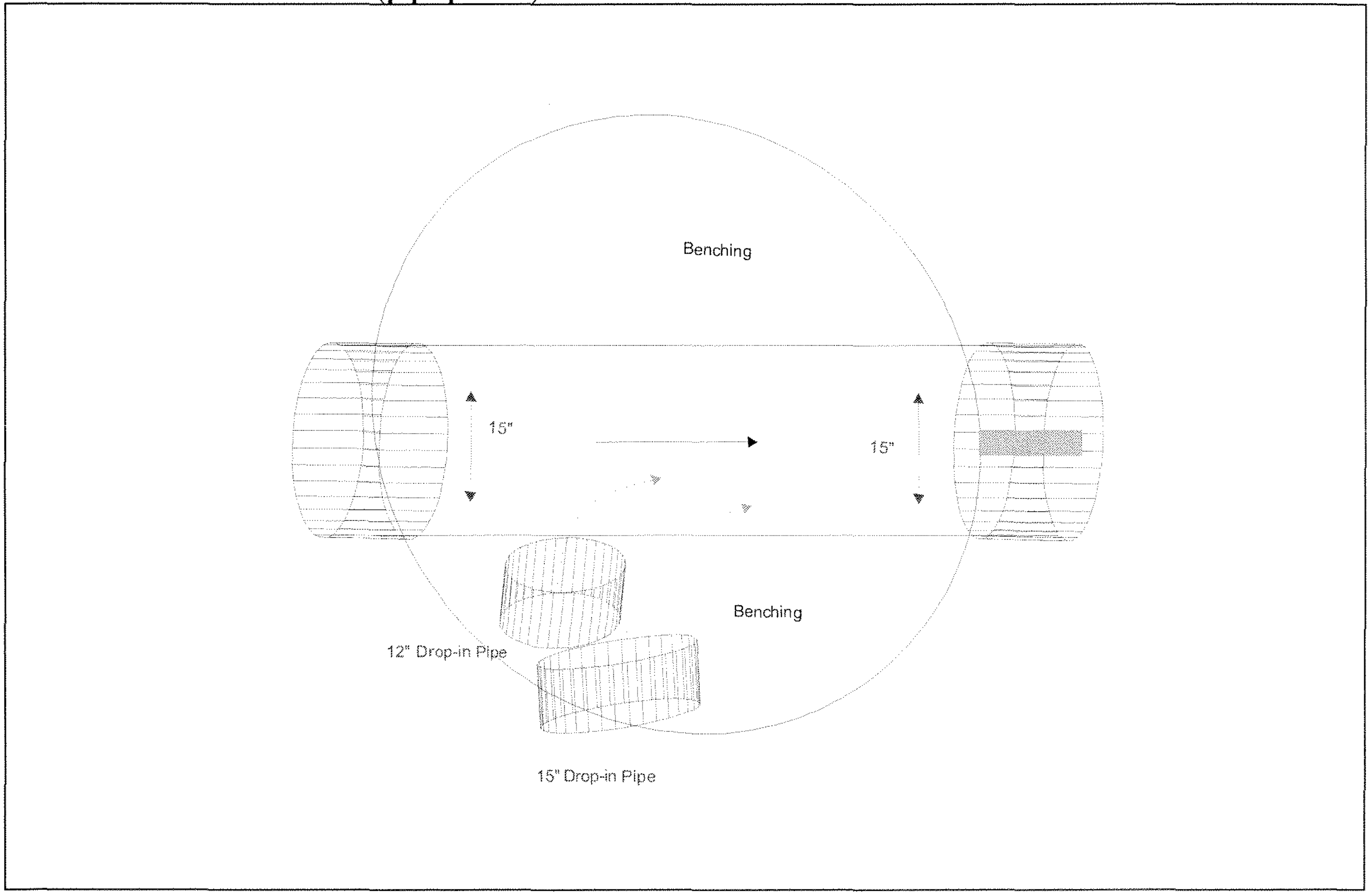


View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

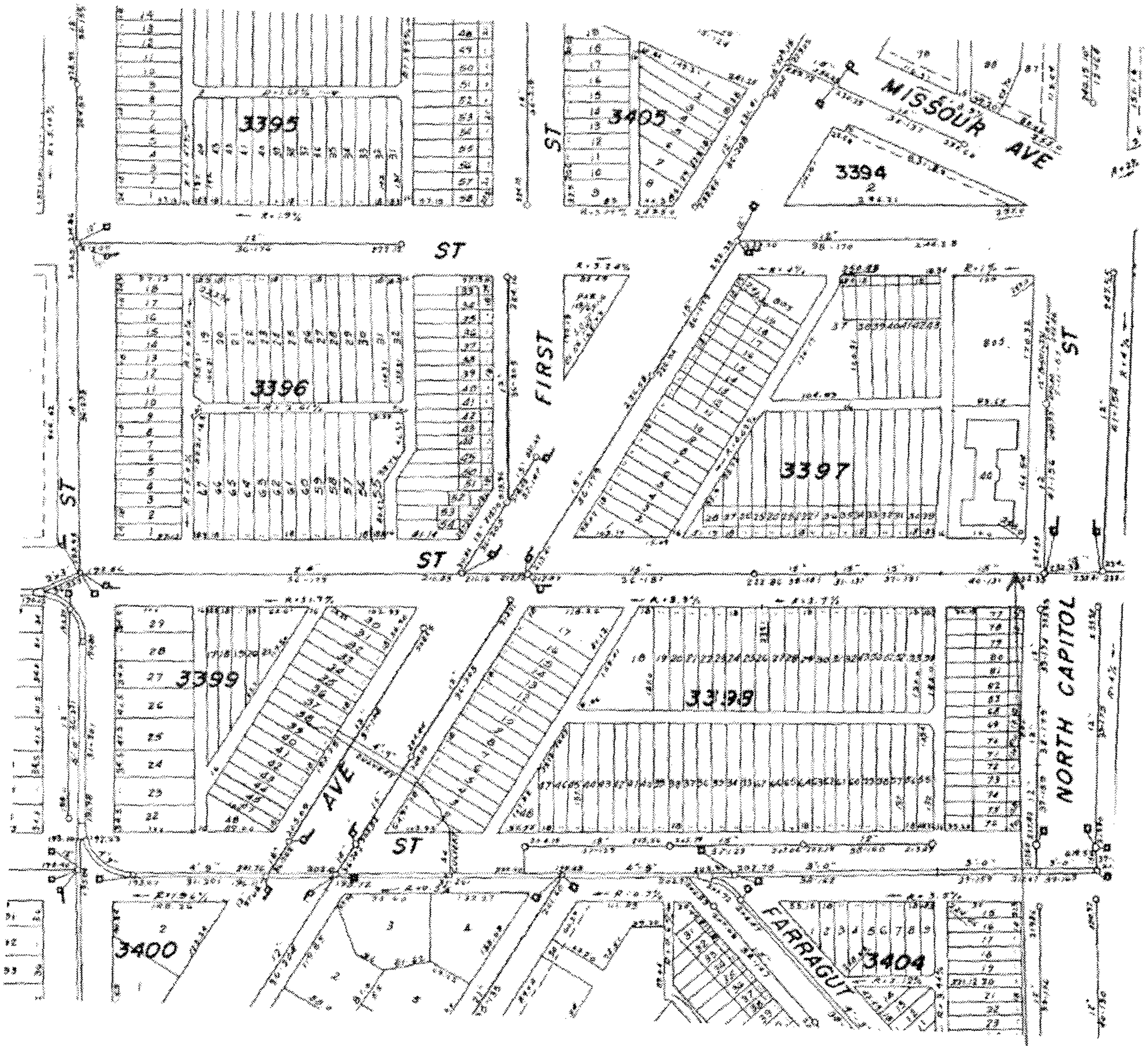


Dimension Structure Detail (pipe profile)



Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



049-3
(15" SEWER, D/S OF STORM CONNECTIONS)

Site Name/Manhole # 049-4 Primary: ☒ Alternate: ☐

Investigation Date: 1/6/16 Time: 2:30 Crew Members: CL/MH

Installation Date: 1/20/16 Time: 12:10 Crew Members: CL/MH

Address/Location: In the intersection of 1st Street NW and Madison Street NW

Latitude: N 38° 57' 31.6" Longitude: W 77° 00' 41.7"

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 2.25 ft/sec

Depth 0.25 in

Turbulence Amplitude:

- ☐ Less than 0.25"
- ☐ [✓ 0.25" to 0.75"]
- ☐ 0.75" to 1.5"
- ☐ 1.5" to 3"
- ☐ Greater than 3"

Sewer Line Characteristics:

	Influent 1	Influent 2	Effluent
Height	10"		21"
Width	10"		21"
Material	Clay		Clay
Shape	Round		Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep
☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ No evidence visible
- ☐ Remains in pipe
- ☐ [✓ 5 ft from rim]
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: ____________ ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *middle of intersection*

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 10' 10"

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ [✓ Influent] ☐ Effluent ☐ Manhole

Approx Distance to change: 2'

(detail is comments)

Crew Member: Can you maintain this site?

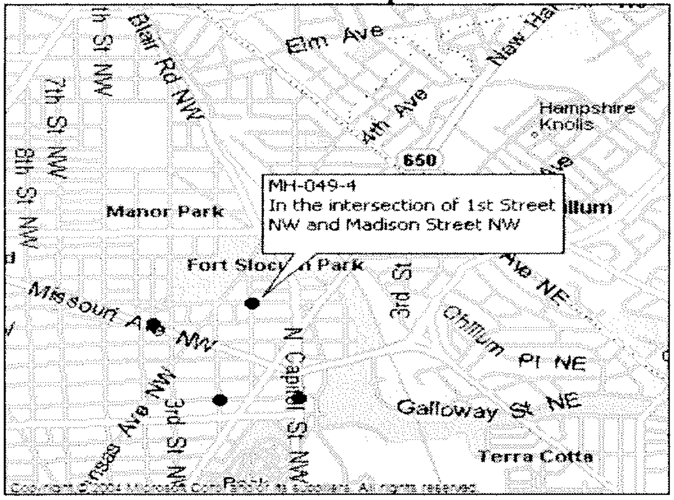
☐ [✓ Yes] ☐ No ☐ Maybe

Sensor Configuration:
(Please include Serial Numbers when possible)

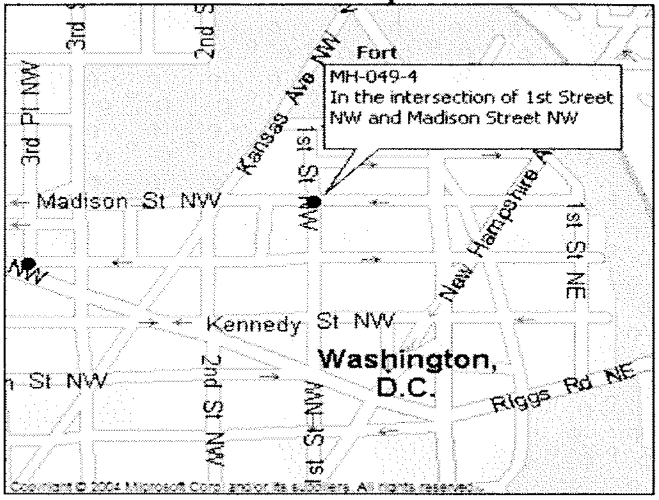
Level	Primary:	Flowav
	Redundant:	
Velocity	Primary:	Flowav
	Redundant:	
Meter Logger	Telog	

Comments:

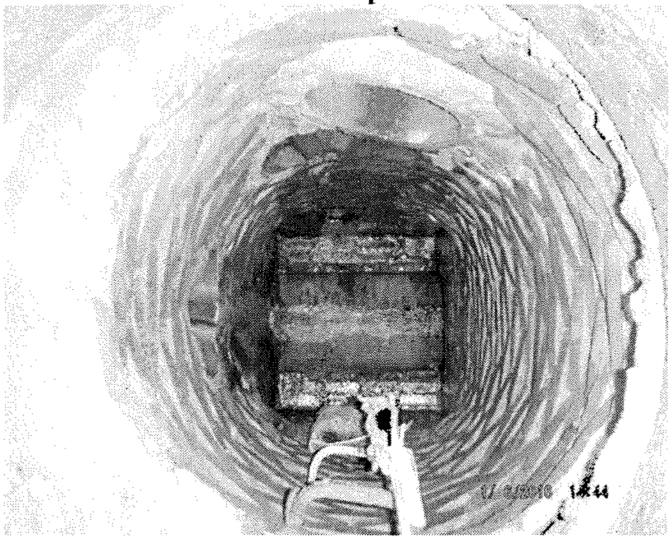
Area Map



Detail Map



View from top of MH

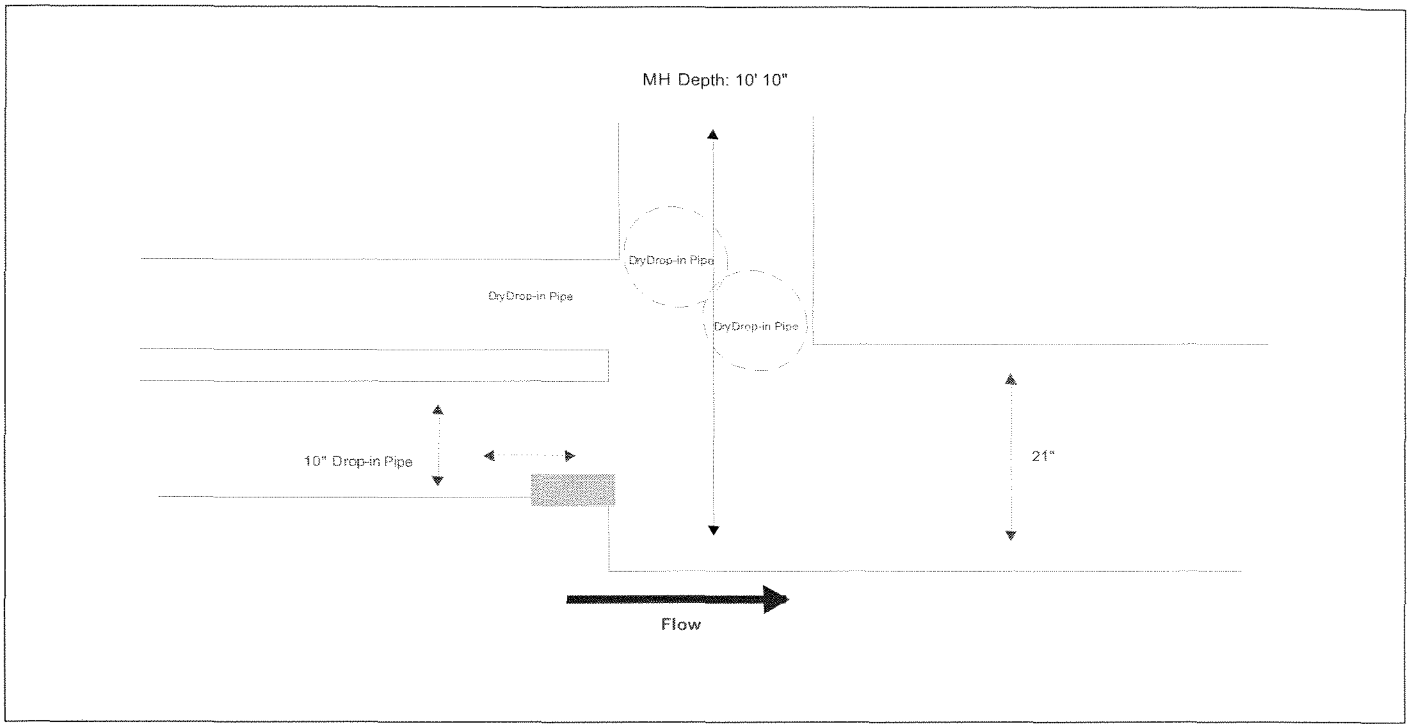


Site Overview

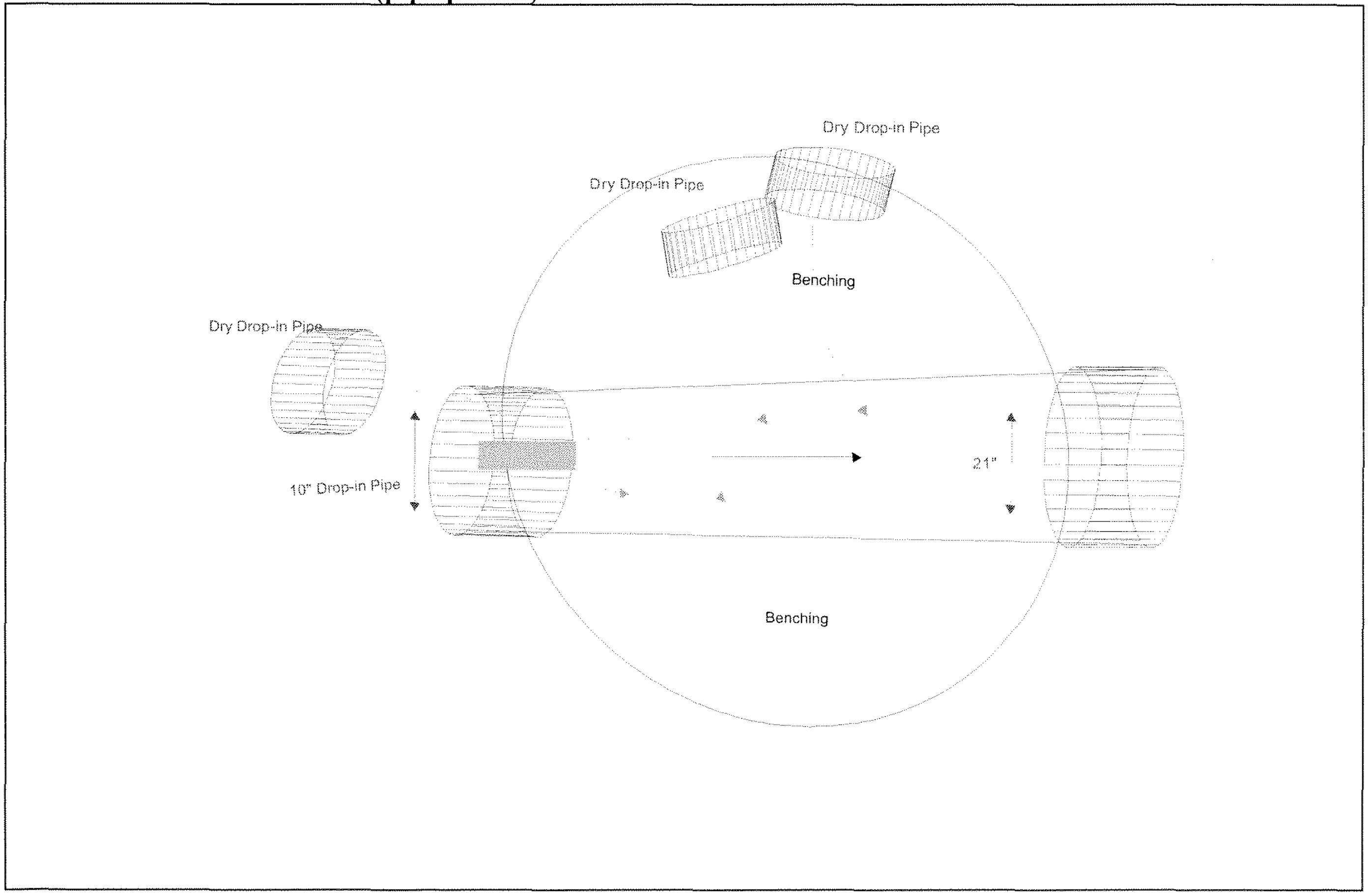
View of flow through influent line

View of flow through effluent line

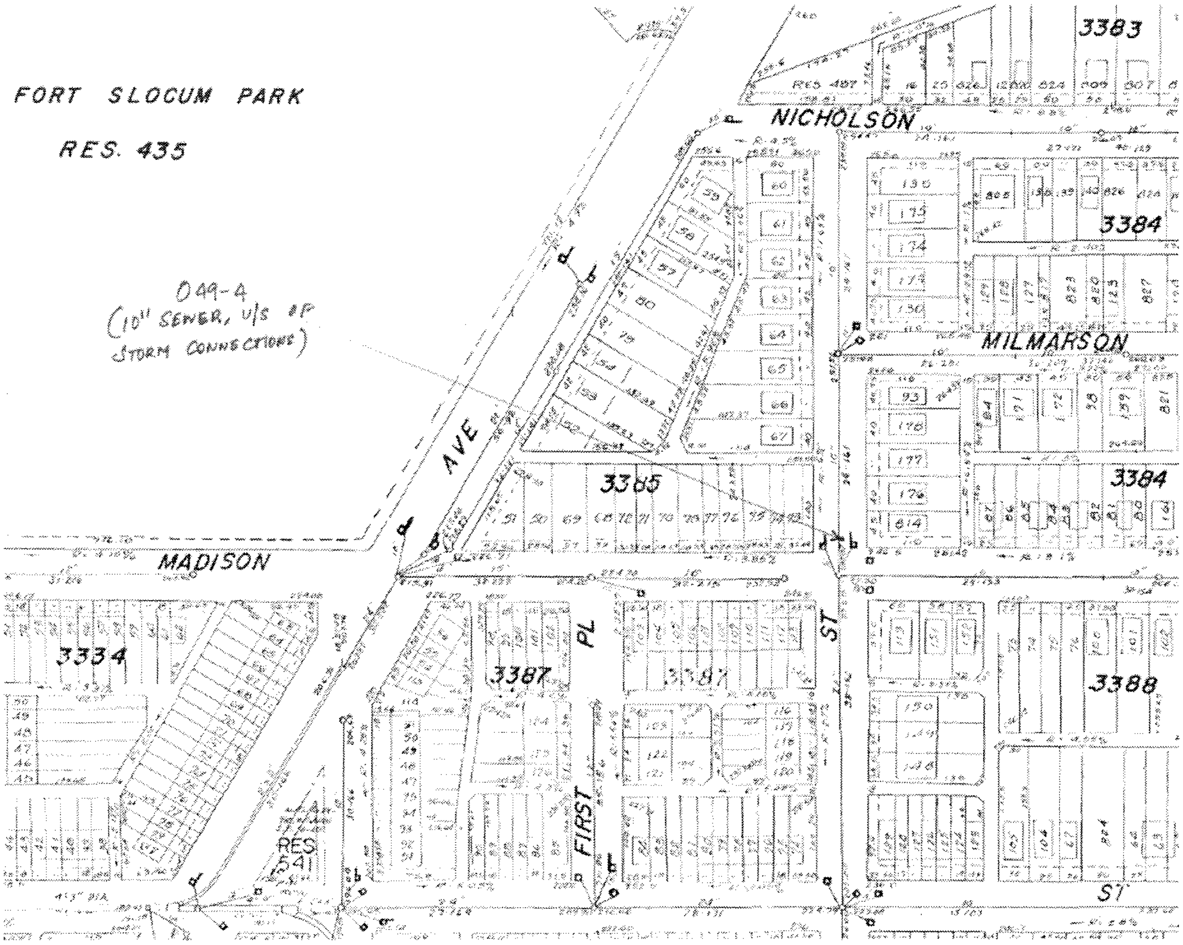
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)



Site Location Plan View
Sketch or plat showing upstream and downstream manholes, connections, and bends.



Appendix B Groundwater Well Installation

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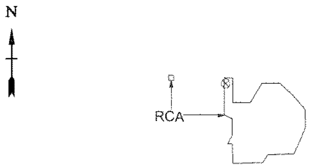

Log of Boring RCAGI-01

PROJECT: **DC Clean Rivers Project- Green Infrastructure**

PROJECT LOCATION: **WASHINGTON DC** COORD. SYS./DATUM: **MD NAD 83/NAVD88**

PROJECT NUMBER: **DCFA # 421-WSA** COORDINATES: **N 471305.7 E 1307486.6**

DATE STARTED: **11/20/2015**	DRILL METHOD: **Air Knife**
DATE COMPLETED: **11/25/2015**	HAMMER TYPE/WEIGHT: **NA/NA**
LOGGED BY: **A. Shah/ M. Lewis**	CASING TYPE: **NA**
CHECKED BY: **K. Bell**	CASING SIZE: **NA**
DRILLING CONTRACTOR: **SALUT**	BIT TYPE/SIZE: **NA/ NA**
DRILL RIG: **Vac Truck**	BOREHOLE DEPTH: **7.5 FT**
DRILLER: **Daniel Pilachowski**	SURFACE ELEVATION: **199.50 FT**

Groundwater Observations

	Date	Time	Depth (ft)	Casing Depth (ft)
Encountered ▽	11-20-2015	-	DRY	-
24-hour ▼	11-23-2015	-	DRY	-

DEPTH (FT)	ELEV. (FT)	DESCRIPTION	USCS	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES DCP BLOWS (PER 1.75")	SAMPLES REC (IN.) (%)	MOISTURE CONTENT ATTERBERG MC ○ PL △ LL □ (20 40 60 80)	Hydrologic Soil Group	Infiltration Rate (inches/hr)	REMARKS AND TESTS
		Asphalt (0.0' - 0.2')									
		Concrete (0.2' - 0.75')									
		Moist, gray with streaks of brown, fine to coarse, SILTY SAND, estimated 15 - 25% fines	SM								
2.5	197.5	Moist, gray with streaks of brown, low plasticity, SANDY LEAN CLAY, estimated 30 - 45% fine to coarse sand, contains streaks of black	CL	B-1	⧗	5-5-2	8" (100%)	△○-□	D		
		Moist, gray with streaks of brown, fine to coarse, CLAYEY SAND WITH GRAVEL, estimated 30 - 45% fines, estimated 15 - 25% fine gravel	SC	B-2	⧗	3-4-8	8" (100%)				
5.0	195.0										
				B-3	⧗		8" (100%)				
7.5	192.5			B-4	⧗		6" (100%)	△□	A	1.2	7.0': Sample B-4 taken after infiltration test.

BORING COMPLETED AT 7.5 FT ON 11/25/2015 AT 1100 HOURS.
Upon completion, set 5" PVC pipe for infiltration test. Infiltration test performed on 11/24/2015. Installed 2" PVC monitoring well with 0.020" well screen placed from 2' to 7' on 11/25/2015.

Note 1:
Soil Samples were field screened for soil vapors using a MultiRAE 4-gas meter at 2', 4' and 6'. Screening for VOC's, LEL, and H2S are "Not Detected", and O2 was 20.9% unless otherwise noted.
Note 2:
Hydrologic soil group based on USDA classfication at the depth of the group letter. Refer to Tables 2 and 4 of the GDR.

B = Bulk Sample	S = Split Spoon Sample	D = Denison Sample
G = Geoprobe	T = Shelby Tube Sample	RC = Rock Core
	P = Pitcher Sample	SC = Sonic Core

EXHIBIT E

Form of Opinion of DC Water's General Counsel

September 29, 2016

District of Columbia Water and Sewer Authority
5000 Overlook Avenue, S.W.
Washington, D.C. 20032

$25,000,000
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Public Utility Subordinate Lien Multimodal Revenue Bonds
Series 2016B
(Environmental Impact Bonds)

Ladies and Gentlemen:

I am the General Counsel to the District of Columbia Water and Sewer Authority (the "Authority") and, in connection with the issuance by the Authority of its Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds), in the original principal amount of $25,000,000 (the "Series 2016B Bonds"), I have reviewed an executed copy of the Private Placement Agreement, dated September 28, 2016, between the Authority, Goldman, Sachs & Co. and Calvert Social Investment Foundation, Inc., with respect to the Series 2016B Bonds (the "Private Placement Agreement"). Capitalized terms used and not defined herein shall have the respective meanings given to such terms in the Private Placement Agreement.

I have also examined an act of the Council of the District of Columbia entitled the "Water and Sewer Authority Establishment and Department of Public Works Reorganization Act of 1996," codified, as amended, at District of Columbia Official Code Ann. Sections 34-2201.01 *et seq.*, and the acts amendatory thereof and supplemental thereto (the "Act"), and an act of the United States Congress entitled the "District of Columbia Water and Sewer Authority Act of 1996" (Public Law 104-184), as amended (the "Federal Act"), certified copies of proceedings of the Authority authorizing the issuance of the Series 2016B Bonds, including the Resolution and such other proceedings as I have considered necessary or advisable to render the following opinions.

In rendering the following opinions, I have relied on representations of the Authority as to matters of fact without independent investigation or verification and, as to matters of law, the representations of Bond Counsel without independent research or verification and have assumed the genuineness of all signatures, the authenticity of all documents tendered to me as originals and the conformity to original documents of all documents submitted to me as certified or photostatic copies.

Based upon review of the materials described above and subject to the recitals and qualifications herein contained, to the best of my knowledge, information and belief, it is my opinion that:

1. The Authority is a body corporate duly created, organized and validly existing as an independent authority of the District under the Act and under the Federal Act (the Act and the Federal Act being sometimes hereinafter referred to as, the "Acts"). The Authority has the full legal right, power and authority to (i) adopt the Resolution, (ii) issue the Series 2016B Bonds, (iii) execute, deliver and perform its obligations under the Bond Documents, and (iv) perform its obligations under the System Agreements.

2. The Federal Act was duly enacted by Congress and the Act was duly enacted by the Council of the District of Columbia. The Acts remain in full force and effect. The Act transferred all assets and liabilities of the Water and Sewer Utility Administration ("WASUA") as indicated on the balance sheet prepared by WASUA, effective April 17, 1996, on an interim basis for the exclusive use and possession of the Authority for so long as any revenue bonds of the Authority, including the Series 2016B Bonds, remain outstanding.

3. The Resolution was adopted by the Authority and has not been amended since the date of the adoption thereof and remains in full force and effect as of the date hereof.

4. (i) The adoption of the Resolution, the issuance of the Series 2016B Bonds, the execution and delivery of the Bond Documents and the performance of the Authority's obligations thereunder, and (ii) the performance of the Authority's obligations under the System Agreements, under the circumstances contemplated thereby, do not and will not in any material respect conflict with or constitute on the part of the Authority, a breach of or default under any agreement or other instrument to which the Authority is a party, or any existing law, administrative regulation, court order, settlement order or consent decree to which the Authority is subject.

5. There is no action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, government agency, public board or body, pending or, to the best of my knowledge, threatened against the Authority (i) seeking to prohibit, restrain or enjoin the issuance, sale or delivery of the Series 2016B Bonds, or the collection of the revenues pledged to the payment of the principal of and interest on the Series 2016B Bonds, (ii) in any way contesting or affecting any authority for the issuance of the Series 2016B Bonds or the validity, enforceability, due authorization, execution or delivery of the Series 2016B Bonds, including the Private Placement Agreement or the other Bond Documents, or the validity or enforceability of the System Agreements, (iii) questioning the tax-exempt status of the Series 2016B Bonds under the laws of the District or the United States, (iv) in any way contesting the corporate existence or powers of the Authority or the titles of the officers of the Authority to their respective offices, or (v) which may result in any material adverse change in the business or the financial condition or the financial prospects of the Authority.

6. Pursuant to the Acts, the Authority has the full legal right, power and authority to operate the System and to collect and pledge the Revenues therefrom in accordance with the Indenture.

7. The Authority has obtained the consents, approvals, authorizations or other orders required for the consummation of the transactions contemplated by the Private Placement Agreement, including the issuance of the Series 2016B Bonds.

This opinion and all documents which relate to this opinion are to be construed in accordance with the laws of the District and the United States of America. This opinion is rendered solely for the use of the Authority and may not be relied on by any other person.

Very truly yours,

General Counsel

Exhibit F

Form of Opinion of the Purchasers' Legal Counsel

September 29, 2016

$25,000,000
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds)

District of Columbia Water and Sewer Authority
5000 Overlook Avenue, S.W.
Washington, D.C. 20032

Ladies and Gentlemen:

We have acted as counsel to GSUIG Real Estate Member LLC and Calvert Social Investment Foundation, Inc., each a purchaser (collectively, the "Purchasers") in connection with their purchase from the District of Columbia Water and Sewer Authority (the "Authority") of its Public Utility Subordinate Lien Multimodal Revenue Bonds, Series 2016B (Environmental Impact Bonds), in the original principal amount of $25,000,000 (the "Bonds"), pursuant to the Private Purchase Agreement, dated September 28, 2016 (the "Purchase Agreement"), between you and the Purchasers. The Bonds are to be issued pursuant to the Master Indenture of Trust, dated as of April 1, 1998 (the "Master Indenture"), between the Issuer and Wells Fargo Bank, N.A., as trustee (the "Trustee"), as amended and supplemented, including by the Twenty-First Supplemental Indenture of Trust, dated as of the Closing Date (the "Twenty-First Supplemental Indenture," and together with the Master Indenture as previously amended and supplemented, the "Indenture"), between the Issuer and the Trustee. The proceeds of the Bonds will be used to (i) pay a portion of the costs of the Project, and (ii) pay costs of issuing the Bonds. Capitalized terms not otherwise defined herein shall have the meanings ascribed thereto in the Purchase Agreement.

In that connection, we have reviewed the Indenture, the Purchase Agreement, certificates of the Authority, the Trustee and others, the opinions referred to in paragraph 6(f) of the Purchase Agreement, and such records and documents, and we have made such investigations of law, as we have deemed appropriate as a basis for the opinions and conclusions hereinafter expressed.

The opinions expressed herein are based on an analysis of existing laws, regulations, rulings and court decisions and cover certain matters not directly addressed by such authorities. Such opinions may be affected by actions taken or omitted or events occurring after the date hereof. We have not undertaken to determine, or to inform any person, whether any such actions are taken or omitted or events do occur or any other matters come to our attention after the date hereof. Accordingly, this opinion speaks only as of its date and is not intended to, and may not, be relied upon or otherwise used in connection with any such actions, events or matters. Our engagement with respect to the Bonds has concluded with their issuance, and we disclaim any obligation to update this letter. We have assumed the genuineness of all documents and signatures presented to us (whether as originals or as copies) and the due and legal execution and delivery thereof by, and validity against, any parties other than the Purchasers. We have assumed, without undertaking to verify, the accuracy of the factual matters represented, warranted or certified in the documents, and of the legal conclusions contained in the opinions, referred to in the second paragraph hereof. We call attention to the fact that the rights and obligations under the Purchase Agreement and their enforceability may be subject to bankruptcy, insolvency, receivership, reorganization, arrangement, fraudulent conveyance, moratorium and other laws relating to or affecting creditors' rights, to the application of equitable principles, and to the exercise of judicial discretion in appropriate cases. We express no opinion with respect to any indemnification, contribution, liquidated damages, penalty (including any remedy deemed to constitute a penalty), right of set-off, arbitration, choice of law, choice of forum, choice of venue, non-exclusivity of remedies, waiver or severability provisions contained in the foregoing documents, nor do we express any opinion with respect to the state or quality of title to or interest in any of the real or personal property described in or as subject to the lien of the Indenture or the accuracy or sufficiency of the description contained therein of, or the remedies available to enforce liens on, any such property. Our services did not include financial or any other non-legal advice.

Based on and subject to the foregoing, and in reliance thereon, as of the date hereof, we are of the following opinion:

1. The Purchase Agreement, when duly executed and delivered by the Purchasers, will constitute the legal, valid and binding obligation of Purchasers.

We are furnishing this letter to you pursuant to paragraph 6(g) of the Purchase Agreement solely for your benefit as the Authority. We disclaim any obligation to update this letter. This letter is not to be used, circulated, quoted or otherwise referred to or relied upon for any other purpose or by any other person. This letter is not intended to, and may not, be relied upon by owners of Bonds or by any other party to whom it is not specifically addressed.

Very truly yours,

ORRICK, HERRINGTON & SUTCLIFFE LLP

Appendix B Model Calibration Plots

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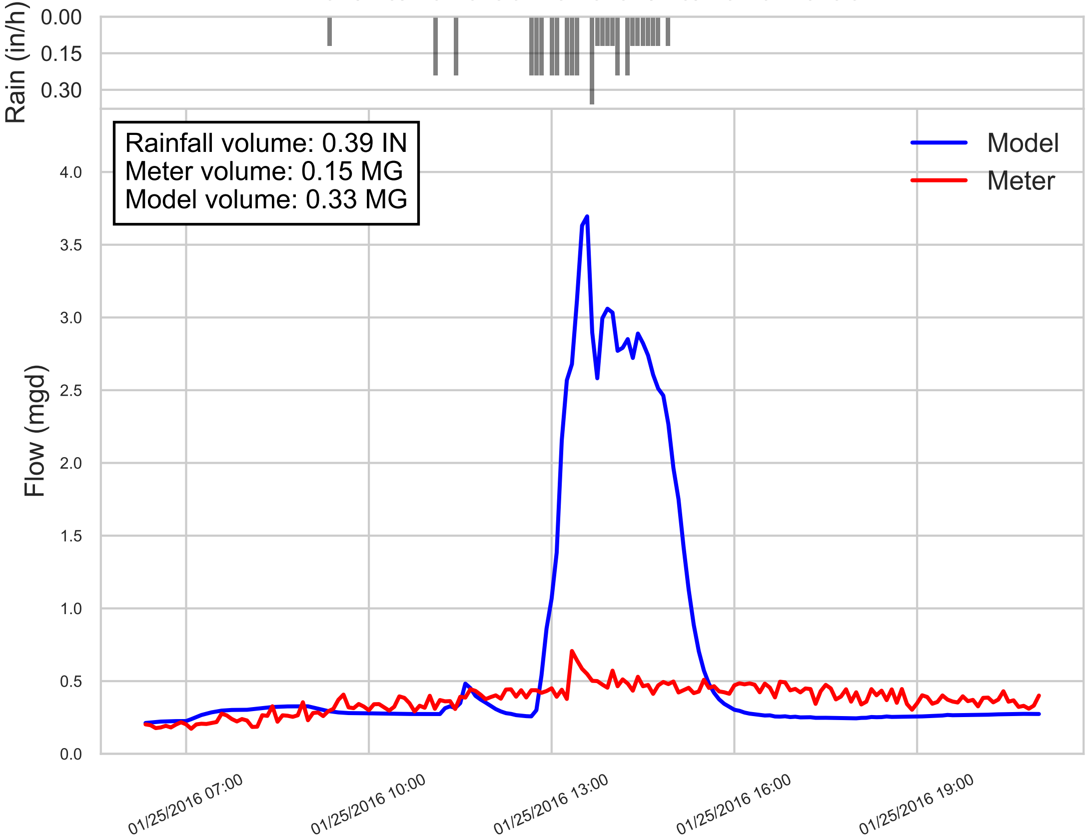
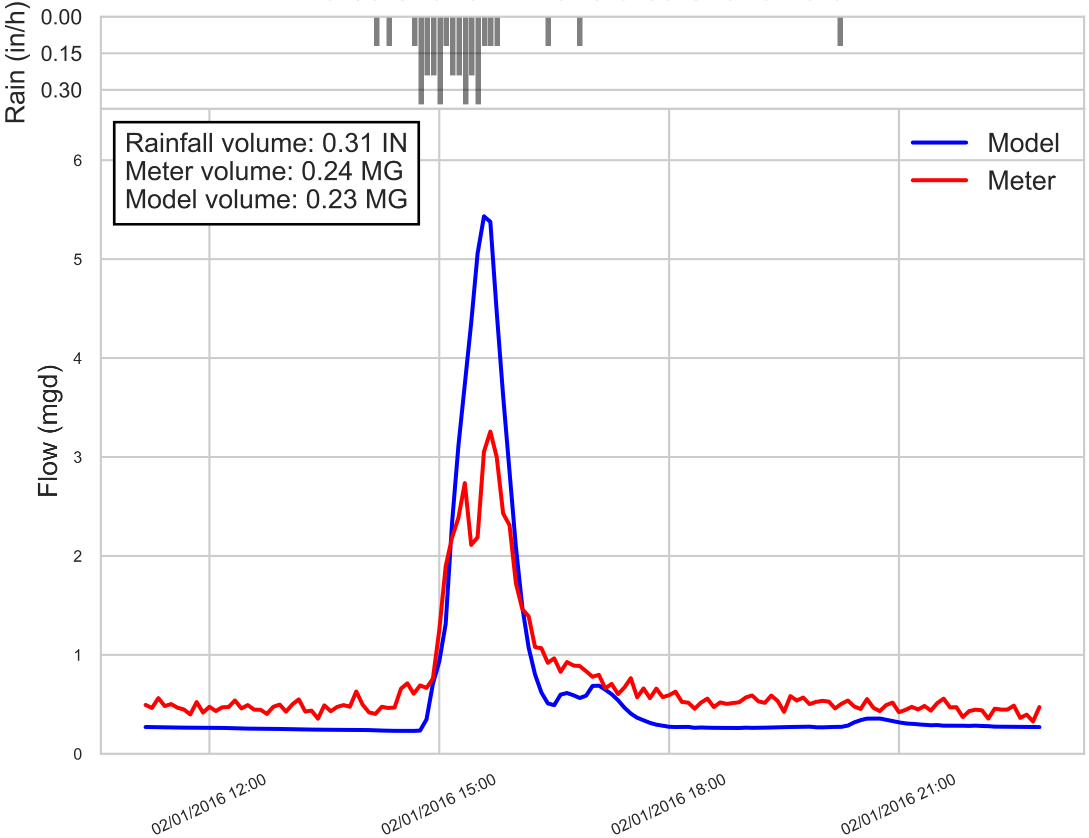
RC-A

Pre-Construction Model Calibration Plots

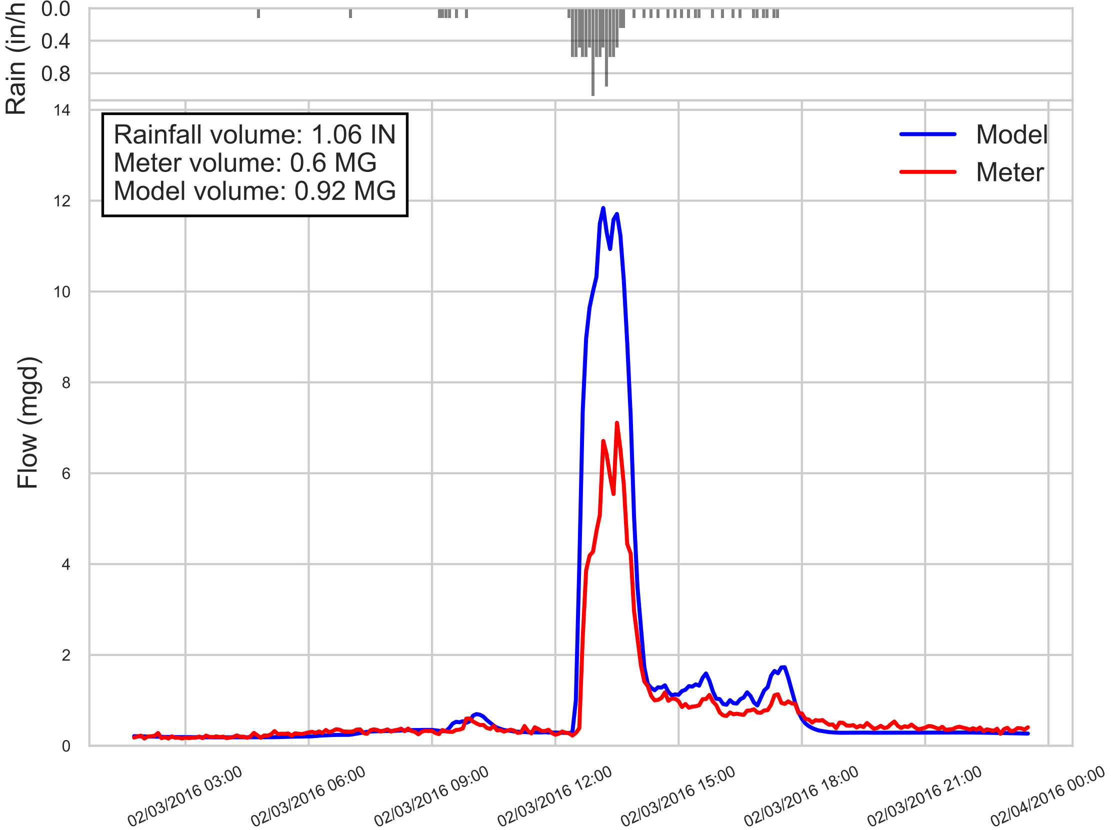
Wet Weather Event 1 for Meter 049-1
01/25/2016 09:20 to 01/25/2016 18:00

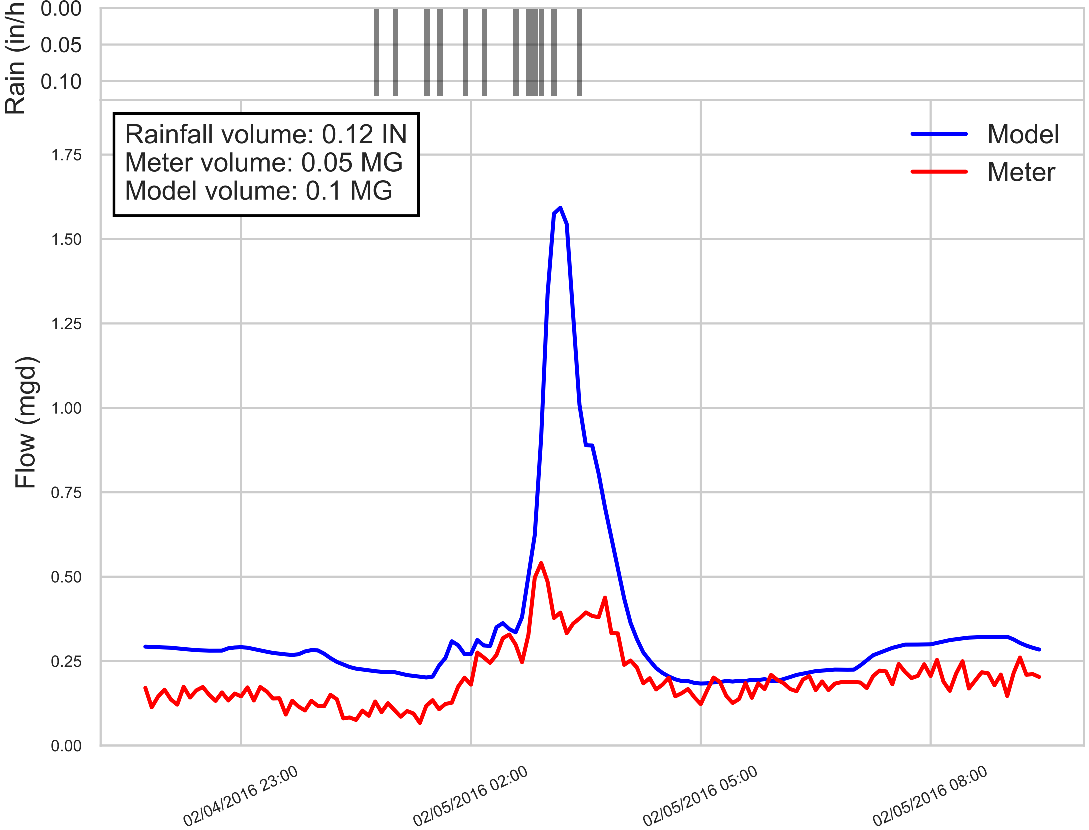


Wet Weather Event 2 for Meter 049-1
02/01/2016 14:10 to 02/01/2016 19:54


Rainfall volume: 0.31 IN
Meter volume: 0.24 MG
Model volume: 0.23 MG

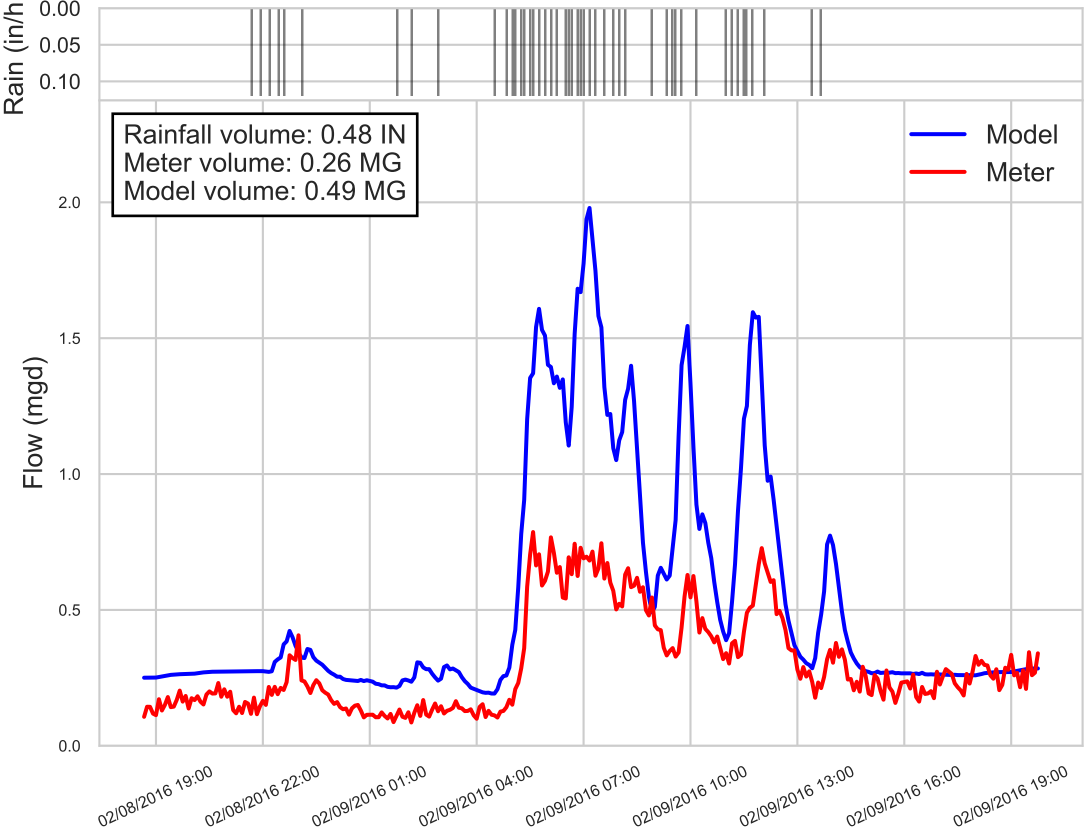
Wet Weather Event 3 for Meter 049-1
02/03/2016 04:45 to 02/03/2016 20:30

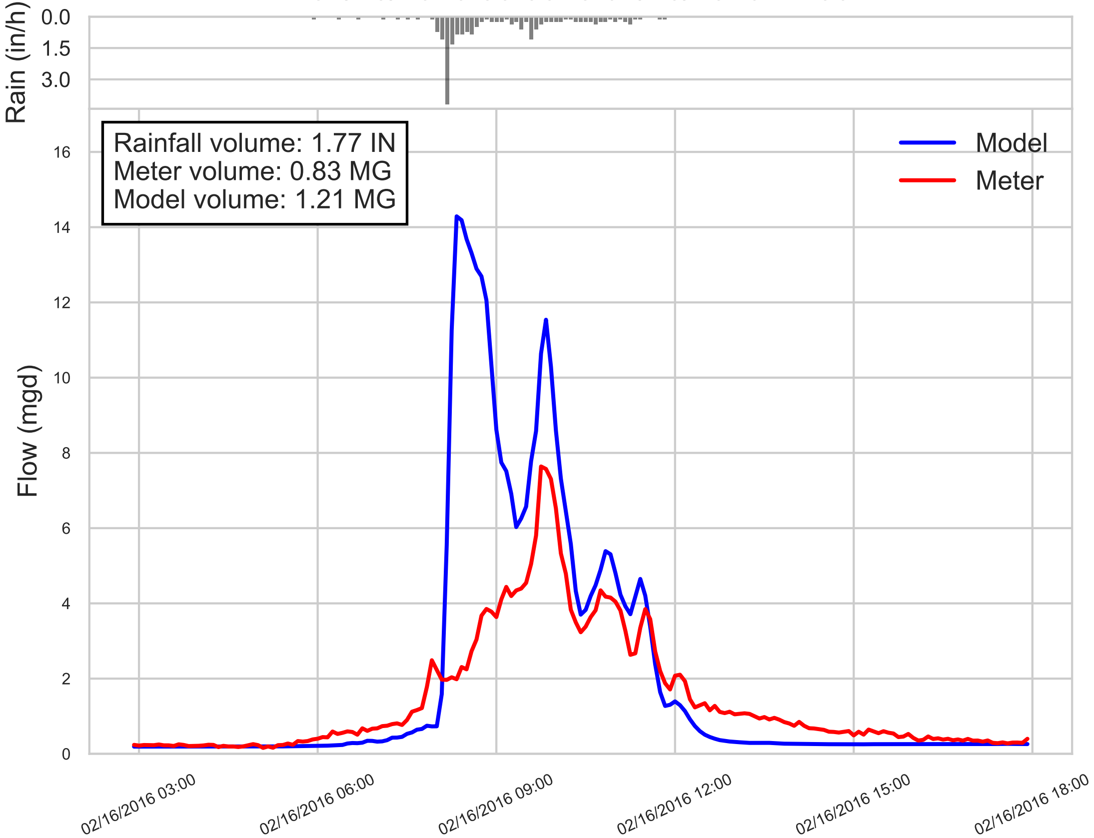




Wet Weather Event 4 for Meter 049-1
02/05/2016 00:45 to 02/05/2016 06:29

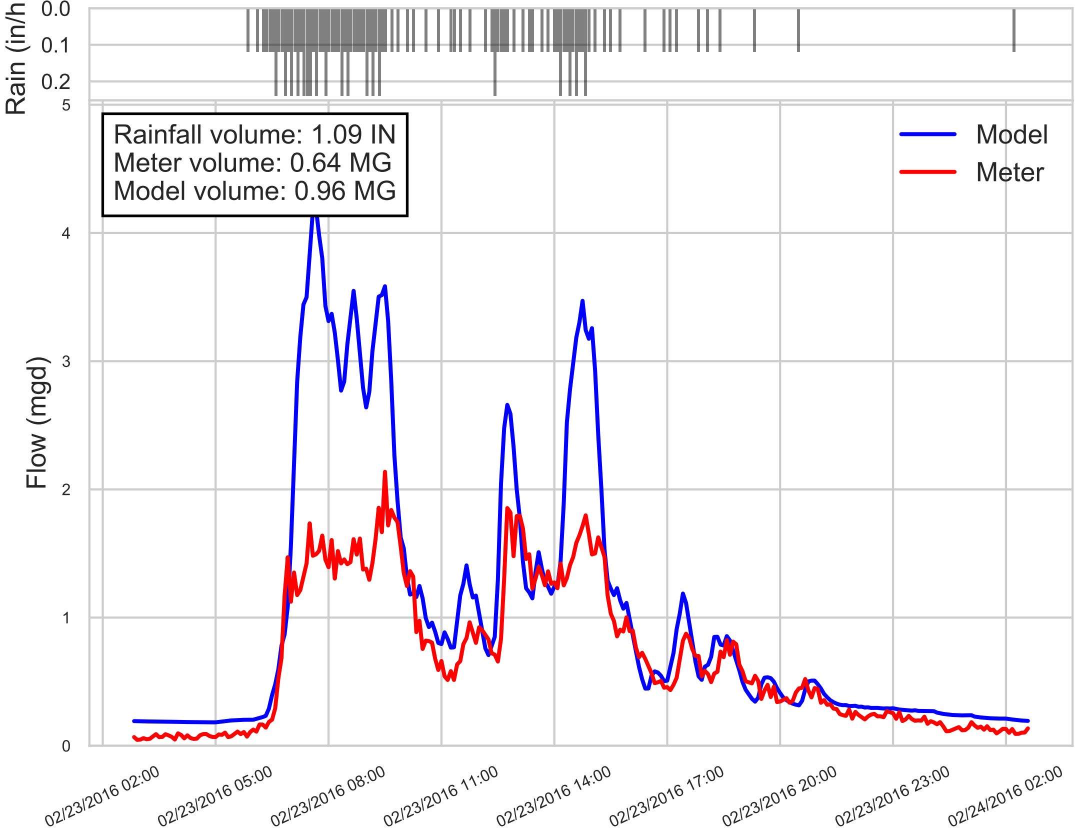
Wet Weather Event 5 for Meter 049-1
02/08/2016 21:40 to 02/09/2016 16:45

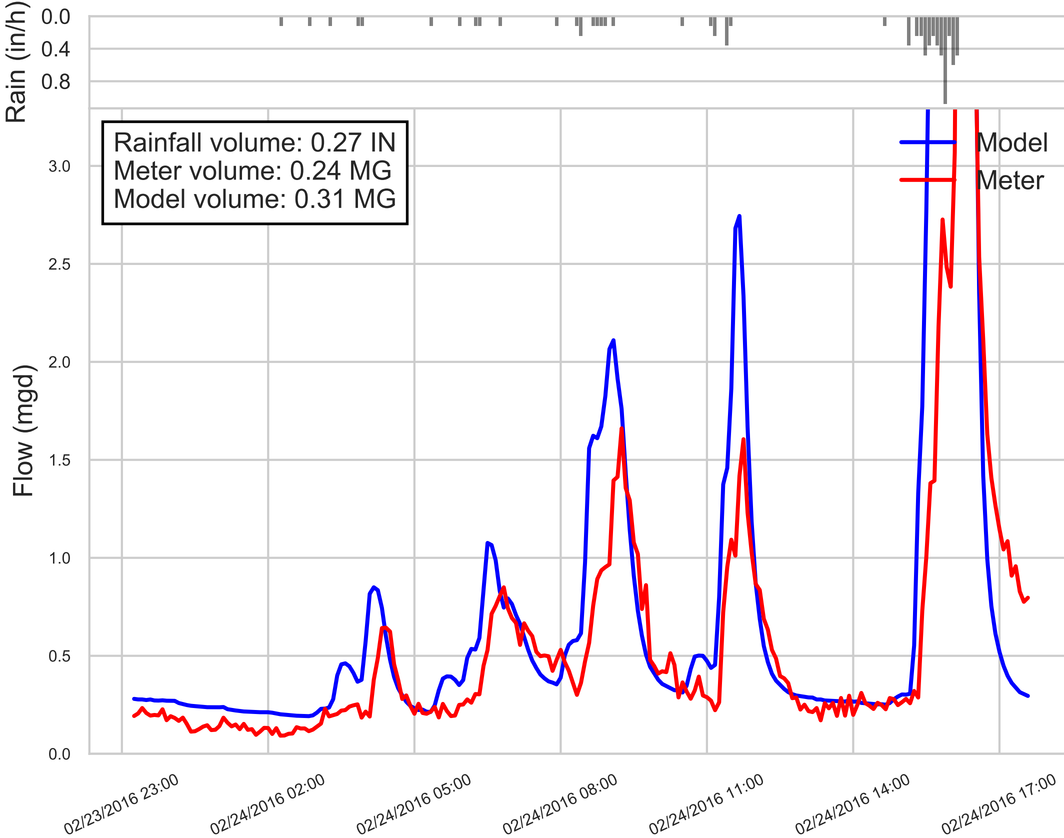




Wet Weather Event 6 for Meter 049-1
02/16/2016 05:55 to 02/16/2016 14:55

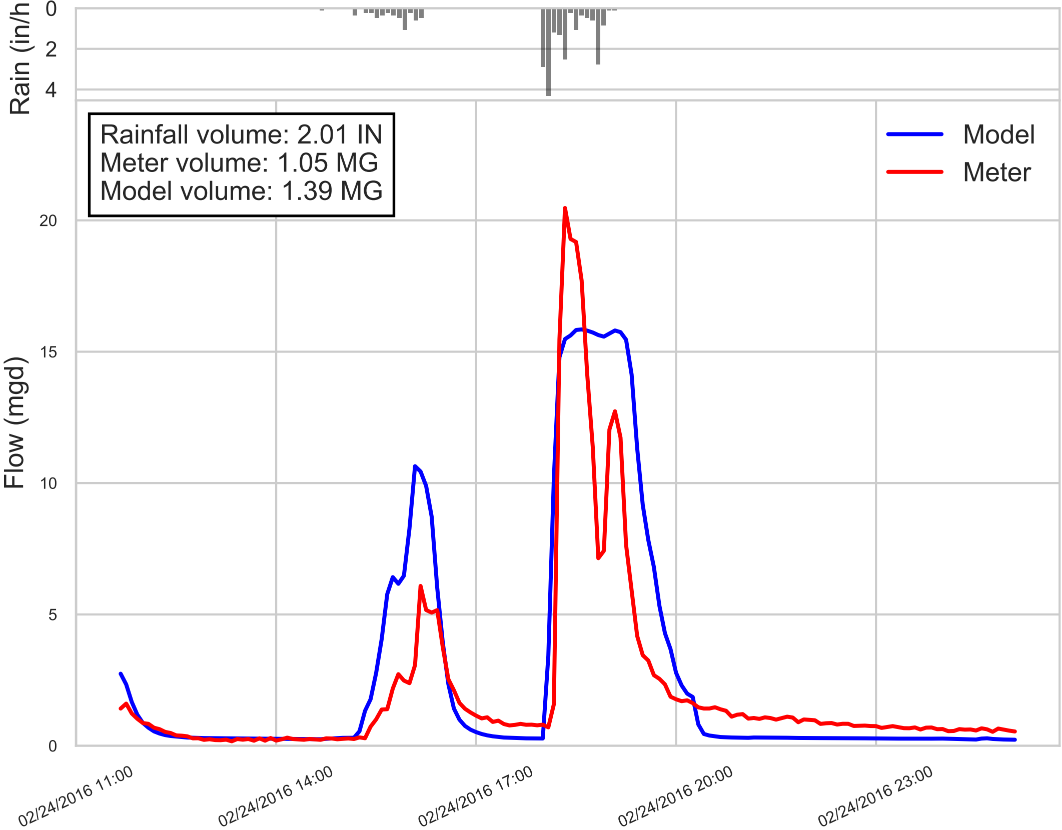
Wet Weather Event 7 for Meter 049-1
02/23/2016 05:50 to 02/23/2016 23:35



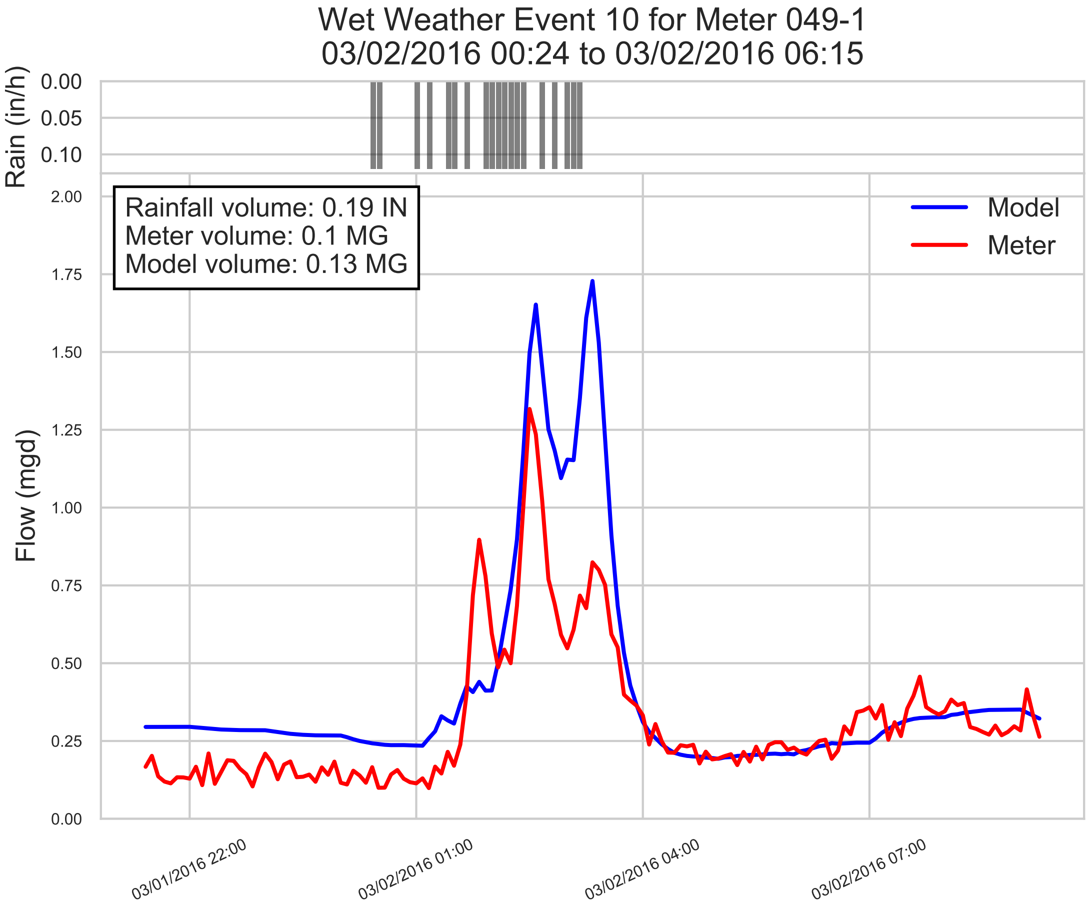


Wet Weather Event 8 for Meter 049-1
02/24/2016 02:15 to 02/24/2016 14:35

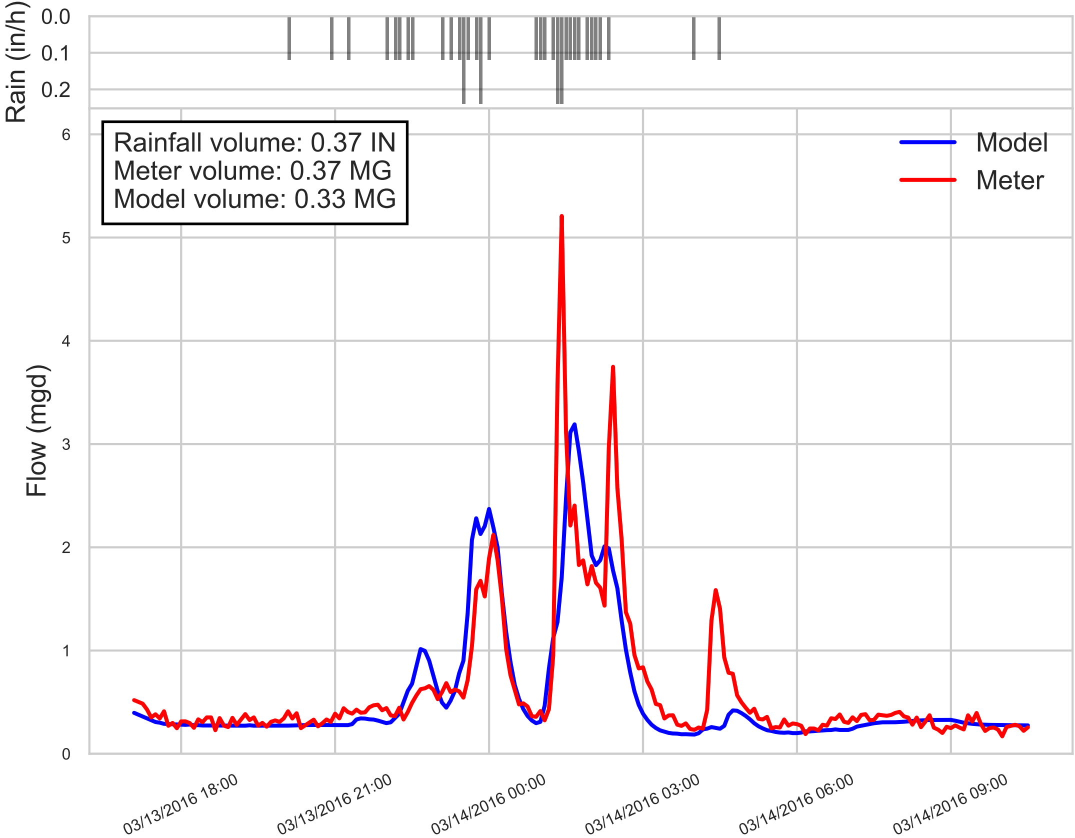
Wet Weather Event 9 for Meter 049-1
02/24/2016 14:39 to 02/24/2016 22:09



Rainfall volume: 2.01 IN
Meter volume: 1.05 MG
Model volume: 1.39 MG

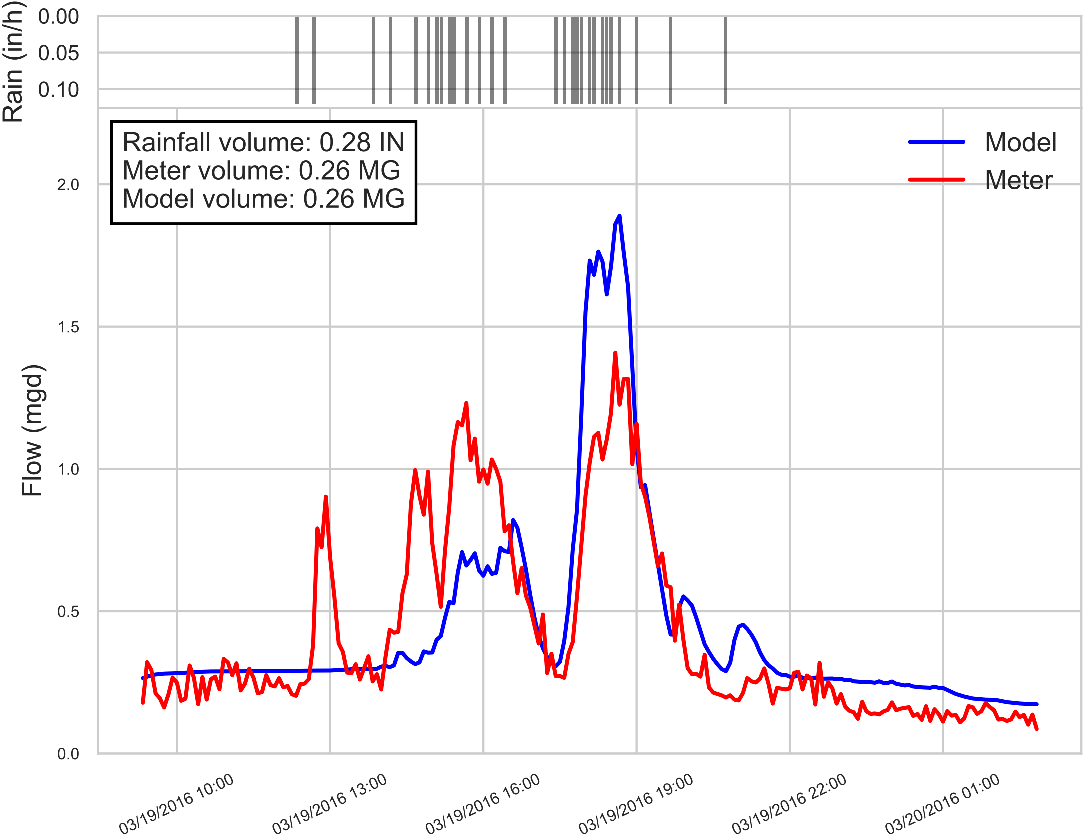

Wet Weather Event 10 for Meter 049-1
03/02/2016 00:24 to 03/02/2016 06:15
Rain (in/h)
0.00
0.05
0.10
Flow (mgd)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Rainfall volume: 0.19 IN
Meter volume: 0.1 MG
Model volume: 0.13 MG
Model
Meter
03/01/2016 22:00
03/02/2016 01:00
03/02/2016 04:00
03/02/2016 07:00

Wet Weather Event 11 for Meter 049-1
03/13/2016 20:05 to 03/14/2016 07:34

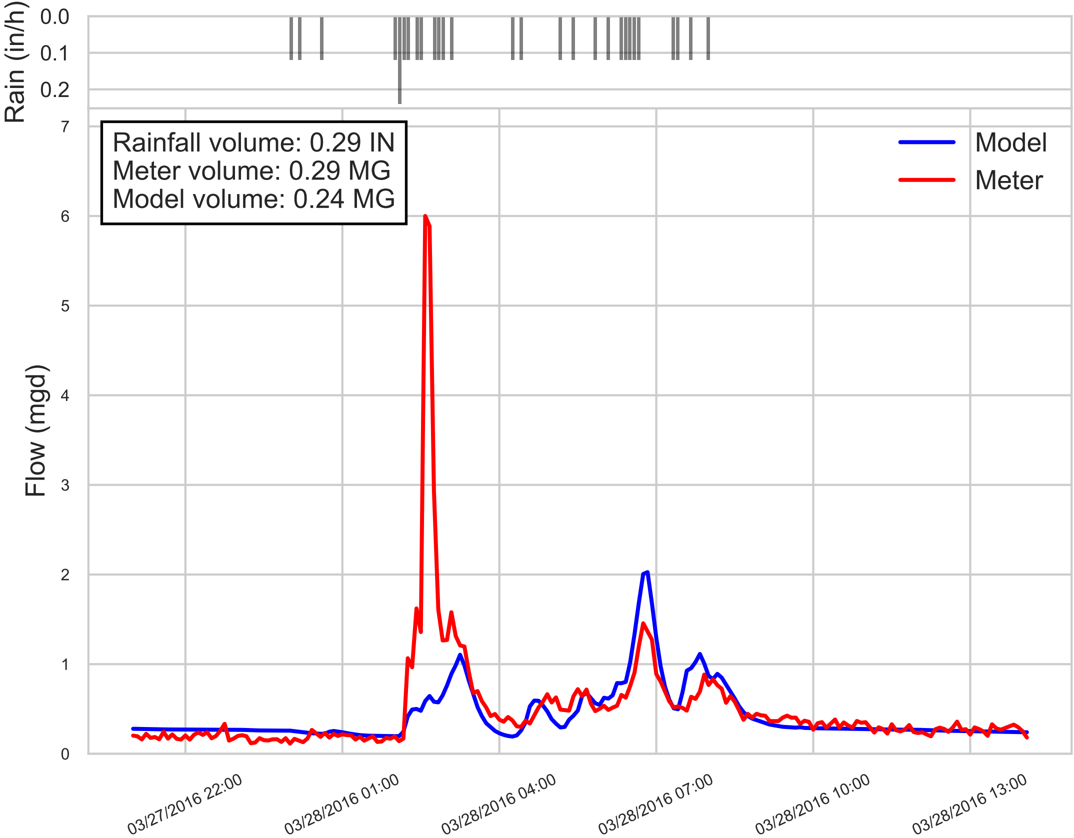


Rainfall volume: 0.37 IN
Meter volume: 0.37 MG
Model volume: 0.33 MG

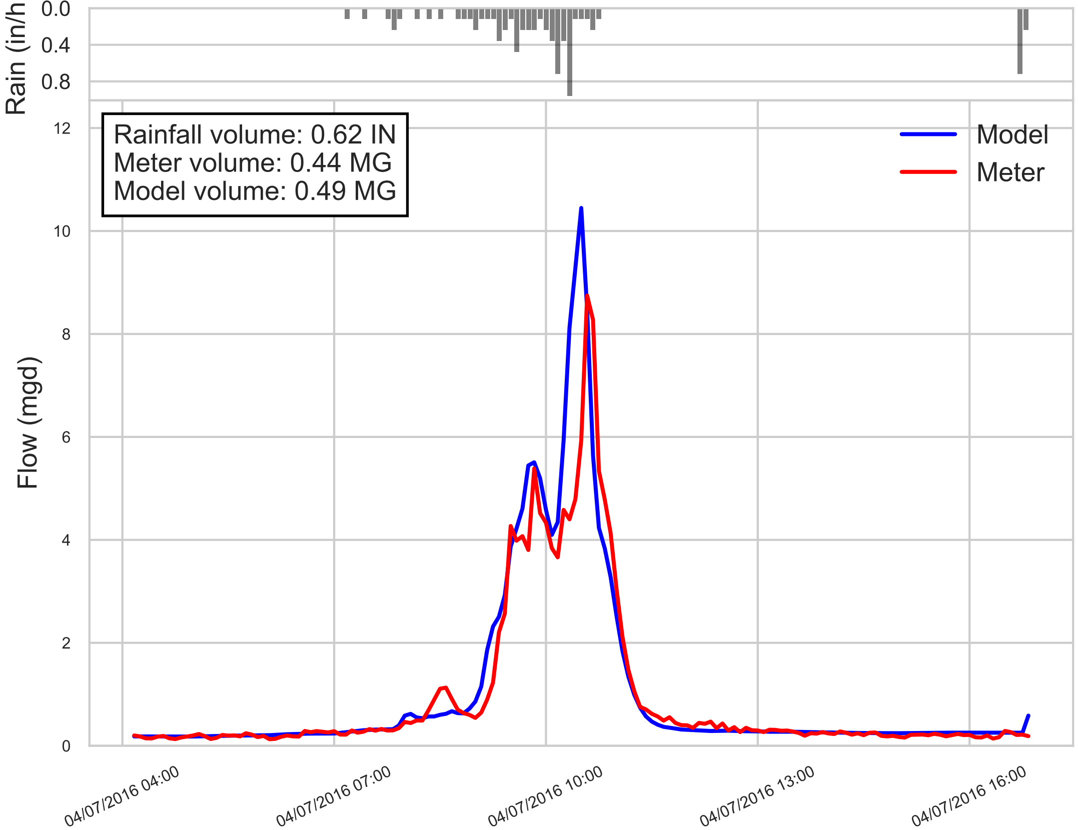
Wet Weather Event 12 for Meter 049-1
03/19/2016 12:20 to 03/19/2016 23:50

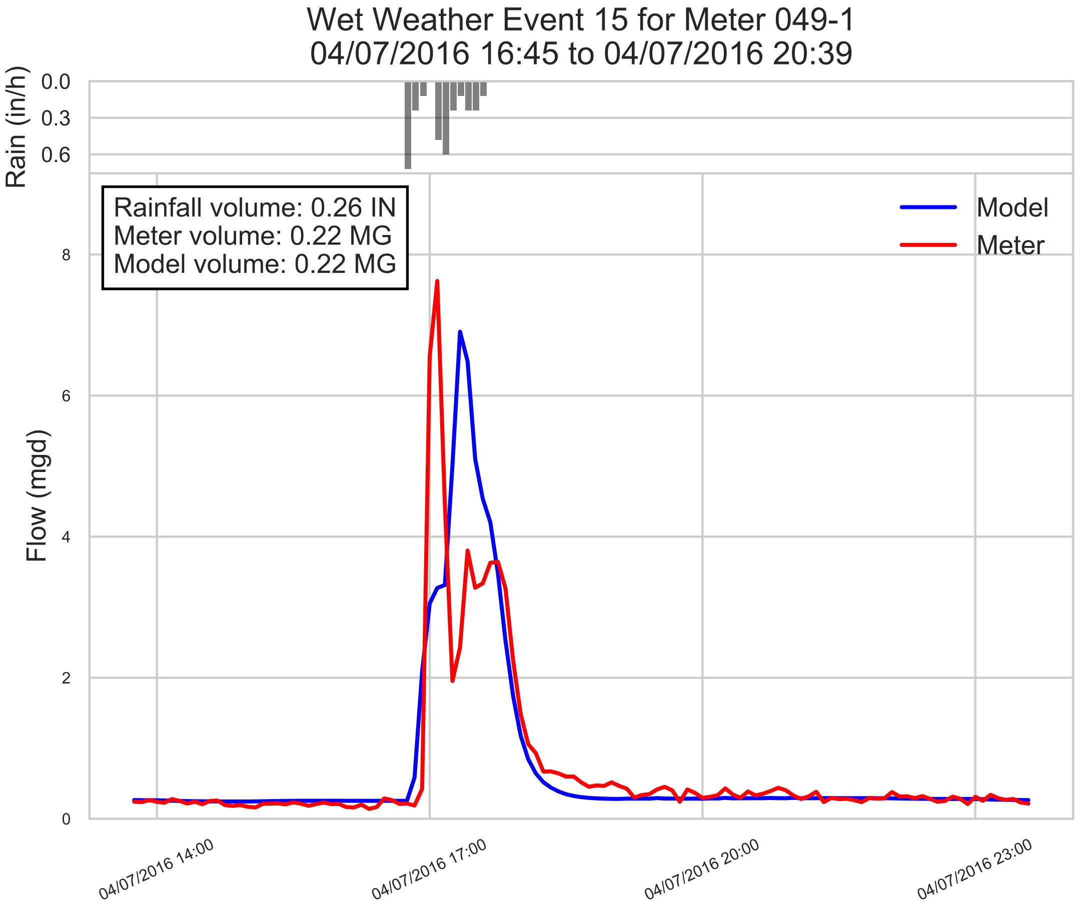


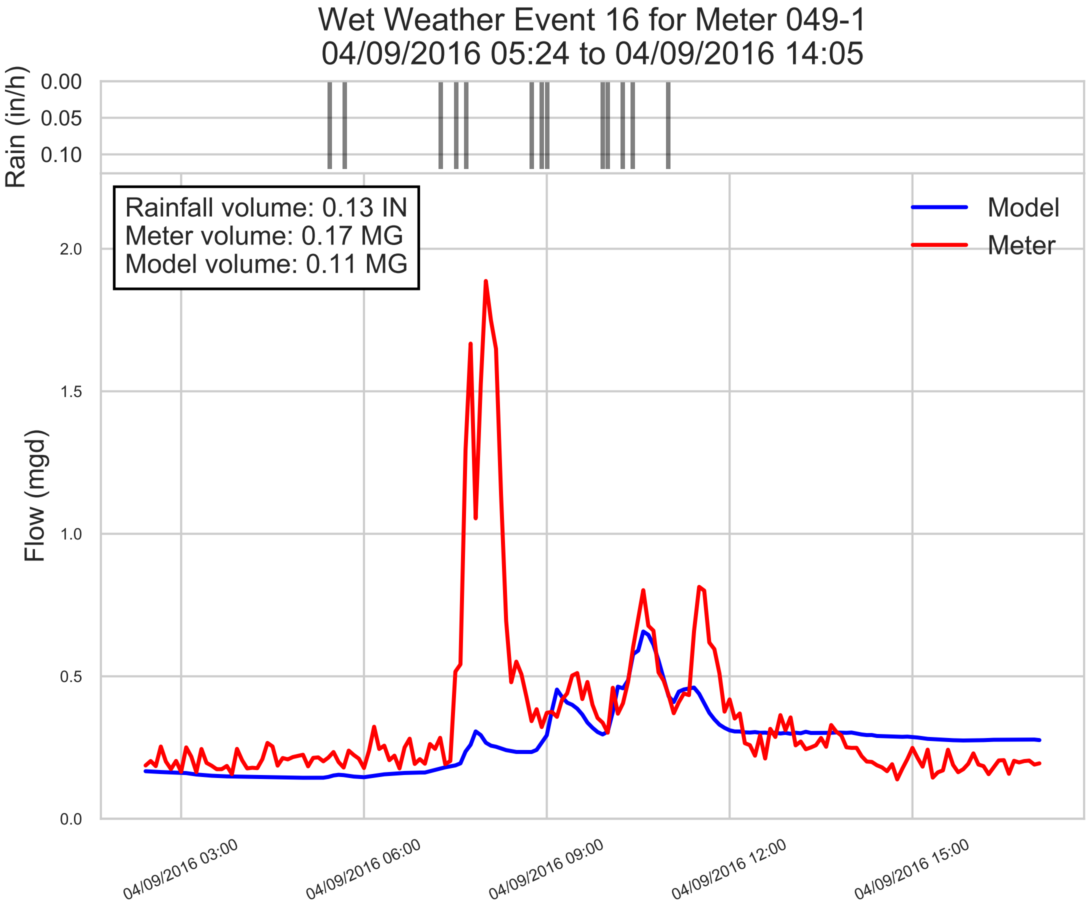
Wet Weather Event 13 for Meter 049-1
03/28/2016 00:00 to 03/28/2016 11:05



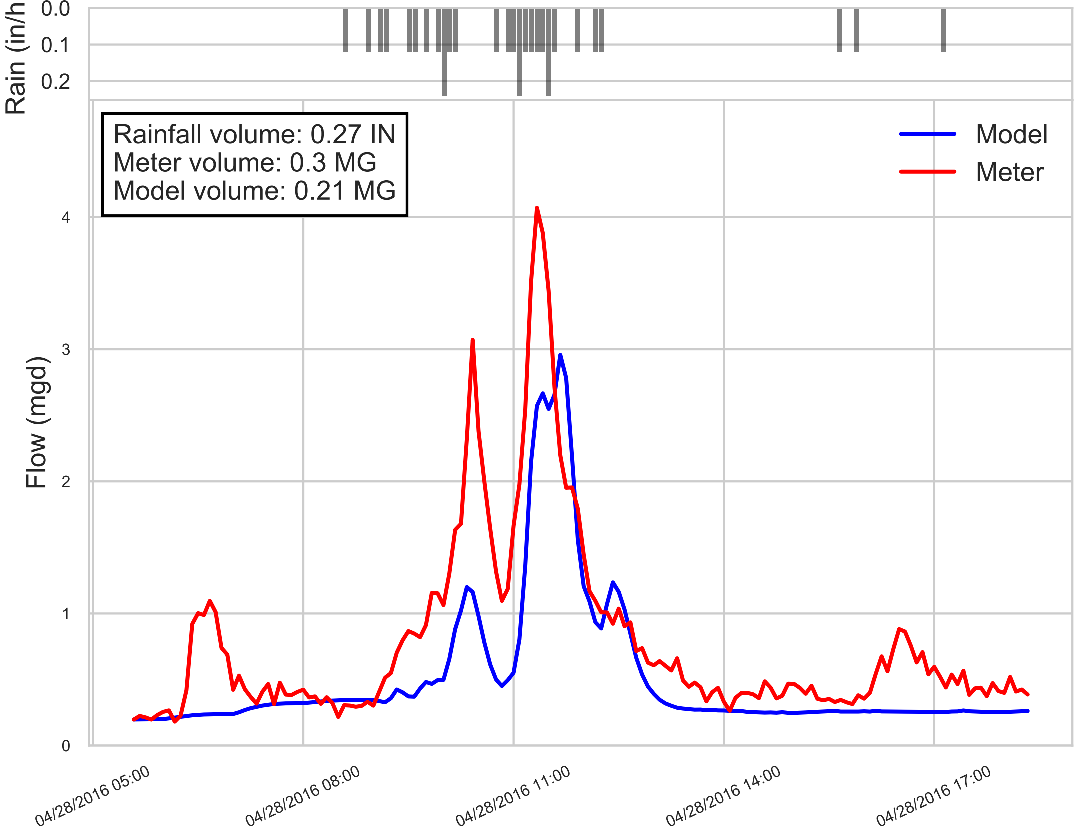
Wet Weather Event 14 for Meter 049-1
04/07/2016 07:09 to 04/07/2016 13:50


Rainfall volume: 0.62 IN
Meter volume: 0.44 MG
Model volume: 0.49 MG


Wet Weather Event 15 for Meter 049-1
04/07/2016 16:45 to 04/07/2016 20:39
Rain (in/h)
0.0
0.3
0.6
Rainfall volume: 0.26 IN
Meter volume: 0.22 MG
Model volume: 0.22 MG
Model
Meter
Flow (mgd)
8
6
4
2
0
04/07/2016 14:00
04/07/2016 17:00
04/07/2016 20:00
04/07/2016 23:00

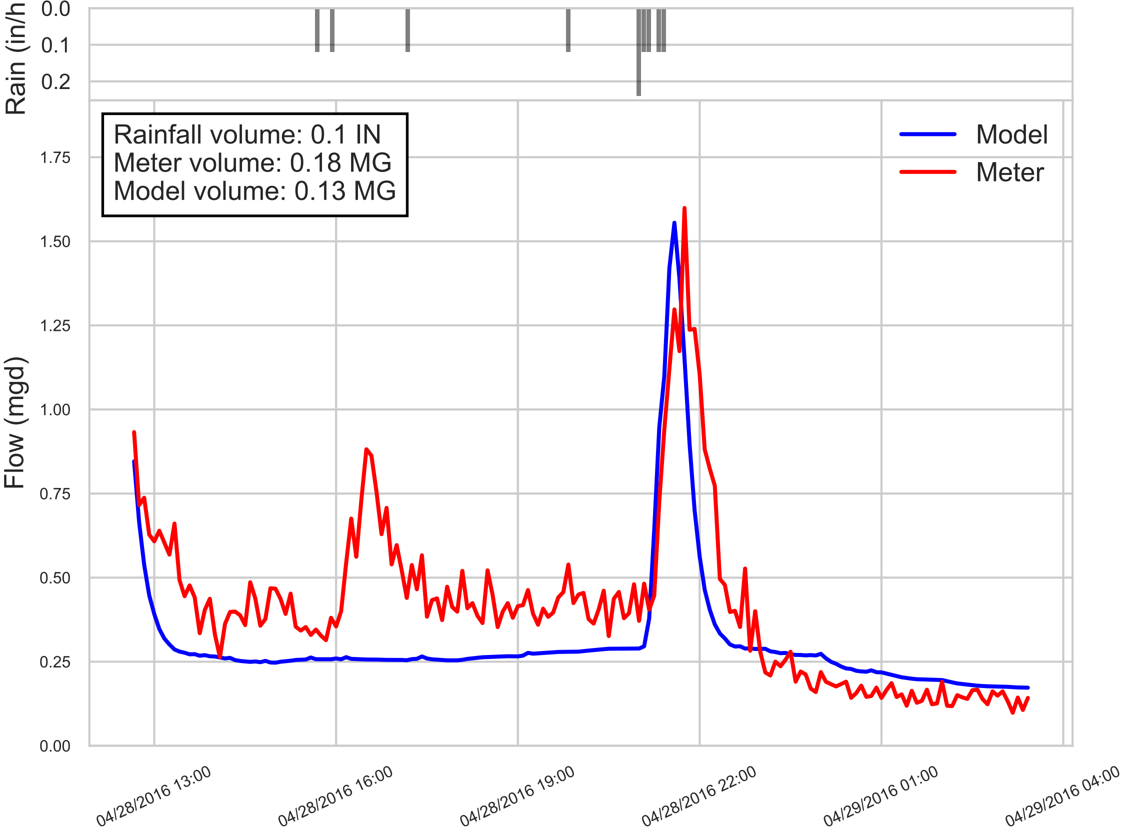

Wet Weather Event 16 for Meter 049-1
04/09/2016 05:24 to 04/09/2016 14:05
Rain (in/h)
0.00
0.05
0.10
Rainfall volume: 0.13 IN
Meter volume: 0.17 MG
Model volume: 0.11 MG
Model
Meter
Flow (mgd)
2.0
1.5
1.0
0.5
0.0
04/09/2016 03:00
04/09/2016 06:00
04/09/2016 09:00
04/09/2016 12:00
04/09/2016 15:00

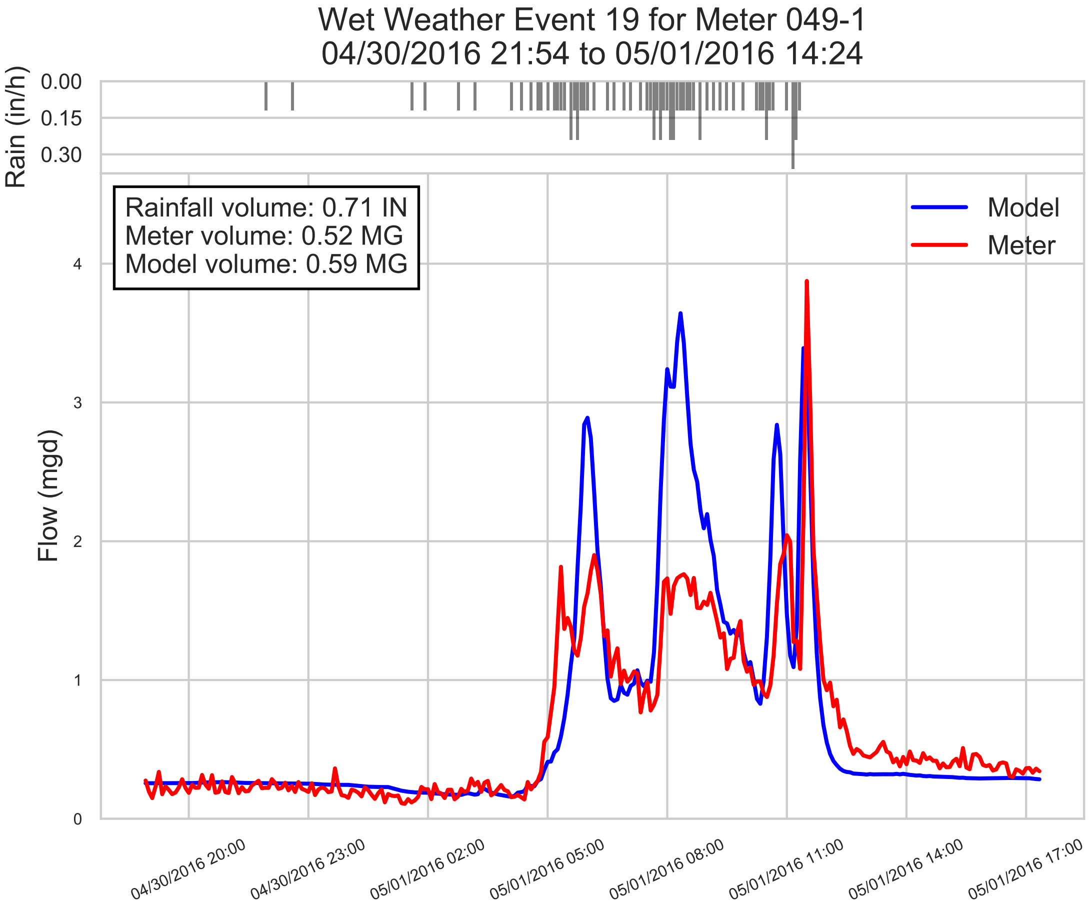
Wet Weather Event 17 for Meter 049-1
04/28/2016 08:35 to 04/28/2016 15:20



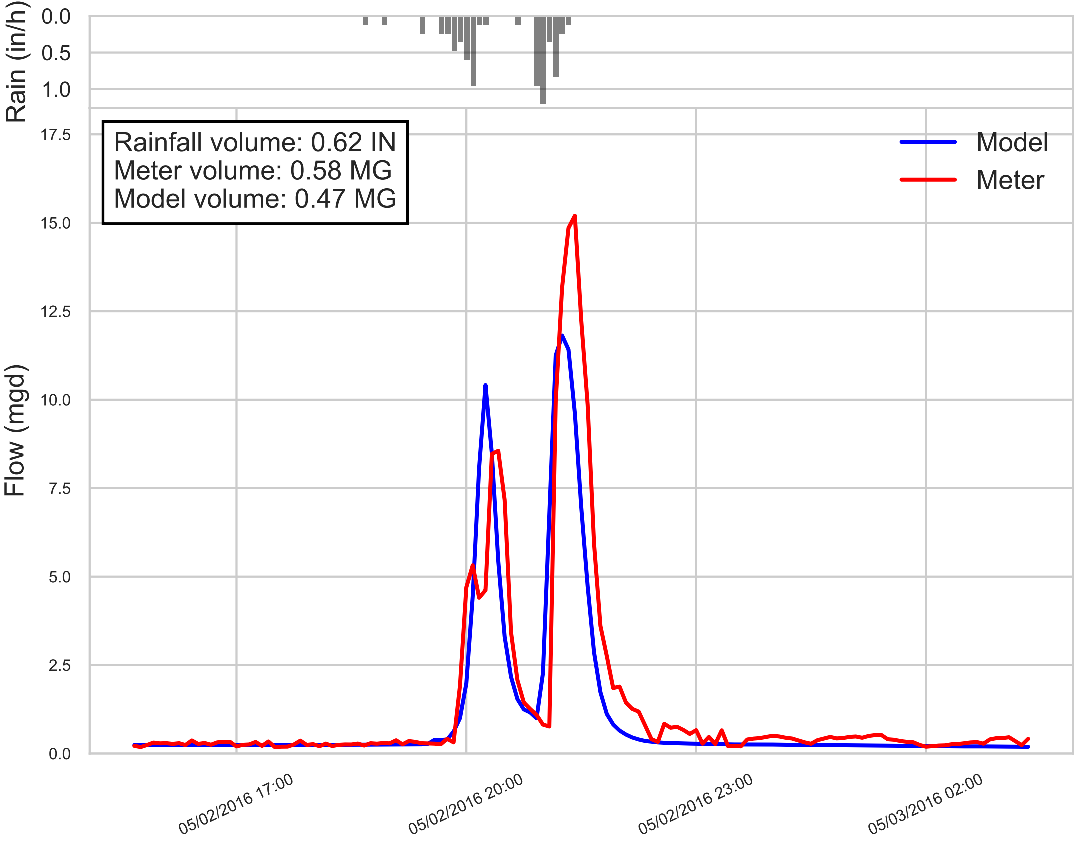
Rainfall volume: 0.27 IN
Meter volume: 0.3 MG
Model volume: 0.21 MG

Wet Weather Event 18 for Meter 049-1
04/28/2016 15:40 to 04/29/2016 00:29

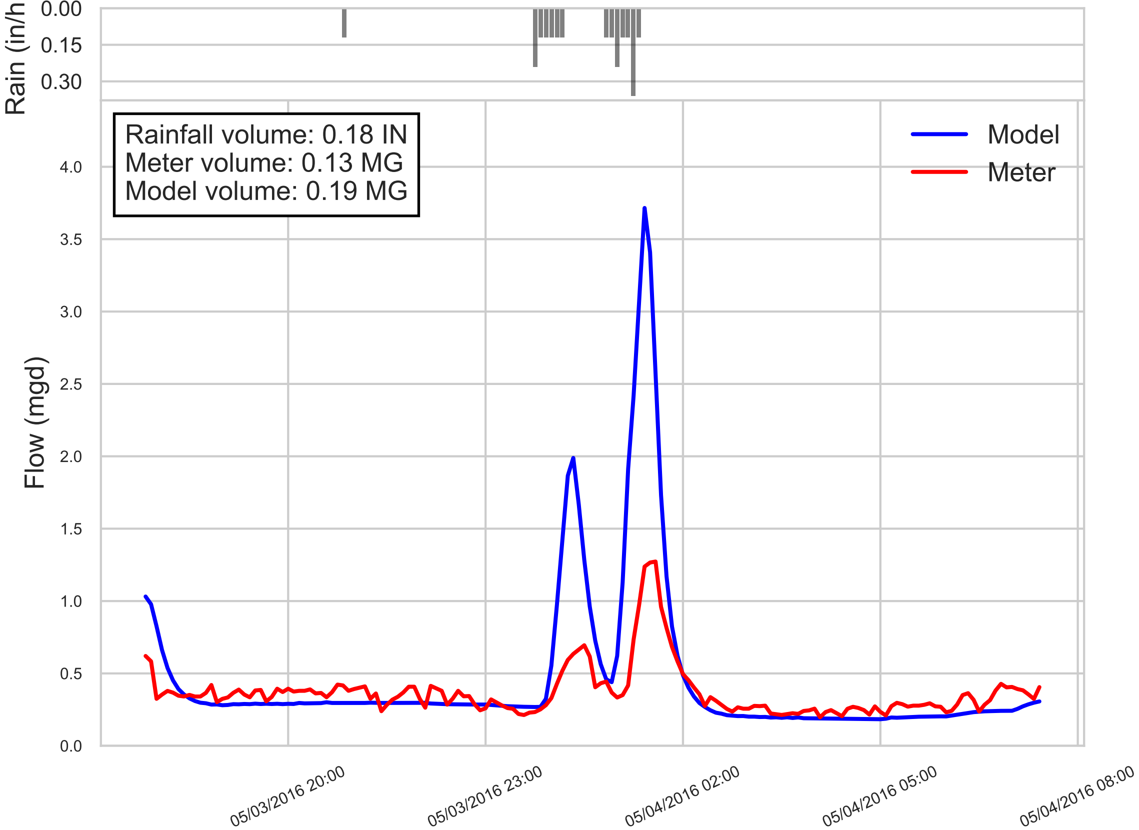


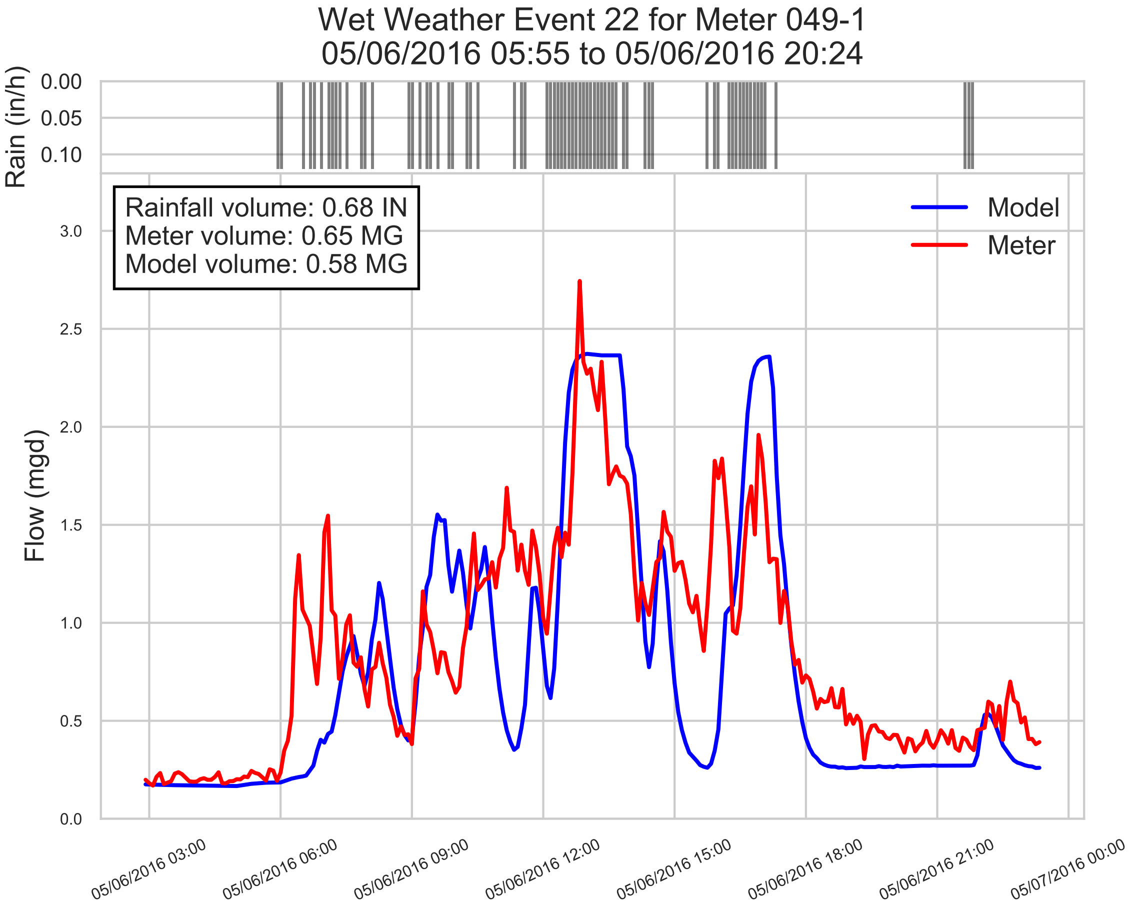

Wet Weather Event 19 for Meter 049-1
04/30/2016 21:54 to 05/01/2016 14:24
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.71 IN
Meter volume: 0.52 MG
Model volume: 0.59 MG
Model
Meter
Flow (mgd)
0
1
2
3
4
04/30/2016 20:00
04/30/2016 23:00
05/01/2016 02:00
05/01/2016 05:00
05/01/2016 08:00
05/01/2016 11:00
05/01/2016 14:00
05/01/2016 17:00

Wet Weather Event 20 for Meter 049-1
05/02/2016 18:40 to 05/03/2016 00:24



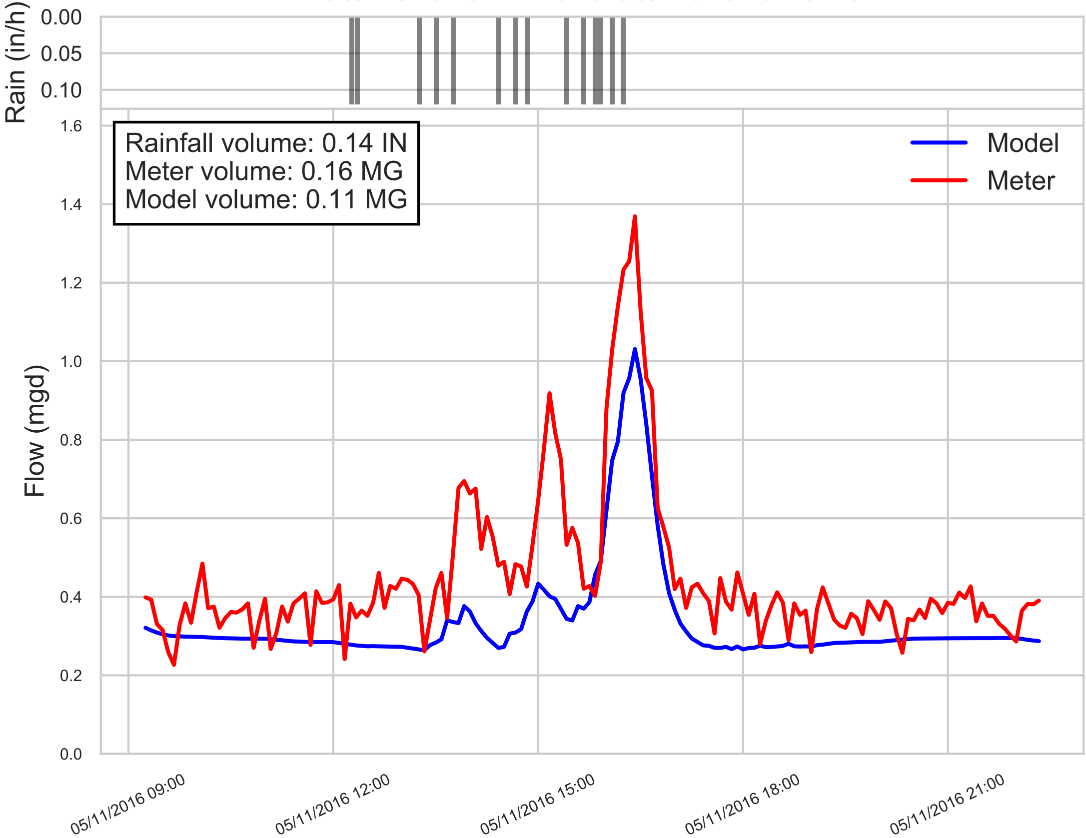
Wet Weather Event 21 for Meter 049-1
05/03/2016 20:50 to 05/04/2016 04:25





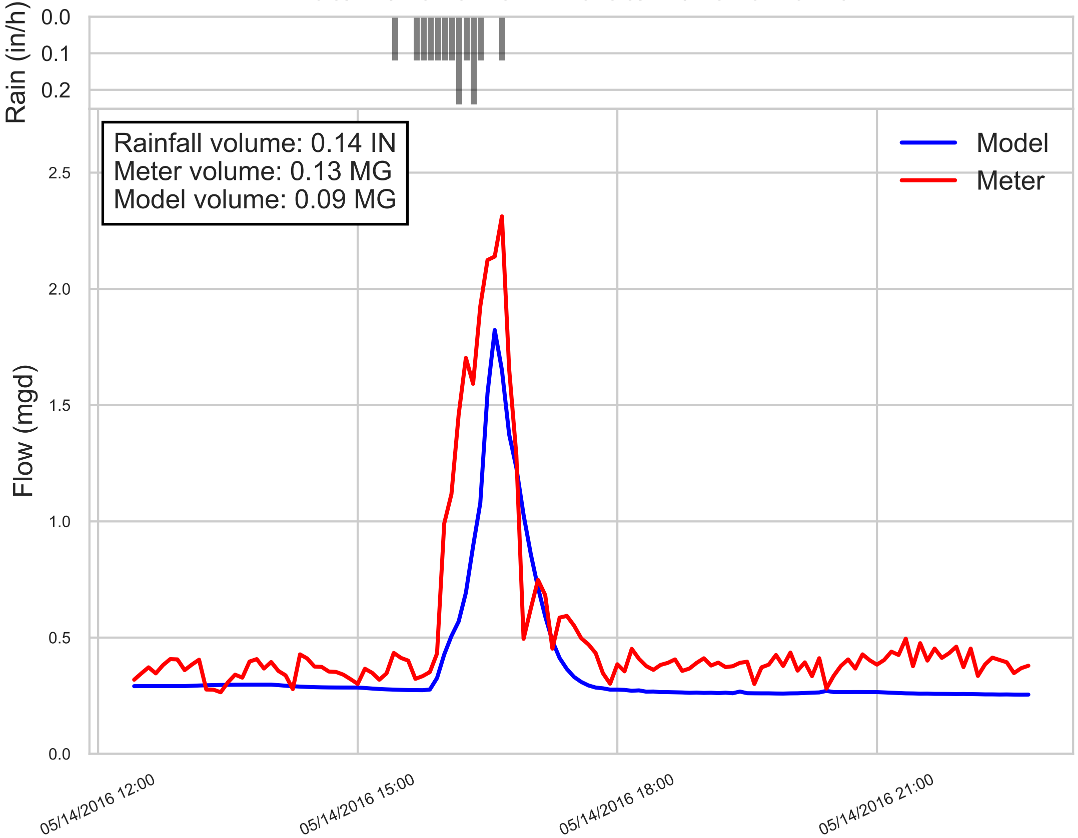
Wet Weather Event 22 for Meter 049-1
05/06/2016 05:55 to 05/06/2016 20:24

Wet Weather Event 23 for Meter 049-1
05/11/2016 12:15 to 05/11/2016 19:20

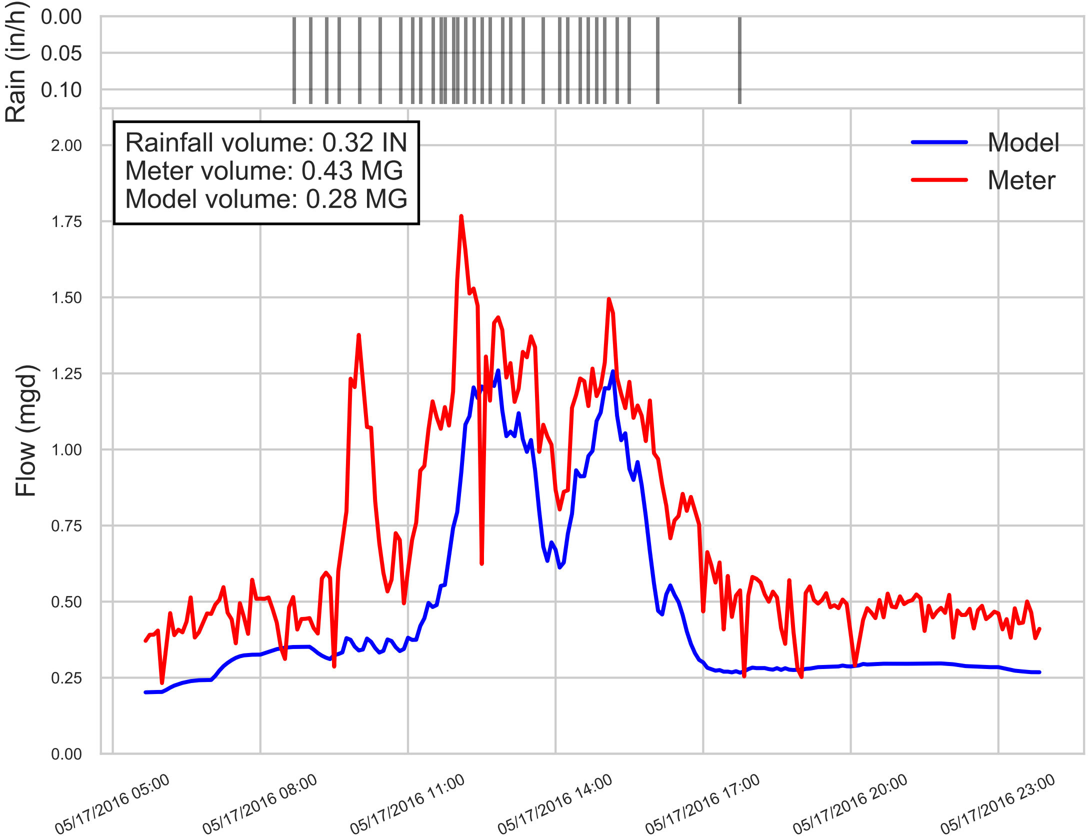


Rainfall volume: 0.14 IN
Meter volume: 0.16 MG
Model volume: 0.11 MG

Wet Weather Event 24 for Meter 049-1
05/14/2016 15:24 to 05/14/2016 19:45

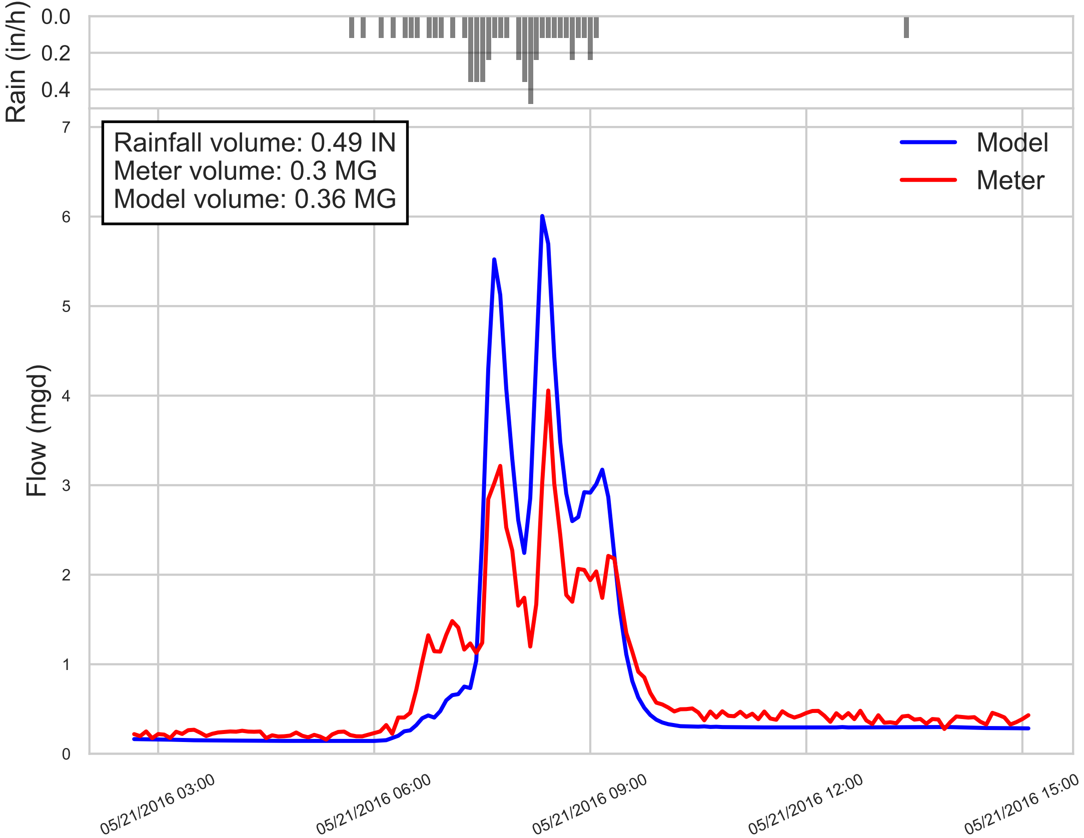


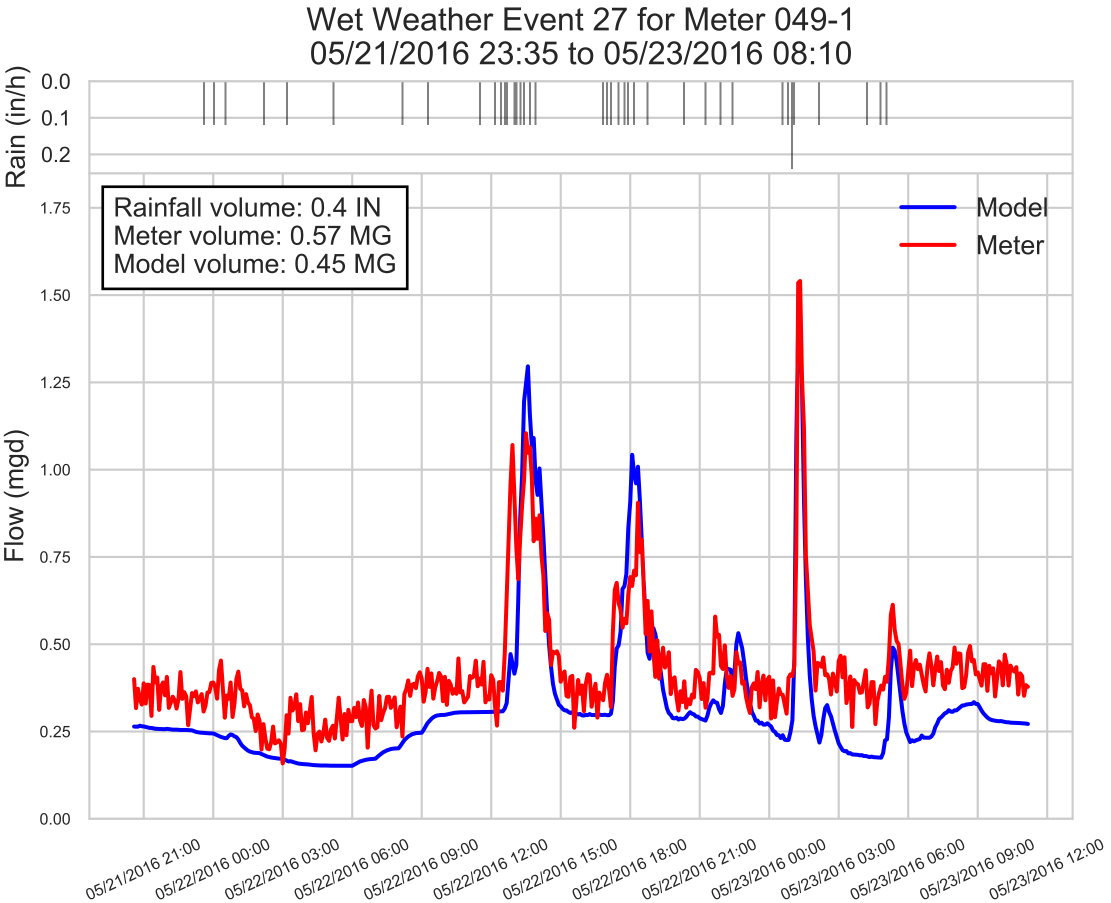
Wet Weather Event 25 for Meter 049-1
05/17/2016 08:39 to 05/17/2016 20:50

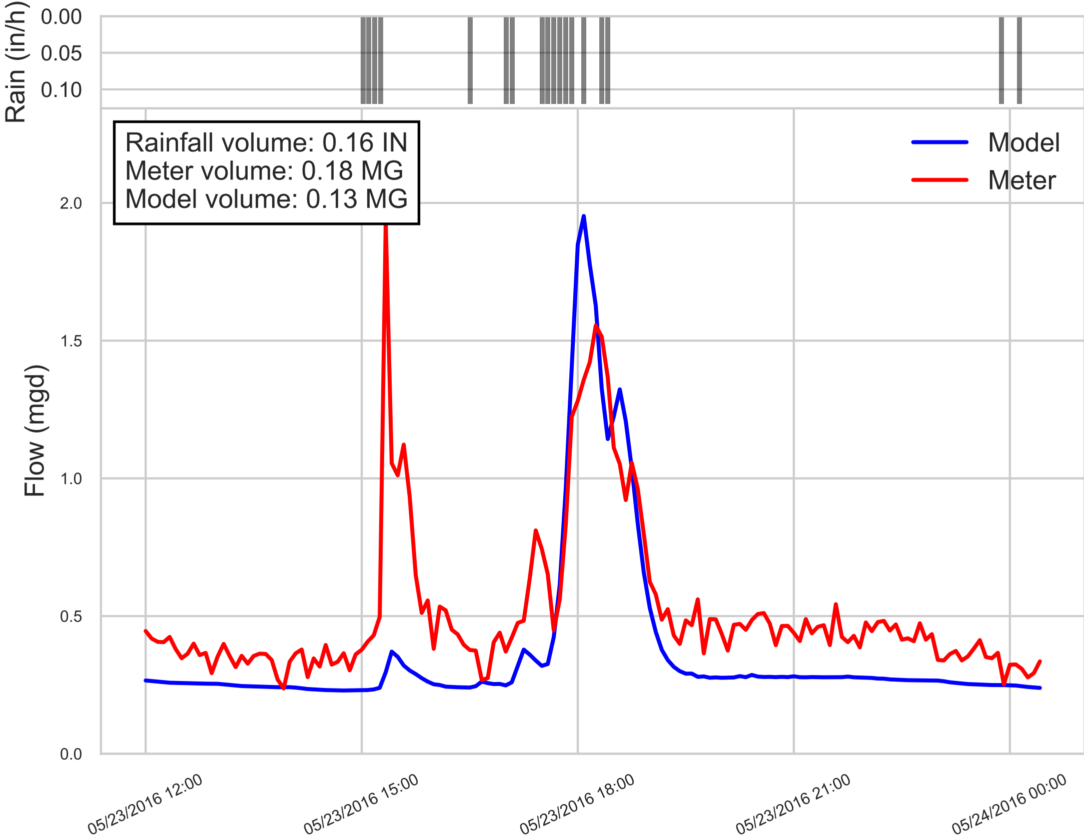


Rainfall volume: 0.32 IN
Meter volume: 0.43 MG
Model volume: 0.28 MG

Wet Weather Event 26 for Meter 049-1
05/21/2016 05:39 to 05/21/2016 12:09



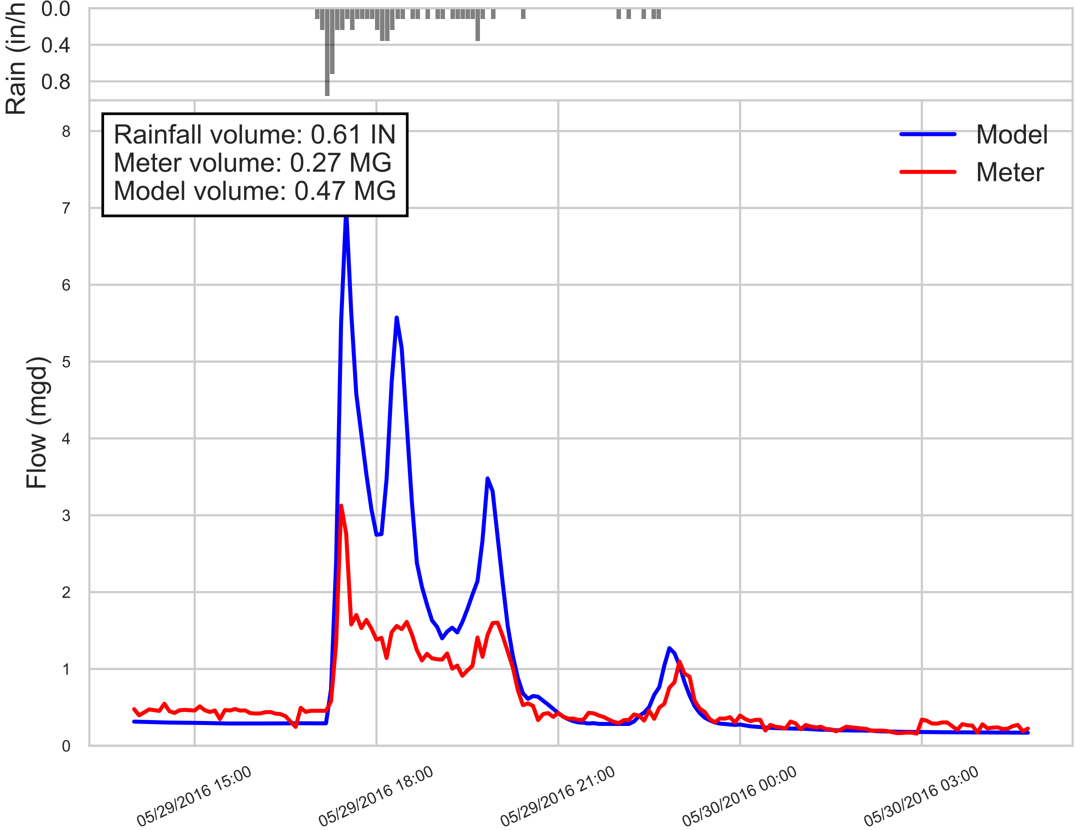

Wet Weather Event 27 for Meter 049-1
05/21/2016 23:35 to 05/23/2016 08:10
Rain (in/h)
0.0
0.1
0.2
Rainfall volume: 0.4 IN
Meter volume: 0.57 MG
Model volume: 0.45 MG
Model
Meter
Flow (mgd)
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
05/21/2016 21:00
05/22/2016 00:00
05/22/2016 03:00
05/22/2016 06:00
05/22/2016 09:00
05/22/2016 12:00
05/22/2016 15:00
05/22/2016 18:00
05/22/2016 21:00
05/23/2016 00:00
05/23/2016 03:00
05/23/2016 06:00
05/23/2016 09:00
05/23/2016 12:00



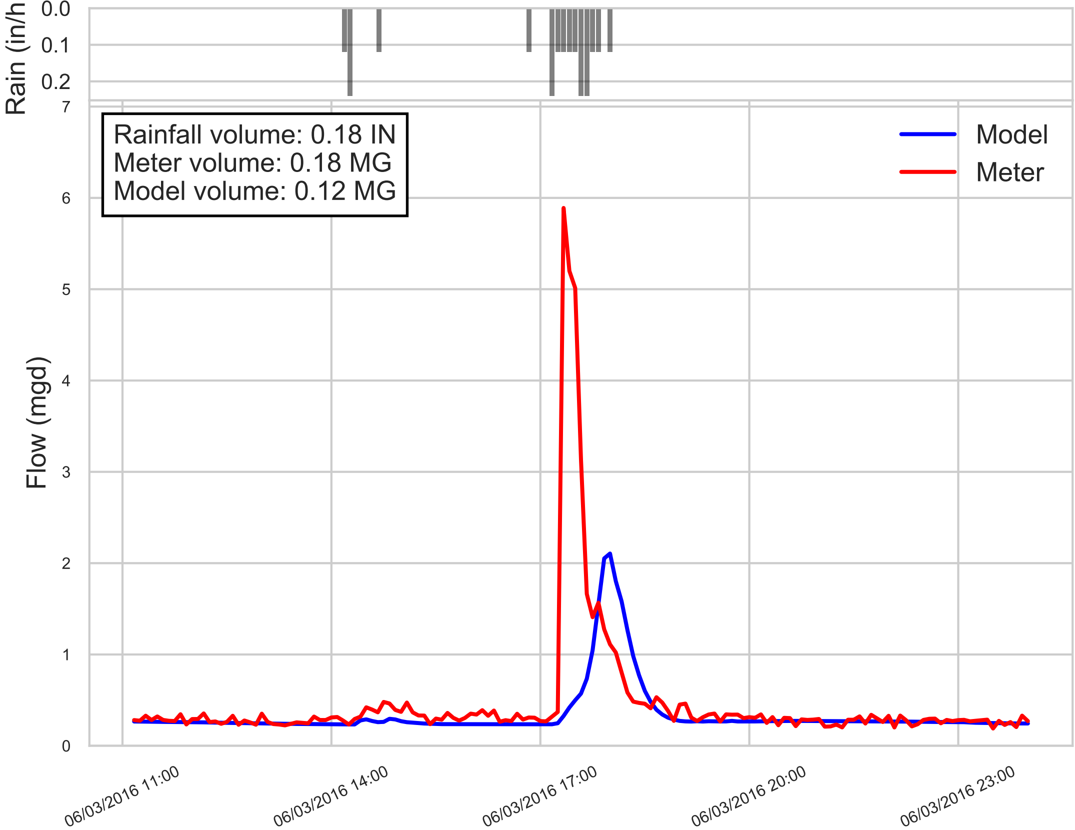
Wet Weather Event 28 for Meter 049-1
05/23/2016 15:00 to 05/23/2016 21:29

Rainfall volume: 0.16 IN
Meter volume: 0.18 MG
Model volume: 0.13 MG

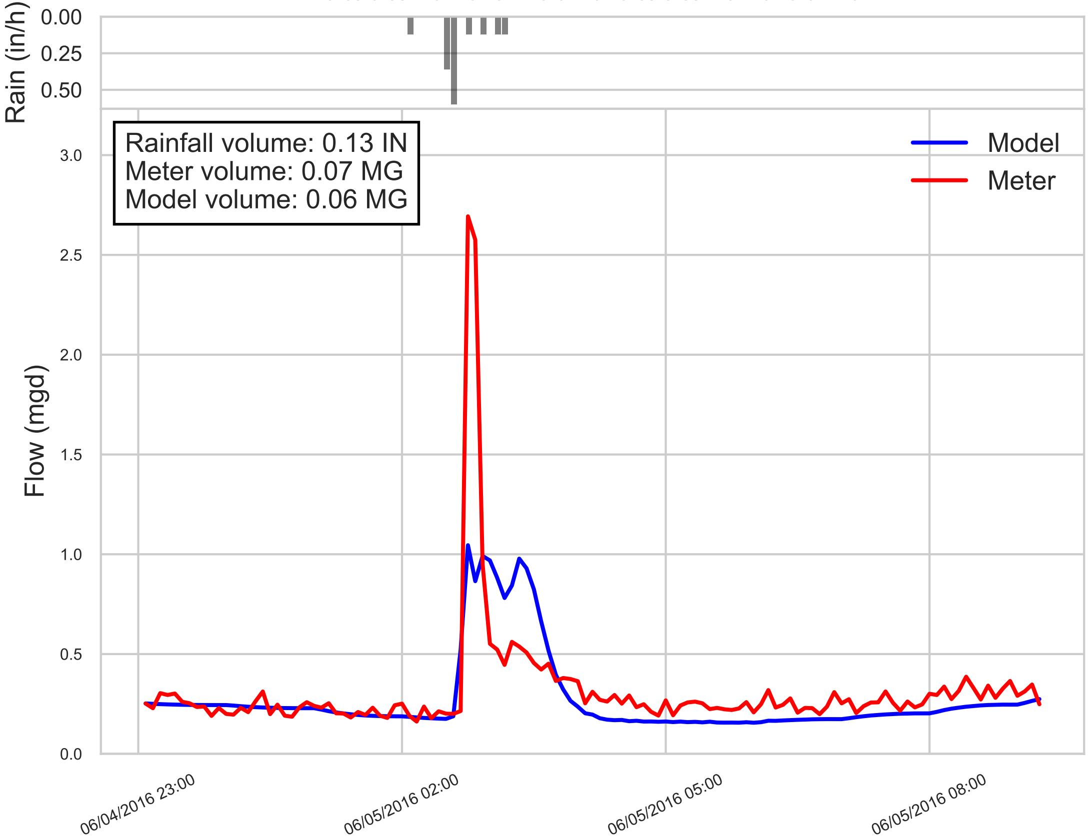
Wet Weather Event 29 for Meter 049-1
05/29/2016 16:59 to 05/30/2016 01:45



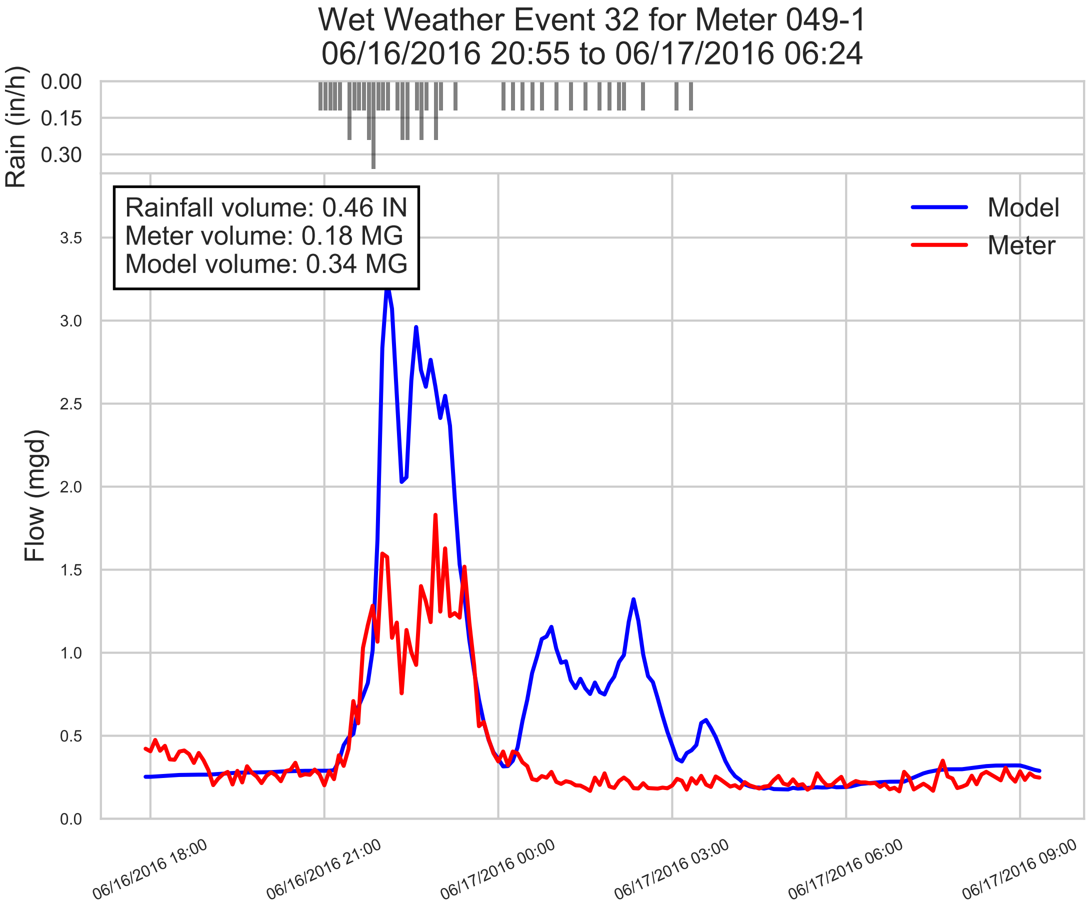
Wet Weather Event 30 for Meter 049-1
06/03/2016 14:10 to 06/03/2016 21:04

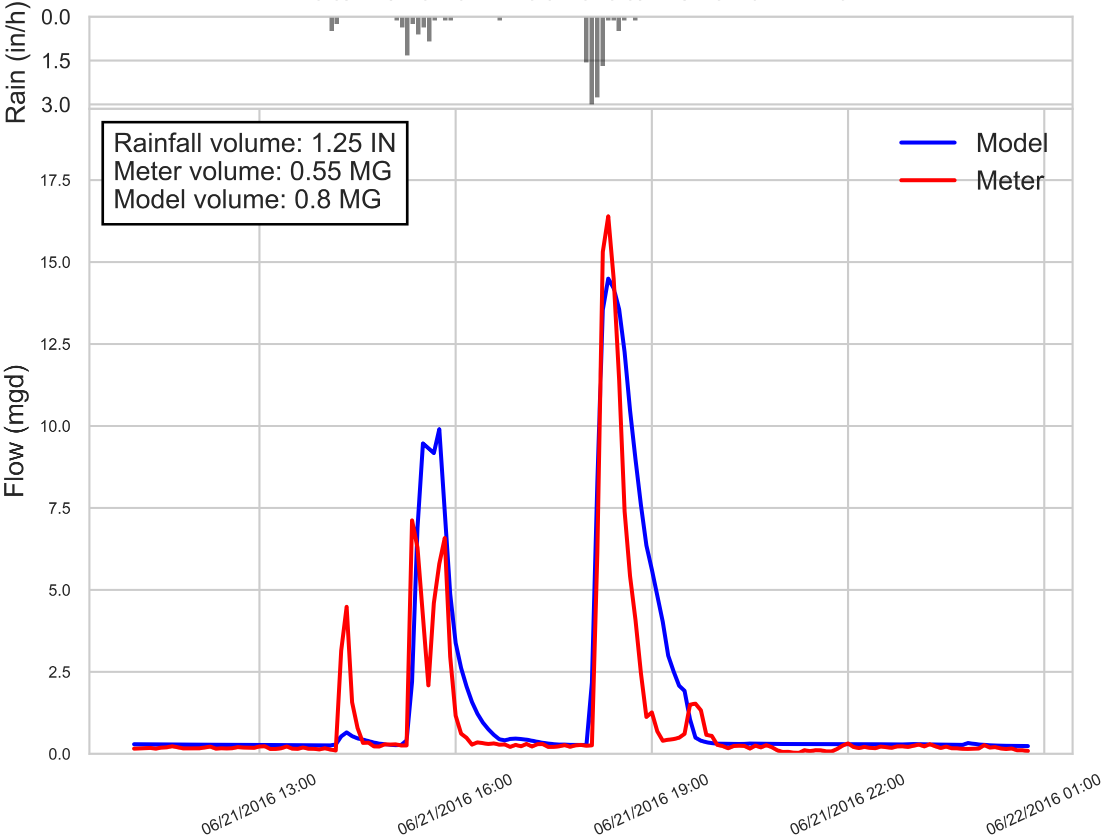


Wet Weather Event 31 for Meter 049-1
06/05/2016 02:05 to 06/05/2016 06:15

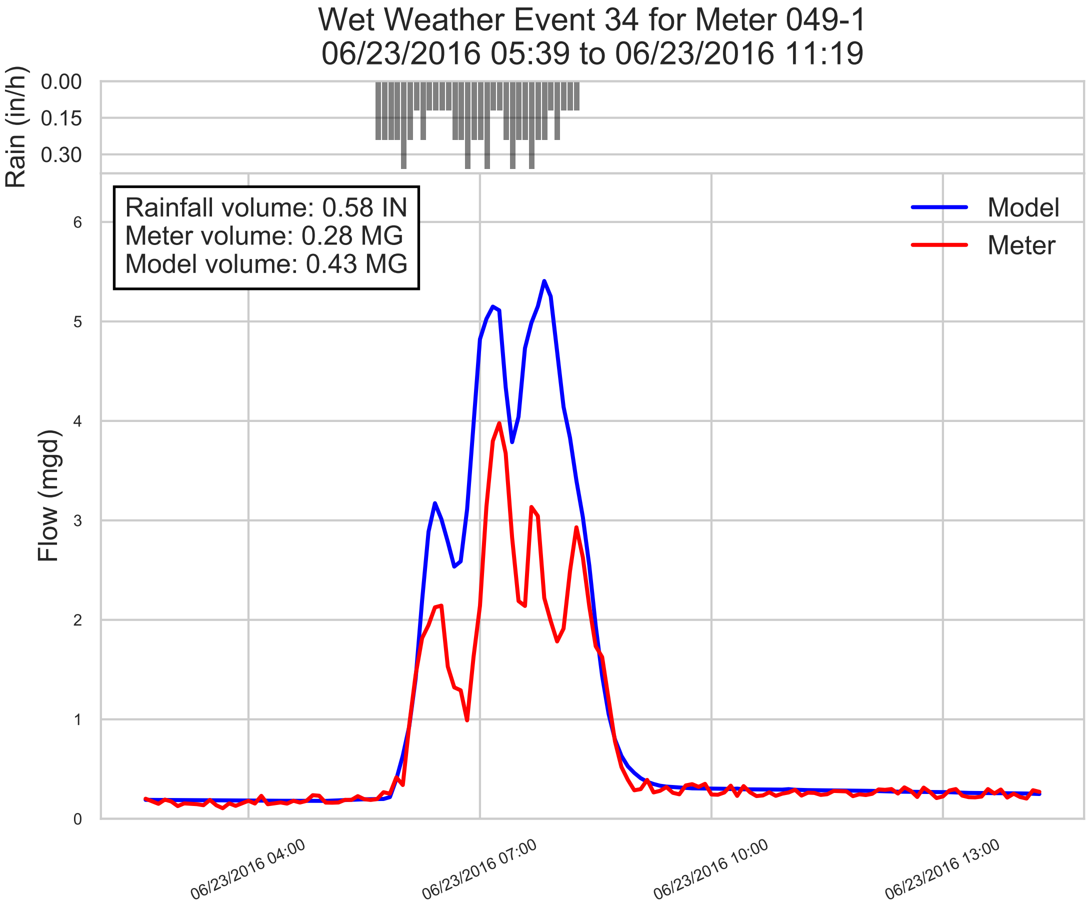


Rainfall volume: 0.13 IN
Meter volume: 0.07 MG
Model volume: 0.06 MG


Wet Weather Event 32 for Meter 049-1
06/16/2016 20:55 to 06/17/2016 06:24
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.46 IN
Meter volume: 0.18 MG
Model volume: 0.34 MG
Model
Meter
Flow (mgd)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
06/16/2016 18:00
06/16/2016 21:00
06/17/2016 00:00
06/17/2016 03:00
06/17/2016 06:00
06/17/2016 09:00



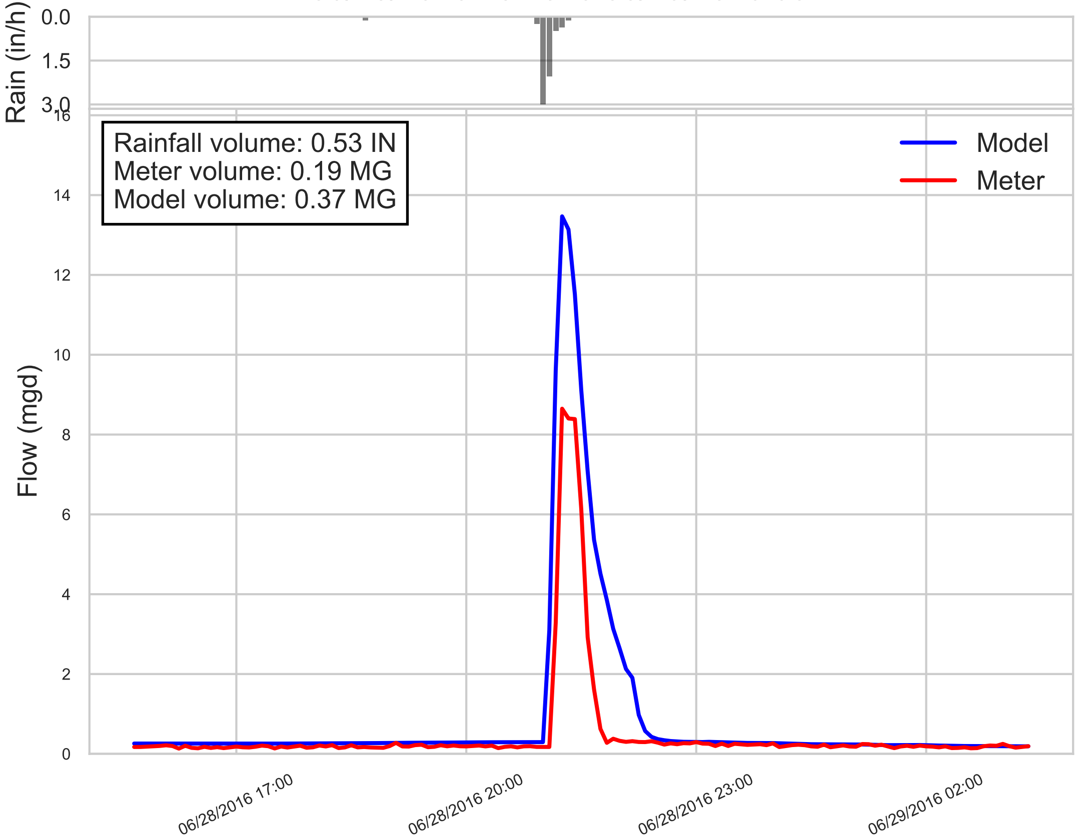
Wet Weather Event 33 for Meter 049-1
06/21/2016 14:05 to 06/21/2016 21:49

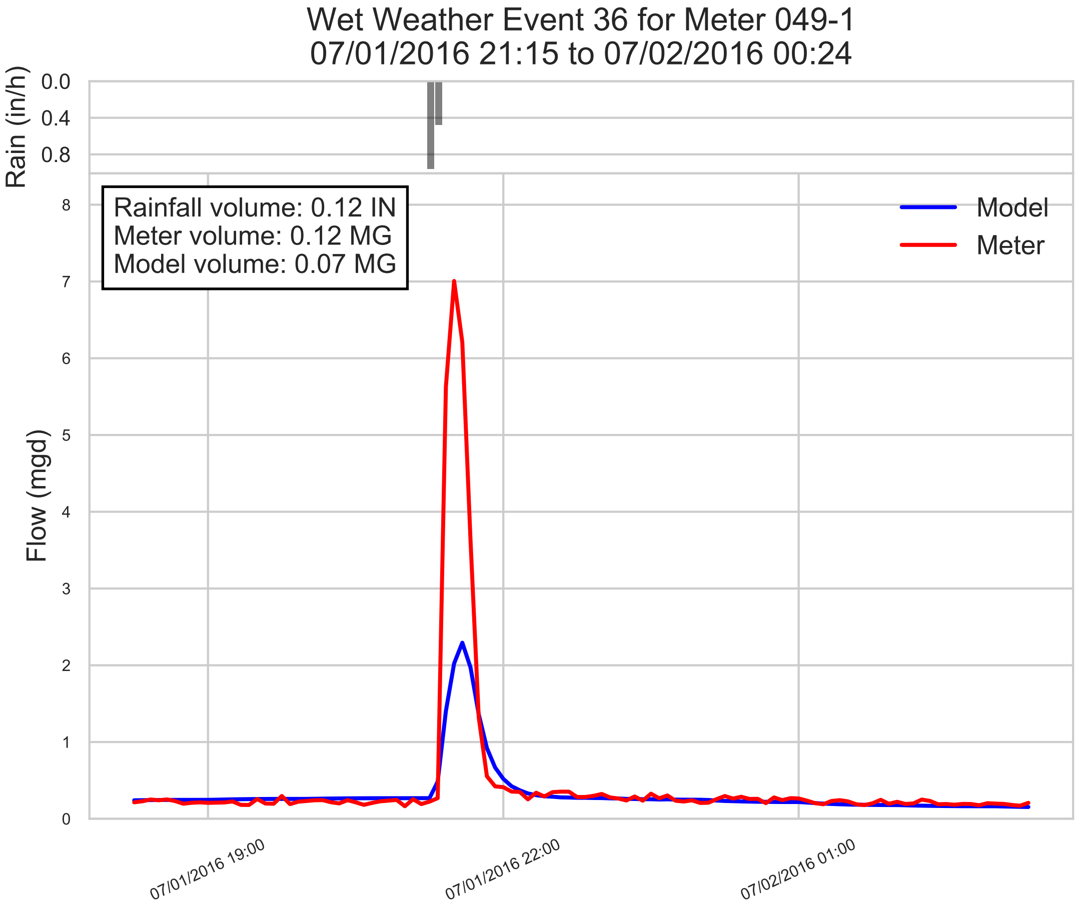


Wet Weather Event 34 for Meter 049-1
06/23/2016 05:39 to 06/23/2016 11:19

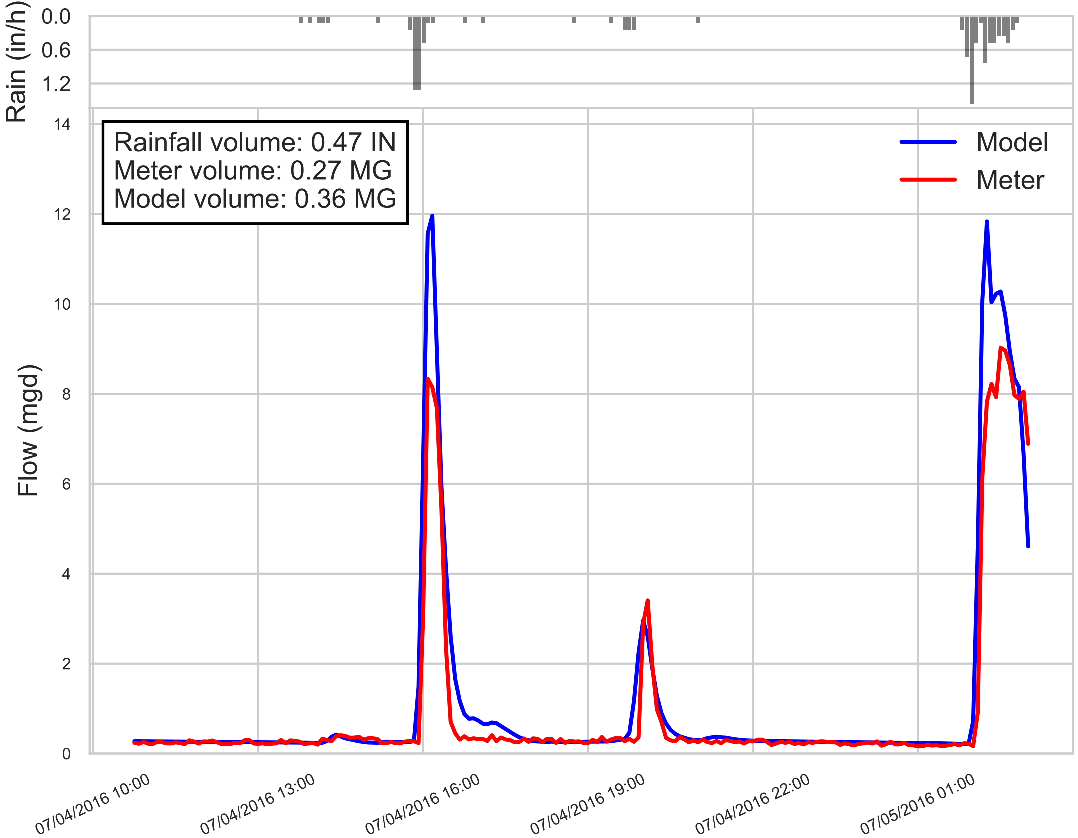
Rainfall volume: 0.58 IN
Meter volume: 0.28 MG
Model volume: 0.43 MG

Wet Weather Event 35 for Meter 049-1
06/28/2016 18:40 to 06/29/2016 00:24

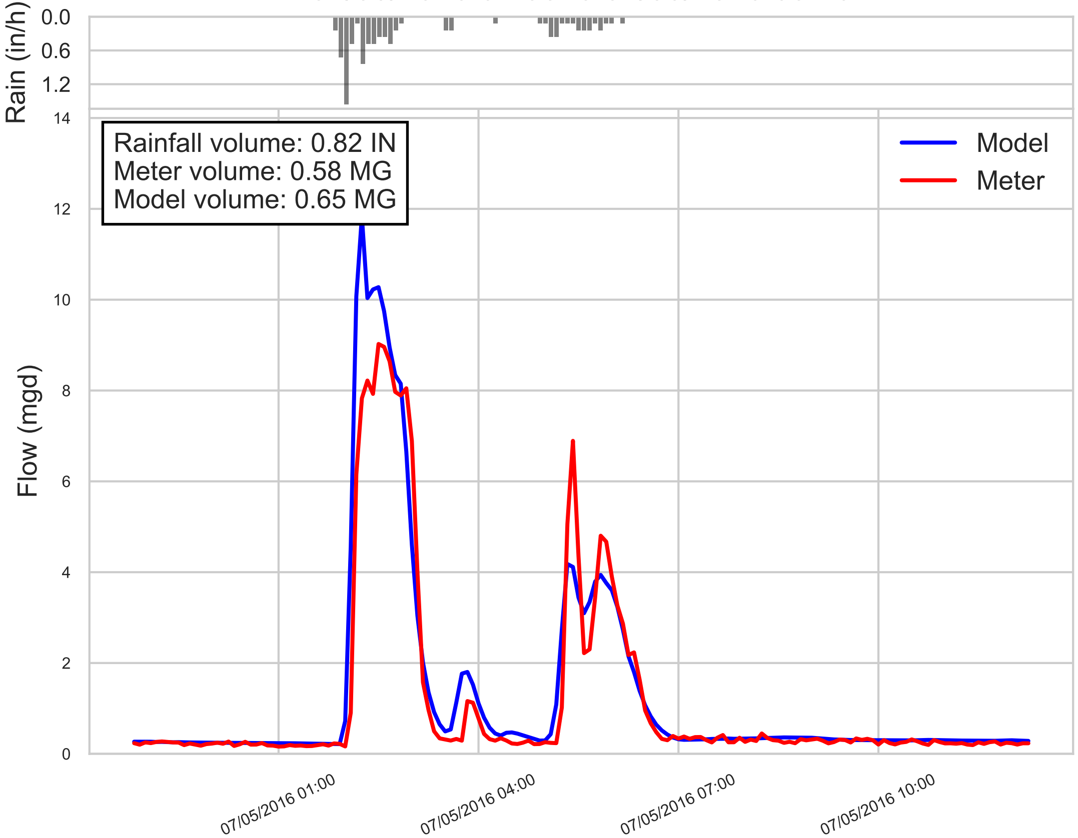



Wet Weather Event 36 for Meter 049-1
07/01/2016 21:15 to 07/02/2016 00:24
Rain (in/h)
0.0
0.4
0.8
Flow (mgd)
8
7
6
5
4
3
2
1
0
Rainfall volume: 0.12 IN
Meter volume: 0.12 MG
Model volume: 0.07 MG
Model
Meter
07/01/2016 19:00
07/01/2016 22:00
07/02/2016 01:00

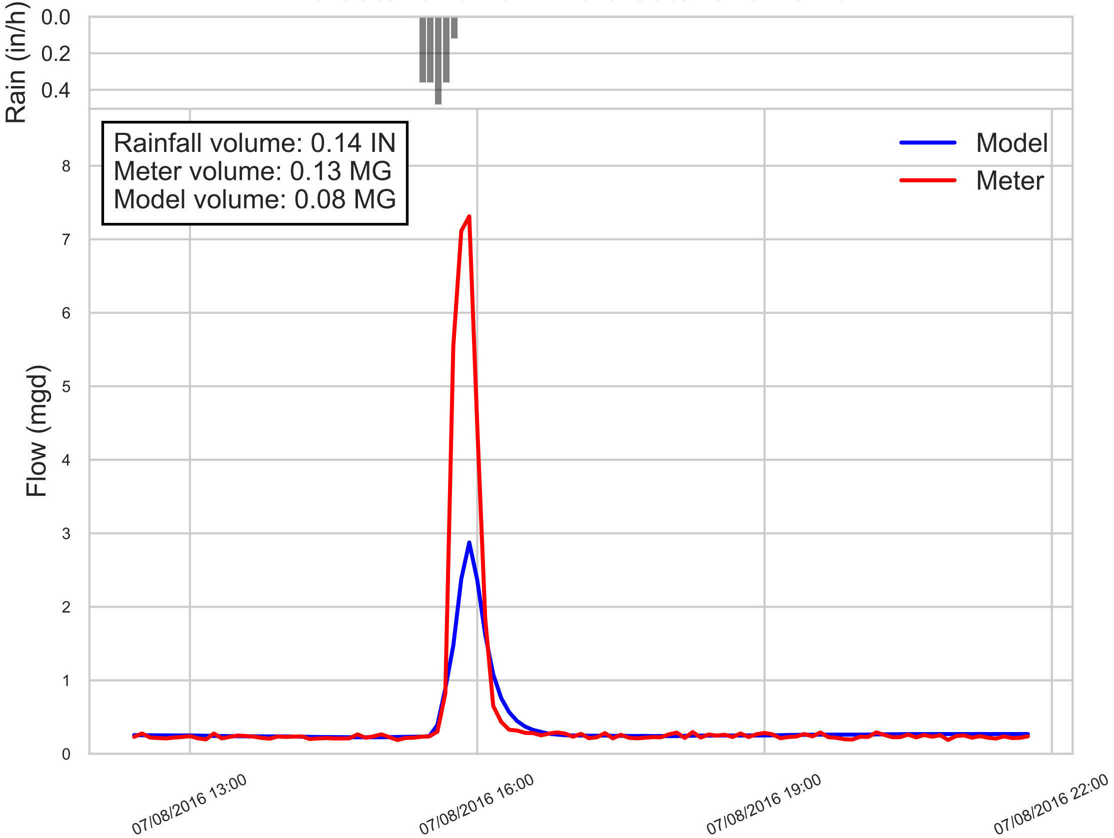
Wet Weather Event 37 for Meter 049-1
07/04/2016 13:45 to 07/05/2016 00:04



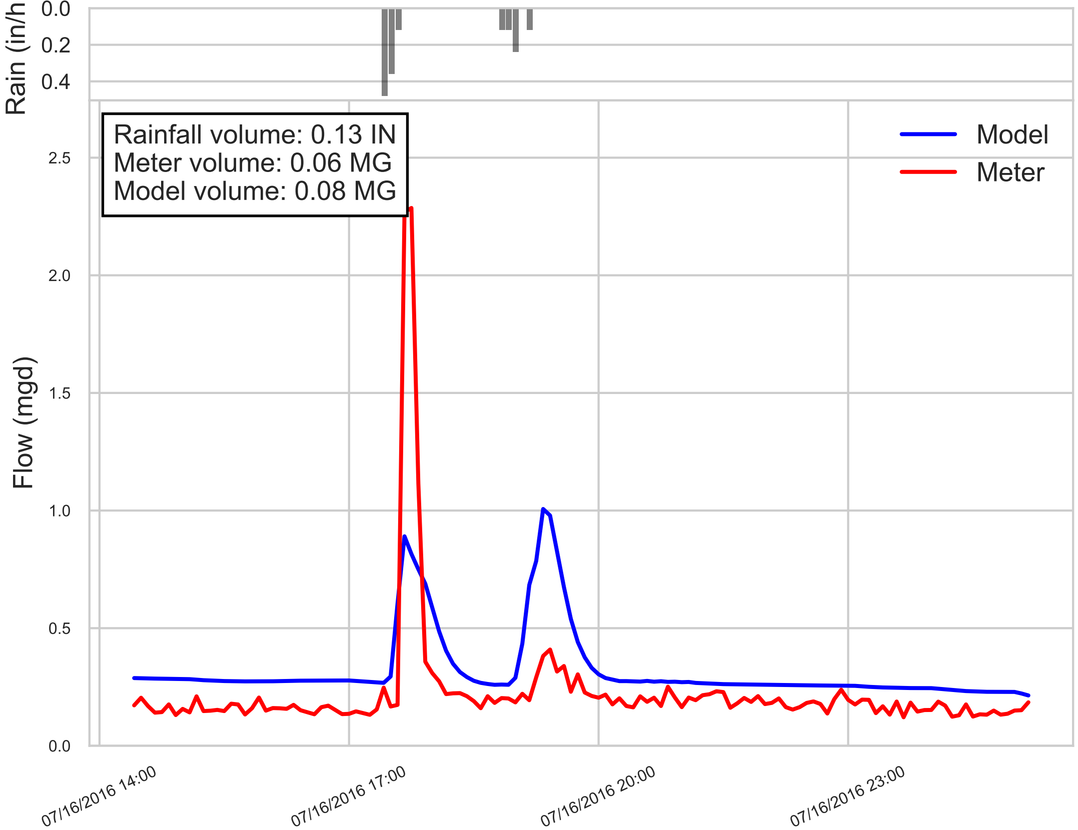
Wet Weather Event 38 for Meter 049-1
07/05/2016 01:50 to 07/05/2016 09:15

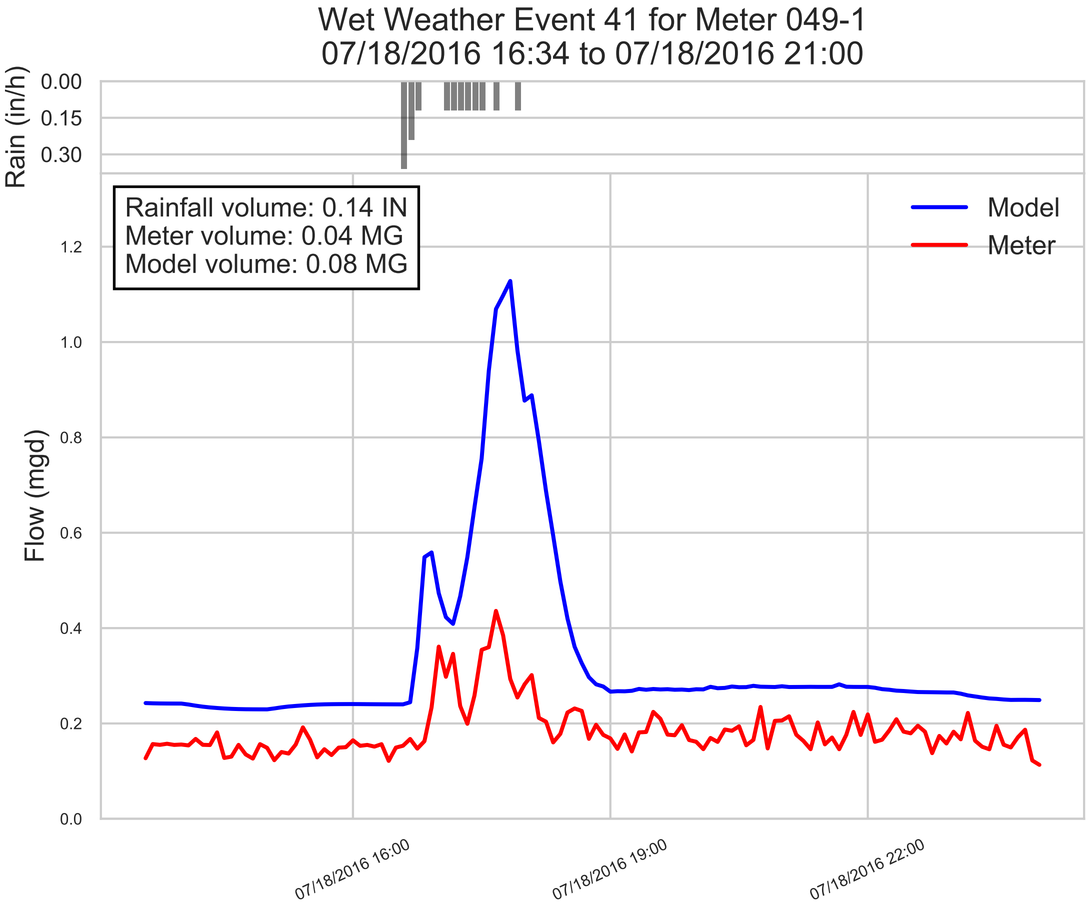


Wet Weather Event 39 for Meter 049-1
07/08/2016 15:24 to 07/08/2016 18:49

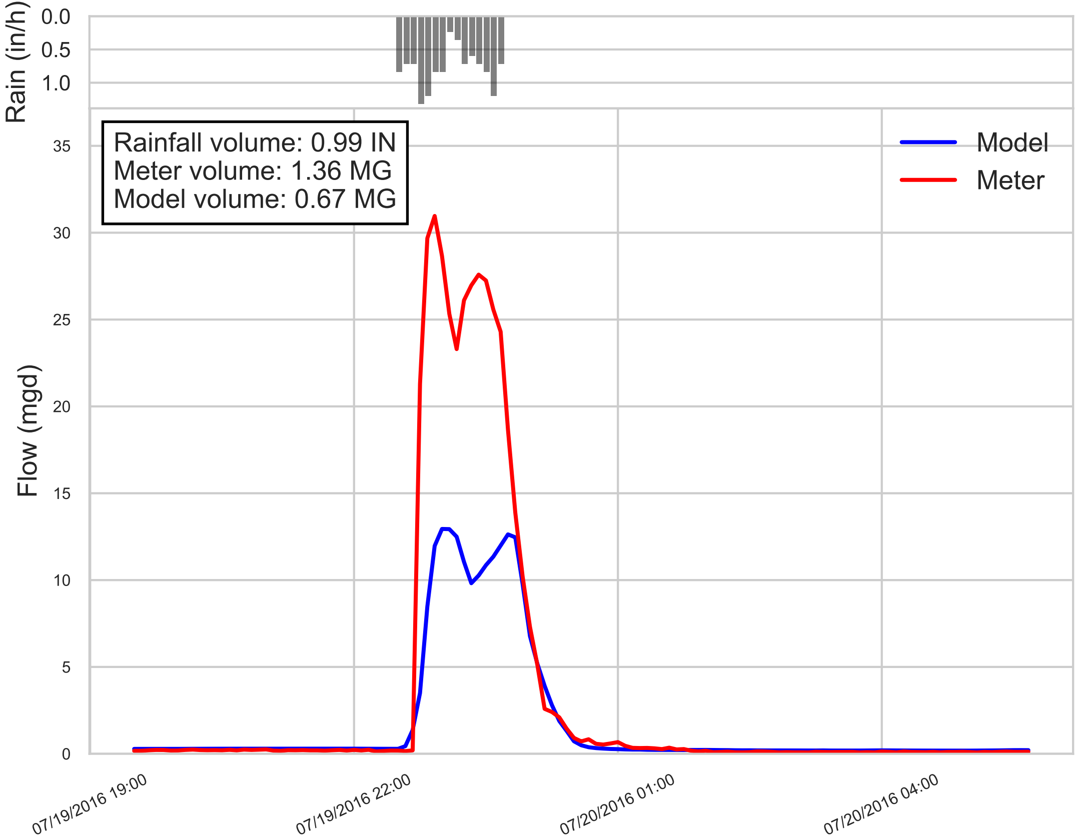


Wet Weather Event 40 for Meter 049-1
07/16/2016 17:24 to 07/16/2016 22:14

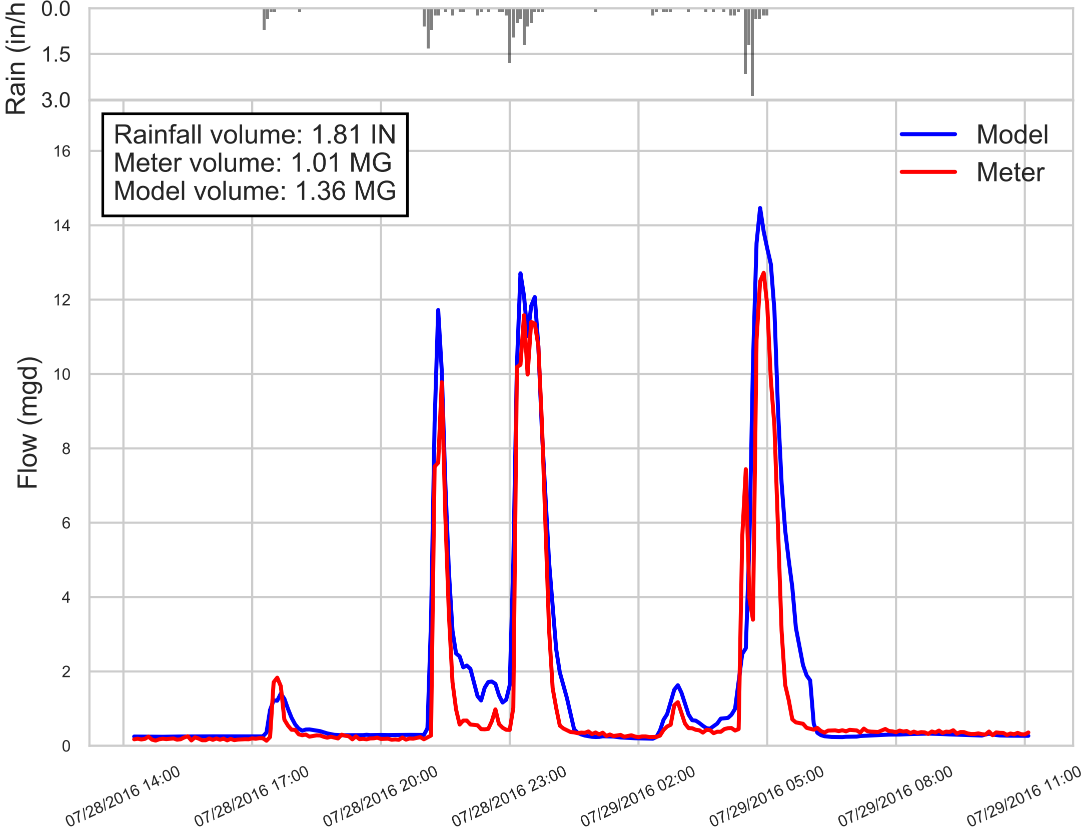


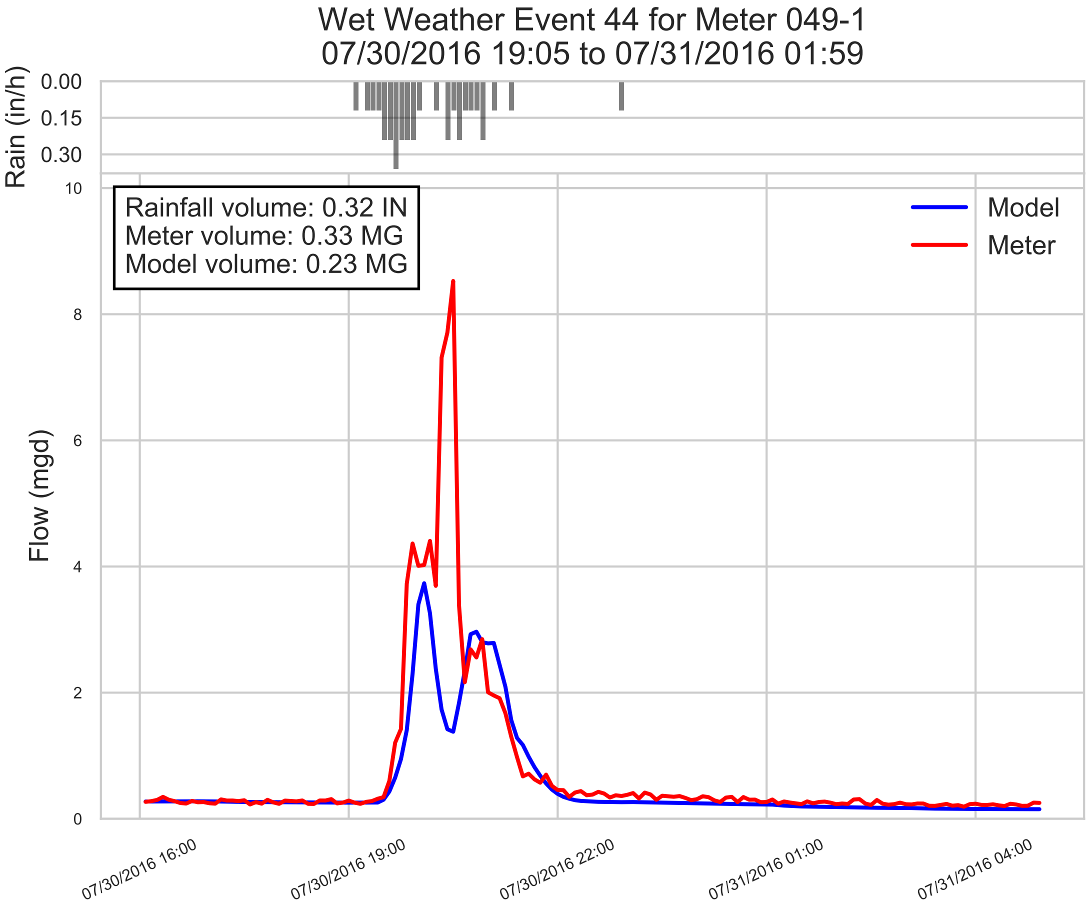

Wet Weather Event 41 for Meter 049-1
07/18/2016 16:34 to 07/18/2016 21:00
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.14 IN
Meter volume: 0.04 MG
Model volume: 0.08 MG
Model
Meter
Flow (mgd)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
07/18/2016 16:00
07/18/2016 19:00
07/18/2016 22:00

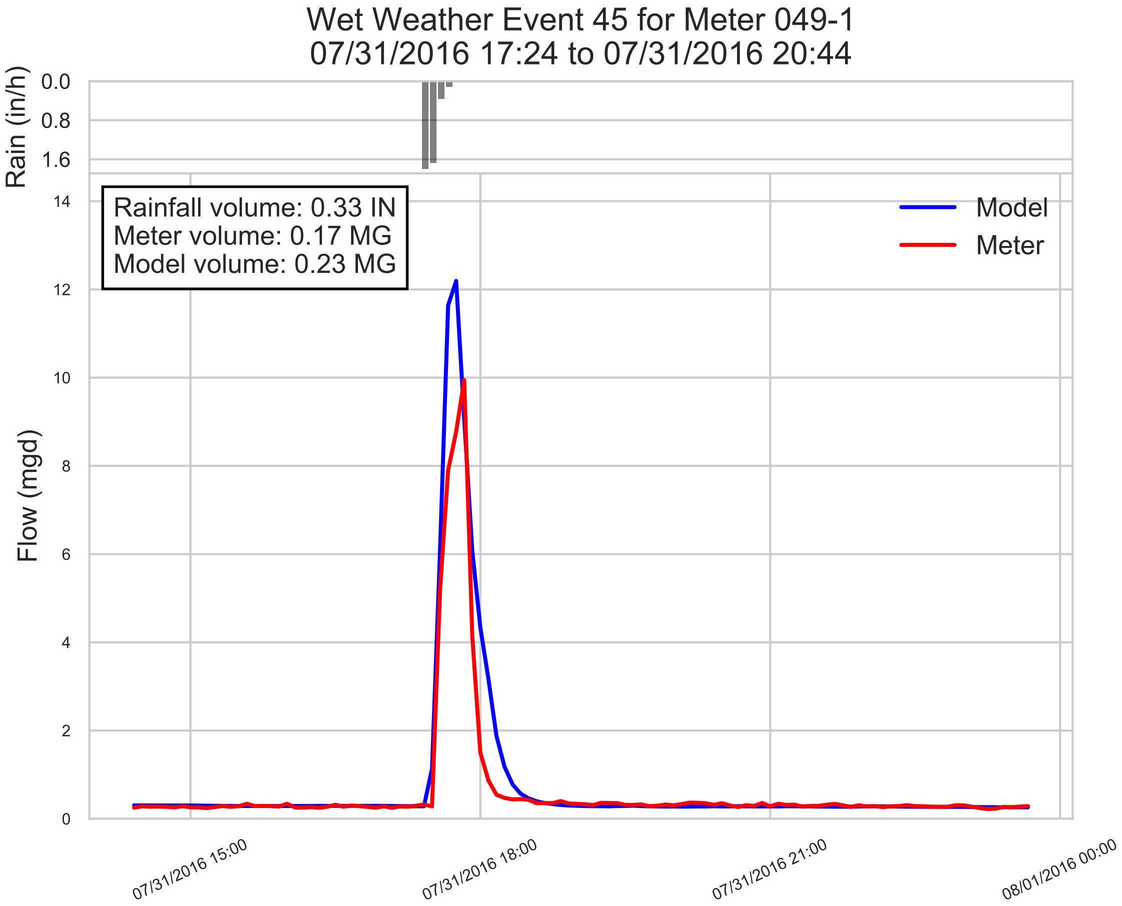
Wet Weather Event 42 for Meter 049-1
07/19/2016 22:30 to 07/20/2016 02:44



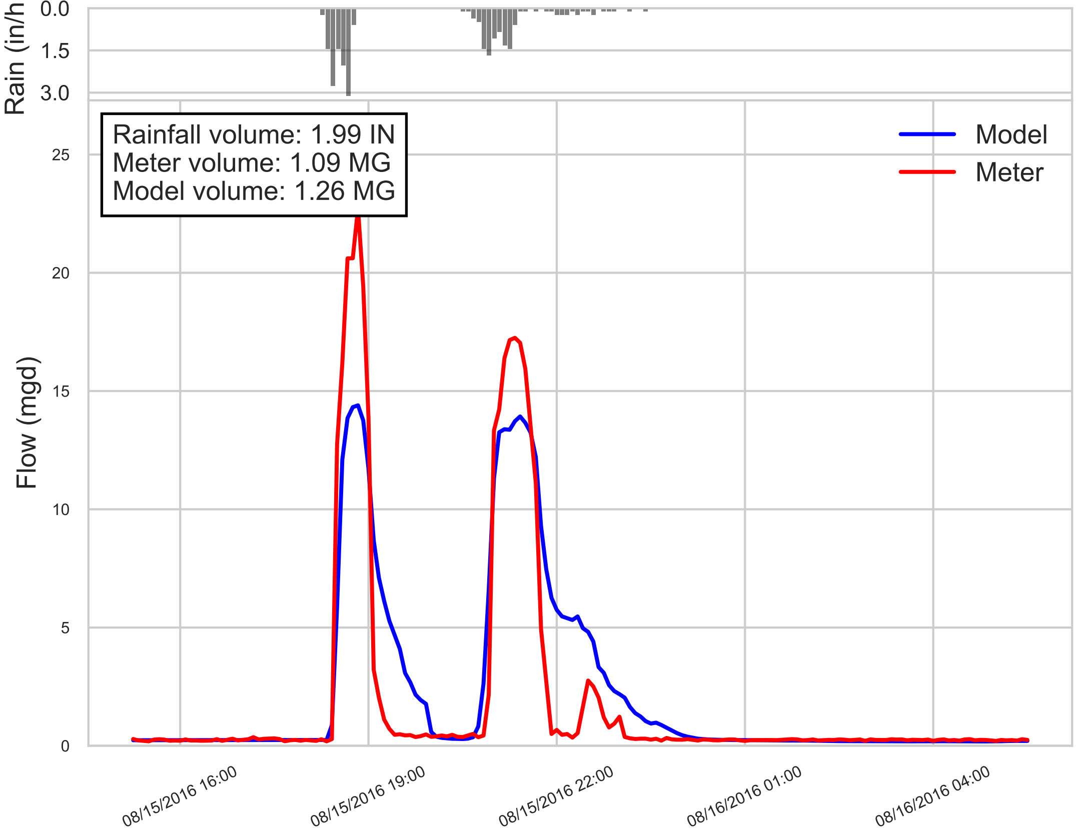
Wet Weather Event 43 for Meter 049-1
07/28/2016 17:15 to 07/29/2016 08:05

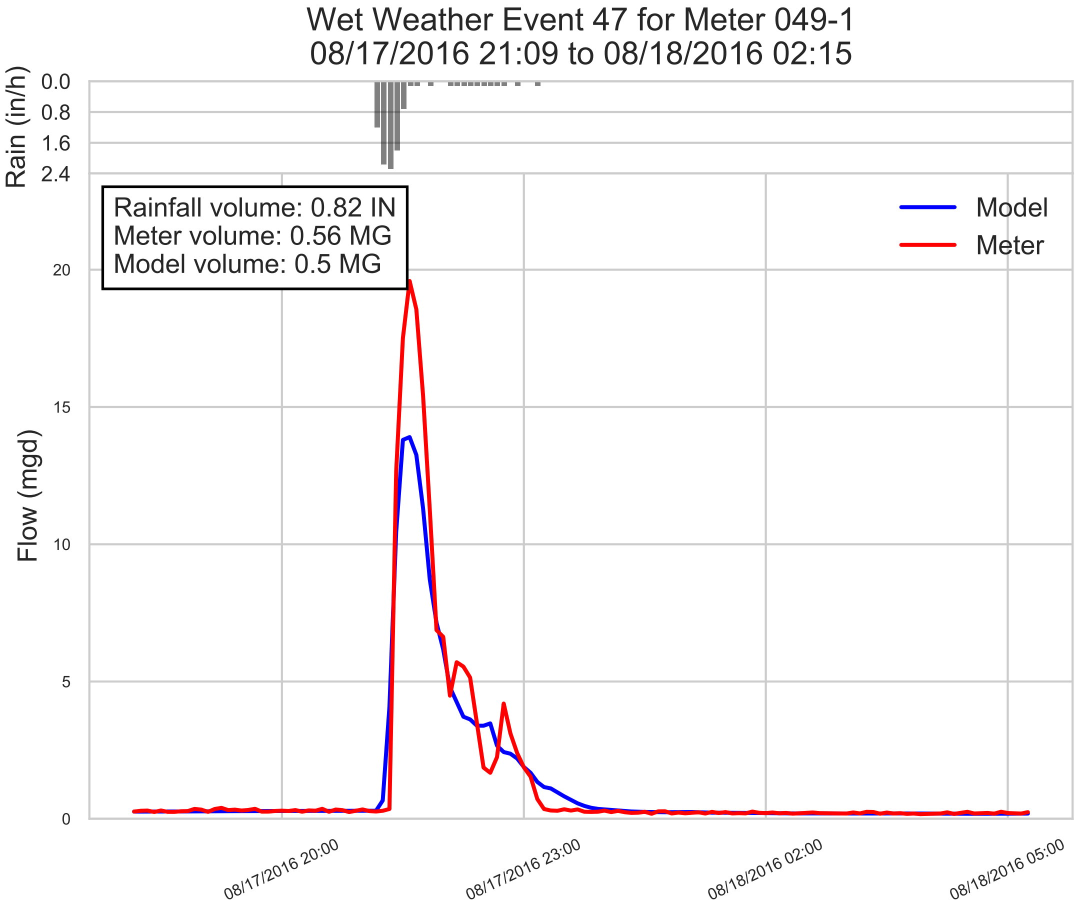



Wet Weather Event 44 for Meter 049-1
07/30/2016 19:05 to 07/31/2016 01:59
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.32 IN
Meter volume: 0.33 MG
Model volume: 0.23 MG
Model
Meter
Flow (mgd)
10
8
6
4
2
0
07/30/2016 16:00
07/30/2016 19:00
07/30/2016 22:00
07/31/2016 01:00
07/31/2016 04:00

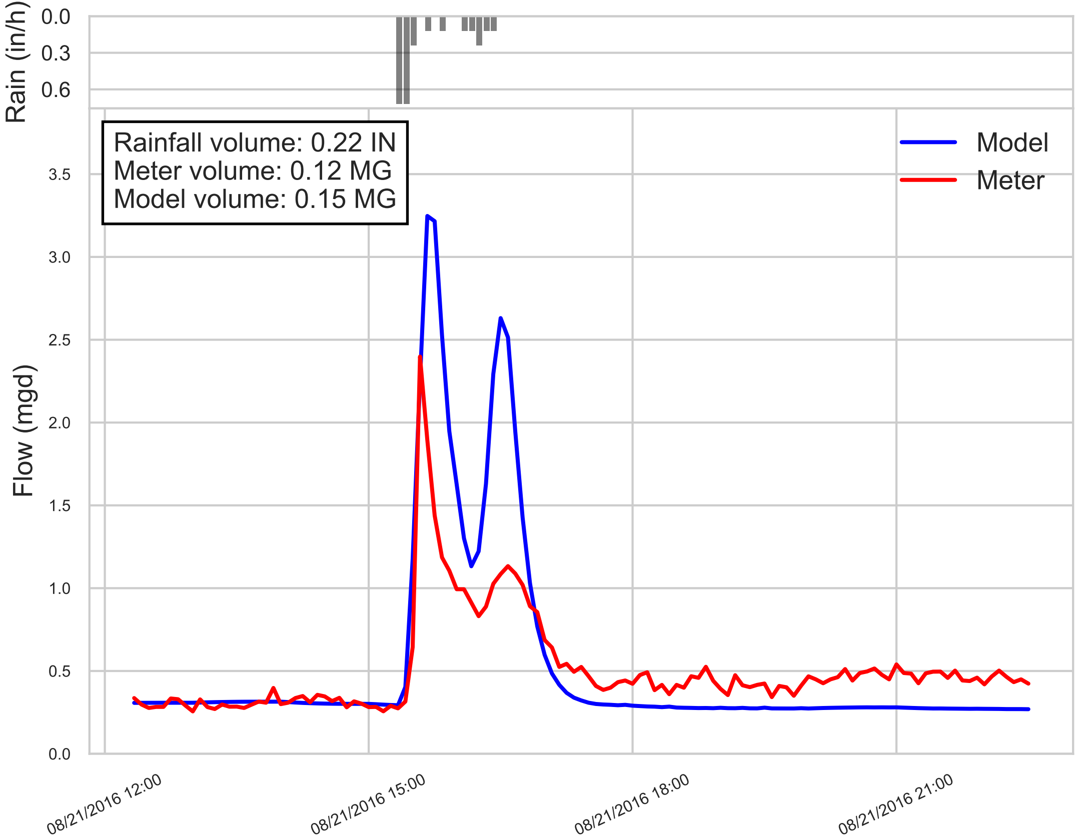

Wet Weather Event 45 for Meter 049-1
07/31/2016 17:24 to 07/31/2016 20:44
Rain (in/h)
0.0
0.8
1.6
Rainfall volume: 0.33 IN
Meter volume: 0.17 MG
Model volume: 0.23 MG
Model
Meter
Flow (mgd)
14
12
10
8
6
4
2
0
07/31/2016 15:00
07/31/2016 18:00
07/31/2016 21:00
08/01/2016 00:00

Wet Weather Event 46 for Meter 049-1
08/15/2016 18:15 to 08/16/2016 02:30



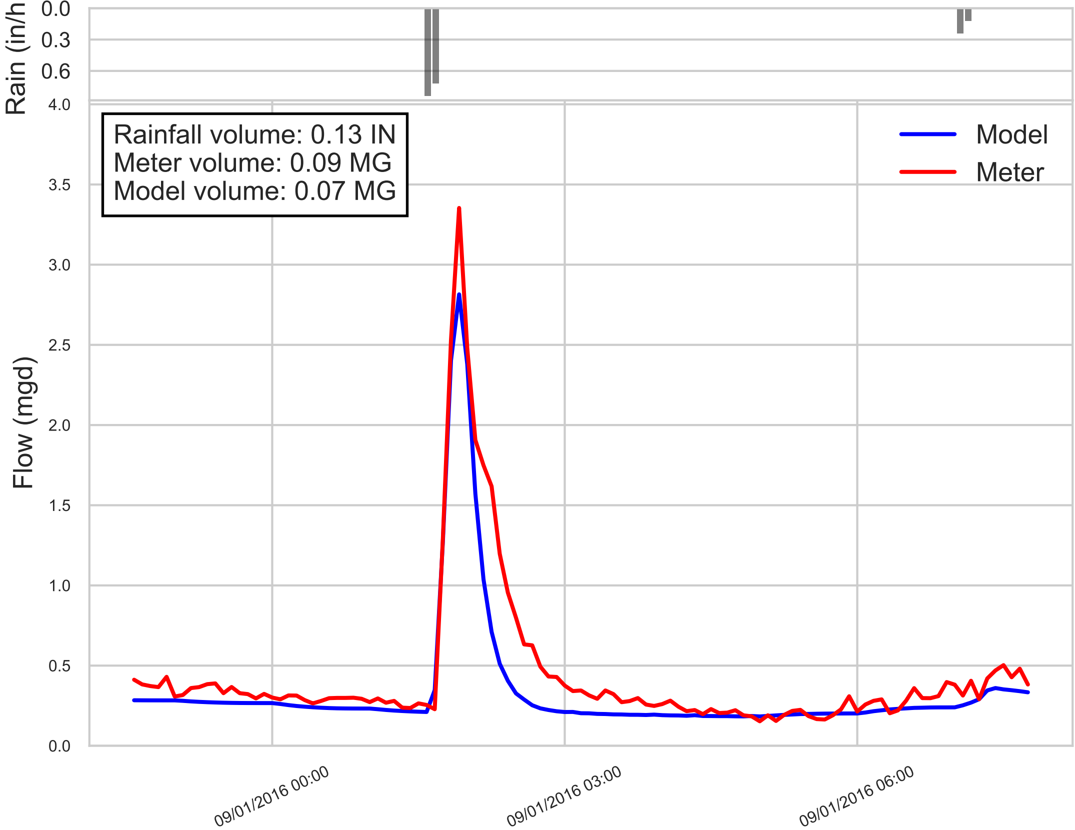

Wet Weather Event 47 for Meter 049-1
08/17/2016 21:09 to 08/18/2016 02:15
Rain (in/h)
0.0
0.8
1.6
2.4
Rainfall volume: 0.82 IN
Meter volume: 0.56 MG
Model volume: 0.5 MG
Model
Meter
Flow (mgd)
20
15
10
5
0
08/17/2016 20:00
08/17/2016 23:00
08/18/2016 02:00
08/18/2016 05:00

Wet Weather Event 48 for Meter 049-1
08/21/2016 15:20 to 08/21/2016 19:30

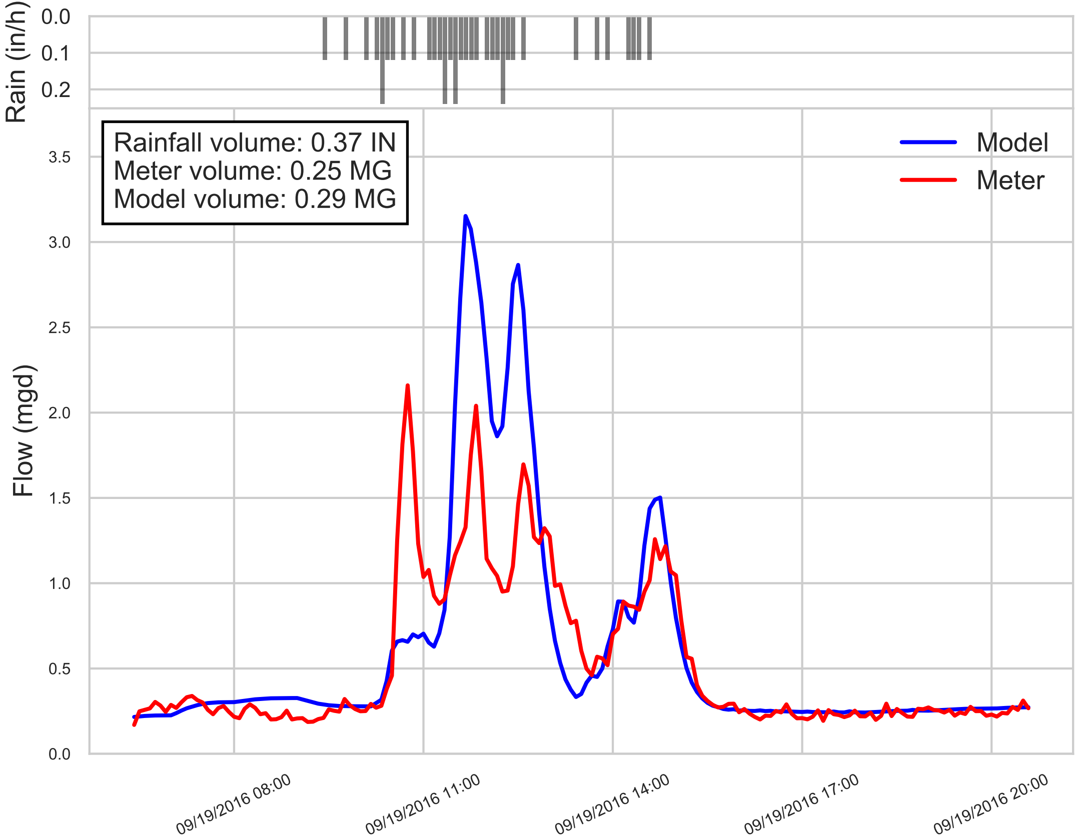


Rainfall volume: 0.22 IN
Meter volume: 0.12 MG
Model volume: 0.15 MG

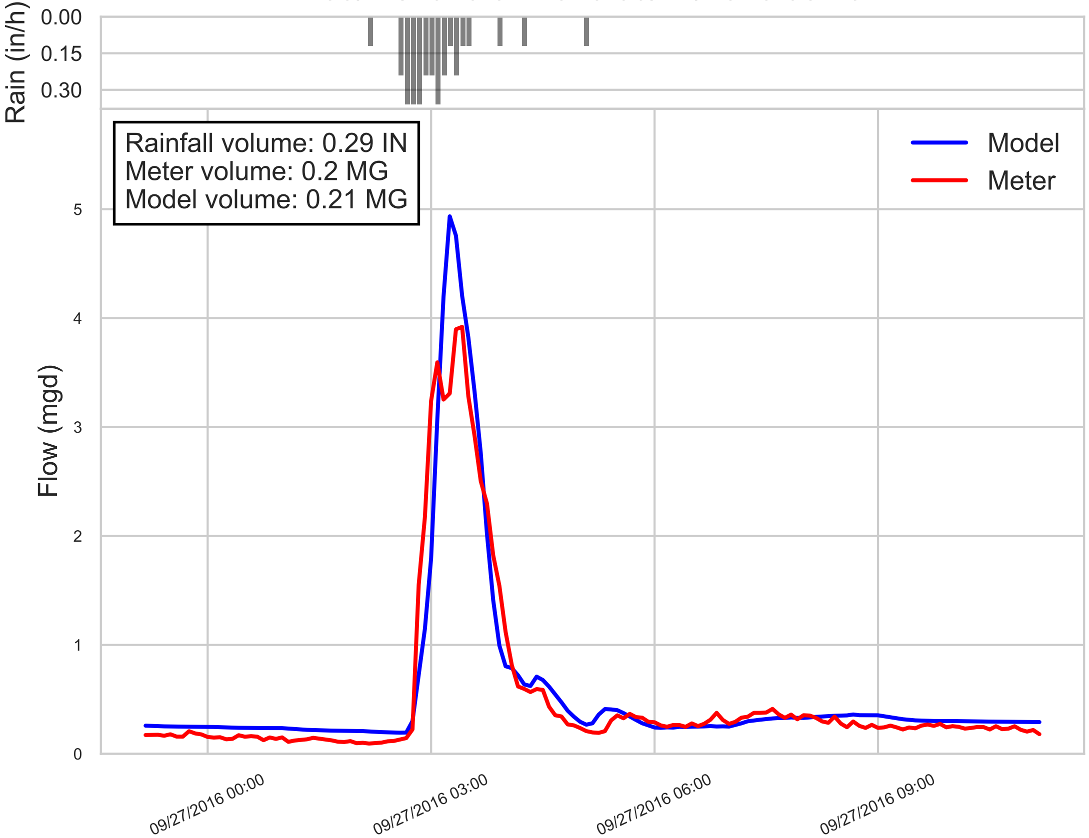
Wet Weather Event 49 for Meter 049-1
09/01/2016 01:34 to 09/01/2016 04:45



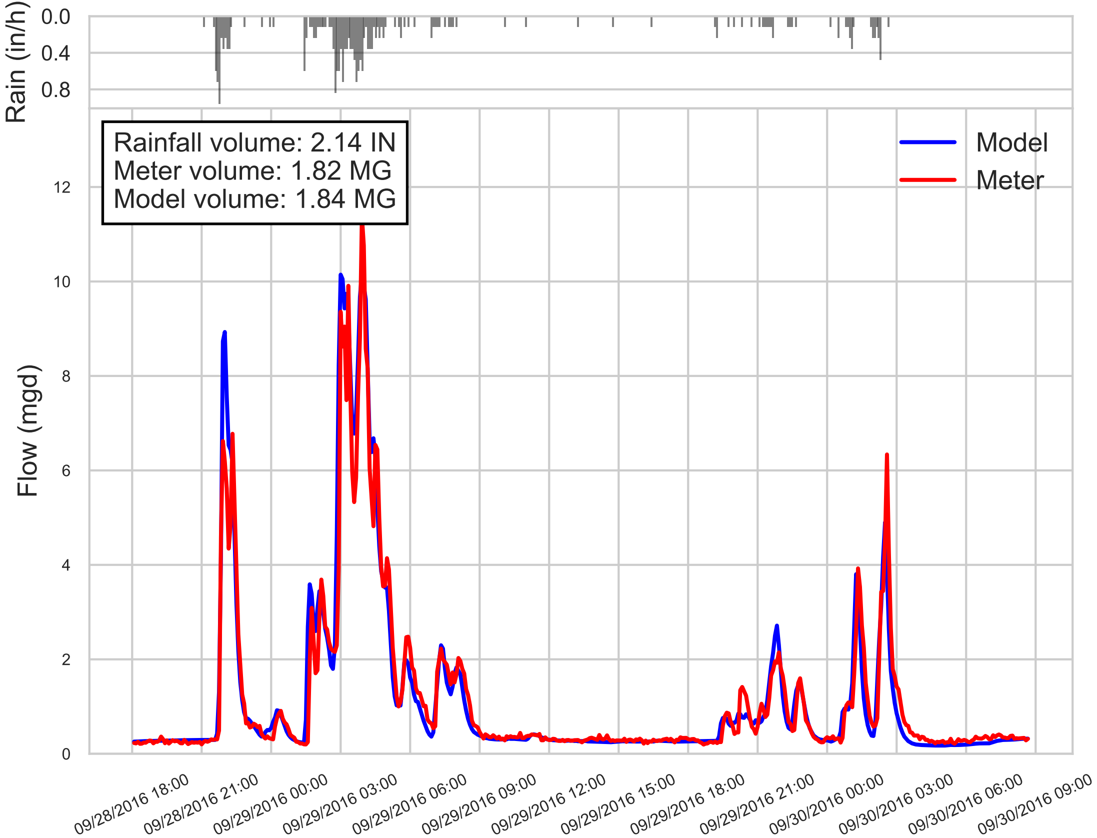
Wet Weather Event 50 for Meter 049-1
09/19/2016 09:24 to 09/19/2016 17:39



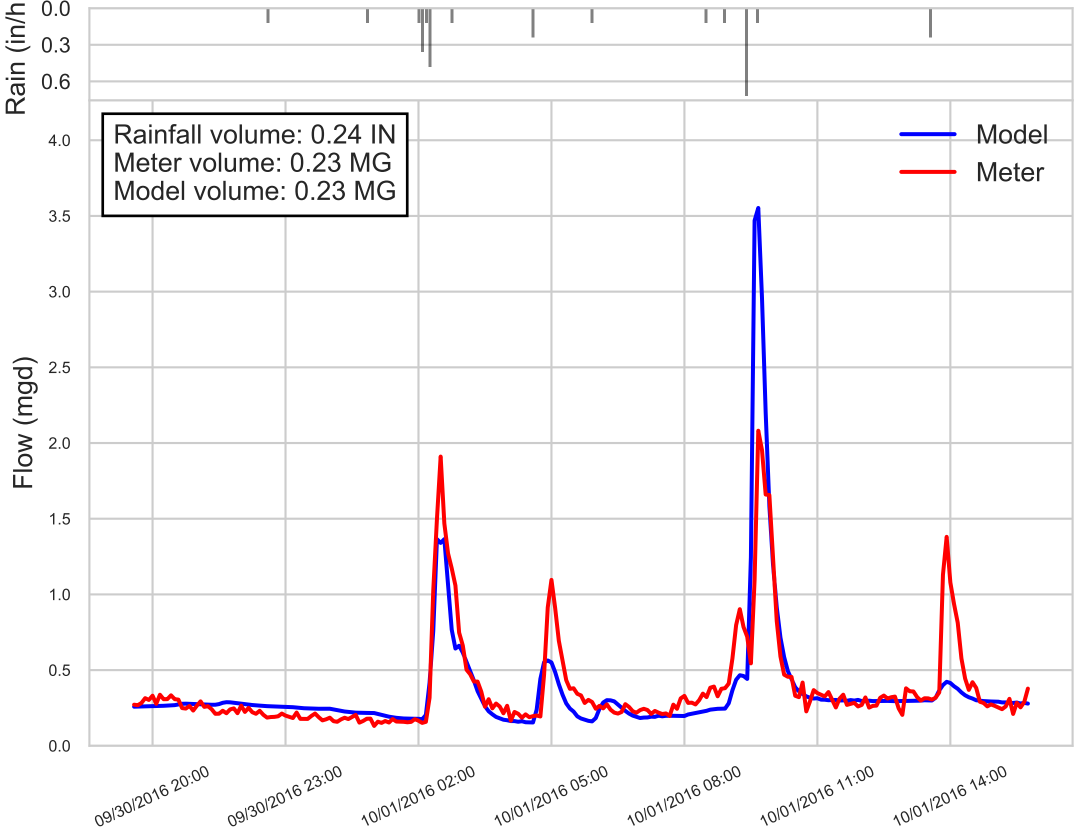
Wet Weather Event 51 for Meter 049-1
09/27/2016 02:10 to 09/27/2016 08:10



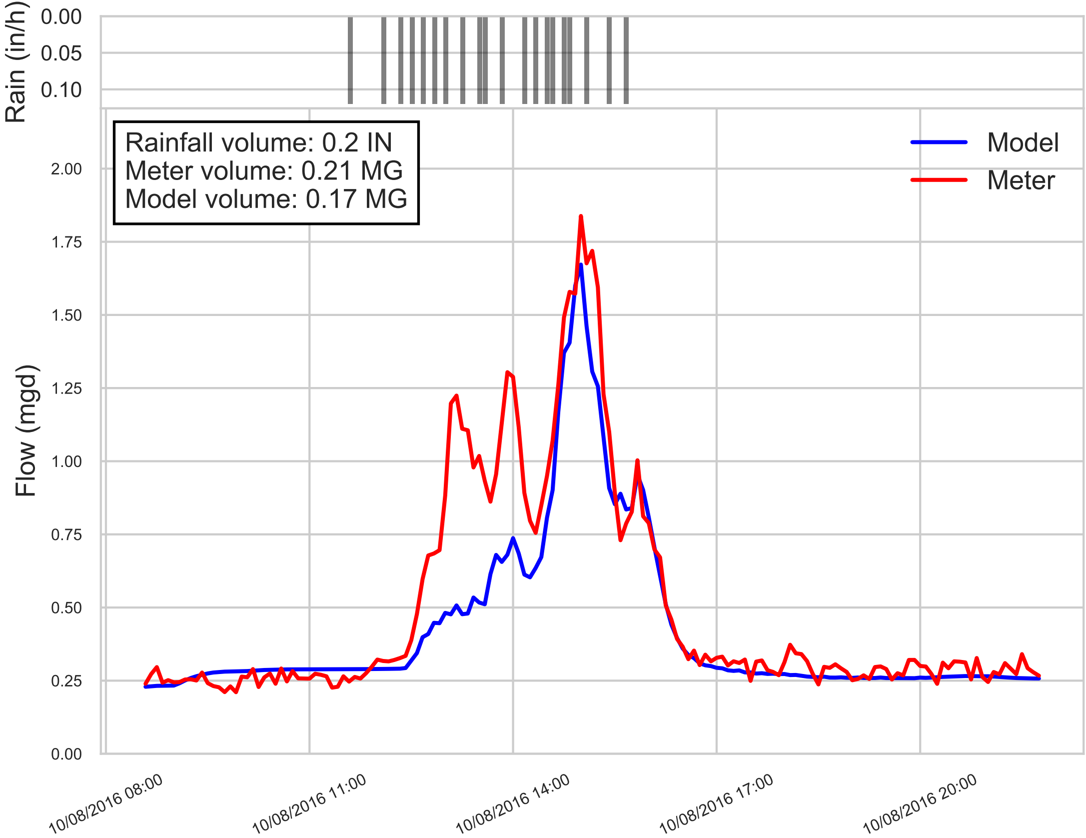
Wet Weather Event 52 for Meter 049-1
09/28/2016 21:04 to 09/30/2016 05:44



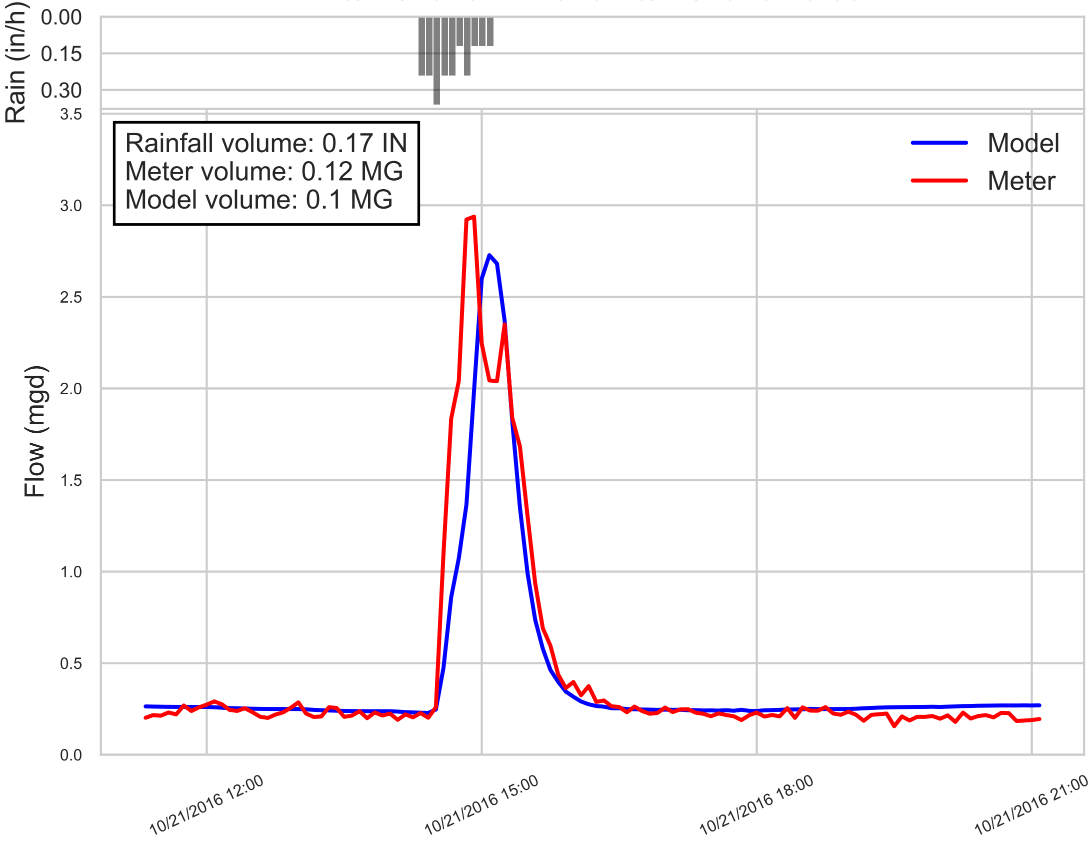
Wet Weather Event 53 for Meter 049-1
09/30/2016 22:34 to 10/01/2016 12:45



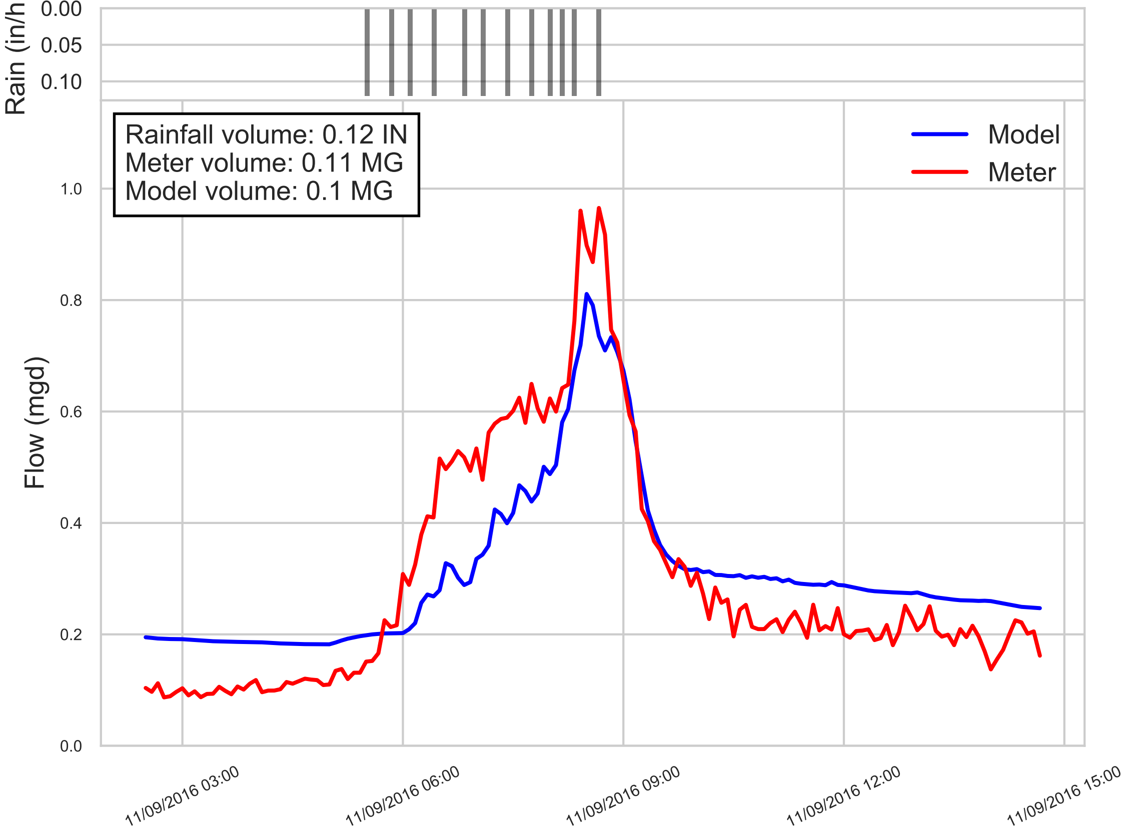
Wet Weather Event 54 for Meter 049-1
10/08/2016 11:35 to 10/08/2016 18:45



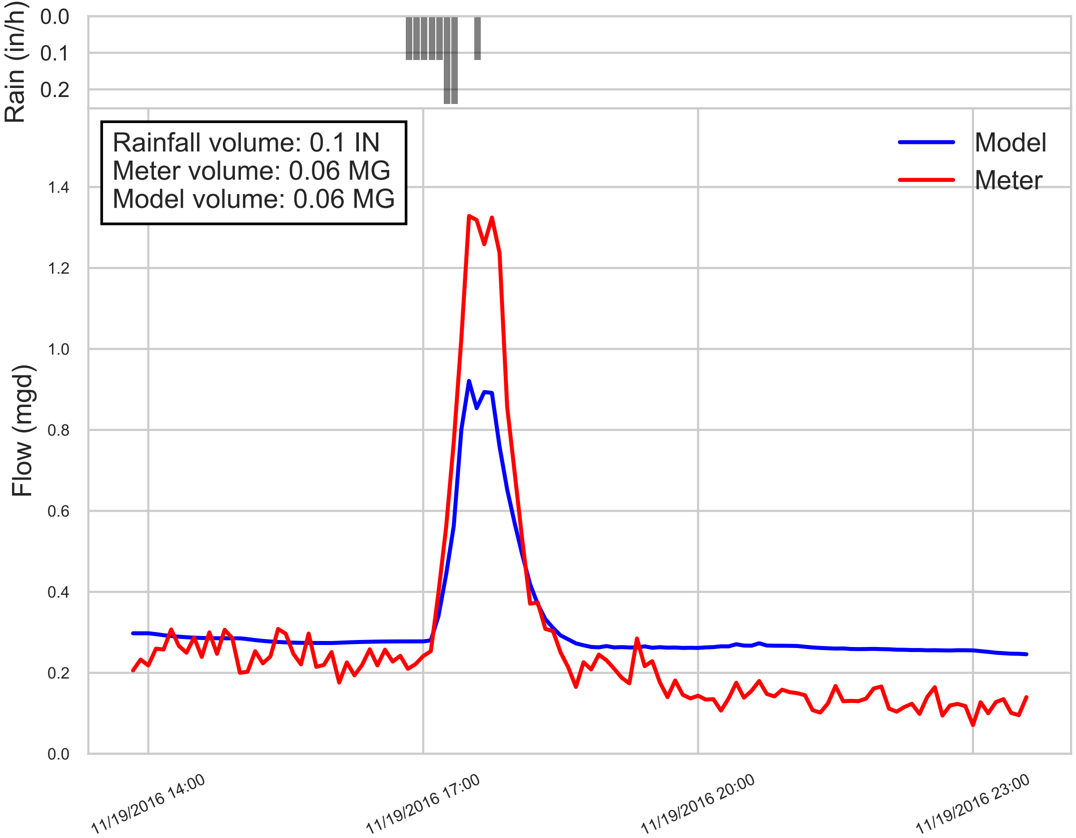
Wet Weather Event 55 for Meter 049-1
10/21/2016 14:19 to 10/21/2016 18:09



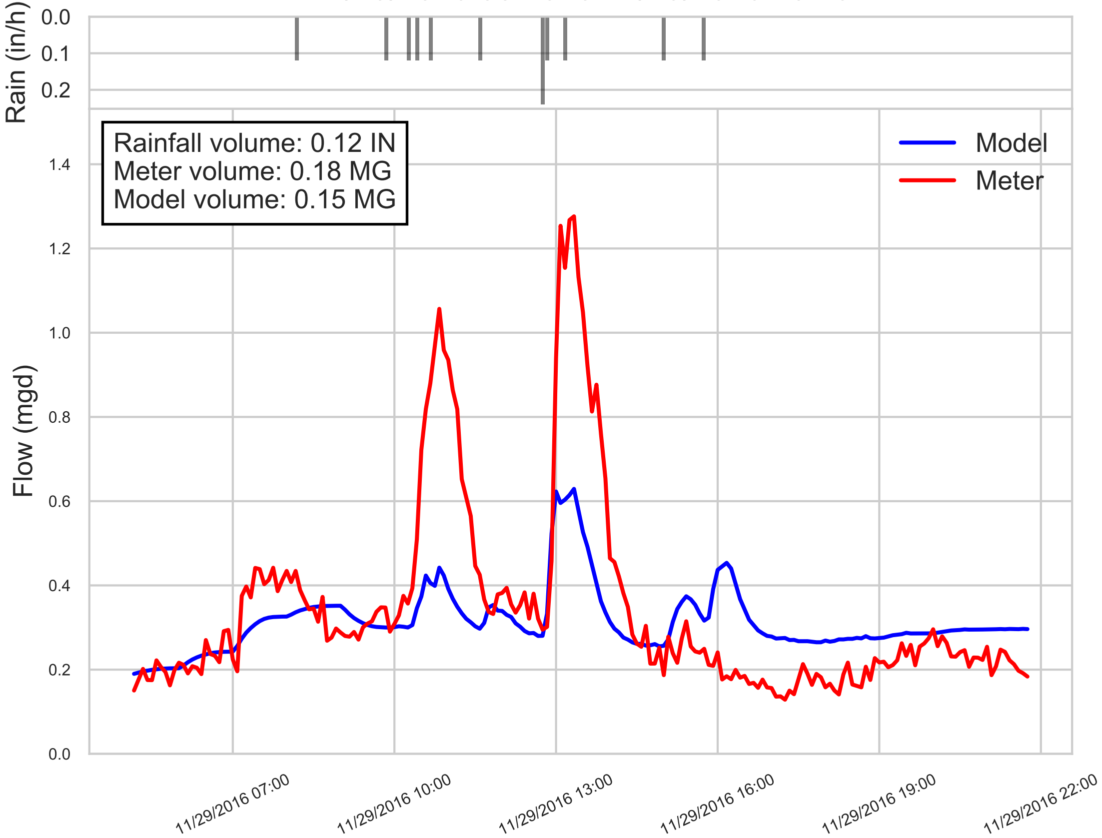
Wet Weather Event 56 for Meter 049-1
11/09/2016 05:30 to 11/09/2016 11:44



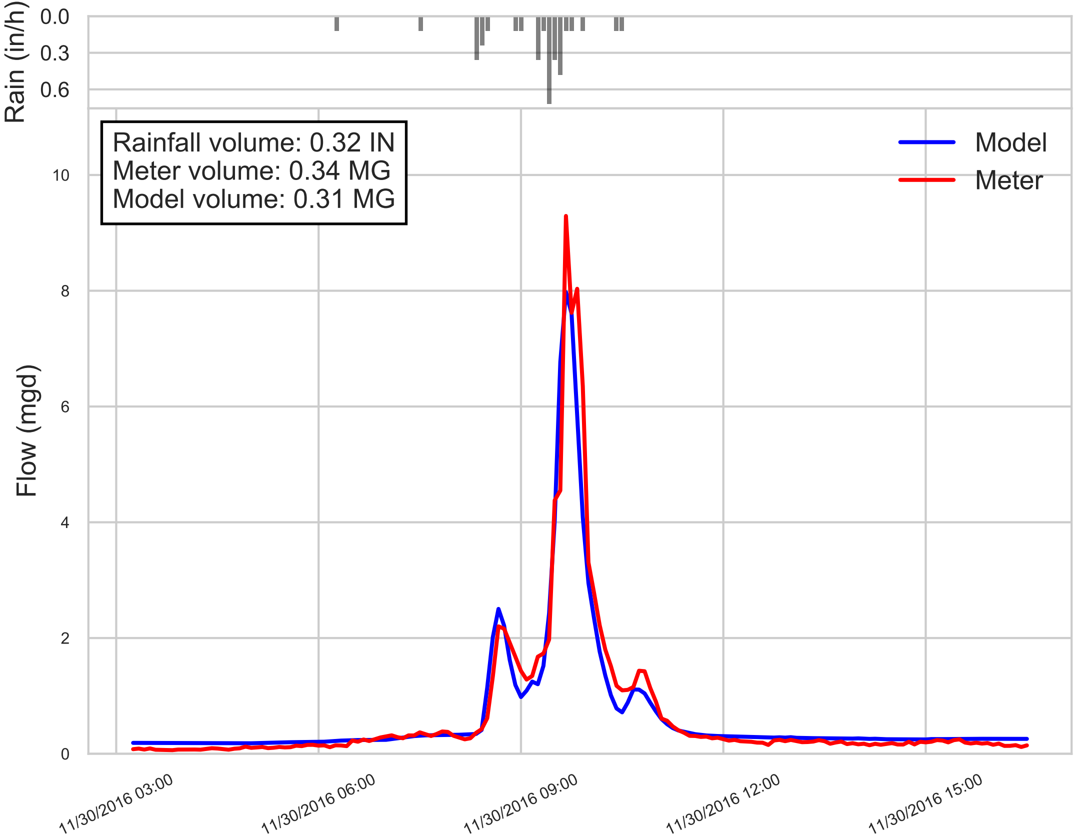
Wet Weather Event 57 for Meter 049-1
11/19/2016 16:50 to 11/19/2016 20:39

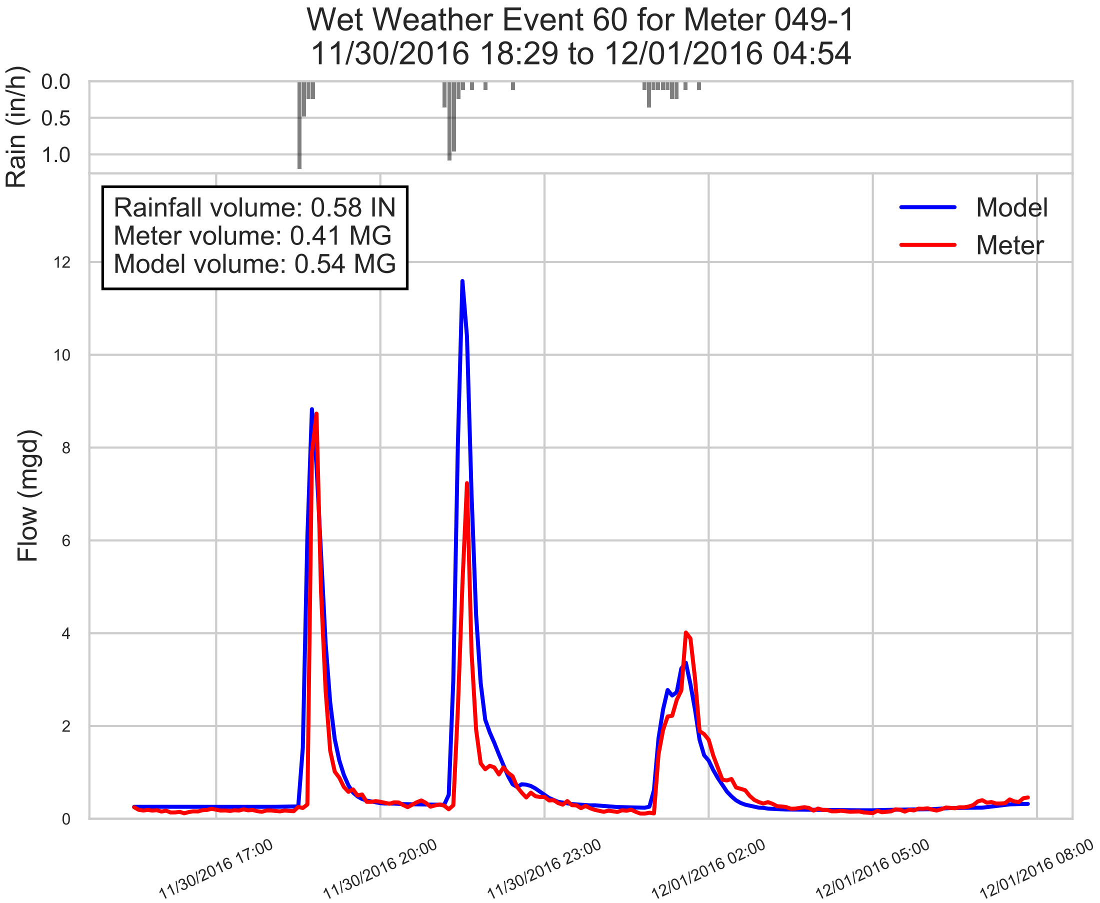


Wet Weather Event 58 for Meter 049-1
11/29/2016 08:10 to 11/29/2016 18:49

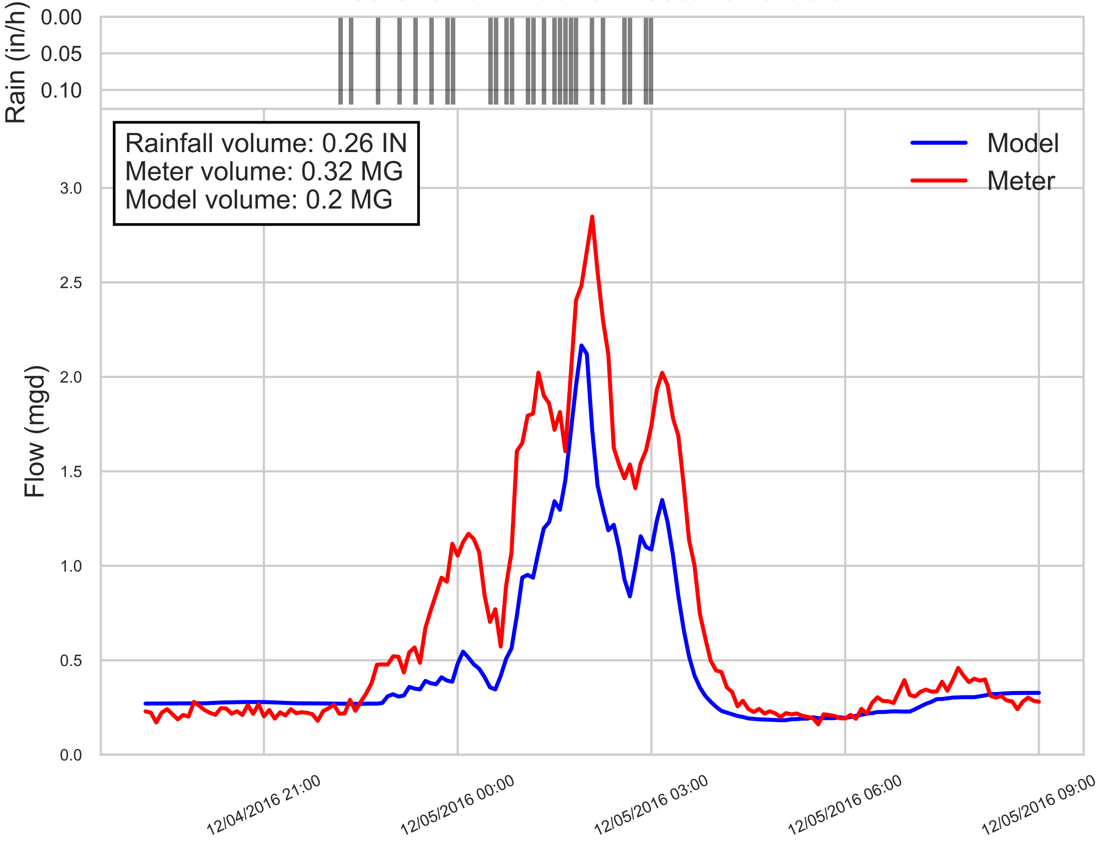


Wet Weather Event 59 for Meter 049-1
11/30/2016 06:15 to 11/30/2016 13:34



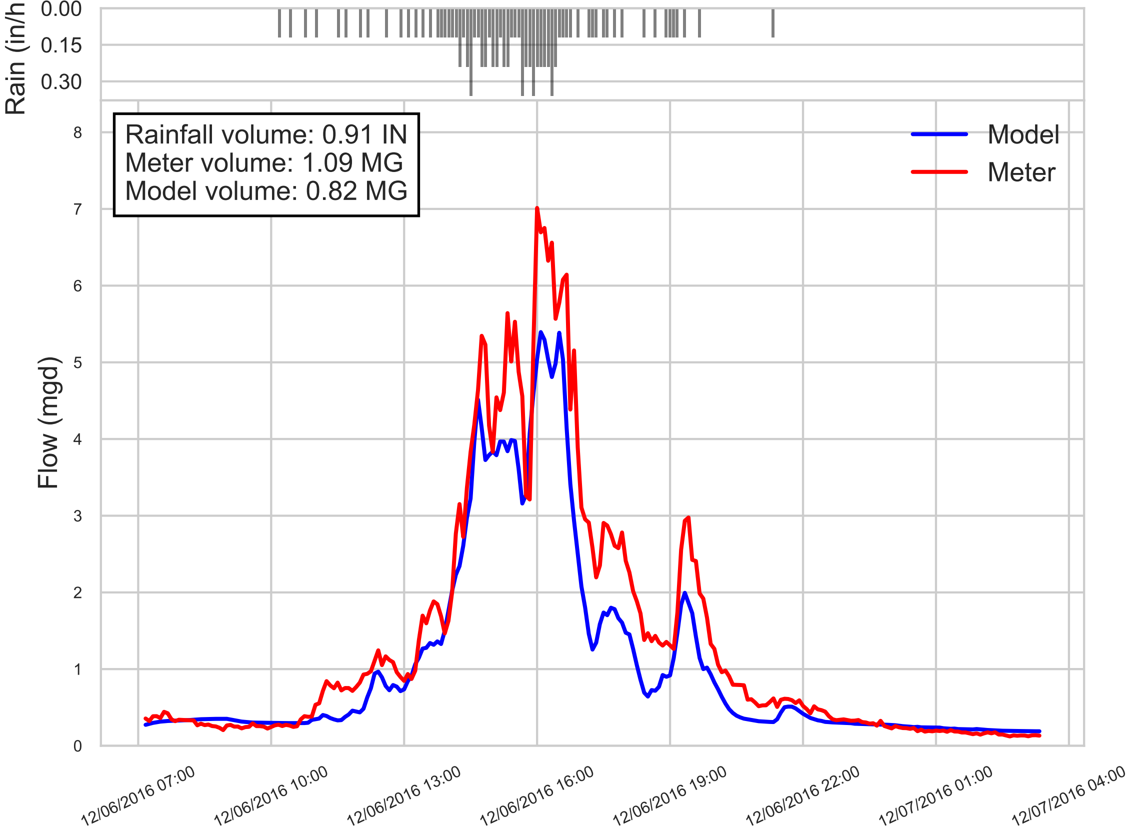

Wet Weather Event 60 for Meter 049-1
11/30/2016 18:29 to 12/01/2016 04:54
Rain (in/h)
0.0
0.5
1.0
Rainfall volume: 0.58 IN
Meter volume: 0.41 MG
Model volume: 0.54 MG
Model
Meter
Flow (mgd)
0
2
4
6
8
10
12
11/30/2016 17:00
11/30/2016 20:00
11/30/2016 23:00
12/01/2016 02:00
12/01/2016 05:00
12/01/2016 08:00

Wet Weather Event 61 for Meter 049-1
12/04/2016 22:09 to 12/05/2016 06:04

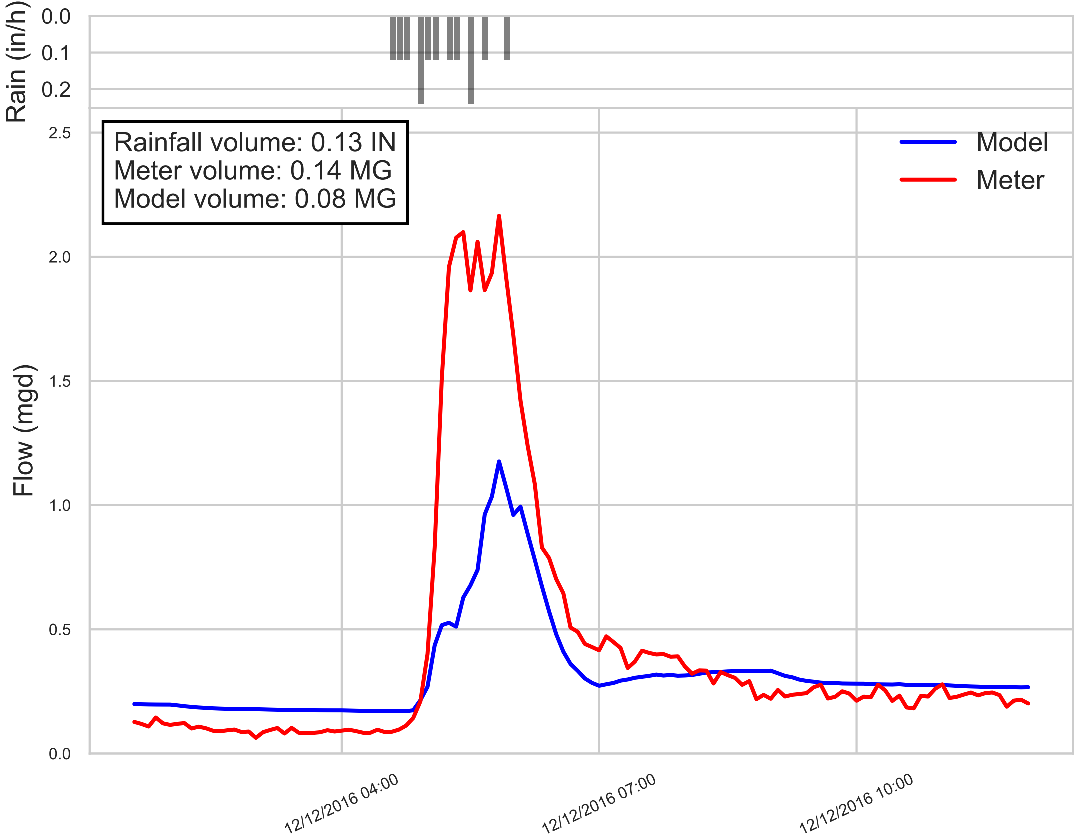


Rainfall volume: 0.26 IN
Meter volume: 0.32 MG
Model volume: 0.2 MG

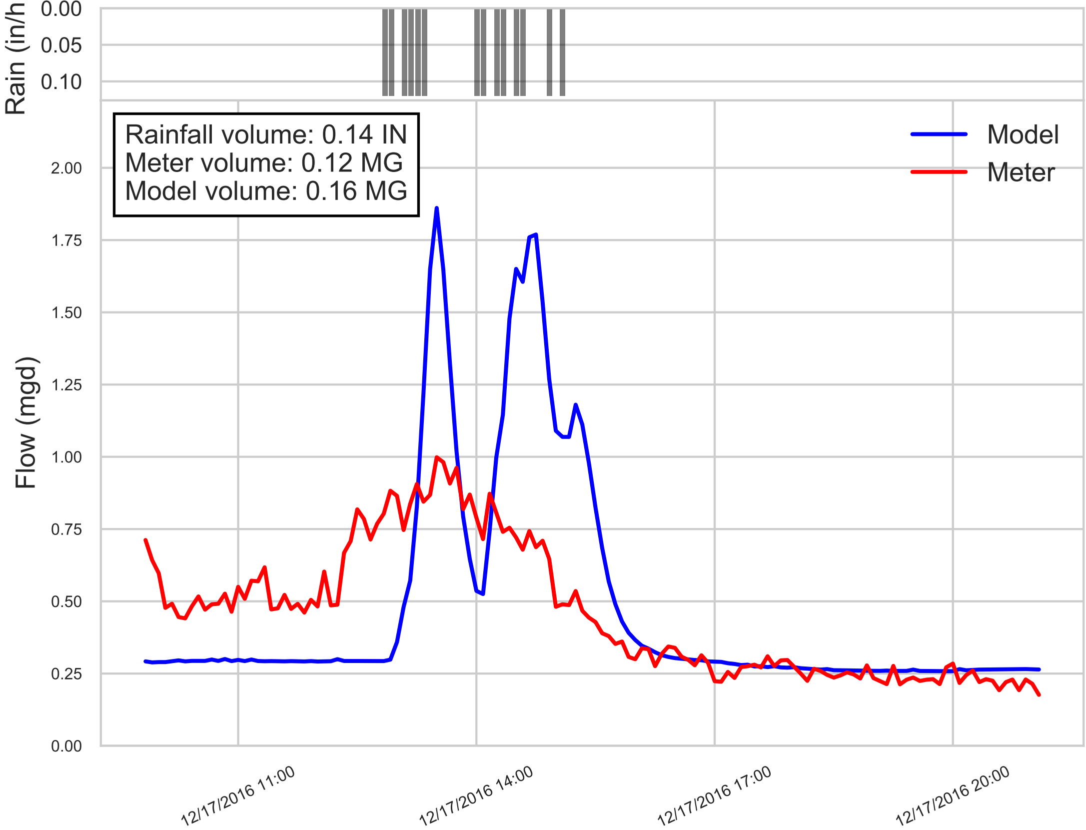
Wet Weather Event 62 for Meter 049-1
12/06/2016 10:09 to 12/07/2016 00:24

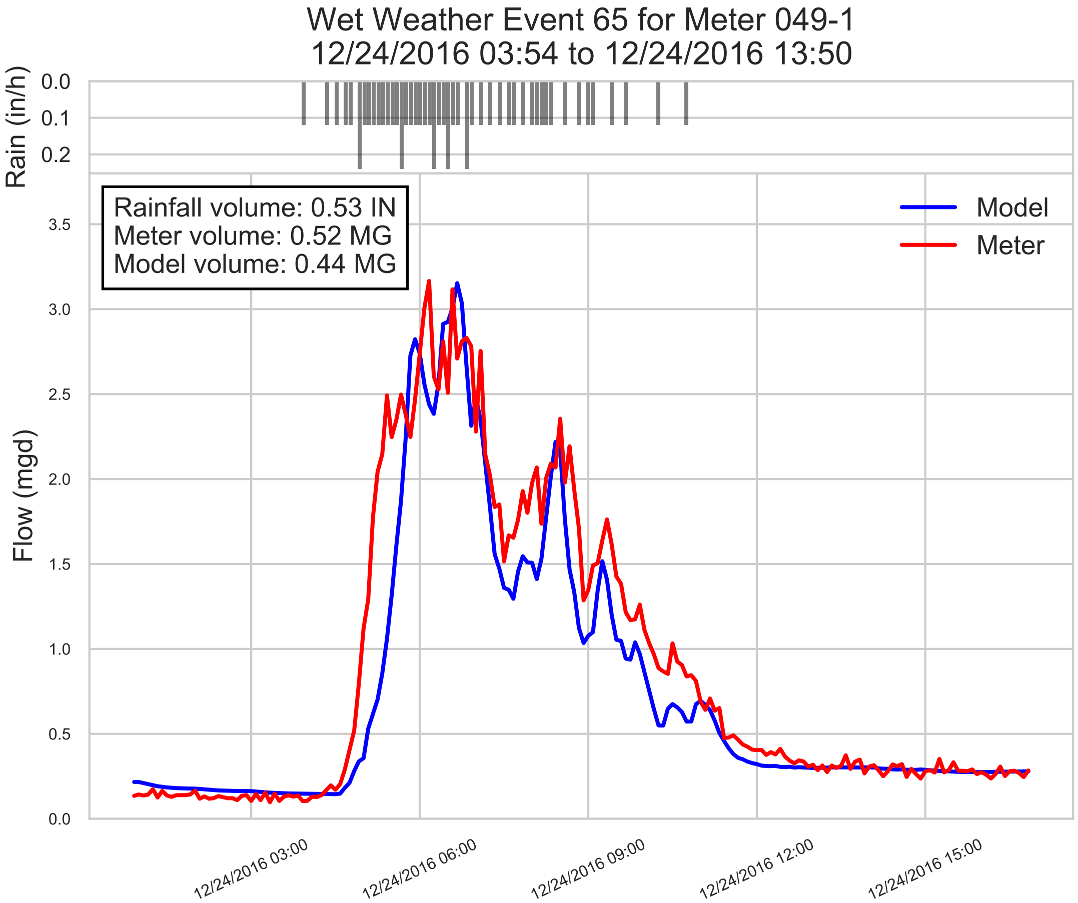


Wet Weather Event 63 for Meter 049-1
12/12/2016 04:34 to 12/12/2016 09:00



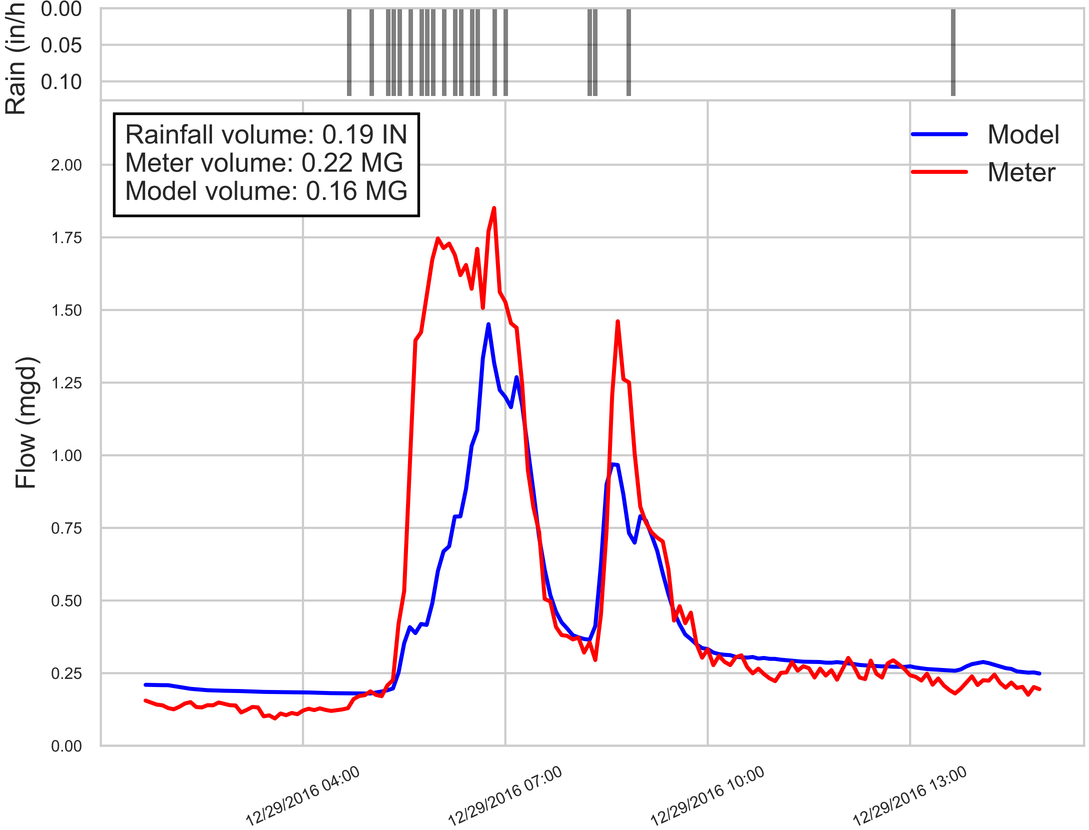
Wet Weather Event 64 for Meter 049-1
12/17/2016 12:49 to 12/17/2016 18:09



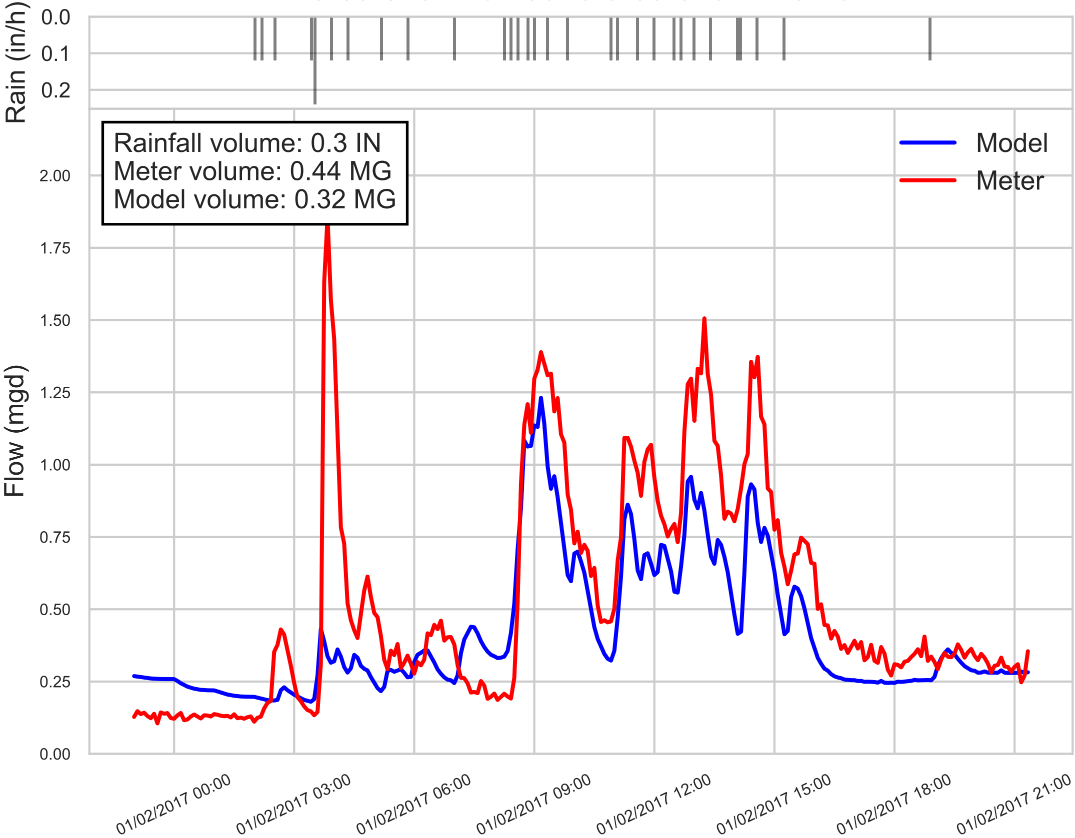


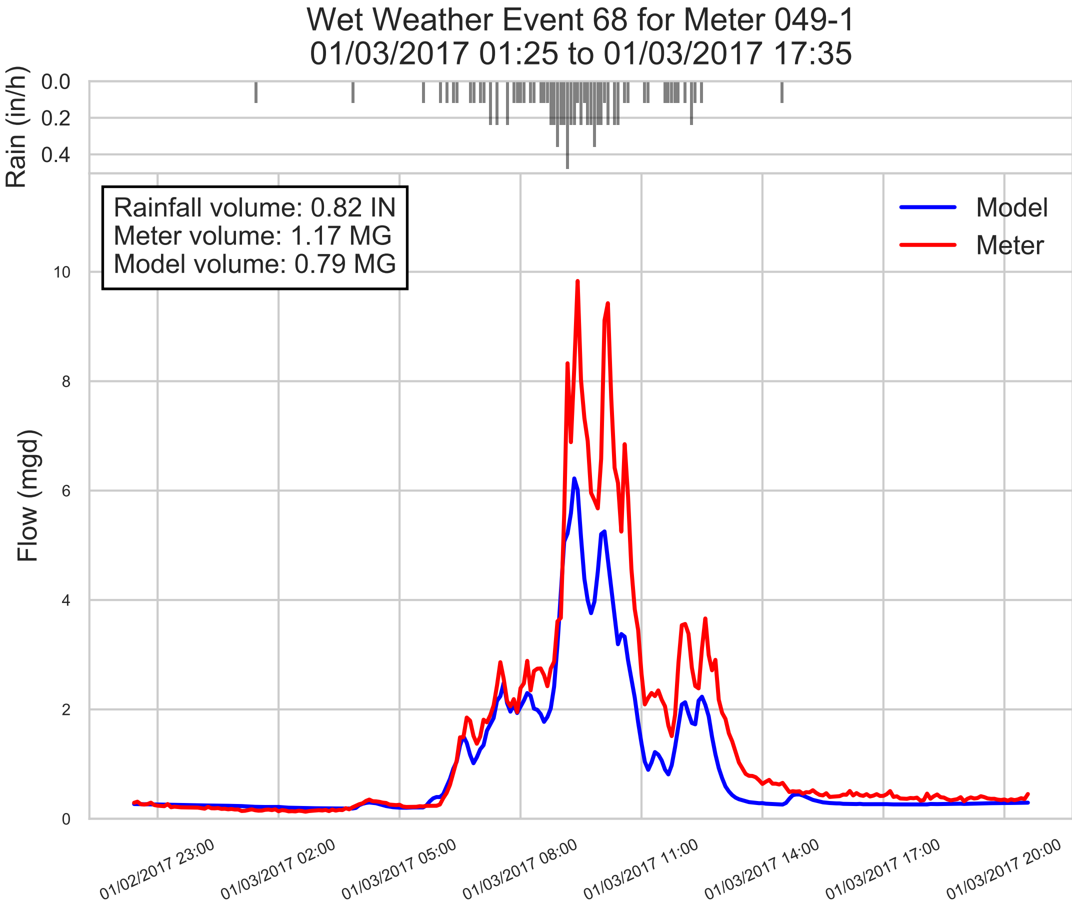
Wet Weather Event 65 for Meter 049-1
12/24/2016 03:54 to 12/24/2016 13:50

Wet Weather Event 66 for Meter 049-1
12/29/2016 04:39 to 12/29/2016 11:55

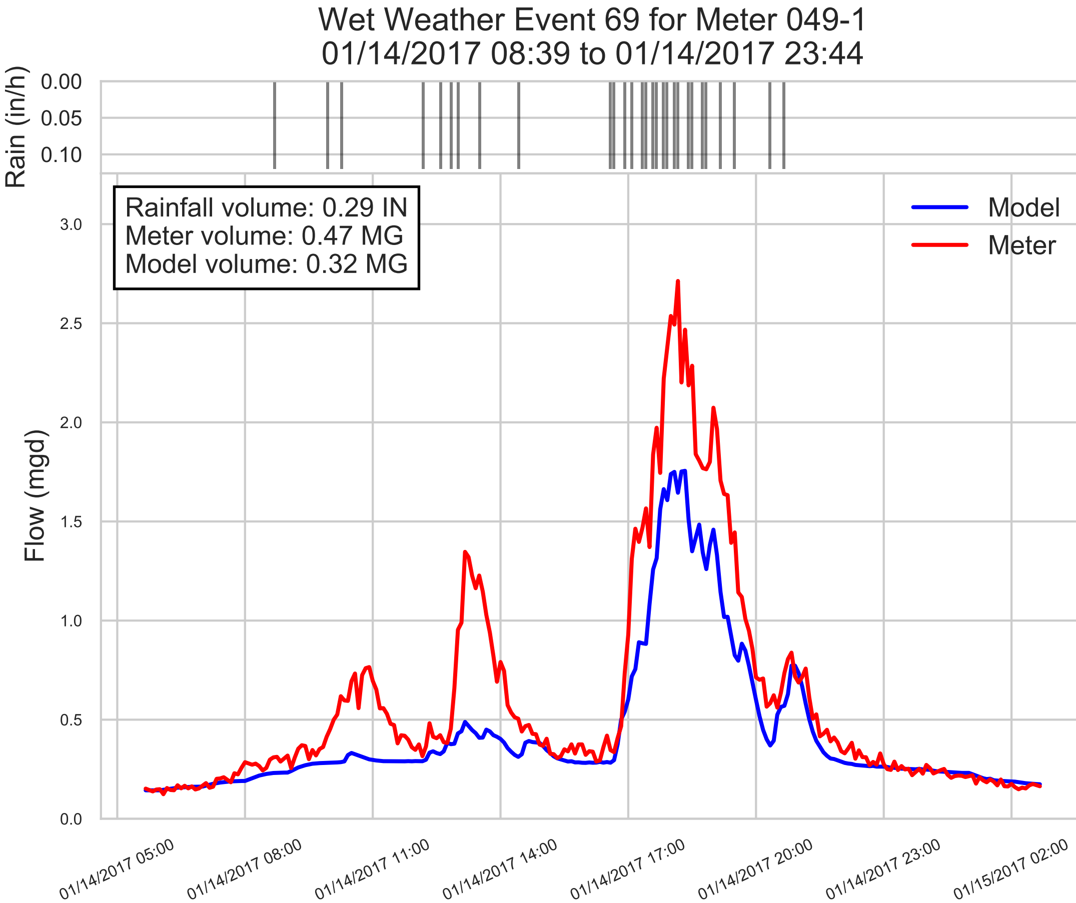


Wet Weather Event 67 for Meter 049-1
01/02/2017 01:59 to 01/02/2017 18:20

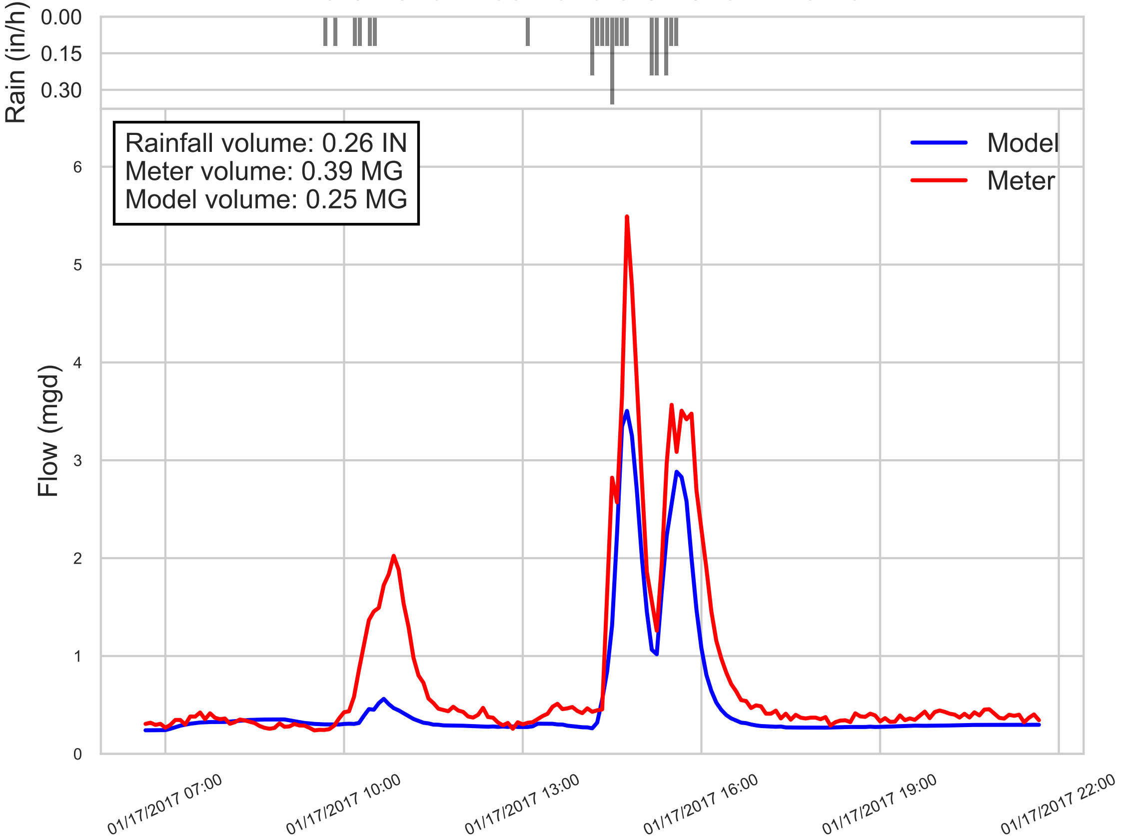




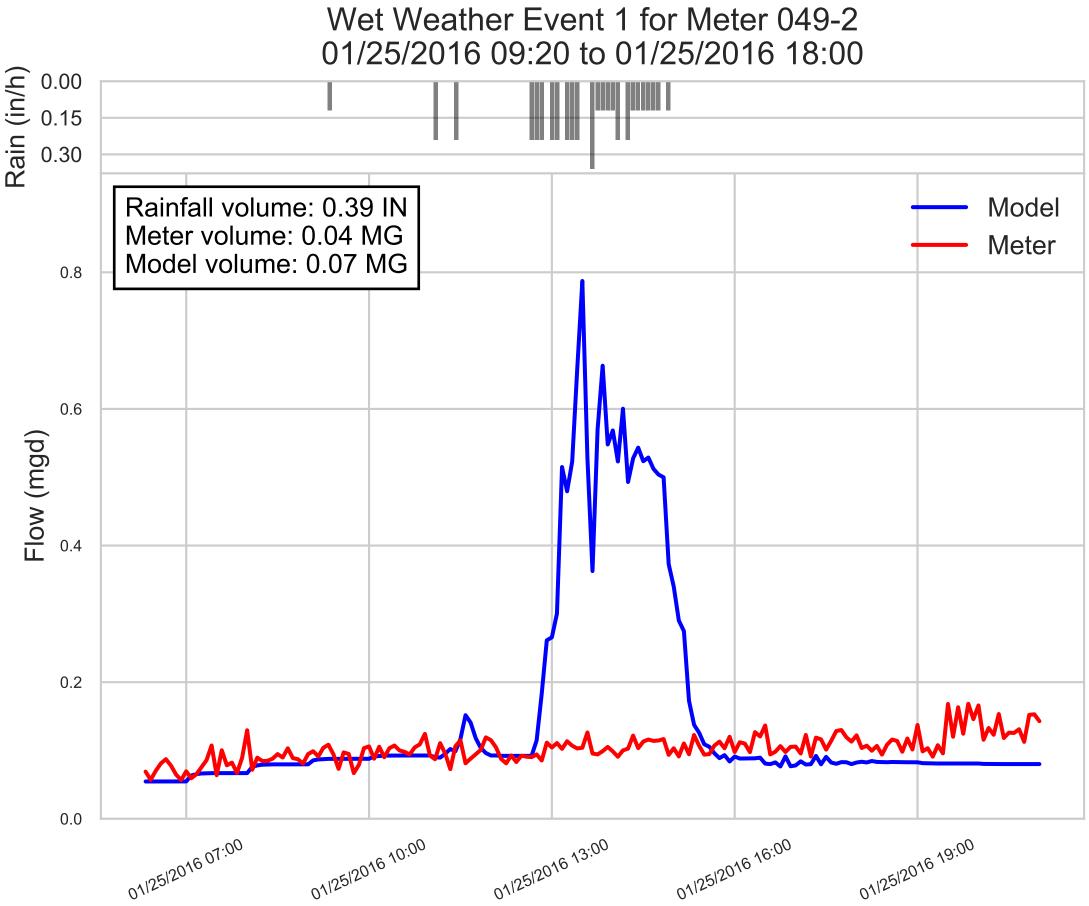
Wet Weather Event 68 for Meter 049-1
01/03/2017 01:25 to 01/03/2017 17:35

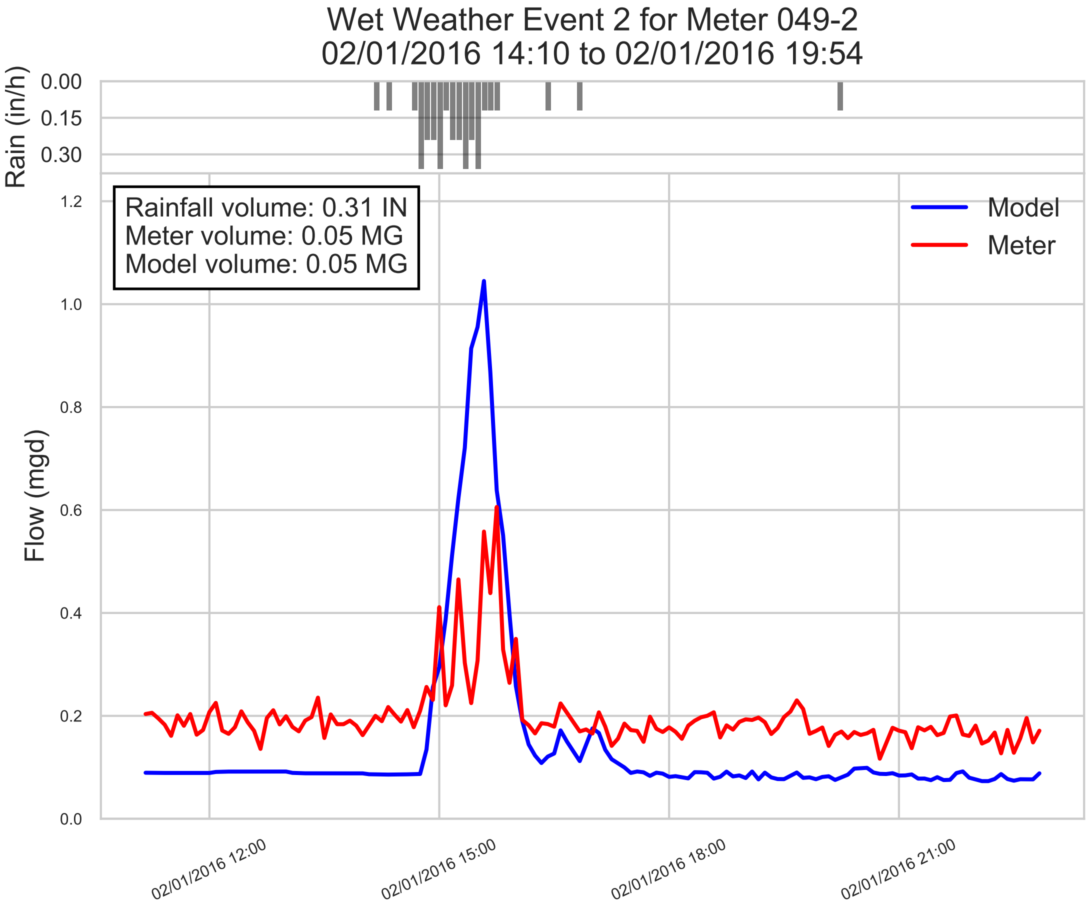

Wet Weather Event 69 for Meter 049-1
01/14/2017 08:39 to 01/14/2017 23:44
Rain (in/h)
0.00
0.05
0.10
Rainfall volume: 0.29 IN
Meter volume: 0.47 MG
Model volume: 0.32 MG
Model
Meter
Flow (mgd)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
01/14/2017 05:00
01/14/2017 08:00
01/14/2017 11:00
01/14/2017 14:00
01/14/2017 17:00
01/14/2017 20:00
01/14/2017 23:00
01/15/2017 02:00

Wet Weather Event 70 for Meter 049-1
01/17/2017 09:40 to 01/17/2017 18:40

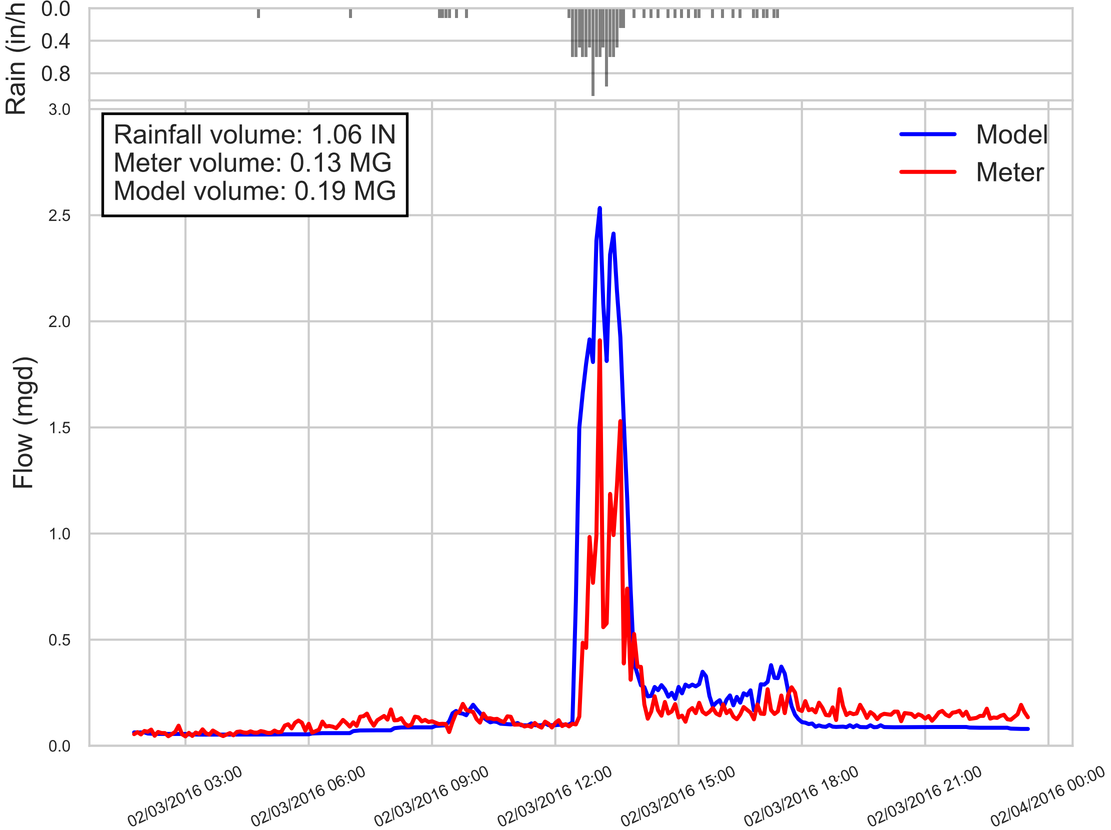


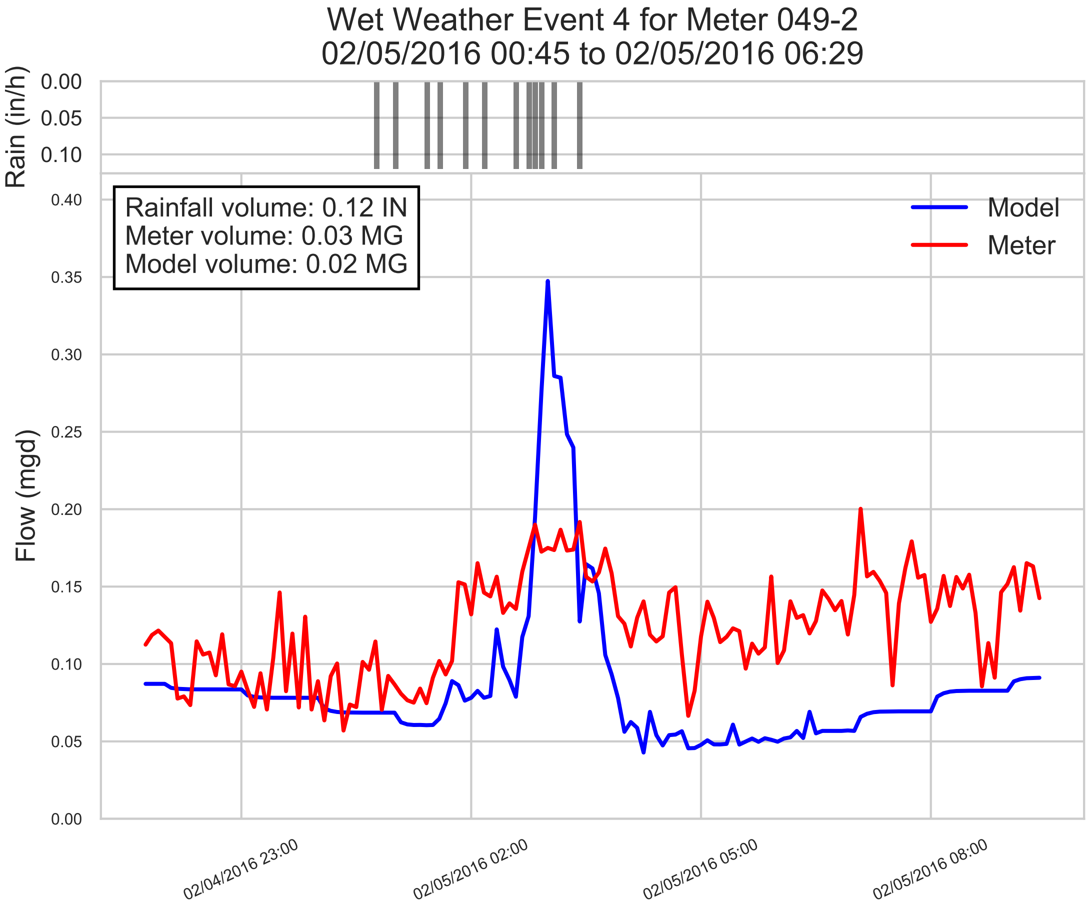
Rainfall volume: 0.26 IN
Meter volume: 0.39 MG
Model volume: 0.25 MG


Wet Weather Event 1 for Meter 049-2
01/25/2016 09:20 to 01/25/2016 18:00
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.39 IN
Meter volume: 0.04 MG
Model volume: 0.07 MG
Model
Meter
Flow (mgd)
0.8
0.6
0.4
0.2
0.0
01/25/2016 07:00
01/25/2016 10:00
01/25/2016 13:00
01/25/2016 16:00
01/25/2016 19:00

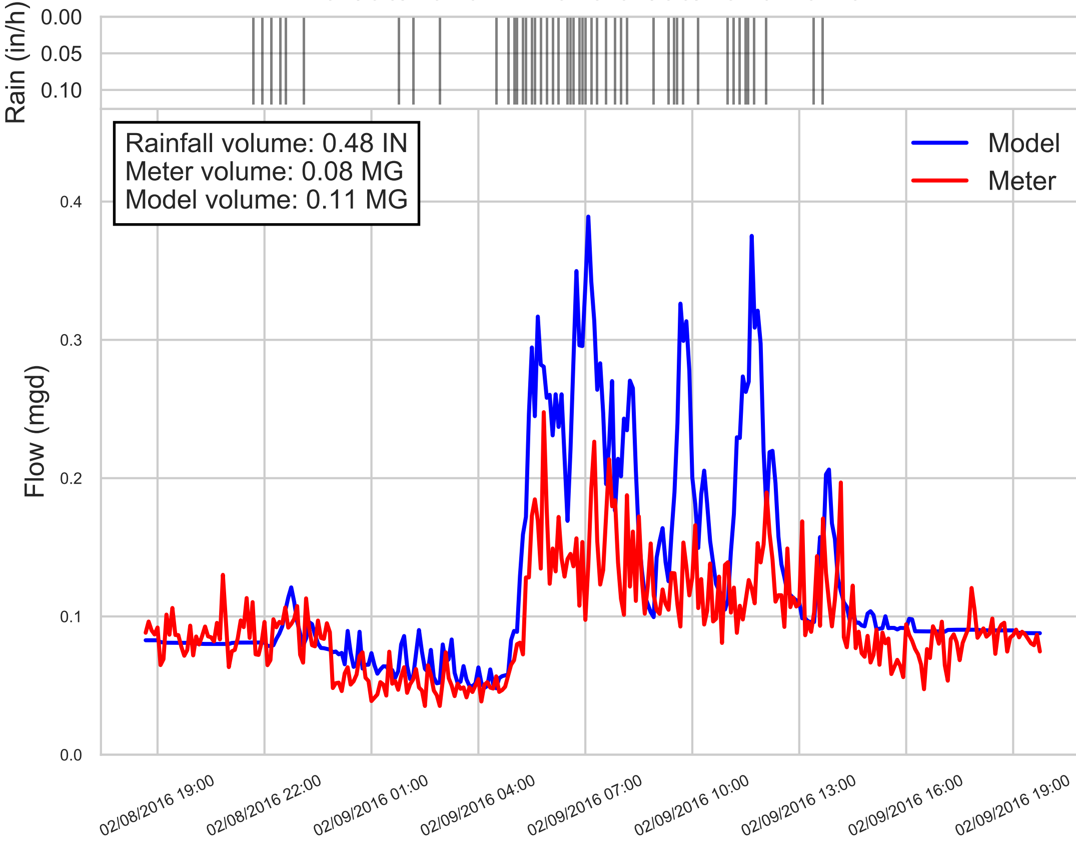

Wet Weather Event 2 for Meter 049-2
02/01/2016 14:10 to 02/01/2016 19:54
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.31 IN
Meter volume: 0.05 MG
Model volume: 0.05 MG
Model
Meter
Flow (mgd)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
02/01/2016 12:00
02/01/2016 15:00
02/01/2016 18:00
02/01/2016 21:00

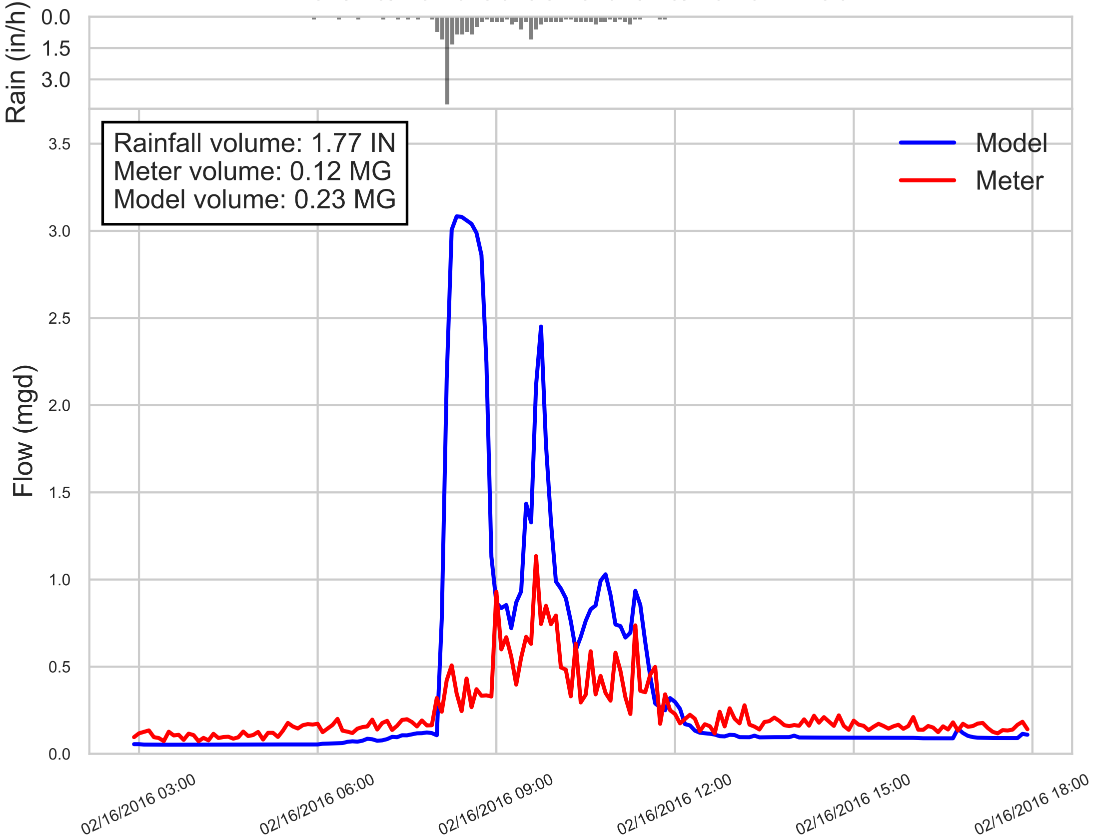
Wet Weather Event 3 for Meter 049-2
02/03/2016 04:45 to 02/03/2016 20:30




Wet Weather Event 4 for Meter 049-2
02/05/2016 00:45 to 02/05/2016 06:29
Rain (in/h)
0.00
0.05
0.10
Flow (mgd)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Rainfall volume: 0.12 IN
Meter volume: 0.03 MG
Model volume: 0.02 MG
Model
Meter
02/04/2016 23:00
02/05/2016 02:00
02/05/2016 05:00
02/05/2016 08:00

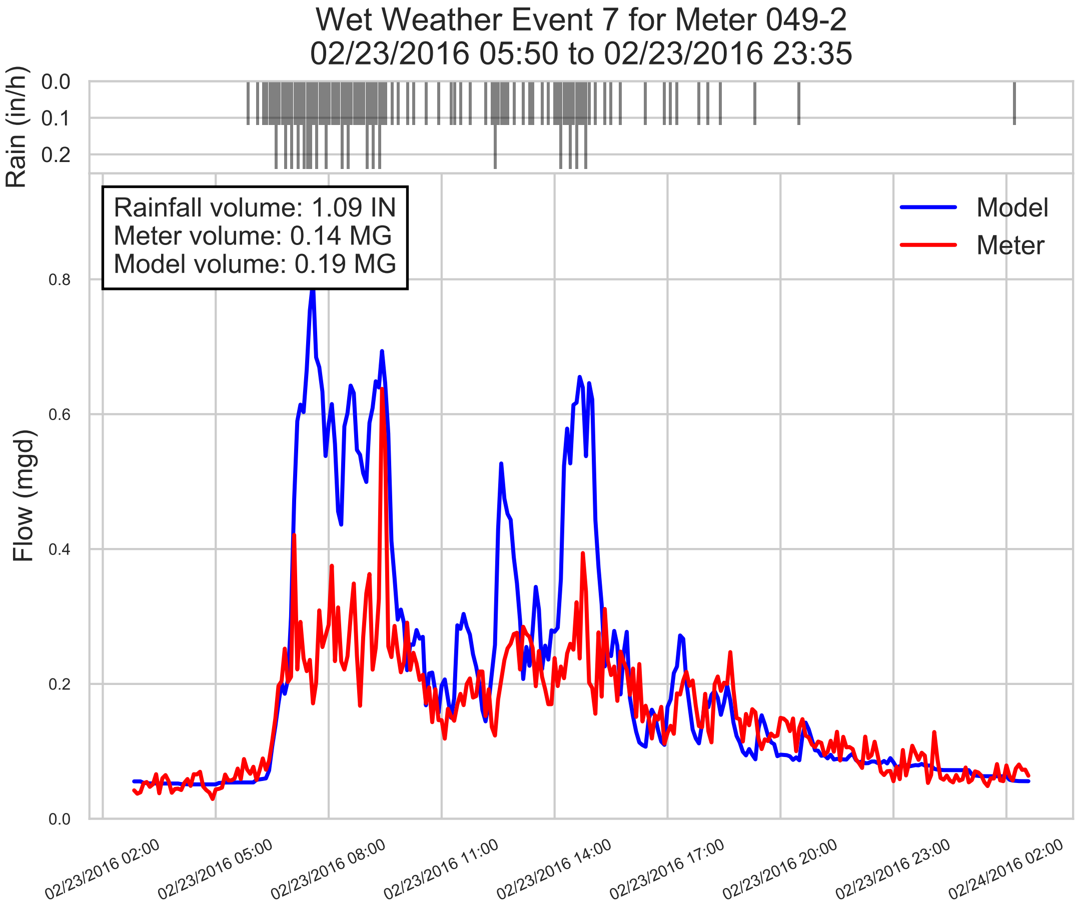
Wet Weather Event 5 for Meter 049-2
02/08/2016 21:40 to 02/09/2016 16:45



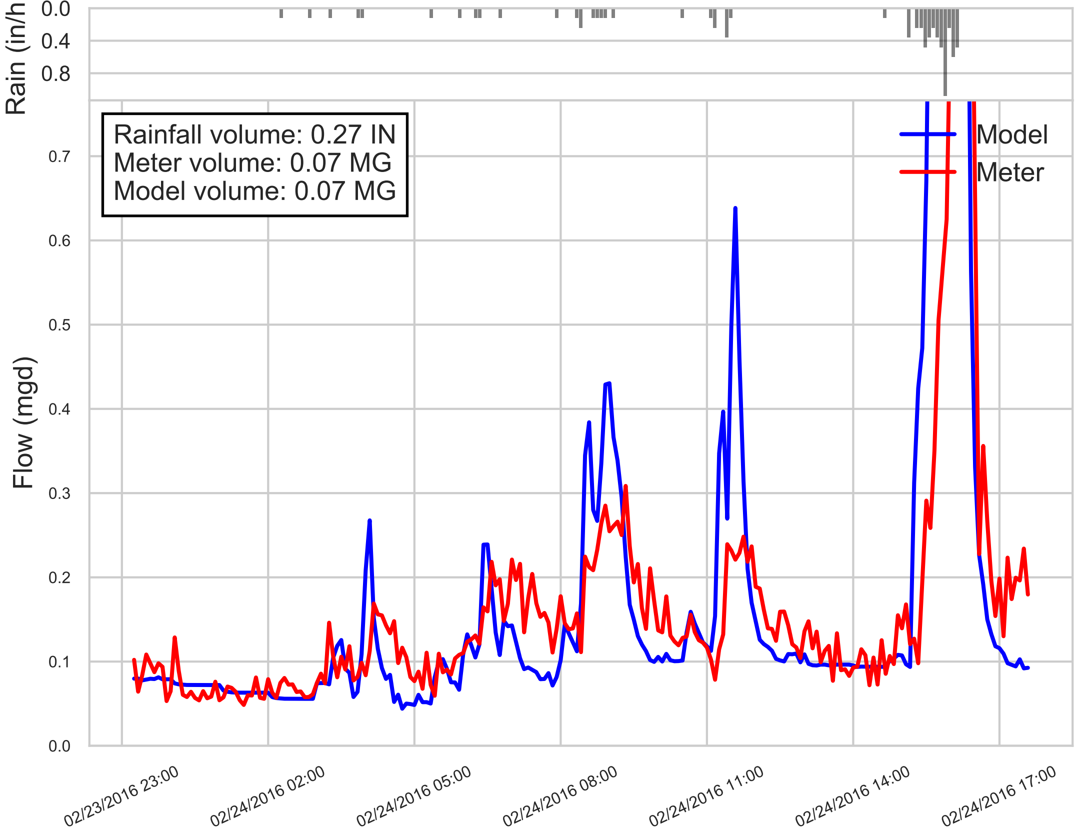


Wet Weather Event 6 for Meter 049-2
02/16/2016 05:55 to 02/16/2016 14:55

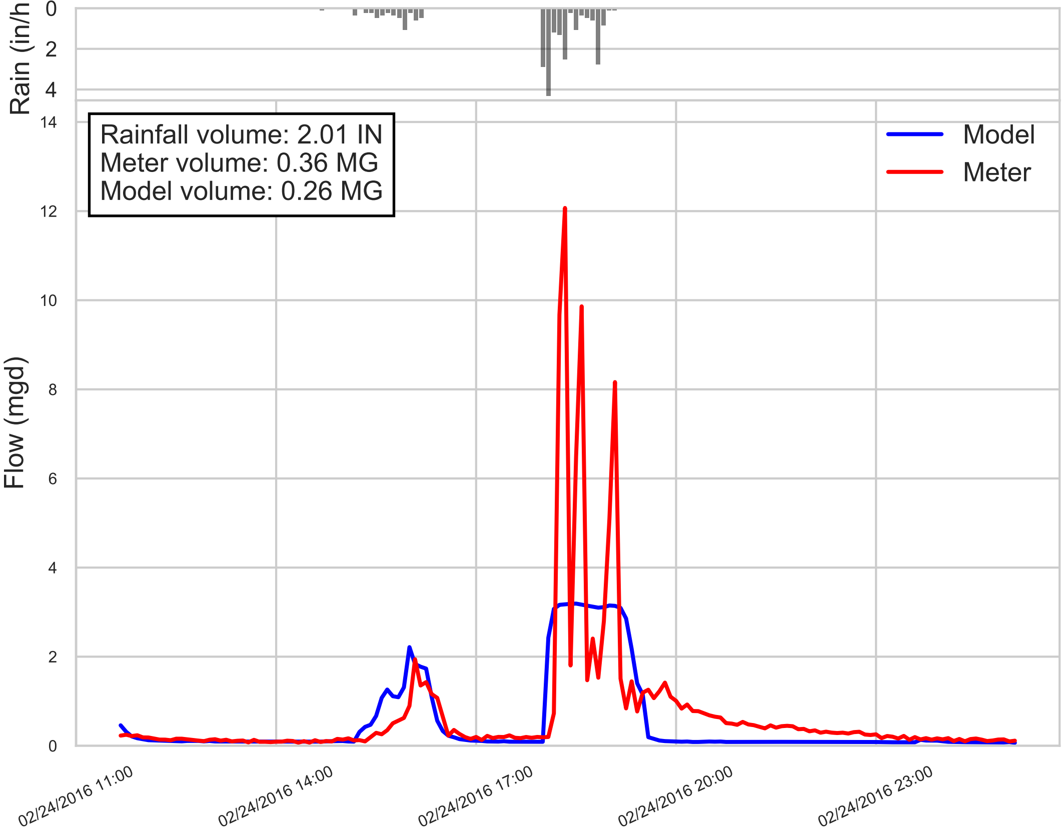
Rainfall volume: 1.77 IN
Meter volume: 0.12 MG
Model volume: 0.23 MG


Wet Weather Event 7 for Meter 049-2
02/23/2016 05:50 to 02/23/2016 23:35
Rain (in/h)
0.0
0.1
0.2
Rainfall volume: 1.09 IN
Meter volume: 0.14 MG
Model volume: 0.19 MG
Model
Meter
Flow (mgd)
0.8
0.6
0.4
0.2
0.0
02/23/2016 02:00
02/23/2016 05:00
02/23/2016 08:00
02/23/2016 11:00
02/23/2016 14:00
02/23/2016 17:00
02/23/2016 20:00
02/23/2016 23:00
02/24/2016 02:00

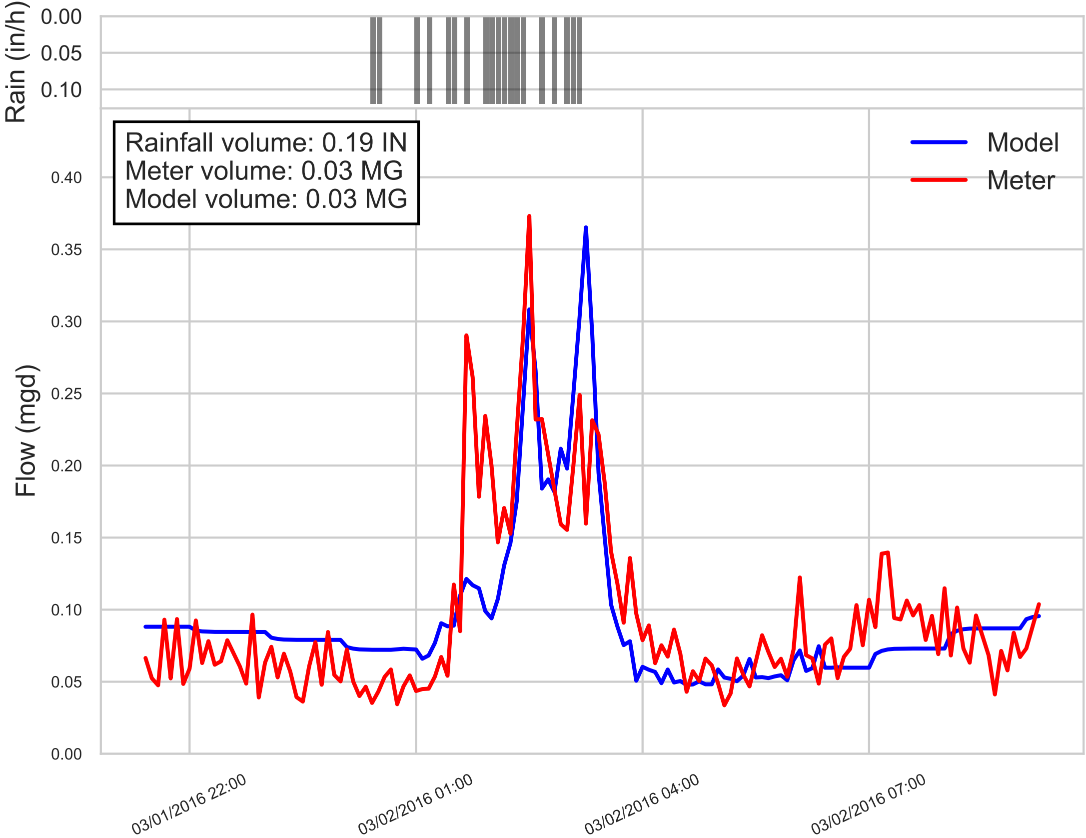
Wet Weather Event 8 for Meter 049-2
02/24/2016 02:15 to 02/24/2016 14:35



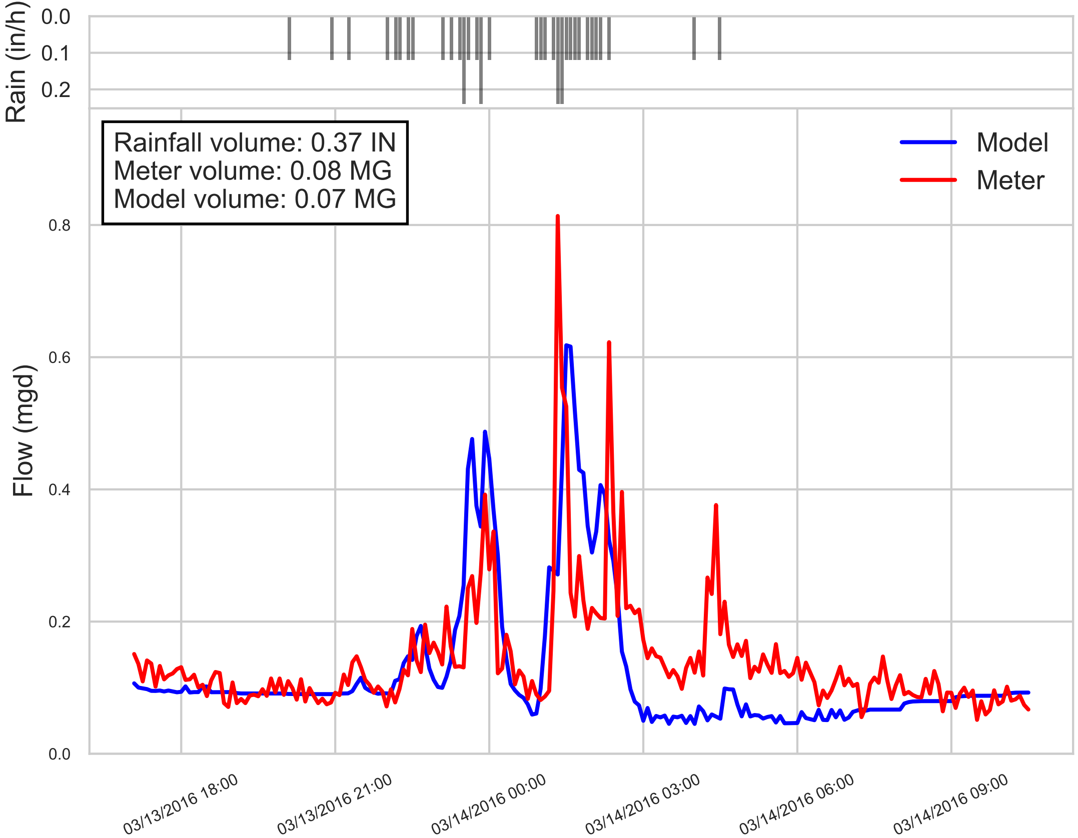
Wet Weather Event 9 for Meter 049-2
02/24/2016 14:39 to 02/24/2016 22:09



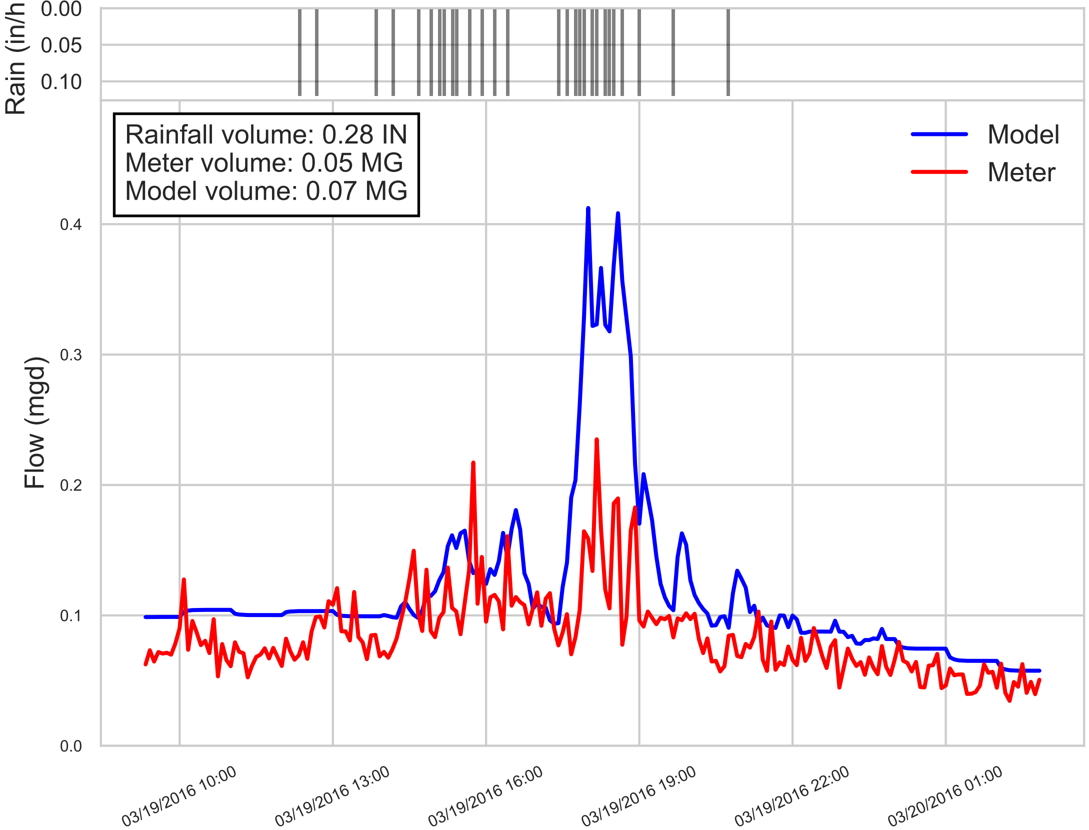
Wet Weather Event 10 for Meter 049-2
03/02/2016 00:24 to 03/02/2016 06:15



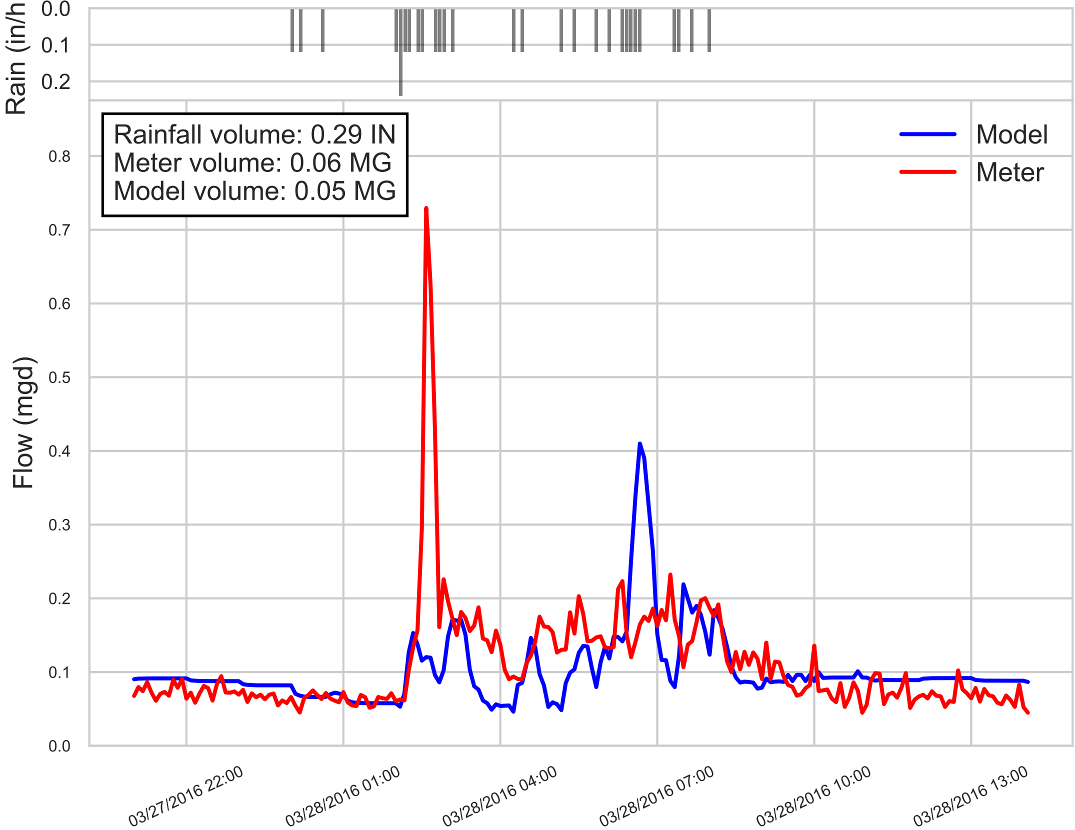
Wet Weather Event 11 for Meter 049-2
03/13/2016 20:05 to 03/14/2016 07:34



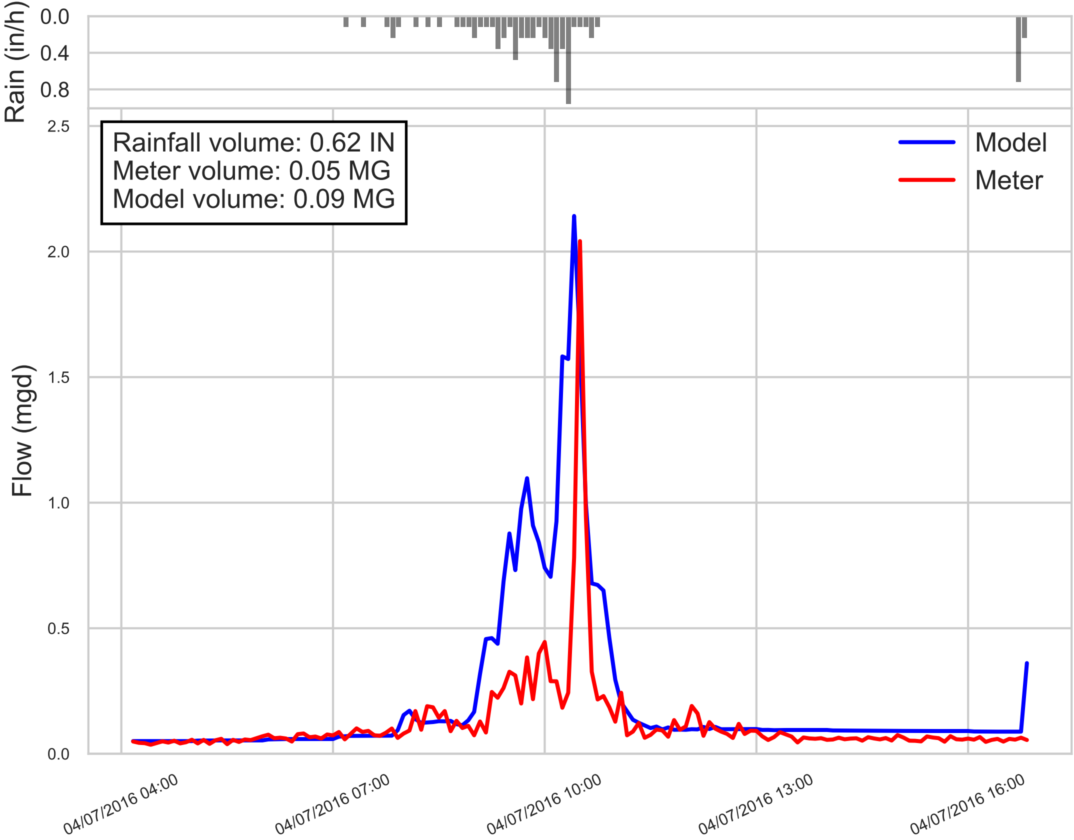
Wet Weather Event 12 for Meter 049-2
03/19/2016 12:20 to 03/19/2016 23:50

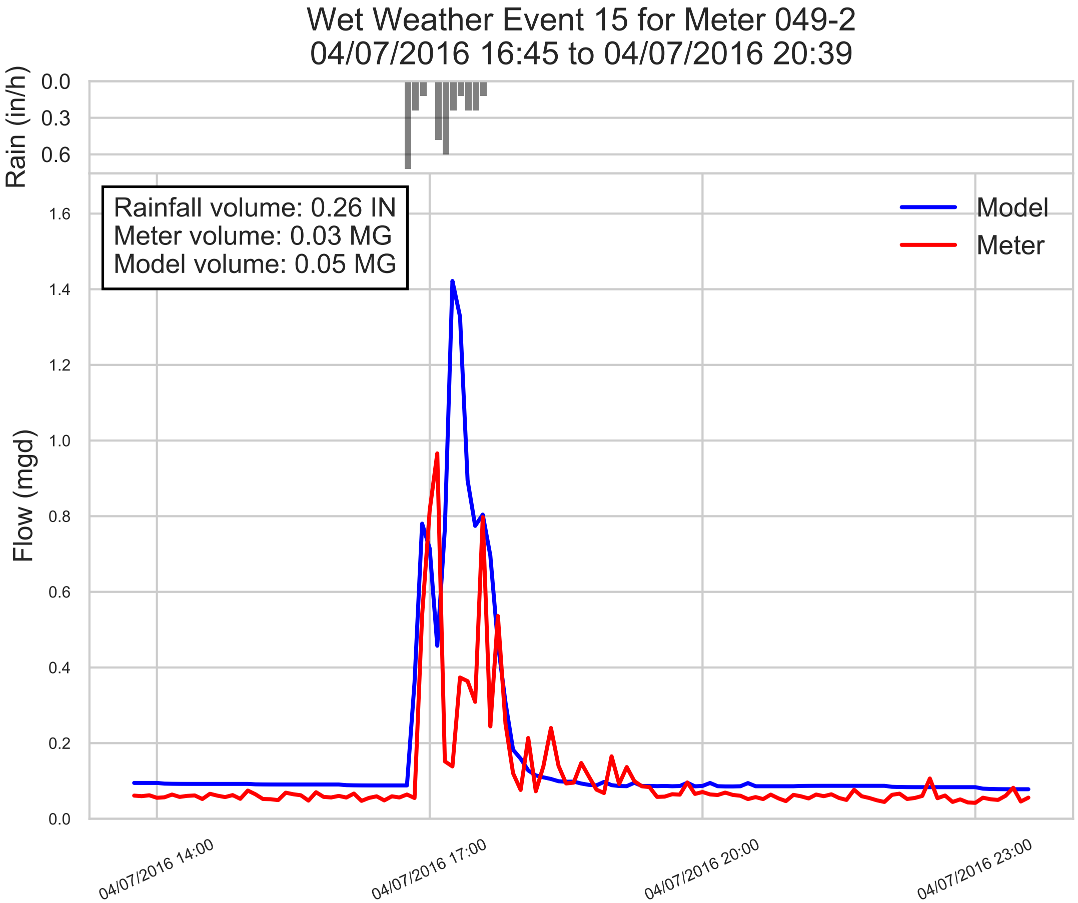


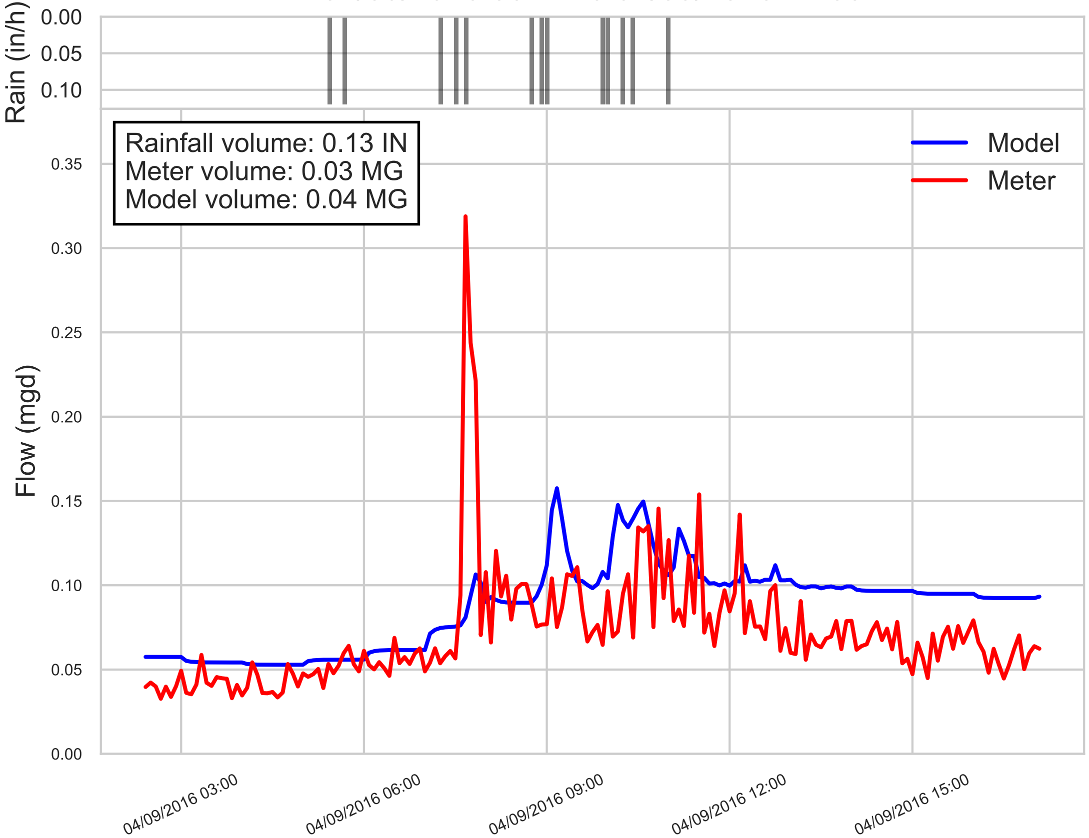
Wet Weather Event 13 for Meter 049-2
03/28/2016 00:00 to 03/28/2016 11:05



Wet Weather Event 14 for Meter 049-2
04/07/2016 07:09 to 04/07/2016 13:50

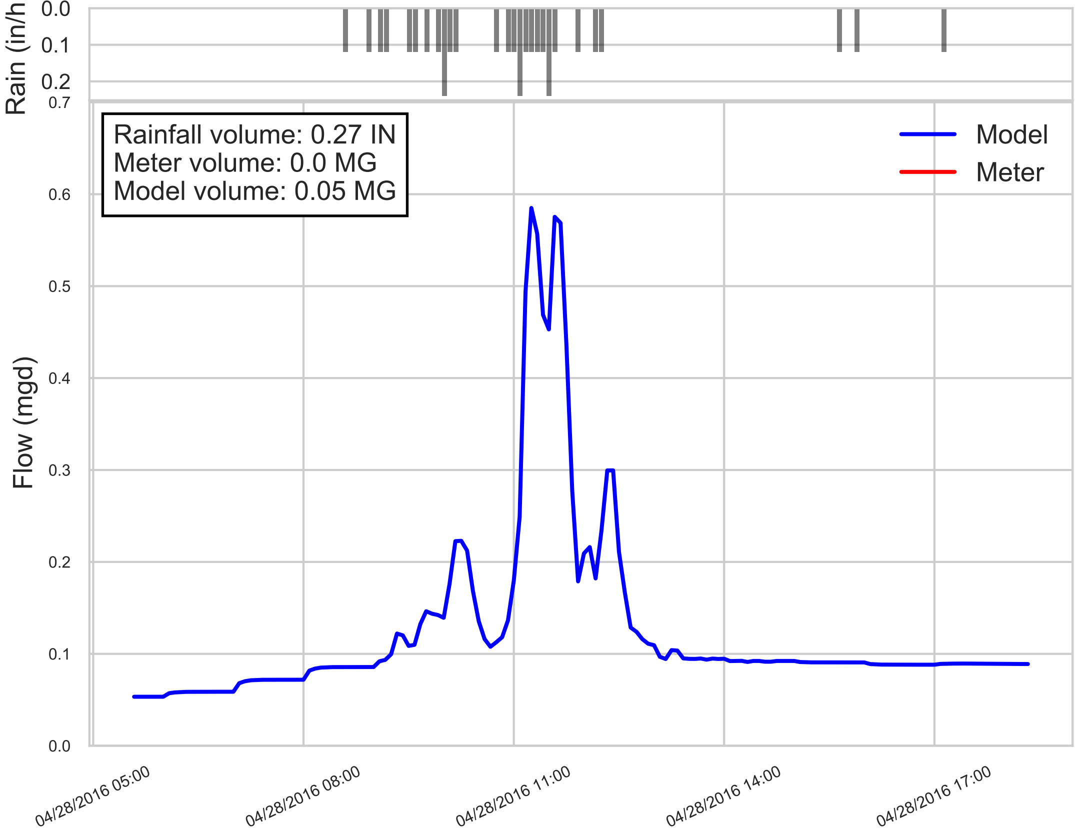



Wet Weather Event 15 for Meter 049-2
04/07/2016 16:45 to 04/07/2016 20:39
Rain (in/h)
0.0
0.3
0.6
Flow (mgd)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Rainfall volume: 0.26 IN
Meter volume: 0.03 MG
Model volume: 0.05 MG
Model
Meter
04/07/2016 14:00
04/07/2016 17:00
04/07/2016 20:00
04/07/2016 23:00

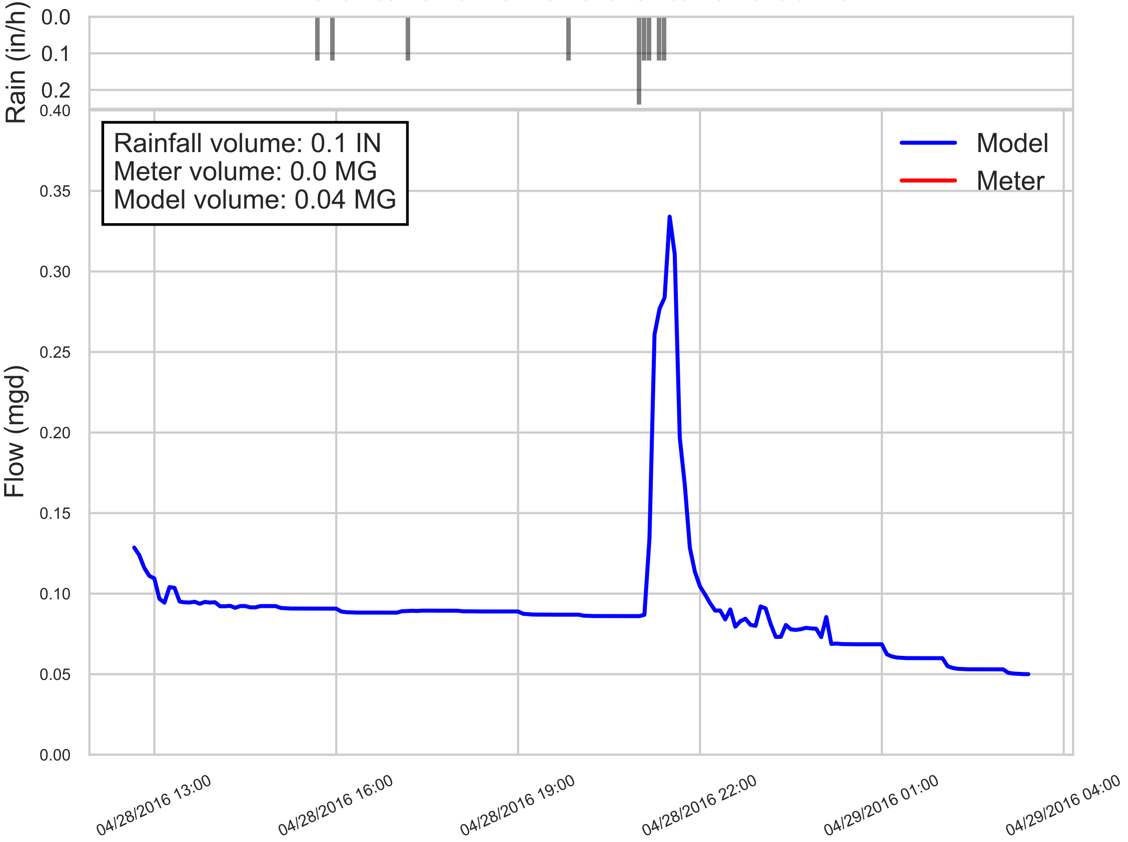


Wet Weather Event 16 for Meter 049-2
04/09/2016 05:24 to 04/09/2016 14:05

Wet Weather Event 17 for Meter 049-2
04/28/2016 08:35 to 04/28/2016 15:20

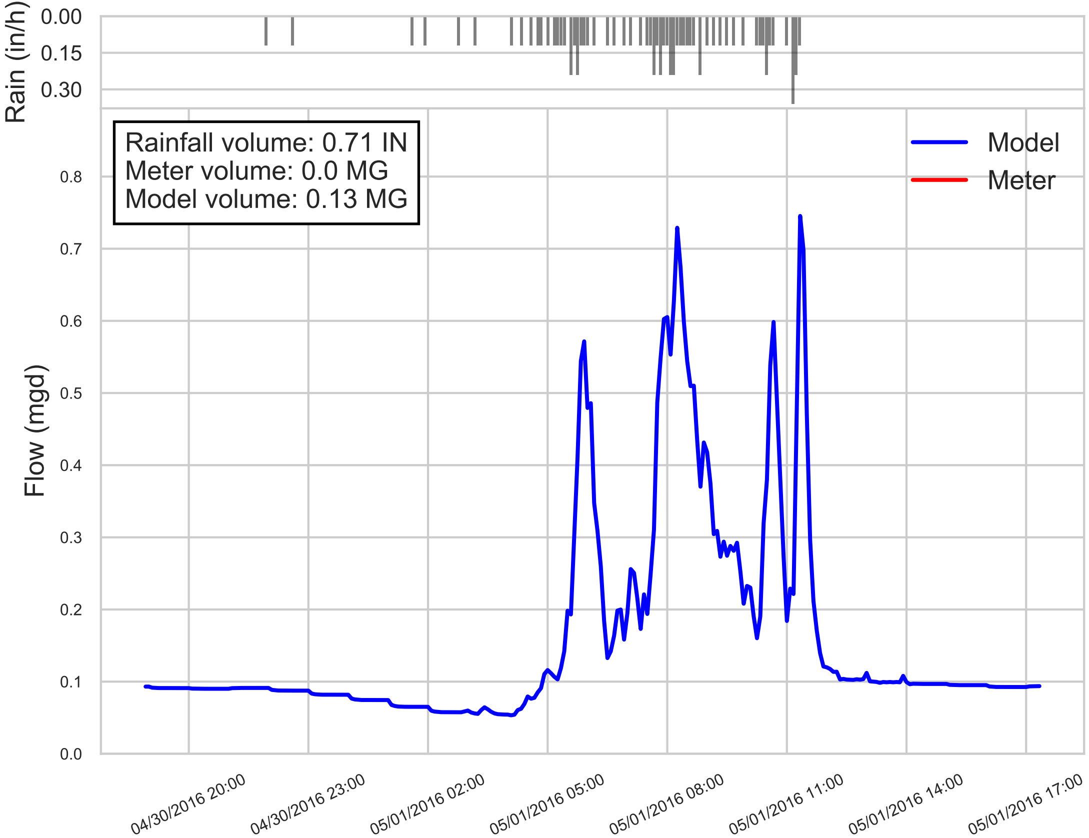


Wet Weather Event 18 for Meter 049-2
04/28/2016 15:40 to 04/29/2016 00:29

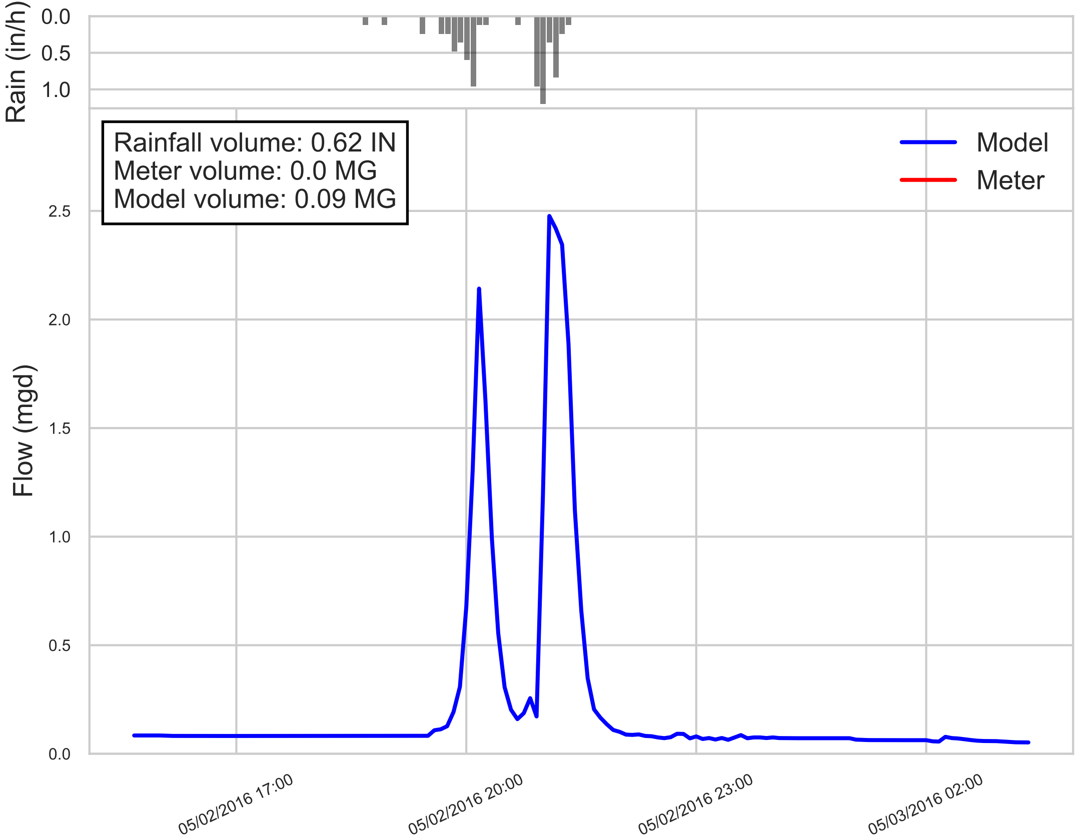


Rainfall volume: 0.1 IN
Meter volume: 0.0 MG
Model volume: 0.04 MG

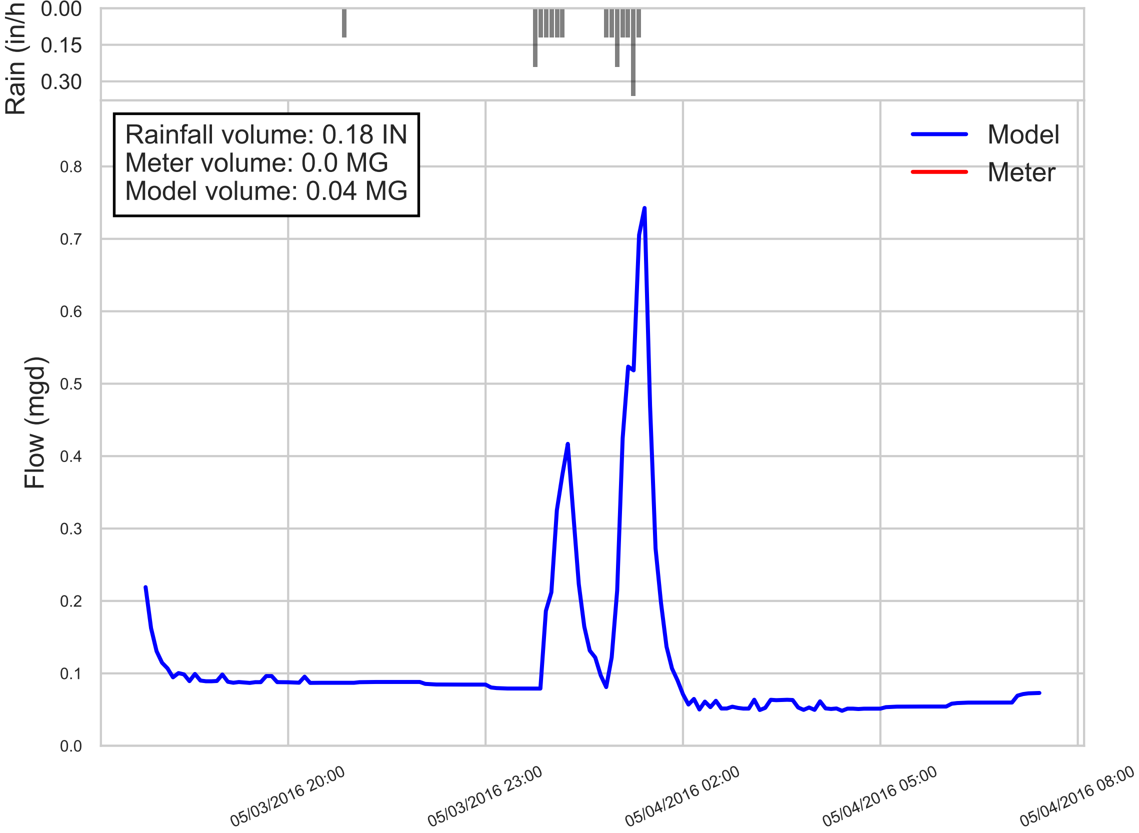
Wet Weather Event 19 for Meter 049-2
04/30/2016 21:54 to 05/01/2016 14:24



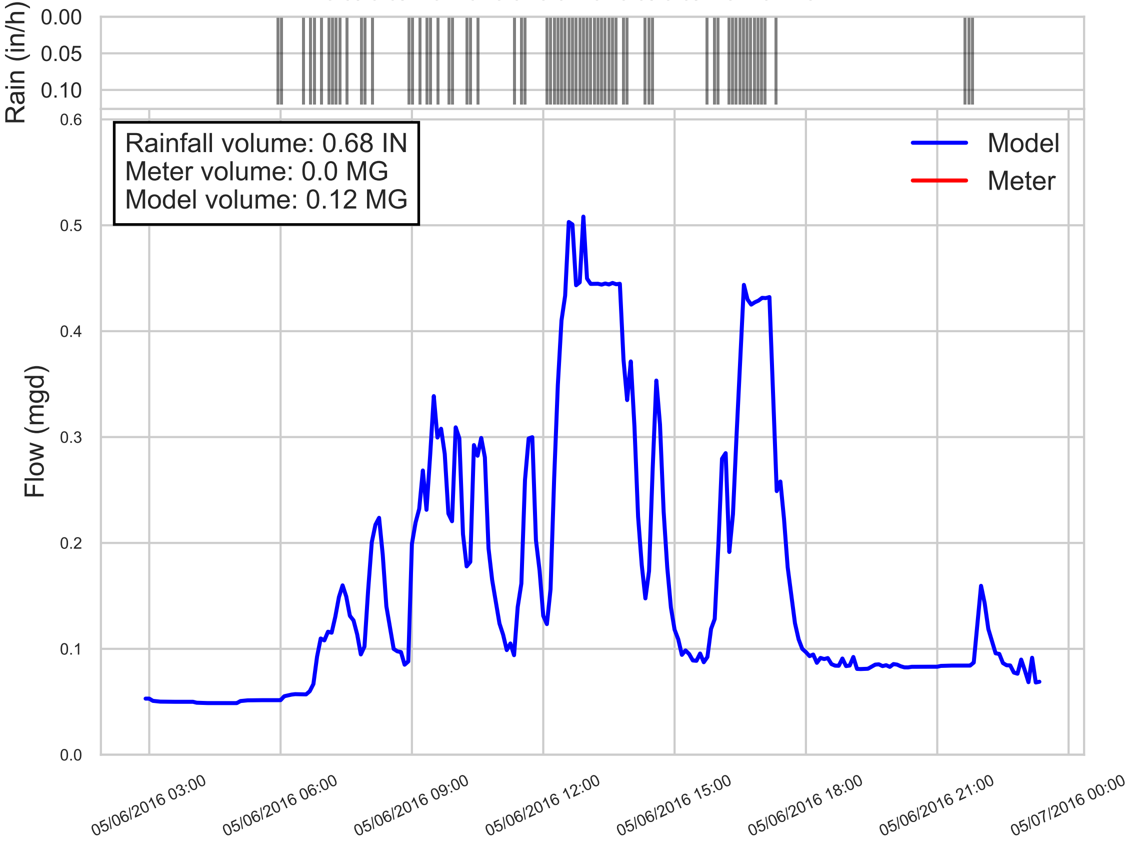
Wet Weather Event 20 for Meter 049-2
05/02/2016 18:40 to 05/03/2016 00:24

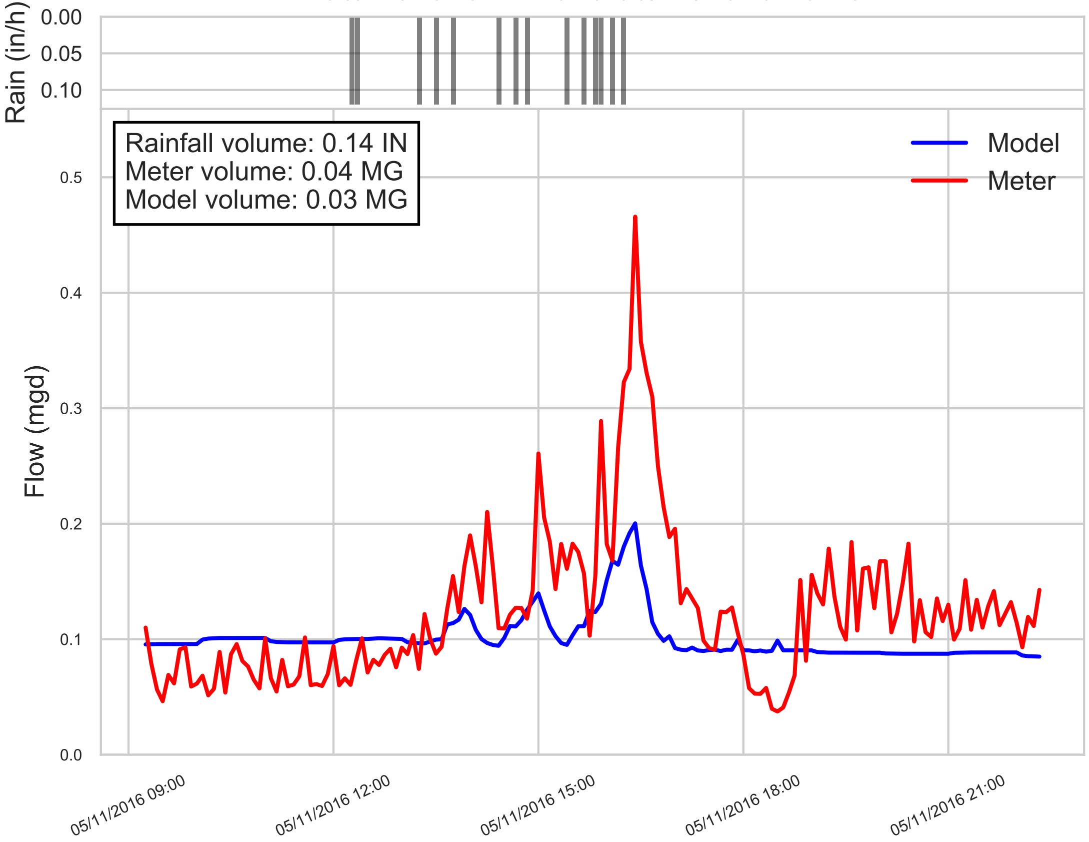


Wet Weather Event 21 for Meter 049-2
05/03/2016 20:50 to 05/04/2016 04:25



Wet Weather Event 22 for Meter 049-2
05/06/2016 05:55 to 05/06/2016 20:24

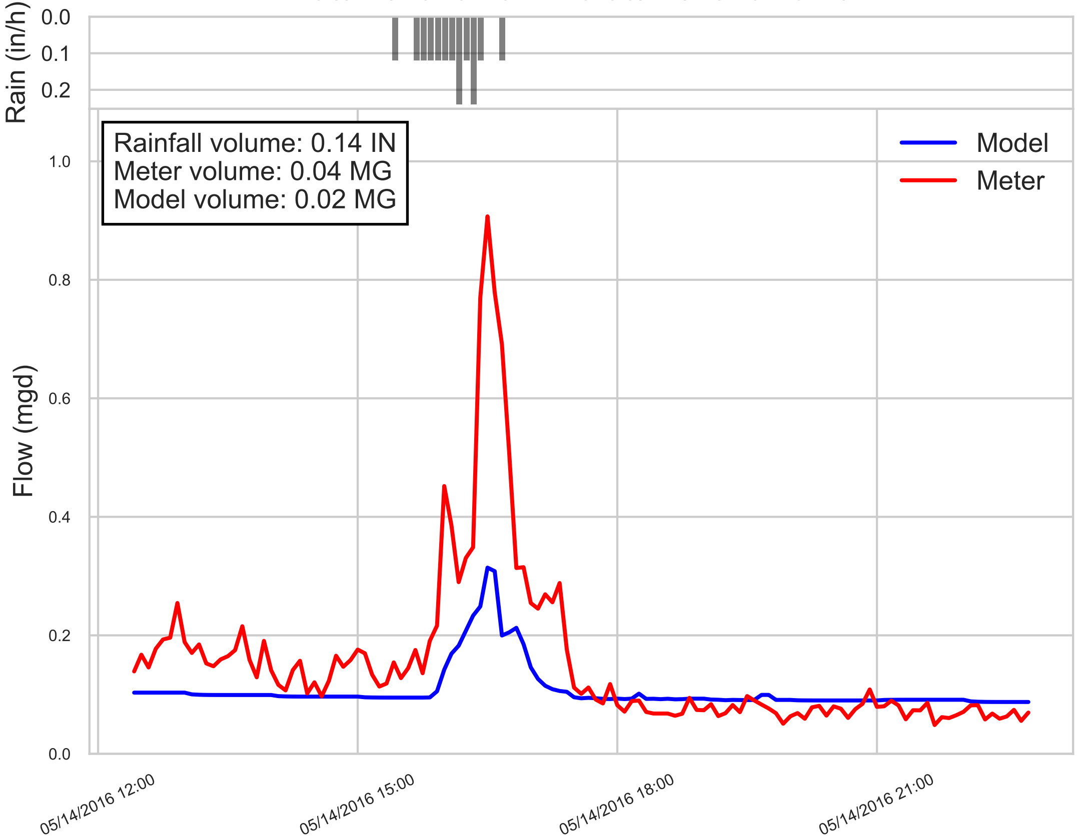




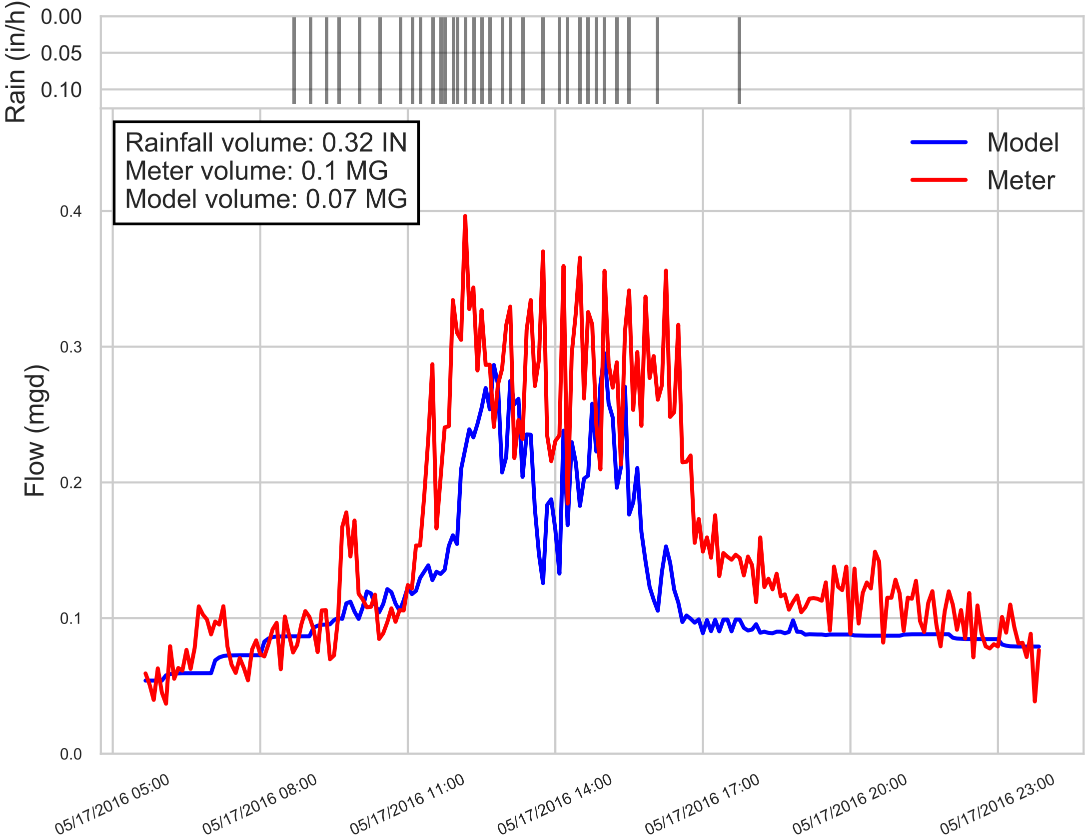
Wet Weather Event 23 for Meter 049-2
05/11/2016 12:15 to 05/11/2016 19:20

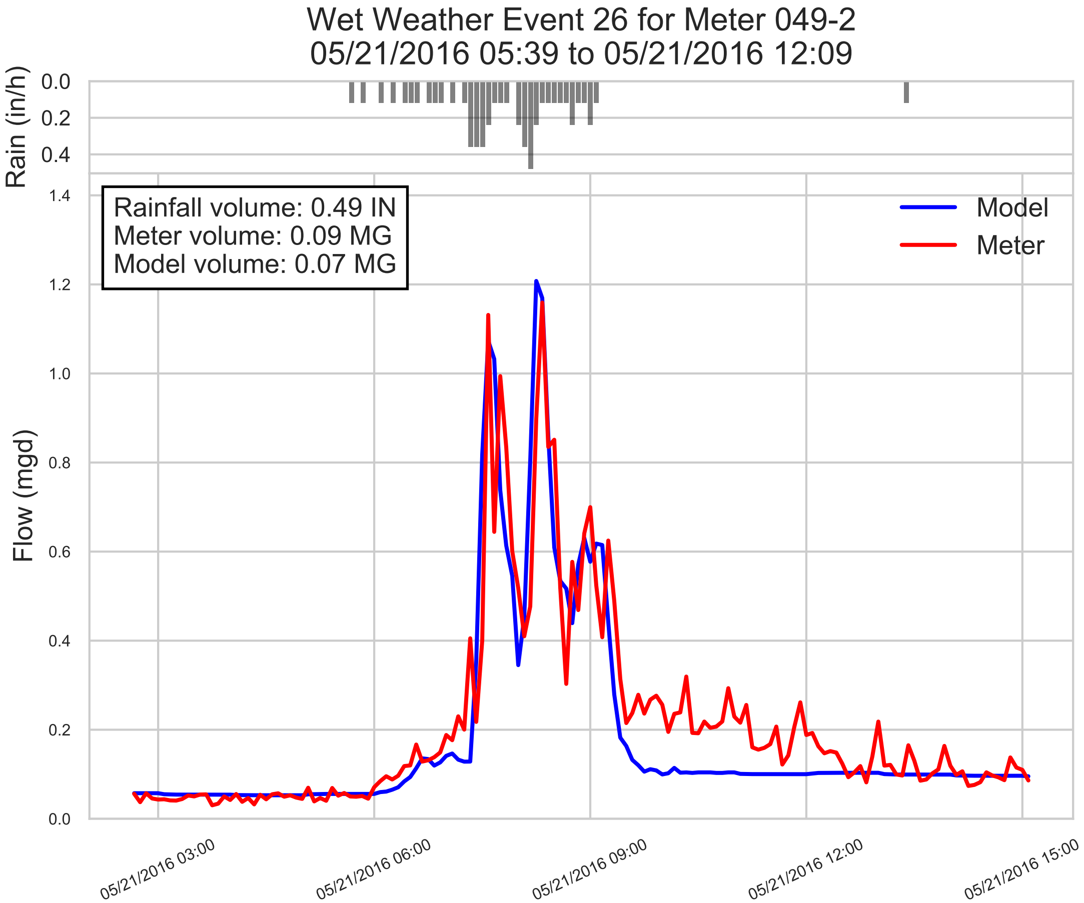
Rainfall volume: 0.14 IN
Meter volume: 0.04 MG
Model volume: 0.03 MG

Wet Weather Event 24 for Meter 049-2
05/14/2016 15:24 to 05/14/2016 19:45

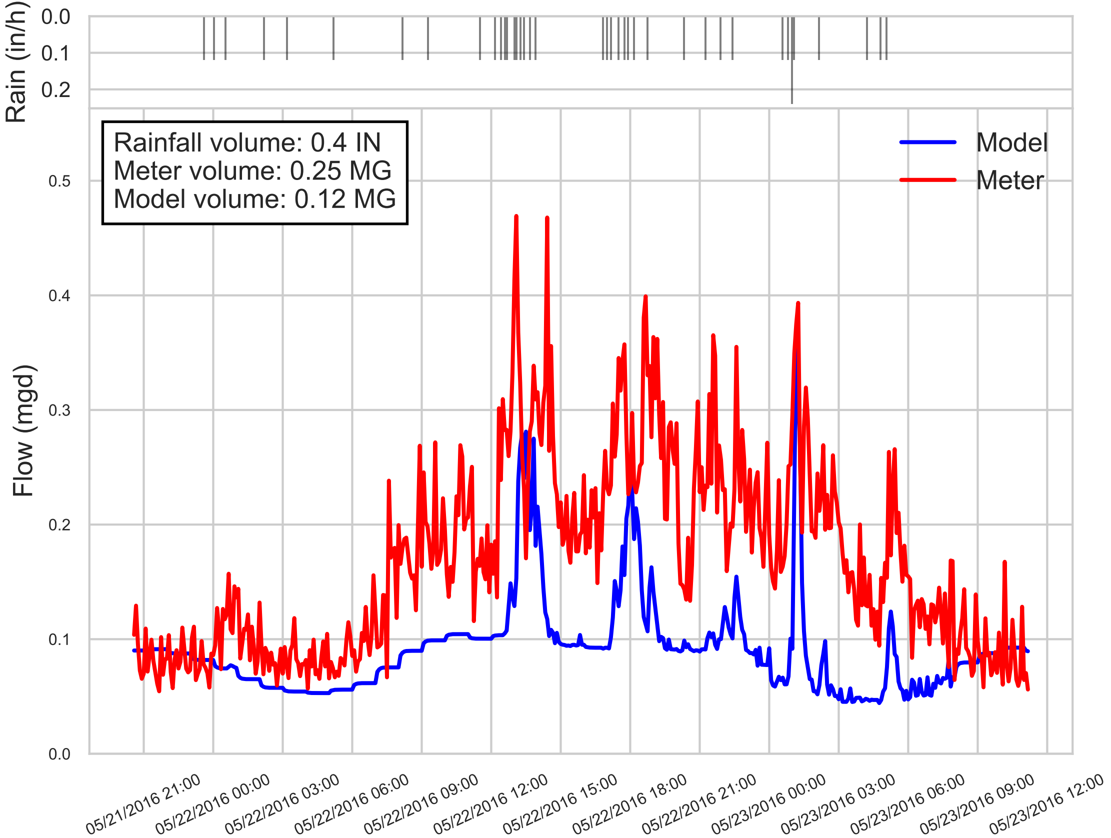


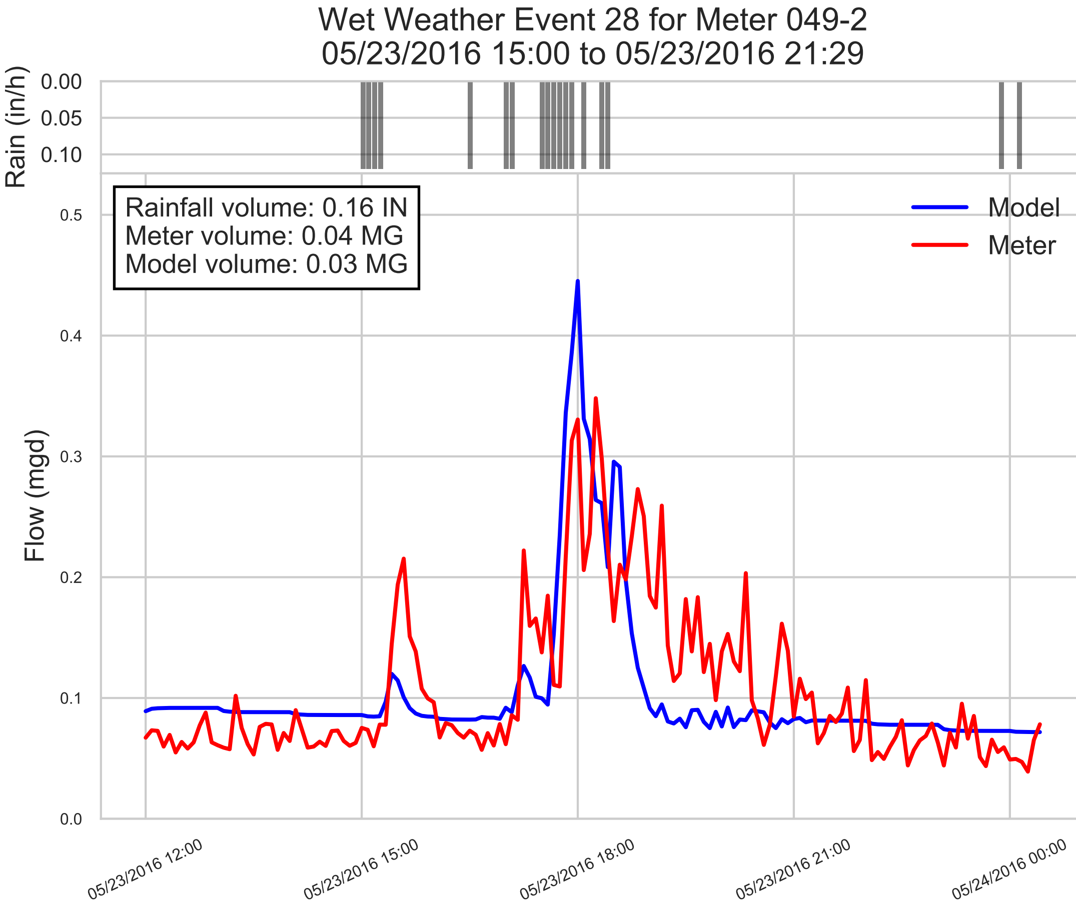
Wet Weather Event 25 for Meter 049-2
05/17/2016 08:39 to 05/17/2016 20:50




Wet Weather Event 26 for Meter 049-2
05/21/2016 05:39 to 05/21/2016 12:09
Rain (in/h)
0.0
0.2
0.4
Rainfall volume: 0.49 IN
Meter volume: 0.09 MG
Model volume: 0.07 MG
Model
Meter
Flow (mgd)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
05/21/2016 03:00
05/21/2016 06:00
05/21/2016 09:00
05/21/2016 12:00
05/21/2016 15:00

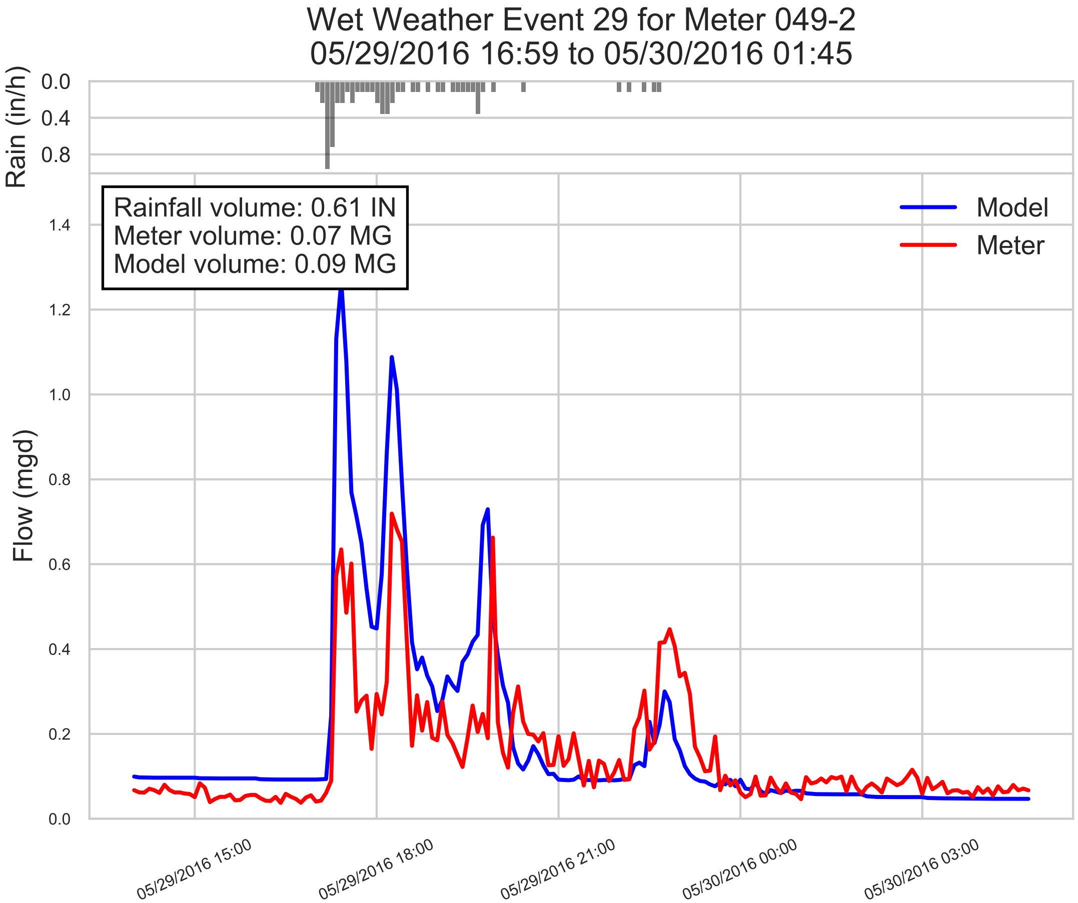
Wet Weather Event 27 for Meter 049-2
05/21/2016 23:35 to 05/23/2016 08:10





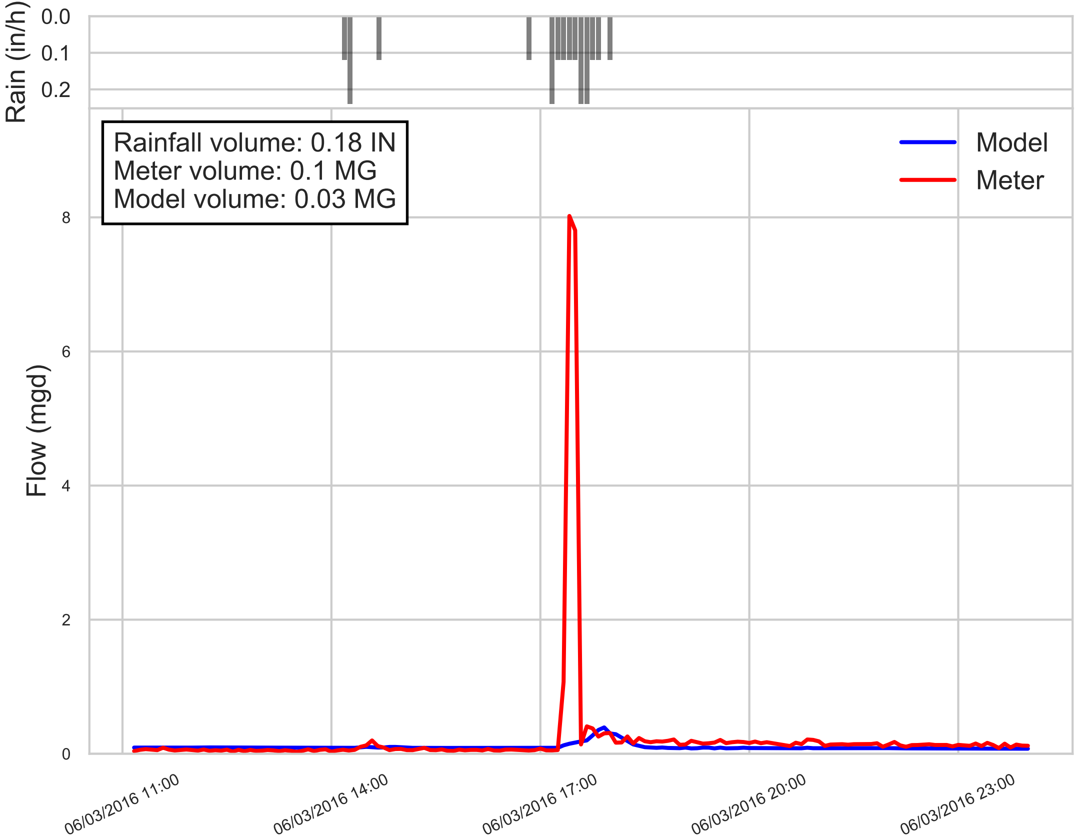
Wet Weather Event 28 for Meter 049-2
05/23/2016 15:00 to 05/23/2016 21:29

Rainfall volume: 0.16 IN
Meter volume: 0.04 MG
Model volume: 0.03 MG

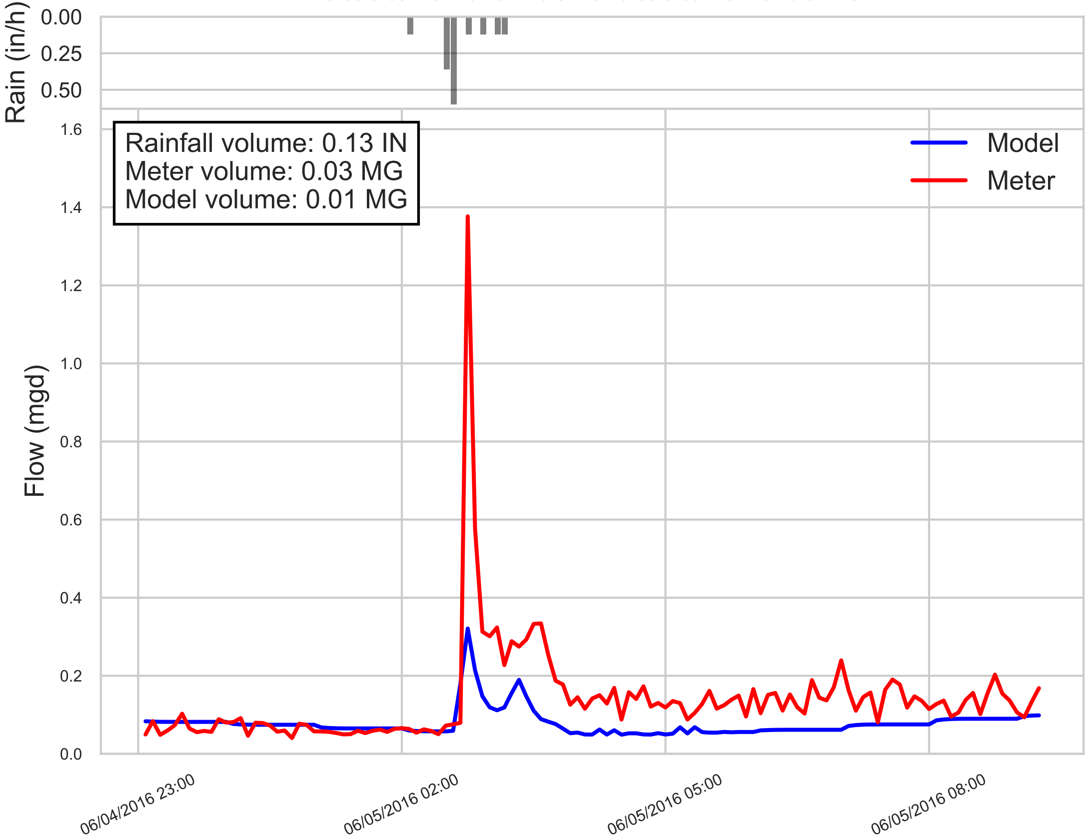


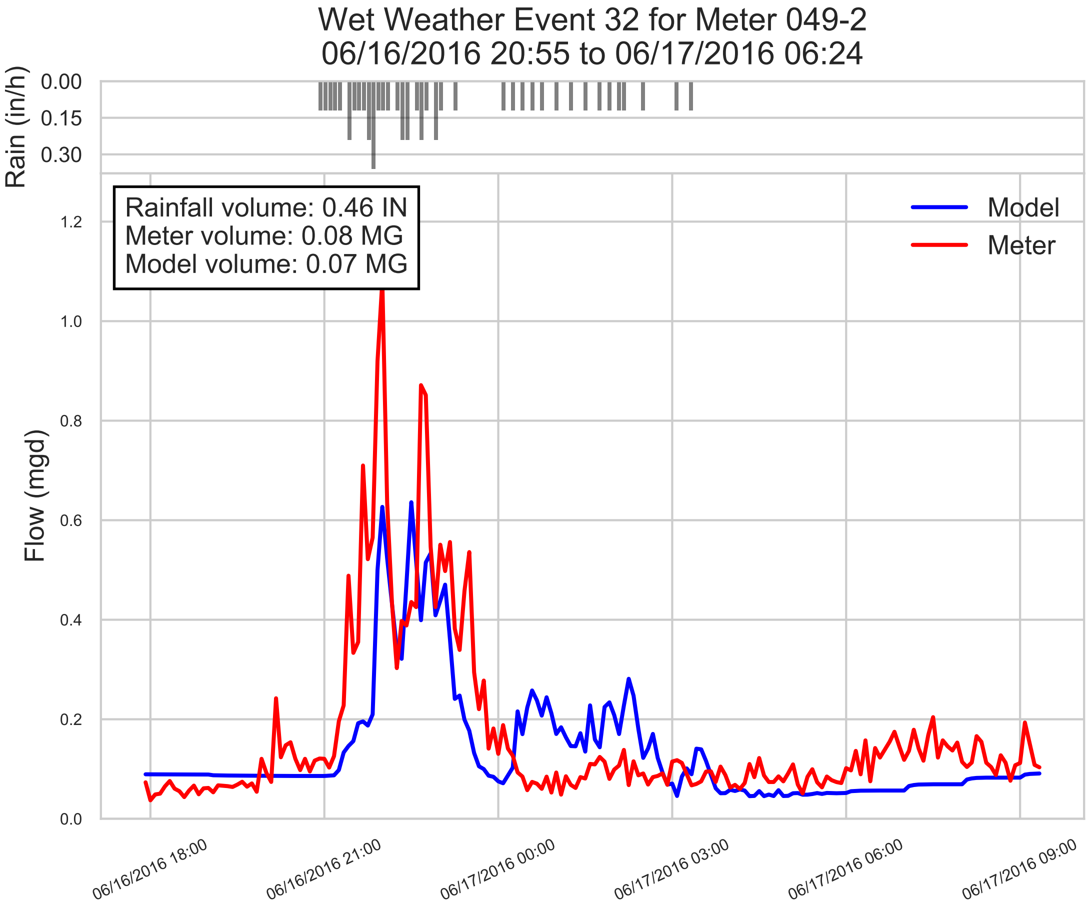
Rainfall volume: 0.61 IN
Meter volume: 0.07 MG
Model volume: 0.09 MG

Wet Weather Event 30 for Meter 049-2
06/03/2016 14:10 to 06/03/2016 21:04

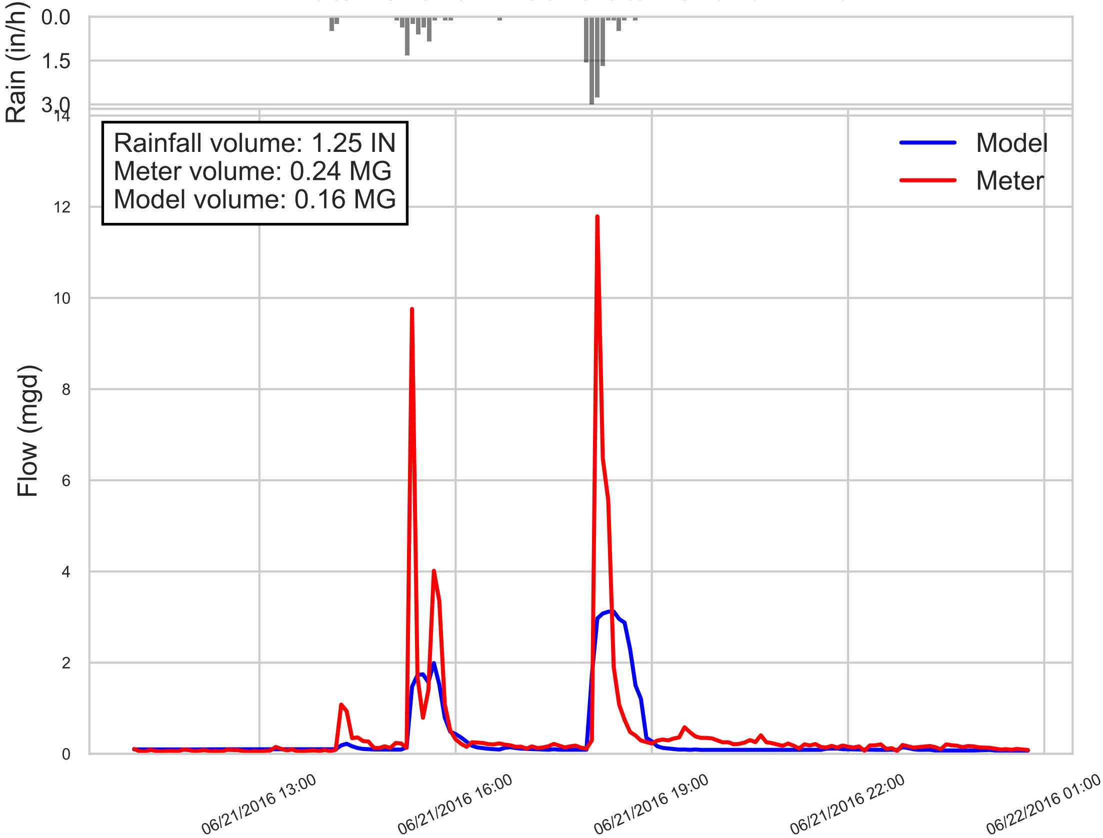


Wet Weather Event 31 for Meter 049-2
06/05/2016 02:05 to 06/05/2016 06:15

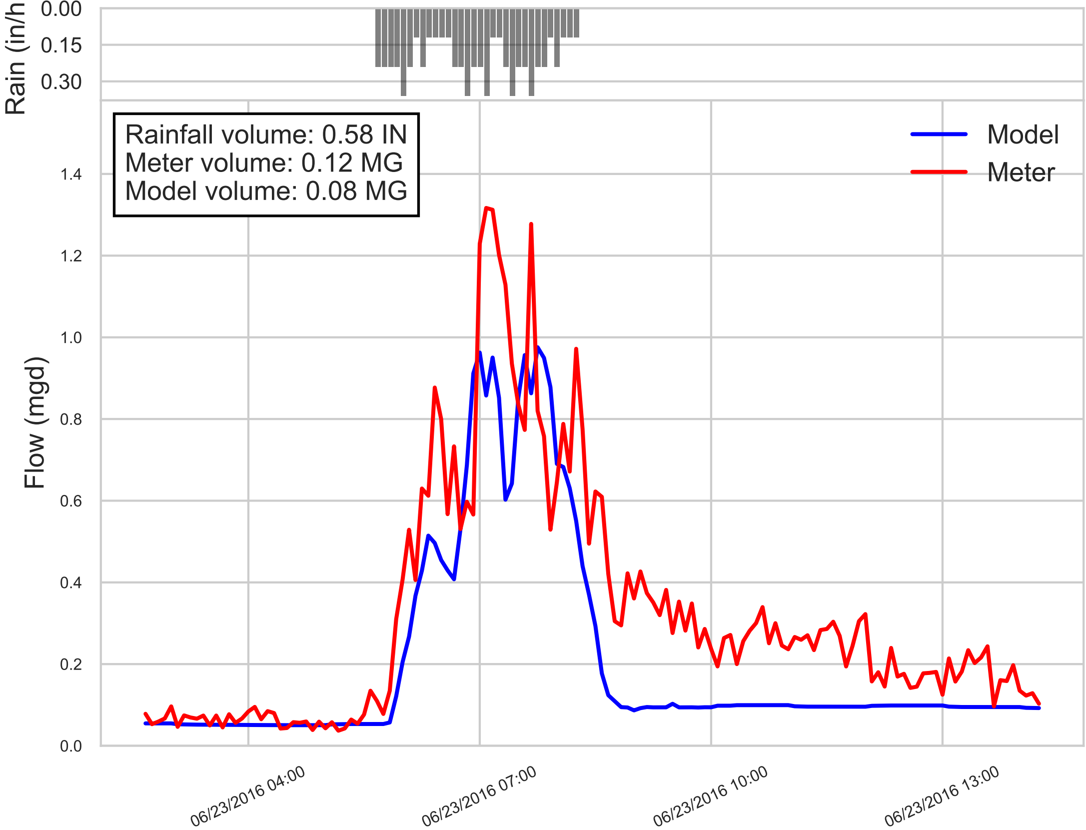



Wet Weather Event 32 for Meter 049-2
06/16/2016 20:55 to 06/17/2016 06:24
Rain (in/h)
0.00
0.15
0.30
Rainfall volume: 0.46 IN
Meter volume: 0.08 MG
Model volume: 0.07 MG
Model
Meter
Flow (mgd)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
06/16/2016 18:00
06/16/2016 21:00
06/17/2016 00:00
06/17/2016 03:00
06/17/2016 06:00
06/17/2016 09:00

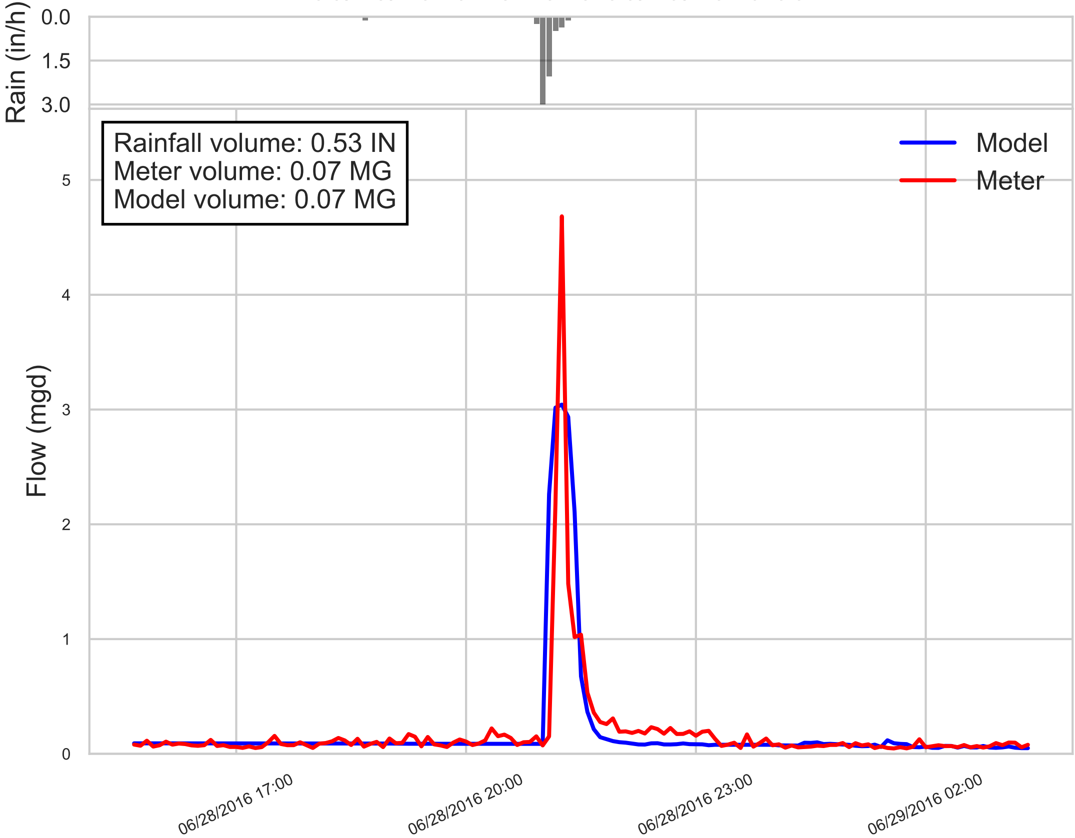
Wet Weather Event 33 for Meter 049-2
06/21/2016 14:05 to 06/21/2016 21:49



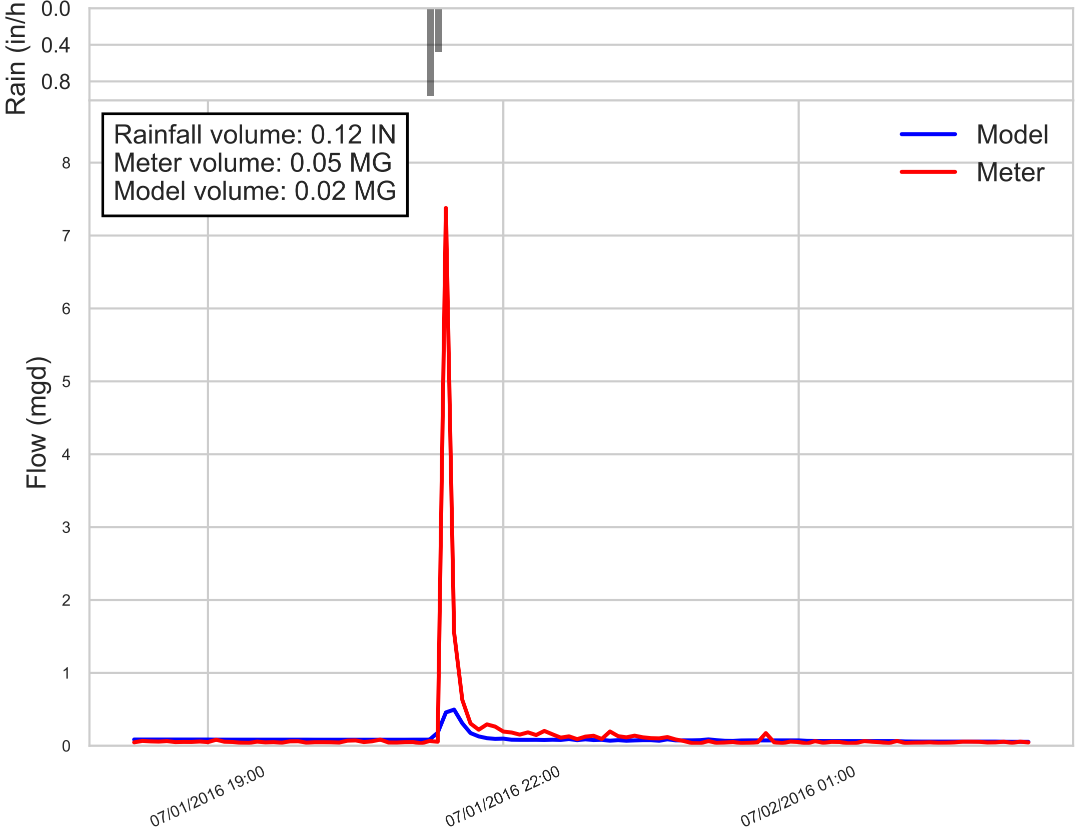
Wet Weather Event 34 for Meter 049-2
06/23/2016 05:39 to 06/23/2016 11:19



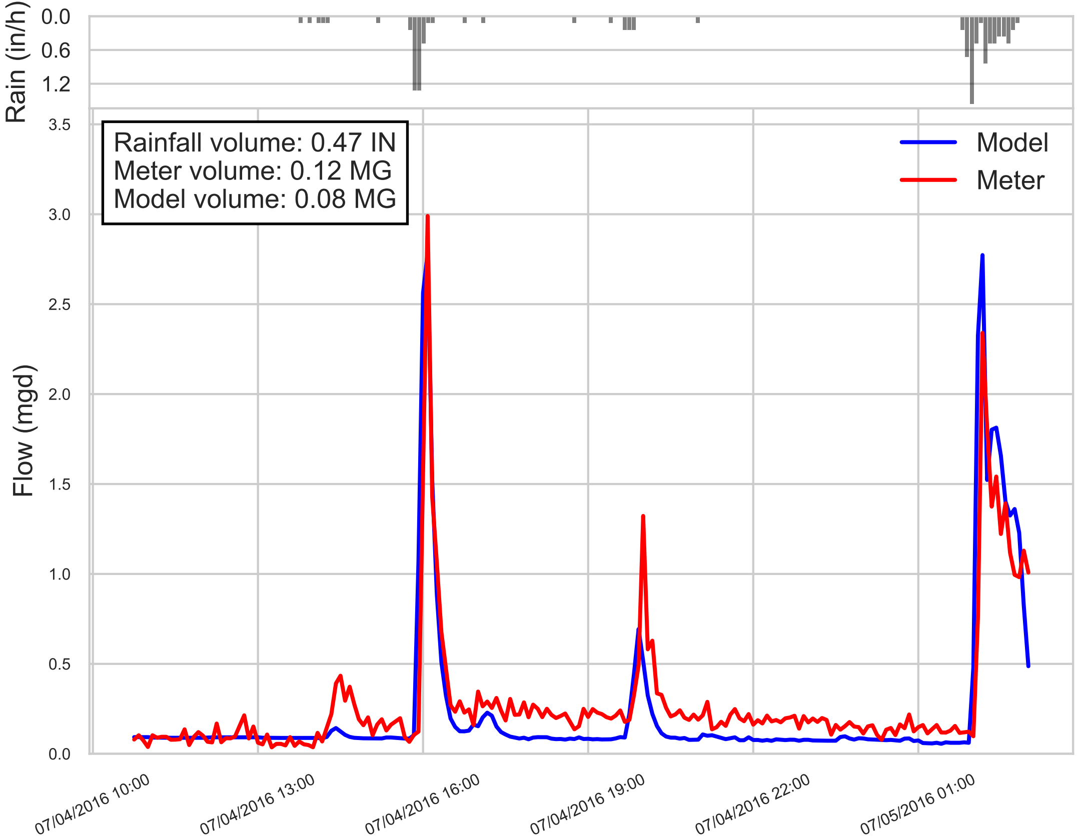
Wet Weather Event 35 for Meter 049-2
06/28/2016 18:40 to 06/29/2016 00:24



Wet Weather Event 36 for Meter 049-2
07/01/2016 21:15 to 07/02/2016 00:24

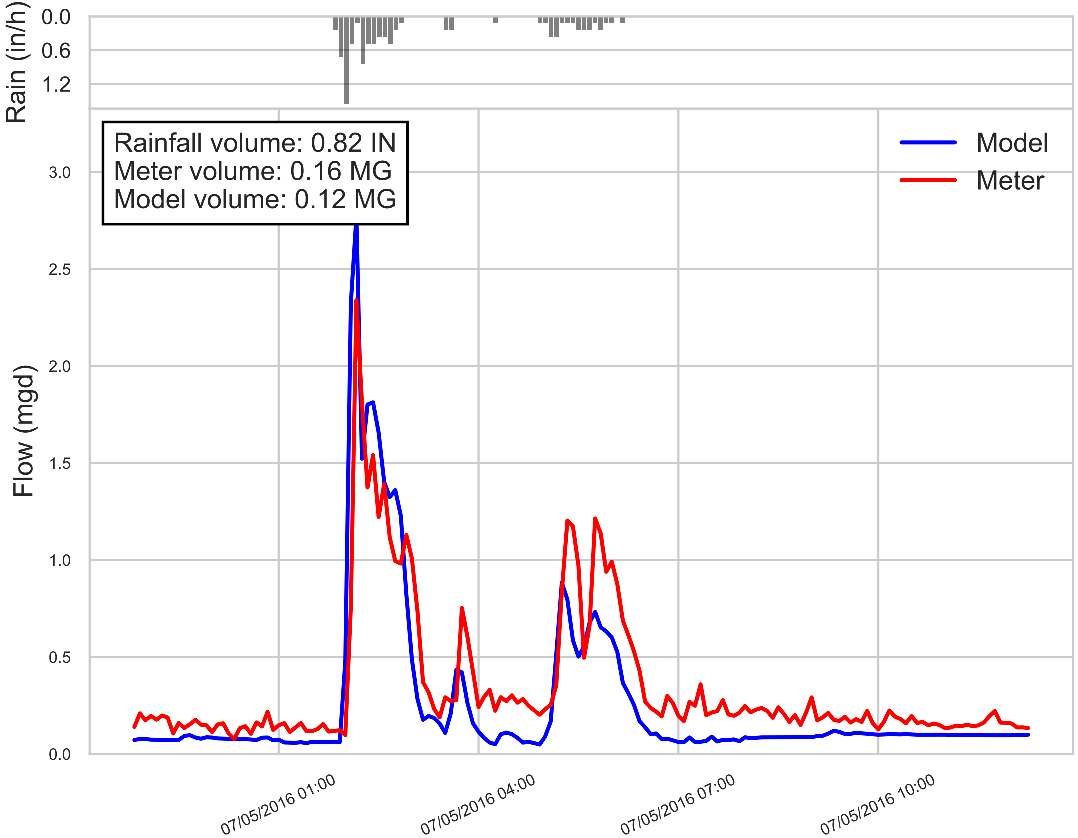


Wet Weather Event 37 for Meter 049-2
07/04/2016 13:45 to 07/05/2016 00:04



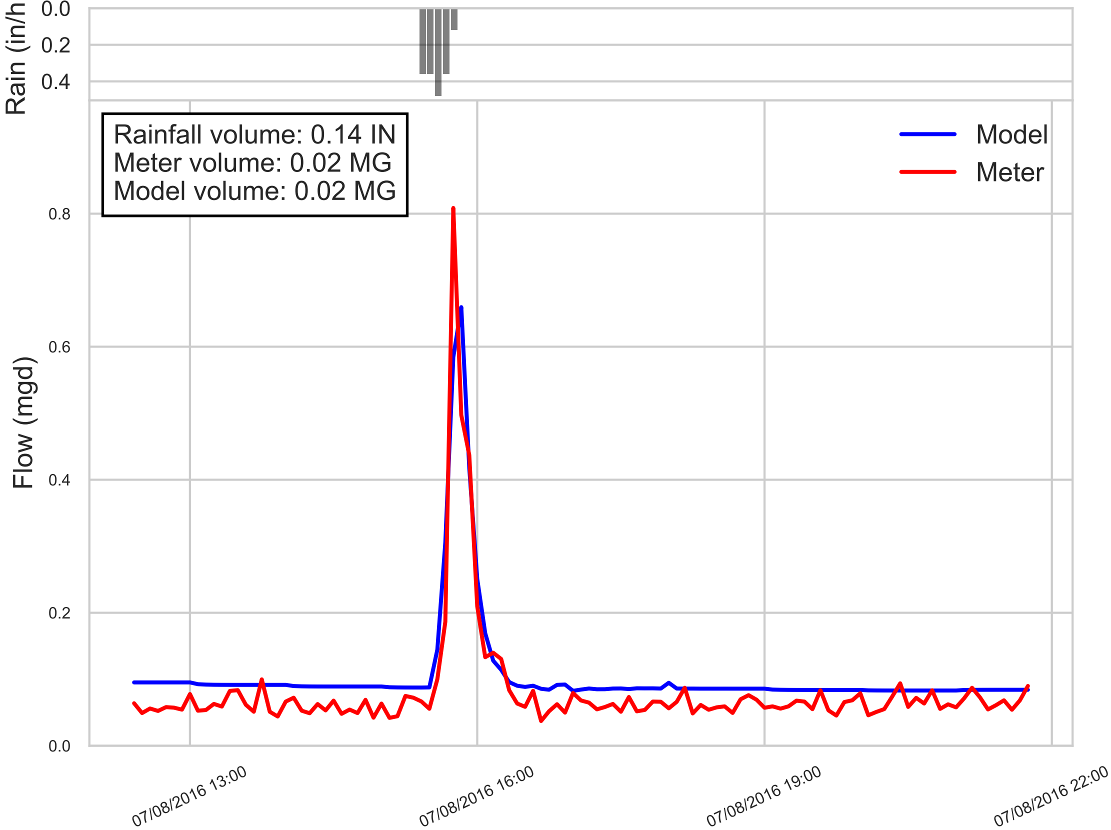
Rainfall volume: 0.47 IN
Meter volume: 0.12 MG
Model volume: 0.08 MG

Wet Weather Event 38 for Meter 049-2
07/05/2016 01:50 to 07/05/2016 09:15

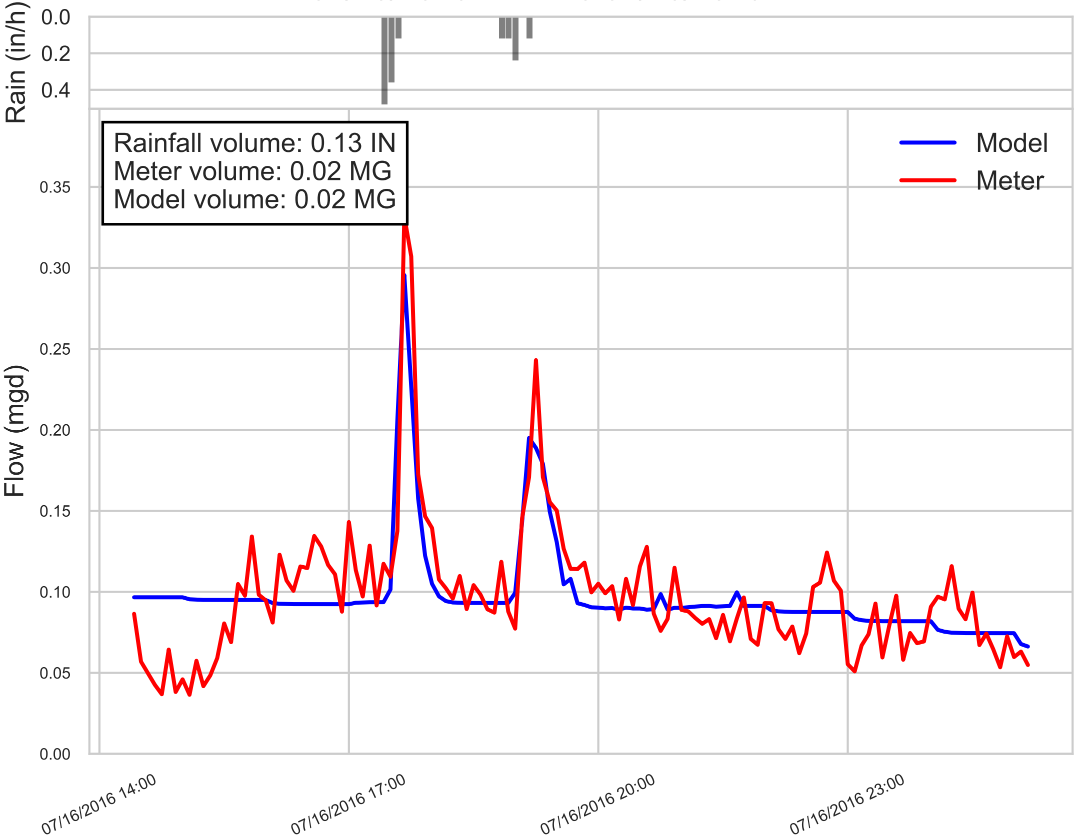


Rainfall volume: 0.82 IN
Meter volume: 0.16 MG
Model volume: 0.12 MG

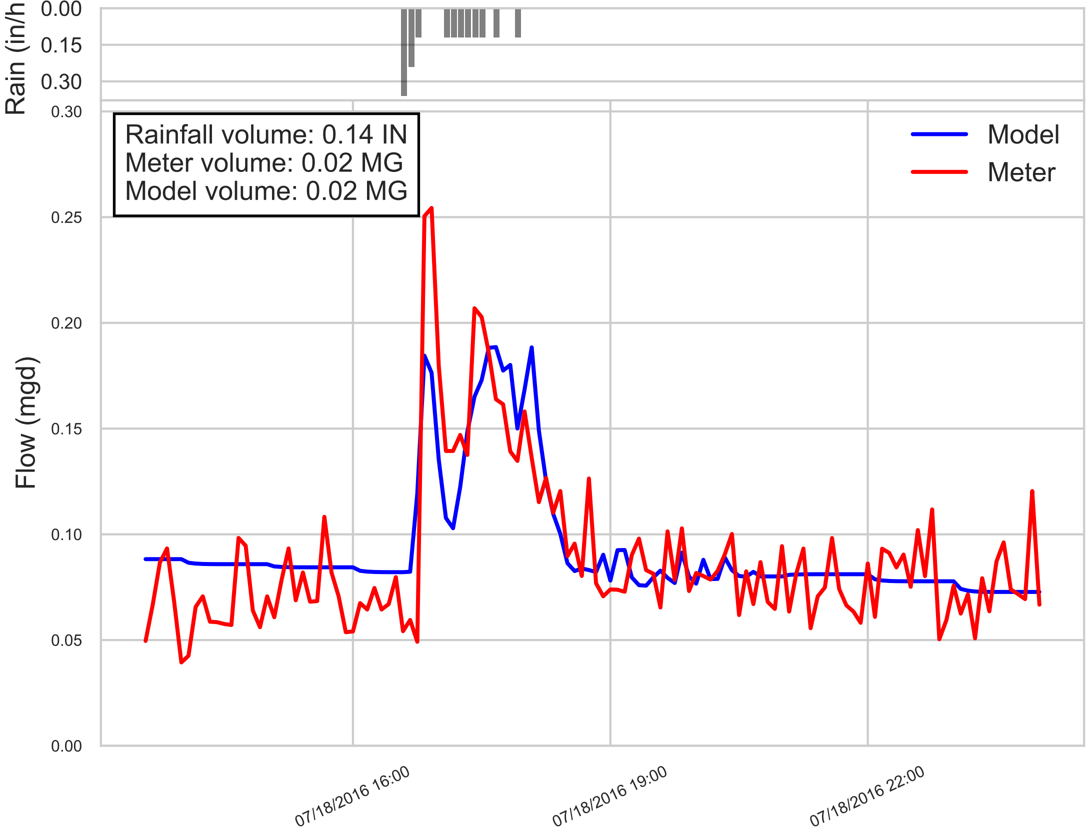
Wet Weather Event 39 for Meter 049-2
07/08/2016 15:24 to 07/08/2016 18:49

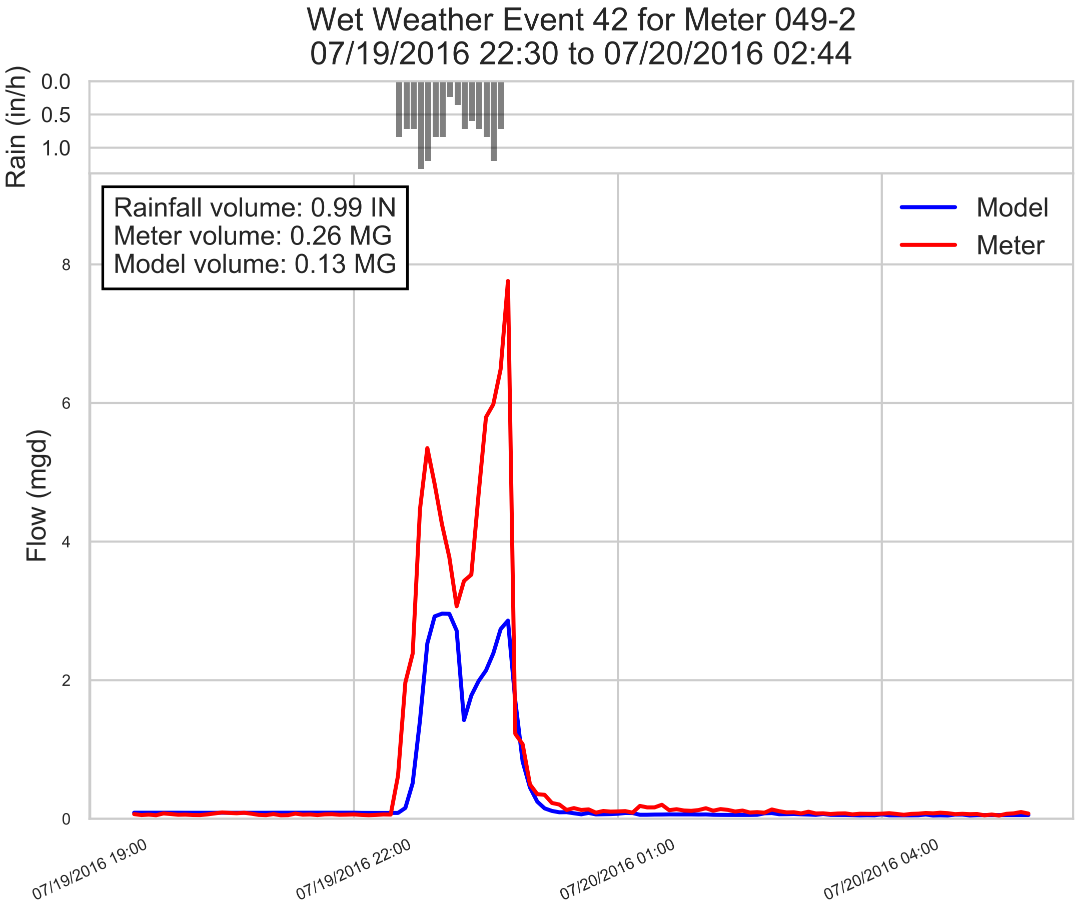


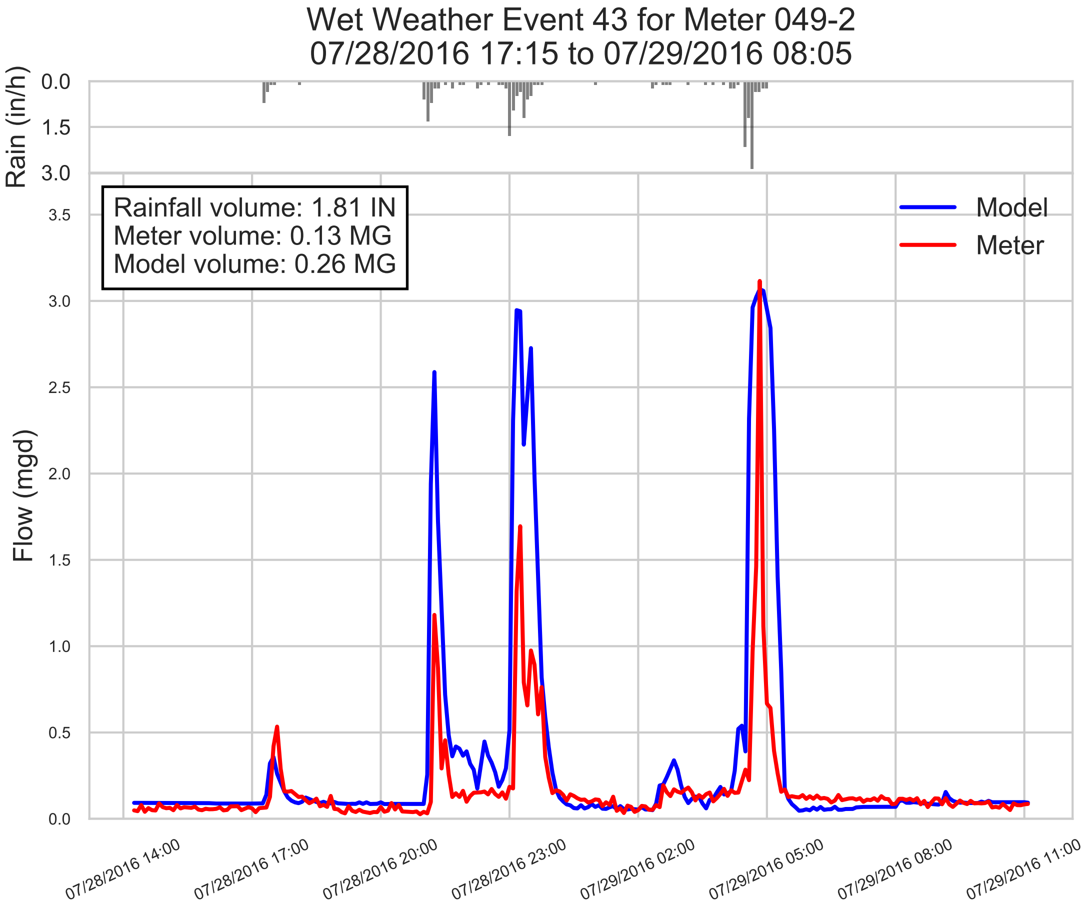
Wet Weather Event 40 for Meter 049-2
07/16/2016 17:24 to 07/16/2016 22:14



Wet Weather Event 41 for Meter 049-2
07/18/2016 16:34 to 07/18/2016 21:00



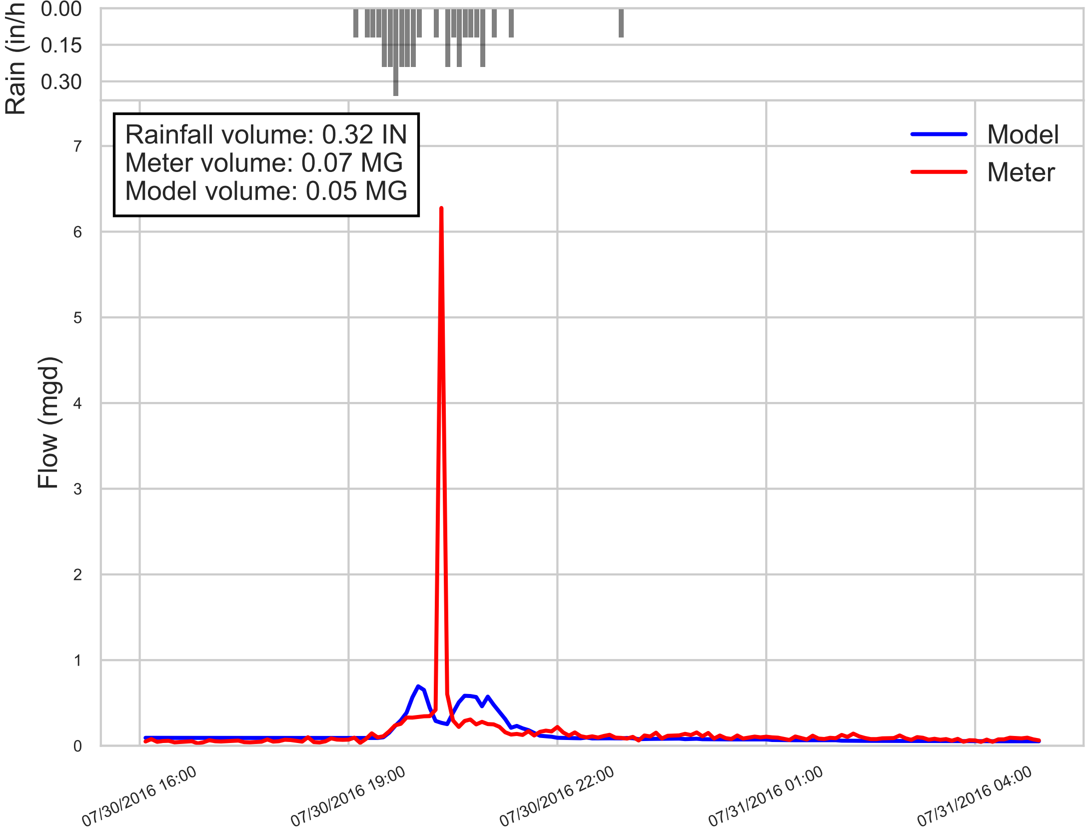

Wet Weather Event 42 for Meter 049-2
07/19/2016 22:30 to 07/20/2016 02:44
Rain (in/h)
0.0
0.5
1.0
Rainfall volume: 0.99 IN
Meter volume: 0.26 MG
Model volume: 0.13 MG
Model
Meter
Flow (mgd)
8
6
4
2
0
07/19/2016 19:00
07/19/2016 22:00
07/20/2016 01:00
07/20/2016 04:00

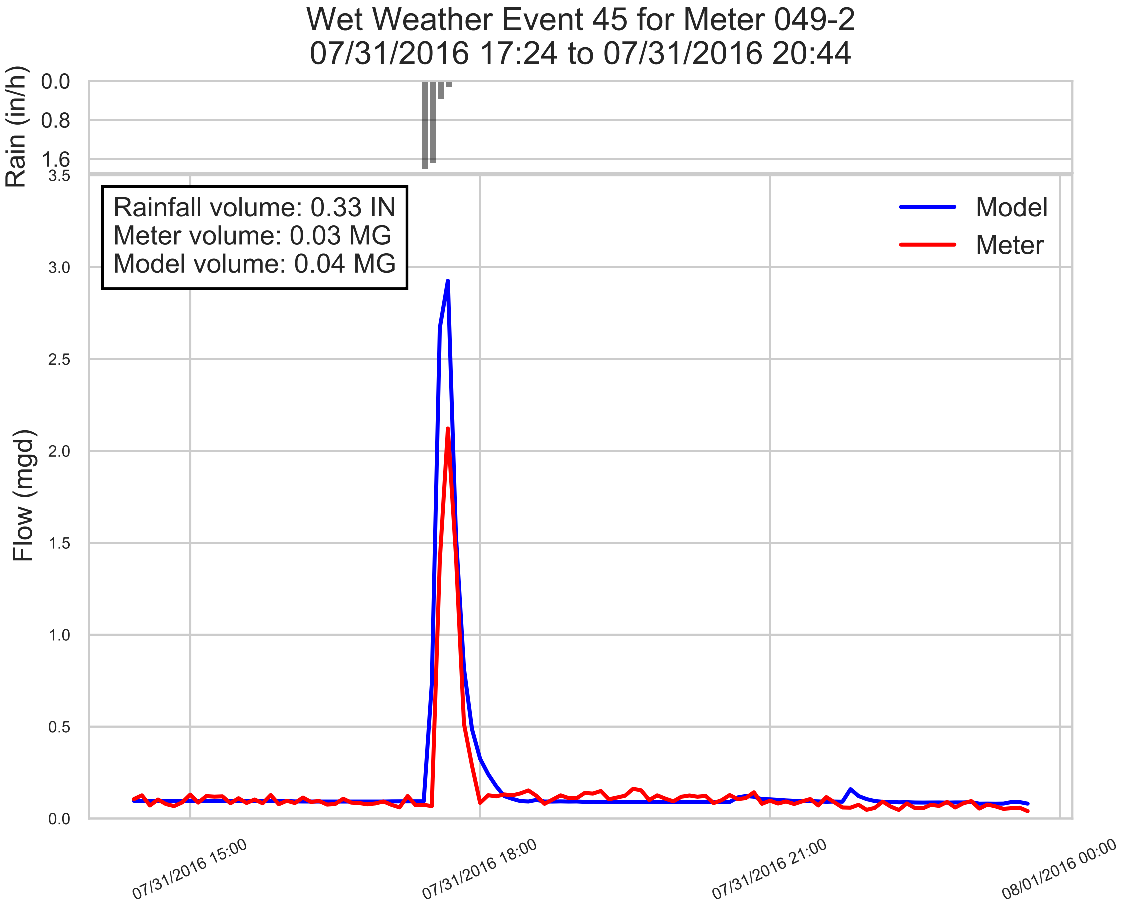


Wet Weather Event 43 for Meter 049-2
07/28/2016 17:15 to 07/29/2016 08:05

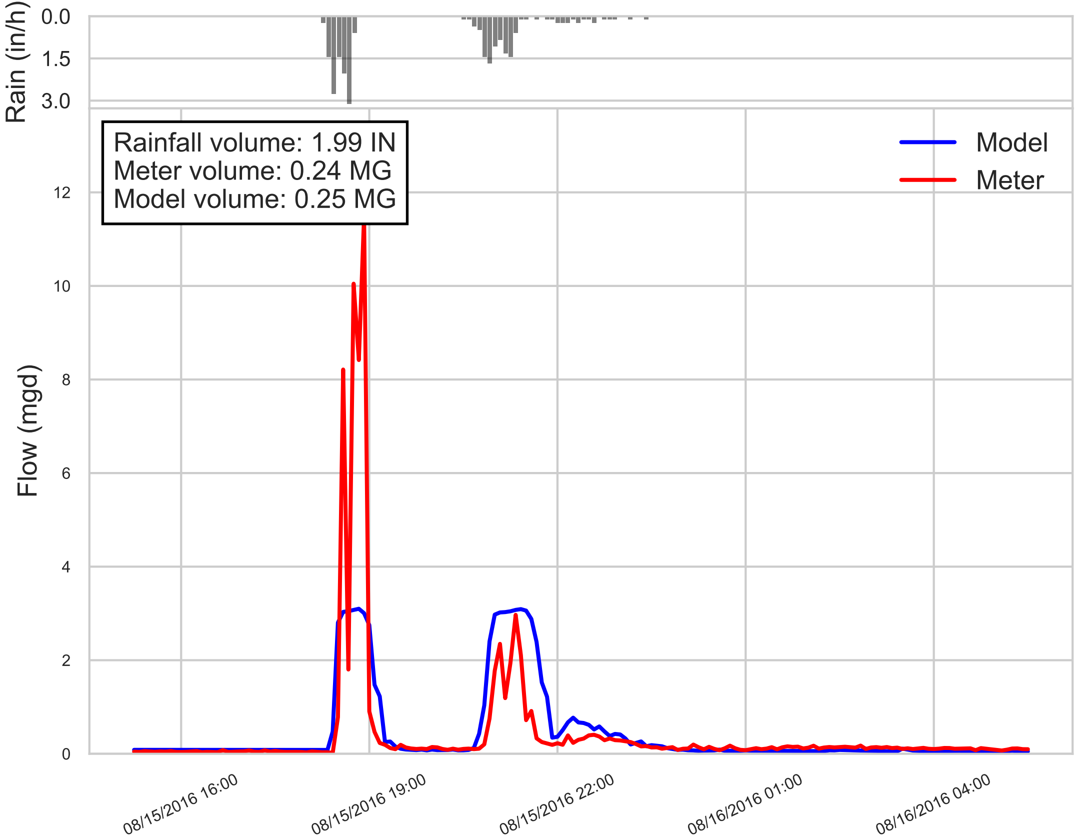
Rainfall volume: 1.81 IN
Meter volume: 0.13 MG
Model volume: 0.26 MG

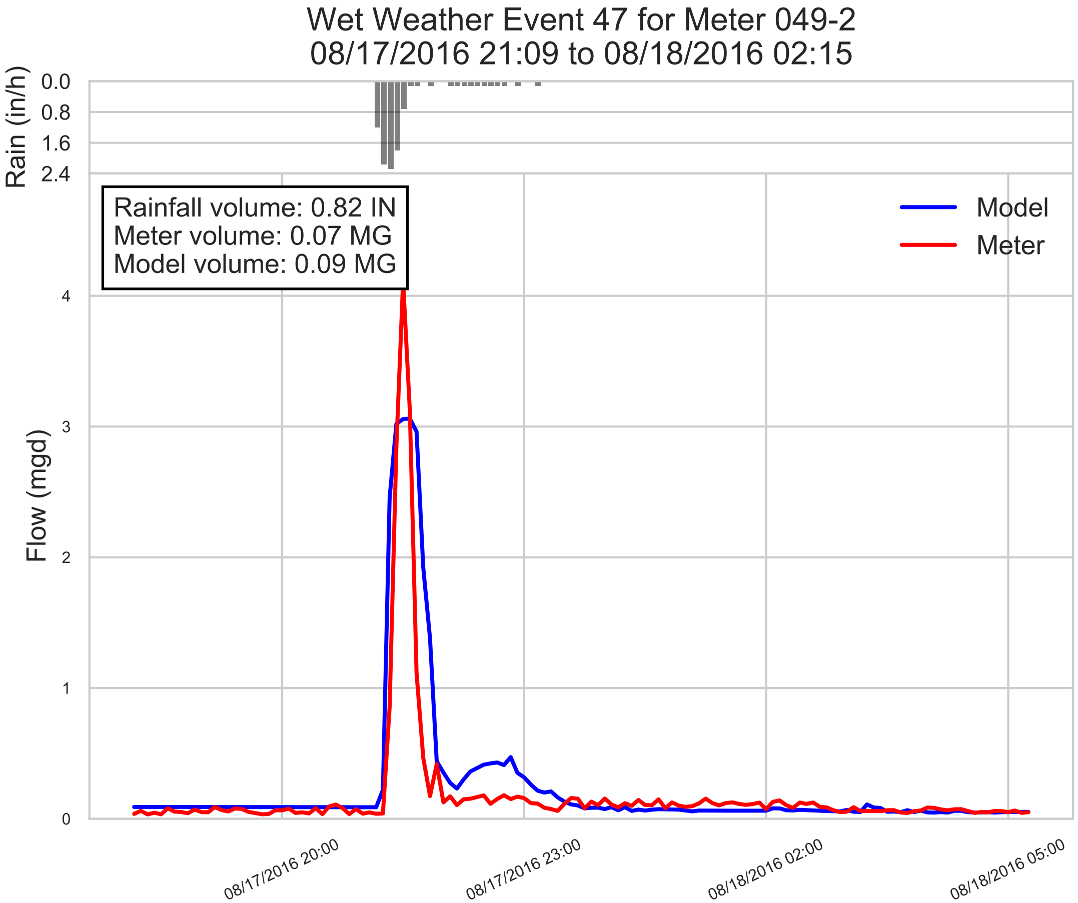
Wet Weather Event 44 for Meter 049-2
07/30/2016 19:05 to 07/31/2016 01:59



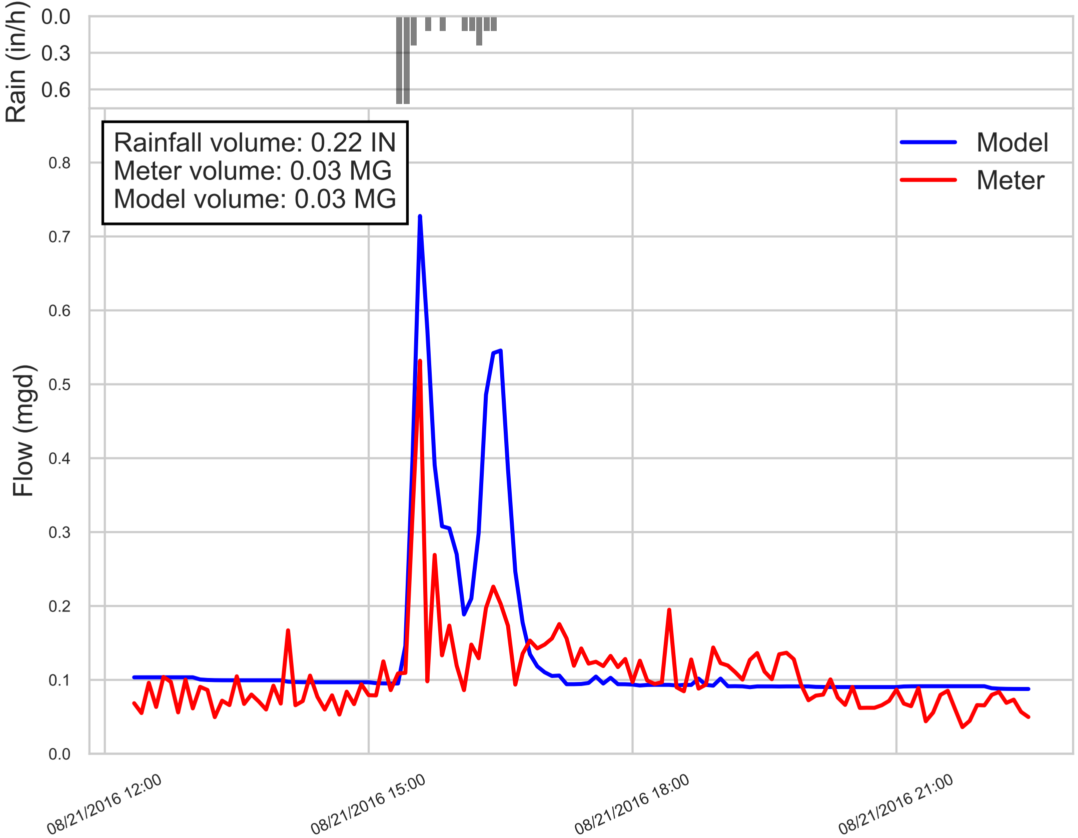

Wet Weather Event 45 for Meter 049-2
07/31/2016 17:24 to 07/31/2016 20:44
Rain (in/h)
0.0
0.8
1.6
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Flow (mgd)
Rainfall volume: 0.33 IN
Meter volume: 0.03 MG
Model volume: 0.04 MG
Model
Meter
07/31/2016 15:00
07/31/2016 18:00
07/31/2016 21:00
08/01/2016 00:00

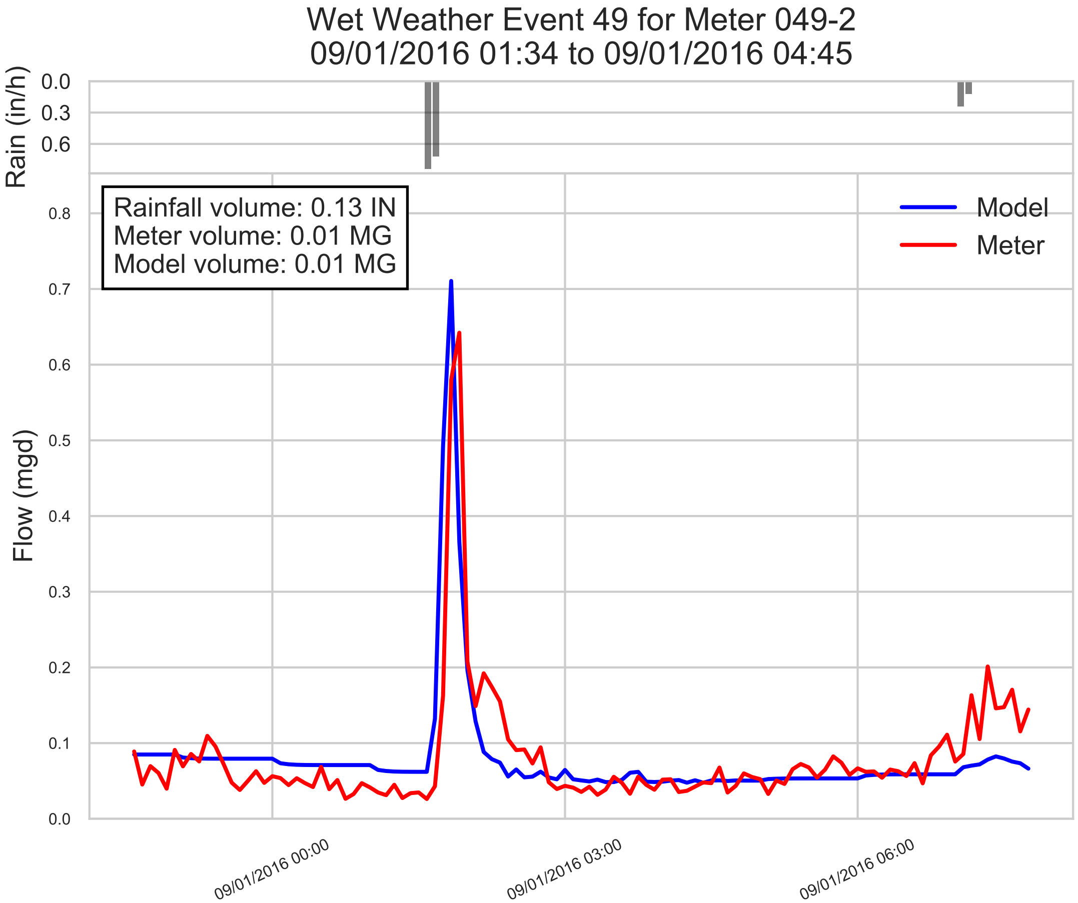
Wet Weather Event 46 for Meter 049-2
08/15/2016 18:15 to 08/16/2016 02:30

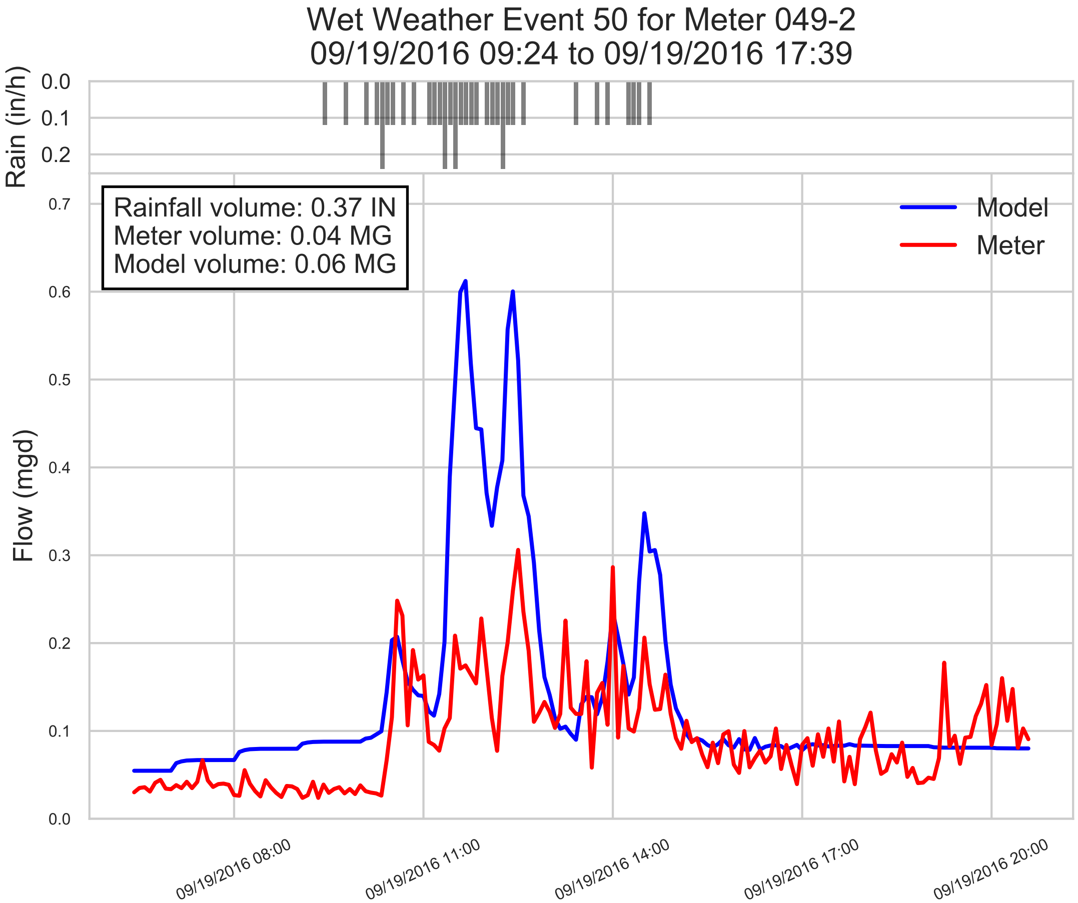



Wet Weather Event 47 for Meter 049-2
08/17/2016 21:09 to 08/18/2016 02:15
Rain (in/h)
0.0
0.8
1.6
2.4
Rainfall volume: 0.82 IN
Meter volume: 0.07 MG
Model volume: 0.09 MG
Model
Meter
Flow (mgd)
4
3
2
1
0
08/17/2016 20:00
08/17/2016 23:00
08/18/2016 02:00
08/18/2016 05:00

Wet Weather Event 48 for Meter 049-2
08/21/2016 15:20 to 08/21/2016 19:30

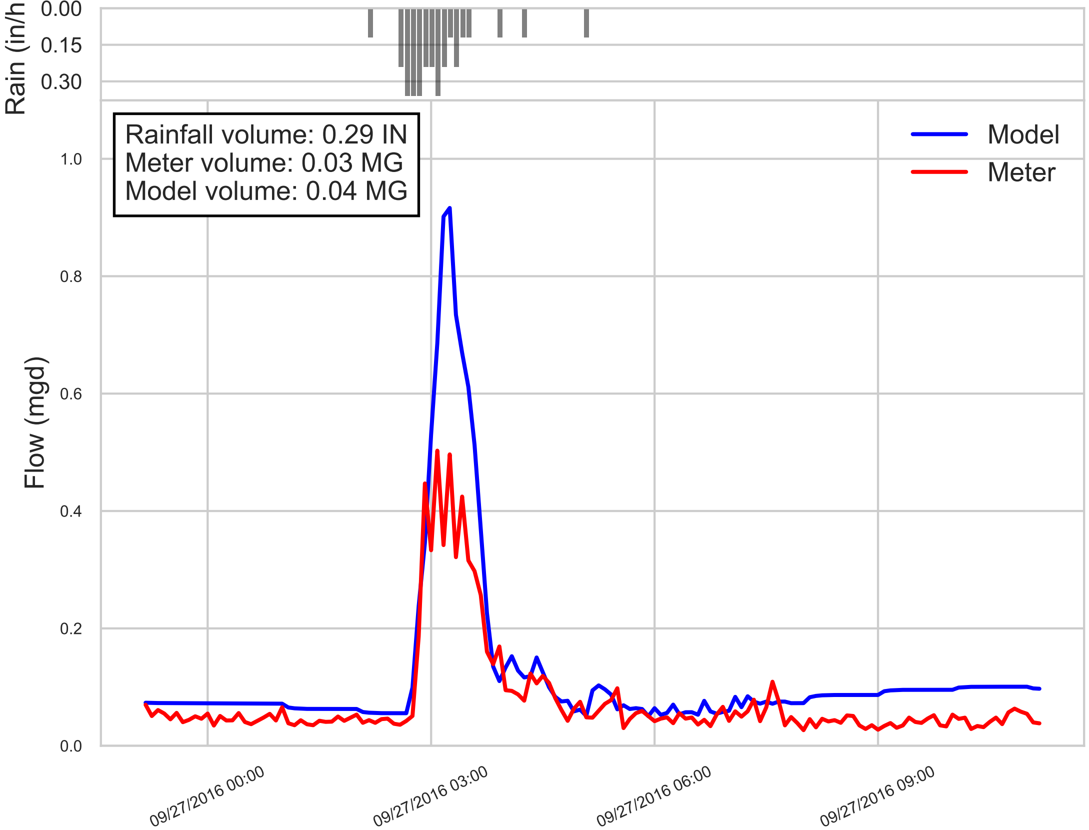



Wet Weather Event 49 for Meter 049-2
09/01/2016 01:34 to 09/01/2016 04:45
Rain (in/h)
0.0
0.3
0.6
Flow (mgd)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
Rainfall volume: 0.13 IN
Meter volume: 0.01 MG
Model volume: 0.01 MG
Model
Meter
09/01/2016 00:00
09/01/2016 03:00
09/01/2016 06:00

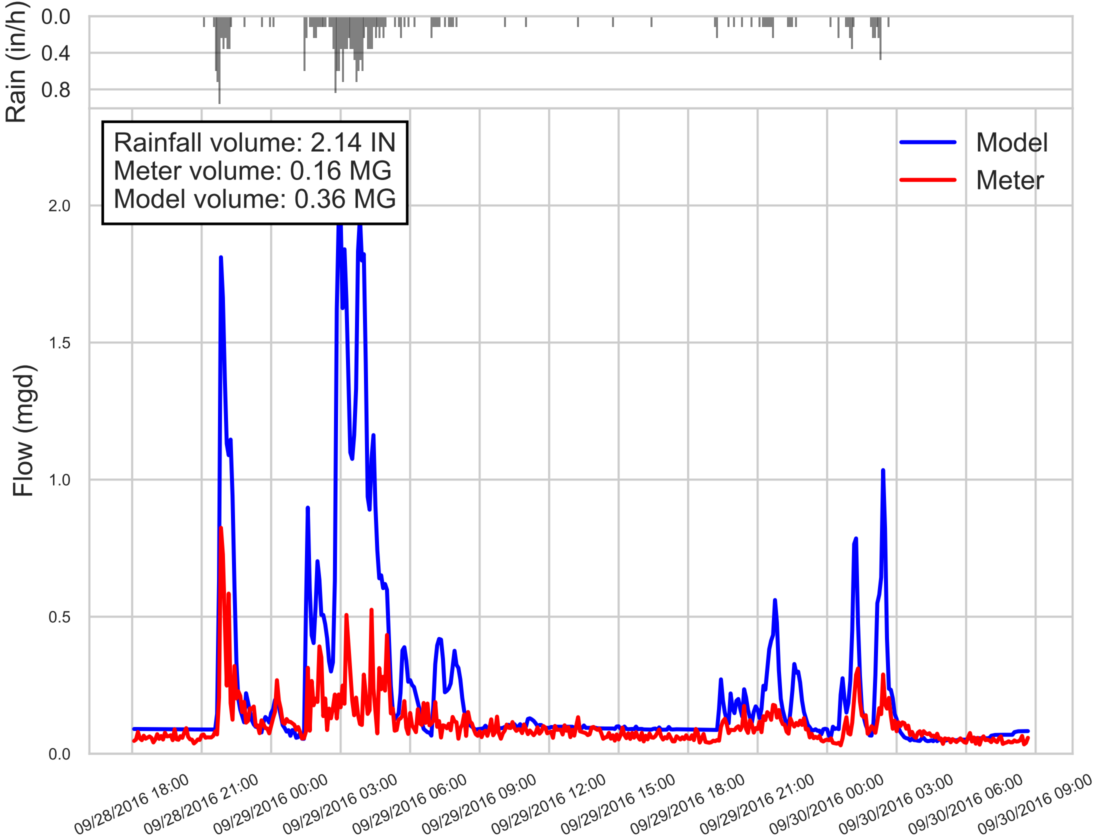


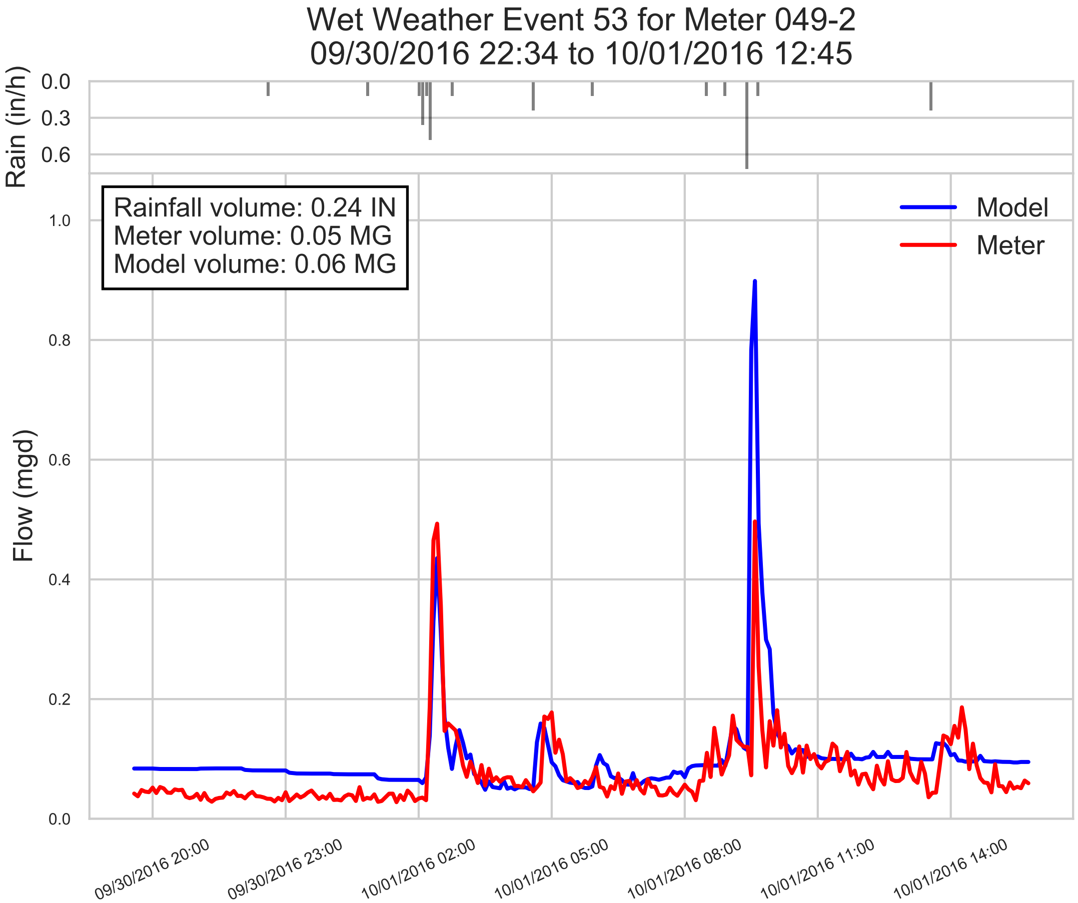
Wet Weather Event 50 for Meter 049-2
09/19/2016 09:24 to 09/19/2016 17:39
Rain (in/h)
0.0
0.1
0.2
Rainfall volume: 0.37 IN
Meter volume: 0.04 MG
Model volume: 0.06 MG
Model
Meter
Flow (mgd)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
09/19/2016 08:00
09/19/2016 11:00
09/19/2016 14:00
09/19/2016 17:00
09/19/2016 20:00

Wet Weather Event 51 for Meter 049-2
09/27/2016 02:10 to 09/27/2016 08:10

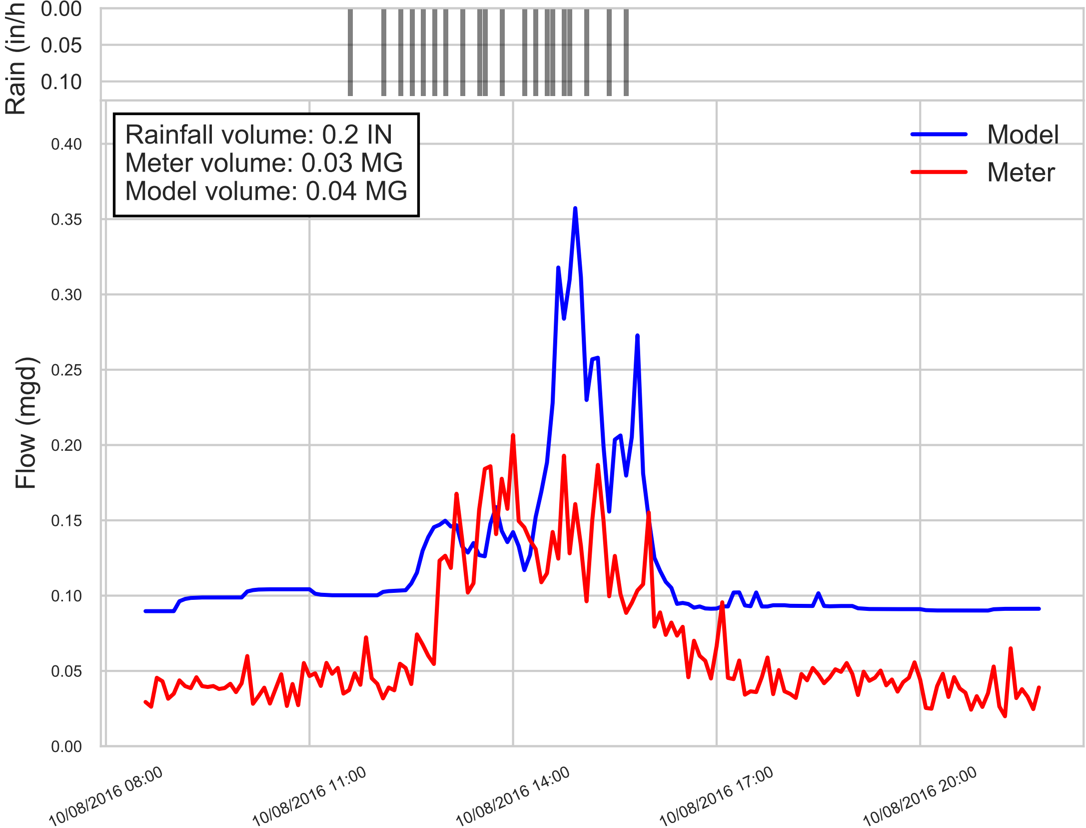


Wet Weather Event 52 for Meter 049-2
09/28/2016 21:04 to 09/30/2016 05:44

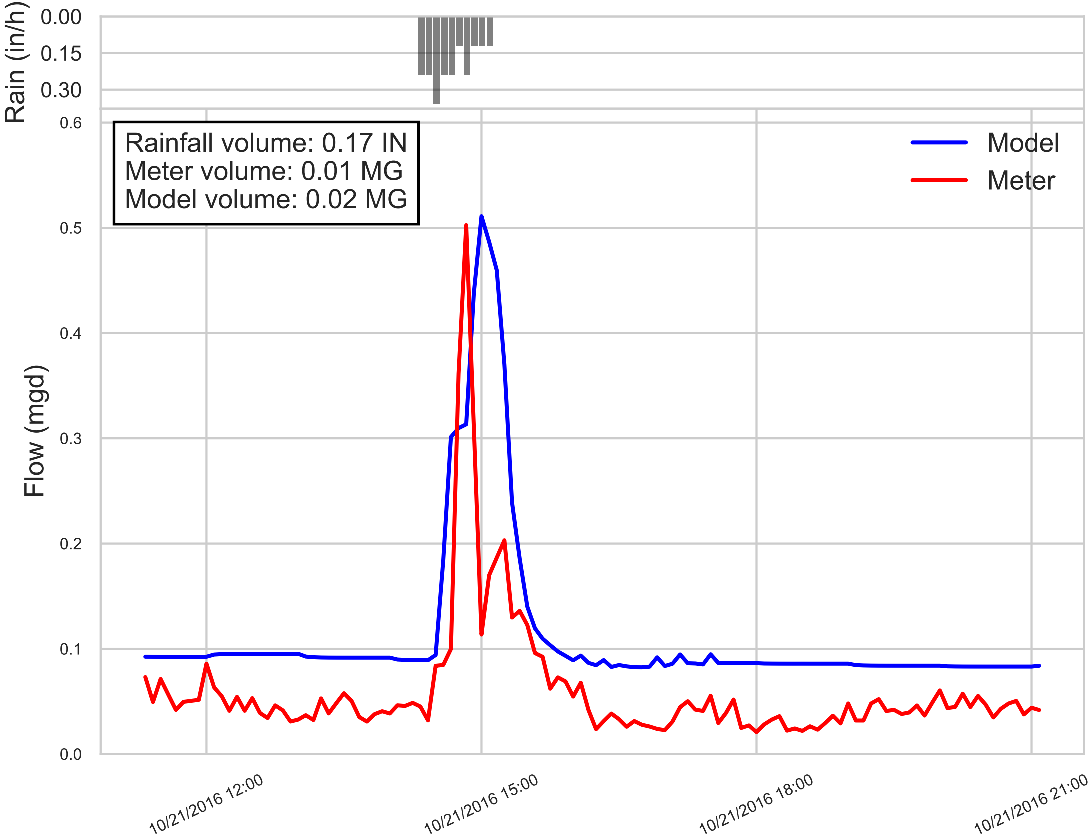



Wet Weather Event 53 for Meter 049-2
09/30/2016 22:34 to 10/01/2016 12:45
Rain (in/h)
0.0
0.3
0.6
Flow (mgd)
1.0
0.8
0.6
0.4
0.2
0.0
Rainfall volume: 0.24 IN
Meter volume: 0.05 MG
Model volume: 0.06 MG
Model
Meter
09/30/2016 20:00
09/30/2016 23:00
10/01/2016 02:00
10/01/2016 05:00
10/01/2016 08:00
10/01/2016 11:00
10/01/2016 14:00

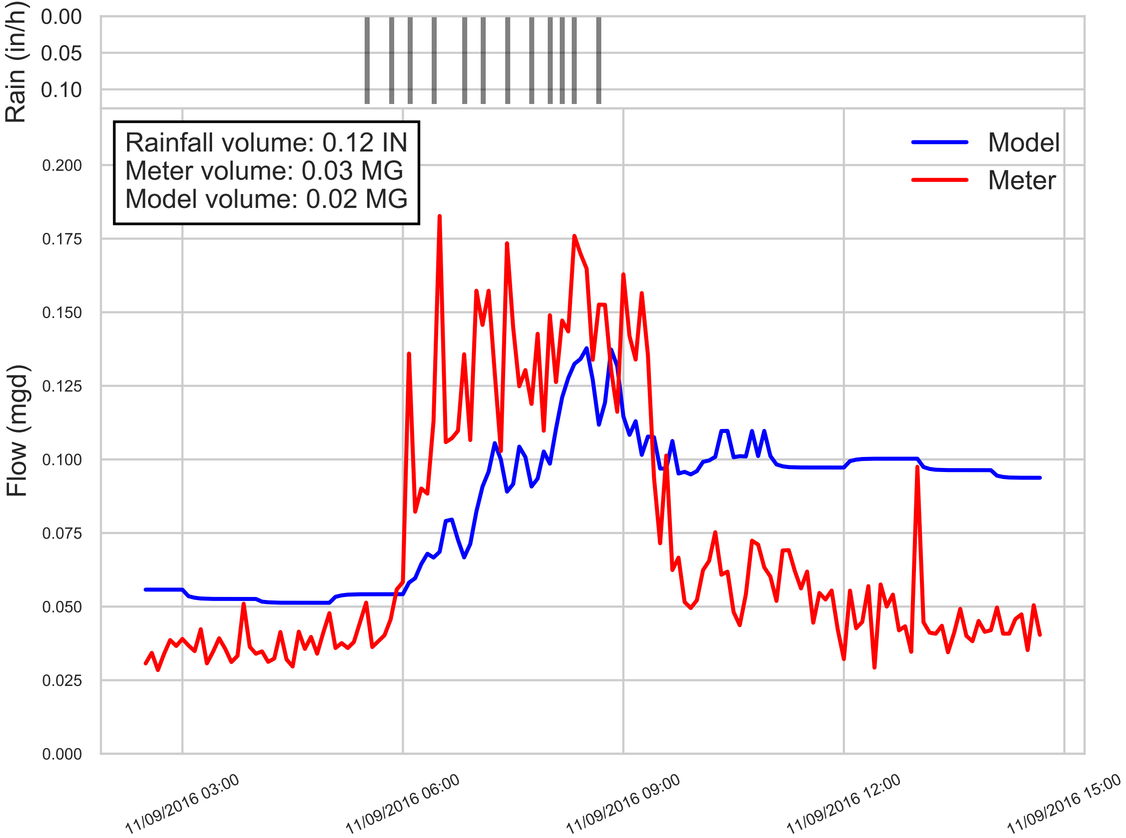
Wet Weather Event 54 for Meter 049-2
10/08/2016 11:35 to 10/08/2016 18:45



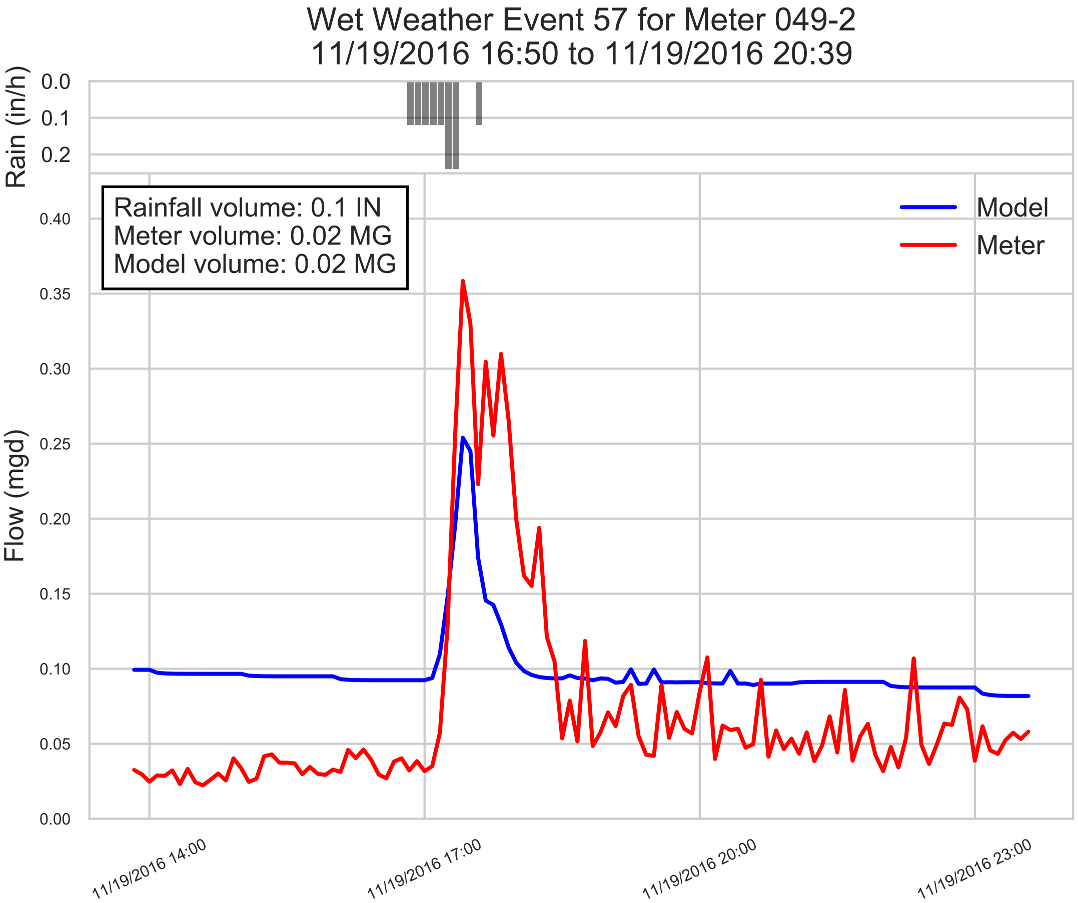
Wet Weather Event 55 for Meter 049-2
10/21/2016 14:19 to 10/21/2016 18:09

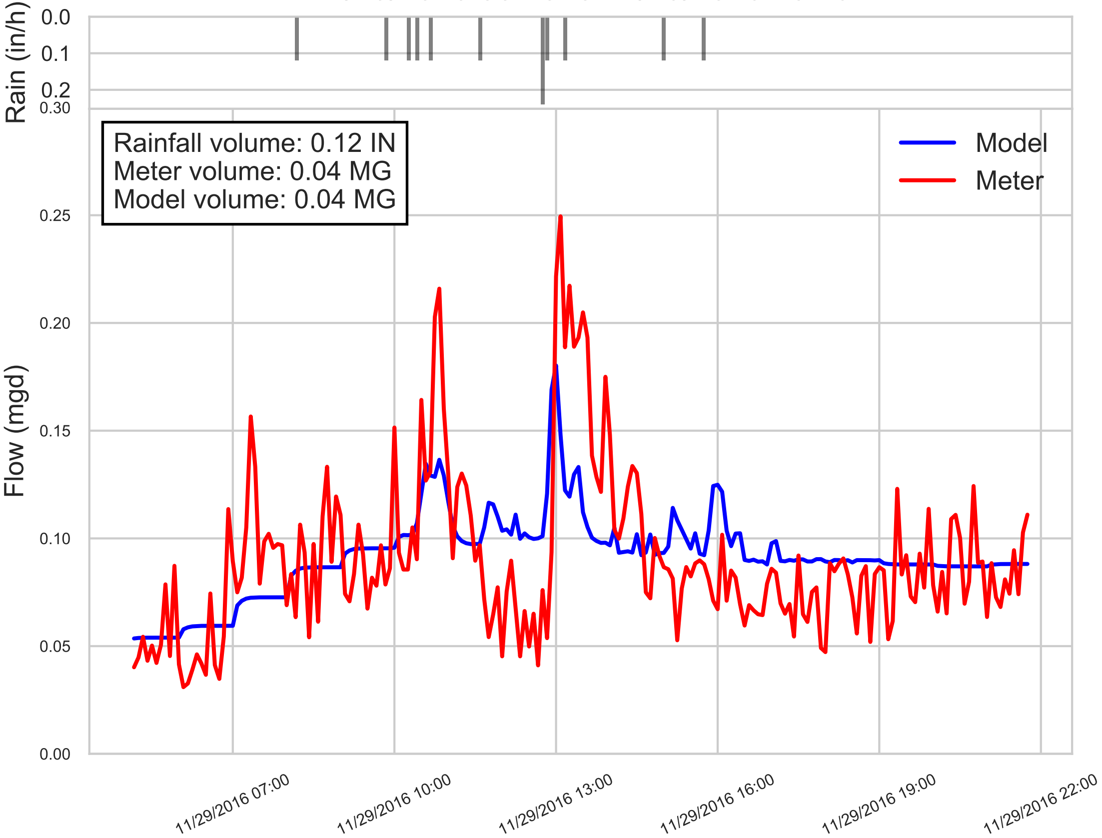


Wet Weather Event 56 for Meter 049-2
11/09/2016 05:30 to 11/09/2016 11:44



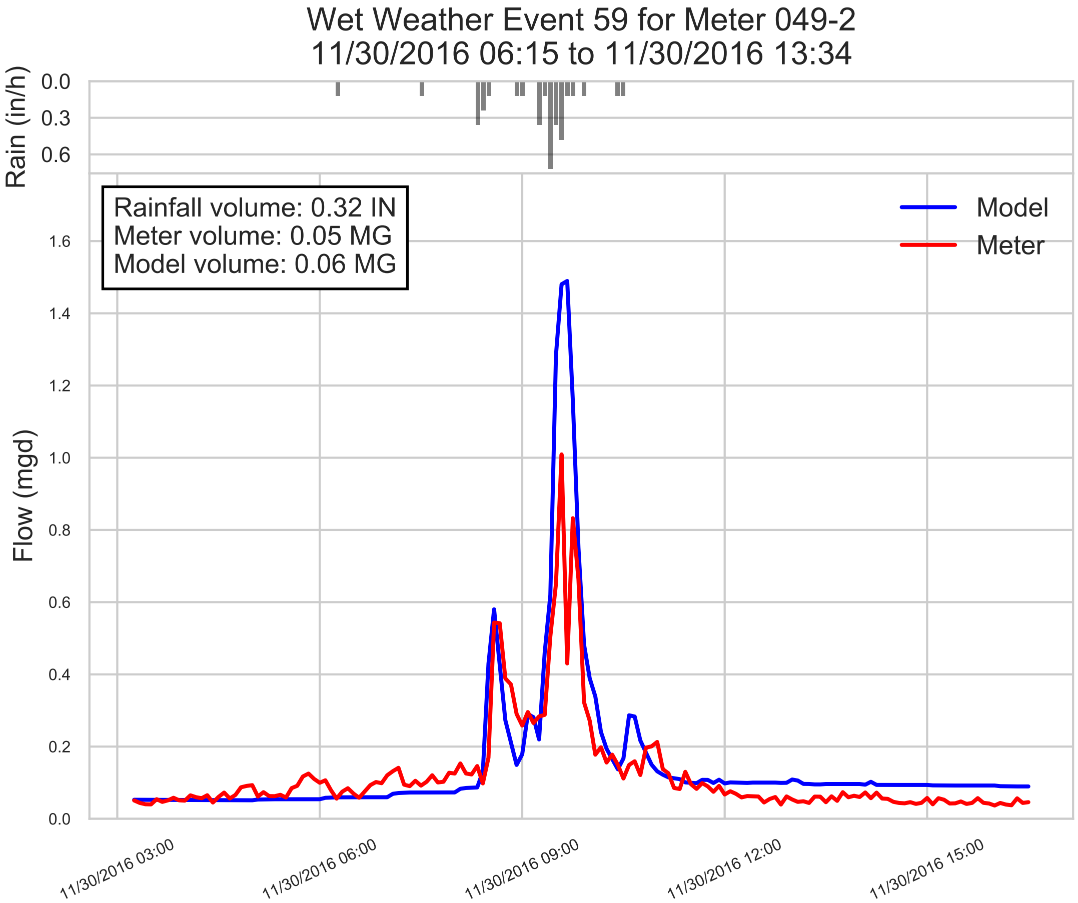
Rainfall volume: 0.12 IN
Meter volume: 0.03 MG
Model volume: 0.02 MG


Wet Weather Event 57 for Meter 049-2
11/19/2016 16:50 to 11/19/2016 20:39
Rain (in/h)
0.0
0.1
0.2
Rainfall volume: 0.1 IN
Meter volume: 0.02 MG
Model volume: 0.02 MG
Model
Meter
Flow (mgd)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
11/19/2016 14:00
11/19/2016 17:00
11/19/2016 20:00
11/19/2016 23:00

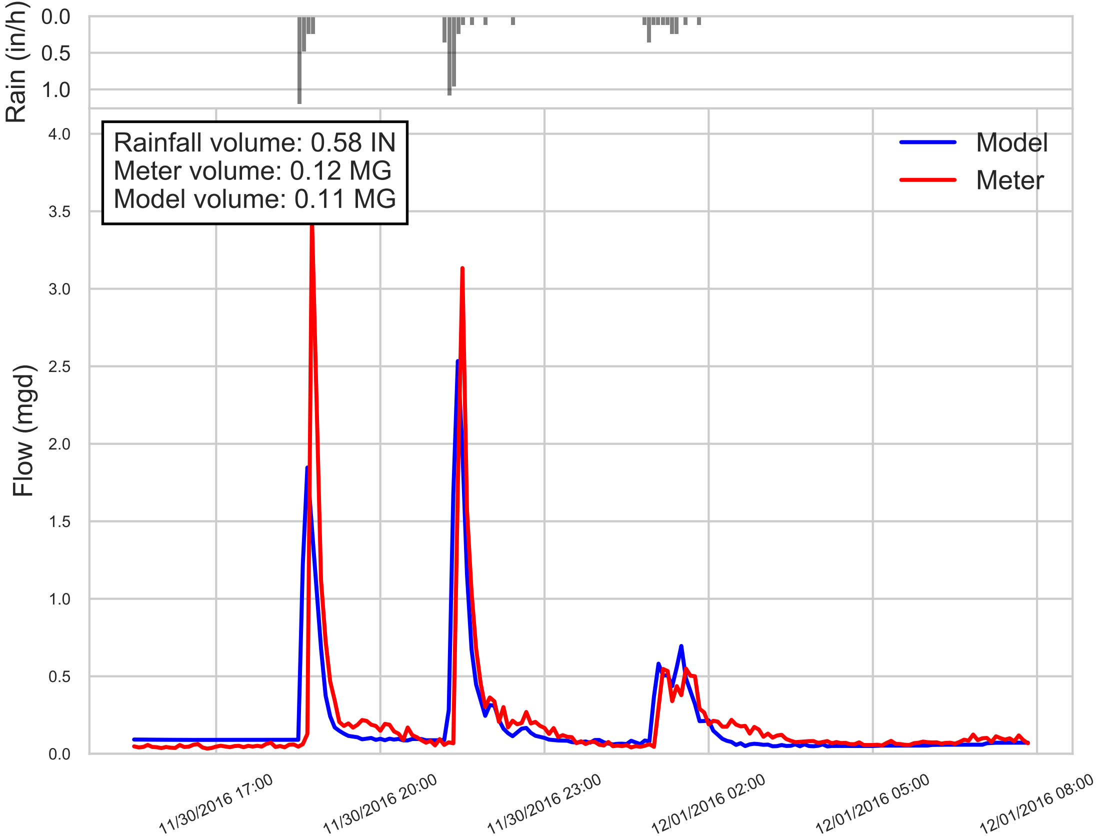


Wet Weather Event 58 for Meter 049-2
11/29/2016 08:10 to 11/29/2016 18:49

Rainfall volume: 0.12 IN
Meter volume: 0.04 MG
Model volume: 0.04 MG

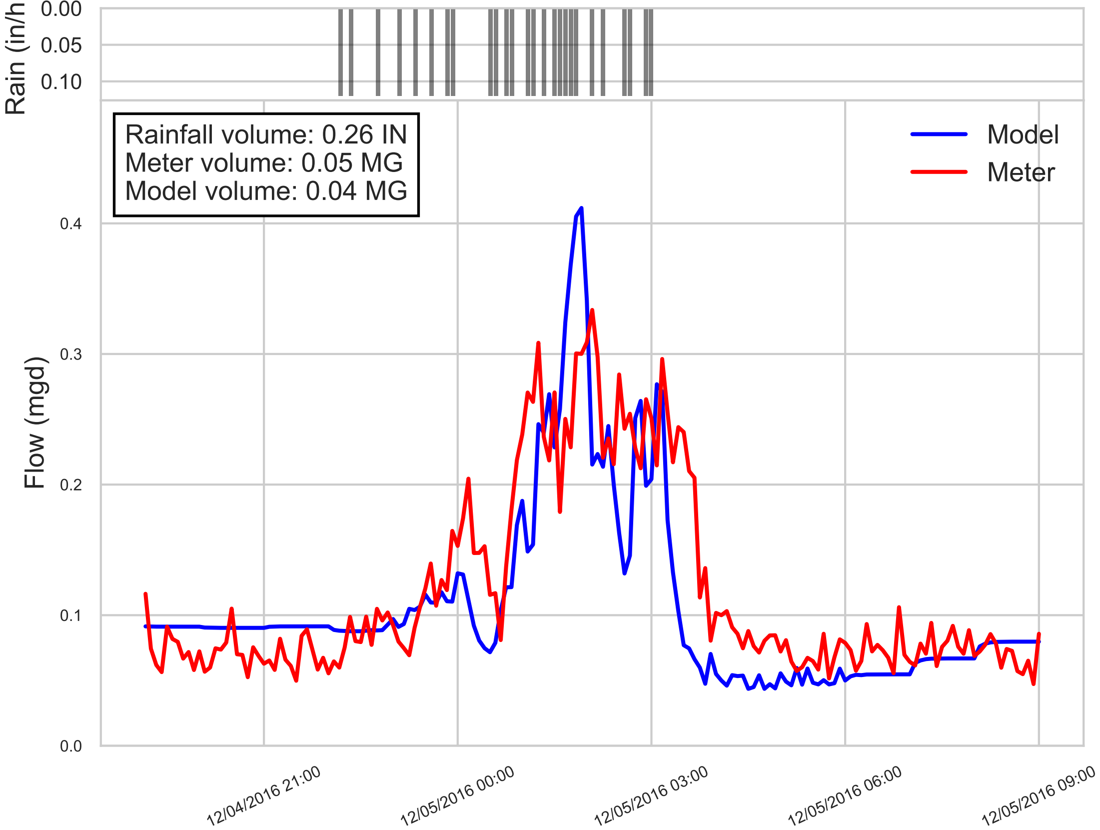

Wet Weather Event 59 for Meter 049-2
11/30/2016 06:15 to 11/30/2016 13:34
Rain (in/h)
0.0
0.3
0.6
Rainfall volume: 0.32 IN
Meter volume: 0.05 MG
Model volume: 0.06 MG
Model
Meter
Flow (mgd)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
11/30/2016 03:00
11/30/2016 06:00
11/30/2016 09:00
11/30/2016 12:00
11/30/2016 15:00

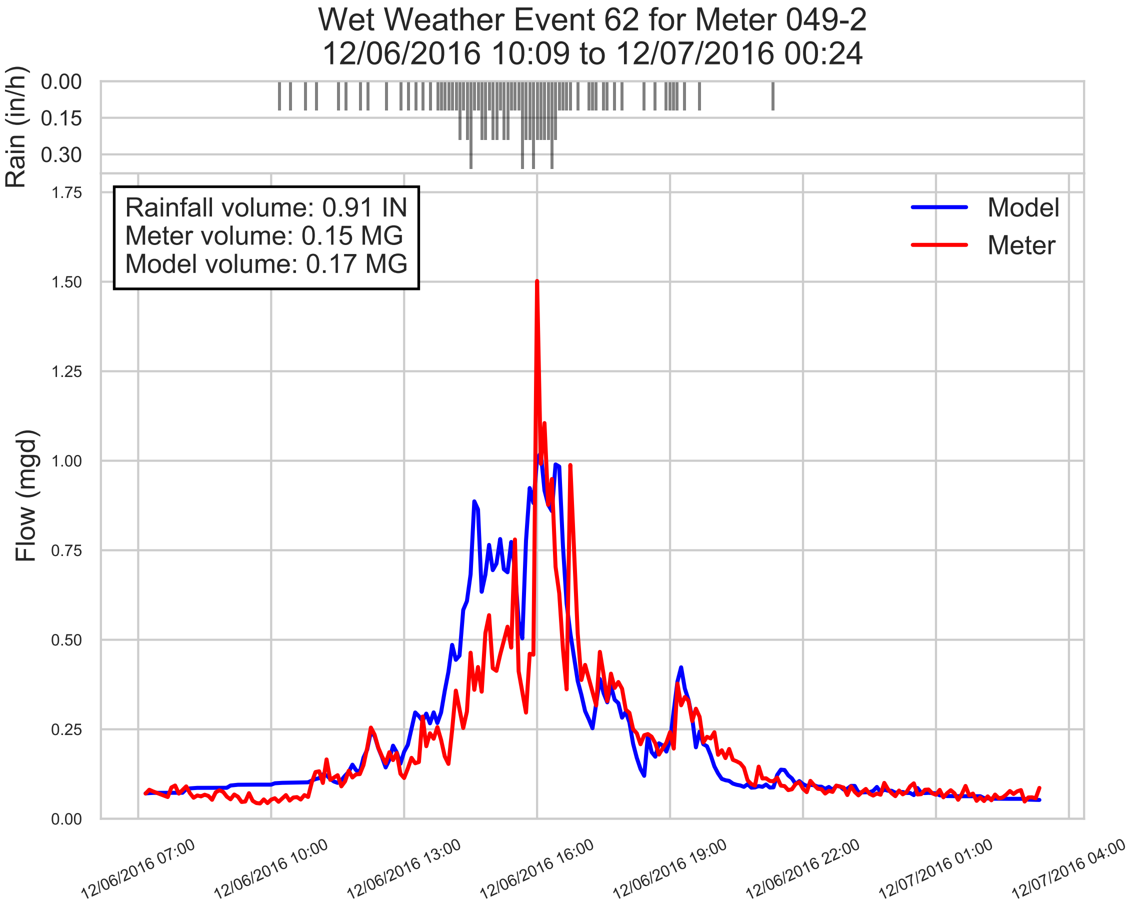
Wet Weather Event 60 for Meter 049-2
11/30/2016 18:29 to 12/01/2016 04:54



Rainfall volume: 0.58 IN
Meter volume: 0.12 MG
Model volume: 0.11 MG

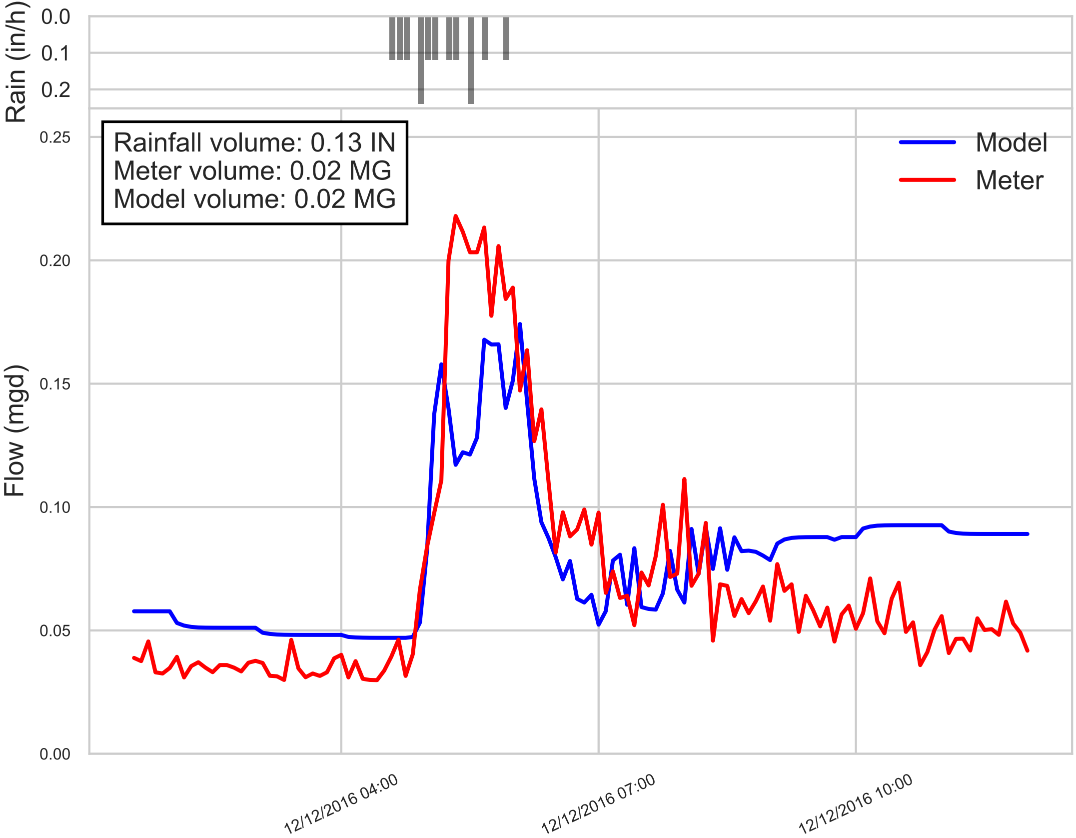
Wet Weather Event 61 for Meter 049-2
12/04/2016 22:09 to 12/05/2016 06:04

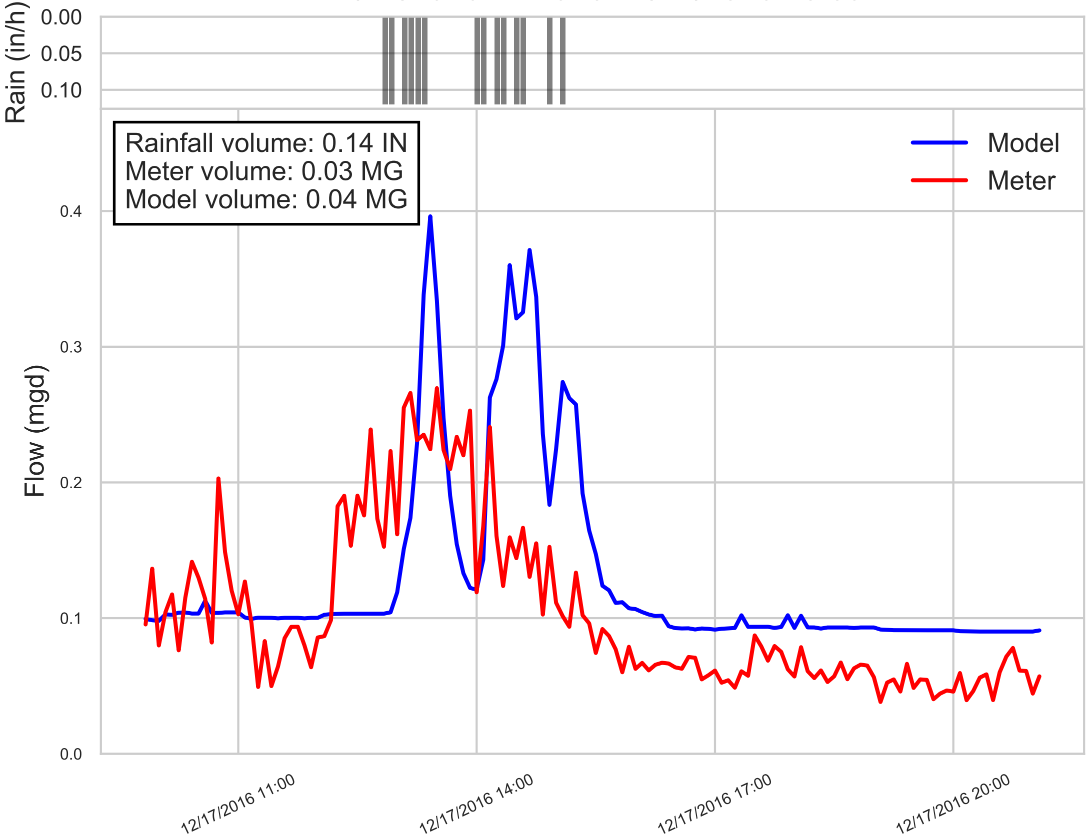




Wet Weather Event 62 for Meter 049-2
12/06/2016 10:09 to 12/07/2016 00:24
Rain (in/h)
0.00
0.15
0.30
Flow (mgd)
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Rainfall volume: 0.91 IN
Meter volume: 0.15 MG
Model volume: 0.17 MG
Model
Meter
12/06/2016 07:00
12/06/2016 10:00
12/06/2016 13:00
12/06/2016 16:00
12/06/2016 19:00
12/06/2016 22:00
12/07/2016 01:00
12/07/2016 04:00

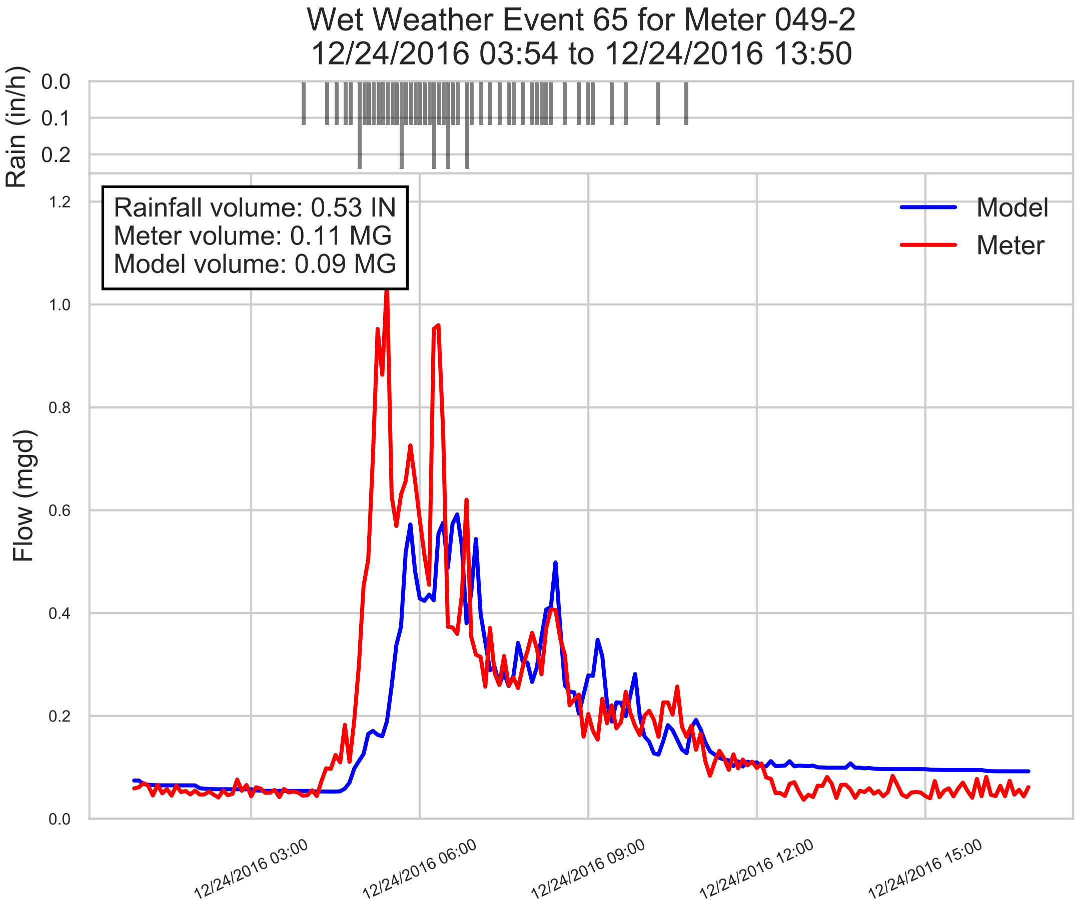
Wet Weather Event 63 for Meter 049-2
12/12/2016 04:34 to 12/12/2016 09:00



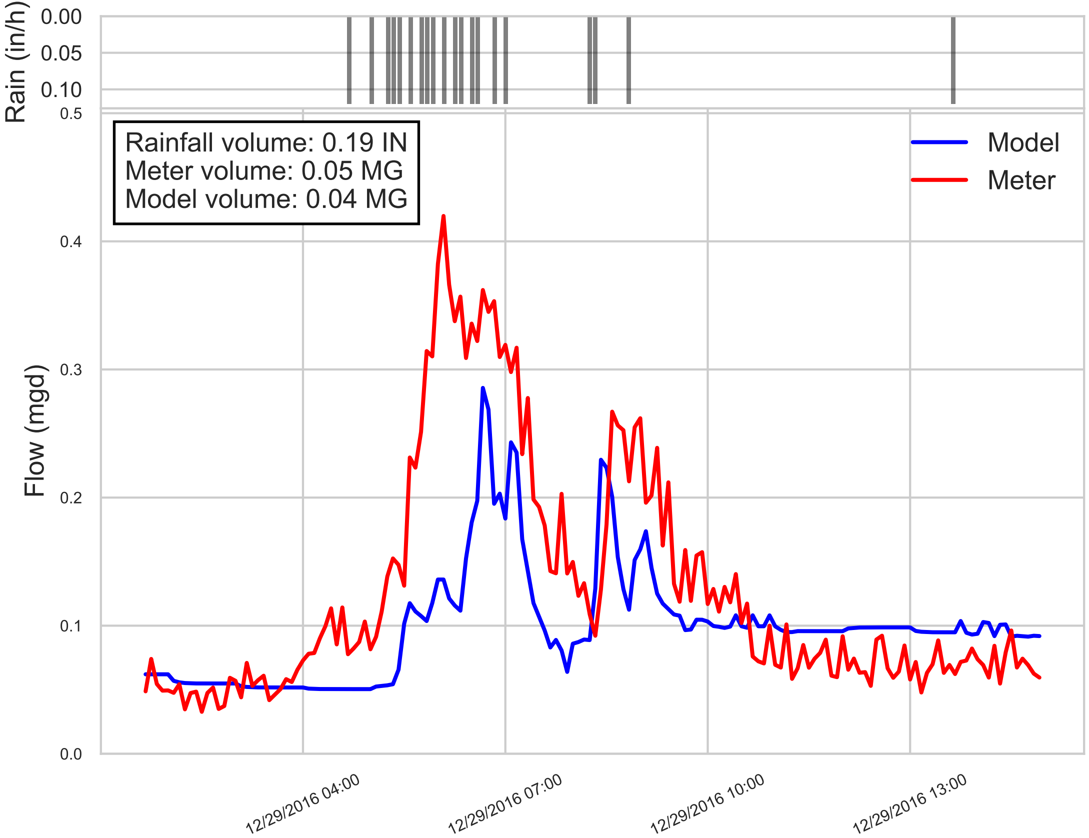


Wet Weather Event 64 for Meter 049-2
12/17/2016 12:49 to 12/17/2016 18:09

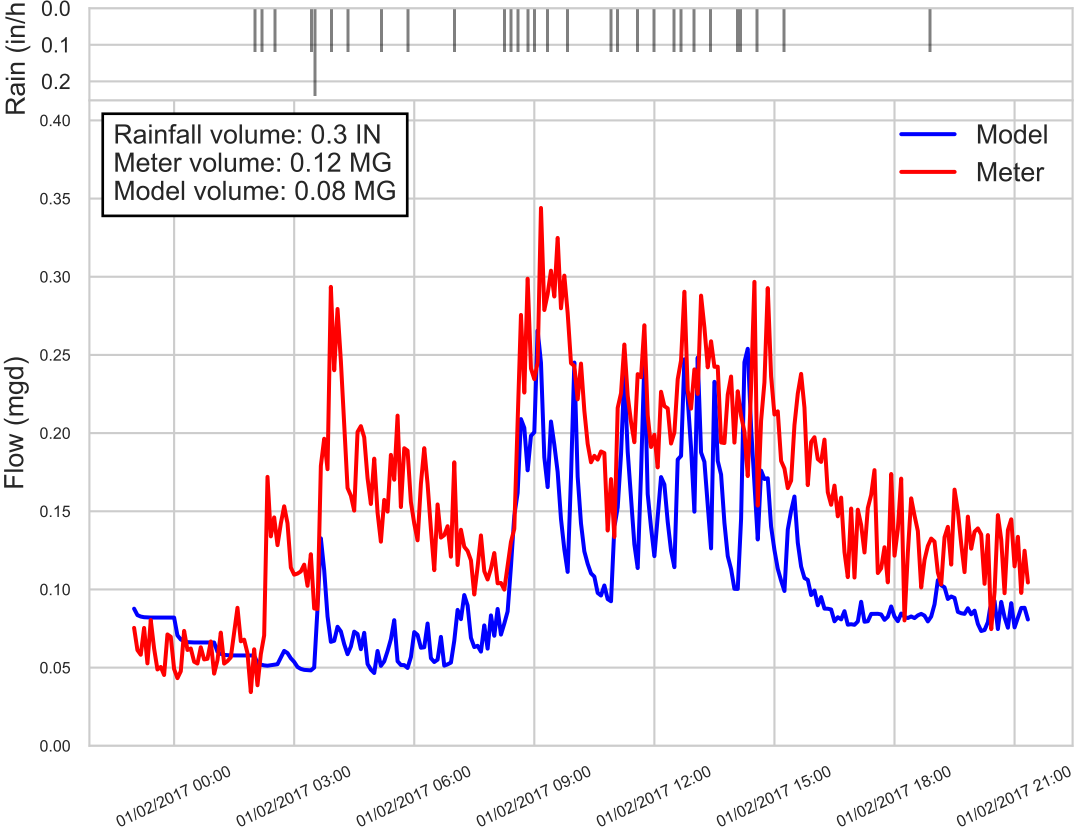
Rainfall volume: 0.14 IN
Meter volume: 0.03 MG
Model volume: 0.04 MG


Wet Weather Event 65 for Meter 049-2
12/24/2016 03:54 to 12/24/2016 13:50
Rain (in/h)
0.0
0.1
0.2
Flow (mgd)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Rainfall volume: 0.53 IN
Meter volume: 0.11 MG
Model volume: 0.09 MG
Model
Meter
12/24/2016 03:00
12/24/2016 06:00
12/24/2016 09:00
12/24/2016 12:00
12/24/2016 15:00

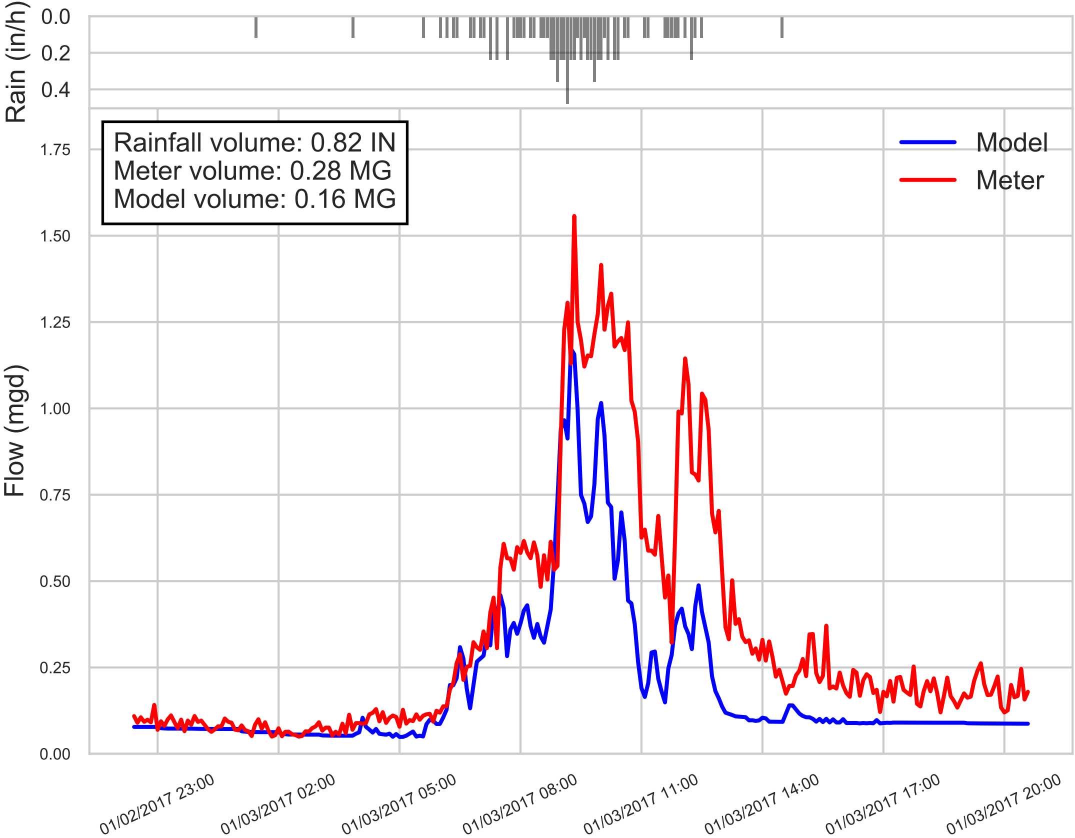
Wet Weather Event 66 for Meter 049-2
12/29/2016 04:39 to 12/29/2016 11:55



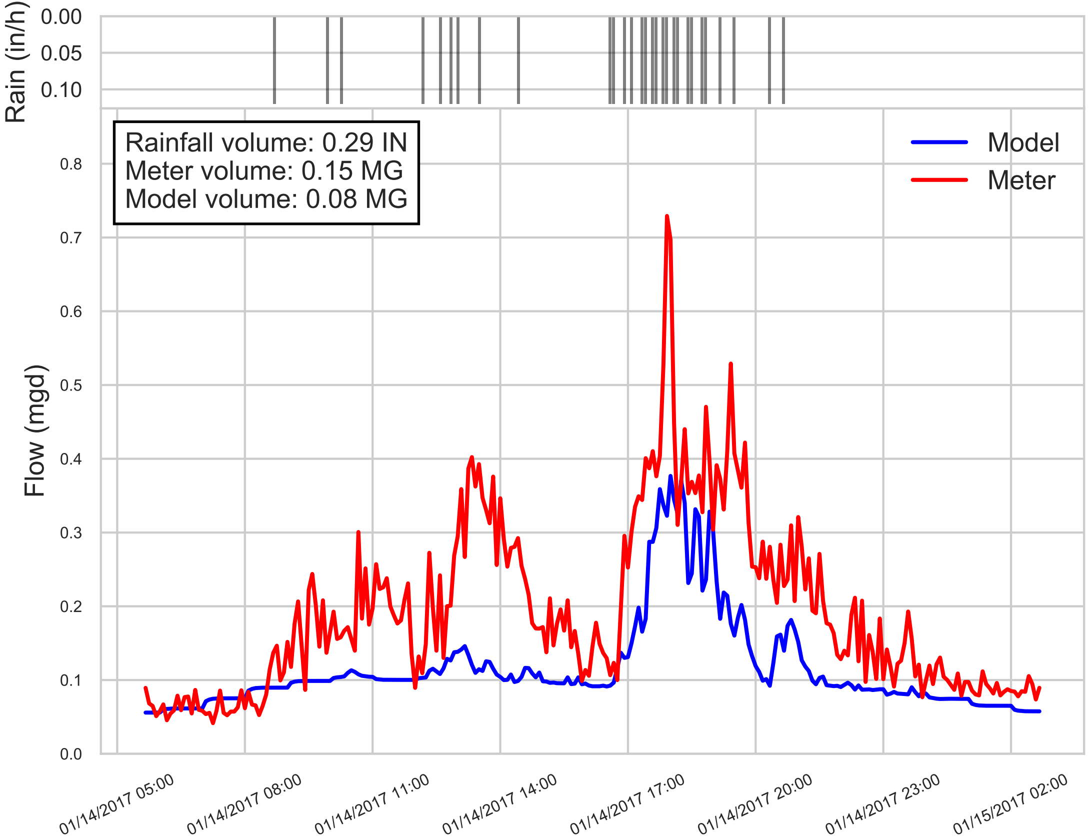
Wet Weather Event 67 for Meter 049-2
01/02/2017 01:59 to 01/02/2017 18:20



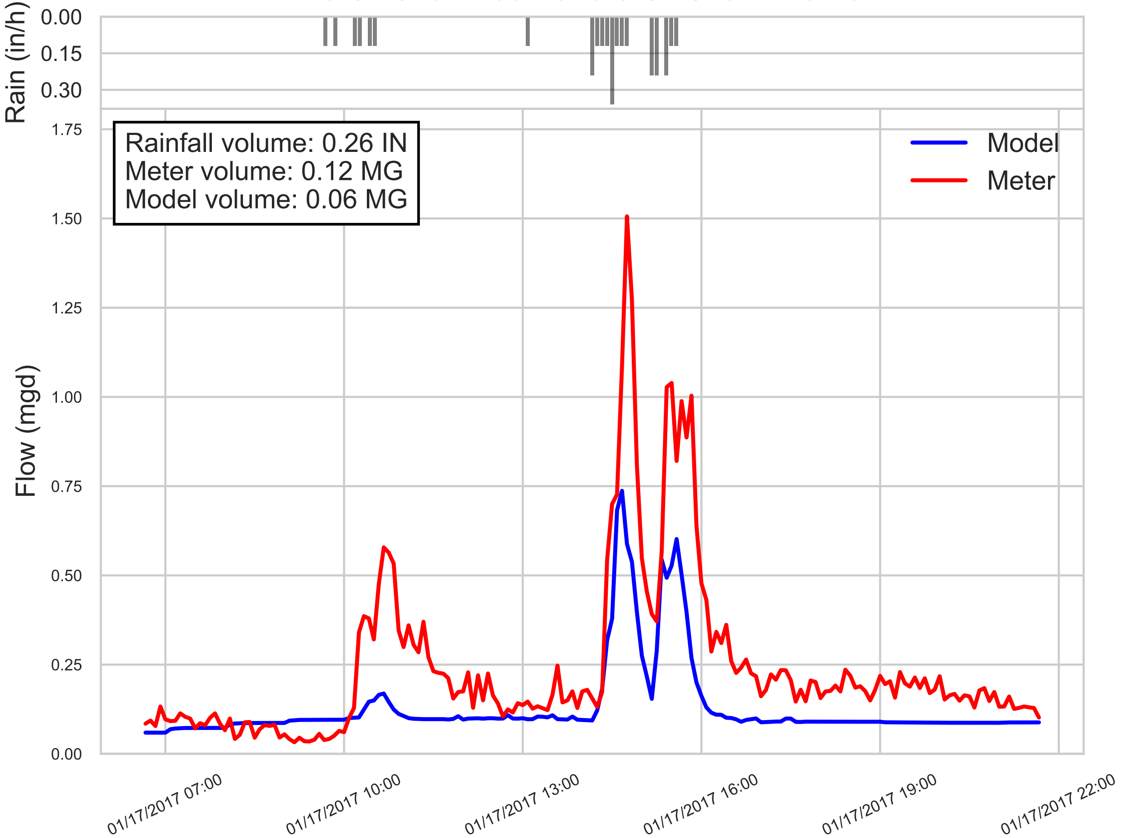
Wet Weather Event 68 for Meter 049-2
01/03/2017 01:25 to 01/03/2017 17:35



Wet Weather Event 69 for Meter 049-2
01/14/2017 08:39 to 01/14/2017 23:44

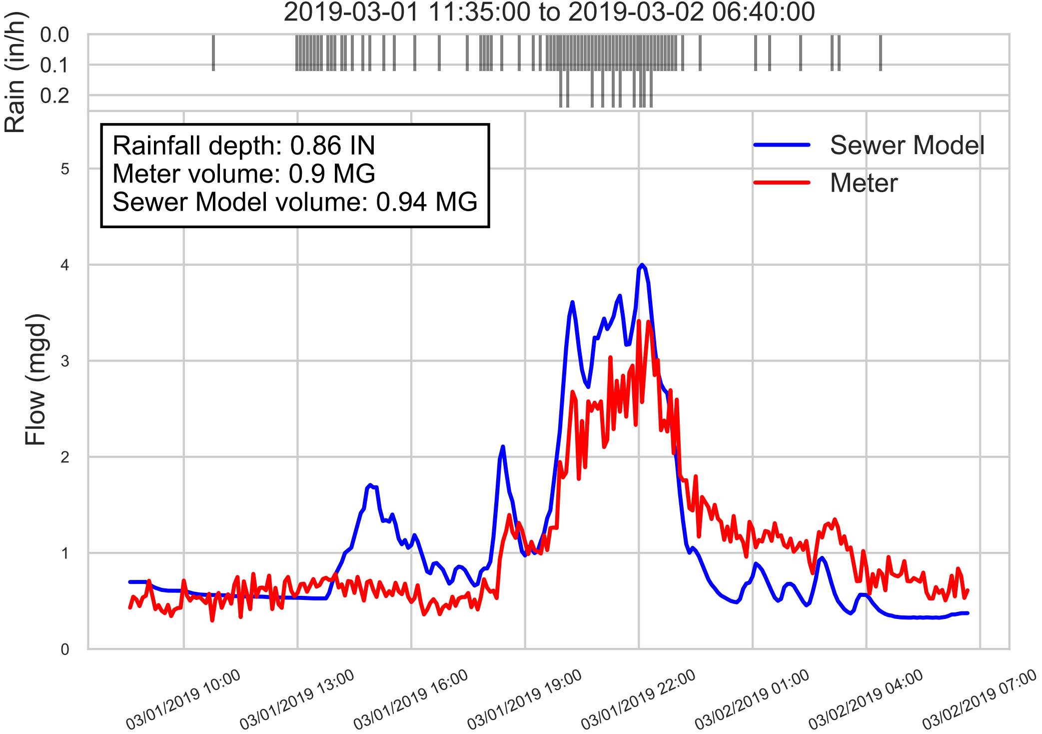


Wet Weather Event 70 for Meter 049-2
01/17/2017 09:40 to 01/17/2017 18:40

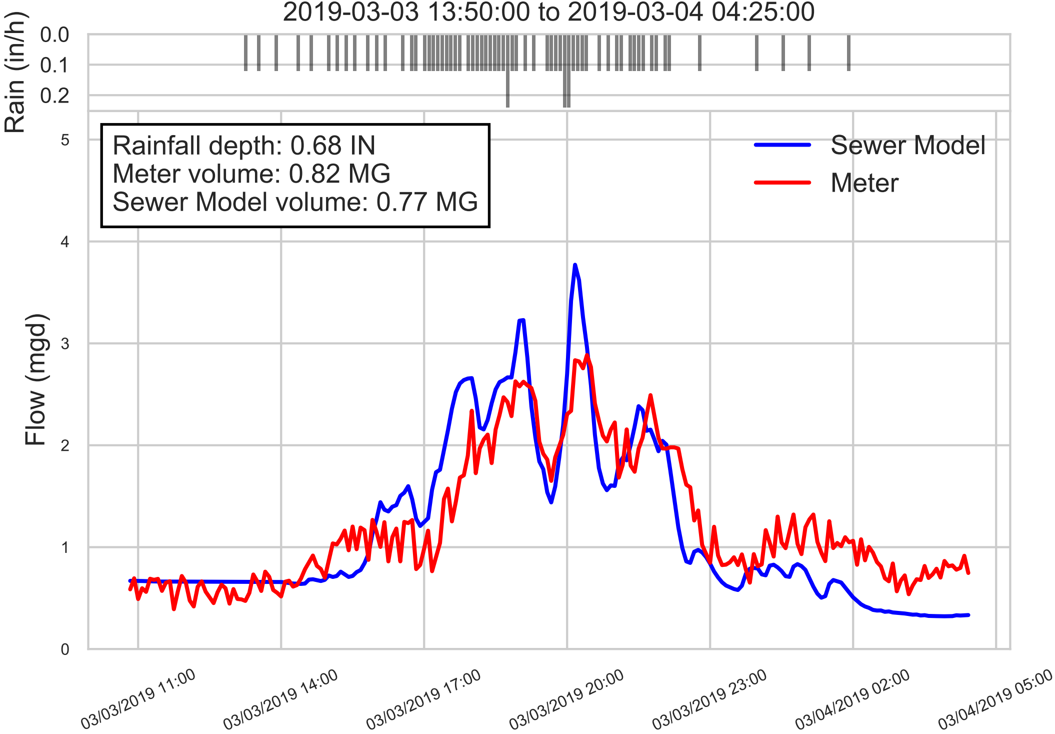


RC-A

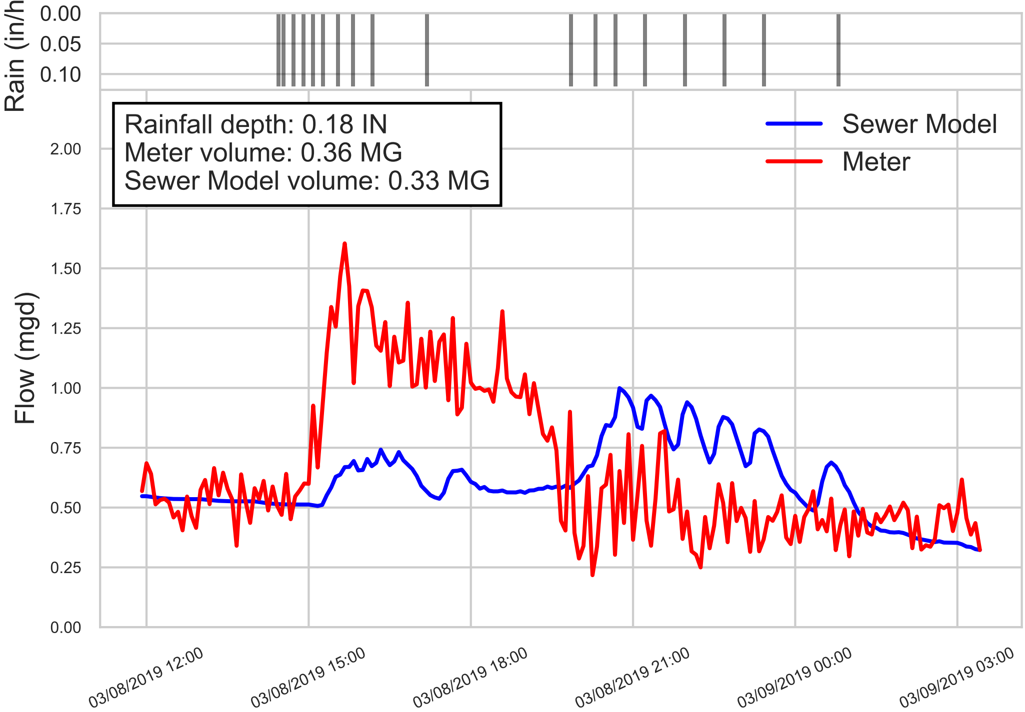
Post-Construction Model Calibration Plots

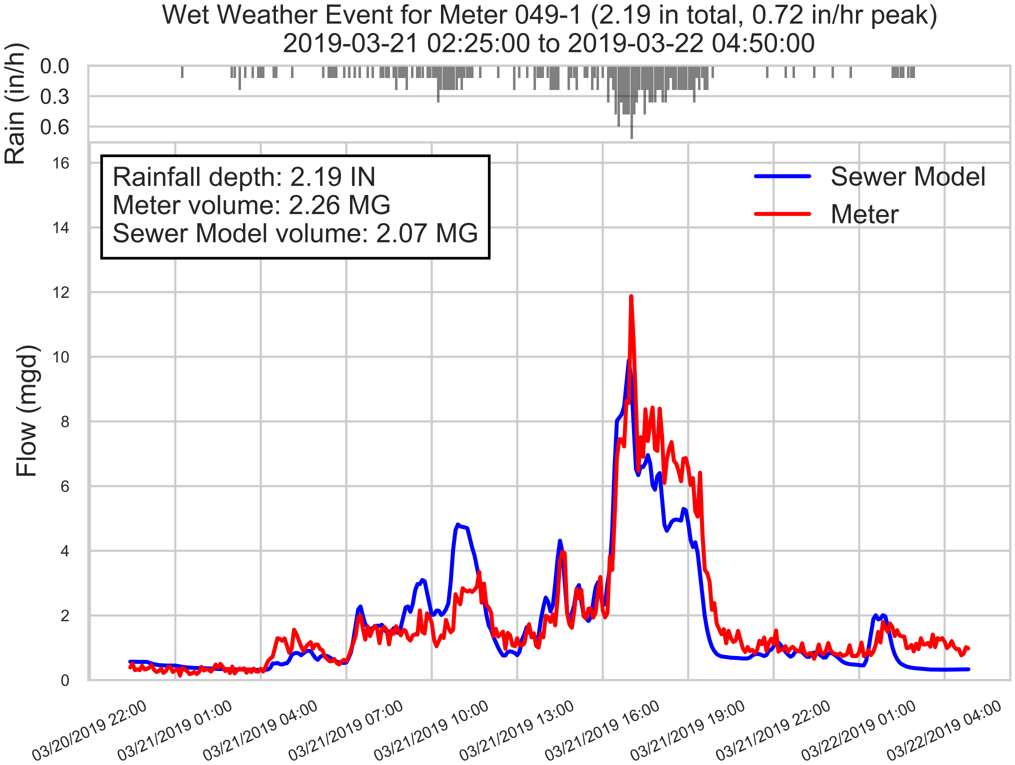

Wet Weather Event for Meter 049-1 (0.86 in total, 0.24 in/hr peak)
2019-03-01 11:35:00 to 2019-03-02 06:40:00

Rainfall depth: 0.86 IN
Meter volume: 0.9 MG
Sewer Model volume: 0.94 MG

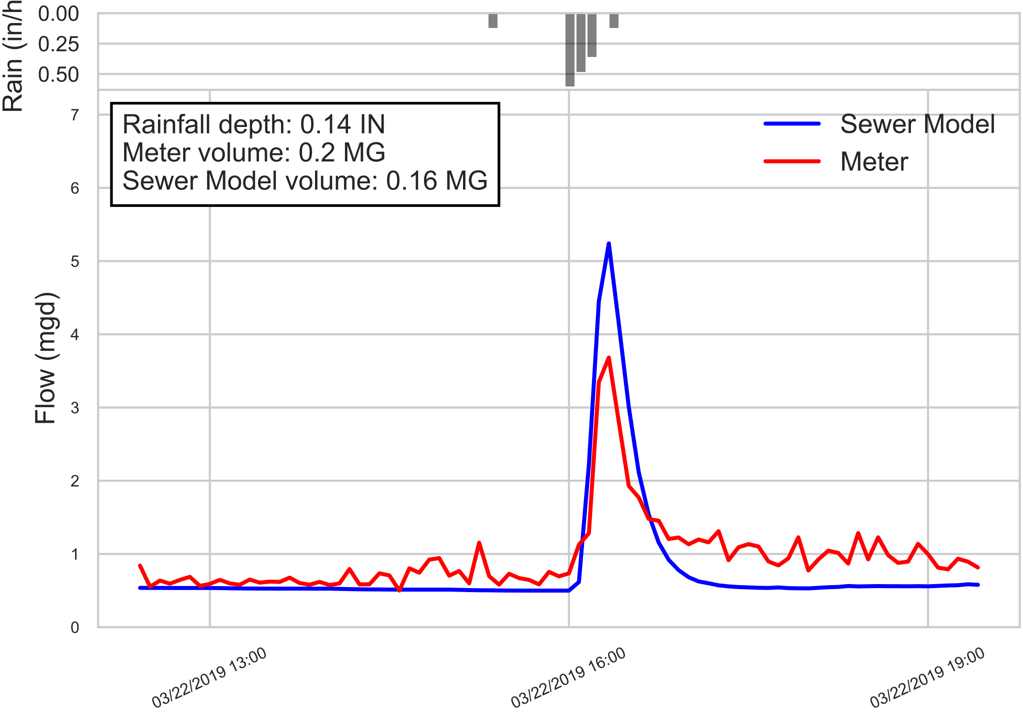


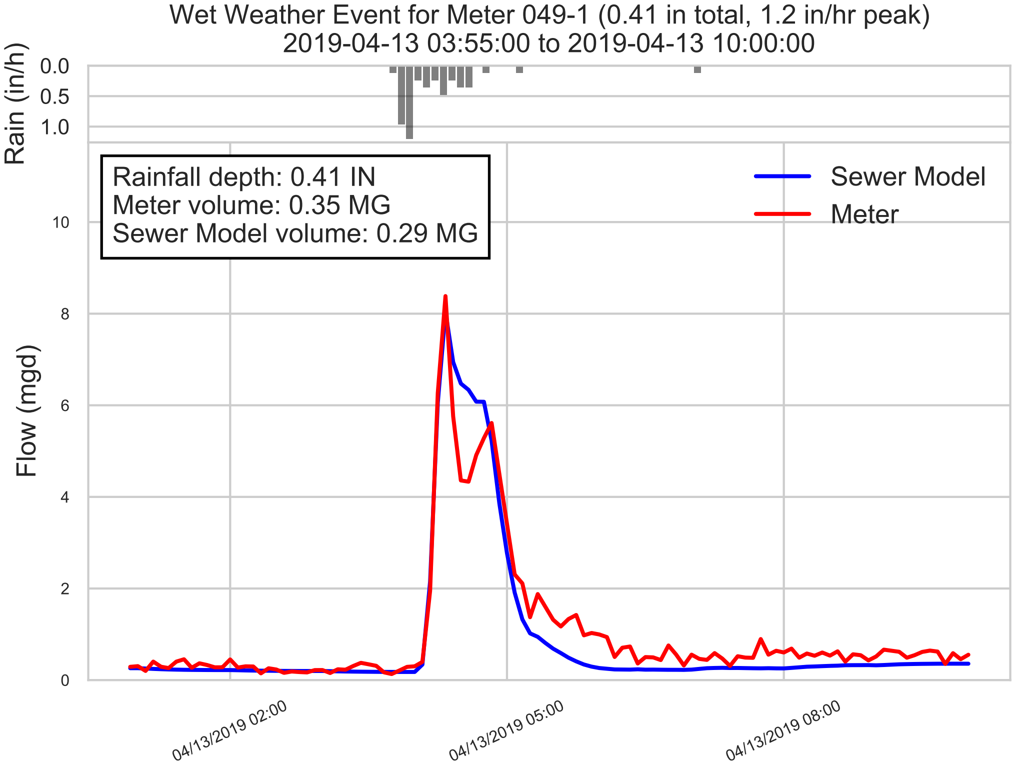
Wet Weather Event for Meter 049-1 (0.68 in total, 0.24 in/hr peak)
2019-03-03 13:50:00 to 2019-03-04 04:25:00

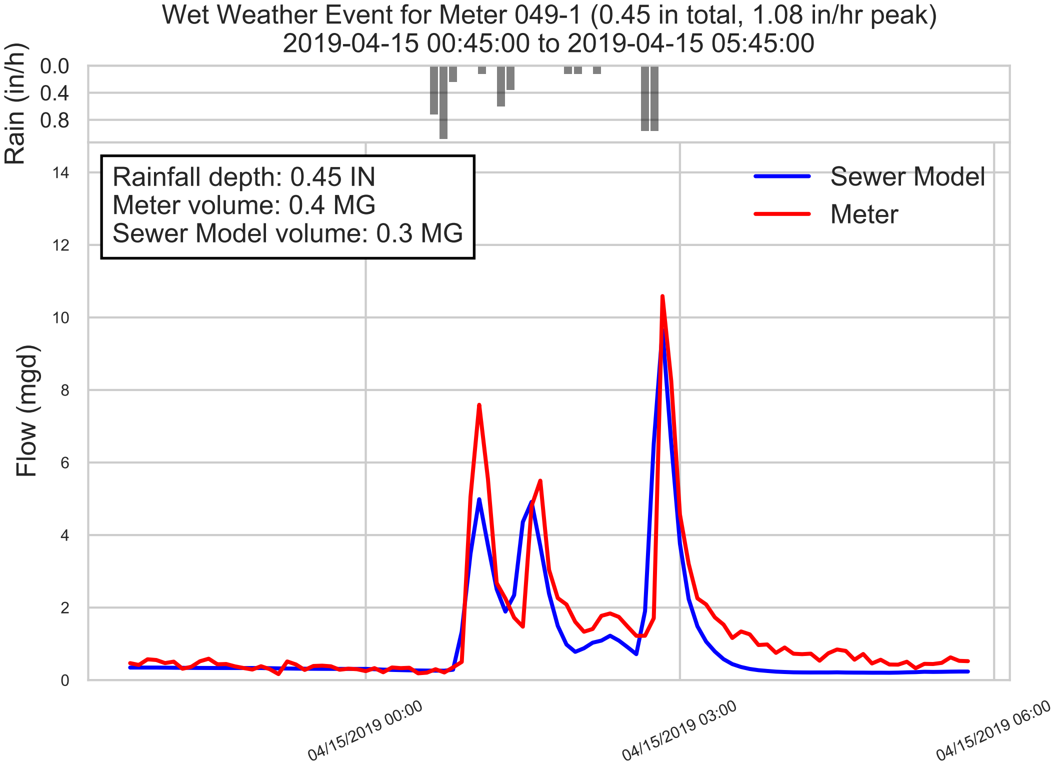

Wet Weather Event for Meter 049-1 (0.18 in total, 0.12 in/hr peak)
2019-03-08 14:55:00 to 2019-03-09 03:25:00

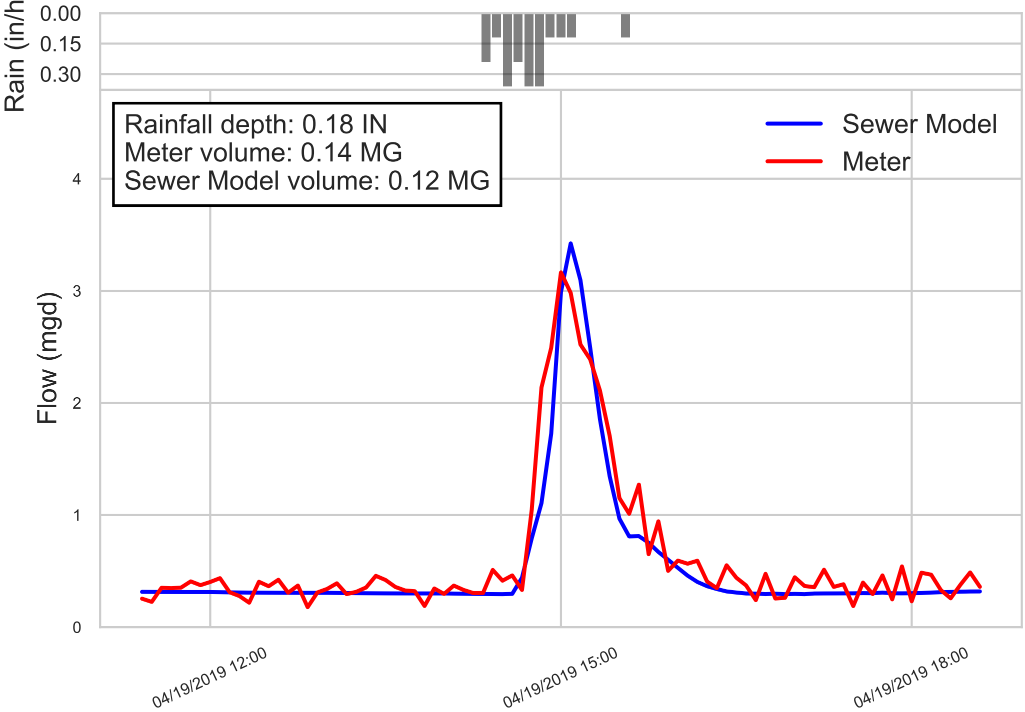

Wet Weather Event for Meter 049-1 (2.19 in total, 0.72 in/hr peak)
2019-03-21 02:25:00 to 2019-03-22 04:50:00
Rain (in/h)
0.0
0.3
0.6
Flow (mgd)
0
2
4
6
8
10
12
14
16
Rainfall depth: 2.19 IN
Meter volume: 2.26 MG
Sewer Model volume: 2.07 MG
Sewer Model
Meter
03/20/2019 22:00
03/21/2019 01:00
03/21/2019 04:00
03/21/2019 07:00
03/21/2019 10:00
03/21/2019 13:00
03/21/2019 16:00
03/21/2019 19:00
03/21/2019 22:00
03/22/2019 01:00
03/22/2019 04:00

Wet Weather Event for Meter 049-1 (0.14 in total, 0.6 in/hr peak)
2019-03-22 15:25:00 to 2019-03-22 19:25:00



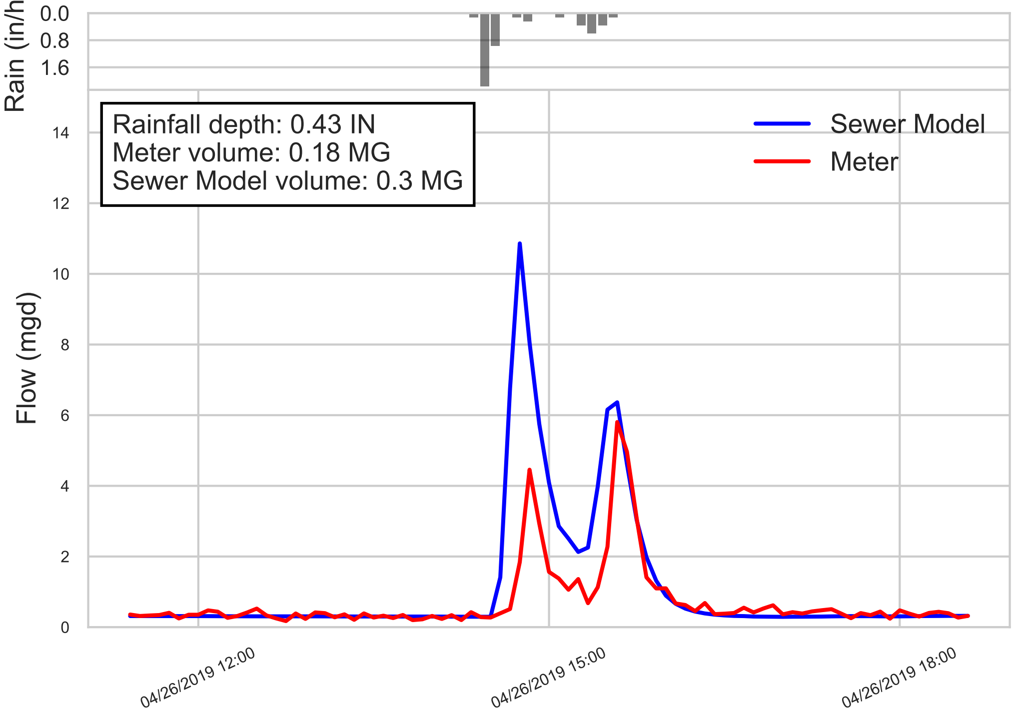

Wet Weather Event for Meter 049-1 (0.41 in total, 1.2 in/hr peak)
2019-04-13 03:55:00 to 2019-04-13 10:00:00
Rain (in/h)
0.0
0.5
1.0
Rainfall depth: 0.41 IN
Meter volume: 0.35 MG
Sewer Model volume: 0.29 MG
Sewer Model
Meter
Flow (mgd)
10
8
6
4
2
0
04/13/2019 02:00
04/13/2019 05:00
04/13/2019 08:00


Wet Weather Event for Meter 049-1 (0.45 in total, 1.08 in/hr peak)
2019-04-15 00:45:00 to 2019-04-15 05:45:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 0.45 IN
Meter volume: 0.4 MG
Sewer Model volume: 0.3 MG
Sewer Model
Meter
Flow (mgd)
14
12
10
8
6
4
2
0
04/15/2019 00:00
04/15/2019 03:00
04/15/2019 06:00



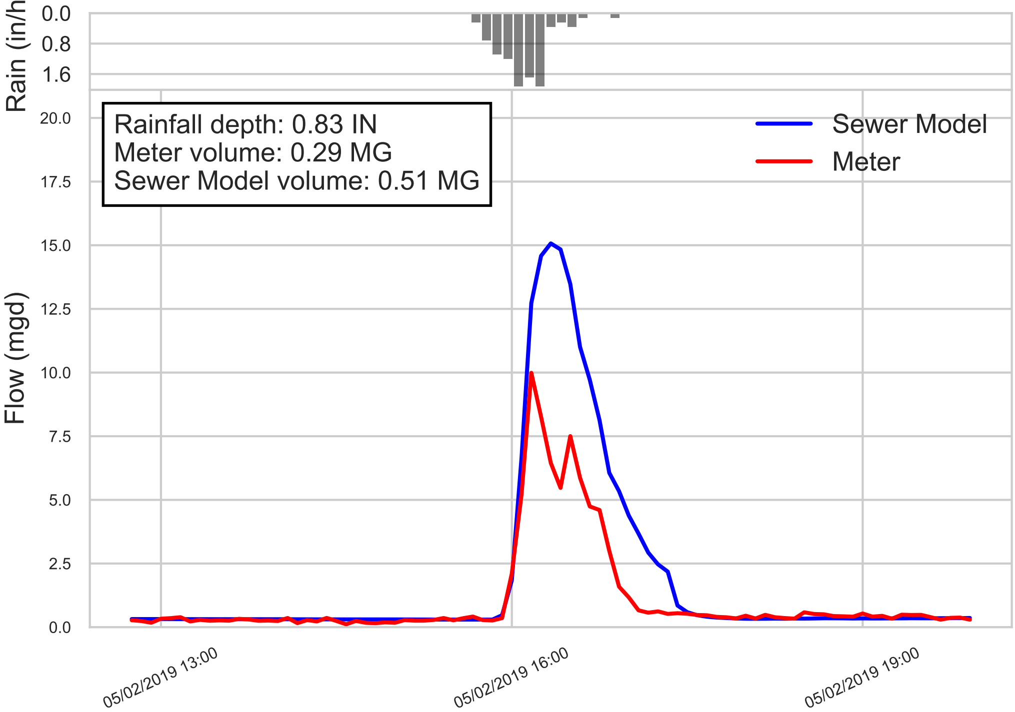
Wet Weather Event for Meter 049-1 (0.18 in total, 0.36 in/hr peak)
2019-04-19 14:25:00 to 2019-04-19 18:35:00

Wet Weather Event for Meter 049-1 (0.43 in total, 2.16 in/hr peak)
2019-04-26 14:25:00 to 2019-04-26 18:35:00

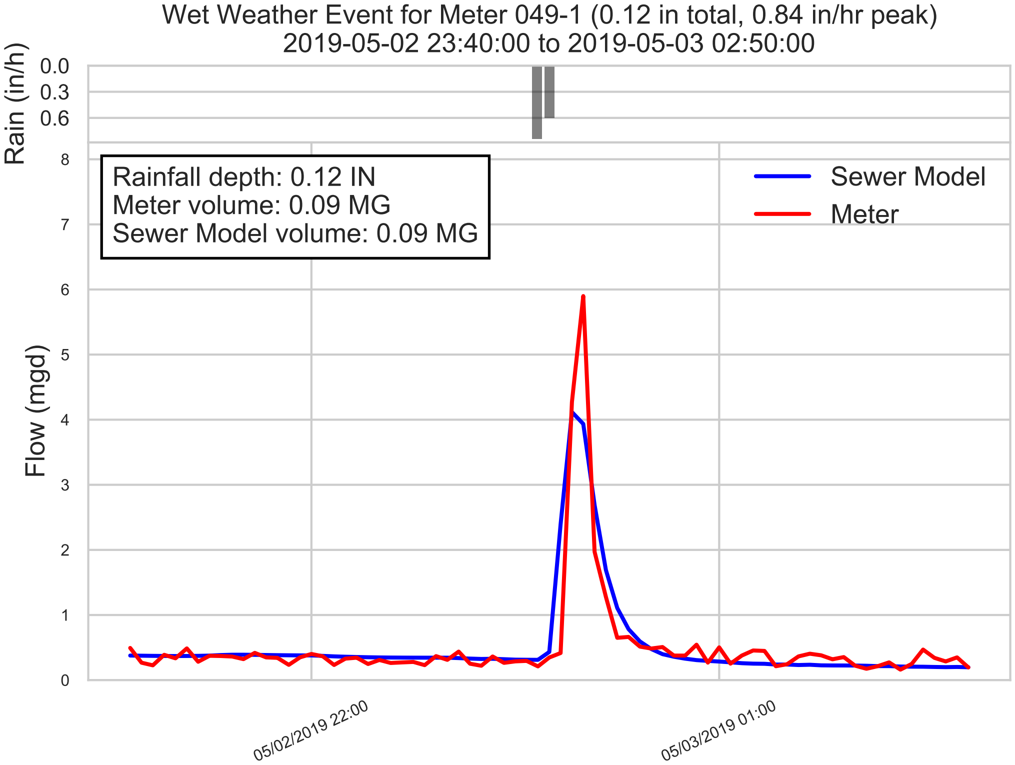


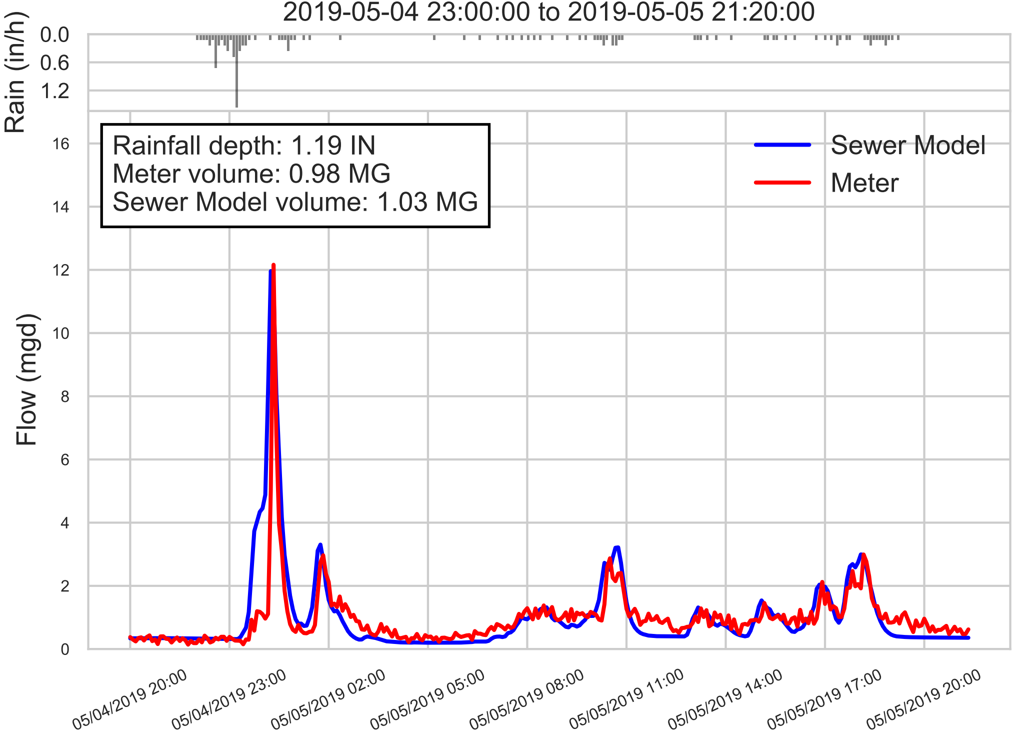
Rainfall depth: 0.43 IN
Meter volume: 0.18 MG
Sewer Model volume: 0.3 MG

Wet Weather Event for Meter 049-1 (0.83 in total, 1.92 in/hr peak)
2019-05-02 15:45:00 to 2019-05-02 19:55:00

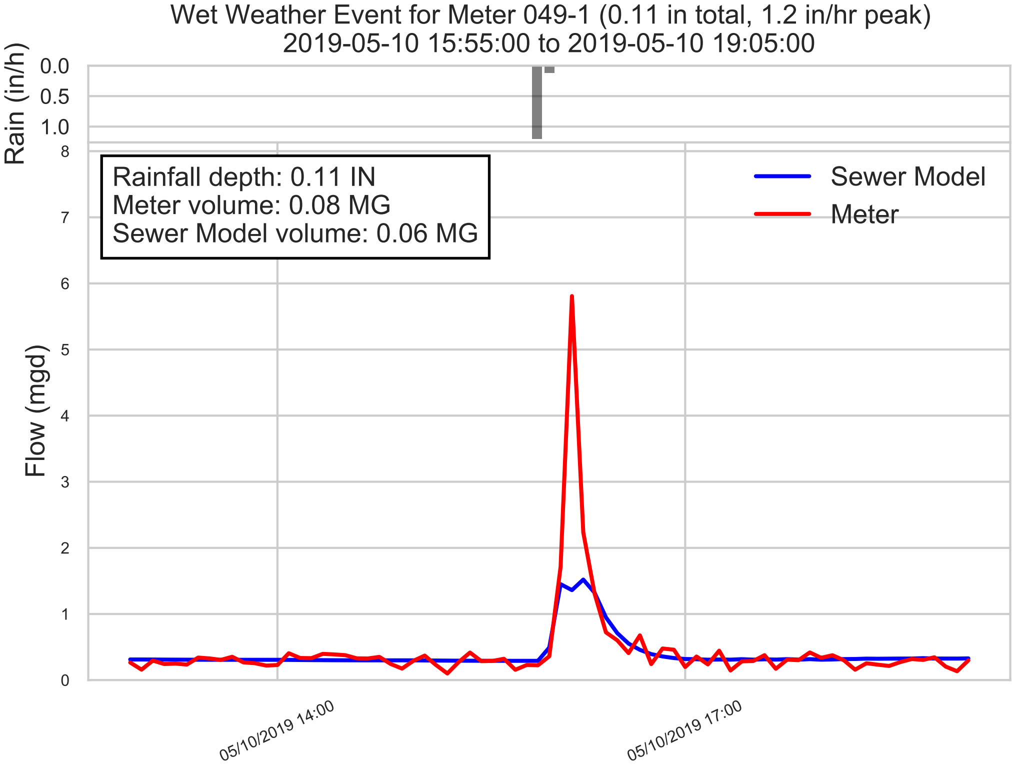


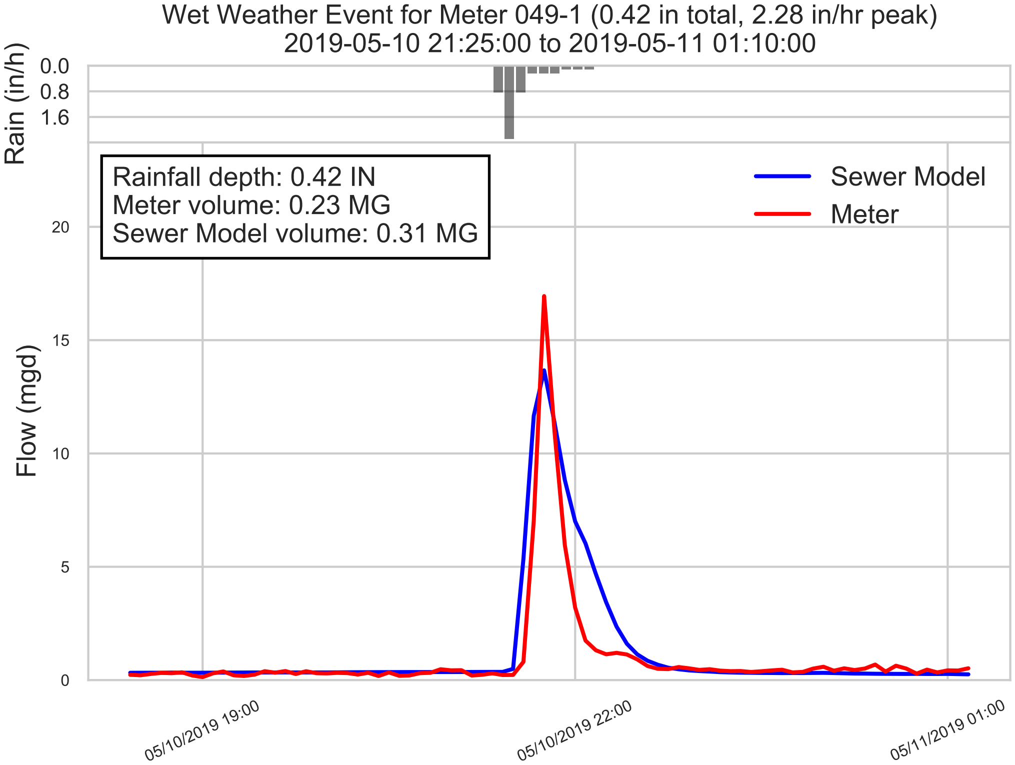
Rainfall depth: 0.83 IN
Meter volume: 0.29 MG
Sewer Model volume: 0.51 MG

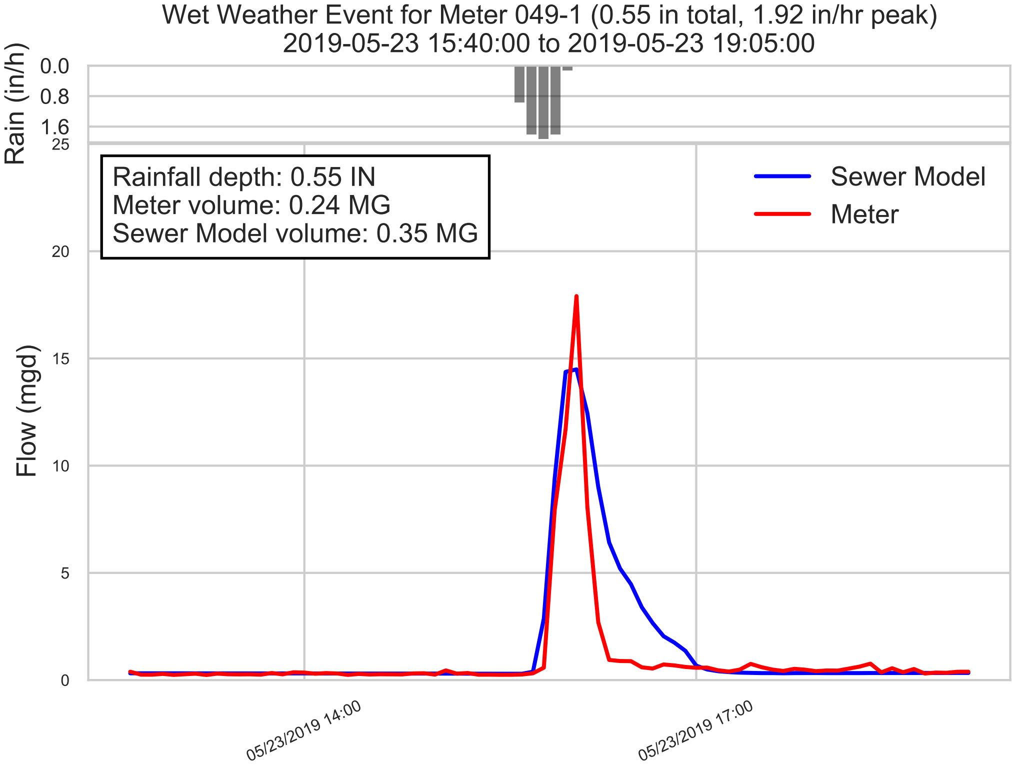

Wet Weather Event for Meter 049-1 (0.12 in total, 0.84 in/hr peak)
2019-05-02 23:40:00 to 2019-05-03 02:50:00

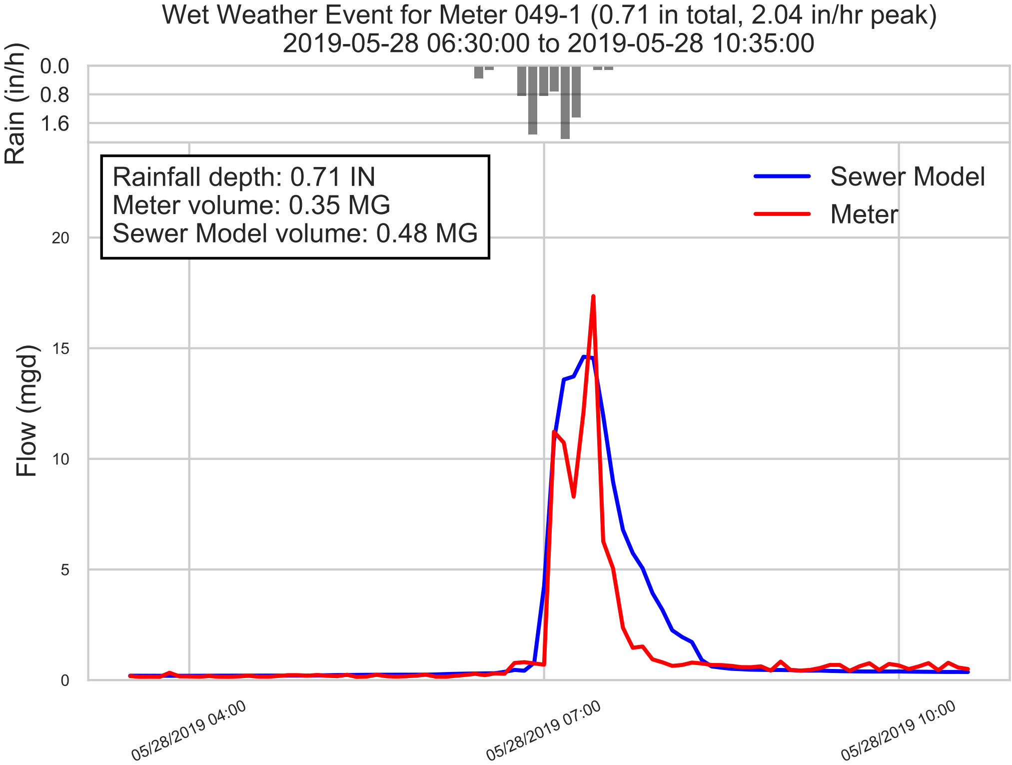


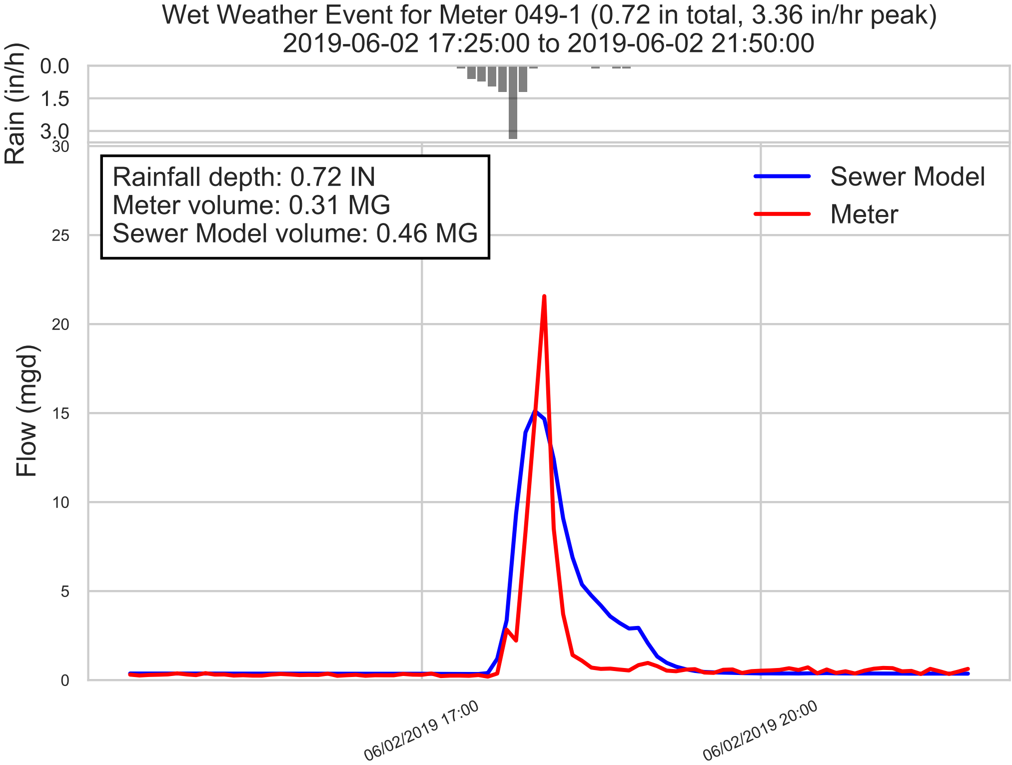
Wet Weather Event for Meter 049-1 (1.19 in total, 1.56 in/hr peak)
2019-05-04 23:00:00 to 2019-05-05 21:20:00


Wet Weather Event for Meter 049-1 (0.11 in total, 1.2 in/hr peak)
2019-05-10 15:55:00 to 2019-05-10 19:05:00
Rain (in/h)
0.0
0.5
1.0
Rainfall depth: 0.11 IN
Meter volume: 0.08 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
Flow (mgd)
8
7
6
5
4
3
2
1
0
05/10/2019 14:00
05/10/2019 17:00

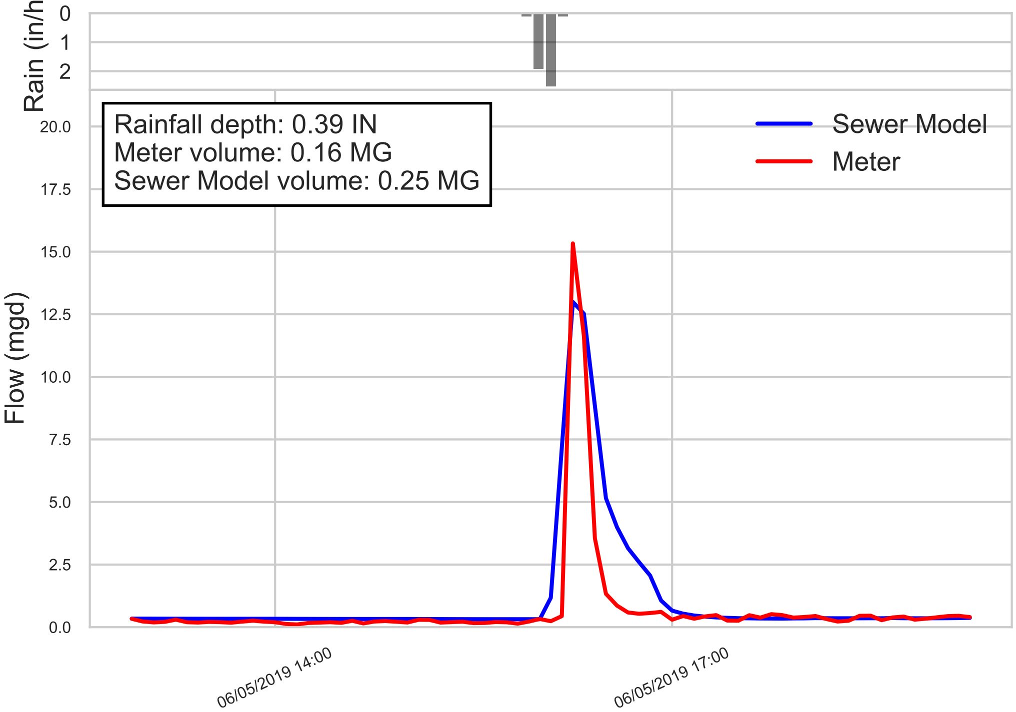

Wet Weather Event for Meter 049-1 (0.42 in total, 2.28 in/hr peak)
2019-05-10 21:25:00 to 2019-05-11 01:10:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.42 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.31 MG
Sewer Model
Meter
Flow (mgd)
20
15
10
5
0
05/10/2019 19:00
05/10/2019 22:00
05/11/2019 01:00


Wet Weather Event for Meter 049-1 (0.55 in total, 1.92 in/hr peak)
2019-05-23 15:40:00 to 2019-05-23 19:05:00
Rain (in/h)
0.0
0.8
1.6
25
20
15
10
5
0
Flow (mgd)
Rainfall depth: 0.55 IN
Meter volume: 0.24 MG
Sewer Model volume: 0.35 MG
Sewer Model
Meter
05/23/2019 14:00
05/23/2019 17:00

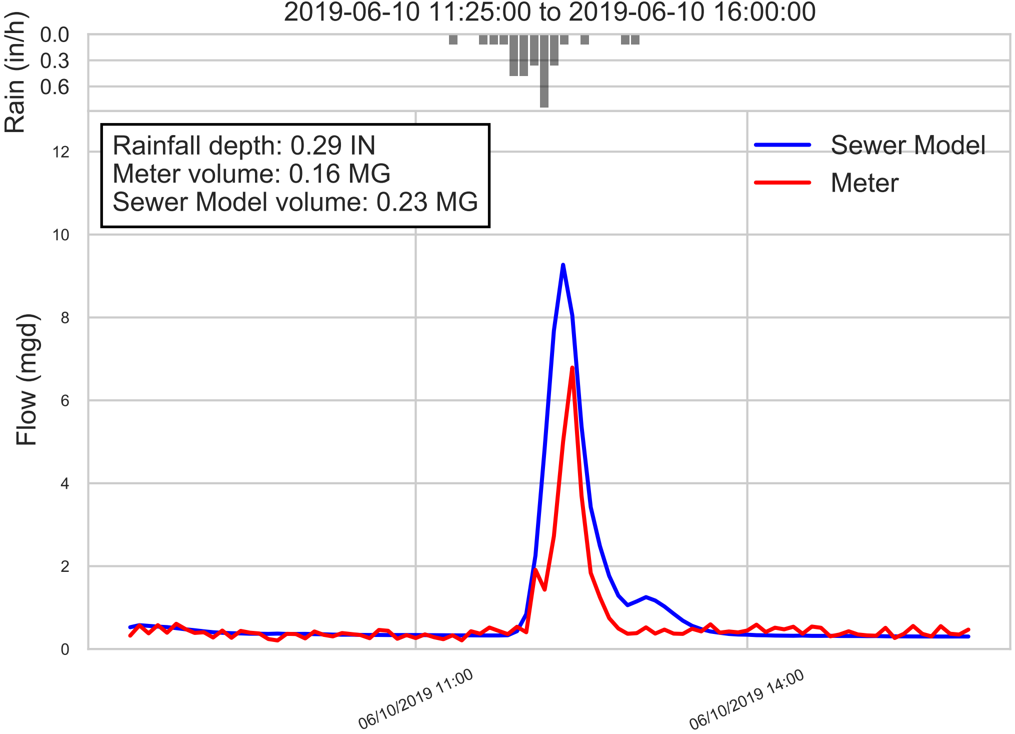

Wet Weather Event for Meter 049-1 (0.71 in total, 2.04 in/hr peak)
2019-05-28 06:30:00 to 2019-05-28 10:35:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.71 IN
Meter volume: 0.35 MG
Sewer Model volume: 0.48 MG
Sewer Model
Meter
Flow (mgd)
20
15
10
5
0
05/28/2019 04:00
05/28/2019 07:00
05/28/2019 10:00

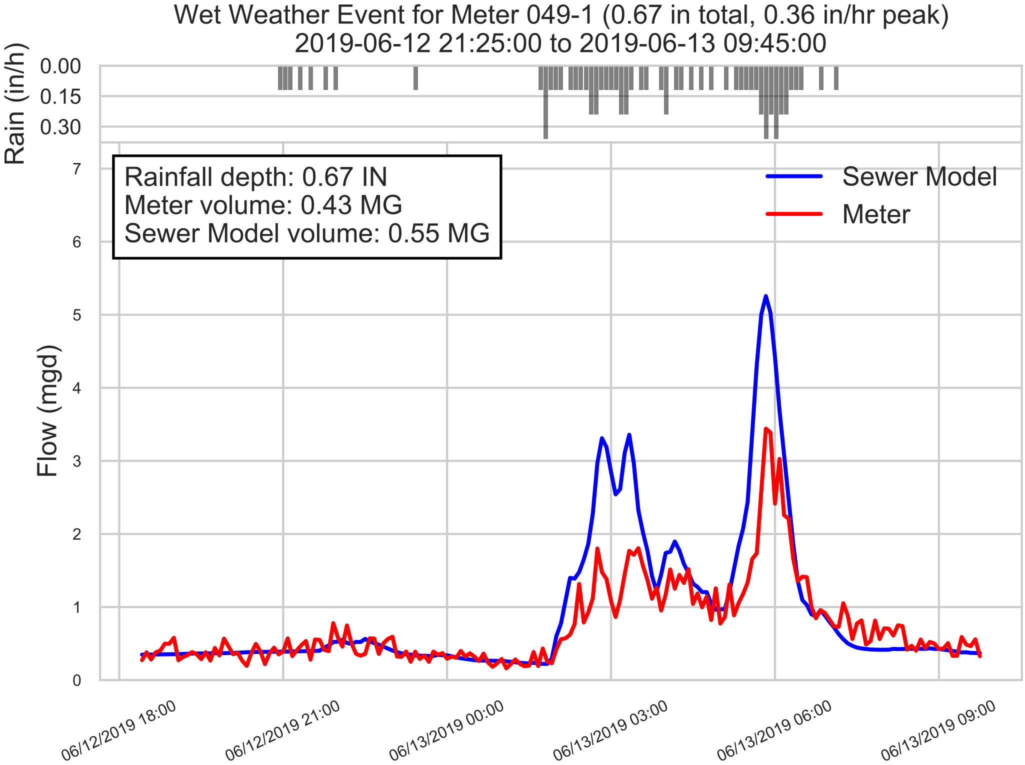

Wet Weather Event for Meter 049-1 (0.72 in total, 3.36 in/hr peak)
2019-06-02 17:25:00 to 2019-06-02 21:50:00
Rain (in/h)
0.0
1.5
3.0
Flow (mgd)
30
25
20
15
10
5
0
Rainfall depth: 0.72 IN
Meter volume: 0.31 MG
Sewer Model volume: 0.46 MG
Sewer Model
Meter
06/02/2019 17:00
06/02/2019 20:00

Wet Weather Event for Meter 049-1 (0.39 in total, 2.52 in/hr peak)
2019-06-05 15:55:00 to 2019-06-05 19:15:00

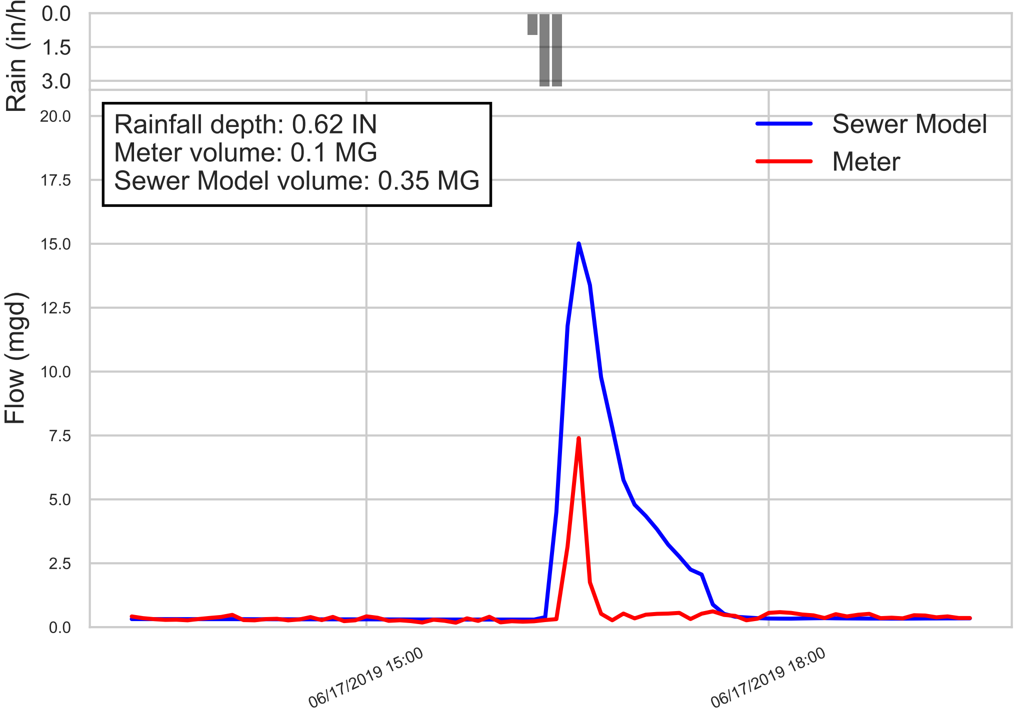


Wet Weather Event for Meter 049-1 (0.29 in total, 0.84 in/hr peak)
2019-06-10 11:25:00 to 2019-06-10 16:00:00



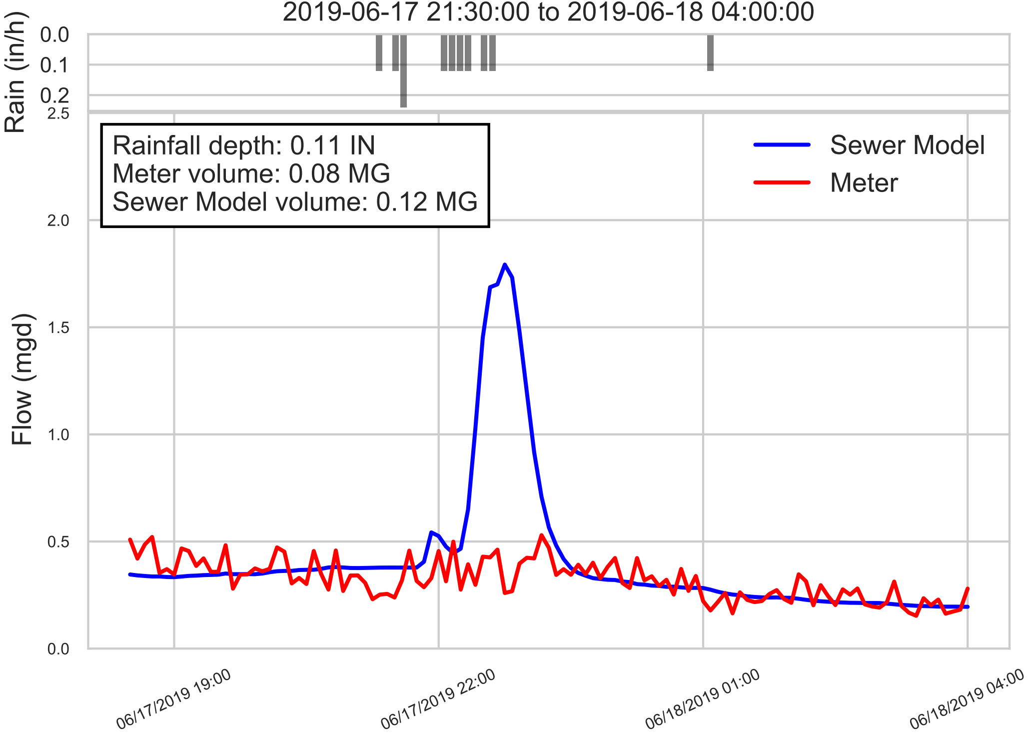


Wet Weather Event for Meter 049-1 (0.67 in total, 0.36 in/hr peak)
2019-06-12 21:25:00 to 2019-06-13 09:45:00

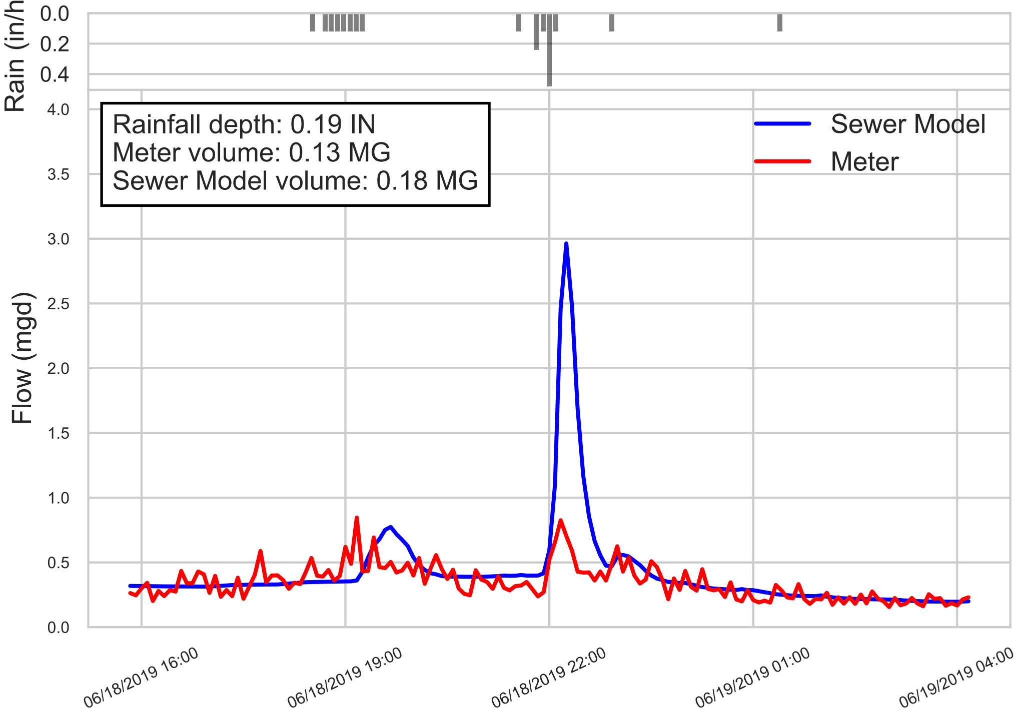


Wet Weather Event for Meter 049-1 (0.62 in total, 3.24 in/hr peak)
2019-06-17 16:15:00 to 2019-06-17 19:30:00

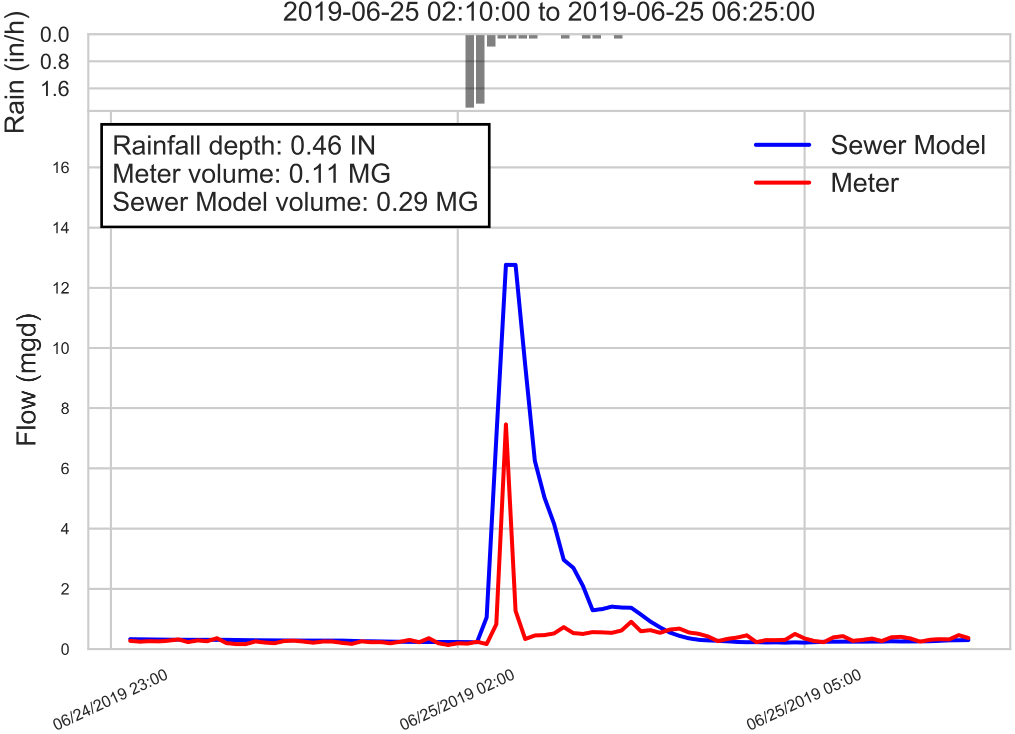
Wet Weather Event for Meter 049-1 (0.11 in total, 0.24 in/hr peak)
2019-06-17 21:30:00 to 2019-06-18 04:00:00



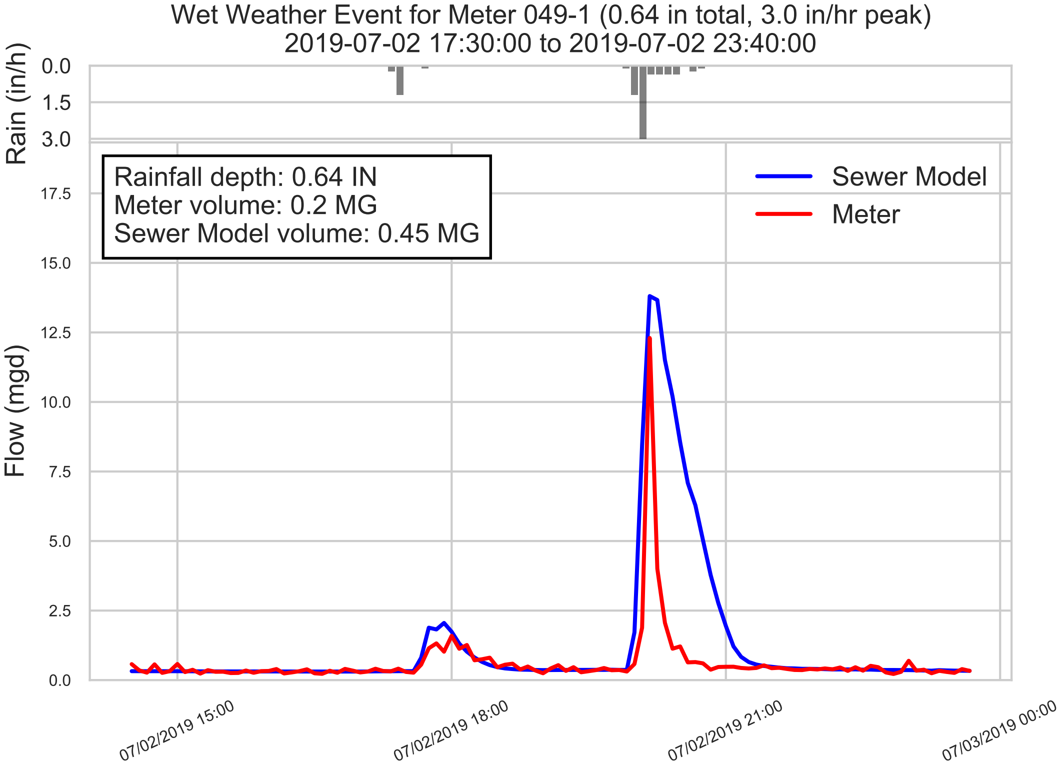
Wet Weather Event for Meter 049-1 (0.19 in total, 0.48 in/hr peak)
2019-06-18 18:50:00 to 2019-06-19 04:10:00



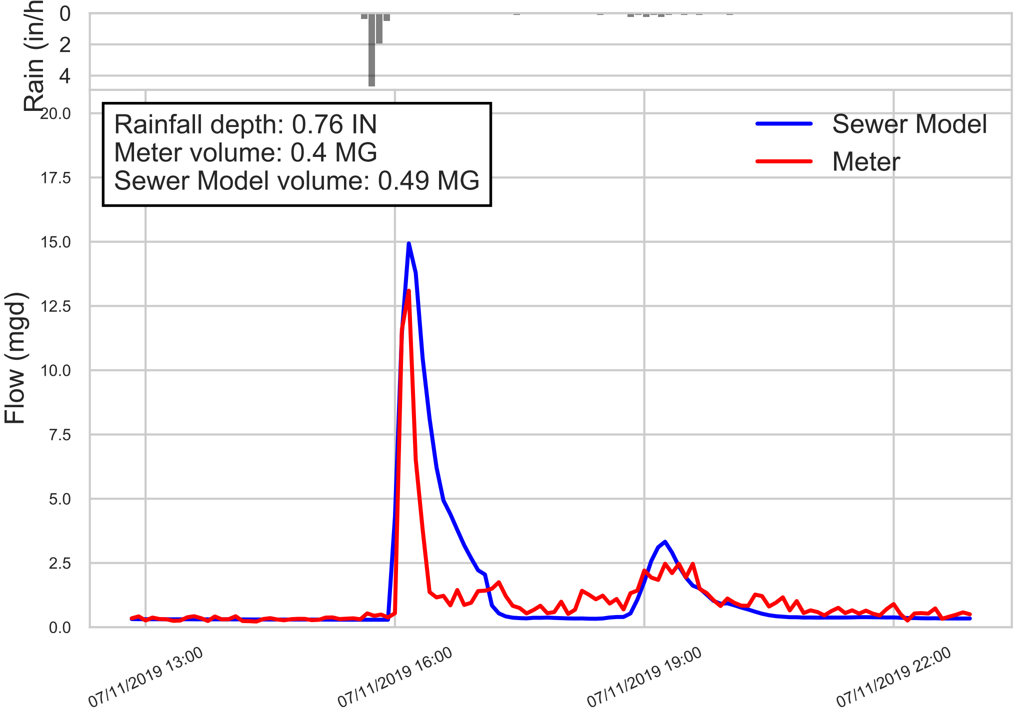
Wet Weather Event for Meter 049-1 (0.46 in total, 2.16 in/hr peak)
2019-06-25 02:10:00 to 2019-06-25 06:25:00



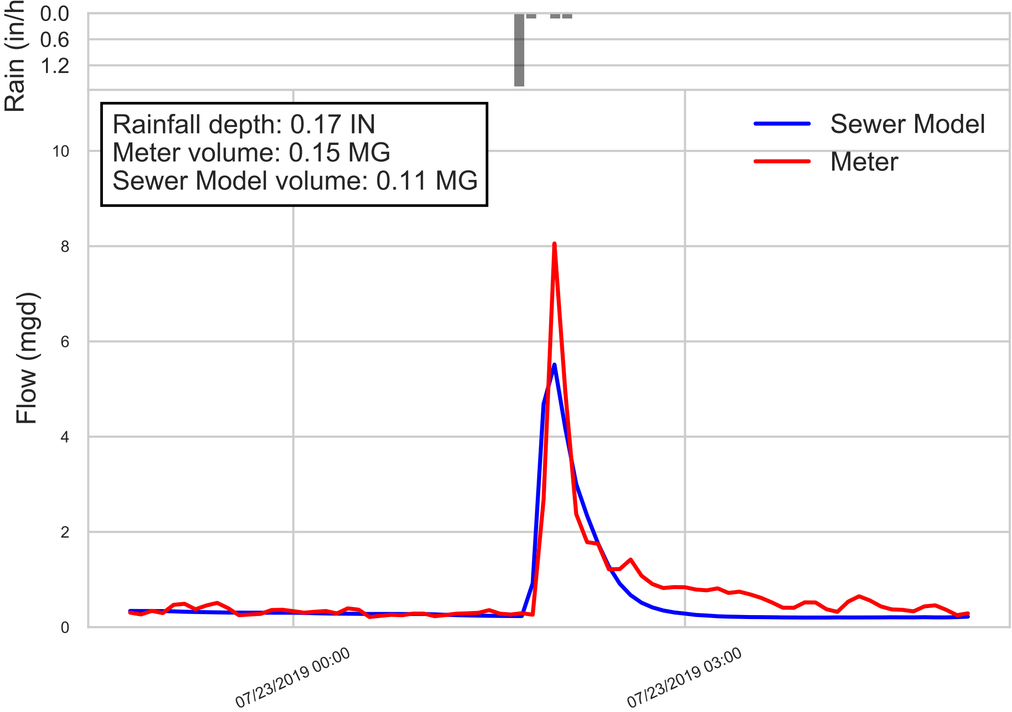
Rainfall depth: 0.46 IN
Meter volume: 0.11 MG
Sewer Model volume: 0.29 MG

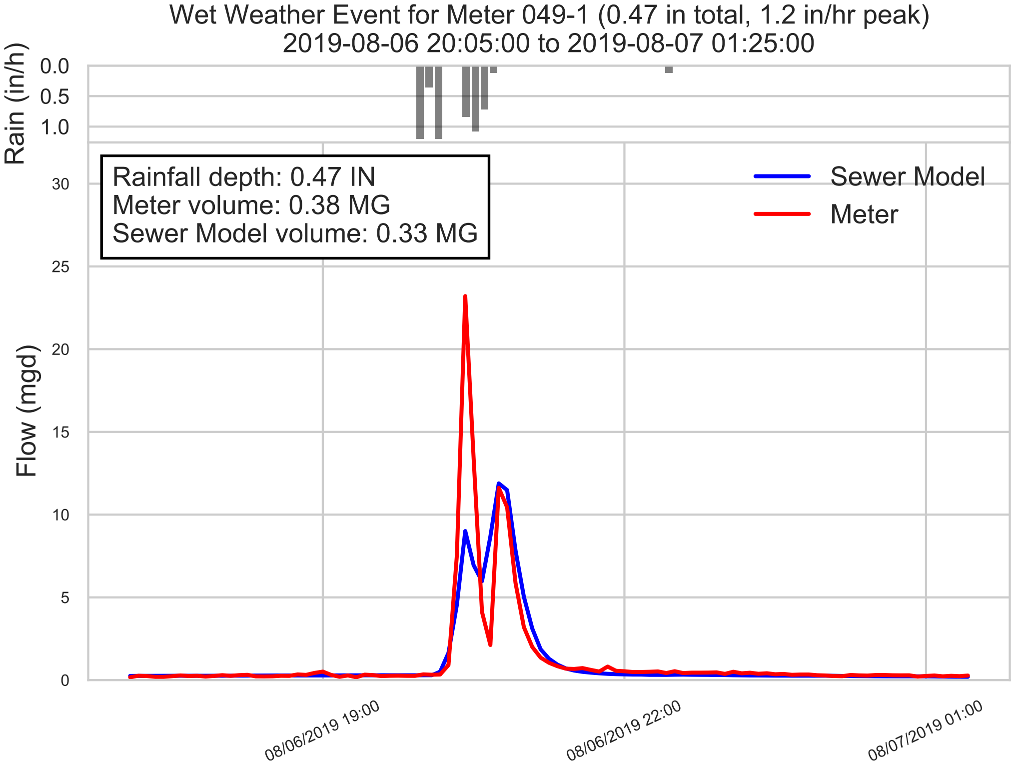

Wet Weather Event for Meter 049-1 (0.64 in total, 3.0 in/hr peak)
2019-07-02 17:30:00 to 2019-07-02 23:40:00
Rain (in/h)
0.0
1.5
3.0
Flow (mgd)
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Rainfall depth: 0.64 IN
Meter volume: 0.2 MG
Sewer Model volume: 0.45 MG
Sewer Model
Meter
07/02/2019 15:00
07/02/2019 18:00
07/02/2019 21:00
07/03/2019 00:00

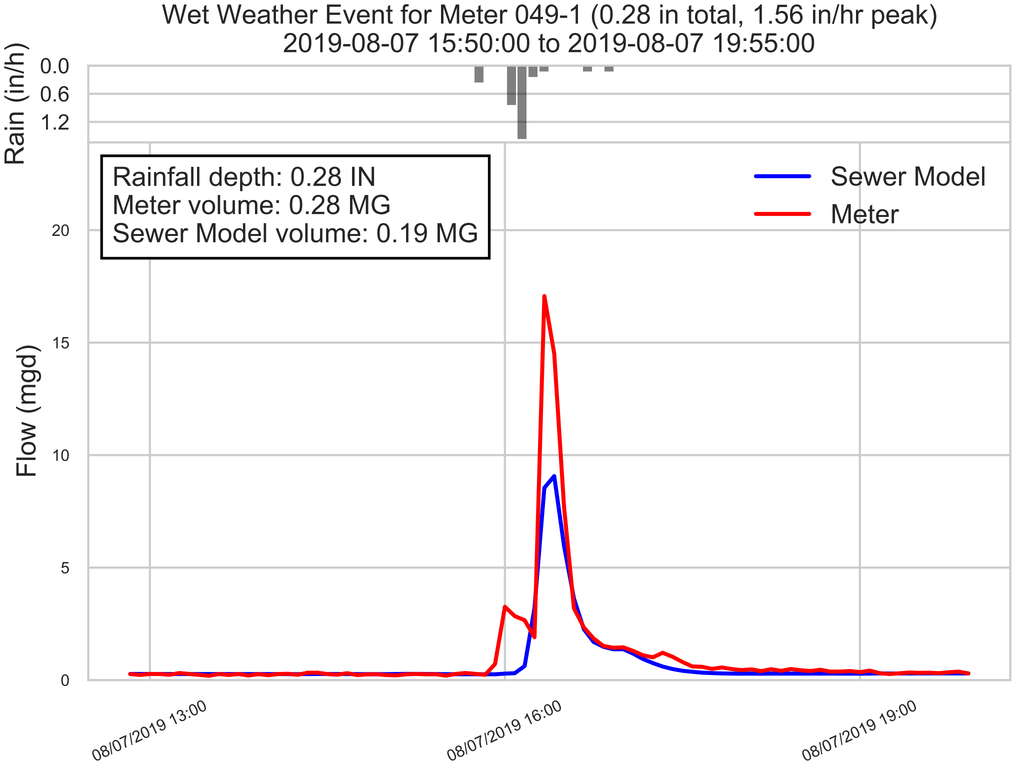
Wet Weather Event for Meter 049-1 (0.76 in total, 4.68 in/hr peak)
2019-07-11 15:50:00 to 2019-07-11 22:55:00



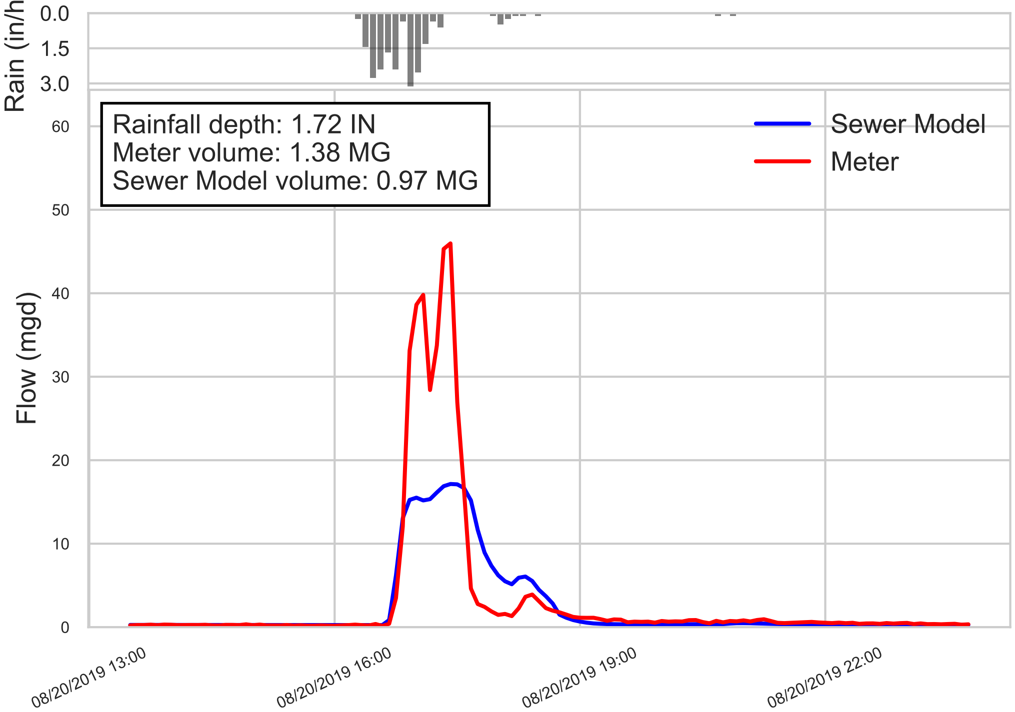
Wet Weather Event for Meter 049-1 (0.17 in total, 1.68 in/hr peak)
2019-07-23 01:45:00 to 2019-07-23 05:10:00

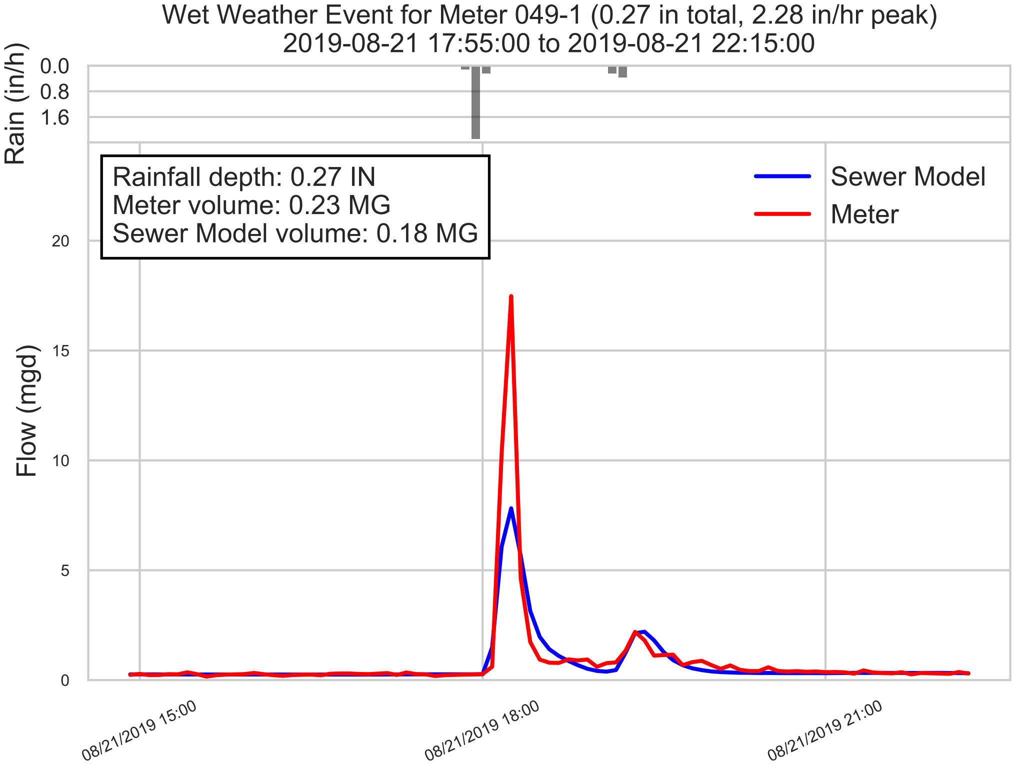


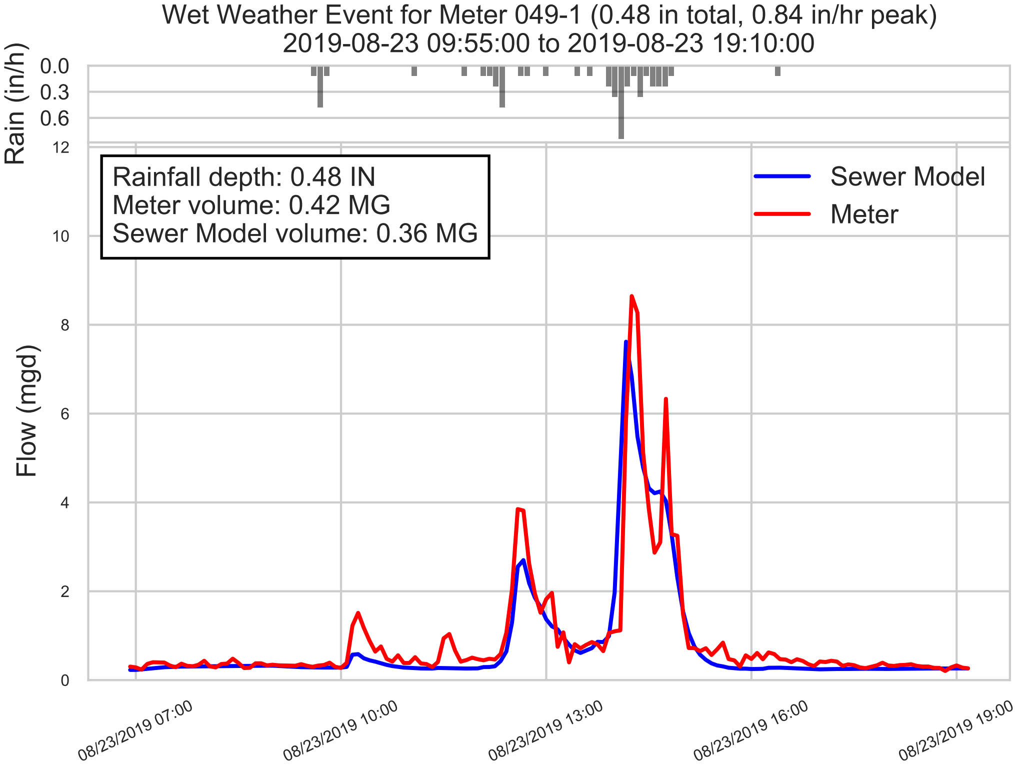

Wet Weather Event for Meter 049-1 (0.47 in total, 1.2 in/hr peak)
2019-08-06 20:05:00 to 2019-08-07 01:25:00
Rain (in/h)
0.0
0.5
1.0
Rainfall depth: 0.47 IN
Meter volume: 0.38 MG
Sewer Model volume: 0.33 MG
Sewer Model
Meter
Flow (mgd)
30
25
20
15
10
5
0
08/06/2019 19:00
08/06/2019 22:00
08/07/2019 01:00

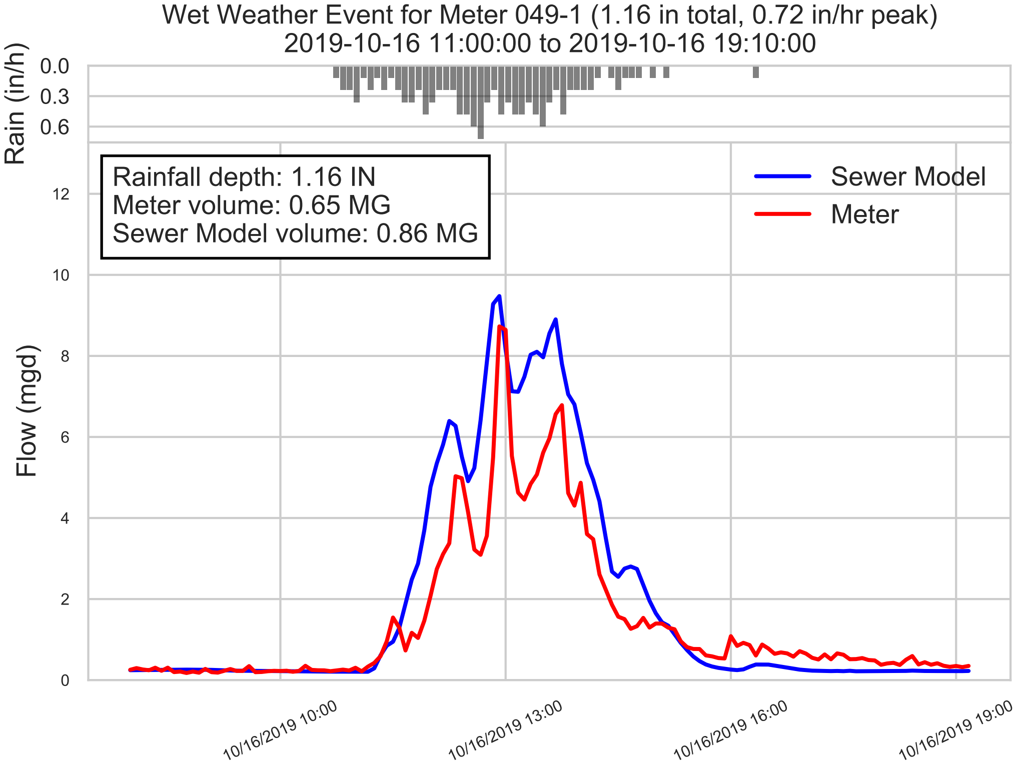

Wet Weather Event for Meter 049-1 (0.28 in total, 1.56 in/hr peak)
2019-08-07 15:50:00 to 2019-08-07 19:55:00
Rain (in/h)
0.0
0.6
1.2
Rainfall depth: 0.28 IN
Meter volume: 0.28 MG
Sewer Model volume: 0.19 MG
Sewer Model
Meter
Flow (mgd)
20
15
10
5
0
08/07/2019 13:00
08/07/2019 16:00
08/07/2019 19:00

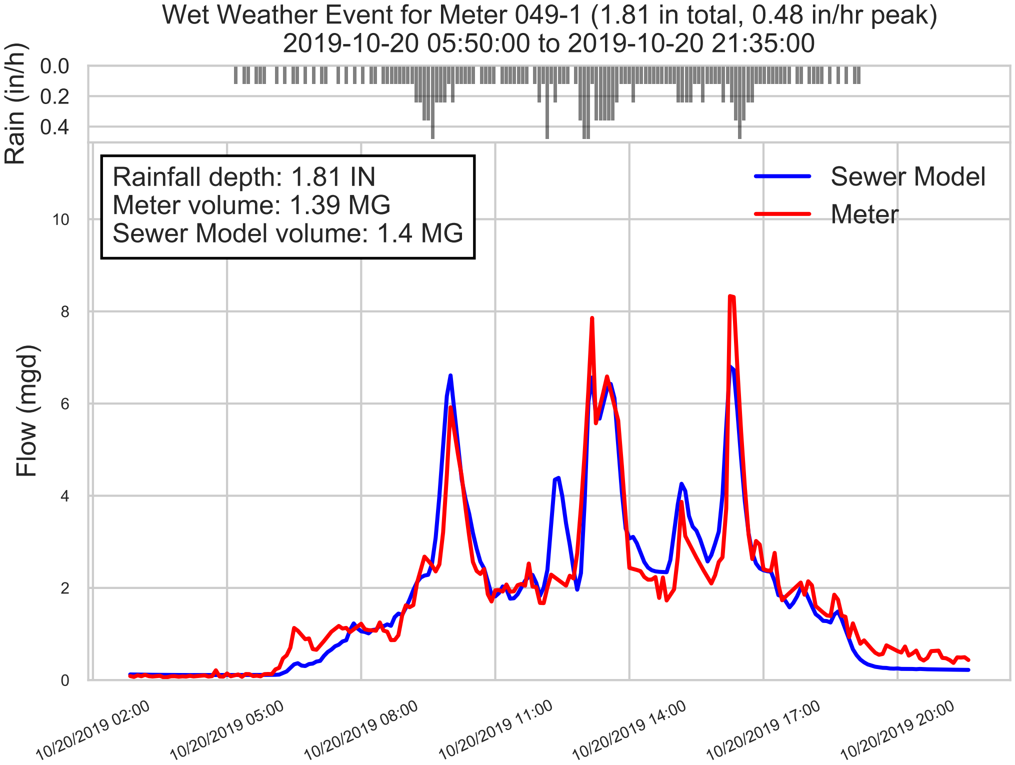
Wet Weather Event for Meter 049-1 (1.72 in total, 3.12 in/hr peak)
2019-08-20 16:30:00 to 2019-08-20 23:45:00



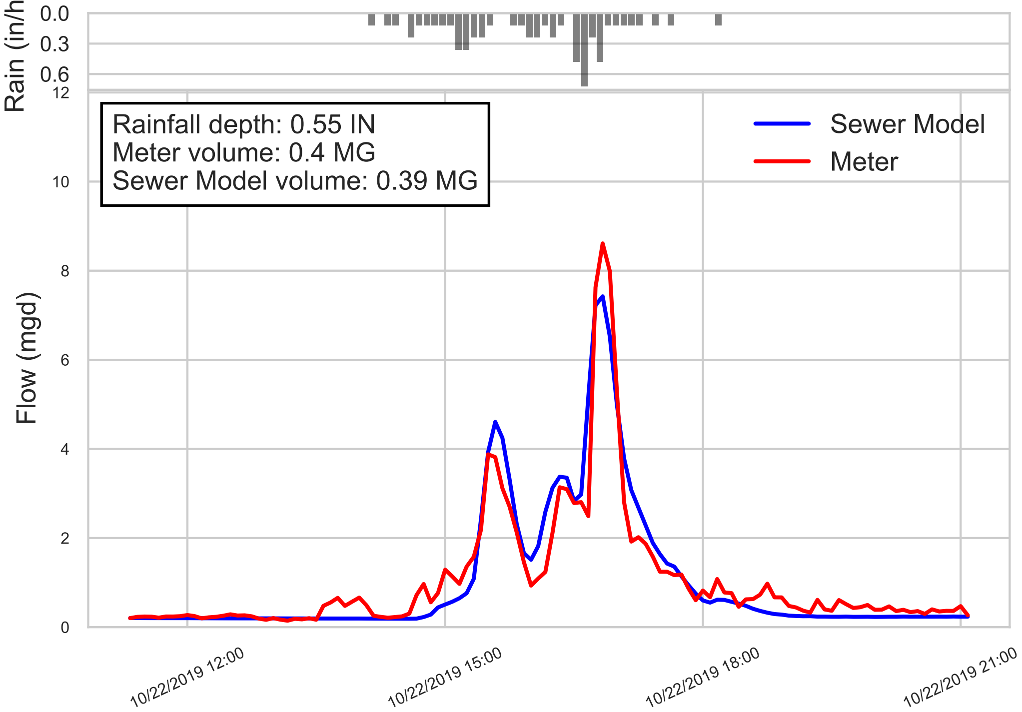

Wet Weather Event for Meter 049-1 (0.27 in total, 2.28 in/hr peak)
2019-08-21 17:55:00 to 2019-08-21 22:15:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.27 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.18 MG
Sewer Model
Meter
Flow (mgd)
20
15
10
5
0
08/21/2019 15:00
08/21/2019 18:00
08/21/2019 21:00

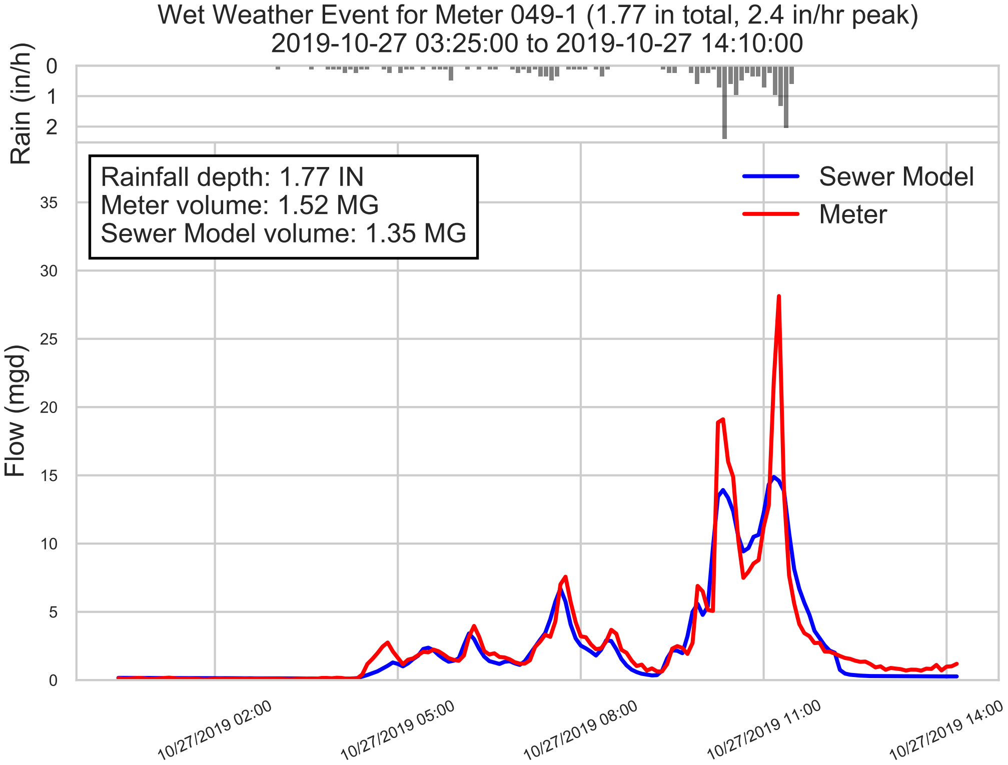

Wet Weather Event for Meter 049-1 (0.48 in total, 0.84 in/hr peak)
2019-08-23 09:55:00 to 2019-08-23 19:10:00
Rain (in/h)
0.0
0.3
0.6
12
10
8
6
4
2
0
Flow (mgd)
Rainfall depth: 0.48 IN
Meter volume: 0.42 MG
Sewer Model volume: 0.36 MG
Sewer Model
Meter
08/23/2019 07:00
08/23/2019 10:00
08/23/2019 13:00
08/23/2019 16:00
08/23/2019 19:00

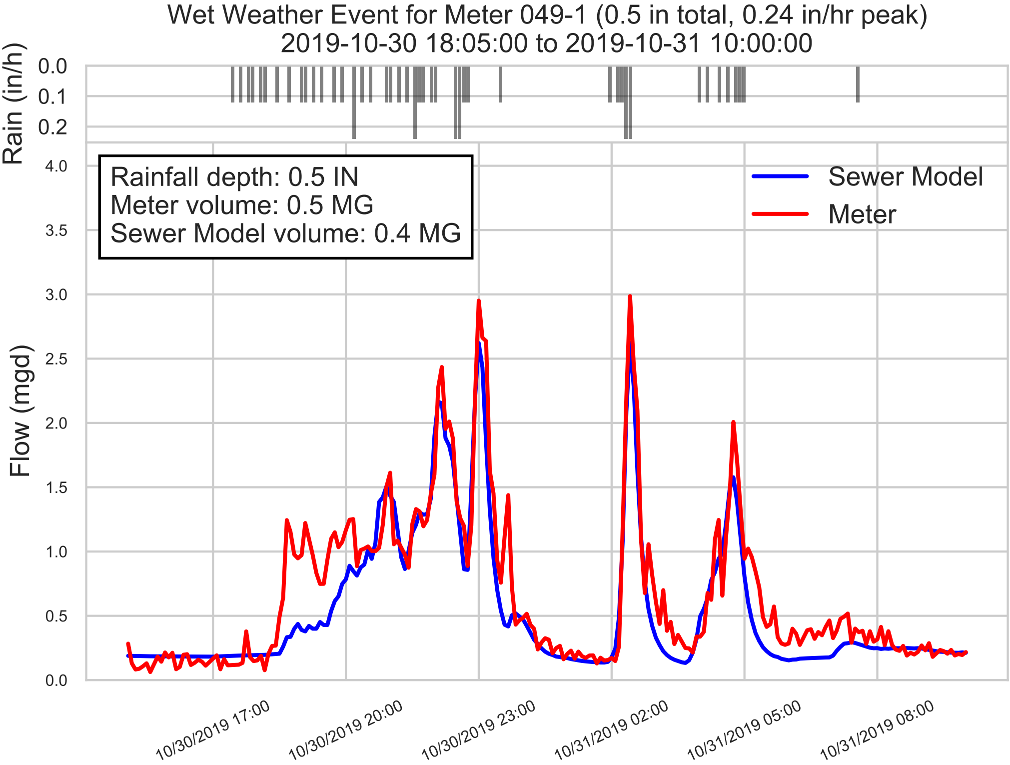

Wet Weather Event for Meter 049-1 (1.16 in total, 0.72 in/hr peak)
2019-10-16 11:00:00 to 2019-10-16 19:10:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 1.16 IN
Meter volume: 0.65 MG
Sewer Model volume: 0.86 MG
Sewer Model
Meter
Flow (mgd)
12
10
8
6
4
2
0
10/16/2019 10:00
10/16/2019 13:00
10/16/2019 16:00
10/16/2019 19:00

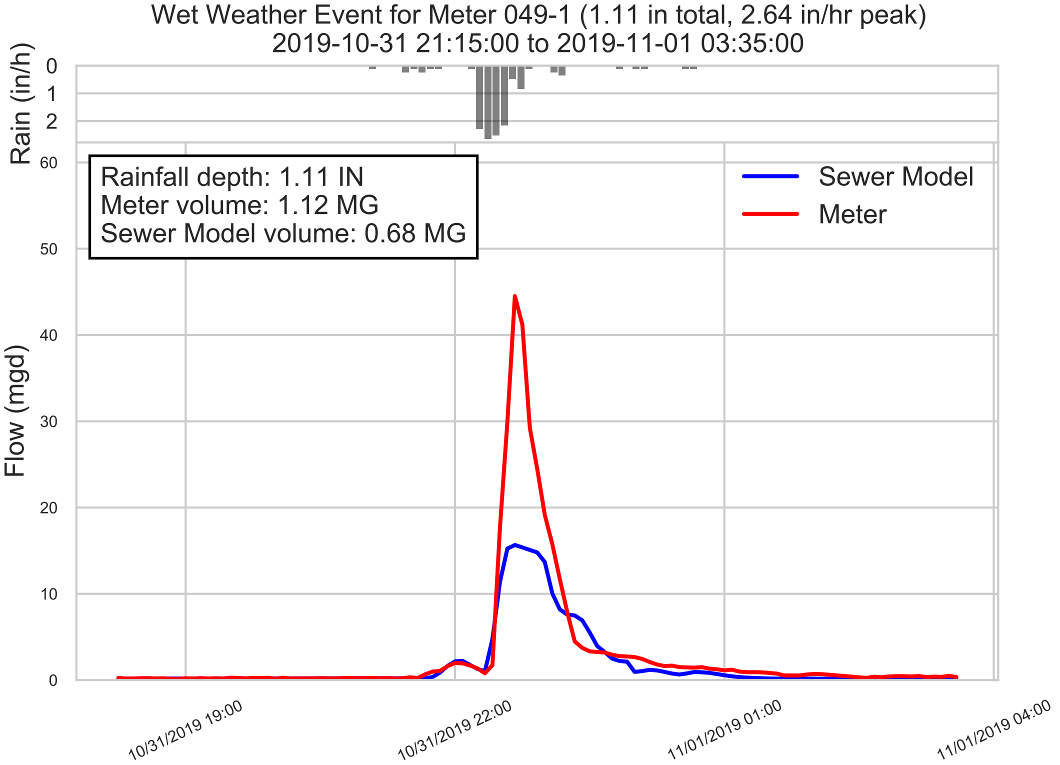

Wet Weather Event for Meter 049-1 (1.81 in total, 0.48 in/hr peak)
2019-10-20 05:50:00 to 2019-10-20 21:35:00
Rain (in/h)
0.0
0.2
0.4
Rainfall depth: 1.81 IN
Meter volume: 1.39 MG
Sewer Model volume: 1.4 MG
Sewer Model
Meter
Flow (mgd)
0
2
4
6
8
10
10/20/2019 02:00
10/20/2019 05:00
10/20/2019 08:00
10/20/2019 11:00
10/20/2019 14:00
10/20/2019 17:00
10/20/2019 20:00

Wet Weather Event for Meter 049-1 (0.55 in total, 0.72 in/hr peak)
2019-10-22 14:20:00 to 2019-10-22 21:05:00

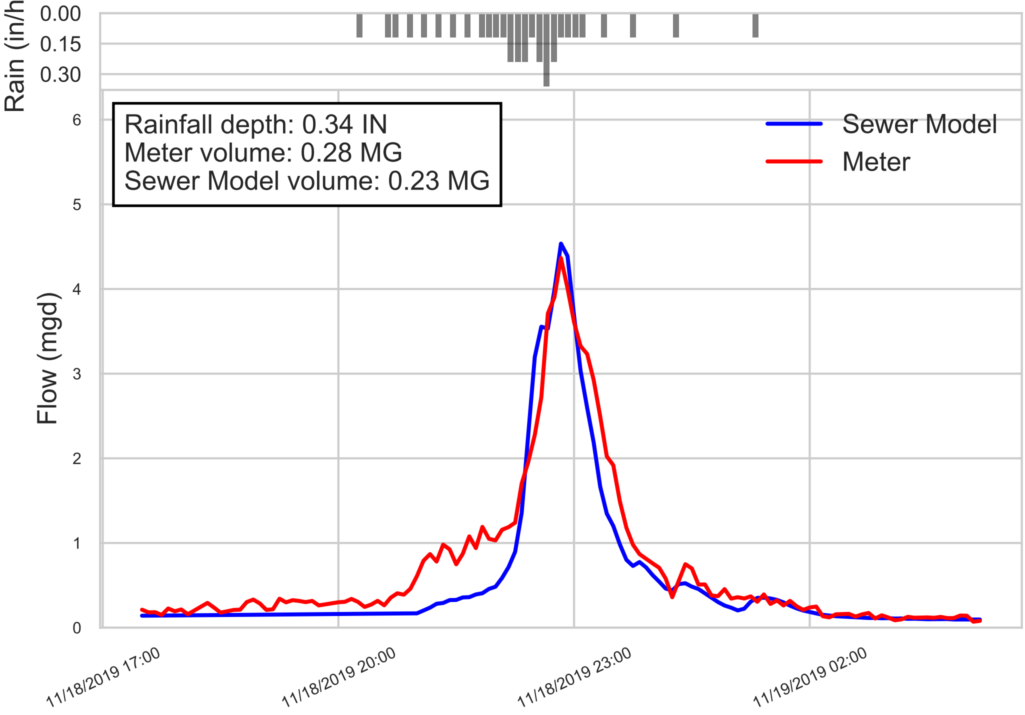



Wet Weather Event for Meter 049-1 (1.77 in total, 2.4 in/hr peak)
2019-10-27 03:25:00 to 2019-10-27 14:10:00
Rain (in/h)
0
1
2
Rainfall depth: 1.77 IN
Meter volume: 1.52 MG
Sewer Model volume: 1.35 MG
Sewer Model
Meter
Flow (mgd)
35
30
25
20
15
10
5
0
10/27/2019 02:00
10/27/2019 05:00
10/27/2019 08:00
10/27/2019 11:00
10/27/2019 14:00

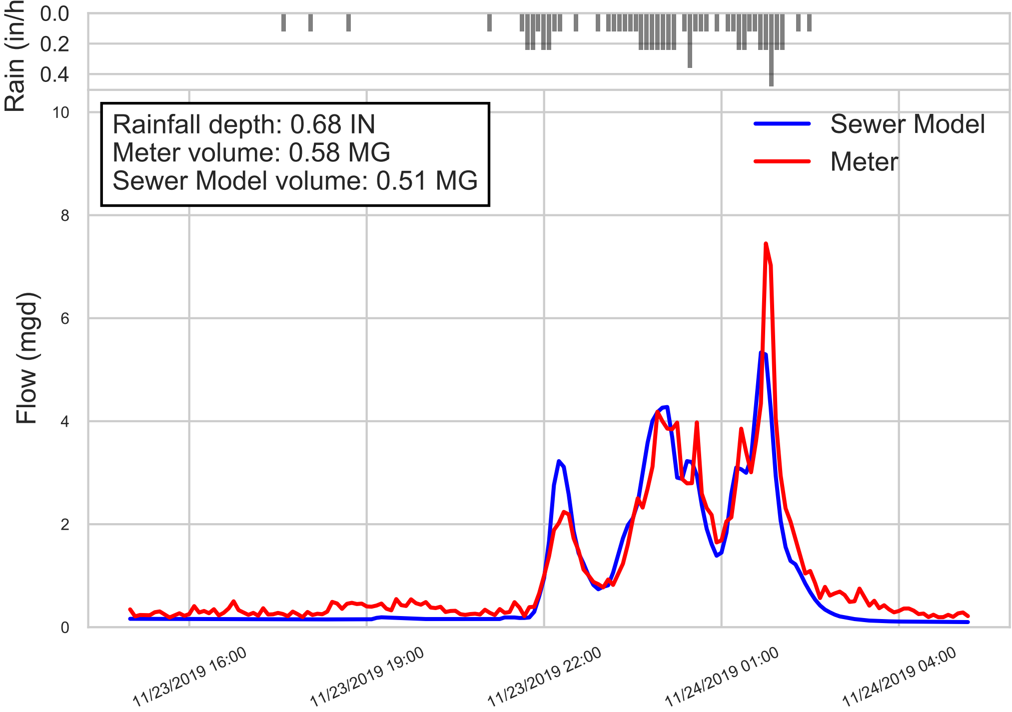

Wet Weather Event for Meter 049-1 (0.5 in total, 0.24 in/hr peak)
2019-10-30 18:05:00 to 2019-10-31 10:00:00
Rain (in/h)
0.0
0.1
0.2
Flow (mgd)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Rainfall depth: 0.5 IN
Meter volume: 0.5 MG
Sewer Model volume: 0.4 MG
Sewer Model
Meter
10/30/2019 17:00
10/30/2019 20:00
10/30/2019 23:00
10/31/2019 02:00
10/31/2019 05:00
10/31/2019 08:00

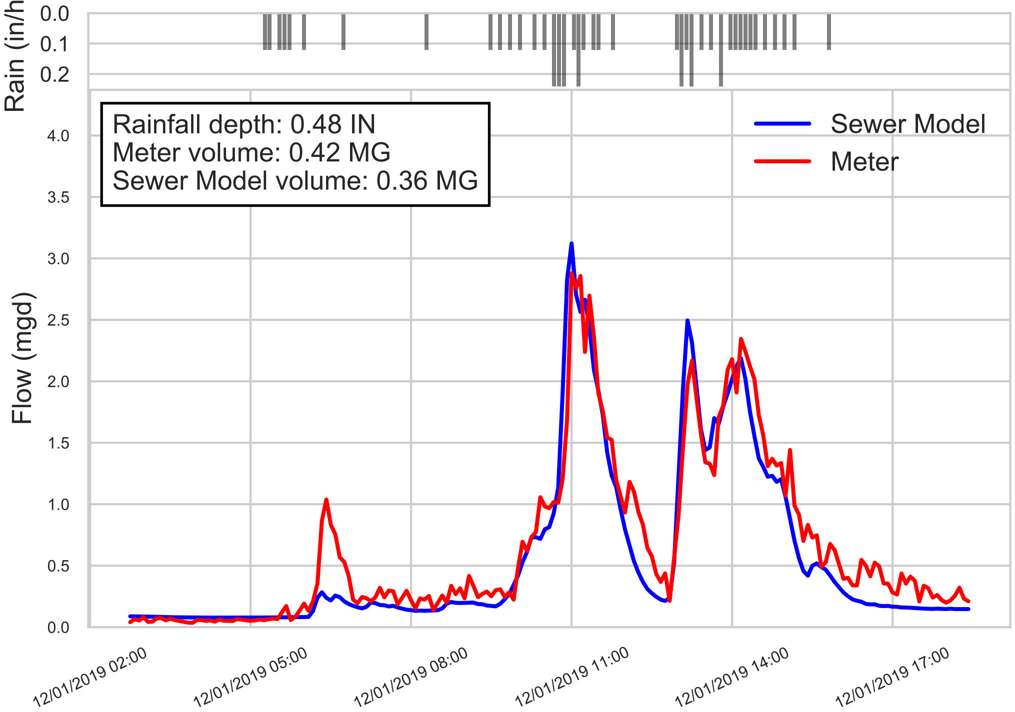

Wet Weather Event for Meter 049-1 (1.11 in total, 2.64 in/hr peak)
2019-10-31 21:15:00 to 2019-11-01 03:35:00
Rain (in/h)
0
1
2
Rainfall depth: 1.11 IN
Meter volume: 1.12 MG
Sewer Model volume: 0.68 MG
Sewer Model
Meter
Flow (mgd)
60
50
40
30
20
10
0
10/31/2019 19:00
10/31/2019 22:00
11/01/2019 01:00
11/01/2019 04:00

Wet Weather Event for Meter 049-1 (0.34 in total, 0.36 in/hr peak)
2019-11-18 20:30:00 to 2019-11-19 04:10:00

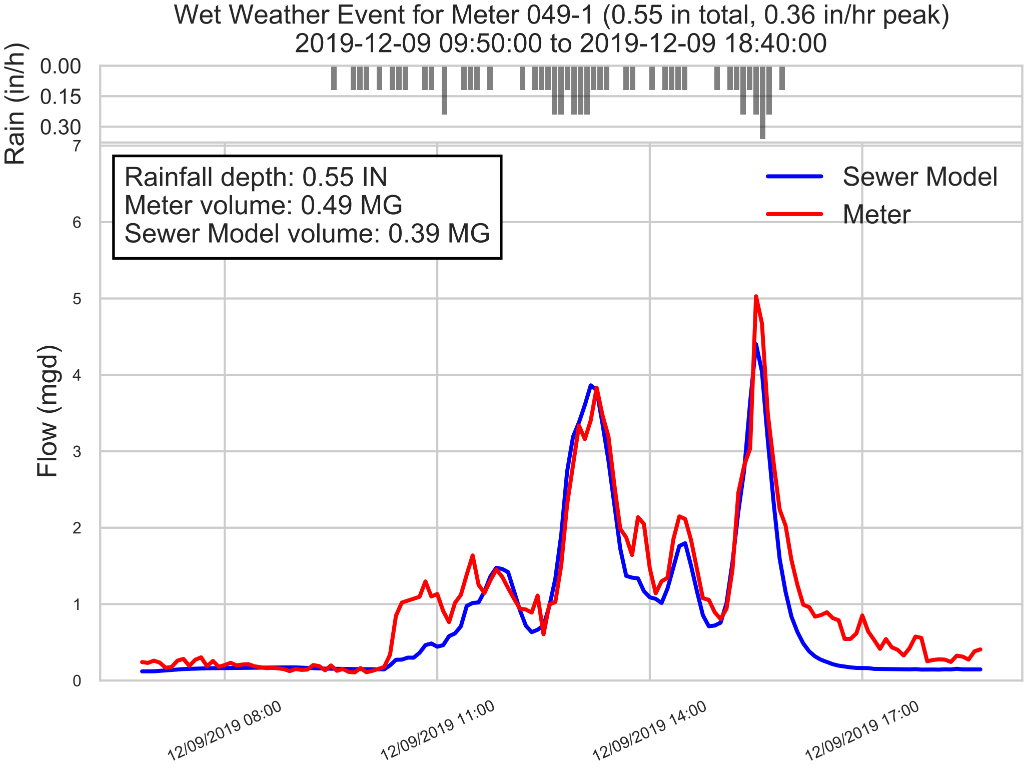


Wet Weather Event for Meter 049-1 (0.68 in total, 0.48 in/hr peak)
2019-11-23 18:00:00 to 2019-11-24 05:10:00

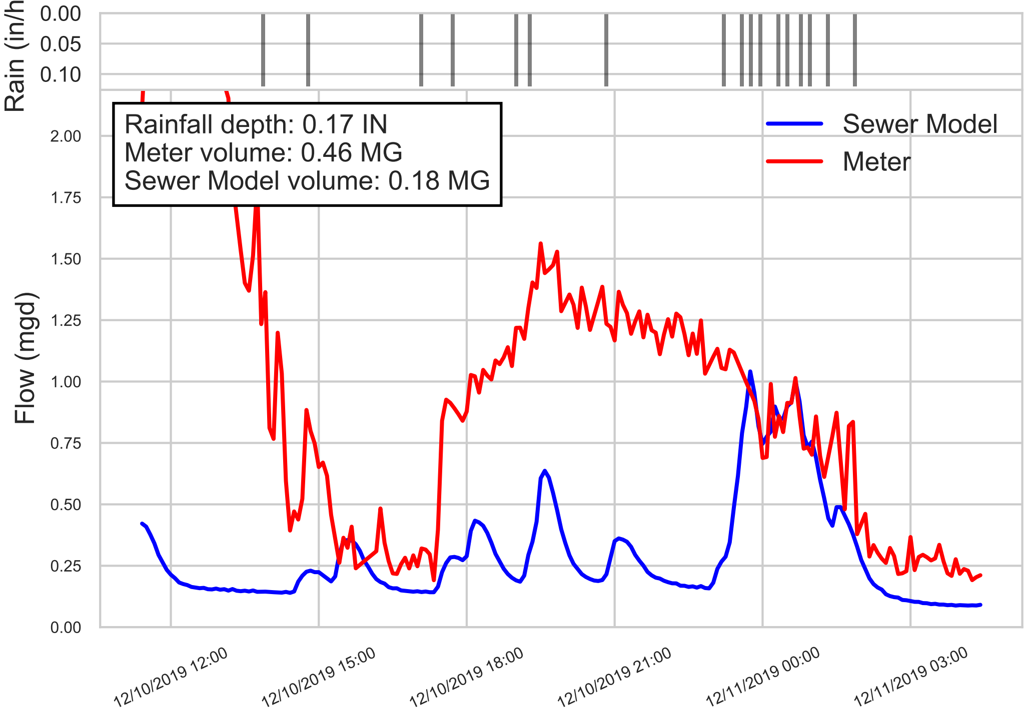




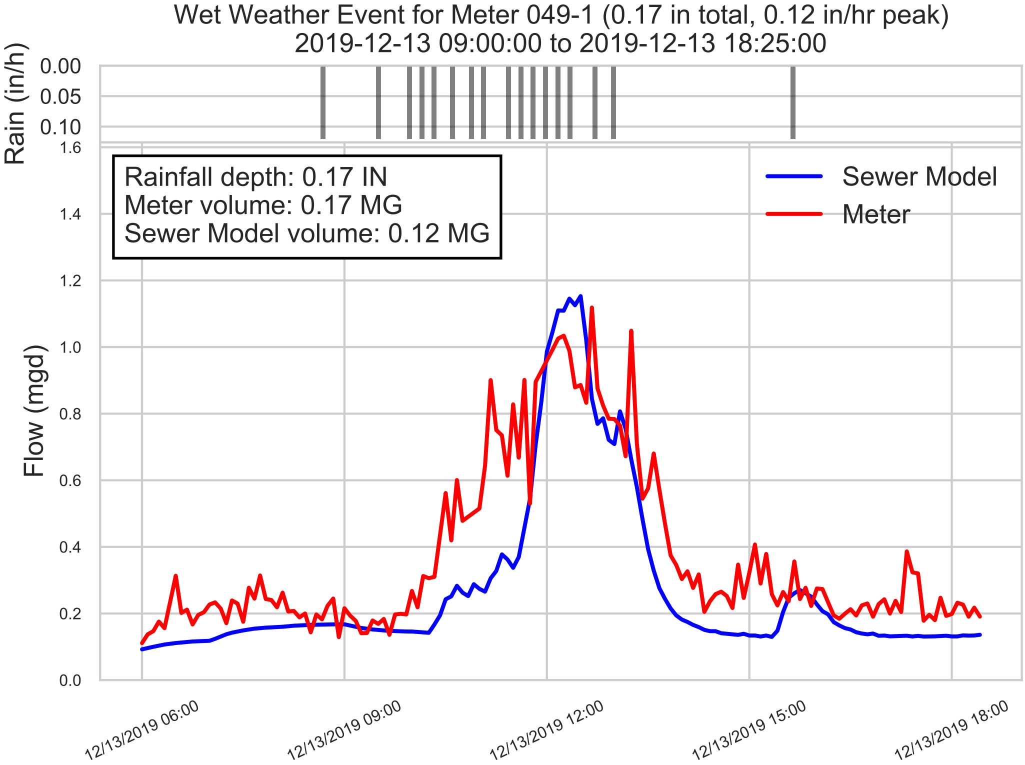
Wet Weather Event for Meter 049-1 (0.48 in total, 0.24 in/hr peak)
2019-12-01 05:45:00 to 2019-12-01 18:25:00



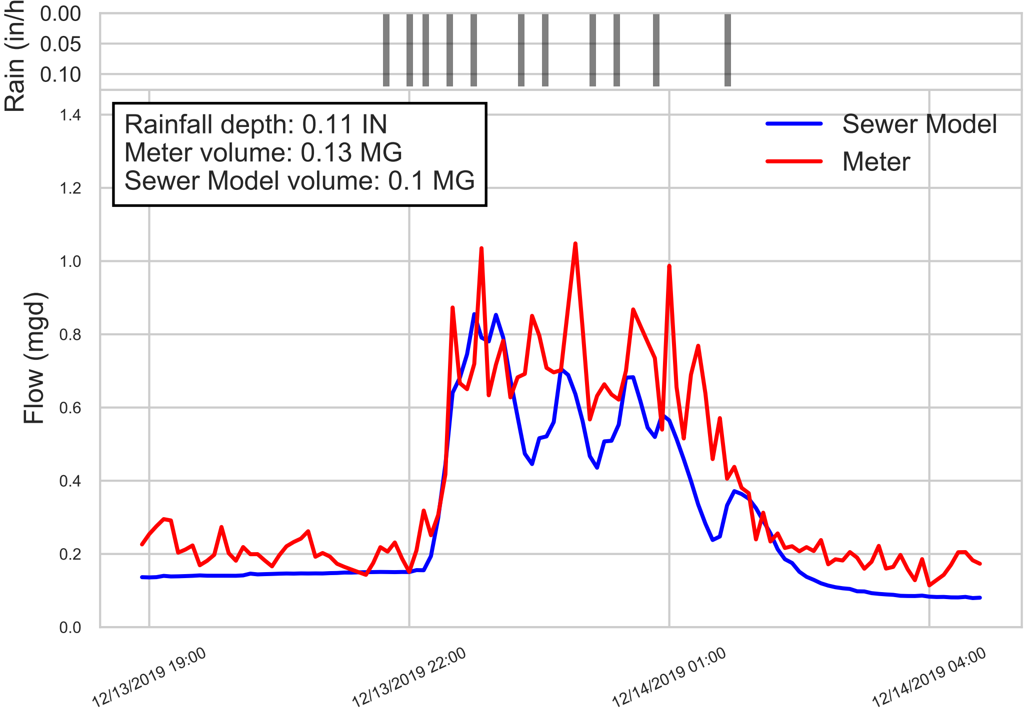
Wet Weather Event for Meter 049-1 (0.55 in total, 0.36 in/hr peak)
2019-12-09 09:50:00 to 2019-12-09 18:40:00



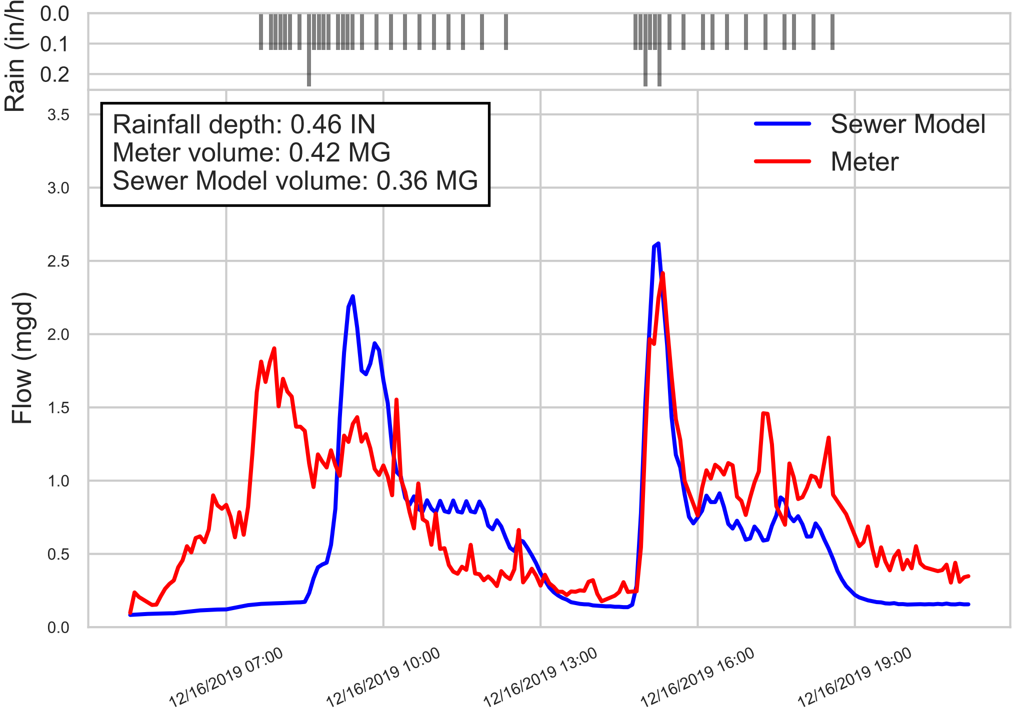
Wet Weather Event for Meter 049-1 (0.17 in total, 0.12 in/hr peak)
2019-12-10 14:25:00 to 2019-12-11 04:25:00

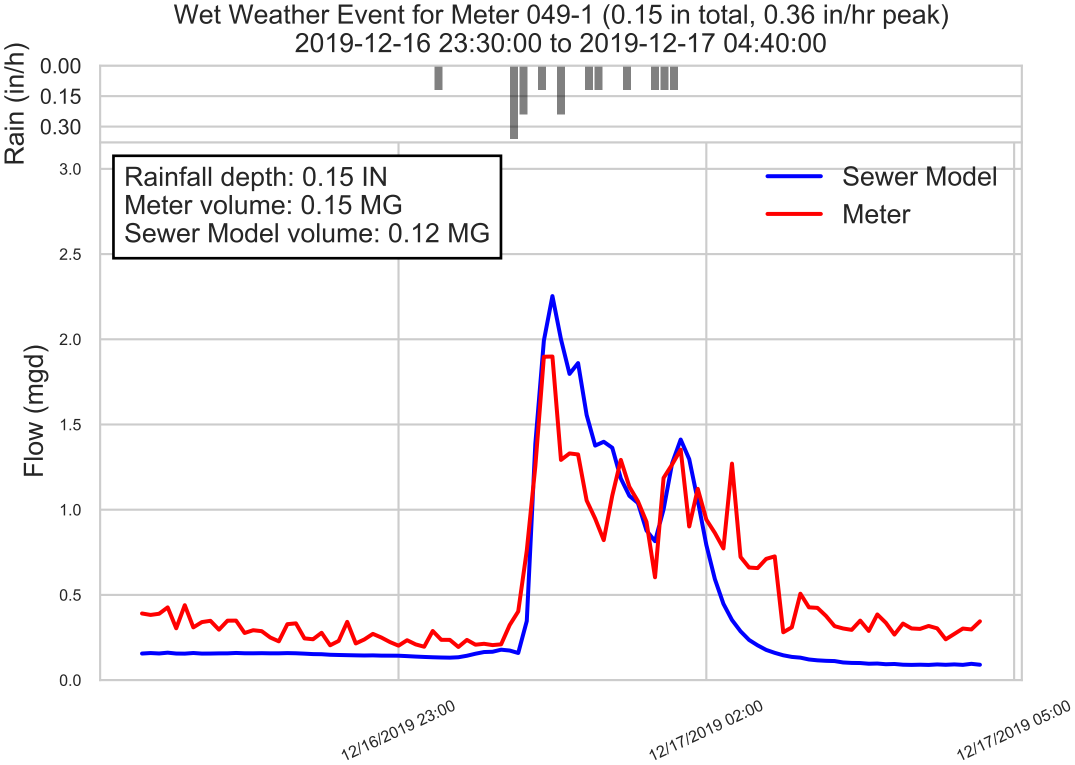

Wet Weather Event for Meter 049-1 (0.17 in total, 0.12 in/hr peak)
2019-12-13 09:00:00 to 2019-12-13 18:25:00
Rain (in/h)
0.00
0.05
0.10
Flow (mgd)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Rainfall depth: 0.17 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.12 MG
Sewer Model
Meter
12/13/2019 06:00
12/13/2019 09:00
12/13/2019 12:00
12/13/2019 15:00
12/13/2019 18:00

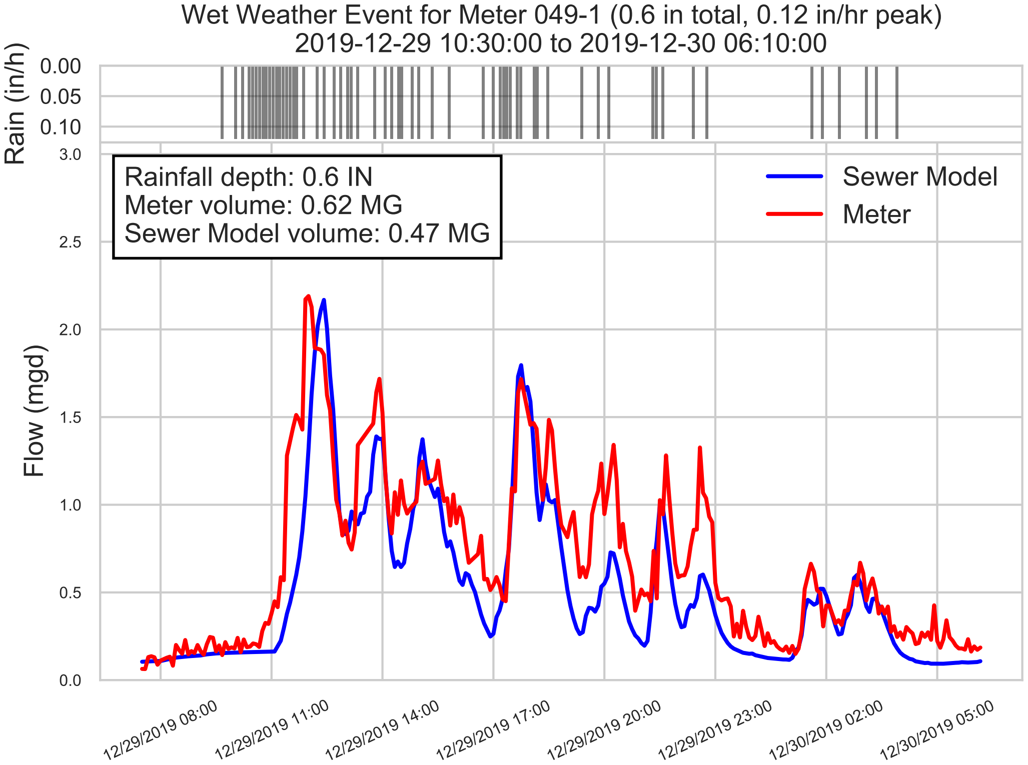
Wet Weather Event for Meter 049-1 (0.11 in total, 0.12 in/hr peak)
2019-12-13 21:55:00 to 2019-12-14 04:35:00



Wet Weather Event for Meter 049-1 (0.46 in total, 0.24 in/hr peak)
2019-12-16 08:10:00 to 2019-12-16 21:10:00

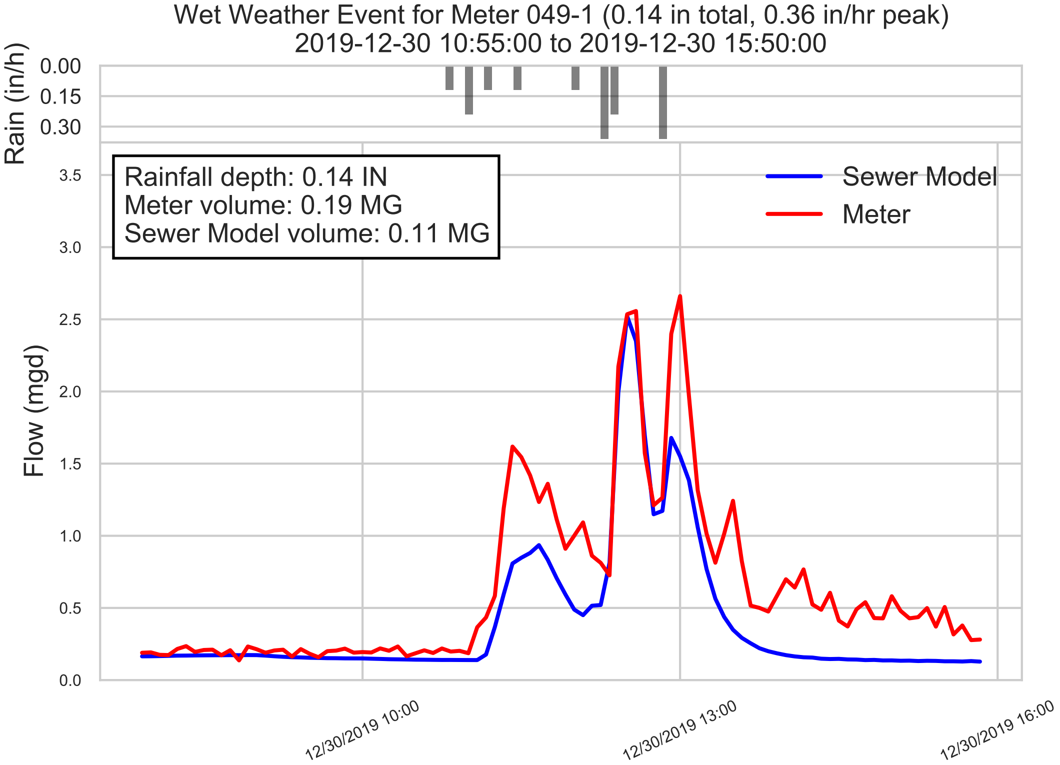

Rainfall depth: 0.46 IN
Meter volume: 0.42 MG
Sewer Model volume: 0.36 MG


Wet Weather Event for Meter 049-1 (0.15 in total, 0.36 in/hr peak)
2019-12-16 23:30:00 to 2019-12-17 04:40:00
Rain (in/h)
0.00
0.15
0.30
Rainfall depth: 0.15 IN
Meter volume: 0.15 MG
Sewer Model volume: 0.12 MG
Sewer Model
Meter
Flow (mgd)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
12/16/2019 23:00
12/17/2019 02:00
12/17/2019 05:00

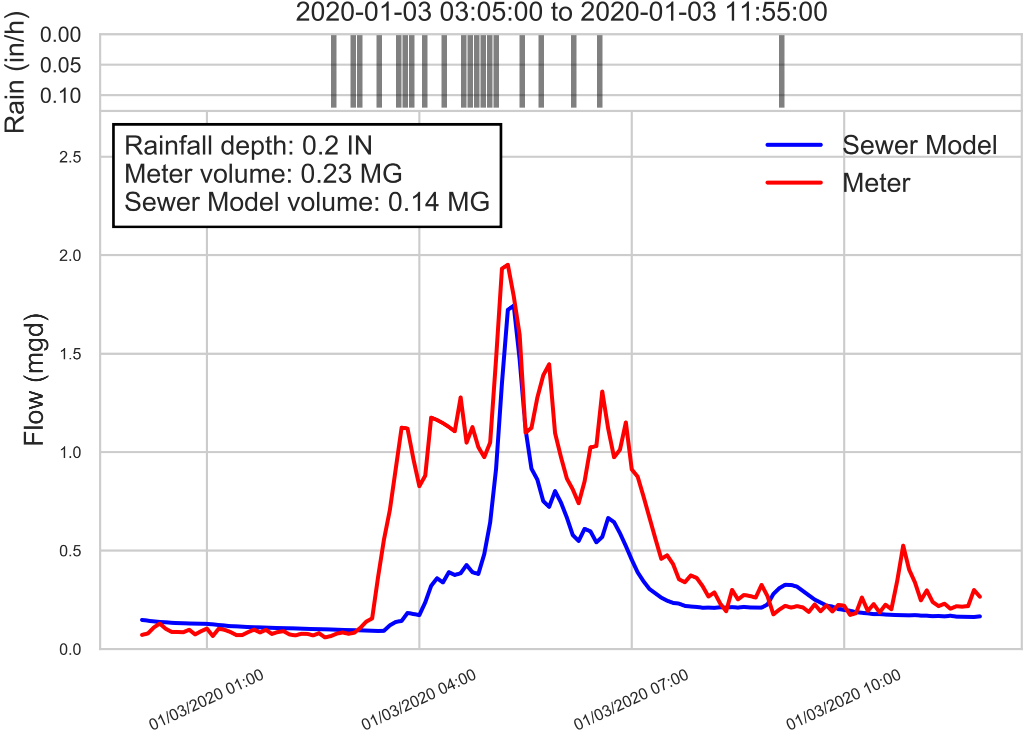


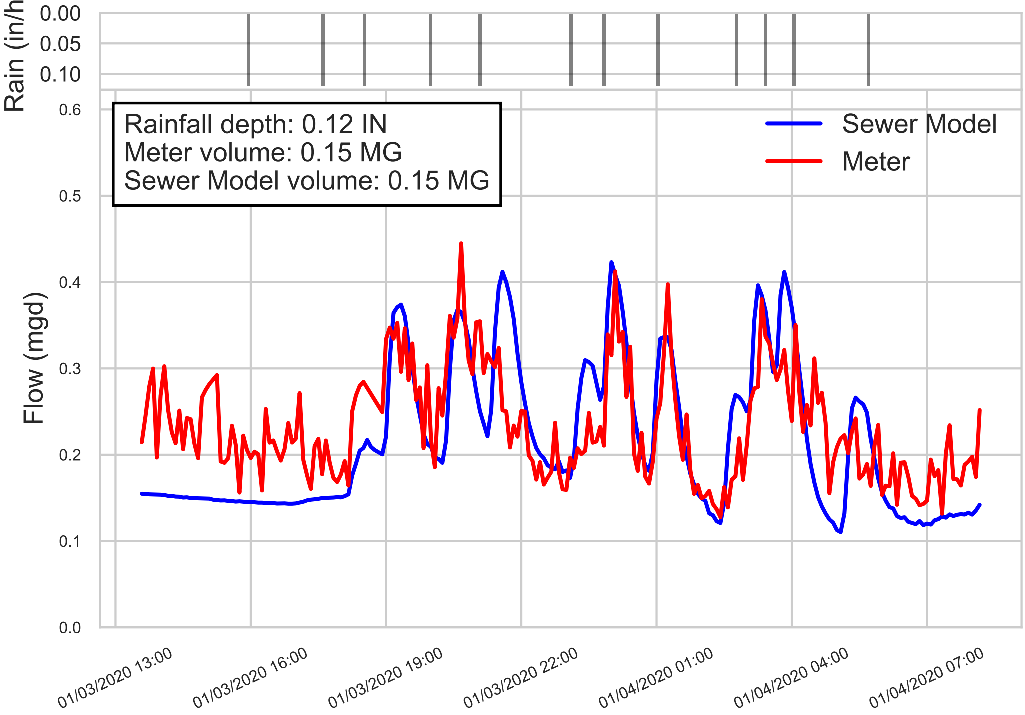
Wet Weather Event for Meter 049-1 (0.6 in total, 0.12 in/hr peak)
2019-12-29 10:30:00 to 2019-12-30 06:10:00

Rainfall depth: 0.6 IN
Meter volume: 0.62 MG
Sewer Model volume: 0.47 MG


Wet Weather Event for Meter 049-1 (0.14 in total, 0.36 in/hr peak)
2019-12-30 10:55:00 to 2019-12-30 15:50:00
Rain (in/h)
0.00
0.15
0.30
Flow (mgd)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Rainfall depth: 0.14 IN
Meter volume: 0.19 MG
Sewer Model volume: 0.11 MG
Sewer Model
Meter
12/30/2019 10:00
12/30/2019 13:00
12/30/2019 16:00

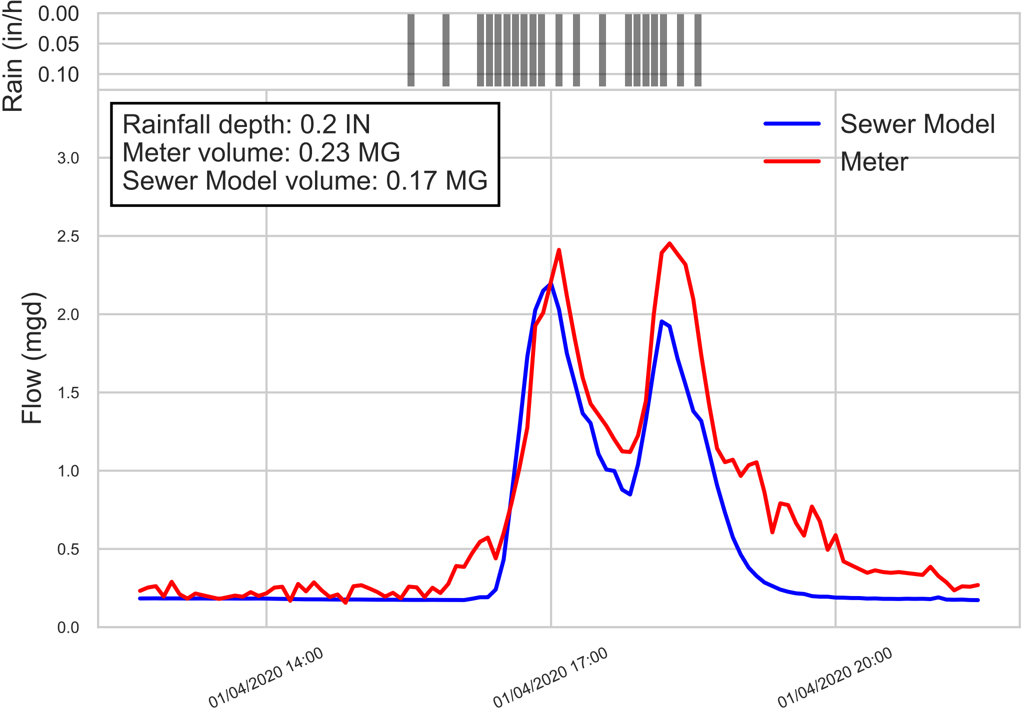
Wet Weather Event for Meter 049-1 (0.2 in total, 0.12 in/hr peak)
2020-01-03 03:05:00 to 2020-01-03 11:55:00



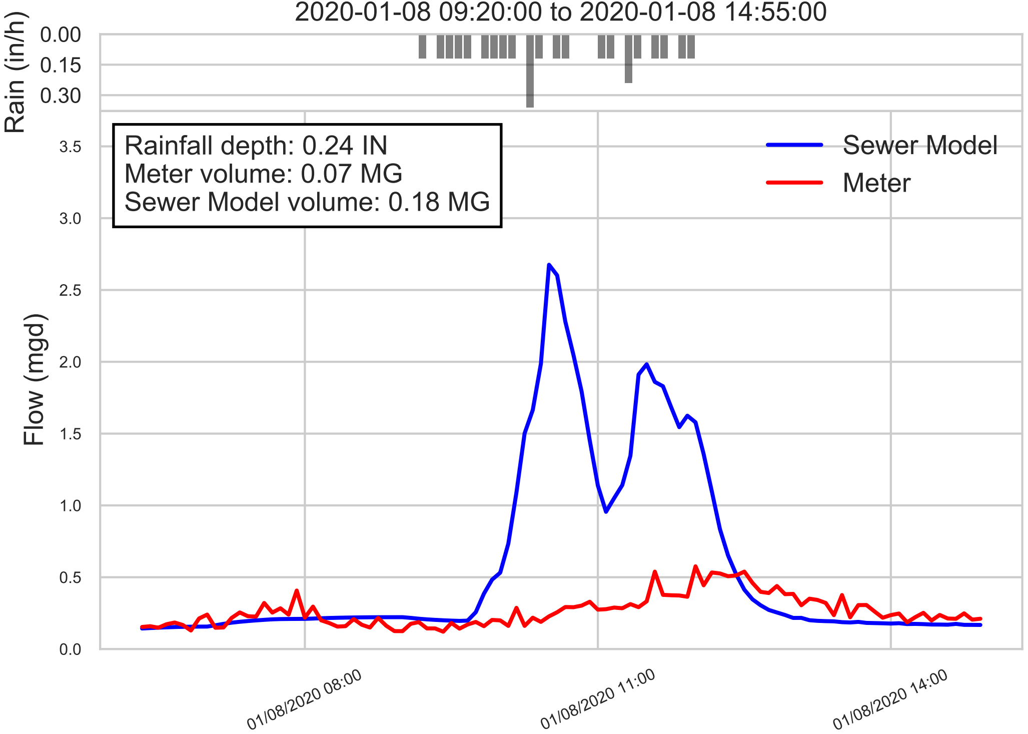


Wet Weather Event for Meter 049-1 (0.12 in total, 0.12 in/hr peak)
2020-01-03 16:35:00 to 2020-01-04 08:10:00

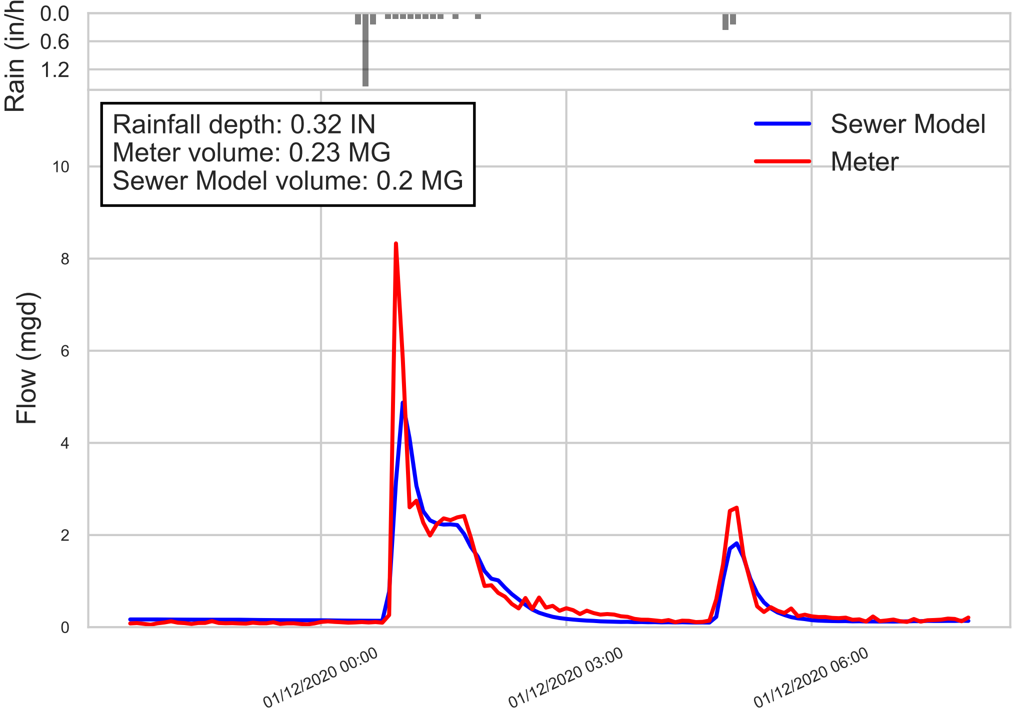
Wet Weather Event for Meter 049-1 (0.2 in total, 0.12 in/hr peak)
2020-01-04 15:40:00 to 2020-01-04 21:30:00

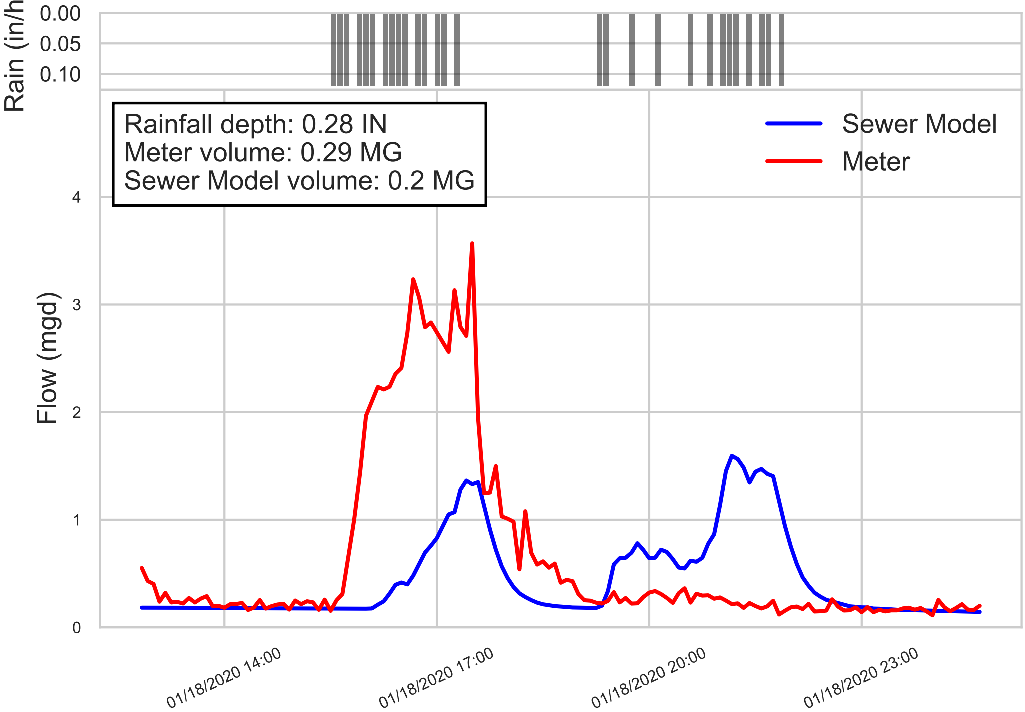


Wet Weather Event for Meter 049-1 (0.24 in total, 0.36 in/hr peak)
2020-01-08 09:20:00 to 2020-01-08 14:55:00



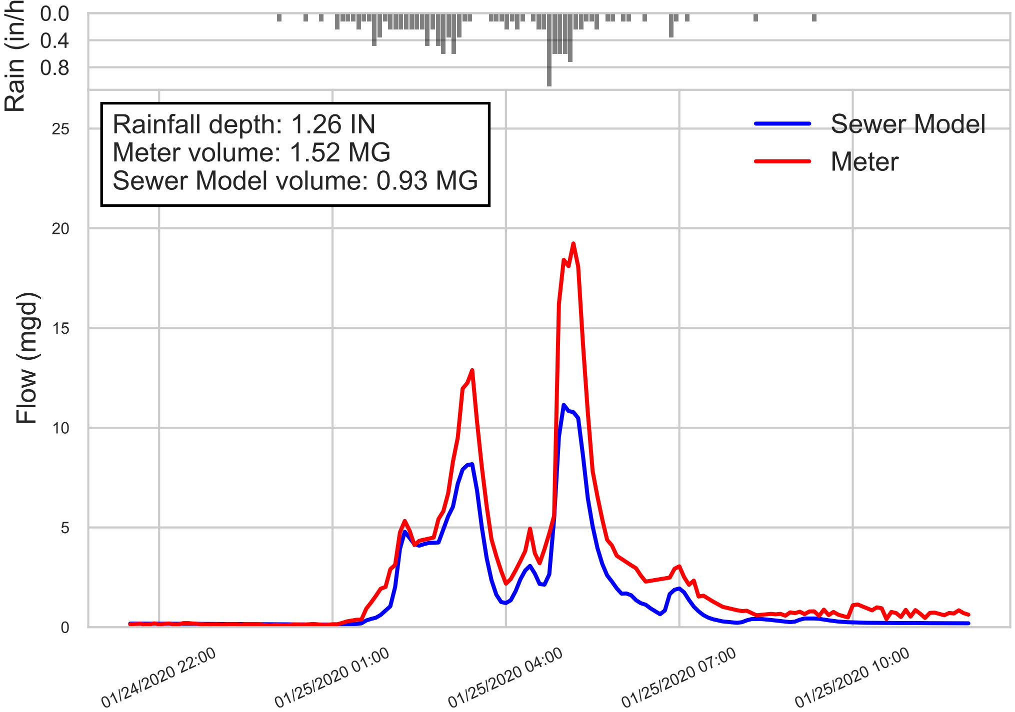
Wet Weather Event for Meter 049-1 (0.32 in total, 1.56 in/hr peak)
2020-01-12 00:40:00 to 2020-01-12 07:55:00



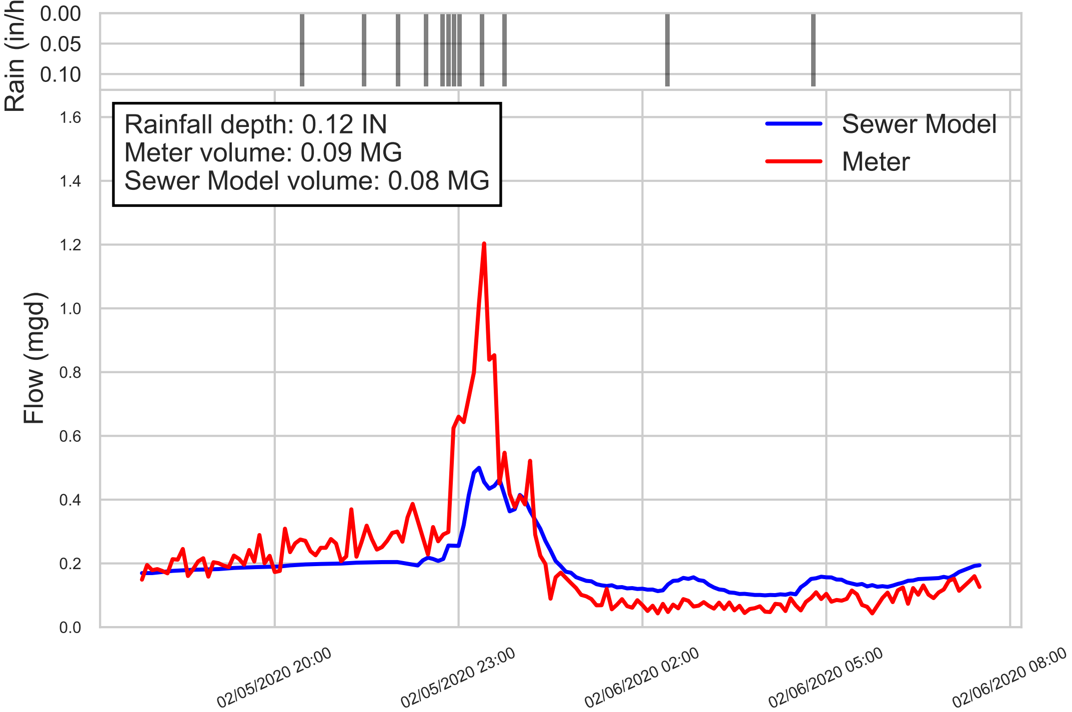


Wet Weather Event for Meter 049-1 (0.28 in total, 0.12 in/hr peak)
2020-01-18 15:50:00 to 2020-01-19 00:40:00

Wet Weather Event for Meter 049-1 (1.26 in total, 1.08 in/hr peak)
2020-01-25 00:30:00 to 2020-01-25 12:00:00

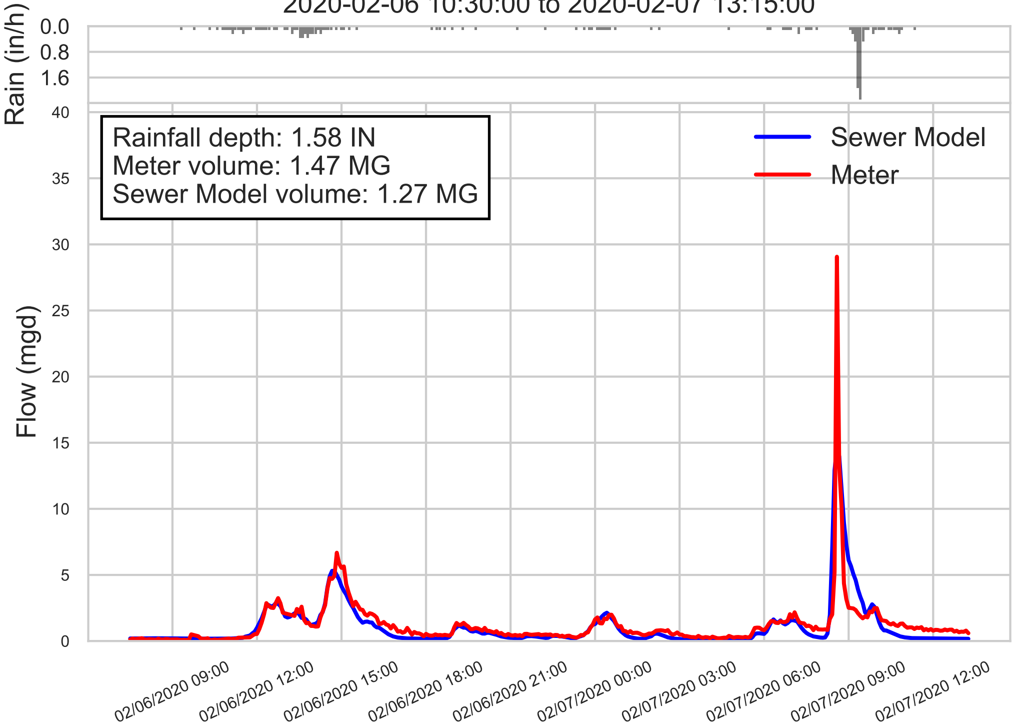


Rainfall depth: 1.26 IN
Meter volume: 1.52 MG
Sewer Model volume: 0.93 MG

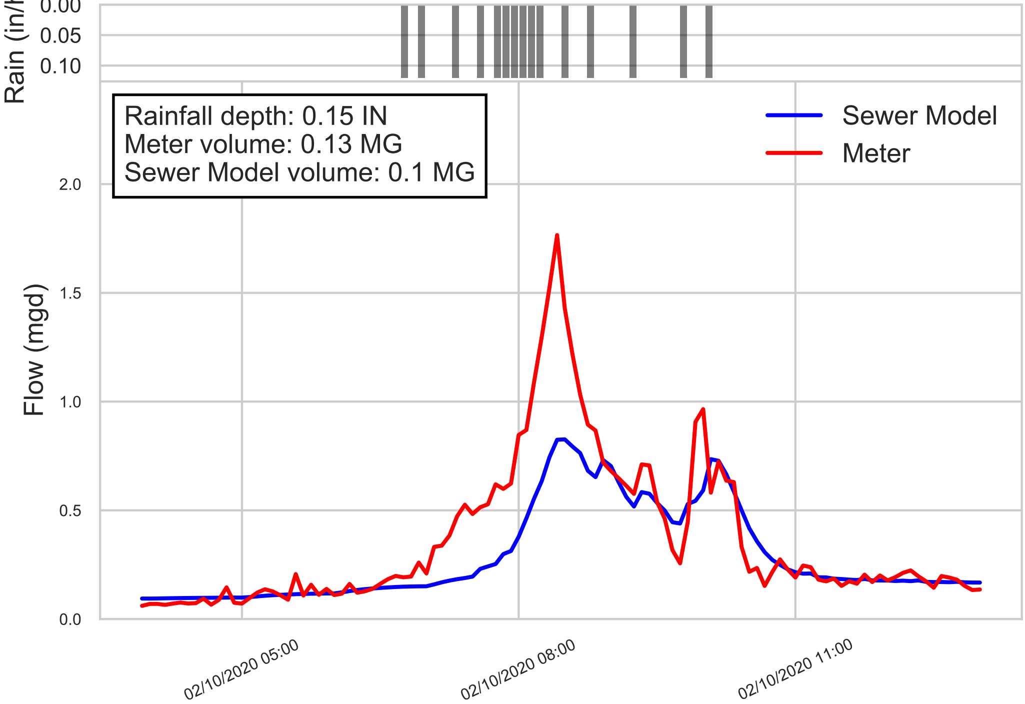


Wet Weather Event for Meter 049-1 (0.12 in total, 0.12 in/hr peak)
2020-02-05 20:50:00 to 2020-02-06 07:30:00

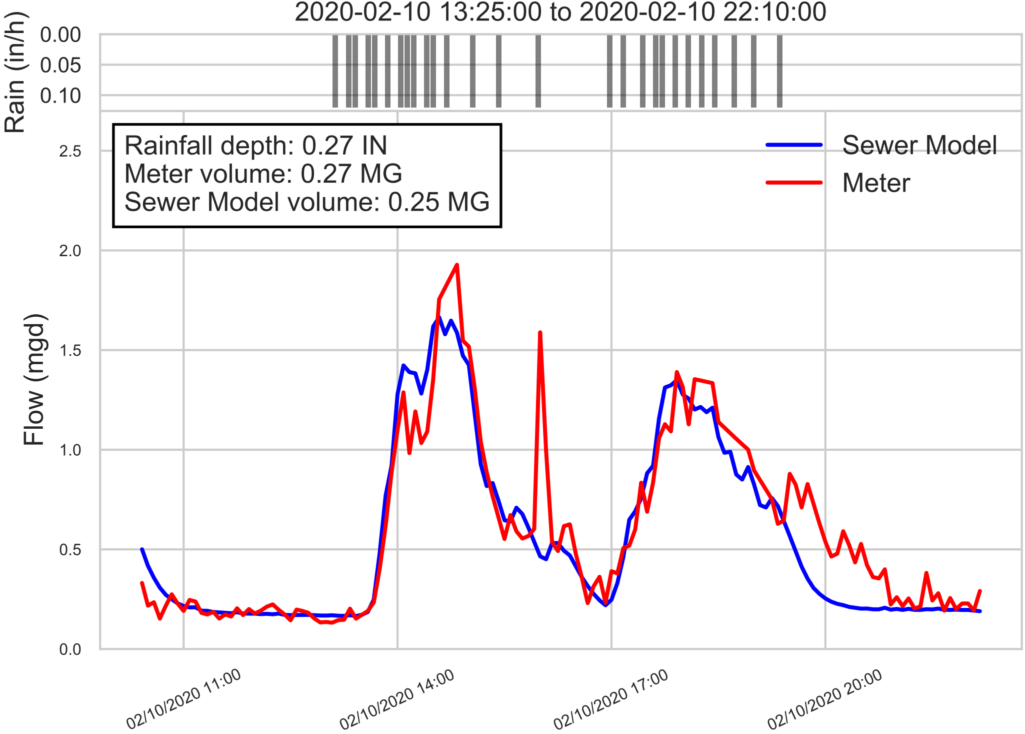
Rainfall depth: 0.12 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.08 MG

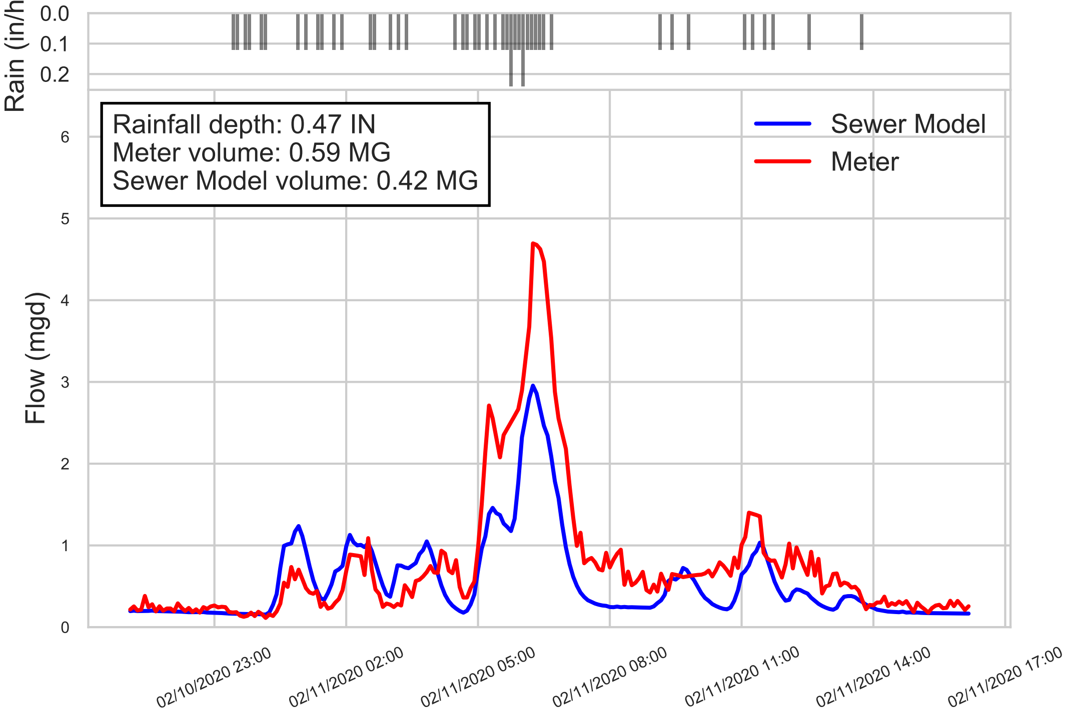

Wet Weather Event for Meter 049-1 (1.58 in total, 2.28 in/hr peak)
2020-02-06 10:30:00 to 2020-02-07 13:15:00

Wet Weather Event for Meter 049-1 (0.15 in total, 0.12 in/hr peak)
2020-02-10 06:55:00 to 2020-02-10 13:00:00



Wet Weather Event for Meter 049-1 (0.27 in total, 0.12 in/hr peak)
2020-02-10 13:25:00 to 2020-02-10 22:10:00

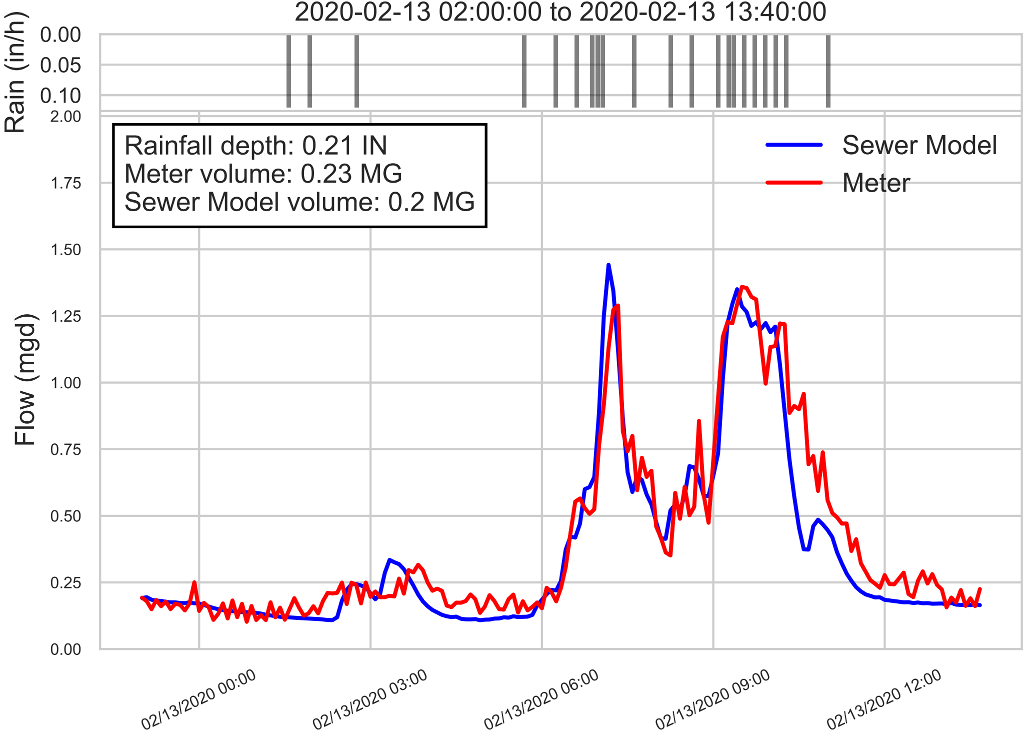


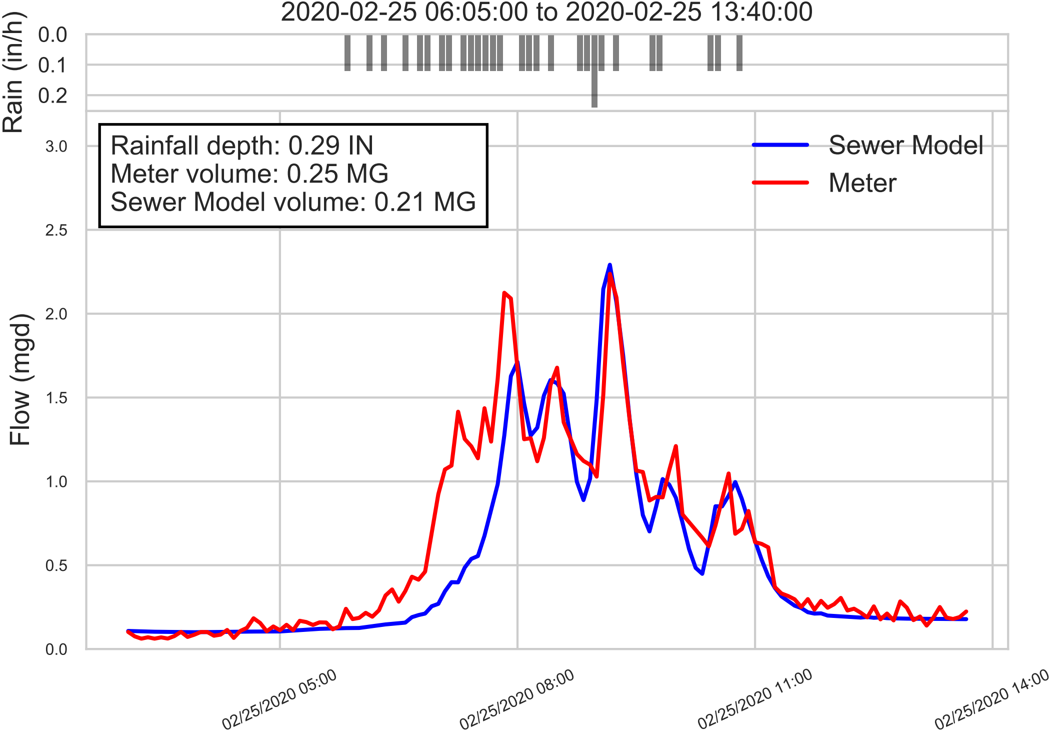


Wet Weather Event for Meter 049-1 (0.47 in total, 0.24 in/hr peak)
2020-02-11 00:05:00 to 2020-02-11 16:10:00

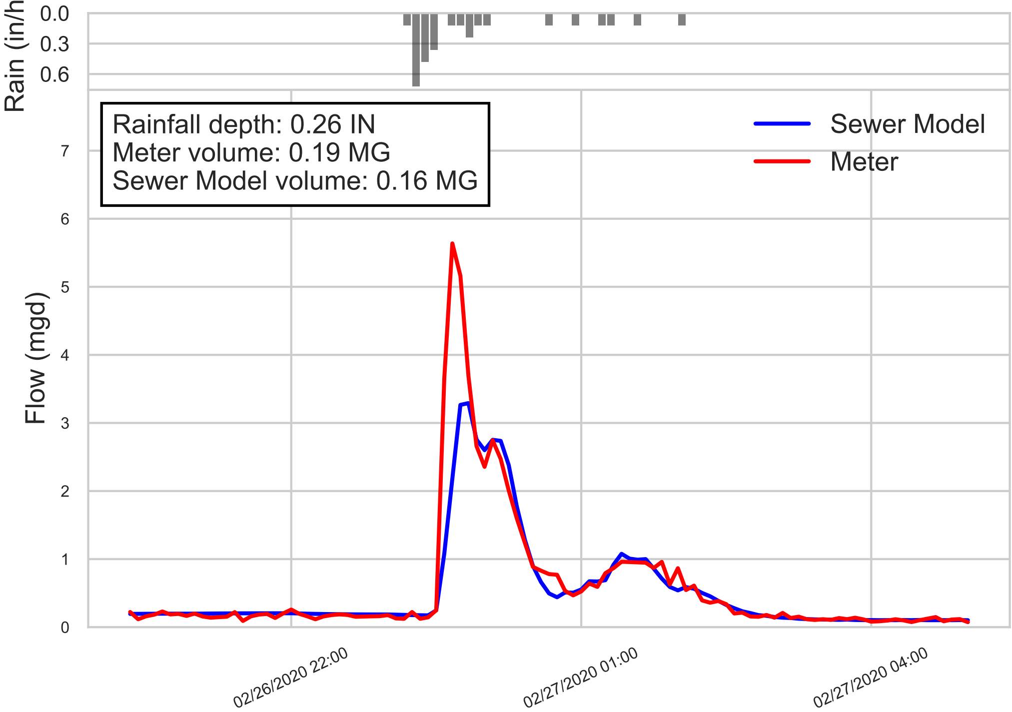
Rainfall depth: 0.47 IN
Meter volume: 0.59 MG
Sewer Model volume: 0.42 MG

Wet Weather Event for Meter 049-1 (0.21 in total, 0.12 in/hr peak)
2020-02-13 02:00:00 to 2020-02-13 13:40:00

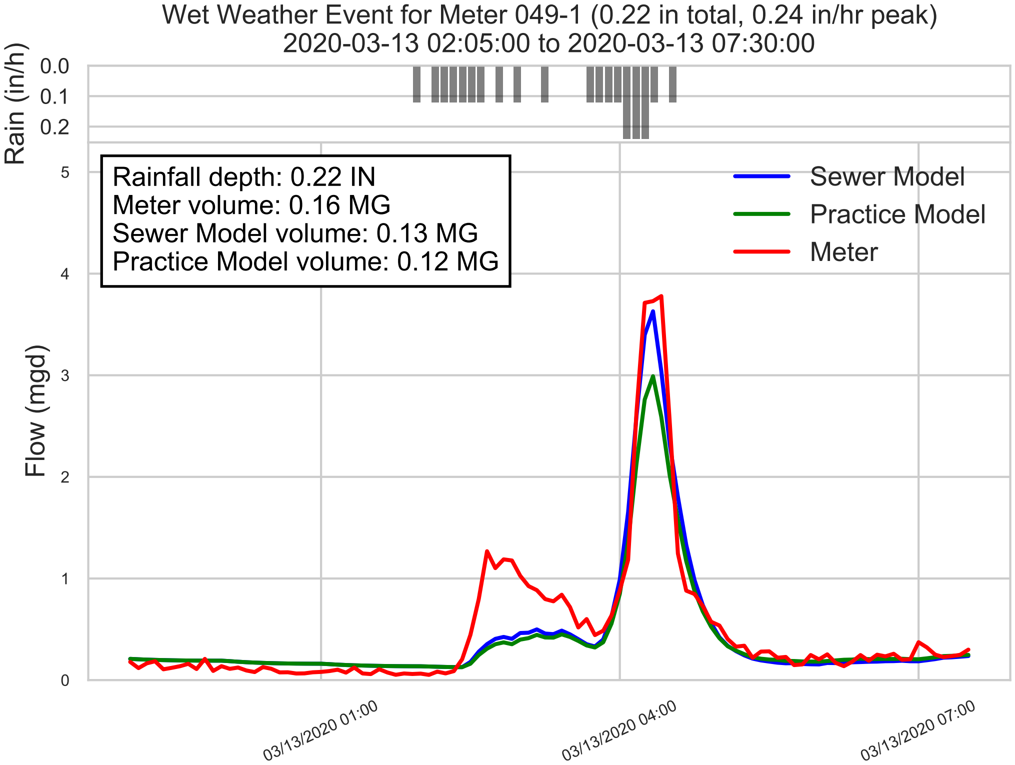


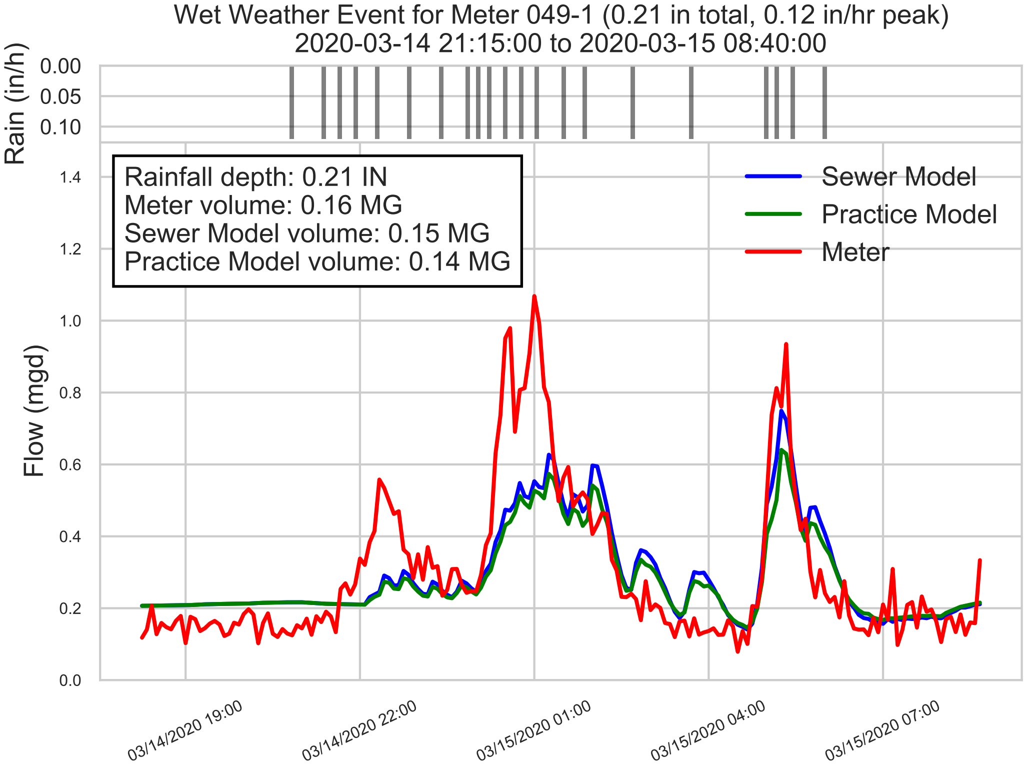

Wet Weather Event for Meter 049-1 (0.29 in total, 0.24 in/hr peak)
2020-02-25 06:05:00 to 2020-02-25 13:40:00

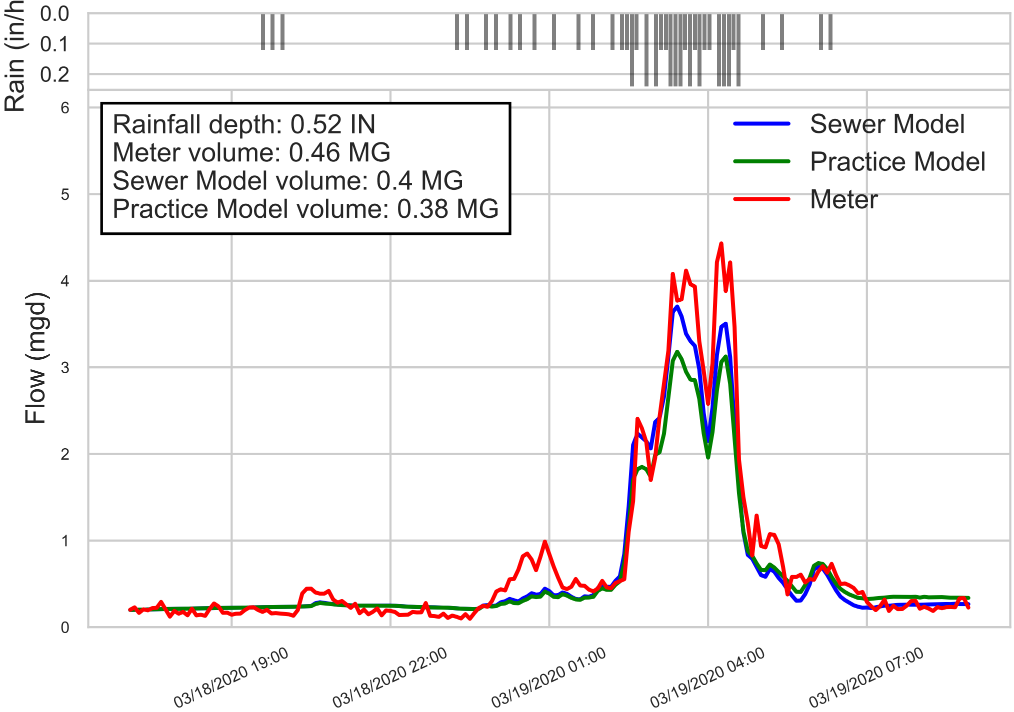
Wet Weather Event for Meter 049-1 (0.26 in total, 0.72 in/hr peak)
2020-02-26 23:20:00 to 2020-02-27 05:00:00



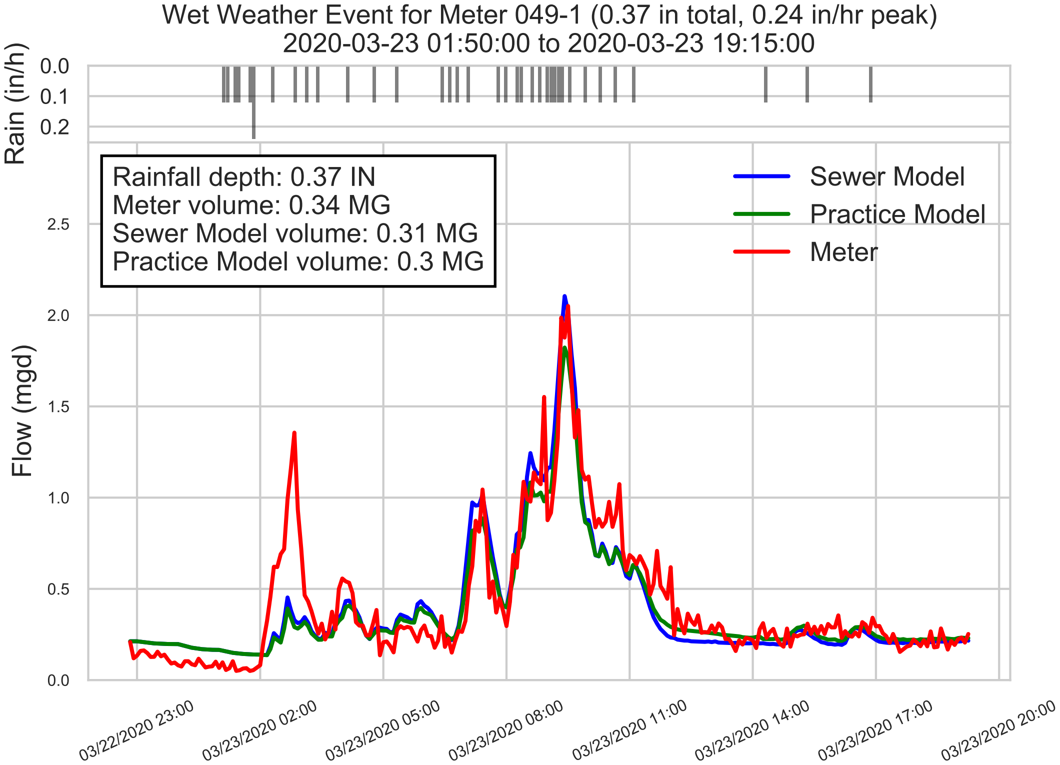
Rainfall depth: 0.26 IN
Meter volume: 0.19 MG
Sewer Model volume: 0.16 MG


Wet Weather Event for Meter 049-1 (0.22 in total, 0.24 in/hr peak)
2020-03-13 02:05:00 to 2020-03-13 07:30:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.22 IN
Meter volume: 0.16 MG
Sewer Model volume: 0.13 MG
Practice Model volume: 0.12 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
5
4
3
2
1
0
03/13/2020 01:00
03/13/2020 04:00
03/13/2020 07:00

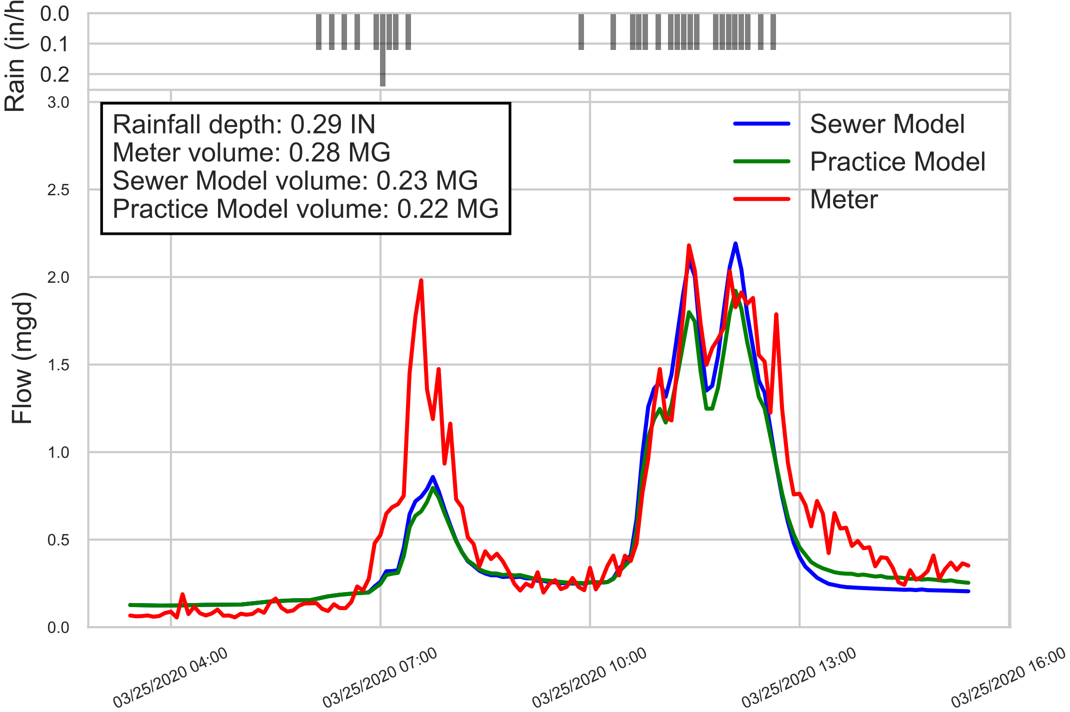

Wet Weather Event for Meter 049-1 (0.21 in total, 0.12 in/hr peak)
2020-03-14 21:15:00 to 2020-03-15 08:40:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.21 IN
Meter volume: 0.16 MG
Sewer Model volume: 0.15 MG
Practice Model volume: 0.14 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
03/14/2020 19:00
03/14/2020 22:00
03/15/2020 01:00
03/15/2020 04:00
03/15/2020 07:00

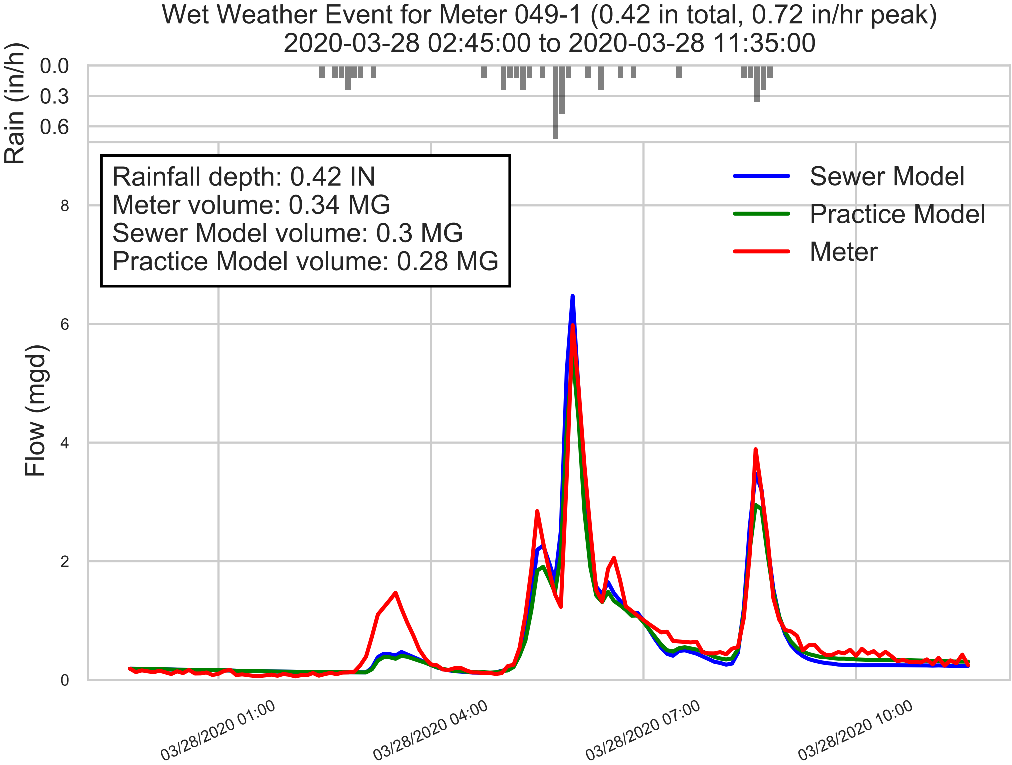


Wet Weather Event for Meter 049-1 (0.52 in total, 0.24 in/hr peak)
2020-03-18 20:05:00 to 2020-03-19 08:55:00

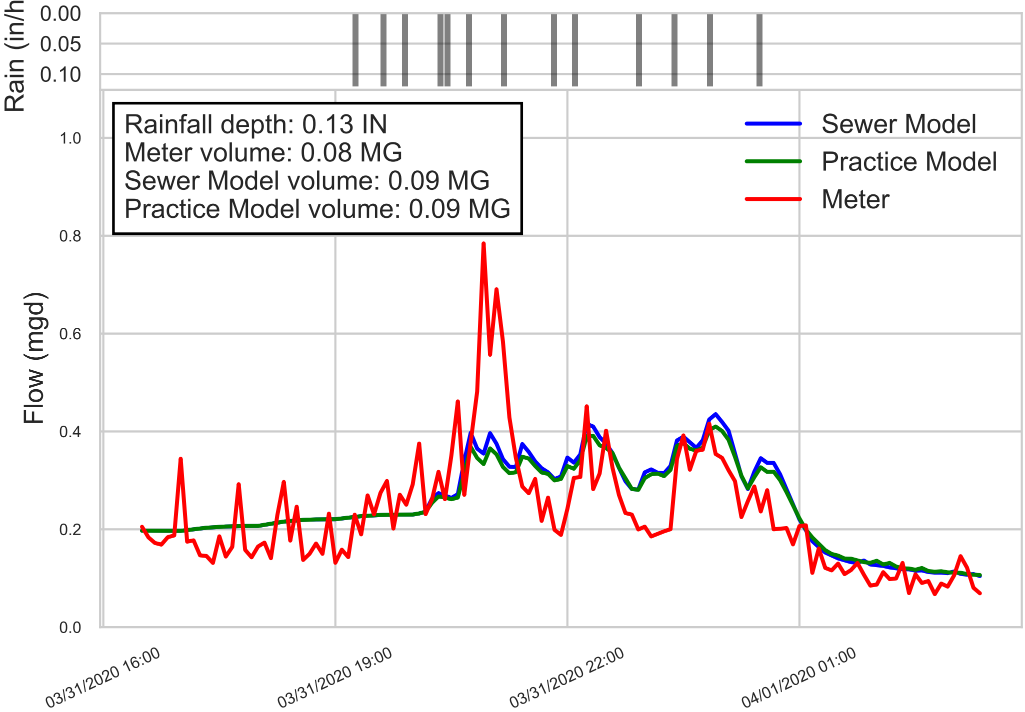

Wet Weather Event for Meter 049-1 (0.37 in total, 0.24 in/hr peak)
2020-03-23 01:50:00 to 2020-03-23 19:15:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.37 IN
Meter volume: 0.34 MG
Sewer Model volume: 0.31 MG
Practice Model volume: 0.3 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
2.5
2.0
1.5
1.0
0.5
0.0
03/22/2020 23:00
03/23/2020 02:00
03/23/2020 05:00
03/23/2020 08:00
03/23/2020 11:00
03/23/2020 14:00
03/23/2020 17:00
03/23/2020 20:00

Wet Weather Event for Meter 049-1 (0.29 in total, 0.24 in/hr peak)
2020-03-25 06:25:00 to 2020-03-25 15:25:00

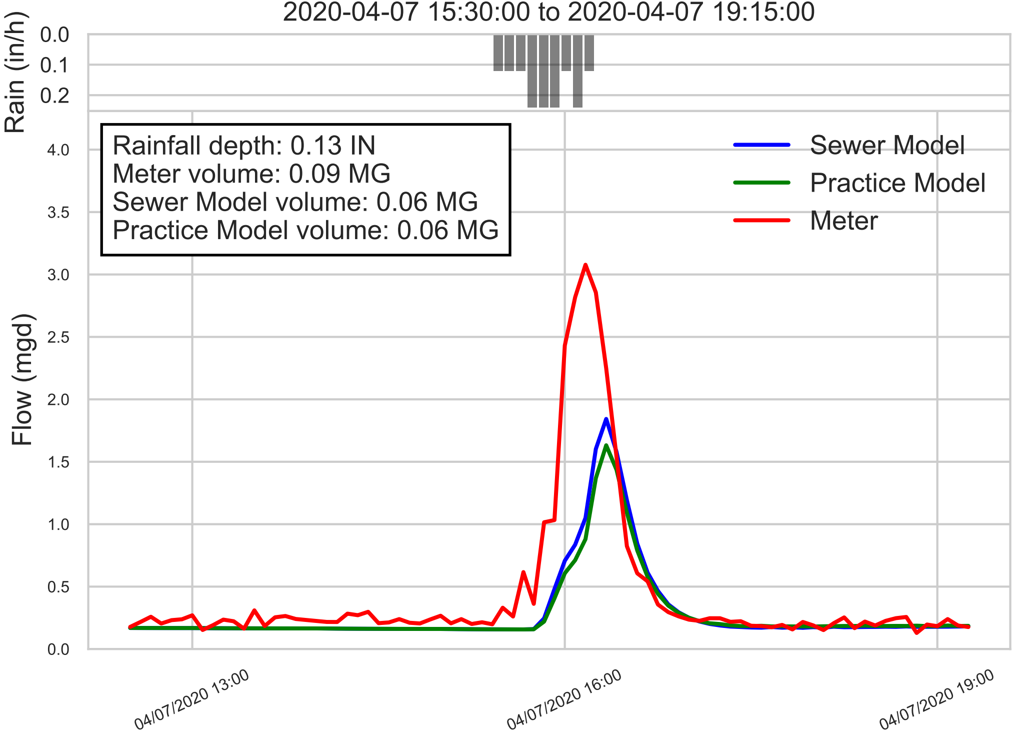


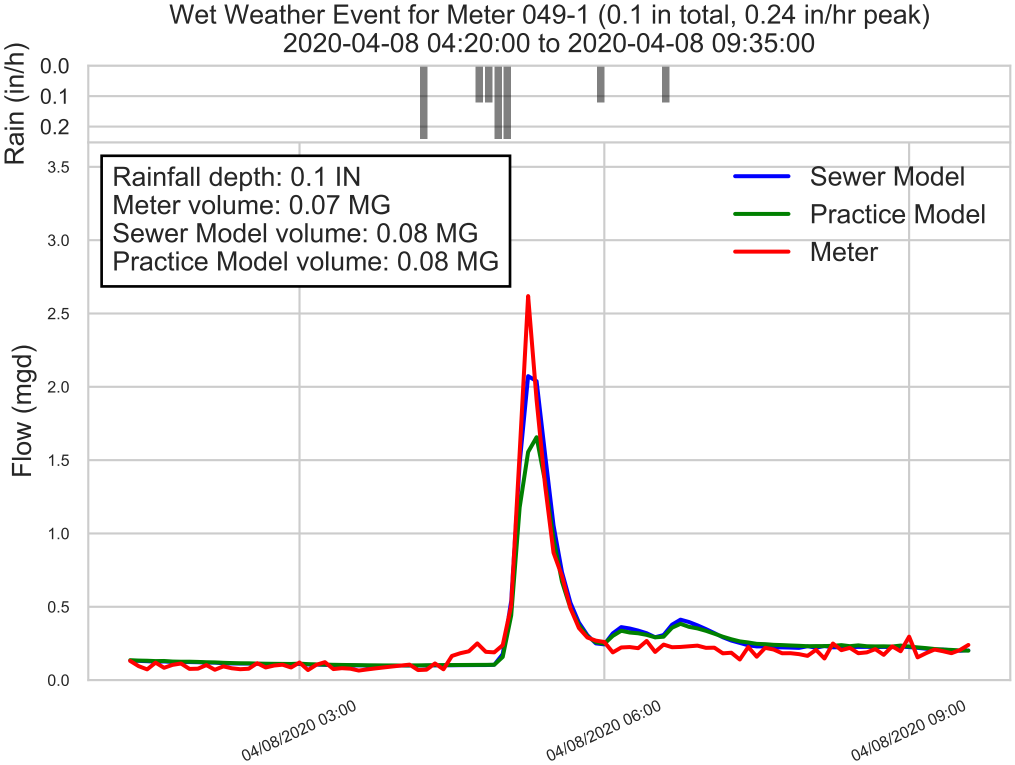

Wet Weather Event for Meter 049-1 (0.42 in total, 0.72 in/hr peak)
2020-03-28 02:45:00 to 2020-03-28 11:35:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 0.42 IN
Meter volume: 0.34 MG
Sewer Model volume: 0.3 MG
Practice Model volume: 0.28 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
8
6
4
2
0
03/28/2020 01:00
03/28/2020 04:00
03/28/2020 07:00
03/28/2020 10:00

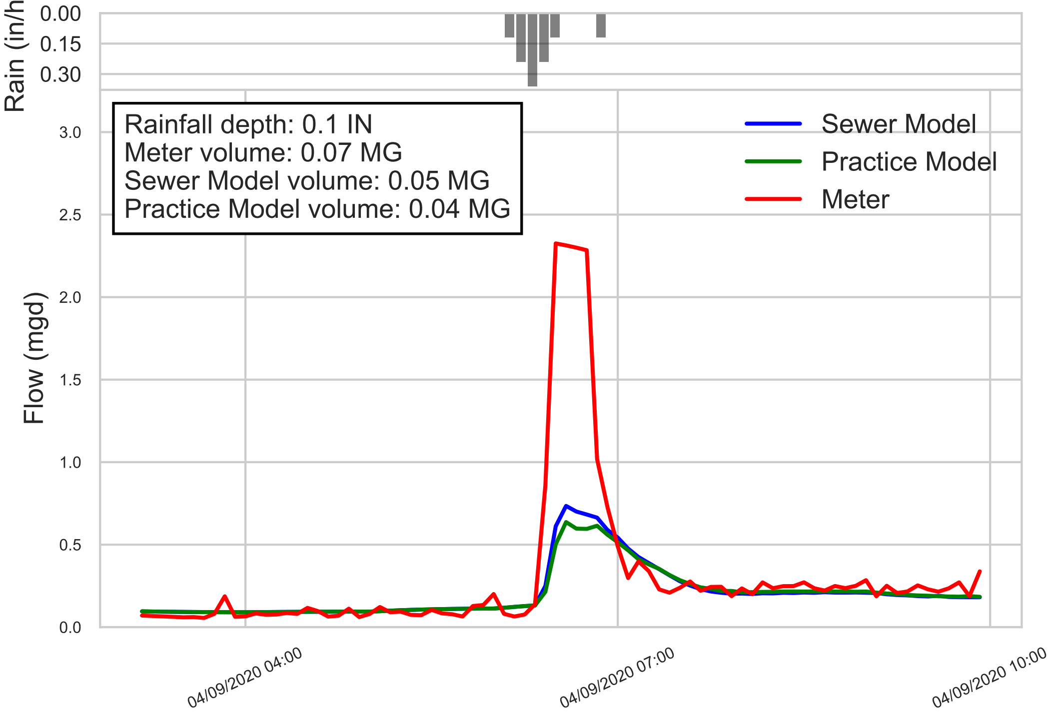
Wet Weather Event for Meter 049-1 (0.13 in total, 0.12 in/hr peak)
2020-03-31 19:30:00 to 2020-04-01 03:20:00



Wet Weather Event for Meter 049-1 (0.13 in total, 0.24 in/hr peak)
2020-04-07 15:30:00 to 2020-04-07 19:15:00

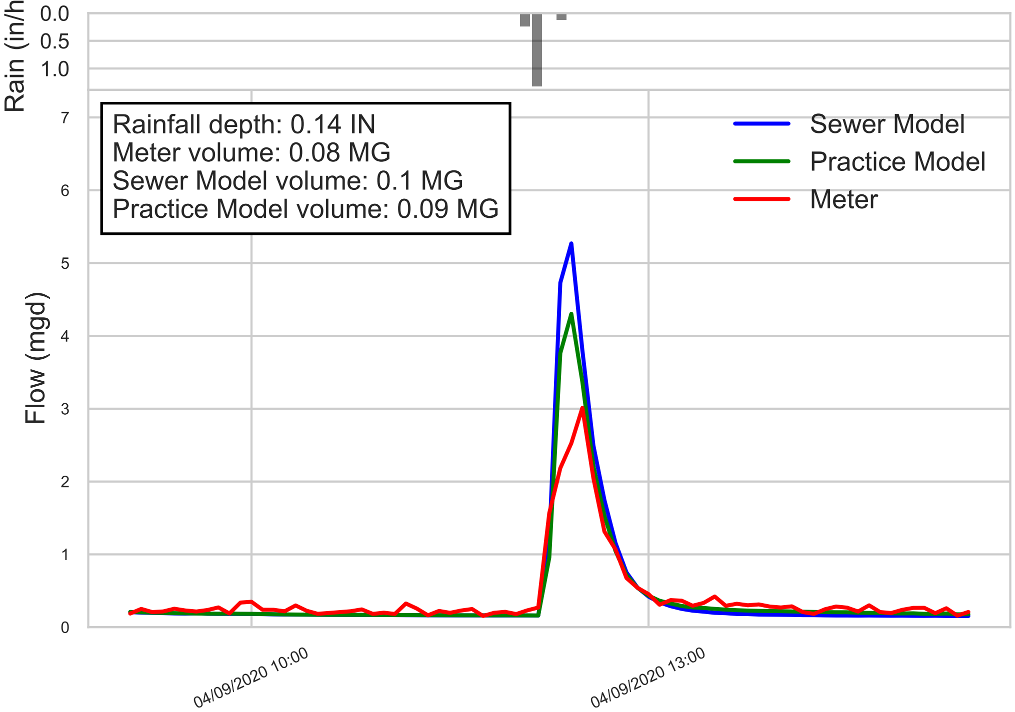



Wet Weather Event for Meter 049-1 (0.1 in total, 0.24 in/hr peak)
2020-04-08 04:20:00 to 2020-04-08 09:35:00
Rain (in/h)
0.0
0.1
0.2
Flow (mgd)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Rainfall depth: 0.1 IN
Meter volume: 0.07 MG
Sewer Model volume: 0.08 MG
Practice Model volume: 0.08 MG
Sewer Model
Practice Model
Meter
04/08/2020 03:00
04/08/2020 06:00
04/08/2020 09:00

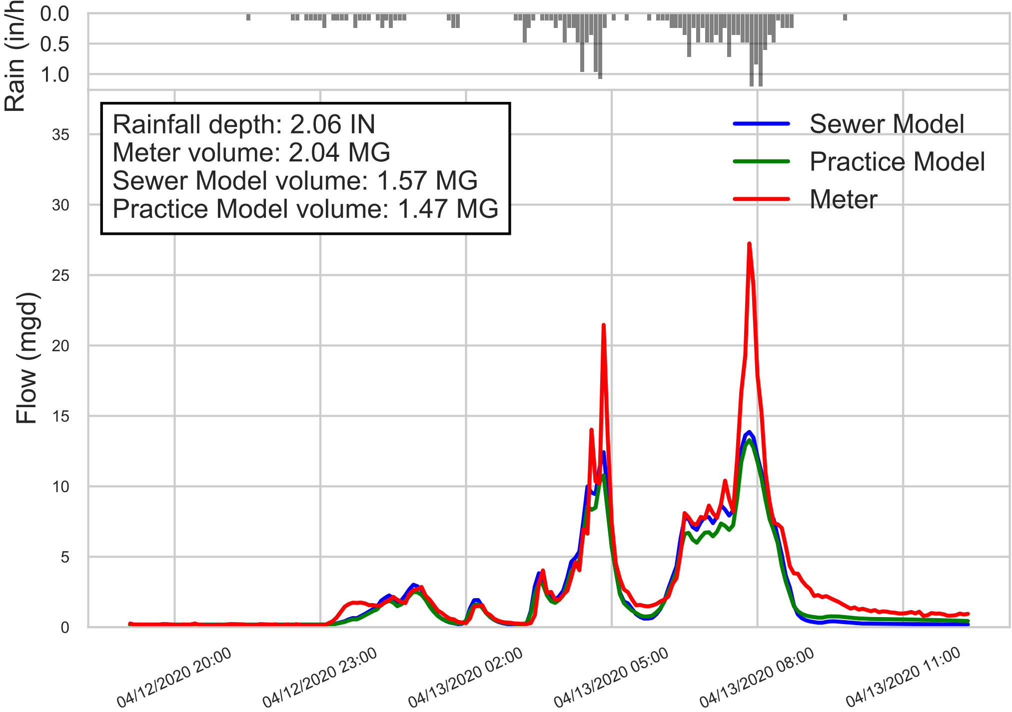


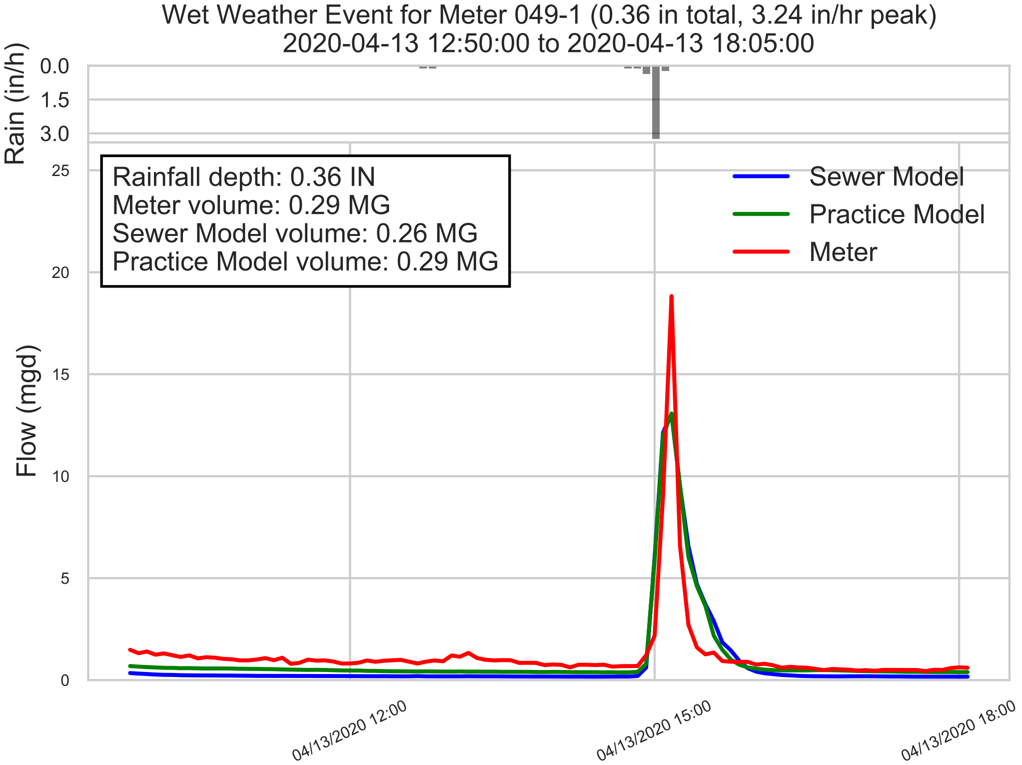
Wet Weather Event for Meter 049-1 (0.1 in total, 0.36 in/hr peak)
2020-04-09 06:10:00 to 2020-04-09 09:55:00

Wet Weather Event for Meter 049-1 (0.14 in total, 1.32 in/hr peak)
2020-04-09 12:05:00 to 2020-04-09 15:25:00



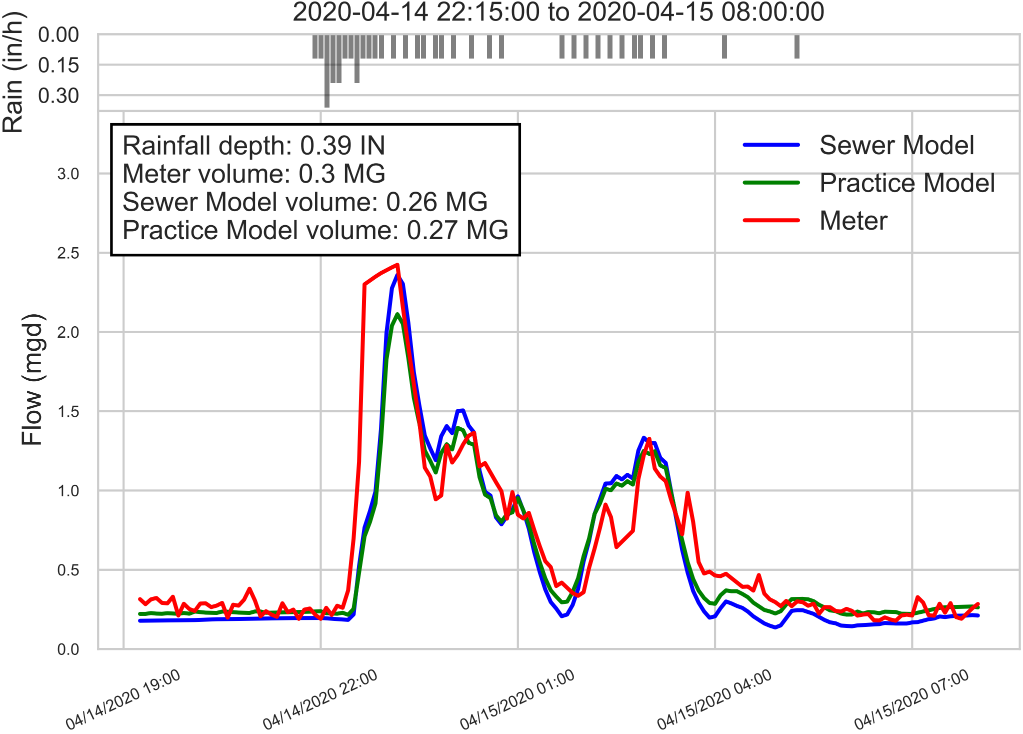
Wet Weather Event for Meter 049-1 (2.06 in total, 1.2 in/hr peak)
2020-04-12 22:05:00 to 2020-04-13 12:20:00



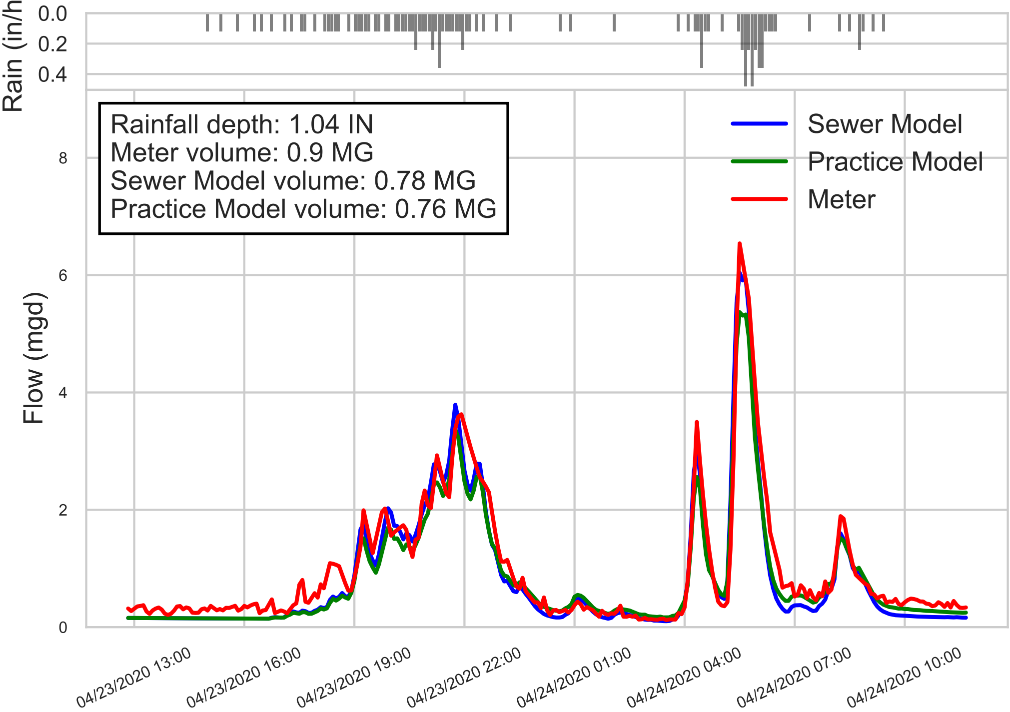


Wet Weather Event for Meter 049-1 (0.36 in total, 3.24 in/hr peak)
2020-04-13 12:50:00 to 2020-04-13 18:05:00

Rainfall depth: 0.36 IN
Meter volume: 0.29 MG
Sewer Model volume: 0.26 MG
Practice Model volume: 0.29 MG

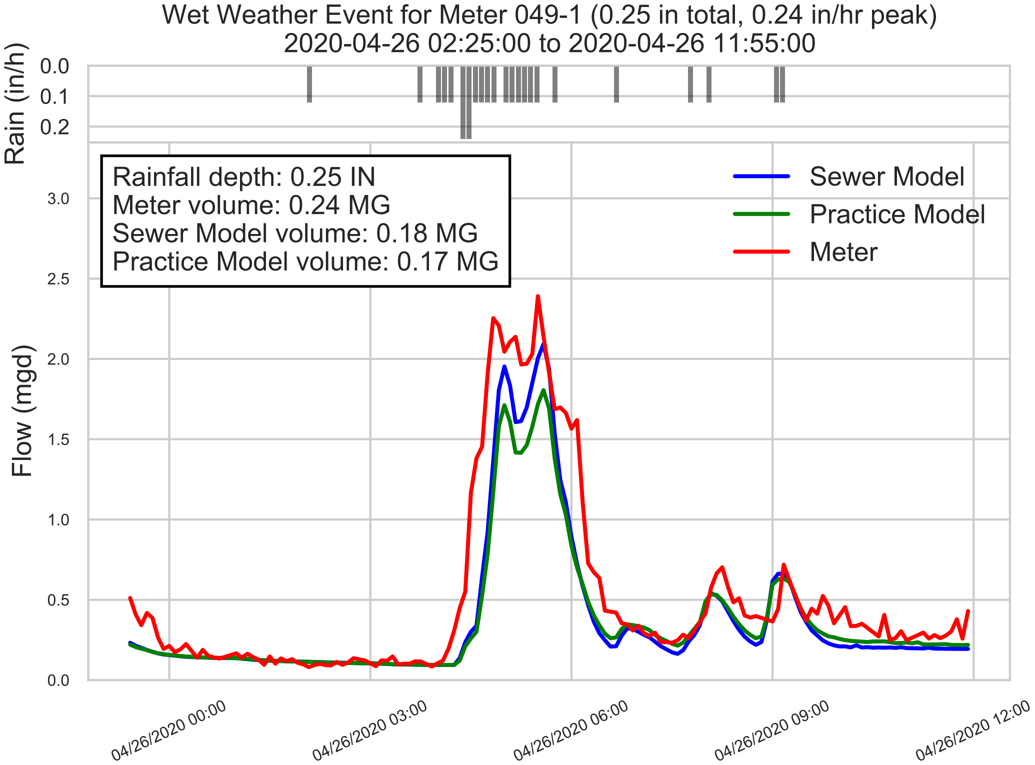


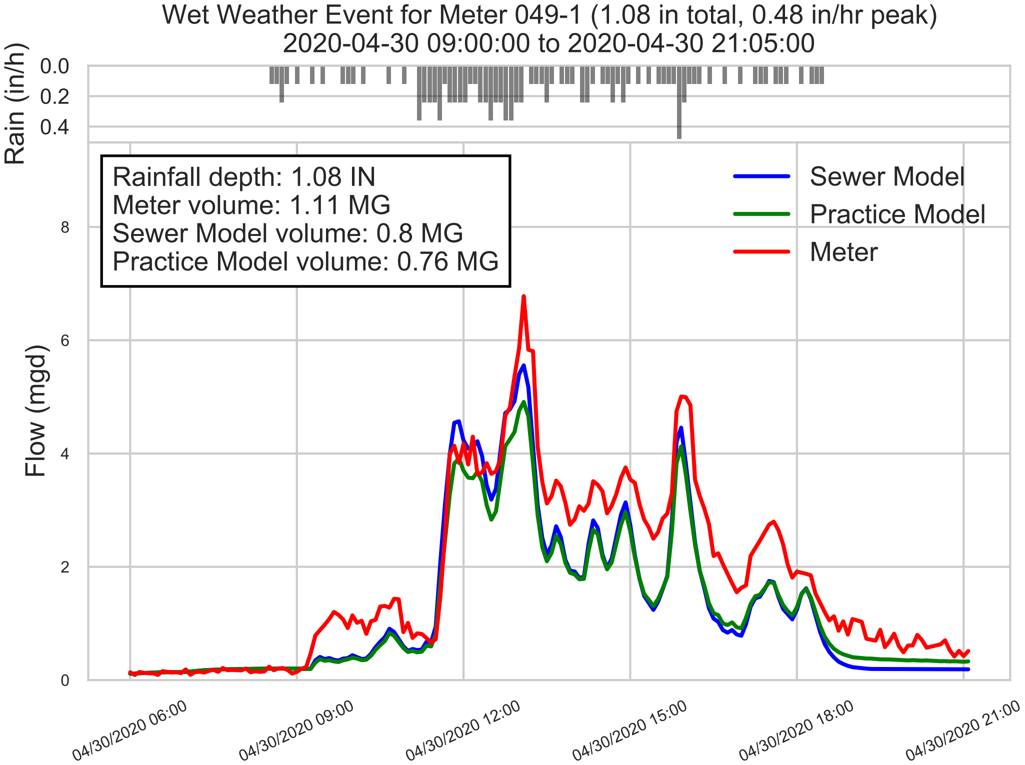
Wet Weather Event for Meter 049-1 (0.39 in total, 0.36 in/hr peak)
2020-04-14 22:15:00 to 2020-04-15 08:00:00



Wet Weather Event for Meter 049-1 (1.04 in total, 0.48 in/hr peak)
2020-04-23 15:50:00 to 2020-04-24 11:40:00

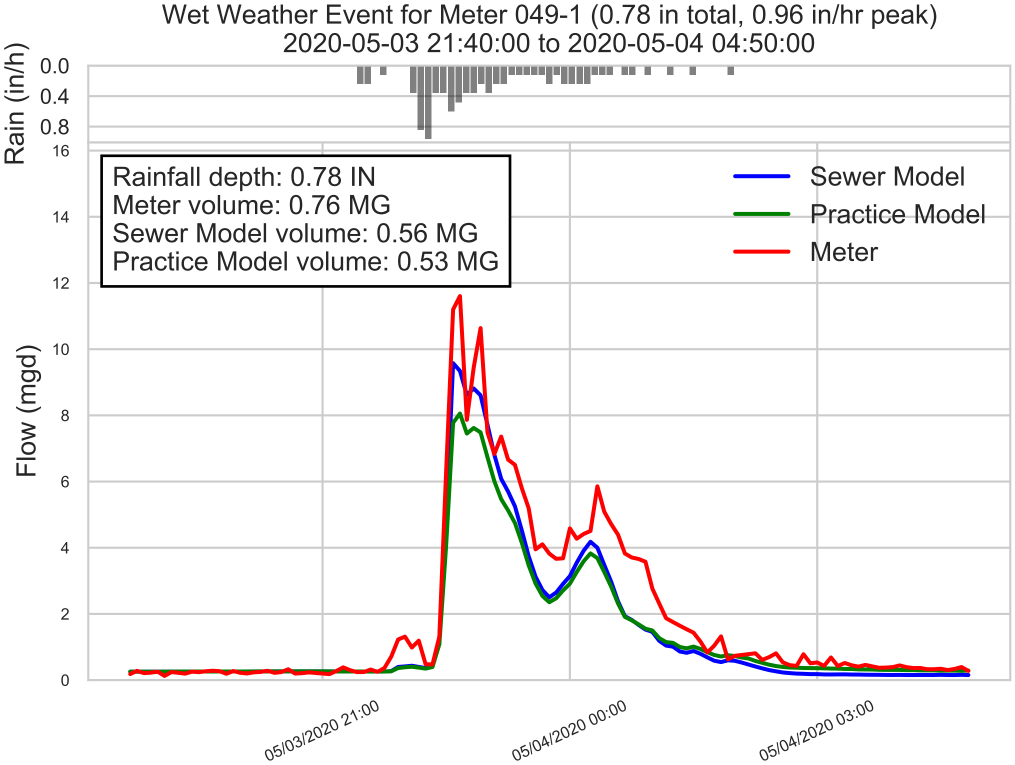
Rainfall depth: 1.04 IN
Meter volume: 0.9 MG
Sewer Model volume: 0.78 MG
Practice Model volume: 0.76 MG

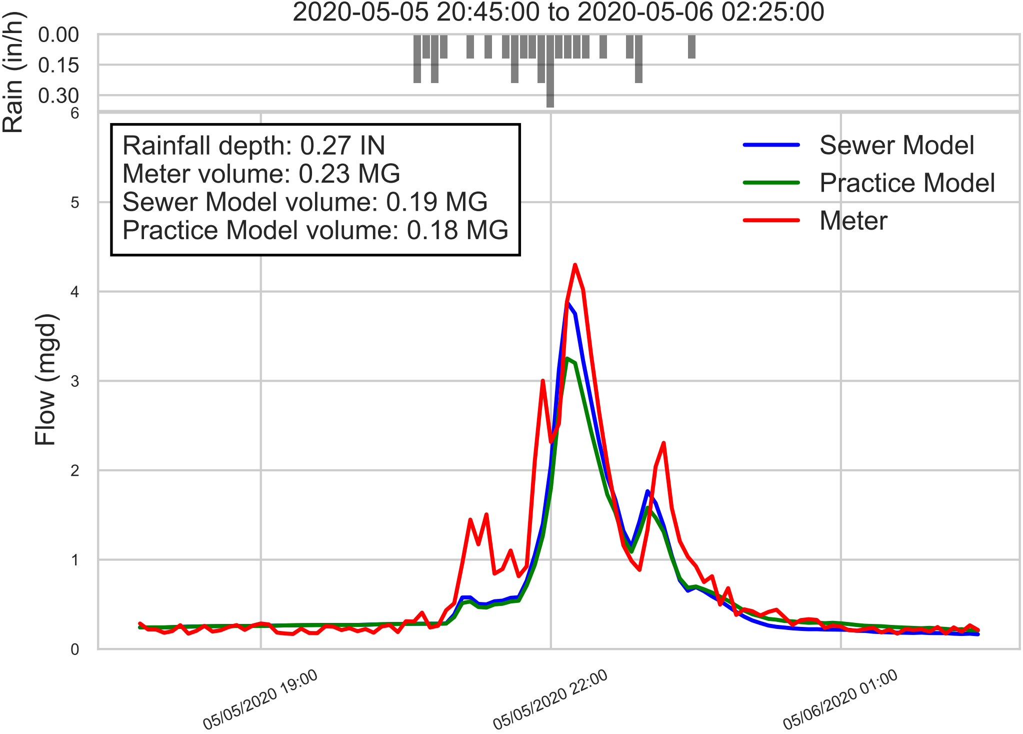

Wet Weather Event for Meter 049-1 (0.25 in total, 0.24 in/hr peak)
2020-04-26 02:25:00 to 2020-04-26 11:55:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.25 IN
Meter volume: 0.24 MG
Sewer Model volume: 0.18 MG
Practice Model volume: 0.17 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
04/26/2020 00:00
04/26/2020 03:00
04/26/2020 06:00
04/26/2020 09:00
04/26/2020 12:00



Wet Weather Event for Meter 049-1 (1.08 in total, 0.48 in/hr peak)
2020-04-30 09:00:00 to 2020-04-30 21:05:00

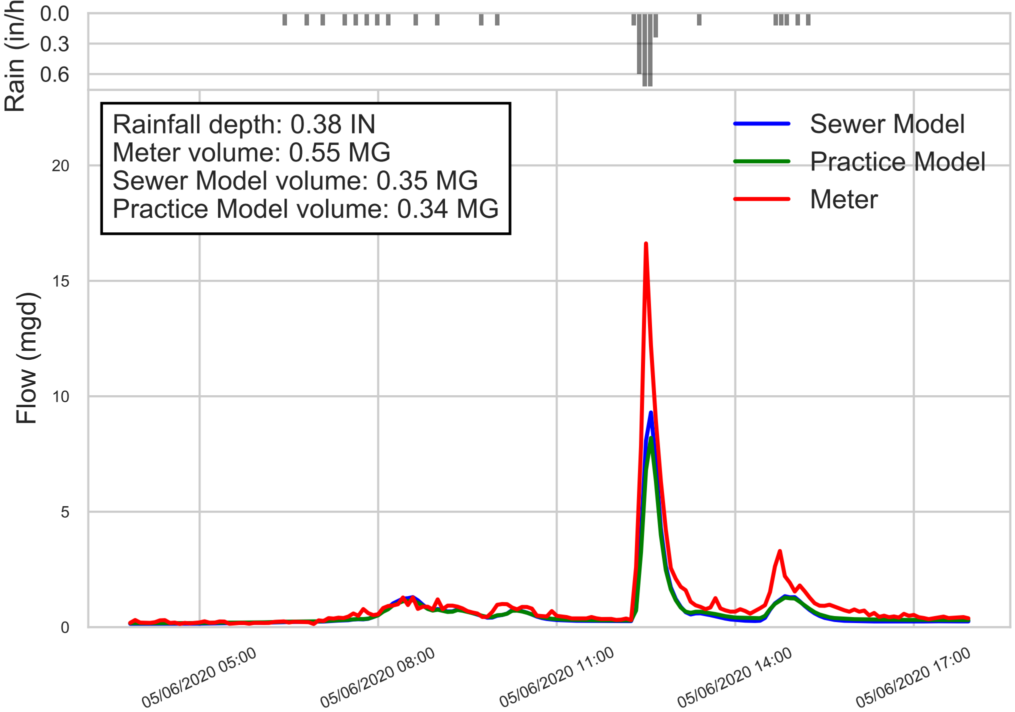
Rainfall depth: 1.08 IN
Meter volume: 1.11 MG
Sewer Model volume: 0.8 MG
Practice Model volume: 0.76 MG

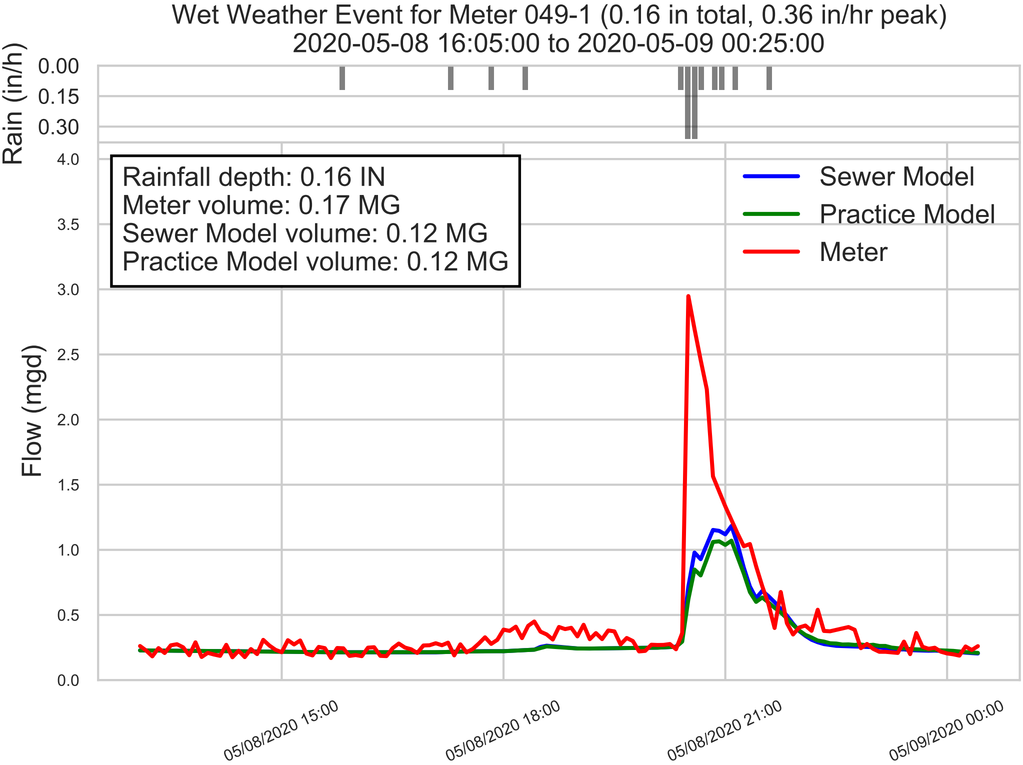

Wet Weather Event for Meter 049-1 (0.78 in total, 0.96 in/hr peak)
2020-05-03 21:40:00 to 2020-05-04 04:50:00
Rain (in/h)
0.0
0.4
0.8
16
14
12
10
8
6
4
2
0
Flow (mgd)
Rainfall depth: 0.78 IN
Meter volume: 0.76 MG
Sewer Model volume: 0.56 MG
Practice Model volume: 0.53 MG
Sewer Model
Practice Model
Meter
05/03/2020 21:00
05/04/2020 00:00
05/04/2020 03:00



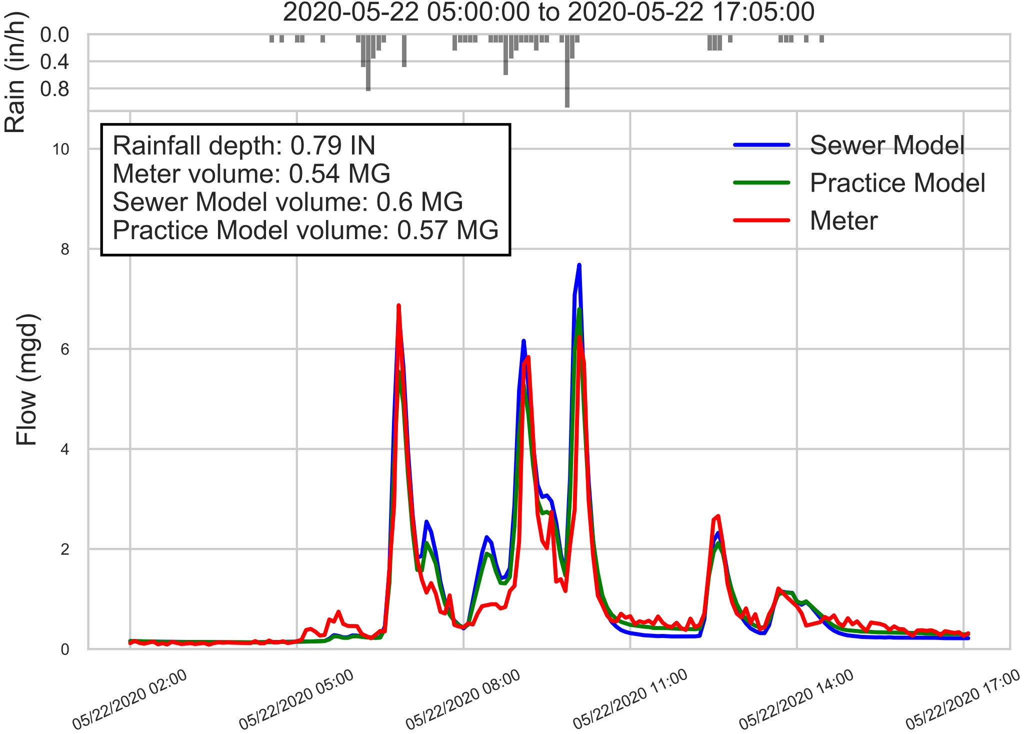
Wet Weather Event for Meter 049-1 (0.27 in total, 0.36 in/hr peak)
2020-05-05 20:45:00 to 2020-05-06 02:25:00

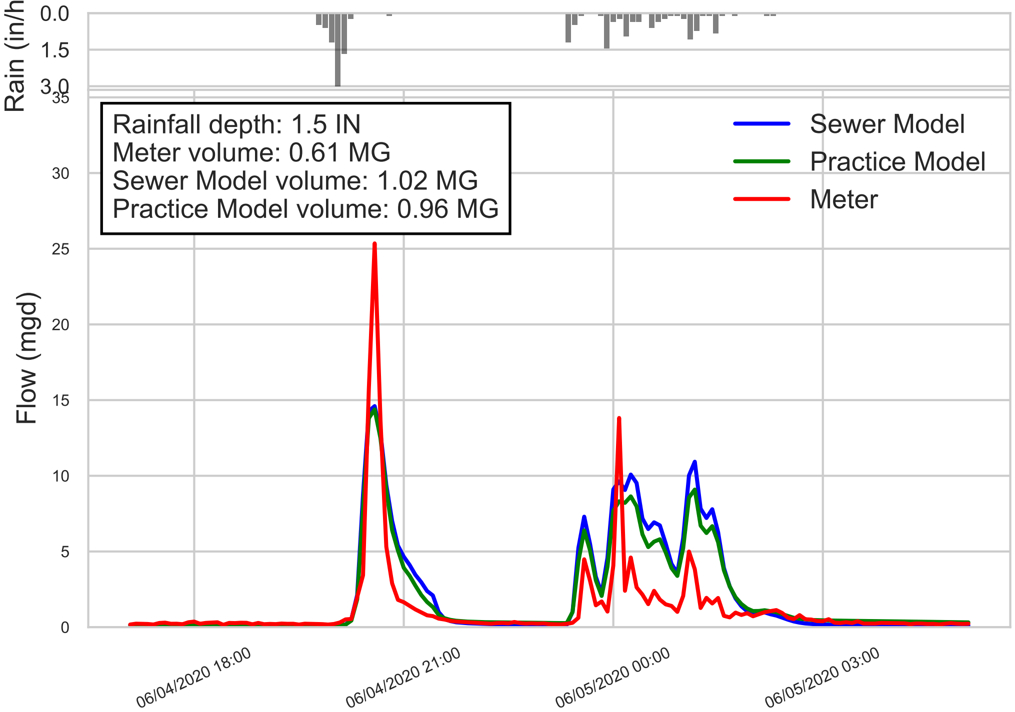
Wet Weather Event for Meter 049-1 (0.38 in total, 0.72 in/hr peak)
2020-05-06 06:50:00 to 2020-05-06 17:55:00



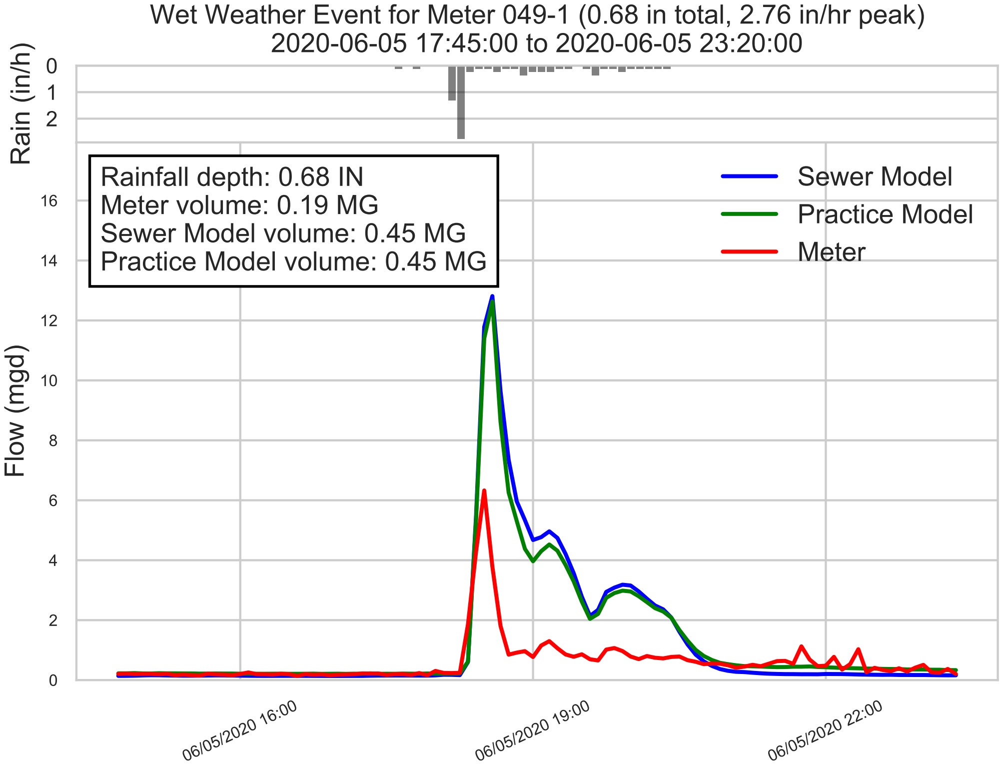

Wet Weather Event for Meter 049-1 (0.16 in total, 0.36 in/hr peak)
2020-05-08 16:05:00 to 2020-05-09 00:25:00
Rain (in/h)
0.00
0.15
0.30
Rainfall depth: 0.16 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.12 MG
Practice Model volume: 0.12 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
05/08/2020 15:00
05/08/2020 18:00
05/08/2020 21:00
05/09/2020 00:00

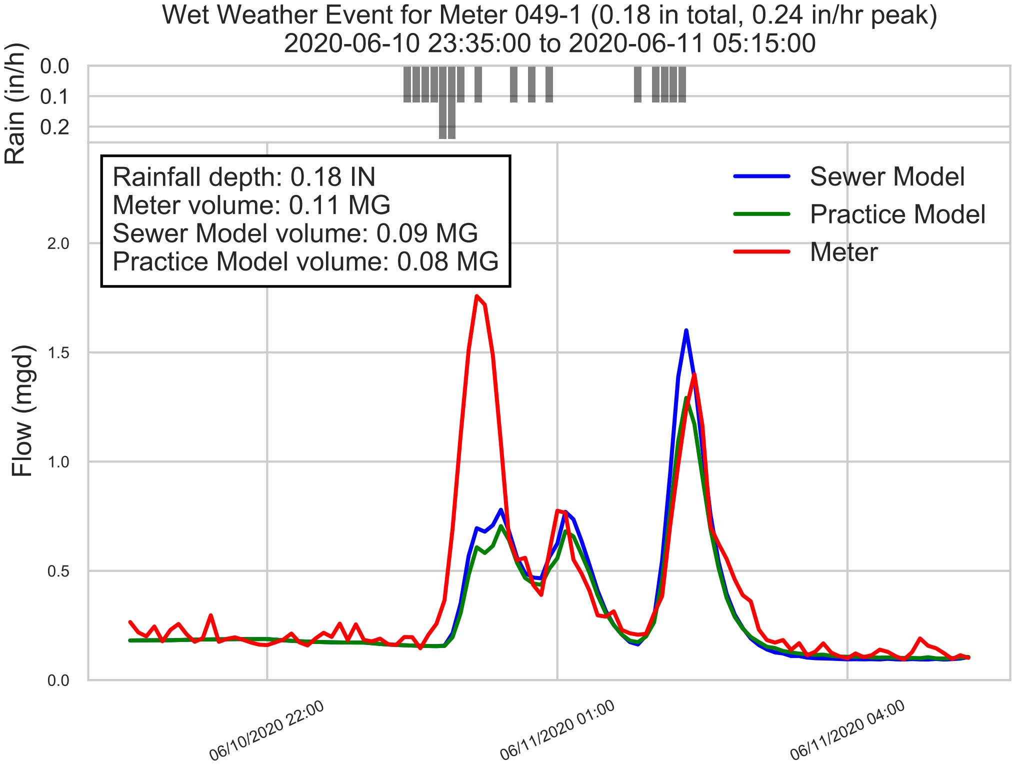
Wet Weather Event for Meter 049-1 (0.79 in total, 1.08 in/hr peak)
2020-05-22 05:00:00 to 2020-05-22 17:05:00



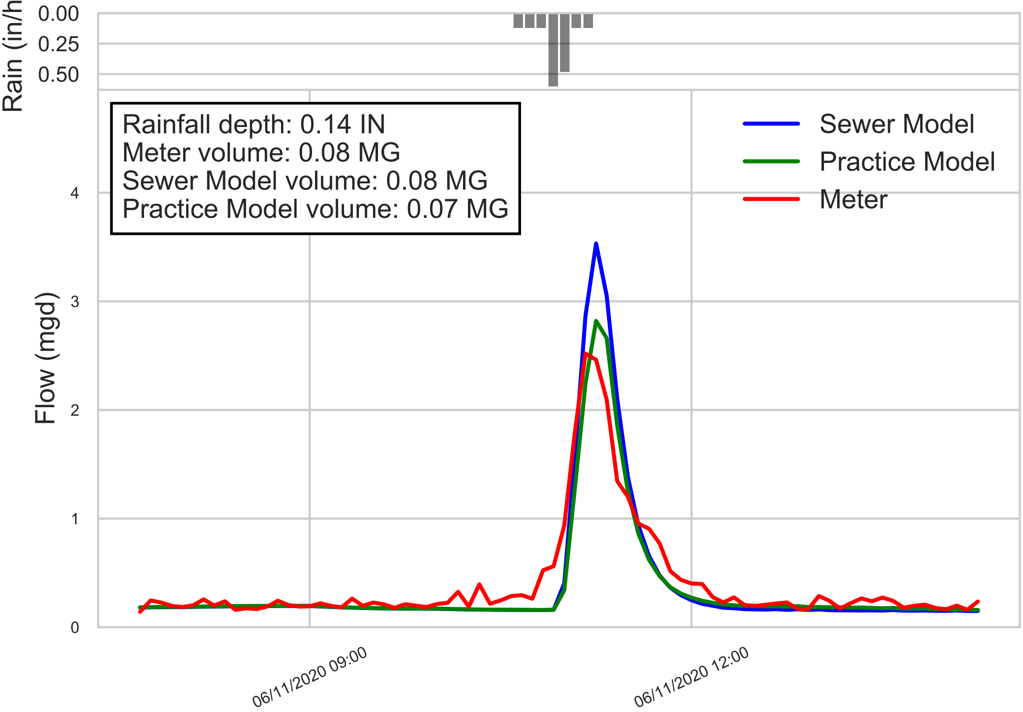


Wet Weather Event for Meter 049-1 (1.5 in total, 3.0 in/hr peak)
2020-06-04 20:05:00 to 2020-06-05 05:05:00

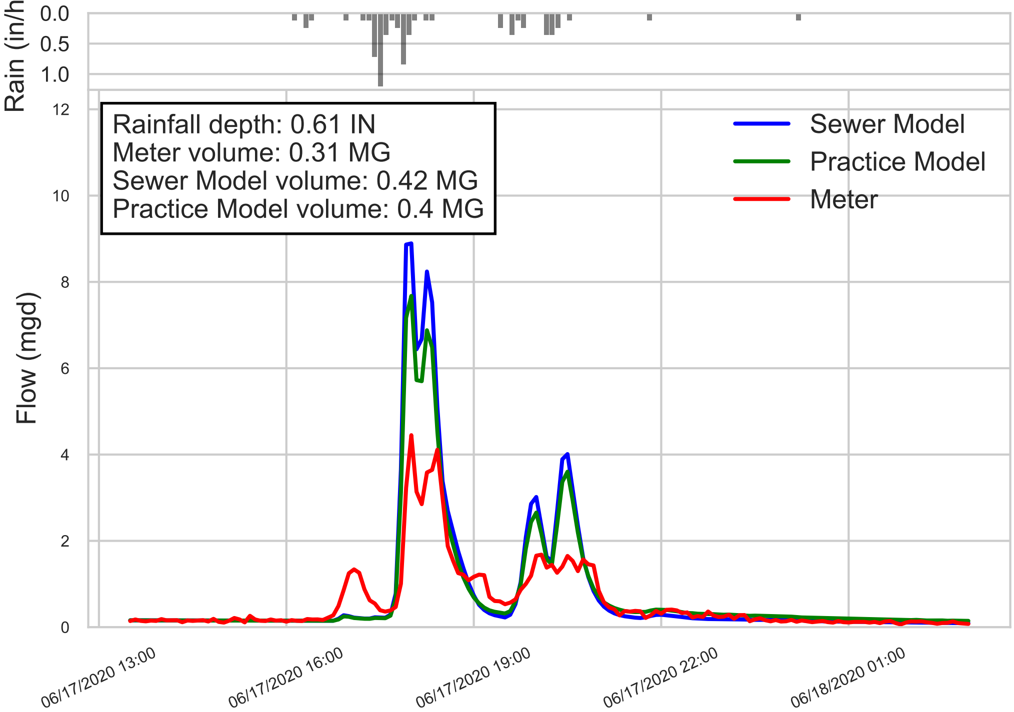

Wet Weather Event for Meter 049-1 (0.68 in total, 2.76 in/hr peak)
2020-06-05 17:45:00 to 2020-06-05 23:20:00

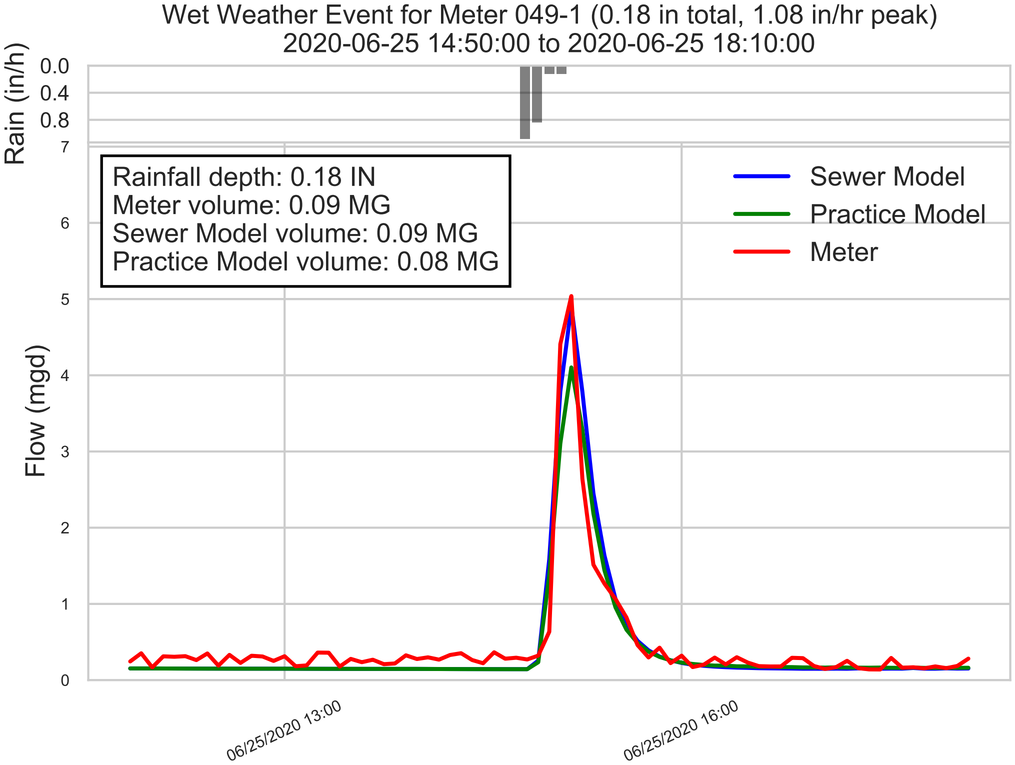

Wet Weather Event for Meter 049-1 (0.18 in total, 0.24 in/hr peak)
2020-06-10 23:35:00 to 2020-06-11 05:15:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.18 IN
Meter volume: 0.11 MG
Sewer Model volume: 0.09 MG
Practice Model volume: 0.08 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
2.0
1.5
1.0
0.5
0.0
06/10/2020 22:00
06/11/2020 01:00
06/11/2020 04:00

Wet Weather Event for Meter 049-1 (0.14 in total, 0.6 in/hr peak)
2020-06-11 10:40:00 to 2020-06-11 14:15:00

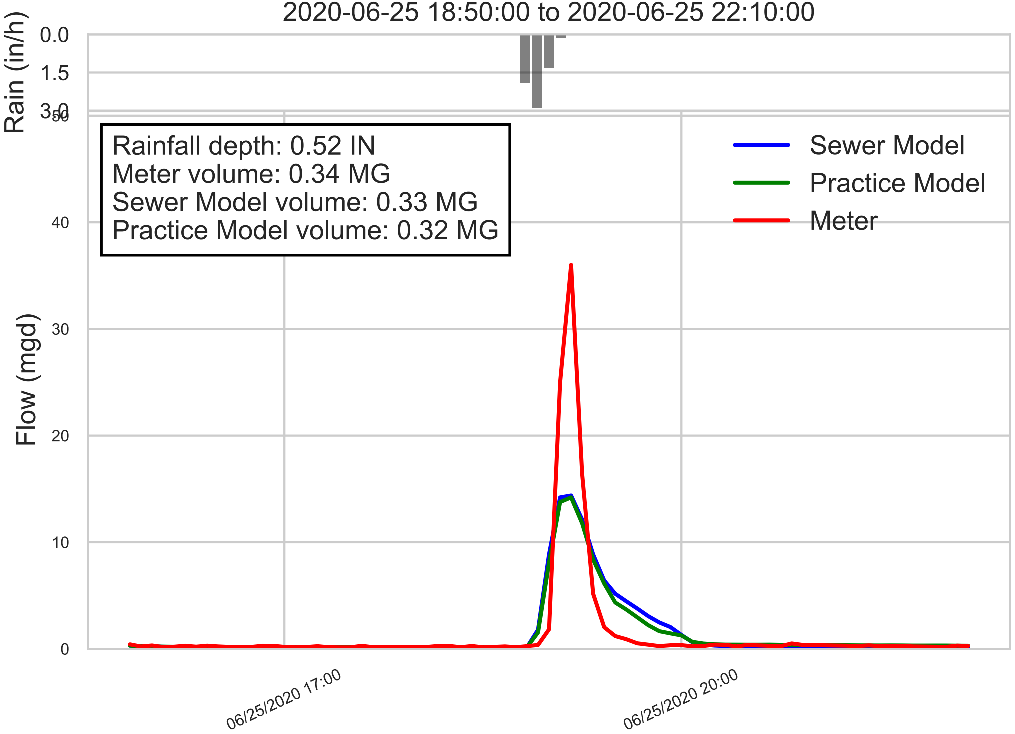


Wet Weather Event for Meter 049-1 (0.61 in total, 1.2 in/hr peak)
2020-06-17 16:30:00 to 2020-06-18 02:55:00

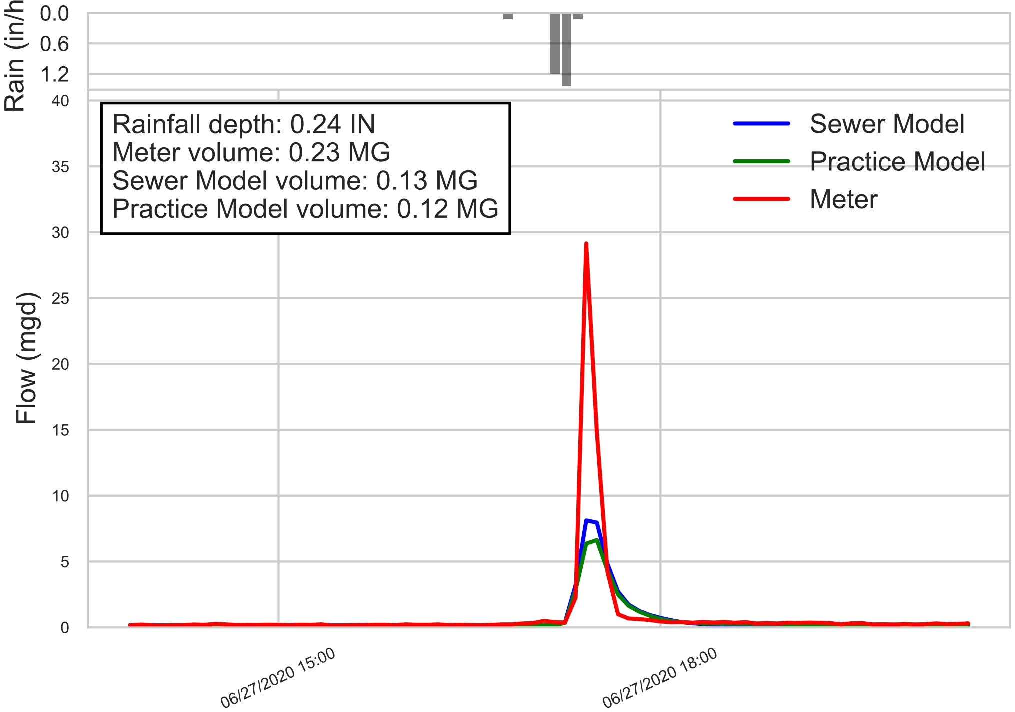


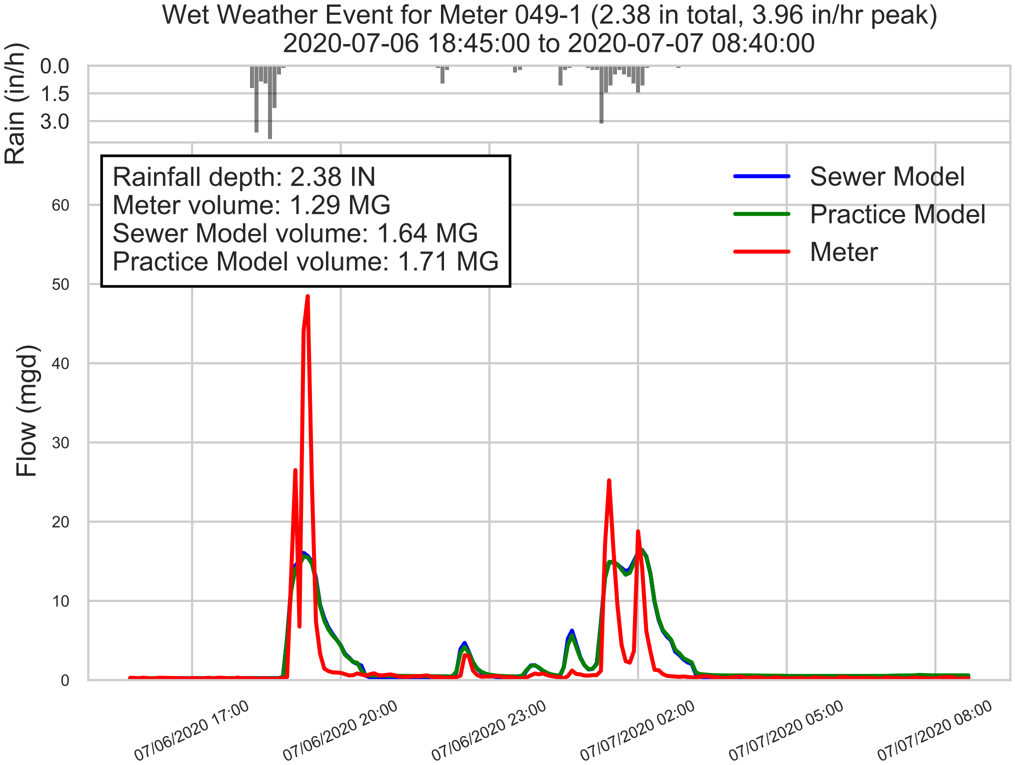

Wet Weather Event for Meter 049-1 (0.18 in total, 1.08 in/hr peak)
2020-06-25 14:50:00 to 2020-06-25 18:10:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 0.18 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.09 MG
Practice Model volume: 0.08 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
7
6
5
4
3
2
1
0
06/25/2020 13:00
06/25/2020 16:00

Wet Weather Event for Meter 049-1 (0.52 in total, 2.88 in/hr peak)
2020-06-25 18:50:00 to 2020-06-25 22:10:00



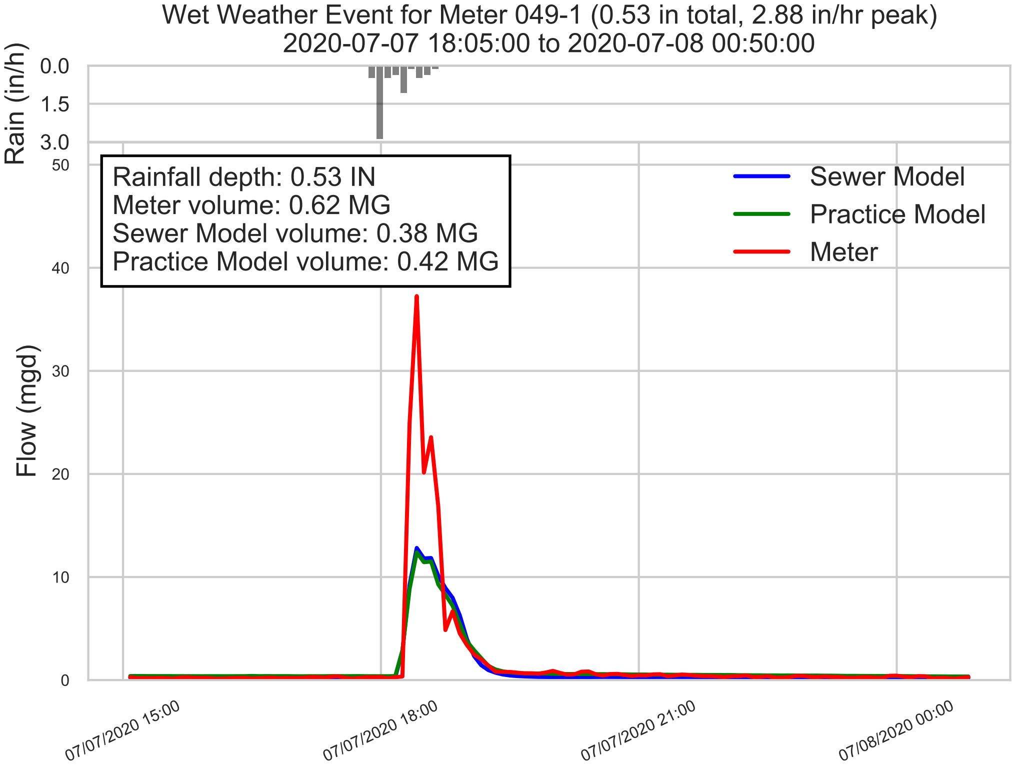
Wet Weather Event for Meter 049-1 (0.24 in total, 1.44 in/hr peak)
2020-06-27 16:50:00 to 2020-06-27 20:25:00

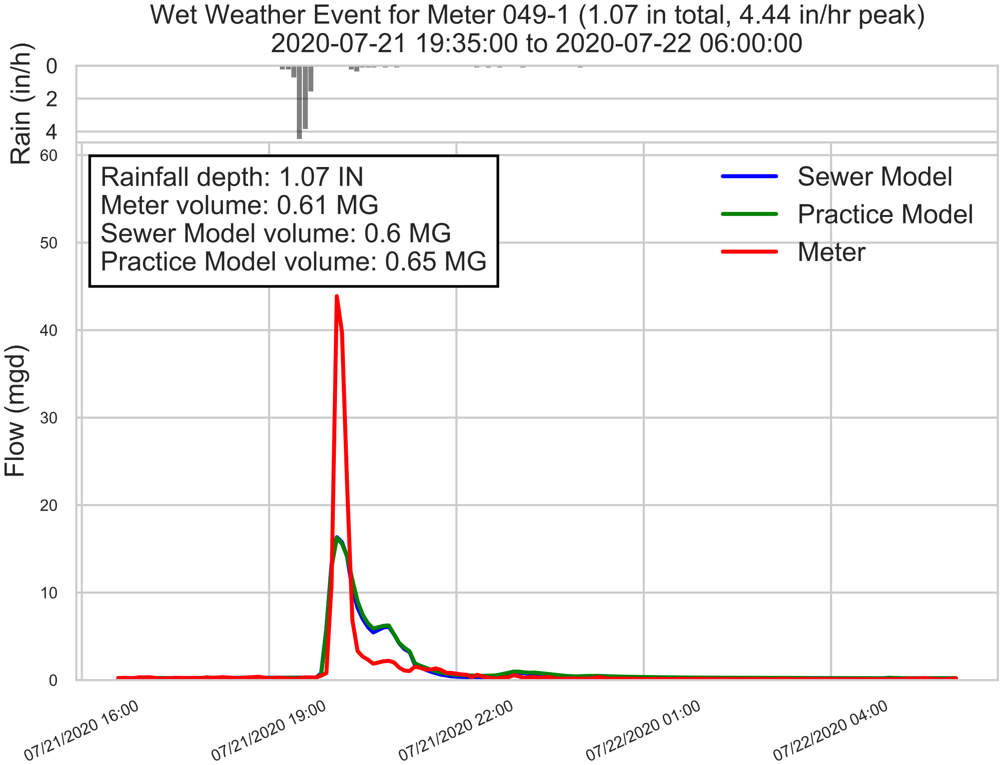




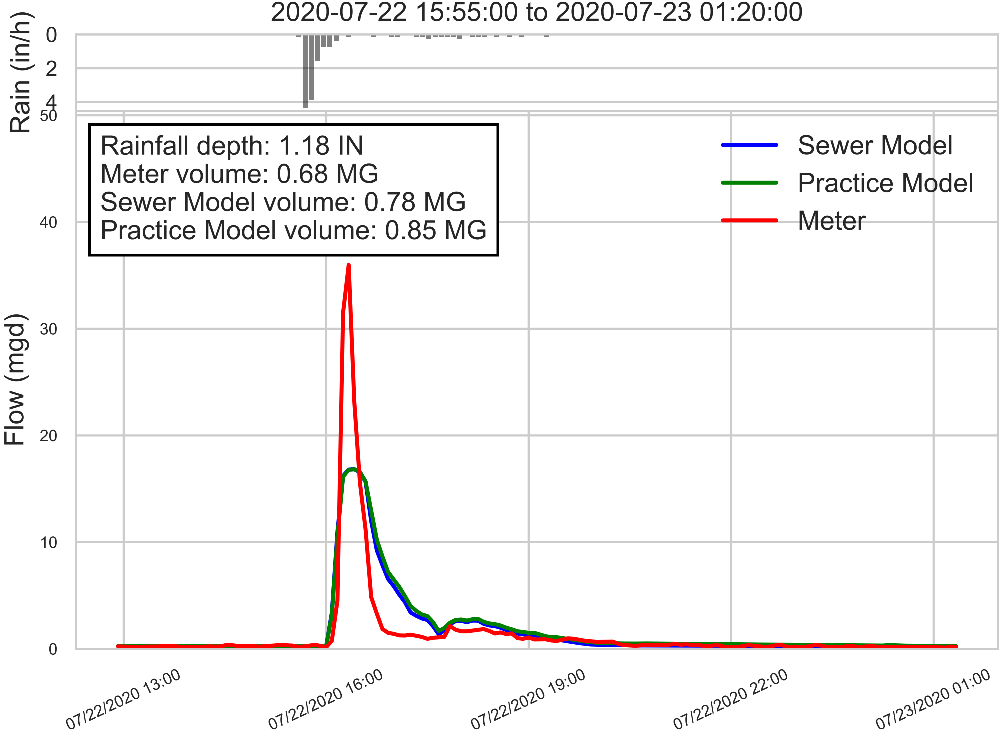
Wet Weather Event for Meter 049-1 (2.38 in total, 3.96 in/hr peak)
2020-07-06 18:45:00 to 2020-07-07 08:40:00

Rainfall depth: 2.38 IN
Meter volume: 1.29 MG
Sewer Model volume: 1.64 MG
Practice Model volume: 1.71 MG

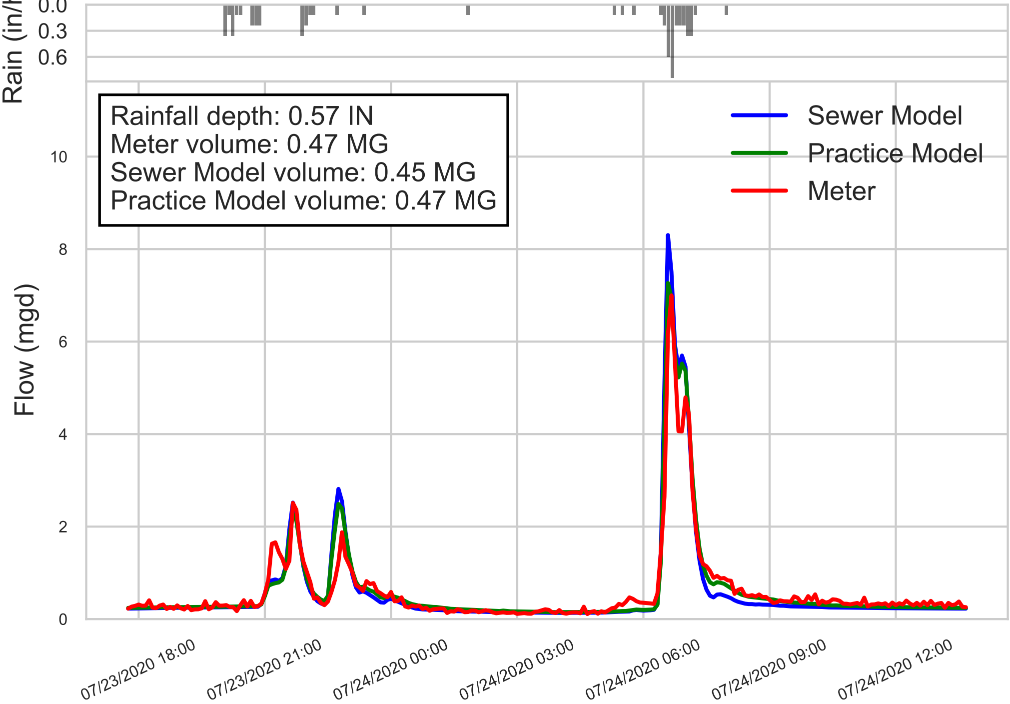

Wet Weather Event for Meter 049-1 (0.53 in total, 2.88 in/hr peak)
2020-07-07 18:05:00 to 2020-07-08 00:50:00
Rain (in/h)
0.0
1.5
3.0
Flow (mgd)
50
40
30
20
10
0
Rainfall depth: 0.53 IN
Meter volume: 0.62 MG
Sewer Model volume: 0.38 MG
Practice Model volume: 0.42 MG
Sewer Model
Practice Model
Meter
07/07/2020 15:00
07/07/2020 18:00
07/07/2020 21:00
07/08/2020 00:00


Wet Weather Event for Meter 049-1 (1.07 in total, 4.44 in/hr peak)
2020-07-21 19:35:00 to 2020-07-22 06:00:00
Rain (in/h)
0
2
4
Flow (mgd)
60
50
40
30
20
10
0
Rainfall depth: 1.07 IN
Meter volume: 0.61 MG
Sewer Model volume: 0.6 MG
Practice Model volume: 0.65 MG
Sewer Model
Practice Model
Meter
07/21/2020 16:00
07/21/2020 19:00
07/21/2020 22:00
07/22/2020 01:00
07/22/2020 04:00

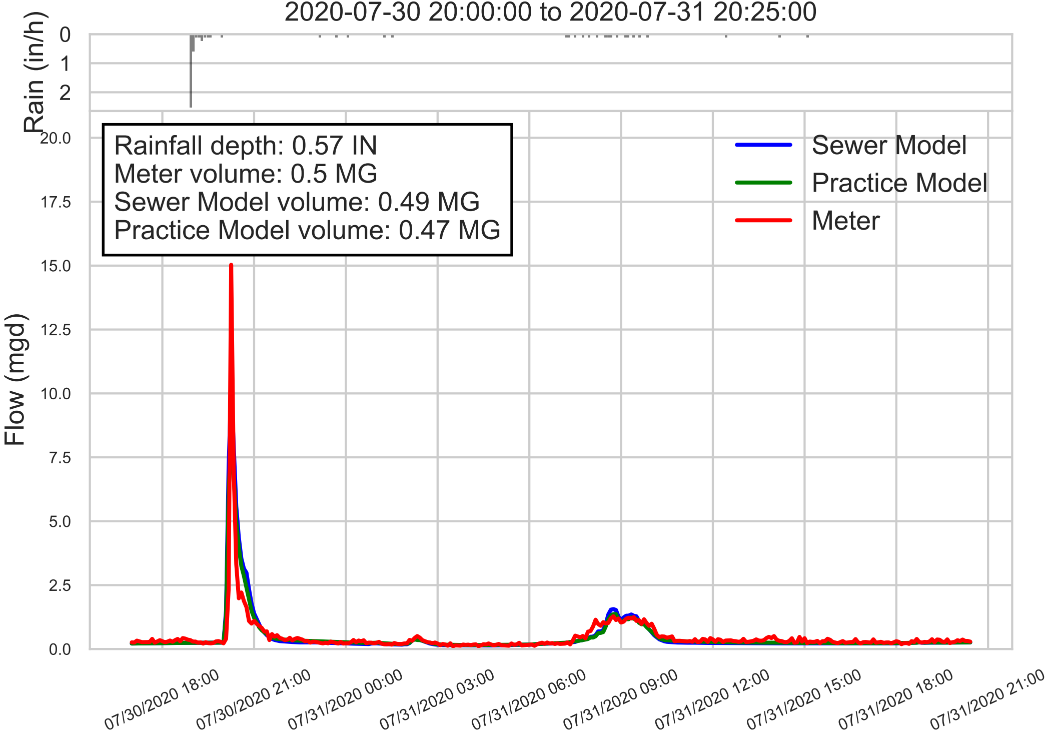
Wet Weather Event for Meter 049-1 (1.18 in total, 4.32 in/hr peak)
2020-07-22 15:55:00 to 2020-07-23 01:20:00



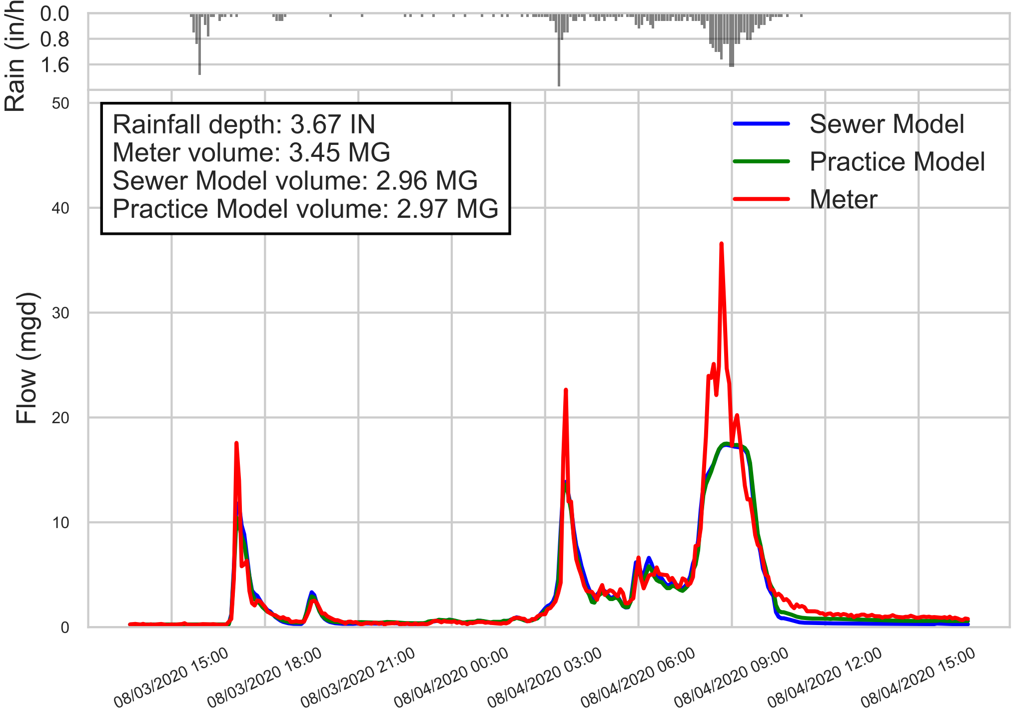
Wet Weather Event for Meter 049-1 (0.57 in total, 0.84 in/hr peak)
2020-07-23 20:45:00 to 2020-07-24 13:40:00

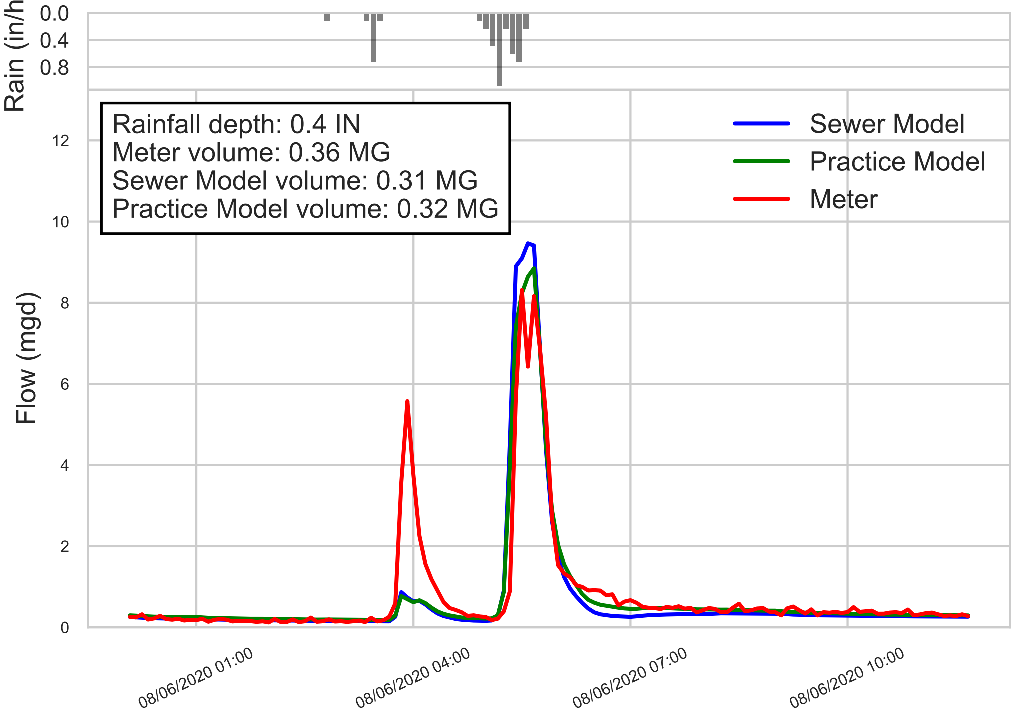


Rainfall depth: 0.57 IN
Meter volume: 0.47 MG
Sewer Model volume: 0.45 MG
Practice Model volume: 0.47 MG

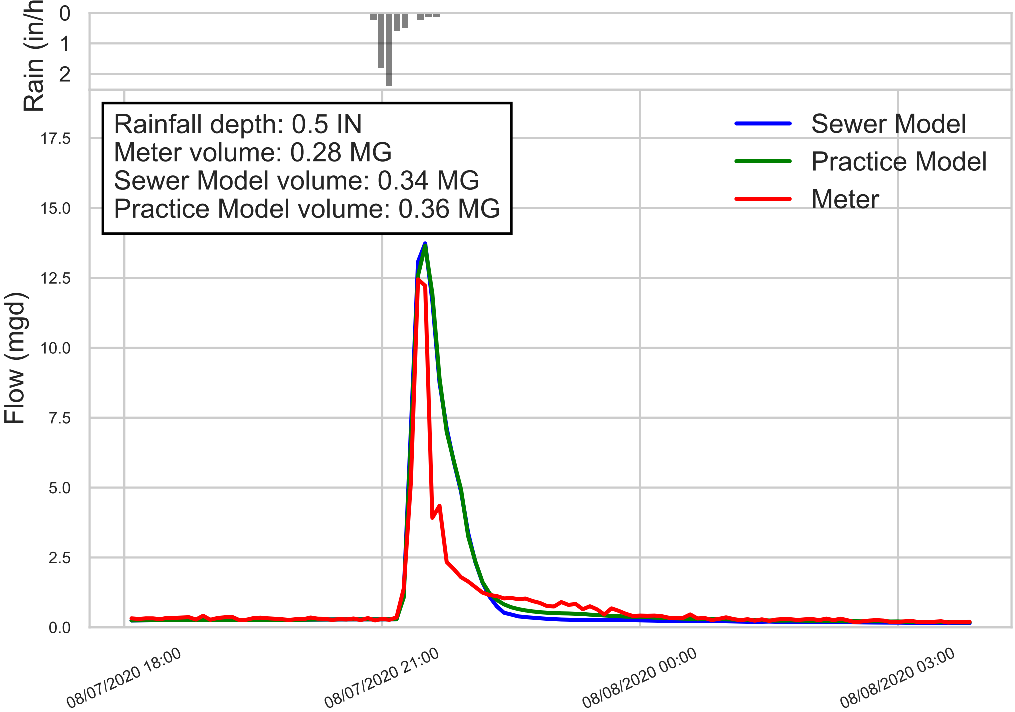

Wet Weather Event for Meter 049-1 (0.57 in total, 2.52 in/hr peak)
2020-07-30 20:00:00 to 2020-07-31 20:25:00

Wet Weather Event for Meter 049-1 (3.67 in total, 2.28 in/hr peak)
2020-08-03 16:40:00 to 2020-08-04 16:35:00

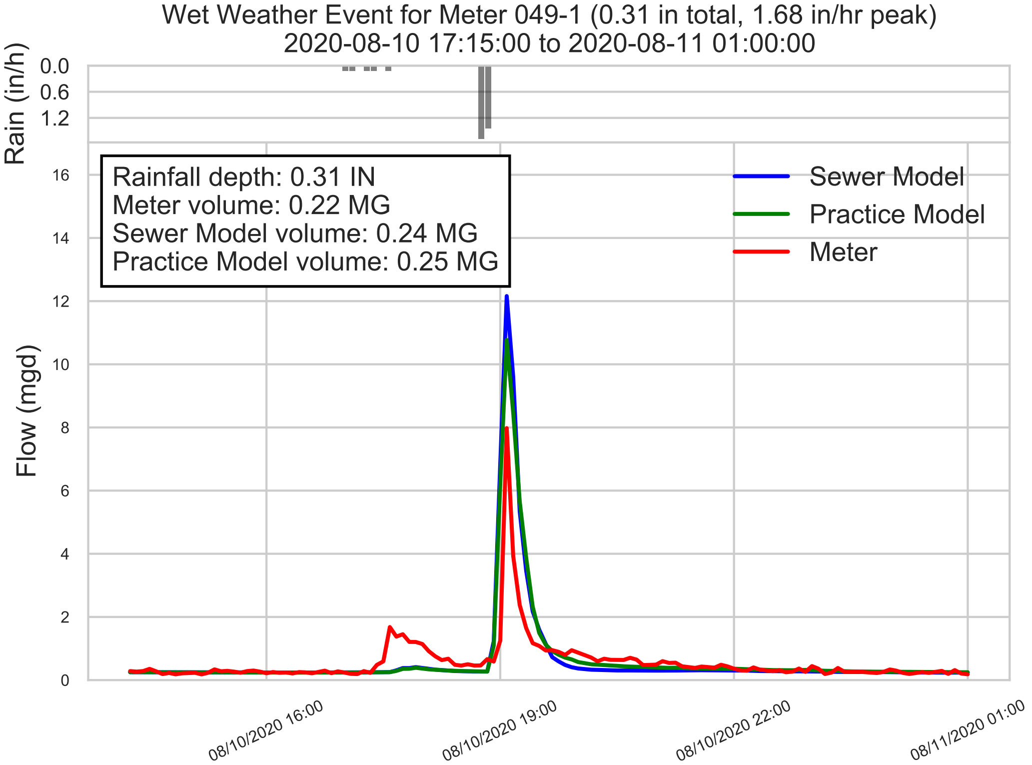



Wet Weather Event for Meter 049-1 (0.4 in total, 1.08 in/hr peak)
2020-08-06 03:05:00 to 2020-08-06 11:40:00

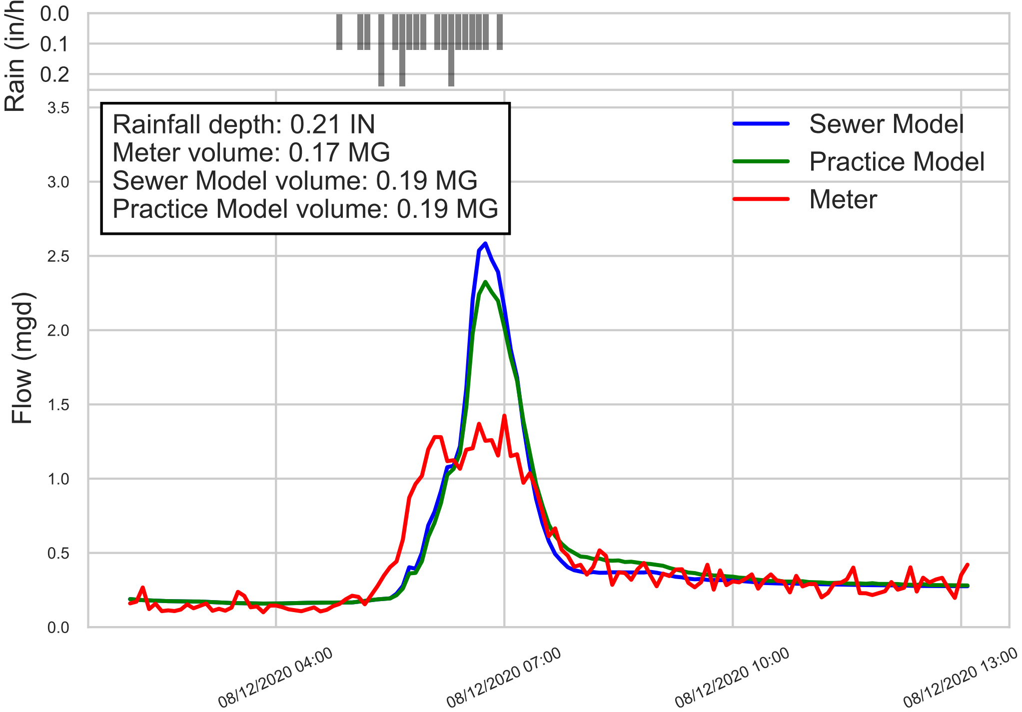
Wet Weather Event for Meter 049-1 (0.5 in total, 2.4 in/hr peak)
2020-08-07 21:05:00 to 2020-08-08 03:50:00



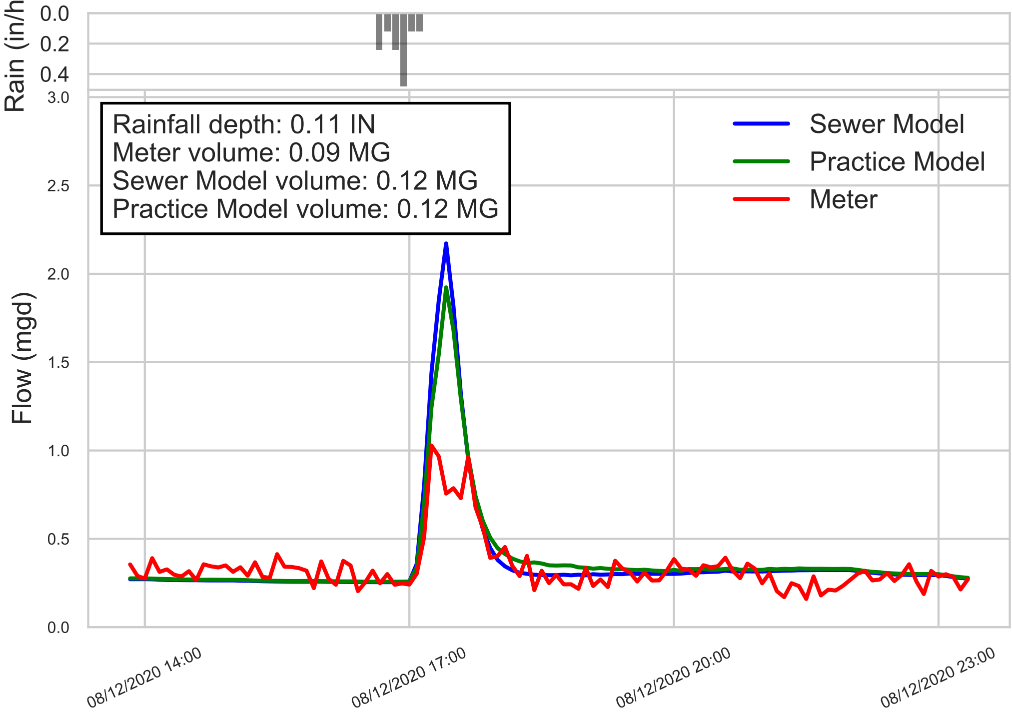
Rainfall depth: 0.5 IN
Meter volume: 0.28 MG
Sewer Model volume: 0.34 MG
Practice Model volume: 0.36 MG

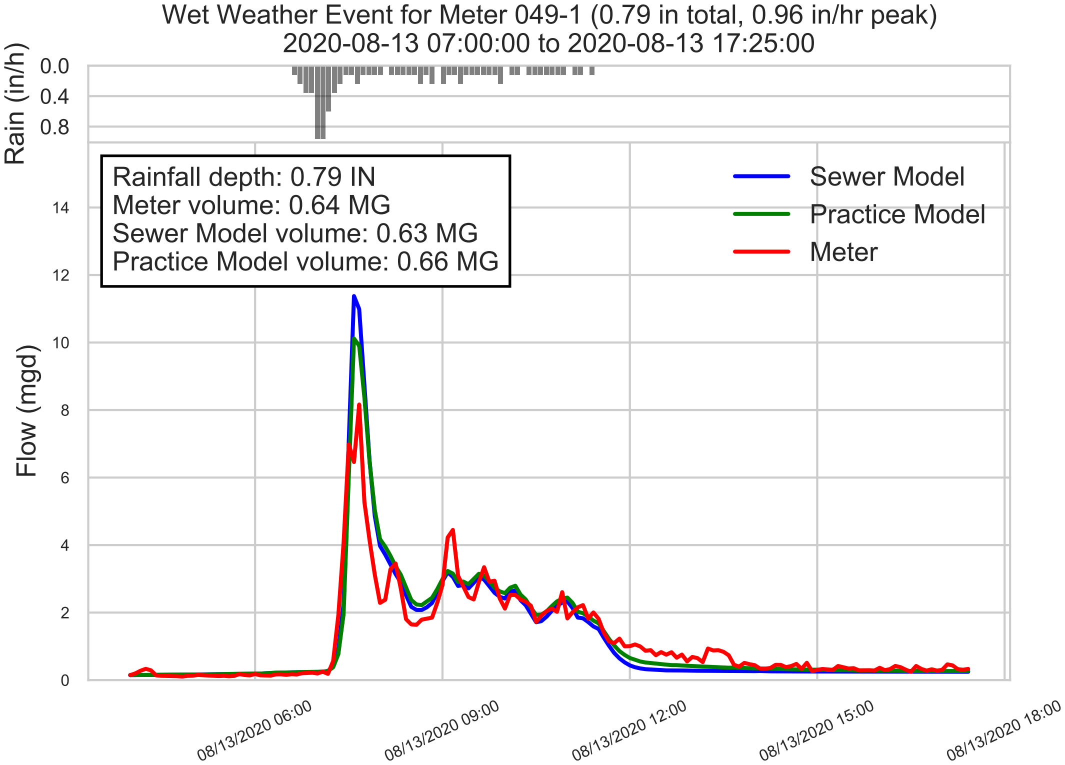

Wet Weather Event for Meter 049-1 (0.31 in total, 1.68 in/hr peak)
2020-08-10 17:15:00 to 2020-08-11 01:00:00
Rain (in/h)
0.0
0.6
1.2
Rainfall depth: 0.31 IN
Meter volume: 0.22 MG
Sewer Model volume: 0.24 MG
Practice Model volume: 0.25 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0
2
4
6
8
10
12
14
16
08/10/2020 16:00
08/10/2020 19:00
08/10/2020 22:00
08/11/2020 01:00

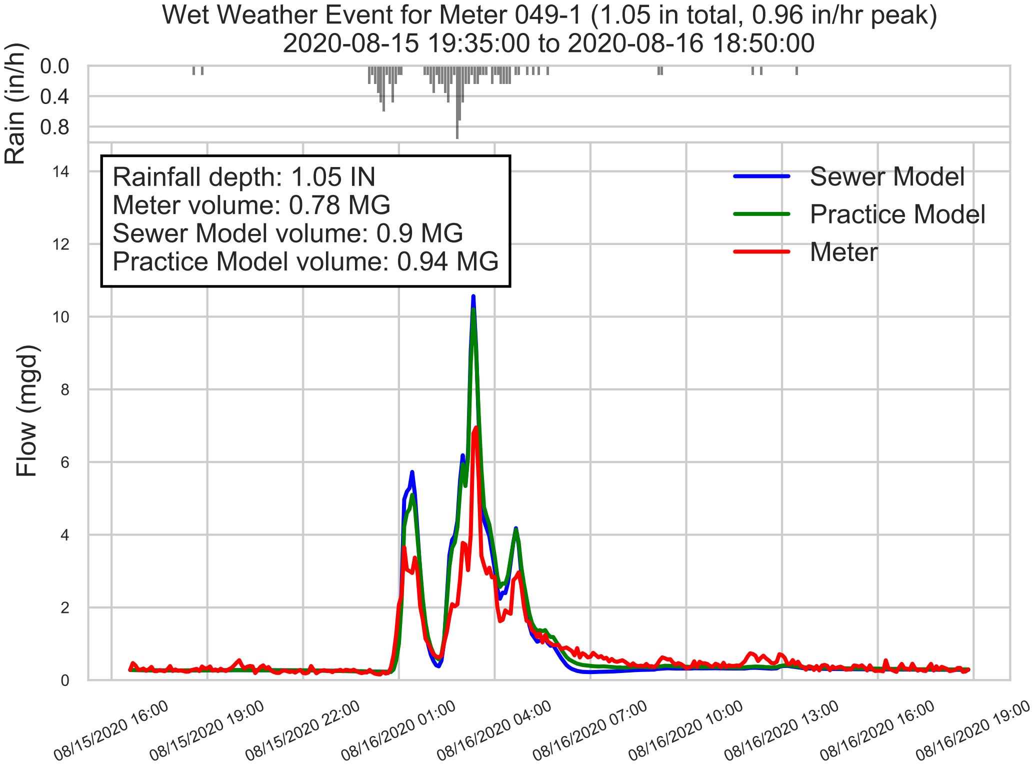
Wet Weather Event for Meter 049-1 (0.21 in total, 0.24 in/hr peak)
2020-08-12 05:05:00 to 2020-08-12 13:05:00

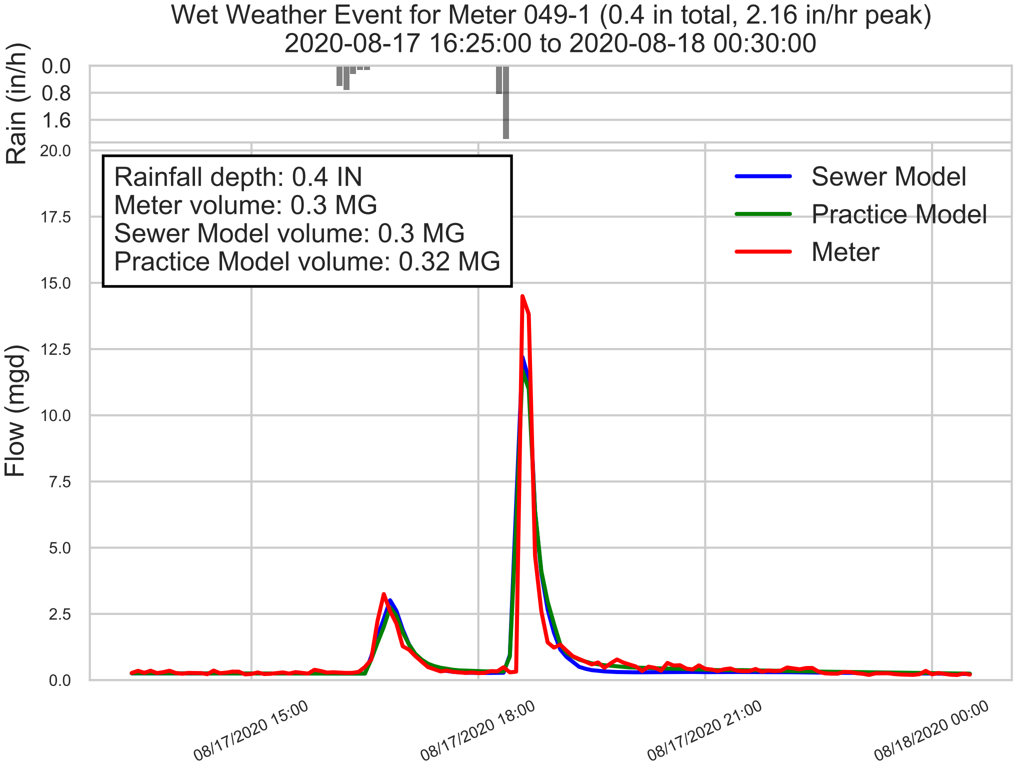


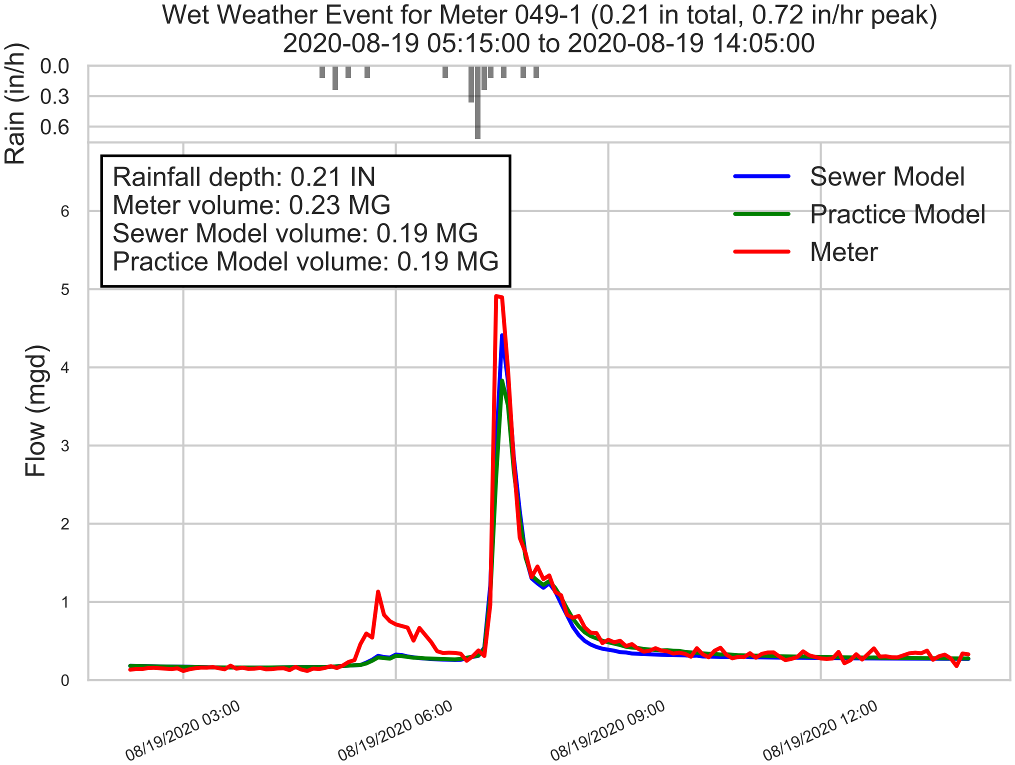
Wet Weather Event for Meter 049-1 (0.11 in total, 0.48 in/hr peak)
2020-08-12 16:50:00 to 2020-08-12 23:20:00

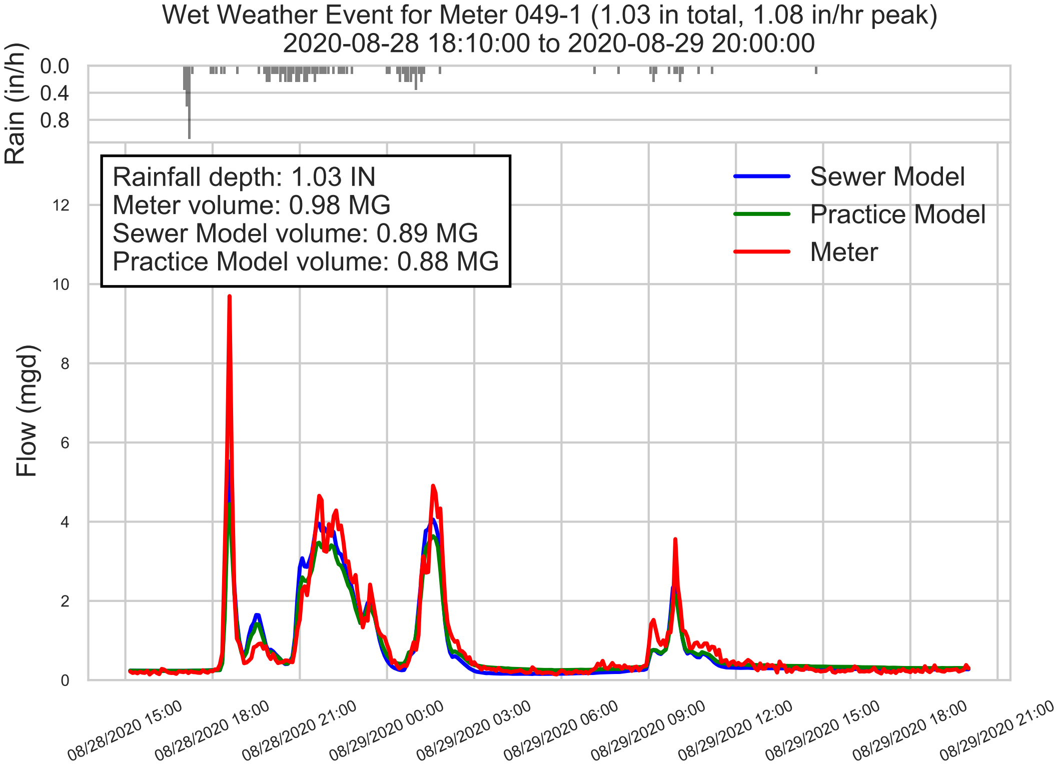



Wet Weather Event for Meter 049-1 (0.79 in total, 0.96 in/hr peak)
2020-08-13 07:00:00 to 2020-08-13 17:25:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 0.79 IN
Meter volume: 0.64 MG
Sewer Model volume: 0.63 MG
Practice Model volume: 0.66 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0
2
4
6
8
10
12
14
08/13/2020 06:00
08/13/2020 09:00
08/13/2020 12:00
08/13/2020 15:00
08/13/2020 18:00

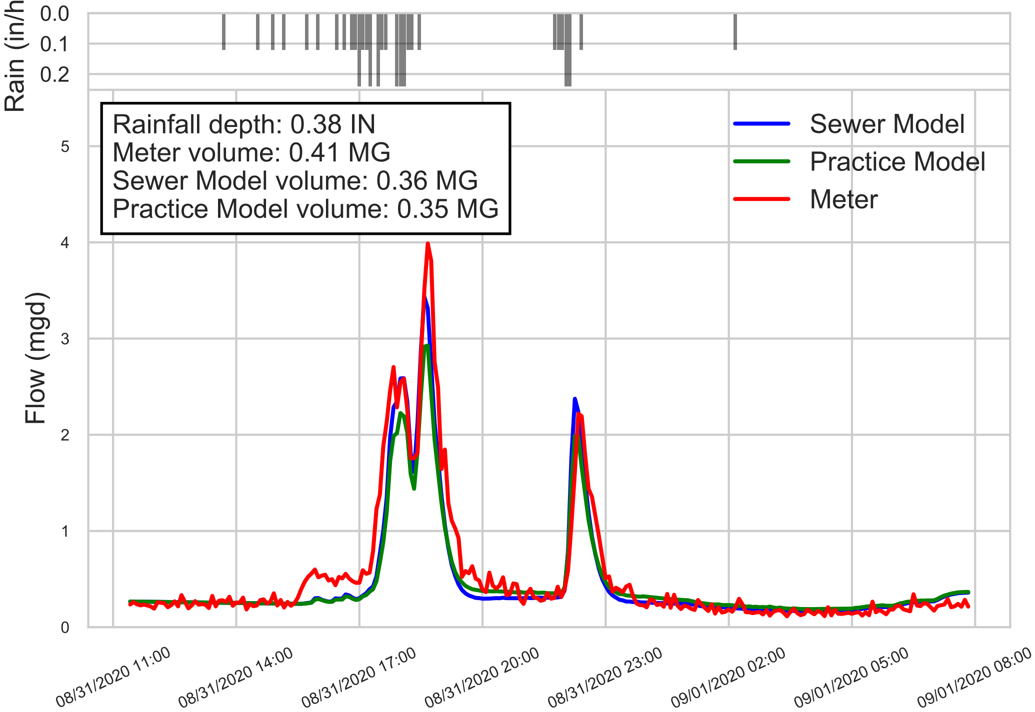

Wet Weather Event for Meter 049-1 (1.05 in total, 0.96 in/hr peak)
2020-08-15 19:35:00 to 2020-08-16 18:50:00
Rain (in/h)
0.0
0.4
0.8
Flow (mgd)
14
12
10
8
6
4
2
0
Rainfall depth: 1.05 IN
Meter volume: 0.78 MG
Sewer Model volume: 0.9 MG
Practice Model volume: 0.94 MG
Sewer Model
Practice Model
Meter
08/15/2020 16:00
08/15/2020 19:00
08/15/2020 22:00
08/16/2020 01:00
08/16/2020 04:00
08/16/2020 07:00
08/16/2020 10:00
08/16/2020 13:00
08/16/2020 16:00
08/16/2020 19:00


Wet Weather Event for Meter 049-1 (0.4 in total, 2.16 in/hr peak)
2020-08-17 16:25:00 to 2020-08-18 00:30:00
Rain (in/h)
0.0
0.8
1.6
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Flow (mgd)
Rainfall depth: 0.4 IN
Meter volume: 0.3 MG
Sewer Model volume: 0.3 MG
Practice Model volume: 0.32 MG
Sewer Model
Practice Model
Meter
08/17/2020 15:00
08/17/2020 18:00
08/17/2020 21:00
08/18/2020 00:00


Wet Weather Event for Meter 049-1 (0.21 in total, 0.72 in/hr peak)
2020-08-19 05:15:00 to 2020-08-19 14:05:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 0.21 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.19 MG
Practice Model volume: 0.19 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0
1
2
3
4
5
6
08/19/2020 03:00
08/19/2020 06:00
08/19/2020 09:00
08/19/2020 12:00

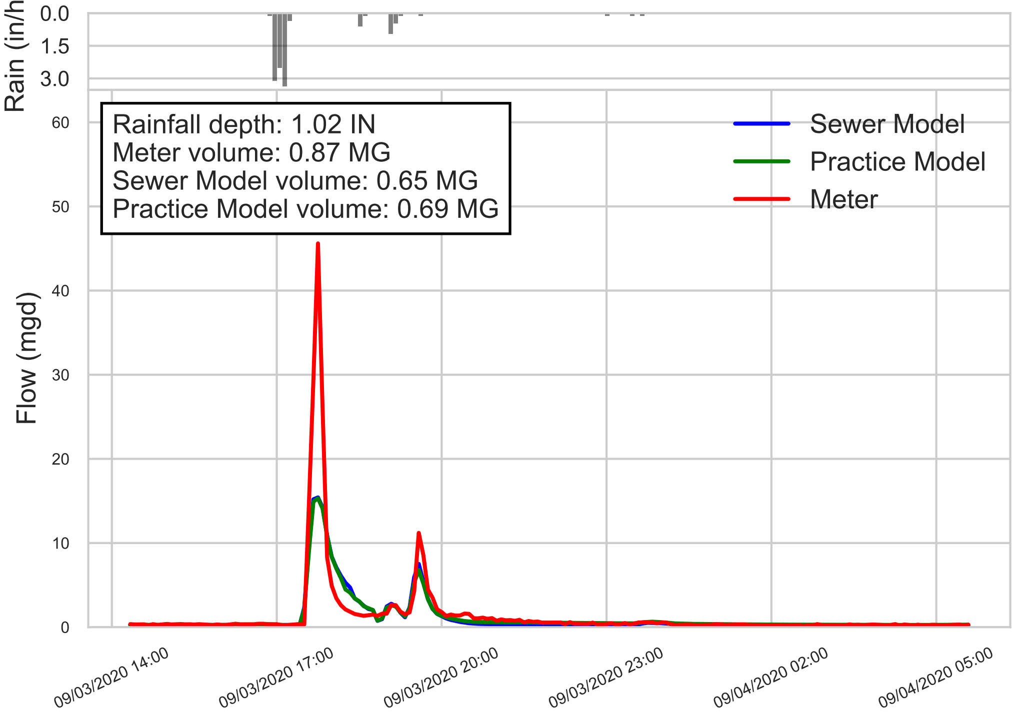

Wet Weather Event for Meter 049-1 (1.03 in total, 1.08 in/hr peak)
2020-08-28 18:10:00 to 2020-08-29 20:00:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 1.03 IN
Meter volume: 0.98 MG
Sewer Model volume: 0.89 MG
Practice Model volume: 0.88 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0
2
4
6
8
10
12
08/28/2020 15:00
08/28/2020 18:00
08/28/2020 21:00
08/29/2020 00:00
08/29/2020 03:00
08/29/2020 06:00
08/29/2020 09:00
08/29/2020 12:00
08/29/2020 15:00
08/29/2020 18:00
08/29/2020 21:00

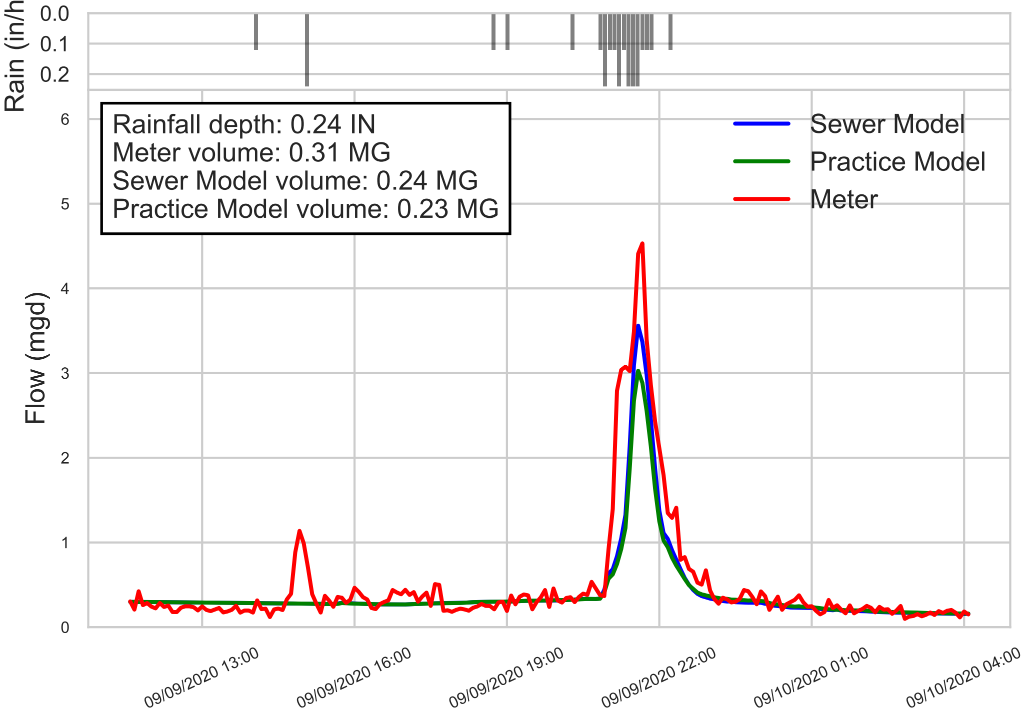
Wet Weather Event for Meter 049-1 (0.38 in total, 0.24 in/hr peak)
2020-08-31 14:25:00 to 2020-09-01 07:50:00

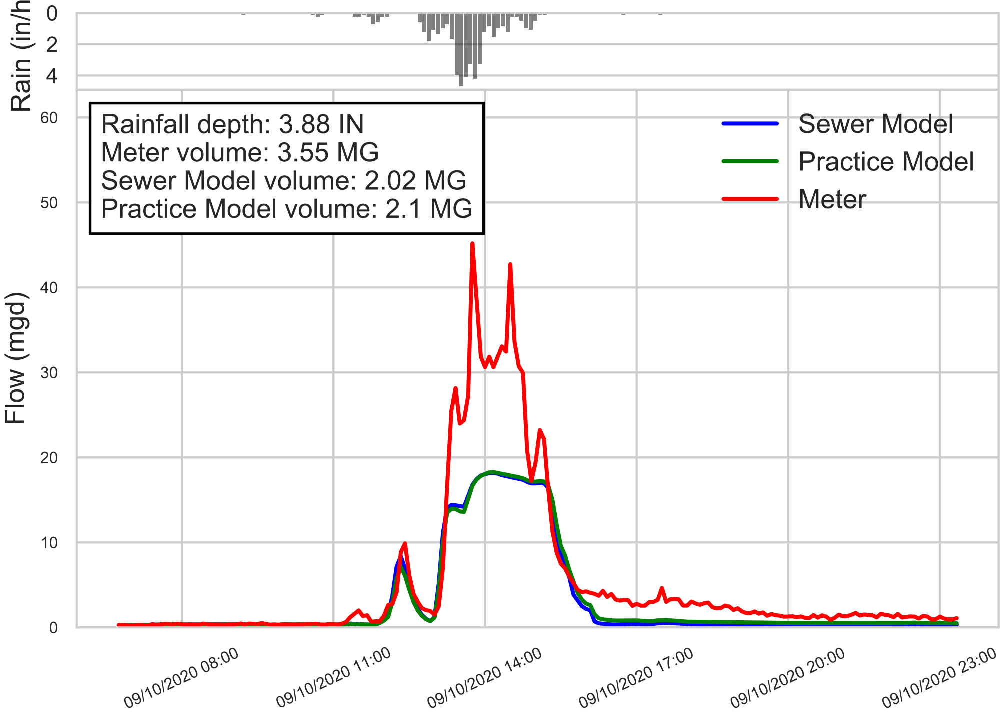


Rainfall depth: 0.38 IN
Meter volume: 0.41 MG
Sewer Model volume: 0.36 MG
Practice Model volume: 0.35 MG

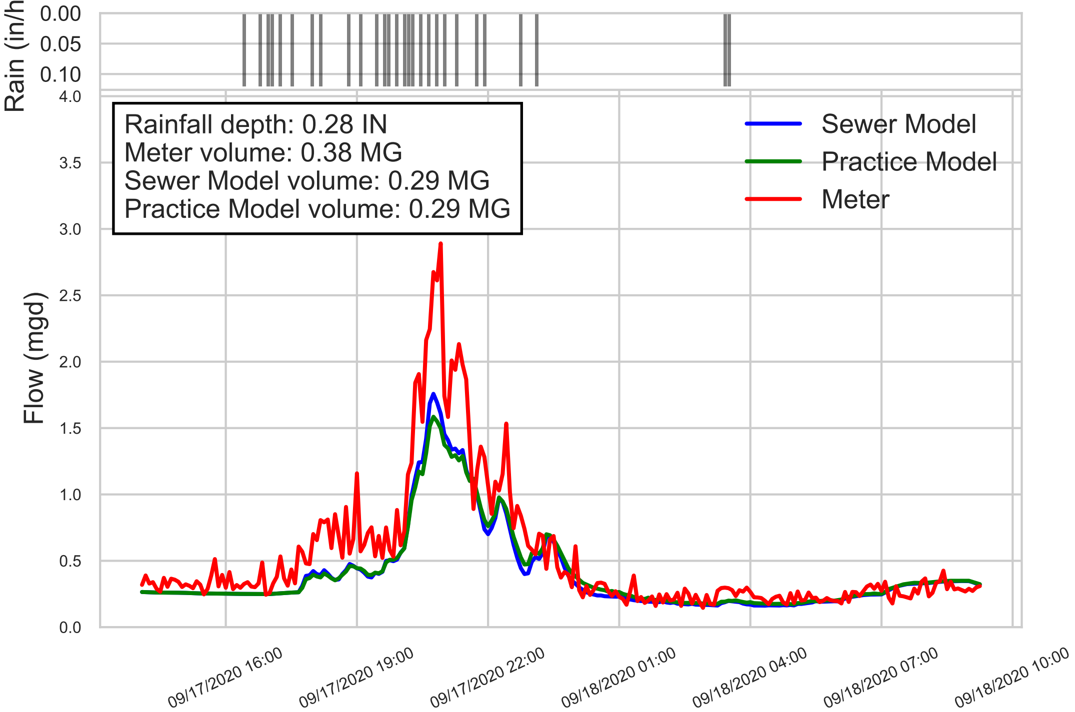
Wet Weather Event for Meter 049-1 (1.02 in total, 3.36 in/hr peak)
2020-09-03 17:20:00 to 2020-09-04 05:35:00


Rainfall depth: 1.02 IN
Meter volume: 0.87 MG
Sewer Model volume: 0.65 MG
Practice Model volume: 0.69 MG

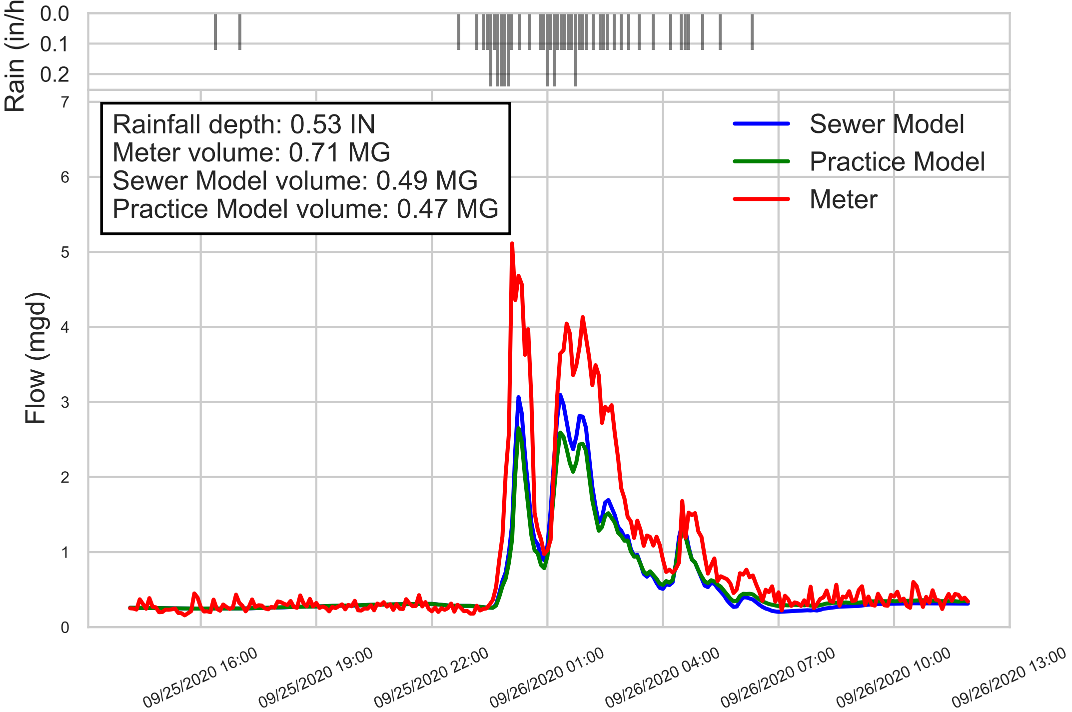

Wet Weather Event for Meter 049-1 (0.24 in total, 0.24 in/hr peak)
2020-09-09 14:35:00 to 2020-09-10 04:05:00


Wet Weather Event for Meter 049-1 (3.88 in total, 4.68 in/hr peak)
2020-09-10 09:45:00 to 2020-09-10 23:20:00

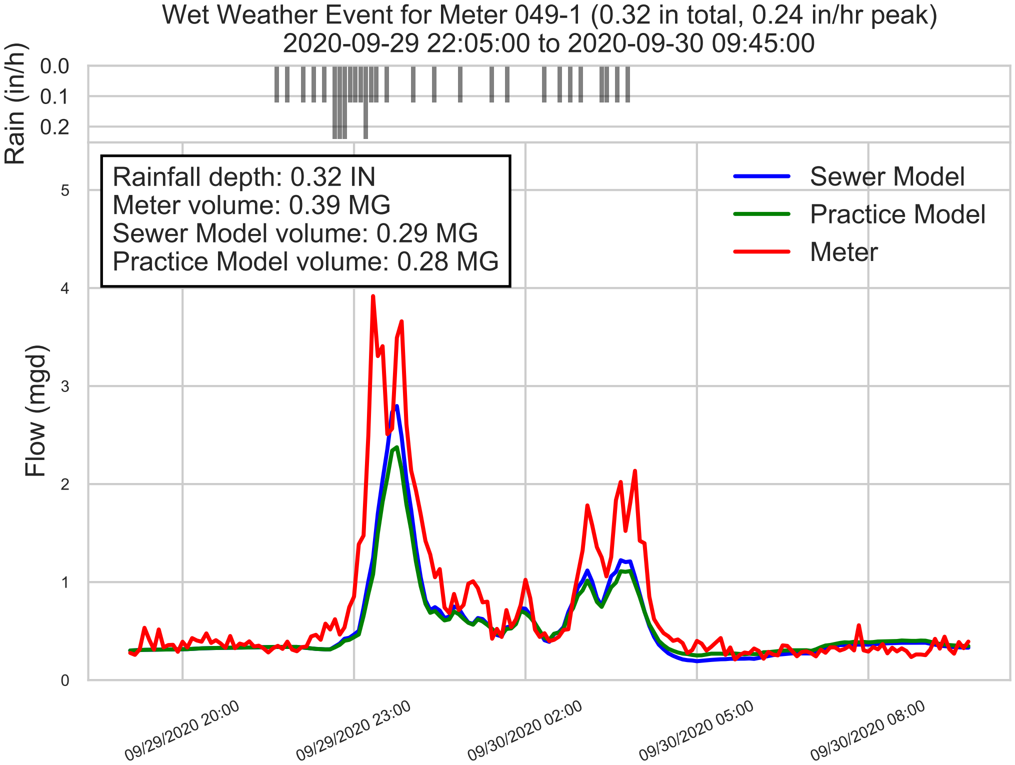
Wet Weather Event for Meter 049-1 (0.28 in total, 0.12 in/hr peak)
2020-09-17 17:05:00 to 2020-09-18 09:15:00

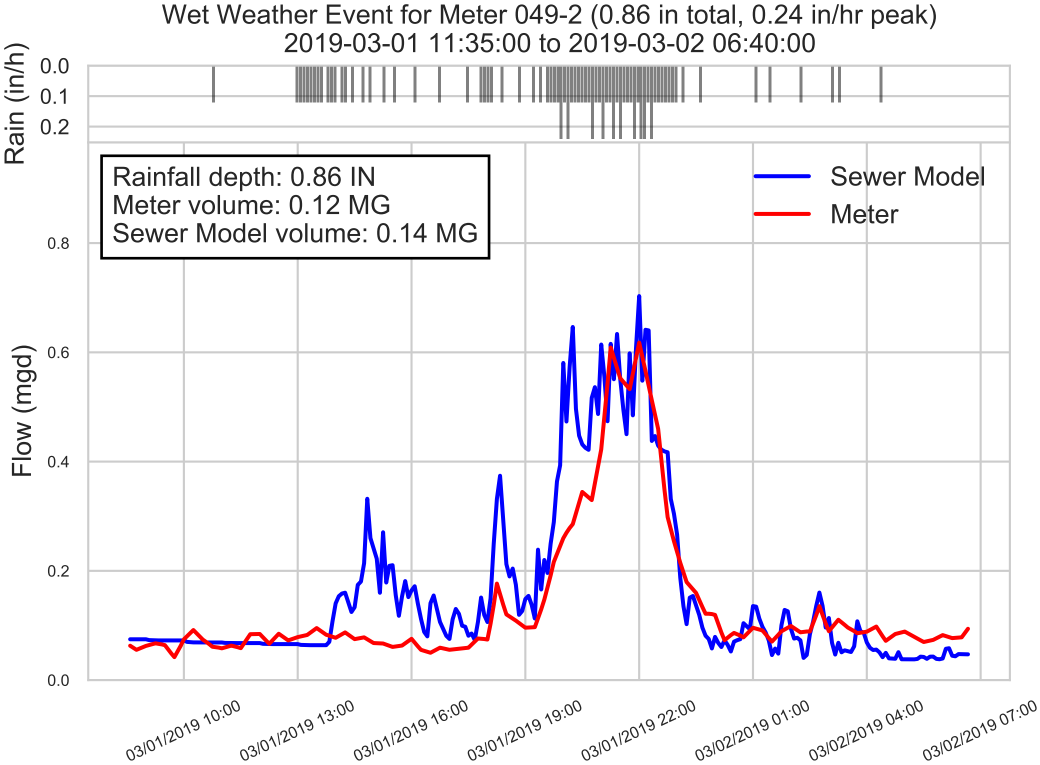


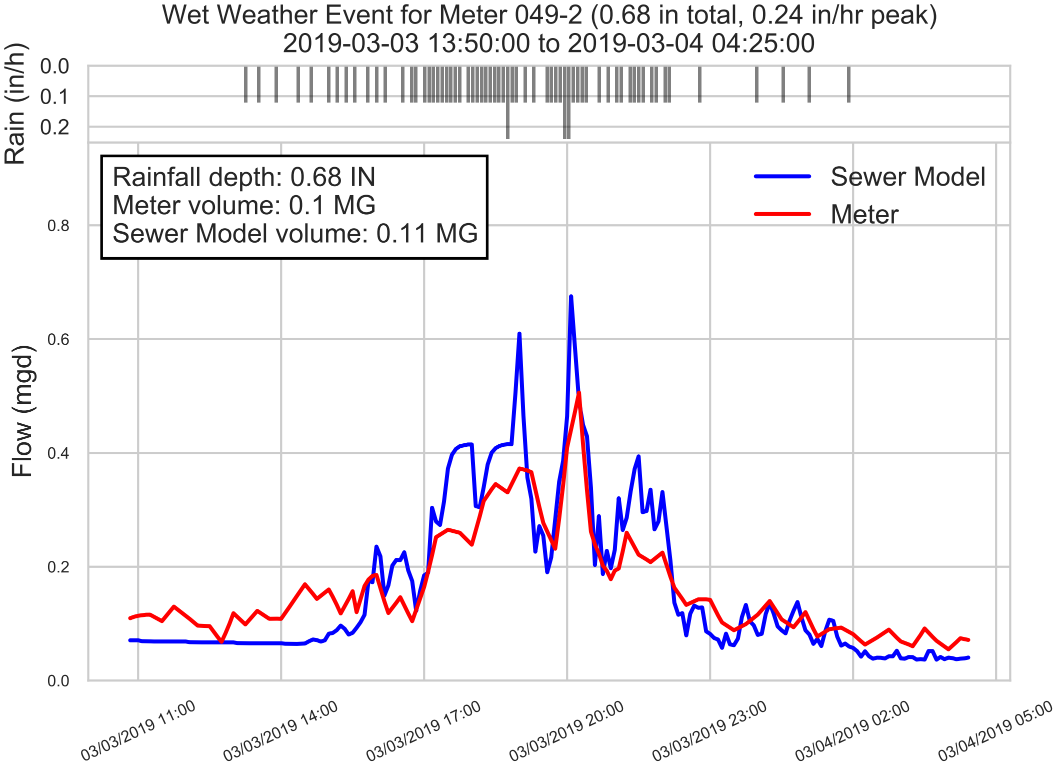
Wet Weather Event for Meter 049-1 (0.53 in total, 0.24 in/hr peak)
2020-09-25 17:10:00 to 2020-09-26 11:55:00



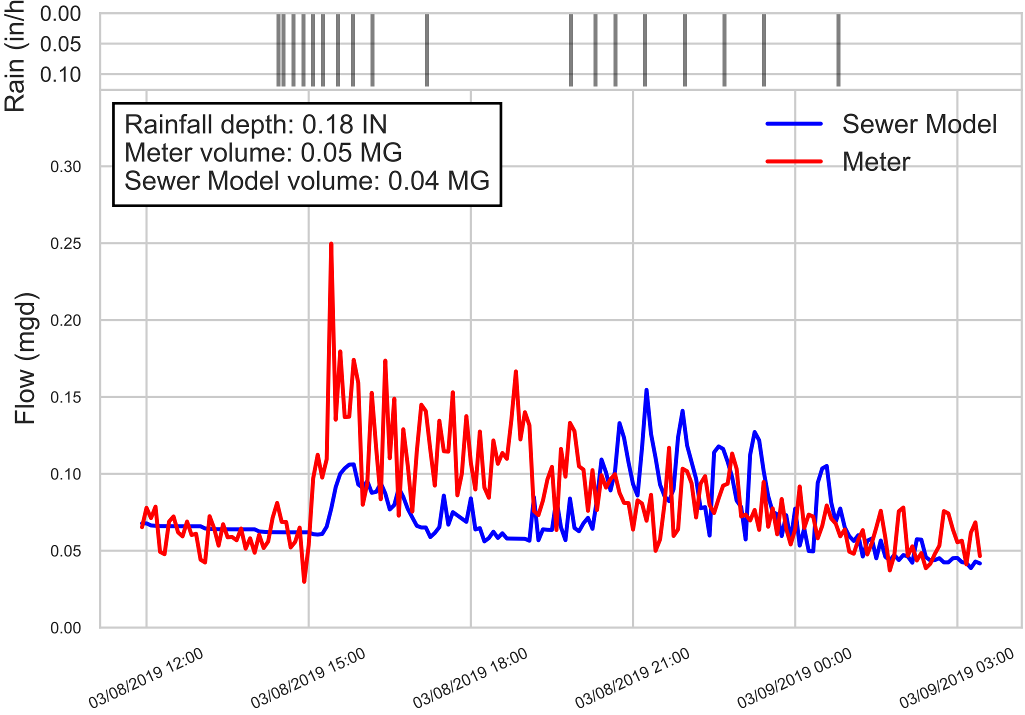
Rainfall depth: 0.53 IN
Meter volume: 0.71 MG
Sewer Model volume: 0.49 MG
Practice Model volume: 0.47 MG


Wet Weather Event for Meter 049-1 (0.32 in total, 0.24 in/hr peak)
2020-09-29 22:05:00 to 2020-09-30 09:45:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.32 IN
Meter volume: 0.39 MG
Sewer Model volume: 0.29 MG
Practice Model volume: 0.28 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0
1
2
3
4
5
09/29/2020 20:00
09/29/2020 23:00
09/30/2020 02:00
09/30/2020 05:00
09/30/2020 08:00

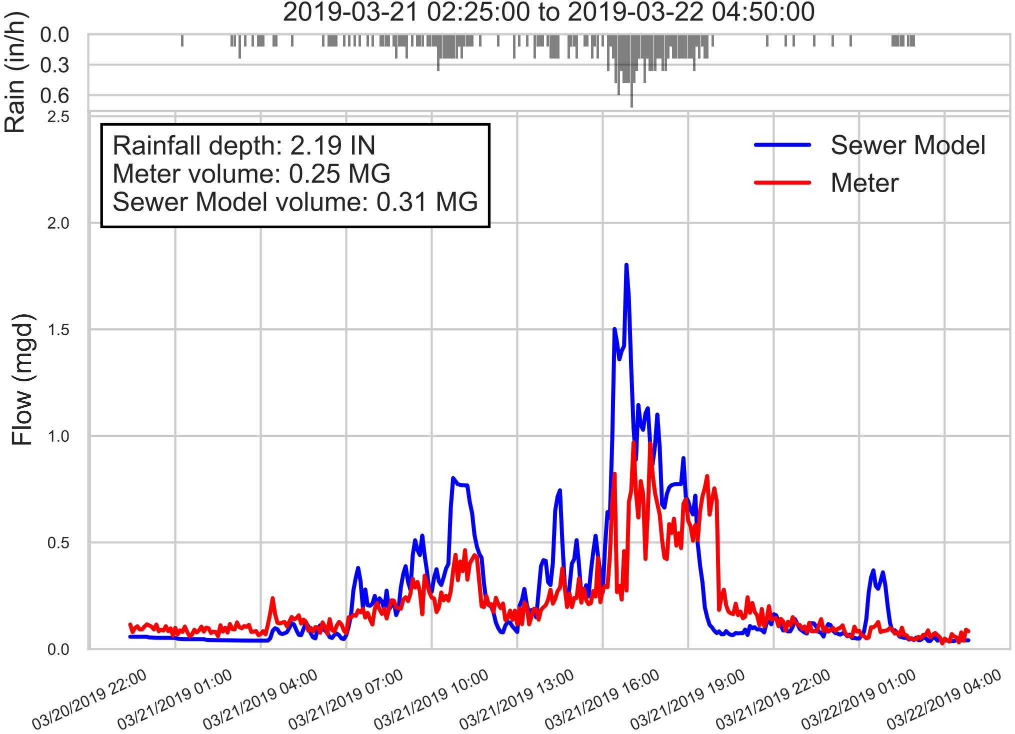

Wet Weather Event for Meter 049-2 (0.86 in total, 0.24 in/hr peak)
2019-03-01 11:35:00 to 2019-03-02 06:40:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.86 IN
Meter volume: 0.12 MG
Sewer Model volume: 0.14 MG
Sewer Model
Meter
Flow (mgd)
0.8
0.6
0.4
0.2
0.0
03/01/2019 10:00
03/01/2019 13:00
03/01/2019 16:00
03/01/2019 19:00
03/01/2019 22:00
03/02/2019 01:00
03/02/2019 04:00
03/02/2019 07:00


Wet Weather Event for Meter 049-2 (0.68 in total, 0.24 in/hr peak)
2019-03-03 13:50:00 to 2019-03-04 04:25:00

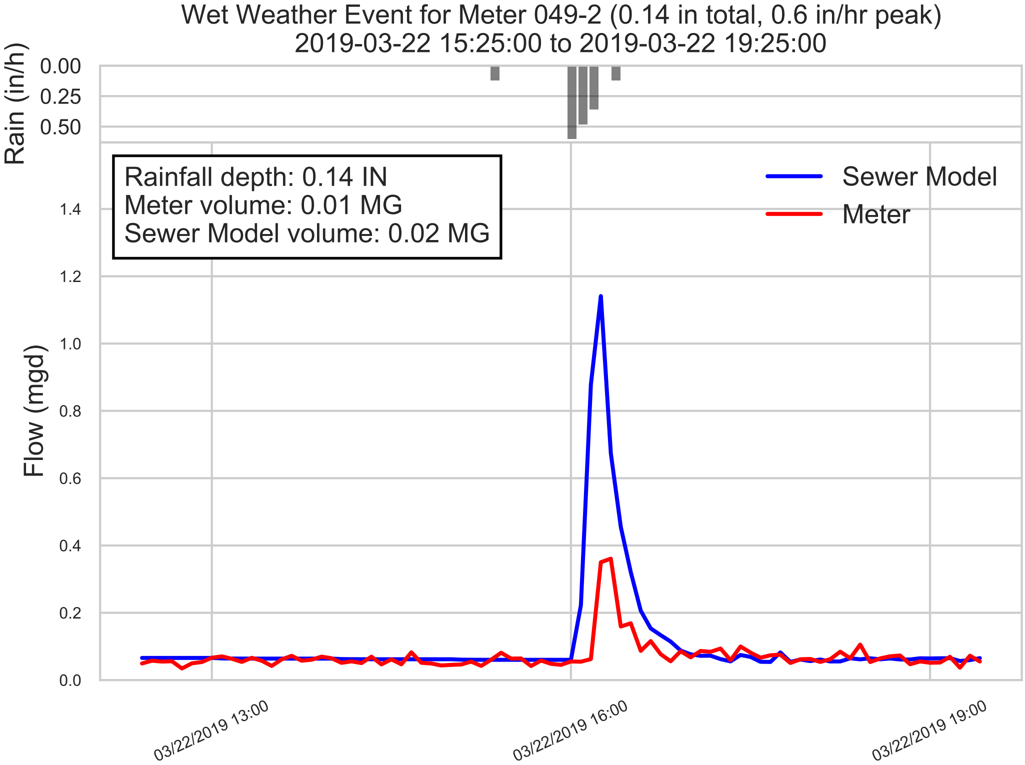
Wet Weather Event for Meter 049-2 (0.18 in total, 0.12 in/hr peak)
2019-03-08 14:55:00 to 2019-03-09 03:25:00



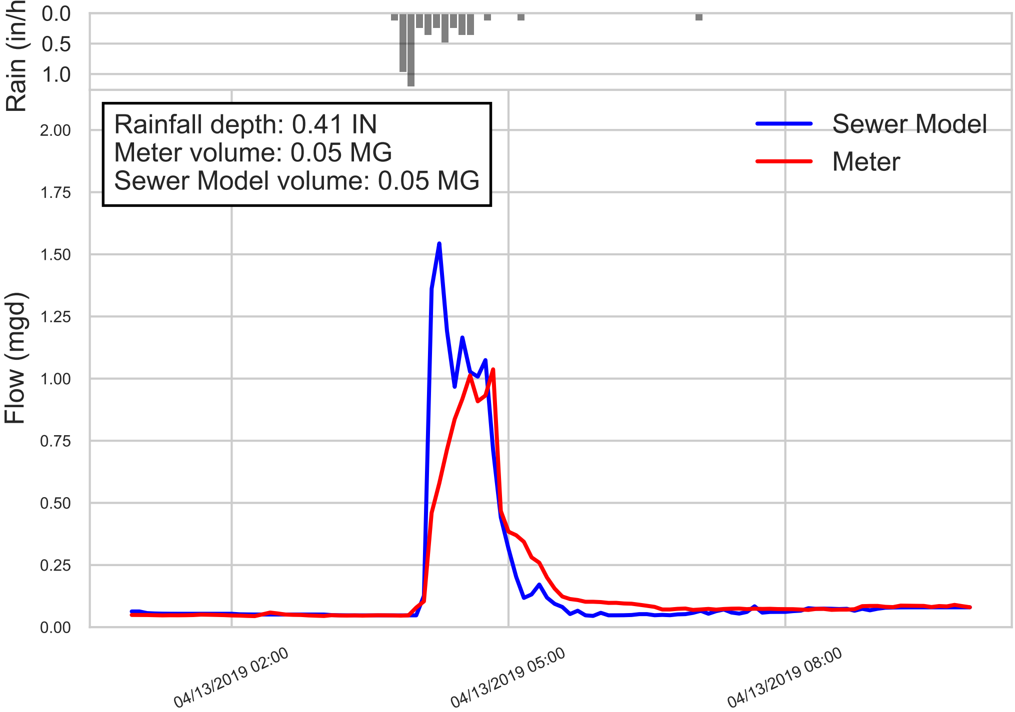
Wet Weather Event for Meter 049-2 (2.19 in total, 0.72 in/hr peak)
2019-03-21 02:25:00 to 2019-03-22 04:50:00

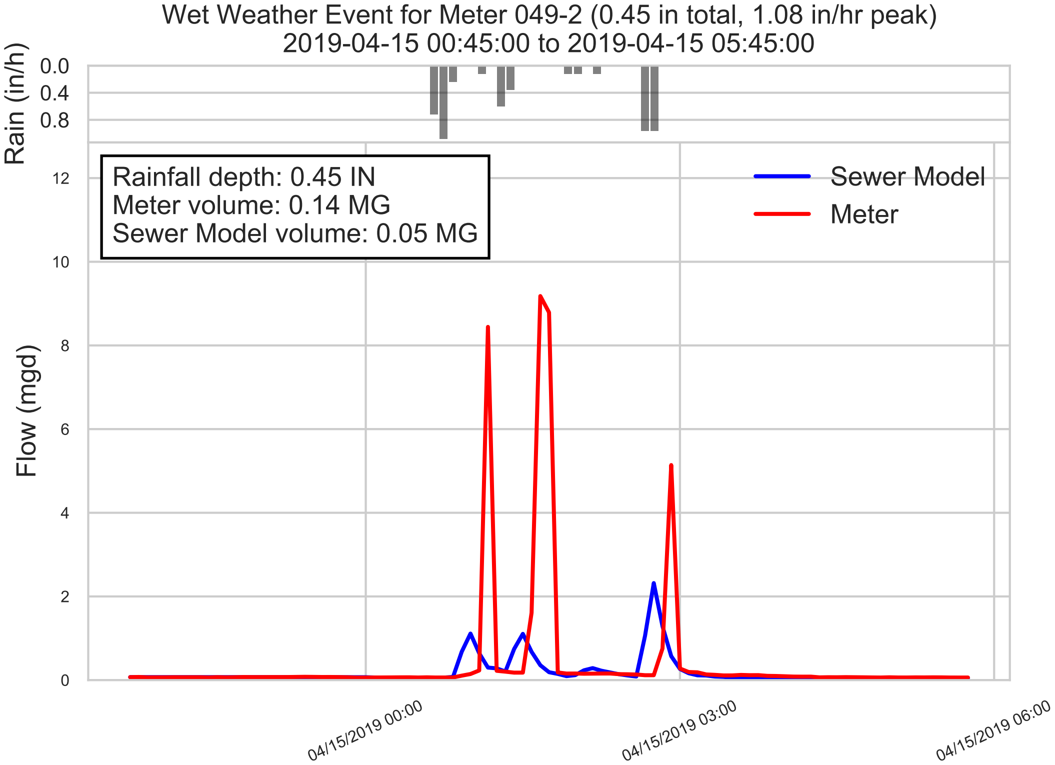


Rainfall depth: 2.19 IN
Meter volume: 0.25 MG
Sewer Model volume: 0.31 MG

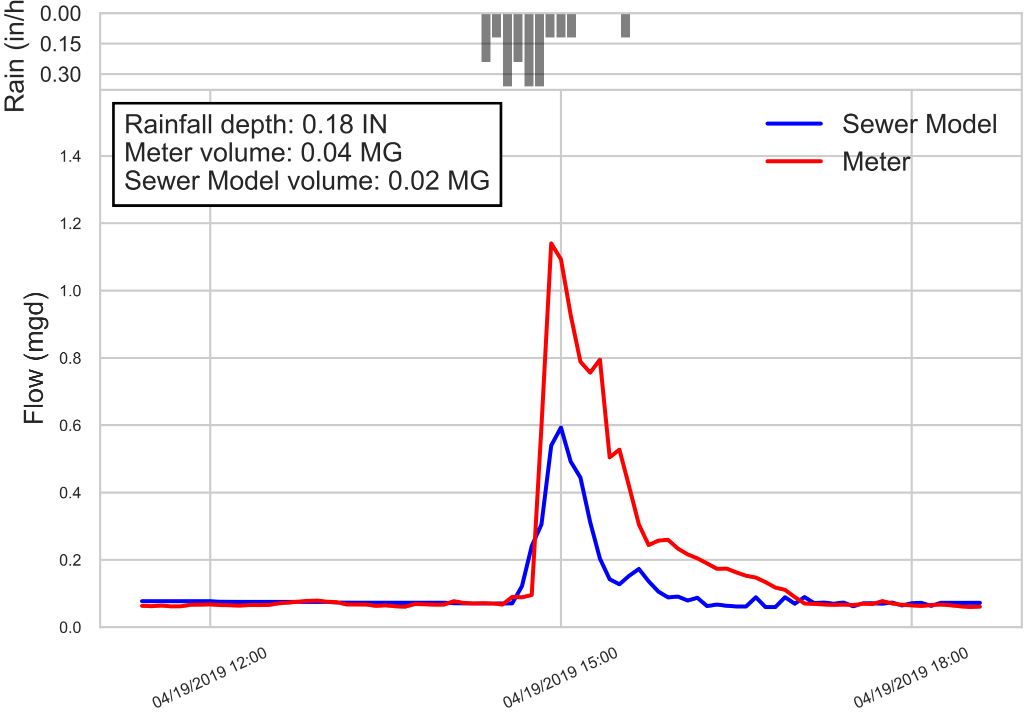

Wet Weather Event for Meter 049-2 (0.14 in total, 0.6 in/hr peak)
2019-03-22 15:25:00 to 2019-03-22 19:25:00
Rain (in/h)
0.00
0.25
0.50
Rainfall depth: 0.14 IN
Meter volume: 0.01 MG
Sewer Model volume: 0.02 MG
Sewer Model
Meter
Flow (mgd)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
03/22/2019 13:00
03/22/2019 16:00
03/22/2019 19:00

Wet Weather Event for Meter 049-2 (0.41 in total, 1.2 in/hr peak)
2019-04-13 03:55:00 to 2019-04-13 10:00:00

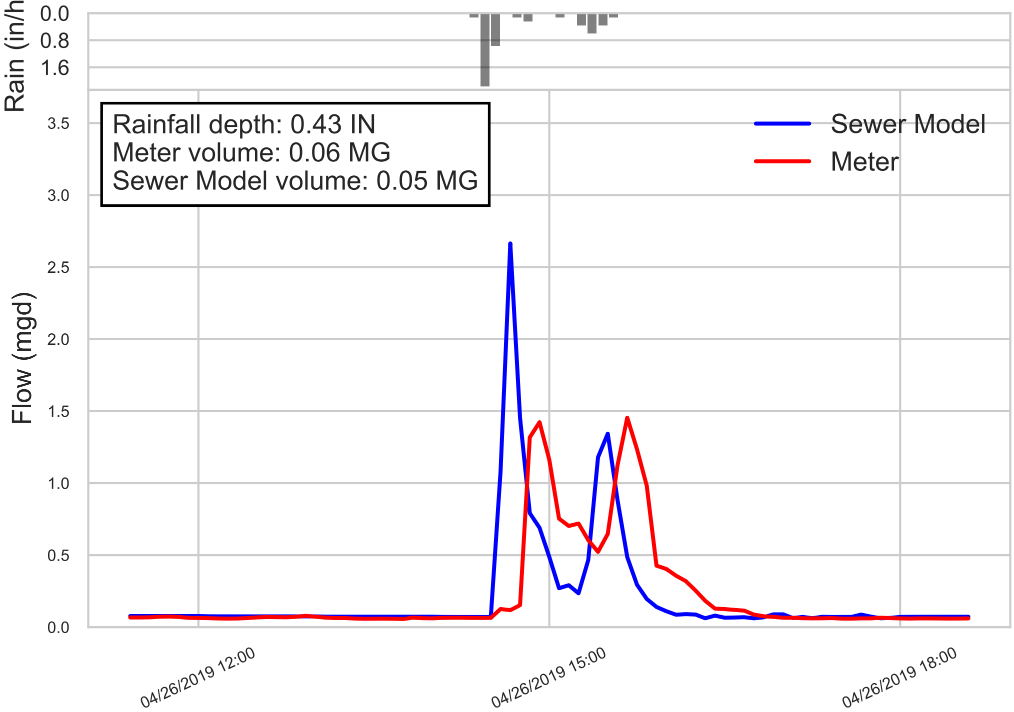


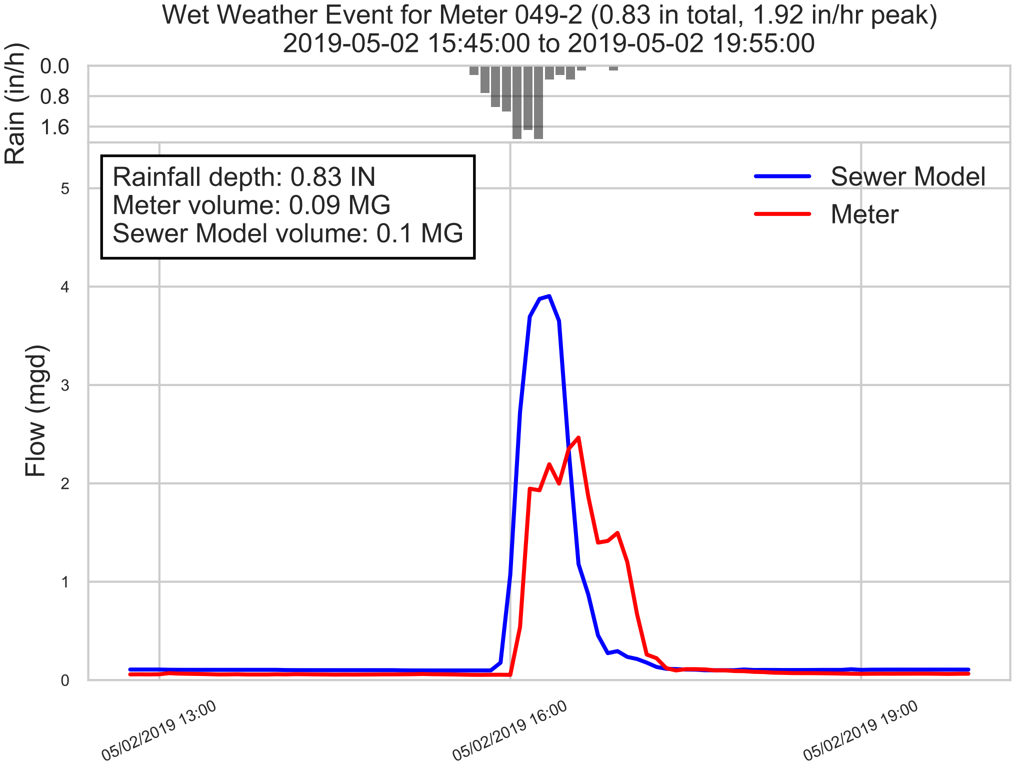

Wet Weather Event for Meter 049-2 (0.45 in total, 1.08 in/hr peak)
2019-04-15 00:45:00 to 2019-04-15 05:45:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 0.45 IN
Meter volume: 0.14 MG
Sewer Model volume: 0.05 MG
Sewer Model
Meter
Flow (mgd)
12
10
8
6
4
2
0
04/15/2019 00:00
04/15/2019 03:00
04/15/2019 06:00

Wet Weather Event for Meter 049-2 (0.18 in total, 0.36 in/hr peak)
2019-04-19 14:25:00 to 2019-04-19 18:35:00

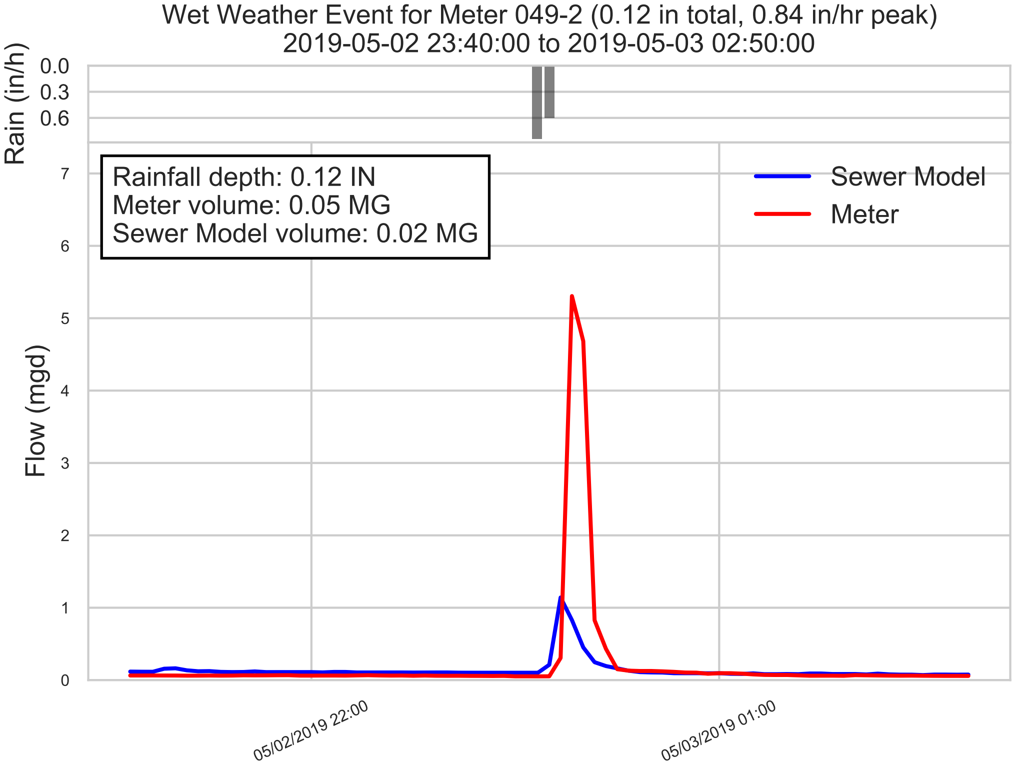


Wet Weather Event for Meter 049-2 (0.43 in total, 2.16 in/hr peak)
2019-04-26 14:25:00 to 2019-04-26 18:35:00

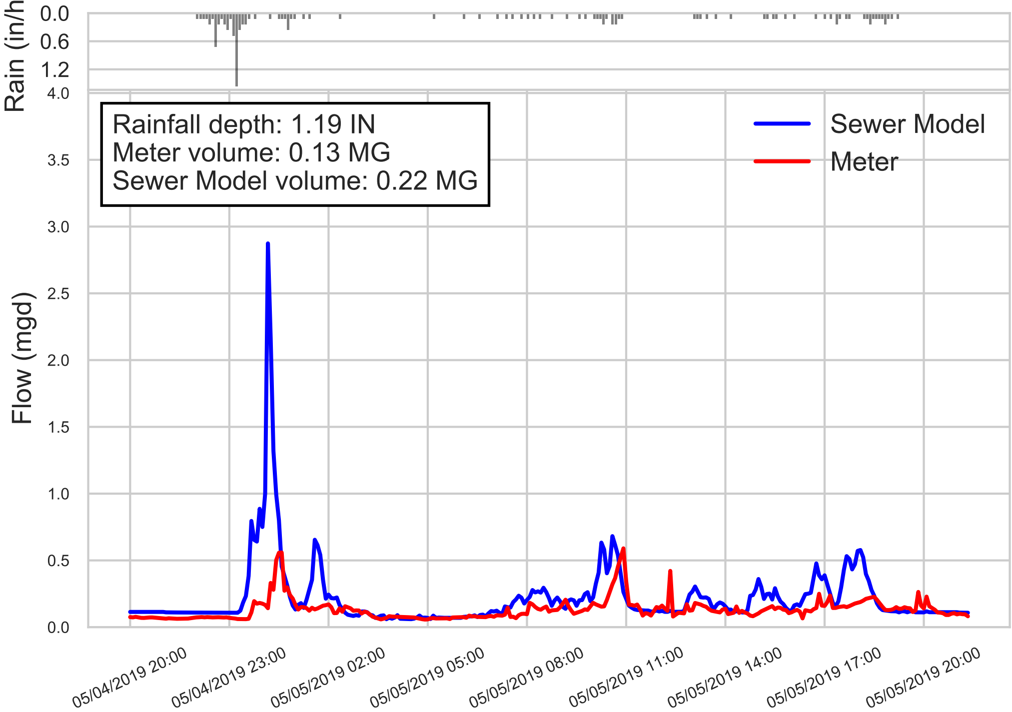




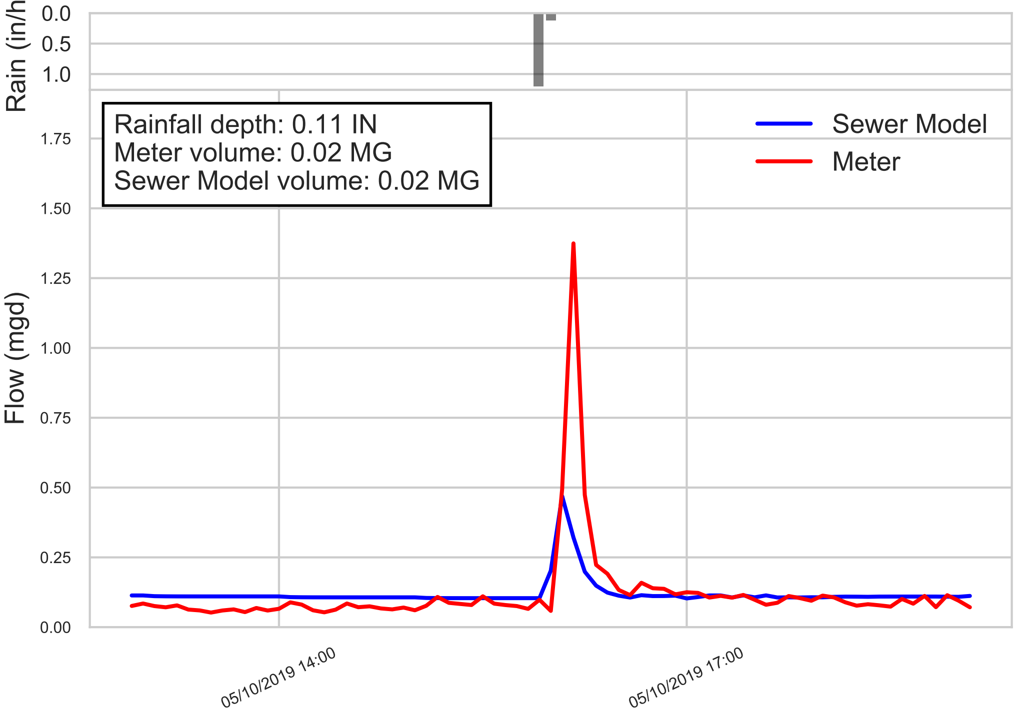
Wet Weather Event for Meter 049-2 (0.83 in total, 1.92 in/hr peak)
2019-05-02 15:45:00 to 2019-05-02 19:55:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.83 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.1 MG
Sewer Model
Meter
Flow (mgd)
5
4
3
2
1
0
05/02/2019 13:00
05/02/2019 16:00
05/02/2019 19:00

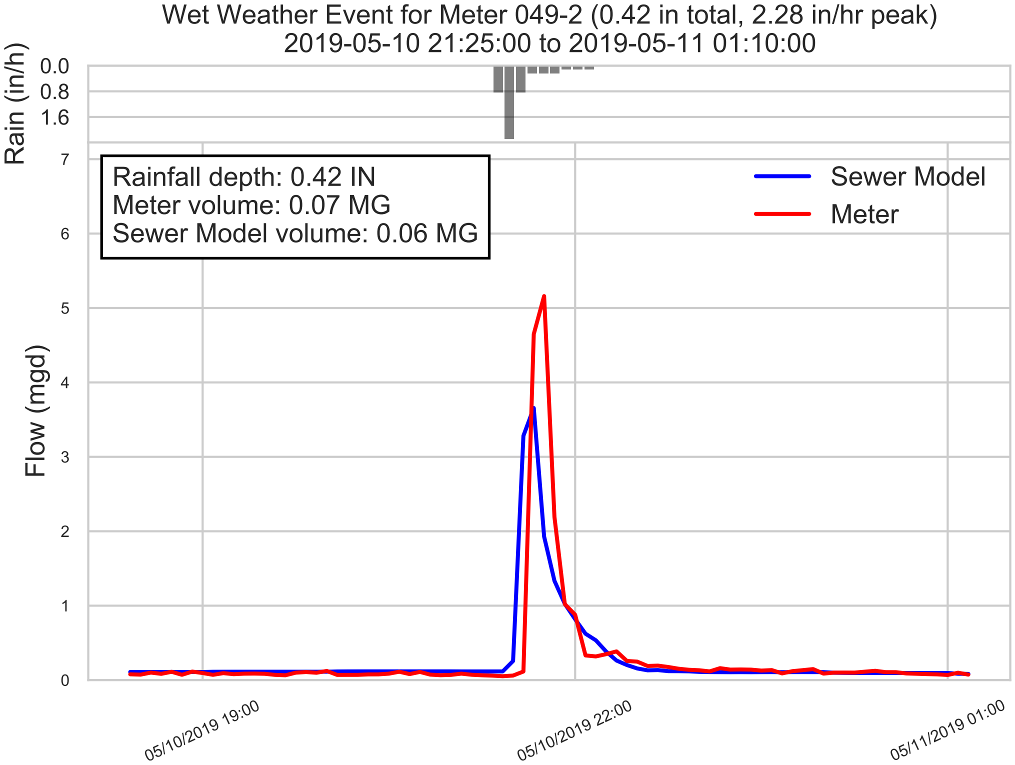

Wet Weather Event for Meter 049-2 (0.12 in total, 0.84 in/hr peak)
2019-05-02 23:40:00 to 2019-05-03 02:50:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 0.12 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.02 MG
Sewer Model
Meter
Flow (mgd)
7
6
5
4
3
2
1
0
05/02/2019 22:00
05/03/2019 01:00

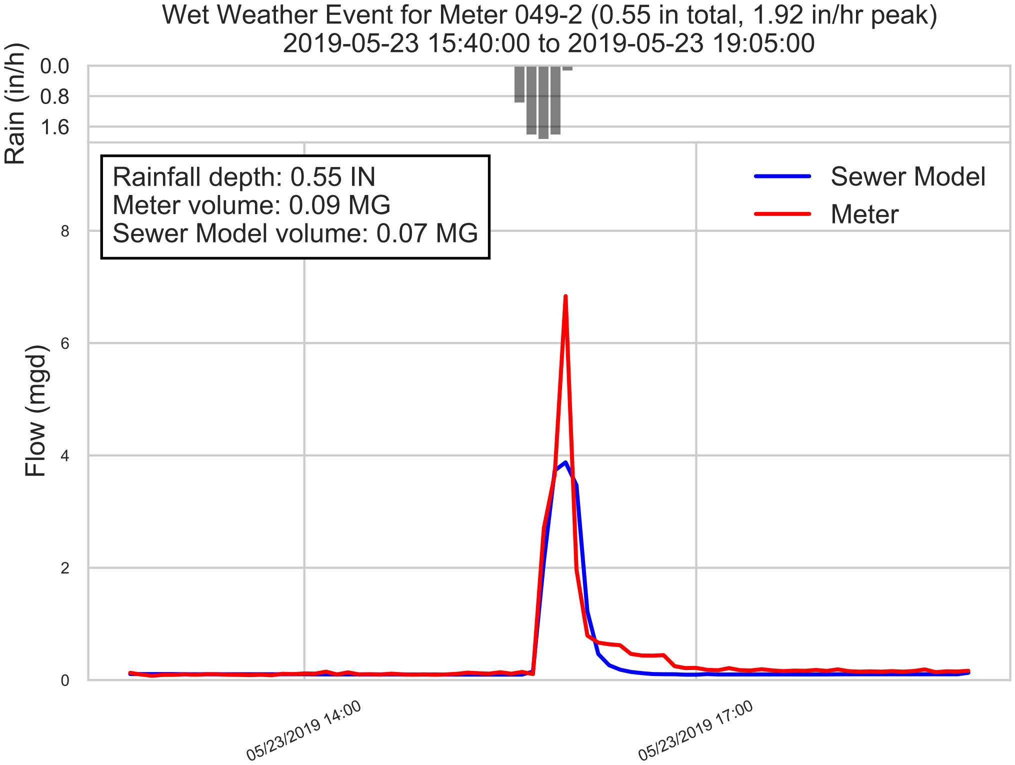
Wet Weather Event for Meter 049-2 (1.19 in total, 1.56 in/hr peak)
2019-05-04 23:00:00 to 2019-05-05 21:20:00

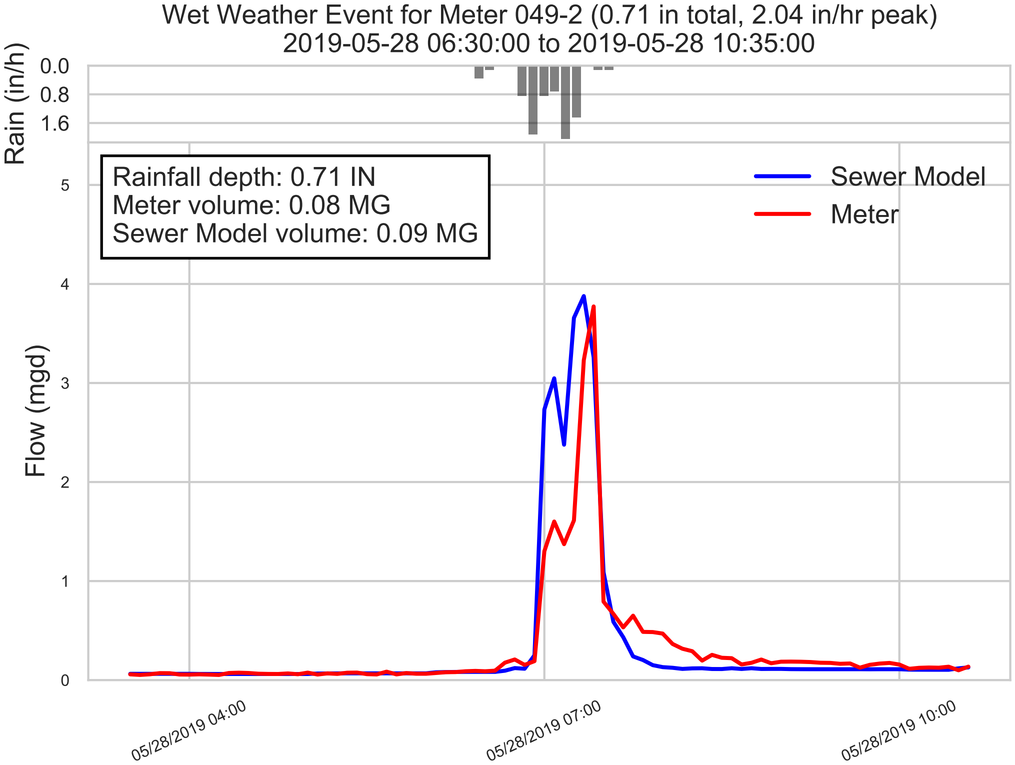


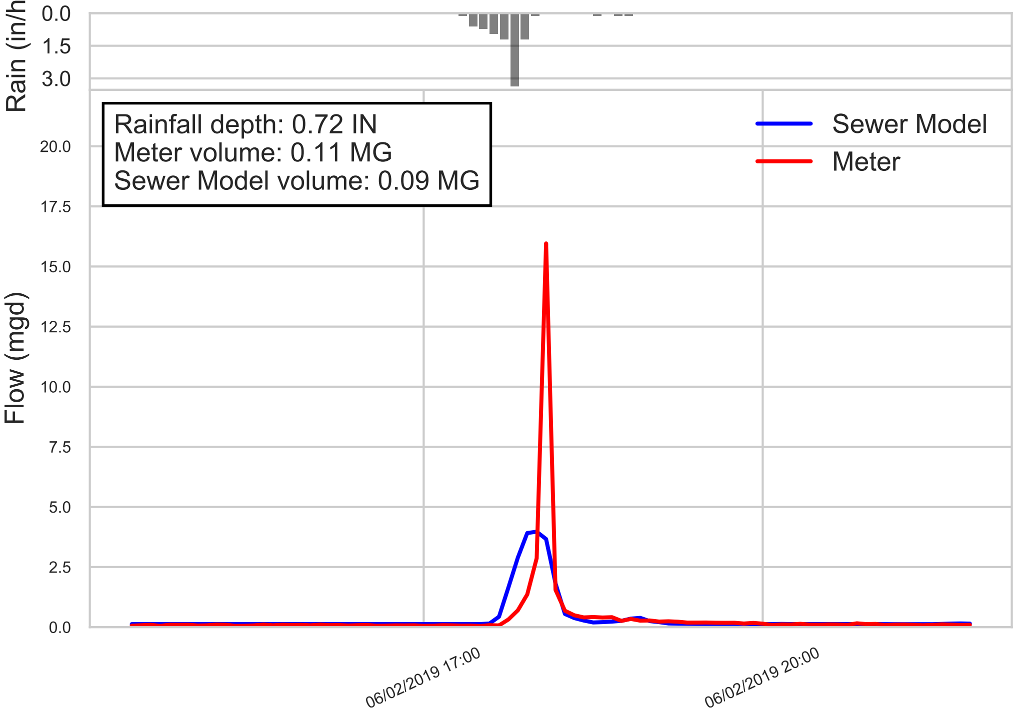
Wet Weather Event for Meter 049-2 (0.11 in total, 1.2 in/hr peak)
2019-05-10 15:55:00 to 2019-05-10 19:05:00



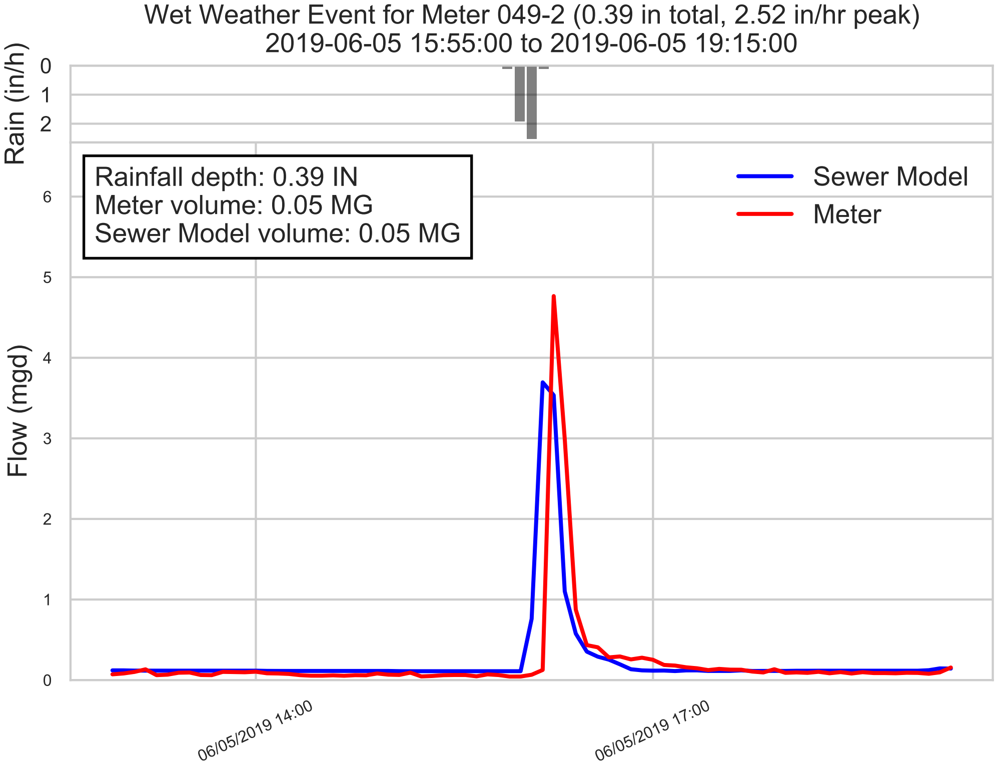

Wet Weather Event for Meter 049-2 (0.42 in total, 2.28 in/hr peak)
2019-05-10 21:25:00 to 2019-05-11 01:10:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.42 IN
Meter volume: 0.07 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
Flow (mgd)
0
1
2
3
4
5
6
7
05/10/2019 19:00
05/10/2019 22:00
05/11/2019 01:00

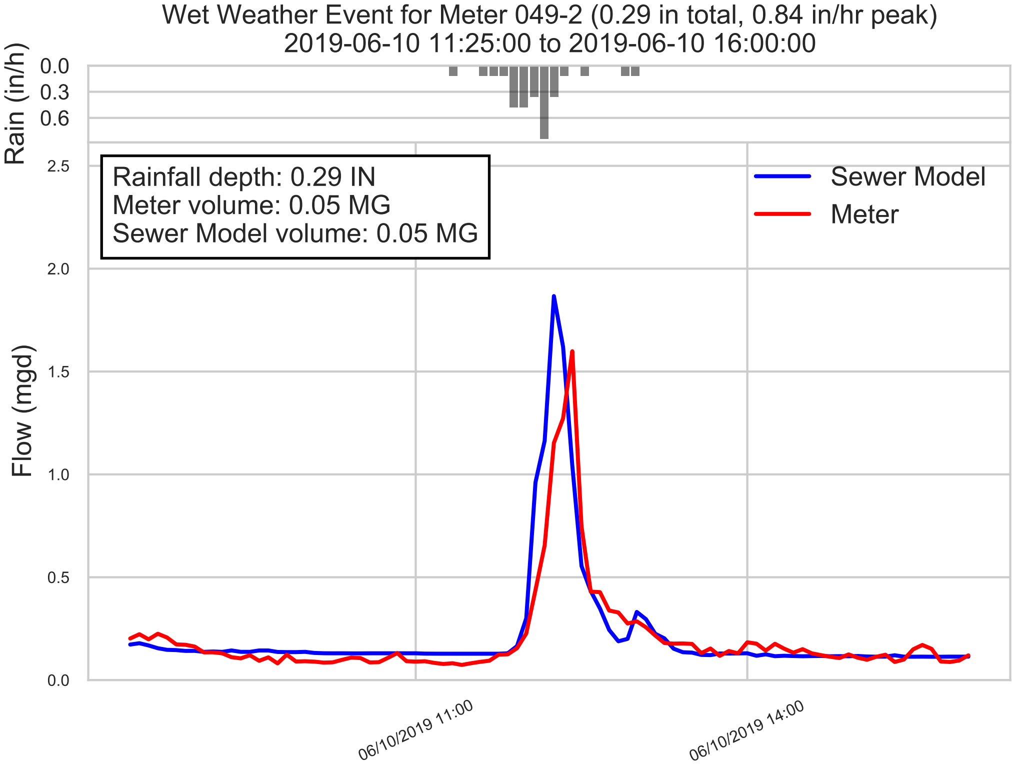

Wet Weather Event for Meter 049-2 (0.55 in total, 1.92 in/hr peak)
2019-05-23 15:40:00 to 2019-05-23 19:05:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.55 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.07 MG
Sewer Model
Meter
Flow (mgd)
8
6
4
2
0
05/23/2019 14:00
05/23/2019 17:00


Wet Weather Event for Meter 049-2 (0.71 in total, 2.04 in/hr peak)
2019-05-28 06:30:00 to 2019-05-28 10:35:00
Rain (in/h)
0.0
0.8
1.6
Rainfall depth: 0.71 IN
Meter volume: 0.08 MG
Sewer Model volume: 0.09 MG
Sewer Model
Meter
Flow (mgd)
5
4
3
2
1
0
05/28/2019 04:00
05/28/2019 07:00
05/28/2019 10:00

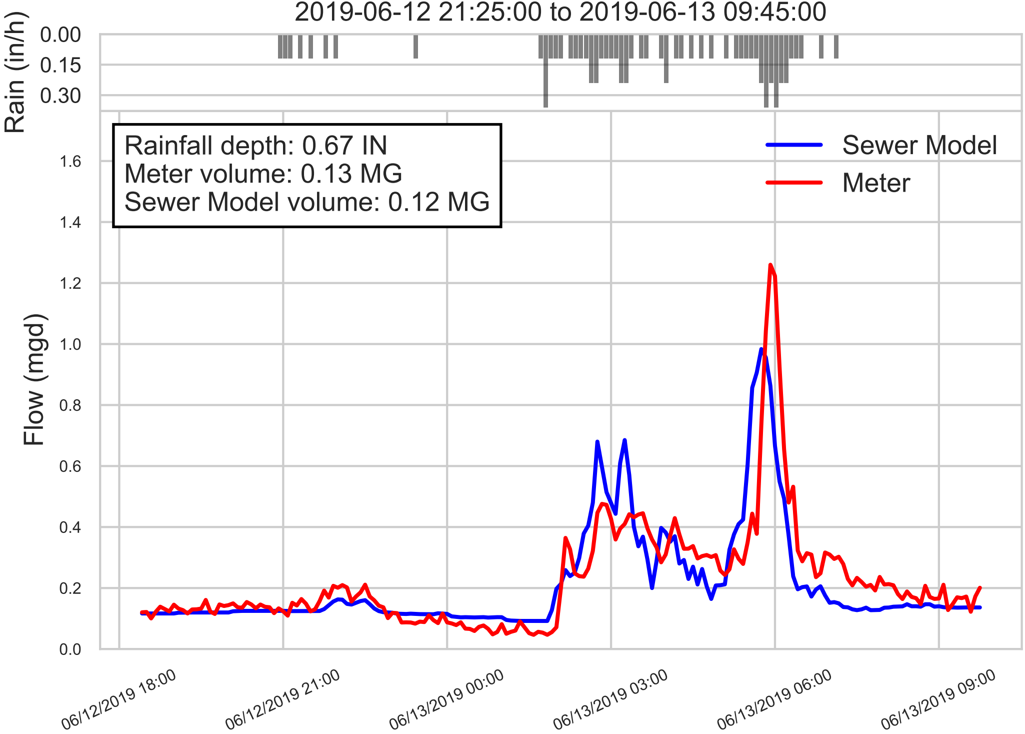


Wet Weather Event for Meter 049-2 (0.72 in total, 3.36 in/hr peak)
2019-06-02 17:25:00 to 2019-06-02 21:50:00

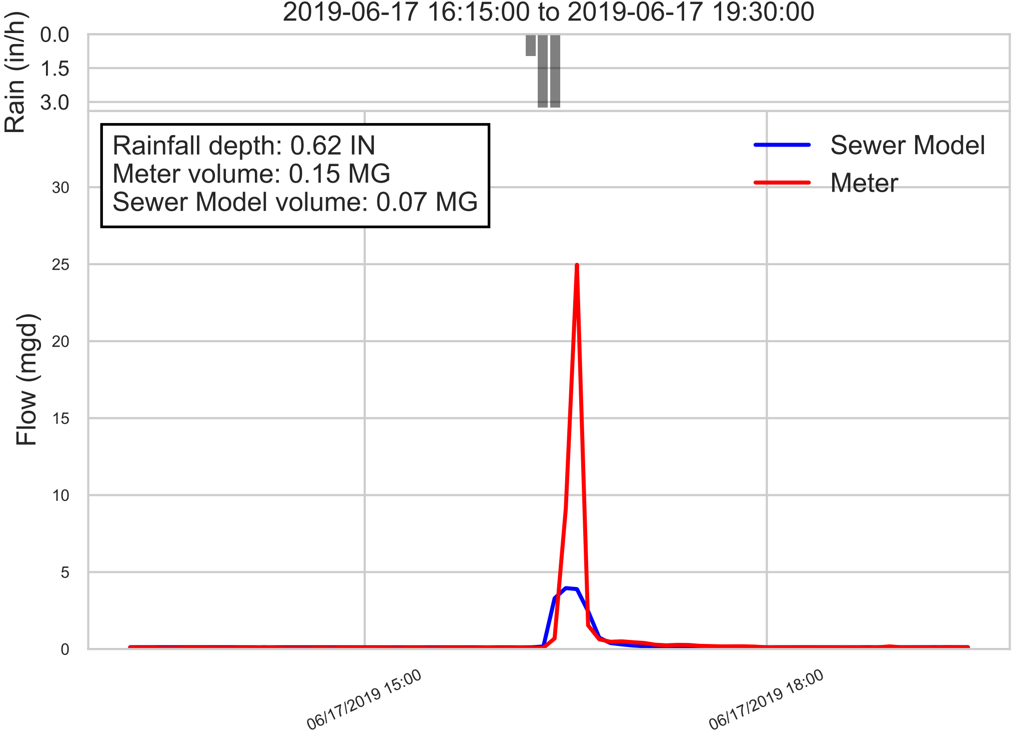

Wet Weather Event for Meter 049-2 (0.39 in total, 2.52 in/hr peak)
2019-06-05 15:55:00 to 2019-06-05 19:15:00

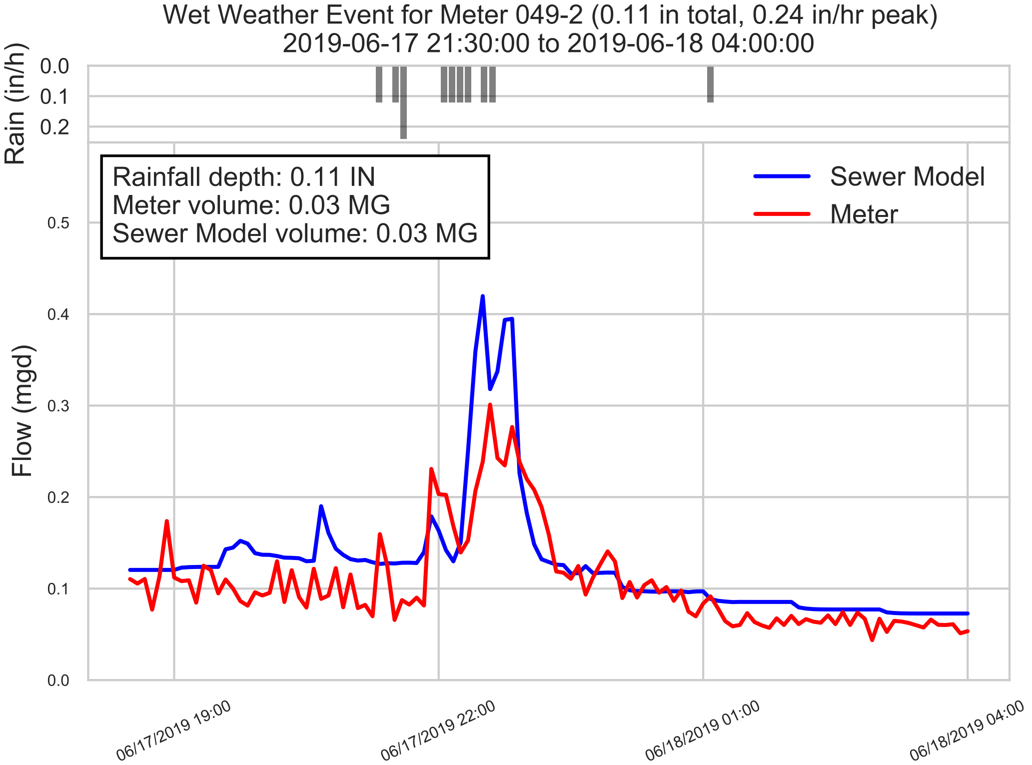

Wet Weather Event for Meter 049-2 (0.29 in total, 0.84 in/hr peak)
2019-06-10 11:25:00 to 2019-06-10 16:00:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 0.29 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.05 MG
Sewer Model
Meter
Flow (mgd)
2.5
2.0
1.5
1.0
0.5
0.0
06/10/2019 11:00
06/10/2019 14:00

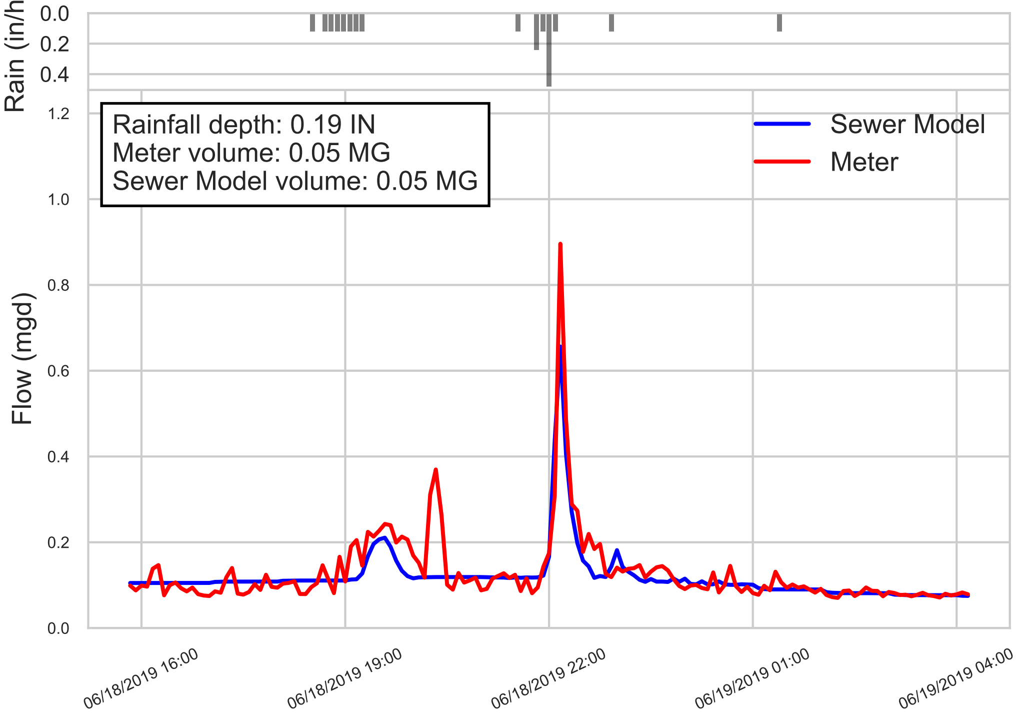
Wet Weather Event for Meter 049-2 (0.67 in total, 0.36 in/hr peak)
2019-06-12 21:25:00 to 2019-06-13 09:45:00



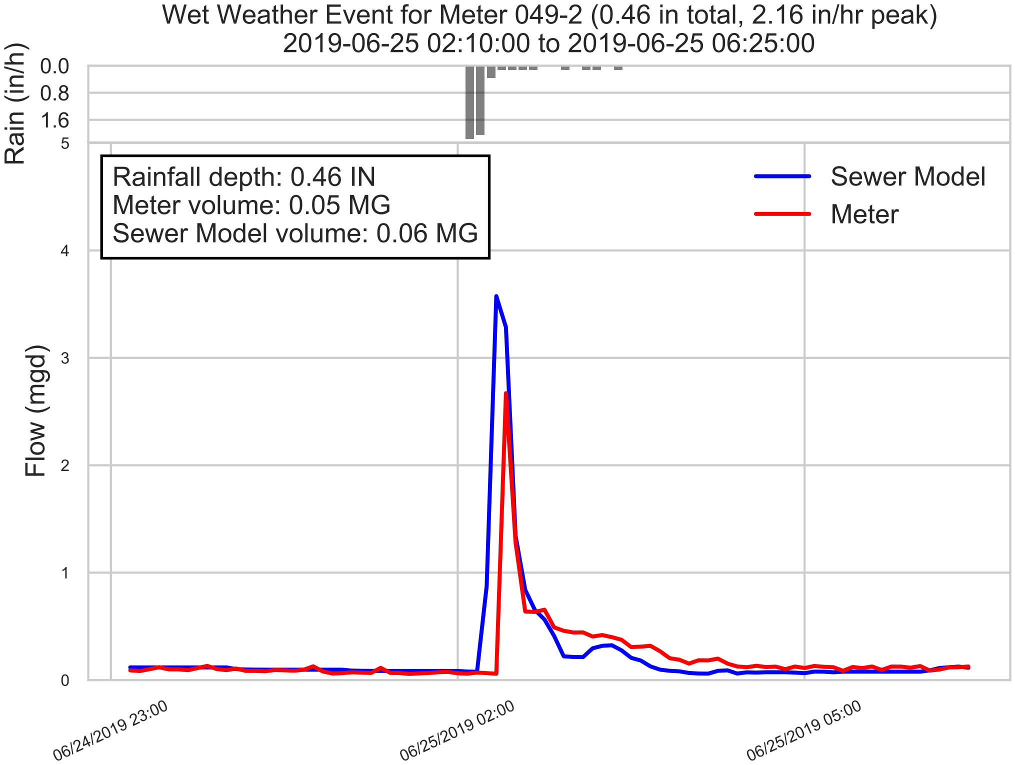
Wet Weather Event for Meter 049-2 (0.62 in total, 3.24 in/hr peak)
2019-06-17 16:15:00 to 2019-06-17 19:30:00



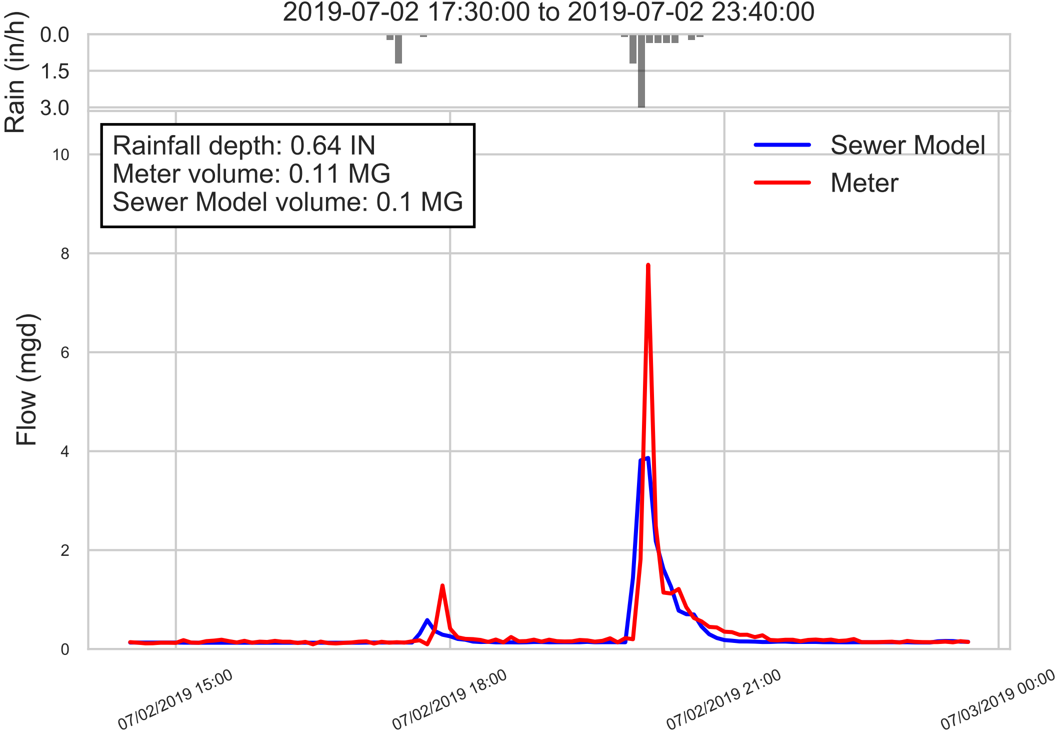

Wet Weather Event for Meter 049-2 (0.11 in total, 0.24 in/hr peak)
2019-06-17 21:30:00 to 2019-06-18 04:00:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.11 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.03 MG
Sewer Model
Meter
Flow (mgd)
0.5
0.4
0.3
0.2
0.1
0.0
06/17/2019 19:00
06/17/2019 22:00
06/18/2019 01:00
06/18/2019 04:00

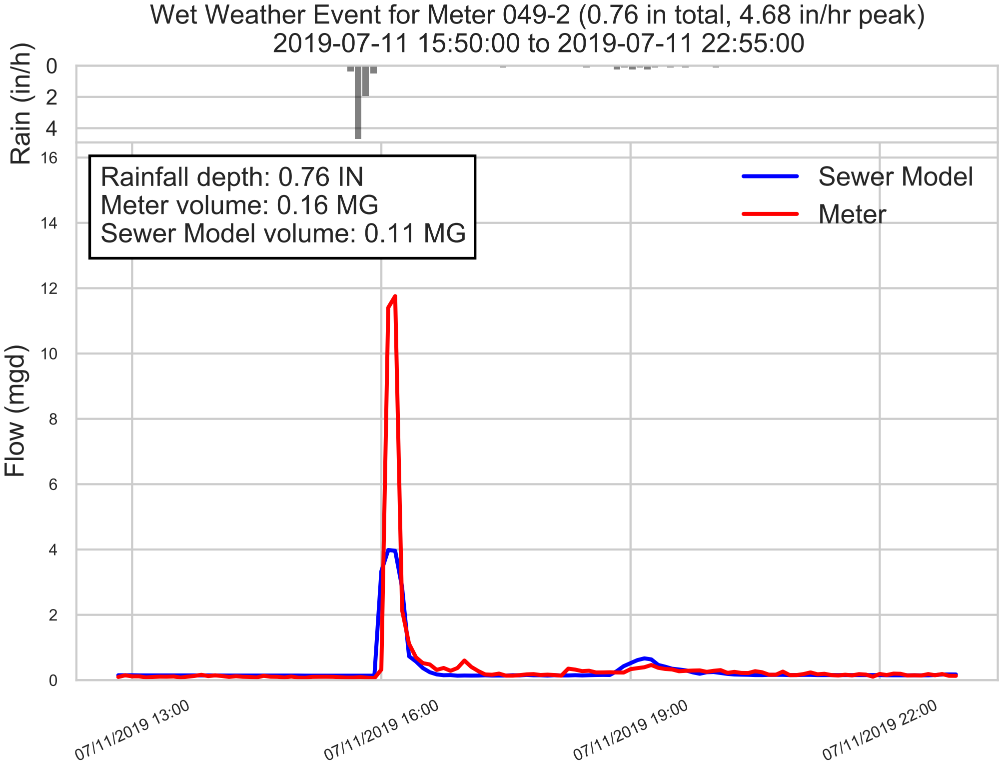


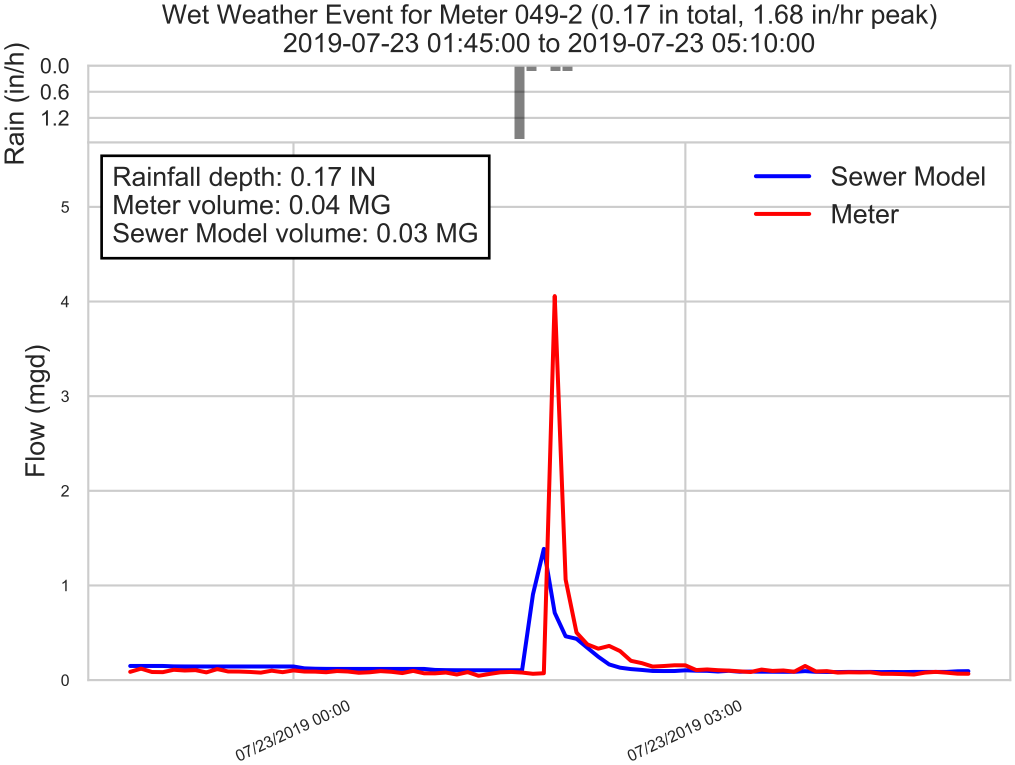
Wet Weather Event for Meter 049-2 (0.19 in total, 0.48 in/hr peak)
2019-06-18 18:50:00 to 2019-06-19 04:10:00


Wet Weather Event for Meter 049-2 (0.46 in total, 2.16 in/hr peak)
2019-06-25 02:10:00 to 2019-06-25 06:25:00
Rain (in/h)
0.0
0.8
1.6
5
4
3
2
1
0
Flow (mgd)
Rainfall depth: 0.46 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
06/24/2019 23:00
06/25/2019 02:00
06/25/2019 05:00

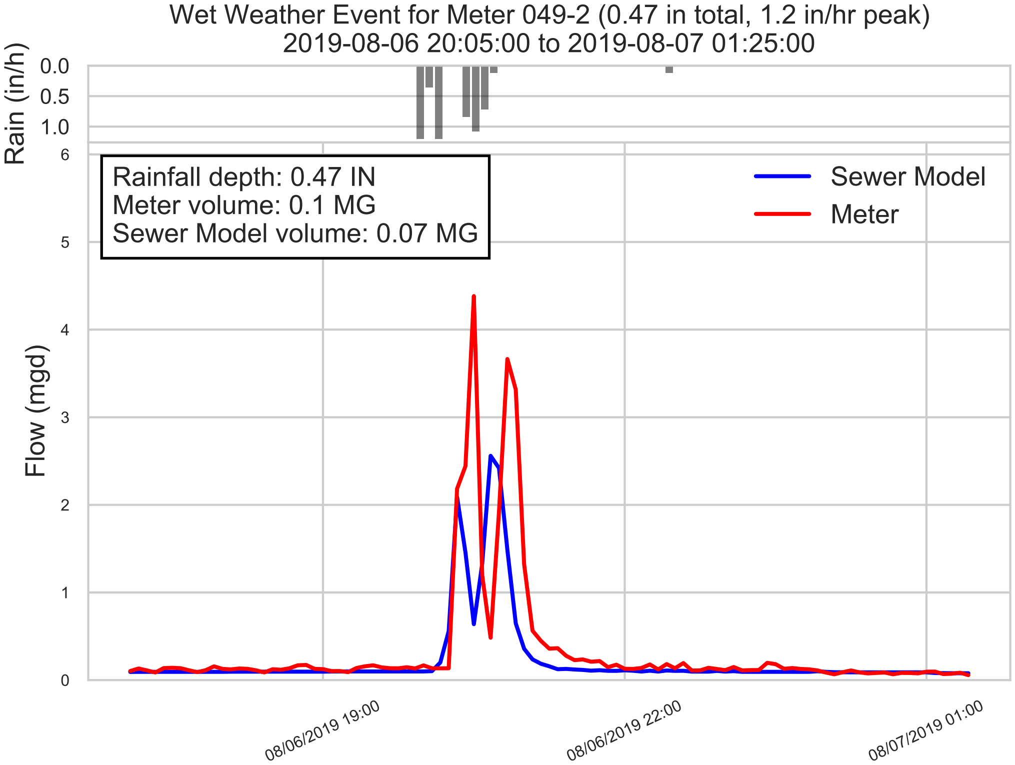
Wet Weather Event for Meter 049-2 (0.64 in total, 3.0 in/hr peak)
2019-07-02 17:30:00 to 2019-07-02 23:40:00



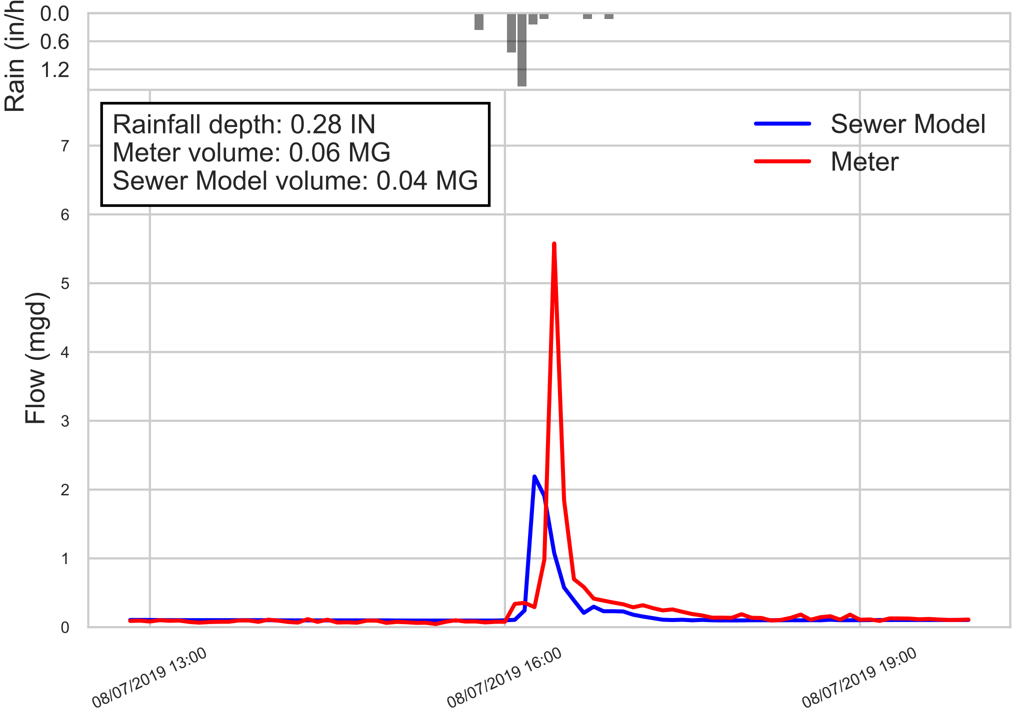

Wet Weather Event for Meter 049-2 (0.76 in total, 4.68 in/hr peak)
2019-07-11 15:50:00 to 2019-07-11 22:55:00
Rain (in/h)
0
2
4
Flow (mgd)
0
2
4
6
8
10
12
14
16
Rainfall depth: 0.76 IN
Meter volume: 0.16 MG
Sewer Model volume: 0.11 MG
Sewer Model
Meter
07/11/2019 13:00
07/11/2019 16:00
07/11/2019 19:00
07/11/2019 22:00



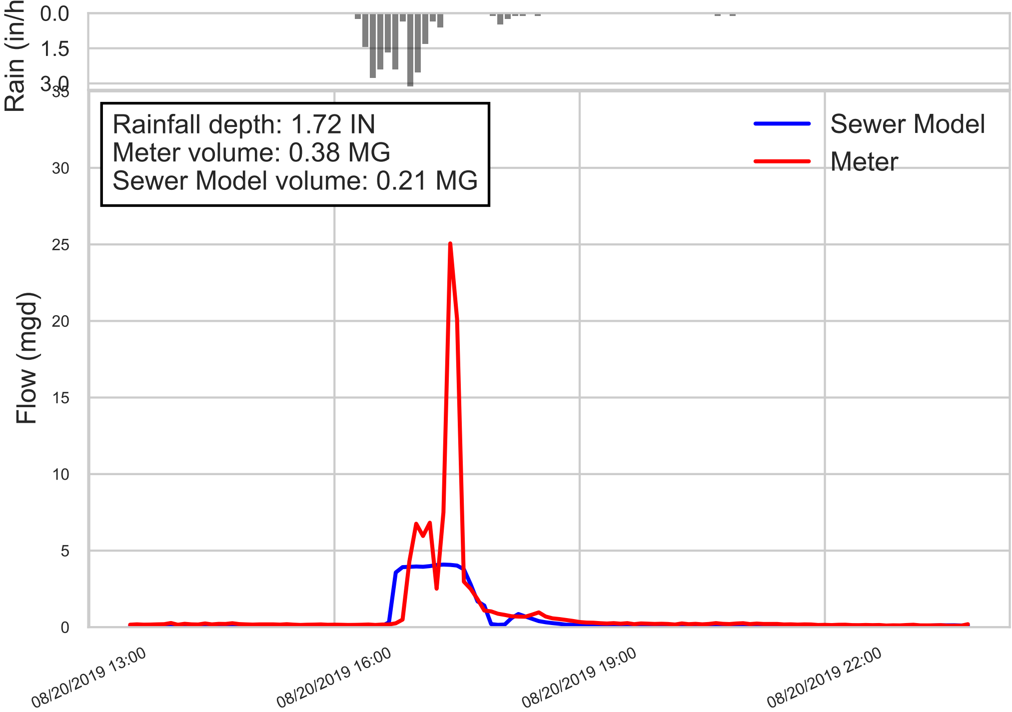
Rainfall depth: 0.17 IN
Meter volume: 0.04 MG
Sewer Model volume: 0.03 MG


Wet Weather Event for Meter 049-2 (0.47 in total, 1.2 in/hr peak)
2019-08-06 20:05:00 to 2019-08-07 01:25:00
Rain (in/h)
0.0
0.5
1.0
Flow (mgd)
6
5
4
3
2
1
0
Rainfall depth: 0.47 IN
Meter volume: 0.1 MG
Sewer Model volume: 0.07 MG
Sewer Model
Meter
08/06/2019 19:00
08/06/2019 22:00
08/07/2019 01:00

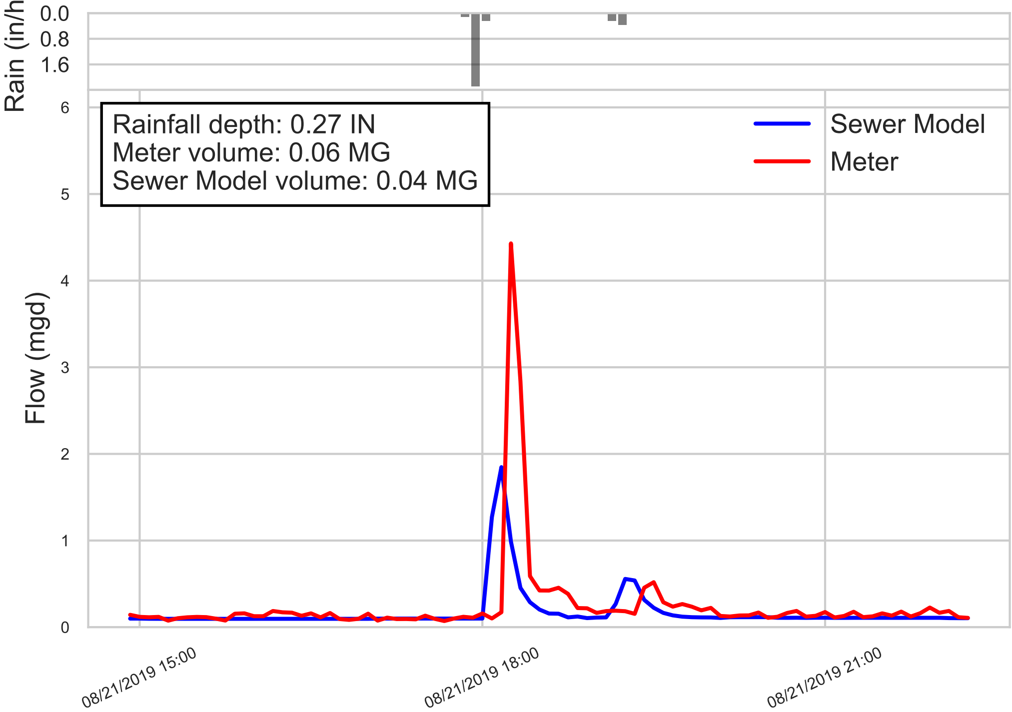
Wet Weather Event for Meter 049-2 (0.28 in total, 1.56 in/hr peak)
2019-08-07 15:50:00 to 2019-08-07 19:55:00



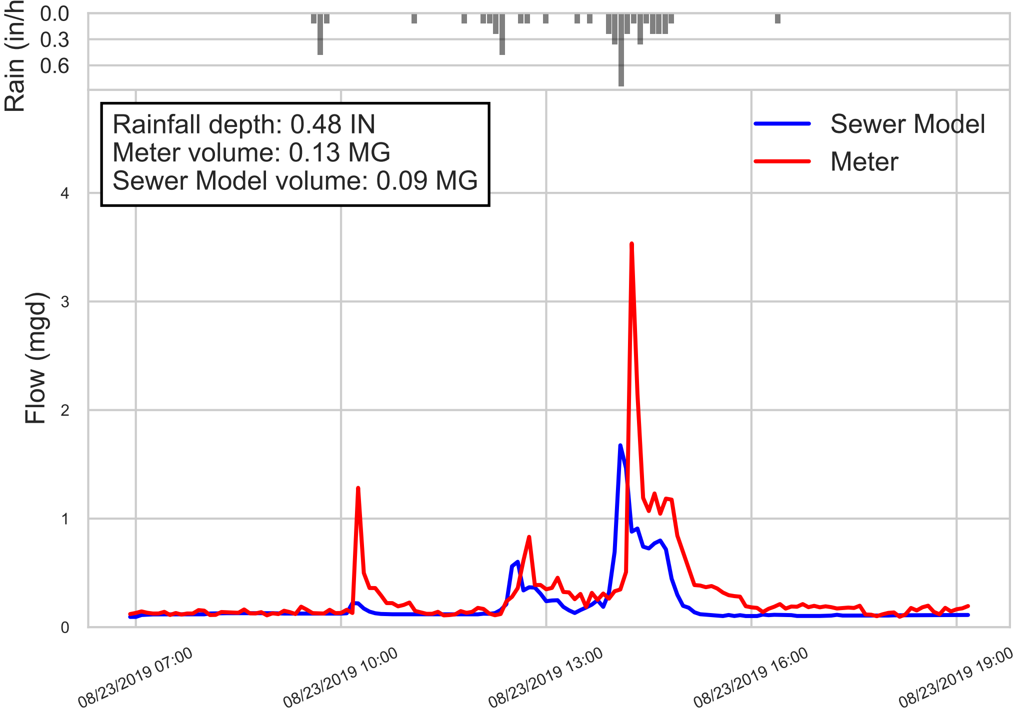
Wet Weather Event for Meter 049-2 (1.72 in total, 3.12 in/hr peak)
2019-08-20 16:30:00 to 2019-08-20 23:45:00

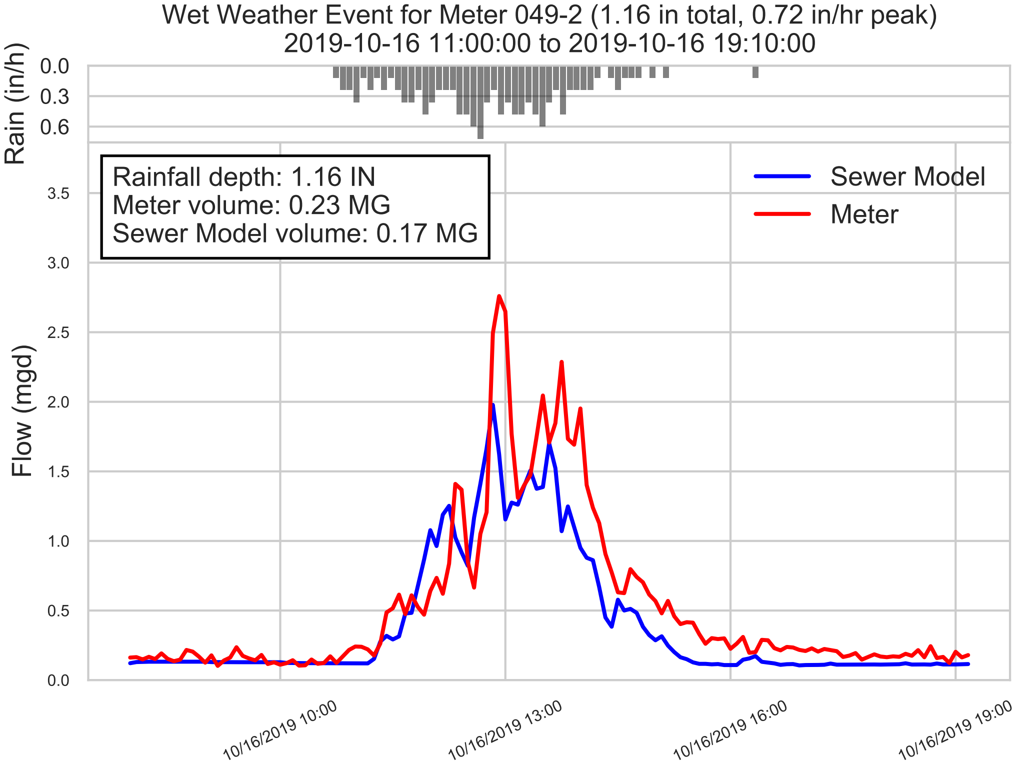


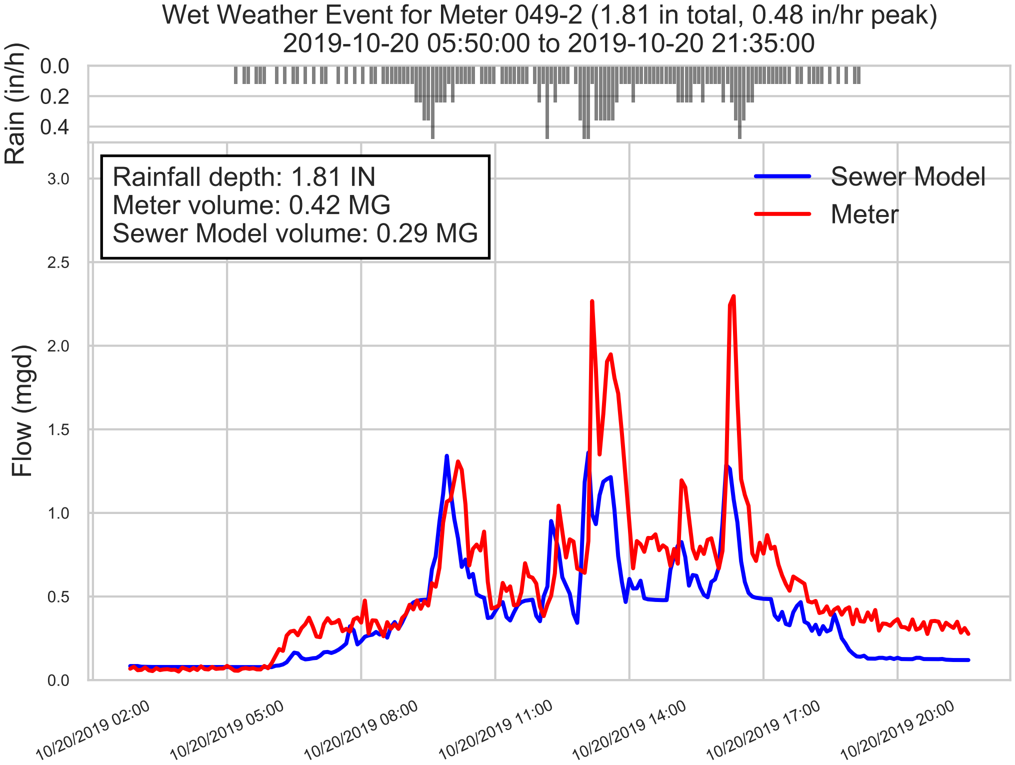
Wet Weather Event for Meter 049-2 (0.27 in total, 2.28 in/hr peak)
2019-08-21 17:55:00 to 2019-08-21 22:15:00

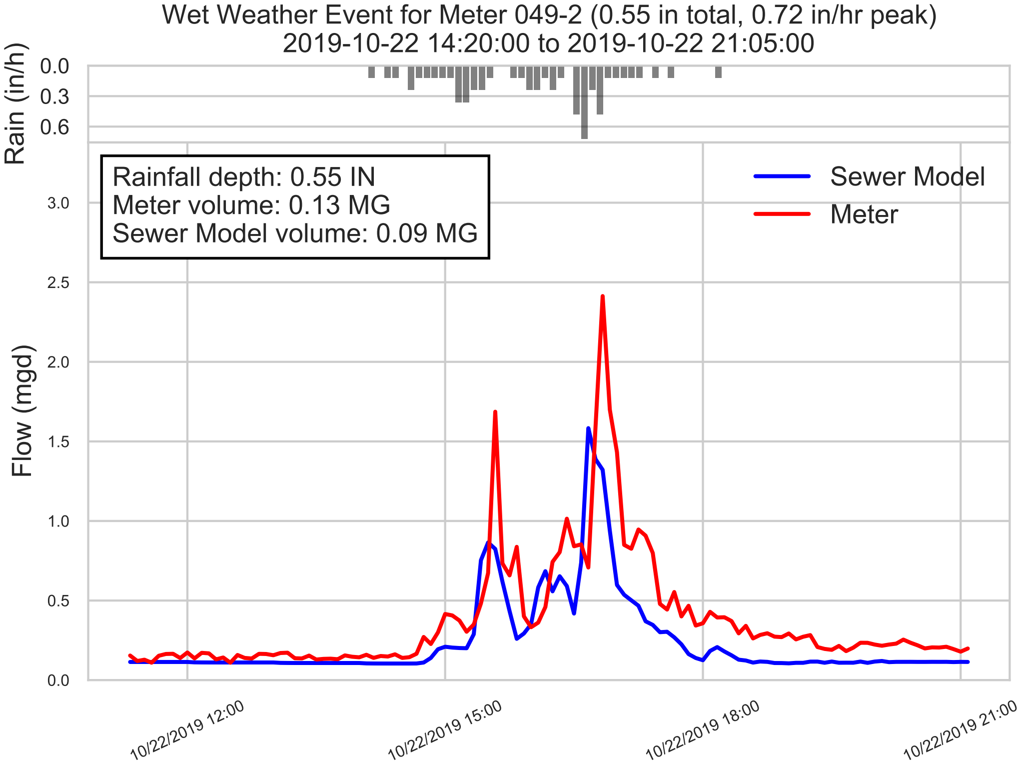


Wet Weather Event for Meter 049-2 (0.48 in total, 0.84 in/hr peak)
2019-08-23 09:55:00 to 2019-08-23 19:10:00



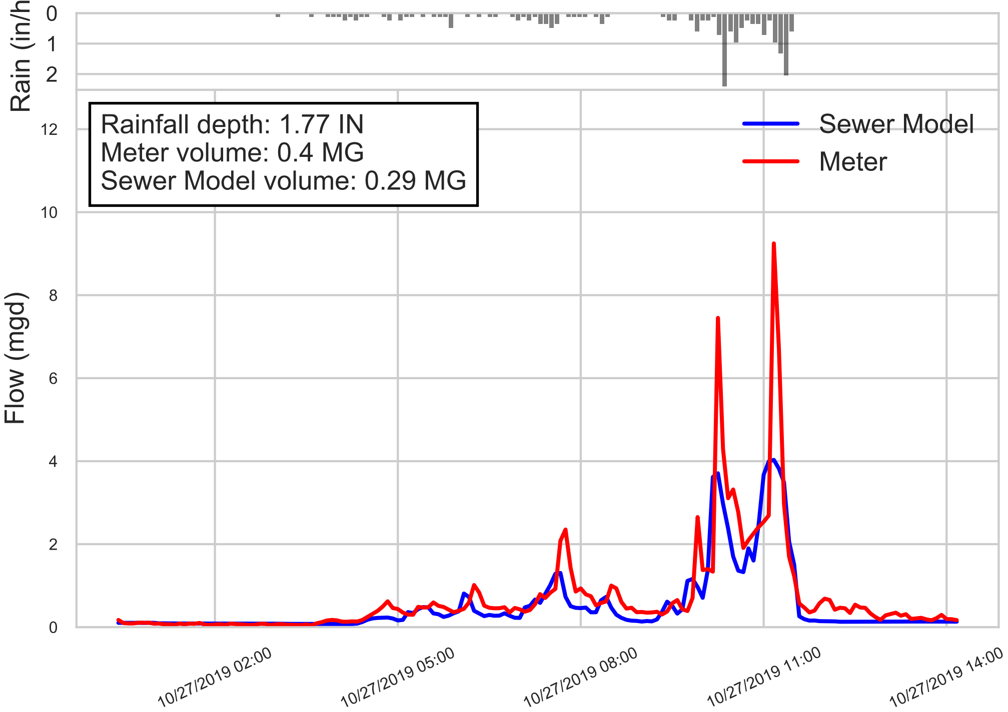

Wet Weather Event for Meter 049-2 (1.16 in total, 0.72 in/hr peak)
2019-10-16 11:00:00 to 2019-10-16 19:10:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 1.16 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.17 MG
Sewer Model
Meter
Flow (mgd)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
10/16/2019 10:00
10/16/2019 13:00
10/16/2019 16:00
10/16/2019 19:00


Wet Weather Event for Meter 049-2 (1.81 in total, 0.48 in/hr peak)
2019-10-20 05:50:00 to 2019-10-20 21:35:00
Rain (in/h)
0.0
0.2
0.4
Rainfall depth: 1.81 IN
Meter volume: 0.42 MG
Sewer Model volume: 0.29 MG
Sewer Model
Meter
Flow (mgd)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
10/20/2019 02:00
10/20/2019 05:00
10/20/2019 08:00
10/20/2019 11:00
10/20/2019 14:00
10/20/2019 17:00
10/20/2019 20:00



Wet Weather Event for Meter 049-2 (0.55 in total, 0.72 in/hr peak)
2019-10-22 14:20:00 to 2019-10-22 21:05:00

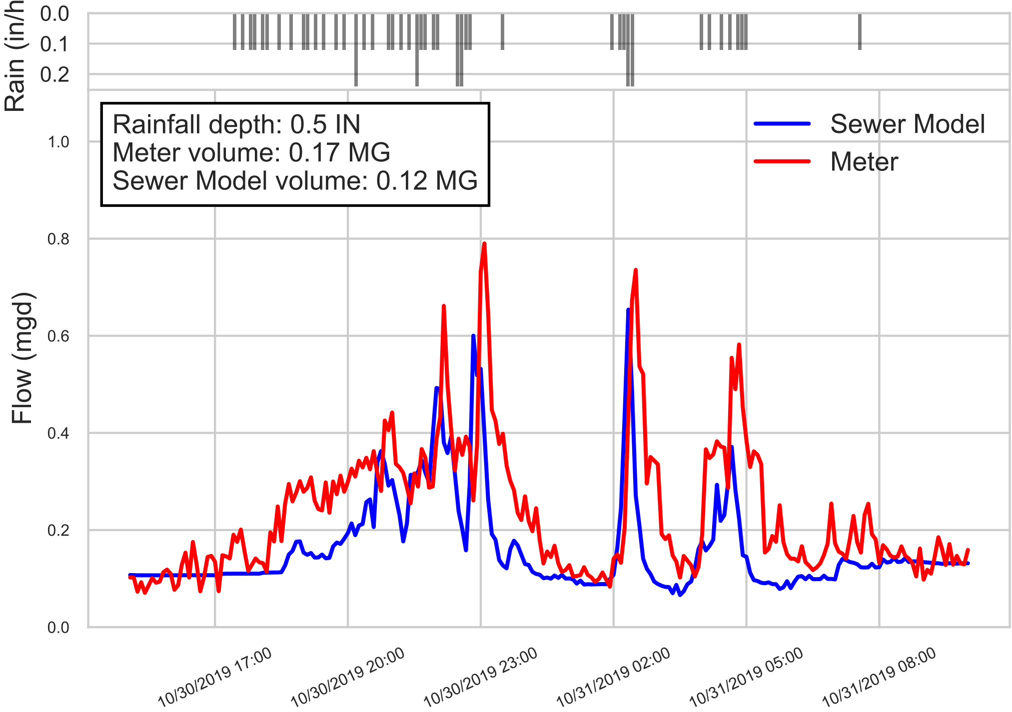
Rainfall depth: 0.55 IN
Meter volume: 0.13 MG
Sewer Model volume: 0.09 MG



Wet Weather Event for Meter 049-2 (1.77 in total, 2.4 in/hr peak)
2019-10-27 03:25:00 to 2019-10-27 14:10:00

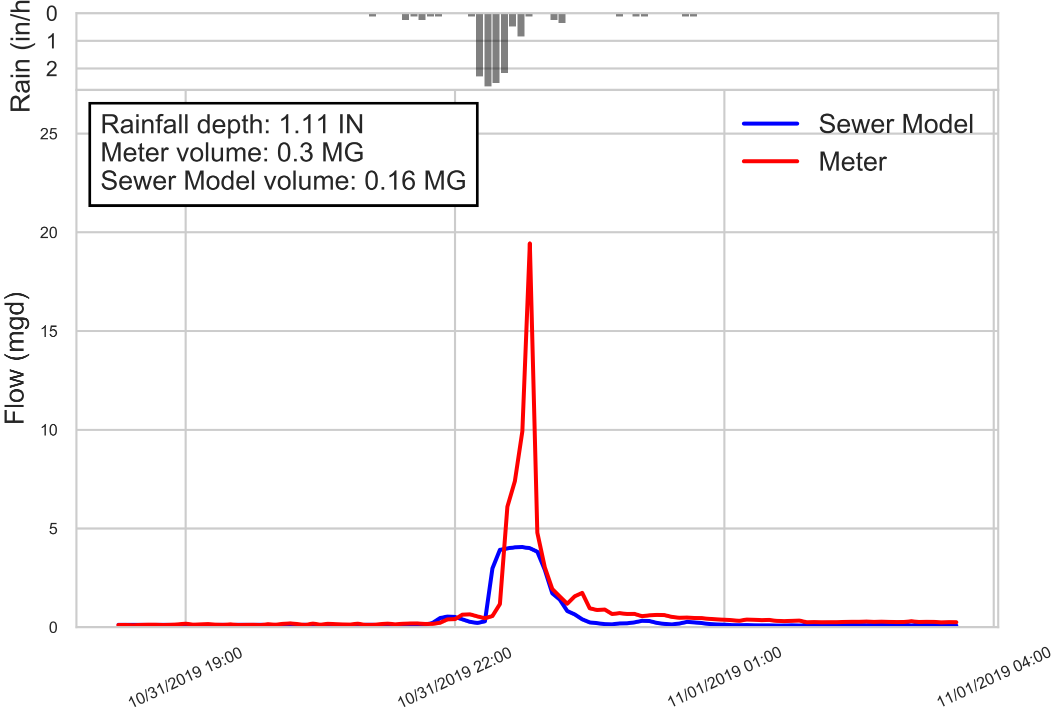
Rainfall depth: 1.77 IN
Meter volume: 0.4 MG
Sewer Model volume: 0.29 MG

Wet Weather Event for Meter 049-2 (0.5 in total, 0.24 in/hr peak)
2019-10-30 18:05:00 to 2019-10-31 10:00:00

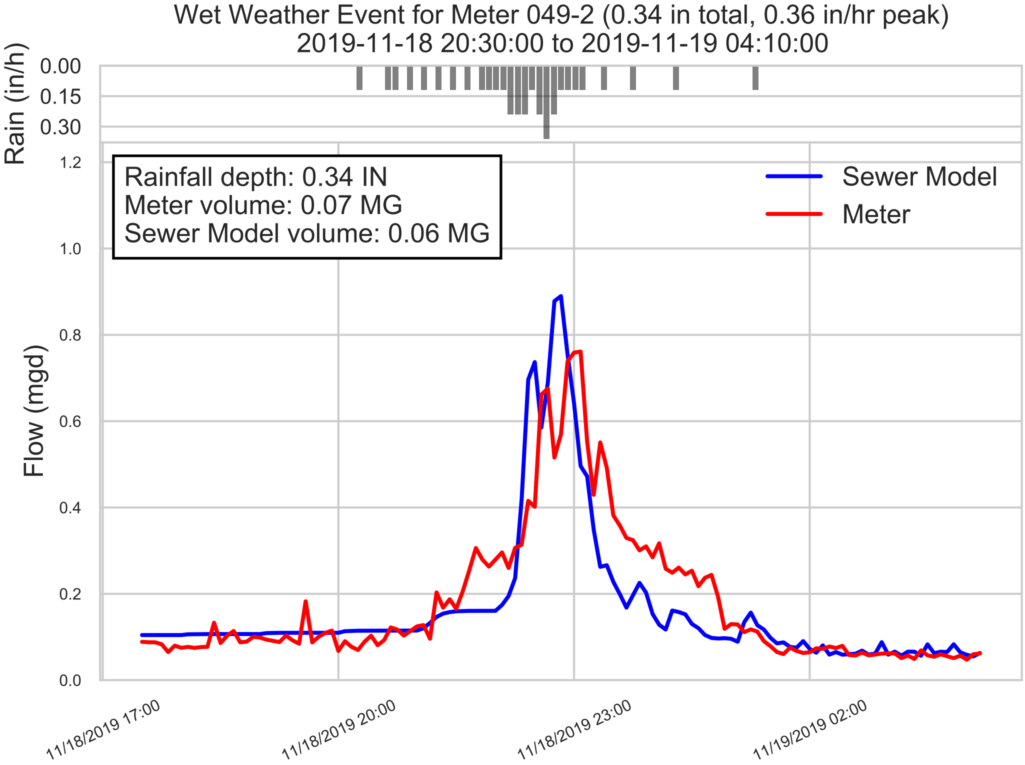


Rainfall depth: 0.5 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.12 MG

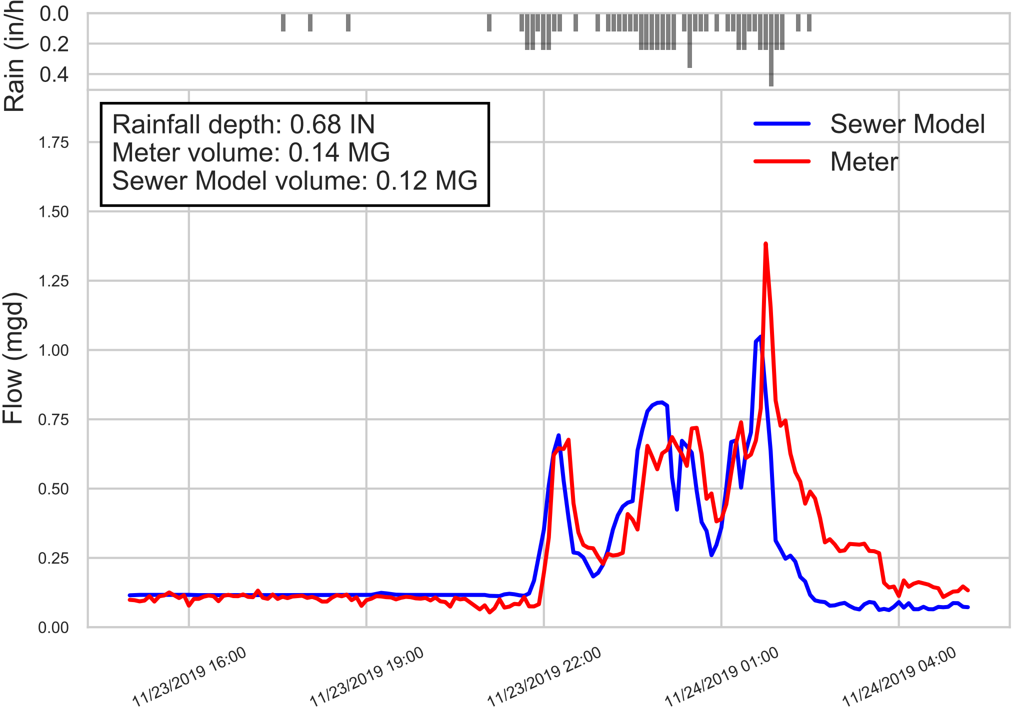
Wet Weather Event for Meter 049-2 (1.11 in total, 2.64 in/hr peak)
2019-10-31 21:15:00 to 2019-11-01 03:35:00

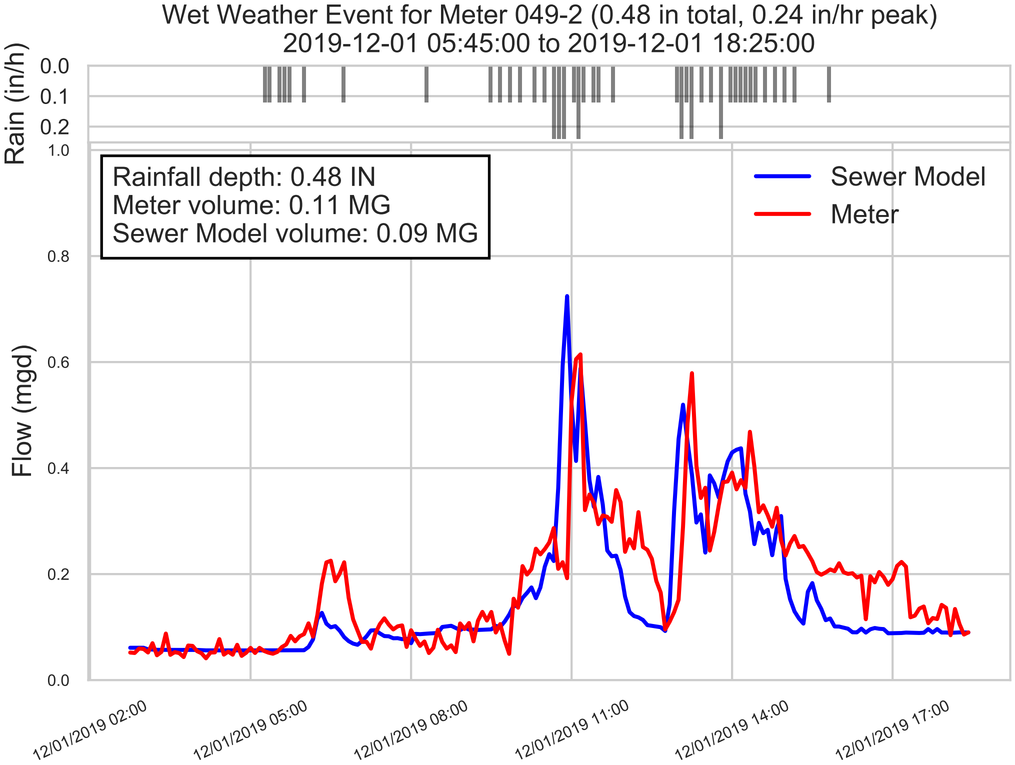


Rainfall depth: 1.11 IN
Meter volume: 0.3 MG
Sewer Model volume: 0.16 MG

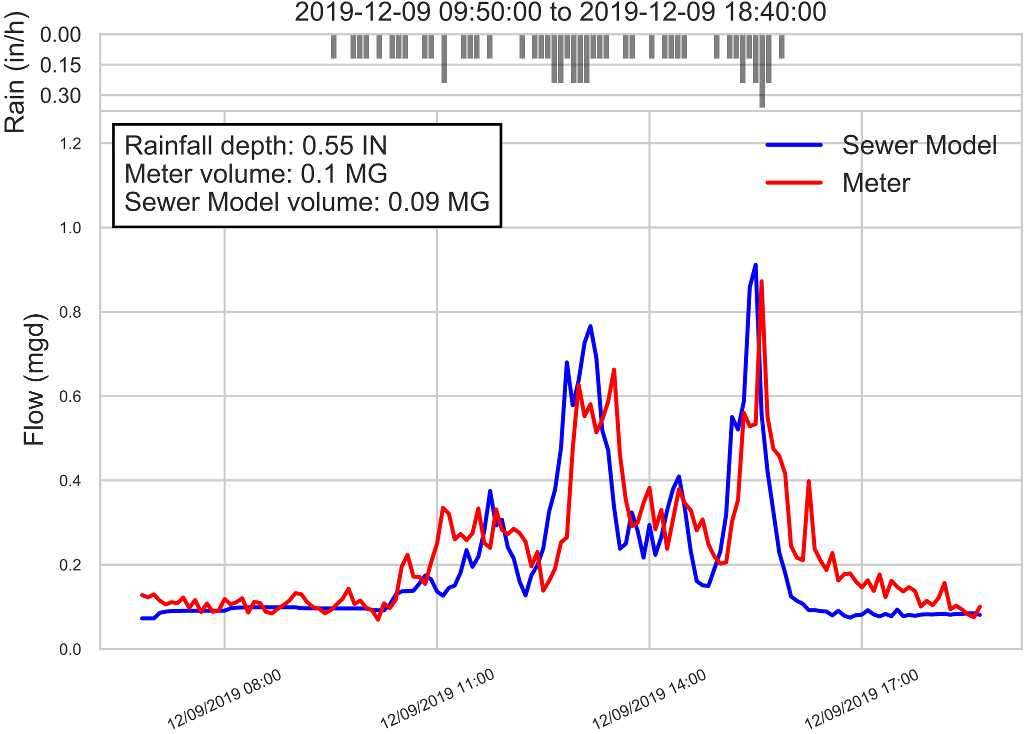

Wet Weather Event for Meter 049-2 (0.34 in total, 0.36 in/hr peak)
2019-11-18 20:30:00 to 2019-11-19 04:10:00
Rain (in/h)
0.00
0.15
0.30
Flow (mgd)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Rainfall depth: 0.34 IN
Meter volume: 0.07 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
11/18/2019 17:00
11/18/2019 20:00
11/18/2019 23:00
11/19/2019 02:00

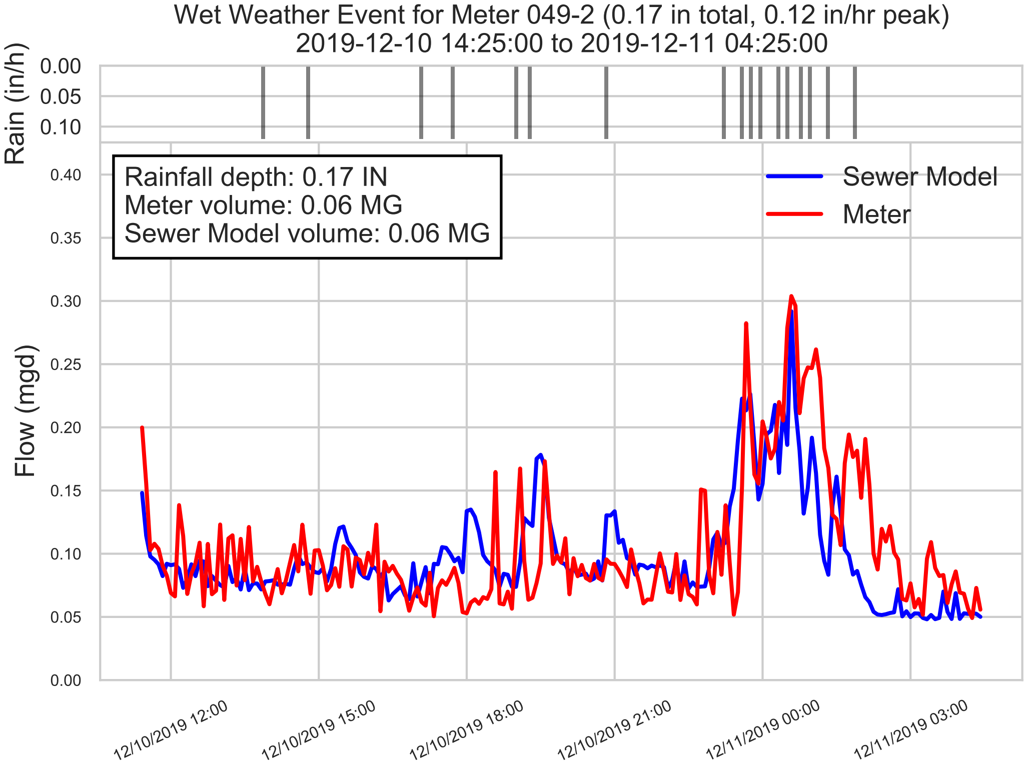
Wet Weather Event for Meter 049-2 (0.68 in total, 0.48 in/hr peak)
2019-11-23 18:00:00 to 2019-11-24 05:10:00

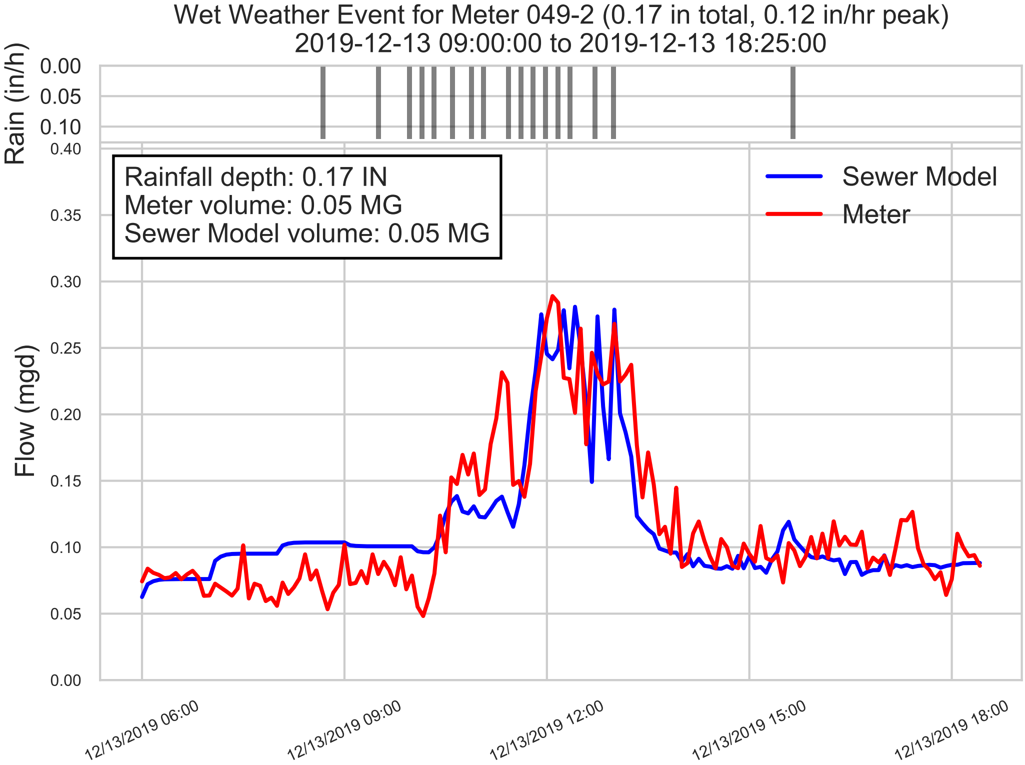



Wet Weather Event for Meter 049-2 (0.48 in total, 0.24 in/hr peak)
2019-12-01 05:45:00 to 2019-12-01 18:25:00
Rain (in/h)
0.0
0.1
0.2
1.0
0.8
0.6
0.4
0.2
0.0
Flow (mgd)
Rainfall depth: 0.48 IN
Meter volume: 0.11 MG
Sewer Model volume: 0.09 MG
Sewer Model
Meter
12/01/2019 02:00
12/01/2019 05:00
12/01/2019 08:00
12/01/2019 11:00
12/01/2019 14:00
12/01/2019 17:00

Wet Weather Event for Meter 049-2 (0.55 in total, 0.36 in/hr peak)
2019-12-09 09:50:00 to 2019-12-09 18:40:00



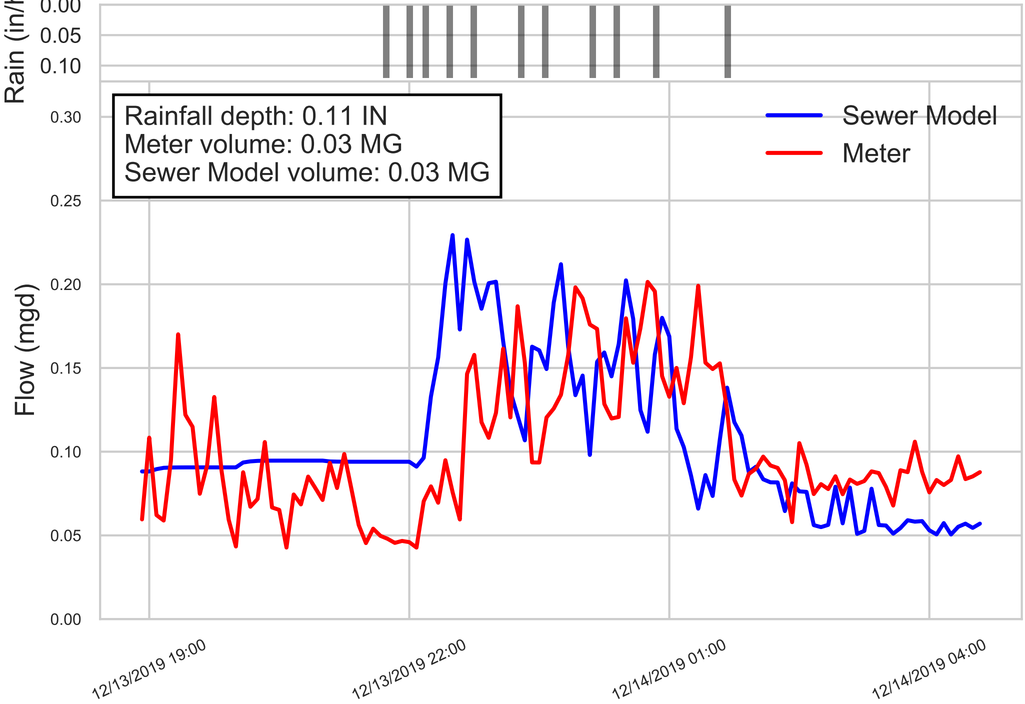

Wet Weather Event for Meter 049-2 (0.17 in total, 0.12 in/hr peak)
2019-12-10 14:25:00 to 2019-12-11 04:25:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.17 IN
Meter volume: 0.06 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
Flow (mgd)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
12/10/2019 12:00
12/10/2019 15:00
12/10/2019 18:00
12/10/2019 21:00
12/11/2019 00:00
12/11/2019 03:00

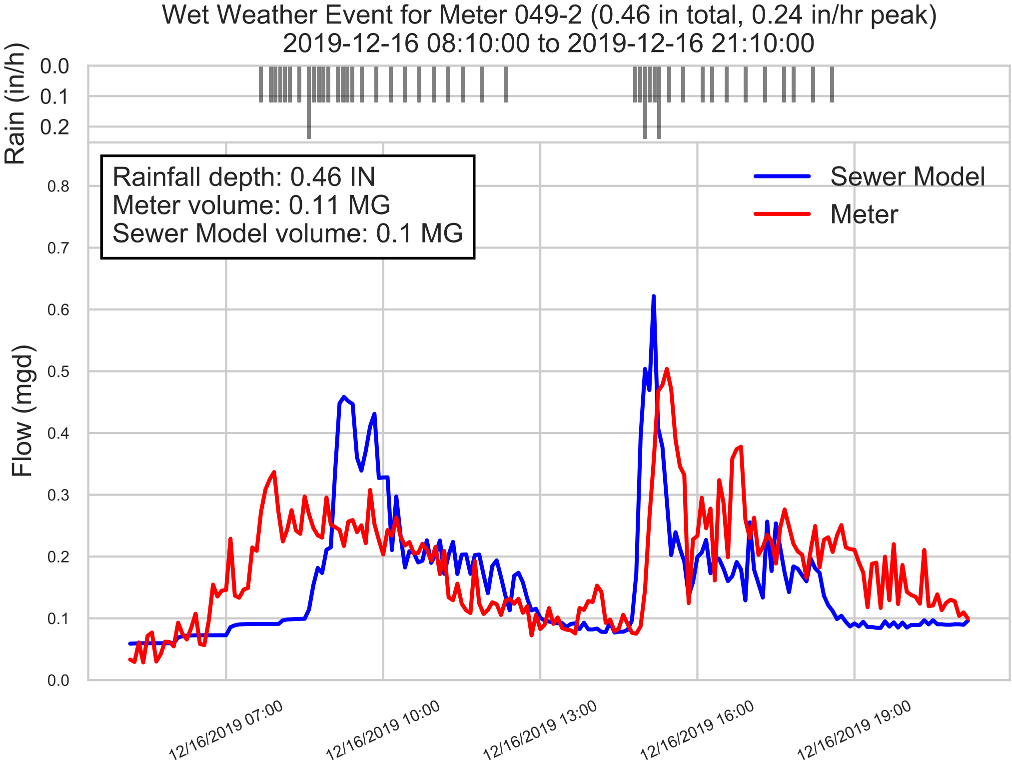


Wet Weather Event for Meter 049-2 (0.17 in total, 0.12 in/hr peak)
2019-12-13 09:00:00 to 2019-12-13 18:25:00

Rainfall depth: 0.17 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.05 MG

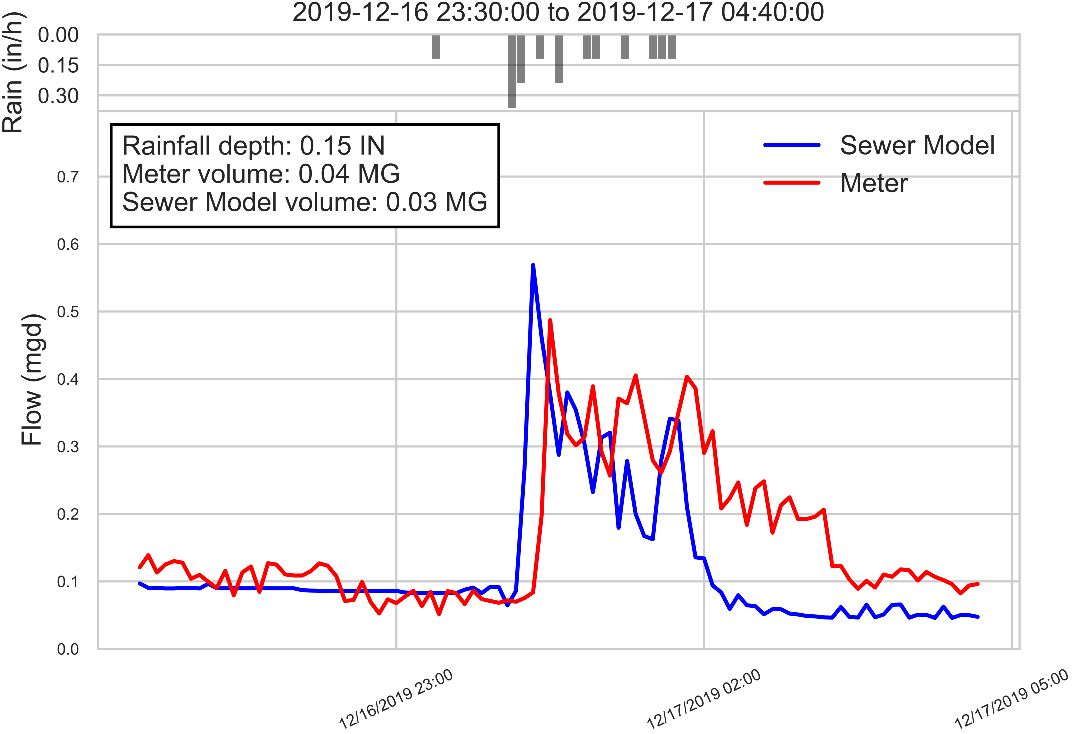
Wet Weather Event for Meter 049-2 (0.11 in total, 0.12 in/hr peak)
2019-12-13 21:55:00 to 2019-12-14 04:35:00

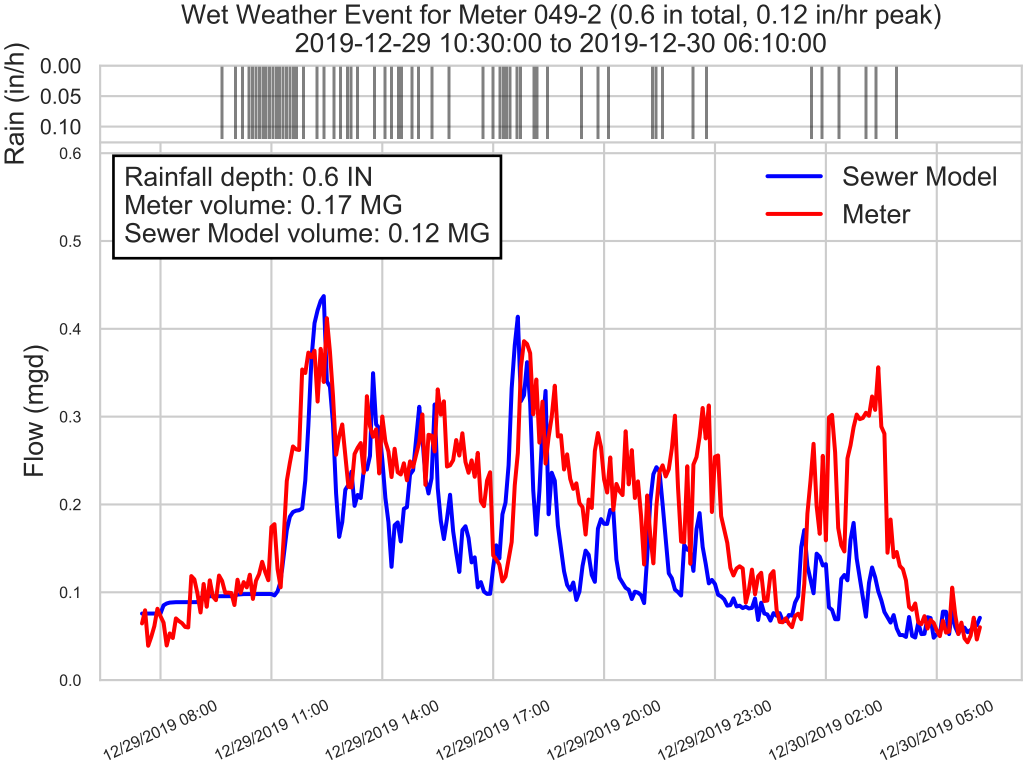


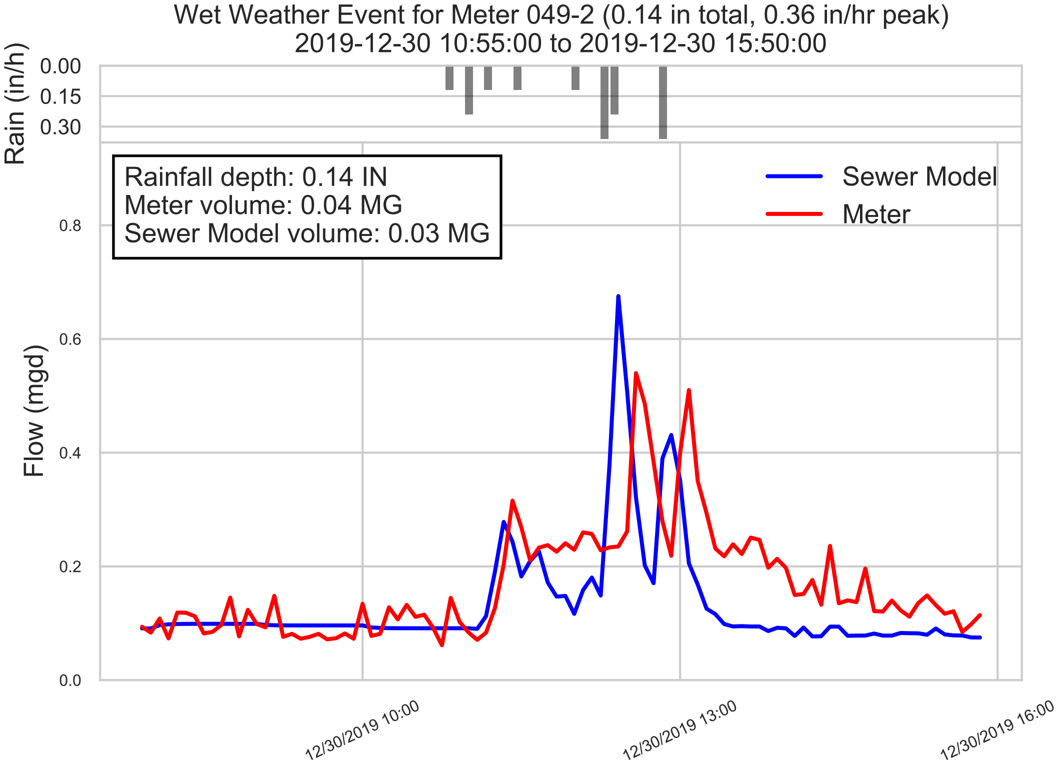


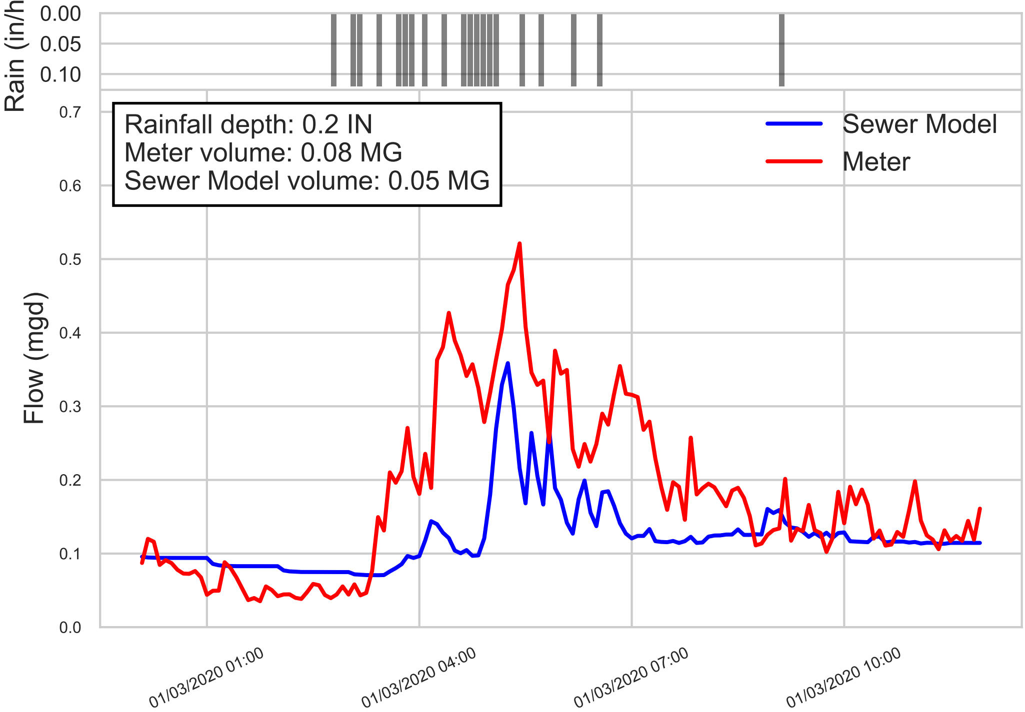
Wet Weather Event for Meter 049-2 (0.46 in total, 0.24 in/hr peak)
2019-12-16 08:10:00 to 2019-12-16 21:10:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.46 IN
Meter volume: 0.11 MG
Sewer Model volume: 0.1 MG
Sewer Model
Meter
Flow (mgd)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
12/16/2019 07:00
12/16/2019 10:00
12/16/2019 13:00
12/16/2019 16:00
12/16/2019 19:00

Wet Weather Event for Meter 049-2 (0.15 in total, 0.36 in/hr peak)
2019-12-16 23:30:00 to 2019-12-17 04:40:00

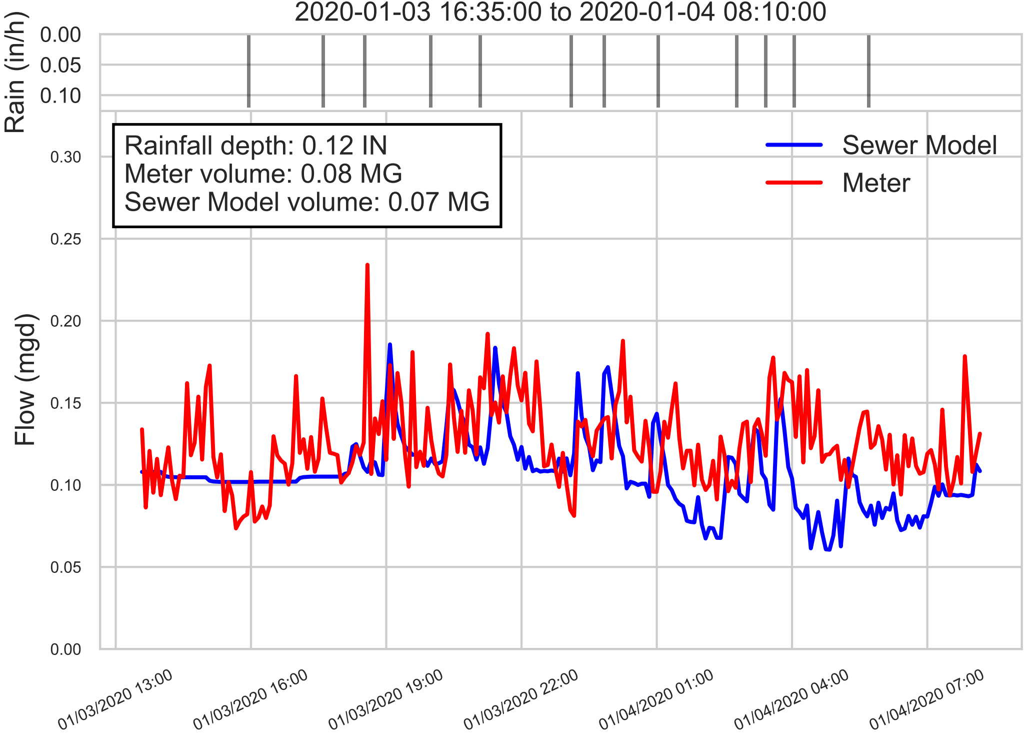



Wet Weather Event for Meter 049-2 (0.6 in total, 0.12 in/hr peak)
2019-12-29 10:30:00 to 2019-12-30 06:10:00
Rain (in/h)
0.00
0.05
0.10
Flow (mgd)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Rainfall depth: 0.6 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.12 MG
Sewer Model
Meter
12/29/2019 08:00
12/29/2019 11:00
12/29/2019 14:00
12/29/2019 17:00
12/29/2019 20:00
12/29/2019 23:00
12/30/2019 02:00
12/30/2019 05:00

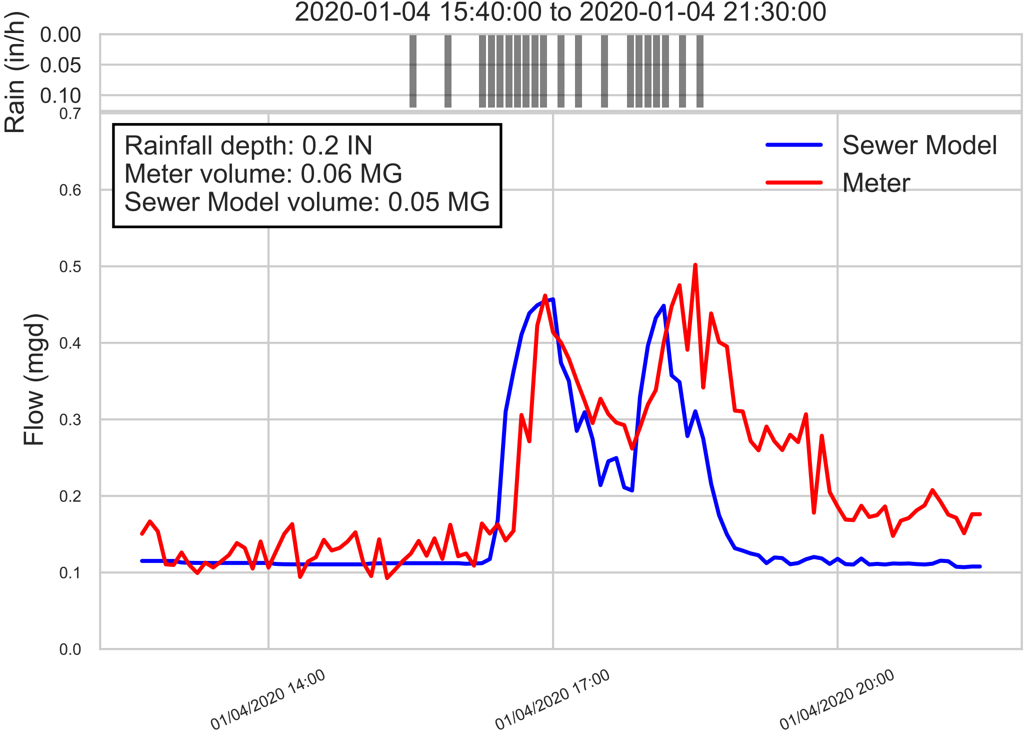

Wet Weather Event for Meter 049-2 (0.14 in total, 0.36 in/hr peak)
2019-12-30 10:55:00 to 2019-12-30 15:50:00
Rain (in/h)
0.00
0.15
0.30
Rainfall depth: 0.14 IN
Meter volume: 0.04 MG
Sewer Model volume: 0.03 MG
Sewer Model
Meter
Flow (mgd)
0.8
0.6
0.4
0.2
0.0
12/30/2019 10:00
12/30/2019 13:00
12/30/2019 16:00



Wet Weather Event for Meter 049-2 (0.2 in total, 0.12 in/hr peak)
2020-01-03 03:05:00 to 2020-01-03 11:55:00

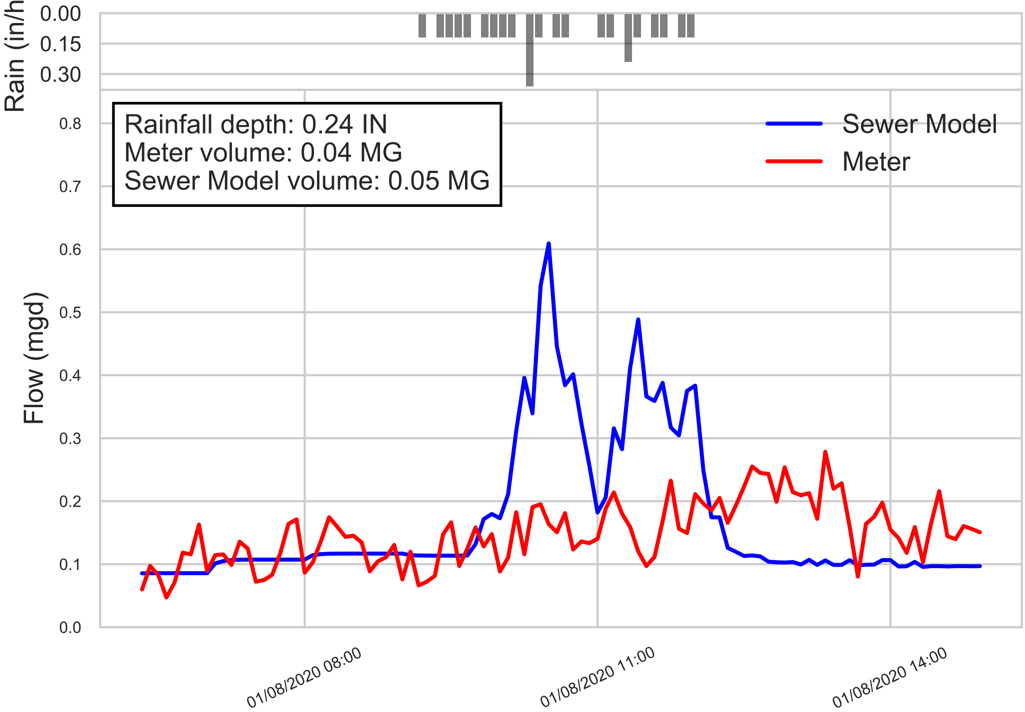


Wet Weather Event for Meter 049-2 (0.12 in total, 0.12 in/hr peak)
2020-01-03 16:35:00 to 2020-01-04 08:10:00

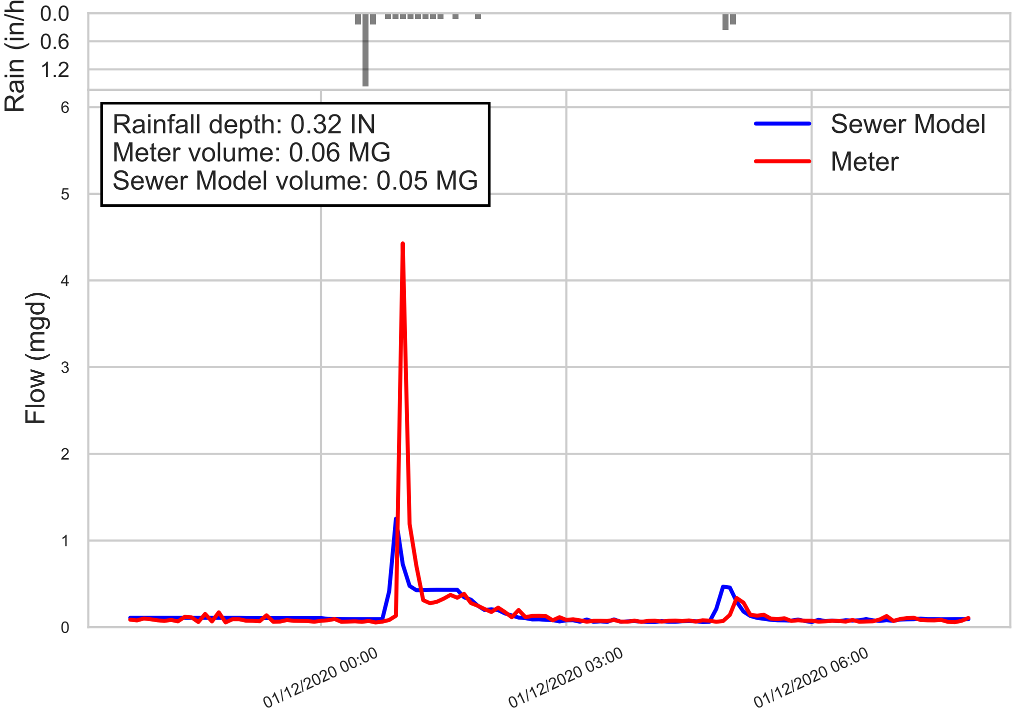


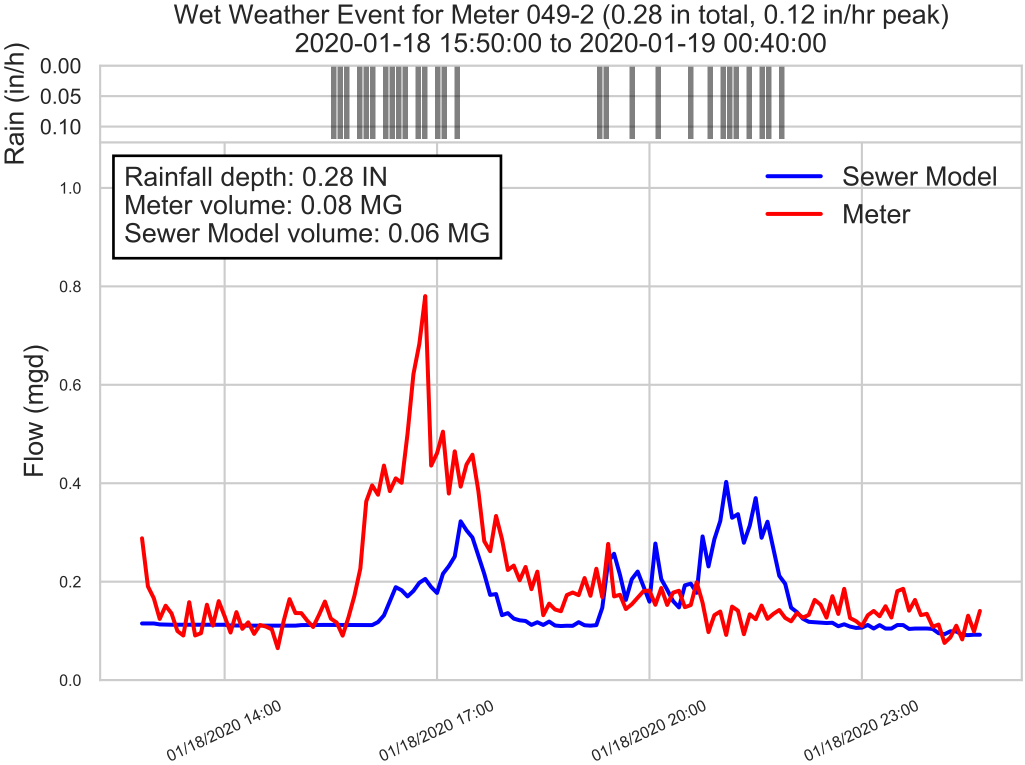
Wet Weather Event for Meter 049-2 (0.2 in total, 0.12 in/hr peak)
2020-01-04 15:40:00 to 2020-01-04 21:30:00

Wet Weather Event for Meter 049-2 (0.24 in total, 0.36 in/hr peak)
2020-01-08 09:20:00 to 2020-01-08 14:55:00

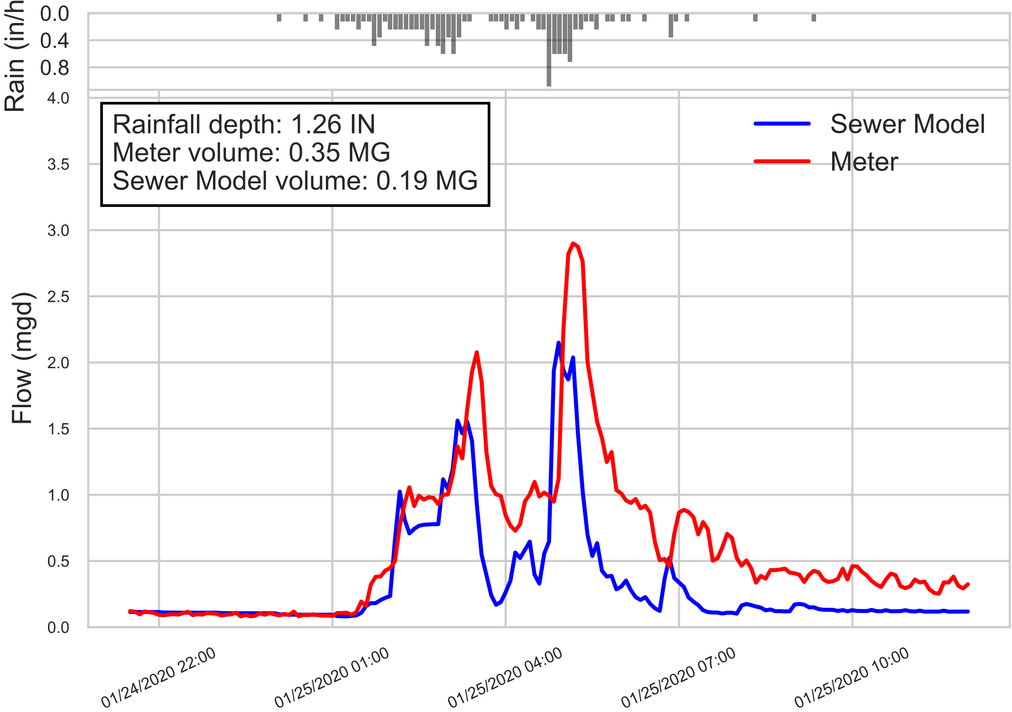


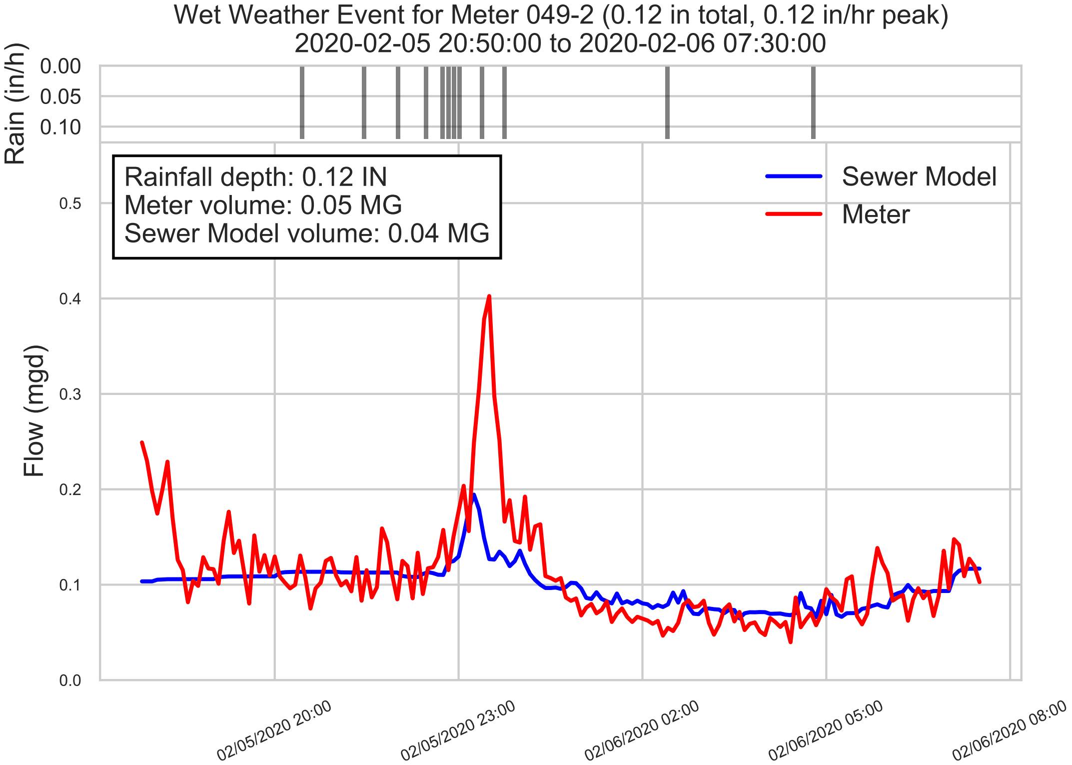
Wet Weather Event for Meter 049-2 (0.32 in total, 1.56 in/hr peak)
2020-01-12 00:40:00 to 2020-01-12 07:55:00



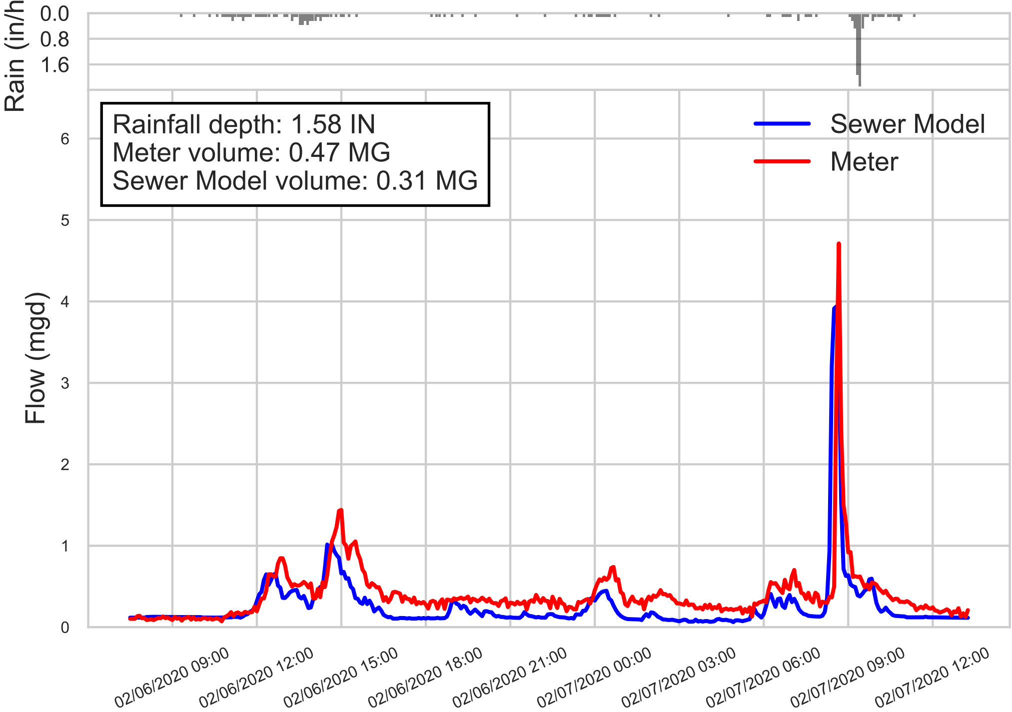

Wet Weather Event for Meter 049-2 (0.28 in total, 0.12 in/hr peak)
2020-01-18 15:50:00 to 2020-01-19 00:40:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.28 IN
Meter volume: 0.08 MG
Sewer Model volume: 0.06 MG
Sewer Model
Meter
Flow (mgd)
1.0
0.8
0.6
0.4
0.2
0.0
01/18/2020 14:00
01/18/2020 17:00
01/18/2020 20:00
01/18/2020 23:00

Wet Weather Event for Meter 049-2 (1.26 in total, 1.08 in/hr peak)
2020-01-25 00:30:00 to 2020-01-25 12:00:00

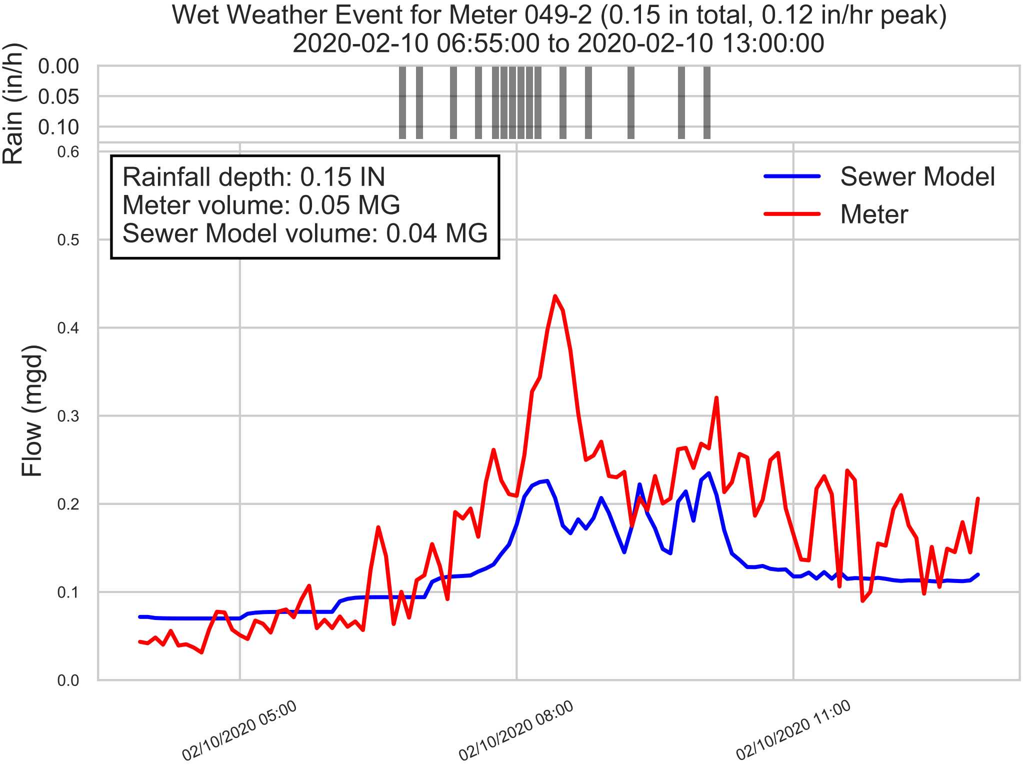


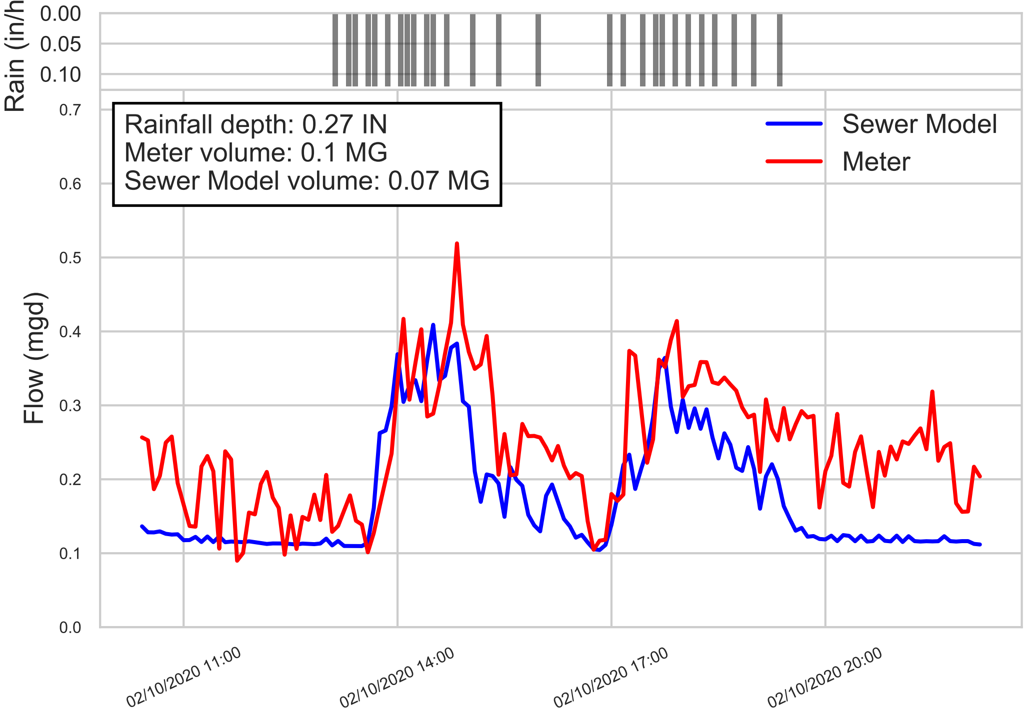

Wet Weather Event for Meter 049-2 (0.12 in total, 0.12 in/hr peak)
2020-02-05 20:50:00 to 2020-02-06 07:30:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.12 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.04 MG
Sewer Model
Meter
Flow (mgd)
0.5
0.4
0.3
0.2
0.1
0.0
02/05/2020 20:00
02/05/2020 23:00
02/06/2020 02:00
02/06/2020 05:00
02/06/2020 08:00

Wet Weather Event for Meter 049-2 (1.58 in total, 2.28 in/hr peak)
2020-02-06 10:30:00 to 2020-02-07 13:15:00

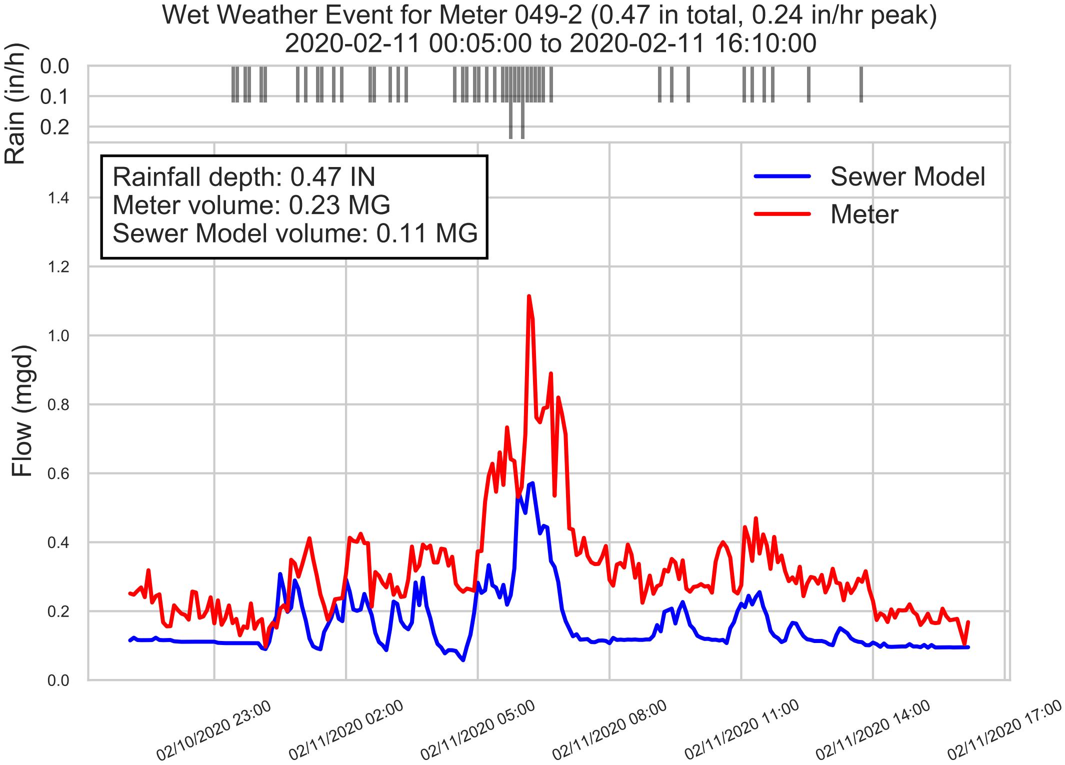


Rainfall depth: 1.58 IN
Meter volume: 0.47 MG
Sewer Model volume: 0.31 MG

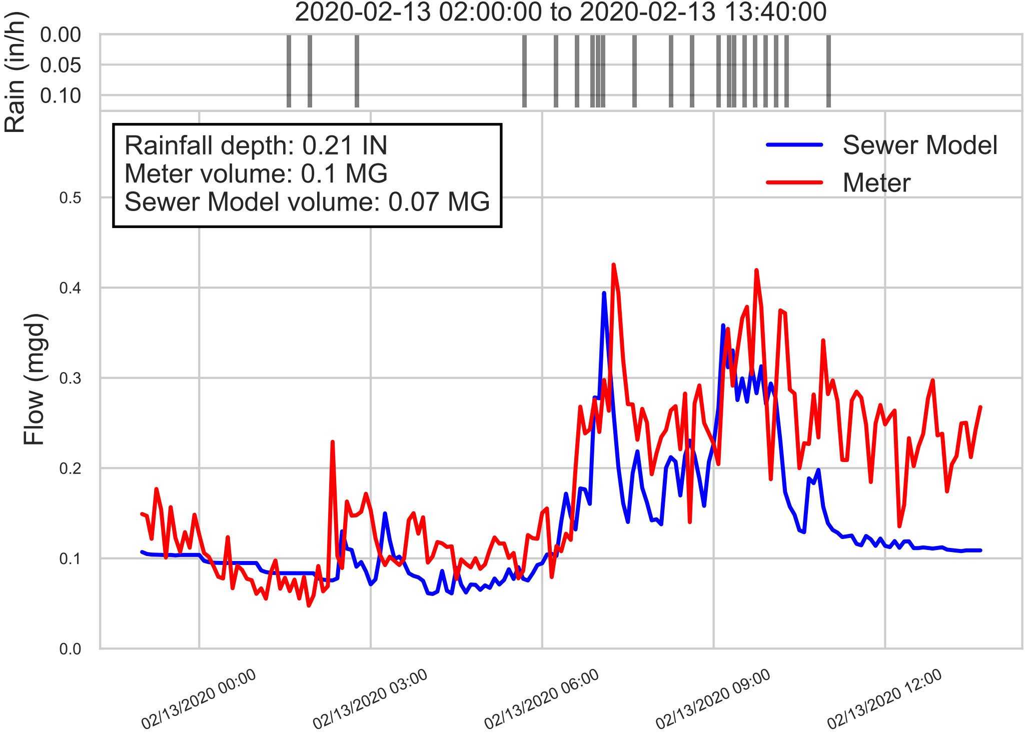

Wet Weather Event for Meter 049-2 (0.15 in total, 0.12 in/hr peak)
2020-02-10 06:55:00 to 2020-02-10 13:00:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.15 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.04 MG
Sewer Model
Meter
Flow (mgd)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
02/10/2020 05:00
02/10/2020 08:00
02/10/2020 11:00

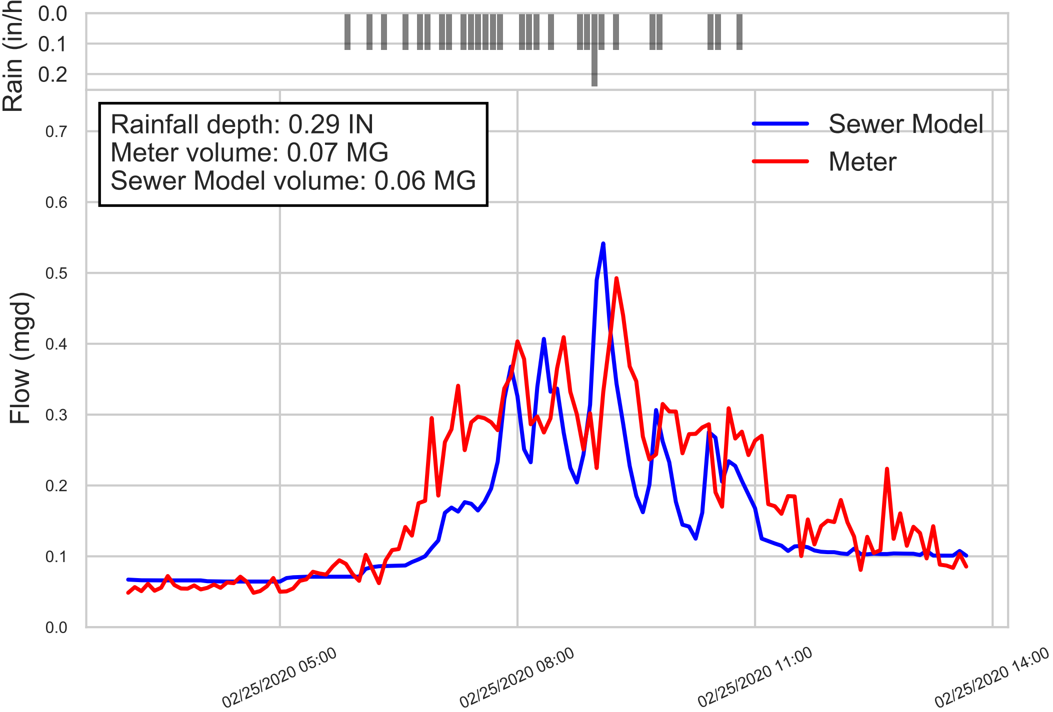


Wet Weather Event for Meter 049-2 (0.27 in total, 0.12 in/hr peak)
2020-02-10 13:25:00 to 2020-02-10 22:10:00

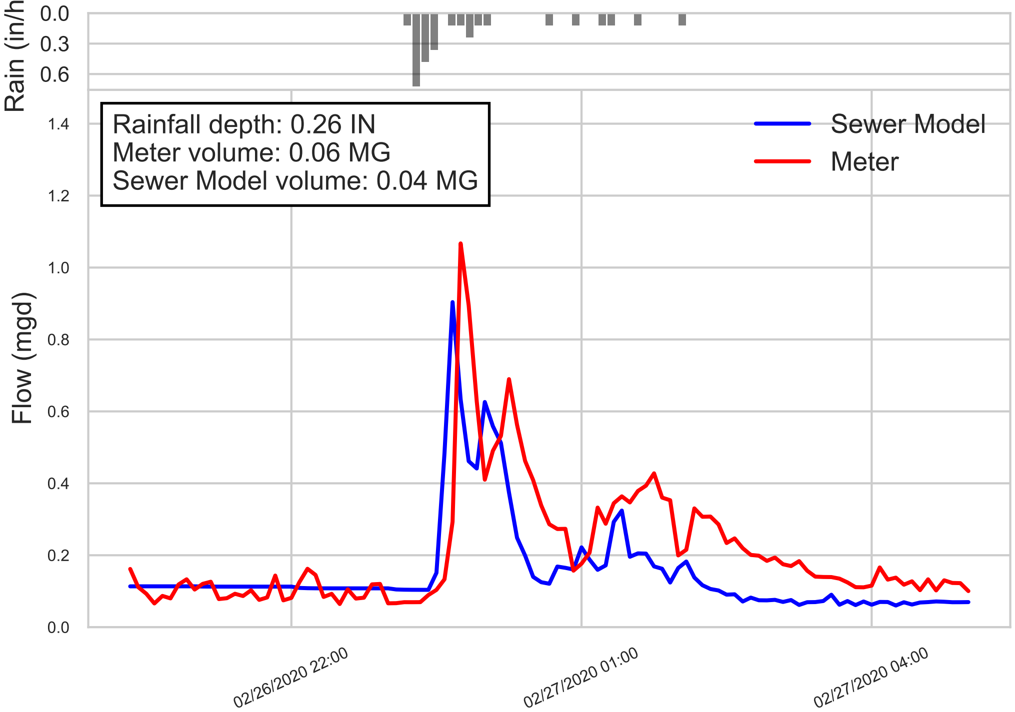

Wet Weather Event for Meter 049-2 (0.47 in total, 0.24 in/hr peak)
2020-02-11 00:05:00 to 2020-02-11 16:10:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.47 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.11 MG
Sewer Model
Meter
Flow (mgd)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
02/10/2020 23:00
02/11/2020 02:00
02/11/2020 05:00
02/11/2020 08:00
02/11/2020 11:00
02/11/2020 14:00
02/11/2020 17:00

Wet Weather Event for Meter 049-2 (0.21 in total, 0.12 in/hr peak)
2020-02-13 02:00:00 to 2020-02-13 13:40:00

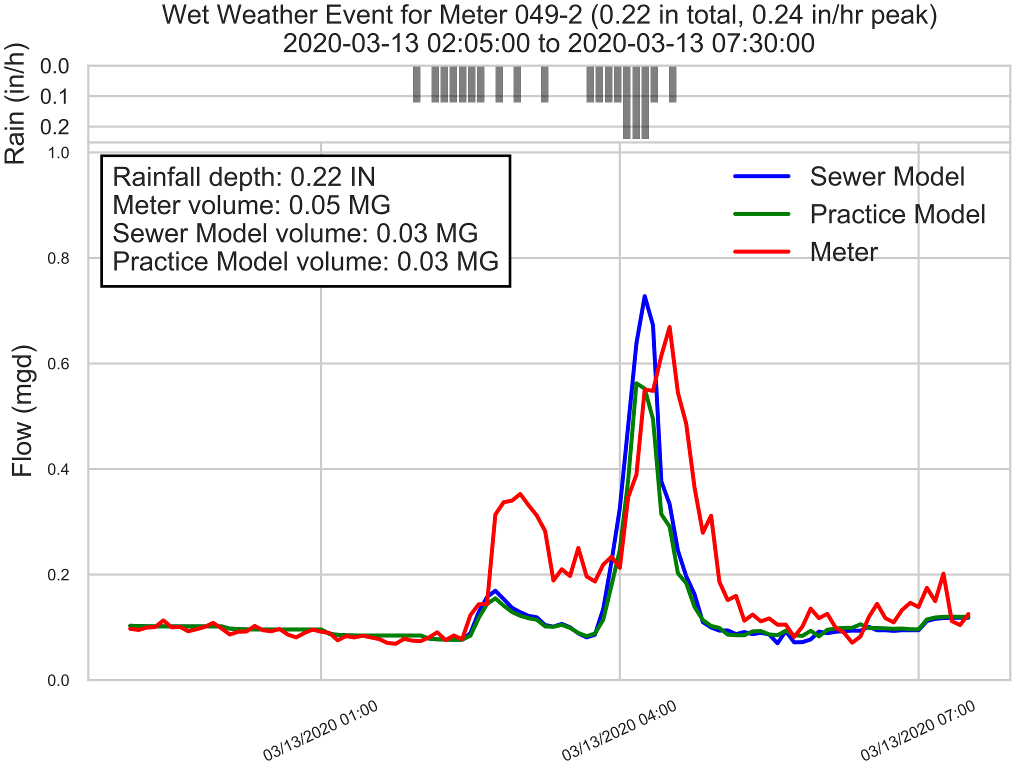




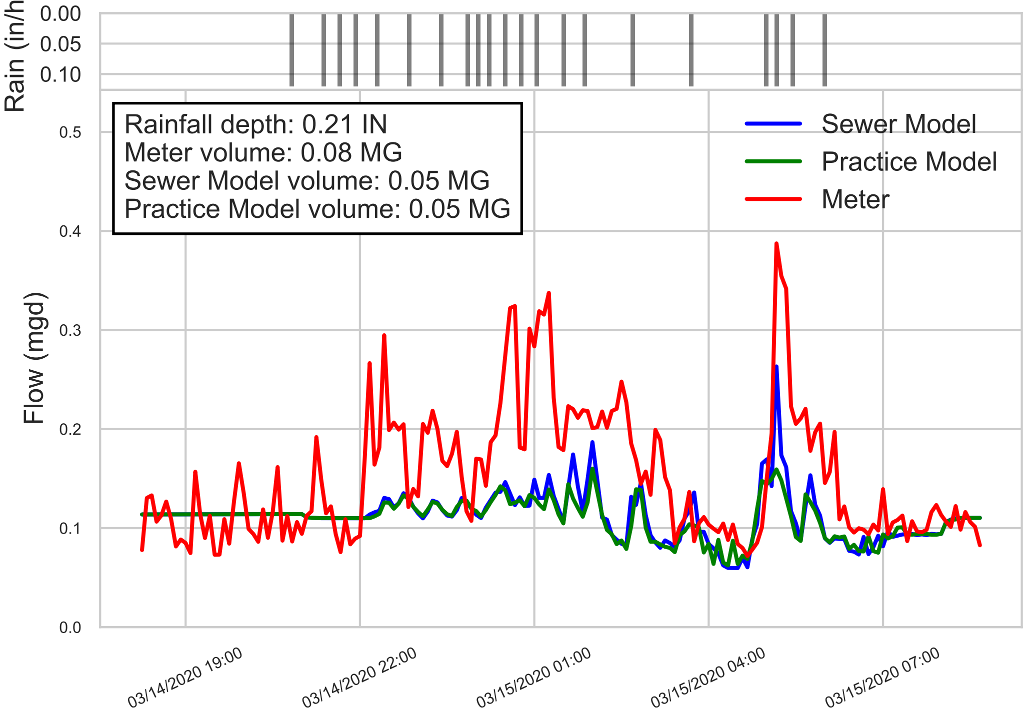
Wet Weather Event for Meter 049-2 (0.29 in total, 0.24 in/hr peak)
2020-02-25 06:05:00 to 2020-02-25 13:40:00



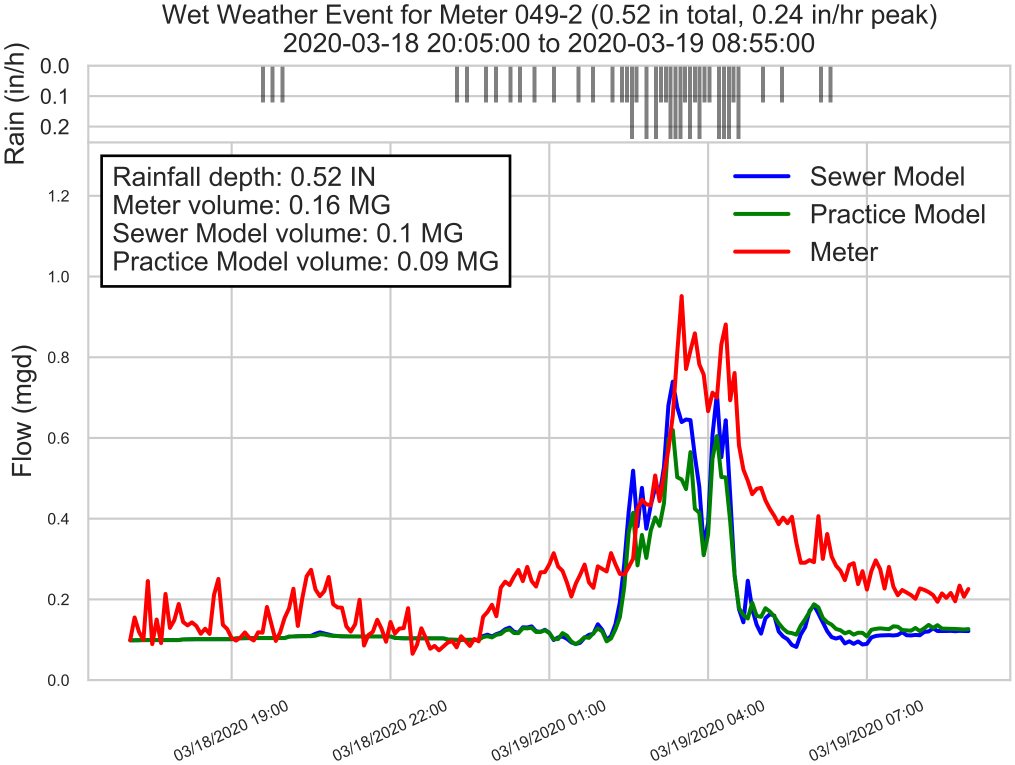
Wet Weather Event for Meter 049-2 (0.26 in total, 0.72 in/hr peak)
2020-02-26 23:20:00 to 2020-02-27 05:00:00


Wet Weather Event for Meter 049-2 (0.22 in total, 0.24 in/hr peak)
2020-03-13 02:05:00 to 2020-03-13 07:30:00
Rain (in/h)
0.0
0.1
0.2
1.0
0.8
0.6
0.4
0.2
0.0
Flow (mgd)
Rainfall depth: 0.22 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG
Sewer Model
Practice Model
Meter
03/13/2020 01:00
03/13/2020 04:00
03/13/2020 07:00

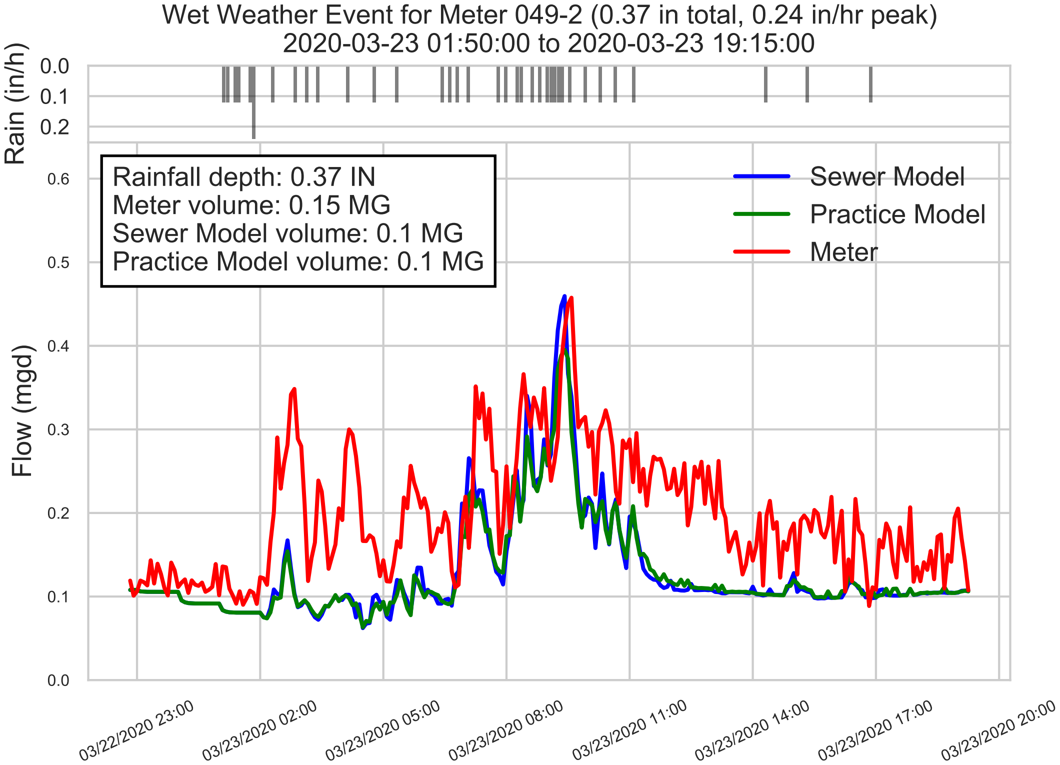
Wet Weather Event for Meter 049-2 (0.21 in total, 0.12 in/hr peak)
2020-03-14 21:15:00 to 2020-03-15 08:40:00

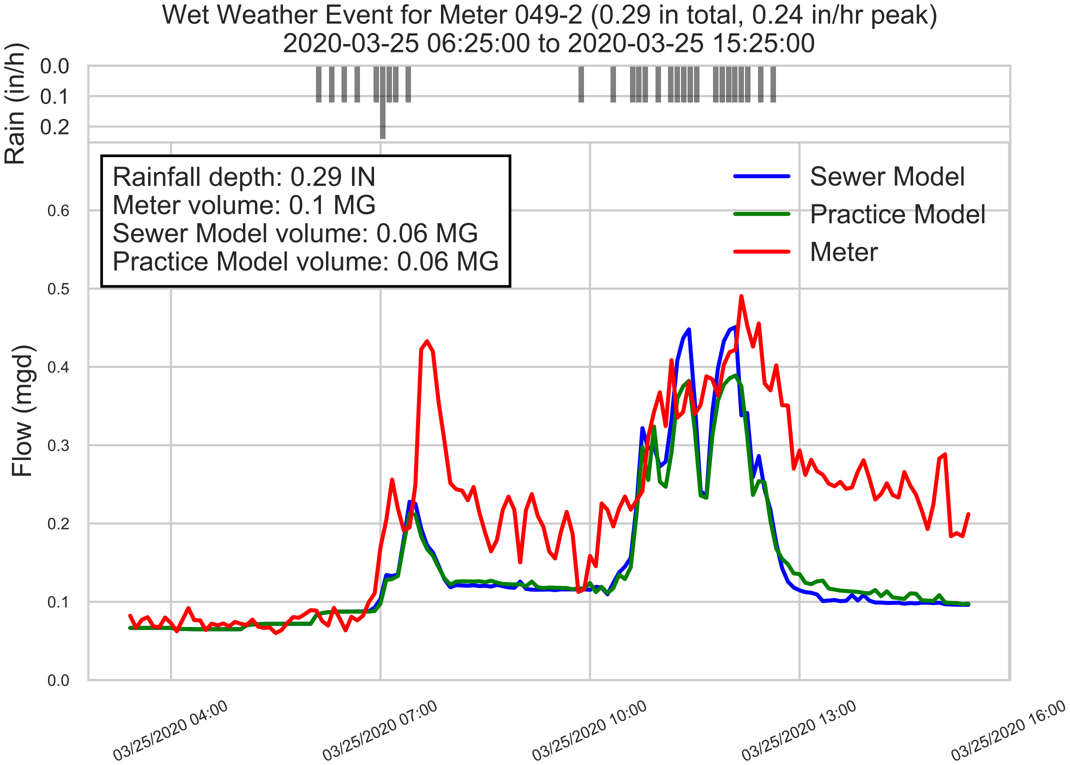


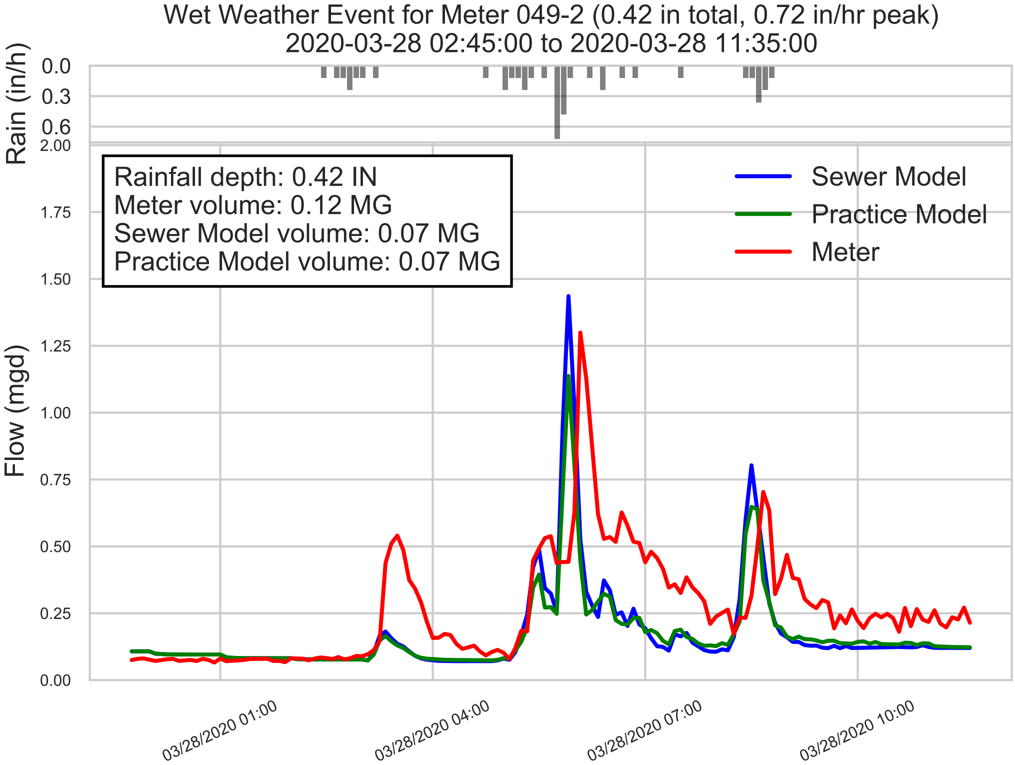
Rainfall depth: 0.21 IN
Meter volume: 0.08 MG
Sewer Model volume: 0.05 MG
Practice Model volume: 0.05 MG



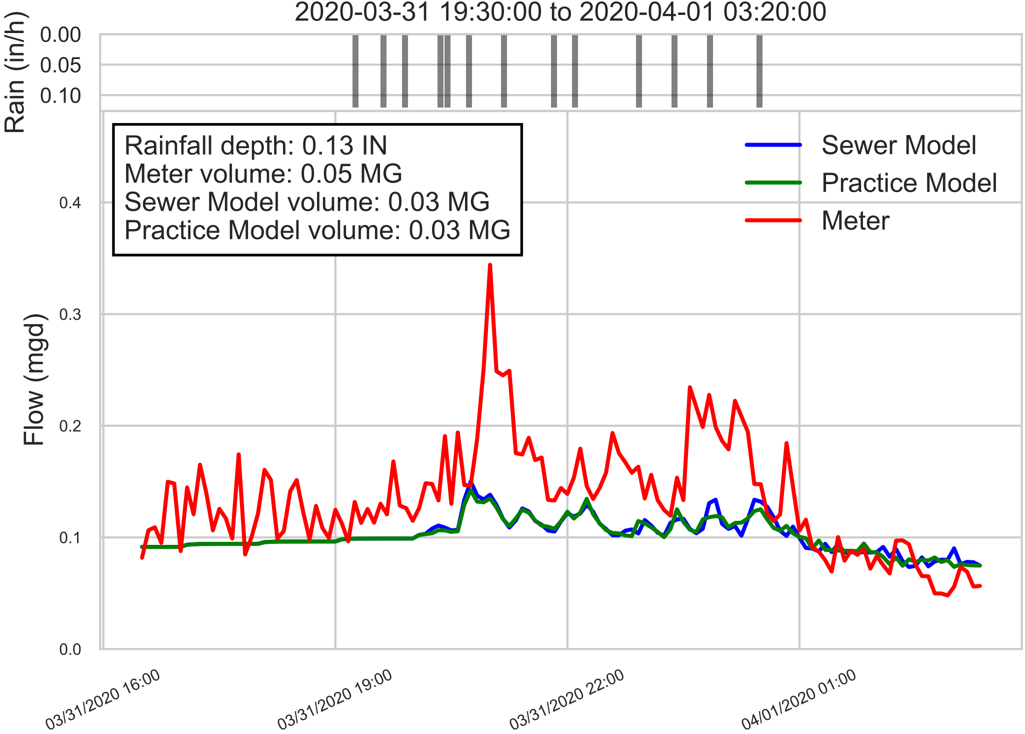
Wet Weather Event for Meter 049-2 (0.52 in total, 0.24 in/hr peak)
2020-03-18 20:05:00 to 2020-03-19 08:55:00


Wet Weather Event for Meter 049-2 (0.37 in total, 0.24 in/hr peak)
2020-03-23 01:50:00 to 2020-03-23 19:15:00
Rain (in/h)
0.0
0.1
0.2
Flow (mgd)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Rainfall depth: 0.37 IN
Meter volume: 0.15 MG
Sewer Model volume: 0.1 MG
Practice Model volume: 0.1 MG
Sewer Model
Practice Model
Meter
03/22/2020 23:00
03/23/2020 02:00
03/23/2020 05:00
03/23/2020 08:00
03/23/2020 11:00
03/23/2020 14:00
03/23/2020 17:00
03/23/2020 20:00

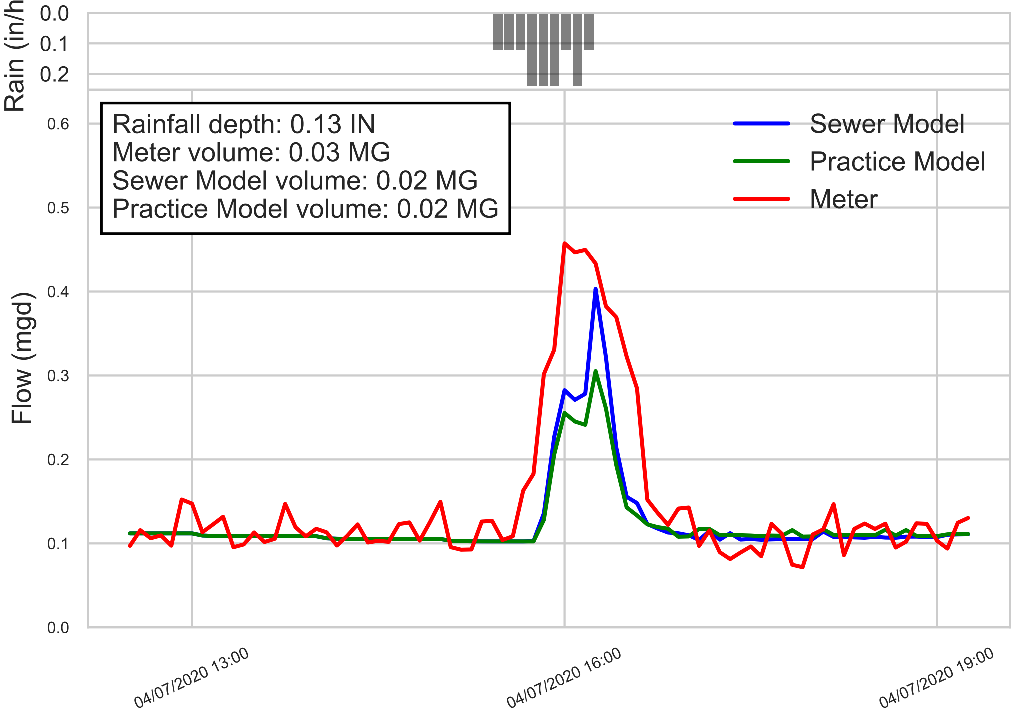

Wet Weather Event for Meter 049-2 (0.29 in total, 0.24 in/hr peak)
2020-03-25 06:25:00 to 2020-03-25 15:25:00


Wet Weather Event for Meter 049-2 (0.42 in total, 0.72 in/hr peak)
2020-03-28 02:45:00 to 2020-03-28 11:35:00
Rain (in/h)
0.0
0.3
0.6
Flow (mgd)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Rainfall depth: 0.42 IN
Meter volume: 0.12 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.07 MG
Sewer Model
Practice Model
Meter
03/28/2020 01:00
03/28/2020 04:00
03/28/2020 07:00
03/28/2020 10:00

Wet Weather Event for Meter 049-2 (0.13 in total, 0.12 in/hr peak)
2020-03-31 19:30:00 to 2020-04-01 03:20:00

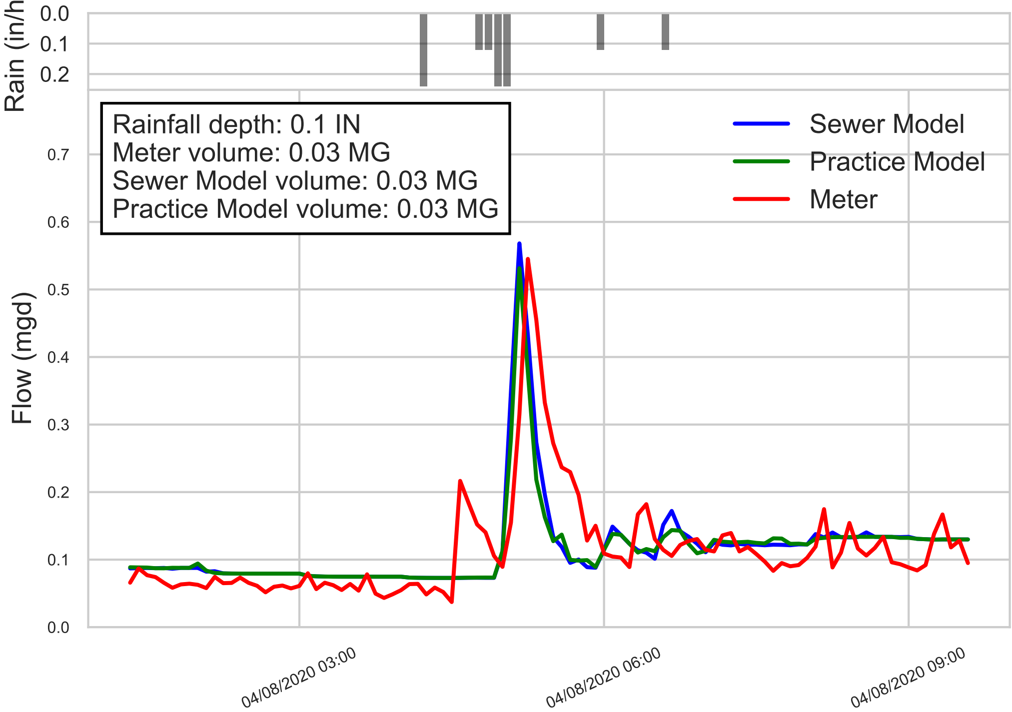

Rainfall depth: 0.13 IN
Meter volume: 0.05 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG

Wet Weather Event for Meter 049-2 (0.13 in total, 0.24 in/hr peak)
2020-04-07 15:30:00 to 2020-04-07 19:15:00



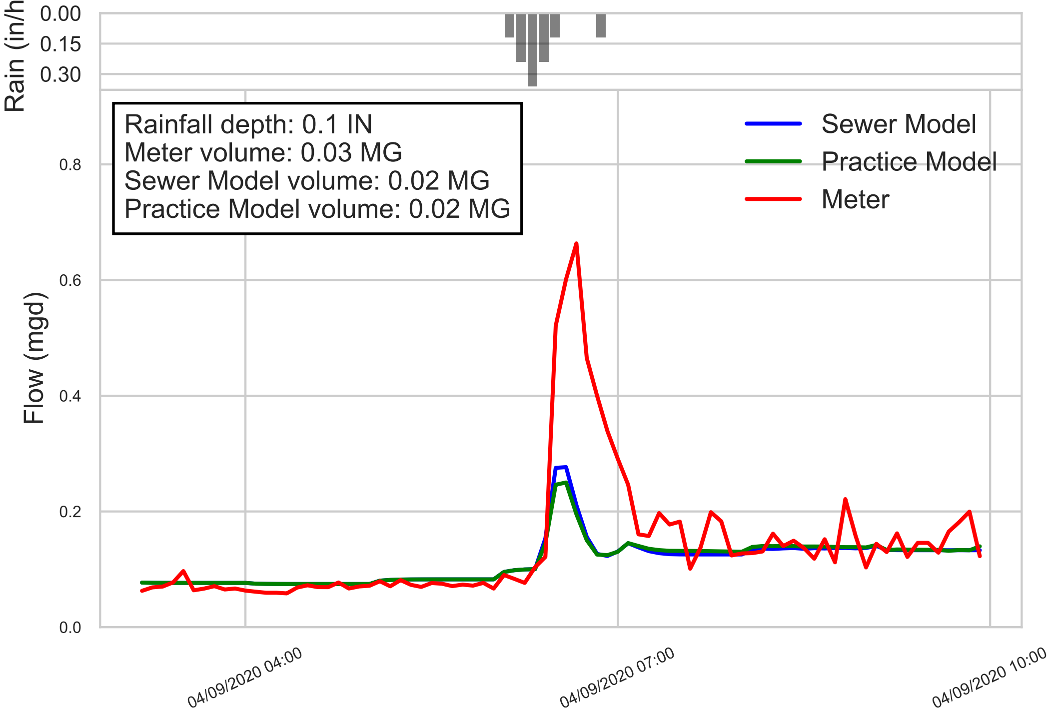
Rainfall depth: 0.13 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.02 MG
Practice Model volume: 0.02 MG

Wet Weather Event for Meter 049-2 (0.1 in total, 0.24 in/hr peak)
2020-04-08 04:20:00 to 2020-04-08 09:35:00

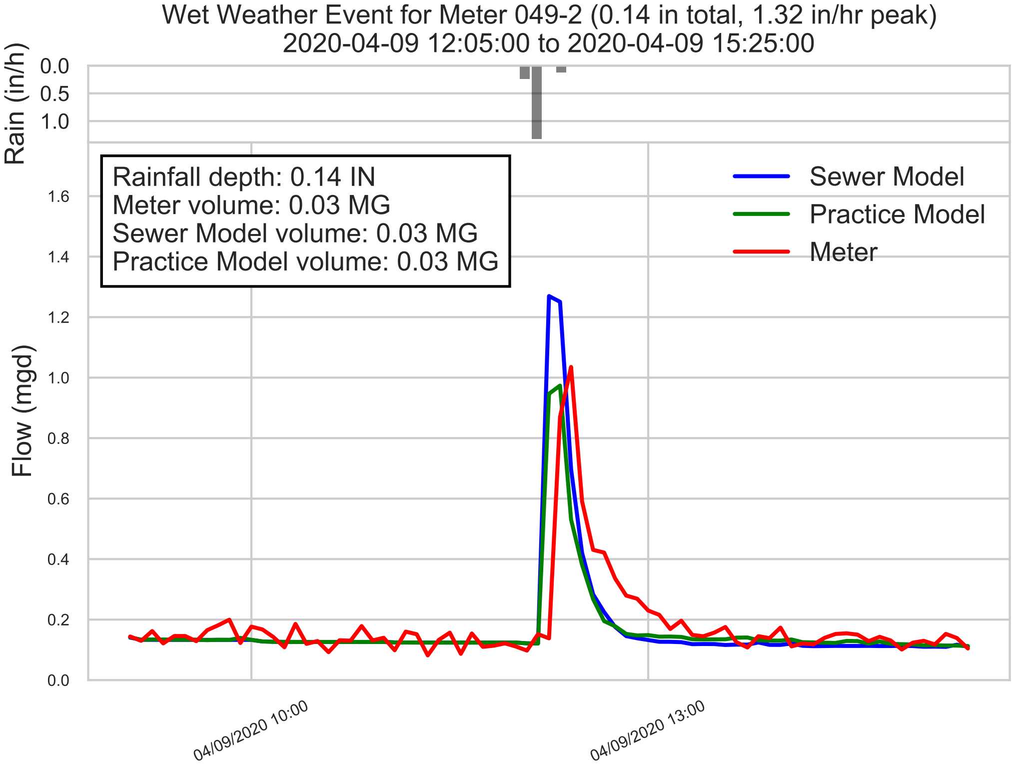


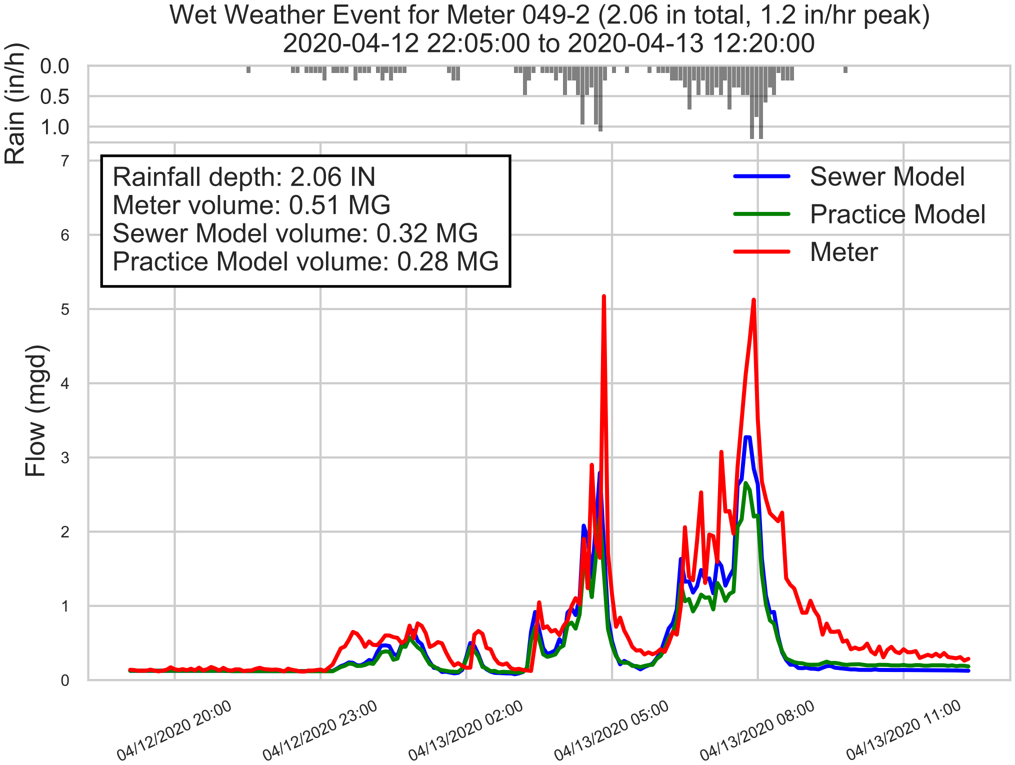
Rainfall depth: 0.1 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG

Wet Weather Event for Meter 049-2 (0.1 in total, 0.36 in/hr peak)
2020-04-09 06:10:00 to 2020-04-09 09:55:00



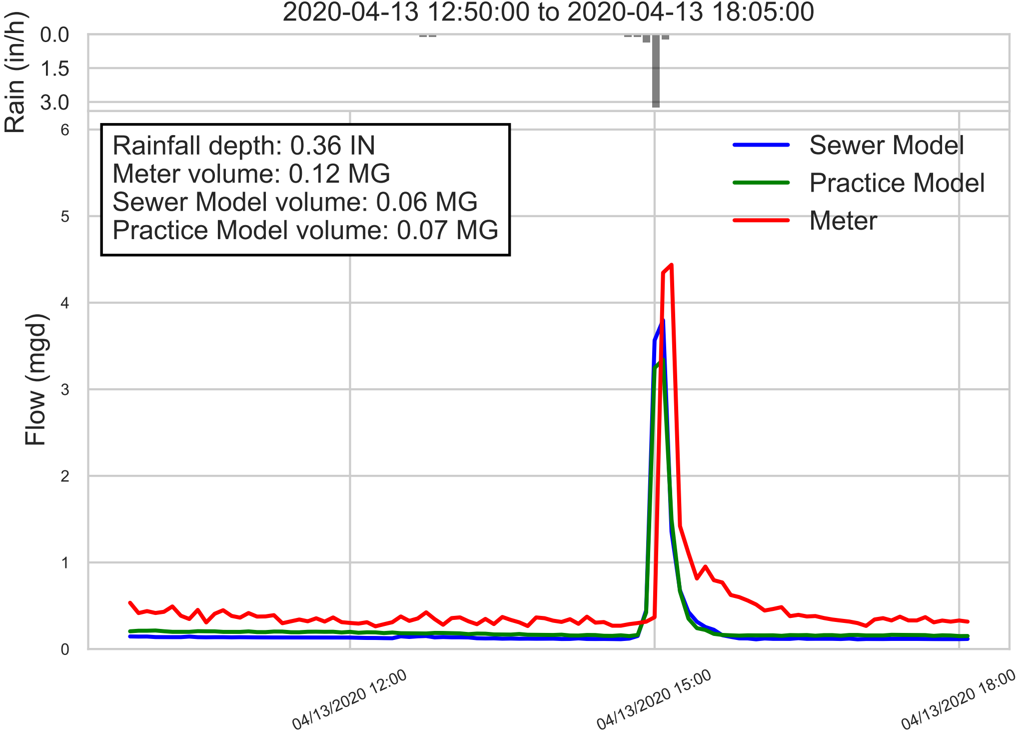
Rainfall depth: 0.1 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.02 MG
Practice Model volume: 0.02 MG


Wet Weather Event for Meter 049-2 (0.14 in total, 1.32 in/hr peak)
2020-04-09 12:05:00 to 2020-04-09 15:25:00
Rain (in/h)
0.0
0.5
1.0
Rainfall depth: 0.14 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
04/09/2020 10:00
04/09/2020 13:00



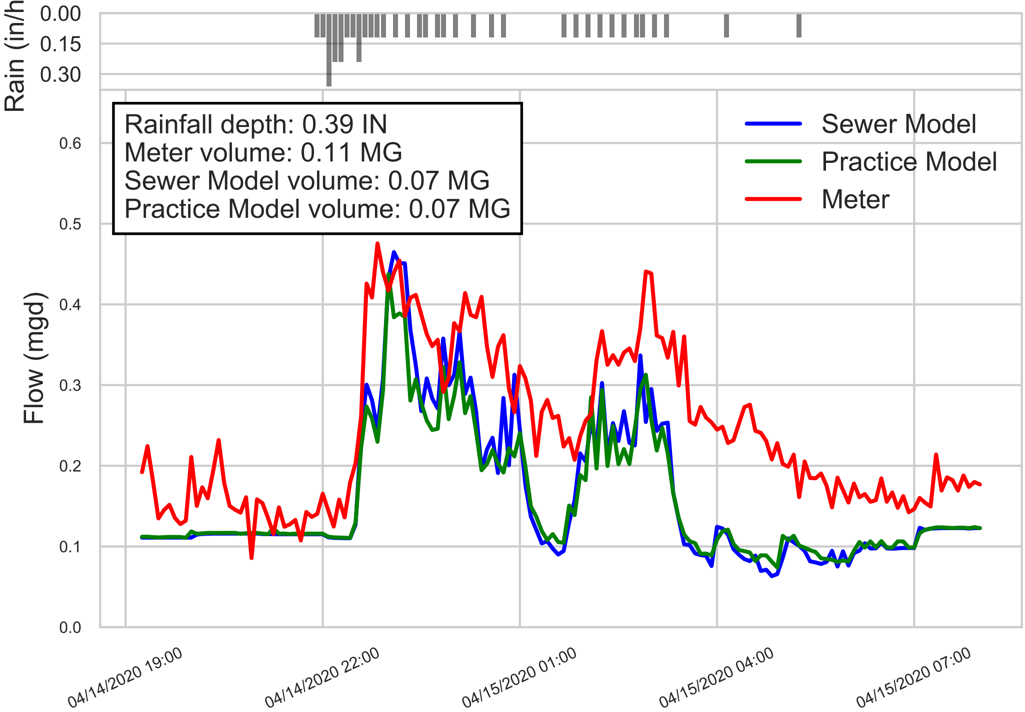
Wet Weather Event for Meter 049-2 (2.06 in total, 1.2 in/hr peak)
2020-04-12 22:05:00 to 2020-04-13 12:20:00

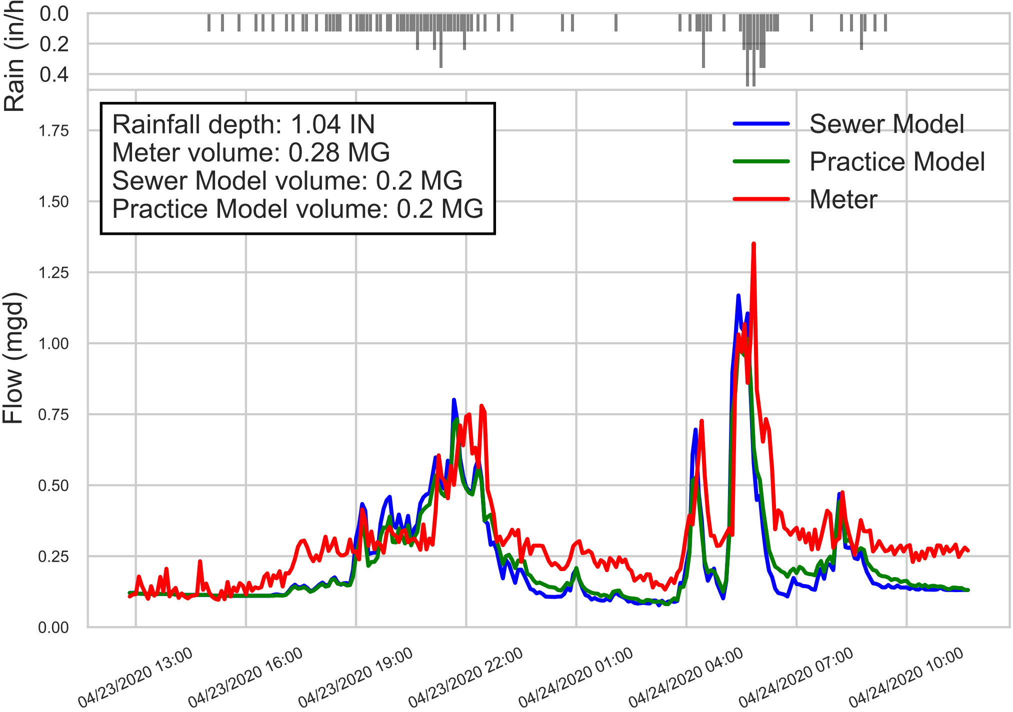
Rainfall depth: 2.06 IN
Meter volume: 0.51 MG
Sewer Model volume: 0.32 MG
Practice Model volume: 0.28 MG



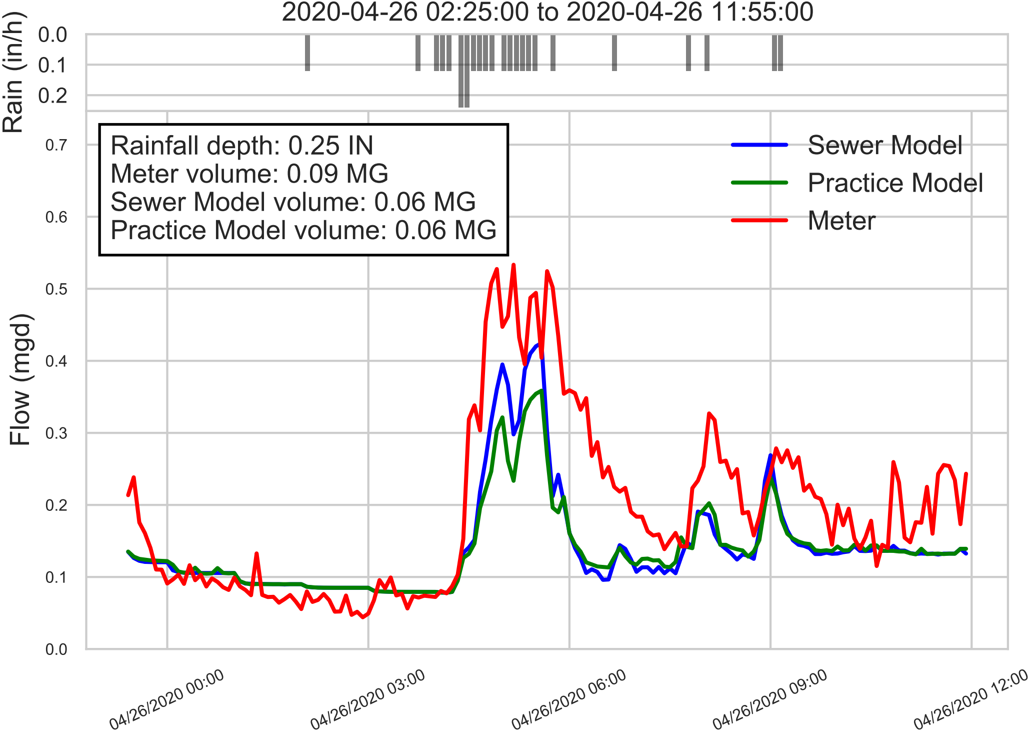
Wet Weather Event for Meter 049-2 (0.36 in total, 3.24 in/hr peak)
2020-04-13 12:50:00 to 2020-04-13 18:05:00

Wet Weather Event for Meter 049-2 (0.39 in total, 0.36 in/hr peak)
2020-04-14 22:15:00 to 2020-04-15 08:00:00

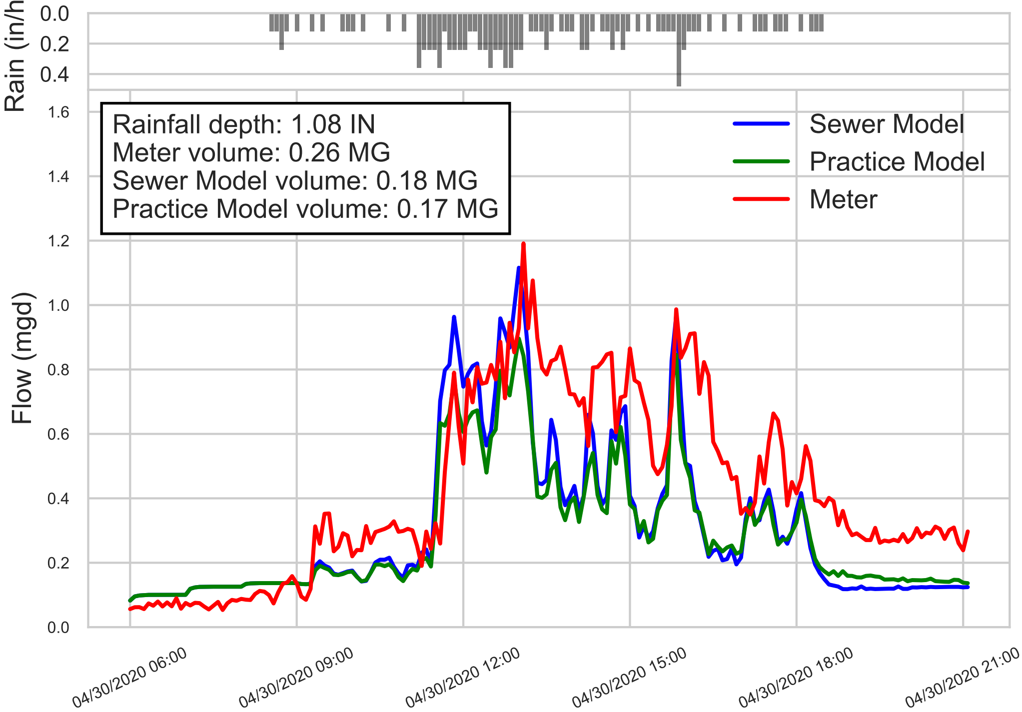



Wet Weather Event for Meter 049-2 (1.04 in total, 0.48 in/hr peak)
2020-04-23 15:50:00 to 2020-04-24 11:40:00

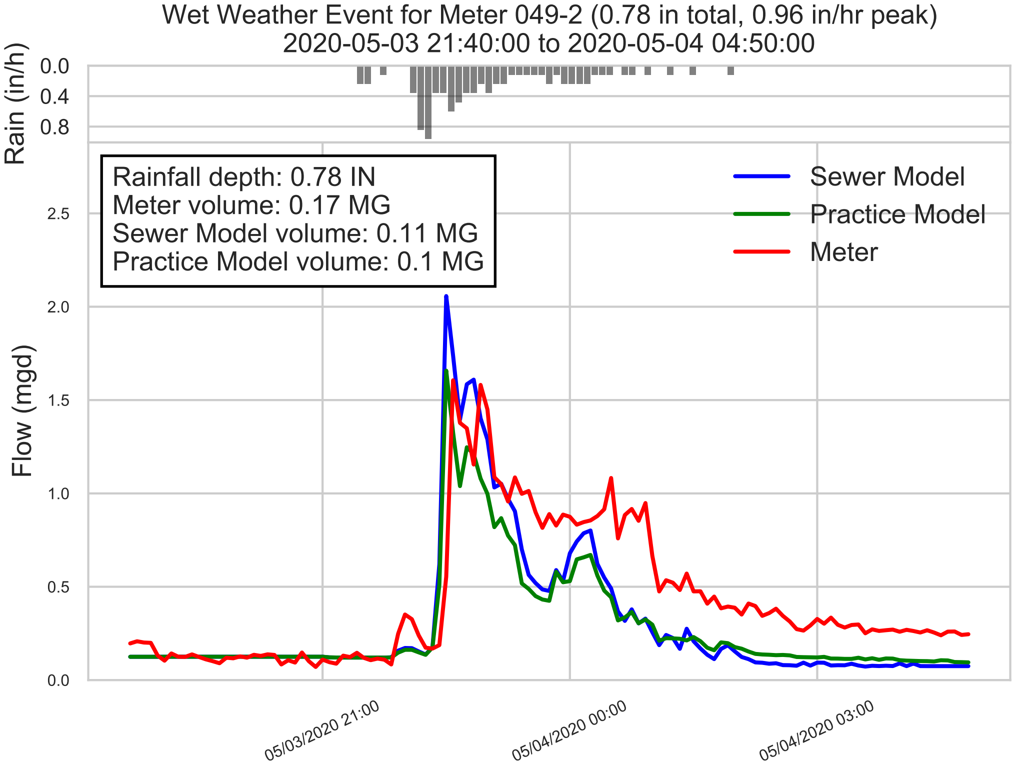
Wet Weather Event for Meter 049-2 (0.25 in total, 0.24 in/hr peak)
2020-04-26 02:25:00 to 2020-04-26 11:55:00

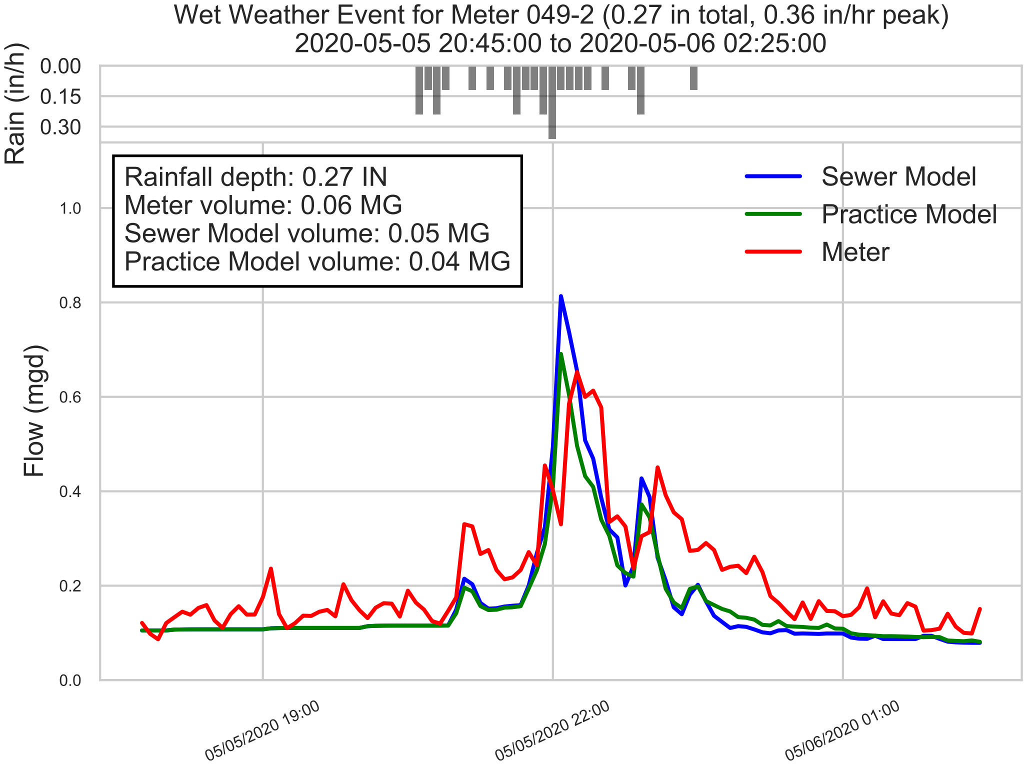


Rainfall depth: 0.25 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.06 MG
Practice Model volume: 0.06 MG

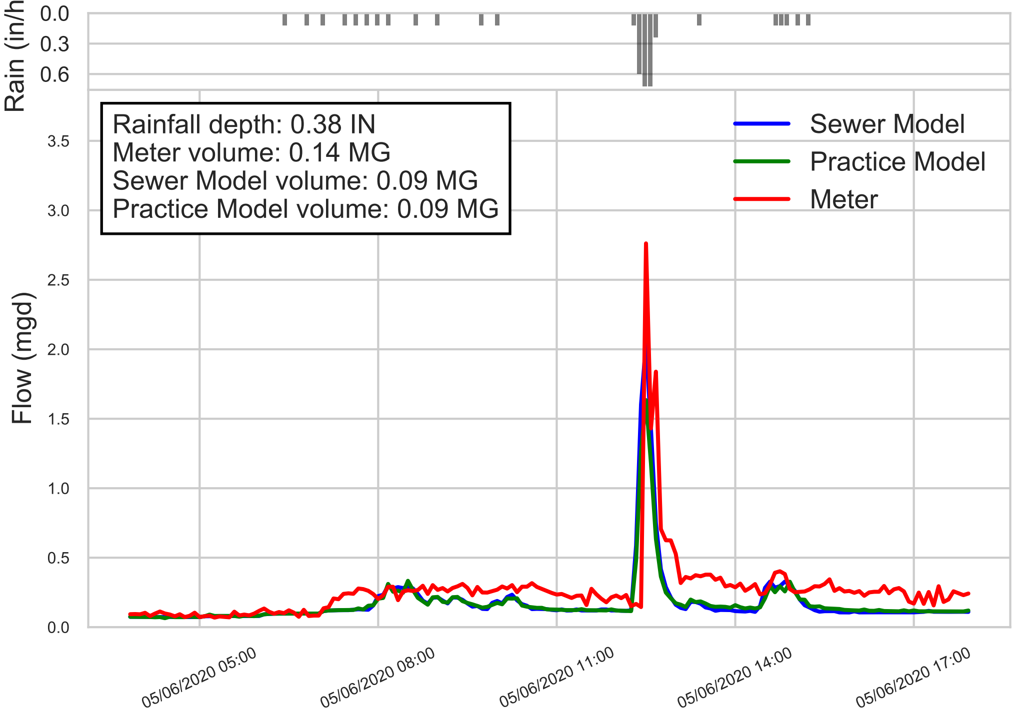


Wet Weather Event for Meter 049-2 (1.08 in total, 0.48 in/hr peak)
2020-04-30 09:00:00 to 2020-04-30 21:05:00


Wet Weather Event for Meter 049-2 (0.78 in total, 0.96 in/hr peak)
2020-05-03 21:40:00 to 2020-05-04 04:50:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 0.78 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.11 MG
Practice Model volume: 0.1 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
2.5
2.0
1.5
1.0
0.5
0.0
05/03/2020 21:00
05/04/2020 00:00
05/04/2020 03:00

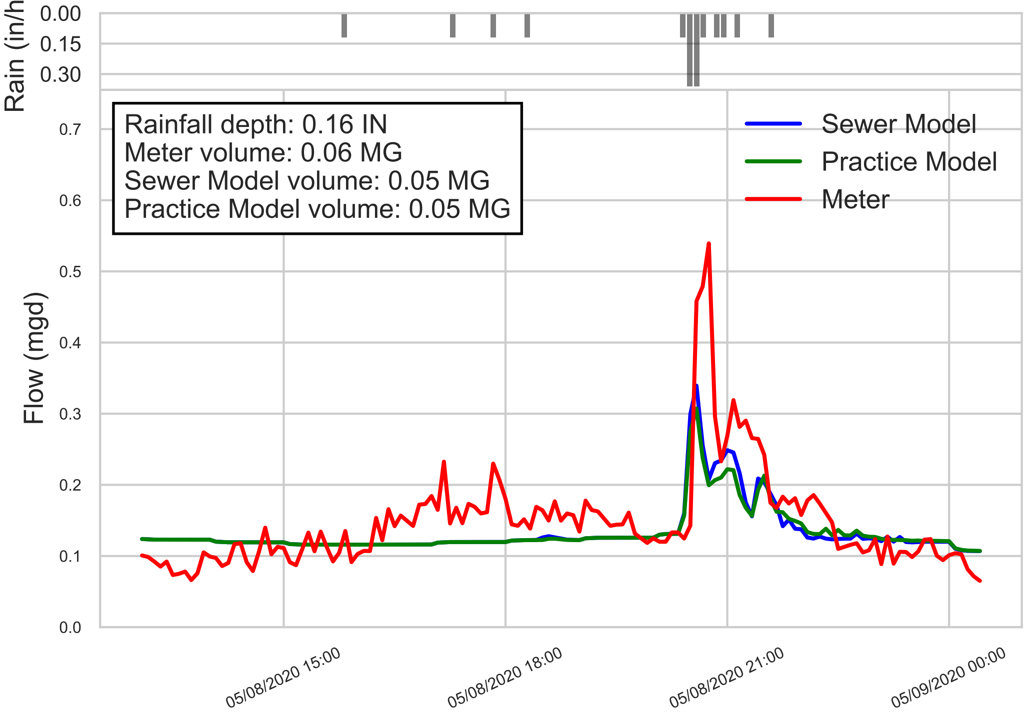


Wet Weather Event for Meter 049-2 (0.27 in total, 0.36 in/hr peak)
2020-05-05 20:45:00 to 2020-05-06 02:25:00



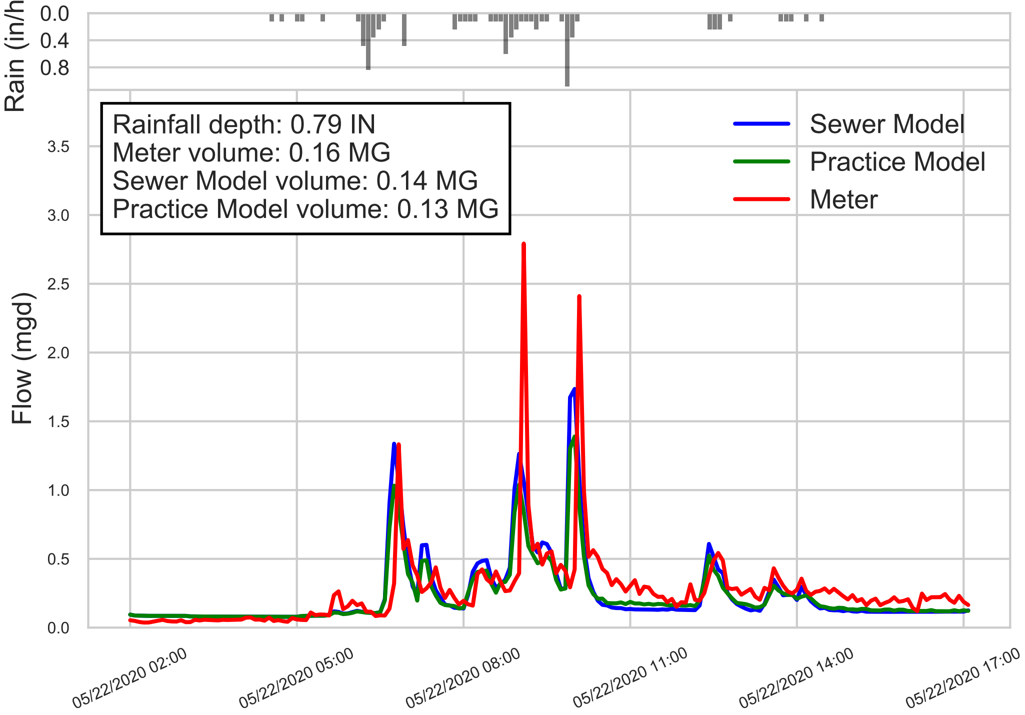
Wet Weather Event for Meter 049-2 (0.38 in total, 0.72 in/hr peak)
2020-05-06 06:50:00 to 2020-05-06 17:55:00

Wet Weather Event for Meter 049-2 (0.16 in total, 0.36 in/hr peak)
2020-05-08 16:05:00 to 2020-05-09 00:25:00

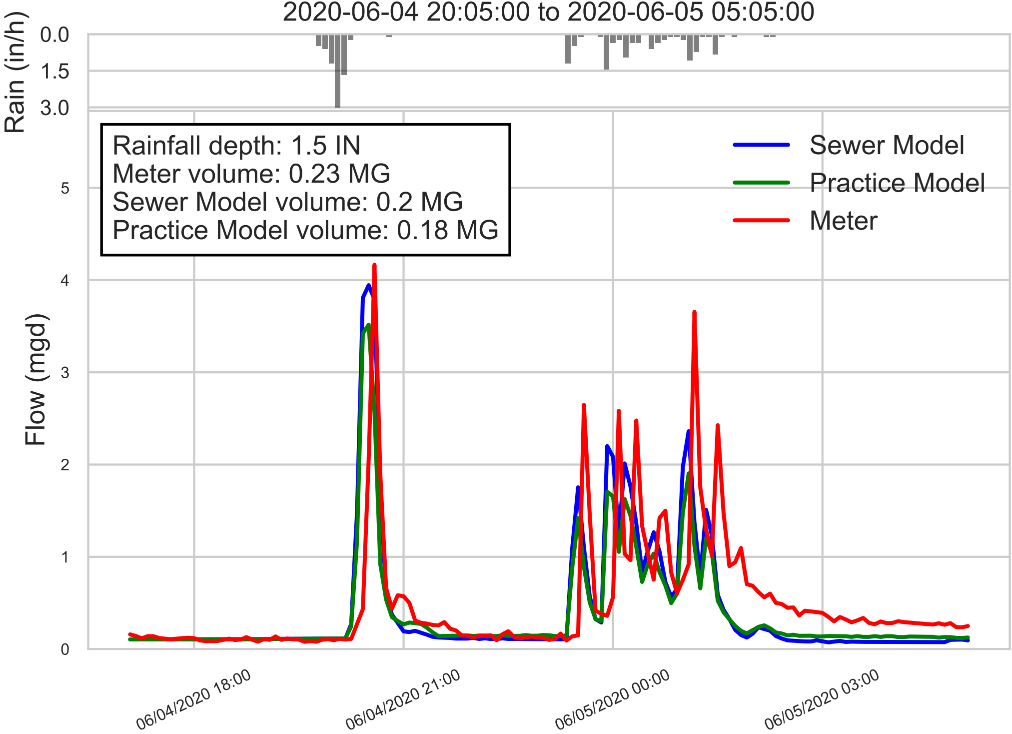


Rainfall depth: 0.16 IN
Meter volume: 0.06 MG
Sewer Model volume: 0.05 MG
Practice Model volume: 0.05 MG

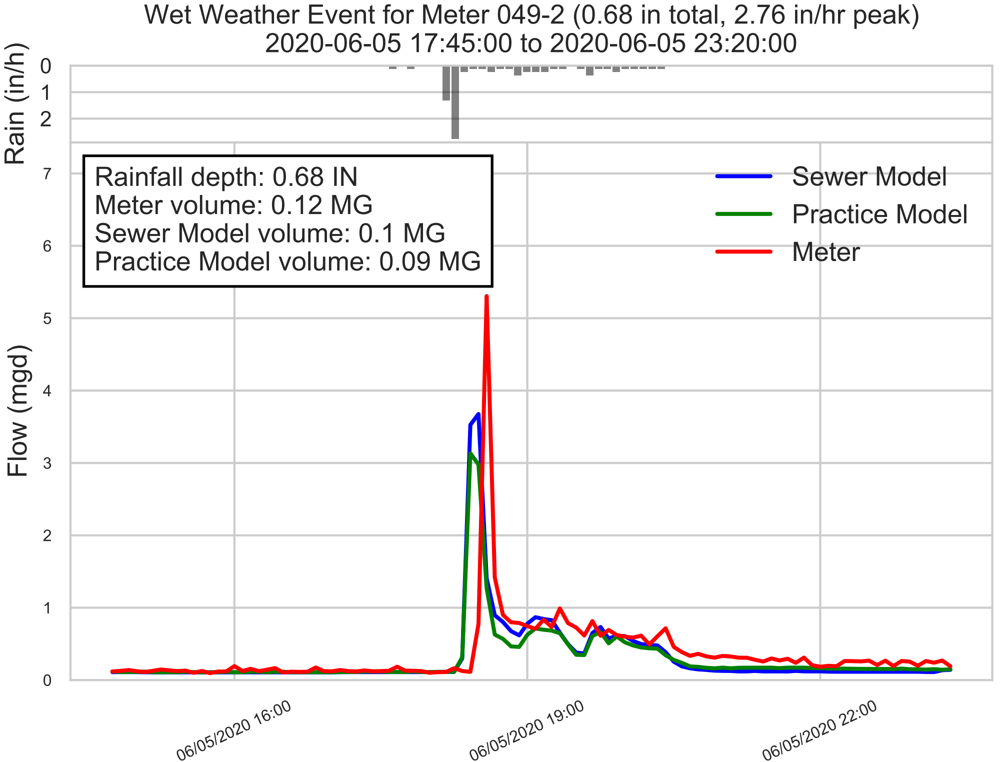
Wet Weather Event for Meter 049-2 (0.79 in total, 1.08 in/hr peak)
2020-05-22 05:00:00 to 2020-05-22 17:05:00

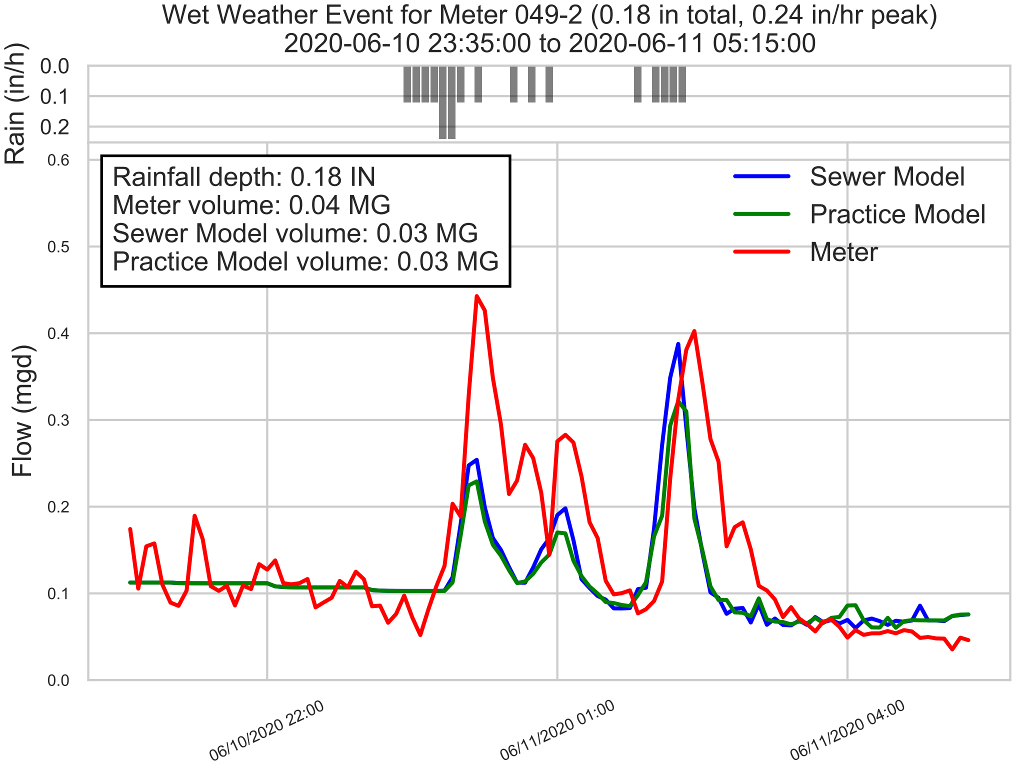


Wet Weather Event for Meter 049-2 (1.5 in total, 3.0 in/hr peak)
2020-06-04 20:05:00 to 2020-06-05 05:05:00

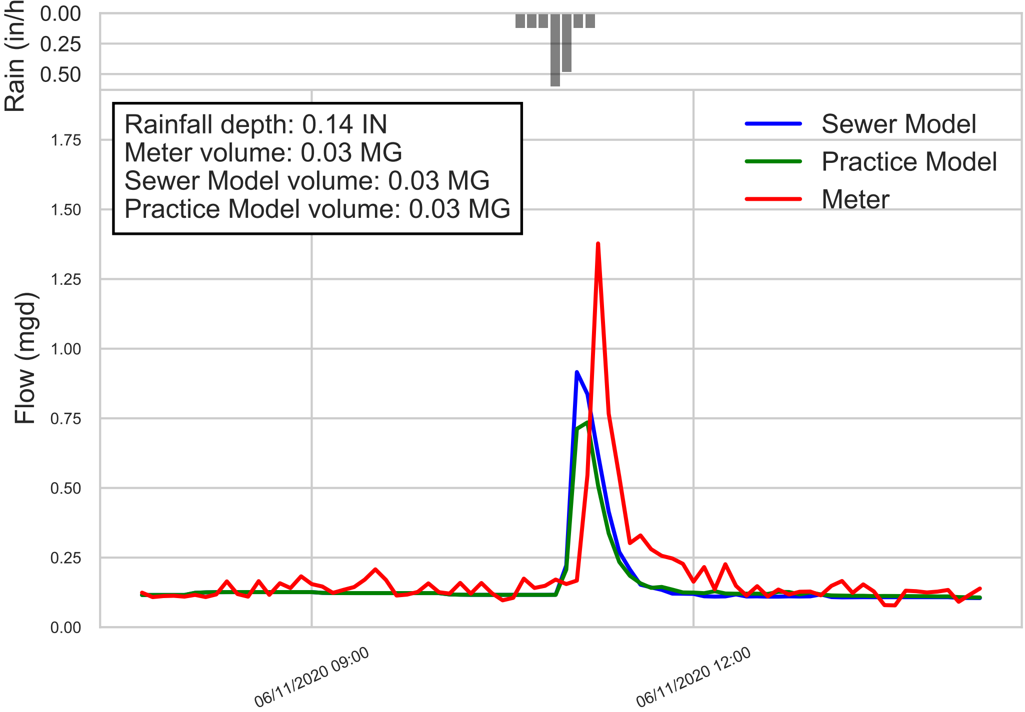


Rainfall depth: 1.5 IN
Meter volume: 0.23 MG
Sewer Model volume: 0.2 MG
Practice Model volume: 0.18 MG

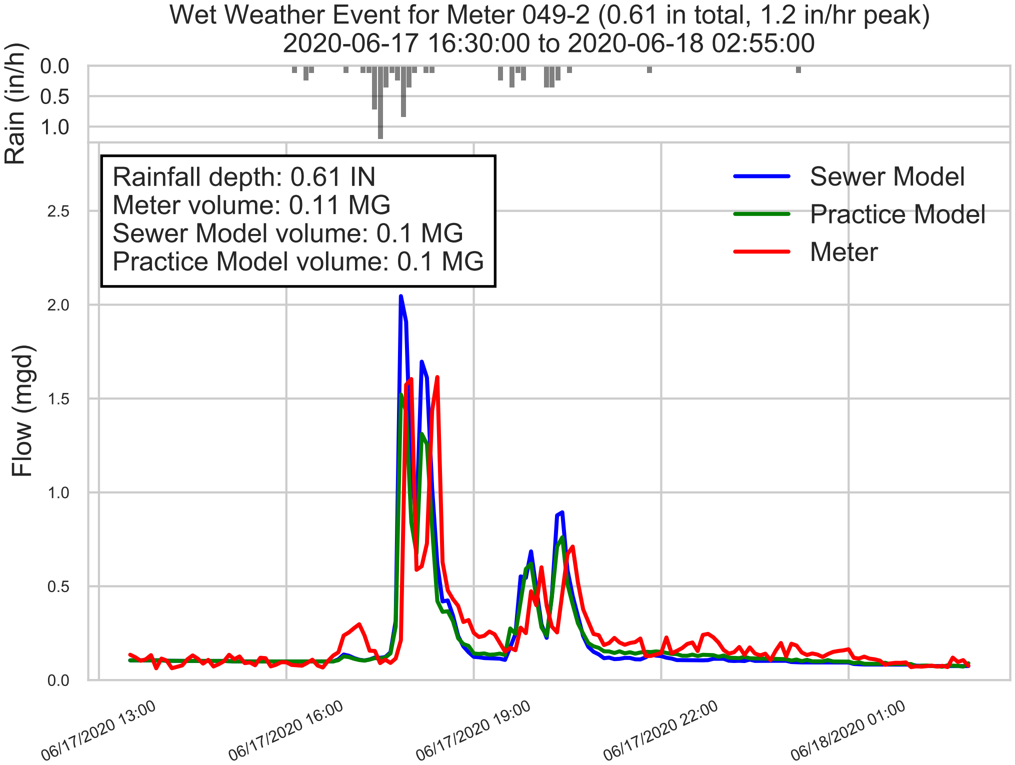

Wet Weather Event for Meter 049-2 (0.68 in total, 2.76 in/hr peak)
2020-06-05 17:45:00 to 2020-06-05 23:20:00
Rain (in/h)
0
1
2
Rainfall depth: 0.68 IN
Meter volume: 0.12 MG
Sewer Model volume: 0.1 MG
Practice Model volume: 0.09 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
7
6
5
4
3
2
1
0
06/05/2020 16:00
06/05/2020 19:00
06/05/2020 22:00

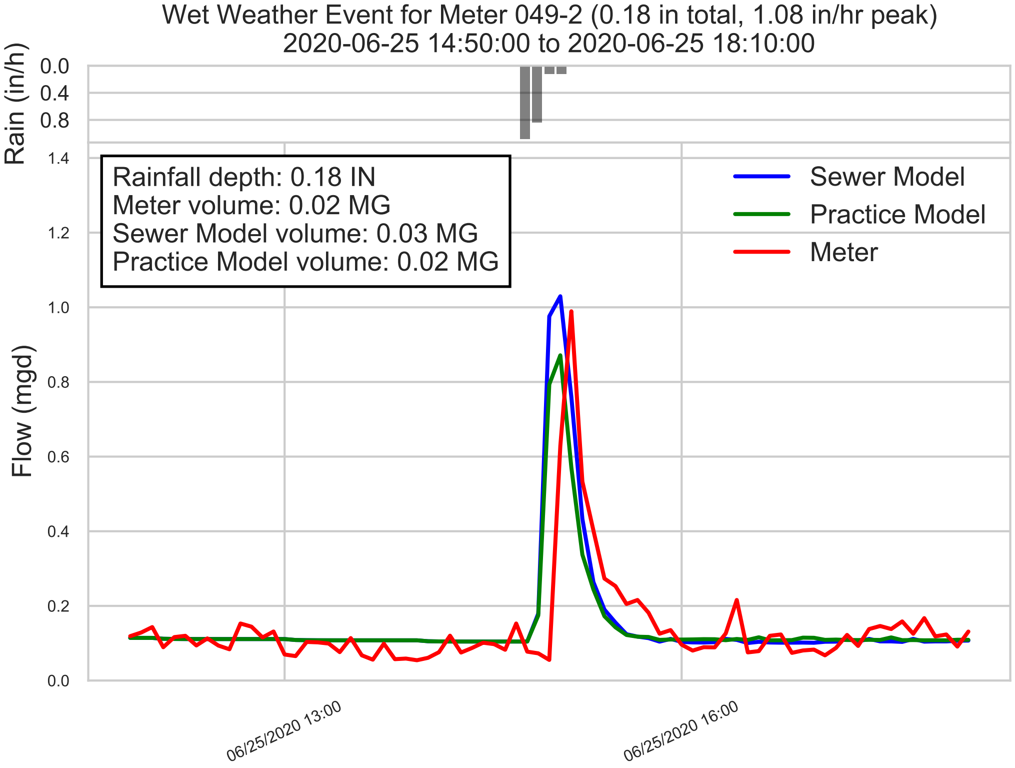

Wet Weather Event for Meter 049-2 (0.18 in total, 0.24 in/hr peak)
2020-06-10 23:35:00 to 2020-06-11 05:15:00
Rain (in/h)
0.0
0.1
0.2
Flow (mgd)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Rainfall depth: 0.18 IN
Meter volume: 0.04 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG
Sewer Model
Practice Model
Meter
06/10/2020 22:00
06/11/2020 01:00
06/11/2020 04:00

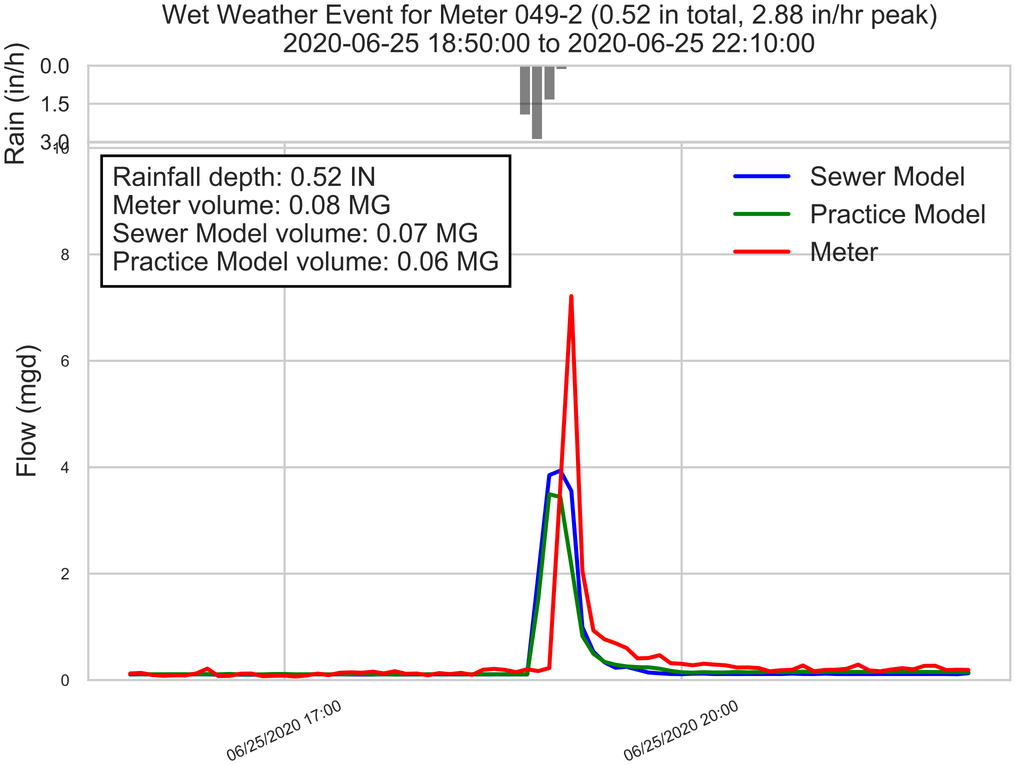
Wet Weather Event for Meter 049-2 (0.14 in total, 0.6 in/hr peak)
2020-06-11 10:40:00 to 2020-06-11 14:15:00



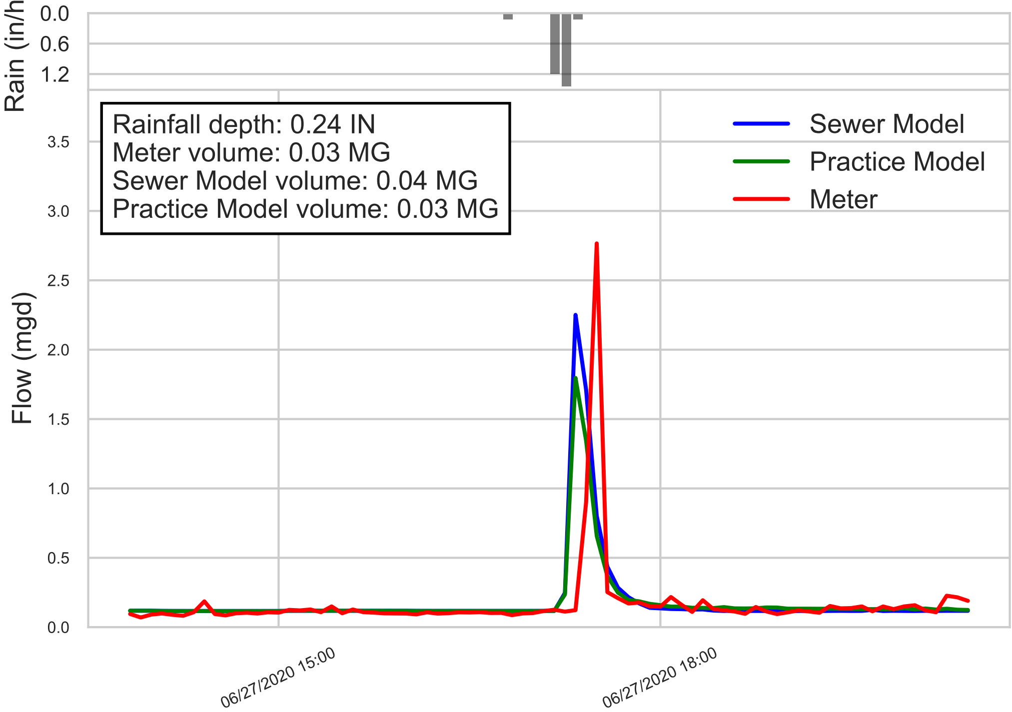
Rainfall depth: 0.14 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG


Wet Weather Event for Meter 049-2 (0.61 in total, 1.2 in/hr peak)
2020-06-17 16:30:00 to 2020-06-18 02:55:00
Rain (in/h)
0.0
0.5
1.0
Rainfall depth: 0.61 IN
Meter volume: 0.11 MG
Sewer Model volume: 0.1 MG
Practice Model volume: 0.1 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
2.5
2.0
1.5
1.0
0.5
0.0
06/17/2020 13:00
06/17/2020 16:00
06/17/2020 19:00
06/17/2020 22:00
06/18/2020 01:00

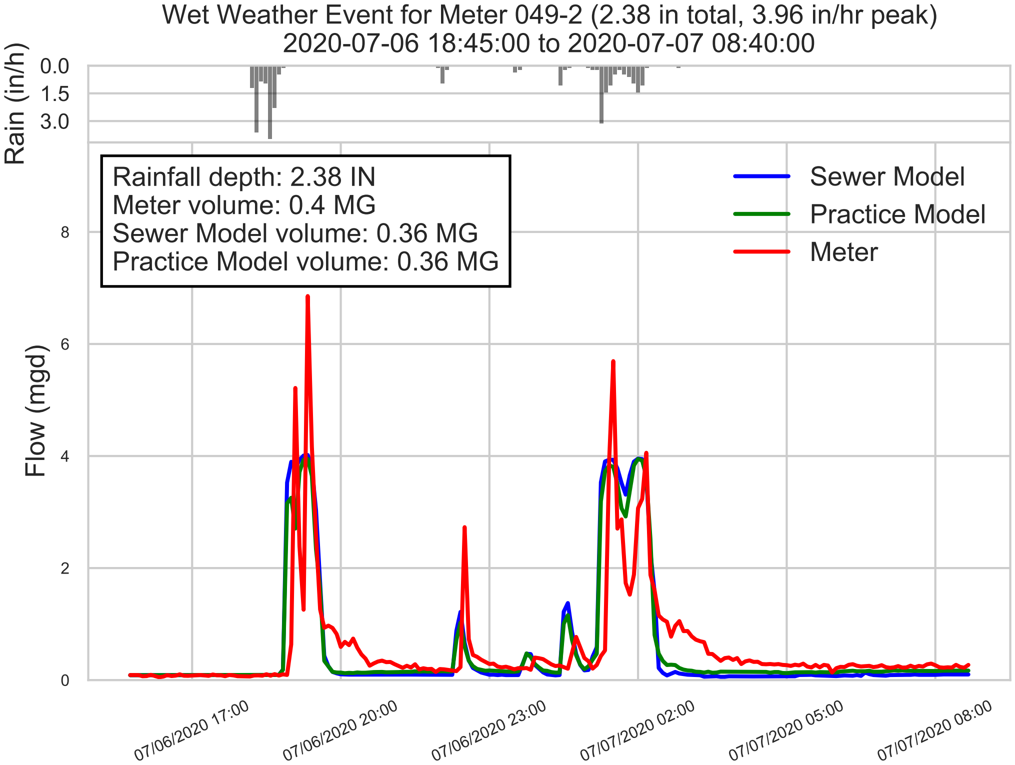

Wet Weather Event for Meter 049-2 (0.18 in total, 1.08 in/hr peak)
2020-06-25 14:50:00 to 2020-06-25 18:10:00
Rain (in/h)
0.0
0.4
0.8
Flow (mgd)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Rainfall depth: 0.18 IN
Meter volume: 0.02 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.02 MG
Sewer Model
Practice Model
Meter
06/25/2020 13:00
06/25/2020 16:00


Wet Weather Event for Meter 049-2 (0.52 in total, 2.88 in/hr peak)
2020-06-25 18:50:00 to 2020-06-25 22:10:00
Rain (in/h)
0.0
1.5
3.0
10
8
6
4
2
0
Flow (mgd)
Rainfall depth: 0.52 IN
Meter volume: 0.08 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.06 MG
Sewer Model
Practice Model
Meter
06/25/2020 17:00
06/25/2020 20:00

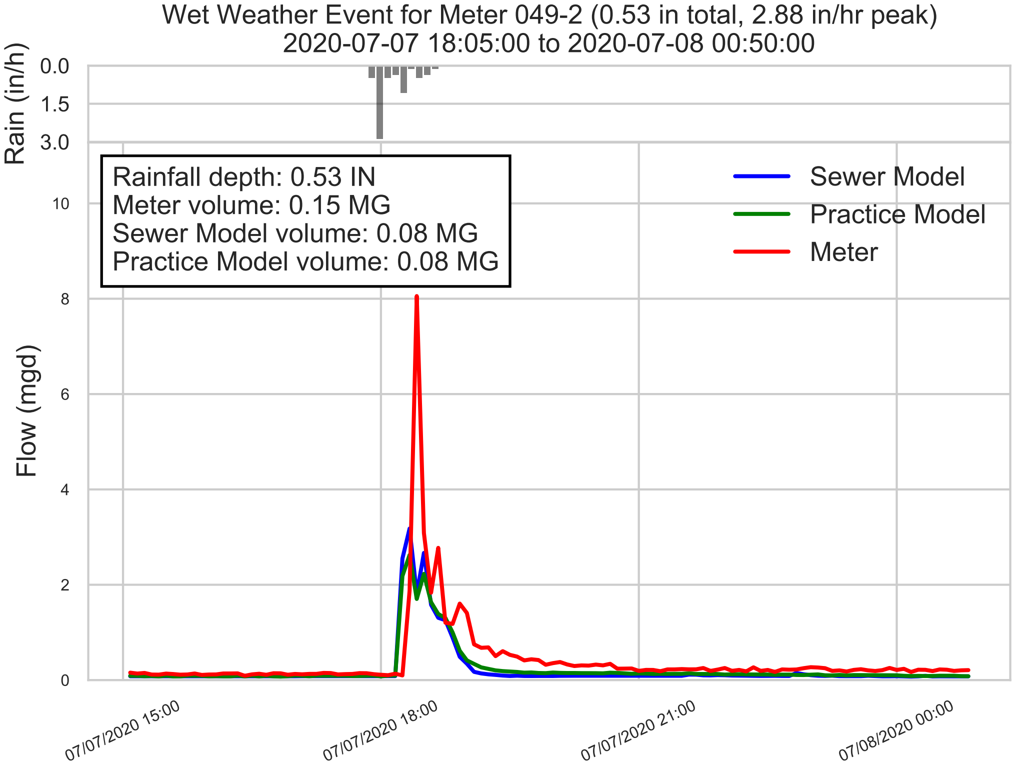
Wet Weather Event for Meter 049-2 (0.24 in total, 1.44 in/hr peak)
2020-06-27 16:50:00 to 2020-06-27 20:25:00

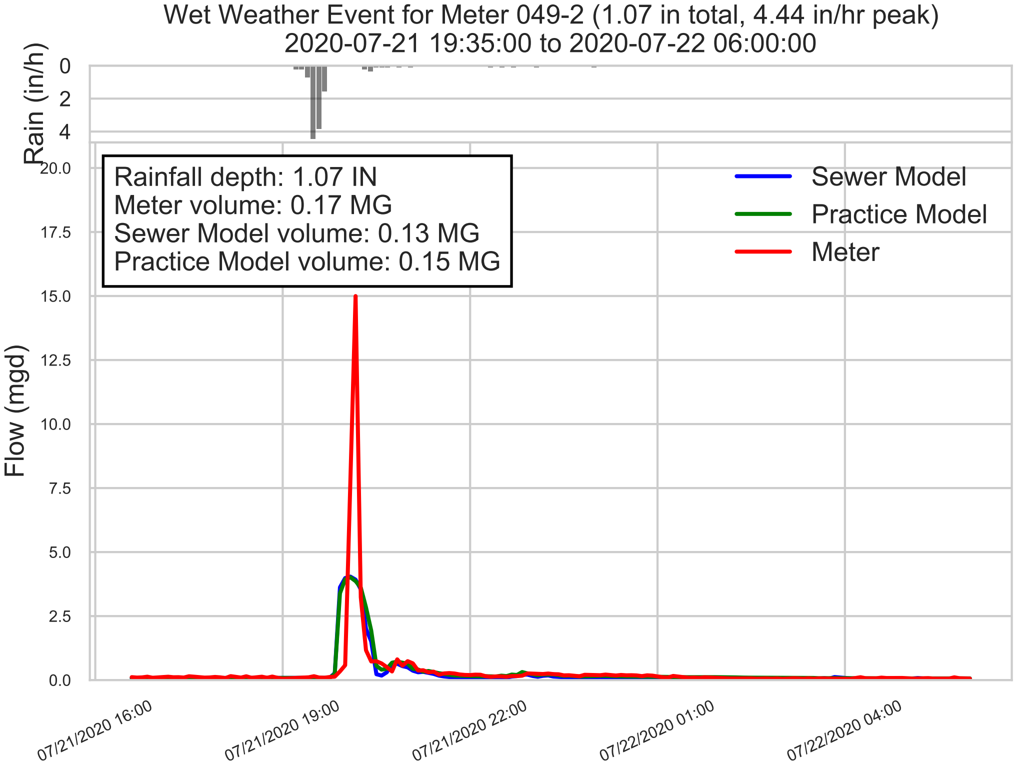


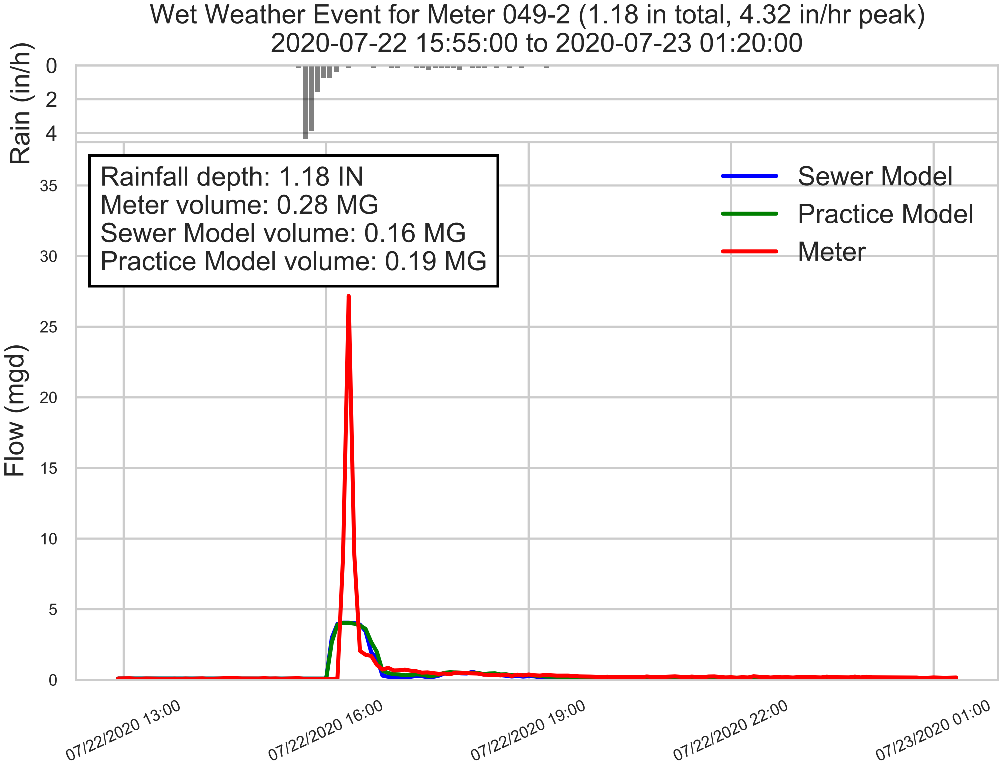
Rainfall depth: 0.24 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.04 MG
Practice Model volume: 0.03 MG

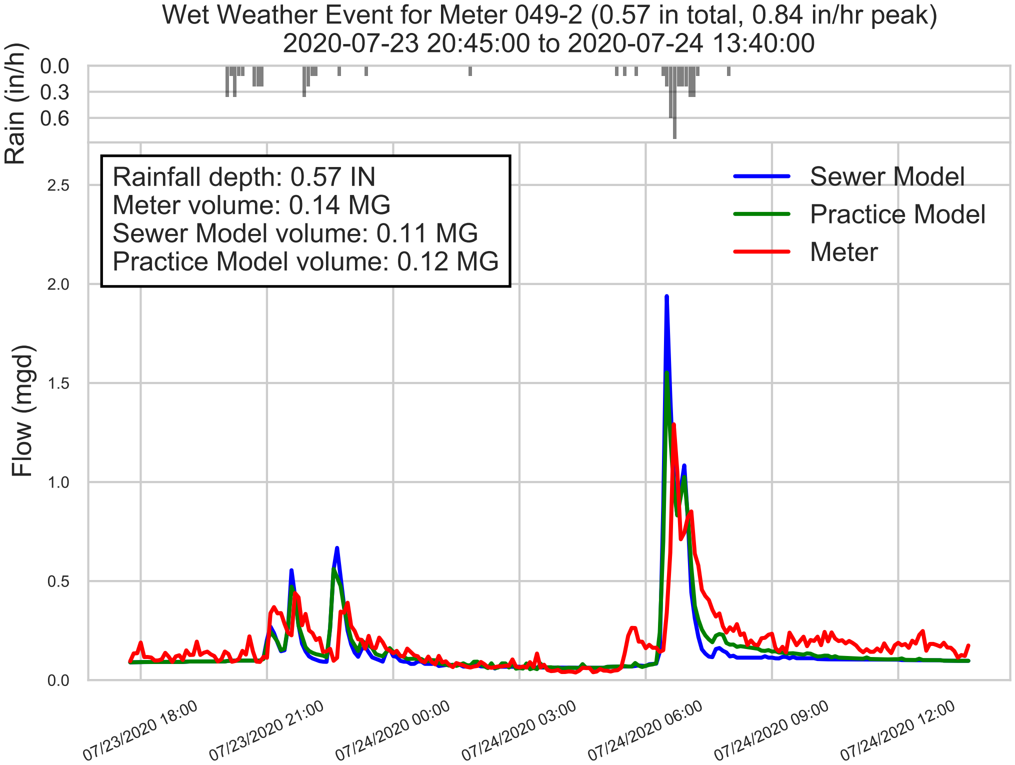


Wet Weather Event for Meter 049-2 (2.38 in total, 3.96 in/hr peak)
2020-07-06 18:45:00 to 2020-07-07 08:40:00

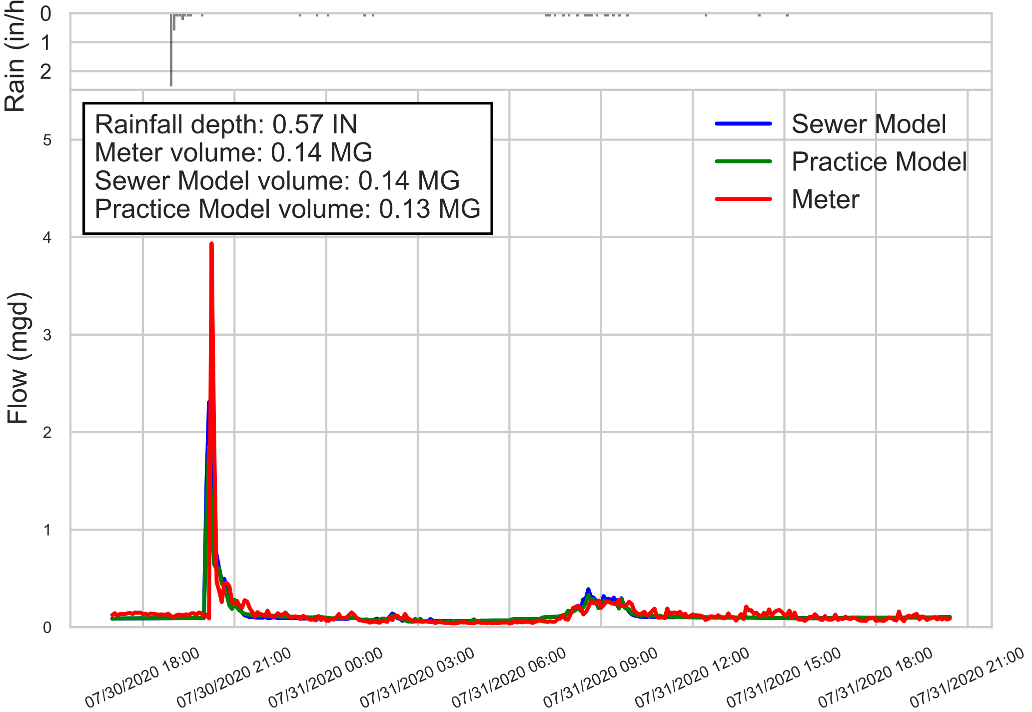

Wet Weather Event for Meter 049-2 (0.53 in total, 2.88 in/hr peak)
2020-07-07 18:05:00 to 2020-07-08 00:50:00
Rain (in/h)
0.0
1.5
3.0
Rainfall depth: 0.53 IN
Meter volume: 0.15 MG
Sewer Model volume: 0.08 MG
Practice Model volume: 0.08 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
10
8
6
4
2
0
07/07/2020 15:00
07/07/2020 18:00
07/07/2020 21:00
07/08/2020 00:00


Wet Weather Event for Meter 049-2 (1.07 in total, 4.44 in/hr peak)
2020-07-21 19:35:00 to 2020-07-22 06:00:00
Rain (in/h)
0
2
4
Rainfall depth: 1.07 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.13 MG
Practice Model volume: 0.15 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
07/21/2020 16:00
07/21/2020 19:00
07/21/2020 22:00
07/22/2020 01:00
07/22/2020 04:00


Wet Weather Event for Meter 049-2 (1.18 in total, 4.32 in/hr peak)
2020-07-22 15:55:00 to 2020-07-23 01:20:00
Rain (in/h)
0
2
4
Rainfall depth: 1.18 IN
Meter volume: 0.28 MG
Sewer Model volume: 0.16 MG
Practice Model volume: 0.19 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
35
30
25
20
15
10
5
0
07/22/2020 13:00
07/22/2020 16:00
07/22/2020 19:00
07/22/2020 22:00
07/23/2020 01:00

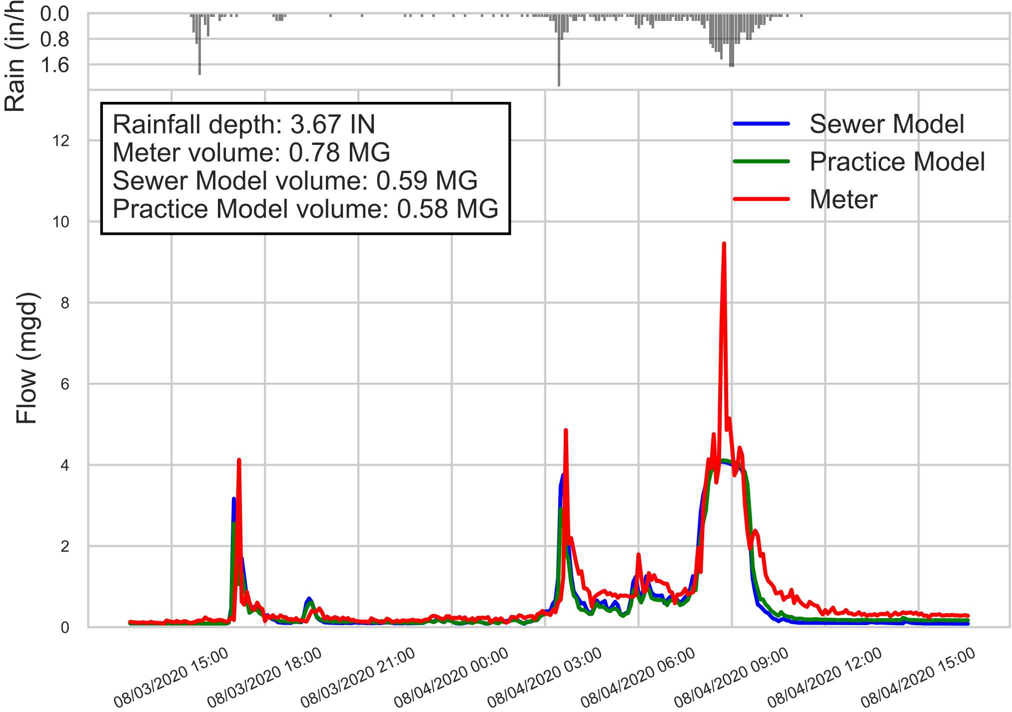

Wet Weather Event for Meter 049-2 (0.57 in total, 0.84 in/hr peak)
2020-07-23 20:45:00 to 2020-07-24 13:40:00
Rain (in/h)
0.0
0.3
0.6
Rainfall depth: 0.57 IN
Meter volume: 0.14 MG
Sewer Model volume: 0.11 MG
Practice Model volume: 0.12 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
2.5
2.0
1.5
1.0
0.5
0.0
07/23/2020 18:00
07/23/2020 21:00
07/24/2020 00:00
07/24/2020 03:00
07/24/2020 06:00
07/24/2020 09:00
07/24/2020 12:00

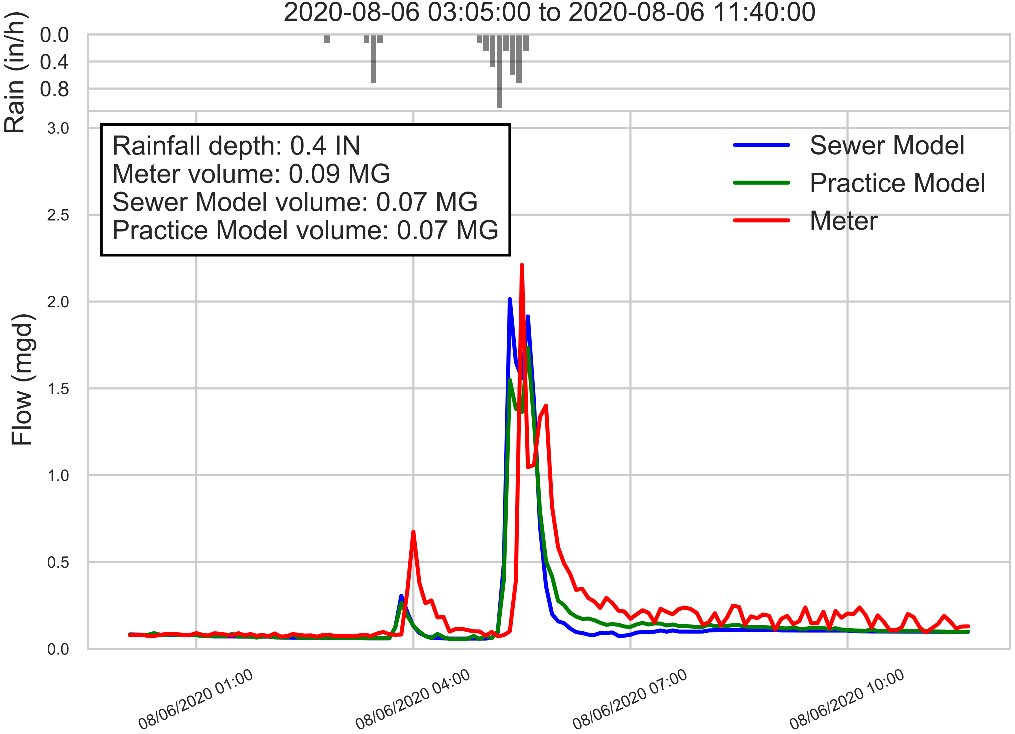
Wet Weather Event for Meter 049-2 (0.57 in total, 2.52 in/hr peak)
2020-07-30 20:00:00 to 2020-07-31 20:25:00



Rainfall depth: 0.57 IN
Meter volume: 0.14 MG
Sewer Model volume: 0.14 MG
Practice Model volume: 0.13 MG

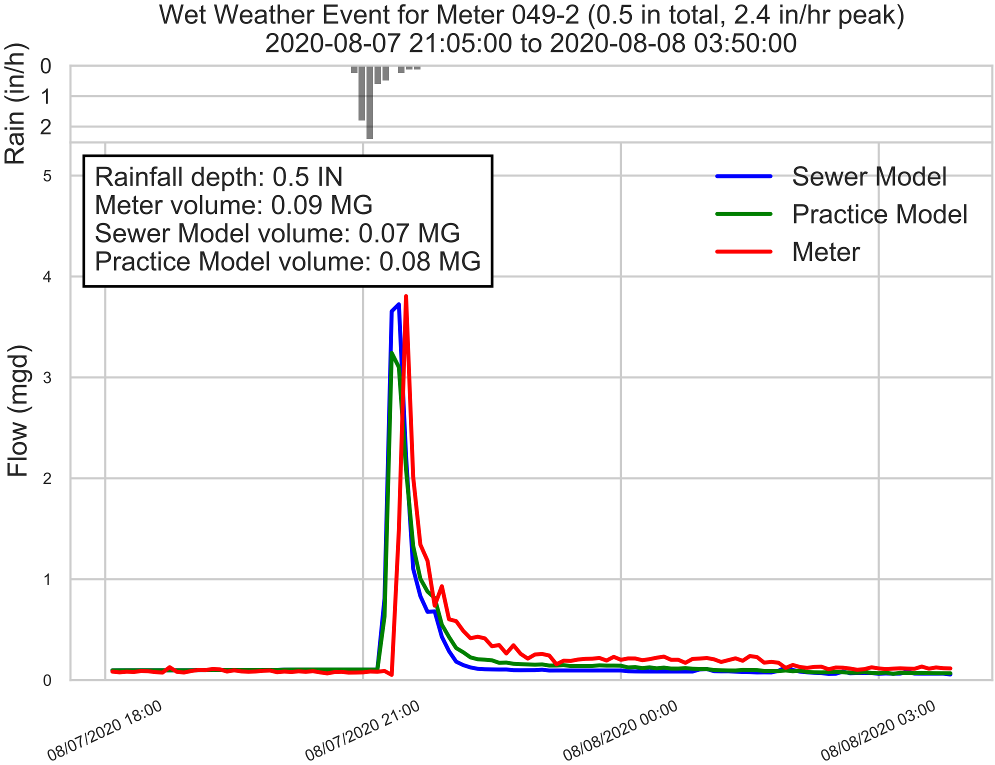
Wet Weather Event for Meter 049-2 (3.67 in total, 2.28 in/hr peak)
2020-08-03 16:40:00 to 2020-08-04 16:35:00





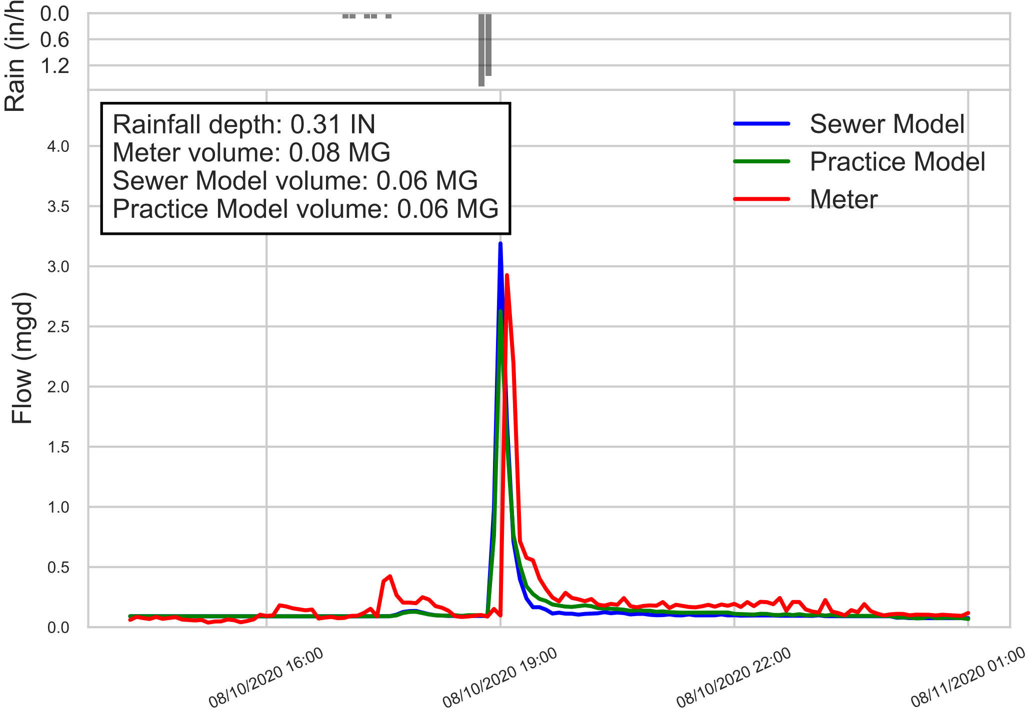
Wet Weather Event for Meter 049-2 (0.4 in total, 1.08 in/hr peak)
2020-08-06 03:05:00 to 2020-08-06 11:40:00

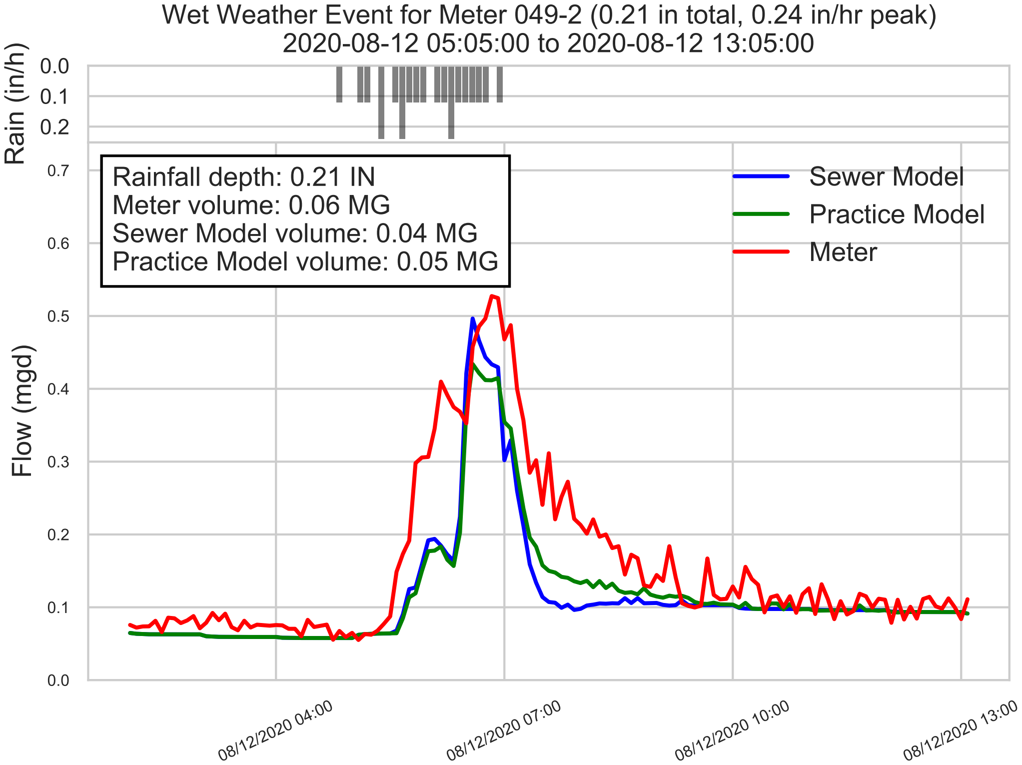
Rainfall depth: 0.4 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.07 MG

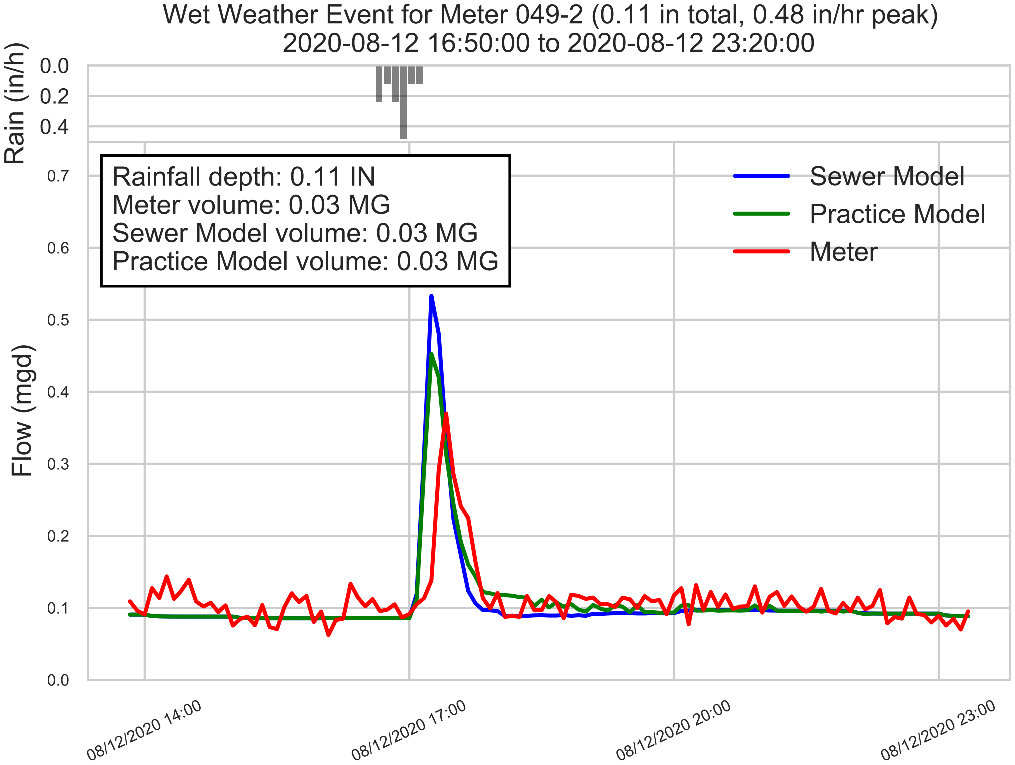


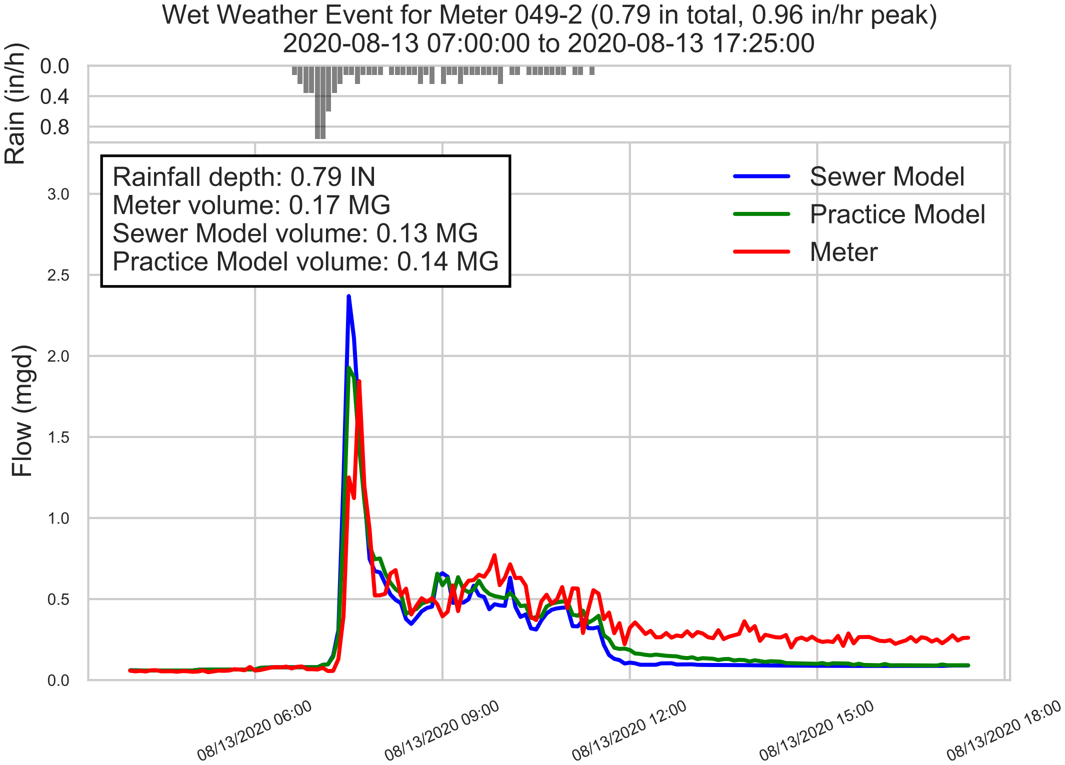
Wet Weather Event for Meter 049-2 (0.5 in total, 2.4 in/hr peak)
2020-08-07 21:05:00 to 2020-08-08 03:50:00
Rain (in/h)
0
1
2
Rainfall depth: 0.5 IN
Meter volume: 0.09 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.08 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
5
4
3
2
1
0
08/07/2020 18:00
08/07/2020 21:00
08/08/2020 00:00
08/08/2020 03:00

Wet Weather Event for Meter 049-2 (0.31 in total, 1.68 in/hr peak)
2020-08-10 17:15:00 to 2020-08-11 01:00:00

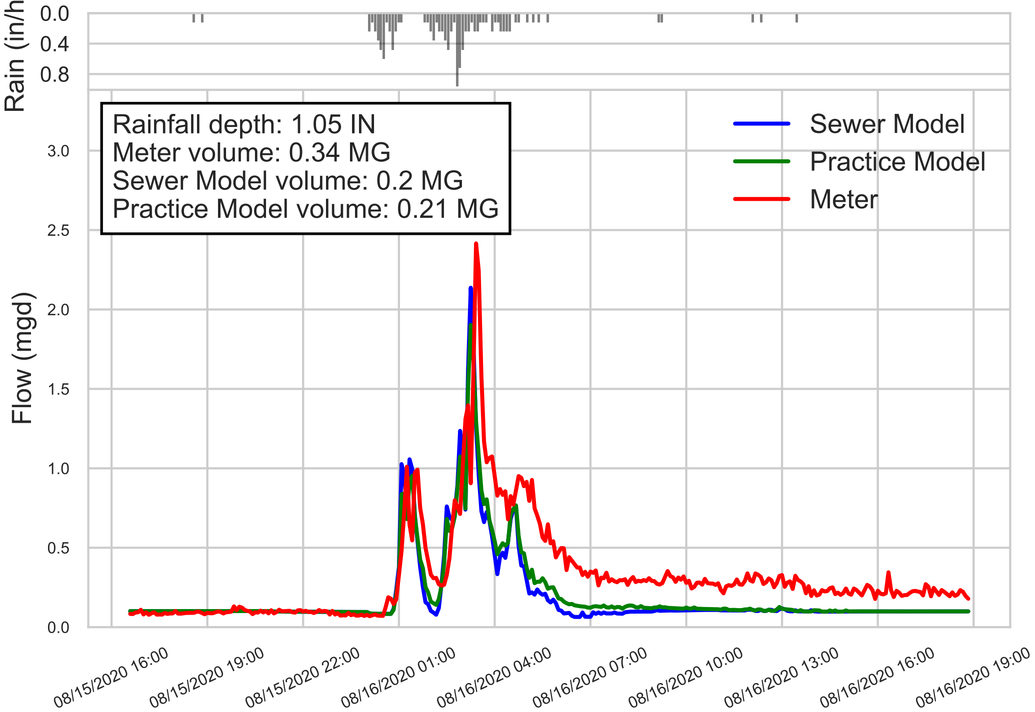



Wet Weather Event for Meter 049-2 (0.21 in total, 0.24 in/hr peak)
2020-08-12 05:05:00 to 2020-08-12 13:05:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.21 IN
Meter volume: 0.06 MG
Sewer Model volume: 0.04 MG
Practice Model volume: 0.05 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
08/12/2020 04:00
08/12/2020 07:00
08/12/2020 10:00
08/12/2020 13:00

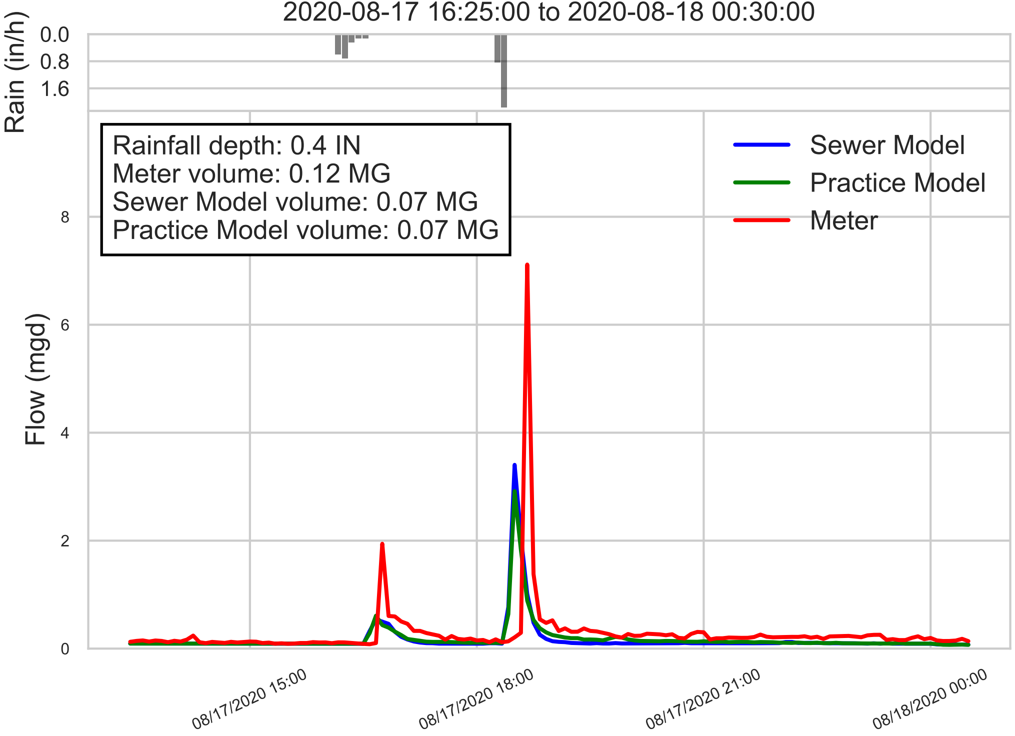

Wet Weather Event for Meter 049-2 (0.11 in total, 0.48 in/hr peak)
2020-08-12 16:50:00 to 2020-08-12 23:20:00
Rain (in/h)
0.0
0.2
0.4
Rainfall depth: 0.11 IN
Meter volume: 0.03 MG
Sewer Model volume: 0.03 MG
Practice Model volume: 0.03 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
08/12/2020 14:00
08/12/2020 17:00
08/12/2020 20:00
08/12/2020 23:00


Wet Weather Event for Meter 049-2 (0.79 in total, 0.96 in/hr peak)
2020-08-13 07:00:00 to 2020-08-13 17:25:00
Rain (in/h)
0.0
0.4
0.8
Flow (mgd)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Rainfall depth: 0.79 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.13 MG
Practice Model volume: 0.14 MG
Sewer Model
Practice Model
Meter
08/13/2020 06:00
08/13/2020 09:00
08/13/2020 12:00
08/13/2020 15:00
08/13/2020 18:00

Wet Weather Event for Meter 049-2 (1.05 in total, 0.96 in/hr peak)
2020-08-15 19:35:00 to 2020-08-16 18:50:00

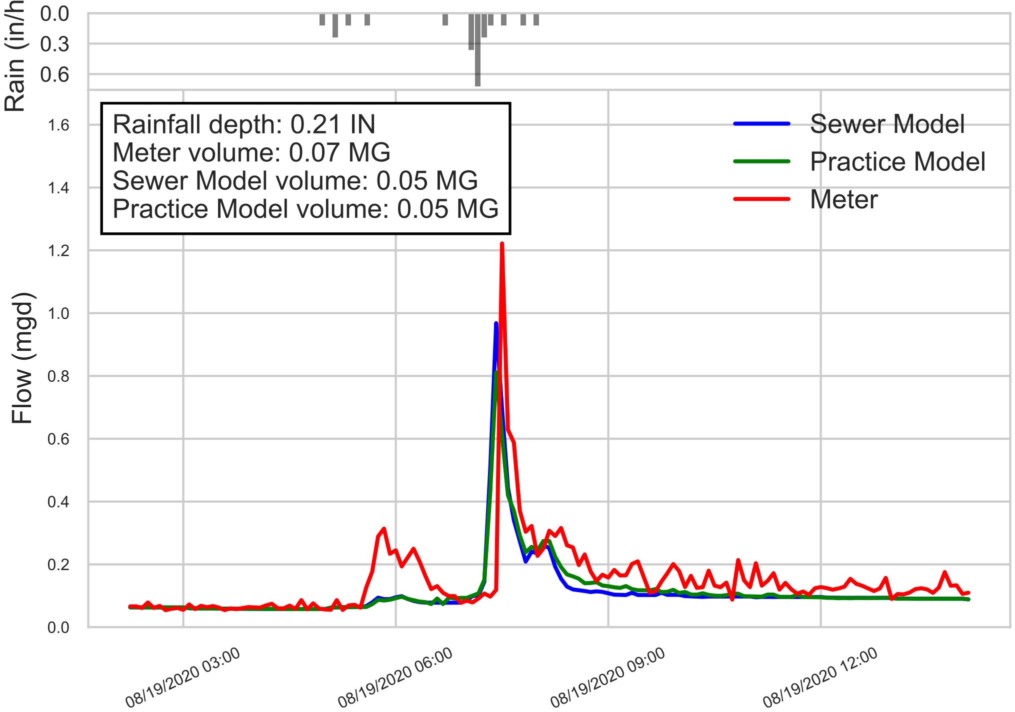


Wet Weather Event for Meter 049-2 (0.4 in total, 2.16 in/hr peak)
2020-08-17 16:25:00 to 2020-08-18 00:30:00

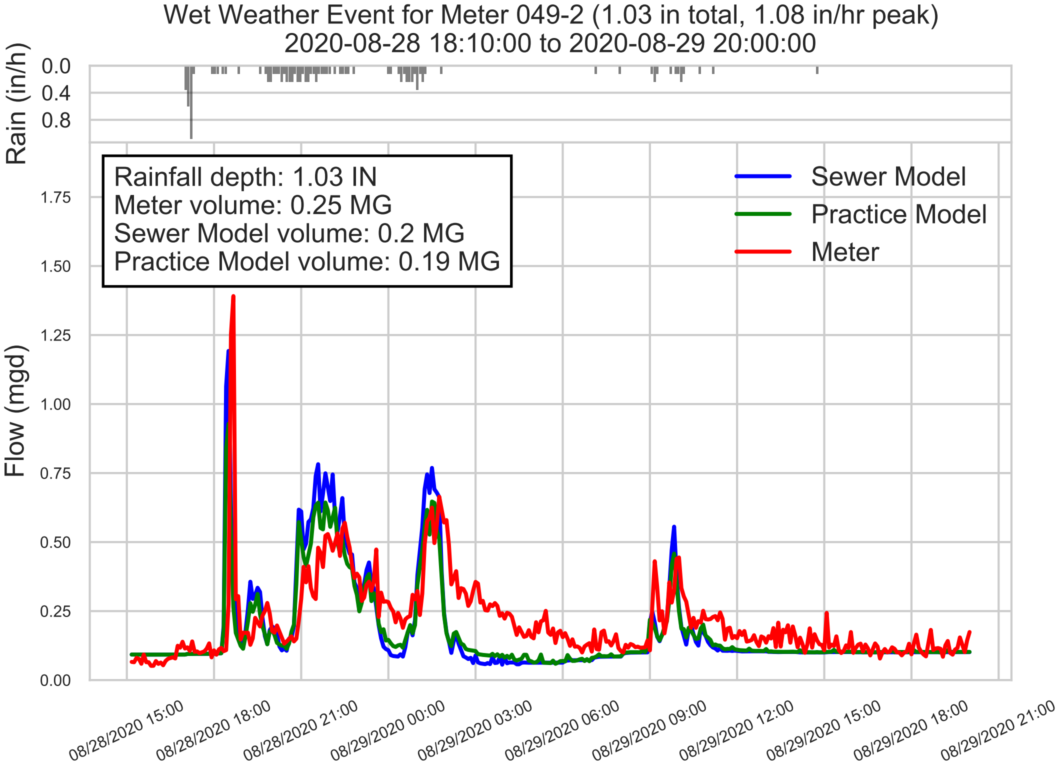


Rainfall depth: 0.4 IN
Meter volume: 0.12 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.07 MG

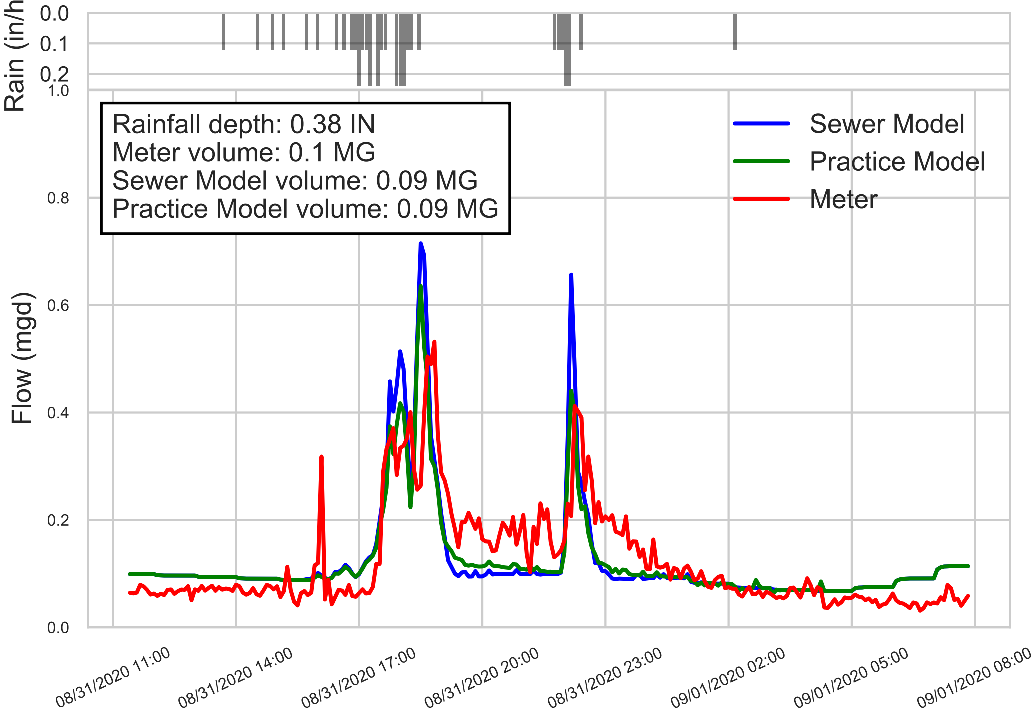
Wet Weather Event for Meter 049-2 (0.21 in total, 0.72 in/hr peak)
2020-08-19 05:15:00 to 2020-08-19 14:05:00



Rainfall depth: 0.21 IN
Meter volume: 0.07 MG
Sewer Model volume: 0.05 MG
Practice Model volume: 0.05 MG

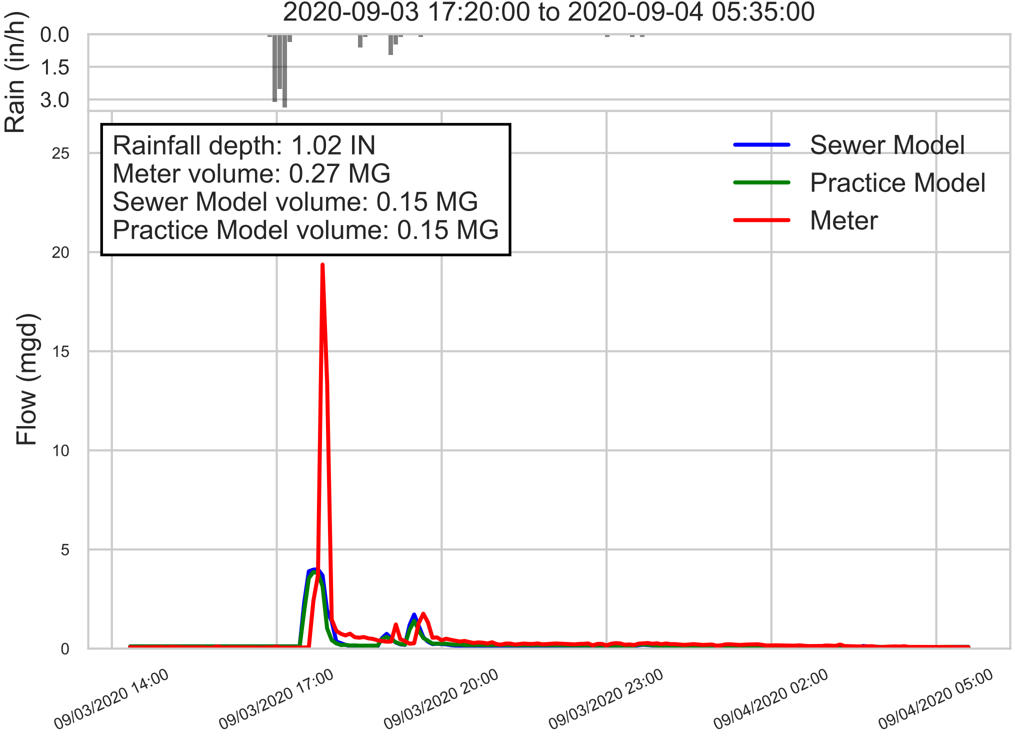

Wet Weather Event for Meter 049-2 (1.03 in total, 1.08 in/hr peak)
2020-08-28 18:10:00 to 2020-08-29 20:00:00
Rain (in/h)
0.0
0.4
0.8
Rainfall depth: 1.03 IN
Meter volume: 0.25 MG
Sewer Model volume: 0.2 MG
Practice Model volume: 0.19 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
08/28/2020 15:00
08/28/2020 18:00
08/28/2020 21:00
08/29/2020 00:00
08/29/2020 03:00
08/29/2020 06:00
08/29/2020 09:00
08/29/2020 12:00
08/29/2020 15:00
08/29/2020 18:00
08/29/2020 21:00

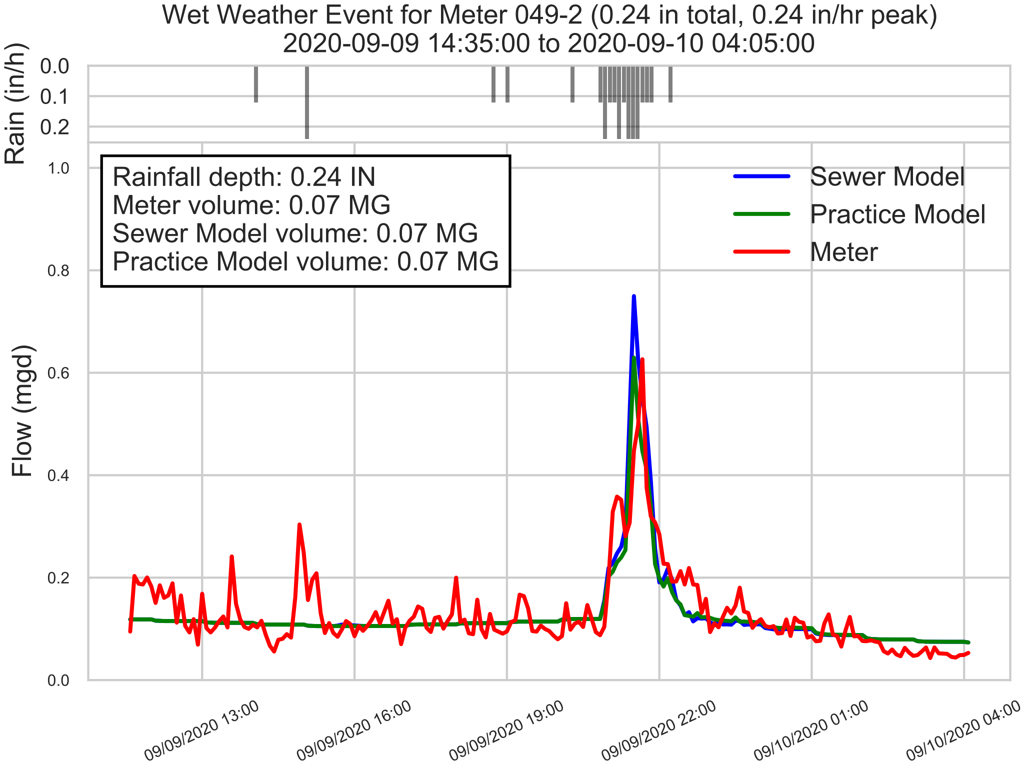
Wet Weather Event for Meter 049-2 (0.38 in total, 0.24 in/hr peak)
2020-08-31 14:25:00 to 2020-09-01 07:50:00



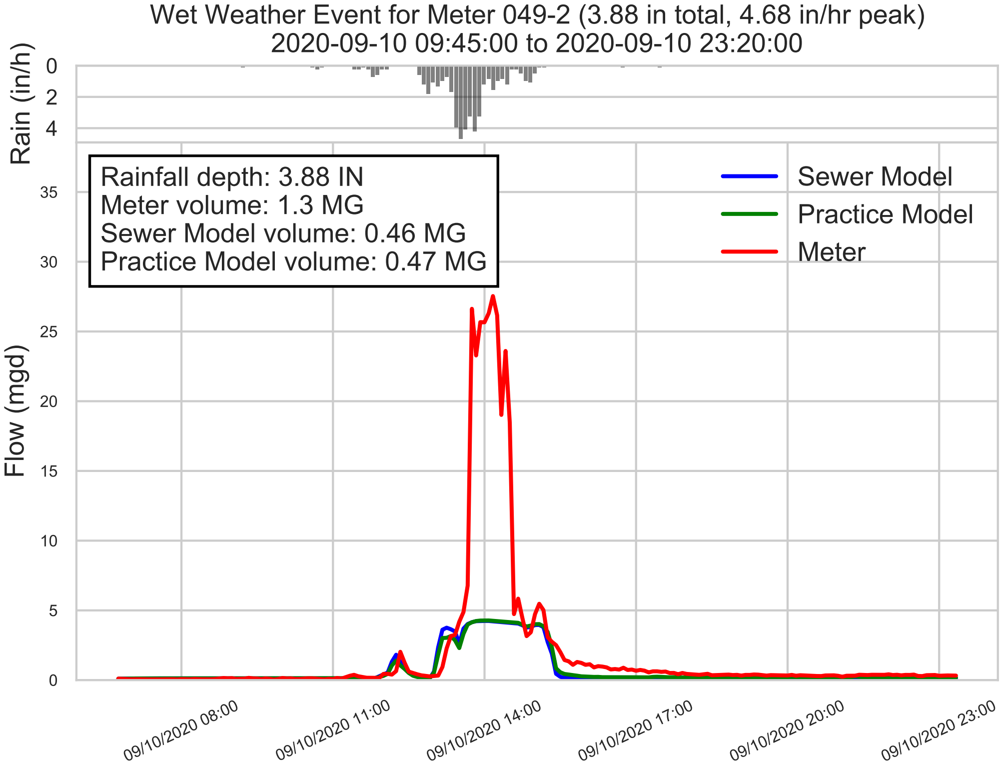
Rainfall depth: 0.38 IN
Meter volume: 0.1 MG
Sewer Model volume: 0.09 MG
Practice Model volume: 0.09 MG

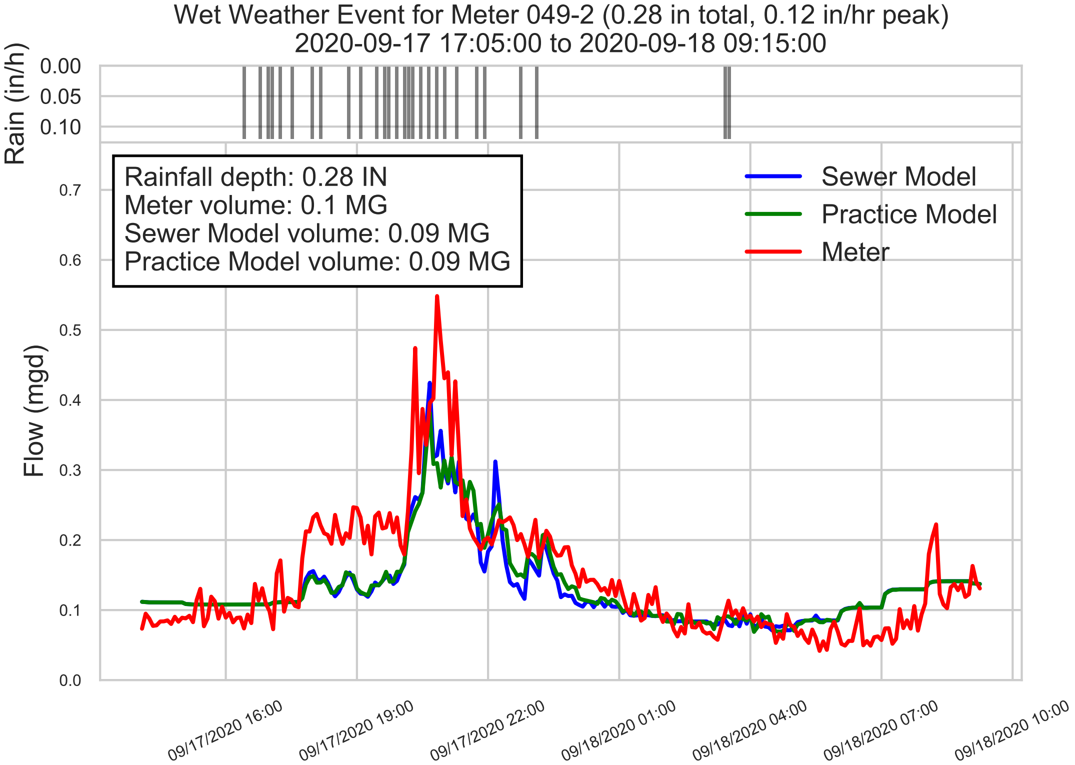
Wet Weather Event for Meter 049-2 (1.02 in total, 3.36 in/hr peak)
2020-09-03 17:20:00 to 2020-09-04 05:35:00

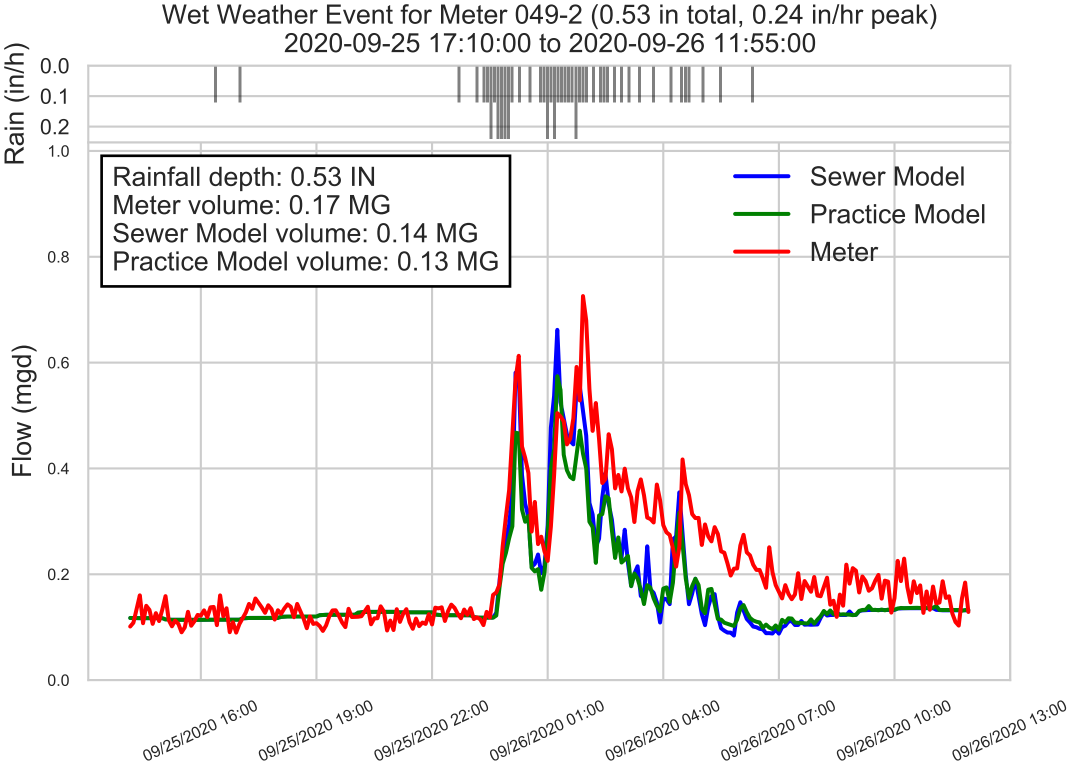


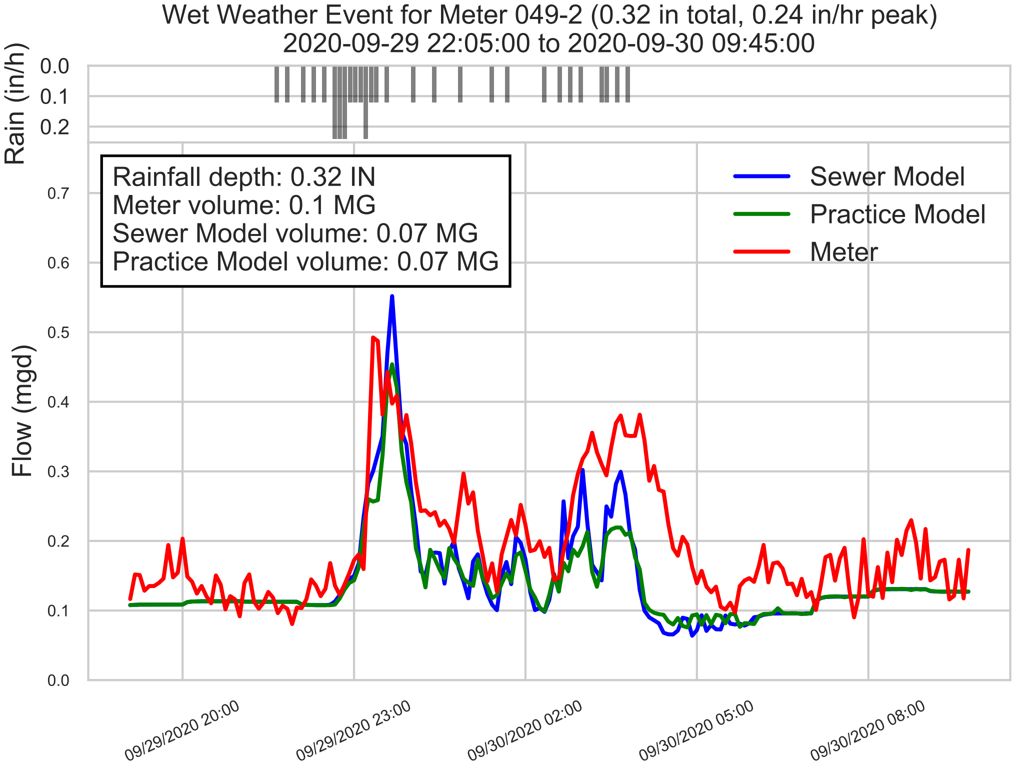


Wet Weather Event for Meter 049-2 (0.24 in total, 0.24 in/hr peak)
2020-09-09 14:35:00 to 2020-09-10 04:05:00


Wet Weather Event for Meter 049-2 (3.88 in total, 4.68 in/hr peak)
2020-09-10 09:45:00 to 2020-09-10 23:20:00
Rain (in/h)
0
2
4
Rainfall depth: 3.88 IN
Meter volume: 1.3 MG
Sewer Model volume: 0.46 MG
Practice Model volume: 0.47 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
35
30
25
20
15
10
5
0
09/10/2020 08:00
09/10/2020 11:00
09/10/2020 14:00
09/10/2020 17:00
09/10/2020 20:00
09/10/2020 23:00


Wet Weather Event for Meter 049-2 (0.28 in total, 0.12 in/hr peak)
2020-09-17 17:05:00 to 2020-09-18 09:15:00
Rain (in/h)
0.00
0.05
0.10
Rainfall depth: 0.28 IN
Meter volume: 0.1 MG
Sewer Model volume: 0.09 MG
Practice Model volume: 0.09 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
09/17/2020 16:00
09/17/2020 19:00
09/17/2020 22:00
09/18/2020 01:00
09/18/2020 04:00
09/18/2020 07:00
09/18/2020 10:00


Wet Weather Event for Meter 049-2 (0.53 in total, 0.24 in/hr peak)
2020-09-25 17:10:00 to 2020-09-26 11:55:00
Rain (in/h)
0.0
0.1
0.2
1.0
0.8
0.6
0.4
0.2
0.0
Flow (mgd)
Rainfall depth: 0.53 IN
Meter volume: 0.17 MG
Sewer Model volume: 0.14 MG
Practice Model volume: 0.13 MG
Sewer Model
Practice Model
Meter
09/25/2020 16:00
09/25/2020 19:00
09/25/2020 22:00
09/26/2020 01:00
09/26/2020 04:00
09/26/2020 07:00
09/26/2020 10:00
09/26/2020 13:00


Wet Weather Event for Meter 049-2 (0.32 in total, 0.24 in/hr peak)
2020-09-29 22:05:00 to 2020-09-30 09:45:00
Rain (in/h)
0.0
0.1
0.2
Rainfall depth: 0.32 IN
Meter volume: 0.1 MG
Sewer Model volume: 0.07 MG
Practice Model volume: 0.07 MG
Sewer Model
Practice Model
Meter
Flow (mgd)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
09/29/2020 20:00
09/29/2020 23:00
09/30/2020 02:00
09/30/2020 05:00
09/30/2020 08:00

Appendix C Monitoring Documentation

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RC-A

Pre-Construction Monitoring Documentation

CSL Services, Inc.
Customized Solutions to your Flow Metering Needs

To: DC Clean Rivers

From: CSL Services, Inc.

Date: February 15, 2017

RE: RCA Combined Sewer Flow Monitoring

Enclosed is the data for 1/1/16 – 2/4/17. The information provided is as follows:

- Investigation and Installation Report
- Flow, Level & Velocity Hydrograph
- Level vs. Velocity Hourly Scattergraph
- Calibration and Maintenance Log
- Instrumentation Manual (Page 40)

Please feel free to contact me should you have any questions.

7905 BROWNING ROAD • SUITE 316 • PENNSAUKEN, NEW JERSEY 08109
PHONE: 856-755-9440 • FAX: 856-755-9445 • cslservices.com

Monitoring Summary:

Overview:

Four sites and one rain gauge were monitored by area/velocity flow meters installed between January 1, 2016 and February 4, 2017.

Sensors provide depth (from which area is calculated) and velocity measurements which are used to determine flow rate. Every 5 minutes, the meter takes a depth and velocity measurement. The flow meter utilizes a pressure sensor to measure depth, and a continuous wave Doppler sensor to measure velocity.

049-1

The flow meter was installed between January 1, 2016 and January 21, 2017, and provided 100% uptime during the monitoring period.

The sensor was installed 36” upstream from the mouth of the pipe in the 6:00 clock position. No silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. During the smaller wet weather events, the flow remained in pipe and maintained free flow conditions. During larger events, backwater conditions were seen, causing an increase in level and decrease in velocity. This site required more maintenance than most because of debris which washed through the combined sewer, but the meter collected very high quality data despite the challenging conditions.

049-1 (Redundant)

The flow meter was installed between July 27, 2016 and September 16, 2016, and provided 100% uptime during the monitoring period.

The sensor was installed 36” upstream from the mouth of the pipe in the 6:00 clock position. No silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. During the smaller wet weather events, the flow remained in pipe and maintained free flow conditions. During larger events, backwater conditions were seen, causing an increase in level and decrease in velocity. This site was installed to confirm readings at the 049-1 meter, and generally confirmed the readings with a high degree of precision.

049-2

The flow meter was installed between January 1, 2016 and January 21, 2017, and provided 100% uptime during the monitoring period.

The sensor was installed 24” downstream from the mouth of the pipe in the 6:00 clock position. No silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. During the smaller wet weather events, the flow remained in pipe and maintained free flow conditions. During larger events, backwater conditions were seen, causing an increase in level and decrease in velocity. This site was removed from April 12, 2016 to May 13, 2016 for line cleaning. Rock and debris was sporadically found in the site, but the meter produced high quality data despite the challenging conditions.

049-3

The flow meter was installed between January 22, 2016 and January 21, 2017, and provided 100% uptime during the monitoring period.

The sensor was installed 12” downstream from the mouth of the pipe in the 6:00 clock position. No silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. During all wet weather events, the flow remained in pipe and maintained free flow conditions.

049-4

The flow meter was installed between January 22, 2016 and January 21, 2017, and provided 100% uptime during the monitoring period.

The sensor was installed 6” upstream from the mouth of the pipe in the 6:00 clock position. No silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. During the smaller wet weather events, the flow remained in pipe and maintained free flow conditions. During larger events, backwater conditions were seen, causing an increase in level and decrease in velocity.

CSL Services, Inc.

Site Name/Manhole # 049-1 Primary: ☒ Alternate: ☐

Investigation Date: 12/15/15 Time: 13:40 Crew Members: CL/MH

Installation Date: 12/29/15 Time: 13:15 Crew Members: CL/MM

Address/Location: Intersection of Longfellow Street NW and 3rd Place NW

Latitude: N 38°57’ 28” Longitude: W 77°1’ 1”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 2.70 ft/sec

Depth 1.50 in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Influent 3	Effluent
Height	4’ 3”	12”	15”	4’ 3”
Width	4’ 3”	12”	15”	4’ 3”
Material	Concrete	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 13’ 9”

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

☐ [✓ Yes] ☐ No ☐ Maybe

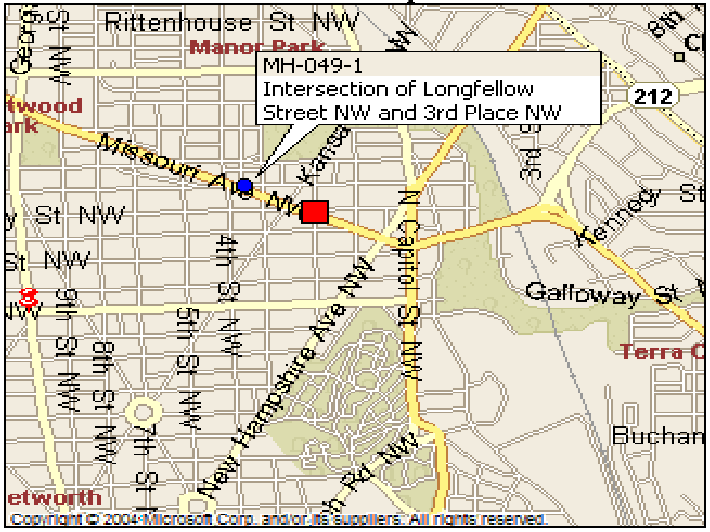
Sensor Configuration:

(Please include Serial Numbers when possible)

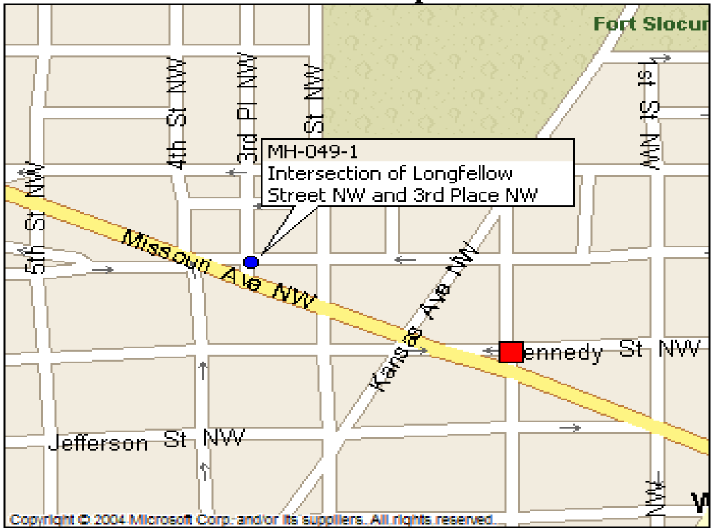
Level	Primary: Flowav	
	Redundant:	
Velocity	Primary: Flowav	
	Redundant:	
Meter Logger	Telog	

Comments:

Area Map



Detail Map



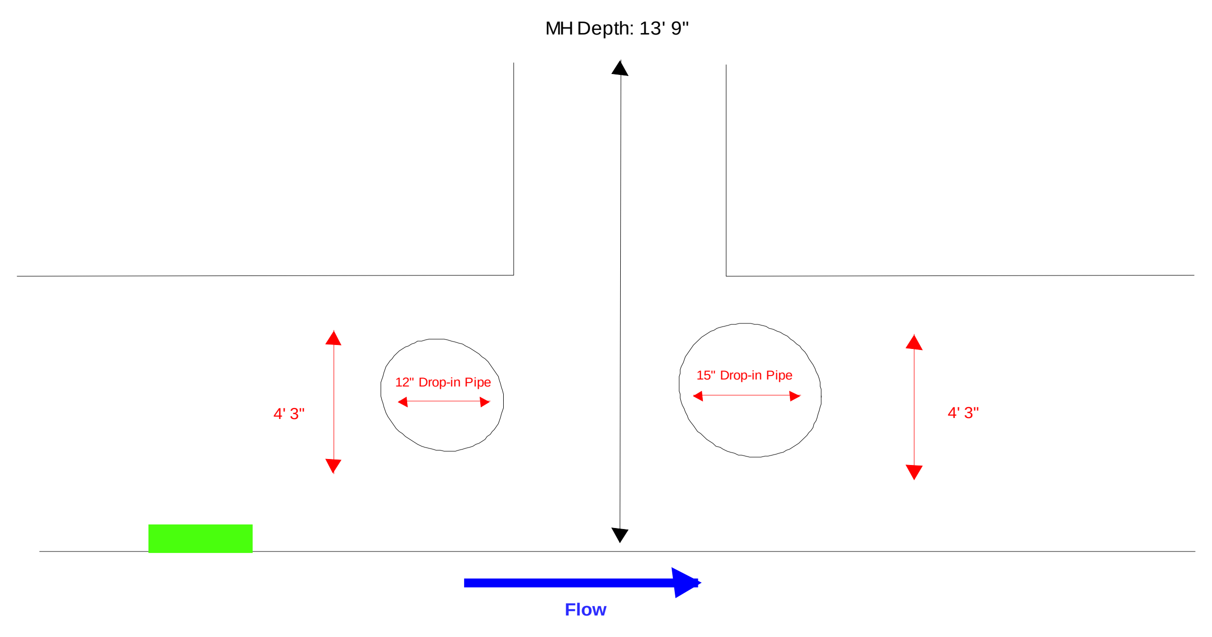
View from top of MH

Site Overview

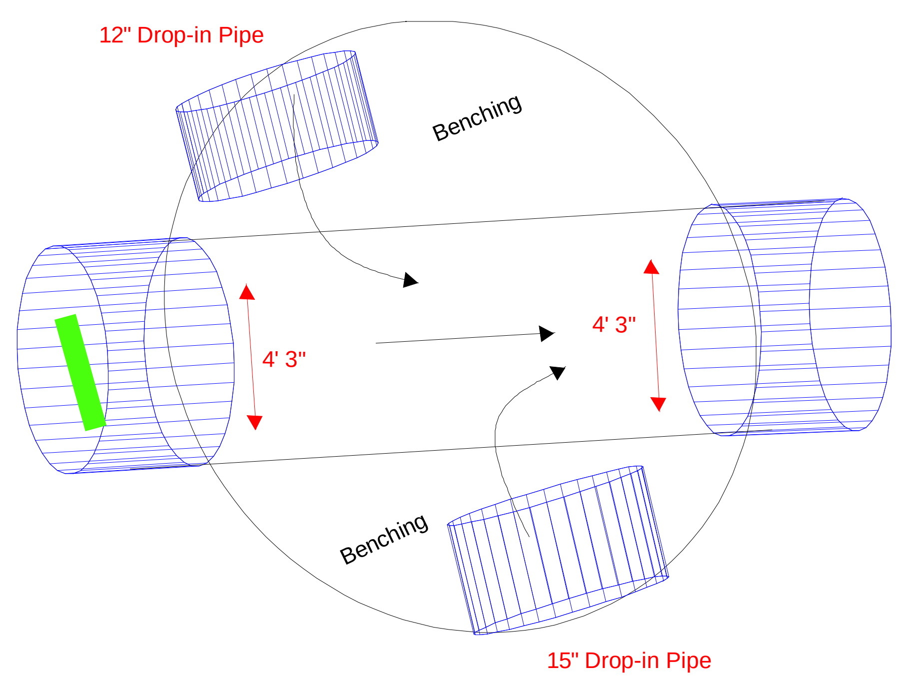
View of flow through influent line

View of flow through effluent line

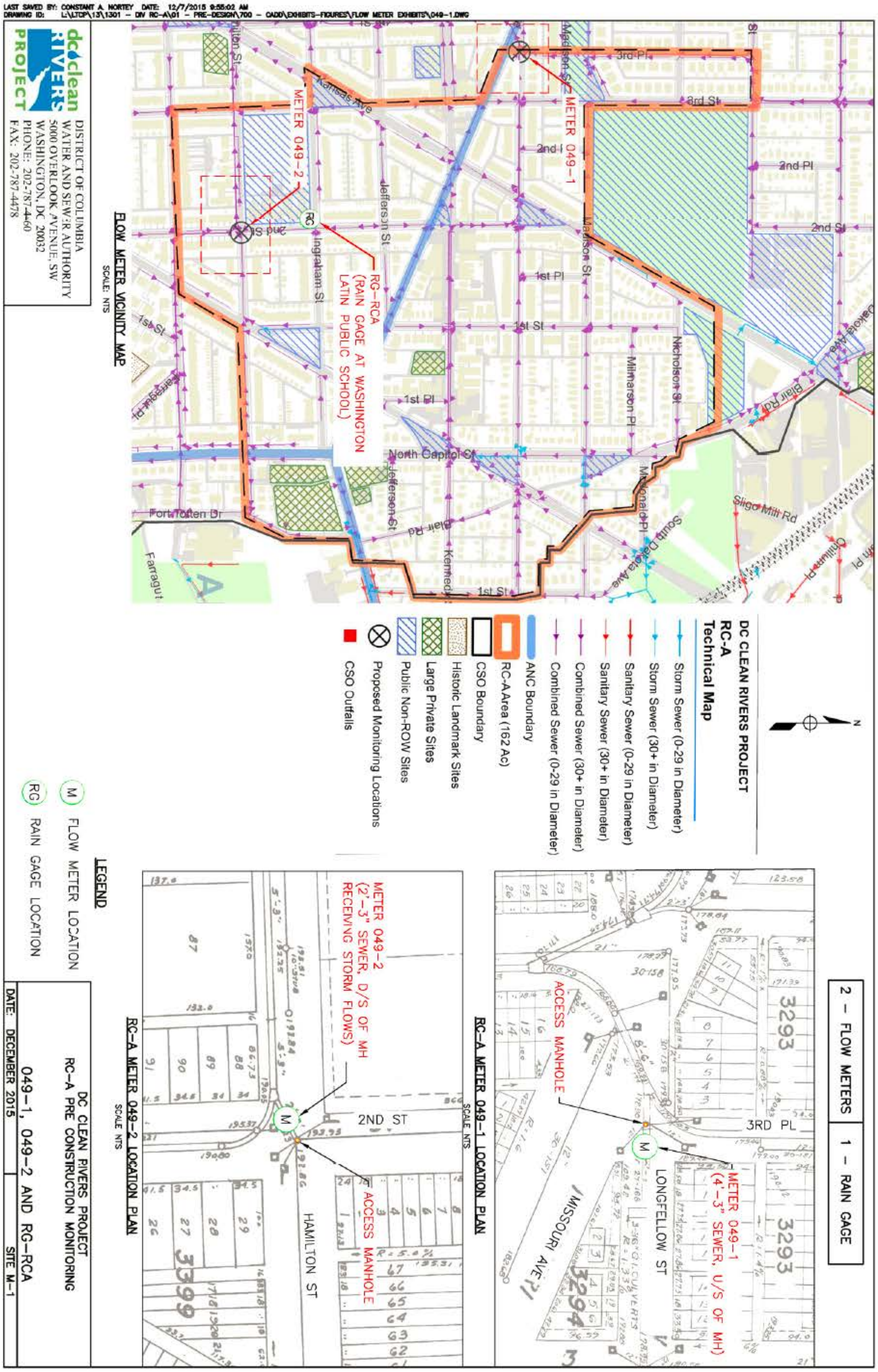
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)



Site Location Plan View
Sketch or plat showing upstream and downstream manholes, connections, and bends.

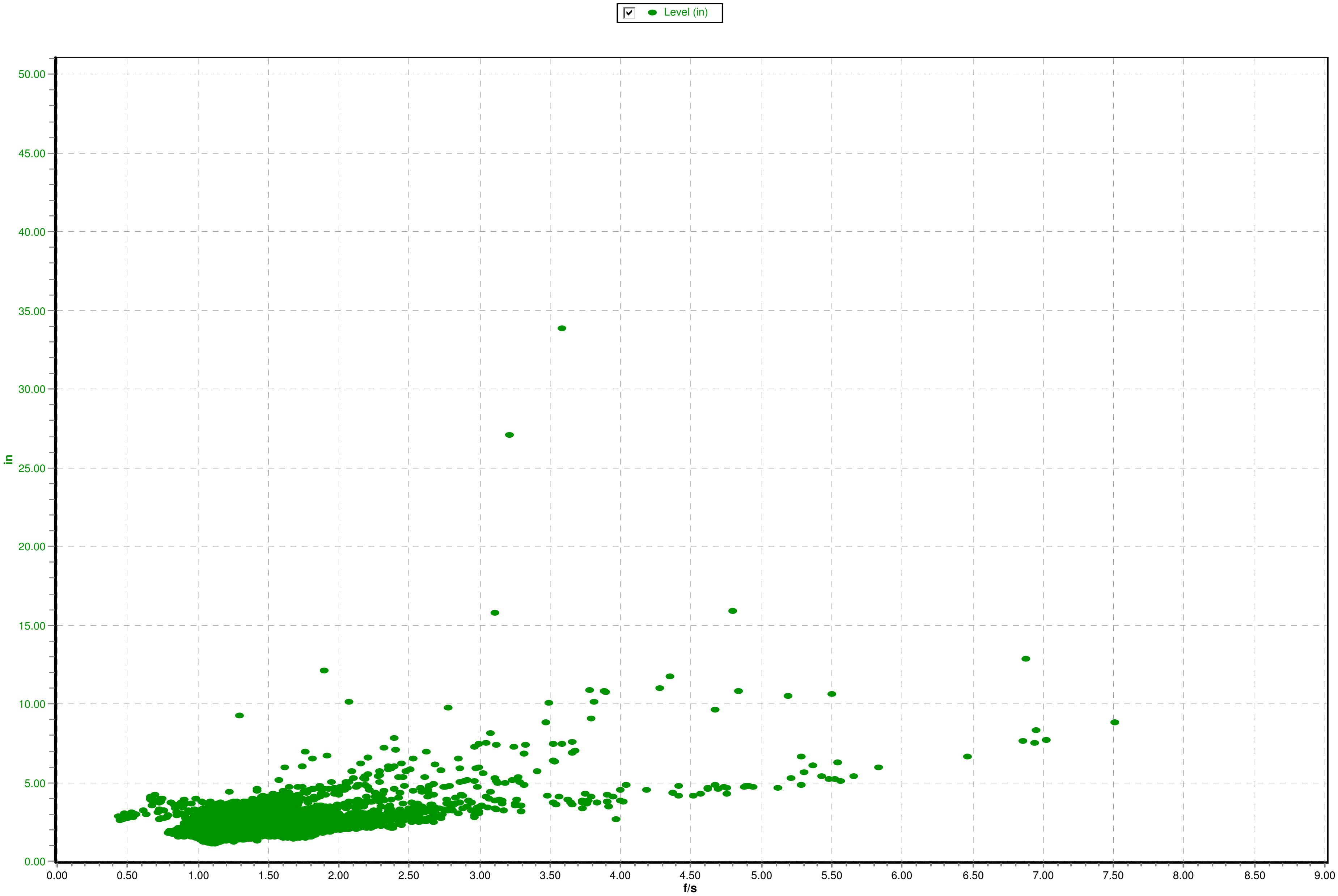


049-1 - 366 Longfellow St. NW

Pipe Diameter (in): 51 (01/01/16 to 01/22/17)

049-1 - 366 Longfellow St. NW

Pipe Diameter (in): 51 (01/01/16 to 01/22/17)



CSL Services, Inc.

Site Name/Manhole # 049-1R Primary: ☒ Alternate: ☐

Investigation Date: 12/15/15 Time: 13:40 Crew Members: CL/MH

Installation Date: 7/27/16 Time: 10:00 Crew Members: GM/WR

Address/Location: Intersection of Longfellow Street NW and 3rd Place NW

Latitude: N 38°57’ 28” Longitude: W 77°1’ 1”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 1.60 ft/sec

Depth 2.50 in

Turbulence Amplitude:

☐ Less than 0.25”
[✓ 0.25” to 0.75”]
☐ 0.75” to 1.5”
☐ 1.5” to 3”
☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Influent 3	Effluent
Height	4’ 3”	12”	15”	4’ 3”
Width	4’ 3”	12”	15”	4’ 3”
Material	Concrete	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep
[✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

[✓ No evidence visible]
☐ Remains in pipe
☐ _____ft from rim
☐ Reaches Rim (potential meter damage)
☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access:

☐ Good (no problems accessing site)
[✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
☐ Traffic Control only (Requires extra traffic control
☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes [✓ No]
Height above ground ____
Manhole depth 13’ 9”
Structural Integrity of Manhole:
☐ Good [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*
☐ Influent ☐ Effluent ☐ Manhole
Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:
☐ Influent ☐ Effluent ☐ Manhole
Approx Distance to change:_________ft
(detail is comments)

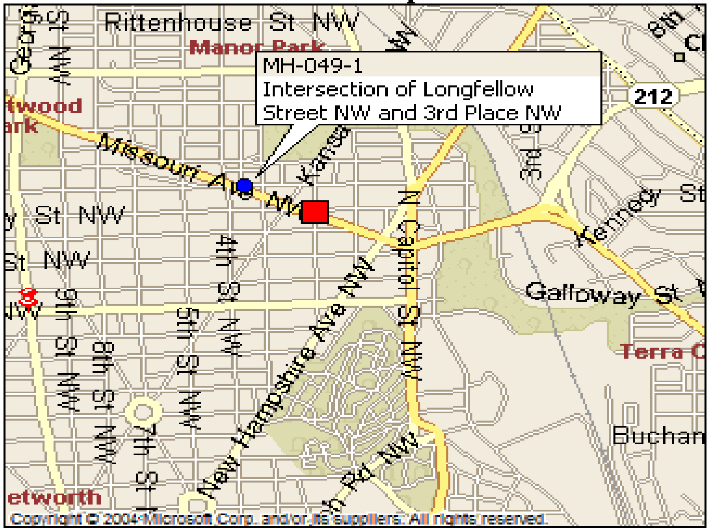
Crew Member: Can you maintain this site?
[✓ Yes] ☐ No ☐ Maybe

Sensor Configuration:
(Please include Serial Numbers when possible)

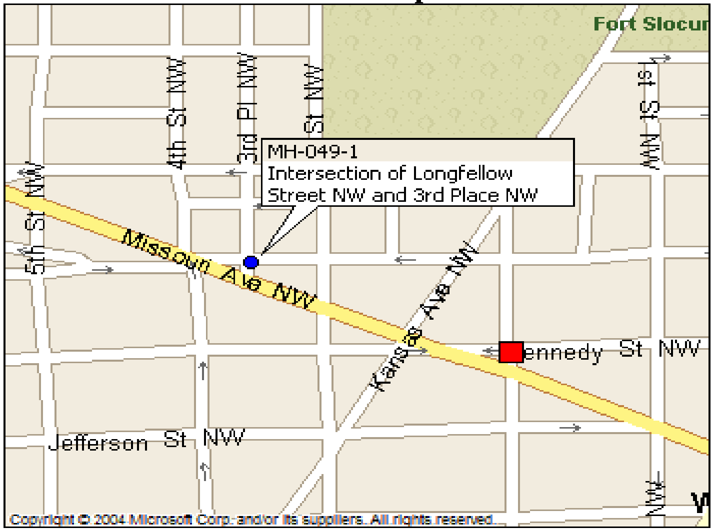
Level	Primary: Pressure	
	Redundant:	
Velocity	Primary: Doppler	
	Redundant:	
Meter Logger	Telog	

Comments:

Area Map



Detail Map



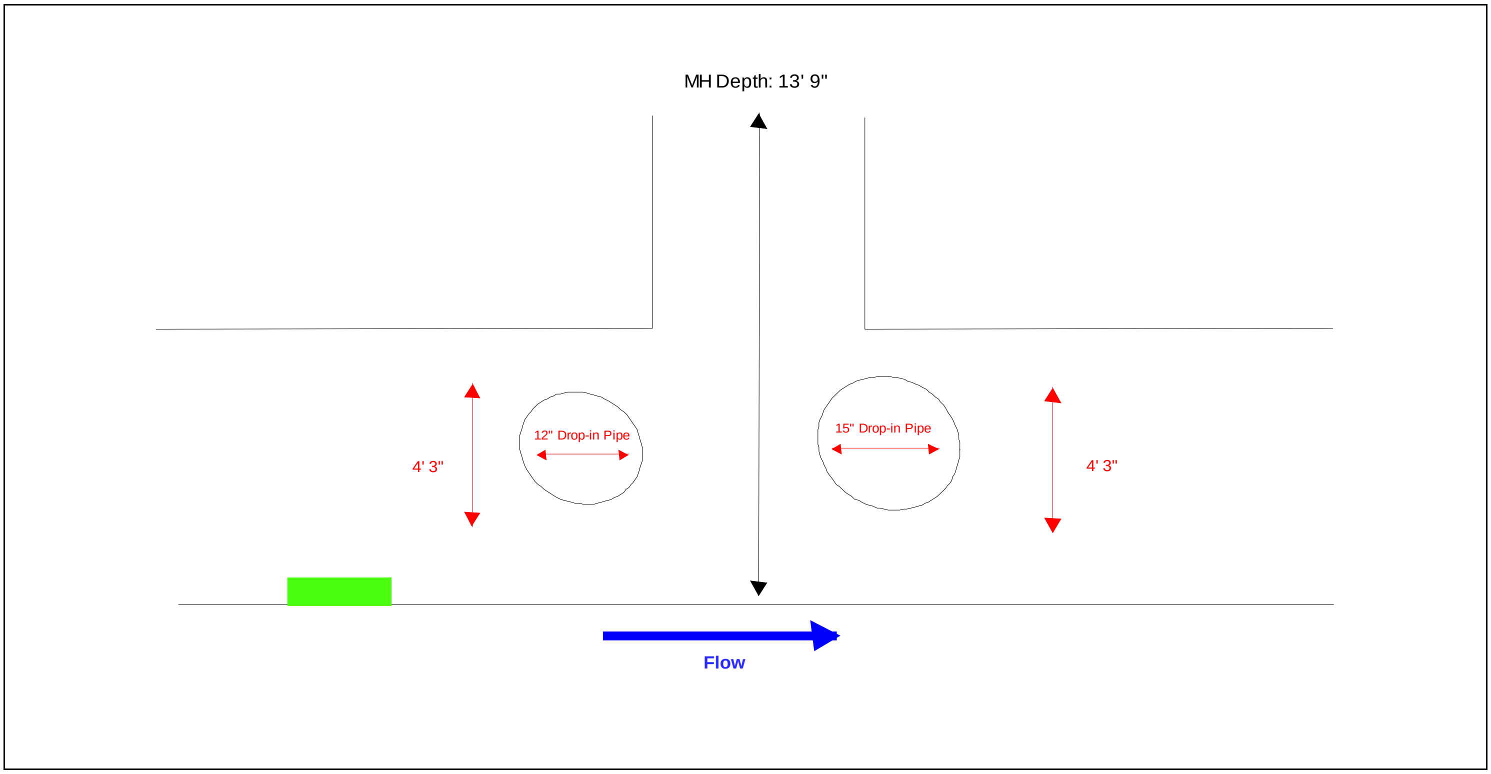
View from top of MH

Site Overview

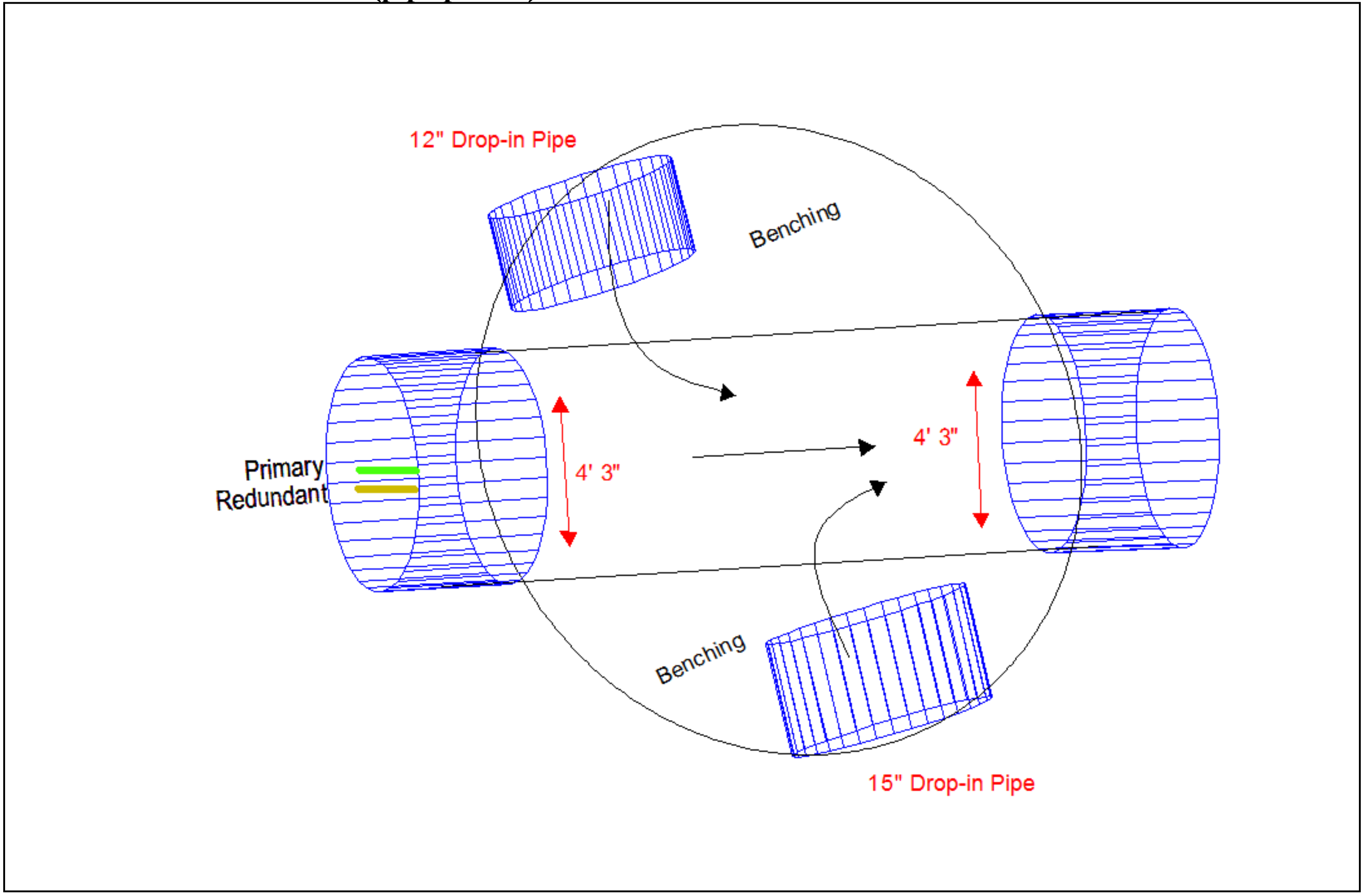
View of flow through influent line

View of flow through effluent line

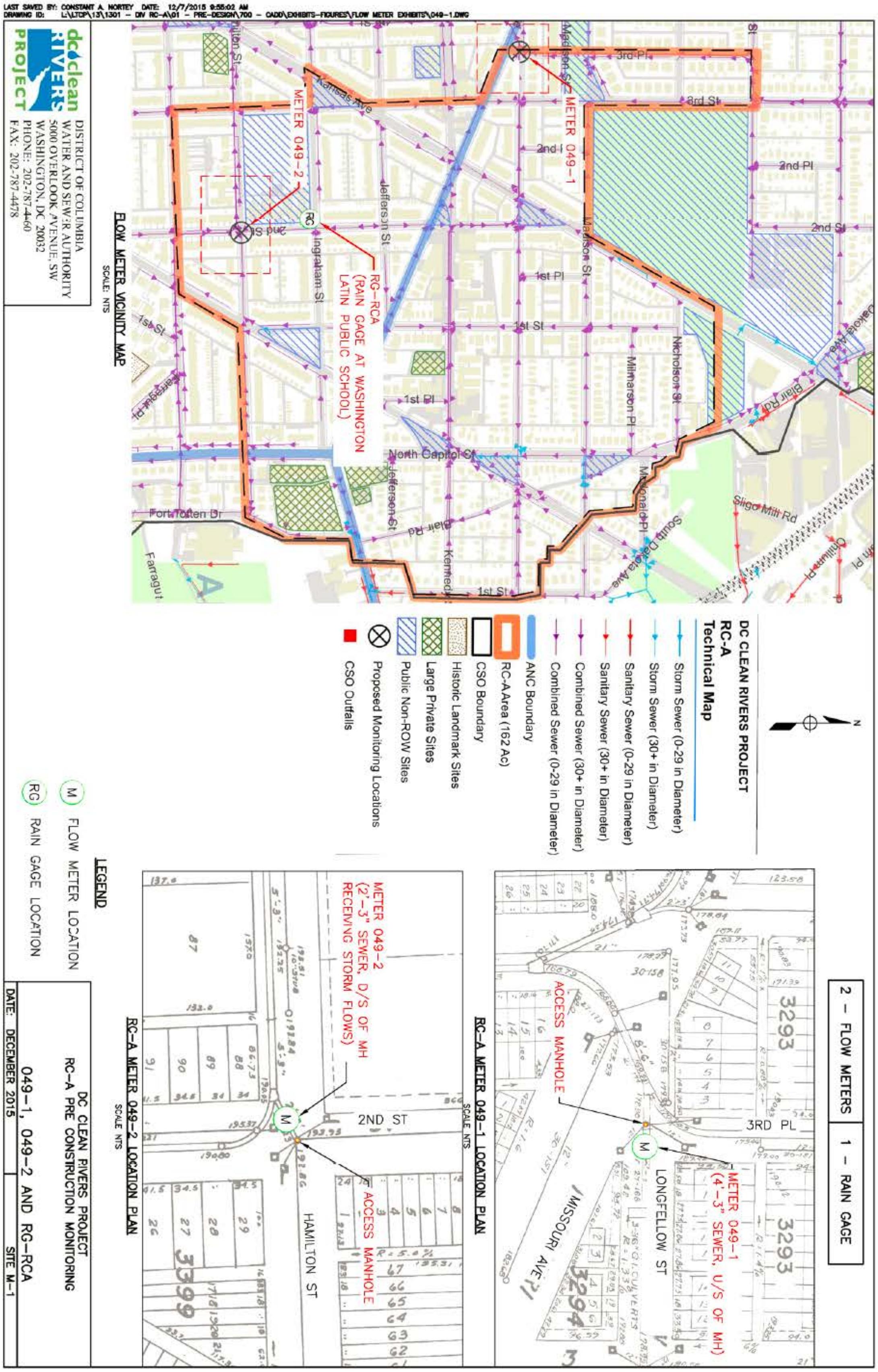
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)



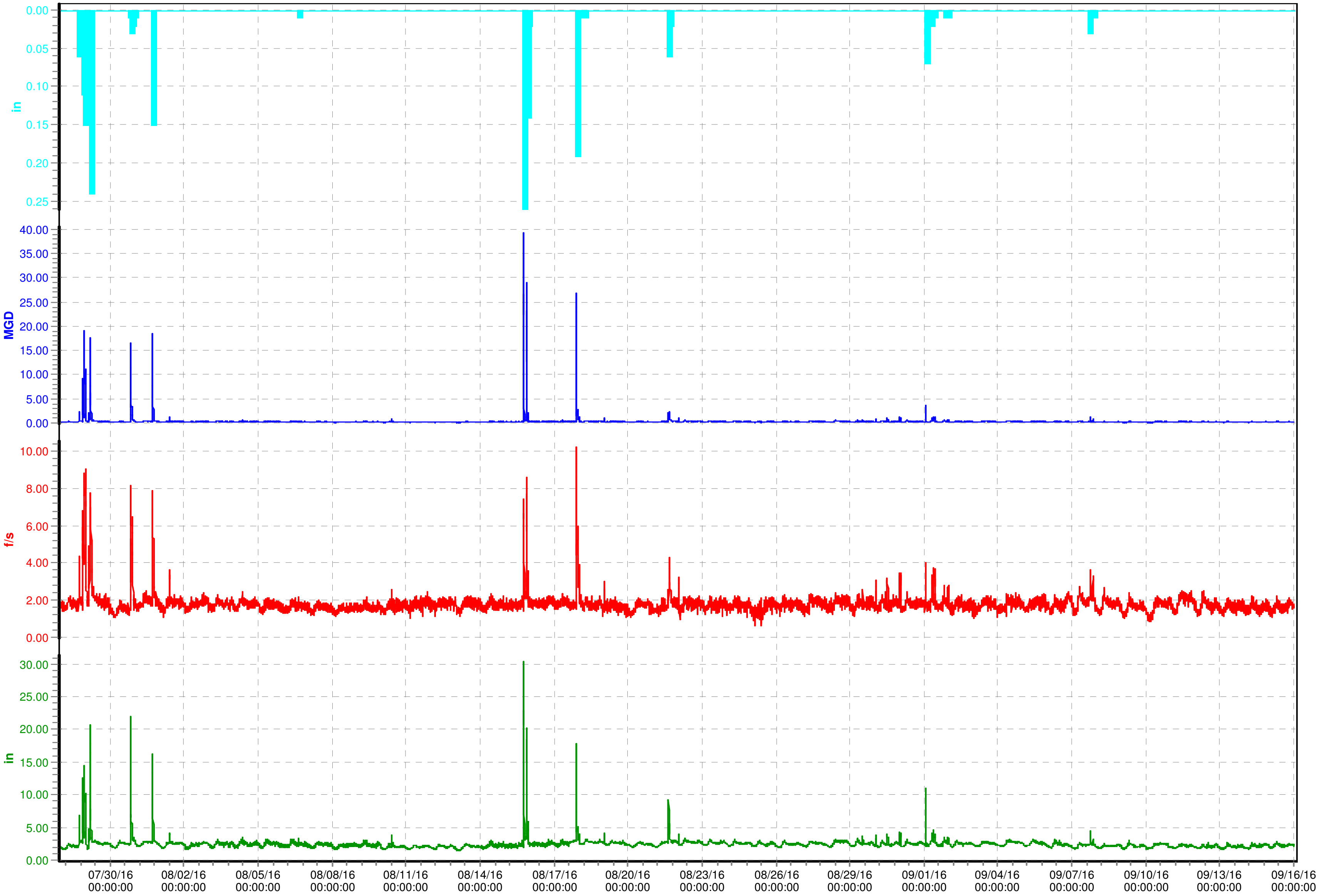
Site Location Plan View
Sketch or plat showing upstream and downstream manholes, connections, and bends.



049-1R - 366 Longfellow St. NW

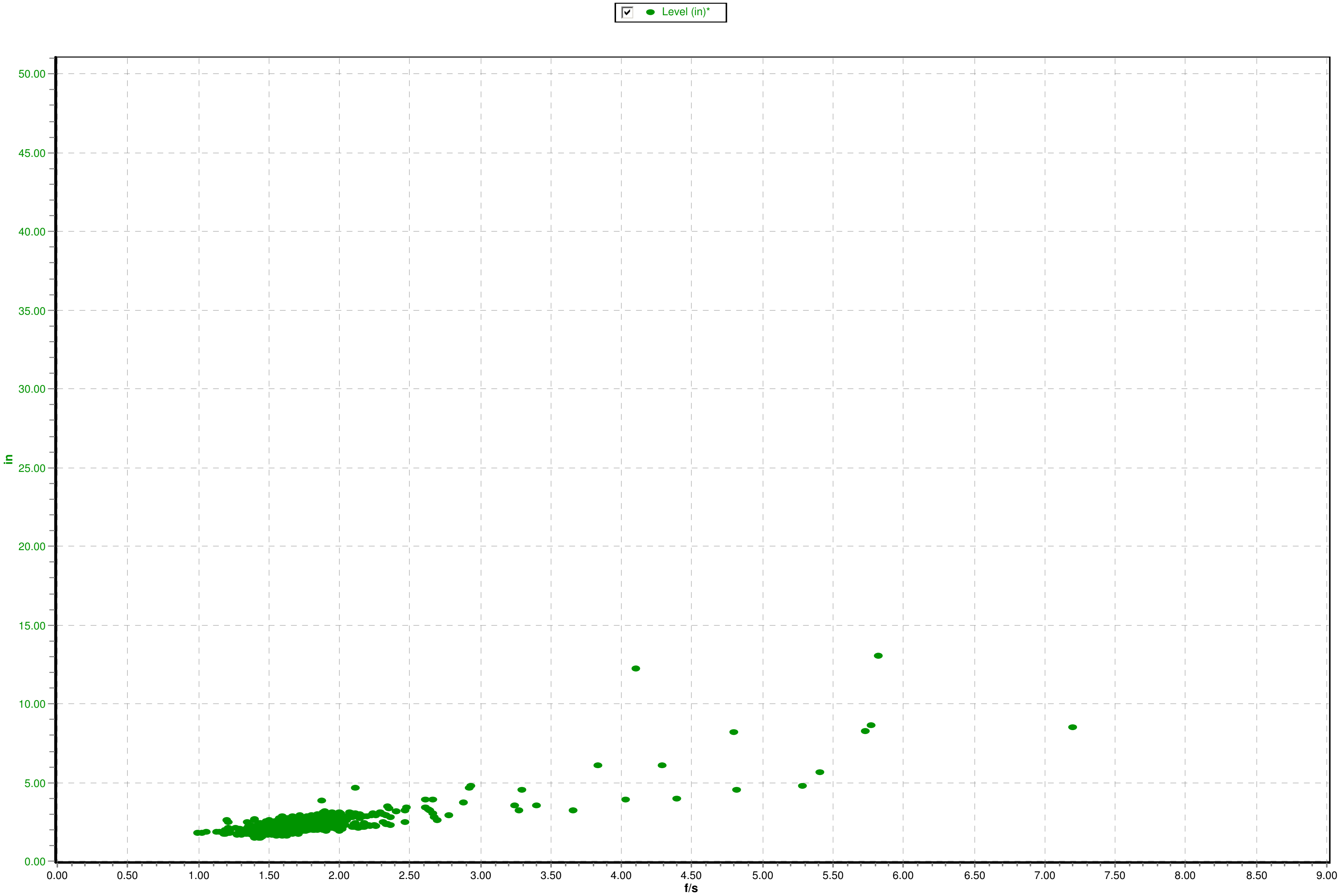
Pipe Diameter (in): 51 (07/28/16 to 09/16/16)

☑ Level (in) ☑ Velocity (f/s) ☑ Flow (MGD) ☑ Rain Guage - Latin School.Rainfall (in)



049-1R - 366 Longfellow St. NW

Pipe Diamter (in): 51 (07/27/16 to 09/16/16)



Site: 049-1

Date	Time	Meter Depth	Field Depth	Meter Vel.	Field Vel.	Silt	Initials	Service Comments
12/29/2015	13:24		2.25		1.40	0.0	LL/MM	Install
12/29/2015	13:29		2.25		1.38	0.0	LL/MM	
12/29/2015	13:44		2.25		1.42	0.0	LL/MM	
1/8/2016	13:33		2.25		1.65	0.0	LL/MH	
1/21/2016	16:00		2.25		1.80	0.0	LL/MH	
2/8/2016	12:50		2.25		1.45	0.0	LL/MH	
5/10/2016	16:05		3.25		1.40	0.0	RD/DJ	Change Battery
5/20/216	8:55		3.25		1.50	0.0	GM/DJ	
6/1/2016	14:40		2.75		1.25	0.0	SD/DJ	
7/14/2016	10:55		2.75		1.20	0.0	GM/JS	
7/22/2016	11:50		2.00		1.51	0.0	SD/SH	Blind
7/27/2016	10:15		2.50		1.54	0.0	GM/SH	Install redundant meter
8/10/2016	10:21		2.50		1.61	0.0	SD/DN	
8/17/2016	11:34						SH/MM	Change Battery
9/7/2016	11:23		2.25		2.11	0.0	GW/JC	
9/15/2016	18:00		2.25		1.74	0.0	GM/SH	
10/19/2016	10:20		2.00		1.41	0.0	LL/MM	Change Battery
12/8/2016	16:45		2.25		1.35	0.0	SH/DG	Change Battery
1/10/2017	13:36		2.25		1.51	0.0	SD/DN	
1/25/2017	15:37		2.50		1.61	0.0	SD/DN	Remove meter

CSL Services, Inc.

Site Name/Manhole # 049-2 Primary: ☒ Alternate: ☐

Investigation Date: 12/16/15 Time: 7:40 Crew Members: CL/MH

Installation Date: 12/29/15 Time: 15:30 Crew Members: CL/MM

Address/Location: Intersection of Hamilton Street NW and 2nd Street NW

Latitude: N 38°57’11.9” Longitude: W 77°00’ 48.7”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 1.50 ft/sec

Depth 1.25 in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics: *Inf. #6: 15” Dry Pipe at top*

	Infl 1	Infl 2	Infl 3	Infl 4	Infl 5	Effluent
Height	24.75”	18”	15”	12”	15”	36”
Width	24.75”	18”	15”	12”	15”	24”
Material	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round	Round	Oval

Sediment Present:

☐ Yes Hard packed: ____________ in. deep
☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *Not during rush hour traffic hours*

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]
Height above ground ____
Manhole depth 13’ 10”
Structural Integrity of Manhole:
☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole
Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ [✓ Influent] ☐ Effluent ☐ Manhole
Approx Distance to change:_________ft
(detail is comments)

Crew Member: Can you maintain this site?
☐ [✓ Yes] ☐ No ☐ Maybe

Sensor Configuration:
(Please include Serial Numbers when possible)

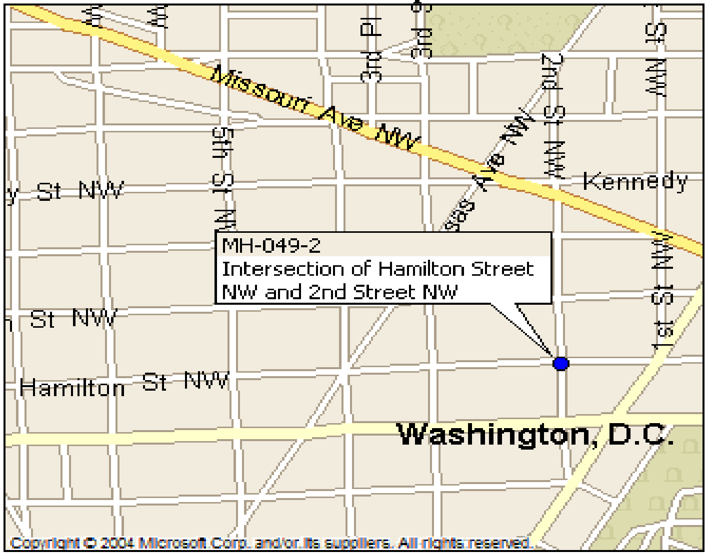
Level	Primary: Flowav
	Redundant:
Velocity	Primary: Flowav
	Redundant:
Meter Logger	Telog

Comments:

Area Map


MH-049-2
Intersection of Hamilton Street NW and 2nd Street NW

Detail Map


MH-049-2
Intersection of Hamilton Street NW and 2nd Street NW

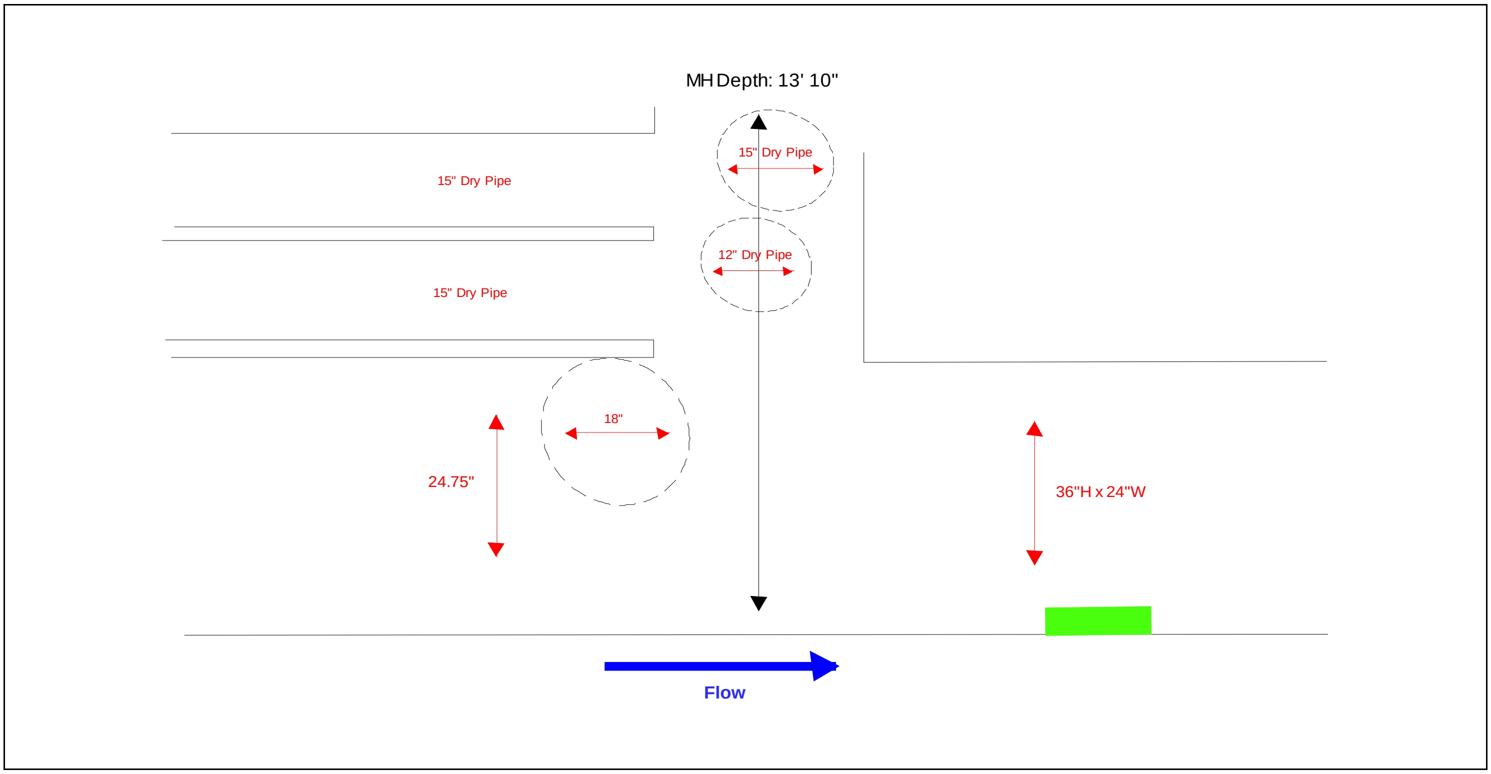
View from top of MH

Site Overview

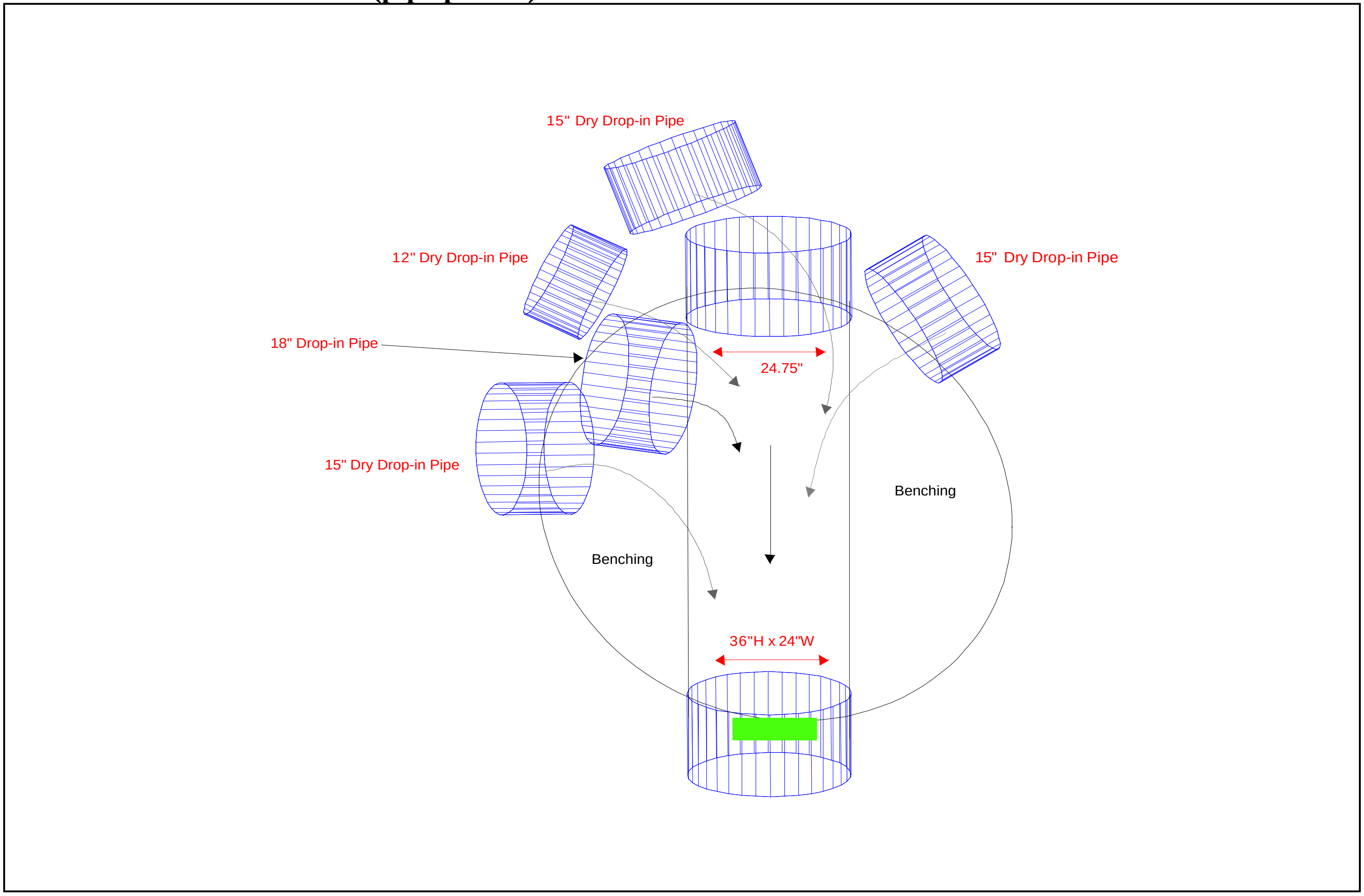
View of flow through influent line

View of flow through effluent line

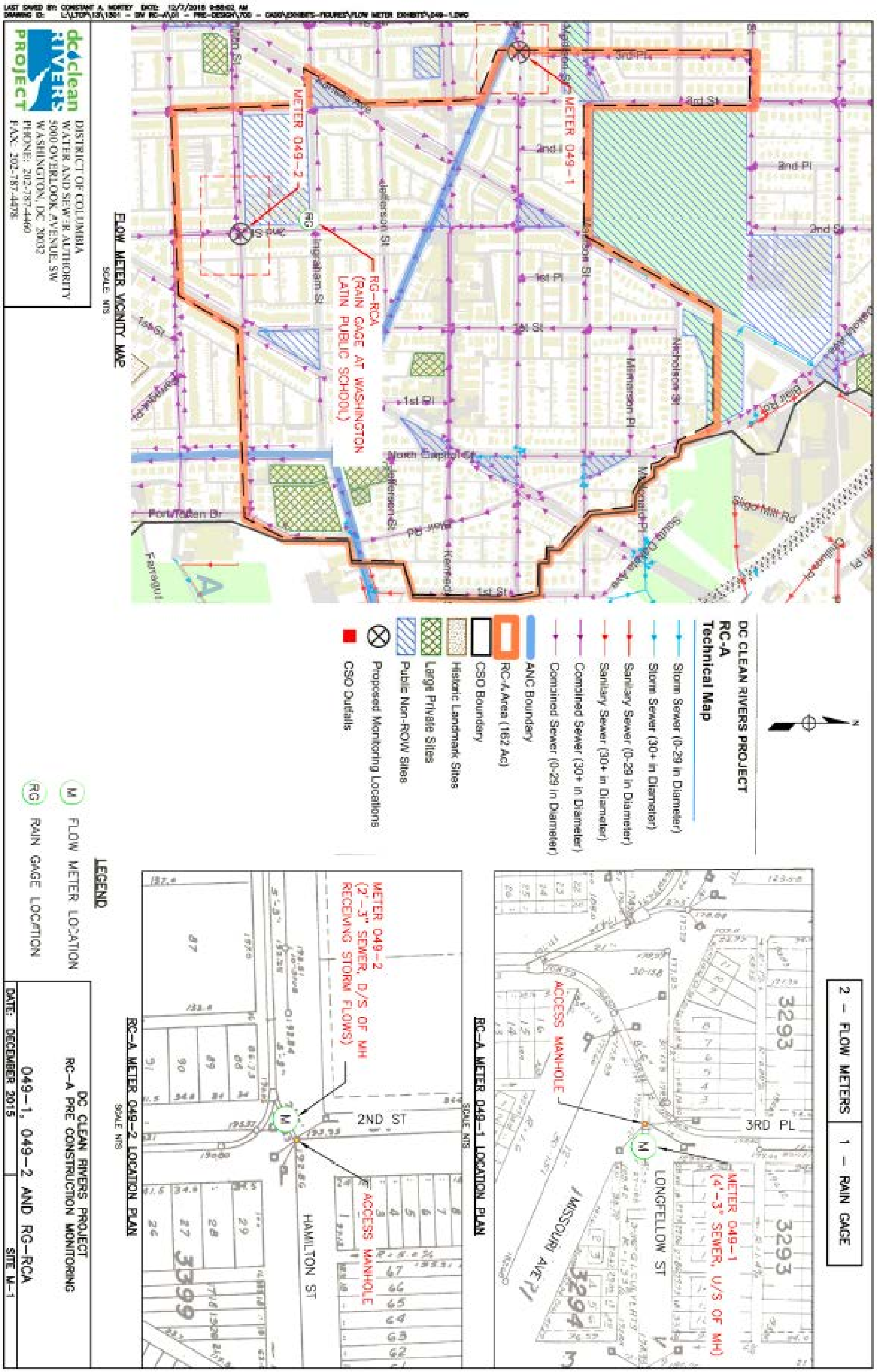
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)

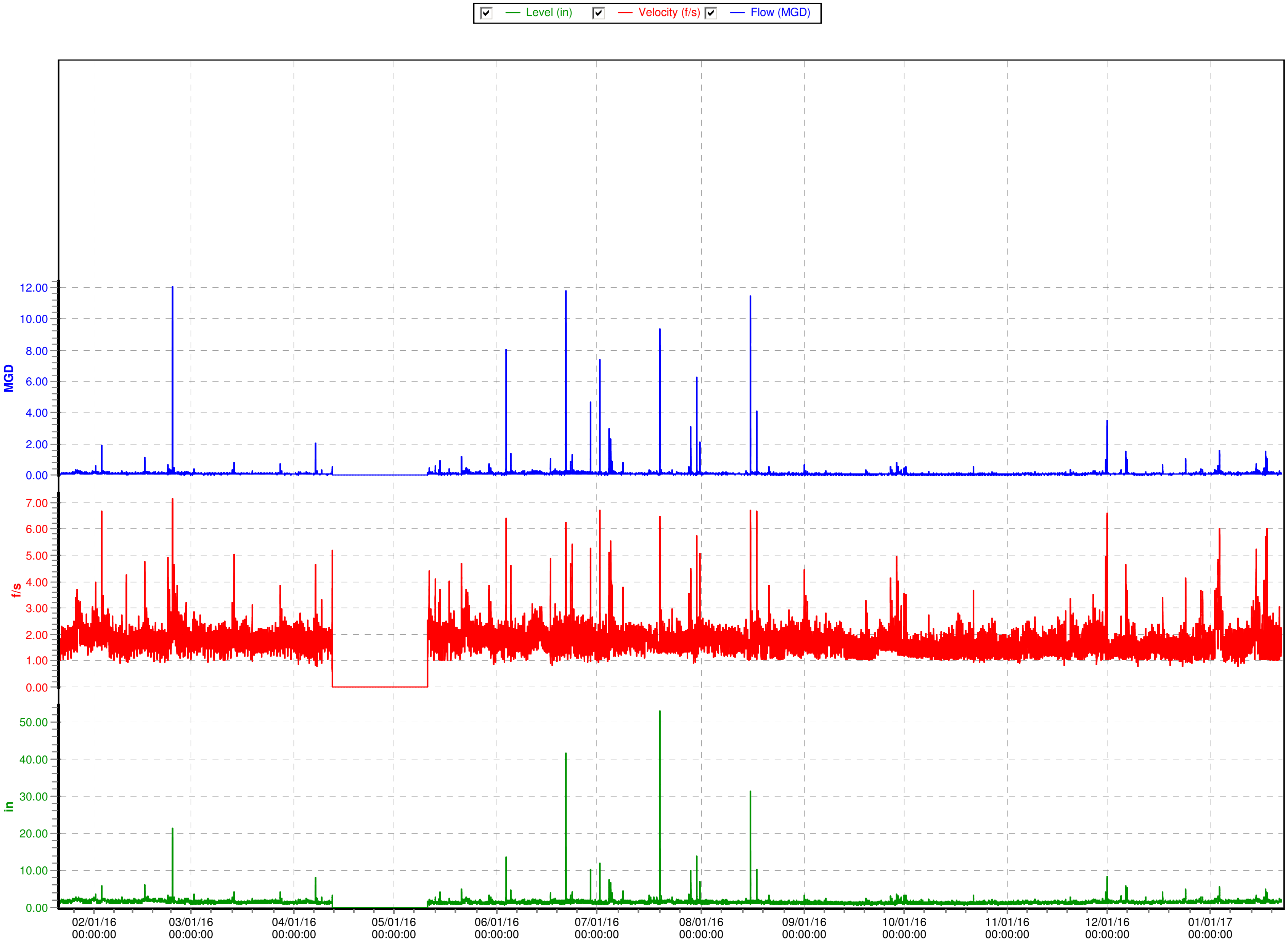


Site Location Plan View
Sketch or plat showing upstream and downstream manholes, connections, and bends.



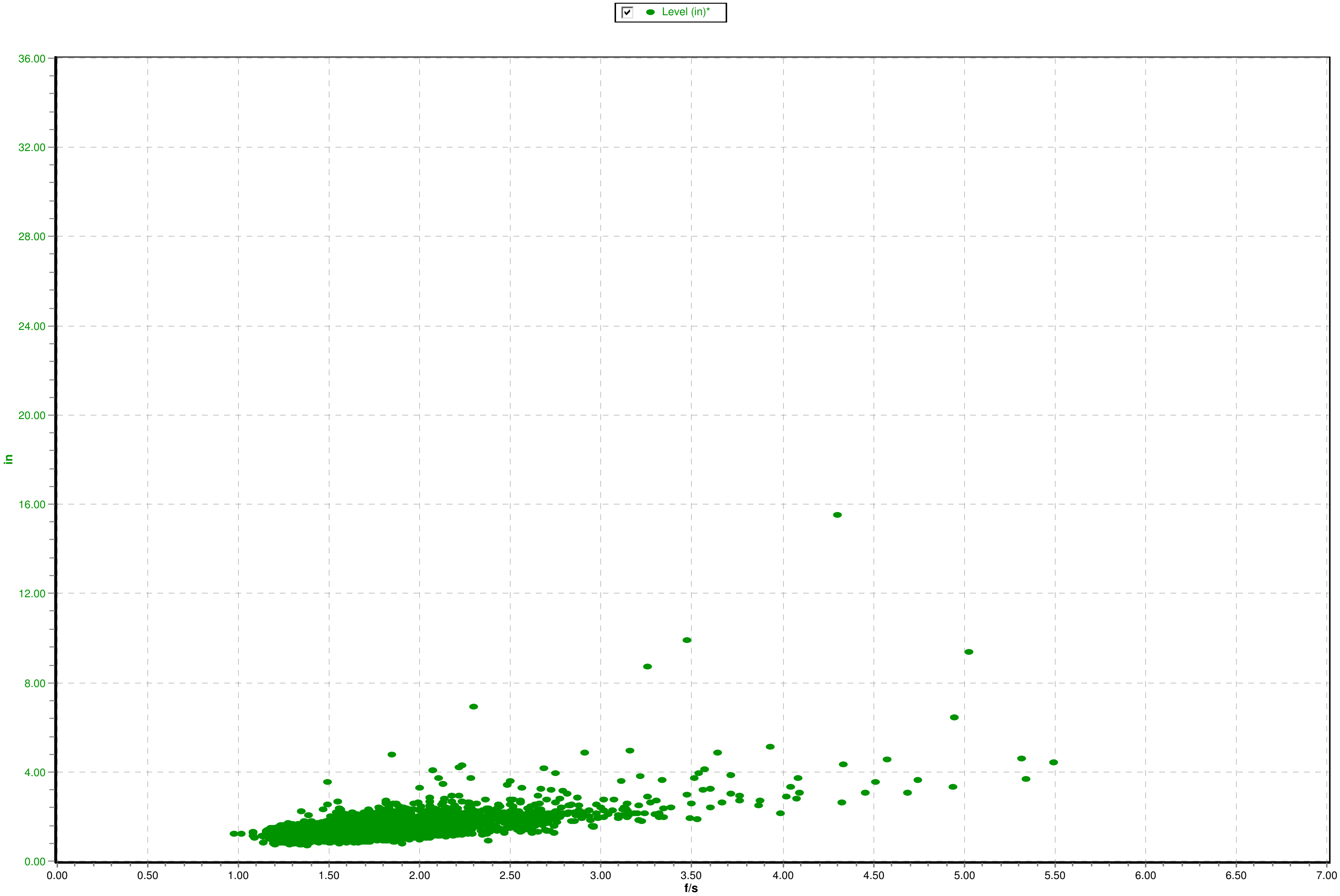
049-2 - 203 Hamilton St. NW

Pipe Diameter (in): 36x 24 (01/22/16 to 01/22/17)



049-2 - 203 Hamilton St. SW

Pipe Diameter (in): 36 x 24 (01/01/16 to 01/22/17)



Site: 049-2

Date	Time	Meter Depth	Field Depth	Meter Vel.	Field Vel.	Silt	Initials	Service Comments
12/29/2015	16:03		1.50		1.60	0.0	LL/MM	Install
12/29/2015	16:08		1.50		1.64	0.0	LL/MM	
12/29/2015	16:13		1.50		1.72	0.0	LL/MM	
1/5/2016	12:02		1.25		1.90	0.0	LL/MH	
2/5/2016	13:52		1.25		2.10	0.0	LL/MH	Change Battery
2/18/2016	14:21		1.75		1.80	0.0	LL/MH	
3/1/2016	12:25		1.25		1.90	0.0	LL/DJ	Change Battery
4/15/2016	13:15						RD/DJ	Site is full of rocks
4/21/2016	11:31						SD/DN	Remove meter
5/10/2016	17:30		1.50		1.75	0.0	RD/DJ	Reinstall meter
7/14/2016	12:01		1.50		1.72	0.0	GM/JS	
7/27/2016	11:20		1.25		1.87	0.0	GM/SH	Change Battery
10/14/2016	10:42		1.25		1.67	0.0	LL/SH	Change Battery
12/9/2016	7:48		1.50		1.88	0.0	SH/DG	Change Battery
1/25/2017	14:07		1.50		1.61	0.0	SD/SN	Remove meter

Site Name/Manhole # 049-3 Primary: ☒ Alternate: ☐

Investigation Date: 1/6/16 Time: 12:20 Crew Members: CL/MH

Installation Date: 1/20/16 Time: 10:15 Crew Members: CL/MH

Address/Location: 6 Hamilton St NW (in the crosswalk)

Latitude: N 38° 57’ 12.4” Longitude: W 77° 00’ 33.5”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 0.40 ft/sec

Depth 1.25 in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Influent 3	Effluent
Height	15”	12”`	15”	15”
Width	15”	12”	15”	15”
Material	Clay	Concrete	Concrete	Concrete
Shape	Round	Round	Round	Round

Sediment Present: *US*

☐ [✓ Yes] Hard packed: ____________ in. deep

☐ No Soft: 0.25 in. deep

Surcharge / Backwater Influence:

- ☐ No evidence visible
- ☐ Remains in pipe
- ☐ [✓ 3 ft from rim]
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *in crosswalk at traffic light, use cones*

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 11’ 9”

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

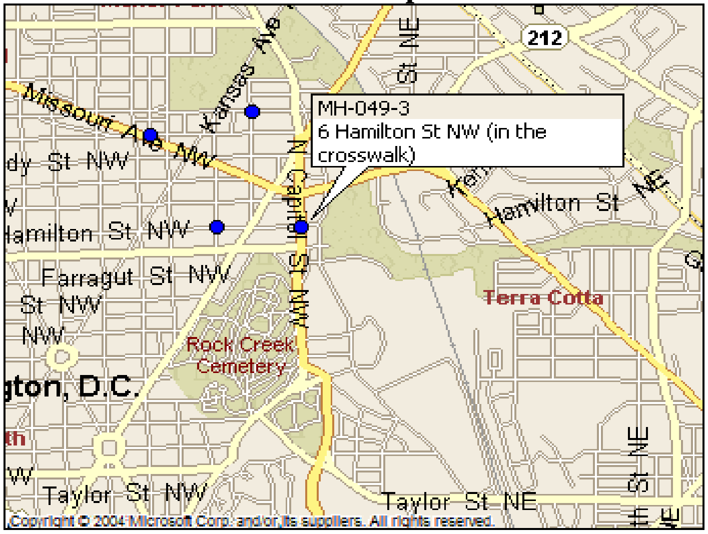
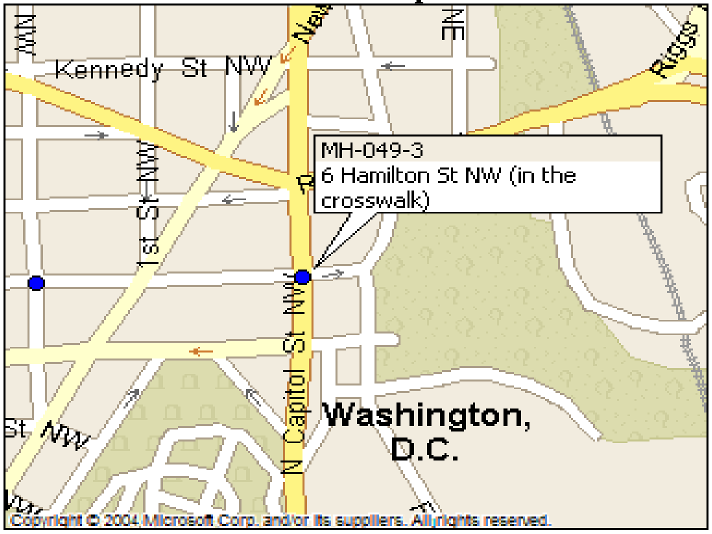
☐ [✓ Yes] ☐ No ☐ Maybe

Sensor Configuration:

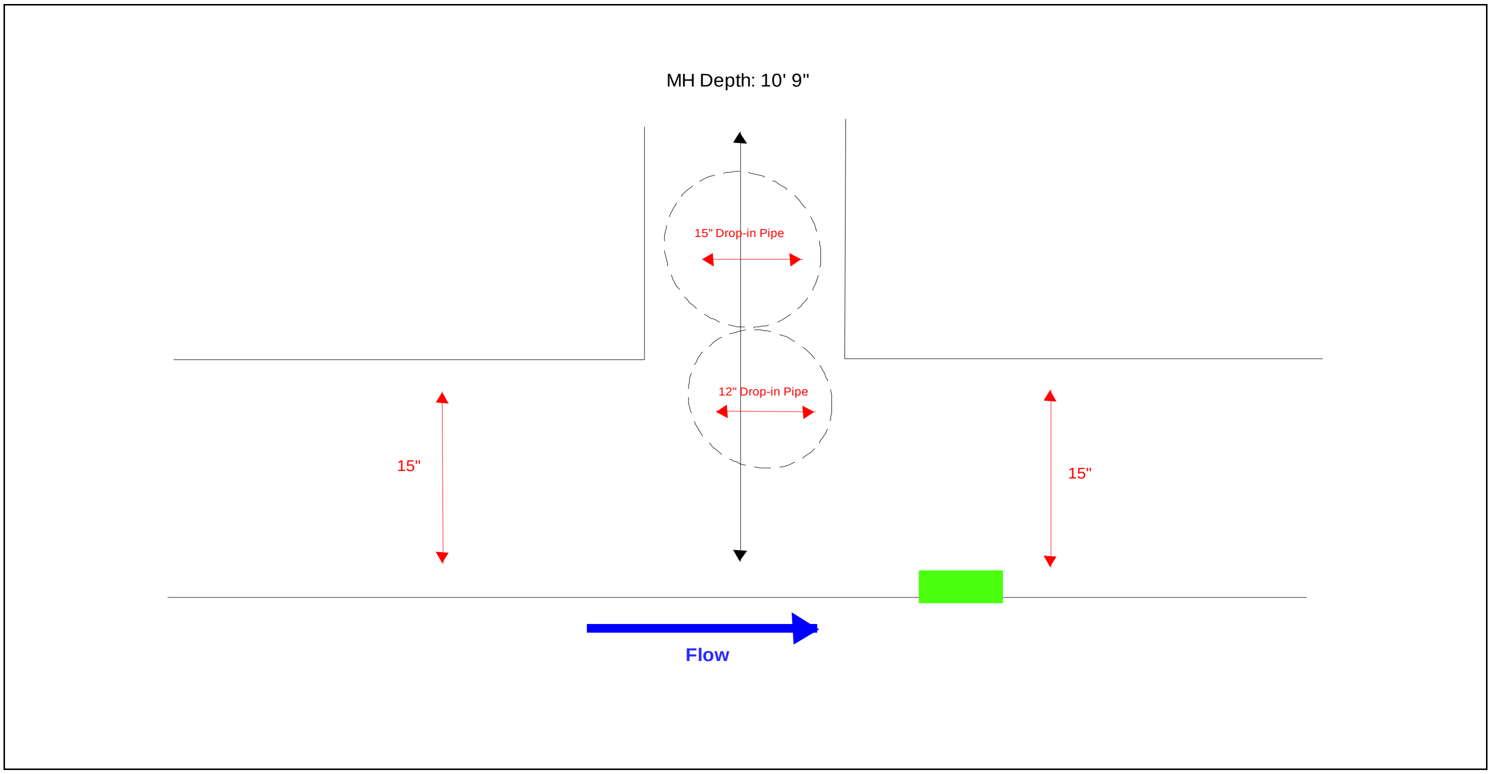
(Please include Serial Numbers when possible)

Level	Primary: Isco A/V
	Redundant:
Velocity	Primary: Isco A/V
	Redundant:
Meter Logger	Telog

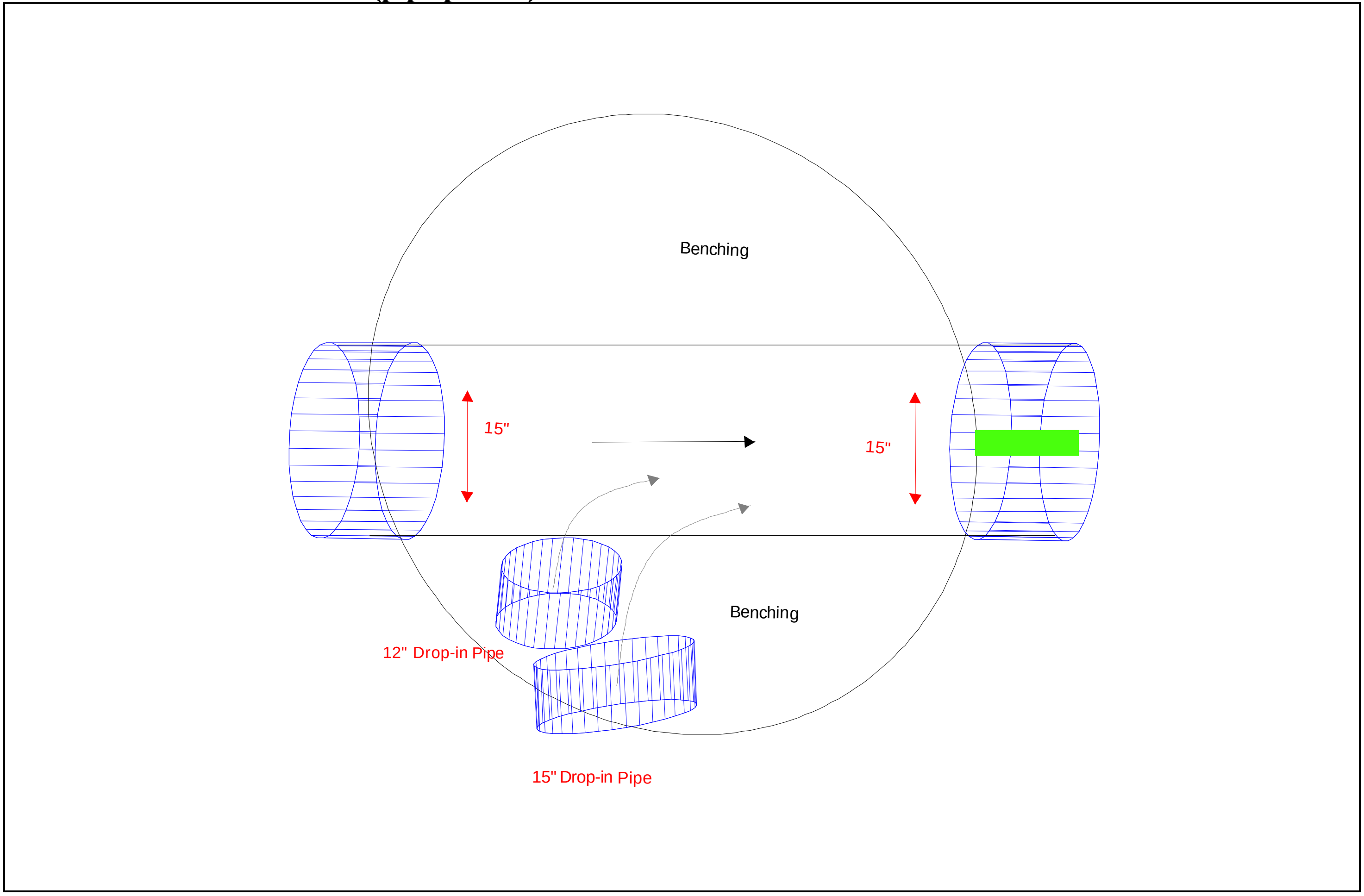
Comments:

Area Map	Detail Map
	
View from top of MH	Site Overview
	
View of flow through influent line	View of flow through effluent line
	

Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)



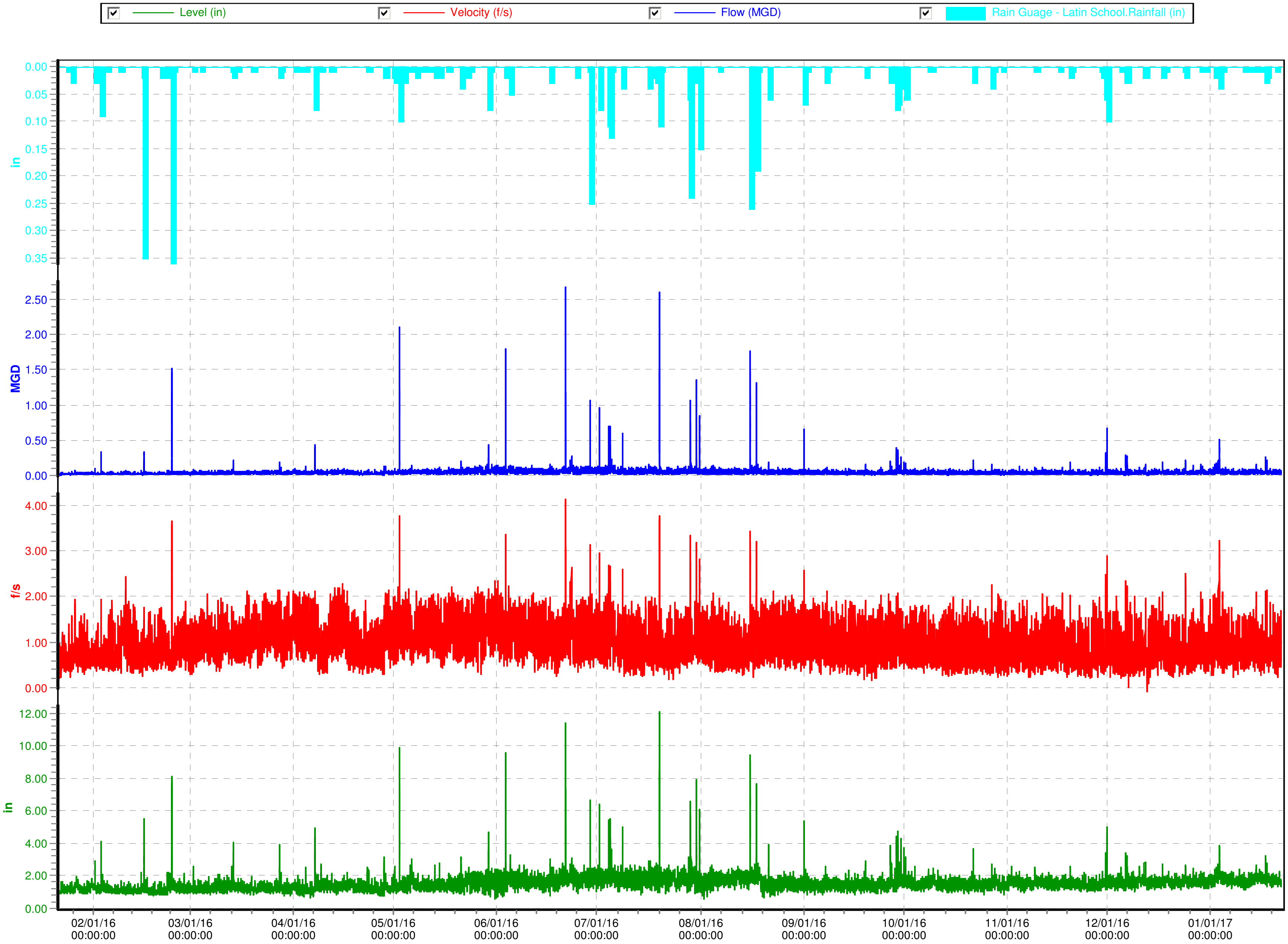
Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.

049-3
(15" SEWER, D/S OF STORM CONNECTIONS)

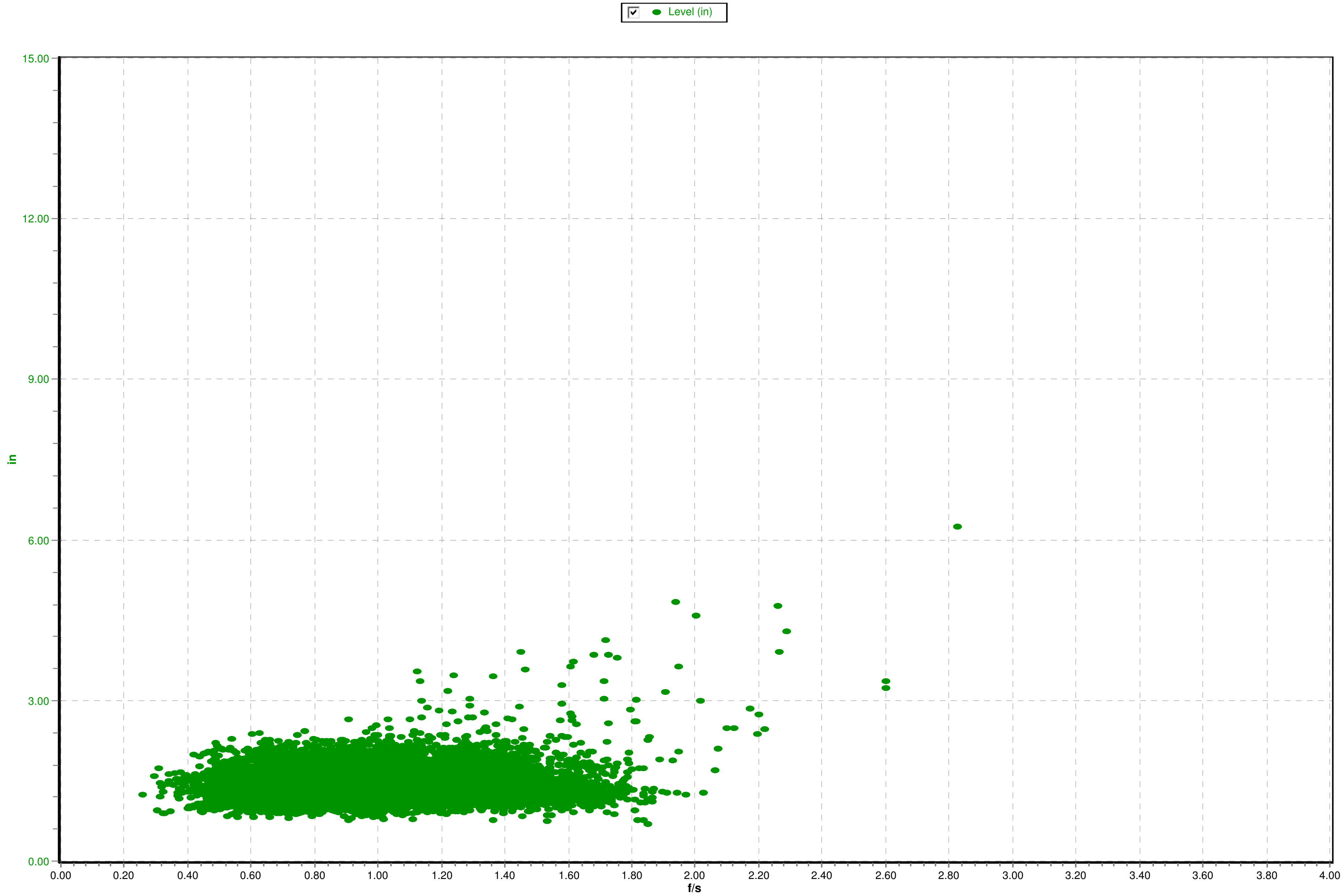
049-3 - 6 Hamilton St. NW

Pipe Diameter (in): 26 (01/22/16 to 01/22/17)



049-3 - 6 Hamilton St. NW

Pipe Diameter (in): 15 (01/22/16 to 01/22/17)



Site: 049-3

Date	Time	Meter Depth	Field Depth	Meter Vel.	Field Vel.	Silt	Initials	Service Comments
1/20/2016	11:26		1.50		0.50	0.0	LL/MH	Install
1/20/2016	11:31		1.25		0.60	0.0	LL/MH	
1/20/2016	11:36		1.25		0.60	0.0	LL/MH	
2/5/2016	13:24		1.00		0.80	0.0	LL/MH	
5/6/2016	12:35		3.00		1.35	0.0	SD/DJ	Change Battery
6/1/2016	16:00		1.00		1.66	0.0	SD/DJ	
7/14/2016	12:52		1.25		0.87	0.0	GM/JS	
9/15/2016	18:50		1.25		0.79	0.0	GM/SH	Change Battery
10/13/2016	15:23		1.25		1.01	0.0	LL/SH	
12/9/2016	8:59		1.50		0.65	0.0	SH/DG	
12/22/2016	11:14						SD/CP	Change Battery
1/25/2017	14:44		1.50		0.90	0	SD/DN	Remove meter

CSL Services, Inc.

Site Name/Manhole # 049-4   Primary: ☒ Alternate: ☐

Investigation Date: 1/6/16   Time: 2:30   Crew Members: CL/MH

Installation Date: 1/20/16   Time: 12:10   Crew Members: CL/MH

Address/Location: In the intersection of 1st Street NW and Madison Street NW

Latitude: N 38° 57’ 31.6”   Longitude: W 77° 00’ 41.7”

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 2.25 ft/sec

Depth 0.25 in

Turbulence Amplitude:

☐ Less than 0.25”
[✓ ☐ 0.25” to 0.75”]
☐ 0.75” to 1.5”
☐ 1.5” to 3”
☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Effluent
Height	10”		21”
Width	10”		21”
Material	Clay		Clay
Shape	Round		Round

Sediment Present:

☐ Yes   Hard packed: ____________ in. deep
[✓ ☐ No]   Soft: ____________ in. deep

Surcharge / Backwater Influence:

☐ No evidence visible
☐ Remains in pipe
[✓ ☐ 5 ft from rim]
☐ Reaches Rim (potential meter damage)
☐ Evidence unclear: ____________ft from rim

Gas Investigation:

☐ Good 20.9 (condition)

Site Conditions

Site Access: *middle of intersection*

☐ Good (no problems accessing site)
[✓ ☐ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
☐ Traffic Control only (Requires extra traffic control
☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes [✓ ☐ No]

Height above ground ____
Manhole depth 10’ 10”
Structural Integrity of Manhole:
☐ Good [✓ ☐ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole
Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

[✓ ☐ Influent] ☐ Effluent ☐ Manhole
Approx Distance to change: 2’
(detail is comments)

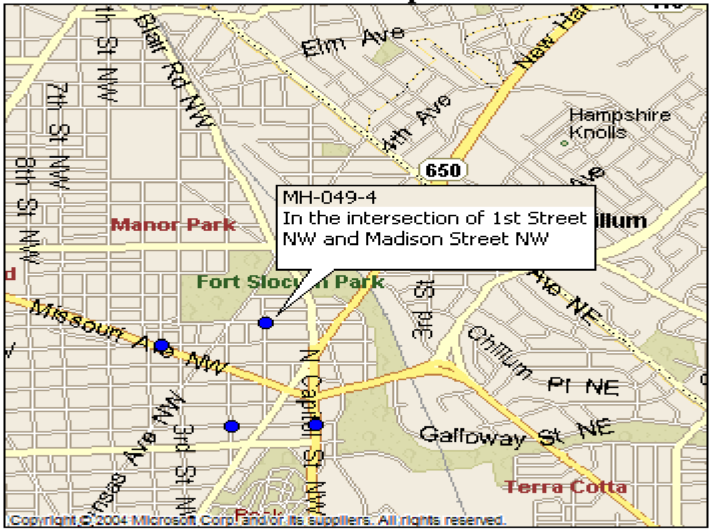
Crew Member: Can you maintain this site?
[✓ ☐ Yes] ☐ No ☐ Maybe

Sensor Configuration:
(Please include Serial Numbers when possible)

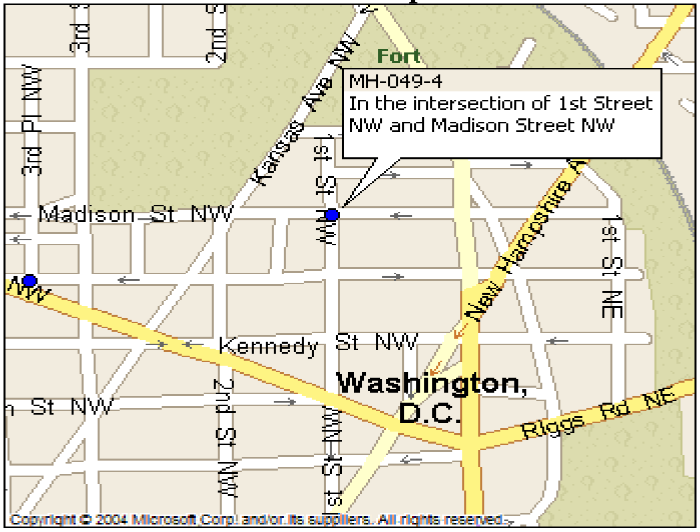
Level	Primary:	Flowav
	Redundant:	
Velocity	Primary:	Flowav
	Redundant:	
Meter Logger	Telog	

Comments:

Area Map



Detail Map



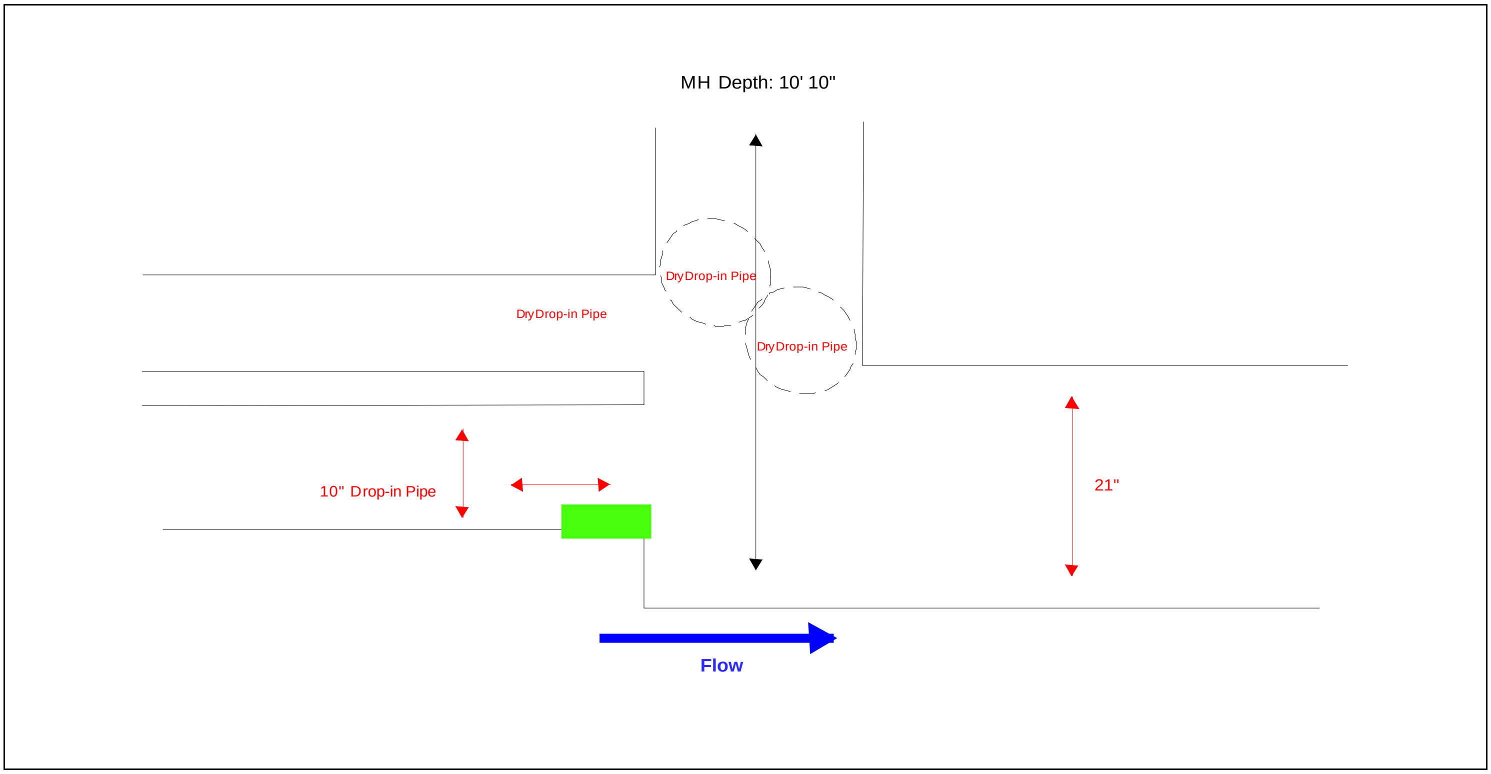
View from top of MH

Site Overview

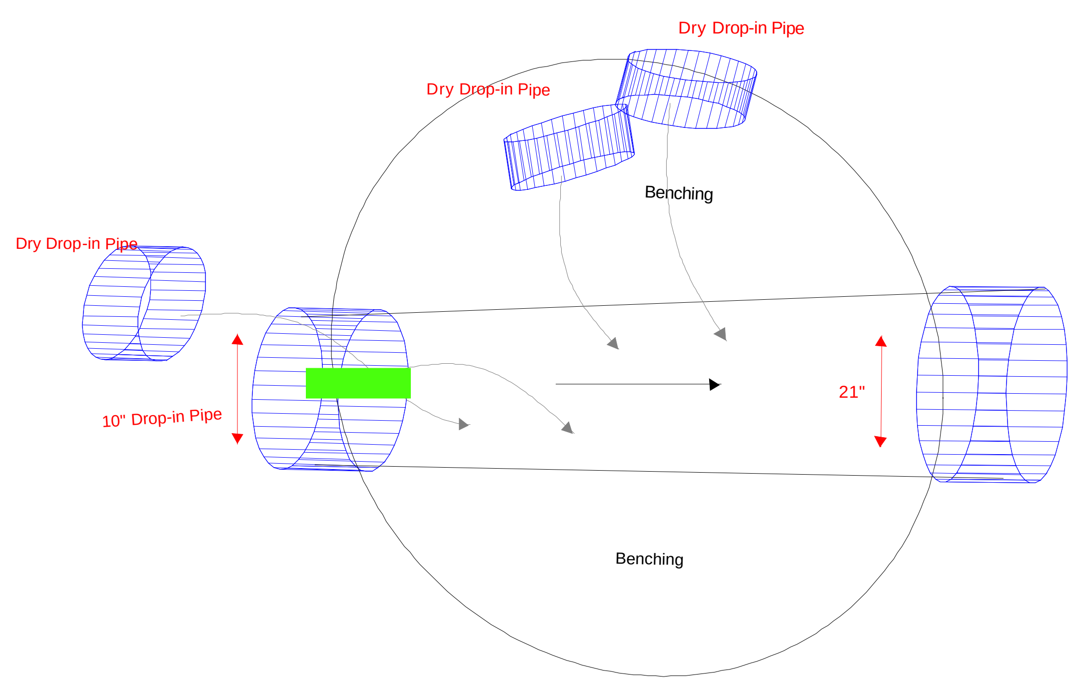
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

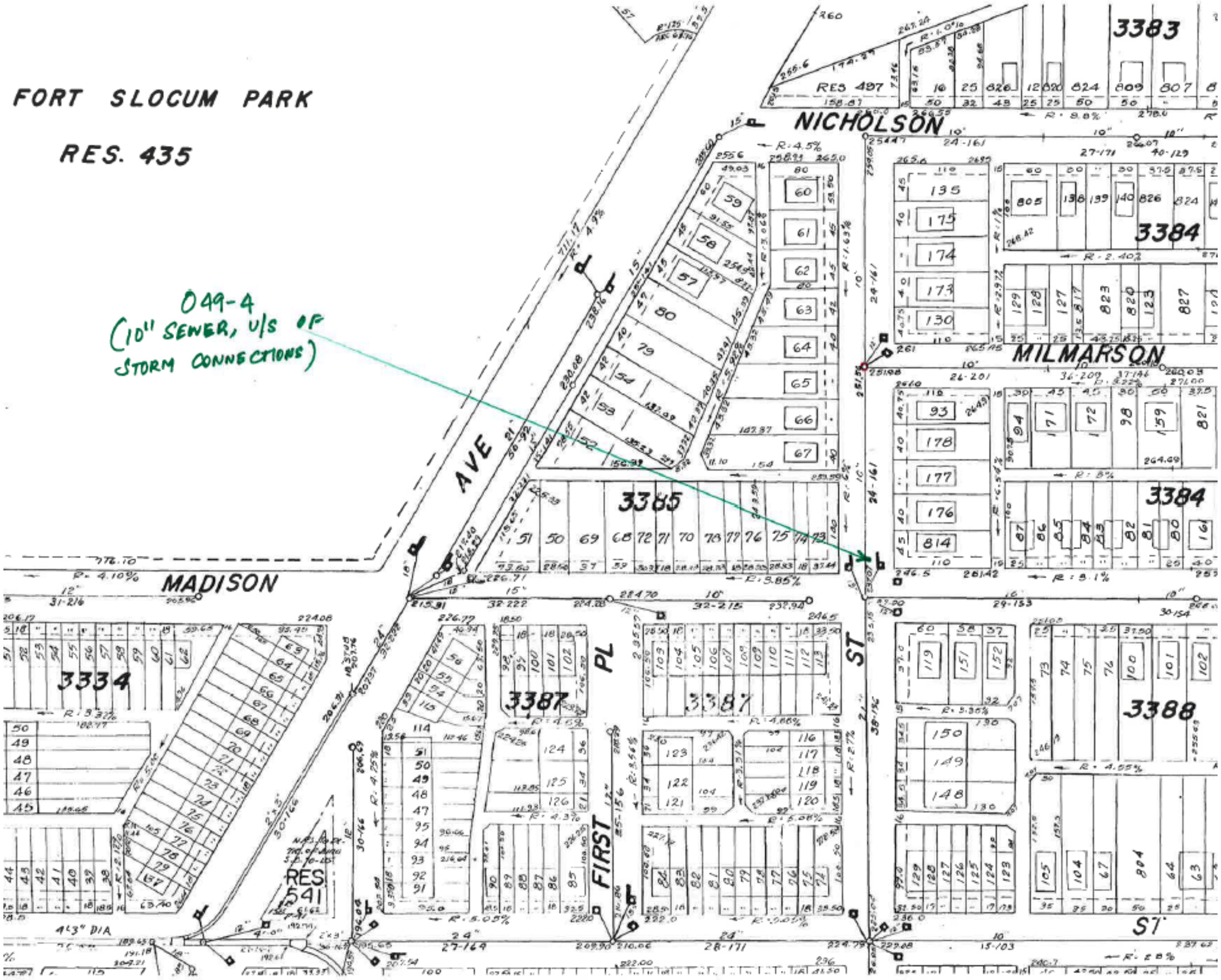


Dimension Structure Detail (pipe profile)



Site Location Plan View

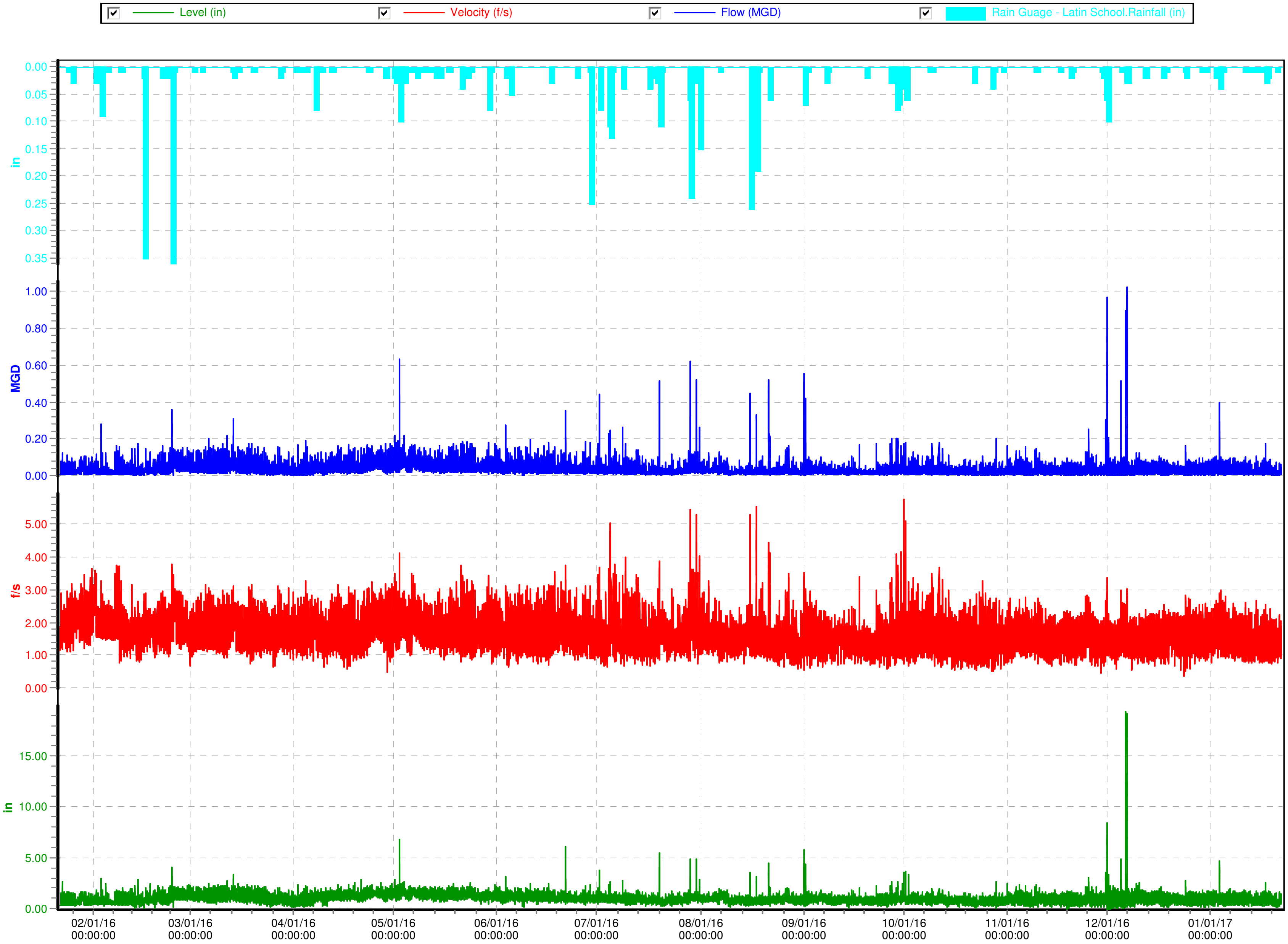
Sketch or plat showing upstream and downstream manholes, connections, and bends.



049-4
(10" SEWER, U/S OF STORM CONNECTIONS)

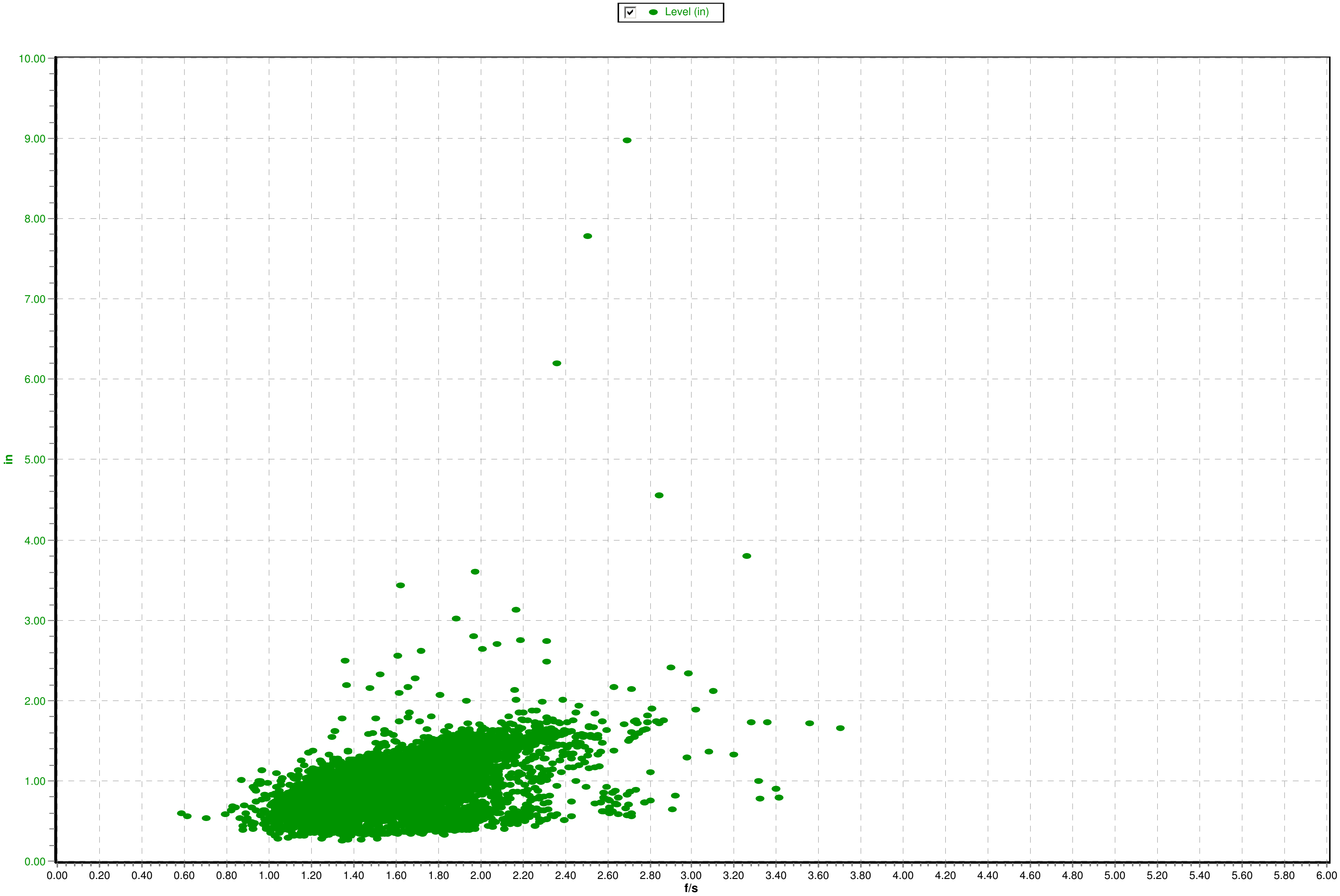
049-4 - 5701 1st St. NW

Pipe Diameter (in): 10 (01/22/16 to 01/22/17)



049-4 - 5701 1st St. NW

Pipe Diamter (in): 10 (01/22/16 to 01/22/17)



Site: 049-4

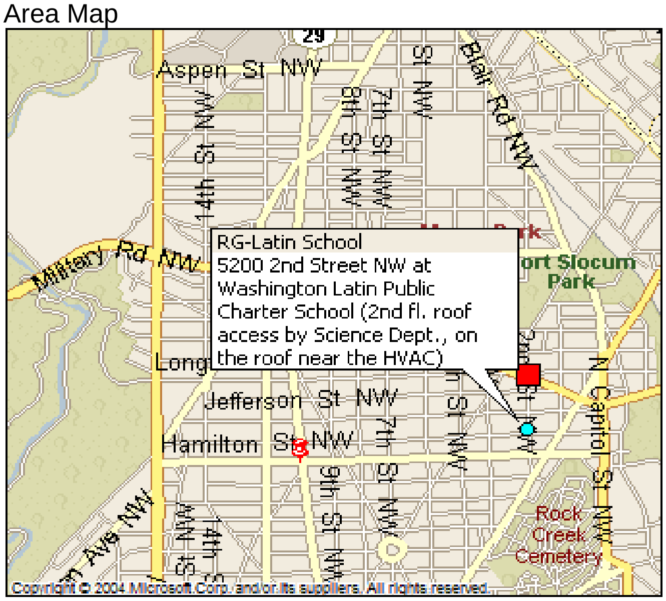
Date	Time	Meter Depth	Field Depth	Meter Vel.	Field Vel.	Silt	Initials	Service Comments
1/20/2016	13:18		0.25		1.70	0.0	LL/MH	Install
1/20/2016	13:23		0.25		1.80	0.0	LL/MH	
1/20/2016	13:28		0.25		1.70	0.0	LL/MH	
2/5/2016	10:40		0.50		2.00	0.0	LL/MH	
2/9/2016	9:30		0.50		1.70	0.0	LL/MH	
3/23/2016	17:52		1.00		1.70	0.0	SD/DJ	Change Battery
5/20/2016	7:28		1.00		1.90	0.0	GM/DJ	Change Battery
6/16/2016	8:42		0.75		1.35	0.0	LL/DJ	
7/14/2016	10:19		0.75		1.57	0.0	GM/JS	
8/25/2016	13:57		0.75		1.45	0.0	RD/LL	Change Battery
10/13/2016	10:47		1.00		1.35	0.0	LL/SH	Change Battery
10/28/2016	8:04		0.50		1.15	0.0	GM/SH	
11/2/2016	10:56		0.75		1.51	0.0	SD/DN	Change Sensor / Change Battery
12/9/2016	9:40		1.00		1.37	0.0	SH/DG	Change Battery
2/8/2017	9:11		0.50		1.39	0.0	SD/DN	Remove meter

SITE REPORT

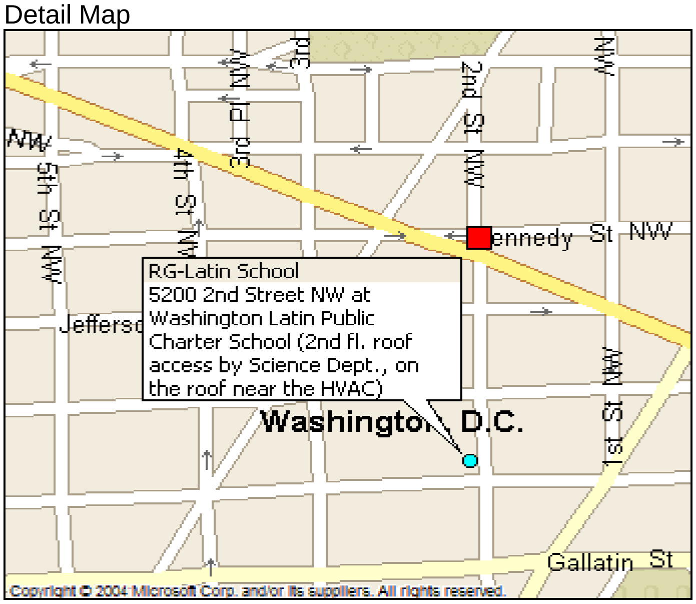
Project: DC RC-A & PR-A	Date: 12/22/15	Time: 8:27	Name: L. Radico
Manhole #: RG-Latin School		Town: Washington	
Address/Location: 5200 2nd Street NW at Washington Latin Public Charter School (2nd fl. roof access by Science Dept., on the roof near the HVAC)			
Latitude: N 38° 57’ 15”	Longitude: W 77 ° 0’ 51”	Access: Drive	
Telog: 293642	Rain Gauge Serial: 51832-612		

Site Comments, if any:
****Contact Miss Fleming for access**

Area Map



Detail Map



Site: RG-Latin School

Date	Time	Meter Depth	Field Depth	Meter Vel.	Field Vel.	Silt	Initials	Service Comments
12/22/2015	9:10						LR/DN	Install
1/20/2016	14:10						LL/DJ	Test Tips
3/23/2016	17:20						SD/DJ	Test Tips
5/10/2016	15:10						RD/DJ	Test Tips
6/24/2016	13:45						RD/JS	Test Tips
2/8/2017	13:35						SD/DN	Remove

Hach FL900 Standard (Non-Wireless) Flow Logger

When combined with the Flo-Dar®, Flo-Tote® 3, AV9000 module and IM9001 module, the Hach FL900 Series Flow Logger takes flow monitoring to a whole new level. With features that reduce site time and increase crew safety, the flow monitoring system allows you to easily manage your flow data, as well as your budget.

Features and Benefits

The FL900 Flow Logger provides users with a reliable, budget saving solution for open channel portable flow monitoring applications. The robust logger's time-saving features will drastically decrease site time and increase safety for monitoring crews. The Logger LED provides instant communication verification of correct site set-up and flow meter communication prior to leaving the site.

Increase Monitoring Crew Safety

With the time saving features designed into the FL900 Flow Loggers, crews spend less time in the manhole and less time on site to decrease monitoring costs while increasing the safety of flow monitoring crews.

Plug and Play Sensor Ports

The FL900 Series Flow Logger is available with 1, 2 or 4 sensor ports. The logger auto-detects the type of sensor connected to allow customers maximum flexibility for their Hach flow sensor inventories.

Easy Installation/Versatile Mounting Options

The logger can be quickly attached to a wall, pole or manhole ladder in minutes. Users can choose to hang logger from standard carabiner or optional 4-bolt wall mount for pole, horizontal or vertical wall mount or ladder rung mount.

Applications

Municipal

- *Sanitary Sewer Evaluation Studies*
- *Collection Systems*
- *Capacity Studies*
- *Combined Sewer Overflows*
- *Inflow and Infiltration (I&I) Studies*
- *Billing / Custody Transfer*
- *Plant Influent and Effluent*

Industrial

- *Process Waste*
- *Plant Influent*
- *Plant Effluent*
- *Non-contact Cooling Water*
- *Stormwater Monitoring and Compliance*

**Requires AV9000 Analyzer module.*

Specifications*

Dimensions (W x D x H)

25.4 x 22 x 40 cm (10.0 x 8.7 x 16.0 in.)

Enclosure

PC/ABS structural foam

Environmental Rating

NEMA 6P (IP68)

Weight (Using Model FL900)

4.5 kg (10 lb)—no batteries; 6.3 kg (14 lb)—2 batteries;
8.2 kg (18 lb)—4 batteries

Operating Temperature

-18 to 60°C (0 to 140°F) at 95% RH

Storage Temperature

-40 to 60°C (-40 to 140°F)

Power Requirements

8 to18 Vdc from batteries

Battery Life at 15 minute logging intervals (at room temperature)

185 days with 4 lantern batteries and a Flo-Dar sensor
306 days with 4 lantern batteries and a Flo-Tote sensor
296 days with 4 lantern batteries and a Sub AV sensor with AV9000 analyzer module
(4 lantern batteries shall be included with each logger)

Sensor Ports

1, 2 or 4

Connectors

Stainless steel connectors

LED Status Indicator

- – Green Flashes every 3 seconds during normal operation. Flashes every 15 seconds during sleep mode.
- – Red Flashes when an attached sensor does not agree with the logger program, when an expected sensor is not found or the sensor is not working properly.

Datalog Channels

16 maximum

Alarms

Maximum of 16 channel alarms including high/high, high, low, low/low

Alarm Actions

Change logging interval

Logging Intervals

1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 or 60 minutes
Primary and secondary intervals for dynamic logging.

Data Storage

Event Log: 1,000 events maximum in non-volatile flash memory
Sample History: 2,000 sample events maximum in non-volatile flash memory
Datalog: 325,000 data points; 1128 days for 3 channels at 15-minute log intervals

Local Communication

USB
RS232 (Baud rates: 9600, 19200, 38400, 57600, 115200)

Protocols

Local Modbus RTU

Timebase Accuracy

±0.002%

Supported Sensors / External Devices

Flo-Dar, Flo-Tote 3, Submerged Area Velocity Sensor[†], and Sigma 950[†], Rain Gauge, Sigma SD900 Sampler (with FL901, FL902 and FL904 only)

Certifications

Logger: CE

Warranty

1 year

Set-up/Data Retrieval

Flo-Ware for Windows software is required for programming the logger, data management, and report generation. It is compatible with desktop/laptop computers utilizing Windows operating system. Minimum resolution needed is 1024x768.

CE FL900 Flow Logger meets CE requirements.

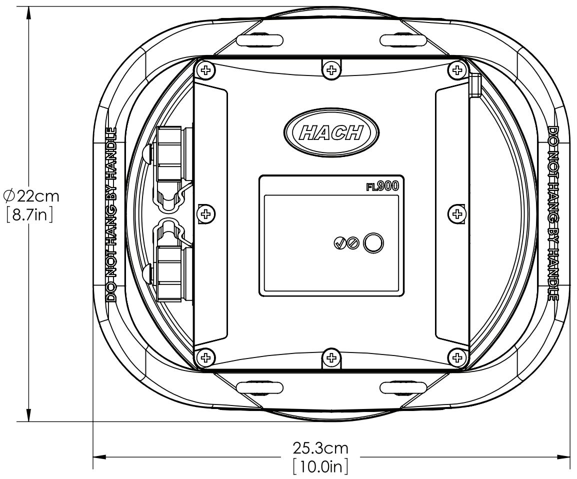
[†] *Requires external module.*

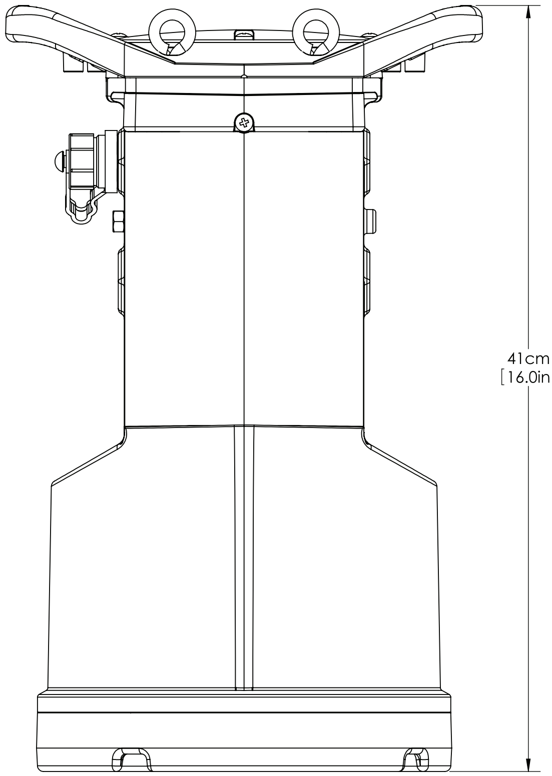
**Specifications subject to change without notice.*

Engineering Specifications

1. Exterior dimensions of the Flow Logger shall be:
   25.4 W x 22 D x 40 cm H
   (10.0 W x 8.7 D x 16.0 in. H)
2. The Flow Logger enclosure material shall be PC/ABS structural foam with NEMA 6P (IP68) rating.
3. The Operating temperature for the Flow Logger shall be -18 to 60°C (0 to 140°F) at 95% relative humidity and storage temperature of -40 to 60°C (-40 to 140°F).
4. Power requirements of the Flow Logger shall be 8 to18 Vdc from batteries.
5. The Flow Logger shall have a battery life of 185 days, when using a Flo-Dar sensor, 306 days when using a Flo-Tote sensor, and 360 days when using a Sub AV with AV9000 analyzer module, utilizing 4 batteries at a 15 minute logging interval at room temperature.
6. The Flow Logger shall have 1, 2 or 4 sensor ports and one communications port with stainless steel connector.
7. The Flow Logger shall have primary logging intervals of 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 or 60 minutes.
8. The Flow Logger shall have secondary logging intervals available to modify the logging rate based on a defined channel alarm condition or trigger for dynamic logging.
9. The Flow Logger data storage event log shall be 1,000 events maximum in non-volatile flash memory.
10. Timebase Accuracy of the Flow Logger shall be 0.002%.
11. The Flow Logger shall support the Flo-Dar, Flo-Tote 3, Submerged Area Velocity Sensor and Sigma 950.
12. The Flow Logger shall be able to connect to a lap top or desk top PC using either USB or RS232 serial connection.
13. The Flow Logger shall have an LED indicator for operating /programming status visible on the topmost horizontal surface of the logger.
14. The Flow Logger shall be a Hach FL900 Flow Logger.

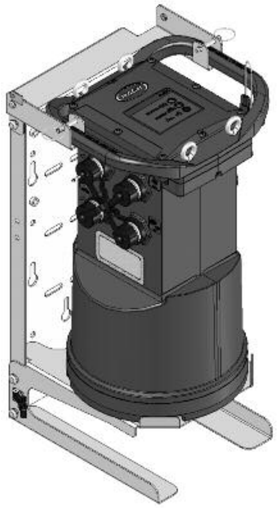
Dimensions



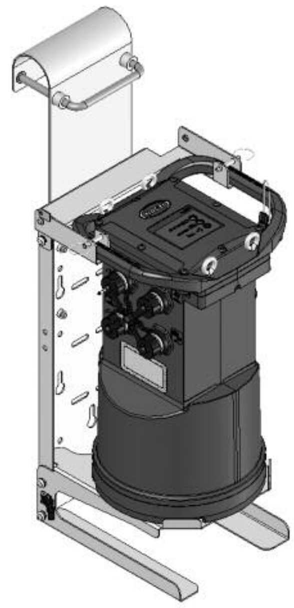


Installation/Mounting Options

Flow Logger
Suspension Cable with Carabiner
(Standard)



Flow Logger Wall Mount
Prod. No. 8542700
(Optional)



Flow Logger Ladder Rung Mount
Prod. No. 8544500
(Optional)

Ordering Information

Flow Logger

FL900.97	FL900 Flow Logger, 1 sensor port, no aux port
FL901.97.XX	FL901 Flow Logger, 1 sensor port, 1 aux port
FL901.97.XR	FL901 Flow Logger with optional Rain Gauge*
FL902.97.XX	FL902 Flow Logger, 2 sensor ports, 1 aux port
FL902.97.XR	FL902 Flow Logger with optional Rain Gauge*
FL904.97.XX	FL904 Flow Logger, 4 sensor ports, 1 aux port
FL904.97.XR	FL904 Flow Logger with optional Rain Gauge*

**Order Rain Gauge, Hach Prod. No. 8542800 separately.*

Analyzer Modules

FL900AV.97	FL900 Flow Logger with AV9000 analyzer module
8531300	AV9000 Digital Analyzer module (required to attach a Sigma Sub AV sensor)
8549800	IM9001 Interface module (required to attach a Sigma 950 flow meter)

Cables

8528200	Cable, Communication, RS232
8528300	Cable, Communication, USB

Software

Model T200-900	Flo-Ware Desktop PC/Laptop Software

Mounting Hardware

9542	Manhole Support Bracket/Spanner; 18-28"
9557	Manhole Support Bracket/Spanner; 28-48"
5713000	Manhole Support Bracket; 18-27"
8544300	Suspension cable, 16 in.
8543800	Wall mount bracket (304 Stainless)
8545600	Wall mount bracket with ladder hanger (304 Stainless)
8542700	Wall mount bracket with AC Power Supply shelf (304 Stainless)
8544500	Wall mount bracket with AC Power Supply Shelf with ladder hanger (304 Stainless)

Replacement Parts

8755500	Desiccant refill beads, Bulk 1.5 lb
11013M	Battery, 6V lantern
8524400	Battery compartment cover
8533400	O-ring for battery cover

For Models with wireless communication option, see Lit. No. 2711

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

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Products > Open Channel Flow Measurement > 2100 Series Flow Modules >

2150 Area Velocity Module

Continuous wave Doppler flow meter is ideal for portable flow surveys and permanent installations.

The 2150 Flow Module uses continuous wave Doppler technology to measure mean velocity. The sensor transmits a continuous ultrasonic wave, then measures the frequency shift of returned echoes reflected by air bubbles or particles in the flow.

The 2150's "smart" area velocity probe is built on digital electronics, so the analog level is digitized in the sensor itself to overcome electromagnetic interference. The probe is also factory-calibrated for 10-foot (3 meter) span at different temperatures. This built-in calibration eliminates drift in the level signal, providing long-term level stability that reduces recalibration frequency and completely eliminates span recalibration.

In field use, the 2150 is typically powered either by two alkaline, or Isco Rechargeable Lead-acid batteries, within a 2191 Battery Module. Highly efficient power management extends battery life up to 15 months at 15-minute data storage intervals. Other power options (including solar) are available.

Above: 2150 with AV sensor and Battery Module

Right: up to 4 Modules stack together for multi-stream or redundant measurements

Standard Features

- Rugged, submersible enclosure meets NEMA 4X, 6P (IP68) environmental specs.
- Chemically resistant epoxy-encapsulated sensor withstands abuse, resists oil and grease fouling, and eliminates the need for frequent cleaning.
- Replaceable high-capacity internal desiccant cartridge and hydrophobic filter protect sensor reference from water entry and internal moisture.
- Pressure transducer vent system automatically compensates for atmospheric pressure changes to maintain accuracy.
- The quick-connect sensor can be easily removed and interchanged in the field without requiring recalibration.
- Up to four 2100 Series flow modules can be networked by stacking and/or extension cables.
- Secure data storage. All data are continuously stored in flash memory to protect against loss in case of power failure
- Easy to upgrade. New operating software can be downloaded into non-volatile flash memory, without affecting stored program and data.
- Records and stores input voltage and temperature data.
- Variable rate data storage lets you change the data storage interval when programmed conditions occur. This feature assures maximum information about an exceptional event – such as an overflow – while conserving power and data capacity during normal conditions.
- 38,400 bps communication provides speedy setup and data retrieval.

Applications

- Portable and permanent-site AV flow monitoring for inflow and infiltration, capacity assessment, sewer overflow, and sewer studies.
- Measures shallow flow is small pipes. Low-profile velocity sensor minimizes flow stream obstruction, and senses velocity in flows down to 1 inch (25 mm) in depth.
- Stack modules you need to build a compact, integrated system.
- Monitor multiple flow streams at the same time.
- Obtain redundant measurements to guarantee integrity.
- Remotely locate modules and connect them via cable.
- Expand your monitoring system as your requirements evolve.

Options and Accessories

- 2101 Field Wizard - ruggedized keyboard and display stacks on 2100 system
- 2102 Wireless Module - adds 2-way spread spectrum radio communication for remote data retrieval without manhole entry
- 2103 Modem Module - adds telephone (land line) communication for remote data retrieval
- 2103c CDMA Modem Module - adds cellular communication and/or 1xRTT packet-switched data transmission (with Flowlink Pro software)
- 2108 Analog Output Module allows easy interface with SCADA/DCS or other secondary instrument systems

Specifications

2150 Flow Module	
Size (HxWxD):	2.9 x 11.3 x 7.5 in (74 x 287 x 191 mm)
Weight:	2.0 lb (0.9 kg)

Materials of construction:	High-impact polystyrene, stainless steel
Enclosure (self-certified):	NEMA 4X, 6P (IP68)
Temperature Range:	-40° to 140° F (-40° to 60° C) operating and storage
Power Required:	12 VDC nominal (7.0 to 16.6 VDC), 100 mA typical, 1 mA standby
Power Source:	Typically, an Isco 2191 Battery Module, containing 2 alkaline or 2 rechargeable lead-acid batteries. (Other power options are available; ask for details.)
Typical Battery Life:	(using 15-minute data storage interval) Energizer® Model 529 alkaline - 15 months; Isco rechargeable lead-acid - 2.5 months
Program Memory:	Non-volatile programmable flash; can be updated using PC without opening enclosure; retains user program after updating.
Built-in Conversions	
Flow Rate Conversions:	Up to 2 independent level-to-area conversions and/or level-to-flow rate conversions.
Level-to-Area Conversions:	Channel Shapes - round, U-shaped, rectangular, trapezoidal, elliptical, with silt correction; Data Points - Up to 50 level-area points.
Level-to-Flow Conversions:	Most common weirs and flumes; Manning Formula; Data Points (up to 50 level-flow points); 2-term polynomial equation
Total Flow Calculations:	Up to 2 independent, net, positive or negative, based on either flow rate conversion
Data Handling and Communications	
Data Storage:	Non-volatile flash; retains stored data during program updates. Capacity 395,000 bytes (up to 79,000 readings, equal to over 270 days of level and velocity readings at 15-minute intervals, plus total flow and input voltage readings at 24-hour intervals)
Data Types:	Level, velocity, flow rate 1, flow rate 2, total flow 1, total flow 2, input voltage, temperature
Storage Mode:	Rollover; 5 bytes per reading.
Storage Interval:	15 or 30 seconds; 1, 2, 5, 15, or 30 minutes; or 1, 2, 4, 12, or 24 hours; Storage rate variable based on level, velocity, flow rate, total flow, or input voltage
Data Retrieval:	Serial connection to PC or optional 2101 Field Wizard module; optional modules for spread spectrum radio; land-line or cellular modem; 1xRTT. Modbus and 4-20 mA analog available.
Software:	Isco Flowlink for setup, data retrieval, editing, analysis, and reporting
Multi-module networking:	Up to four 2100 Series Flow Modules, stacked and/or remotely connected. Max distance between modules 3300 ft (1000 m).
Serial Communication Speed:	38,400 bps
2150 Area Velocity Sensor	
Size (HxWxD):	0.75 x 1.3 x 6.0 in (19 x 33 x 152 mm)
Cable (Length x Diameter):	25 ft x 0.37 in (7.6 m x 9 mm) standard. Custom lengths available on request.
Weight (including cable):	2.2 lbs (1 kg)
Materials of construction:	Sensor - Epoxy, chlorinated polyvinyl chloride (CPVC), stainless steel; Cable - Polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC)
Operating Temperature:	32° to 140° F (0° to 60° C)
Level Measurement	
Method:	Submerged pressure transducer mounted in the flow stream
Transducer Type:	Differential linear integrated circuit pressure transducer
Range:	(standard) 0.033 to 10 ft (0.010 to 3.05 m); (optional) up to 30 ft (9.15 m).
Maximum Allowable Level:	34 ft (10.5 m)
Accuracy:	±0.01 ft from 0.033 to 10 ft, (±0.003 m from 0.01 to 3.05 m)
Long-Term Stability:	±0.023 ft/yr (±0.007 m/yr)
Compensated Range:	32° to 122°F (0° to 50°C)
Velocity Measurement	
Method:	Doppler ultrasonic, frequency 500 kHz
Typical Minimum Depth:	0.08 ft (25 mm)
Range:	-5 to +20 ft/s (-1.5 to +6.1 m/s)

Accuracy:	(in water with uniform velocity profile, speed of sound = 4850 ft/s, for indicated velocity range); ±0.1 ft/s from -5 to 5 ft/s (±0.03 m/s from -1.5 to +1.5 m/s); ±2% of reading from 5 to 20 ft/s (1.5 to 6.1 m/s)
Temperature Measurement	
Accuracy:	±3.6° F (±2° C)
2191 Battery Module	
Size (HxWxD):	6.0 x 9.6 x 7.6 in (152 x 244 x 193 mm)
Weight (without batteries):	3.2 lb (1.4 kg)
Materials of construction:	High-impact polystyrene, stainless steel
Enclosure (self certified):	NEMA 4X, 6P, (IP68)
Batteries:	Two 6-volt Energizer Model 529* alkaline (25 Ahrs capacity) or Isco Rechargeable Lead-acid (5 Ahrs capacity) recommended. *Note – Energizer 529 ER does not give specified life.

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Monitoring a New Wave of Technology

Pipeline Model PSA-AV

Area Velocity Sensor

Proven technology with Innovations

The Pipeline Model PSA-AV sensor is a fully integrated area velocity flow sensor, and combines proven pressure depth and continuous wave Doppler velocity technologies with innovative sensor level signal processing for improved sensor accuracy and stability.

Velocity Sensor

The sensor utilizes continuous wave Doppler velocity technology which has been proven in open channel flow metering applications for over 25 years. The sensor utilizes Progressive Spectral Analyzer (PSA-Patent Pending) technology, which improves the quality of the signal, accuracy of the readings, and reduces the power consumption on the batteries.

Level Sensor

The pressure level sensor utilizes a 100% piezoresistive ceramic pressure sensor which has been utilized for the first time in the sewer flow metering industry. This technology offers improvements over the previously used pressure depth measurement technologies through a reinforced structure. This enhancement provides more durability in the hostile and corrosive sewer environment. The ceramic sensor ensures high linearity across the entire range of measurement and reduces the effects of Hysteresis (sensor drift). The sensor-to-water interface is a unique Teflon protected membrane that will not puncture or foul from debris in the water.

Signal Processing in the Sensor

The sensor is uniquely designed to process the primary sensor signals within inches of the signal source. This means that all signal processing power is applied to producing the best measurement possible and not utilized to separate "good" signal from electronic noise introduced by the sensor cable. The sensor delivers the processed measurements to the logger over industry standard RS-485 serial communication using Modbus Communication Protocol (an industry standard communication protocol).

Fit for Duty

The sensor cable is the smallest diameter cable available in the market today. This is important because a smaller cable minimizes the potential to obstruct flow in the pipe. Additionally, thinner cable is easier to manage during installation and maintenance. The cable is terminated with an industry proven connector to ensure no moisture interferes with the transmission of data.

Flow Meter Optional

This sensor is capable of being connected directly into a Telog Recording Telemetry Unit, FloWav ShortBoard Models 1000 and 2000, and other SCADA systems.

Proven Technology

- Stable pressure depth technology
- Continuous wave Doppler velocity

Innovations

- Progressive Spectral Analyzer (patent pending)
- Sensor Level Intelligence- SLI™
- Integrated wireless communication
- 100% ceramic piezoresistive crystal construction
- Sensor level signal processing
- Minimal power consumption
- USB communication cables available

FloWav, Inc.
Hershey Square #217
1152 Mae Street
Hummelstown, PA 17036

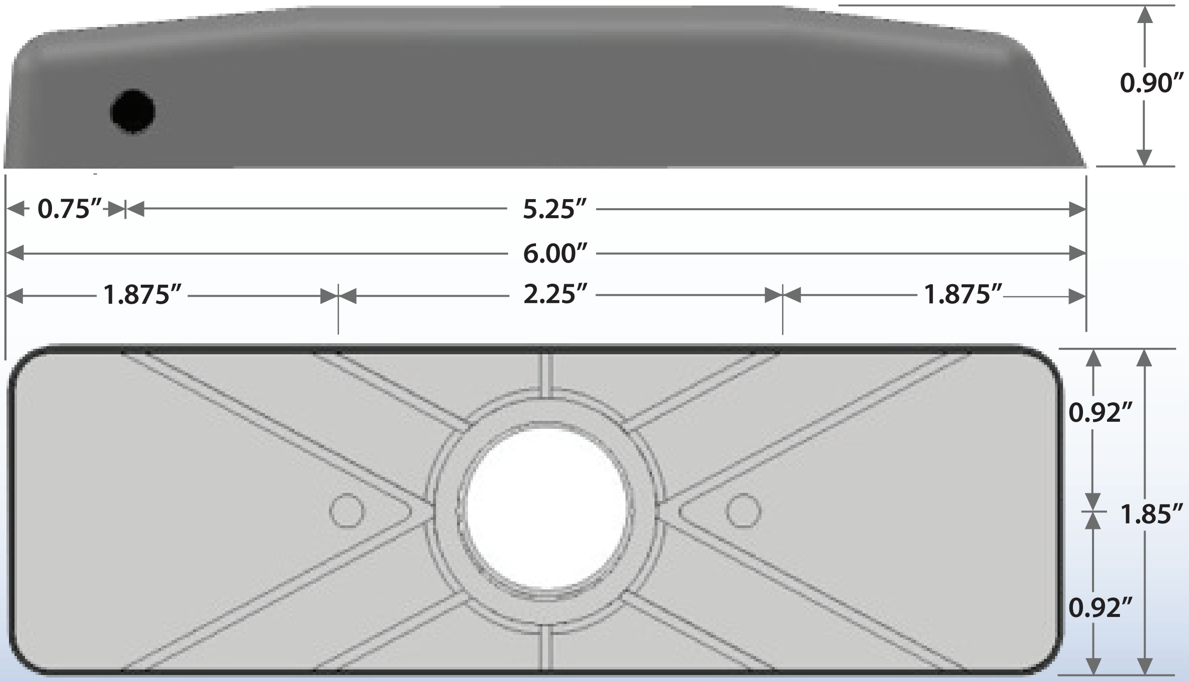
www.FloWav.com
1(855) 2-FloWav
Email: Sales@FloWav.com

Technical Specifications

General	
Type:	Combined Doppler Velocity & Pressure Depth with temperature compensation
Material:	Epoxy encapsulated PVC housing
Dimensions:	0.90 x 1.85 x 6.0 in (H x W x L)
Cable:	Black Polyurethane jacket with vent tube
Cable Diameter:	0.250” ± 0.005”
Cable Length:	40 ft. (custom lengths available)
Connector:	Bulgin 9 pin circular, IP68
Vent Tube:	Nylon 0.055” ID x 0.085” OD
Power:	+9 to +16 Vdc, 250mA
Communication Interface:	Two wire, RS-485
Communication Protocol:	Modbus RTU
Velocity Spectrum:	Progressive Spectrum Analysis (Patent Pending)
Mounting Screws:	Two #6-32 x 1/2” , S.S. Flat Tapered
Standard Warranty:	1 year parts and labor

Velocity Sensor	
Method:	Doppler ultrasound; twin PZT discs
Transducer Type:	Ceramic Discs
Min. Depth:	0.90 in.
Range:	-5 to +20 ft/s
Accuracy:	±2% of reading
Operating Temp.:	32° to 160°F

Depth Sensor	
Method:	Pressure Transducer, 500 mBar
Transducer Type:	Ceramic Piezioresistive
Range:	0 to 15 ft.
Max Allowed Level:	45 ft.
Accuracy:	±0.25% full scale ±2.1% of reading from 32° to 160°F
Compensated Range:	32° to 86°F

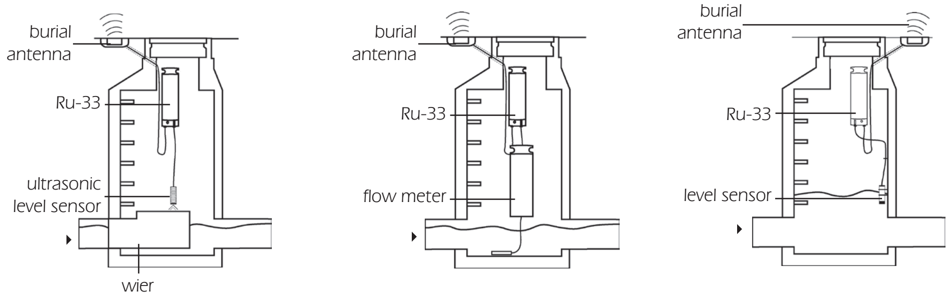


Ru-33 Recording Telemetry Unit

Wireless RTU for underground monitoring

Ru-33 pictured with the Telog ultrasonic sensor

Applications



Level/flow

Flow

Overflow

Telog's Ru-33 **R**ecording **T**elemetry **U**nit, (RTU), provides real-time monitoring and alarming of instruments and sensors found in the harsh environment of sewers and underground water vaults.

The Ru-33 has low power requirements and automatically monitors level, flow, pressure and water quality sensors. Data is forwarded wirelessly to a host computer operating Telog host application software, Telogers for Windows or Telog Enterprise. Data communication may be scheduled frequently (e.g. daily, hourly, every five minutes, etc.) and/or immediately in response to site alarm conditions.

The Ru-33 supports multiple sensor interface options including RS-232, RS-485, analog and digital inputs. For example, when connected to an open-channel flowmeter via RS-232, the RTU can interrogate the meter for it's most recent level, flow velocity and battery voltage measurements.

Telog also provides optional sensors that may be directly attached to the Ru-33 including ultrasonic and pressure level, water quality Sondes, temperature, level switches and a rain gauge.

Wireless communication is supported via an embedded, m2m cellular data modem. An optional burial antenna may be embedded in the street pavement producing a complete underground wireless monitoring solution.

The RTU is powered from a single, 6-volt lantern battery providing an operating life of six months to two years depending on sensor interface and call schedule.

Directly Monitor:
- **Popular Open-channel Wastewater Flowmeters**
- **Pressure Level Sensors**
- **Ultrasonic Level Sensors**
- **Water Quality Sensors and Sondes**

Communicate Via:
- **Local Connection**
- **Cellular**
- **Land-line Telephone**

Powered by:
- **6V Lantern Battery**
- **External DC**

Alarm Notification

Two Year Battery Life

Burial Antenna Option

Submersible Enclosure

Web Application Software

Ru-33 Specifications

(for more detailed specification information refer to Telog's Ru-33 Product Specification Paper, document #PS-33u)

Recorder

Model	Telog Ru-33
Type	Multi- channel underground RTU (Recording Telemetry Unit)
Recording	
Sample rate	Programmable from 1/sec up to 8 hours; each channel
Data interval	Programmable from 1/sec up to 8 hours; each channel
Memory	
Size:	512 Kbytes
Storage method	Wrap around (first-in; first-out),
Data capacity	Dynamically allocated to active channels, any combination of:
Analog input	270,000 values
Pulse input	200,000 values
Event input	67,000 values
ComSensor input	100,000 values
Communication:	
Standard:	Standard: 4 pin circular connector rated IP-67 Auto-selected baud rate to 19.2K
Optional	Land line telephone Telog M-324 2400 baud modem Auto-dial/Auto-answer FCC and CSA approved Cellular data modem Provides both 1xRTT packet switched and CDMA circuit switched data.
Inputs	Limited to one ComSensor + one analog + one digital
ComSensor/meter	Selectable RS-232 or RS-485 to 19.2 Kbaud. Protocol determined by meter or sensor
Analog	
Selectable ranges	0-1 VDC, 0-5 VDC, 4-20 ma
Excitation	Pulsed +5 or +12 VDC, (selectable duration)
Resolution	0.025%; 12 bits
Accuracy	±0.1% of full range at 25° C ±50 ppm
Digital (one channel)	
Type	Selectable pulse counter or event recorder
Input	Contact closure or logic driven input
Excitation	5 VDC at 20 μAmps (max)
Pulse width	10 mS minimum
Battery	
Factory installed	Single 6V alkaline lantern battery Eveready Energizer model 529
Battery Life Example:	
Input ComSensor	Sigma 900 series flowmeter
Sample rate	Five minutes
Communication	Wireless 1xRTT
Call schedule	
5 minutes	Battery life=1 month
15 minutes	Battery life=3 months
2 hours	Battery life=1 year
24 hours	Battery life=2 years
External Power Input	9 to 15 VDC @ 1 amp max
Enclosure	
Size	Cylindrical 4.5" x 15.4"
Weight	7 lbs.
Material	PVC
Environmental	
Temperature	0 to 70° C -30 to +70° C powered externally
Submersible	IP67 (NEMA 6)
Support Software	
S-3PC	Telogers for Windows
S-3EP	Telogers Enterprise
Data transfer unit	IP-67 rated PDA running Palm OS and Telog application program

Supported Sensors

Pressure Level Sensor	Submersible pressure sensor
Model	Telog PT-3Vu
Ranges	0-5 PSI thru 0-200 PSI
Accuracy	±0.25% of full scale
Construction	316 stainless steel
Vent	In-line dry box with user replaceable desiccant
Ultrasonic Level Sensor	Ultrasonic transmitter (ComSensor)
Model	Telog UT-33u/95
Frequency	95 KHz
Range	one foot to 13 feet
Beam Angle	8° conical
Accuracy	±0.25% over any range segment exceeding 12 inches (homogeneous environment)
Temperature Sensor	
Model	AT-3u ambient temperature sensor
Range	-20 to +70° C
Accuracy	±0.2° C
Size	Stainless Steel probe (4" x ¼") with 10 feet of cable

Ru-33 Telog Supplied Options

Burial Antenna

Ultrasonic sensor

Pressure sensor

Temperature sensor

Ru-33 Supported Meters & Sensors

Flowmeters	
Via RS-232 or RS-485	ADS Flow Shark
Interface to meter	Hach Sigma 900 Series
Serial interface port	FloWav PSA-AV
	ISCO 2150
	Marsh McBirney Flo-Dar & Flo-Tote3 Meters
	MGD ADFM & accQmin
Sensors	
	Hydrolab Sondes
	Hach WMD Pipe Sonde
Water Quality	
	Hach Hydrolab Multiparameter Sondes
	DataSonde 4a, MiniSonde 4a
	DS5X, DS5, MS5
	Hach WDM Pipe Sonde

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02/14

Surface Combo Sensor (ADS p/n 8K-CS3-V2-xx-30)

This sensor supports downward ultrasonic depth, surface velocity, surcharge peak velocity, and surcharge pressure depth.

Enclosure	Marine grade aluminum/epoxy
Dimensions	9.56 inches (243 mm) long x 4.19 inches (106 mm) wide x 2.25 inches (57 mm) high
Cable	Standard size: 30.0 feet (9.14 m) long x 0.45 inches (11 mm) nominal OD, polyurethane jacket Extension cables available up to 300 feet (91 m)
Operating Temperature	-4° to 104° F (-20° to 40° C) **Note:** The sensor will *not* produce accurate readings when ice is built up on the sensor.
Downward Ultrasonic Depth	
Accuracy	0.125 inches (3.2 mm)
Deadband	0.5 inches (12.7 mm) from the sensor face or 5% of maximum range, whichever is greater
Frequency	40 kHz
Range	0.5 inches (12.7 mm) (or 5% of maximum range, whichever is greater) to 10.0 feet (3.05 m)
Resolution	0.01 inches (0.25 mm)
Drift	0

Surface Velocity	
Accuracy	*Pending laboratory testing*
Deadband	<3 inches (76 mm) from the face of the sensor
Maximum Range	>36 inches (914 mm) – *exact range pending laboratory* testing
Frequency	*Varies based on the parameter settings*
Range	*Pending laboratory testing*
Resolution	0.01
Surcharge Peak Velocity	
Accuracy	-30 to 30 feet/second (-9.1 to 9.1 m/sec)
Frequency	250 kHz
Resolution	Vel Range: -5.0 to +5.0 ft/sec (-1.5 to +1.5 m/sec): 0.01 ft/sec (0.003 m/sec) resolution Vel Range: +5.0 to +10 ft/sec (+1.5 to +3.04 m/sec): 0.02 ft/sec (0.006 m/sec) resolution Vel Range: +10.0 to +15.0 ft./sec (+3.04 to +4.57 m/sec): 0.04 ft/sec (0.012 m/sec) resolution Vel Range: +15 to +20.0 ft/sec (+4.57 to +6.09 m/sec): 0.05 ft/sec (0.015 m/sec) resolution
Accuracy	+/- 0.2 ft/sec (0.06 m/sec) or 4% of actual peak velocity (whichever is greater) in flow velocities from -5 to 20 ft/sec (-1.52 to 6.10 m/sec)

Surcharge Pressure Depth	
Pressure Range	0.0 to 5.0 PSI (0.0 - 0.34 Bar) up to 11.5 feet (3.5 m) 0.0 to 15.0 PSI (0.0 - 1.03 Bar) up to 34.5 feet (10.5 m)
Pressure Accuracy	0 - 5.0 PSI (0 - 0.34 Bar): +/- 1.4 inches (36 mm) 0 - 15.0 PSI (0 - 1.03 Bar): +/- 4.1 inches (104 mm)
Pressure Resolution	0.01 inches (0.25 mm)

Ultrasonic Depth Sensor (ADS p/n 8K-CS3-V0-xx-30)

This sensor supports downward ultrasonic depth and optional pressure depth.

Housing	Marine-grade aluminum/epoxy
Dimensions	7.45 inches (189 mm) long x 4.125 inches (105 mm) wide x 0.86 inches (22 mm) high
Cable	Standard size: 30.0 feet (9.14 m) long x 0.45 inches nominal (11 mm nominal) OD, polyurethane jacket Extension cables available up to 300 feet (91 m)
Operating Temperature	-4° to 104° F (-20° to 40° C) **Note:** The sensor will *not* produce accurate readings when ice is built up on the sensor.

RC-A

Post-Construction Monitoring Documentation

CSL Services, Inc.
Customized Solutions to your Flow Metering Needs

To: DC Clean Rivers

From: CSL Services, Inc.

Date: 11/05/2020

RE: RCA Post Construction Sewershed Flow Monitoring

Enclosed is the data for 03/01/19 – 10/15/20. The information provided is as follows:

- RCA Post Construction Sewershed Monitoring (Page 2)
  - Investigation and Installation Reports
  - Flow, Level & Velocity Timeseries Hydrographs
  - Level vs. Velocity Hourly Scattergraphs
  - Calibration and Maintenance Logs
- RCA Post Construction Rainfall Monitoring (Page 65)
  - Investigation and Installation Reports
  - Rainfall Timeseries Graph
  - Calibration and Maintenance Log
- RCA GI Practice Level Monitoring (Page 69)
  - Investigation and Installation Reports
  - Depth vs Rain Timeseries Graph
  - Calibration and Maintenance Logs
- Instrumentation Manuals (Page 721)

Please feel free to contact me should you have any questions.

- **RCA Post Construction Sewershed Monitoring**
    - Investigation and Installation Reports
    - Flow, Level & Velocity Timeseries Hydrographs
    - Level vs. Velocity Hourly Scattergraphs

Monitoring Summary:

Overview: Starting March 1, 2019, seven locations were monitored with area/velocity flow meters. Sensors provide depth (from which area is calculated) and velocity measurements which are used to determine flow rate. Every 5 minutes, the meter takes a depth and velocity measurement. The flow meter utilizes a pressure and/or ultrasonic sensors to measure depth, and a continuous wave Doppler sensor to measure velocity.

RCA 049-1 – Intersection of Longfellow St. NW and 3rd Place NW

For the period starting on March 1, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the upstream pipe and no silt was found in the site during the study period. It should be noted that on July 24, 2019, a redundant flow meter was installed to further verify flow rate and general data quality. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow conditions. We believe that the data collected between the two the meters is consistent, reliable and repeatable.

RCA 049-2 – Intersection of Hamilton St. NW and 2nd St. NW

For the period starting on March 1, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the downstream pipe. No silt was found at the time of site investigation and installation, however, throughout the study period after wet weather events various levels of silt and gravel appeared at and around the sensor that required frequent maintenance. As evidenced by the hydrograph and scattergraph, this site generally exhibited typical open channel, free flow. Although the site conditions were challenging, we believe that the meter produced reliable and repeatable data.

RCA 049-3 – Intersection of Hamilton St. NW and Capital St. NW

For the period starting on March 1, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the downstream pipe and no silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. We believe that the meter produced reliable and repeatable data.

RCA 049-4 - Intersection of 1st St NW and Capital St NW

For the period starting on March 1, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the upstream pipe and no silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. We believe that the meter produced reliable and repeatable data despite the challenge of extremely low flow conditions.

RCA 049-6 - Approximately 5317 2nd St NW

For the period starting on April 19, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the downstream pipe and no silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited dry to nearly dry conditions throughout the majority of the monitoring period with the exception of a few high intensity wet weather events. We believe that the meter produced reliable and repeatable data.

RCA 049-7 - Intersection of Hamilton ST NW and 2nd ST NW

For the period starting on April 19, 2019, the flow meter has provided 100% uptime.

The sensor was installed in the upstream pipe and no silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site exhibited typical open channel, free flow. We believe that the meter produced reliable and repeatable data.

RCB-KEN - 145 Kennedy St NW

For the period starting on March 14, 2019, the flow meter has provided 94% uptime due to inability to access during permit renewal process. Downtime occurred March 29, 2020 to April 30, 2020.

The sensor was installed in the downstream pipe and no silt was found in the site during the study period. As evidenced by the hydrograph and scattergraph, this site generally exhibited typical open channel, free flow during dry weather, however, during wet weather events this site exhibited backwater conditions . Despite the challenging low flow conditions and pipe configuration, we believe the meter produced reliable data.

Site Name/Manhole # RCA-RCB 049-1 Primary: ☒ Alternate: ☐ Grade: ☐

Investigation Date: 1/22/2019 Time: 14:40 Crew Members: GM/CP

Installation Date: 2/27/201 Time: 8:40 Crew Members: SD/DN

Address/Location: Intersection of Longfellow Street NW and 3rd Place NW

Latitude: 38.9576 ° Longitude: -77.0171

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 2.50 ft/sec

Depth 2 in

Turbulence Amplitude:

- ☐ [✓ Less than 0.25”]
- ☐ 0.25” to 0.75”
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Inf 4	Inf 5	Eff
Height	51”	12”	15”	6”	6”	51”
Width	51”	12”	15”	6”	6”	51”
Material	Brick	Clay	Clay	PVC	PVC	Brick
Shape	Round	Round	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 14 ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

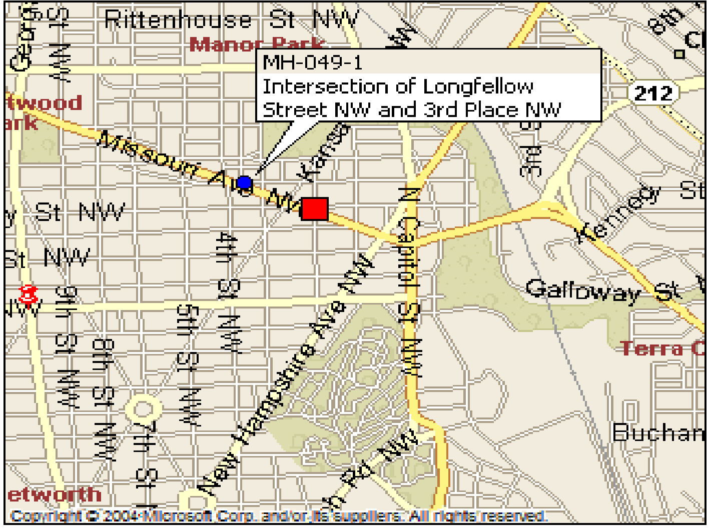
☐ Yes ☐ No ☐ Maybe

Sensor Configuration:

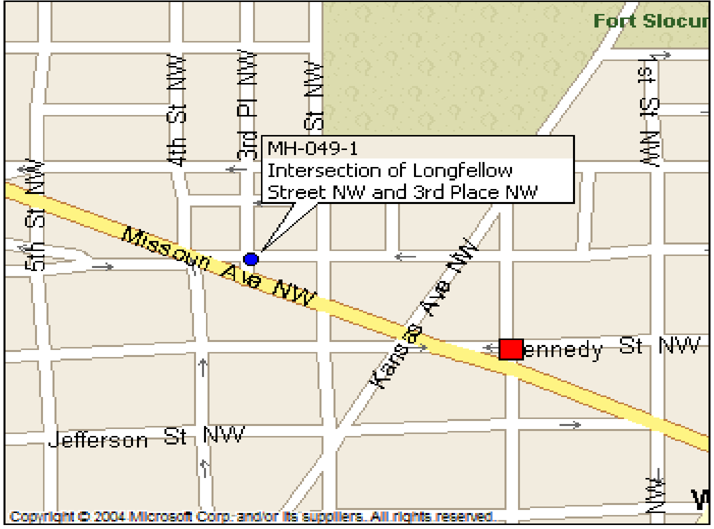
Level	Primary:Pressure	
	Redundant: Ultrasonic	
Velocity	Primary:Doppler	
	Redundant:	
Meter Logger	Telog	

Comments: Install in upstream

Area Map



Detail Map



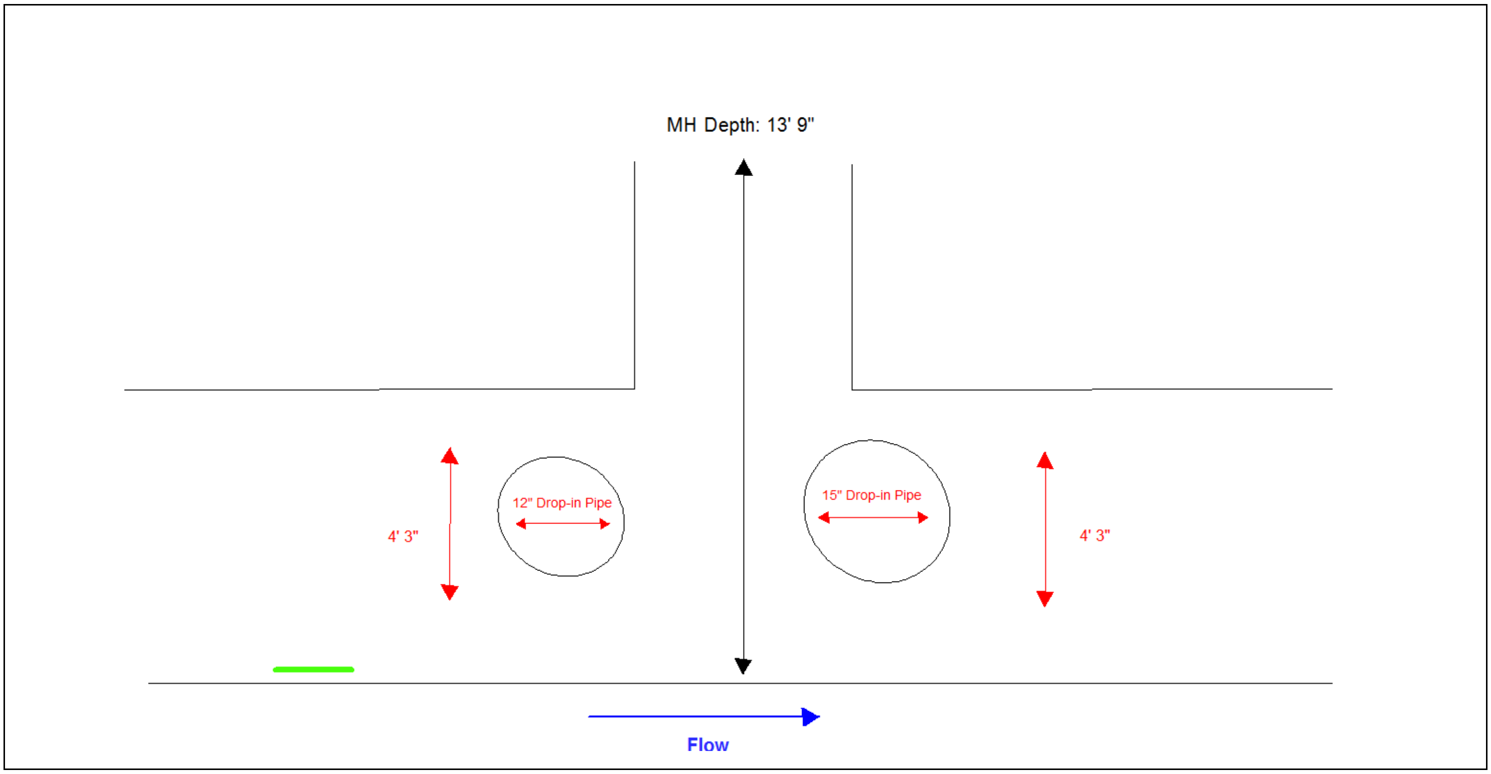
View from top of MH

Site Overview

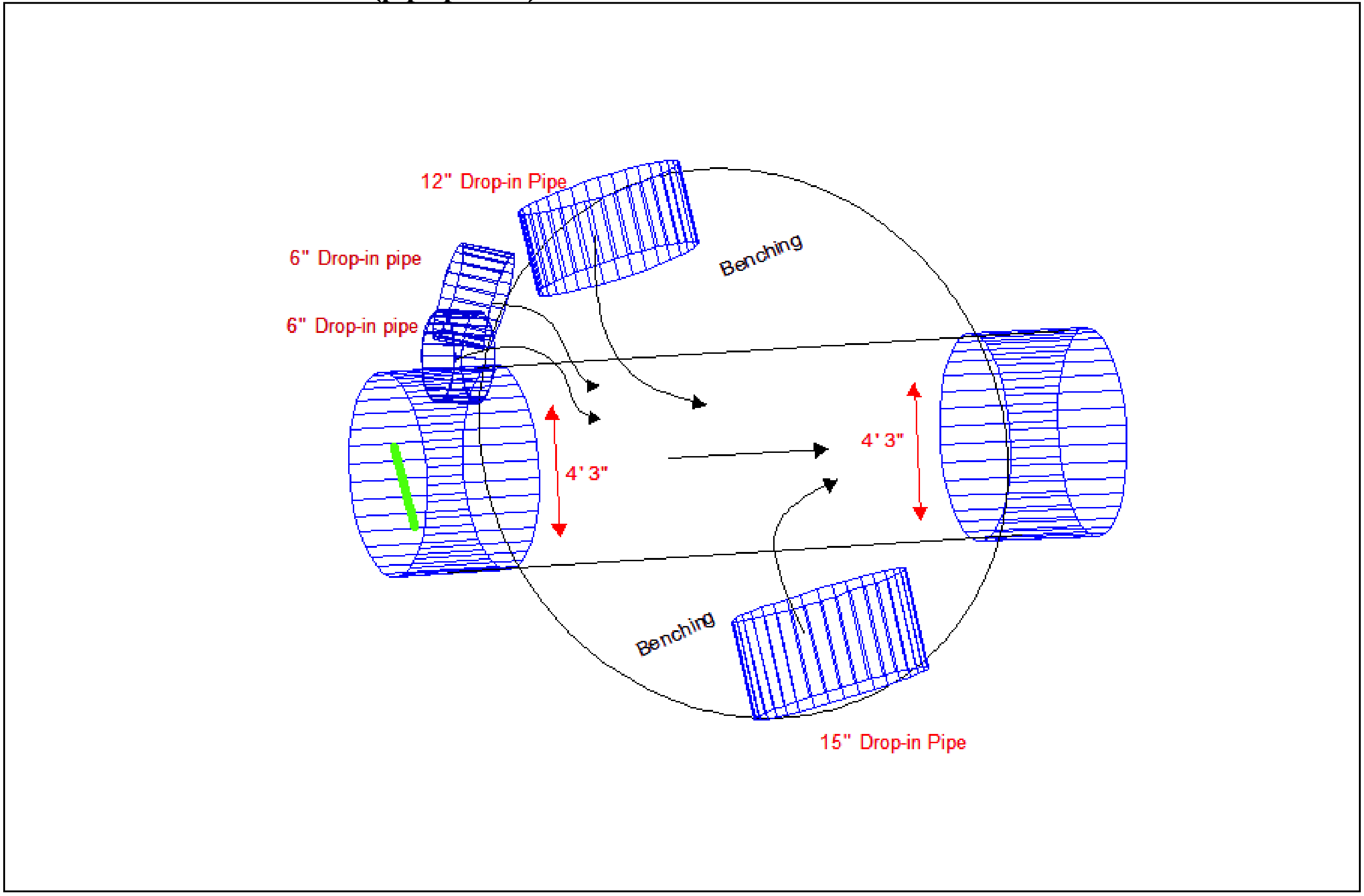
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

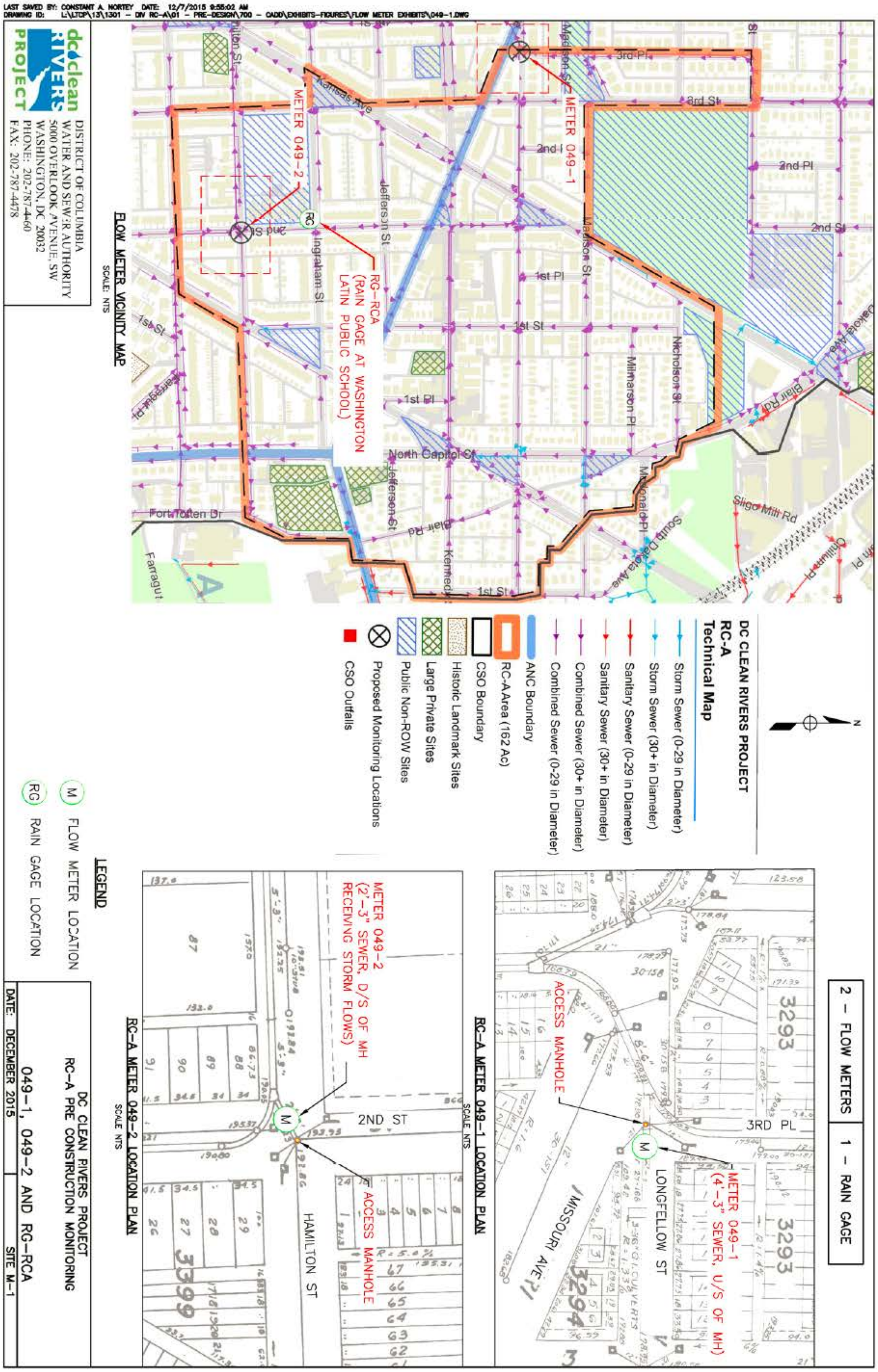


Dimension Structure Detail (pipe profile)



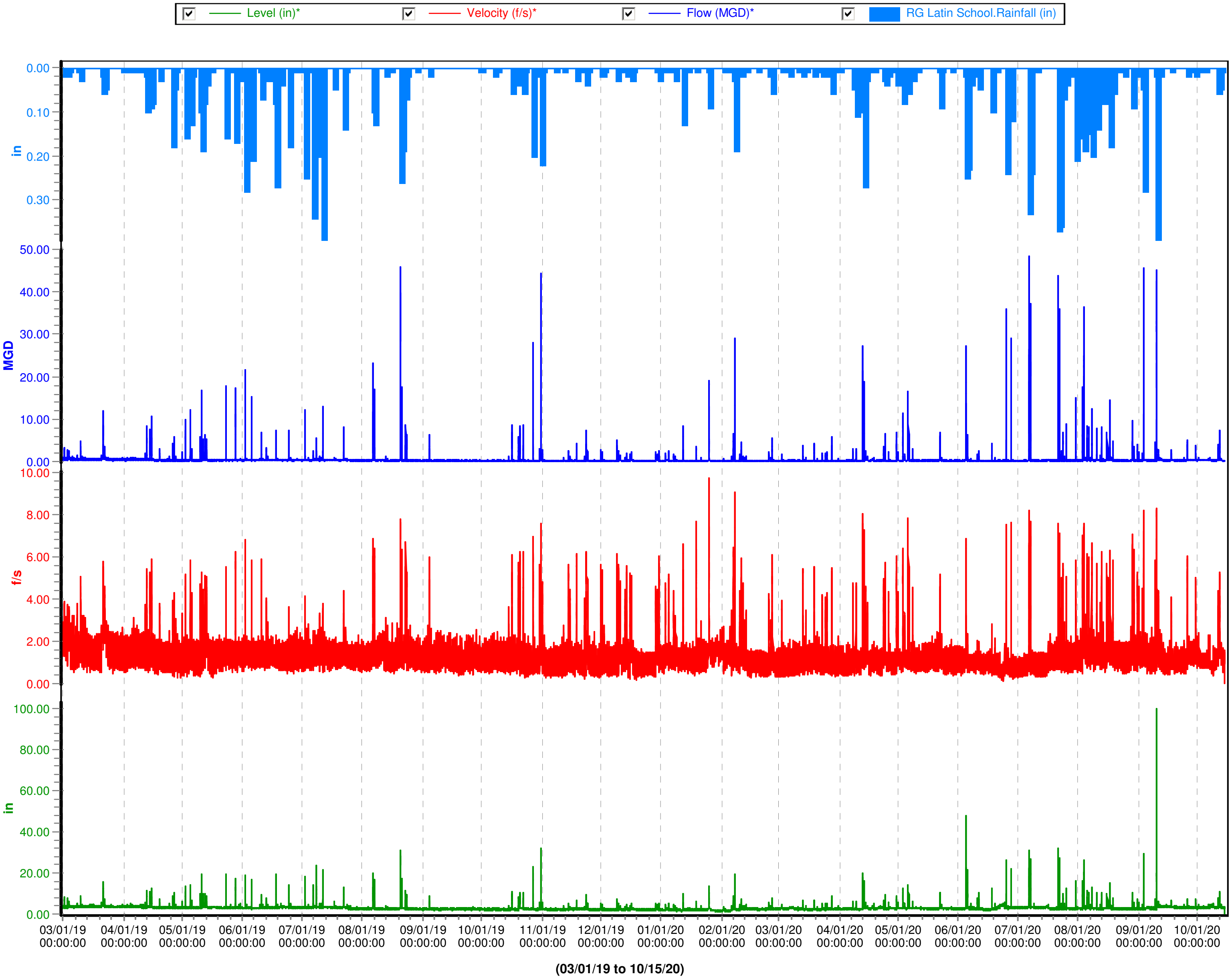
Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



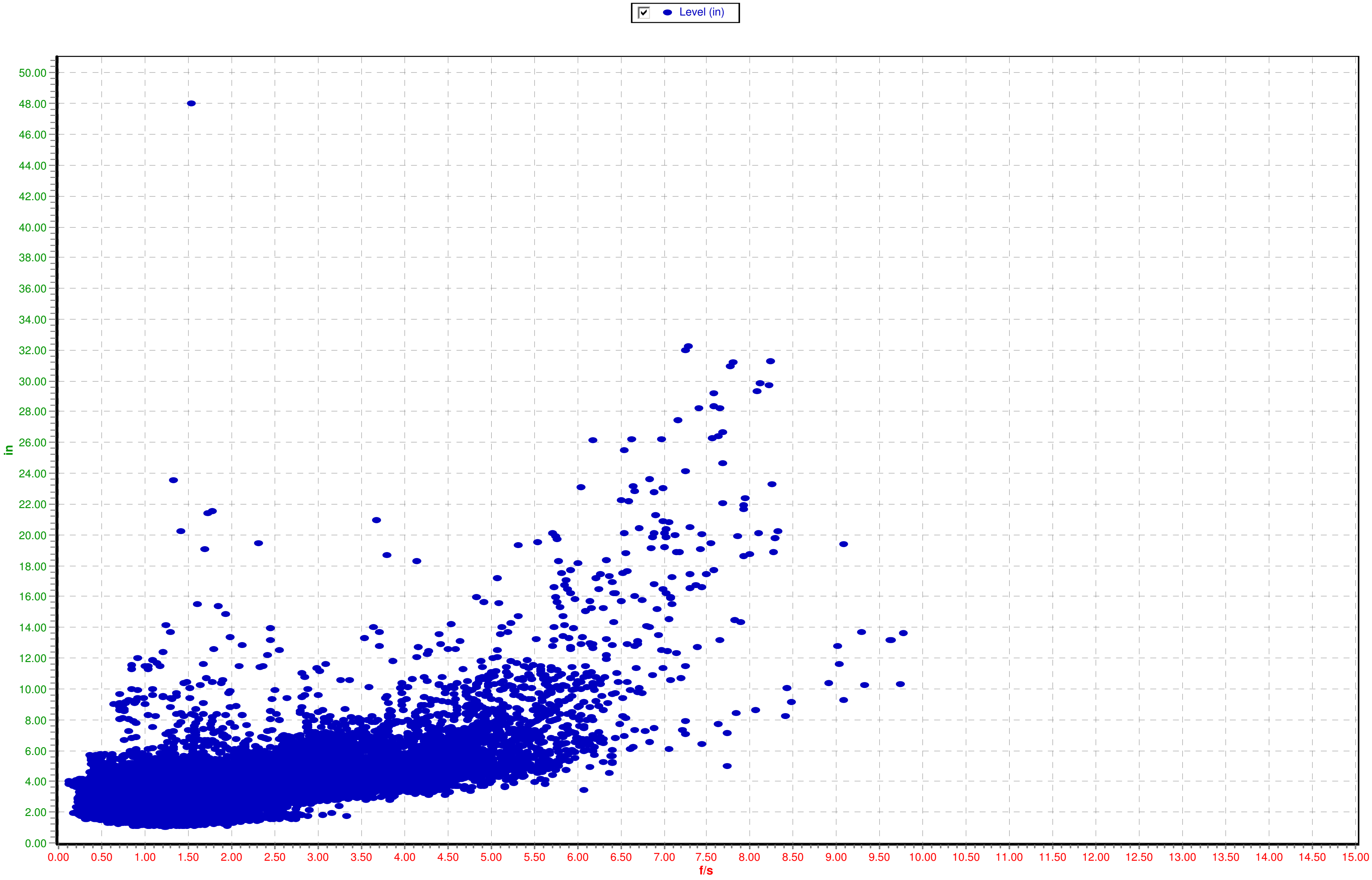
RCA 049-1

Intersection of Longfellow St NW and 3rd Place NW - Pipe Diameter (in): 51



RCA 049-1 - Intersection of Longfellow St NW and 3rd Place NW

Pipe Diameter (in): 51



(03/01/19 to 10/15/20)

Site #	RC-A 049-1							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
2/27/2019	11:02		3.00		2.61	0.00	SD/DN	Install, V1
2/27/2019	11:07	3.18	3.00	2.62	2.69	0.00	SD/DN	V2
2/27/2019	11:12	3.07	3.00	2.62	2.56	0.00	SD/DN	V3
2/28/2019	9:29						SD/DN	Change Battery, Restore Communication
3/6/2019	11:39		3.75		1.76	0.00	DM/NM	V1
3/12/2019	13:47		3.75		2.31	0.00	SD/DN	V1
3/20/2019	15:08						DM/AP	Change Desiccant
4/17/2019	15:54		3.00		1.66	0.00	DM/PJ/JB	V1
4/24/2019	8:30						SD/PJ/JB	Change Battery
5/1/2019	9:37	2.85	3.00	1.42	1.34	0.00	SD/PJ/JB	V1
5/29/2019	17:09						SD/JB	Change Battery
5/30/2019	10:49		3.00		1.47	0.00	SD/PJ	V1
6/4/2019	13:13	2.89	2.75	1.38	1.45	0.00	LR/PJ/JB	V1
6/11/2019	15:10		3.25		1.61	0.00	SD/PJ/DC	V1
6/17/2019	12:35		3.00		1.36	0.00	SD/PJ/DC	V1
6/24/2019	12:56		3.25		1.10	0.00	DM/PJ/DC	V1
7/2/2019	14:26		3.25		1.26	0.00	SD/PJ/DC	V1
7/8/2019	12:14		4.00		1.53	0.00	SD/PJ/DC	Change Battery, V1
7/10/2019	10:32		3.75		1.56	0.00	LR/PJ/DC	V1
7/16/2019	13:20	3.27	3.25	1.49	1.57	0.00	SD/PJ	V1
7/24/2019	14:48	2.66	2.75	1.53	1.46	0.00	SD/PJ/DC	V1
7/24/2019	14:50	2.67	2.50	1.36	1.39	0.00	SD/PJ/DC	V2
7/29/2019	15:10		2.75		1.33	0.00	SD/PJ/DC	V1
8/5/2019	16:16		2.75		1.31	0.00	LP/PJ	V1
8/12/2019	13:55		2.50		1.56	0.00	SD.PJ	Change Battery, V1
8/19/2019	14:15		2.50		1.32	0.00	DM/PJ	Change Battery, V1

8/26/2019	13:17		2.50		1.45	0.00	LP/AP/PJ	V1
8/26/2019	13:20		2.50		1.42	0.00	LP/AP/PJ	V2
9/3/2019	14:15		2.25		1.33	0.00	SD/AP/PJ	V1
9/9/2019	15:40		2.25		1.36	0.00	SD/PJ	Change Battery, V1
9/16/2019	14:42		2.25		1.57	0.00	SD/DL	V1
9/24/2019	11:35	2.19	2.25	1.3	1.35	0.00	SD/PJ/DL	V1
9/30/2019	14:57		2.50		1.38	0.00	SD/DL	V1
10/15/2019	15:15		2.25		1.27	0.00	SD/AP	V1
11/12/2019	14:20		2.25		1.23	0.00	SD/AP	Change Battery, V1
12/10/2019	15:57						SD/AP	Change Battery
12/31/2019	10:02		2.25		1.46	0.00	SD/MH	Change Battery, V1, Replace antenna
1/6/2020	15:38	2.03	2.00	1.14	1.13	0.00	SD/DW	Change Battery, V1
1/14/2020	11:51	2.74	2.69	1.57	1.69	0.00	SD/DW	V1
1/27/2020	14:50					0.00	SD/DW	Change Battery
2/11/2020	11:15					0.00	SD/DW	Change Battery
2/18/2020	15:05	2.67	2.50	1.07	1.17	0.00	SD/DW	V1
2/26/2020	15:18		2.50		1.47	0.00	SD/DW	V1- Change Sensor
2/26/2020	15:36	2.61	2.50	1.39	1.31	0.00	SD/DW	V2
2/26/2020	15:44	2.56	2.50	1.35	1.49	0.00	SD/DW	V3
3/4/2020	10:05		3.00		1.26	0.00	SD/JP	Change Battery, V1
3/11/2020	14:47						SD/JP	Change Battery
3/24/2020	10:28						SD/JP/AE	Change Battery
3/31/2020	16:58						SD/JP/AE	Redrill antenna, Change Battery
4/20/2020							SD/JP/AE	Change Battery
4/28/2020	10:55		3.00		1.34	0.00	SD/JP/AE	V1
5/11/2020	13:14	2.91	3.00	1.22	1.31	0.00	SD/JP/AE	V1
5/13/2020	13:37						SD/JP/AE	Download Meter
5/18/2020	13:03						SD/JP/AE	Change Battery

6/15/2020	13:21						SD/JP/AE	Change Battery
6/24/2020	10:40		3.00		1.10	0.00	SD/JP/AE	V1
7/2/2020	10:12						SD/JP/AE	Change Battery
7/8/2020							SD/JP/AE	Change Battery
7/21/2020	13:22	2.74	2.75	1.41	1.37	0.00	SD/JP/AE	V1
7/23/2020	10:41		2.75		1.29	0.00	SD/JP/AE	V1
8/3/2020	11:54						SD/JP/AE	Change Battery
8/10/2020	12:58		3.00		1.40	0.00	SD/JP/AE	V1
8/24/2020	14:15						SD/JP/AE	Change Battery
8/31/2020	13:27	2.87	2.75	1.79	1.96	0.00	SD/JP/AE	V1
9/14/2020	14:36						SD/JP/AE	Change Battery
9/21/2020	15:34						SD/JP/AE	Change Battery
9/28/2020	14:49						SD/JP/AE	scrub
10/14/2020	10:56	2.89	3.00	1.29	1.37	0.00	SD/JP/AE	V1
10/19/2020	1324		2.75		1.42	0.00	SD/JP/AE	V1
10/19/2020	1327		2.75		1.58	0.00	SD/JP/AE	V2
10/19/2020	1330		2.50		1.67	0.00	SD/JP/AE	V3, Remove

Site Name/Manhole # RCA-RCB 049-2 Primary: ☒ Alternate: ☐ Grade: ☐

CSL Services, Inc.

Investigation Date: 1/22/2019 Time: 11:30 Crew Members: GM/CP

Installation Date: 2/27/2019 Time: 12:00 Crew Members: SD/DN

Address/Location: Intersection of Hamilton Street NW and 2nd Street NW

Latitude: 38.9533 ° Longitude: -77.0137

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 1.50 ft/sec

Depth 1 in

Turbulence Amplitude:

- ☐ [✓ Less than 0.25”]
- ☐ 0.25” to 0.75”
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Inf 4	Inf 5	Eff
Height	24.75”	18”	15”	12”	15”	36”
Width	24.75”	18”	15”	12”	15”	24”
Material	Concrete	Clay	Clay	Clay	Clay	Brick
Shape	Round	Round	Round	Round	Round	Oval

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 13’10” ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

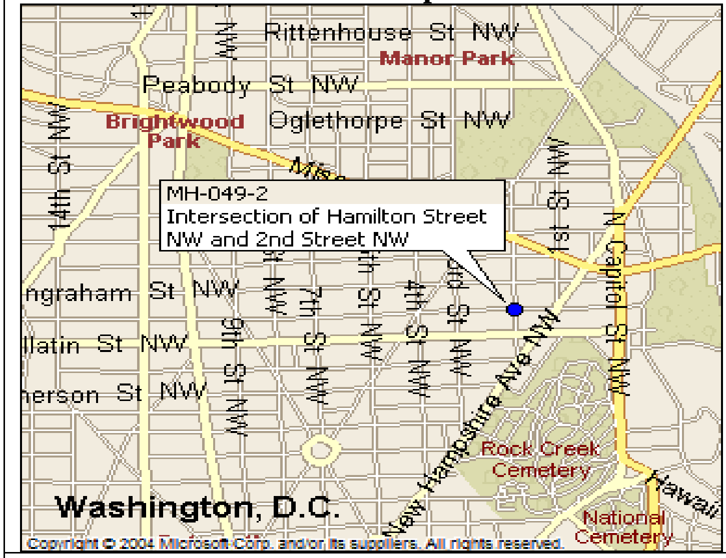
☐ Yes ☐ No ☐ Maybe

Sensor Configuration:

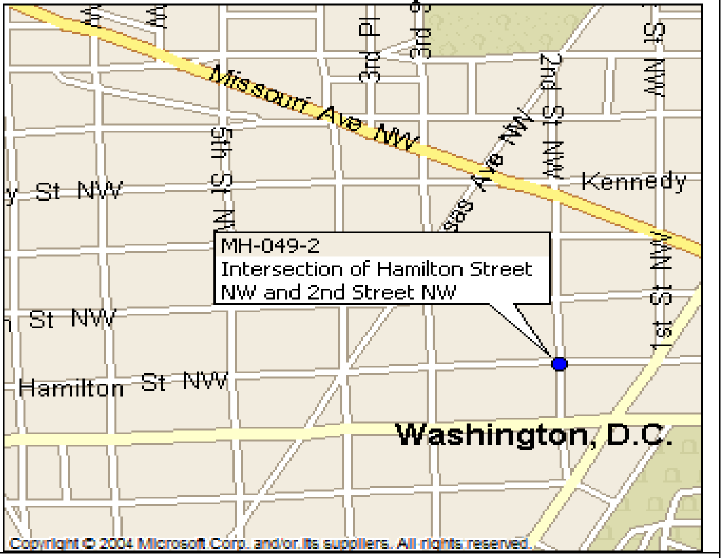
Level	Primary: Pressure	
	Redundant: Ultrasonic	
Velocity	Primary: Doppler	
	Redundant:	
Meter Logger	Telog	

Comments: Manhole lid is damaged, Install in the Downstream

Area Map



Detail Map



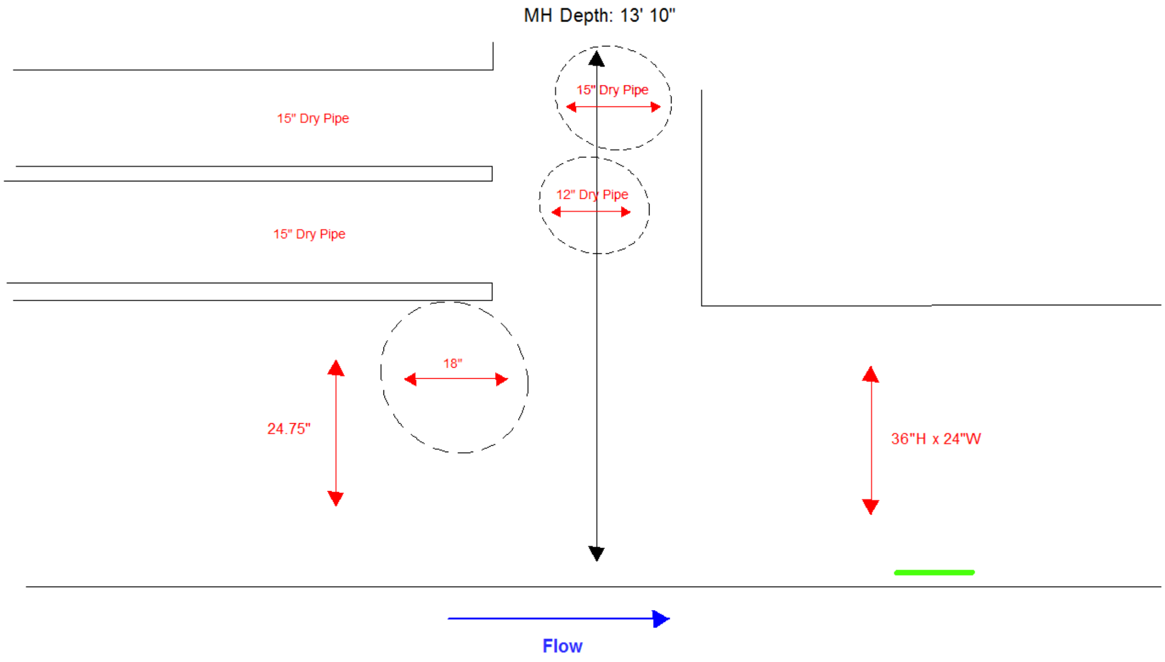
iew from top of MH

Site Overview

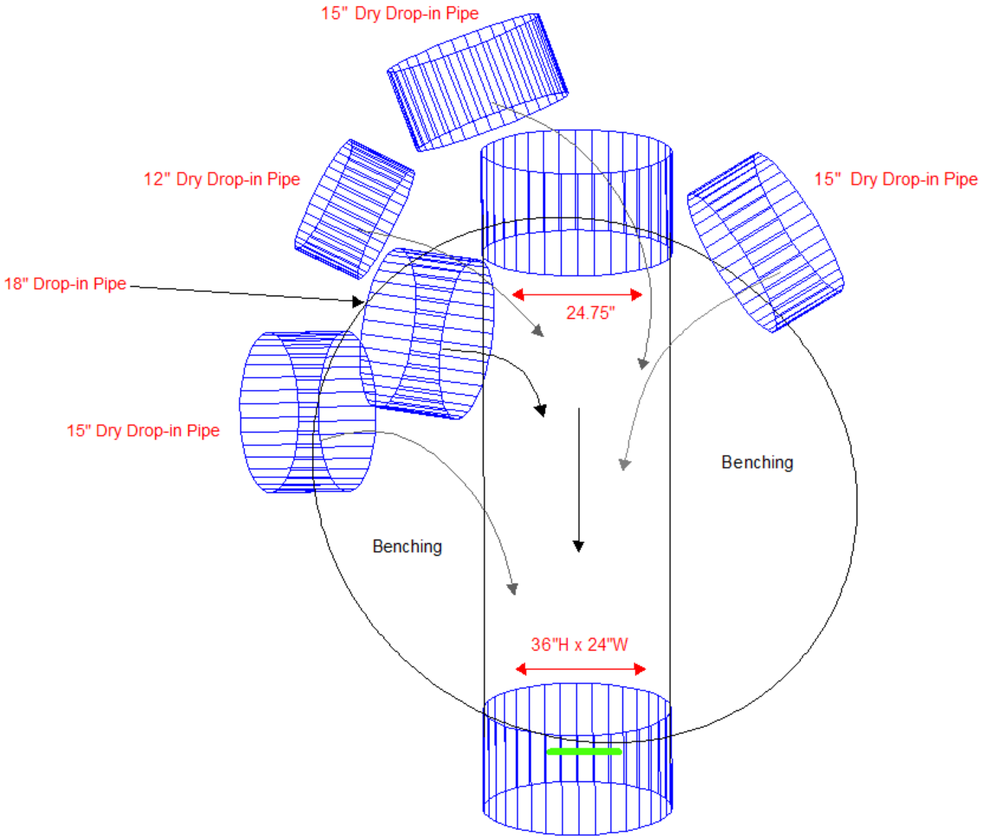
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

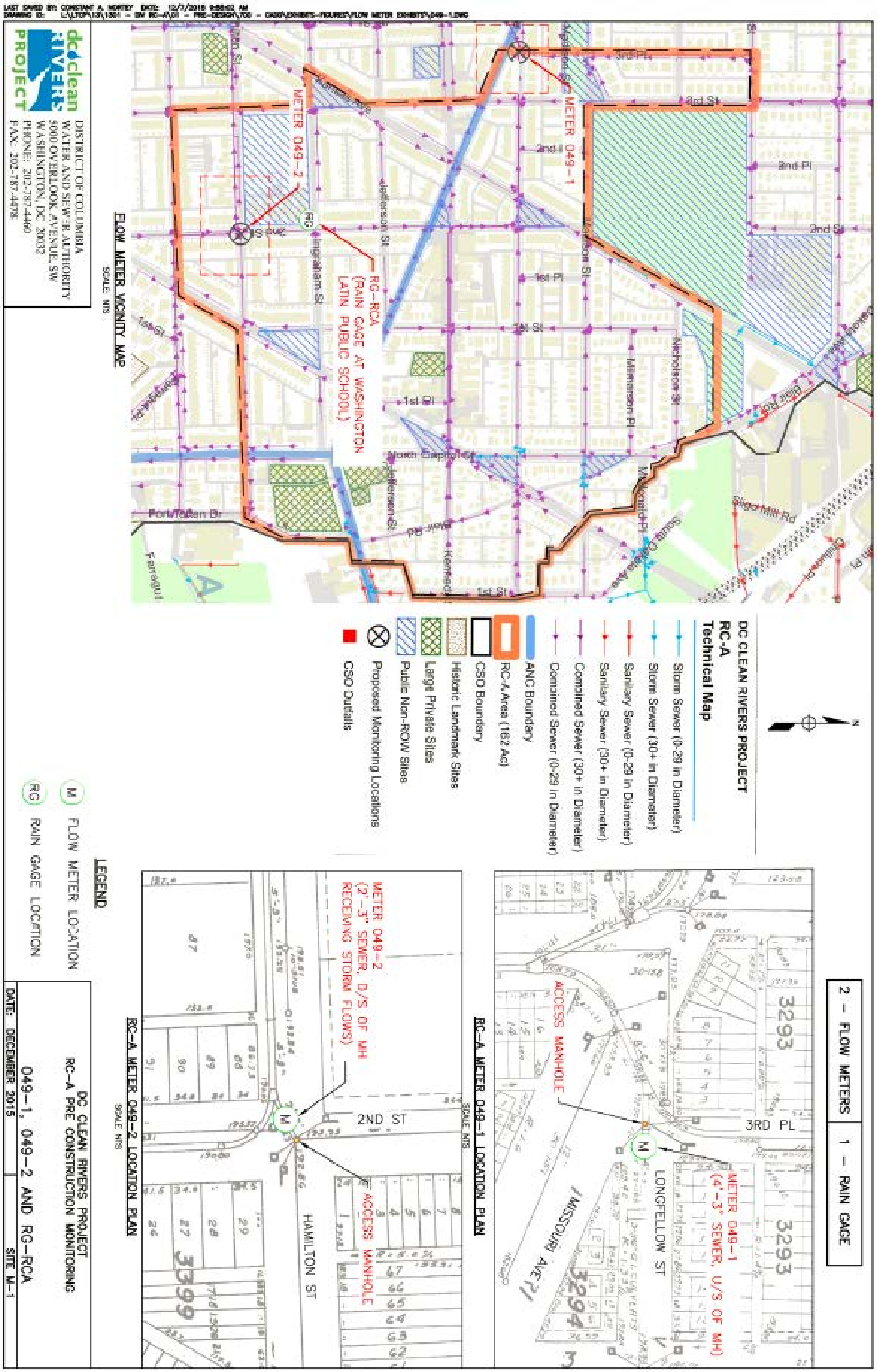


Dimension Structure Detail (pipe profile)



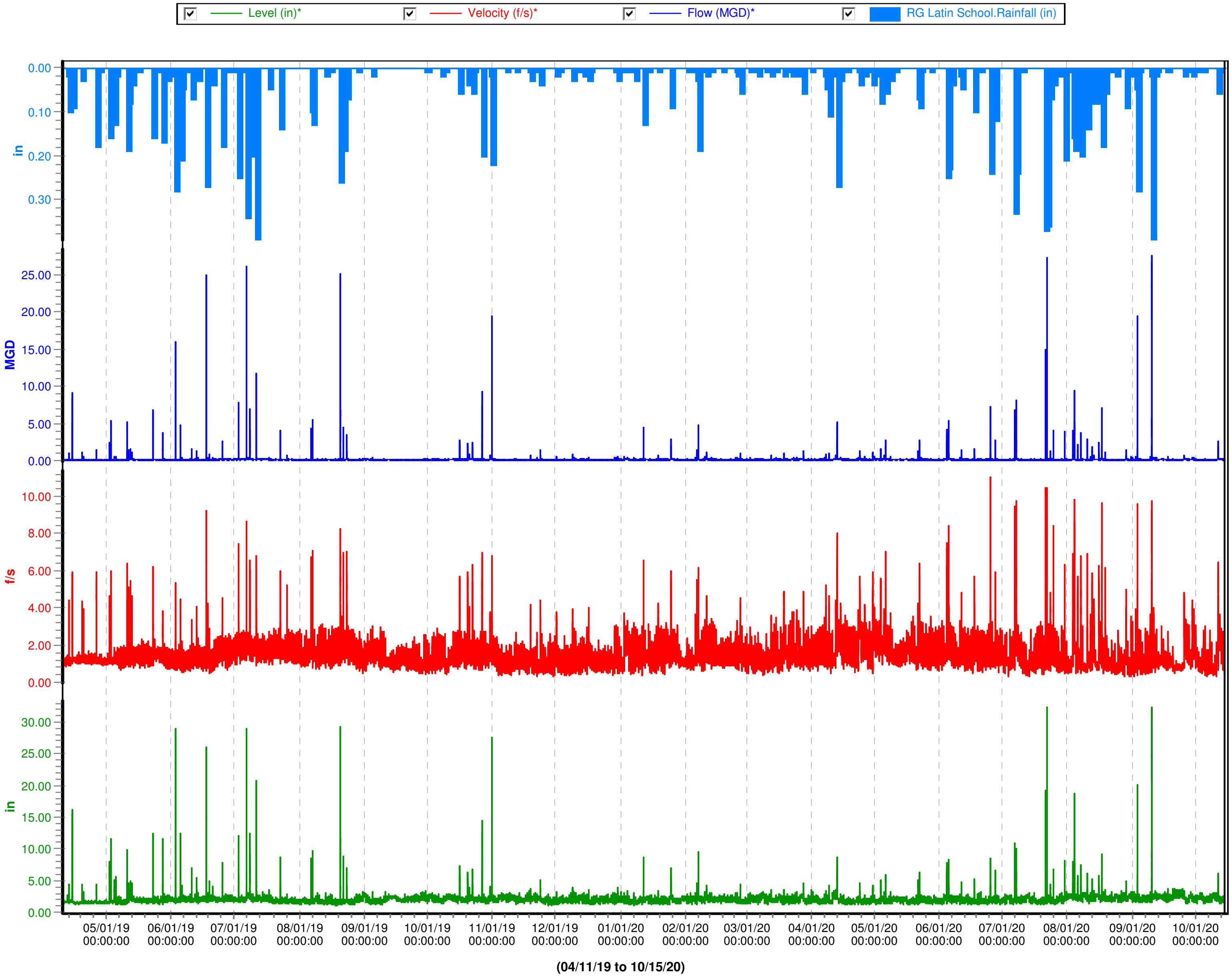
Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



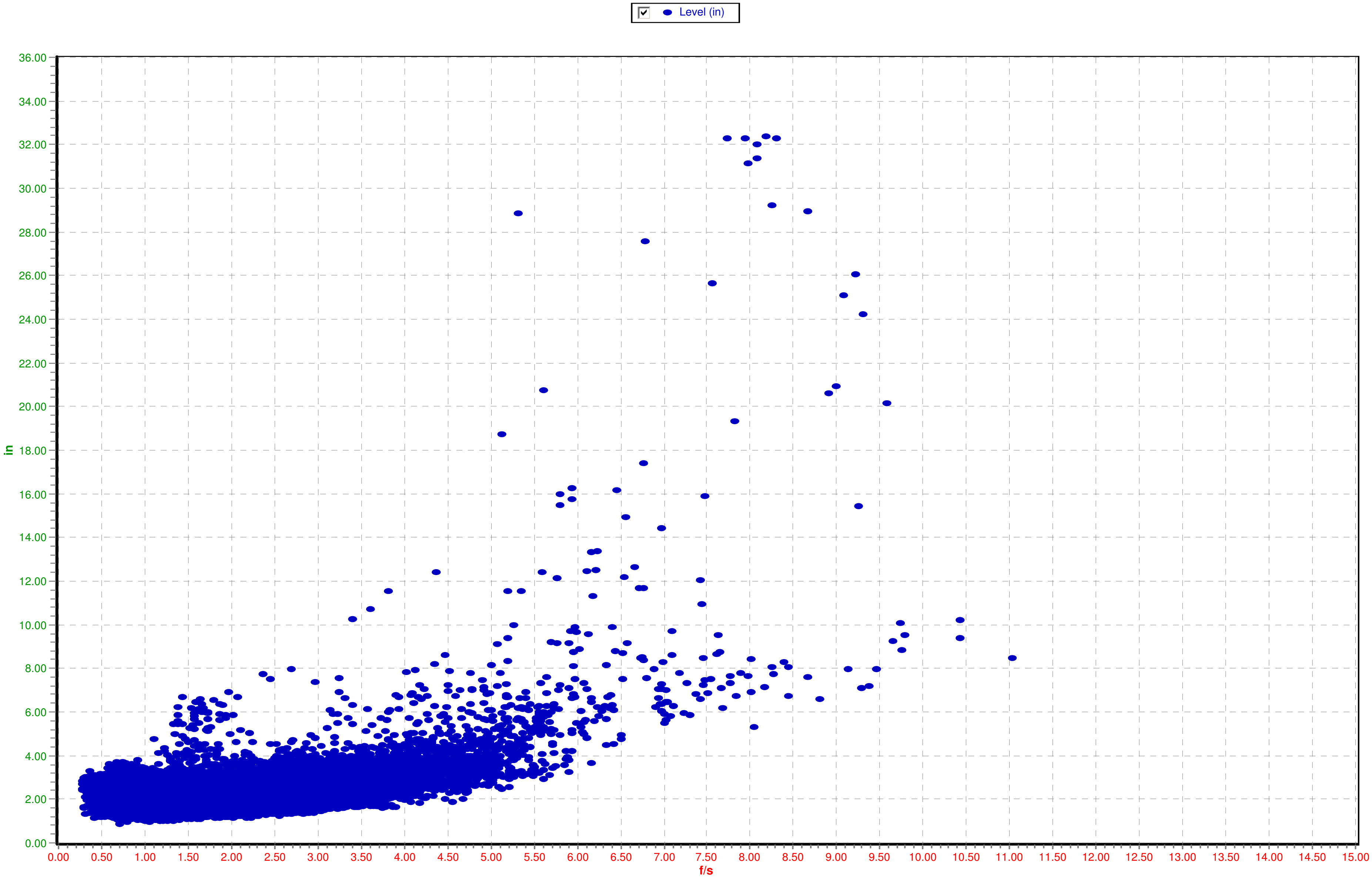
RCA 049-2

Intersection of Hamilton and 2nd St NW - Pipe Diameter (in): 36x24



RCA 049-2 - Intersection of Hamilton and 2nd St NW

Pipe Diameter (in): 36x24



(03/01/19 to 10/15/20)

Site #	RC-A 049-2							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
2/28/2019	13:40	2.71	1.75	4.36	1.71	0.00	SD/DN	Install, V1
2/28/2019	13:45	1.89	1.75	1.50	1.68	0.00	SD/DN	V2
2/28/2019	13:59	1.61	1.75	1.48	1.64	0.00	SD/DN	V3
3/6/2019	12:42	1.55	1.50	1.33	1.23	0.00	DM/NM	V1, Replace Logger
3/14/2019							SD/DN	Topside Scrub
3/20/2019	15:40		1.50		1.10	Trace	DM/AP	V1
3/27/2019	16:17	1.91	1.75	1.06	1.04	0.00	SD/Purdy	Replace Meter, V1
3/27/2019	16:22	1.87	1.50	1.02	1.10	0.00	SD/Purdy	V2
3/27/2019	16:27	1.77	1.50	0.98	1.02	0.00	SD/Purdy	V3
3/28/2019	10:38	1.68	1.50	0.88	0.97	0.00	SD/AP	V1
3/28/2019	10:40	1.66	1.50	0.9	0.98	0.00	SD/AP	V2
3/28/2019	10:56	1.62	1.50	0.87	0.92	0.00	SD/AP	V3
4/2/2019	14:00		1.25	1.17	1.21	0.00	SD/PJ/JB	Replace Meter, V1
4/2/2019	14:05		1.50	1.11	1.15	0.00	SD/PJ/JB	V2
4/2/2019	14:10		1.25	1.27	1.35	0.00	SD/PJ/JB	V3
4/3/2019	9:17						SD/PJ/JB	Download Meter, Restore Communication
4/22/2019	12:14		1.50		1.17	0.00	SD/PJ/JB	Change Battery, V1
5/6/2019	14:35	1.48	1.50	1.28	1.43	0.00	SD/PJ/JB	V1
5/6/2019	14:38	1.59	1.50	1.33	1.41	0.00	SD/PJ/JB	V3
5/7/2019	13:13	1.55	1.50	1.31	1.37	0.00	SD/PJ/JB	V1
5/13/2019	16:06		2.00		1.96	0.00	SD/PJ	V1
5/29/2019	14:50		1.75		1.34	Trace	SD/JB	Change Battery, Download Meter, V1
6/4/2019	12:26		1.50		1.45	0.00	LR/PJ/JB	V1
6/17/2019	12:00						SD/PJ/DC	Could not access- manhole was paved over
6/24/2019	11:25	1.84	1.75	1.91	1.78	0.00	DM/PJ/DC	Replace Antena, Change Battery, V1
7/2/2019	12:20		1.75		1.61	0.00	SD/PJ/DC	V1

7/8/2019	13:00						SD/PJ/DC	Change Battery, Download Meter, Restore Communication
7/10/2019	9:14		2.00		1.76	0.00	LR/PJ/DC	Download Meter, V1
7/16/2019	11:15		1.75		1.86	0.00	SD/PJ	V1
7/22/2019	13:00		1.75		1.88	0.00	SD/PJ/DC	Change Battery, V1
8/5/2019	13:50		1.50		1.48	0.00	LP/PJ	V1
8/12/2019	12:25		1.50		1.89	0.00	SD/PJ	V1
8/19/2019	10:43		1.50		1.51	0.00	DM/PJ	V1
8/26/2019	11:55		1.75		1.96	0.00	LP/AP/PJ	V1
8/26/2019	12:00		1.75		1.93	0.00	LP/AP/PJ	V2
9/3/2019	13:33		1.75		1.84	0.00	SD/AP/PJ	V1
9/9/2019	12:44		1.25		1.35	0.00	SD/PJ	Change Battery, V1
9/16/2019	12:08		2.00		1.45	Trace	SD/DL	V1
9/18/2019	10:13						SD/DL	Gravel found at Sensor-Scrub/Clear Sensor
9/24/2019	10:37	1.97	1.75	1.52	1.37		SD/PJ/DL	Change Battery, V1
9/24/219	10:49	1.65	1.50	1.21	1.35		SD/PJ/DL	V2
9/30/2019	14:02		2.00		1.46	0.00	SD/DL	V1
10/1/2019	10:07		1.75		1.62	0.00	Sd/PJ/DL	Change Battery, V1
10/2/2019	14:29						LP/MD	Restore Communitcation
10/10/2019	12:35						GM/CP	Change Battery
10/15/2019	13:53		1.75		1.59	0.00	SD/AP	V1
10/28/2019	11:22		1.75		1.61	0.00	SD/AP	Change Battery, V1
11/19/2019	13:31		1.25		1.21	0.00	SD.MH	Change Battery, V1
12/3/2019	9:26		1.75		1.38	0.00	Sd/MH	Change Battery, V1
12/10/2019	11:15						SD/AP	Change Battery
12/19/2019	10:00						SD/MH	Change Battery
12/31/2019	8:44		1.25		1.39	0.00	SD/MH	Change Battery, V1
1/8/2020	11:43	1.66	1.75	1.89	1.78	0.00	SD/DW	Change Battery, V1
1/15/2020	9:06						SD/DW	Change Battery

1/22/2020	9:40		1.75		2.32	0.00	SD/DW	Change Battery, V1
1/27/2020	12:44		1.50		1.60	0.00	SD/DW	Change Battery, V1
2/4/2020	10:48		2.00		1.42	0.00	SD/DW	Change Battery, V1
2/11/2020	14:04						SD/DW	Change Battery
3/16/2020	16:05		2.25		1.13	0.00	SD/JP	V1
5/18/2020	14:07		1.75		1.61	0.00	SD/JP/AE	V1
6/24/2020	11:24		1.50		1.83	0.00	SD/JP/AE	V1
7/14/2020	14:58		1.50		1.46	0.00	SD/JP/AE	V1
7/14/2020	15:26		1.75		1.63	0.00	SD/JP/AE	V2
7/23/2020	9:38						SD/JP/AE	Change Battery
8/5/2020	9:46						SD/JP/AE	Replace Antenna
8/10/2020	15:30						SD/JP/AE	Replace Antenna
9/14/2020	12:26		2.50		1.50	0.00	SD/JP/AE	V1
9/21/2020	13:53		3.00		0.82	0.25	SD/JP/AE	V1
9/28/2020	12:25						SD/JP/AE	Replace Antenna
10/5/2020	10:21						LP/JP/AE	Replace Antenna
10/21/2020	10:14		1.50		1.68	0.00	SD/JP/AE	V1
10/21/2020	10:18		1.50		1.52	0.00	SD/JP/AE	V2
10/21/2020	10:21		1.50		1.63	0.00	SD/JP/AE	V3, Remove

Site Name/Manhole # RCA-RCB 049-3 Primary: X Alternate: ☐ Grade: ☐

Investigation Date: 1/22/2019 Time: 12:30 Crew Members: GM/CP

Installation Date: 2/27/2019 Time: 12:00 Crew Members: SD/DN

Address/Location: Intersection of Hamilton NW and Capital St. NW (Near11 Hamilton Street NW)

Latitude: 38.9533 ° Longitude: -77.0137

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity .25 ft/sec

Depth 1.25 in

Turbulence Amplitude:

- ☐ [✓ Less than 0.25”]
- ☐ 0.25” to 0.75”
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Eff
Height	15”	12”	15”	15”
Width	15”	12”	15”	15”
Material	Clay	Clay	Clay	Clay
Shape	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ No evidence visible
- ☐ Remains in pipe
- ☐ [✓ 2 ft from rim]
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: ____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 11’8” ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

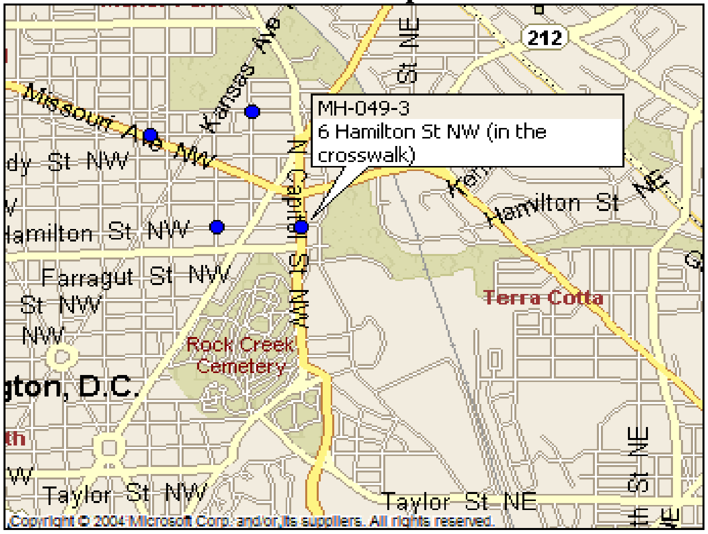
☐ Yes ☐ No ☐ Maybe

Sensor Configuration:

Level	Primary: Ultrasonic	
	Redundant: Pressure	
Velocity	Primary: Ultrasonic	
	Redundant:	
Flow Meter	Triton	
Meter Logger	Telog	

Comments: Install in the Downstream

Area Map



MH-049-3
6 Hamilton St NW (in the crosswalk)

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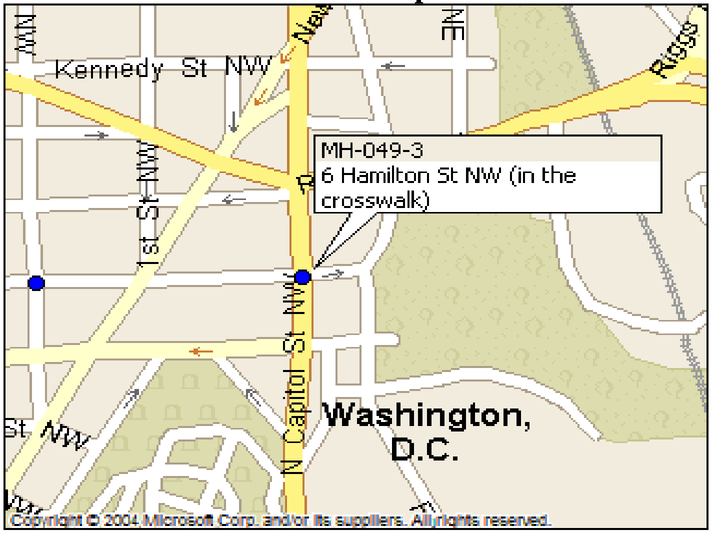
Detail Map



MH-049-3
6 Hamilton St NW (in the crosswalk)

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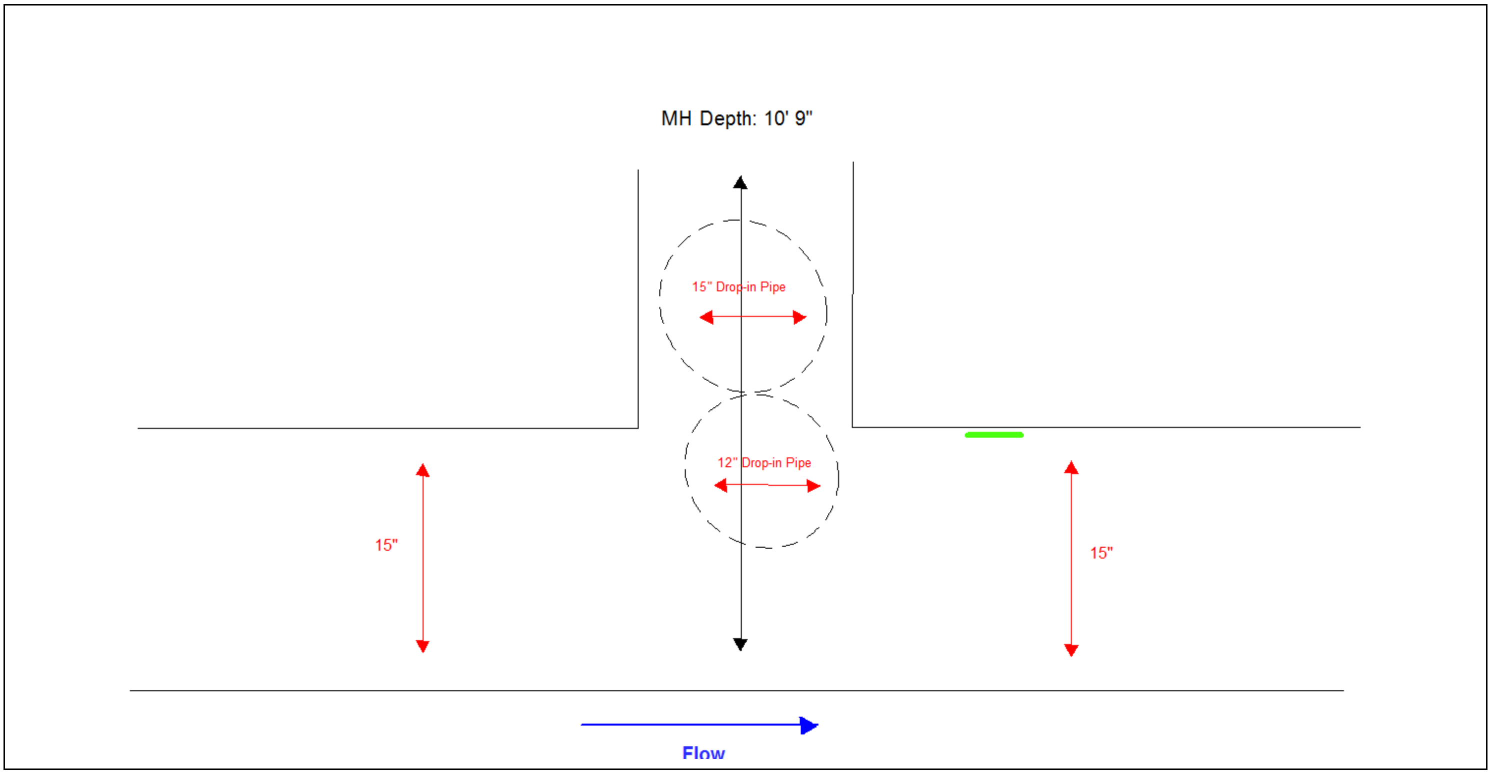
View from top of MH

Site Overview

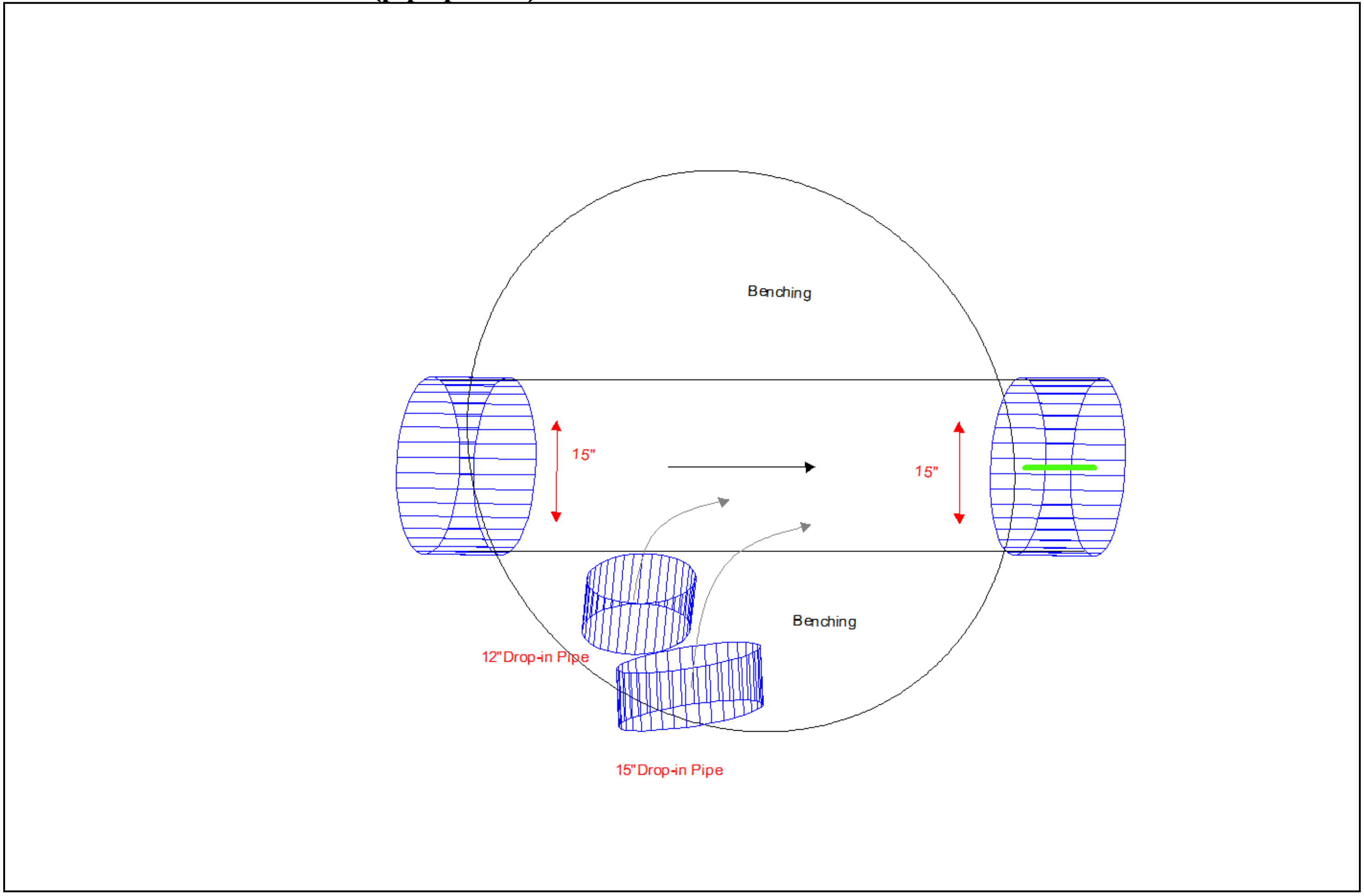
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)



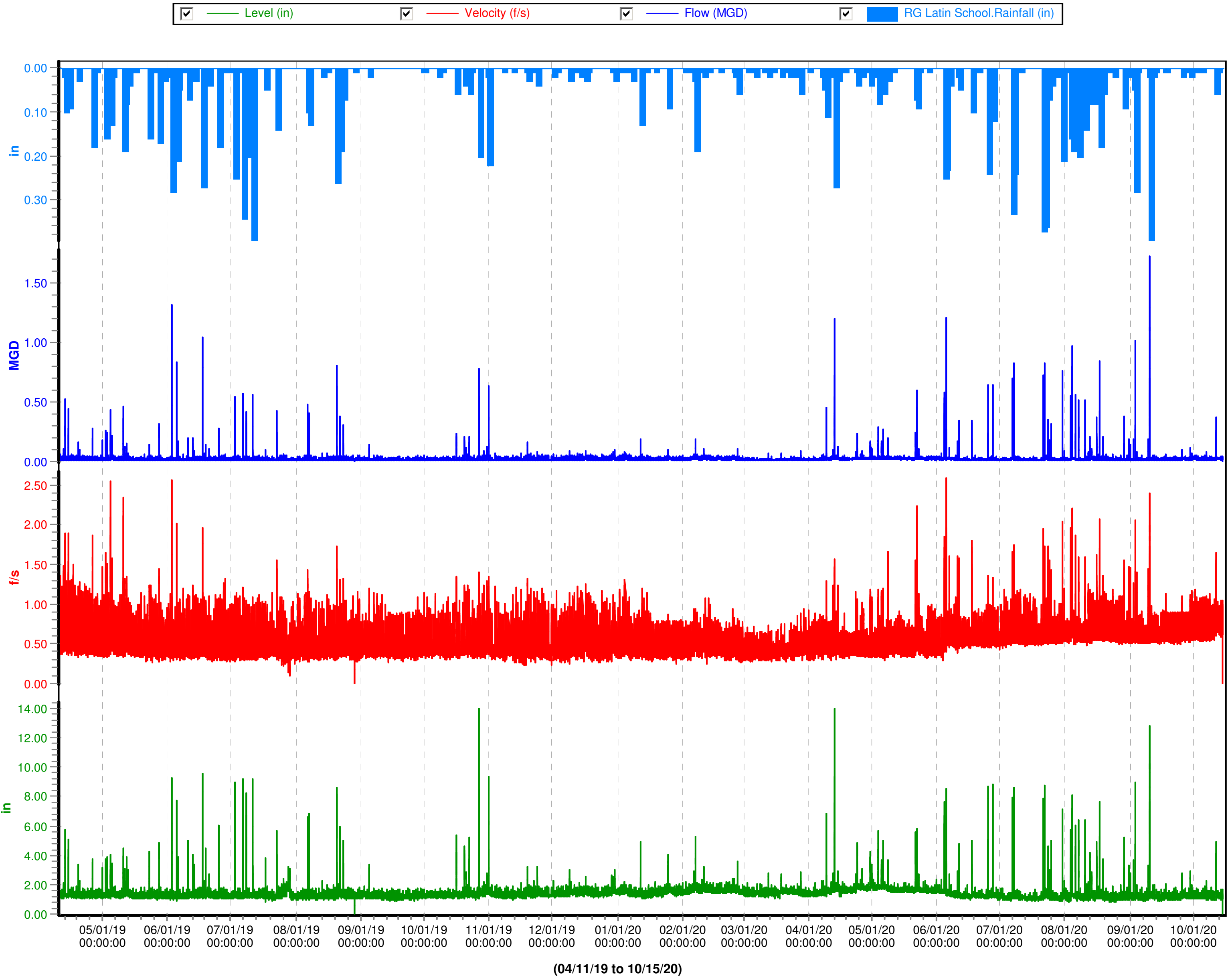
Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.

049-3
(15" SEWER, D/S OF STORM CONNECTIONS)

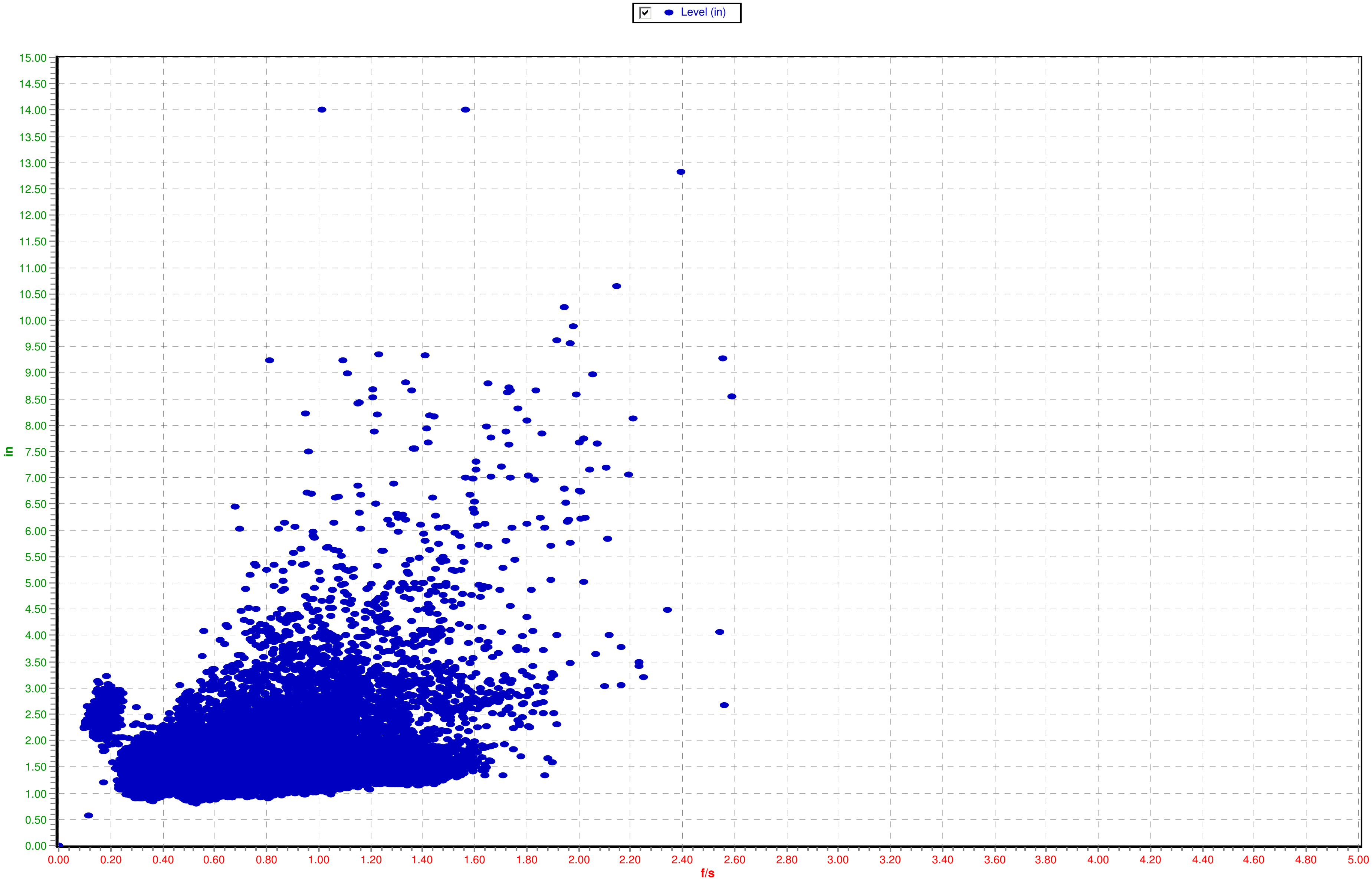
RCA 049-3

Intersection of Hamilton St NW and Capital St. NW - Pipe Diameter (in): 15



RCA 049-3 - Intersection of Hamilton St NW and Capital St. NW

Pipe Diameter (in): 15



(03/01/19 to 10/15/20)

Site #	RC-A 049-3							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
2/27/2019	13:15	1.17	1.25	1.47	1.31	0.00	SD/DN	Install, V1
2/27/2019	13:20	1.25	1.25	1.29	1.37	0.00	SD/DN	V2
2/27/2019	13:25	1.24	1.25	1.35	1.26	0.00	SD/DN	V3
2/28/2019	9:00						SD/DN	Restore Lost Communication
3/6/2019	13:58		1.75		0.59	0.00	DM/NM	Replace Logger, V1
3/6/2019	15:18		1.50		0.89	0.00	DM/NM	V2
3/12/219	11:53	1.13	1.25	1.19	1.09	0.00	SD/DN	V1
4/17/2019	16:27	1.24	1.25	0.55	0.61	0.00	DM/PJ/JB	V1
5/30/2019	11:46		1		0.73	0.00	SD/PJ	V1
6/5/2019	8:20		1.25		1.32	0.00	LR/PJ/JB	V1
6/19/2019	8:50		1.25		0.83	0.00	SD/PJ/DC	*V1*
6/24/2019	14:31		1.00		0.45	0.00	DM/PJ/DC	v1
7/10/2019	11:33		1.25		0.67	0.00	LR/PJ/DC	V1
7/10/2019	11:43		1.25		0.55	0.00	LR/PJ/DC	V2
7/15/2019	16:35						SD/PJ	Replace Antenna
7/29/2019	12:02		2.50		0.21	0.00	SD/PJ/DC	Download Meter, V1
8/5/2019	15:40		1.00		0.71	0.00	LP/PJ	V1
8/12/2019	16:00		1.25		0.80	0.00	SD/PJ	V1
8/19/2019	15:30		1.25		0.82	0.00	DM/PJ	V1
8/26/2019	14:48		1.25		0.69	0.00	LP/AP/PJ	V1
8/26/2019	14:52		1.25		0.77	0.00	LP/AP/PJ	V2
9/3/2019	16:00		1.00		0.44	0.00	SD/AP/PJ	V1
9/9/2019	14:40		1.00		0.48	0.00	SD/PJ	Replace Antenna, V1
11/12/2019	11:40		1.25		0.53	0.00	SD/AP	Repalce Antenna, V1
12/3/2019	13:07						SD/MH	Topside scrub, Download Meter
1/14/2020	10:36		1.25		0.67	0.00	SD/DW	Change Battery, V1

2/25/2020	15:20		1.25		0.52		SD/DW	V1
3/11/2020	14:15						SD/JP	could not access due to crosswalk painting
3/16/2020	13:50		1.50		0.49	0.00	SD/JP	V1
4/8/2020	9:36		1.50		0.51	0.00	SD/JP/AE	V1
4/13/2020	15:40	2.37	2.25	0.99	1.08	0.00	SDJP/AE	Swap sensor, V1
4/13/2020	15:52	2.46	2.50	0.79	0.81	0.00	SD/JP/AE	V2
5/5/2020	10:01						SD/JP/AE	Change Battery
6/9/2020	14:25		1.25		0.72	0.00	SD/JP/AE	V1
6/24/2020	12:18		1.00		0.61	0.00	SD/JP/AE	Change Battery, V1
7/16/2020	11:55		1.00		0.69	0.00	SD/JP/AE	V1
7/27/2020	15:30						SD/JP/AE	Replace Antenna
8/19/2020	13:57						SD/JP/AE	Download
8/26/2020	9:15						SD/JP/AE	Download
8/31/2020							SD/JP/AE	Download
9/14/2020	13:18		1.25		0.73	0.00	SD/JP/AE	V1
10/19/2020	14:45		1.00		1.01	0.00	SD/JP/AE	V1
10/19/2020	14:48		1.25		0.86	0.00	SD/JP/AE	V2
10/19/2020	14:51		1.00		0.93	0.00	SD/JP/AE	V3, Remove

Site Name/Manhole # RCA-RCB 049-4 Primary: ☒ Alternate: ☐ Grade: ☐

Investigation Date: 1/22/2019 Time: 13:10 Crew Members: GM/CP

Installation Date: 2/27/2019 Time: 15:26 Crew Members: SD/DN

Address/Location: Intersection of 1st St. NW and Madison St. NW

Latitude: 38.9587 ° Longitude: -77.0117

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity .50 ft/sec

Depth .25 in

Turbulence Amplitude:

- ☐ [✓ Less than 0.25”]
- ☐ 0.25” to 0.75”
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Inf 4	Inf 5	Eff
Height	10”	15”	12”	10”	12”	21”
Width	10”	15”	12”	10”	12”	21”
Material	Clay	Clay	Clay	Clay	Clay	Clay
Shape	Round	Round	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ No evidence visible
- ☐ Remains in pipe
- ☐ [✓ 3 ft from rim]
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 10’10”ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

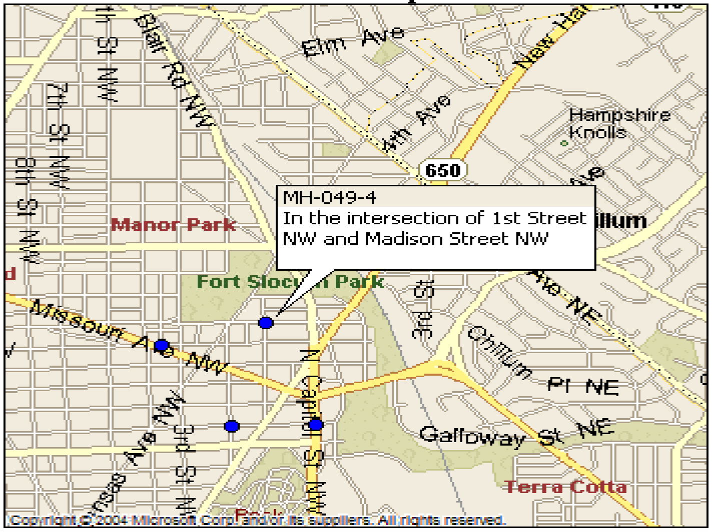
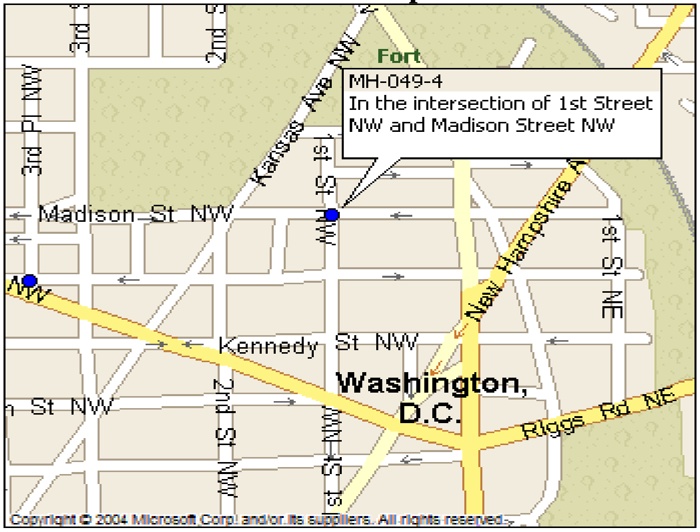
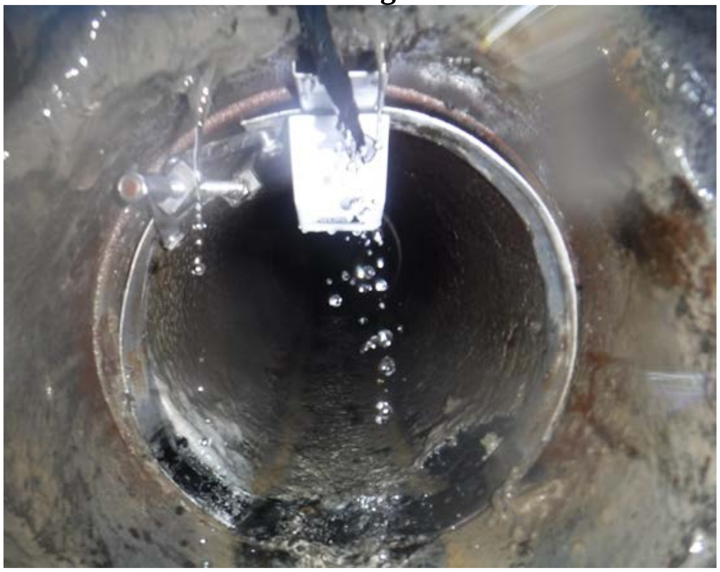
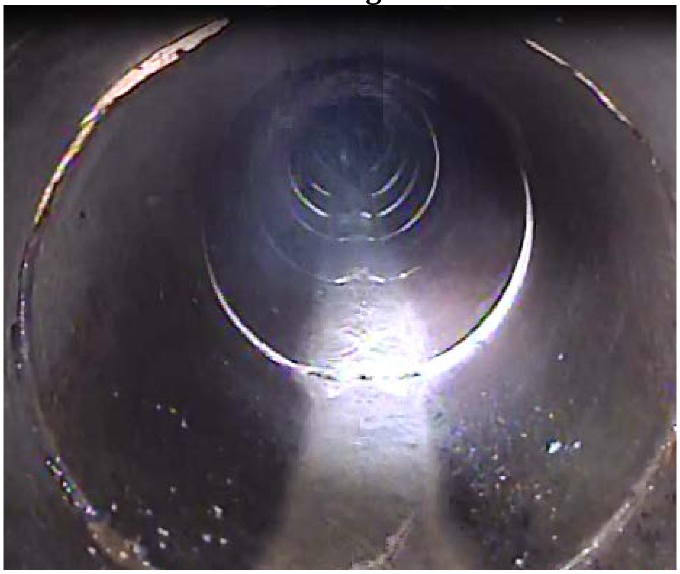
Crew Member: Can you maintain this site?

☐ Yes ☐ No ☐ Maybe

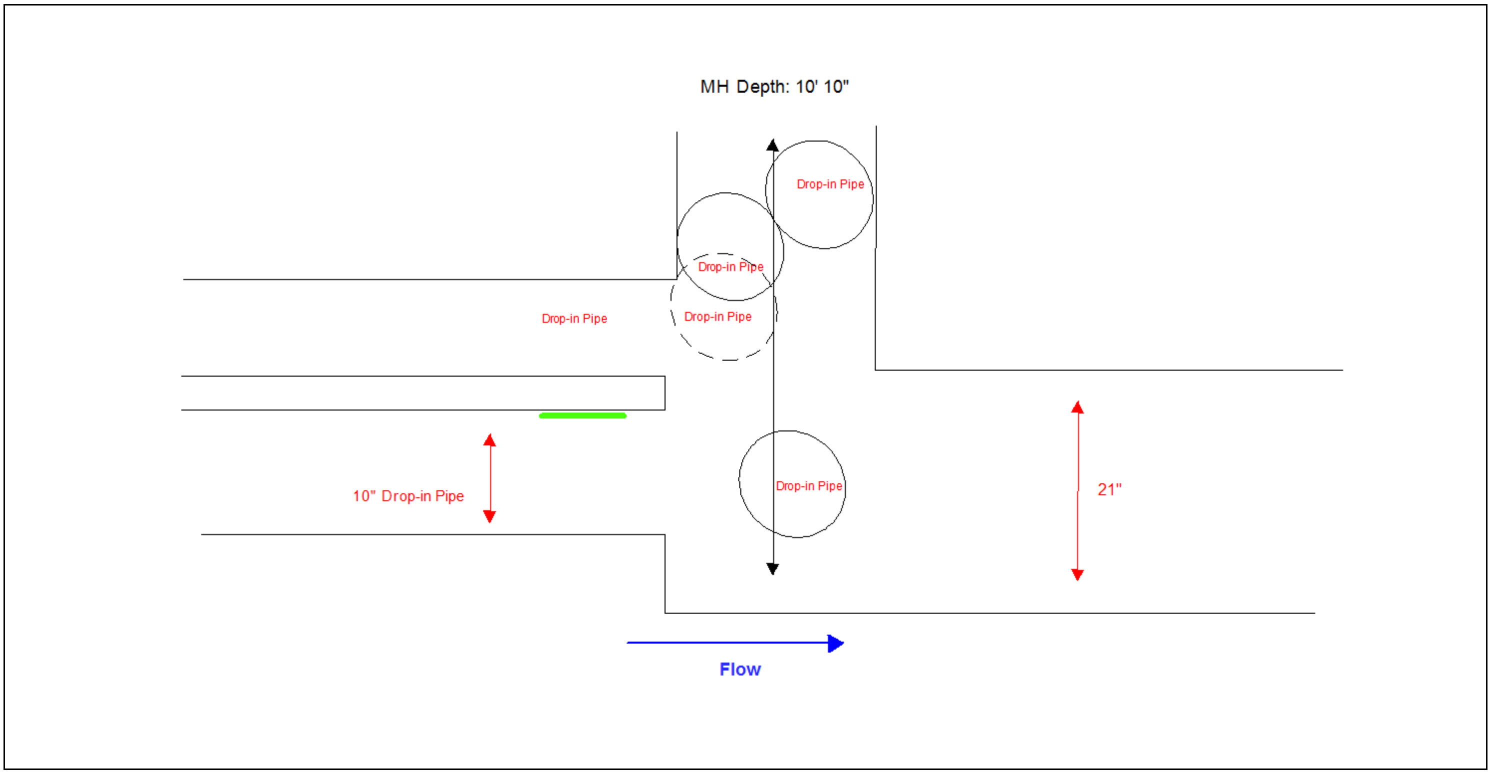
Sensor Configuration:

Level	Primary: Ultrasonic
	Redundant: Pressure
Velocity	Primary: Ultrasonic
	Redundant:
Flow Meter	Triton
Meter Logger	Telog

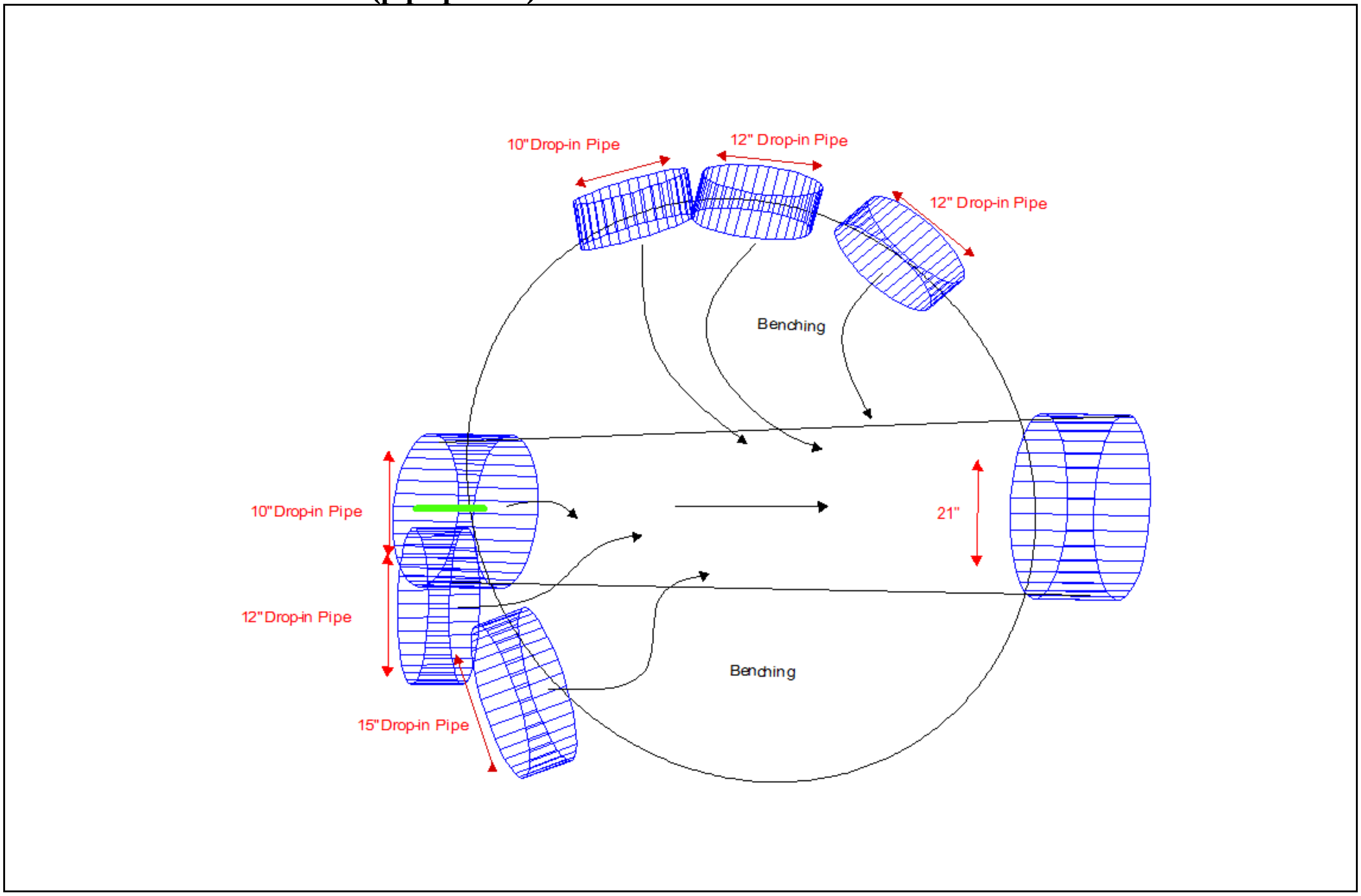
Comments: Installed in the upstream

Area Map  MH-049-4 In the intersection of 1st Street NW and Madison Street NW Copyright © 2004 Microsoft Corp. and/or its suppliers. All rights reserved.	**Detail Map**  MH-049-4 In the intersection of 1st Street NW and Madison Street NW Copyright © 2004 Microsoft Corp. and/or its suppliers. All rights reserved.
View from top of MH 	**Site Overview** 
View of flow through influent line 	**View of flow through effluent line** 

Dimensional Structure Profile View (profile sketch showing location of sensors)

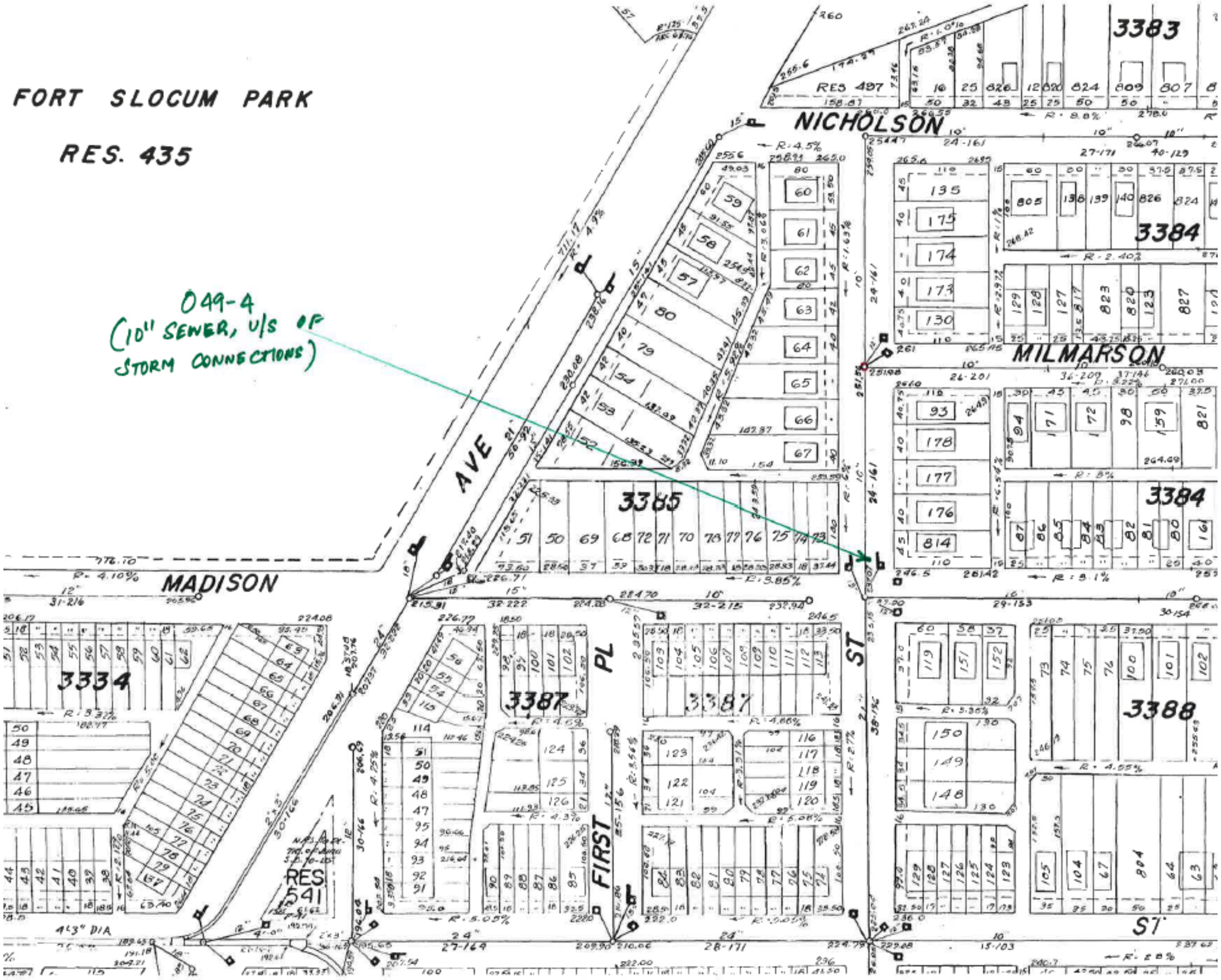


Dimension Structure Detail (pipe profile)



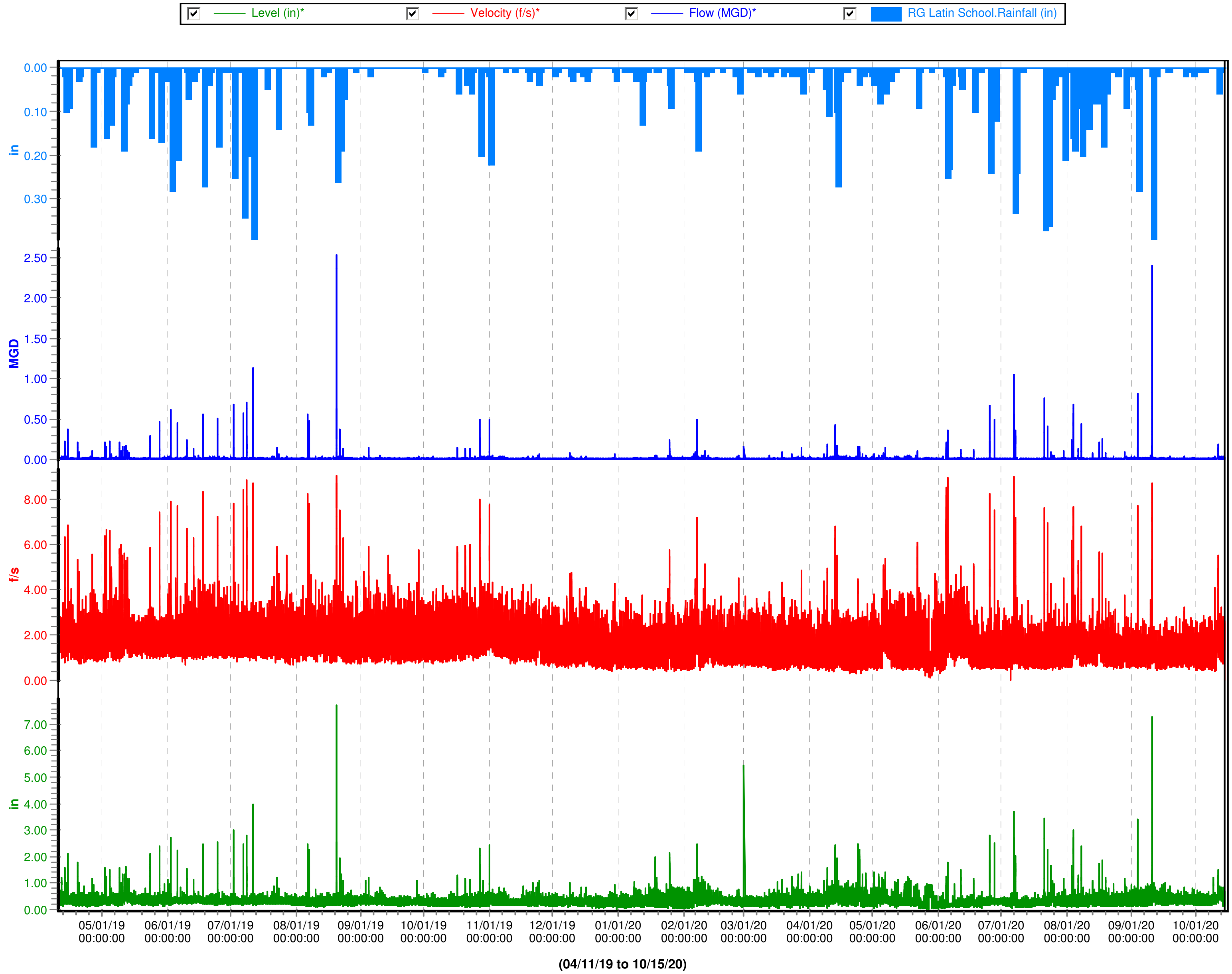
Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.



RCA 049-4

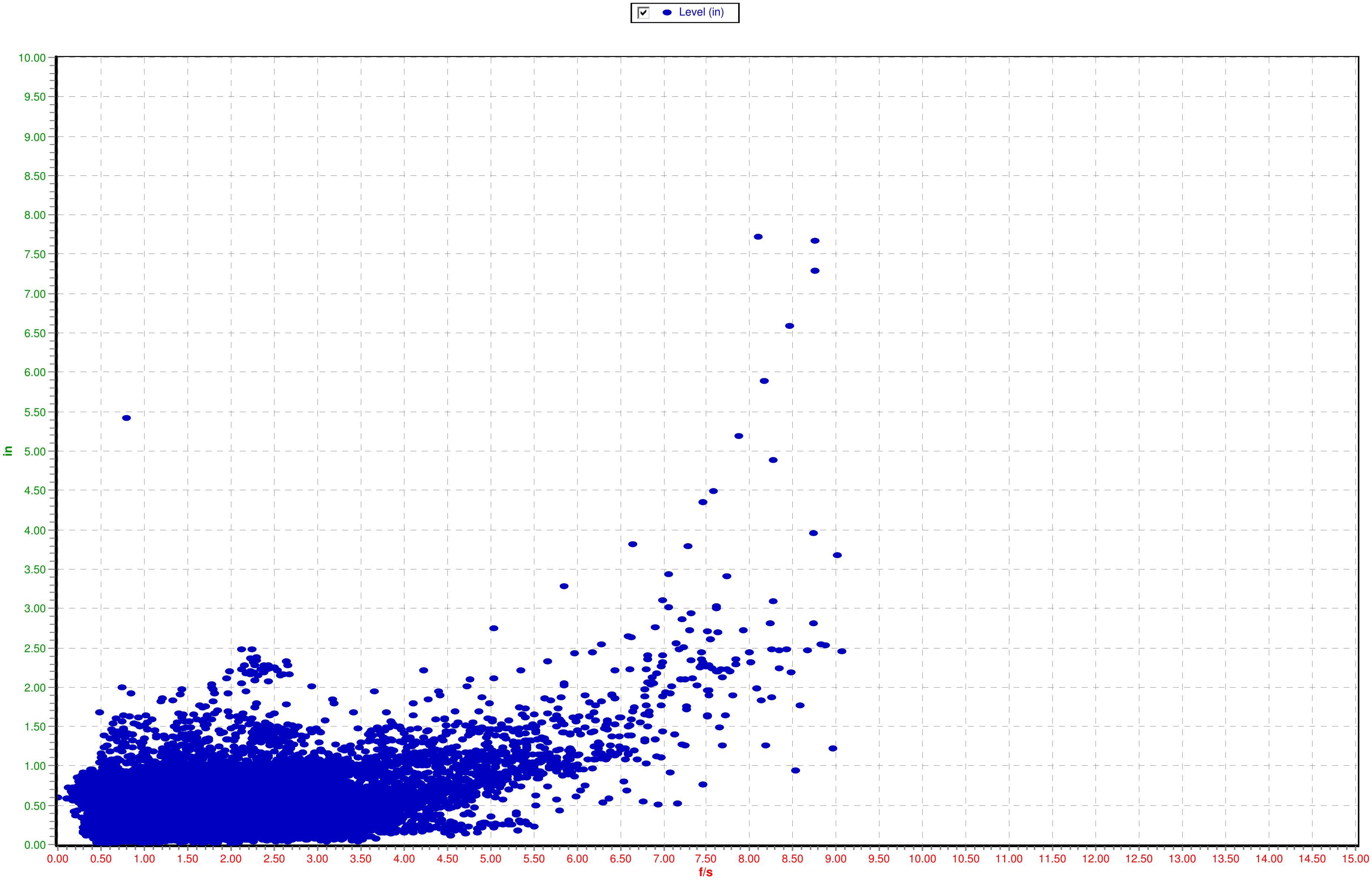
Intersection of 1st St NW and Capital St NW - Pipe Diameter (in): 10



(04/11/19 to 10/15/20)

RCA 049-4 - Intersection of 1st St NW and Capital St NW

Pipe Diameter (in): 10



(03/01/19 to 10/15/20)

Site #	RC-A 049-4							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
2/27/2019	15:26	0.34	0.25	1.61	1.48	0.00	SD/DN	Install, V1
2/27/2019	15:31	0.33	0.25	1.71	1.72	0.00	SD/DN	V2
2/27/2019	15:36	0.39	0.25	1.49	1.41	0.00	SD/DN	V3
3/6/2019	15:36		0.25		1.75	0.00	DM/NM	V1
3/7/2019	14:00						DM/NM	Download Meter
3/12/2019	12:17						SD/DN	Download Meter
3/20/2019	16:33		0.50		1.93	0.00	DM/AP	Download Meter, V1
3/27/2019	10:20		0.25		2.17	0.00	GM/AP	Replace Meter, V1
3/28/2019	9:45	0.22	0.25	1.64	1.79	0.00	SD/AP	V1
4/1/2019	16:10	0.36	0.25	1.35	1.47	0.00	SD/PJ	V1, Download Meter
4/17/2019	13:46						DM/PJ	Download Meter
5/1/2019	9:01		0.50		1.81	0.00	SD/PJ/JB	V1
5/13/2019	15:06						SD/PJ	Change Battery
5/15/2019	16:00						SD/PJ/JB	DL Meter, Change Battery
5/29/2019	16:29		0.25		1.34	0.00	SD/JB	Replace Meter
5/30/2019	12:19		0.25		1.78	0.00	SD/PJ	V1
6/3/2019	16:24		0.25		1.01	0.00	LR/PJ	V1
6/11/2019	15:46		0.50		1.48	0.00	SD/PJ/DC	V1, Change Battery
6/19/2019	8:02		0.25		2.32	0.00	SD/PJ/DC	V1
6/24/2019	13:39	0.31	0.50	1.26	1.35	0.00	DM/PJ/DC	V1, Change Battery
7/8/2019	16:36		0.25		1.77	0.00	SD/PJ/DC	V1, Change Battery
7/17/2019	9:25		0.25		1.54	0.00	SD/PJ	V1
7/22/2019	14:58		0.25		1.60	0.00	SD/PJ/DC	V1
7/23/2019	13:00						SD/PJ/DC	
7/29/2019							SD/PJ/DC	Change Battery
8/7/2019	8:55		0.50		1.57	0.00	LP/PJ	V1

8/12/2019	15:28		0.25		1.62	0.00	SD/PJ	V1, Change Battery
8/19/2019	12:48		0.25		1.52	0.00	DM/PJ	V1
8/26/2019	14:20		0.25		1.33	0.00	LP/AP/PJ	V1
8/26/2019	14:23		0.25		1.29	0.00	LP/AP/PJ	V2
9/3/2019	15:42		0.25		1.30	0.00	SD/AP/PJ	V1, Change Battery
9/23/2019	14:55		0.25		1.50	0.00	SD/PJ/DL	Change Battery, V1
10/15/2019	16:00		0.25		1.25	0.00	SD/AP	Change Battery, V1
11/12/2019	13:20						SD/AP	Change Battery
11/19/2019	15:32	0.33	0.25		1.21	0.00	SD/MH	Replace Redundant Depth Sensor
12/3/2019	11:08		0.25		1.17	0.00	SD/MH	Replace Meter
12/18/2019	15:53						SD/MH	Restore Communication
12/19/2019	9:24	0.38	0.25	1.22	1.14	0.00	SD.MH	Change Battery,V1
1/6/2020	16:31						SD/DW	Replace antenna
1/14/2020	13:03						SD/DW	Change Battery
1/22/2020	14:44	0.39	0.25	1.08	0.99	0.00	SD/DW	V1
1/27/2020	14:21						SD/DW	Replace Antenna
2/11/2020	13:00	0.59	0.50	2.34	2.23	0.00	SD/DW	Change Battery, Change Sensor V1
2/11/2020	13:05	0.55	0.50	2.28	2.22	0.00	SD/DW	V2
2/11/2020	13:10	0.61	0.50	2.31	2.16	0.00	SD/DW	V3
2/18/2020	14:05	0.39	0.25	0.91	1.26	0.00	SD/DW	V1
2/18/2020	14:10	0.44	0.25	0.99	1.09	0.00	SD/DW	V2
2/25/2020	16:46	0.39	0.50	0.86	0.90	0.00	SD/MH	V1
3/4/2020	11:19	0.39	0.25	1.01	0.98	0.00	SD/JP	V1
3/11/2020	15:50	0.39	0.25	1.08	1.09	0.00	SD/JP	Swap meter, V1
3/11/2020	15:55	0.35	0.25	1.05	1.03	0.00	SD/JP	V2
3/11/2020	16:00	0.39	0.25	1.11	1.19	0.00	SD/JP	V3
3/16/2020	16:55						SD/JP	Change Battery
3/24/2020	9:41						SF/JP/A	Change Battery

4/13/2020	14:16						SD/JP/AE	Change Battery
4/28/2020	10:28						SD/JP/AE	Change Battery
5/5/2020	9:07						SD/JP/AE	Restart Battery
5/18/2020	12:15		0.50		1.47	0.00	SD/JP/AE	V1
6/2/2020	11:00						SD/JP/AE	Change Battery
6/15/2020	15:14	0.44	0.25	1.38	1.27	0.00	SD/JP/AE	V1
6/16/2020	10:07						SD/JP/AE	DL meter
7/2/2020	14:28						SD/JP/AE	Change Battery
7/8/2020	15:55						SD/JP/AE	Change Battery
7/9/2020	14:22						SD/JP/AE	Restore Communication
7/14/2020	12:26						SD/JP/AE	Change Battery
8/3/2020	11:12						SD/JP/AE	Change Battery
8/10/2020							SD/JP/AE	Replace antenna
8/12/2020	14:50						SD/JP/AE	Download Meter
8/24/2020	15:13						SD/JP/AE	Change Battery
8/31/2020	13:19		0.25		1.31	0.00	SD/JP/AE	V1
9/14/2020	13:52						SD/JP/AE	Change Battery
10/5/2020	12:46						LP/JP/AE	Change Battery
10/14/2020	10:16	0.52	0.50	1.20	1.11	0.00	SD/JP/AE	V1
10/19/2020	12:14		0.50		1.18	0.00	SD/JP/AE	V1
10/19/2020	12:17		0.50		1.27	0.00	SD/JP/AE	V2
10/19/2020	12:20		0.50		1.21	0.00	SD/JP/AE	V3, remove

Site Name/Manhole # RCA 049-6 Primary: ☒ Alternate: ☐ Grade: ☐

Investigation Date: 4/9/2019 Time: 13:15 Crew Members: SD/DM

Installation Date: 4/9/2019 Time: 14:00 Crew Members: SD/DM

Address/Location: 5317 2nd St. NW

Latitude: 38.955018° Longitude: -77.013600°

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 0.00 ft/sec

Depth .25 in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Effluent
Height	12”		12”
Width	12”		12”
Material	Clay		Clay
Shape	Round		Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 13’10” ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

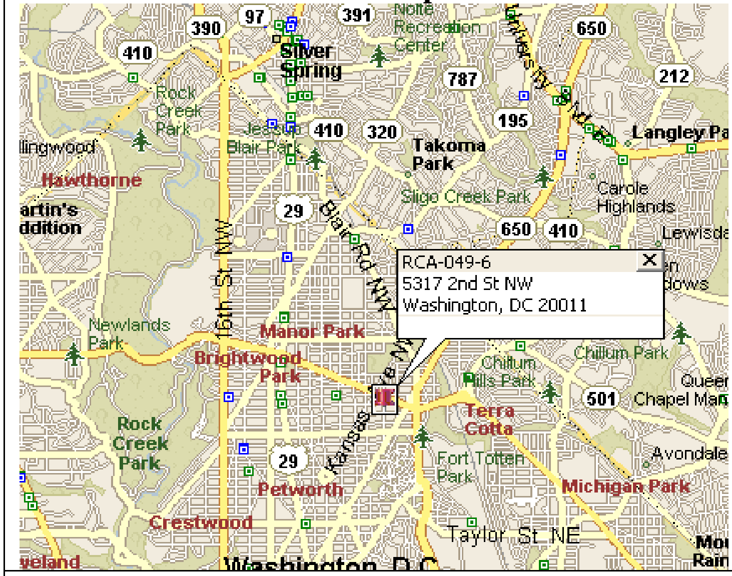
☐ Yes ☐ No ☐ Maybe

Sensor Configuration:

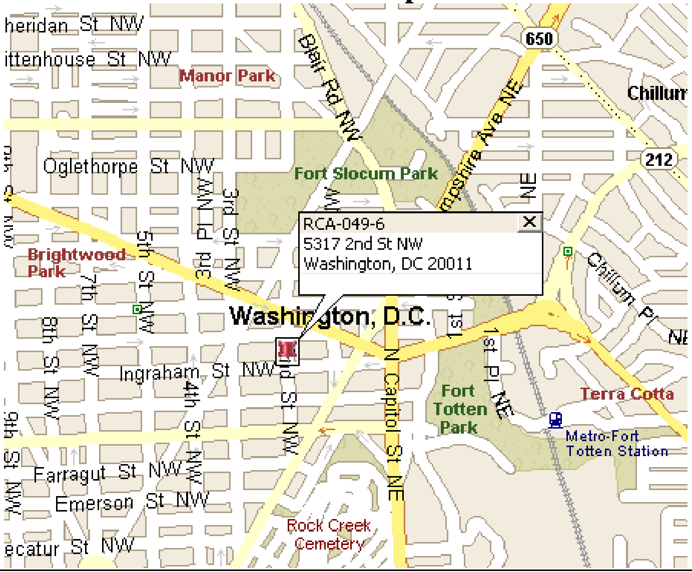
Level	Primary: Ultrasonic
	Redundant: Pressure
Velocity	Primary: Ultrasonic
	Redundant:
Meter Logger	Telog

Comments:

Area Map



Detail Map



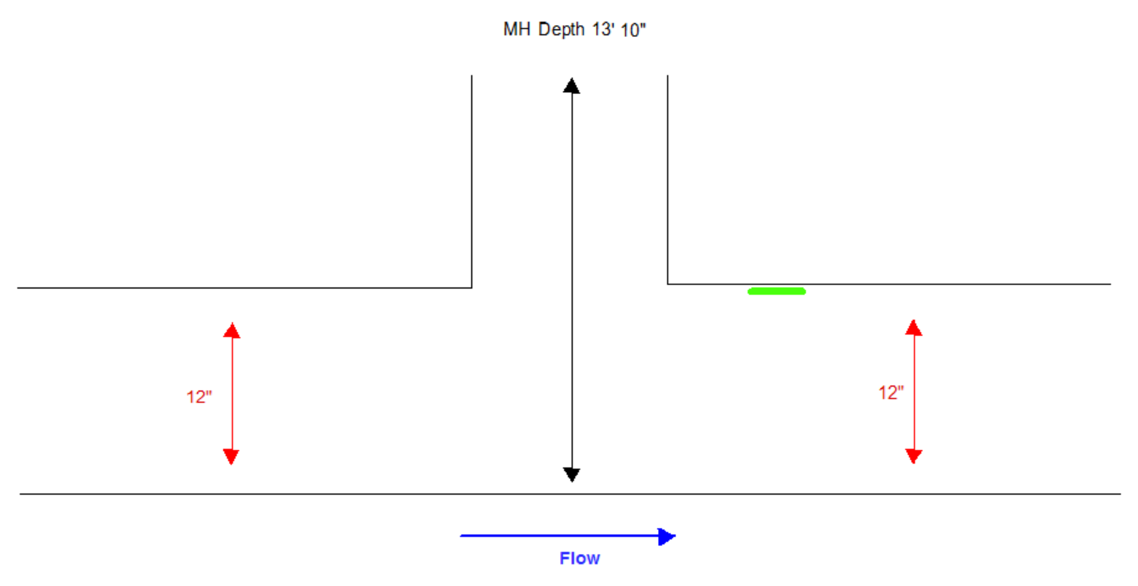
View from top of MH

Site Overview

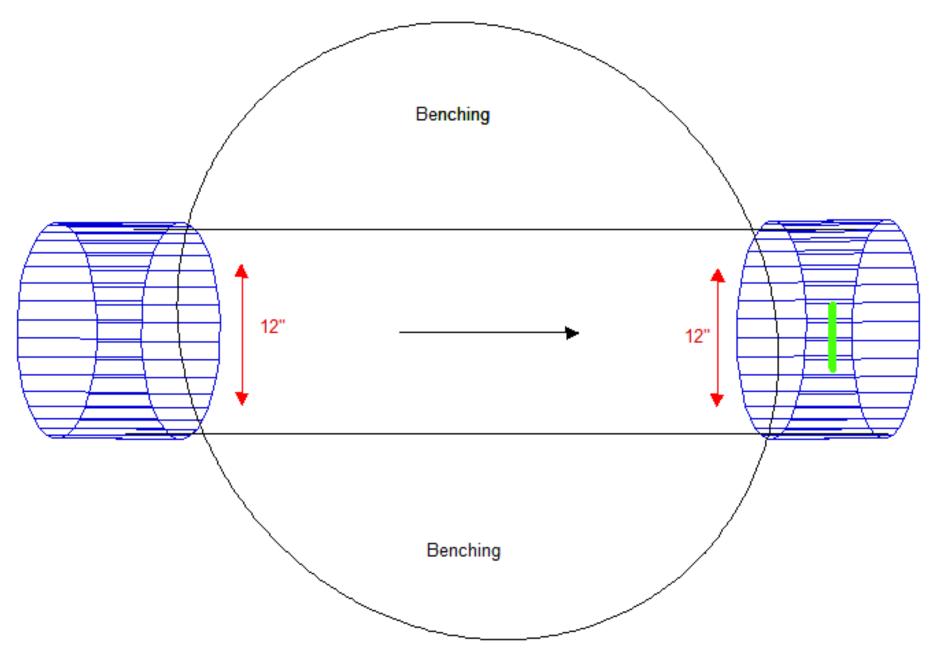
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

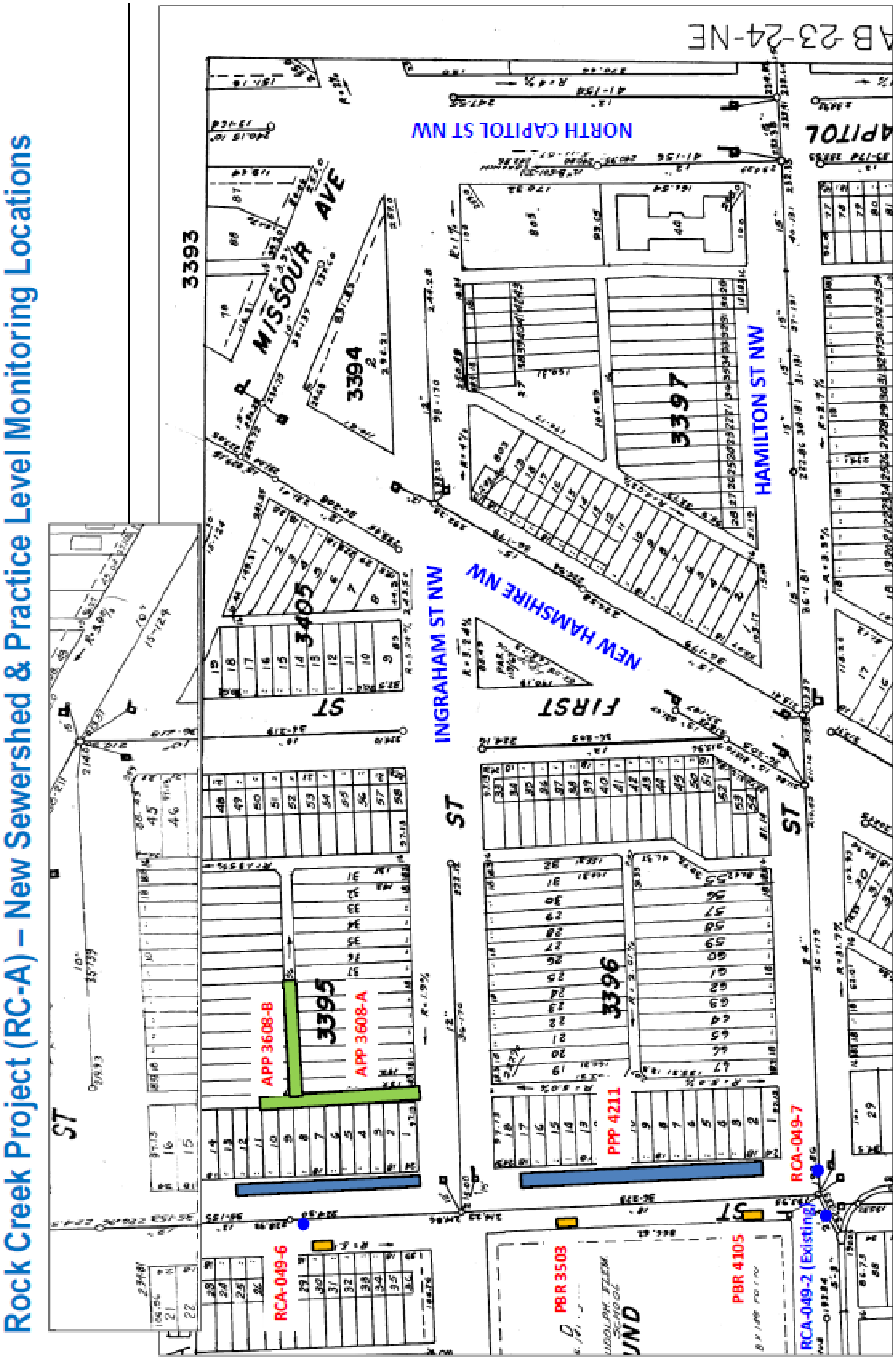


Dimension Structure Detail (pipe profile)



Site Location Plan View

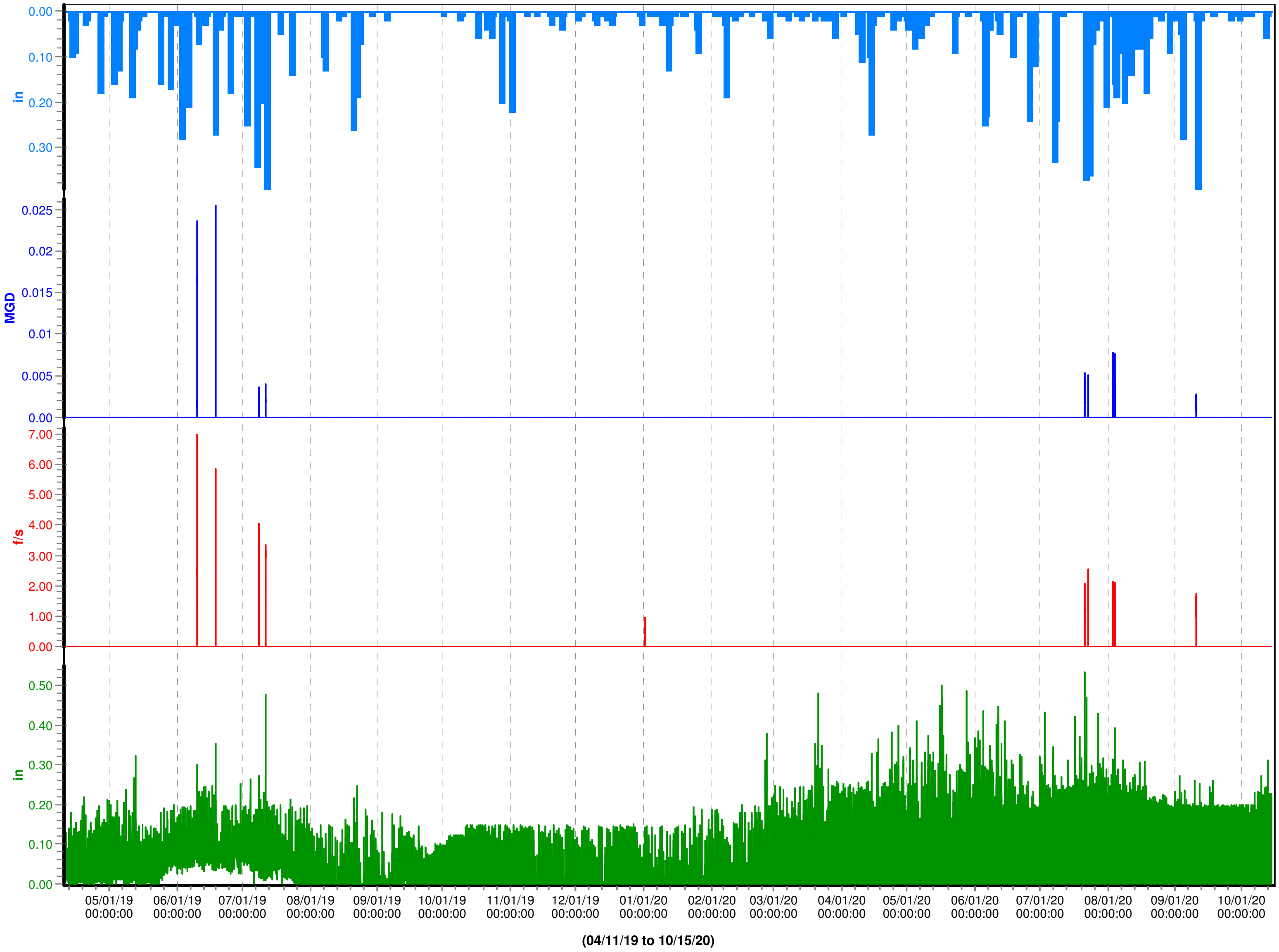
Sketch or plat showing upstream and downstream manholes, connections, and bends.



RCA 049-6

Approximately 5317 2nd St NW - Pipe Diameter (in): 12

☑ Level (in) ☑ Velocity (f/s) ☑ Flow (MGD) ☑ RG Latin School.Rainfall (in)



RCA 049-6 - Approximately 5317 2nd St NW

Pipe Diameter (in): 12

(03/01/19 to 10/15/20)

Site #	RC-A 049-6							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
4/9/2019	15:28	0.18	<0.25	0.00	0.00	0.00	SD/PJ	Install, V1
4/9/2019	15:32	0.12	<0.25	0.00	0.00	0.00	SD/PJ	V2
4/9/2019	15:37	0.16	<0.25	0.00	0.00	0.00	SD/PJ	V3
4/11/2019	12:55						SD/PJ/JB	Could not access due to car on lid
4/16/2019	10:30						DM/PJ/JB	DownL meterload
4/23/2019	8:45		<0.25		0.00	0.00	SD/PJ/JB	Restore Communication, V1
4/30/2019							SD/JB	Download Meter
5/7/2019	11:00		<0.25		0.00	0.00	SD/PJ/JB	Restore Communistion, V1
5/14/2019	9:33						SD/PJ/JB	fix antenna
6/4/2019	11:00						LR/PJ	Replace Damaged Antenna
6/11/2019	10:48						SD/PJ/DC	Download Meter
6/25/2019	10:25		0.00		0.00	0.00	DM/PJ/DC	V1
7/9/2019	11:05		<0.25		0.00	Trace	SD/PJ/DC	V1
7/30/2019	11:35		<0.25		0.00	0.00	SD/PJ/DC	V1
8/13/2019	14:48		<0.25		0.00	0.00	SD/PJ	V1
8/20/2019	8:16		<0.25		0.00	0.00	DM/PJ	V1
10/1/2019	9:14		<0.25		0.00	0.00	SD/PJ/DL	V1
10/15/2019	12:14	0.16	<0.25	0.00	0.00	0.00	SD/AP	Repalce Sensor
10/15/2019	12:17	0.13	<0.25	0.00	0.00	0.00	SD/AP	V2
12/10/2019	10:57		<0.25		0.00	0.00	SD/AP	Change Battery
1/22/2020	13:45						SD/DW	Replace antenna, Change Battery
2/18/2020	12:11						SD/DW	Could not access due to cars parked on either side of manhole
2/25/2020	9:00	0.20	0.25	0.00	0.00	0.00	SD/DW	Replace sensor,V1
2/25/2020	9:05	0.21	0.25	0.00	0.00	0.00	SD/DW	V2
2/25/2020	9:10	0.20	0.25	0.00	0.00	0.00	SD/DW	V3
3/16/2020	-							Could not access due to cars parked on either side of manhole

4/7/2020	-							Could not access due to cars parked on either side of manhole
4/29/2020	11:30		<0.25	0.00	0.00	0.00	SD/JP AE/KE	Change Battery, V1
6/23/2020	12:02		<0.25		0	trace	SD/JP/AE	V1
8/26/2020	12:30		0			0	SD/JP/AE	V1
9/1/2020	8:50						SD/JP	Change Battery
9/22/2020	8:30						SD/AE	Change Battery
10/6/2020	8:30		<0.25		0		LP/JP/AE	Change Battery, V1
10/20/2020	8:54		<0.25		0	0	SD/JP/AE	V1
10/20/2020	8:57		<0.25		0	0	SD/JP/AE	V2
10/20/2020	9:00		<0.25		0	0	SD/JP/AE	V3, Remove

Site Name/Manhole # RCA 049-7 Primary: ☐ Alternate: ☒ Grade: ☐

Investigation Date: 4/11/2019 Time: 10:00 Crew Members: SD/PJ

Installation Date: 4/11/2019 Time: 11:35 Crew Members: SD/PJ

Address/Location: Intersection of Hamilton Street NW and 2nd Street NW

Latitude: 38.9533 ° Longitude: -77.0137

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 2.43 ft/sec

Depth 0.50 in

Turbulence Amplitude:

- ☐ [✓ Less than 0.25”]
- ☐ 0.25” to 0.75”
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Inf 4	Inf 5	Eff
Height	24.75”	18”	15”	12”	15”	36”
Width	24.75”	18”	15”	12”	15”	24”
Material	Concrete	Clay	Clay	Clay	Clay	Brick
Shape	Round	Round	Round	Round	Round	Oval

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9

Site Conditions

Site Access:

- ☐ Good (no problems accessing site)
- ☐ [✓ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)]
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____ft

Manhole depth 13’10” ft

Measured from *downstream invert* to *rim*

Pipe Offset _____

Structural Integrity of Manhole:

☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change:_________ft

(detail is comments)

Crew Member: Can you maintain this site?

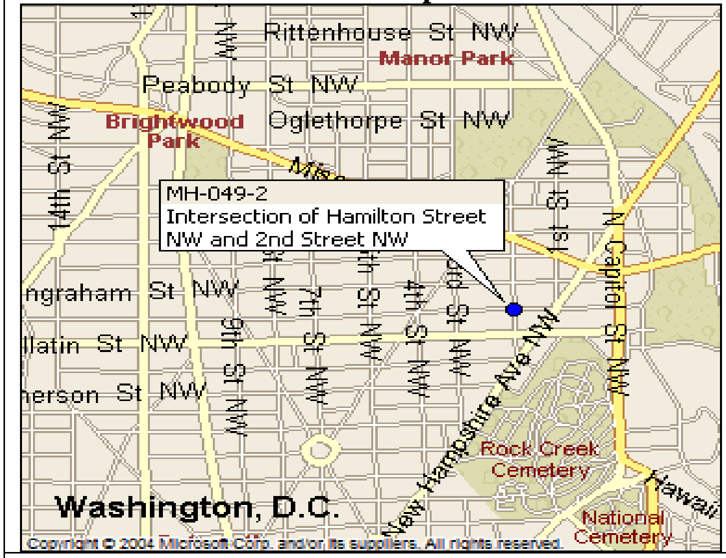
☐ Yes ☐ No ☐ Maybe

Sensor Configuration:

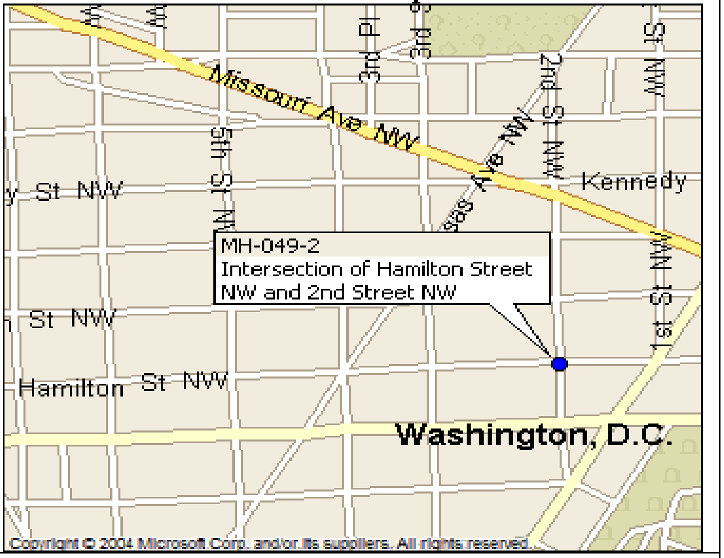
Level	Primary: Pressure
	Redundant: Ultrasonic
Velocity	Primary: Doppler
	Redundant:
Meter Logger	Telog

Comments: Sensor is installed in the 18” upstream pipe of same metering manhole of RCA 049-2 Manhole lid is damaged, Install in the Downstream

Area Map



Detail Map



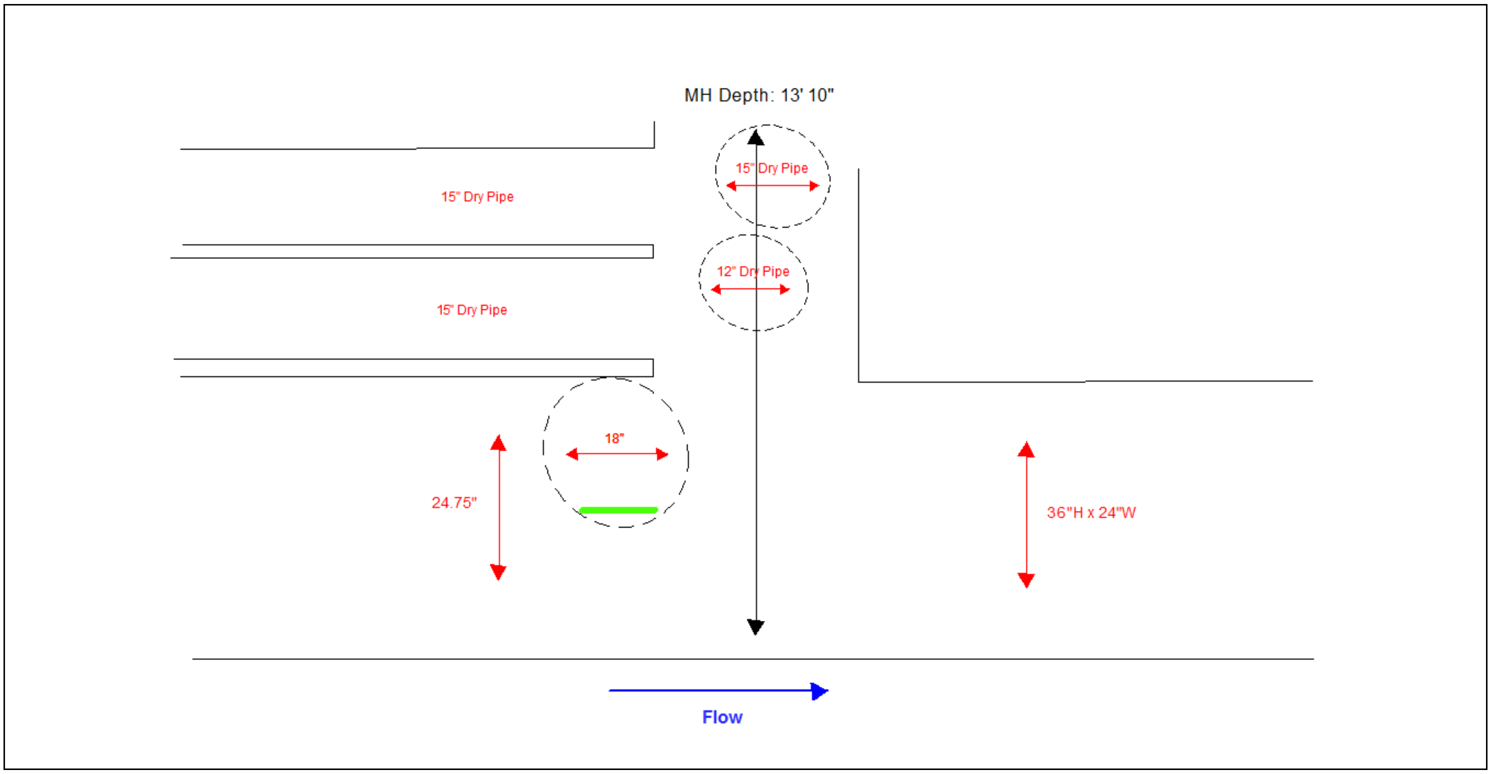
View from top of MH

Site Overview

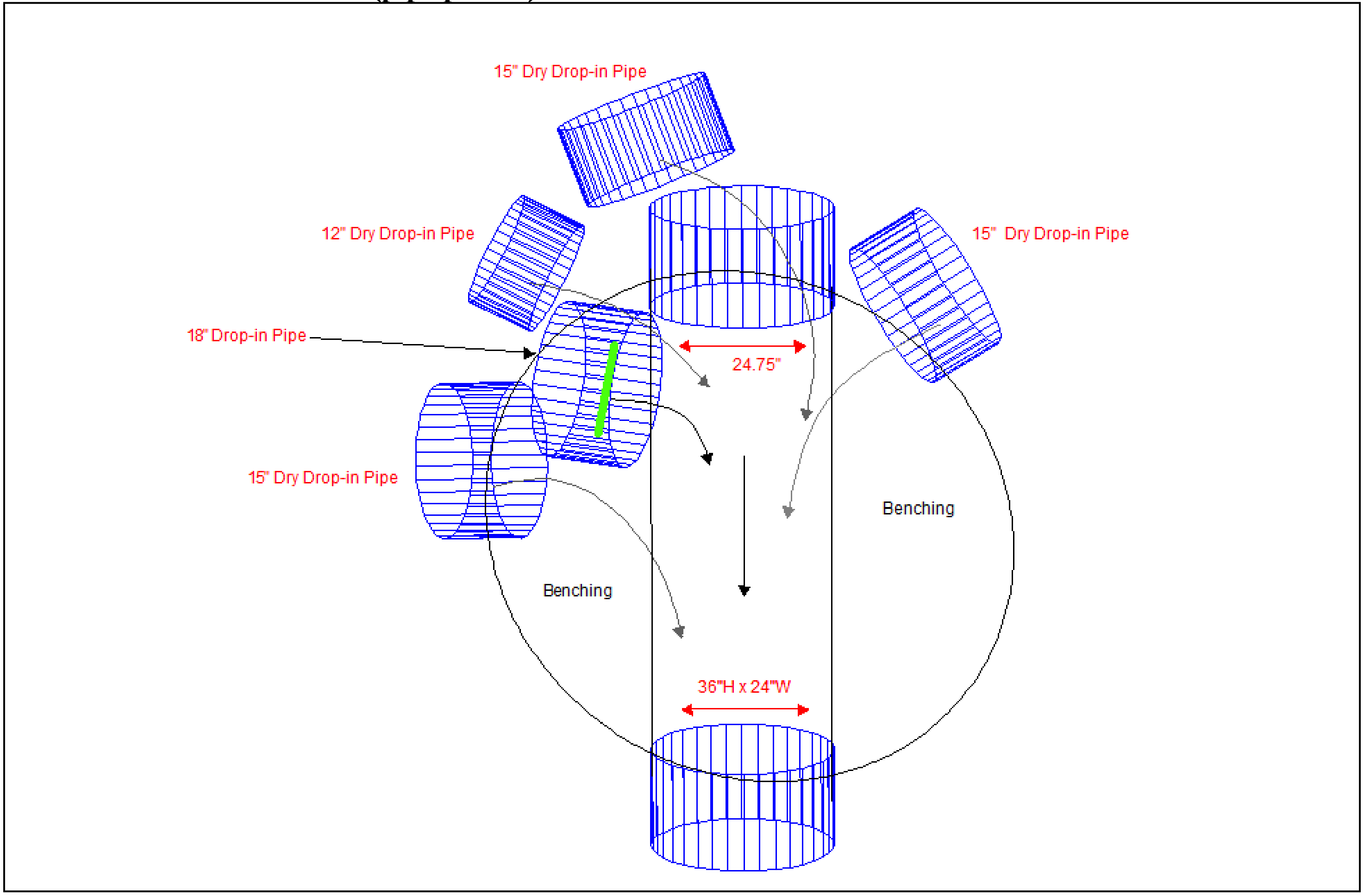
View of flow through influent line

View of flow through effluent line

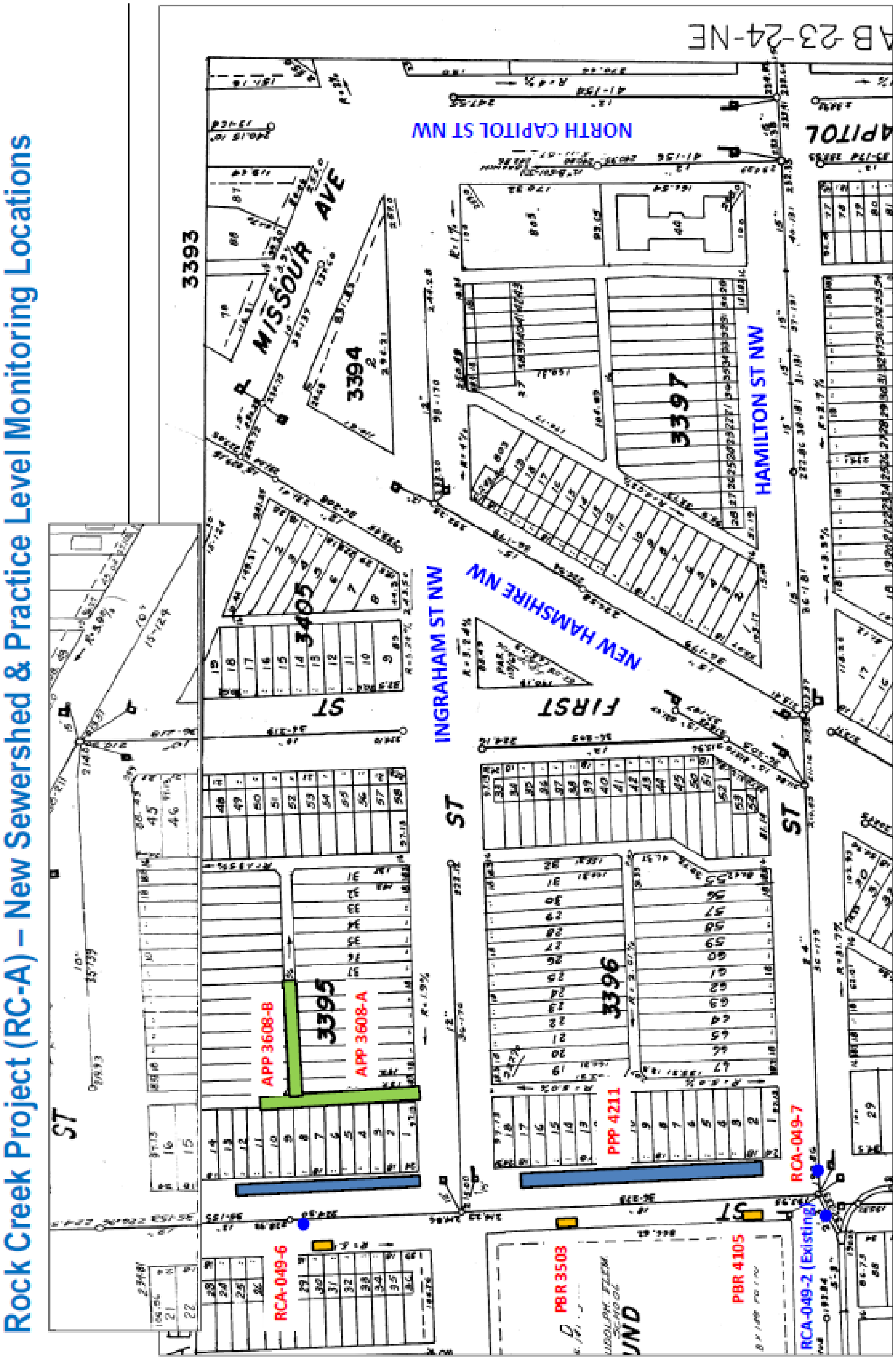
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (pipe profile)

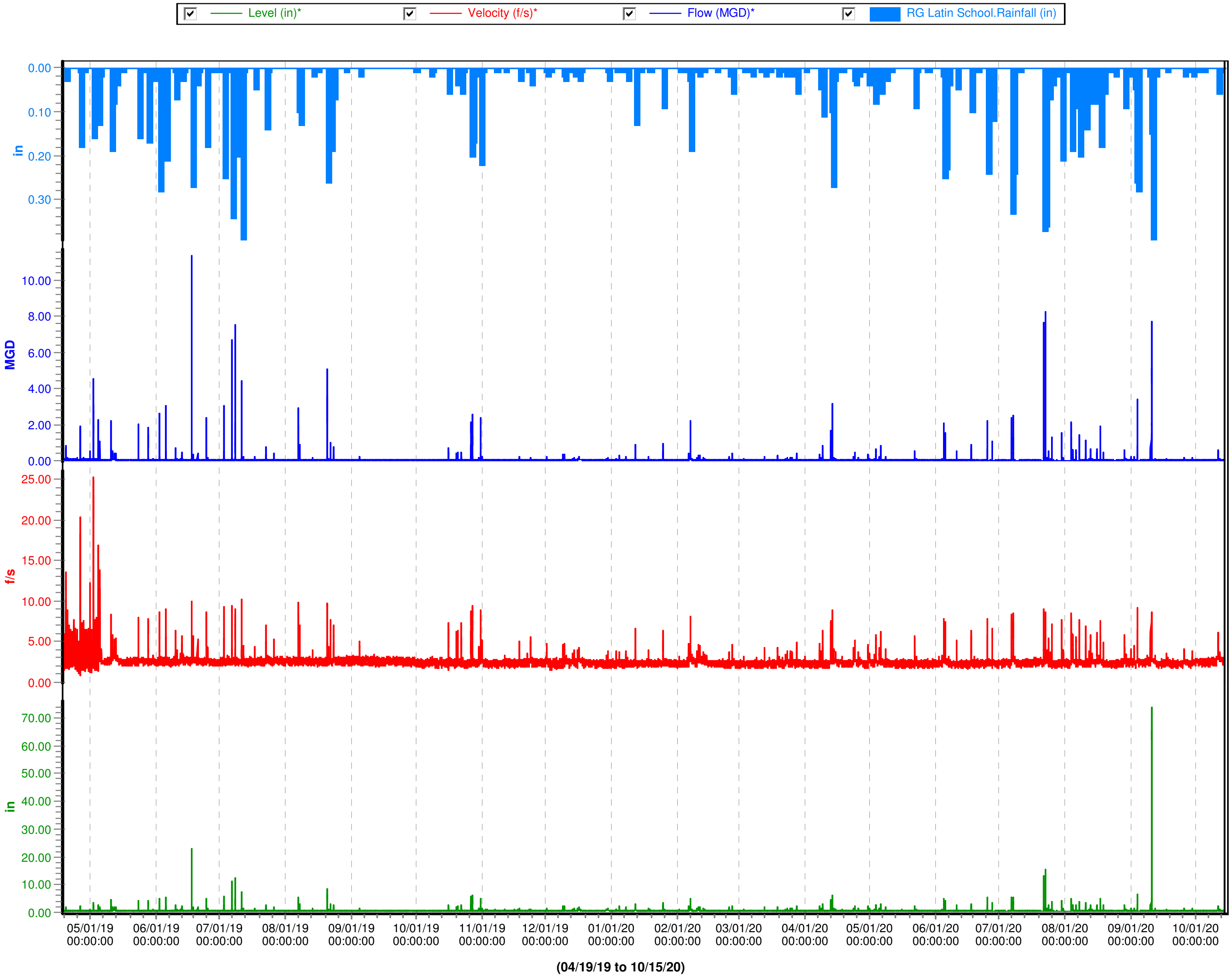


Site Location Plan View
Sketch or plat showing upstream and downstream manholes, connections, and bends.


Rock Creek Project (RC-A) – New Sewershed & Practice Level Monitoring Locations

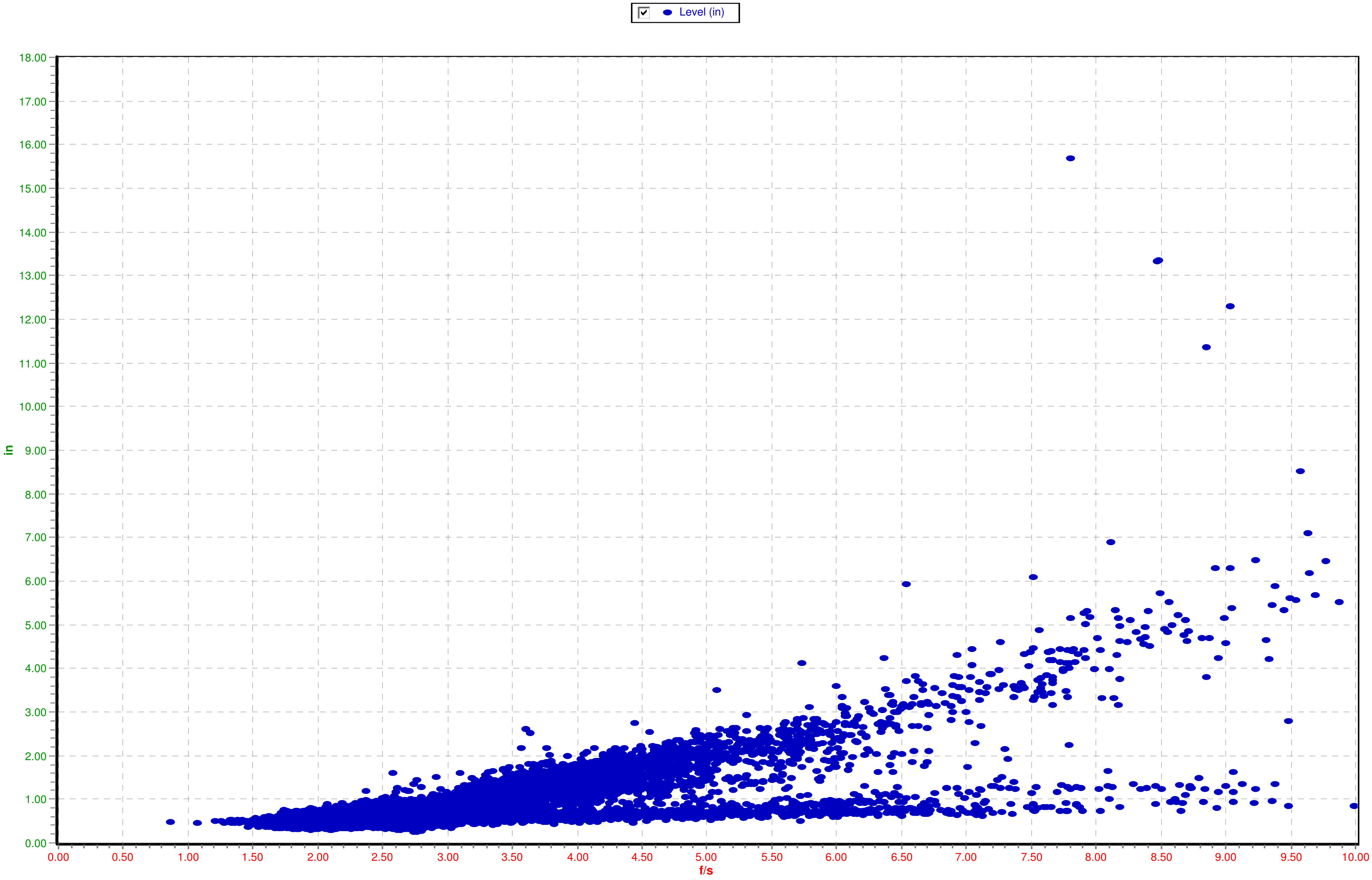
RCA 049-7

Intersection of Hamilton ST NW and 2nd ST NW - Pipe Diameter (in): 18



RCA 049-7

Intersection of Hamilton ST NW and 2nd ST NW - Pipe Diameter (in): 18



(04/19/19 to 10/15/20)

Site #	RC-A 049-7							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
4/11/2019	11:27		0.50		2.79	0.00	SD/PJ/JB	Install, V1
4/11/2019	11:30		0.50		2.71	0.00	SD/PJ/JB	V2
4/11/2019	11:35		0.50		2.88	0.00	SD/PJ/JB	V3
4/11/2019	11:43	0.46	0.50	2.68	2.77	0.00	SD/PJ/JB	V1
4/11/2019	11:46	0.51	0.50	2.66	2.82	0.00	SD/PJ/JB	V2
4/11/2019	11:49	0.48	0.50	2.62	2.74	0.00	SD/PJ/JB	V3
4/22/2019	12:19		0.50		2.55	0.00	SD/PJ/JB	Replace Antenna, V1
5/6/2019	14:20	0.35	0.50	2.67	2.73	0.00	SD/PJ/JB	Replace Meter, V1
5/6/2019	14:23	0.39	0.50	2.78	2.81	0.00	SD/PJ/JB	V2
5/6/2019	15:06	0.32	0.50	2.81	2.97	0.00	SD/PJ/JB	V3
5/7/2019	13:11	0.32	0.50	2.31	2.53	0.00	SD/PJ/JB	V1
5/13/2019	16:02		0.50		2.88	0.00	SD/PJ	V1
5/21/2019	11:00		0.75		2.75	0.00	SD/PJ	V1
5/29/2019	14:48	0.51	0.50	2.82	2.63	0.00	SD/JB	Change Battery
6/4/2019	12:23		0.75		2.8	0.00	LR/PJ/JB	V1
6/17/2019	12:00						SD/PJ/DC	Could not access- manhole was paved over
6/24/2019	11:25		0.75		2.96	0.00	DM/PJ/DC	Replace Antenna, V1
7/2/2019	12:25		0.50		2.38	0.00	SD/PJ/DC	Replace Antenna, V1
7/10/2019	9:15		0.50		2.52	0.00	LR/PJ/DC	V1
7/16/2019	11:20		0.50		2.50	0.00	SD/PJ	V1
7/22/2019	13:53		0.50		2.57	0.00	SD/PJ/DC	V1
8/5/2019	13:55		0.50		2.61	0.00	LP/PJ	V1
8/7/2019	7:55		0.75		2.93	0.00	LP/PJ	V1
8/7/2019	8:07		0.75		2.97	0.00	LP/PJ	V1
8/12/2019	12:28		0.50		2.64	0.00	SD/PJ	V1
8/19/2019	10:45		0.50		2.89	0.00	DM/PJ	V1

8/26/2019	11:57		0.50		2.94	0.00	LP/AP/PJ	V1
8/26/2019	12:02		0.50		2.87	0.00	LP/AP/PJ	V2
9/3/2019	13:35		0.50		2.57	0.00	SD/AP/PJ	Change Battery, V1
9/9/2019	12:46		0.50		2.39	0.00	SD/PJ	V1
9/16/2019	12:09		0.50		2.31	0.00	SD/DL	V1
9/24/2019	10:06		0.50		2.51	0.00	SD/PJ/DL	V1
9/30/2019	14:05		.0.50		2.12	0.00	SD/DL	V1
10/1/2019	10:07						SD/PJ/Dl	Scrub Sensor
10/15/2019	13:51		0.50		2.20	0.00	SD/AP	V1
10/28/2019	11:24		0.50		2.47	0.00	SD/AP	V1
11/19/2019	13:29		0.75		2.32	0.00	SD/MH	V1
12/3/2019	9:30		0.50		2.16	0.00	SD/MH	V1
12/10/2019	11:15						SD/AP	Change Battery
12/19/2019	10:01						SD/MH	Change Battery
12/31/2019	8:37		0.50		2.49	0.00	SD/MH	V1, Change Meter Fuse
1/8/2020	11:27	0.74	0.75	2.98	2.79	0.00	SD/DW	V1
1/22/2020	9:46		0.50		2.21	0.00	SD/DW	V1
1/27/2020	12:41		0.50		2.37	0.00	SD/DW	V1
2/4/2020	10:50		0.50		2.45	0.00	SD/DW	V1
3/16/2020	16:10		0.50		2.43	0.00	SD/JP	V1
5/18/2020	14:09		0.50		2.34	0.00	SD/JP/AE	V1
6/2/2020	14:54						SD/JP/AE	Replace Antenna
6/9/2020	11:07						SD/JP/AE	Restore Communication
6/15/2020	12:35						SD/JP/AE	Change Battery
6/24/2020	11:21		0.50		2.61	0.00	SD/JP/AE	V1, Change Battery
7/2/2020	9:03						SD/JP/AE	Change Battery
7/14/2020	15:28		0.50		2.30	0.00	SD/JP/AE	V1
7/16/2020	12:32						SD/JP/AE	Replace Antenna

7/21/2020	11:46						SD/JP/AE	Download Meter
7/23/220	9:38						SD/JP/AE	Redrill Antenna, Restore Communication
8/10/2020	15:00						SD/JP/AE	Change Battery
9/14/2020	12:33		0.50		2.19	0.00	SD/JP/AE	V1, Change Battery
9/21/2020	13:50		0.50		2.41	0.00	SD/JP/AE	V1
10/21/2020	10:19		0.50		2.49	0.00	SD/JP/AE	V1
10/21/2020	10:22		0.50		2.20	0.00	SD/JP/AE	V2
10/21/2020	10:25		0.50		2.21	0.00	SD/JP/AE	V3, Remove

Site Name/Manhole # RCB-KEN Primary: ☒ Alternate: ☐

CSL Services, Inc.

Investigation Date: 3/13/2019 Time: 11:00 Crew Members: SC/DN

Installation Date: 3/13/2019 Time: 12:45 Crew Members: SD/DN

Address/Location: 145 Kennedy Street NW (in the middle of the street)

Latitude: : N 38° 57394 Longitude: W 77° 00808

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity 1.85 ft/sec

Depth 1.5 in

Turbulence Amplitude:

☐ Less than 0.25”
☐ 0.25” to 0.75”
☐ [✓ 0.75” to 1.5”]
☐ 1.5” to 3”
☐ Greater than 3”

Sewer Line Characteristics:

	Inf 1	Inf 2	Inf 3	Inf 4	Inf 5	Eff
Height	10”	15”	15”	14.5”	14.5”	21”
Width	10”	15”	15”	14.5”	14.5”	21”
Material	Clay	Clay	Clay	PVC	PVC	Clay
Shape	Round	Round	Round	Round	Round	Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep
☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

☐ [✓ No evidence visible]
☐ Remains in pipe
☐ ______ft from rim
☐ Reaches Rim (potential meter damage)
☐ Evidence unclear: ______________ft from rim

Gas Investigation:

☐ [✓ Good] 20.9 (condition)

Site Conditions

Site Access:

☐ Good (no problems accessing site)
☐ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)
☐ Poor (remote areas, steel embankments, ~~No safe place to park, elevated MH >3 ft)~~
☐ [✓ Traffic Control only (Requires extra traffic control]
☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground _____
Manhole depth 141”
Structural Integrity of Manhole:
☐ Good ☐ [✓ Fair] ☐ Poor

Pipe Bends: *None within camera view*
☐ Influent ☐ Effluent ☐ Manhole
Approx Distance to bend:____ft

Pipe Size/Geometry/Material Change:
☐ Influent ☐ [✓ Effluent] ☐ Manhole
Approx Distance to change:__________ft
(detail is comments)

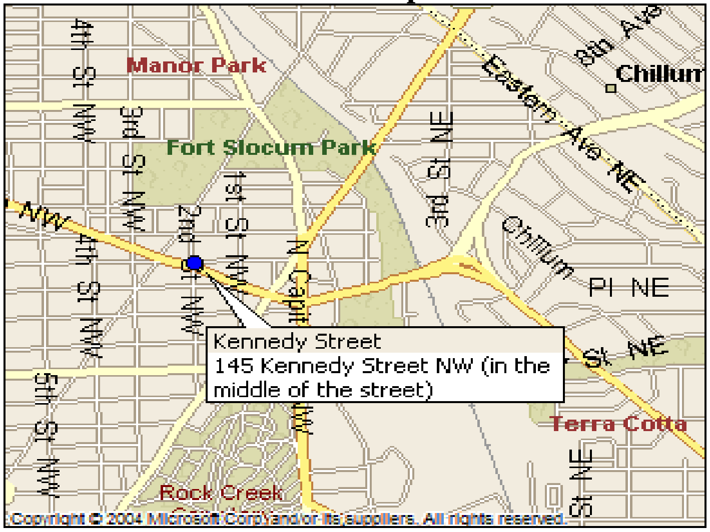
Crew Member: Can you maintain this site?
☐ [✓ Yes] ☐ No ☐ Maybe

Sensor Configuration:
(Please include Serial Numbers when possible)

Level	Primary: FL900	
	Redundant:	
Velocity	Primary: FL900	
	Redundant:	
Meter Logger	Telog	

Comments: *DS pipe very short, drops into a bigger pipe. Installed 8” in downstream pipe*

Area Map



Kennedy Street
145 Kennedy Street NW (in the middle of the street)

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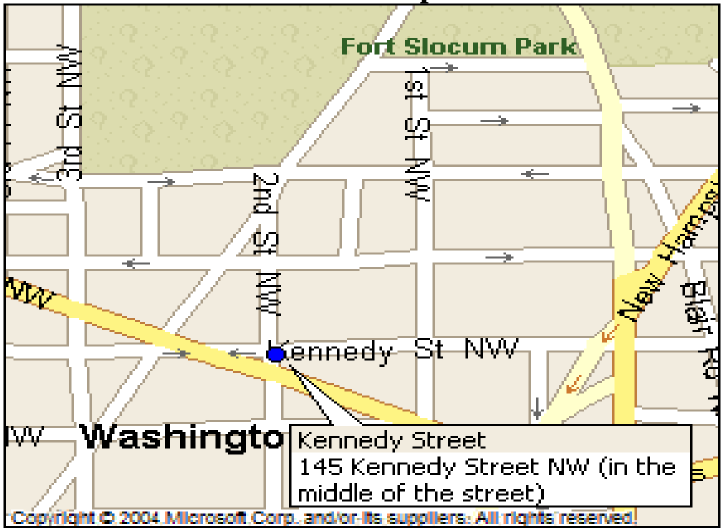
Detail Map



Kennedy Street
145 Kennedy Street NW (in the middle of the street)

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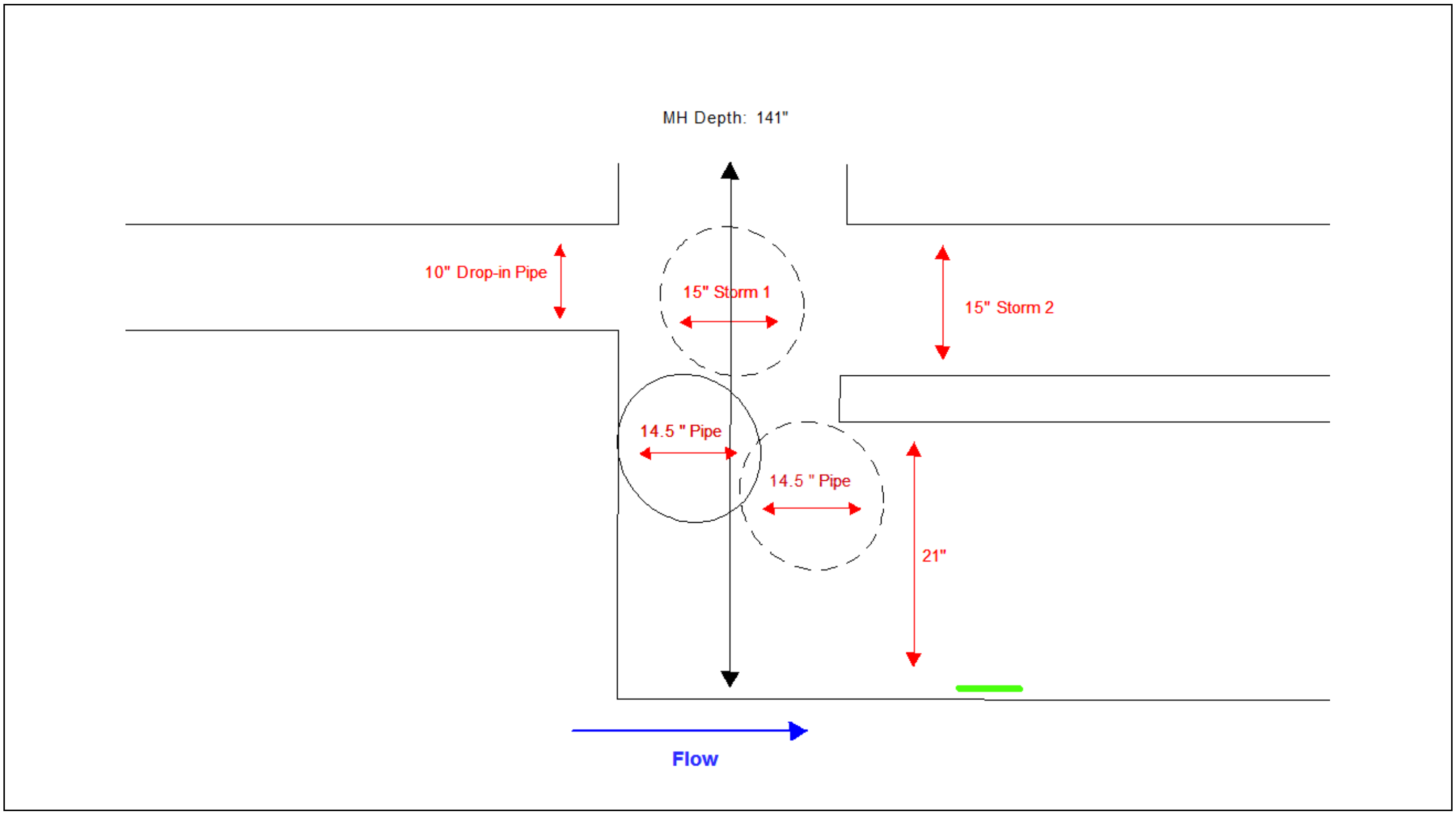
View from top of MH

Site Overview

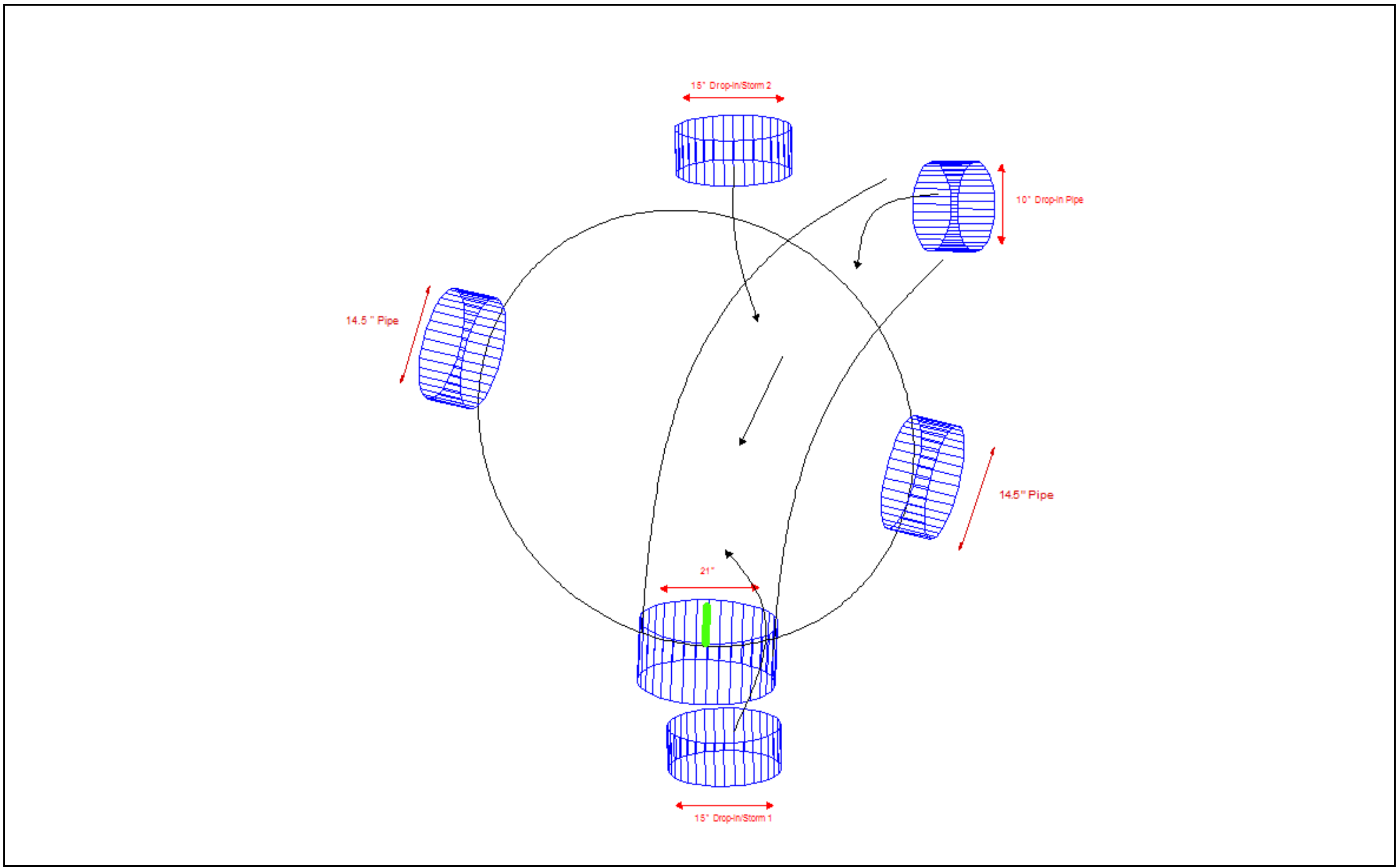
View of flow through influent line

View of flow through effluent line

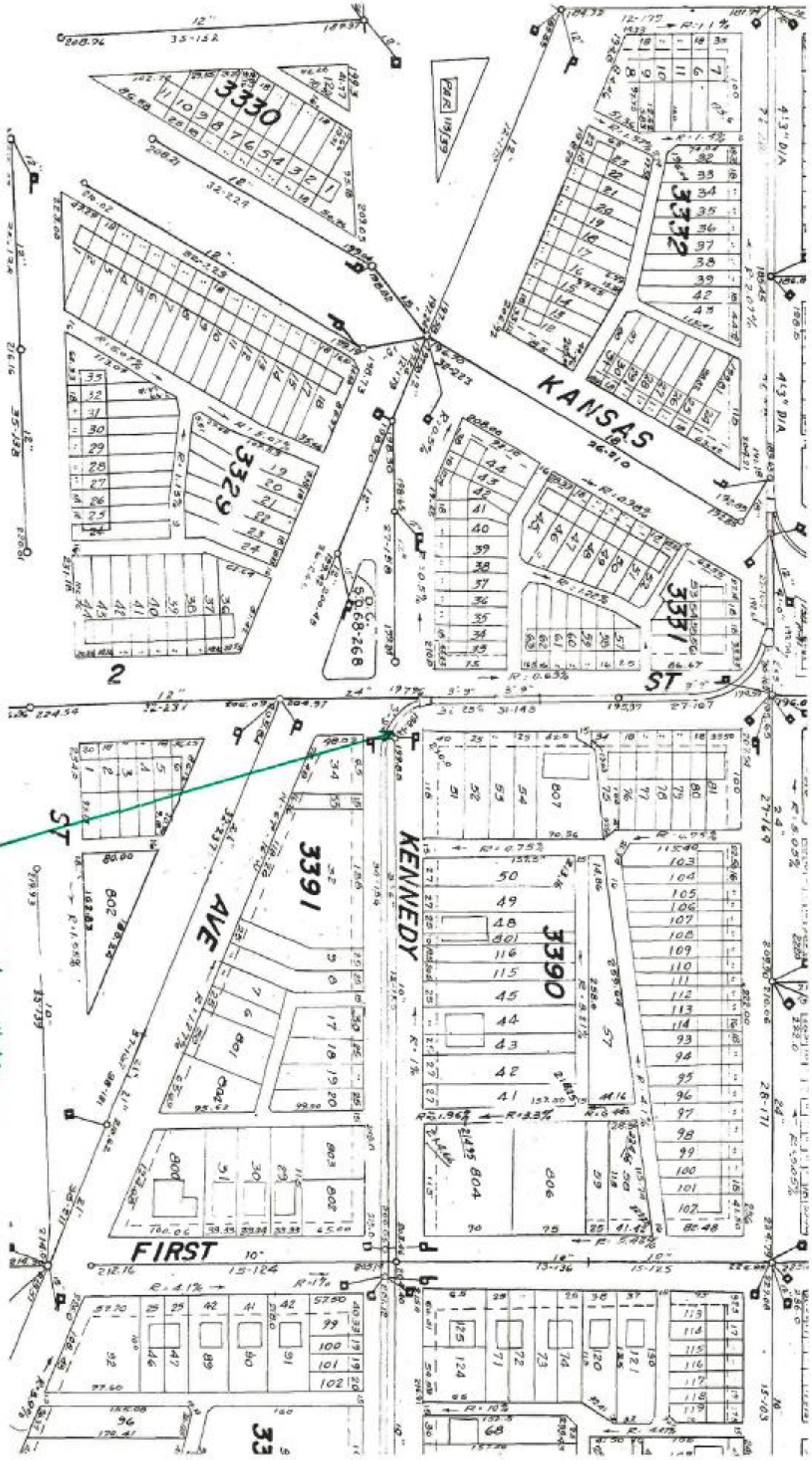
Dimensional Structure Profile View (profile sketch showing location of sensors)



Dimension Structure Detail (Plan View)



MAP



10" SEWER, D/S OF MH AND 1' BEFORE CONNECTING WITH 3'-9"

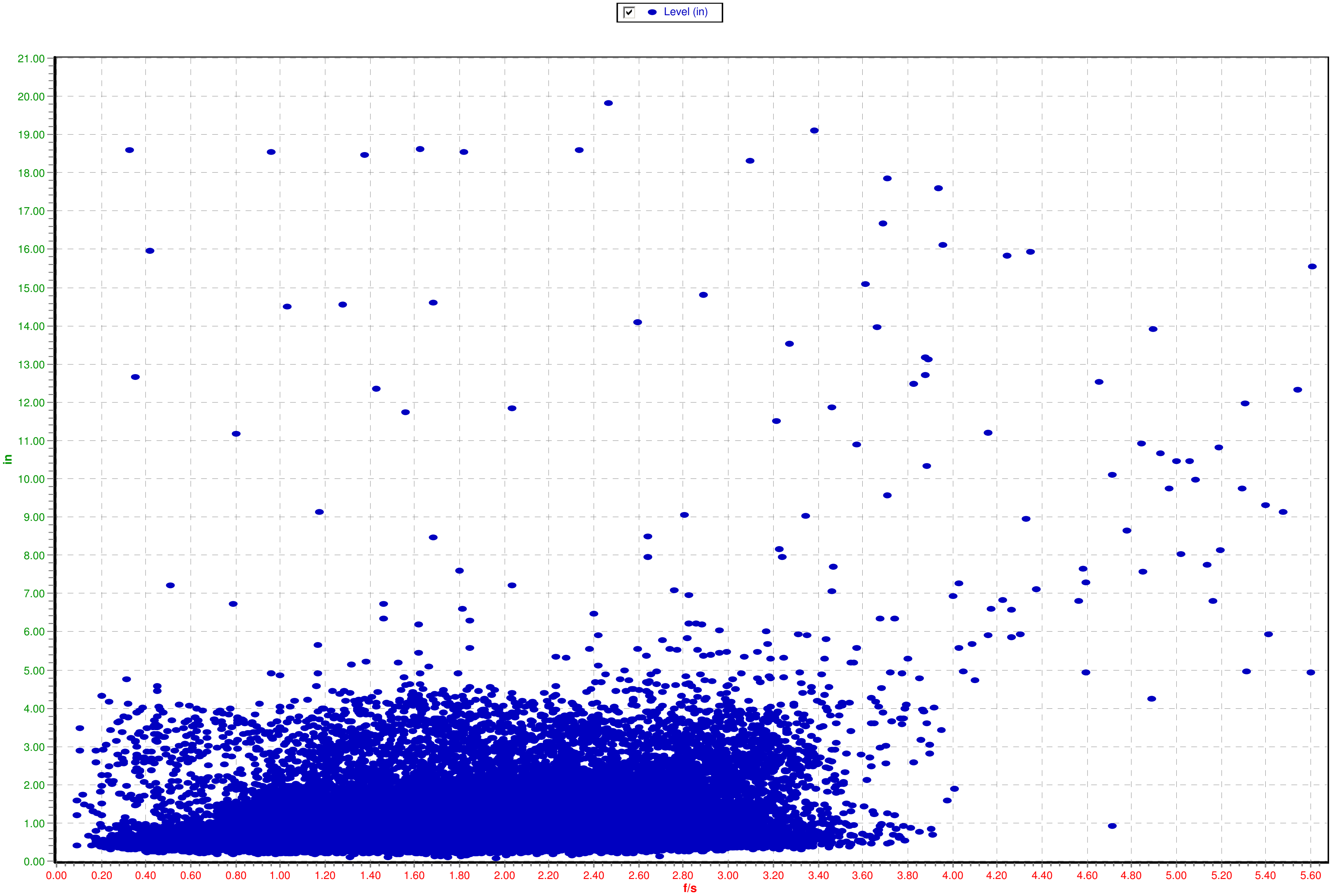
RCB KEN

145 Kennedy St NW - Pipe Diameter (in): 21

(03/14/19 to 10/15/20)

RCB KEN - 145 Kennedy St NW

Pipe Diameter (in): 21 (03/14/19 to 10/15/20)



Site #	RC-B KEN							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
3/13/2019	13:17		1.50		1.60	0.00	SD/DN	Install, V1
3/13/2019	13:40	1.35	1.50	1.55	1.62	0.00	SD/DN	V2
3/13/2019	13:45	1.57	1.50	1.83	1.67	0.00	SD/DN	V3
3/13/2019	13:50	1.58	1.50	1.74	1.57	0.00	SD/DN	V4
3/27/2019	12:25	1.19	1.00	1.81	1.77	0.00	SD/PJ	V1
3/27/2019	12:55	0.87	1.00	1.37	1.53	0.00	SD/PJ	V2
3/27/2019	13:00	0.87	1.00	1.21	1.27	0.00	SD/PJ	V3
4/2/2019	10:45		0.50		1.50	0.00	SD/PJ/JB	Download Meter, V1
4/29/2019	13:58		0.75		1.76	0.00	SD/PJ	Change Battery, V1
5/21/2019	11:25	0.77	0.75	2.01	1.91	0.00	SD/PJ/JB	Replace Meter
6/11/2019	13:39	0.35	0.50	1.68	1.57	0.00	SD/PJ/DC	Change Battery
7/2/2019	10:25		0.50		1.61	0.00	Sd/PJ/DC	Change Battery, V1
7/30/2019	13:20		0.50		1.48	0.00	SD/PJ/DC	Change Battery, V1
8/28/2019	9:27		0.50		1.63	0.00	LP/AP/PJ	Change Battery, V1
8/28/2019	9:32		0.50		1.77	0.00	LP/AP/PJ	V2
10/2/2019	14:30		0.75		2.01	0.00	SD/PJ/DL	Change Battery, V1
10/29/2019	11:10	0.65	0.75	1.94	1.77	0.00	SD/AP	Change Battery, V1
11/19/2019	12:19		0.50		2.02	0.00	SD.MH	Change Battery, V1
12/10/2019	14:47						SD/AP	Change Battery
12/19/2019	14:54						SD/MH	Change Battery
1/7/2020	14:10	0.61	0.75	2.01	1.89	0.00	SD/DW	Change Battery, V1
1/28/2020	13:50		0.50		2.61	0.00	SD/DW	Change Battery, V1
2/18/2020	11:20						SD/DW	Change Battery
3/6/2020	11:48						SD/AW	Change Battery
4/28/2020							SD/JP/AE	Change Battery, Download
4/29/2020							SD/JP/AE	Restore Lost Communication

5/5/2020	12:10	0.52	0.50	1.57	1.62	0.00	SD/JP/AE	Change Meter ,V1
5/5/2020	12:15	0.55	0.50	1.54	1.67	0.00	SD/JP/AE	V2
5/5/2020	12:20	0.56	0.50	1.62	1.59	0.00	SD/JP/AE	V3
7/9/2020	12:20		0.50		1.91	0.00	SD/JP/AE	V1
8/19/2020	12:31		0.75		2.23	0.00	SD/JP/AE	Change Battery, V1
9/21/2020	12:19						SD/JP/AE	Change Desiccant
10/15/2020	10:50	0.58	0.75	2.54	2.31	0.00	SD/JP/AE	V1
10/15/2020	10:55	0.48	0.5	2.45	2.29	0.00	SD/JP/AE	V2
10/15/2020	11:00	0.42	0.5	2.36	2.24	0.00	SD/JP/AE	V3, remove

- **RCA Post Construction Rainfall Monitoring**
    - Investigation and Installation Reports
    - Rainfall Timeseries Graph
    - Calibration and Maintenance Log

CSL Services, Inc.

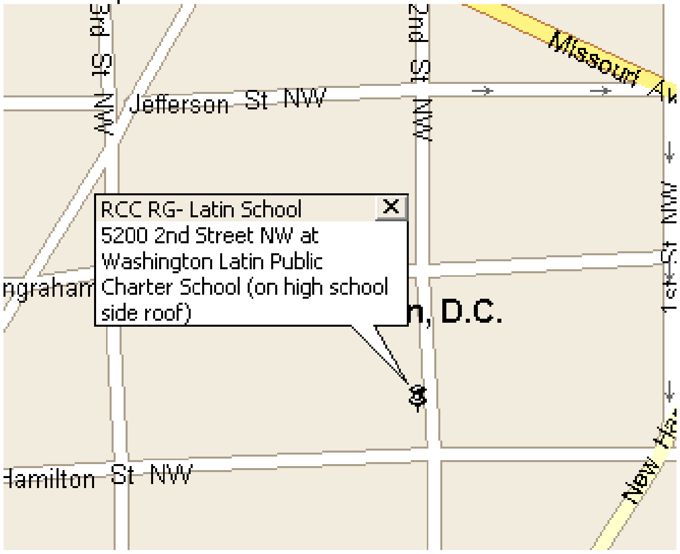
SITE REPORT

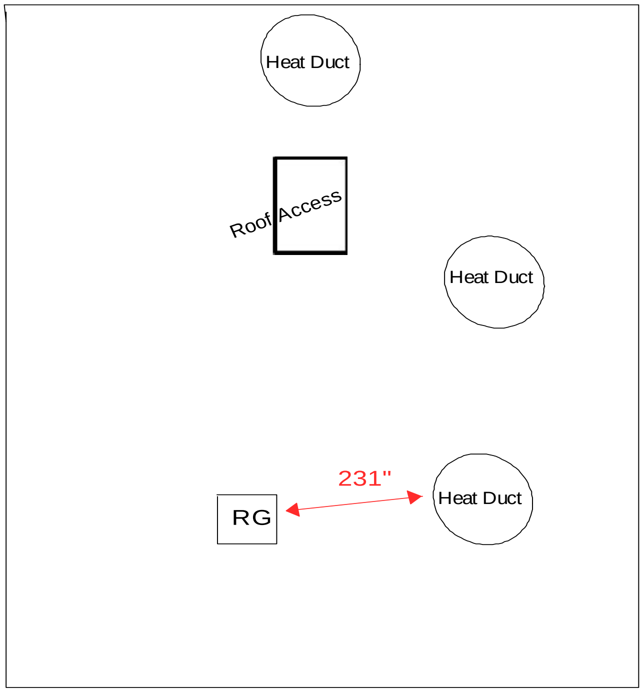
Project: DC RCC 049	Date: 2-21-18	Time: 14:30	C. LaClaire, J. Austin
Manhole#: RG- Latin School	Town: Washington DC		
Address/Location: 5200 2nd Street NW at Washington Latin Public Charter School (On high school side of roof)			
Latitude: N 38° 57’ 15”	Longitude: W 77° 0’ 51”	Access: Drive	
Telog: 294530	Rain Gauge Serial: 63554-215		

Site Comments:
Height from bucket to roof = 12”
Closet obstacle = 231”
Height of obstacle = 3’

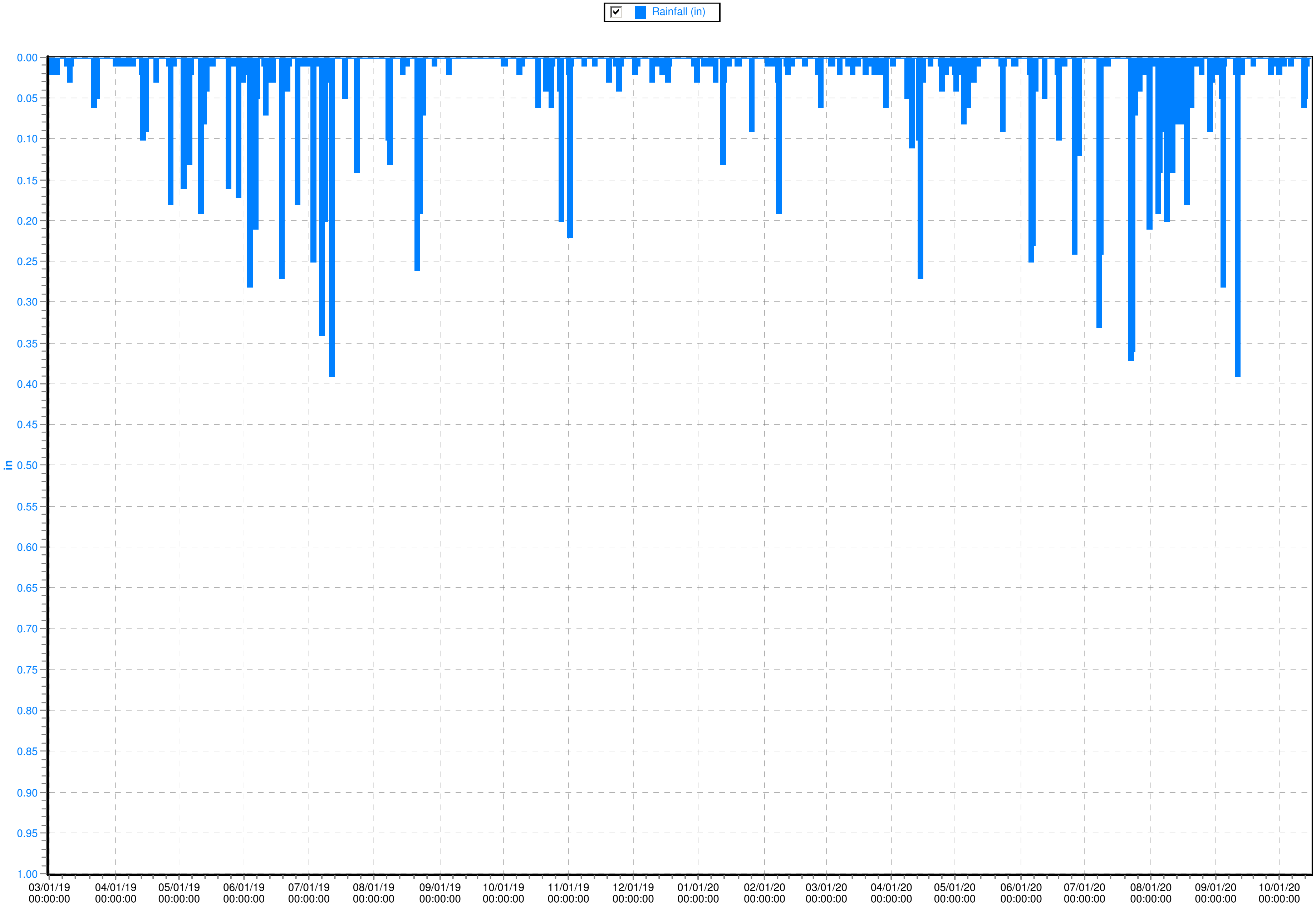
Area Map

Detail Map





RG Latin School (03/01/19 to 10/15/20)



Site #	RCC RG-Latin School		
Date	Time	Crew	Comments
3/6/2019	16:06	DM/NM	Check, Calibration Test Results 57 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
4/24/2019	10:11	SD/PJ/JB	Change Battery
5/22/2019	9:10	SD/PJ/JB	Raingauge Check, Cleared Funnel, Test Tips
6/17/2019	13:48	SD/PJ/DC	Check, Calibration Test Results 57 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
8/5/2019	14:40	LP/PJ	Check, Calibration Test Results 57 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
9/23/2019	13:30	SD/DL	Check, Calibration Test Results 57 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
1/15/2020	9:52	SD/DW	Check, Calibration Test Results 57 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
2/10/2020	14:37	SD/DW	Change Battery, Replace antenna, Download Logger, Replace Logger and Restore Communication
4/7/2020	-	SD/DW	Unable to access to Perform Calibration Test Due to Covid Restritcitons
7/9/2020	13:20	SD/JP/AE	Check, Calibration Test Results 60 Tips, Pass (59 tips +/- 2)No Corrective Actions Required
10/5/2020	12:03	LP/JP/AE	Check, Calibration Test Results 60 Tips, Pass (59 tips +/- 2)No Corrective Actions Required

- **RCA GI Practice Level Monitoring**
    - Investigation and Installation Reports
    - Depth vs Rain Timeseries Graph
    - Calibration and Maintenance Logs

RCA Green Infrastructure Practice Level Summary:

Overview: For the monitoring period starting on April 19, 2019, a total of twenty-eight (28) water depth sensors were installed in green infrastructure facilities that include permeable pavement on streets and alleys (PPP and APP) as well as bio-retention planters (PBR) in the general vicinity of 2nd St NW and Hamilton St. NW. An additional seventy-five (75) water depth sensors were installed in the most downstream well of PPP, APP, PBR and CBR facilities throughout the RCA Sewershed for a monitoring period starting on March 12, 2020. Every 5 minutes, the water depth sensor records an absolute pressure measurement in which depth within an area is derived using the sensor manufacture’s processing software. The total of one hundred and three water depth sensors provided 100% uptime during the monitoring periods.

Site Name/ Manhole ID: PBR 3503

Address: 5231 2nd St. NW

Latitude: N 38.954158°° Longitude: -77.013611°

Investigation Date: 3/22/2019 Crew: DM/AP

Installation Date: 4/16/2019 Crew: DM/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

A1 Depth (in): 0

A2 Depth (in): 0

A3 Depth (in): 0

A4 Depth (in): 0

Site Location Characteristics:

	Well 1	Well 2	Well 3	Well 4
Height	58”	60”	62”	55.5”
Width	8”	8”	8”	8”
Material	PVC	PVC	PVC	PVC
Shape	Round	Round	Round	Round

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

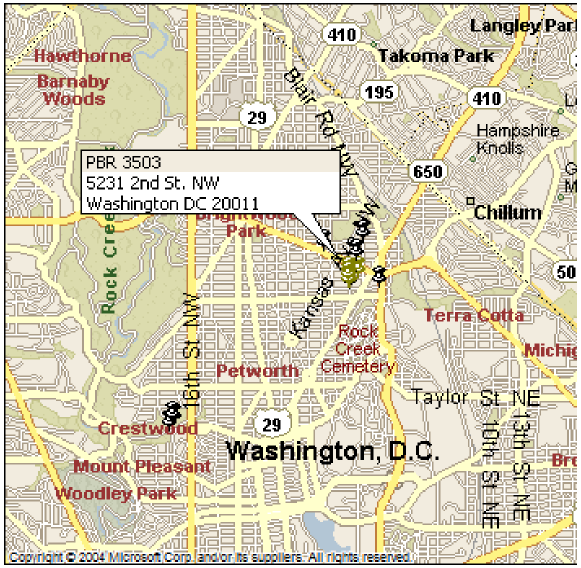
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map



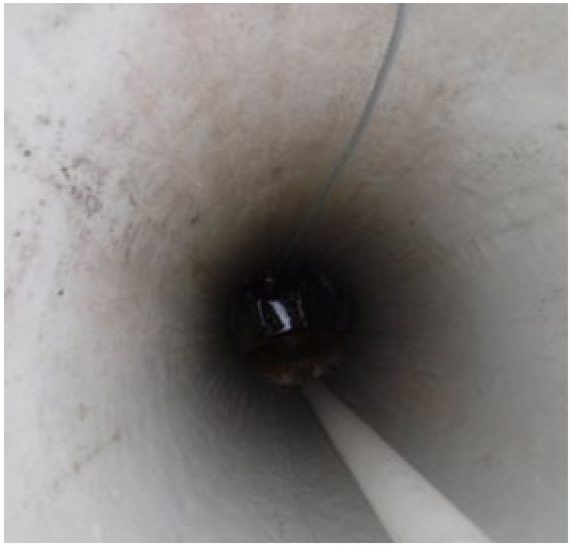
Detail Map

Site Area Overview

View from Top of Well 1

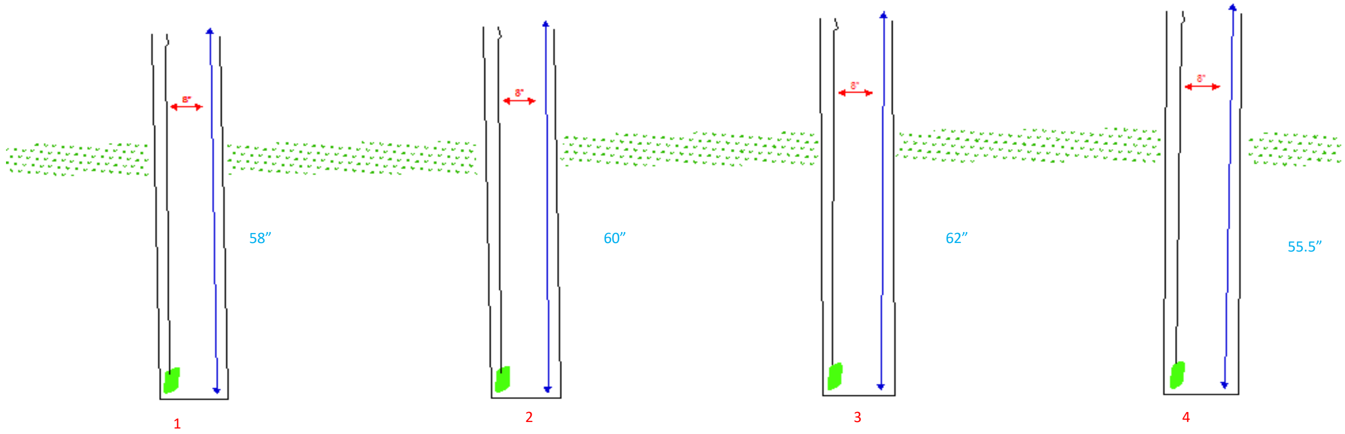
View from Top of Well 2

View from Top of Well 3

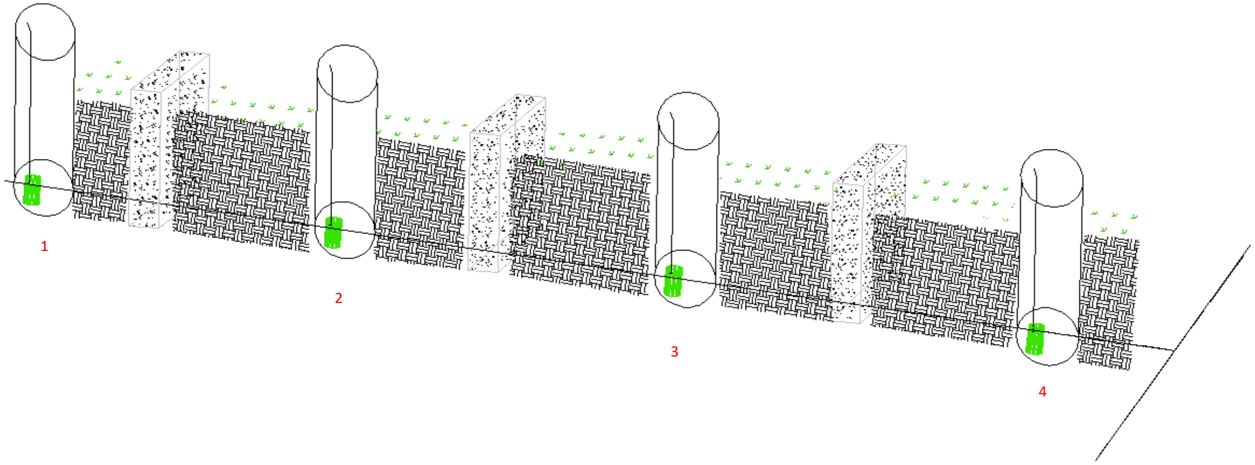


View from Top of Well 4

Dimensional Structure Profile View- Showing Location of Sensor(s)

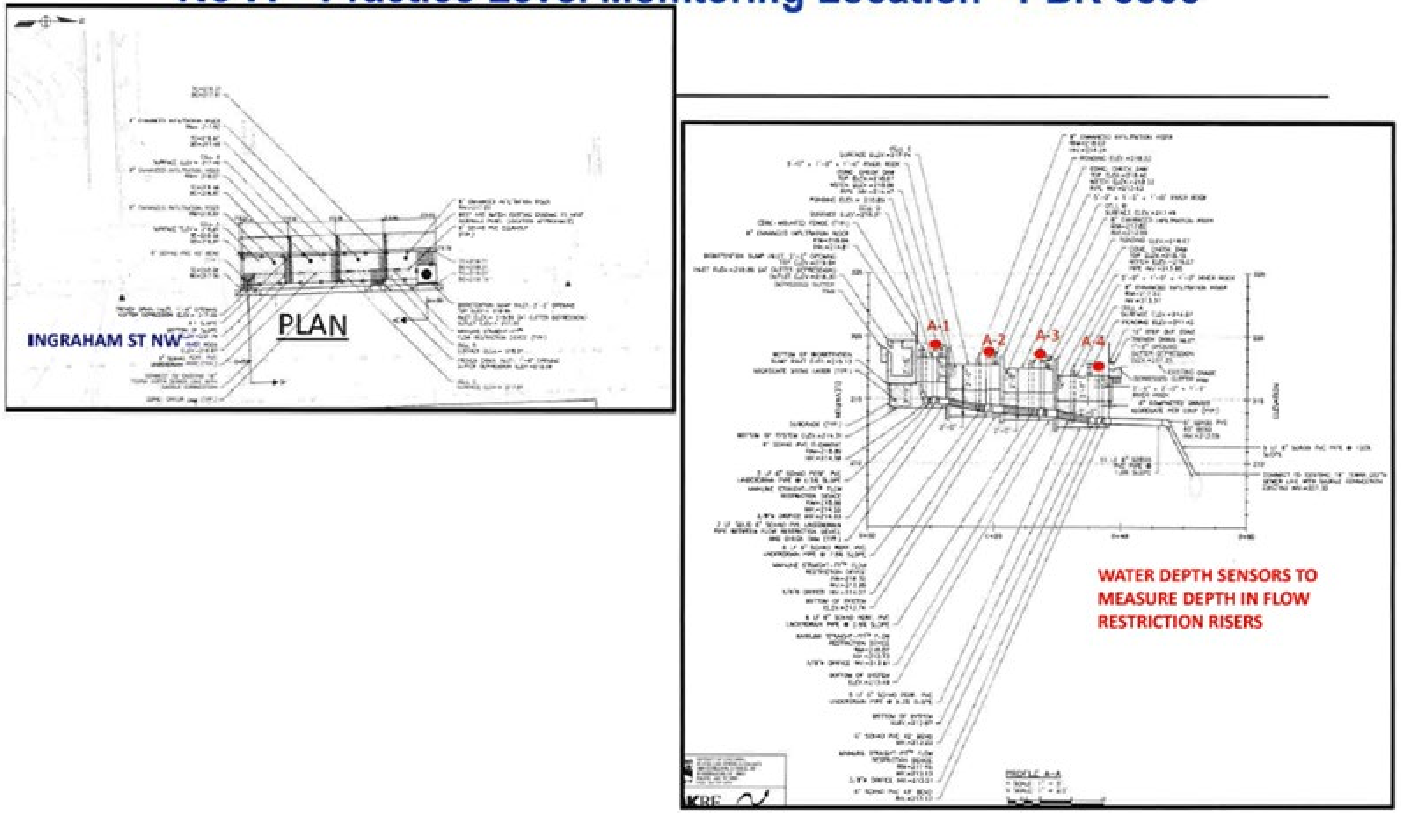


Three Dimensional Cross Section Representation



Site Locat

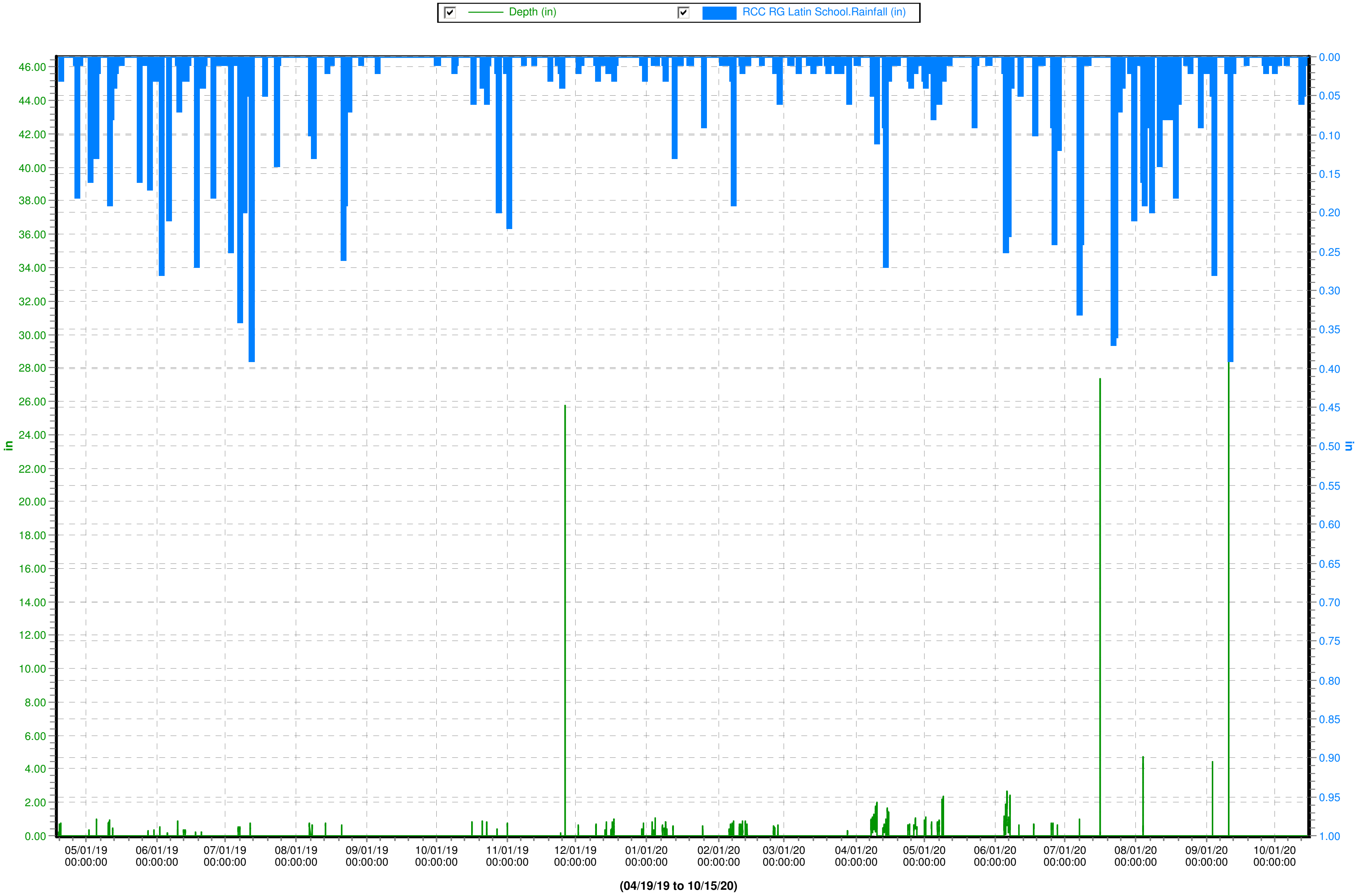
RC-A – Practice Level Monitoring Location - PBR 3503



WATER DEPTH SENSORS TO MEASURE DEPTH IN FLOW RESTRICTION RISERS

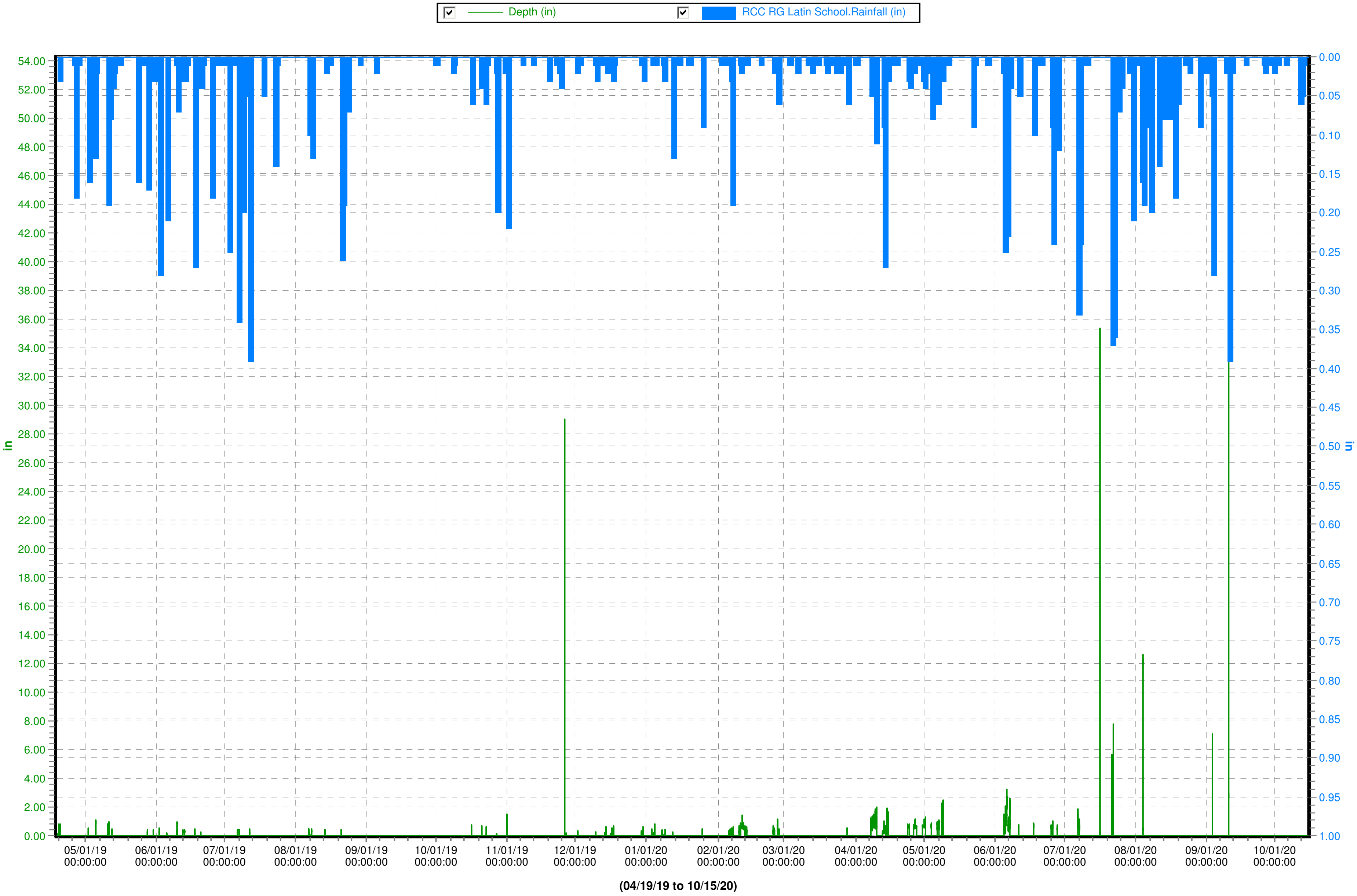
3503-A01

5231 2nd St. NW-Well Depth (in): 58



3503-A02

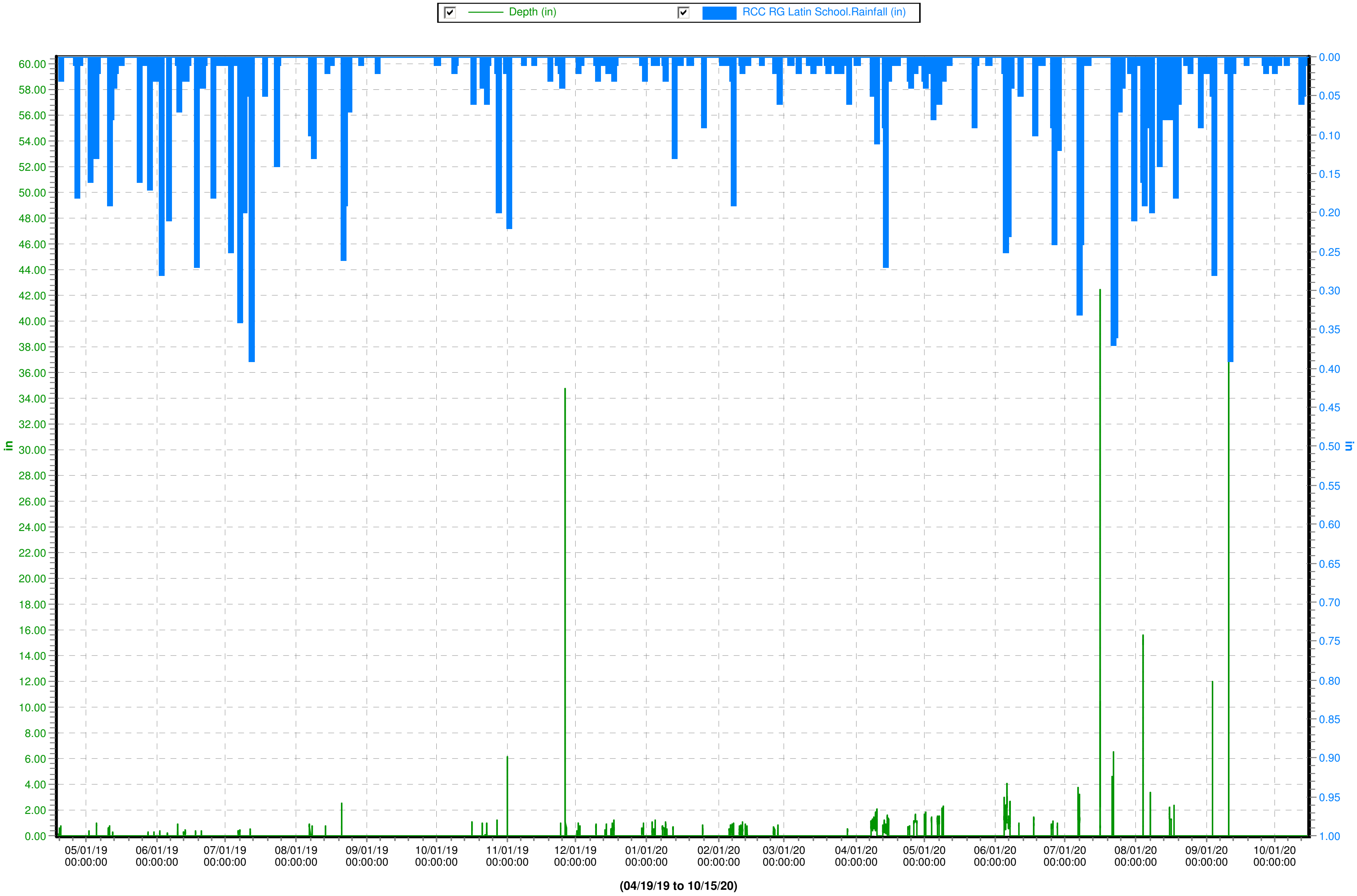
5231 2nd St. NW-Well Depth (in): 60



(04/19/19 to 10/15/20)

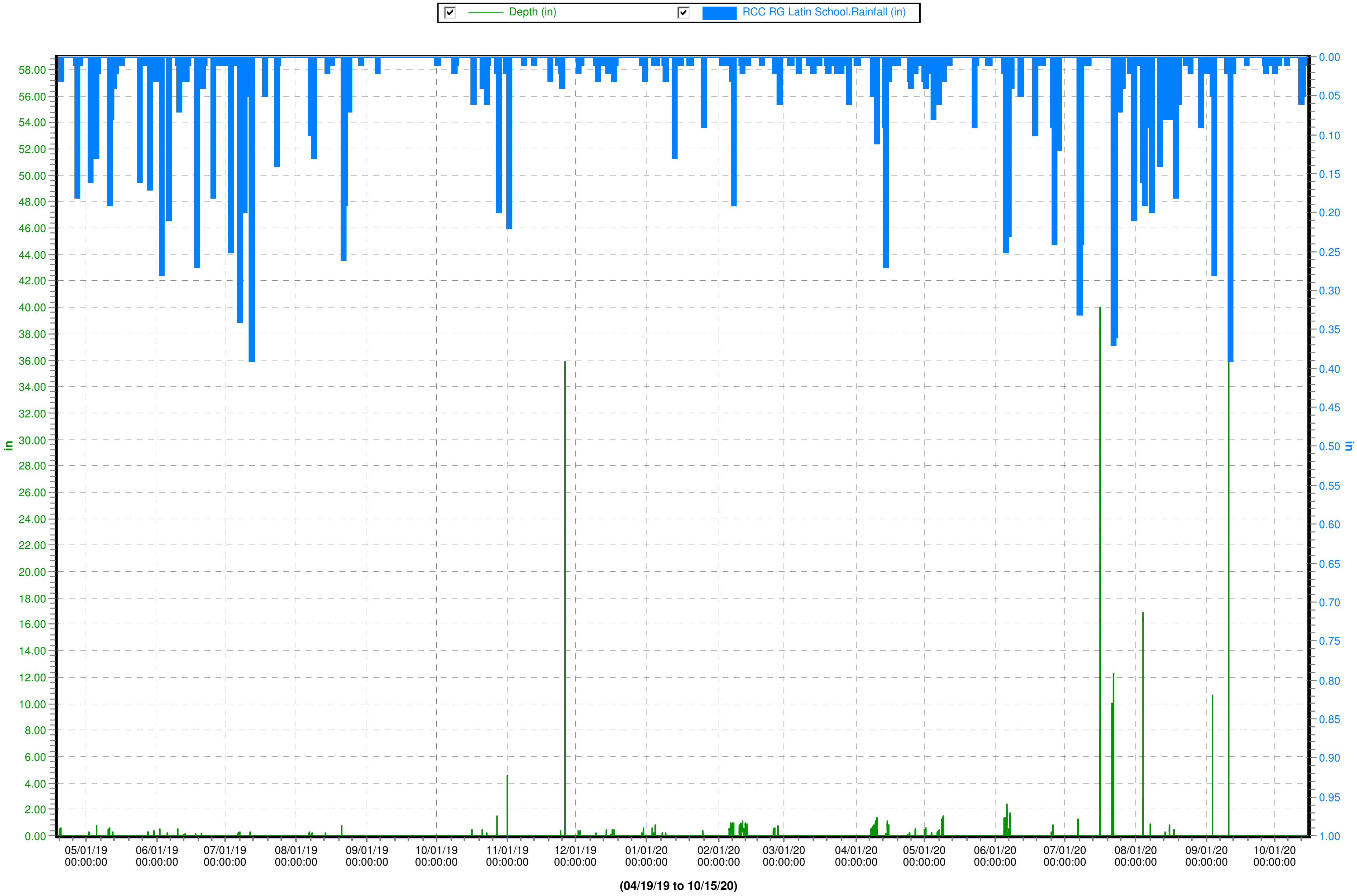
3503-A03

5231 2nd St. NW-Well Depth (in): 62



3503-A04

5231 2nd St. NW-Well Depth (in): 61



PBR 3503

Site#	A01				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	13:35		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:40		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JL	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	10:53		<0.25"	SD/PJ/DC	Download Water Depth Sensor
6/13/2019	9:58		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:40		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019	12:30		<0.25"	SD.PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	8:52			PJ/DC	Download Water Depth Sensor
7/30/2019	7:52			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	7:47		0	LP/PJ	Download Water Depth Sensor
8/12/2019	8:55			PJ	Download Water Depth Sensor
8/19/2019	8:50			PJ	Download Water Depth Sensor
8/21/2019	12:08		<0.25"	DM/PJ	Download Water Depth Sensor
8/26/2019	8:25			PJ	Download Water Depth Sensor
9/3/2019	9:01			pj	Download Water Depth Sensor
9/9/2019	8:52			PJ	Download Water Depth Sensor
9/10/2019	14:12		<0.25"	SD/PJ	Download Water Depth Sensor
9/16/2019	9:16			PJ	Download Water Depth Sensor
9/23/2019	8:50			PJ/DL	Download Water Depth Sensor

9/30/2019	10:55			DL	Download Water Depth Sensor
10/16/2019	9:50			SD/AP	Download Water Depth Sensor
10/29/2019	8:46		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:02			SD/AP	Download Water Depth Sensor
12/2/2019	15:47			SD/MH	Download Water Depth Sensor
12/10/2019	8:53			SD/AP	Download Water Depth Sensor
12/18/2019	12:25		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:40			Sd/MH	Download Water Depth Sensor
1/6/2020	11:56			SD/DW	Download Water Depth Sensor
1/13/2020	16:40			SD/DW	Download Water Depth Sensor
1/21/2020	16:12		0	SD/DW	Download Water Depth Sensor
1/27/2020	8:51			SD/DW	Download Water Depth Sensor
2/3/2020	13:02		0	SD/DW	Download Water Depth Sensor
2/10/2020	12:01			SD/DW	Download Water Depth Sensor
2/18/2020	7:51			SD/DW	Download Water Depth Sensor
2/24/2020	9:55			SD	Download Water Depth Sensor
3/3/2020	9:27		0	SD/JP	Download Water Depth Sensor
3/10/2020	7:40			SD/JP	Download Water Depth Sensor
3/16/2020	12:43			SD/JP	Download Water Depth Sensor
3/23/2020	13:20			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:50		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	15:15			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:31			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:18			SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:40		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:23		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:07		0	JP/AE	Download Water Depth Sensor
5/28/2020	10:46			SD/JP/AE	Download Water Depth Sensor
6/1/2020	12:26			SD/JP/AE	Download Water Depth Sensor
6/5/2020	14:41		0.25	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:16			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:24		0	JP/AE	Download Water Depth Sensor

6/22/2020	11:08			SD/JP/AE	Download Water Depth Sensor
6/26/2020	12:35		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:14			SD/JP/AE	Download Water Depth Sensor
7/20/2020	11:41			SD/JP/AE	Download Water Depth Sensor
7/31/2020	10:22			SD/JP/AE	Download Water Depth Sensor
8/4/2020	10:07			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:20			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:32			SD/JP/AE	Download Water Depth Sensor
8/31/2020	11:51		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:47		0	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:39			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:54		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	11:15		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:50		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:25			JP/AE	Download Water Depth Sensor
10/13/2020	10:30		0	AE	Download Water Depth Sensor
10/16/2020	11:35		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:06		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:31		0	SD/JP/AE	Download Water Depth Sensor, Remove

PBR 3503

Site#	A02				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	13:45		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:43		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JL	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	10:58		<0.25"	SD/PJ/DC	Download Water Depth Sensor
6/13/2019	9:51		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:32		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019	12:31		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	8:48			PJ/DC	Download Water Depth Sensor
7/30/2019	7:48			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	7:50		0	LP/PJ	Download Water Depth Sensor
8/12/2019	8:50			PJ	Download Water Depth Sensor
8/19/2019	8:46			PJ	Download Water Depth Sensor
8/21/2019	12:08		<0.25"	DM/PJ	Download Water Depth Sensor
8/26/2019	8:22			PJ	Download Water Depth Sensor
9/3/2019	8:58			PJ	Download Water Depth Sensor
9/9/2019	8:50			PJ	Download Water Depth Sensor
9/10/2019	14:14		0	SD/PJ	Download Water Depth Sensor
9/16/2019	11:45			SD/PJ	Download Water Depth Sensor
9/23/2019	8:47			PJ/DL	Download Water Depth Sensor

9/30/2019	10:53			DL	Download Water Depth Sensor
10/16/2019	9:55			SD/AP	Download Water Depth Sensor
10/29/2019	8:45		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:01			SD/AP	Download Water Depth Sensor
12/2/2019	15:49			SD/MH	Download Water Depth Sensor
12/10/2019	8:55			SD/AP	Download Water Depth Sensor
12/18/2019	12:24		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:40			SD/MH	Download Water Depth Sensor
1/6/2020	12:00			SD/DW	Download Water Depth Sensor
1/14/2020	9:21			SD/DW	Download Water Depth Sensor
1/21/2020	16:51		0	SD/DW	Download Water Depth Sensor
1/27/2020	14:10			SD/DW	Download Water Depth Sensor
2/3/2020	13:02		0	SD/DW	Download Water Depth Sensor
2/10/2020	11:58			Sd/DW	Download Water Depth Sensor
2/18/220	7:57			SD/DW	Download Water Depth Sensor
2/24/2020	9:56			SD	Download Water Depth Sensor
3/3/2020	9:29		0	SD/JP	Download Water Depth Sensor
3/10/2020	7:38			SD/JP	Download Water Depth Sensor
3/16/2020	12:39			SD/JP	Download Water Depth Sensor
3/23/2020	13:18			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:48		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:00			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:27			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:20			SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:48			SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:23		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:07		0	JP/AE	Download Water Depth Sensor
5/28/2020	10:47			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:25			SD/JP/AE	Download Water Depth Sensor
6/5/2020	14:40		0.25	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:17			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:21		0	JP/AE	Download Water Depth Sensor

PBR 3503

6/22/2020	11:10			SD/JP/AE	Download Water Depth Sensor
6/26/2020	12:30		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:11			SD/JP/AE	Download Water Depth Sensor
7/20/2020	11:42			SD/JP/AE	Download Water Depth Sensor
7/31/2020	10:25			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:09			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:20			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:34			SD/JP/AE	Download Water Depth Sensor
8/31/2020	11:52		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	2:22		0	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:37			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:56		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	11:17		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:48		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:26			JP/AE	Download Water Depth Sensor
10/13/2020	10:31		0	AE	Download Water Depth Sensor
10/16/2020	11:36		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:07		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:30		0	SD/JP/AE	Download Water Depth Sensor, Remove

PBR 3503

Site#	A03				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	13:40		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:49		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JL	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:07		<0.25"	SD/PJ/DC	Download Water Depth Sensor
6/13/2019	9:58		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:23		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019	12:33		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/23/2019	12:00			SD/PJ/DC	Download Water Depth Sensor
7/30/2019	7:41			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	7:53		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:46			PJ	Download Water Depth Sensor
8/19/2019	8:45			PJ	Download Water Depth Sensor
8/21/2019	12:08		0	DM/PJ	Download Water Depth Sensor
8/26/2019	8:19			PJ	Download Water Depth Sensor
9/3/2019	8:55			PJ	Download Water Depth Sensor
9/9/2019	8:48			PJ	Download Water Depth Sensor
9/10/2019	14:18		0	SD/PJ	Download Water Depth Sensor
9/16/2019	9:00			PJ	Download Water Depth Sensor
9/23/2019	8:40			PJ/DL	Download Water Depth Sensor

PBR 3503

9/30/2019	10:50			DL	Download Water Depth Sensor
10/16/2019	9:58			SD/AP	Download Water Depth Sensor
10/29/2019	8:44		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:00			SD/AP	Download Water Depth Sensor
12/2/2019	15;59			SD/MH	Download Water Depth Sensor
12/10/2019	8:58			SD/AP	Download Water Depth Sensor
12/18/2019	12:23		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:37			SD/MH	Download Water Depth Sensor
1/6/2020	12:00			SD/DW	Download Water Depth Sensor
1/13/2020	16:52			SD/DW	Download Water Depth Sensor
1/21/2020	16:51		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:37			SD/DW	Download Water Deph Sensor
2/3/2020	13:10		0	SD/DW	Download Water Deph Sensor
2/10/2020	11:57			SD/DW	Download Water Deph Sensor
2/18/2020	7:54			SD/DW	Download Water Deph Sensor
2/24/2020	9:57			SD	Download Water Deph Sensor
3/3/2020	9:30		0	SD/JP	Download Water Deph Sensor
3/10/2020	7:37			SD/JP	Download Water Deph Sensor
3/16/2020	12:37			SD/JP	Download Water Deph Sensor
3/23/2020	13:17			SD/JP/AE	Download Water Deph Sensor
3/30/2020	10:46		0	SD/JP/AE	Download Water Deph Sensor
4/15/2020	10:01			SD/JP/AE	Download Water Deph Sensor
4/21/2020	9:25			SD/JP/AE	Download Water Deph Sensor
4/21/2020	11:23			SD/JP/AE	Download Water Deph Sensor
5/8/2020	9:54		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:23		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:07		0	JP/AE	Download Water Depth Sensor
5/28/2020	10:47			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:25			SD/JP/AE	Download Water Depth Sensor
6/5/2020	14:37		1.00	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:19			SD/JP/AE	Download Water Deph Sensor
6/18/2020	11:47		0	JP/AE	Download Water Deph Sensor

PBR 3503

6/22/2020	11:11			SD/JP/AE	Download Water Deph Sensor
6/26/2020	11:57			JP/AE	Download Water Deph Sensor
7/6/2020	13:08			SD/JP/AE	Download Water Deph Sensor
7/20/2020	11:43			SD/JP/AE	Download Water Deph Sensor
7/31/2020	10:26			SD/JP/AE	Download Water Deph Sensor
8/5/2020	10:10			SD/JP/AE	Download Water Deph Sensor
8/14/2020	9:22			SD/JP/AE	Download Water Deph Sensor
8/19/2020	10:35			SD/JP/AE	Download Water Deph Sensor
8/31/2020	11:56		0	SD/JP/AE	Download Water Deph Sensor
9/11/2020	14:20			SD/JP/AE	Download Water Deph Sensor
9/21/2020	11:38			SD/JP/AE	Download Water Deph Sensor
9/25/2020	14:58		0	SD/JP/AE	Download Water Deph Sensor
10/2/2020	11:19		0	JP/AE	Download Water Deph Sensor
10/8/2020	12:45		0	JP/AE	Download Water Deph Sensor
10/9/2020	11:27			JP/AE	Download Water Deph Sensor
10/13/2020	10:34		0	AE	Download Water Deph Sensor
10/16/2020	11:39		0	JP/AE	Download Water Deph Sensor
10/22/2020	15:09		0	JP/AE	Download Water Deph Sensor
10/26/2020	13:27		0	SD/JP/AE	Download Water Deph Sensor, remove

Site#	A04				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	13:40		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:52		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JL	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:13		<0.25"	SD/PJ/DC	Download Water Depth Sensor
6/13/2019	9:39		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:12		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/019	12:35		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	11:45			PJ/DC	Download Water Depth Sensor
8/6/2019	7:56		<0.25"	LP/PJ	Download Water Depth Sensor
8/12/2019	8:43			PJ	Download Water Depth Sensor
8/19/2019	8:42			PJ	Download Water Depth Sensor
8/21/219	12:08		<0.25"	DM/PJ	Download Water Depth Sensor
8/26/2019	8:15			PJ	Download Water Depth Sensor
9/3/2019	8:51			PJ	Download Water Depth Sensor
9/9/2019	8:46			PJ	Download Water Depth Sensor
9/10/2019	14:22		0	SD/PJ	Download Water Depth Sensor
9/16/2019	8:55			PJ	Download Water Depth Sensor
9/23/2019	8:37			PJ/DL	Download Water Depth Sensor
9/30/2019	10:36			DL	Download Water Depth Sensor

10/16/2019	10:02			SD/AP	Download Water Depth Sensor
10/29/2019	8:43		0	SD/AP	Download Water Depth Sensor
11/11/2019	9:59			SD/AP	Download Water Depth Sensor
12/2/2019	15:30			SD/MH	Download Water Depth Sensor
12/10/2019	8:57			SD/AP	Download Water Depth Sensor
12/18/2019	12:22		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:36			SD/MH	Download Water Depth Sensor
1/6/2020	12:01			SD/DW	Download Water Depth Sensor
1/13/2020	16:51			SD/DW	Download Water Depth Sensor
1/21/2020	16:51		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:39			SD/DW	Download Water Depth Sensor
2/3/2020	10:12		0	SD/DW	Download Water Depth Sensor
2/10/2020	11:56			SD/DW	Download Water Depth Sensor
2/18/2020	7:56			SD/DW	Download Water Depth Sensor
2/24/2020	9:58			SD	Download Water Depth Sensor
3/3/2020	9:31		0	SD/JP	Download Water Depth Sensor
3/10/2020	7:34			SD/JP	Download Water Depth Sensor
3/16/2020	12:31			SD/JP	Download Water Depth Sensor
3/23/2020	13:15			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:45		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:02			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:25			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:21			SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:52		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:23		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:07		0	JP/AE	Download Water Depth Sensor
5/28/2020	10:49			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:27			SD/JP/AE	Download Water Depth Sensor
6/5/2020	14:39		0	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:19			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:37		0	JP/AE	Download Water Depth Sensor
6/22/2020	11:11			SD/JP/AE	Download Water Depth Sensor

6/26/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:10			SD/JP/AE	Download Water Depth Sensor
7/20/2020	11:43			SD/JP/AE	Download Water Depth Sensor
7/31/2020	10:26			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:10			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:22			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:35			SD/JP/AE	Download Water Depth Sensor
8/31/2020	11:55		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:21			SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:37			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:57		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	11:18		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:47		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:27			JP/AE	Download Water Depth Sensor
10/13/2020	10:33		0	AE	Download Water Depth Sensor
10/16/2020	11:37		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:08		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:28		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site Name/ Manhole ID: APP 3608

Address: 137 Ingraham St. NW

Latitude: 38.954833 Longitude: -77.012991

Investigation Date: 3/22/2019 Crew: DM/AP

Installation Date: 4/17/2019 Crew: DM/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Well 1 Depth (in) 0

Well 2 Depth (in) 0

Well 3 Depth (in) 0

Well 4 Depth (in) 0

Well 5 Depth (in) 0

Well 6 Depth (in) 0

Well 7 Depth (in) 0

Well 8 Depth (in) 0

	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8
Height	23”	26”	24”	43”	34”	34”	31”	28”
Width	8”	8”	8”	8”	8”	8”	8”	8”
Material	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC
Shape	Round	Round	Round	Round	Round	Round	Round	Round

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

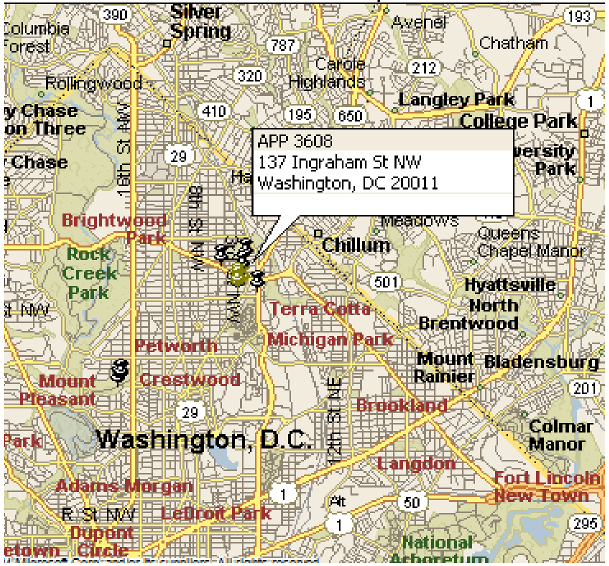
Sediment Present:

[✓ No] Yes

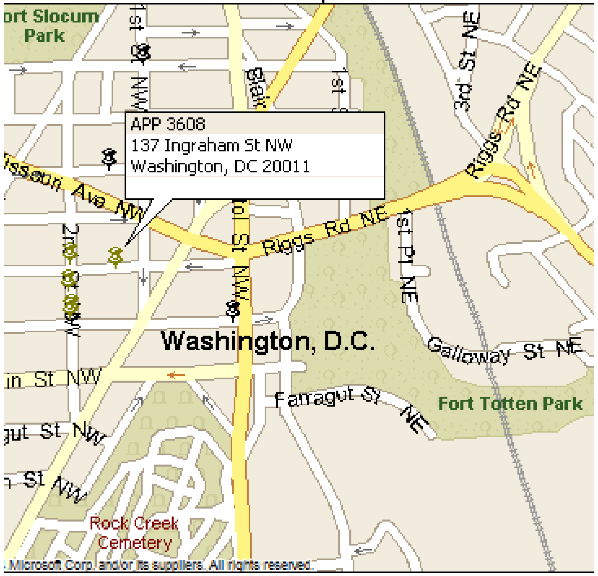
Hard Packed (in):

Soft (in):

Area Map


APP 3608
137 Ingraham St NW
Washington, DC 20011

Detail Map


APP 3608
137 Ingraham St NW
Washington, DC 20011

Site Area Overview

View from Top of Well 1

View from Top of Well 2

View from Top of Well 3

View from Top of Well 4

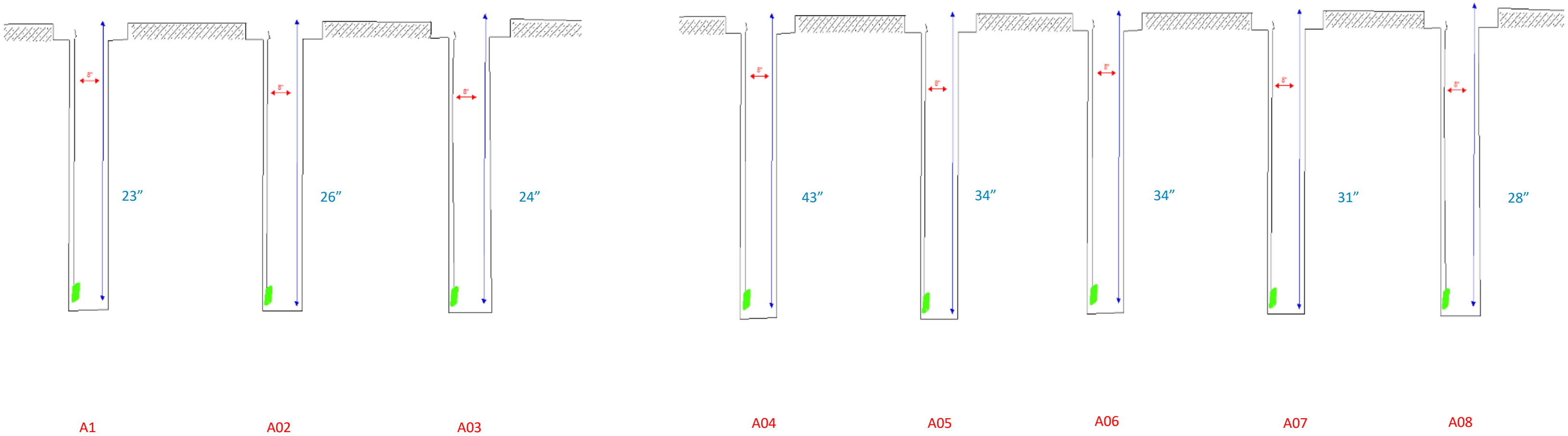
View from Top of Well 5

View from Top of Well 6

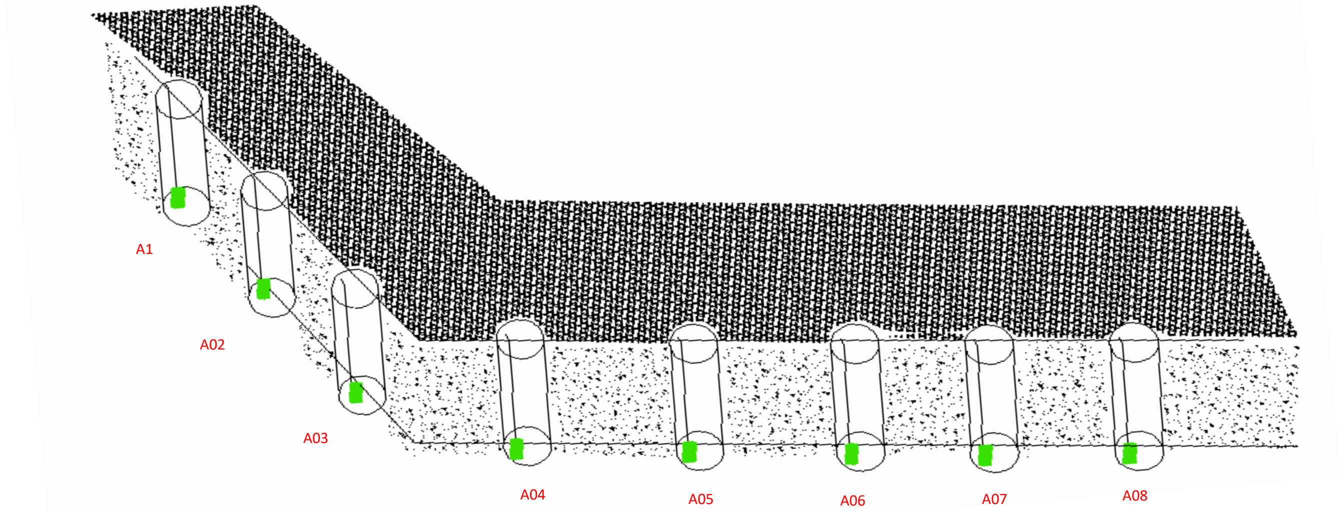
View from Top of Well 7

View from Top of Well 8

Dimensional Structure Profile View- Showing Location of Sensor(s)

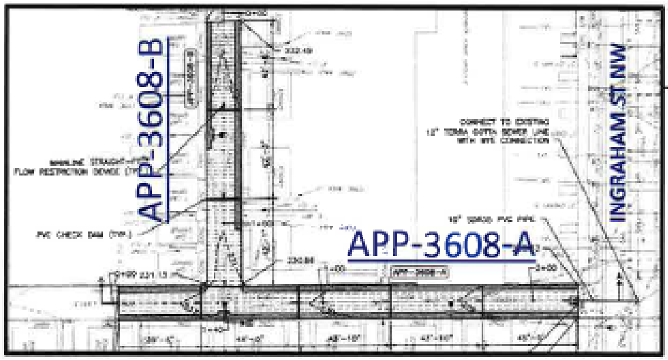


Three Dimensional Cross Section Representation



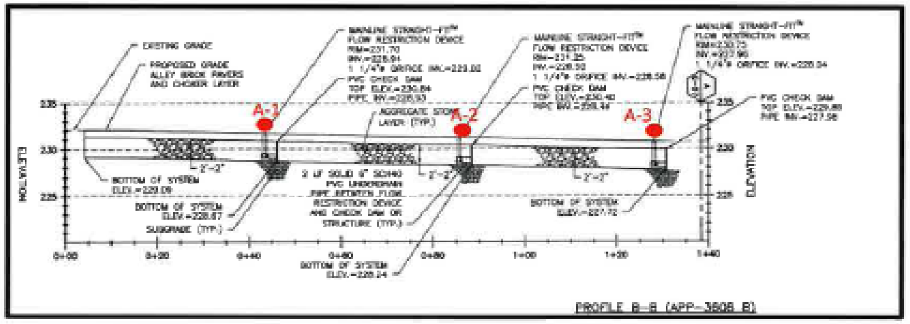
Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends

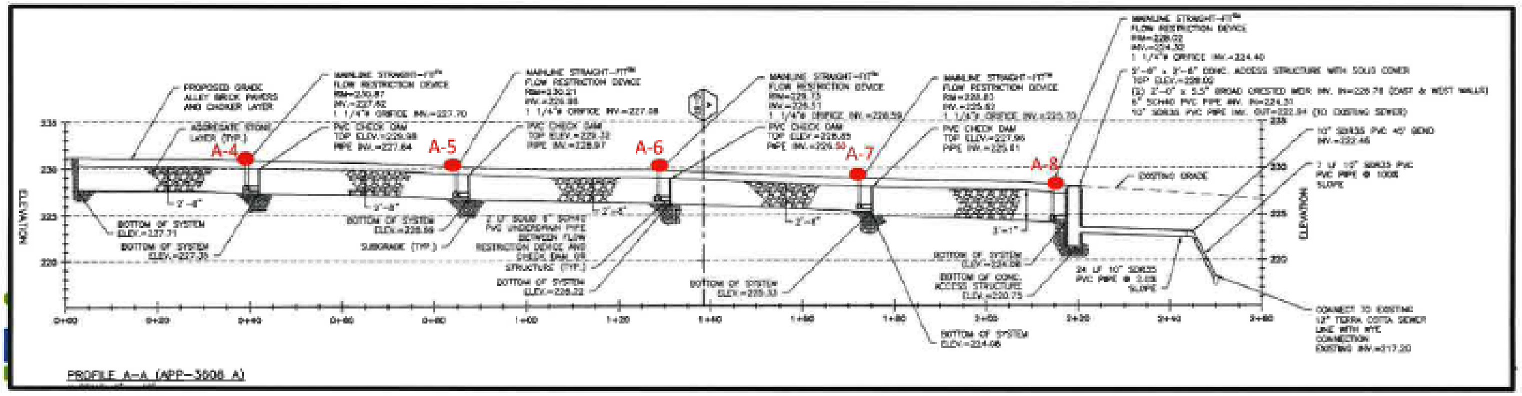
RC-A – Practice Level Monitoring Location - APP 3608



PLAN

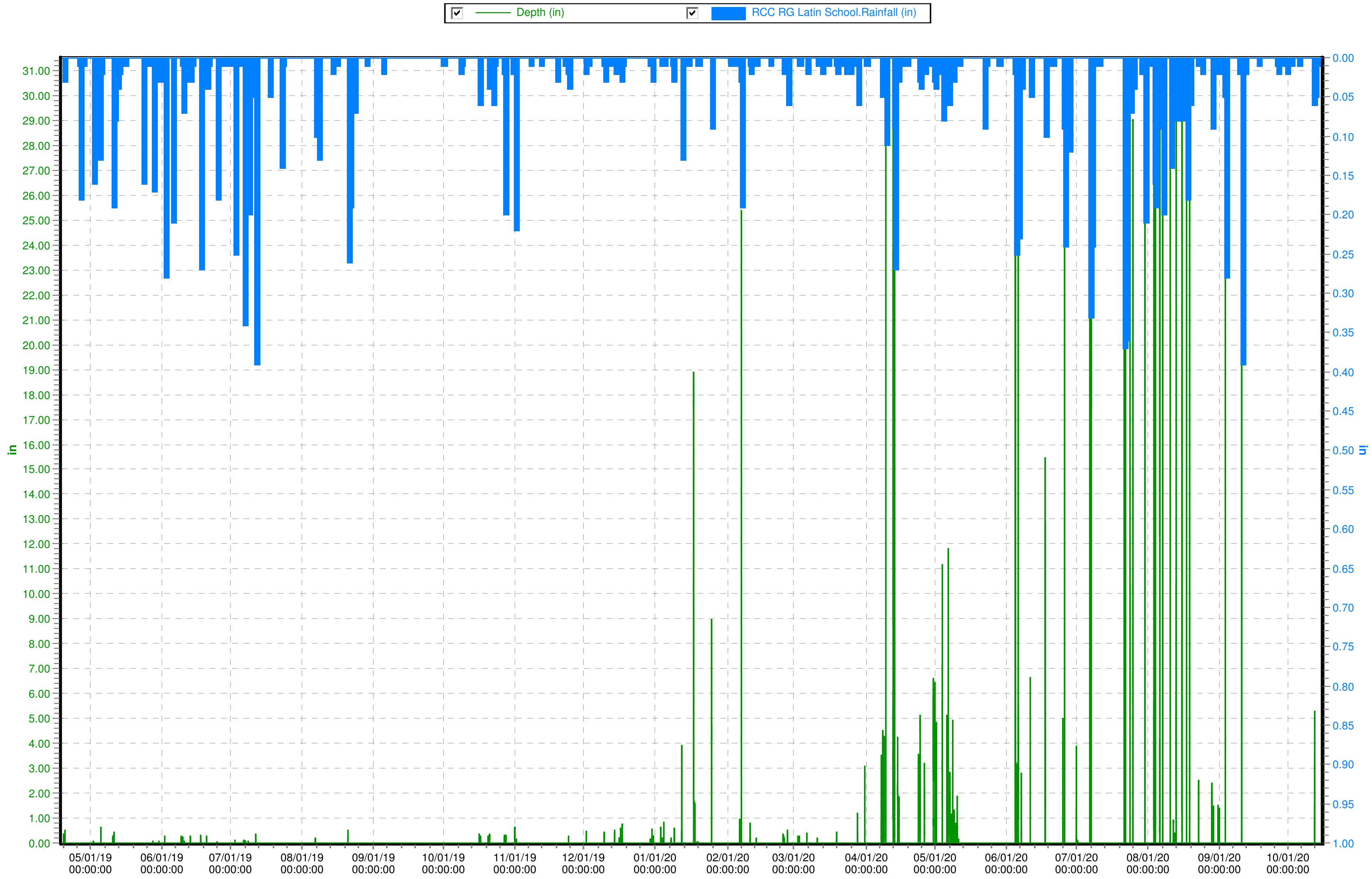
WATER DEPTH SENSORS TO MEASURE DEPTH IN FLOW RESTRICTION RISERS





3608-A01

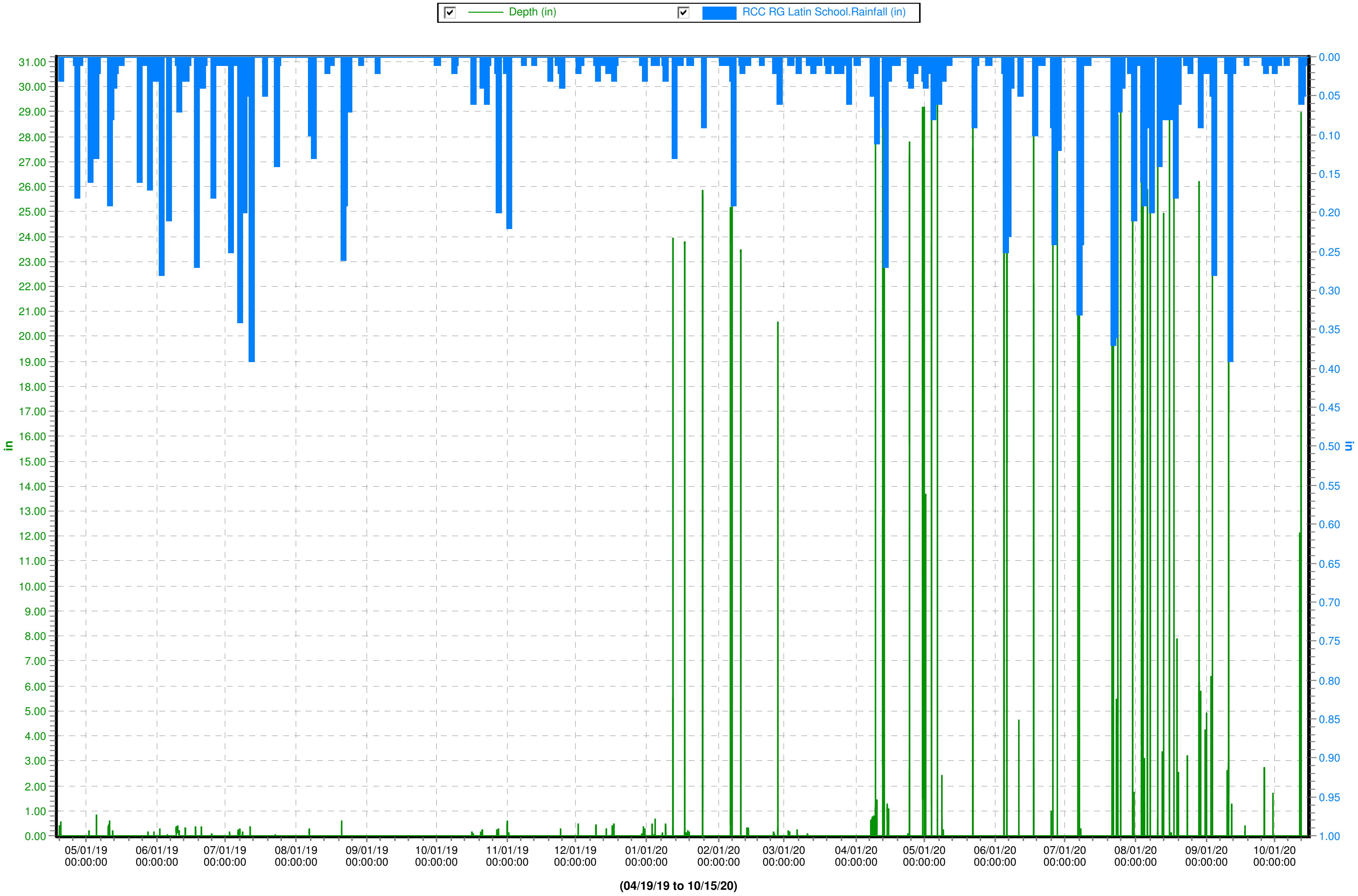
137 Ingraham ST NW-Well Depth (in): 23



(04/19/19 to 10/15/20)

3608-A02

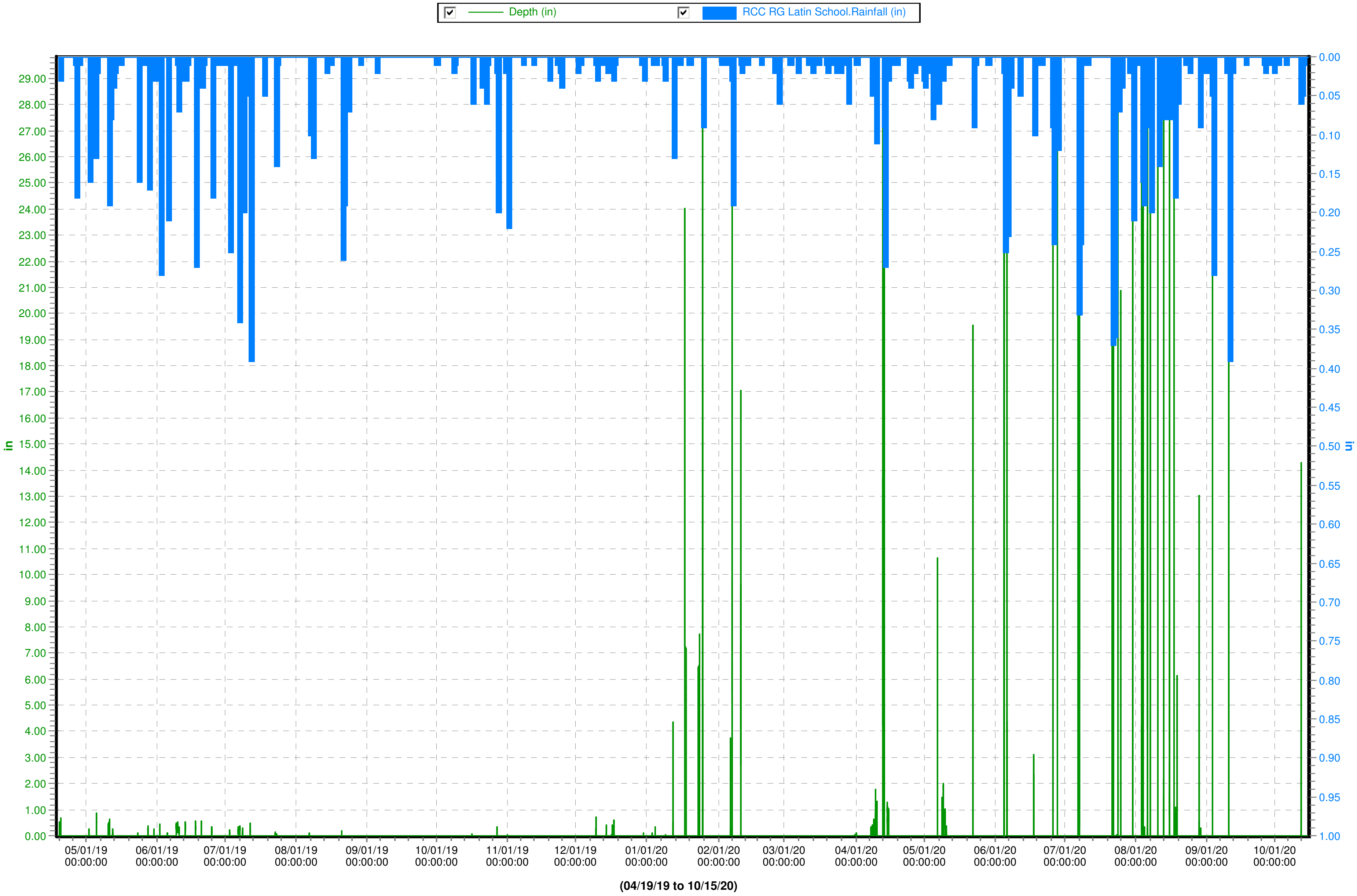
137 Ingraham ST NW-Well Depth (in): 26



(04/19/19 to 10/15/20)

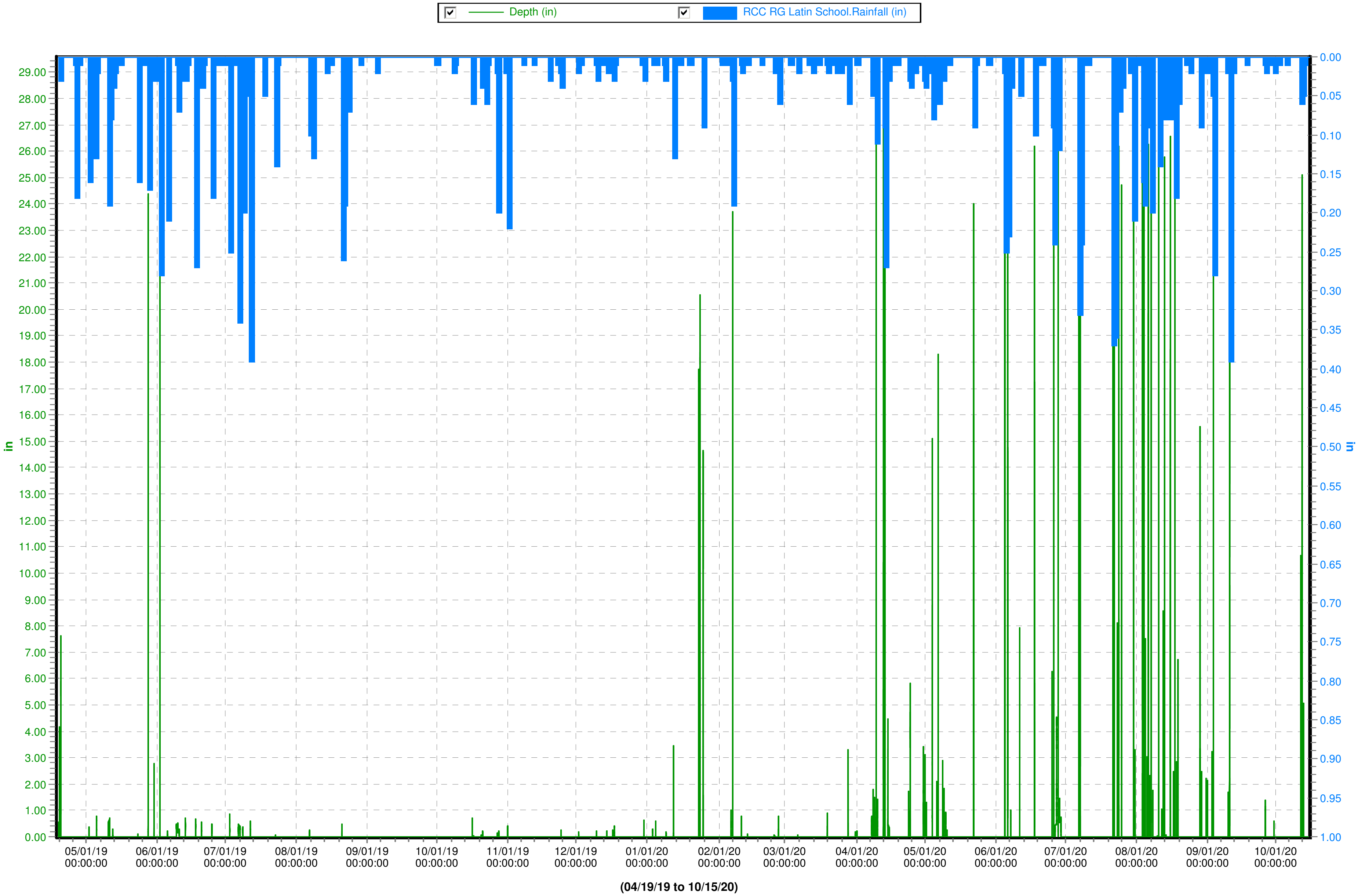
3608-A03

137 Ingraham ST NW-Well Depth (in): 26



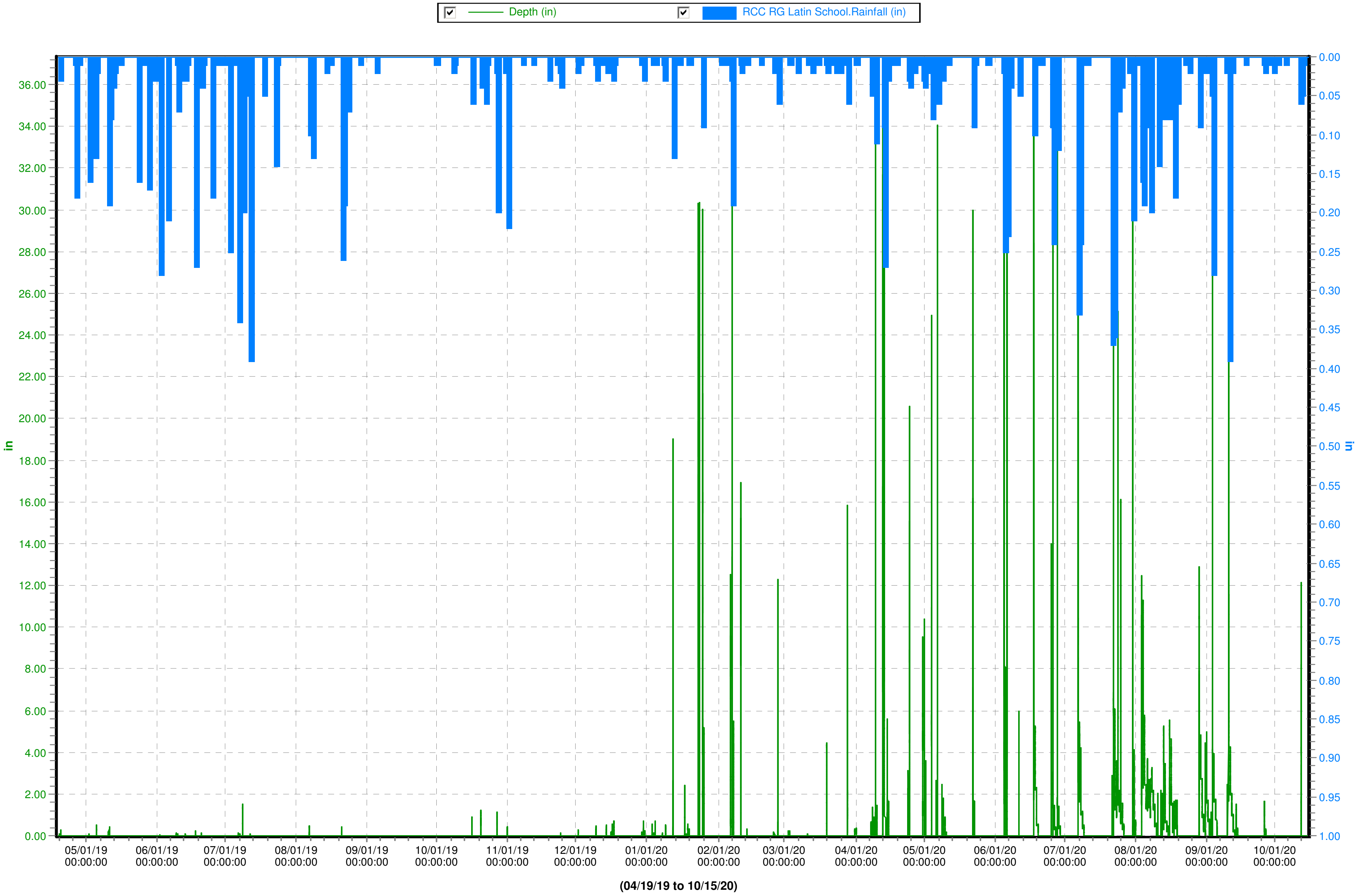
3608-A04

137 Ingraham ST NW-Well Depth (in): 43



3608-A05

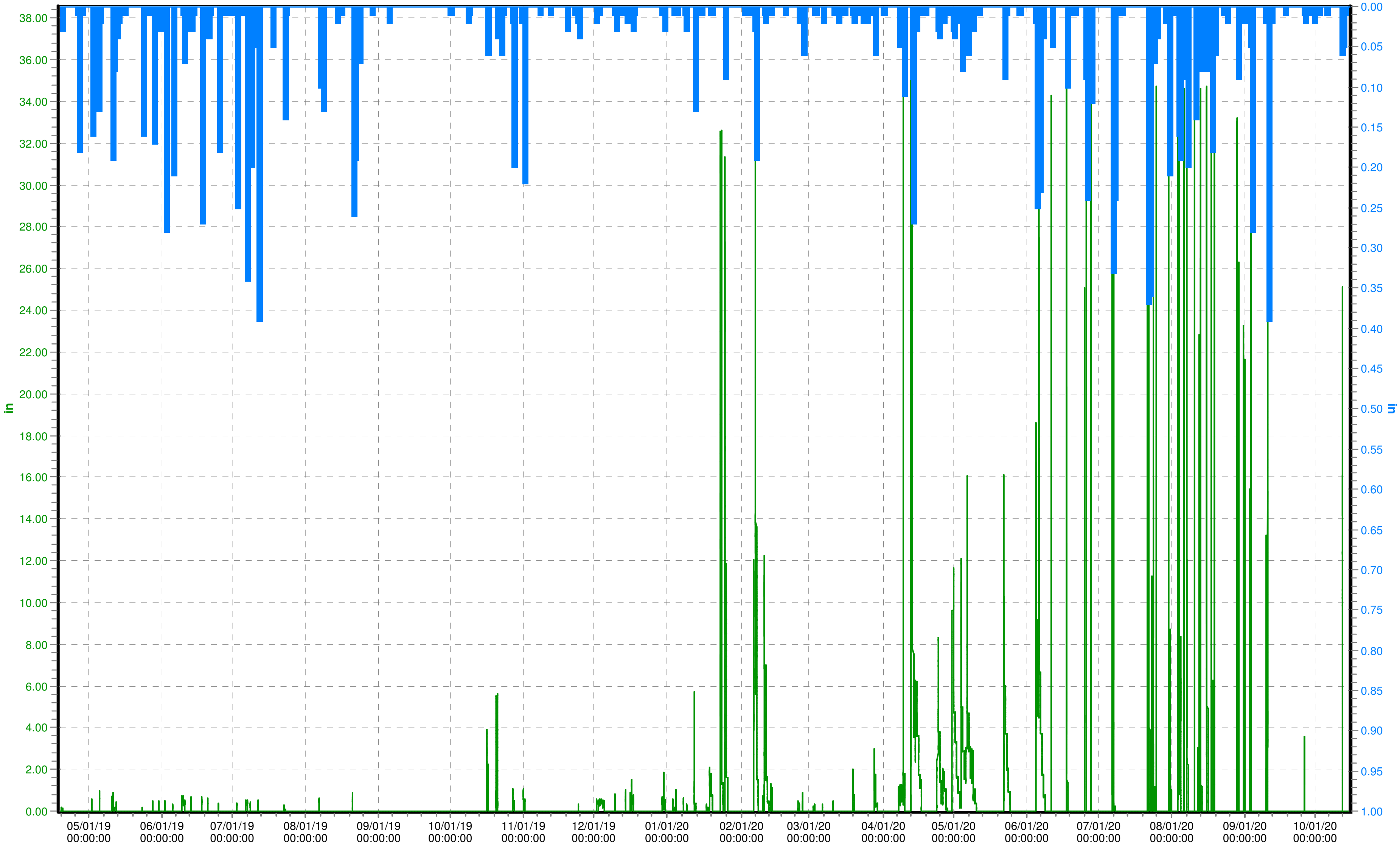
137 Ingraham ST NW-Well Depth (in): 34



3608-A06

137 Ingraham ST NW-Well Depth (in): 34

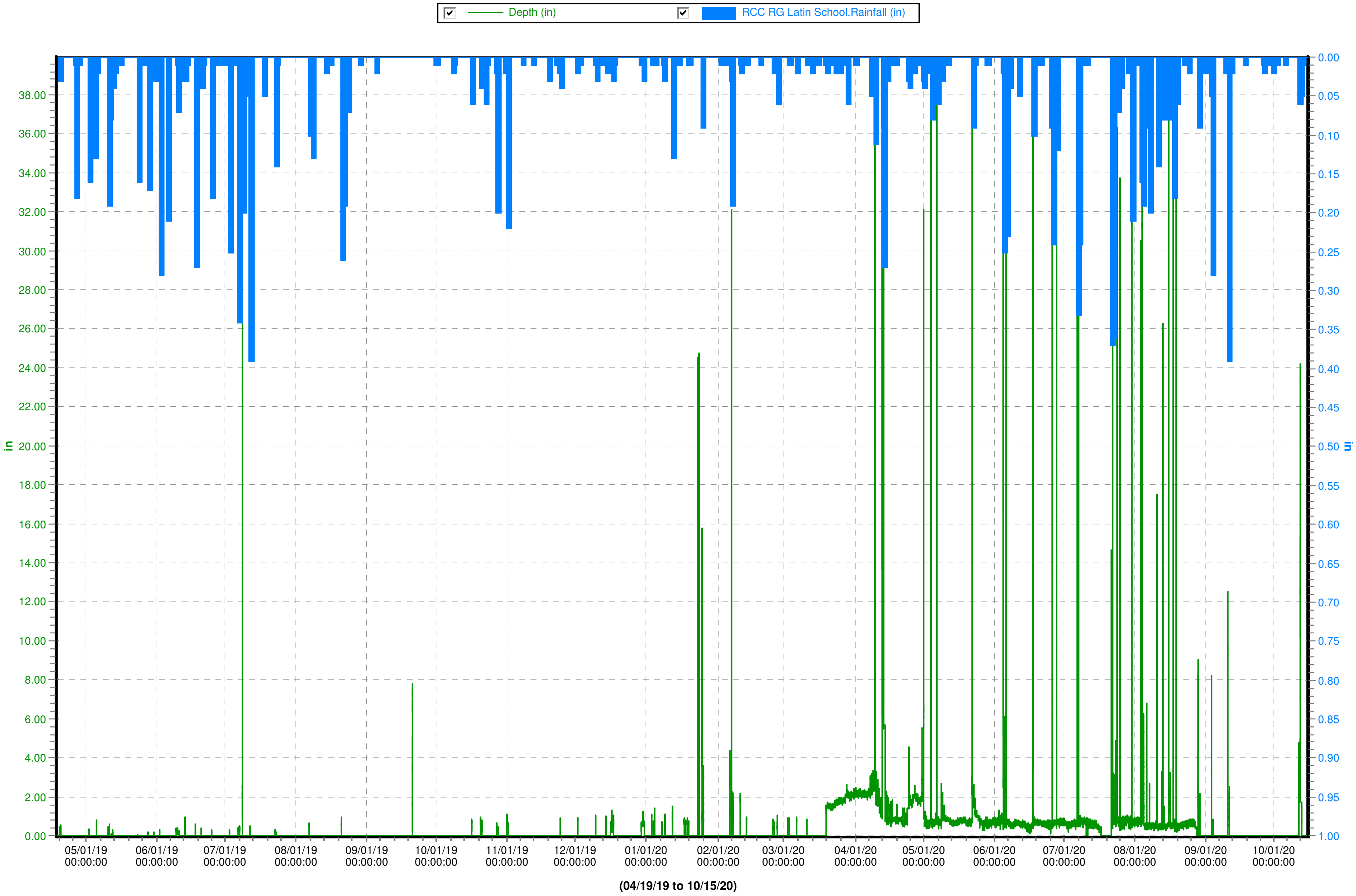
☑ Depth (in) ☑ RCC RG Latin School.Rainfall (in)



(04/19/19 to 10/15/20)

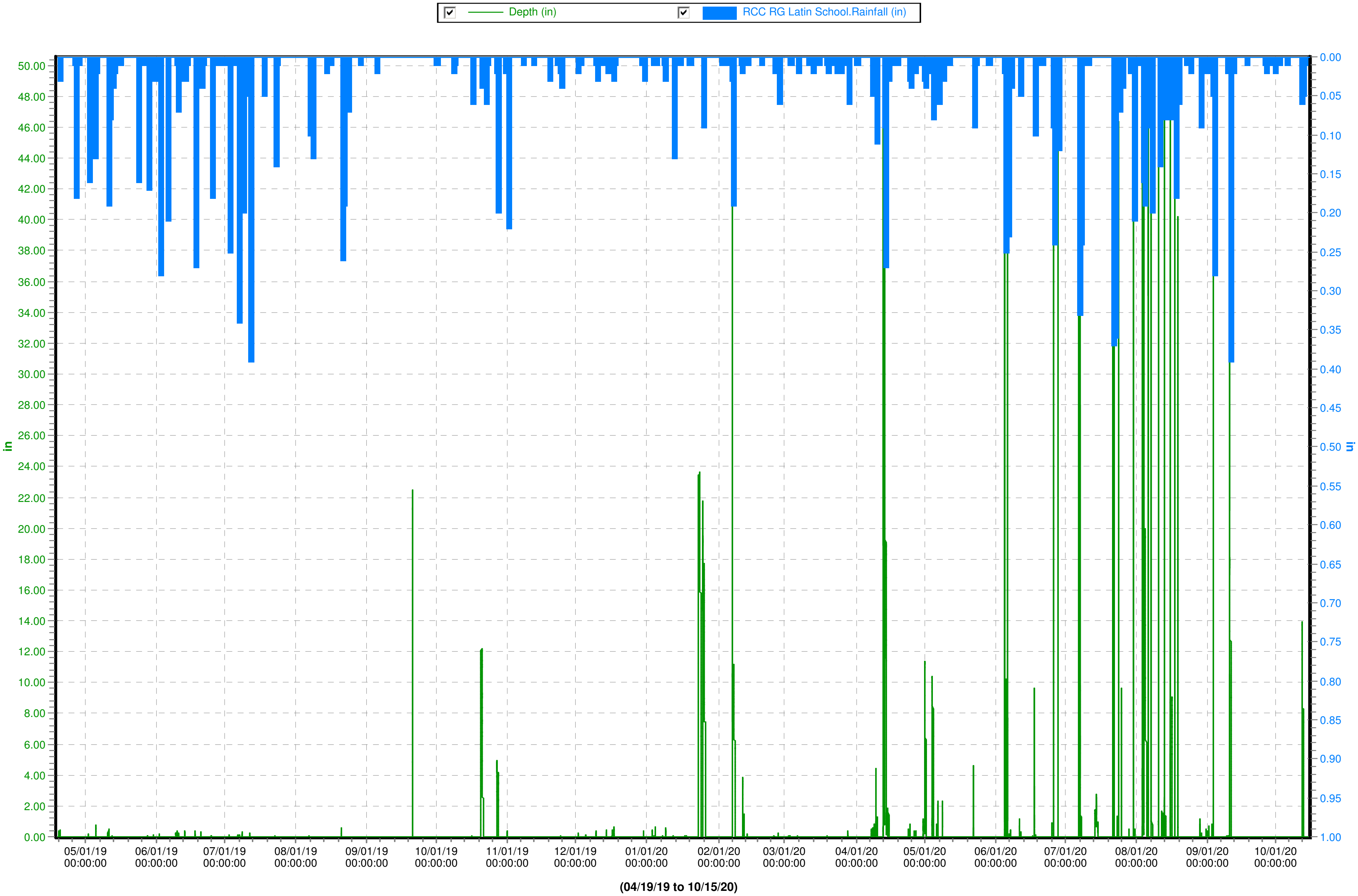
3608-A07

137 Ingraham ST NW-Well Depth (in): 31



3608-A08

137 Ingraham St NW-Well Depth (in): 28



Site#	A01				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/17/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:58		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:24		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	12:38			PJ/DC	Download Water Depth Sensor
7/30/2019	9:03			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	9:32		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:57			PJ	Download Water Depth Sensor
8/19/2019	9:06			PJ	Download Water Depth Sensor
8/21/2019	11:52		0	DM/PJ	Download Water Depth Sensor
8/26/2019	9:17			PJ	Download Water Depth Sensor
9/3/2019	9:15			PJ	Download Water Depth Sensor
9/9/2019	9:05			PJ	Download Water Depth Sensor
9/16/2019	9:25			PJ	Download Water Depth Sensor
9/23/2019	9:00			PJ/DL	Download Water Depth Sensor
9/30/2019	11:06			DL	Download Water Depth Sensor
10/16/2019	13:26			SD/AP	Download Water Depth Sensor

10/29/2019	9:41		0	SD/AP	Download Water Depth Sensor
11/12/2019	11:06			SD/AP	Download Water Depth Sensor
12/2/2019	16:28			sd/mh	Download Water Depth Sensor
12/10/2019	9:50			SD/AP	Download Water Depth Sensor
12/18/2019	13:02		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:41			SD/MH	Download Water Depth Sensor
1/6/2020	13:46			SD/DW	Download Water Depth Sensor
1/14/2020	9:07			SD/DW	Download Water Depth Sensor
1/21/2020	16:42		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:31			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:10			SD/DW	Download Water Depth Sensor
2/18/2020	8:26			SD/DW	Download Water Depth Sensor
2/24/2020	10:45			SD	Download Water Depth Sensor
3/3/2020	10:41			SD/JP	Download Water Depth Sensor
3/10/2020	7:51			Sd/JP	Download Water Depth Sensor
3/16/2020	14:07		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:40			SD/JP/AE	Download Water Depth Sensor
3/30/2020	13:48			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:26			SD/JP/AE	Download Water Depth Sensor
4/28/2020	12:06		0	SD/JP/AE	Download Water Depth Sensor
5/13/2020	12:01			SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:10		0	AE/JP	Download Water Depth Sensor
5/28/2020	11:50			SD/Jp/AE	Download Water Depth Sensor
5/29/2020	10:50		0	AE/JP	Download Water Depth Sensor
6/1/2020	10:35		0	AE/JP	Download Water Depth Sensor
6/5/2020	11:00		0	AE/JP	Download Water Depth Sensor
6/18/2020	10:55		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:31			SD/JP/AE	Download Water Depth Sensor
6/26/2020	10:45		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:40			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:14		0	SD/JP/AE	Download Water Depth Sensor

7/22/2020	8:50			SD/JP/AE	Download Water Depth Sensor
8/5/2020	11:26			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:07		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:46			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:40			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:55		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:08		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:56		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:39		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:48			JP/AE	Download Water Depth Sensor
10/9/2020	11:56		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:36		0	SD/JP/AE	Download Water Depth Sensor
10/22/2020	16:33			JP/AE	Download Water Depth Sensor
10/26/2020	14:22		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A02				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/17/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:49		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:22		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	15:45				Download Water Depth Sensor
7/30/2019	9:02			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	9:28		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:53			PJ	Download Water Depth Sensor
8/19/2019	9:11			PJ	Download Water Depth Sensor
8/21/2019	11:52		0	DM/PJ	Download Water Depth Sensor
8/26/2019	9:15			PJ	Download Water Depth Sensor
9/3/2019	9:20			PJ	Download Water Depth Sensor
9/9/2019	9:08			PJ	Download Water Depth Sensor
9/16/2019	9:30			PJ	Download Water Depth Sensor
9/23/2019	9:03			PJ/DL	Download Water Depth Sensor
9/30/2019	11:08			DL	Download Water Depth Sensor
10/16/2019	13:22			SD/AP	Download Water Depth Sensor

10/29/2019	9:40		0	SD/AP	Download Water Depth Sensor
11/12/2019	11:04			SD/AP	Download Water Depth Sensor
12/2/2019	16:27			sd/mh	Download Water Depth Sensor
12/10/2019	9:49			SD/AP	Download Water Depth Sensor
12/18/2019	13:03		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:39			SD/MH	Download Water Depth Sensor
1/6/2020	13:45			SD/DW	Download Water Depth Sensor
1/14/2020	9:05			SD/Dw	Download Water Depth Sensor
1/21/2020	16:40		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:29			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:09			SD/DW	Download Water Depth Sensor
2/18/2020	8:24			SD/DW	Download Water Depth Sensor
2/24/2020	10:44			SD	Download Water Depth Sensor
3/3/2020	10:40			SD/JP	Download Water Depth Sensor
3/10/2020	7:47			SD/JP	Download Water Depth Sensor
3/16/2020	14:05		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:38			SD/JP/AE	Download Water Depth Sensor
3/30/2020	13:47			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:23			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:27			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:15			SD/JP/AE	Download Water Depth Sensor
5/13/2020	11:59			SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:49		0	SD/JP/AE	Download Water Depth Sensor
5/29/2020	11:05		0	SD/JP/AE	Download Water Depth Sensor
6/1/2020	11:10		0	AE/JP	Download Water Depth Sensor
6/5/2020	11:00		0	AE/JP	Download Water Depth Sensor
6/18/2020	11:05		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:30			SD/JP/aE	Download Water Depth Sensor
6/26/2020	12:00		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:40			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:13		0	SD/JP/aE	Download Water Depth Sensor

7/22/2020	8:50			SD/JP/AE	Download Water Depth Sensor
8/5/2020	11:25			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:05		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:44			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:40			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:52		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:08		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:56		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:38		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:45			JP/AE	Download Water Depth Sensor
10/9/2020	11:54		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:35		0	SD/JP/AE	Download Water Depth Sensor
10/22/2020	16:33			JP/AE	Download Water Depth Sensor
10/26/2020	14:24		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A03				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/17/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:40		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:20		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	13:05			PJ/DC	Download Water Depth Sensor
8/6/2019	9:14		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:50			PJ	Download Water Depth Sensor
8/19/2019	9:15			PJ	Download Water Depth Sensor
8/21/2019	11:52		<.25	DM/PJ	Download Water Depth Sensor
8/26/2019	9:09			PJ	Download Water Depth Sensor
9/3/2019	9:23			PJ	Download Water Depth Sensor
9/9/2019	9:11			PJ	Download Water Depth Sensor
9/16/2019	9:32			PJ	Download Water Depth Sensor
9/23/2019	12:13			SD/PJ/DL	Download Water Depth Sensor
9/30/2019	11:10			DL	Download Water Depth Sensor
10/16/2019	13:25			SD/AP	Download Water Depth Sensor
10/29/2019	9:40		0	SD/AP	Download Water Depth Sensor

11/12/2019	11:03			SD/AP	Download Water Depth Sensor
12/2/2019	16:26			sd/mh	Download Water Depth Sensor
12/10/2019	9:48			SD/AP	Download Water Depth Sensor
12/18/2019	13:01		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:38			SD/MH	Download Water Depth Sensor
1/6/2020	13:43			SD/DW	Download Water Depth Sensor
1/14/2020	9:00			SD/DW	Download Water Depth Sensor
1/21/2020	16:39		0	SD/Dw	Download Water Depth Sensor
1/27/2020	11:28			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:07			SD/DW	Download Water Depth Sensor
2/18/2020	8:22			SD/DW	Download Water Depth Sensor
2/24/2020	10:43			SD	Download Water Depth Sensor
3/3/2020	10:40			SD/JP	Download Water Depth Sensor
3/10/2020	7:46			SD/JP	Download Water Depth Sensor
3/16/2020	14:03		0	sd/jp	Download Water Depth Sensor
3/23/2020	13:40			SD/JP	Download Water Depth Sensor
3/30/2020	13:46			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:59			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:28			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:45			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:14			SD/JP/AE	Download Water Depth Sensor
5/8/2020	11:06		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	10:55		0	AE/JP	Download Water Depth Sensor
5/29/2020	11:08		0	SD/JP/AE	Download Water Depth Sensor
6/5/2020	9:25		0	AE/JP	Download Water Depth Sensor
6/18/2020	10:55		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:30			SD/Jp/AE	Download Water Depth Sensor
6/26/2020	11:35		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:39			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:10		0	SD/JP/AE	Download Water Depth Sensor
7/22/2020	8:47			SD/JP/AE	Download Water Depth Sensor

8/5/2020	11:27			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:10		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:46			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:38			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:56		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:05		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:53		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:36		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:52			JP/AE	Download Water Depth Sensor
10/9/2020	11:56		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:35		0	SD/JP/AE	Download Water Depth Sensor
10/22/2020	15:31		0	JP/AE	Download Water Depth Sensor

Site#	A04				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:20		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:36		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:18		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/17/2019				SD/PJ/PR	Download Water Depth Sensor
7/30/2019	8:58			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	9:04		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:46			PJ	Download Water Depth Sensor
8/19/2019	9:17			PJ	Download Water Depth Sensor
8/21/2019	11:52		0	DM/PJ	Download Water Depth Sensor
8/26/2019	12:22			SD/PJ	Download Water Depth Sensor
9/3/2019	9:29			PJ	Download Water Depth Sensor
9/9/2019	9:15			PJ	Download Water Depth Sensor
9/16/2019	9:36			PJ	Download Water Depth Sensor
9/23/2019	9:08			PJ/DL	Download Water Depth Sensor
9/30/2019	11:13			DL	Download Water Depth Sensor
10/16/2019	13:15			SD/AP	Download Water Depth Sensor

10/29/2019	9:39		0	SD/AP	Download Water Depth Sensor
11/12/2019	11:02			SD/AP	Download Water Depth Sensor
12/2/2019	16:25			sd/mh	Download Water Depth Sensor
12/10/2019	9:47			SD/AP	Download Water Depth Sensor
12/18/2019	13:00		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:37			SD/MH	Download Water Depth Sensor
1/6/2020	13:43			SD/DW	Download Water Depth Sensor
1/14/2020	9:01			SD/DW	Download Water Depth Sensor
1/21/2020	16:37		0	SD/Dw	Download Water Depth Sensor
1/27/2020	11:25			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:06			SD/DW	Download Water Depth Sensor
2/18/2020	8:21			SD/DW	Download Water Depth Sensor
2/24/2020	10:42			SD	Download Water Depth Sensor
3/3/2020	10:39			SD/JP	Download Water Depth Sensor
3/10/2020	7:45			SD/JP	Download Water Depth Sensor
3/16/2020	14:02		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:38			SD/JP/AE	Download Water Depth Sensor
3/30/2020				SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:22			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:30			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:46			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:12			SD/JP/AE	Download Water Depth Sensor
5/8/2020	11:02		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:00		0	AE/JP	Download Water Depth Sensor
5/29/2020	11:06		0	SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:00		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:28			SD/JP/aE	Download Water Depth Sensor
6/26/2020	11:20		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:37			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:07		0	SD/JP/aE	Download Water Depth Sensor
7/22/2020	8:44			SD/JP/AE	Download Water Depth Sensor

8/5/2020	11:28			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:09		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:47			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:37			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:55		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:01		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:52		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:33		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:51			JP/AE	Download Water Depth Sensor
10/9/2020	11:52		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:33		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:31			JP/AE	Download Water Depth Sensor
10/26/2020	13:19		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A05				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:20		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:30		<0.25"	LR//PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:16		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	9:15			PJ/DC	Download Water Depth Sensor
7/30/2019	8:55			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	8:59		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:32			PJ	Download Water Depth Sensor
8/19/2019	9:36			PJ	Download Water Depth Sensor
8/21/2019	11:52		<.25	DM/PJ	Download Water Depth Sensor
8/26/2019	9:36			PJ	Download Water Depth Sensor
9/3/2019	9:31			PJ	Download Water Depth Sensor
9/9/2019	9:18			PJ	Download Water Depth Sensor
9/16/2019	9:40			PJ	Download Water Depth Sensor
9/23/2019	9:11			PJ/DL	Download Water Depth Sensor
9/30/2019	11:15			DL	Download Water Depth Sensor
10/16/2019	13:20			SD/AP	Download Water Depth Sensor

10/29/2019	9:38		0	SD/AP	Download Water Depth Sensor
11/12/2019	11:01			SD/AP	Download Water Depth Sensor
12/2/2019	16:24			sd/mh	Download Water Depth Sensor
12/10/2019	9:47			SD/AP	Download Water Depth Sensor
12/18/2019	12:58		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:12			SD/MH	Download Water Depth Sensor
1/6/2020	13:42			SD/DW	Download Water Depth Sensor
1/14/2020	8:56			SD/DW	Download Water Depth Sensor
1/21/2020	16:36		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:23	`		SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:03			SD/DW	Download Water Depth Sensor
2/18/2020	8:19			SD/DW	Download Water Depth Sensor
2/24/2020	10:42			SD	Download Water Depth Sensor
3/3/2020	10:38			SD/JP	Download Water Depth Sensor
3/10/2020	7:45			SD/JP	Download Water Depth Sensor
3/16/2020	14:00		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:31			SD/JP/AE	Download Water Depth Sensor
3/30/2020	13:45			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:20			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:25			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:44			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:12			SD/JP/AE	Download Water Depth Sensor
5/8/2020	11:01		0	SD/JP/AE	Download Water Depth Sensor
5/29/2020	11:12		0	SD/JP/AE	Download Water Depth Sensor
6/1/2020	11:03		0	AE/JP	Download Water Depth Sensor
6/5/2020	10:50		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:26			SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:35			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:03		0	SD/JP/AE	Download Water Depth Sensor
7/22/2020	8:40			SD/JP/AE	Download Water Depth Sensor

8/5/2020	11:30			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:13		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:49			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:35			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:59		1.25	SD/JP/AE	Download Water Depth Sensor
9/4/2020	12:45		2.00	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:49		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:31		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	13:53			JP/AE	Download Water Depth Sensor
10/9/2020	11:58		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:21		0	SD/JP/AE	Download Water Depth Sensor
10/22/2020	16:29		0	JP/AE	Download Water Depth Sensor
10/26/2020	14:17		0	SD/JP/AE	Download Water Depth Sensor, remove

Site#	A06				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:20		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:25		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:14		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/30/2019	8:40			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	8:55		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:26			PJ	Download Water Depth Sensor
8/19/2019	9:41			PJ	Download Water Depth Sensor
8/21/2019	11:52		<.25	DM/PJ	Download Water Depth Sensor
8/26/2019	8:45			PJ	Download Water Depth Sensor
9/3/2019	12:21			SD/PJ	Download Water Depth Sensor
9/9/2019	9:25			PJ	Download Water Depth Sensor
9/16/2019	9:43			PJ	Download Water Depth Sensor
9/23/2019	9:15			PJ	Download Water Depth Sensor
9/30/2019	11:17			DL	Download Water Depth Sensor
10/16/2019	13:18			SD/AP	Download Water Depth Sensor
10/29/2019	9:37		0	SD/AP	Download Water Depth Sensor

11/12/2019	10:58			SD/AP	Download Water Depth Sensor
12/2/2019	16:23			SD/MH	Download Water Depth Sensor
12/10/2019	9:51			SD/AP	Download Water Depth Sensor
12/18/2019	12:57		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:10			SD/MH	Download Water Depth Sensor
1/6/2020	13:40			SD/DW	Download Water Depth Sensor
1/14/2020	8:54			SD/DW	Download Water Depth Sensor
1/21/2020	16:35		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:21			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:01			SD/DW	Download Water Depth Sensor
2/18/2020	8:17			SD/DW	Download Water Depth Sensor
2/24/2020	10:41			SD	Download Water Depth Sensor
3/3/2020	10:37			SD/JP	Download Water Depth Sensor
3/10/2020	7:43			SD/JP	Download Water Depth Sensor
3/16/2020	12:57		0	sd/jp	Download Water Depth Sensor
3/23/2020	13:30			SD/JP	Download Water Depth Sensor
3/30/2020	13:45			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:21			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:23			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:42			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:11			SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:59		1.50	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:05		0	AE/JP	Download Water Depth Sensor
5/29/2020	11:13			SD/JP/AE	Download Water Depth Sensor
6/1/2020	11:10		0	AE/JP	Download Water Depth Sensor
6/5/2020	12:15		5.00	AE/JP	Download Water Depth Sensor
6/18/2020	11:05		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:27			SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:50		0	AE/JP	Download Water Depth Sensor
7/6/2020	13:36			SD/JP/AE	Download Water Depth Sensor
7/14/2020	11:06		0	SD/JP/AE	Download Water Depth Sensor

7/22/2020	8:46			SD/JP/AE	Download Water Depth Sensor
8/5/2020	11:29			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:12		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:48			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:36			SD/JP/AE	Download Water Depth Sensor
9/1/2020	12:58		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	10:59		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:50		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:32		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:51		0	JP/AE	Download Water Depth Sensor
10/9/2020	12:00		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:23		9.50	SD/JP/AE	Download Water Depth Sensor
10/22/2020	15:28		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:16		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A07				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:20		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:20		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:12		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	9:05			PJ/DC	Download Water Depth Sensor
7/30/2019	8:35			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	8:48		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:22			PJ	Download Water Depth Sensor
8/19/2019	9:46			PJ	Download Water Depth Sensor
8/21/2019	11:52		0	DM/PJ	Download Water Depth Sensor
8/26/2019	8:41			PJ	Download Water Depth Sensor
9/3/2019	9:38			PJ	Download Water Depth Sensor
9/9/2019	9:35			PJ	Download Water Depth Sensor
9/16/2019	9:45			PJ	Download Water Depth Sensor
9/23/2019	9:16			PJ/DL	Download Water Depth Sensor
9/30/2019	11:21			DL	Download Water Depth Sensor
10/16/2019	13:40			SD/AP	Download Water Depth Sensor

10/29/2019	9:36		0	SD/AP	Download Water Depth Sensor
11/12/2019	11:22			SD/AP	Download Water Depth Sensor
12/2/2019	16:22			SD/MH	Download Water Depth Sensor
12/10/2019	9:45			SD/AP	Download Water Depth Sensor
12/18/2019	12:56		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:09			SD/MH	Download Water Depth Sensor
1/6/2020	13:39			SD/MH	Download Water Depth Sensor
1/14/2020	8:51			SD/DW	Download Water Depth Sensor
1/21/2020	16:33		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:18			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	12:55			sd/dw	Download Water Depth Sensor
2/18/2020	8:16			SD/DW	Download Water Depth Sensor
2/24/2020	10:40			SD	Download Water Depth Sensor
3/3/2020	10:36			SD/JP	Download Water Depth Sensor
3/10/2020	7:57			SD/JP	Download Water Depth Sensor
3/16/2020	13:51		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:34			SD/JP/AE	Download Water Depth Sensor
3/30/2020	13:44			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:18			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:19			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:41			SD/JP/AW	Download Water Depth Sensor
4/24/2020	12:09			SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:56		0.50	SD/JP/AE	Download Water Depth Sensor
5/21/2020	11:20		0.50	SD/JP/AE	Download Water Depth Sensor
5/29/2020	11:14		0.50	SD/JP/AE	Download Water Depth Sensor
6/1/2020	11:15		0.50	SD/JP/AE	Download Water Depth Sensor
6/5/2020	11:05		2.00	SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:10		1.00	SD/JP/AE	Download Water Depth Sensor
6/19/2020	11:25			SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:35		0.75	SD/JP/AE	Download Water Depth Sensor
7/6/2020	13:34			SD/JP/AE	Download Water Depth Sensor

7/14/2020	11:01		0.50	SD/JP/AE	Download Water Depth Sensor
7/22/2020	8:37			SD/JP/AE	Download Water Depth Sensor
8/5/2020	11:31			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:14		0.50	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:50			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:35			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:00		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:02		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	14:47		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:28		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	13:56		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:45		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:25		5.50	SD/JP/AE	Download Water Depth Sensor
10/22/2020	15:36		0	JP/AE	Download Water Depth Sensor
10/27/2020	17:17			SD	Download Water Depth Sensor, Remove

Site#	A04				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:20		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/13/2019	16:30		0	SD/PJ	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019				PJ	Download Water Depth Sensor
6/13/2019	10:14		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	9:10		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	9:03			PJ/DC	Download Water Depth Sensor
7/30/2019	9:00			SD/Pj/DC	Download Water Depth Sensor
8/6/2019	8:42		0	LP/PJ	Download Water Depth Sensor
8/12/2019	9:17			PJ	Download Water Depth Sensor
8/19/2019	9:48			PJ	Download Water Depth Sensor
8/21/2019	11:52		<.25	DM/PJ	Download Water Depth Sensor
8/26/2019	8:39			PJ	Download Water Depth Sensor
9/3/2019	9:41			PJ	Download Water Depth Sensor
9/9/2019	9:37			PJ	Download Water Depth Sensor
9/16/2019	9:48			PJ	Download Water Depth Sensor
9/23/2019	9:20			PJ	Download Water Depth Sensor
9/30/2019	11:25			DL	Download Water Depth Sensor
10/16/2019	13:46			SD/AP	Download Water Depth Sensor

10/29/2019	9:35		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:51			SD/AP	Download Water Depth Sensor
12/2/2019	16:20			SD/MH	Download Water Depth Sensor
12/10/2019	9:41			SD/AP	Download Water Depth Sensor
12/18/2019	12:51		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:07			SD/MH	Download Water Depth Sensor
1/6/2020	13:37			SD/DW	Download Water Depth Sensor
1/14/2020	8:48			SD/DW	Download Water Depth Sensor
1/21/2020	16:30		0	SD/DW	Download Water Depth Sensor
1/27/2020	11:15			SD/DW	Download Water Depth Sensor
2/3/2020			0	SD/DW	Download Water Depth Sensor
2/10/2020	13:05			SD/DW	Download Water Depth Sensor
2/18/2020	8:14			SD/DW	Download Water Depth Sensor
2/24/2020	10:38			SD	Download Water Depth Sensor
3/3/2020	10:35			SD/JP	Download Water Depth Sensor
3/10/2020	7:41			SD/JP	Download Water Depth Sensor
3/16/2020	12:19		0	SD/JP	Download Water Depth Sensor
3/23/2020	13:28			SD/JP/AE	Download Water Depth Sensor
3/30/2020	13:43			SD/JP/AE	Download Water Depth Sensor
4/8/2020	10:15			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:20			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:40			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:07			SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:53		0	SD/JP/AE	Download Water Depth Sensor
5/21/2020	8:40		0	AE/JP	Download Water Depth Sensor
5/28/2020	11:30			SD/JP/AE	Download Water Depth Sensor
5/29/2020	10:10		0	AE/JP	Download Water Depth Sensor
6/1/2020	10:54		0	AE/JP	Download Water Depth Sensor
6/5/2020	11:55		1.00	AE/JP	Download Water Depth Sensor
6/18/2020	11:25		0	AE/JP	Download Water Depth Sensor
6/19/2020	11:24			Sd/JP/AE	Download Water Depth Sensor
6/26/2020	12:01		0	AE/JP	Download Water Depth Sensor

7/6/2020	13:33			SD/JP/AE	Download Water Depth Sensor
7/14/2020	10:58		1.75	SD/JP/AE	Download Water Depth Sensor
7/22/2020	8:36			SD/JP/AE	Download Water Depth Sensor
8/5/2020	11:32			SD/JP/AE	Download Water Depth Sensor
8/10/2020	11:15		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020	12:50			SD/JP/AE	Download Water Depth Sensor
8/24/2020	11:34			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:02		0	SD/JP/AE	Download Water Depth Sensor
9/4/2020	11:04		0	SD/JP/AE	Download Water Depth Sensor
9/14/2020	15:02		0	SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:23		0	SD/JP/AE	Download Water Depth Sensor
10/1/2020	14:00		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:46		0	JP/AE	Download Water Depth Sensor
10/12/2020	11:26		13.00	SD/JP/AE	Download Water Depth Sensor
10/22/2020	15:27		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:15		0	SD/JP/AE	Download Water Depth Sensor, Remove

CSL Services, Inc.

Site Name/Manhole # APP-3608-A9 Primary: ☒ Alternate: ☐ Grade ☐

Investigation Date: 7/30/2019 Time: 8:30 Crew Members: SD/PJ

Installation Date: 8/5/2019 Time: 11:30 Crew Members: LP/PJ

Address/Location: 167 Ingram St. NW

Latitude: N 38.9554866° Longitude: W -77°

Weather Conditions: Wet [✓ Dry]

Hydraulic Conditions

Influent Flow:

Velocity _0_ ft/sec

Depth _0_ in

Turbulence Amplitude:

- ☐ Less than 0.25”
- ☐ [✓ 0.25” to 0.75”]
- ☐ 0.75” to 1.5”
- ☐ 1.5” to 3”
- ☐ Greater than 3”

Sewer Line Characteristics:

	Influent 1	Influent 2	Effluent
Height	6		10
Width	6		10
Material	PVC		PVC
Shape	Round		Round

Sediment Present:

☐ Yes Hard packed: ____________ in. deep

☐ [✓ No] Soft: ____________ in. deep

Surcharge / Backwater Influence:

- ☐ [✓ No evidence visible]
- ☐ Remains in pipe
- ☐ _____ft from rim
- ☐ Reaches Rim (potential meter damage)
- ☐ Evidence unclear: _____________ft from rim

Gas Investigation:

☐ [✓ Good] _20.9_ (condition)

Site Conditions

Site Access:

- ☐ [✓ Good (no problems accessing site)]
- ☐ Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)
- ☐ Poor (remote areas, steel embankments, No safe place to park, elevated MH >3 ft)
- ☐ Traffic Control only (Requires extra traffic control
- ☐ Unusable (Document in Comments section)

Manhole Information:

Elevated Manhole: ☐ Yes ☐ [✓ No]

Height above ground ____

Manhole depth 7’ 11”

Structural Integrity of Manhole:

☐ [✓ Good] ☐ Fair ☐ Poor

Pipe Bends:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to bend: ___ft

Pipe Size/Geometry/Material Change:

☐ Influent ☐ Effluent ☐ Manhole

Approx Distance to change: ___ft

(detail is comments)

Crew Member: Can you maintain this site?

☐ [✓ Yes] ☐ No ☐ Maybe

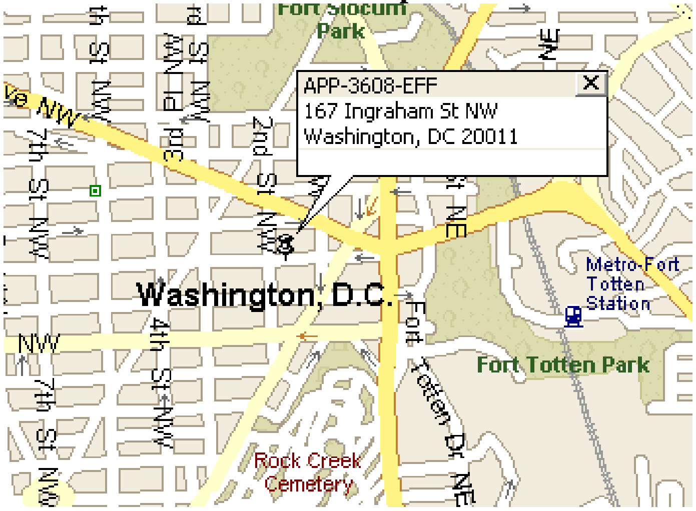
Sensor Configuration:

(Please include Serial Numbers when possible)

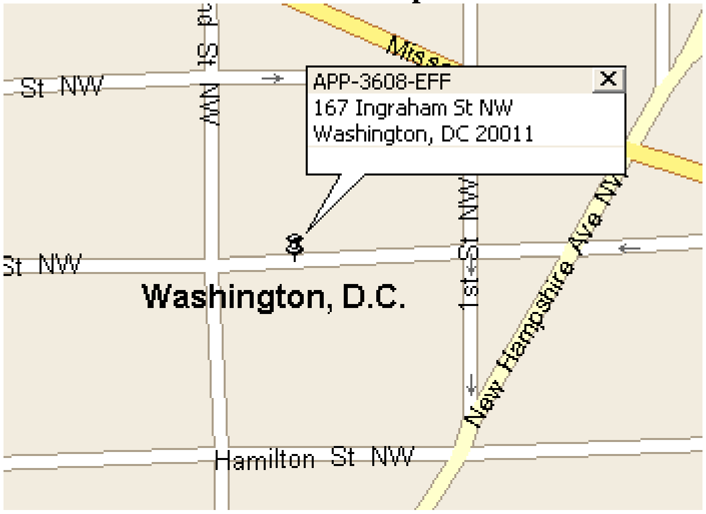
Level	Primary: Pressure Redundant: Ultrasonic
Velocity	Primary: Doppler Redundant:
Meter Logger	Triton

Comments:

Area Map



Detail Map



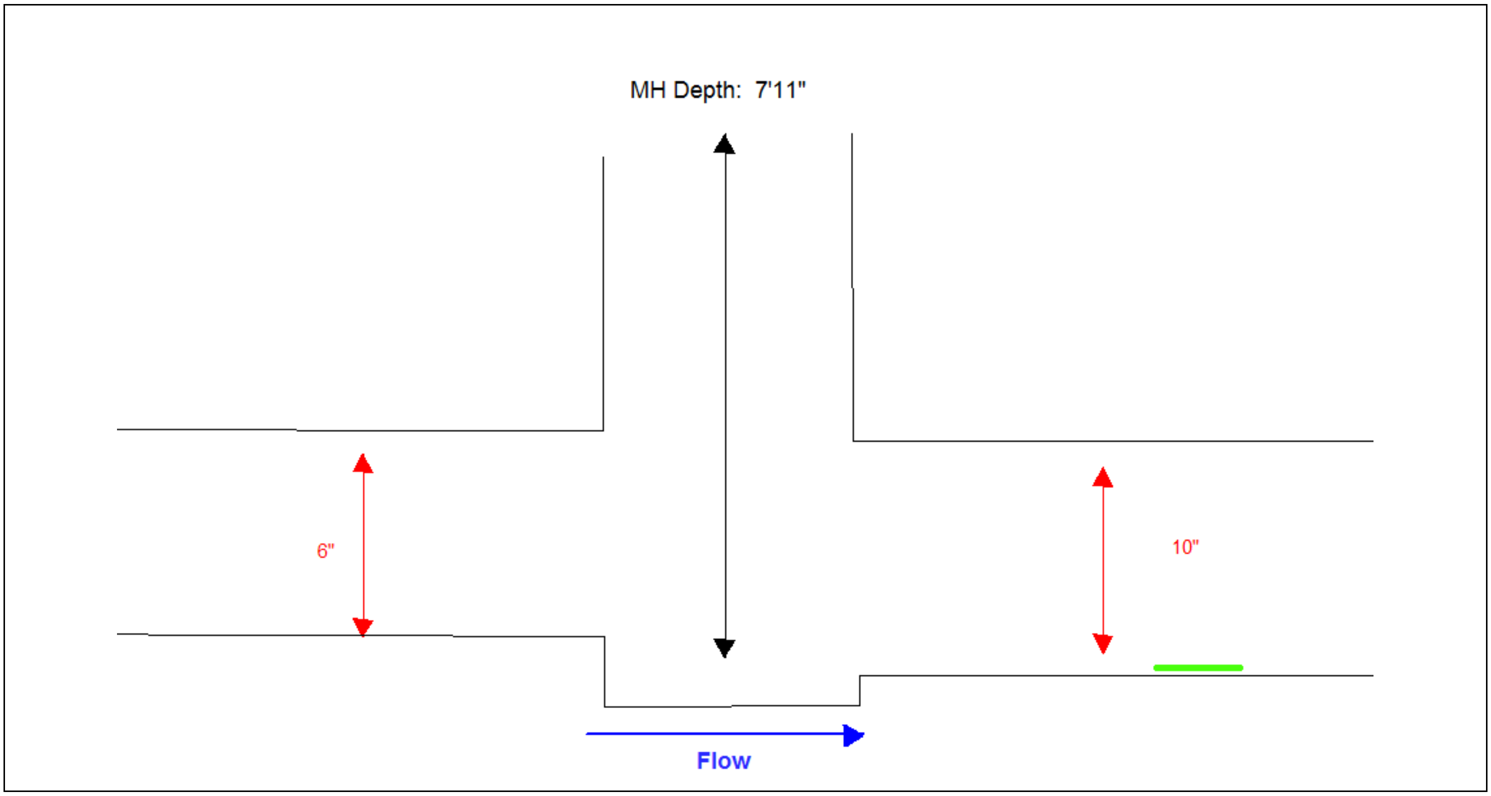
View from top of MH

Site Overview

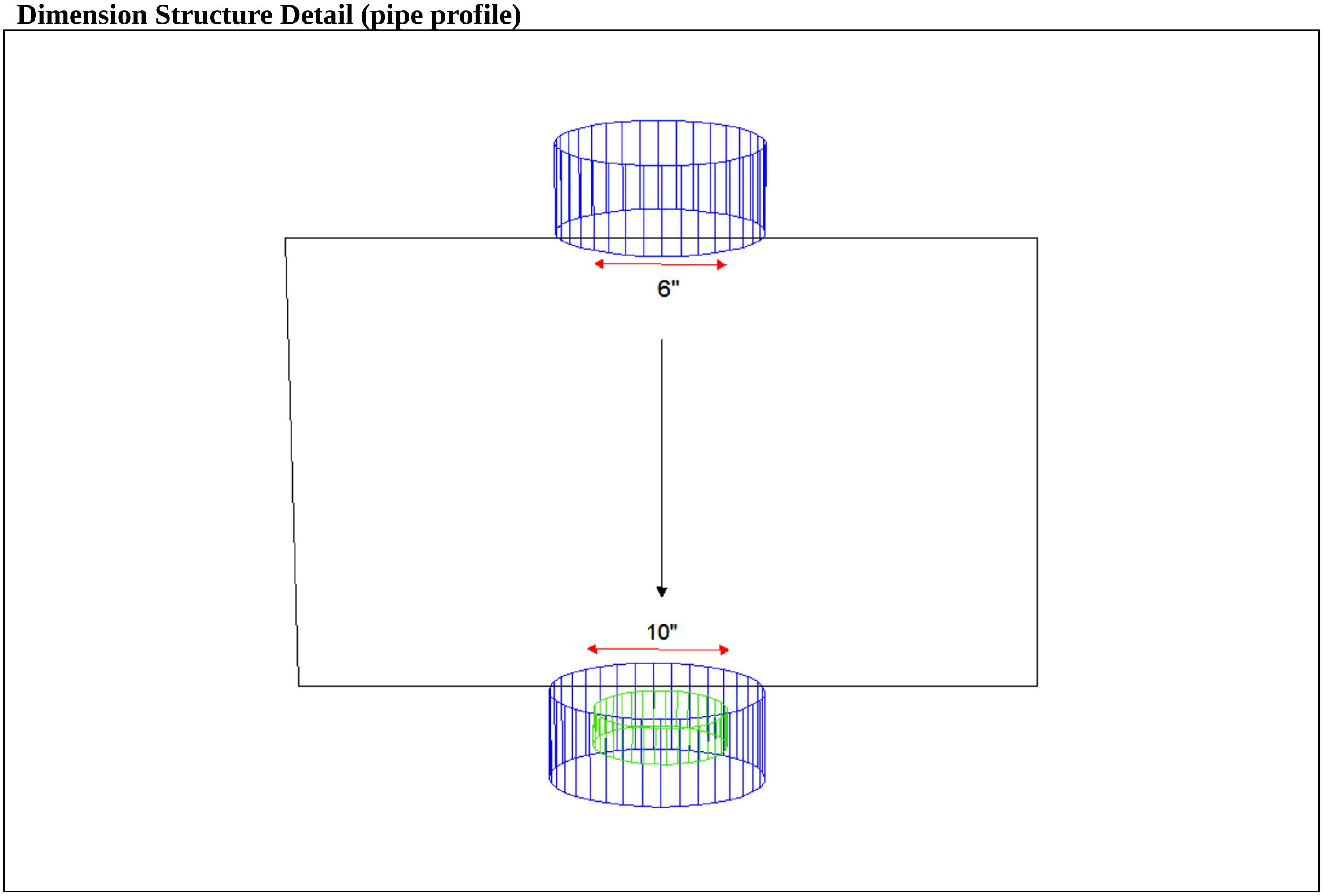
View of flow through influent line

View of flow through effluent line

Dimensional Structure Profile View (profile sketch showing location of sensors)

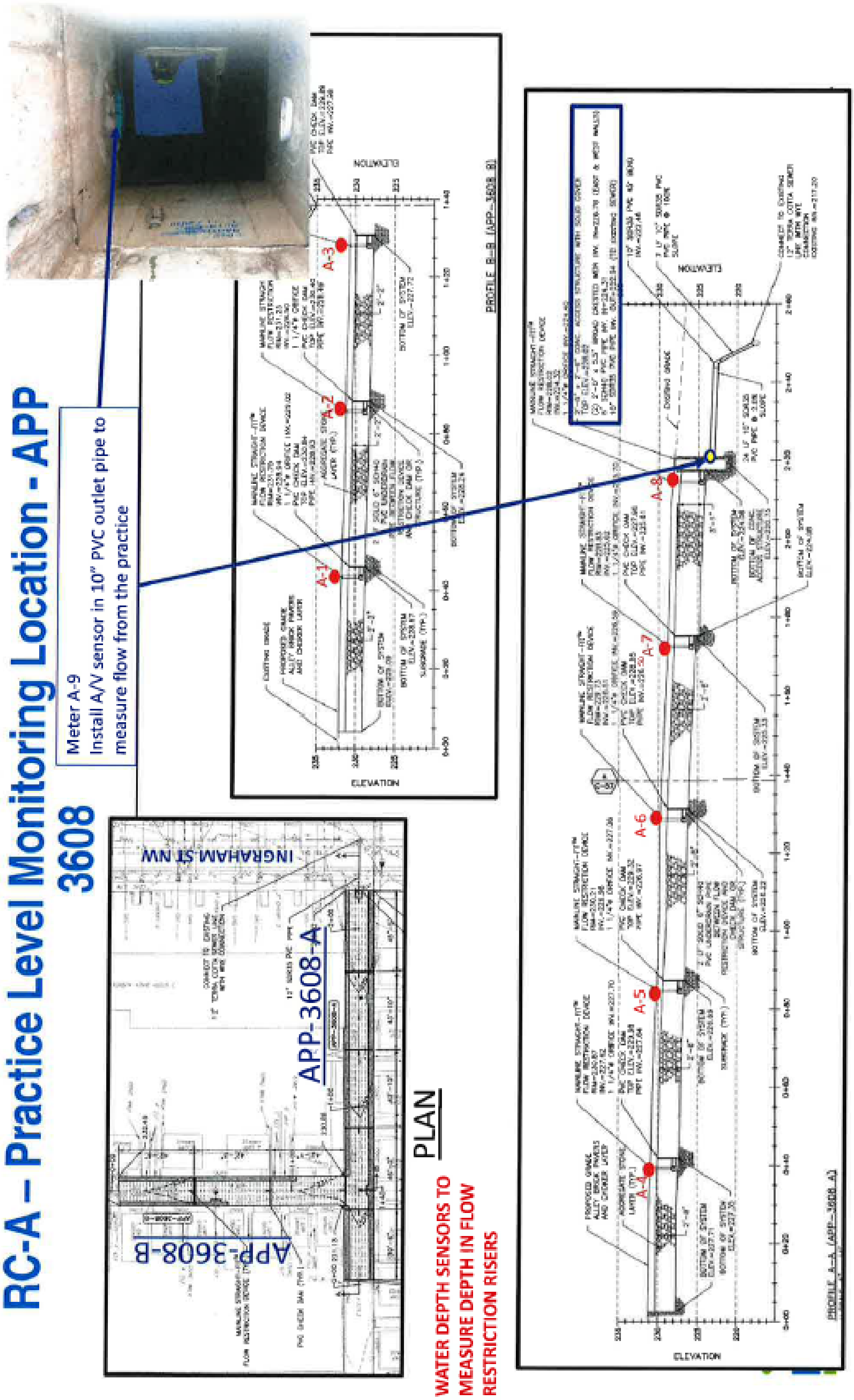


Dimension Structure Detail (pipe profile)



Site Location Plan View

Sketch or plat showing upstream and downstream manholes, connections, and bends.

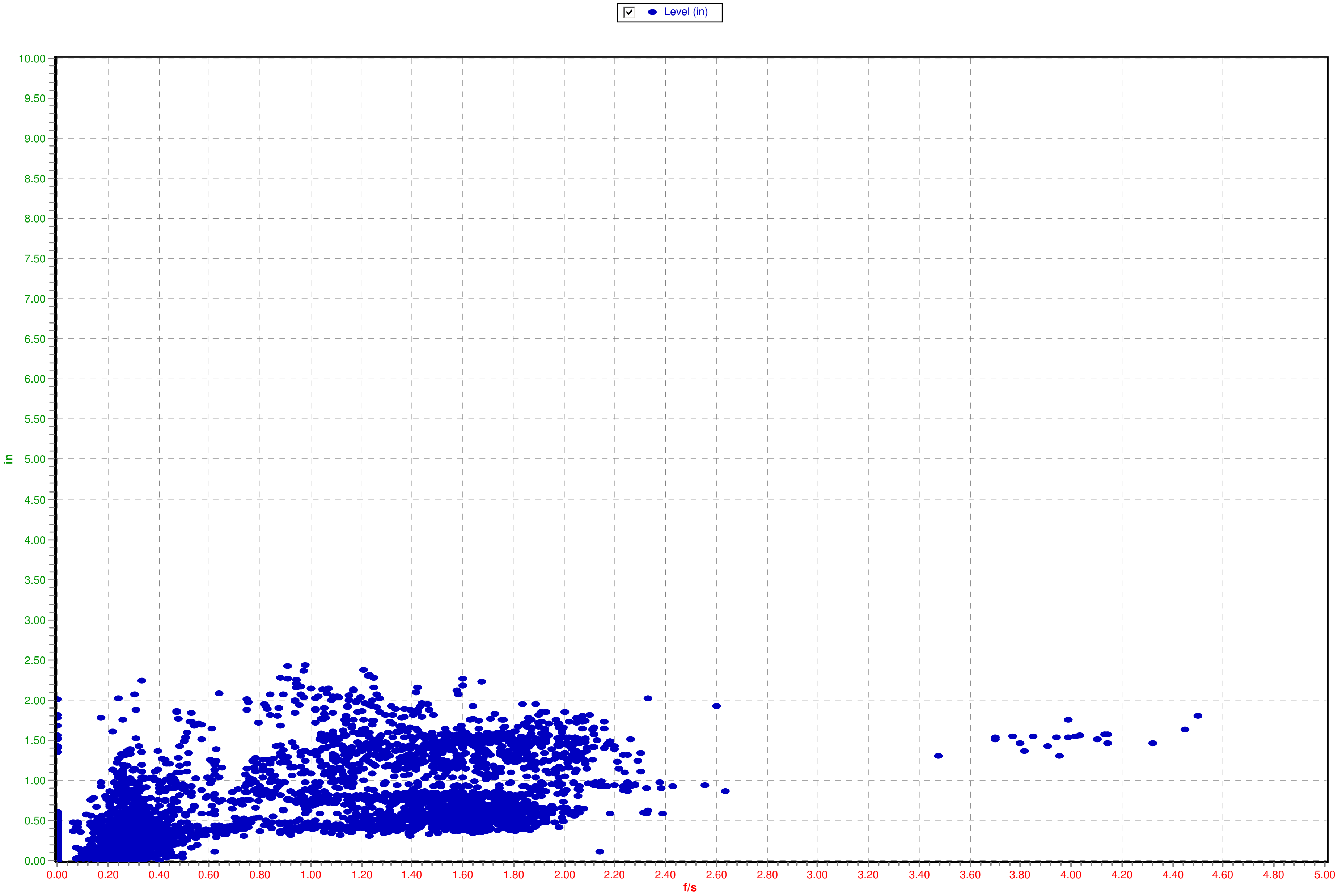


3608-A09

Near Intersection of Hamilton St NW and 2nd St NW - Pipe Diameter (in): 10

3608-A09 - Near Intersection of Hamilton St NW and 2nd St NW

Pipe Diameter (in): 10 (08/06/19 to 10/15/20)



Site #	3608 A09							
Date	Time	Meter Depth	Field Depth	Meter Velocity	Field Velocity	Silt	Initials	Comments
8/5/2019	12:30	0.00	0.00	0.00	0.00	0.00	LP/PJ	Install, V1
8/5/2019	12:35	0.00	0.00	0.00	0.00	0.00	LP/PJ	V2
8/5/2019	12:40	0.00	0.00	0.00	0.00	0.00	LP/PJ	V3
8/6/2019	8:20						LP/PJ	Download Meter
8/12/2019	13:00						SD/PJ	Download Meter
8/13/2019	15:20						SD/PJ	Download Meter
8/19/2019	11:15						DM/PJ	Download Meter
8/21/2019	11:45						DM/PJ	Download Meter
9/3/2019	12:46						SD/AP/PJ	Download Meter
9/9/2019	13:42						SD/PJ	Download Meter
9/16/2019	13:27		0.00		0.00	0.00	SD/DL	Download Meter, V1
9/23/2019	12:20						SD/PJ/DL	Download Meter
10/2/2019	7:55						SD/PJ/DL	Download Meter
10/16/2019	14:20						SD/AP	Download Meter
10/29/2019	9:50						SD/AP	Download Meter
11/12/2019	9:40		0.00		0.00	0.00	SD/AP	Download Meter
12/2/2019	16:15						sd/mh	Download Meter
12/10/2019	9:25						SD/AP	Download Meter
12/18/2019	12:50						SD/MH	Download Meter
12/30/2019	14:30						SD/MH	Download Meter
1/6/2020	13:30		0.00		0.00	0.00	SD/DW	Download Meter, V1
1/14/2020	8:50		0.00		0.00	0.00	SD/DW	Download Meter, V1
1/21/2020	16:45						SD/Dw	Download Meter
1/27/2020	11:05						SD/DW	Download Meter
2/4/2020	9:35						SD/DW	Download Meter
2/10/2020	13:00						SD/DW	Download Meter

2/18/2020	8:55		0.00		0.00	0.00	SD/DW	Download Meter, V1
2/25/200	14:50						SD/DW	Download Meter
3/3/2020	11:16		0.00		0.00	0.00	SD/PJ	Download Meter, V1
3/10/2020	10:00						SD/JP	Download Meter
3/16/2020	10:25						SD/JP	Download Meter
3/31/2020	15:00						SD/JP/AE	Download Meter
4/15/2020	14:00						SD/JP/AE	Download Meter
4/28/2020	13:30		0.00		0.00	0.00	SD/JP/AE	Download Meter
5/13/2020	14:20						SD/JP/aE	Download Meter
5/27/2020	12:54						SD/JP/AE	Download Meter
6/9/2020	13:25						SD/JP/AE	Download Meter
6/22/2020	14:57		0.00		0.00	0.00	SD/JP/AE	Download Meter
7/9/2020	15:18						SD/JP/AE	Download Meter
7/23/2020							SD/JP/AE	Download Meter
8/3/2020							SD/JP/AE	Download Meter
8/10/2020							SD/JP/AE	Download Meter
8/19/2020	15:18		0.00		0.00	0.00	SD/JP/AE	Download Meter, V1
9/14/2020	15:25						SD/JP/AE	Download Meter
10/5/2020	11:24						LP/JP/AE	Download Meter
10/14/2020	13:30						SD/JP/AE	Download Meter
10/21/2020	9:11		0.00		0.00	0.00	SD/JP/AE	Download Meter, V1
10/21/2020	9:14		0.00		0.00	0.00	SD/JP/AE	V2
10/21/2020	9:17		0.00		0.00	0.00	SD/JP/AE	V3, Remove

Site Name/ Manhole ID: PBR 4105

Address: Across from 5201 2nd St NW

Latitude: N ° 38.953492° Longitude: W ° -77.013596°

Investigation Date: 3/22/2019 Crew: DM/AP

Installation Date: 4/16/2019 Crew: DM/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

A1 Depth (in): 0

A2 Depth (in): 0

A3 Depth (in): 0

A4 Depth (in): 0

Site Location Characteristics:

	Well 1	Well 2	Well 3	Well 4
Height	47”	55”	55.25”	55.5”
Width	8”	8”	8”	8”
Material	PVC	PVC	PVC	PVC
Shape	Round	Round	Round	Round

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

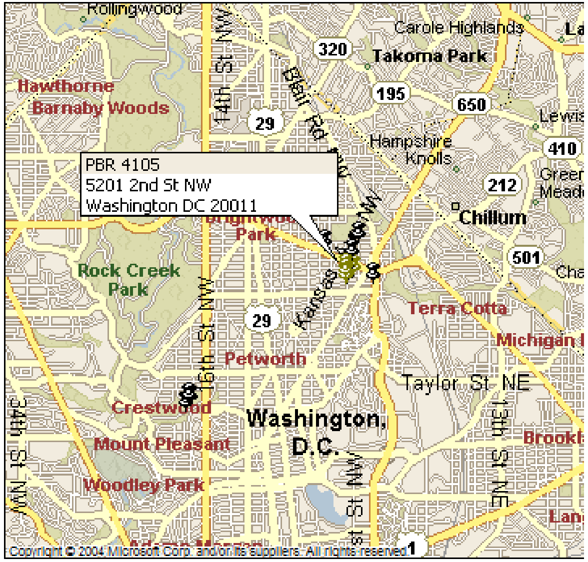
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

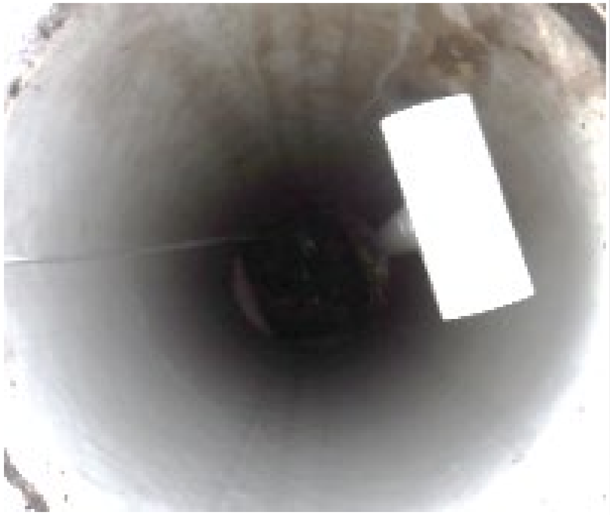


Detail Map

Site Area Overview

View from Top of Well 1

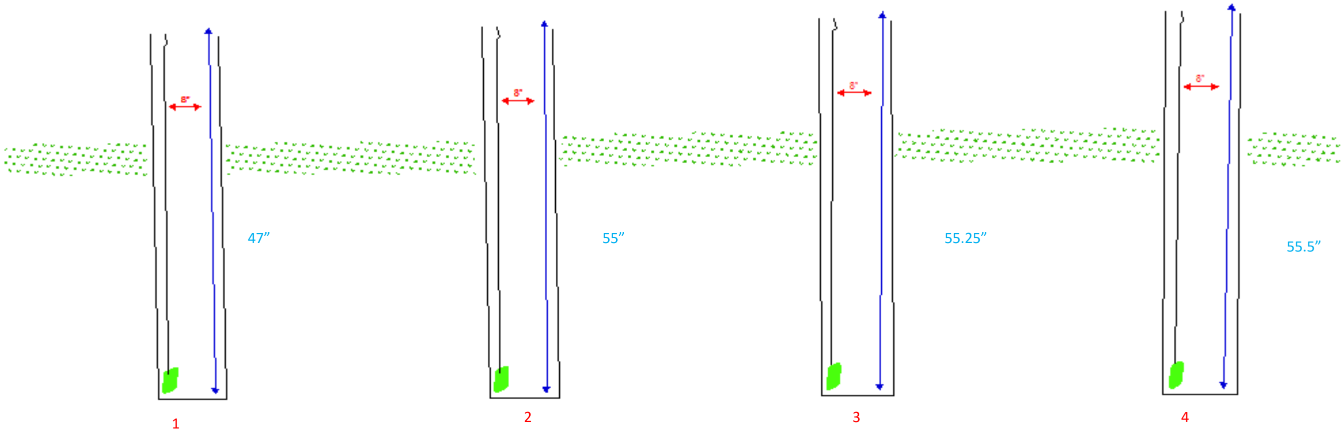
View from Top of Well 2



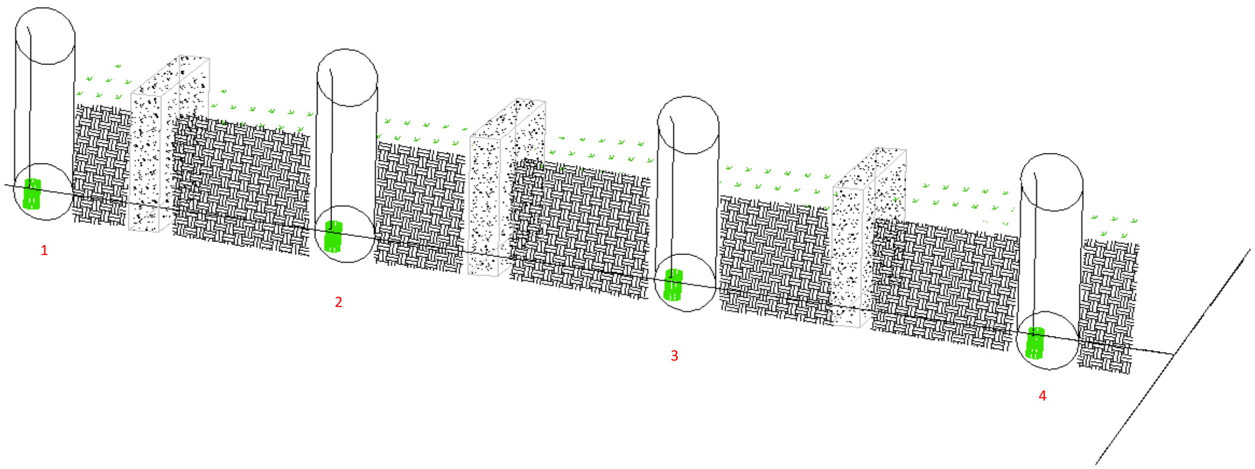
View from Top of Well 3

View from Top of Well 4

Dimensional Structure Profile View- Showing Location of Sensor(s)

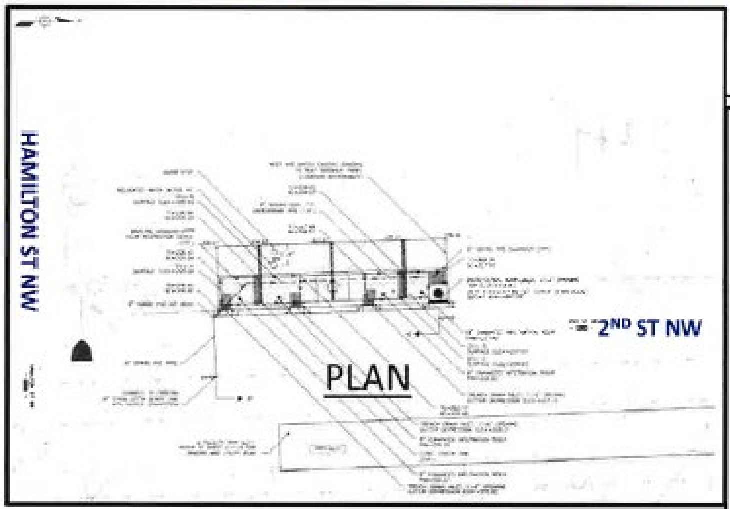


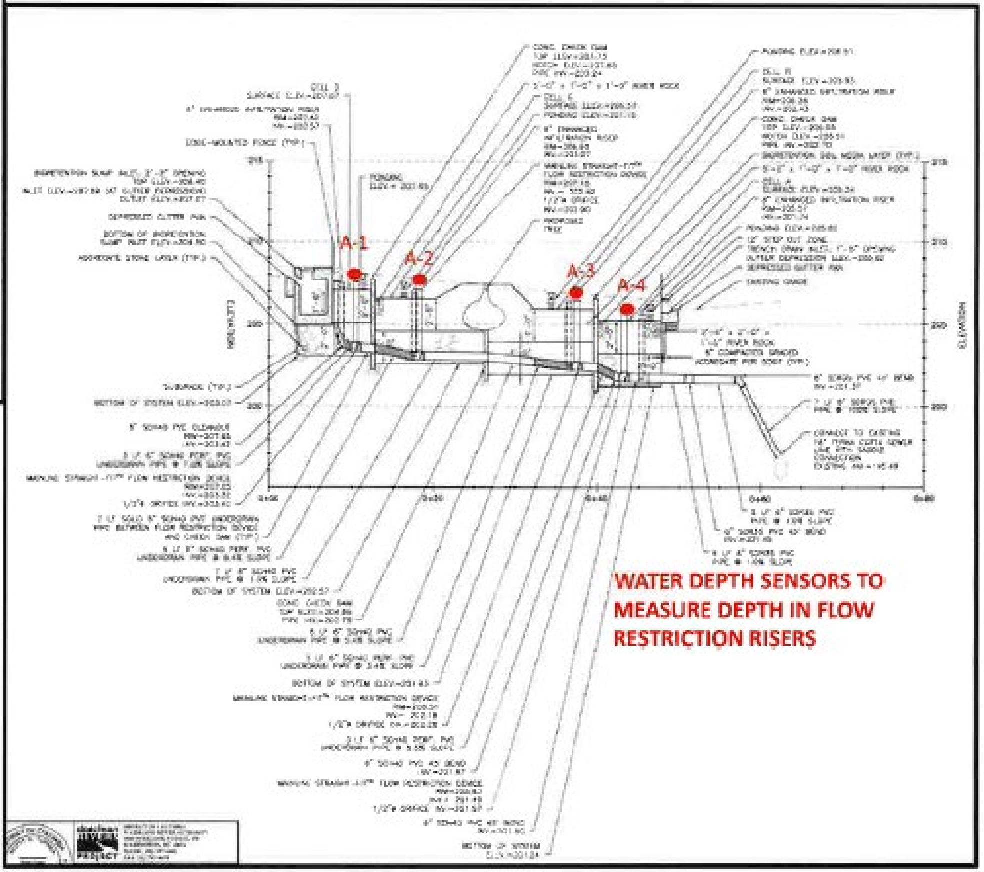
Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends

RC-A – Practice Level Monitoring Location - PBR 4105

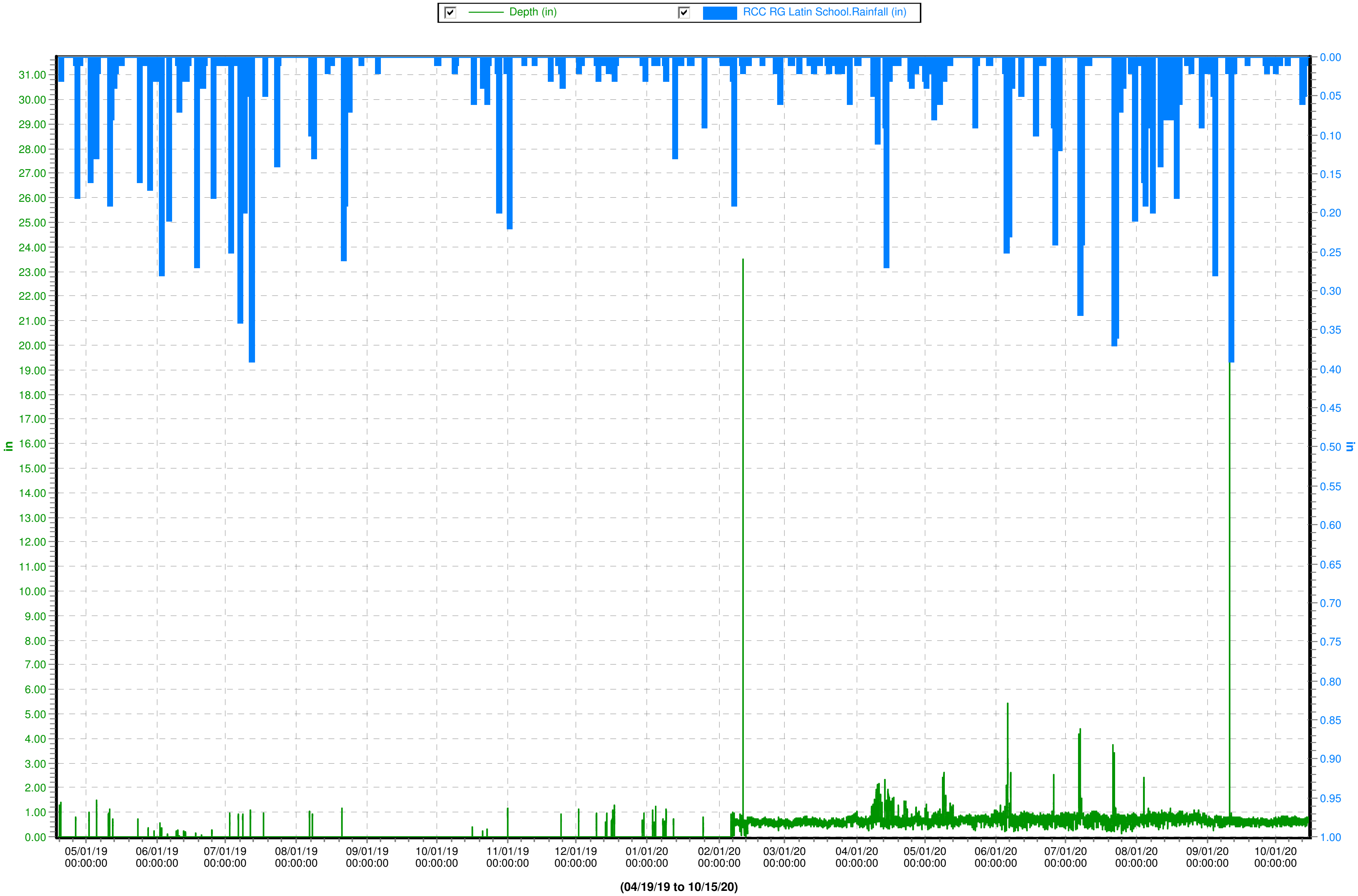




WATER DEPTH SENSORS TO MEASURE DEPTH IN FLOW RESTRICTION RISERS

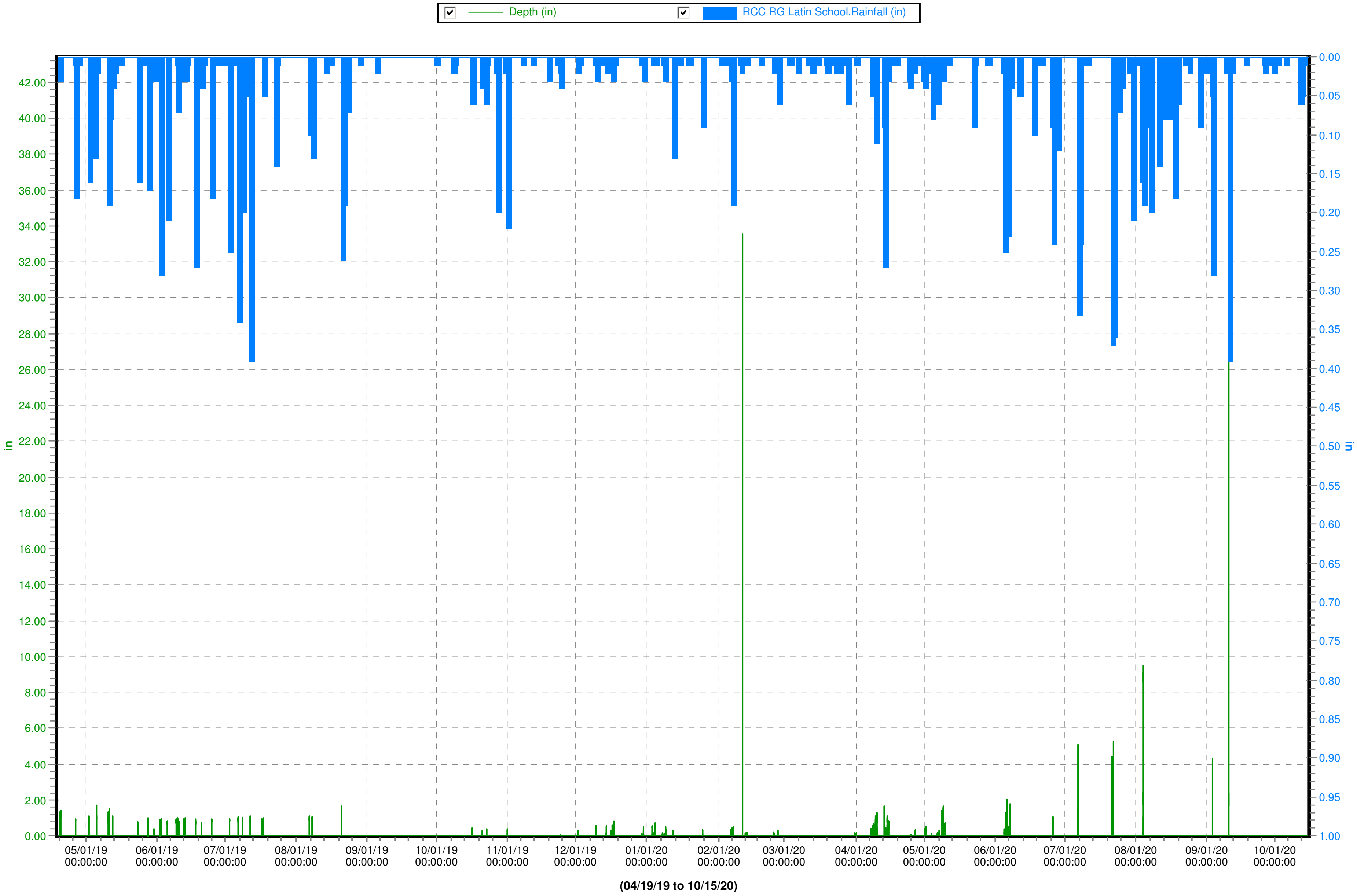
4105-A01

Across 5201 2nd St NW-Well Depth (in): 47



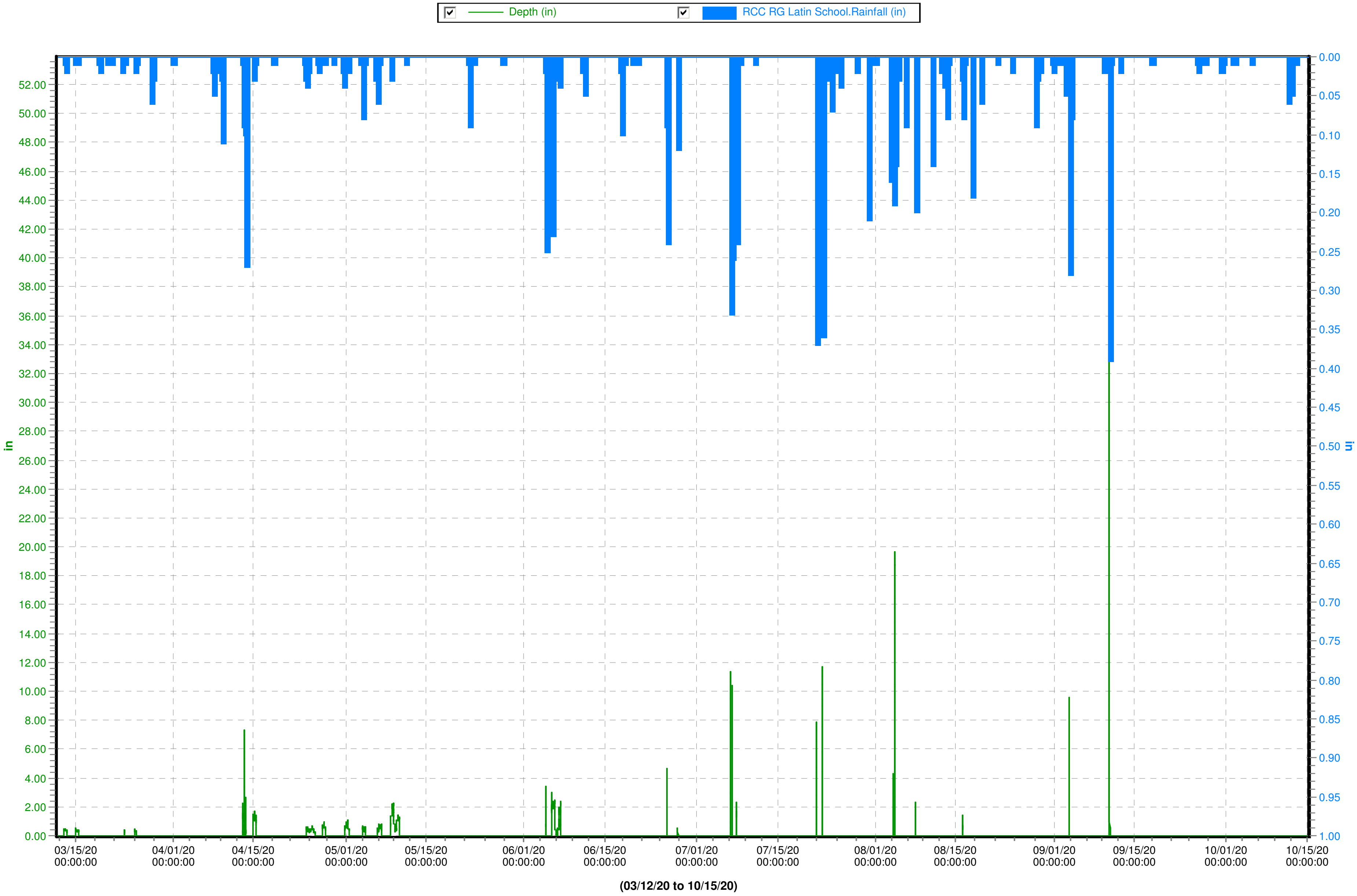
4105-A02

Across 5201 2nd St NW-Well Depth (in): 55



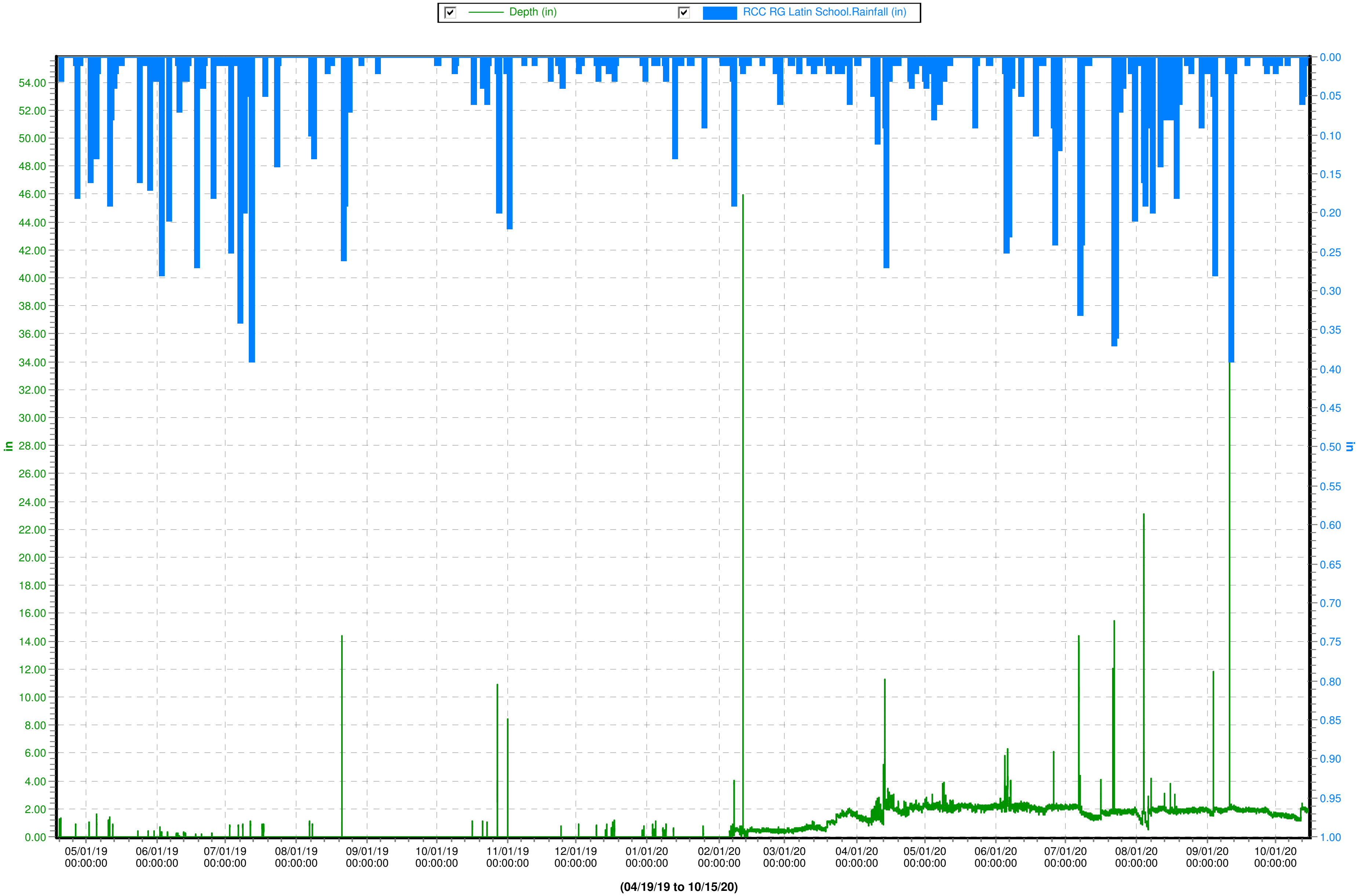
4105-A03

Across 5201 2nd ST NW-Well Depth (in): 55.25



4105-A04

Across 5201 2nd St NW-Well Depth (in): 55.5



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Site#	A01				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/15/2019	16:15		0	DM/PJ	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:30		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:22		<0.25"	PJ	Download Water Depth Sensor
6/13/2019	9:28		<0.25"	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:45		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				PJ/DC	Download Water Depth Sensor
7/8/2019	12:26		0.5	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	8:25			PJ/DC	Download Water Depth Sensor
7/30/2019	7:30			SD/PJ/DC	Download Water Depth Sensor
8/6/2019	7:27		0	LP/PJ	Download Water Depth Sensor
8/12/2019	8:38			PJ	Download Water Depth Sensor
8/19/2019	8:28			PJ	Download Water Depth Sensor
8/21/2019	12:14		<.25	DM/PJ	Download Water Depth Sensor
8/26/2019	8:11			PJ	Download Water Depth Sensor
9/3/2019	8:29			PJ	Download Water Depth Sensor
9/9/2019	8:36			PJ	Download Water Depth Sensor
9/16/2019	8:45			PJ	Download Water Depth Sensor
9/23/2019	8:30			PJ/DL	Download Water Depth Sensor
9/30/2019	10:26			DL	Download Water Depth Sensor
10/16/2019	12:28			SD/AP	Download Water Depth Sensor

10/29/2019	12:29		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:08			SD/AP	Download Water Depth Sensor
12/2/2019	15:57			SD/MH	Download Water Depth Sensor
12/10/2019	9:00			SD/AP	Download Water Depth Sensor
12/18/2019	12:13		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:32			SD/MH	Download Water Depth Sensor
1/6/2020	11:48			SD/DW	Download Water Depth Sensor
1/13/2020	16:46			SD/DW	Download Water Depth Sensor
1/21/2020	16:06		0	SD/DW	Download Water Depth Sensor
1/27/2020	8:44			SD/DW	Download Water Depth Sensor
2/3/2020	11:55		0	SD/DW	Download Water Depth Sensor
2/10/2020	11:54			SD/DW	Download Water Depth Sensor
2/18/2020	7;45			SD/DW	Download Water Depth Sensor
2/24/2020	9:51			SD	Download Water Depth Sensor
3/3/2020	11:55		0.50	SD/JP	Download Water Depth Sensor
3/10/2020	7:32			SD/JP	Download Water Depth Sensor
3/16/2020	13:22			SD/JP	Download Water Depth Sensor
3/23/2020	13:10			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:41		0.50	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:05			SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:35			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:27		0.50	SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:00		0.50	SD/JP/AE	Download Water Depth Sensor
5/22/2020	11:35		0.25	SD/JP/AE	Download Water Depth Sensor
5/28/2020	10:55			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:16			SD/JP/AE	Download Water Depth Sensor
6/5/2020	11:09		0.50	JP/AE	Download Water Depth Sensor
6/9/2020	9:13		0.50	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:21			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:21		0.50	JP/AE	Download Water Depth Sensor
6/22/2020	11:15			SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:41		0.50	JP/AE	Download Water Depth Sensor

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7/6/2020	13:00			SD/JP/AE	Download Water Depth Sensor
7/16/2020	13:52		0.50	SD/JP/AE	Download Water Depth Sensor
7/20/2020	12:01			SD/JP/AE	Download Water Depth Sensor
7/30/2020	11:04		0.25	JP/AE	Download Water Depth Sensor
7/31/2020	10:30			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:22			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:25			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:38			SD/JP/AE	Download Water Depth Sensor
8/31/2020	11:59		0.50	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:50		0.50	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:16		0.50	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:43			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:59		0.50	SD/JP/AE	Download Water Depth Sensor
9/30/2020	8:20		0.50	JP/AE	Download Water Depth Sensor
10/2/2020	11:21		0.50	JP/AE	Download Water Depth Sensor
10/8/2020	12:41		0.50	JP/AE	Download Water Depth Sensor
10/9/2020	11:29			JP/AE	Download Water Depth Sensor
10/13/2020	10:22		0.50	AE	Download Water Depth Sensor
10/16/2020	11:13		0.50	JP/AE	Download Water Depth Sensor
10/22/2020	15:10		0.50	JP/AE	Download Water Depth Sensor
10/26/2020	13:36		0.50	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A02				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/15/2019	16:15		0	DM/PJ	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:33		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:27		<0.25"	PJ	Download Water Depth Sensor
6/13/2019	9:22		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:50		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				PJ/DC	Download Water Depth Sensor
7/8/2019	12:26		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	10:05			PJ/DC	Download Water Depth Sensor
8/6/2019	7:25		0	LP/PJ	Download Water Depth Sensor
8/12/2019	8:33			PJ	Download Water Depth Sensor
8/19/2019	8:25			PJ	Download Water Depth Sensor
8/21/2019	12:14		0	DM/PJ	Download Water Depth Sensor
8/26/2019	8:08			PJ	Download Water Depth Sensor
9/9/2019	11:31			SD/PJ	Download Water Depth Sensor
9/10/2019	14:30		<0.25"	SD/PJ	Download Water Depth Sensor
9/16/2019	8:40			PJ	Download Water Depth Sensor
9/23/2019	8:30			PJ/DL	Download Water Depth Sensor
9/30/2019	10:23			DL	Download Water Depth Sensor
10/16/2019	12:26			SD/AP	Download Water Depth Sensor
10/29/2019	8:39		0	SD/AP	Download Water Depth Sensor

11/12/2019	10:07			SD/AP	Download Water Depth Sensor
12/2/2019	15:57			SD/MH	Download Water Depth Sensor
12/10/2019	9:00			SD/AP	Download Water Depth Sensor
12/18/2019	12:18		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:30			SD/MH	Download Water Depth Sensor
1/6/2020	11:51			SD/DW	Download Water Depth Sensor
1/14/2020	9:35			SD/DW	Download Water Depth Sensor
1/21/2020	16:03		0	SD/DW	Download Water Depth Sensor
1/27/2020	8:42			SD/DW	Download Water Depth Sensor
2/3/2020	11:52		0	SD/DW	Download Water Depth Sensor
2/10/2020	11:53			SD/DW	Download Water Depth Sensor
2/18/2020	10:43			SD/DW	Download Water Depth Sensor
2/24/2020	9:52			SD	Download Water Depth Sensor
3/3/2020	11:56		0	SD/DJP	Download Water Depth Sensor
310/2020	7:31			SD/JP	Download Water Depth Sensor
3/16/2020	13:19			SD/JP	Download Water Depth Sensor
3/23/2020	13:08			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:39		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:07			SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:36			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:30			SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:02			SD/JP/AE	Download Water Depth Sensor
5/22/2020	10:05		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020	10:55			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:16			SD/JP/AE	Download Water Depth Sensor
6/5/2020	10:45		0	JP/AE	Download Water Depth Sensor
6/9/2020	9:12		0	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:23			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:19		0	JP/AE	Download Water Depth Sensor
6/22/2020	11:18			SD/JP/AE	Download Water Depth Sensor
6/26/2020	10:34		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:02			SD/JP/AE	Download Water Depth Sensor

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7/16/2020	13:50		0	SD/JP/AE	Download Water Depth Sensor
7/20/2020	12:00			SD/JP/AE	Download Water Depth Sensor
7/30/2020	11:04		0	JP/AE	Download Water Depth Sensor
7/31/2020	10:33			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:23			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:25			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:40			SD/JP/AE	Download Water Depth Sensor
8/31/2020	12:02		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:52		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:13		0	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:44			SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:01		0	SD/JP/AE	Download Water Depth Sensor
9/30/2020	10:09		0	JP/AE	Download Water Depth Sensor
10/2/2020	11:22		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:40		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:30			JP/AE	Download Water Depth Sensor
10/13/2020	10:20		0	AE	Download Water Depth Sensor
10/16/2020	11:15		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:13		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:34		0	SD/JP/AE	Download Water Depth Sensor, Remove

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Site#	A03				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/15/2019	16:15		0	DM/PJ	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:39		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:33		<0.25"	PJ	Download Water Depth Sensor
6/13/2019	7:27		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:56		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				PJ/DC	Download Water Depth Sensor
7/8/2019	12:24		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	12:05			PJ/DC	Download Water Depth Sensor
8/6/2019	7:22		0	LP/PJ	Download Water Depth Sensor
8/12/2019	8:30			PJ	Download Water Depth Sensor
8/19/2019	8:17			PJ	Download Water Depth Sensor
8/21/2019	12:14		0	DM/PJ	Download Water Depth Sensor
8/26/2019	8:05			PJ	Download Water Depth Sensor
9/3/2019	8:20			PJ	Download Water Depth Sensor
9/9/2019	8:27			PJ	Download Water Depth Sensor
9/10/2019	14:23		0	SD/PJ	Download Water Depth Sensor
9/16/2019	8:30			PJ	Download Water Depth Sensor
9/23/2019	8:25			PJ/DL	Download Water Depth Sensor
9/30/2019	10:16			DL	Download Water Depth Sensor
10/16/2019	12:05			SD/AP	Download Water Depth Sensor

10/29/2019	8:37		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:06			SD/AP	Download Water Depth Sensor
12/2/2019	15:55			SD/MH	Download Water Depth Sensor
12/10/2019	9:00			SD/AP	Download Water Depth Sensor
12/18/2019	12:12		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:29			SD/MH	Download Water Depth Sensor
1/6/2020	11:43			SD/DW	Download Water Depth Sensor
1/13/2020	16:44			SD/DW	Download Water Depth Sensor
1/21/2020	16:02		0	SD/DW	Download Water Depth Sensor
1/27/2020	8:35			SD/DW	Download Water Depth Sensor
2/3/2020	11:58		0	SD/DW	Download Water Depth Sensor
2/10/2020	11:51			SD/DW	Download Water Depth Sensor
2/18/2020	10:41			SD/DW	Download Water Depth Sensor
2/24/2020	9:47			SD	Download Water Depth Sensor
3/3/2020	11:53		0	SD/JP	Download Water Depth Sensor
3/10/2020	7:29			SD/JP	Download Water Depth Sensor
3/16/2020	13:13			SD/JP	Download Water Depth Sensor
3/23/2020	13:06			SD/JP/AE	Download Water Depth Sensor
3/30/2020	10:37		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:07			SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:32			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:32		0	SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	SD/JP/AE	Download Water Depth Sensor
5/22/2020	10:04		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020	10:58			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:21			SD/JP/AE	Download Water Depth Sensor
6/5/20020	9:59		0	JP/AE	Download Water Depth Sensor
6/9/2020	9:10		0	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:25			SD/JP/AE	Download Water Depth Sensor
6/18/2020	10:00		0	JP/AE	Download Water Depth Sensor
6/22/2020	11:20			SD/JP/AE	Download Water Depth Sensor
6/26/2020	10:13		0	JP/AE	Download Water Depth Sensor

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7/6/2020	12:57			SD/JP/aE	Download Water Depth Sensor
7/16/2020	13:47		0	SD/JP/AE	Download Water Depth Sensor
7/20/2020	12:00			SD/JP/AE	Download Water Depth Sensor
7/30/2020	10:59		0	JP/AE	Download Water Depth Sensor
7/31/2020	10:35			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:25			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:27			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:41			SD/JP/AE	Download Water Depth Sensor
8/31/2020	12:04		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:48		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:15		0	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:45			SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:03		0	SD/JP/AE	Download Water Depth Sensor
9/30/2020	8:35		0	JP/AE	Download Water Depth Sensor
10/2/2020	11:24		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:37		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:32			JP/AE	Download Water Depth Sensor
10/13/2020	10:19		0	AE	Download Water Depth Sensor
10/16/2020	11:18		0	JP/AE	Download Water Depth Sensor
10/22/2020	15:14		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:32		0	SD/JP/AE	Download Water Depth Sensor, Remove

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Site#	A04				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/15/2019	16:45		0	DM/PJ	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/6/2019				SD/PJ/JB	Download Water Depth Sensor
5/15/2019	14:27		0	SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
6/3/2019				LR/PJ	Download Water Depth Sensor
6/10/2019	11:40		<0.25"	PJ	Download Water Depth Sensor
6/13/2019	7:10		0	LR/PJ	Download Water Depth Sensor
6/17/2019				PJ/DC	Download Water Depth Sensor
6/24/2019				PJ/DC	Download Water Depth Sensor
6/25/2019	8:58		0	DM/PJ/DC	Download Water Depth Sensor
7/1/2019				SD/PJ/DC	Download Water Depth Sensor
7/8/2019				PJ/DC	Download Water Depth Sensor
7/8/2019	12:23		<0.25"	SD/PJ/DC	Download Water Depth Sensor
7/15/2019				PJ/DC	Download Water Depth Sensor
7/22/2019	12:00			PJ/DC	Download Water Depth Sensor
8/6/2019	7:18			LP/PJ	Download Water Depth Sensor
8/12/2019	8:26			PJ	Download Water Depth Sensor
8/19/2019	8:13			PJ	Download Water Depth Sensor
8/21/2019	12:14		0	DM/PJ	Download Water Depth Sensor
8/26/2019	8:02			PJ	Download Water Depth Sensor
9/3/2019	8:16			PJ	Download Water Depth Sensor
9/9/2019	8:25			PJ	Download Water Depth Sensor
9/10/2019	14:20		<0.25"	PJ	Download Water Depth Sensor
9/16/2019	8:20			PJ	Download Water Depth Sensor
9/23/2019	8:20			PJ/DL	Download Water Depth Sensor
9/30/2019	9:17			DL	Download Water Depth Sensor
10/16/2019	12:10			SD/AP	Download Water Depth Sensor

10/29/2019	8:36		0	SD/AP	Download Water Depth Sensor
11/12/2019	10:05			SD/AP	Download Water Depth Sensor
12/2/2019	15:54			SD/MH	Download Water Depth Sensor
12/10/2019	9:01			SD/AP	Download Water Depth Sensor
12/18/2019	12:10		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:27			SD/MH	Download Water Depth Sensor
1/6/2020	11:45			SD/DW	Download Water Depth Sensor
1/13/200	16:43			SD/DW	Download Water Depth Sensor
1/21/2020	16:01		0.50	SD/DW	Download Water Depth Sensor
1/27/2020	8:34			SD/DW	Download Water Depth Sensor
2/3/2020	12:05		0.75	SD/DW	Download Water Depth Sensor
2/10/2020	11:50			SD/DW	Download Water Depth Sensor
2/18/2020	7:40			SD/DW	Download Water Depth Sensor
2/24/2020	9:48			SD	Download Water Depth Sensor
3/3/2020	11:52		0.50	SD/JP	Download Water Depth Sensor
3/10/2020	7:28			SD/JP	Download Water Depth Sensor
3/16/2020	13:10			SD/JP	Download Water Depth Sensor
3/23/2020	13:04			SD/JP	Download Water Depth Sensor
3/30/2020	10:35		1.50	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:08			SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:31			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:31		2.00	SD/JP/AE	Download Water Depth Sensor
5/8/2020	10:07		2.00	SD/JP/AE	Download Water Depth Sensor
5/22/2020	10:04		1.75	SD/JP/AE	Download Water Depth Sensor
5/28/2020	10:57			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:21			SD/JP/AE	Download Water Depth Sensor
6/5/2020	10:04		2.00	JP/AE	Download Water Depth Sensor
6/9/2020	9:09		2.00	SD/JP/AE	Download Water Depth Sensor
6/15/2020	11:26			SD/JP/AE	Download Water Depth Sensor
6/18/2020	11:27			JP/AE	Download Water Depth Sensor
6/22/2020	11:21			SD/JP/AE	Download Water Depth Sensor
6/26/2020	10:19		2.00	JP/AE	Download Water Depth Sensor

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7/6/2020	12:56			SD/JP/AE	Download Water Depth Sensor
7/16/2020	13:46		1.25	SD/JP/AE	Download Water Depth Sensor
7/20/2020	1:59			SD/JP/AE	Download Water Depth Sensor
7/30/2020	10:10		1.50	JP/AE	Download Water Depth Sensor
7/31/2020	10:36			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:24			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:26			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:40			SD/JP/AE	Download Water Depth Sensor
8/31/2020	12:06		2.00	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:47		1.75	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:12		2.00	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:55			SD/JP/AE	Download Water Depth Sensor
9/25/2020	15:04		1.75	SD/JP/AE	Download Water Depth Sensor
9/30/2020	9:23		1.50	JP/AE	Download Water Depth Sensor
10/2/2020	11:24		1.50	JP/AE	Download Water Depth Sensor
10/8/2020	12:36		1.50	JP/AE	Download Water Depth Sensor
10/9/2020	11:33			JP/AE	Download Water Depth Sensor
10/13/2020	10:18		2.00	AE	Download Water Depth Sensor
10/16/2020	11:17		2.00	JP/AE	Download Water Depth Sensor
10/22/2020	15:15		1.50	JP/AE	Download Water Depth Sensor
10/26/2020	13:31		1.50	SD/JP/AE	Download Water Depth Sensor, Remove

Site Name/ Manhole ID: PPP 4211

Address: 5207 2nd Street NW

Latitude: 38.953485 Longitude: -77.013489

Investigation Date: 3/22/2019 Crew: DM/AP

Installation Date: 4/17/2019 Crew: DM/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

A1 Depth (in) 0
A2 Depth (in) 0
A3 Depth (in) 0
A4 Depth (in) 0
A5 Depth (in) 0
A6 Depth (in) 0
A7 Depth (in) 0
A8 Depth (in) 0
A9 Depth (in) 0
A10 Depth (in) 0
A11 Depth (in) 0
A12 Depth (in) 0

	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8	Well 9	Well 10	Well 11	Well 12
Height	30”	30”	24”	30”	25”	26”	24”	24”	24”	24”	25”	36”
Width	8”	8”	8”	8”	8”	8”	8”	8”	8”	8”	8”	8”
Material	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC
Shape	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

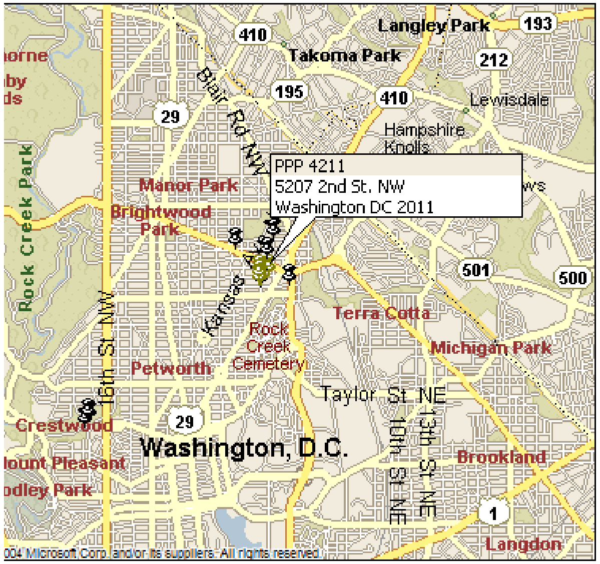
[✓ No]

Yes

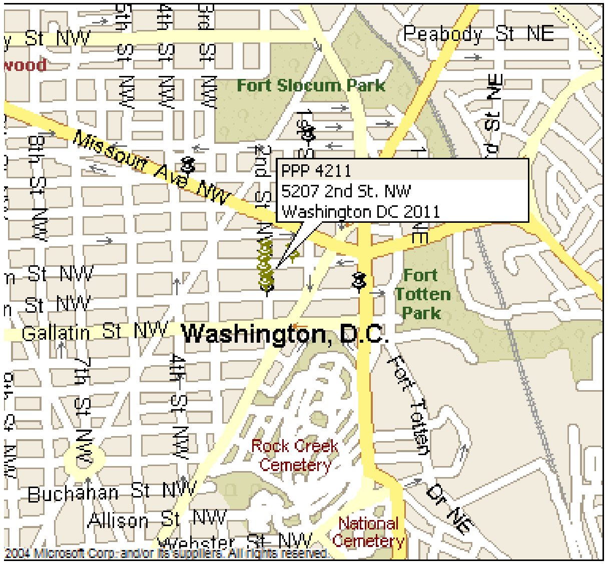
Hard Packed (in):

Soft (in):

Area Map



Detail Map



Site Area Overview

View from Top of Well 1

View from Top of Well 2

View from Top of Well 3

View from Top of Well 4

View from Top of Well 5

View from Top of Well 6

View from Top of Well 7

View from Top of Well 8

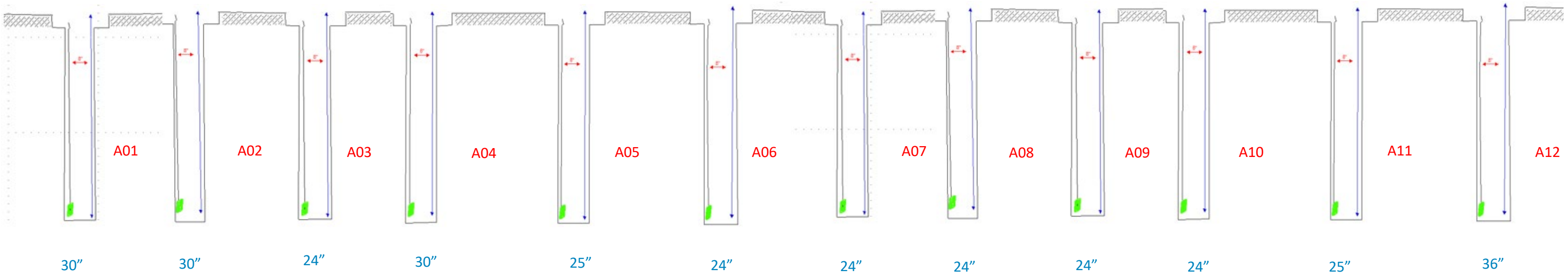
View from Top of Well 9

View from Top of Well 10

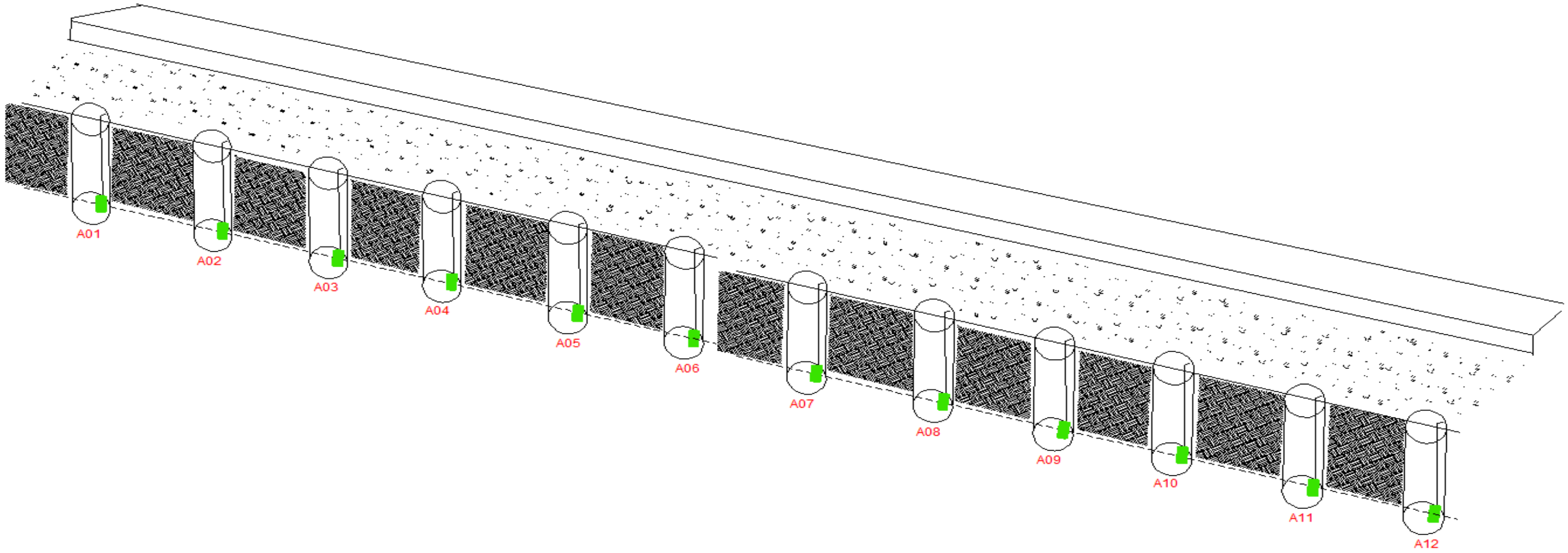
View from Top of Well 11

View from Top of Well 12

Dimensional Structure Profile View- Showing Location of Sensor(s)

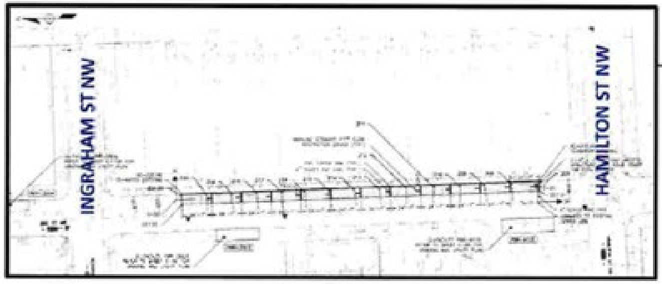


Three Dimensional Cross Section Representation

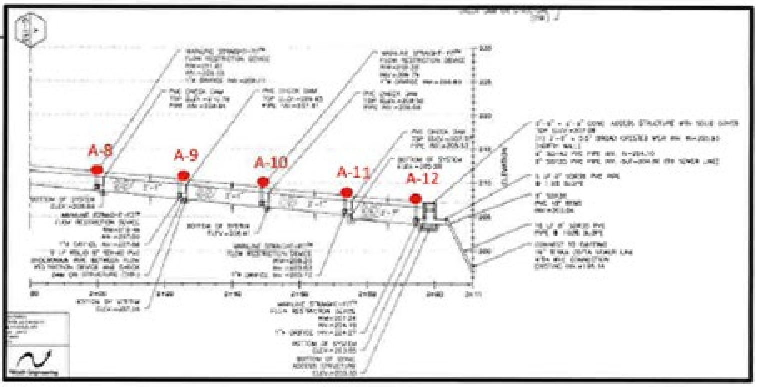


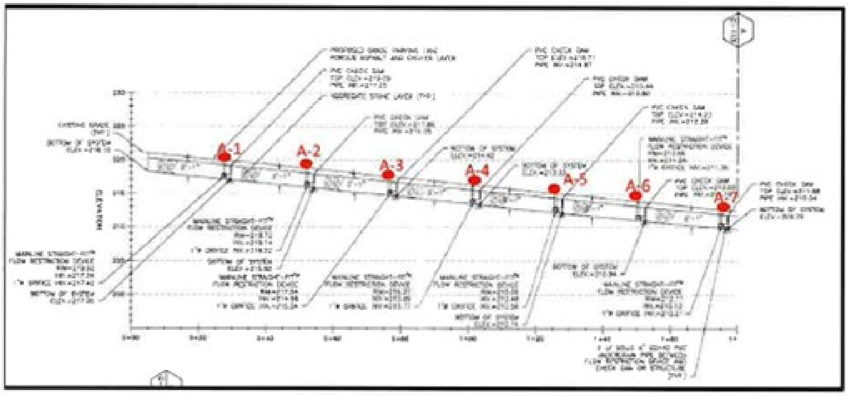
Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends

RC-A – Practice Level Monitoring Location - PPP 4211



PLAN

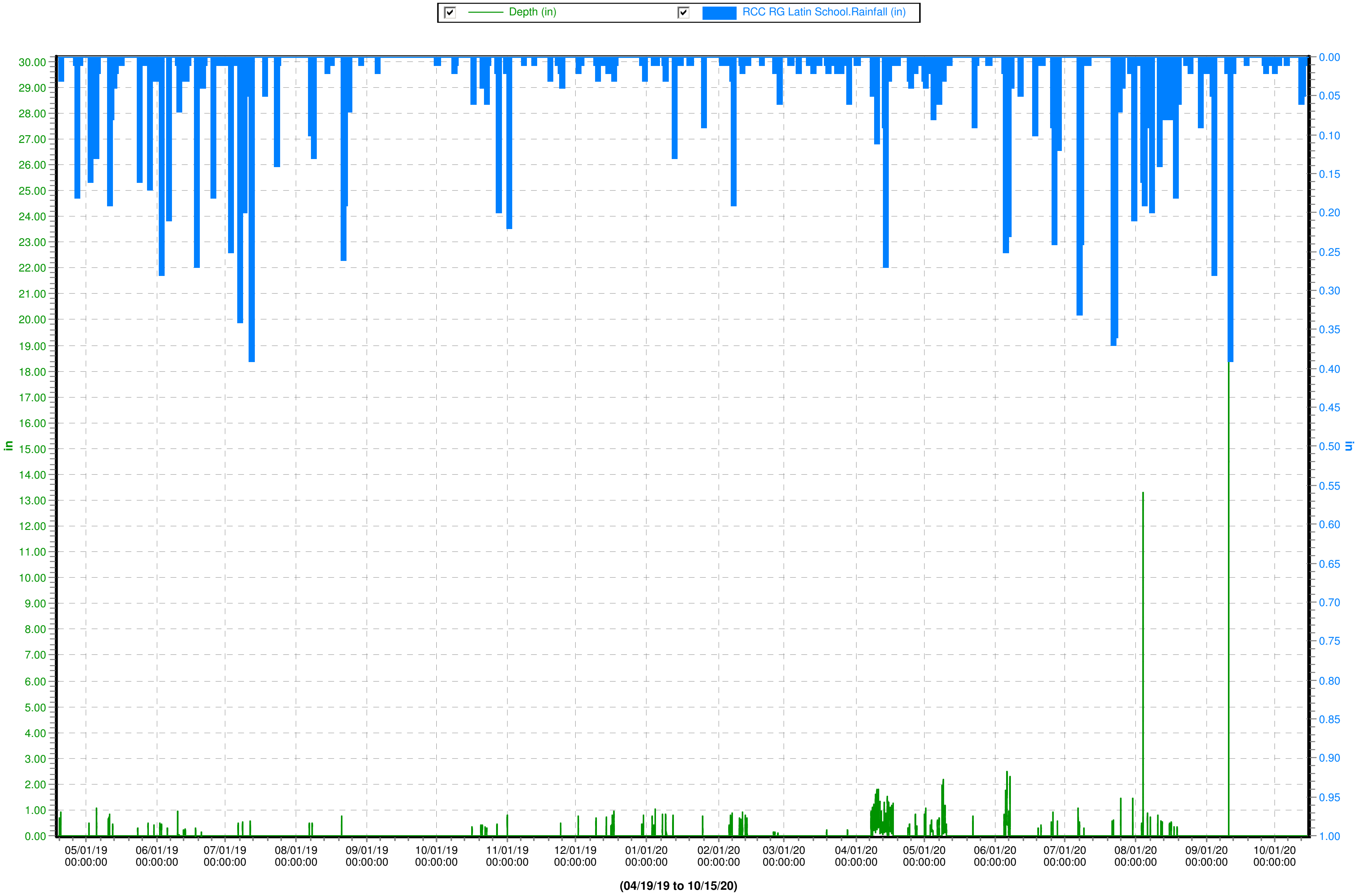




WATER DEPTH SENSORS TO MEASURE DEPTH IN FLOW RESTRICTION RISERS

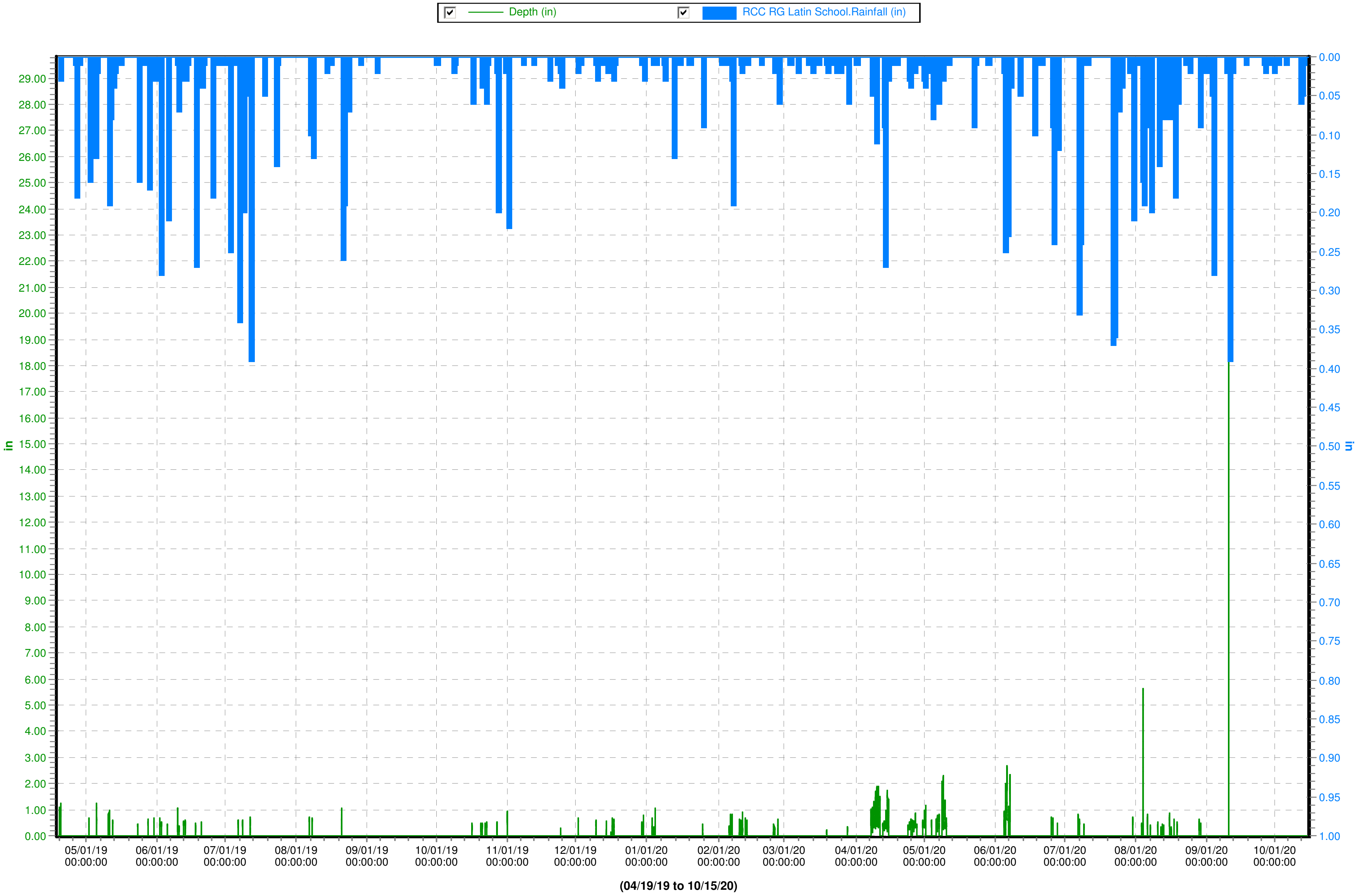
4211-A01

5207 2nd ST NW-Well Depth (in): 30



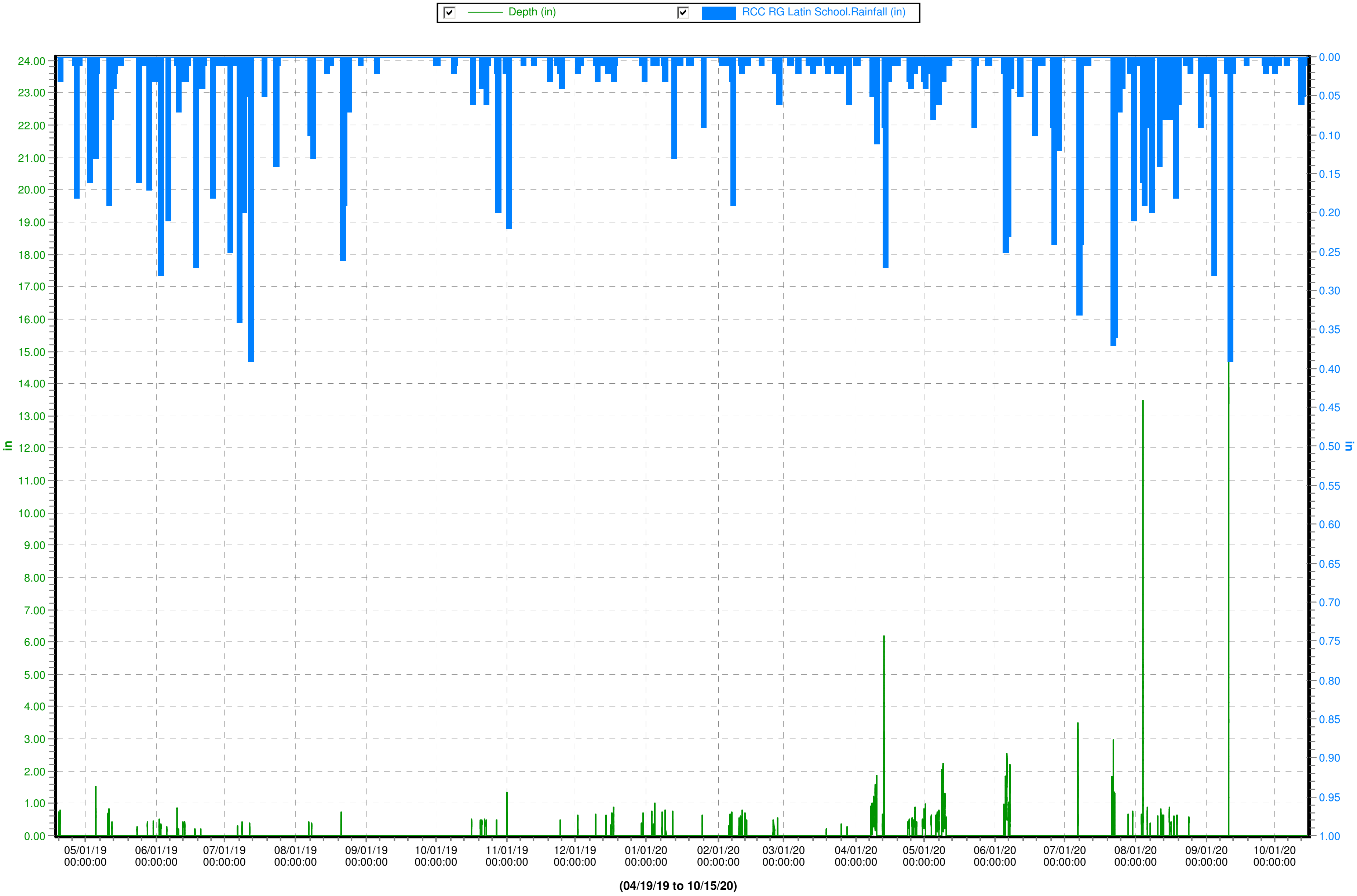
4211-A02

5207 2nd ST NW-Well Depth (in): 30



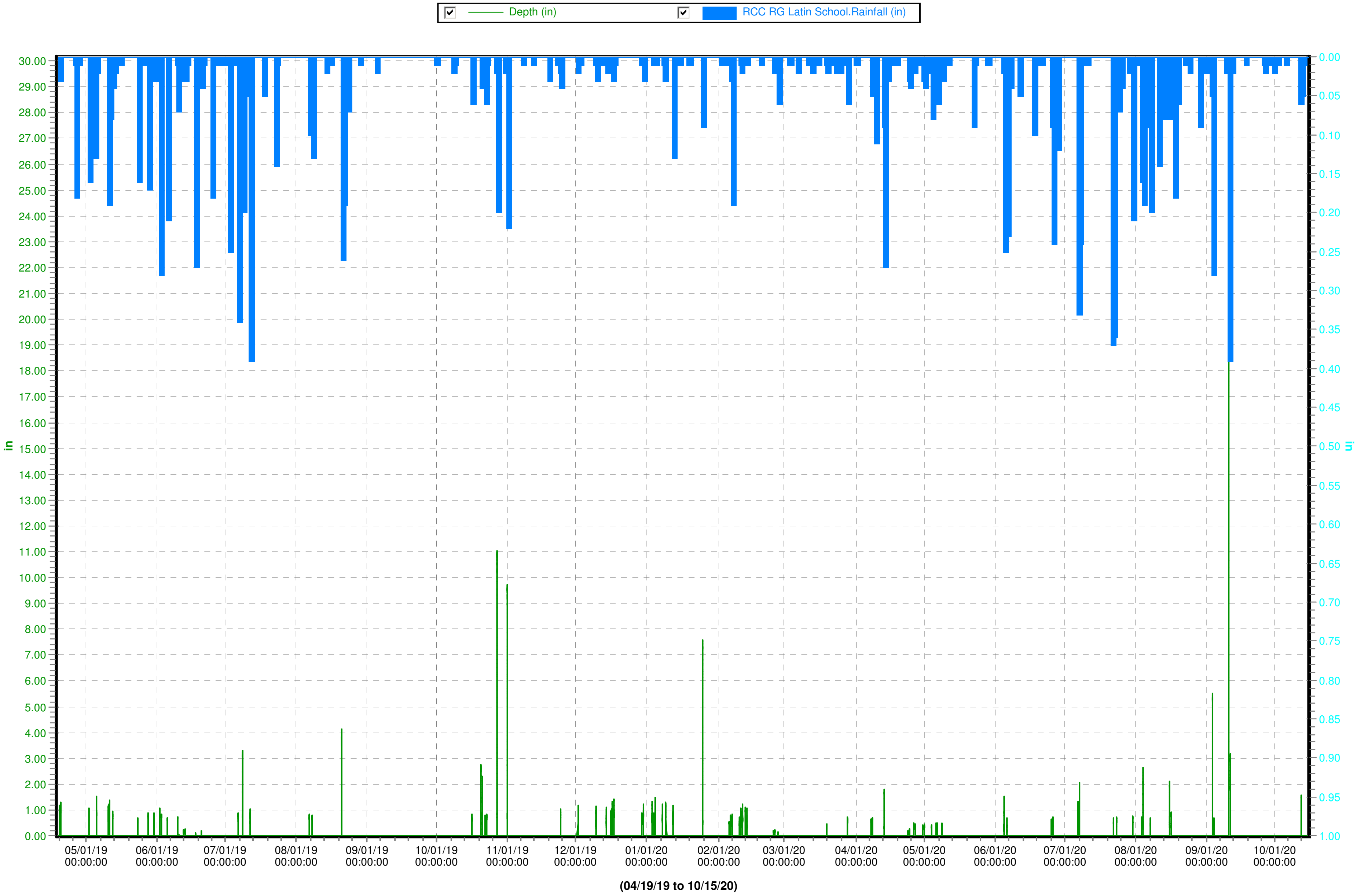
4211-A03

5207 2nd ST NW-Well Depth (in): 24



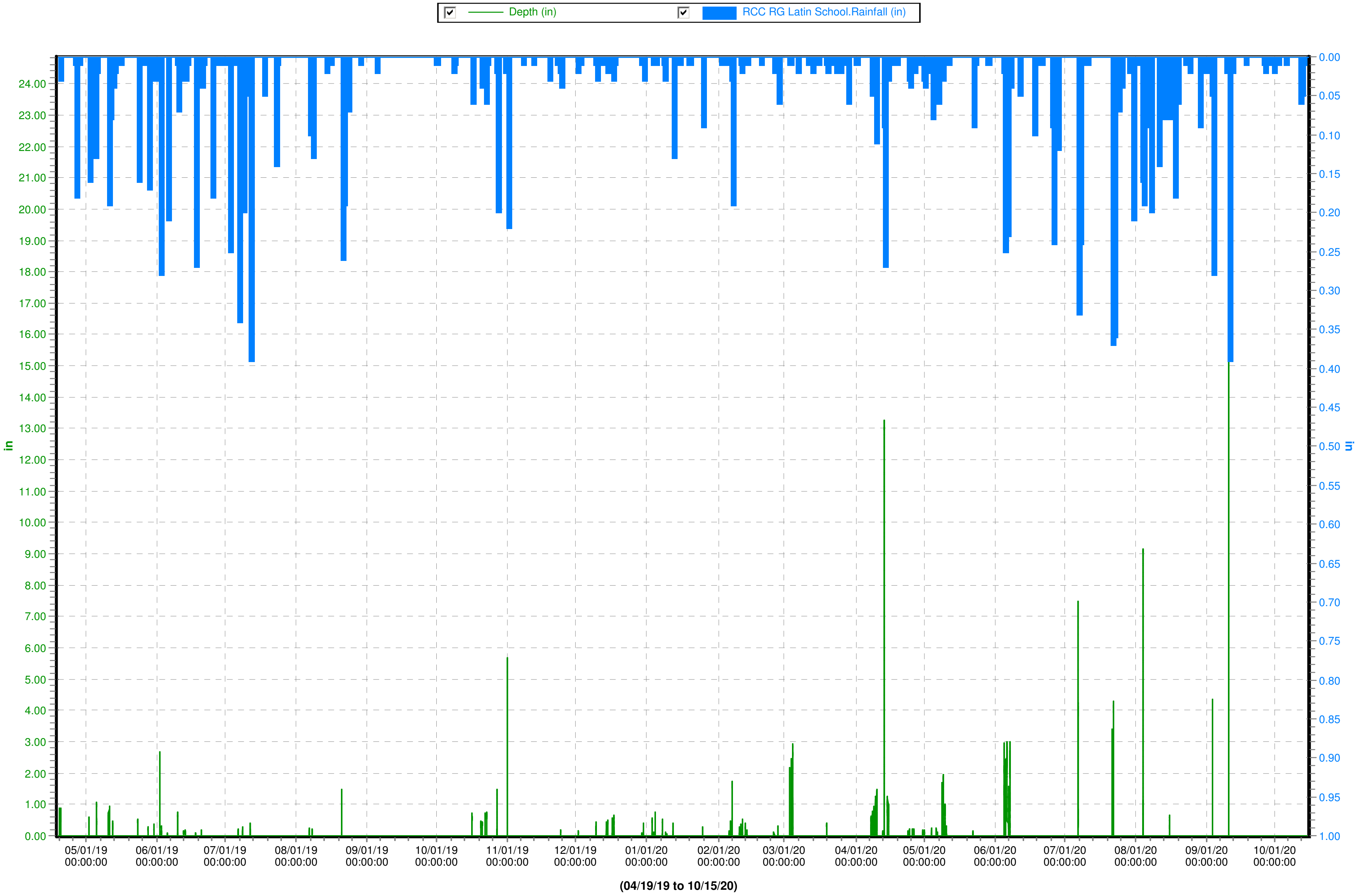
4211-A04

5207 2nd ST NW-Well Depth (in): 30



4211-A05

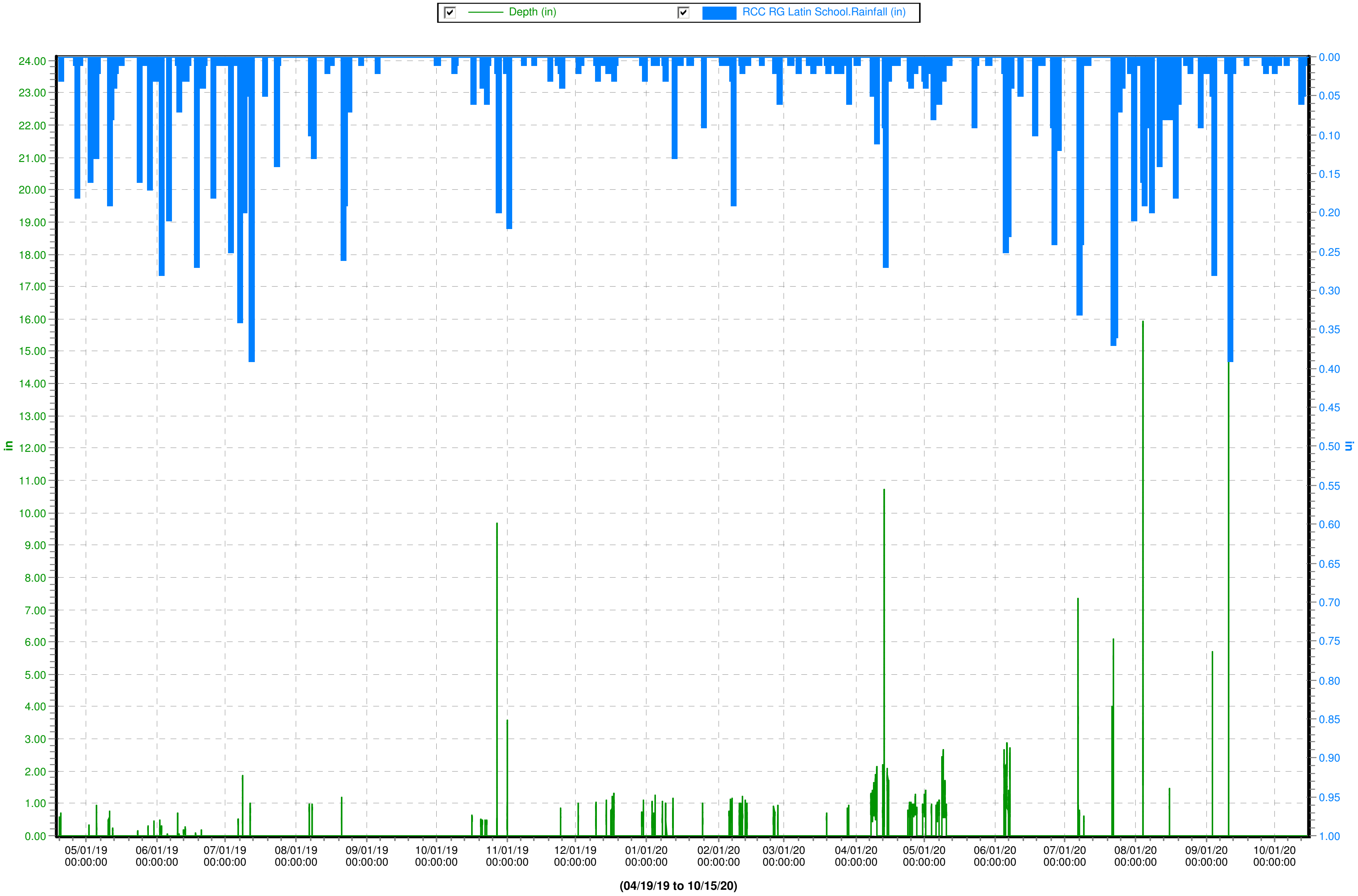
5207 2nd ST NW-Well Depth (in): 25



(04/19/19 to 10/15/20)

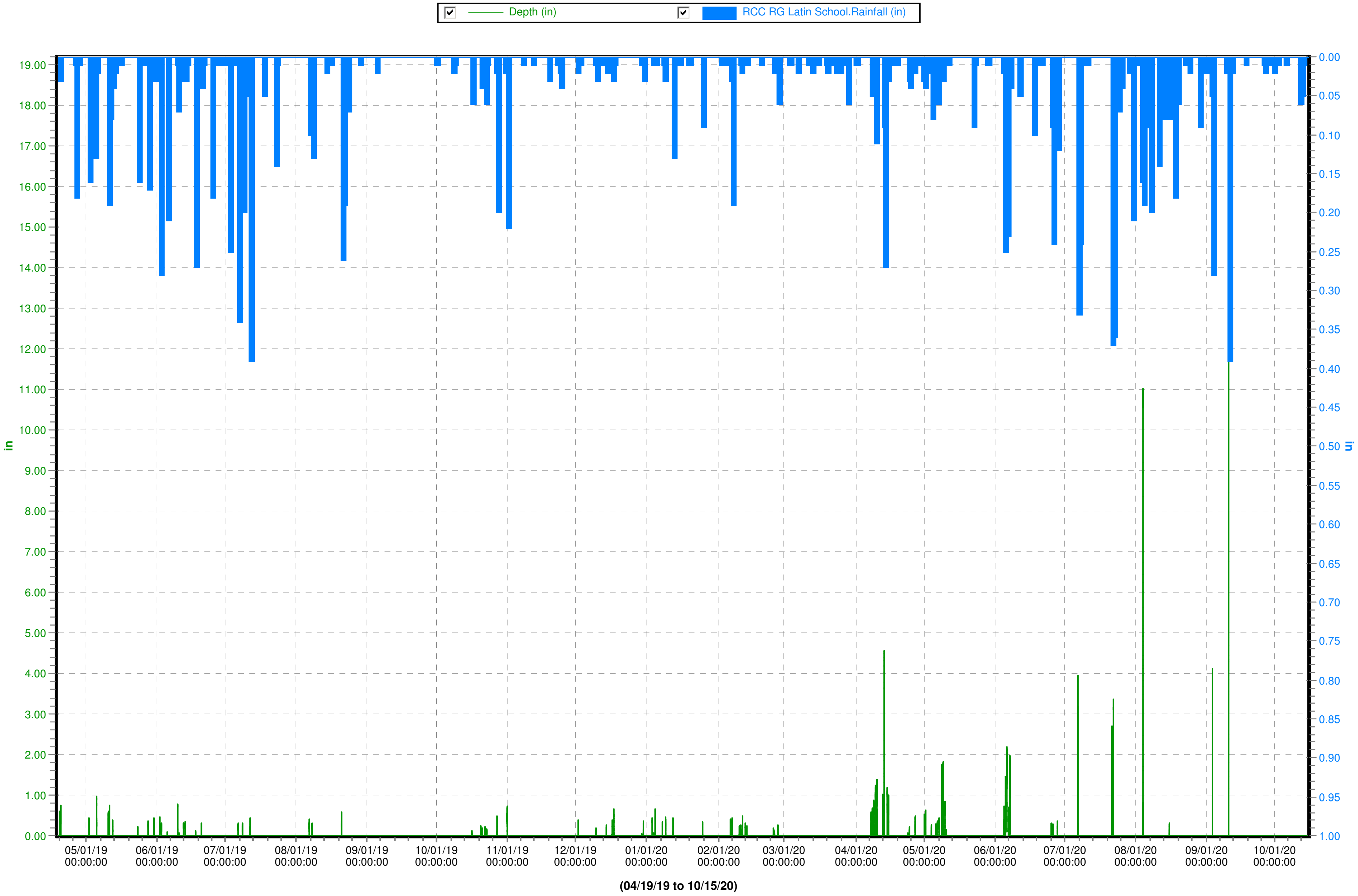
4211-A06

5207 2nd ST NW-Well Depth (in): 24



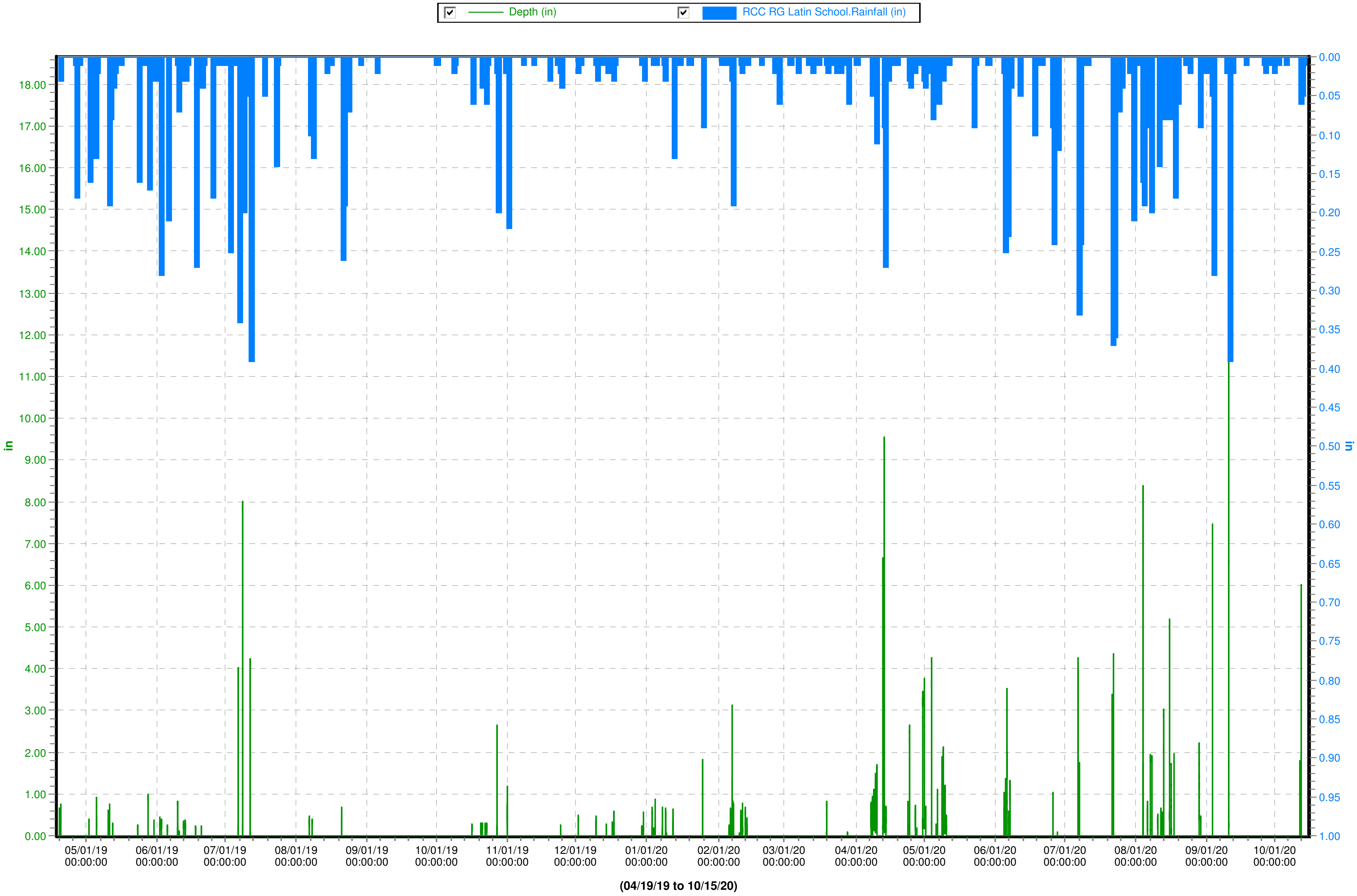
4211-A07

5207 2nd ST NW-Well Depth (in): 24



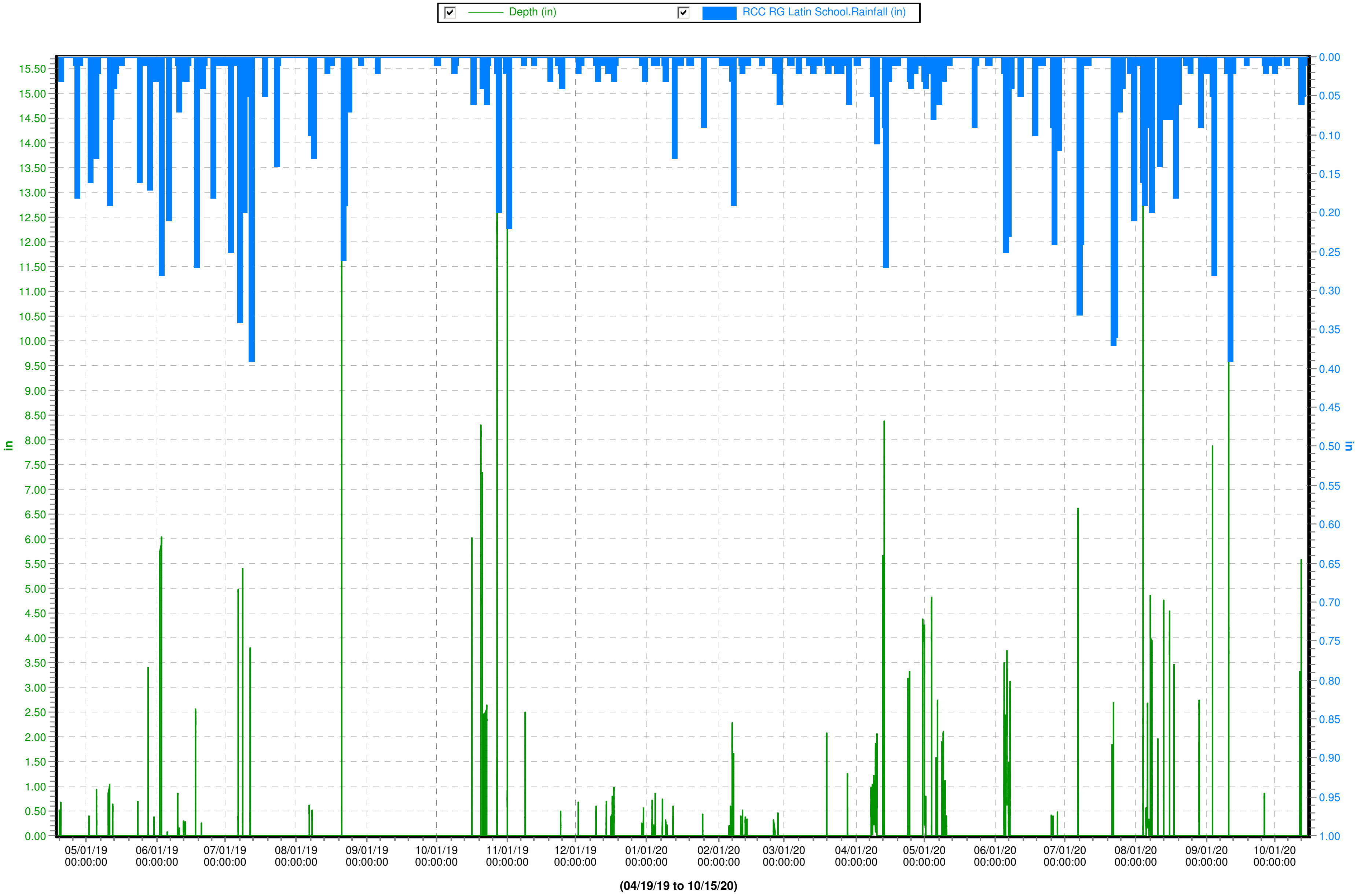
4211-A08

5207 2nd ST NW-Well Depth (in): 24



4211-A09

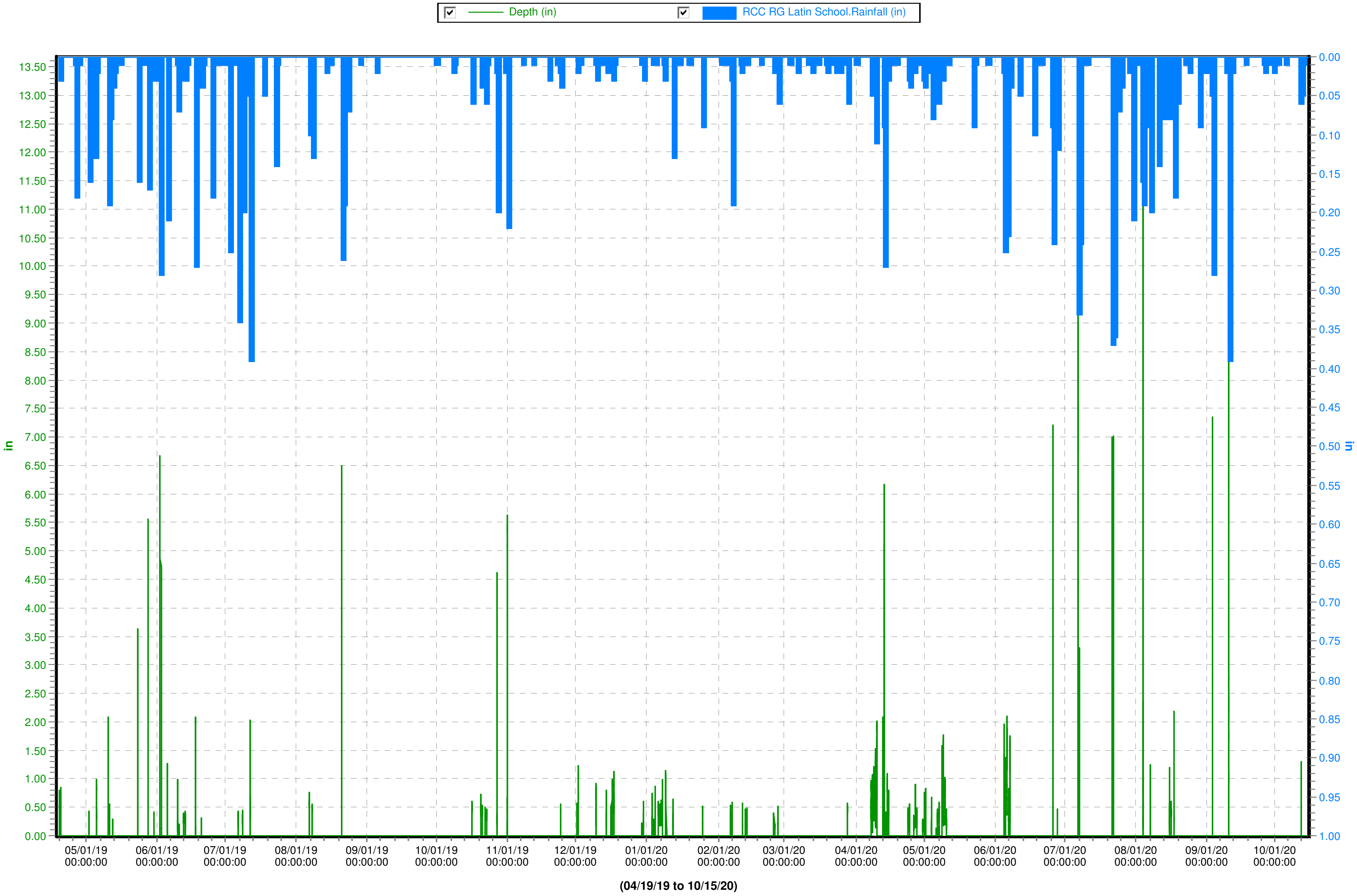
5207 2nd ST NW-Well Depth (in): 24



(04/19/19 to 10/15/20)

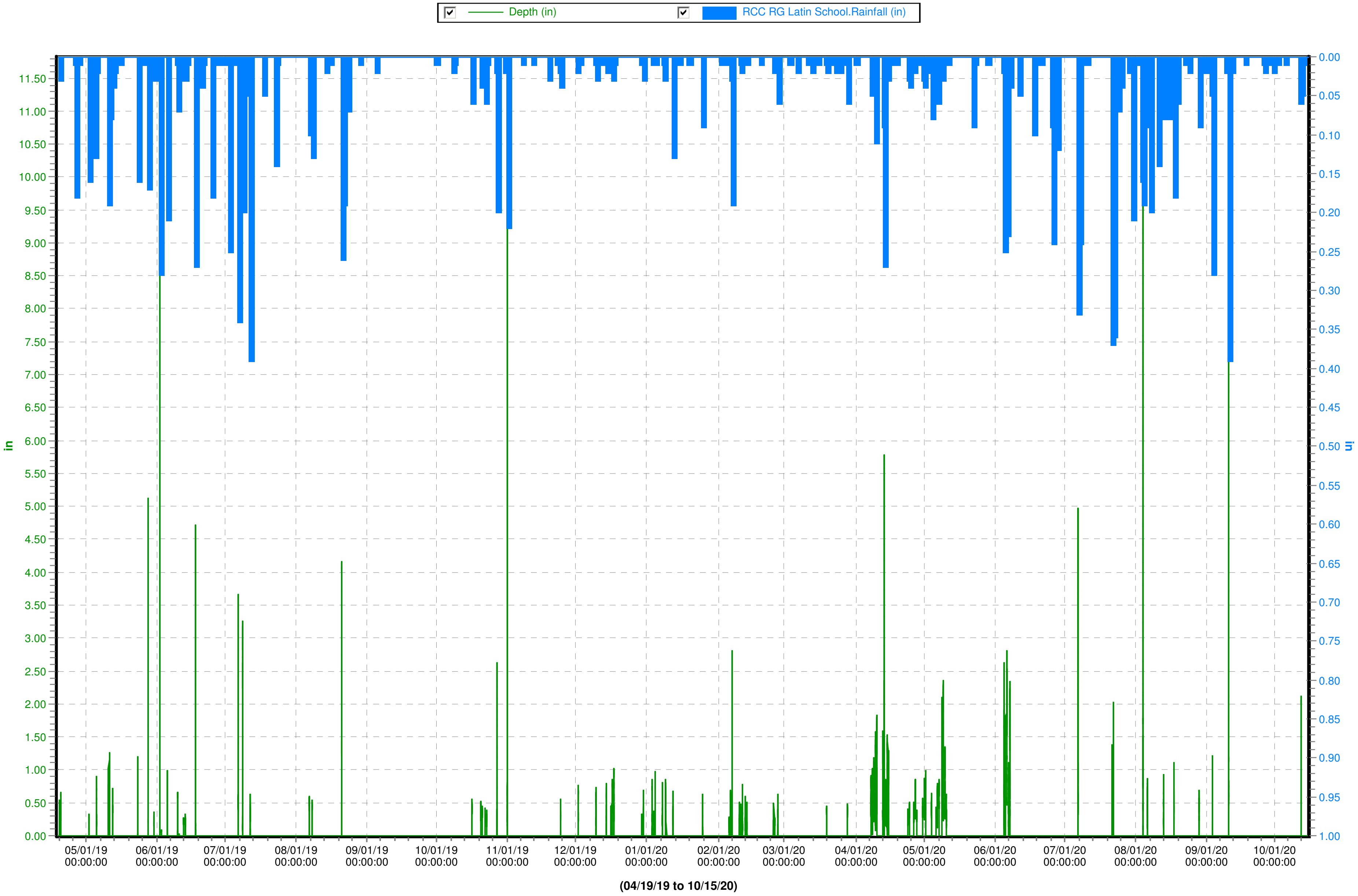
4211-A10

5207 2nd ST NW-Well Depth (in): 24



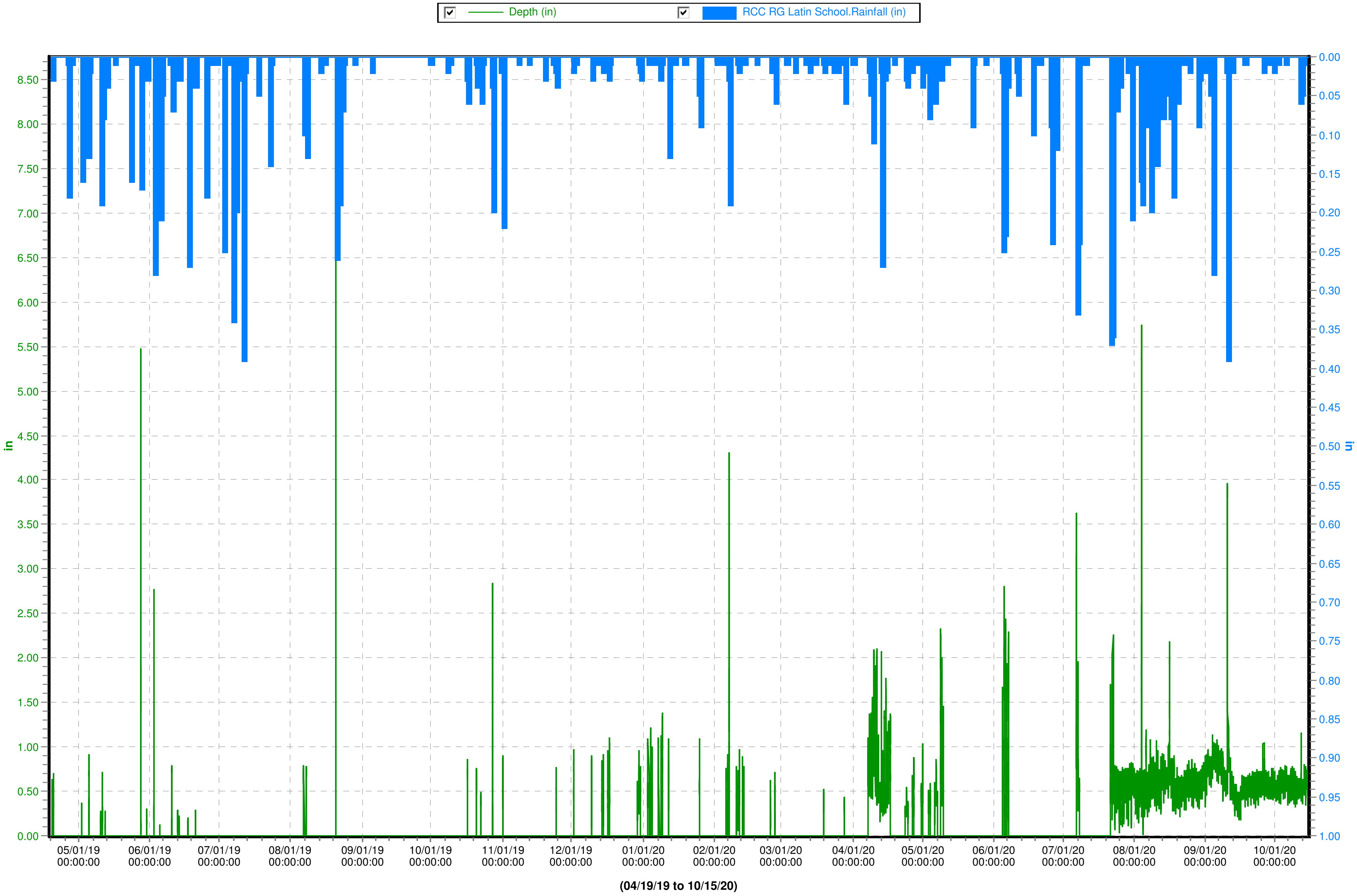
4211-A11

5207 2nd ST NW-Well Depth (in): 25



4211-A12

5207 2nd St NW-Well Depth (in): 26



(04/19/19 to 10/15/20)

Site#	A01				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	8:35		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	11:01		0	LP/PJ	Download Water Depth Sensor
8/13/2019	8:27			SD/PJ	Download Water Depth Sensor
8/20/2019	7:14			DM/PJ	Download Water Depth Sensor
8/27/2019	6:48			LP/PJ	Download Water Depth Sensor
9/3/2019	10:18			SD/PJ	Download Water Depth Sensor
9/10/2019	8:07			SD/PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/16/2019	9:58			PJ	Download Water Depth Sensor
9/23/2019	10:50			PJ/DL	Download Water Depth Sensor

10/1/2019	8:17			SD/PJ/DL	Download Water Depth Sensor
10/29/2019	9:05		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:29			SD/AP	Download Water Depth Sensor
12/3/2019	12:20			SD/MH	Download Water Depth Sensor
12/10/2019	8:46			SD/AP	Download Water Depth Sensor
12/18/2019	10:49		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:26			SD/MH	Download Water Depth Sensor
1/8/2020	12:20			SD/DW	Download Water Depth Sensor
1/15/2020	9:55			SD/DW	Download Water Depth Sensor
1/21/2020	16:35			SD/DW	Could Not Access-Car on Well
1/27/2020	11:17			SD/DW	Download Water Depth Sensor
2/3/2020				SD/DW	Could Not Access-Car on Well
2/4/2020				SD/DW	Could Not Access-Car on Well
2/10/2020	12:15		0	SD/DW	Download Water Depth Sensor
2/18/2020				Sd/DW	Could Not Access-Car on Well
2/24/2020	11:23			SD	Download Water Depth Sensor
3/3/2020	9:50			SD/JP	Download Water Depth Sensor
3/10/2020	8:31			SD/JP	Download Water Depth Sensor
3/16/2020	14:25			SD/JP	Download Water Depth Sensor
3/23/2020	12:17			SD/JP/AE	Download Water Depth Sensor
3/30/2020	9:22		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020				SD/JP/AE	Could Not Access-Car on Well
4/24/2020				SD/JP/AE	Could Not Access-Car on Well
5/13/2020				SD/JP/AE	Could Not Access-Car on Well
5/28/2020				SD/JP/AE	Could Not Access-Car on Well
6/2/2020	12:17		0	SD/JP/AE	Download Water Depth Sensor
6/23/2020	9:14			SD/JP/AE	Download Water Depth Sensor
7/6/2020				SD/JP/AE	Could Not Access-Car on Well
7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/2020	11:57			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:20		0	SD/JP/AE	Download Water Depth Sensor

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8/14/2020	9:30			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:43			SD/JP/AE	Download Water Depth Sensor
8/21/2020	12:37			SD/JP/AE	Download Water Depth Sensor
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020	10:55		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:10		0	SD/JP/AE	Download Water Depth Sensor
9/16/2020	9:35		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020	12:17			SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:48			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:37		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	12:10		0	JP/AE	Download Water Depth Sensor
10/5/2020	11:43		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:32		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:13			JP/AE	Download Water Depth Sensor
10/13/2020	10:21		0	AE	Download Water Depth Sensor
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020	14:36		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:28		0	SD/JP/AE	Download Water Depth Sensor, Remove

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Site#	A02				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	8:45		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	11:36		<0.25"	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:57		0	LP/PJ	Download Water Depth Sensor
8/13/2019	8:27			sd/pj	Download Water Depth Sensor
8/20/2019	8:30			DM/PJ	Download Water Depth Sensor
8/27/2019	6:50			lp/pj	Download Water Depth Sensor
9/3/2019	10:20			SD/PJ	Download Water Depth Sensor
9/10/2019	8:15			SD/PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:15			SD/PJ	Download Water Depth Sensor

9/23/2019	10:53			PJ/DL	Download Water Depth Sensor
10/1/2019	8:18			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:00			SD/AP	Download Water Depth Sensor
10/29/2019	9:05		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:16			SD/AP	Download Water Depth Sensor
12/2/2019	16:41			SD/MH	Download Water Depth Sensor
12/10/2019	8:47			SD/AP	Could Not Access-Car on Well
12/18/2019	11:56		0	SD/MH	Download Water Depth Sensor
12/30/2019	16:15			SD/MH	Download Water Depth Sensor
1/6/2020	13:15			SD/DW	Download Water Depth Sensor
1/13/2020	16:30			sd/dw	Could Not Access-Car on Well
1/21/2020	16:25		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:51			SD/DW	Download Water Depth Sensor
2/3/2020	11:03		0	SD/DW	Download Water Depth Sensor
2/10/2020	12:18			SD/DW	Download Water Depth Sensor
2/18/2020	8:09			SD/DW	Download Water Depth Sensor
2/24/2020	10:10			SD	Download Water Depth Sensor
3/3/2020	9:47		0	SD/JP	Download Water Depth Sensor
3/10/2020				SD/JP	Download Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020	12:18			SD/JP/AE	Download Water Depth Sensor
3/30/2020	9:24		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020				SD/JP/AE	Could Not Access-Car on Well
4/24/2020				SD/JP/AE	Could Not Access-Car on Well
5/13/2020				SD/JP/AE	Download Water Depth Sensor
5/22/2020	11:05		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/AE	Could Not Access-Car on Well
6/2/2020				SD/JP/AE	Download Water Depth Sensor
6/23/2020	9:15		0	SD/JP/AE	Download Water Depth Sensor
7/6/2020				SD/JP/AE	Could Not Access-Car on Well
7/16/2020				SD/JP/AE	Could Not Access-Car on Well

7/20/2020	13:53		0	SD/JP/AE	Download Water Depth Sensor
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020	17:54			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:49			SD/JP/AE	Download Water Depth Sensor
8/21/2020	12:39			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:16		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:56		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:09		0	SD/JP/AE	Download Water Depth Sensor
9/16/2020	9:34		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020	12:16			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:38		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	12:08		0	JP/AE	Download Water Depth Sensor
10/5/2020				JP/AE	Could Not Access-Car on Well
10/8/2020	12:32		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:14			JP/AE	Download Water Depth Sensor
10/13/2020	10:22		0	AE	Download Water Depth Sensor
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020	14:35		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:28		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A03				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	9:05		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	11:41		<0.25"	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019	9:01		0	DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:51		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	7:12			DM/PJ	Download Water Depth Sensor
8/27/2019	6:52			LP/PJ	Download Water Depth Sensor
9/3/2019	10:23			SD/PJ	Download Water Depth Sensor
9/9/2019	10:31			PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/16/2019	10:02			PJ	Download Water Depth Sensor

9/23/2019	10:56			PJ/DL	Download Water Depth Sensor
10/1/2019	8:20			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:10			SD/AP	Download Water Depth Sensor
10/29/2019	9:07		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:17			SD/AP	Download Water Depth Sensor
12/3/2019	8:20			SD/MH	Download Water Depth Sensor
12/10/2019	8:47			SD/AP	Download Water Depth Sensor
12/18/2019	10:56		0	SD/MH	Download Water Depth Sensor
12/30/2019	14:56			SD/MH	Download Water Depth Sensor
1/8/2020	12:22			SD/DW	Download Water Depth Sensor
1/14/2020	9:32			SD/DW	Download Water Depth Sensor
1/22/2020	8:33		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:53			SD/DW	Could Not Access-Car on Well
2/3/2020	14:05		0	SD/DW	Download Water Depth Sensor
2/11/2020	10:30			SD/DW	Download Water Depth Sensor
2/18/2020				SD/DW	Could Not Access-Car on Well
2/24/2020	10:06			SD	Download Water Depth Sensor
3/3/2020	9:46		0	SD/JP	Download Water Depth Sensor
3/10/2020	7:21			SD/JP	Download Water Depth Sensor
3/16/2020				SD/JP	Could Not Access-Car on Well
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020				SD/JP/AE	Could Not Access-Car on Well
4/15/2020	10:00		0	SD/JP/AE	Download Water Depth Sensor
4/20/2020	10:40			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:52			SD/JP/AE	Download Water Depth Sensor
5/13/2020	12:26			SD/JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/AE	Could Not Access-Car on Well
6/2/2020	12:22		0	SD/JP/AE	Download Water Depth Sensor
6/9/2020	9:16		0	SD/JP/AE	Download Water Depth Sensor
6/23/2020	9:16			SD/JP/AE	Download Water Depth Sensor
7/6/2020	13:05			SD/JP/AE	Download Water Depth Sensor
7/16/2020	13:55		0	SD/JP/AE	Download Water Depth Sensor

7/20/2020	11:55			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:19			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:31			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:50			SD/JP/AE	Download Water Depth Sensor
8/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/1/2020	13:14		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020				SD/JP/AE	Download Water Depth Sensor
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020	9:32		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/25/2020	14:39		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	12:06		0	JP/AE	Download Water Depth Sensor
10/5/2020	11:50		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:30		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:15			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020	14:34		0	JP/AE	Download Water Depth Sensor
10/28/2020	17:55		0	SD	Download Water Depth Sensor, Remove

Site#	A04				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/17/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		<0.25"	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019				LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/13/2019				SD/PJP	Download Water Depth Sensor
8/20/2019	7:08			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		<.25"	DM/PJ	Download Water Depth Sensor
8/27/2019	6:55			LP/PJ	Download Water Depth Sensor
9/3/2019	11:50			SD/PJ	Download Water Depth Sensor
9/9/2019	8:27			PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:20			SD/PJ	Download Water Depth Sensor

9/23/2019	11:00			PJ/DL	Download Water Depth Sensor
10/1/2019	8:22			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:04			SD/AP	Download Water Depth Sensor
10/29/2019	9:08		0	SD/AP	Download Water Depth Sensor
11/12/2019	1:03			SD/AP	Download Water Depth Sensor
12/2/2019	15:51			SD/MH	Could Not Access-Car on Well
12/3/2019	8:55			SD/MH	Could Not Access-Car on Well
12/10/2019	8:48			SD/AP	Could Not Access-Car on Well
12/18/2019	12:20		<.25"	SD/MH	Download Water Depth Sensor
12/30/2019	13:30			SD/MH	Could Not Access-Car on Well
1/6/2020	12:13			SD/DW	Download Water Depth Sensor
1/13/2020	16:35			SD/DW	Download Water Depth Sensor
1/21/2020	16:25			SD/DW	Could Not Access-Car on Well
1/27/2020	9:52			SD/DW	Could Not Access-Car on Well
2/3/2020				SD/DW	Could Not Access-Car on Well
2/4/2020				SD/DW	Could Not Access-Car on Well
2/10/2020				SD/DW	Could Not Access-Car on Well
2/11/2020				SD/DW	Could Not Access-Car on Well
2/18/2020	8:08		0	SD/DW	Download Water Depth Sensor
2/24/2020				SD	Could Not Access-Car on Well
3/3/2020	9:50			SD/JP	Download Water Depth Sensor
3/10/2020	8:34		0	SD/JP	Download Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020				SD/JP/AE	Could Not Access-Car on Well
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020				SD/JP/AE	Could Not Access-Car on Well
4/24/2020				SD/JP/AE	Could Not Access-Car on Well
5/13/2020				SD/JP/AE	Could Not Access-Car on Well
5/28/2020				SD/JP/AE	Could Not Access-Car on Well
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/23/2020				SD/JP/AE	Could Not Access-Car on Well

7/6/2020				SD/JP/AE	Could Not Access-Car on Well
7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/220				SD/JP/AE	Could Not Access-Car on Well
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020				SD/JP/AE	Could Not Access-Car on Well
8/21/2020	12:36		0	SD/JP/AE	Download Water Depth Sensor
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020	11:03		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020	12:13			SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:49			SD/JP/AE	Download Water Depth Sensor
9/23/2020	8:06			SD/JP/AE	Download Water Depth Sensor
9/25/2020	12:19		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020				JP/AE	Could Not Access-Car on Well
10/5/2020	11:01		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:41			JP/AE	Download Water Depth Sensor
10/9/2020	11:16			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020	14:33		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:27		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A05				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/17/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:49		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	7:07			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	6:57			LP/PJ	Download Water Depth Sensor
9/10/2019	8:32			SD/PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:23			SD/PJ	Download Water Depth Sensor
9/24/2019	9:02			SD/PJ/DL	Download Water Depth Sensor

10/1/2019	8:26			SD/PJ/DL	Download Water Depth Sensor
10/29/2019	9:12		0	SD/AP	Download Water Depth Sensor
12/2/2019	17:52			SD/AP	Download Water Depth Sensor
12/10/2019	8:48			SD/AP	Could Not Access-Car on Well
12/18/2019	12:30			SD/MH	Could Not Access-Car on Well
12/30/2019	13:30			SD/MH	Could Not Access-Car on Well
1/6/2020	12:15			SD/DW	Could Not Access-Car on Well
1/13/2020	16:50			SD/DW	Could Not Access-Car on Well
1/21/2020	16:25		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:51			SD/DW	Could Not Access-Car on Well
2/3/2020	14:07		0	SD/DW	Download Water Depth Sensor
2/10/2020				SD/DW	Could Not Access-Car on Well
2/11/2020				SD/DW	Could Not Access-Car on Well
2/18/2020				SD/DW	Could Not Access-Car on Well
2/24/2020				SD	Could Not Access-Car on Well
3/3/2020	9:45			SD/DW	Download Water Depth Sensor
3/10/2020	7:36		0	SD/JP	Download Water Depth Sensor
3/16/2020				SD/JP	Could Not Access-Car on Well
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020				SD/JP/Ae	Could Not Access-Car on Well
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020				SD/JP/AE	Could Not Access-Car on Well
4/24/2020				SD/JP/AE	Could Not Access-Car on Well
5/13/2020				SD/JP/AE	Could Not Access-Car on Well
5/28/2020				SD/JP/AE	Could Not Access-Car on Well
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/23/2020				SD/JP/AE	Could Not Access-Car on Well
7/6/2020				SD/JP/AE	Could Not Access-Car on Well
7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/2020				SD/JP/AE	Could Not Access-Car on Well
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well

8/19/2020				SD/JP/AE	Could Not Access-Car on Well
8/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020	9:27		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/21/2020	11:52			SD/JP/AE	Download Water Depth Sensor
9/25/2020				SD/JP/AE	Could Not Access-Car on Well
10/2/2020				JP/AE	Could Not Access-Car on Well
10/5/2020	11:03		0	JP/AE	Download Water Depth Sensor
10/8/2020				JP/AE	Could Not Access-Car on Well
10/9/2020	11:15			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020				JP/AE	Could Not Access-Car on Well
10/28/2020	8:53		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A06				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	11:54		0	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:47		0	LP/PJ	Download Water Depth Sensor
8/13/2019	8:25			SD/PJ	Download Water Depth Sensor
8/27/2019	6:58			LP/PJ	Download Water Depth Sensor
9/3/2019	10:27			SD/PJ	Download Water Depth Sensor
9/9/2019	10:28			SD/PJ	Download Water Depth Sensor
9/10/2019	8:35			SD/PJ	Download Water Depth Sensor
9/10/2019			0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:32			SD/PJ	Download Water Depth Sensor

9/23/2019	10:45			PJ/DL	Download Water Depth Sensor
10/1/2019	8:24			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:11			SD/AP	Download Water Depth Sensor
10/29/2019	9:10		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:19			SD/AP	Download Water Depth Sensor
12/2/2019	15:44			SD/MH	Could Not Access-Car on Well
12/3/2019	8:50			SD/MH	Could Not Access-Car on Well
12/10/2019	8:48			SD/AP	Download Water Depth Sensor
12/18/2019	10:53		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:24			SD/MH	Download Water Depth Sensor
1/6/2020	12:23			SD/DW	Download Water Depth Sensor
1/13/2020	16:49			SD/DW	Download Water Depth Sensor
1/21/2020	16:24		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:50			SD/DW	Could Not Access-Car on Well
2/3/2020				SD/DW	Could Not Access-Car on Well
2/4/2020				SD/DW	Could Not Access-Car on Well
2/10/2020	12:11			SD/DW	Download Water Depth Sensor
2/18/2020	8:05			Sd/DW	Download Water Depth Sensor
2/24/2020	10:05			SD	Download Water Depth Sensor
3/3/2020	9:42		0	SD/JP	Download Water Depth Sensor
3/10/2020				SD/JP	Could Not Access-Car on Well
3/16/2020				SD/JP	Could Not Access-Car on Well
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020	8:26		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020	9:21			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:55			SD/JP/AE	Download Water Depth Sensor
5/13/2020				SD/JP/AE	Download Water Depth Sensor
5/22/2020	12:08		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020	11:04			SD/JP/AE	Download Water Depth Sensor
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/5/2020	14:30			SD/JP/AE	Download Water Depth Sensor

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6/23/2020	9:17		0	SD/JP/AE	Download Water Depth Sensor
7/6/2020	13:05			SD/JP/AE	Download Water Depth Sensor
7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/2020	11:52			SD/JP/AE	Download Water Depth Sensor
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020				SD/JP/AE	Could Not Access-Car on Well
8/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/17/2020	12:08		0	SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:52			SD/JP/AE	Download Water Depth Sensor
9/25/2020				SD/JP/AE	Could Not Access-Car on Well
10/2/2020	12:05		0	JP/AE	Download Water Depth Sensor
10/5/2020	9:45		0	JP/AE	Download Water Depth Sensor
10/8/2020				JP/AE	Could Not Access-Car on Well
10/9/2020	11:17			JP/AE	Download Water Depth Sensor
10/13/2020	10:23		0	AE	Download Water Depth Sensor
10/16/2020	11:40			JP/AE	Download Water Depth Sensor
10/22/2020				JP/AE	Could Not Access-Car on Well
10/28/2020	8:52		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A07				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/18/2019	14:00		0	DM/PJ	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	11:57		0	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:41		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	7:02			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	7:00			LP/PJ	Download Water Depth Sensor
9/3/2019	10:31			PJ	Download Water Depth Sensor
9/9/2019	10:26			PJ	Download Water Depth Sensor
9/10/2019	8:50		0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:25			SD/PJ	Download Water Depth Sensor
9/23/2019	11:10			PJ/DL	Download Water Depth Sensor

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10/1/2019	8:27			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:12			SD/AP	Download Water Depth Sensor
10/29/2019	9:11		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:20			SD/AP	Download Water Depth Sensor
12/2/2019	15:42			SD/MH	Download Water Depth Sensor
12/10/2019	8:49			SD/AP	Download Water Depth Sensor
12/18/2019	10:52		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:23			SD/MH	Download Water Depth Sensor
1/6/2020	12:11			SD/DW	Download Water Depth Sensor
1/14/2020	9:29			SD/DW	Download Water Depth Sensor
1/22/2020	8:36		0	SD/DW	DL Water Depth Sensor
1/27/2020	9:49			SD/DW	Download Water Depth Sensor
2/3/2020	11:10		0	S/DW	Download Water Depth Sensor
2/10/2020	12:06		0	SD/DW	Download Water Depth Sensor
2/18/2020	8:03			SD/DW	Download Water Depth Sensor
2/24/2020				SD	Download Water Depth Sensor
3/3/2020	9:40			SD/JP	Download Water Depth Sensor
3/10/2020				SD/JP	Could Not Access-Car on Well
3/16/2020	14:21			SD/JP	Download Water Depth Sensor
3/23/2020	13:15			SD/JP/AE	Download Water Depth Sensor
3/30/2020	9:27		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	11:26			SD/JP/AE	Download Water Depth Sensor
4/20/2020	10:42			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:53			SD/JP/AE	Download Water Depth Sensor
5/13/2020				SD/JP/AE	Download Water Depth Sensor
5/22/2020	12:15		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020	12:30			SD/JP/AE	Download Water Depth Sensor
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/9/2020	9:17		0	SD/JP/AE	Download Water Depth Sensor
6/23/2020	9:18			SD/JP/AE	Download Water Depth Sensor
7/6/2020				SD/JP/AE	Could Not Access-Car on Well
7/16/2020				SD/JP/AE	Could Not Access-Car on Well

7/20/2020	11:50			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:17		0	SD/JP/AE	Download Water Depth Sensor
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020	10:50			SD/JP/AE	Download Water Depth Sensor
8/21/2020	12:40			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:09		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020	10:56		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:07		0	SD/JP/AE	Download Water Depth Sensor
9/16/2020				SD/JP/AE	Could Not Access-Car on Well
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/21/2020	11:53			SD/JP/AE	Download Water Depth Sensor
9/25/2020				SD/JP/AE	Could Not Access-Car on Well
10/2/2020	12:04		0	JP/AE	Download Water Depth Sensor
10/5/2020				JP/AE	Could Not Access-Car on Well
10/8/2020	12:30		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:20			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020	14:33		0	JP/AE	Could Not Access-Car on Well
10/26/2020	13:27		0	SD/JP/AE	Download Water Depth Sensor, Remove

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Site#	A08				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	8:30		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:37		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	7:17			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	15:06			LP/PJ	Download Water Depth Sensor
9/3/2019	10:33			SD/PJ	Download Water Depth Sensor
9/10/2019	8:52		0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:26			SD/PJ	Download Water Depth Sensor
9/23/2019	11:03			PJ/DL	Download Water Depth Sensor

10/1/2019	8:30			SD/PJ/DL	Download Water Depth Sensor
10/29/2019	9:16		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:21			SD/AP	Download Water Depth Sensor
12/3/2019	8:17			SD/MH	Download Water Depth Sensor
12/10/2019	8:50			SD/AP	Download Water Depth Sensor
12/18/2019	10:47		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:22			SD/MH	Download Water Depth Sensor
1/6/2020	12:08			SD/MH	Download Water Depth Sensor
1/14/2020	9:27			SD/DW	Download Water Depth Sensor
1/21/2020	16:22		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:48			SD/DW	Download Water Depth Sensor
2/4/2020	9:18		0	D/DW	Download Water Depth Sensor
2/10/2020	12:07			SD/DW	Download Water Depth Sensor
2/18/2020	8:01			SD/DW	Download Water Depth Sensor
2/24/2020	10:02			SD	Download Water Depth Sensor
3/3/2020				SD/JP	Could Not Access-Car on Well
3/10/2020	7:24			SD/JP	Download Water Depth Sensor
3/17/2020	10:42			SD/JP	Download Water Depth Sensor
3/23/2020	13:15			SD/JP/AE	Download Water Depth Sensor
3/30/2020	9:30		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:12			SD/JP/AE	Download Water Depth Sensor
4/20/2020	10:45			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:55			SD/JP/AE	Download Water Depth Sensor
5/13/2020	12:24			SD/JP/AE	Download Water Depth Sensor
5/22/2020	12:18		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/AE	Download Water Depth Sensor
6/2/2020	9:16		0	SD/JP/AE	Download Water Depth Sensor
6/5/2020	12:38		0	JP/AE	Download Water Depth Sensor
6/18/2020	12:06		0	JP/AE	Download Water Depth Sensor
6/23/2020				SD/JP/AE	Could Not Access-Car on Well
6/26/2020	11:47		0	JP/AE	Download Water Depth Sensor
7/6/200				SD/JP/AE	Could Not Access-Car on Well

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7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/2020				SD/JP/AE	Could Not Access-Car on Well
7/30/2020	12:45		0	JP/AE	Download Water Depth Sensor
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020	10:52		0	SD/JP/AE	Download Water Depth Sensor
8/21/2020	12:41			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:08		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020				SD/JP/AE	Could Not Access-Car on Well
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/25/2020	12:27		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	12:08		0	JP/AE	Download Water Depth Sensor
10/5/2020	9:48		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:30		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:21			JP/AE	Download Water Depth Sensor
10/13/2020	10:26		0	AE	Download Water Depth Sensor
10/16/2020	11:27		0	JP/AE	Download Water Depth Sensor
10/22/2020	14:32		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:26		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A09				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/18/2019	13:35		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	12:01		0	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019	10:52		0	DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:32		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	9:28			DM/PJ	Download Water Depth Sensor
8/27/2019	7:02			LP/PJ	Download Water Depth Sensor
9/3/2019	10:36			SD/PJ	Download Water Depth Sensor
9/9/2019	10:38			PJ	Download Water Depth Sensor
9/10/2019	8:53		0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:27			SD/PJ	Download Water Depth Sensor

9/23/2019	11:13			PJ/DL	Download Water Depth Sensor
10/1/2019	8:31			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:14			SD/AP	Download Water Depth Sensor
10/29/2019	9:12		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:23			SD/AP	Download Water Depth Sensor
12/2/2019	15:44			SD/MH	Download Water Depth Sensor
12/10/2019	8:51			SD/AP	Download Water Depth Sensor
12/18/2019	10:45		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:20			SD/MH	Download Water Depth Sensor
1/6/2020	12:06			SD/DW	Download Water Depth Sensor
1/13/2020	16:35			SD/DW	Could Not Access-Car on Well
1/21/2020	16:20		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:47			SD/DW	Download Water Depth Sensor
2/3/2020	11:12		0	SD/DW	Download Water Depth Sensor
2/10/2020	12:09			SD/DW	Download Water Depth Sensor
2/18/2020	8:00			SD/DW	Download Water Depth Sensor
2/24/2020				SD	Could Not Access-Car on Well
3/3/2020	9:39			SD/JP	Download Water Depth Sensor
3/10/2020	7:25			SD/JP	Download Water Depth Sensor
3/16/2020				SD/JP	Could Not Access-Car on Well
3/23/2020	13:13			SD/JP/AE	Download Water Depth Sensor
3/30/2020	9:25		0	SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:13			SD/JP/AE	Download Water Depth Sensor
4/20/2020	10:46			SD/JP/AE	Download Water Depth Sensor
4/24/2020	11:56			SD/JP/AE	Download Water Depth Sensor
5/13/2020	12:22			SD/JP/AE	Download Water Depth Sensor
5/22/2020	12:25		0	SD/JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/AE	Download Water Depth Sensor
6/2/2020	9:19		0	SD/JP/Ae	Download Water Depth Sensor
6/10/2020	9:19		0	SD/JP/AE	Download Water Depth Sensor
6/23/2020				SD/JP/AE	Could Not Access-Car on Well
7/6/2020				SD/JP/AE	Could Not Access-Car on Well

7/16/2020				SD/JP/AE	Could Not Access-Car on Well
7/20/2020				SD/JP/AE	Could Not Access-Car on Well
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020	9:40		0	SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:52		0	SD/JP/AE	Download Water Depth Sensor
8/21/2020	12:42			SD/JP/AE	Download Water Depth Sensor
9/1/2020	13:07		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020	9:39		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/21/2020	11:55			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:47		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	12:00		0	JP/AE	Download Water Depth Sensor
10/5/2020	9:49		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:26		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:20			JP/AE	Download Water Depth Sensor
10/13/2020	10:25		0	AE	Download Water Depth Sensor
10/16/2020	11:26		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:23		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A10				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	13:40		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/13/2019	12:05		0	LR/PJ	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019	10:50		0	DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:28		0	LP/PJ	Download Water Depth Sensor
8/13/2019	9:01			SD/PJ	Download Water Depth Sensor
8/20/2019	9:13			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	7:05			LP/PJ	Download Water Depth Sensor
9/10/2019	8:55		0	SD/PJ	Download Water Depth Sensor
9/17/2019	9:28			SD/PJ	Download Water Depth Sensor
9/24/2019	9:06			SD/PJ/DL	Download Water Depth Sensor

10/1/2019	8:32			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:15			SD/AP	Download Water Depth Sensor
10/29/2019	9:13		0	SD/AP	Download Water Depth Sensor
11/12/2019	12:00			D/AP	Download Water Depth Sensor
12/2/2019	15:50			SD/MH	Could Not Access-Car on Well
12/3/2019	8:50			SD/MH	Could Not Access-Car on Well
12/10/2019	8:52			SD/AP	Could Not Access-Car on Well
12/18/2019	12:27		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:20			SD/MH	Could Not Access-Car on Well
1/6/2020	12:30			SD/DW	Could Not Access-Car on Well
1/13/2020	16:37			SD/DW	Download Water Depth Sensor
1/21/2020	16:19		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:46			SD/DW	Could Not Access-Car on Well
2/3/2020				SD/DW	Could Not Access-Car on Well
2/4/2020				SD/DW	Could Not Access-Car on Well
2/10/2020				SD/DW	Could Not Access-Car on Well
2/11/2020				SD/DW	Could Not Access-Car on Well
2/18/2020				SD/DW	Could Not Access-Car on Well
2/24/2020				SD	Download Water Depth Sensor
3/3/2020				SD/JP	Could Not Access-Car on Well
3/10/2020				SD/JP	Could Not Access-Car on Well
3/17/2020	9:40		0	SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020				SD/JP/Ae	Could Not Access-Car on Well
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020	8:23		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020	10:58			SD/JP/AE	Download Water Depth Sensor
5/13/2020				SD/JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/aE	Could Not Access-Car on Well
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/24/2020	7:40		0	SD/JP/AE	Download Water Depth Sensor
7/6/2020	13:08			SD/JP/AE	Download Water Depth Sensor

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7/16/2020				SD/JP/AE	Download Water Depth Sensor
7/20/2020				SD/JP/AE	Download Water Depth Sensor
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020				SD/JP/AE	Could Not Access-Car on Well
8/21/2020	12:42		0	SD/JP/AE	Download Water Depth Sensor
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020				SD/JP/AE	Could Not Access-Car on Well
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/25/2020	16:20		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020				JP/AE	Could Not Access-Car on Well
10/5/2020	9:51		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:25		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:20			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020				JP/AE	Could Not Access-Car on Well
10/27/2020	16:08		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A11				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	14:45		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019	10:48		<0.25"	DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:23		0	LP/PJ	Download Water Depth Sensor
8/13/2019	9:03			SD/PJ	Download Water Depth Sensor
8/20/2019	7:18			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	7:06			LP/PJ	Download Water Depth Sensor
9/3/2019	10:48			SD/PJ	Download Water Depth Sensor
9/10/2019	8:56		0	SD/PJ	Download Water Depth Sensor
9/17/219	9:30			SD/PJ	Download Water Depth Sensor
9/24/2019	9:07			SD/PJ/DL	Download Water Depth Sensor

10/1/2019	8:35			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:16			SD/AP	Download Water Depth Sensor
10/29/2019	9:14		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:25			SD/AP	Download Water Depth Sensor
12/2/2019	15:52			SD/MH	Download Water Depth Sensor
12/10/2019	8:51			SD/AP	Download Water Depth Sensor
12/18/2019	10:44		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:20			SD/MH	Could Not Access-Car on Well
1/6/2020	12:25			SD/DW	Download Water Depth Sensor
1/13/2020	16:38			SD/DW	Download Water Depth Sensor
1/21/2020	16:19		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:46			SD/DW	Could Not Access-Car on Well
2/3/2020				SD/DW	Could Not Access-Car on Well
2/4/2020	8:20		0	SD/DW	Download Water Depth Sensor
2/10/2020				SD/DW	Could Not Access-Car on Well
2/11/2020				SD/DW	Could Not Access-Car on Well
2/18/2020				SD/DW	Could Not Access-Car on Well
2/24/2020				SD	Download Water Depth Sensor
3/3/2020				SD/JP	Could Not Access-Car on Well
3/10/2020				SD/JP	Could Not Access-Car on Well
3/17/2020	9:40		0	SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP/AE	Could Not Access-Car on Well
3/30/2020				SD/JP/Ae	Could Not Access-Car on Well
4/15/2020				SD/JP/AE	Could Not Access-Car on Well
4/21/2020	8:23		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020	10:58			SD/JP/AE	Download Water Depth Sensor
5/13/2020				SD/JP/AE	Download Water Depth Sensor
5/22/2020	11:45		0	JP/AE	Download Water Depth Sensor
5/28/2020				SD/JP/aE	Could Not Access-Car on Well
6/2/2020				SD/JP/AE	Could Not Access-Car on Well
6/5/2020	12:24		0	JP/AE	Download Water Depth Sensor
6/18/2020	11:55		0	JP/AE	Download Water Depth Sensor

6/24/2020	7:40		0	SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:08			SD/JP/AE	Download Water Depth Sensor
7/16/2020				SD/JP/AE	Download Water Depth Sensor
7/20/2020				SD/JP/AE	Download Water Depth Sensor
8/5/2020				SD/JP/AE	Could Not Access-Car on Well
8/14/2020				SD/JP/AE	Could Not Access-Car on Well
8/19/2020				SD/JP/AE	Could Not Access-Car on Well
8/21/2020	12:42		0	SD/JP/AE	Download Water Depth Sensor
9/1/2020				SD/JP/AE	Could Not Access-Car on Well
9/8/2020				SD/JP/AE	Could Not Access-Car on Well
9/11/2020				SD/JP/AE	Could Not Access-Car on Well
9/16/2020				SD/JP/AE	Could Not Access-Car on Well
9/17/2020				SD/JP/AE	Could Not Access-Car on Well
9/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/25/2020	16:20		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020				JP/AE	Could Not Access-Car on Well
10/5/2020	9:51		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:25		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:20			JP/AE	Download Water Depth Sensor
10/13/2020				AE	Could Not Access-Car on Well
10/16/2020				JP/AE	Could Not Access-Car on Well
10/22/2020				JP/AE	Could Not Access-Car on Well
10/27/2020	16:08		0	SD/JP/AE	Download Water Depth Sensor, Remove

Site#	A12				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/16/2019	9:50		0	DM/PJ/JB	Install Water Depth Sensor
4/22/2019				SD/PJ/JB	Download Water Depth Sensor
4/23/2019				SD/PJ/JB	Download Water Depth Sensor
4/30/2019				SD/JB	Download Water Depth Sensor
5/7/2019	8:30		0	SD/PJ/JB	Download Water Depth Sensor
5/14/2019				SD/PJ/JB	Download Water Depth Sensor
5/21/2019				SD/PJ/JB	Download Water Depth Sensor
5/22/2019				SD/PJ/JB	Download Water Depth Sensor
5/28/2019				SD/PJ/JB	Download Water Depth Sensor
5/29/2019				SD/JB	Download Water Depth Sensor
5/30/2019				SD/PJ	Download Water Depth Sensor
6/4/2019				LR/PJ/JB	Download Water Depth Sensor
6/5/2019	7:46		0	LR/PJ/JB	Download Water Depth Sensor
6/11/2019				SD/PJ/DC	Download Water Depth Sensor
6/18/2019				SD/PJ/DC	Download Water Depth Sensor
6/25/2019				DM/PJ/DC	Download Water Depth Sensor
7/2/2019	6:50		0	SD/PJ/DC	Download Water Depth Sensor
7/9/2019				SD/PJ/DC	Download Water Depth Sensor
7/16/2019				SD/PJ	Download Water Depth Sensor
7/23/2019				SD/PJ/DC	Download Water Depth Sensor
7/30/2019				SD/PJ/DC	Download Water Depth Sensor
8/6/2019	10:19		0	LP/PJ	Download Water Depth Sensor
8/13/2019				SD/PJ	Download Water Depth Sensor
8/20/2019	7:20			DM/PJ	Download Water Depth Sensor
8/21/2019	12:23		0	DM/PJ	Download Water Depth Sensor
8/27/2019	7:08			LP/PJ	Download Water Depth Sensor
9/3/2019	10:52			SD/PJ	Download Water Depth Sensor
9/9/2019	10:41			PJ	Download Water Depth Sensor
9/10/2019	8:57		0	SD/PJ	Download Water Depth Sensor
9/16/2019	16:14			SD/PJ	Download Water Depth Sensor

9/23/2019	10:40			PJ/DL	Download Water Depth Sensor
10/1/2019	8:36			SD/PJ/DL	Download Water Depth Sensor
10/15/2019	13:17			SD/AP	Download Water Depth Sensor
10/29/2019	9:15		0	SD/AP	Download Water Depth Sensor
11/12/2019	9:26			SD/AP	Download Water Depth Sensor
12/2/2019	15:46			SD/MH	Download Water Depth Sensor
12/10/2019	8:52			SD/AP	Download Water Depth Sensor
12/18/2019	10:42		0	SD/MH	Download Water Depth Sensor
12/30/2019	13:18			SD/MH	Download Water Depth Sensor
1/6/2020	12:04			SD/DW	Download Water Depth Sensor
1/14/2020	9:24			SD/DW	Download Water Depth Sensor
1/21/2020	16:16		0	SD/DW	Download Water Depth Sensor
1/27/2020	9:43			SD/DW	Download Water Depth Sensor
2/3/2020	11:15		0	SD/DW	Download Water Depth Sensor
2/10/2020				SD/DW	Could Not Access-Car on Well
2/11/2020				SD/DW	Could Not Access-Car on Well
2/18/2020	7:58			SD/DW	Download Water Depth Sensor
2/24/2020	10:00			SD	Download Water Depth Sensor
3/3/2020	9:36			SD/JP	Download Water Depth Sensor
3/10/2020	7:26			SD/JP	Download Water Depth Sensor
3/16/2020	14:17			SD/JP	Download Water Depth Sensor
3/23/2020	13:10		0	SD/JP/AE	Download Water Depth Sensor
4/1/2020	9:20			SD/JP/AE	Download Water Depth Sensor
4/8/2020	11:25			SD/JP/AE	Download Water Depth Sensor
4/15/2020	10:14			SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:24			SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:01			SD/JP/AE	Download Water Depth Sensor
5/13/2020	12:18			SD/JP/AE	Download Water Depth Sensor
5/22/2020	11:47		0	JP/AE	Download Water Depth Sensor
5/28/2020	11:11			SD/JP/AE	Download Water Depth Sensor
6/2/2020	12:22			SD/JP/AE	Download Water Depth Sensor
6/5/2020	14:35		0	SD/JP/AE	Download Water Depth Sensor

6/18/2020	11:55		0	JP/AE	Download Water Depth Sensor
6/24/2020	9:15			SD/JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/6/2020	13:15			SD/JP/AE	Download Water Depth Sensor
7/15/2020	13:58		0	SD/JP/AE	Download Water Depth Sensor
7/20/2020	11:45			SD/JP/AE	Download Water Depth Sensor
8/5/2020	10:12			SD/JP/AE	Download Water Depth Sensor
8/14/2020	9:41			SD/JP/AE	Download Water Depth Sensor
8/19/2020	10:53			SD/JP/AE	Download Water Depth Sensor
8/21/2020				SD/JP/AE	Could Not Access-Car on Well
9/1/2020	13:06		0	SD/JP/AE	Download Water Depth Sensor
9/8/2020	11:00		0	SD/JP/AE	Download Water Depth Sensor
9/11/2020	14:02		0	SD/JP/AE	Download Water Depth Sensor
9/16/2020	9:44		0	SD/JP/AE	Download Water Depth Sensor
9/17/2020	12:05			SD/JP/AE	Download Water Depth Sensor
9/21/2020	11:57			SD/JP/AE	Download Water Depth Sensor
9/25/2020	14:50		0	SD/JP/AE	Download Water Depth Sensor
10/2/2020	11:58		0	JP/AE	Download Water Depth Sensor
10/5/2020	9:53		0	JP/AE	Download Water Depth Sensor
10/8/2020	12;25		0	JP/AE	Download Water Depth Sensor
10/9/2020	11:24			JP/AE	Download Water Depth Sensor
10/13/2020	10:29		0	AE	Download Water Depth Sensor
10/16/2020	11:33		0	JP/AE	Download Water Depth Sensor
10/22/2020	14:29		0	JP/AE	Download Water Depth Sensor
10/26/2020	13:23			SD/JP/AE	Download Water Depth Sensor, Remove

Site Name/ Manhole ID: APP-0601

Address: Behind 5804 3rd ST NW

Latitude: N38.960261 ° Longitude: W °-77.016641

Investigation Date: 3/3/2020 Crew: CP

Installation Date: 3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	48”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

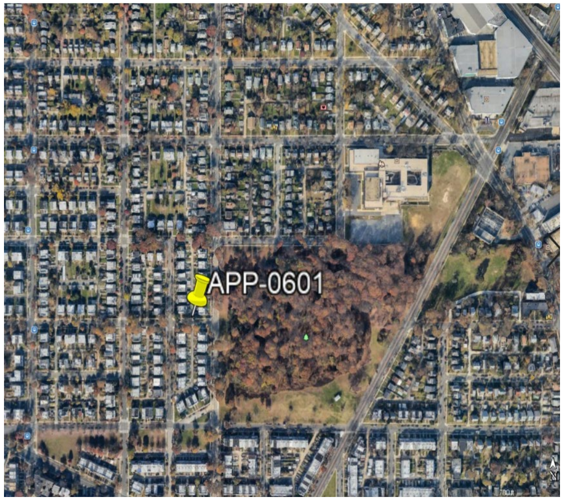
[✓ No]

Yes

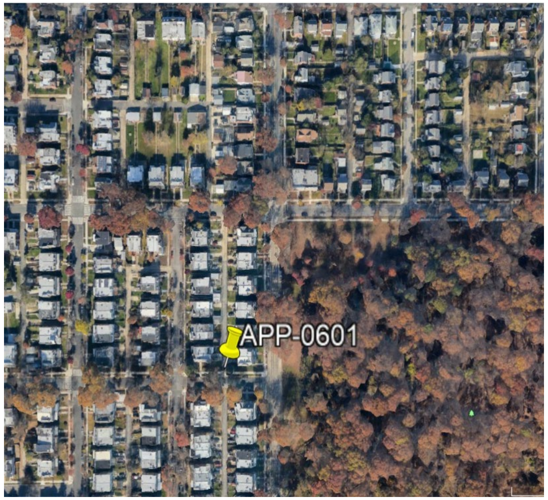
Hard Packed (in):

Soft (in):

Area Map



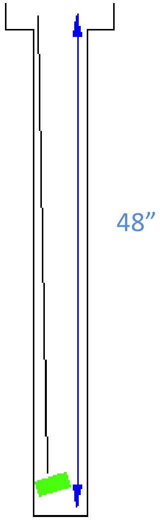
Detail Map



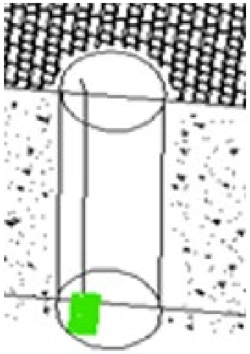
Site Area Overview

View from Top of Well

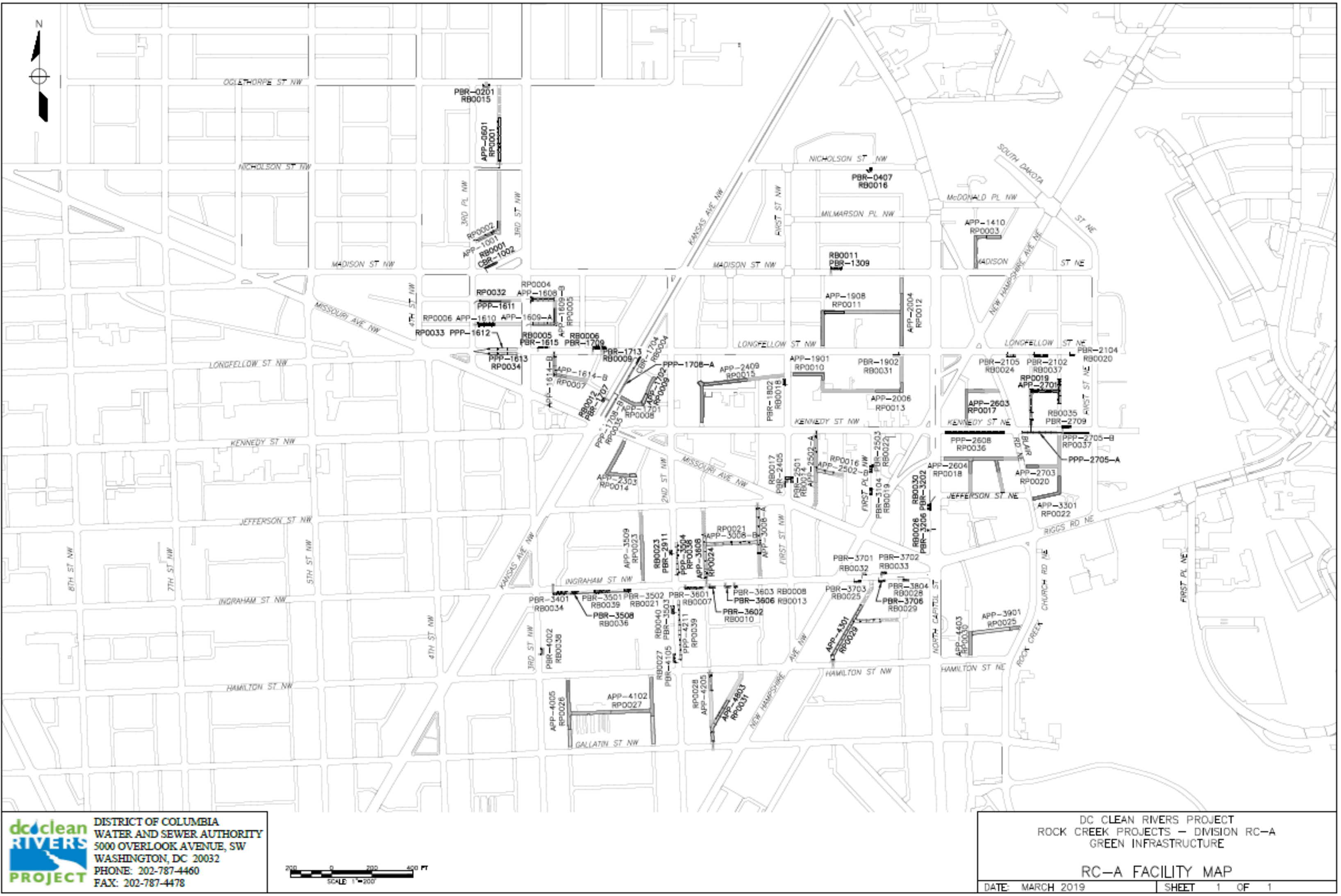
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

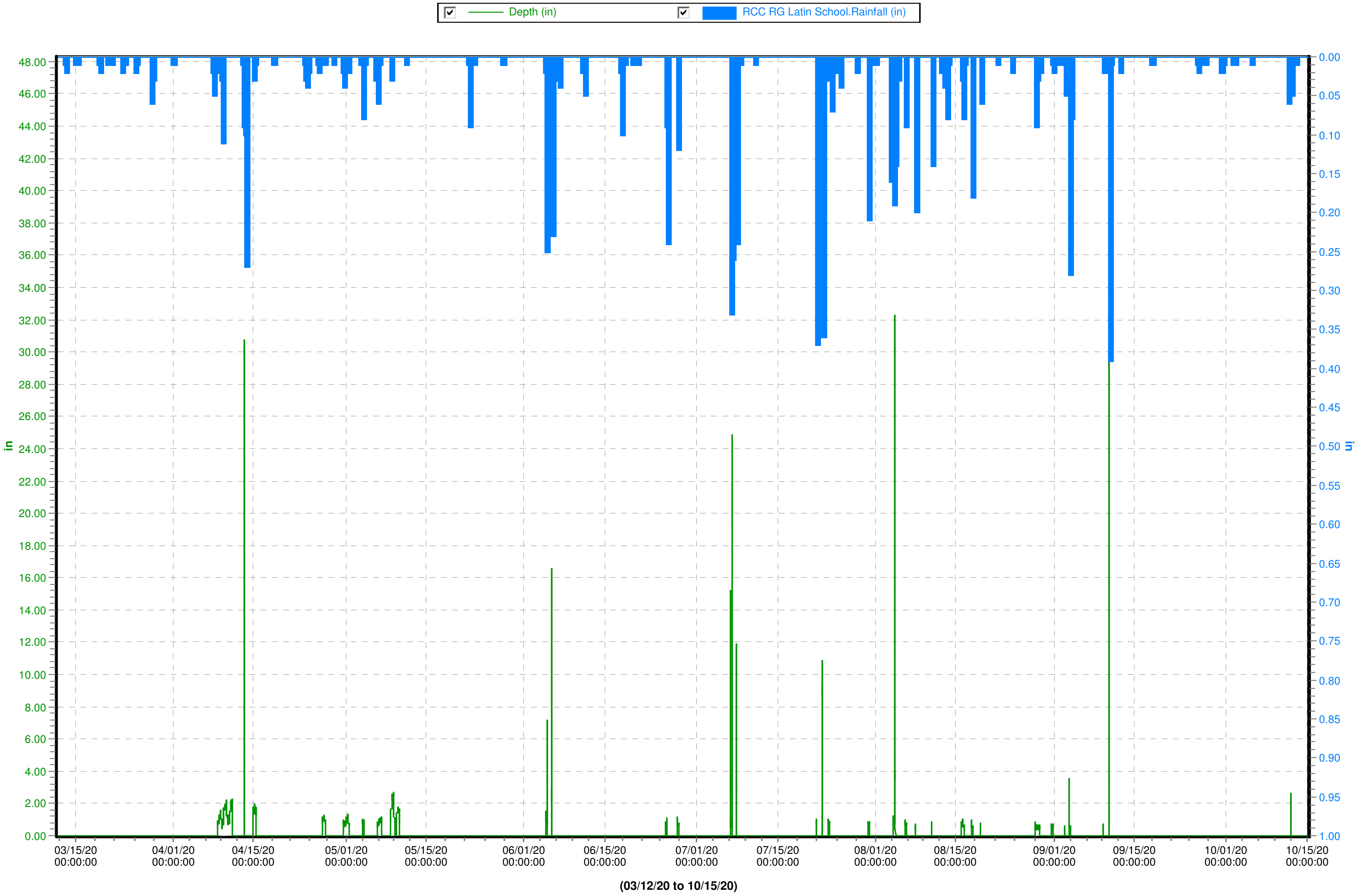


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



0601

5804 3rd ST NW-Well Depth (in): 48



Site Name/ Manhole ID: APP-1001

Address:5707 3rd St NW

Latitude: N 38.959214°
Longitude: W -77.016878°

Investigation Date:3/3/2020
Crew: CP

Installation Date:3/11/2020
Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	51”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

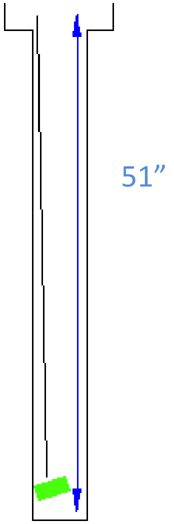
Area Map

Detail Map

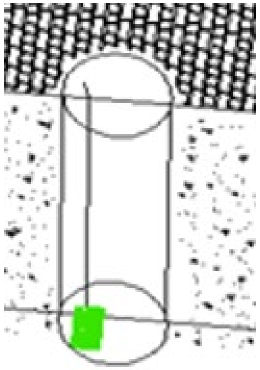
Site Area Overview

View from Top of Well

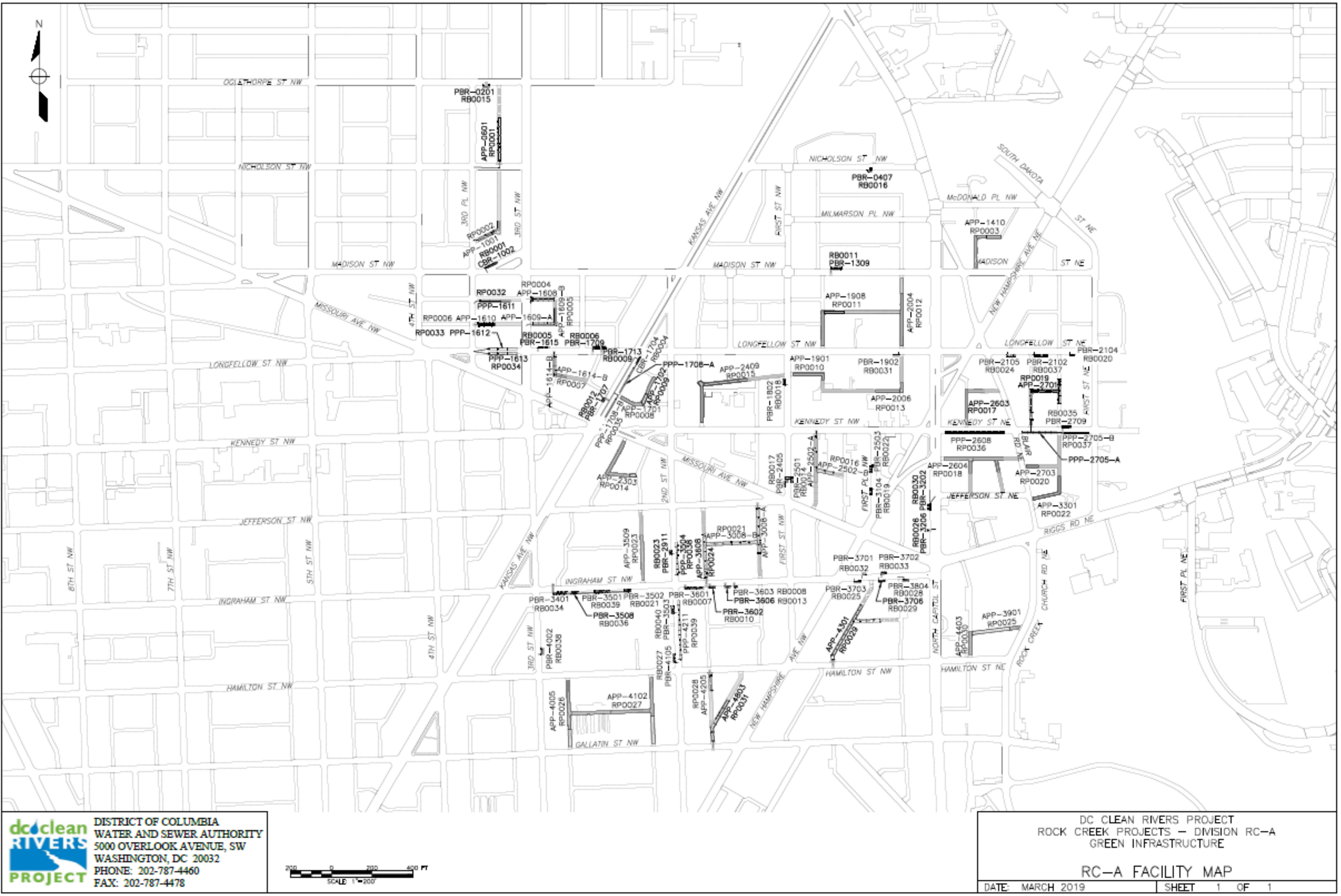
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

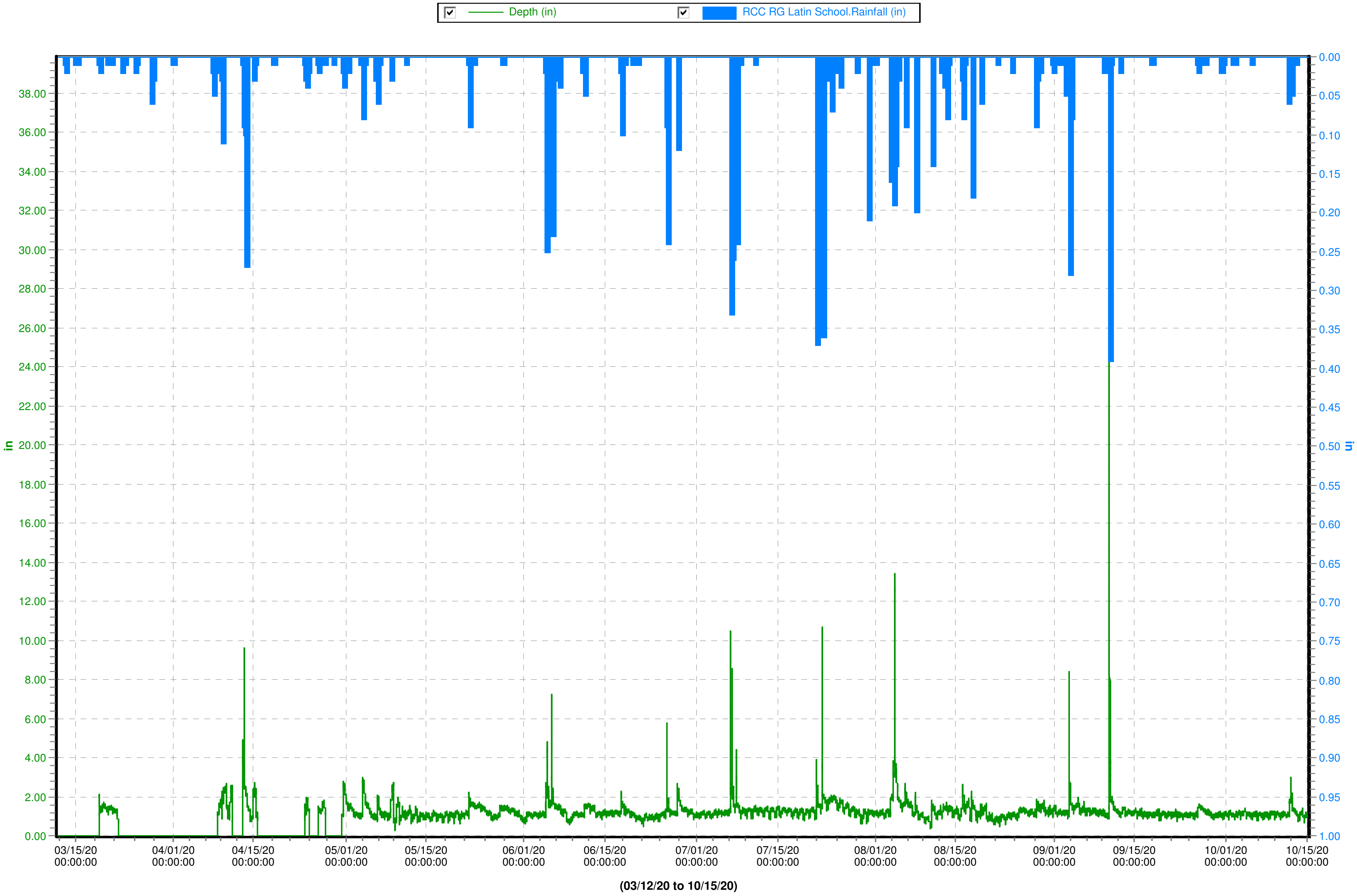


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1001

5707 3rd PL NW-Well Depth (in): 51



Site Name/ Manhole ID: APP 1410

Address: 9 McDonald PL NE

Latitude: N 38.959391° Longitude: W °-77.008343

Investigation Date: 3/3/2020 Crew: CP

Installation Date: 3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 2

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	45”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

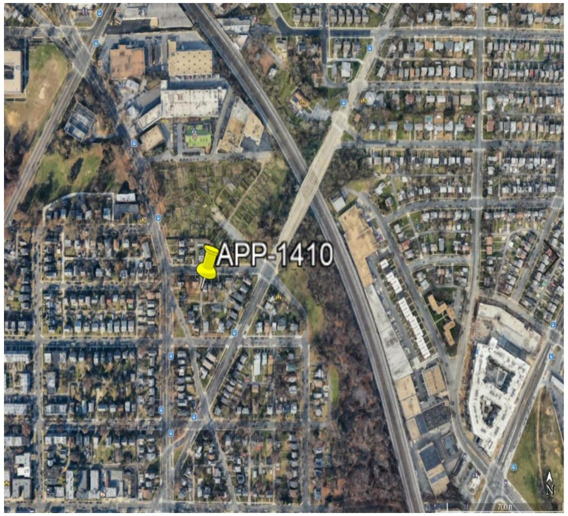
[✓ No]

Yes

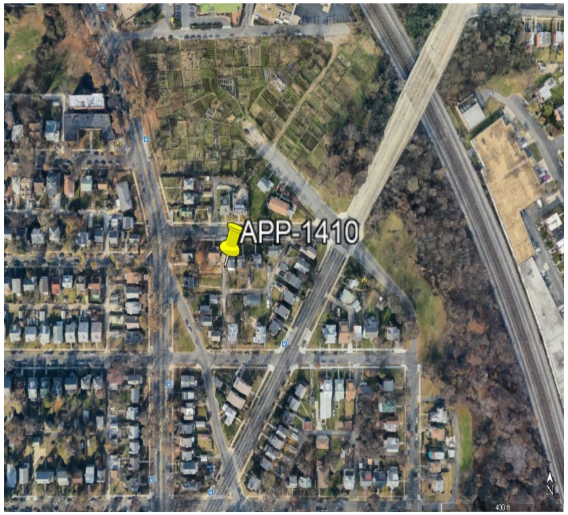
Hard Packed (in):

Soft (in):

Area Map



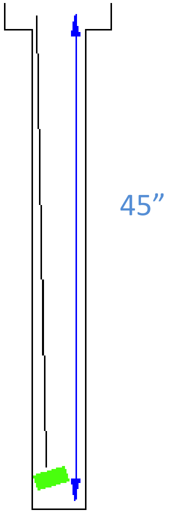
Detail Map



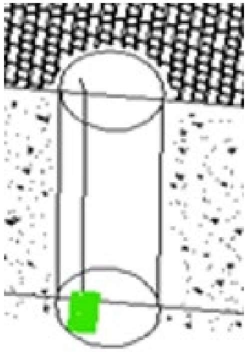
Site Area Overview

View from Top of Well

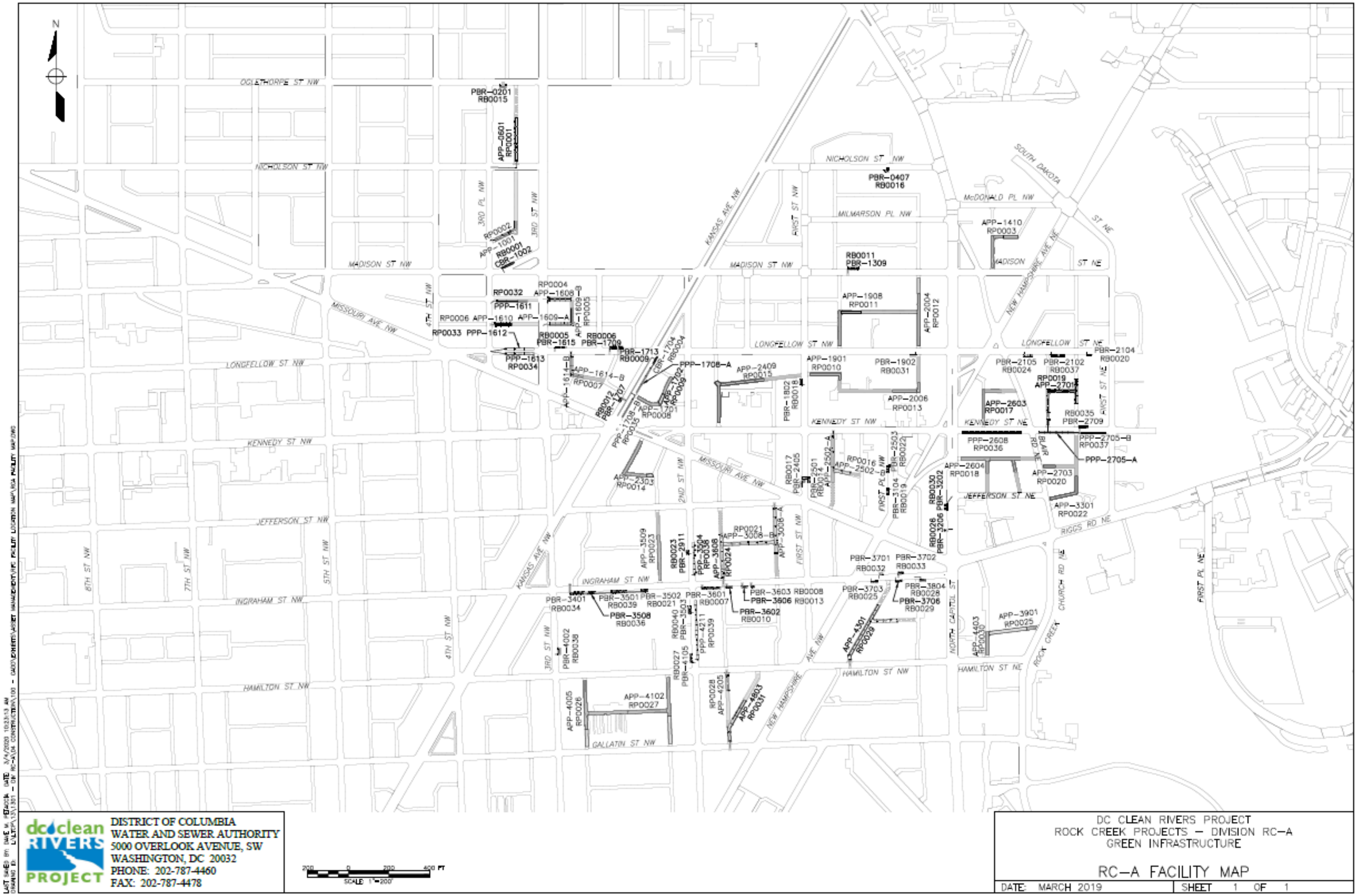
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

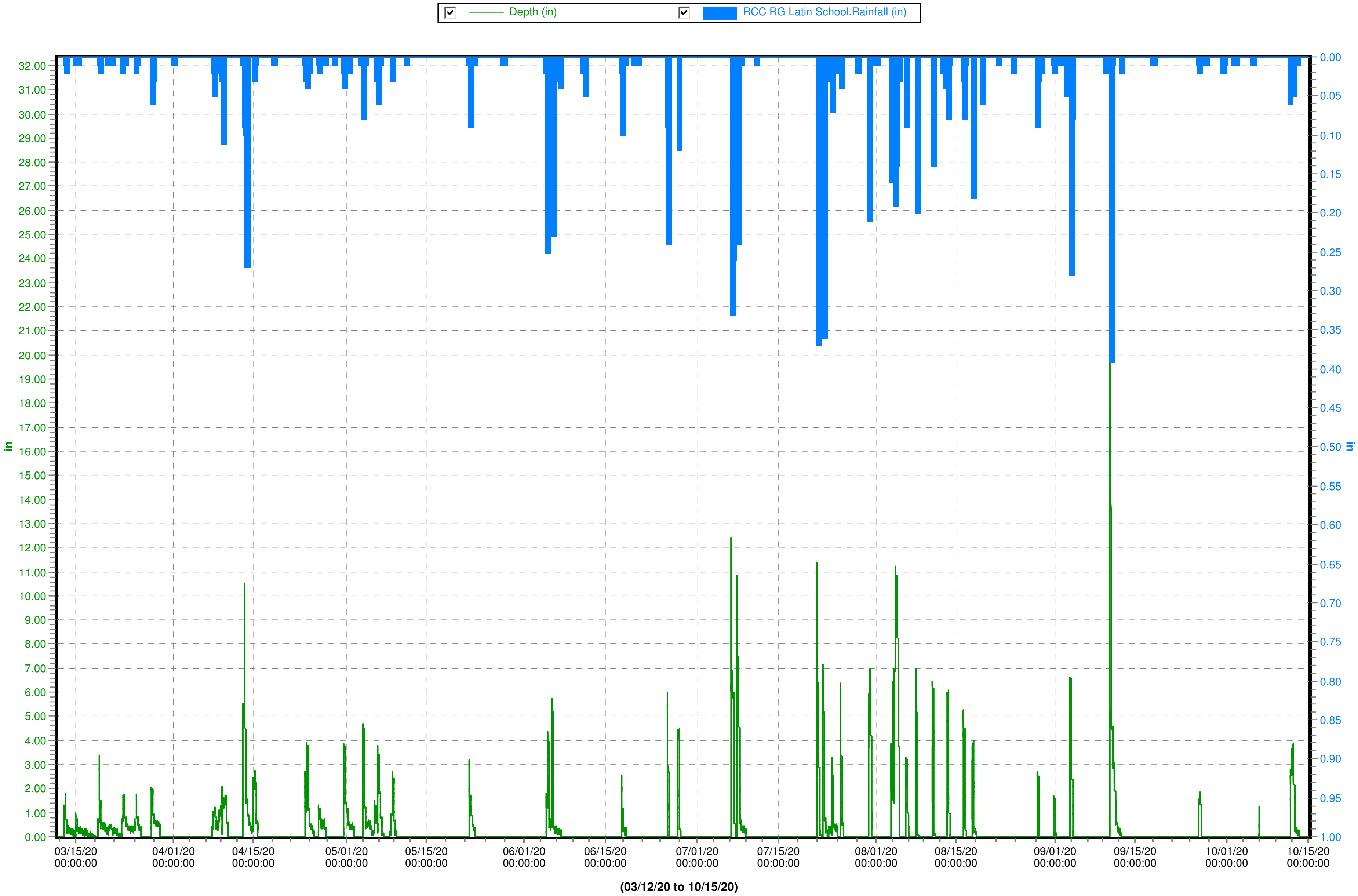


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1410

9 McDonald PL NE-Well Depth (in): 45



Site Name/ Manhole ID: APP-1608

Address:5622 3rd St NW

Latitude: N 38.958366°　Longitude: W -77.016010°

Investigation Date:3/3/2020　Crew: CP

Installation Date:3/10/2020　Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	51”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

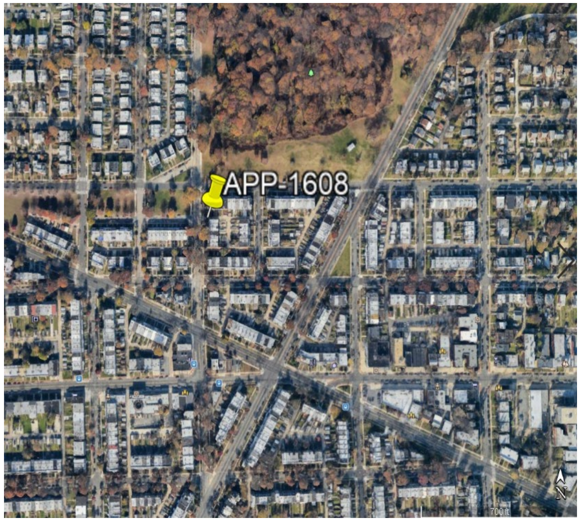
[✓ No]

Yes

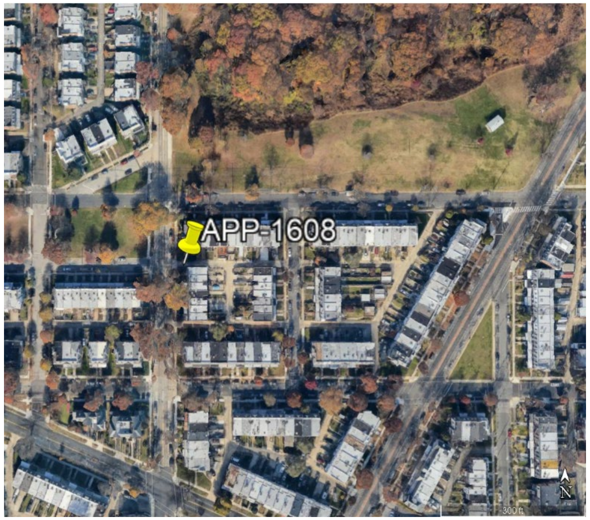
Hard Packed (in):

Soft (in):

Area Map



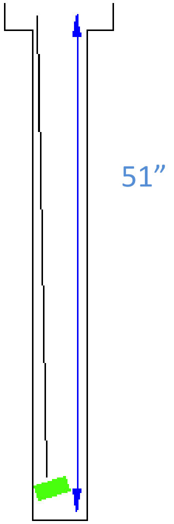
Detail Map



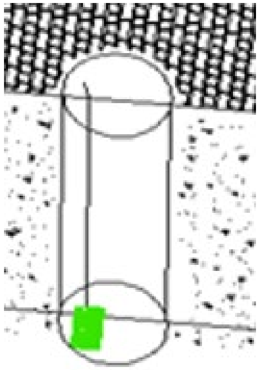
Site Area Overview

View from Top of Well

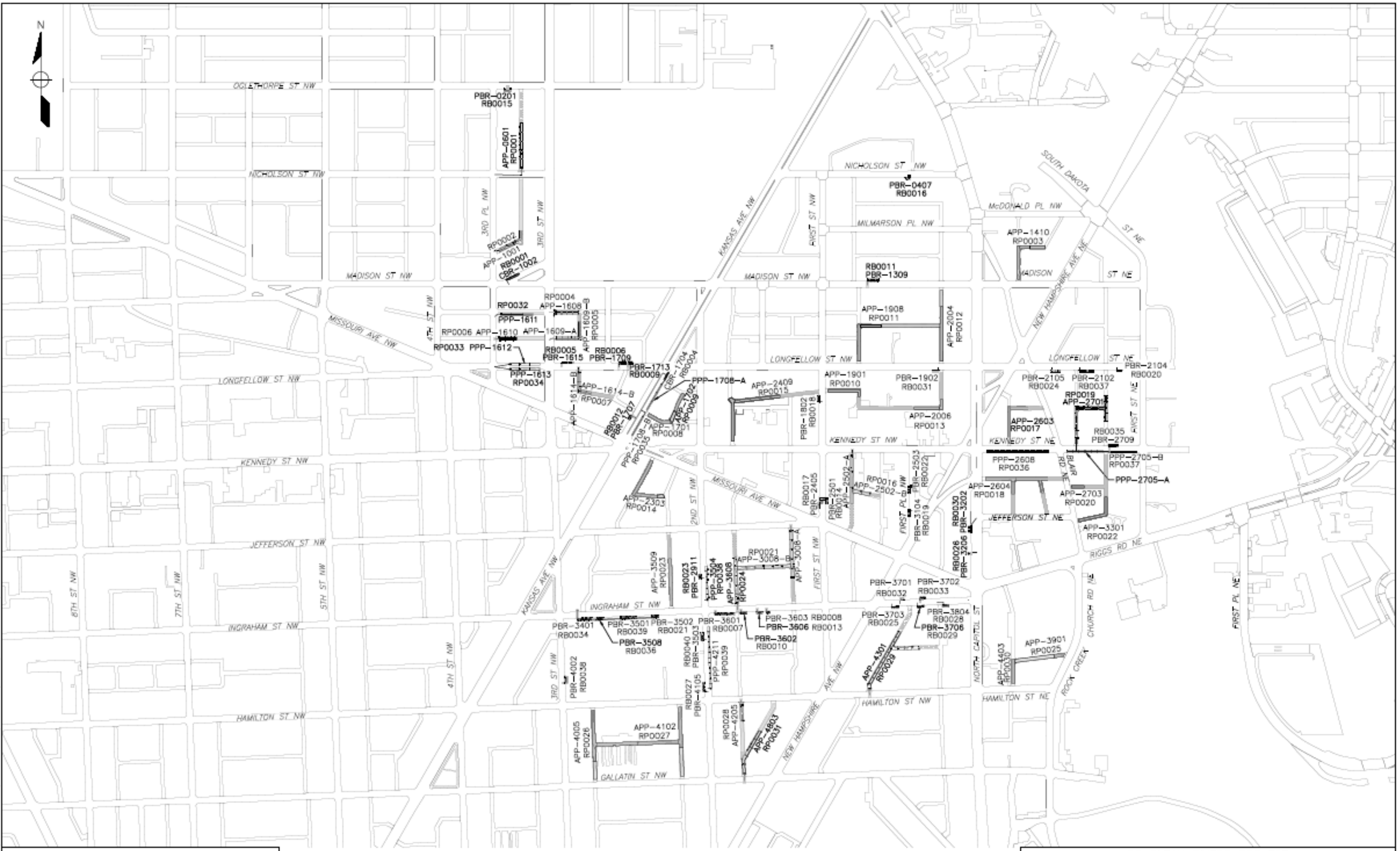
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, SW
WASHINGTON, DC 20032
PHONE: 202-787-4460
FAX: 202-787-4478

SCALE 1"=200'

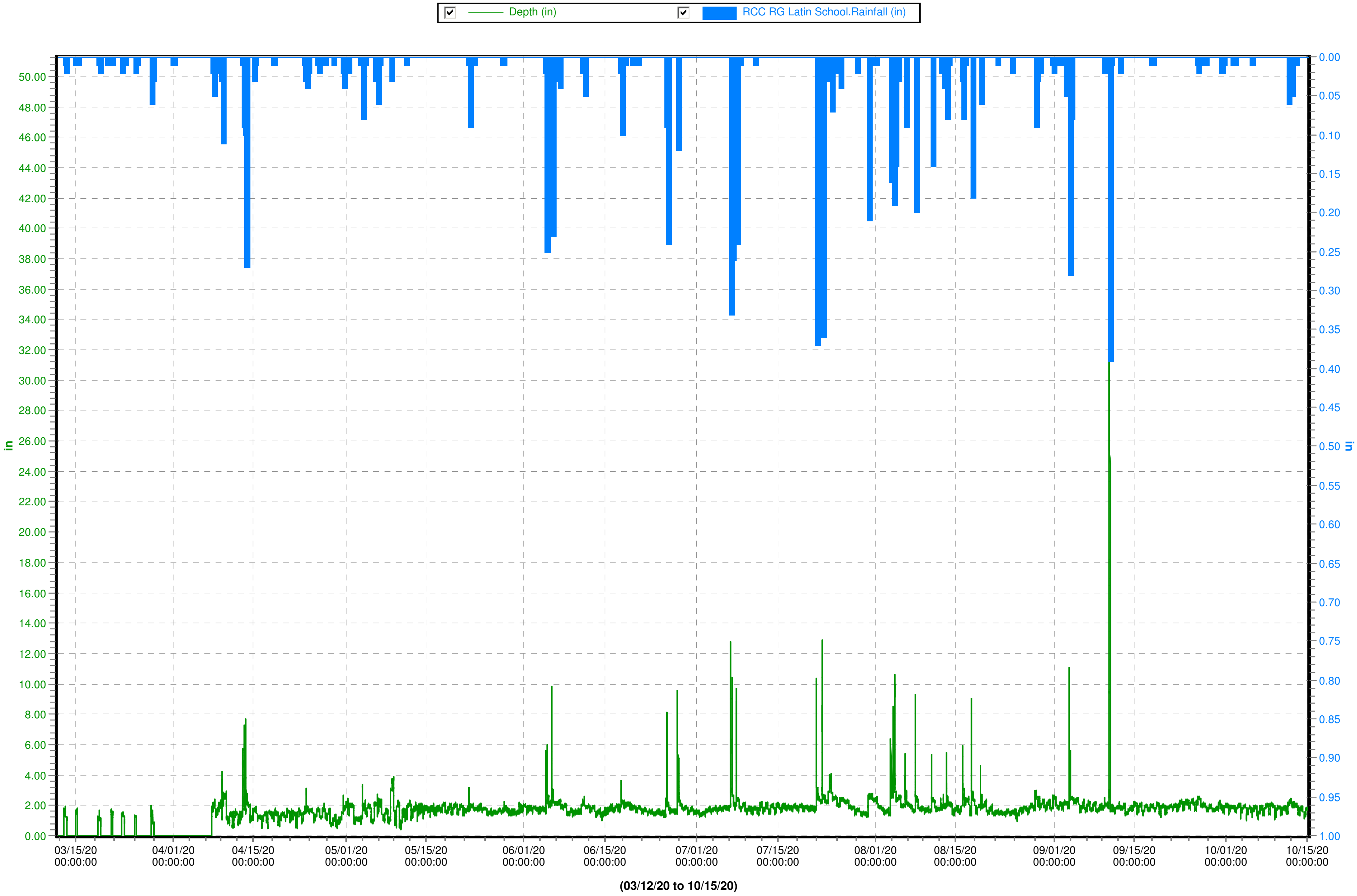
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

1608

5622 3rd NW-Well Depth (in): 51



Site Name/ Manhole ID: APP-1609

Address: 5611 3rd St NW

Latitude: N 38.958010°

Longitude: W -77.016004°

Investigation Date: 3/3/2020

Crew: CP

Installation Date:3/10/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	41”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

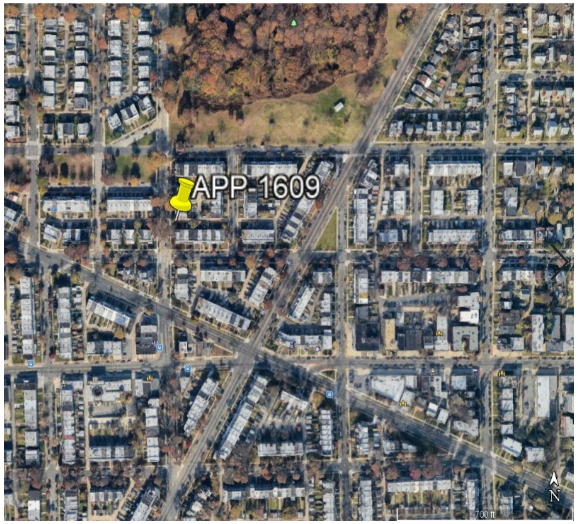
[✓ No]

Yes

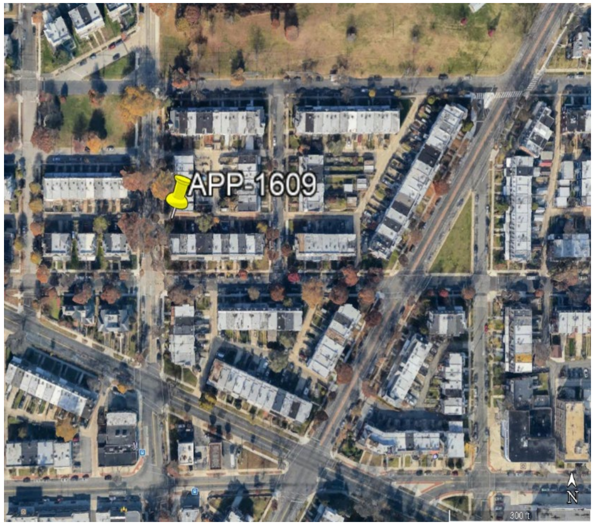
Hard Packed (in):

Soft (in):

Area Map



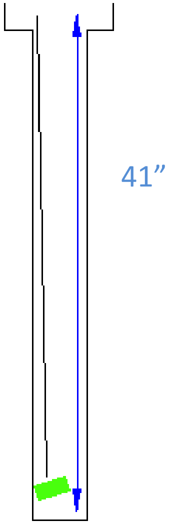
Detail Map



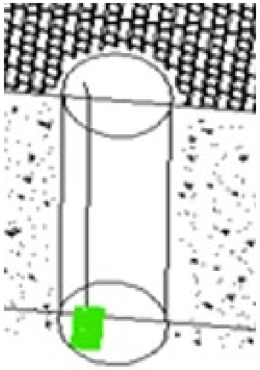
Site Area Overview

View from Top of Well

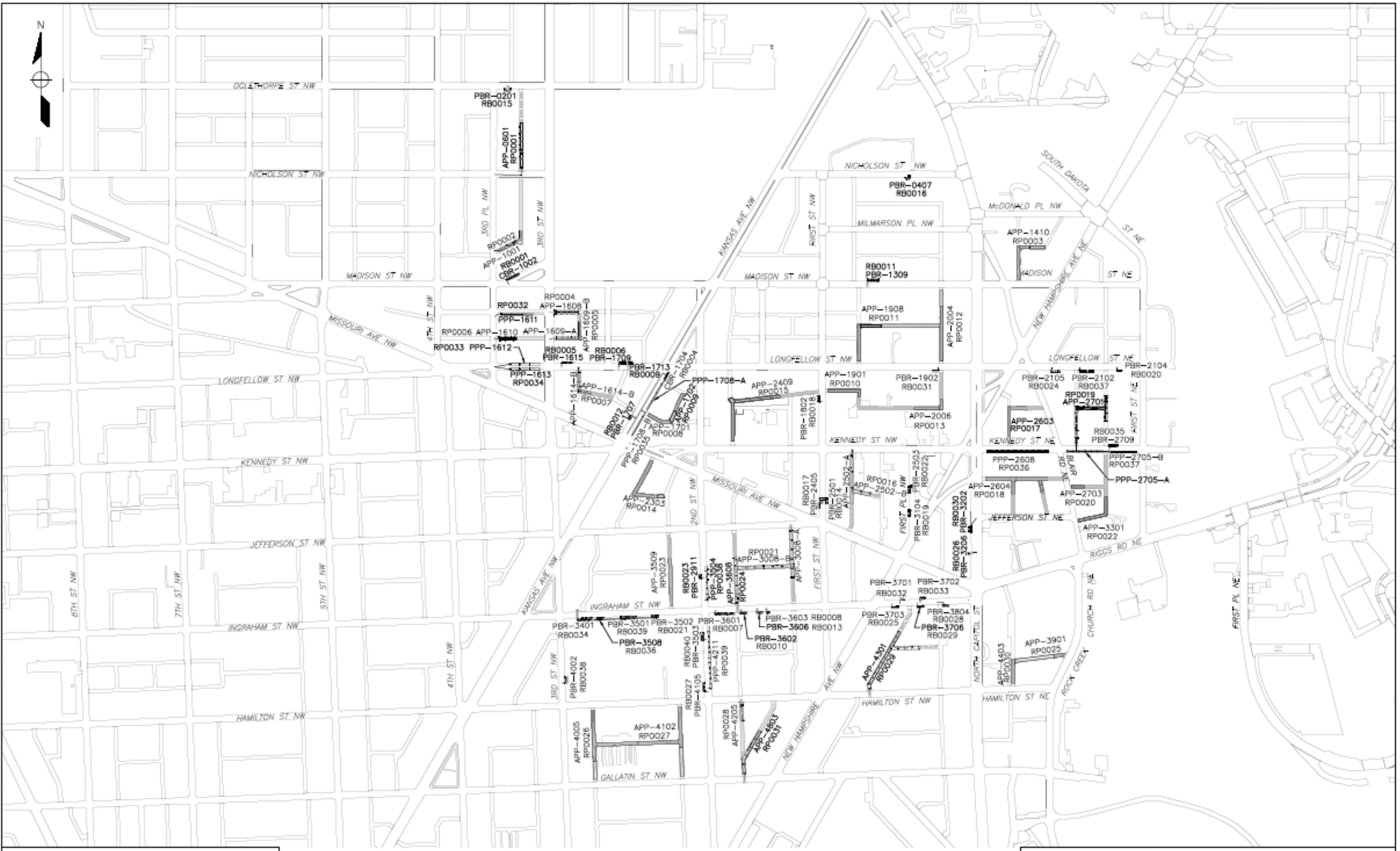
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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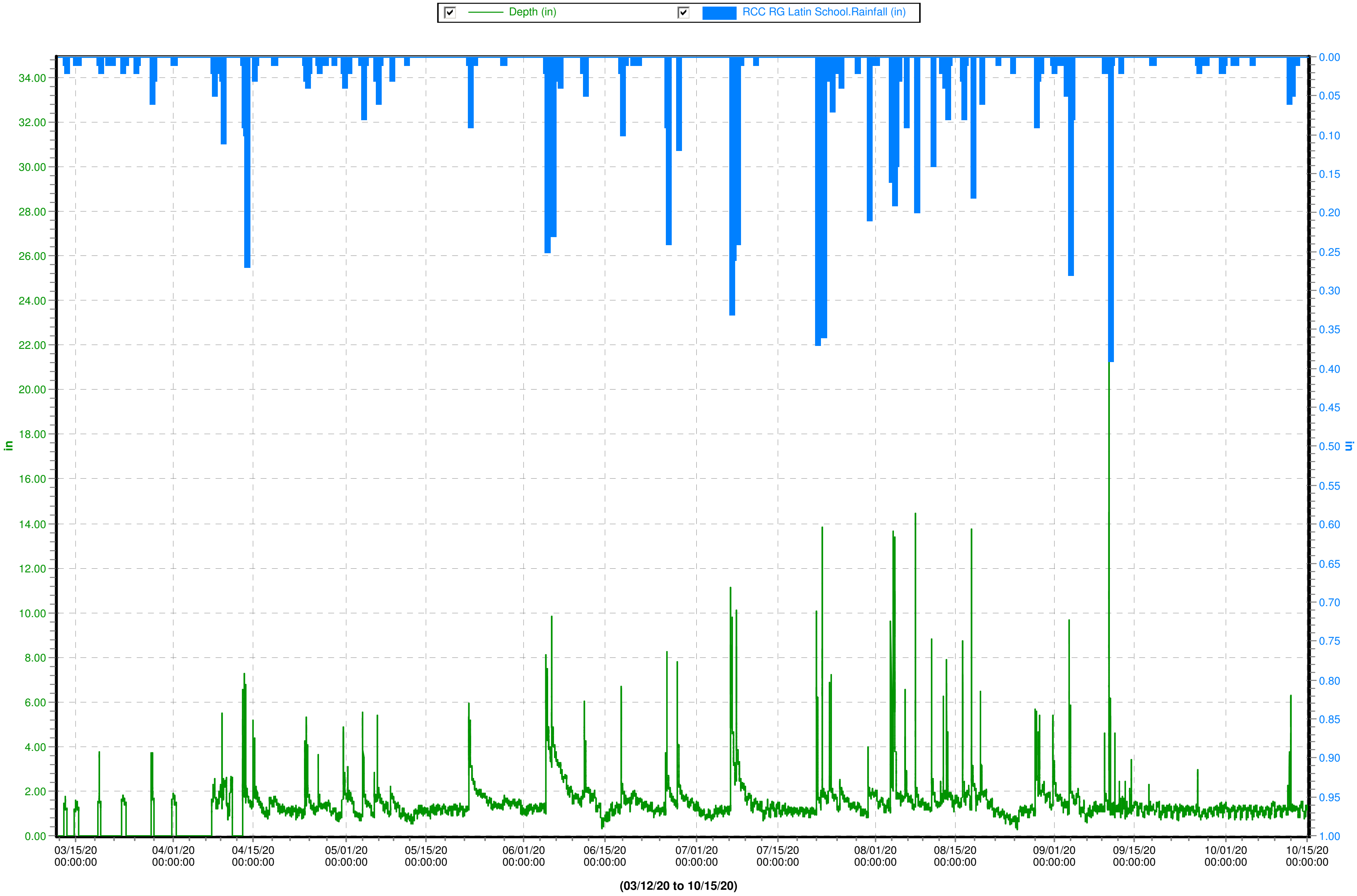
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

1609

5611 3rd ST NW-Well Depth (in): 41



Site Name/ Manhole ID: APP-1610

Address:5603 3rd St NW

Latitude: N 38.957943°
Longitude: W -77.016024°

Investigation Date:3/3/2020
Crew: CP

Installation Date:3/10/2020
Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	44”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

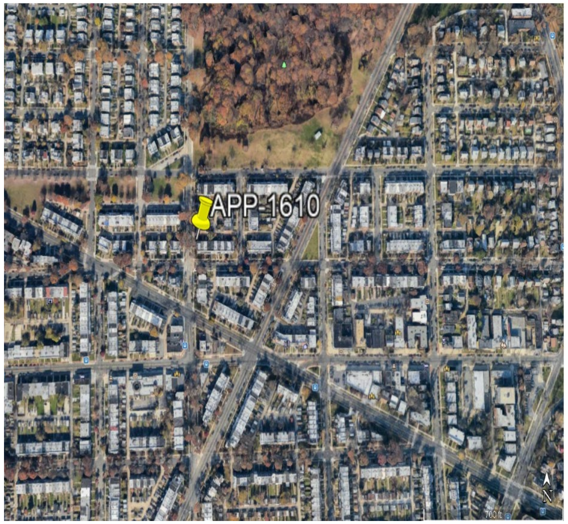
Sediment Present:

[✓ No] Yes

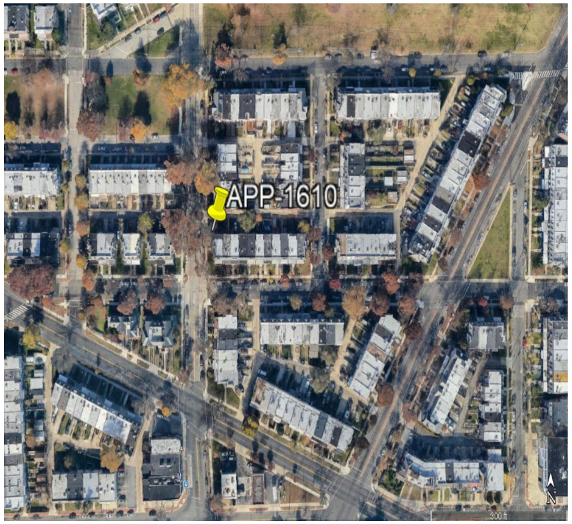
Hard Packed (in):

Soft (in):

Area Map



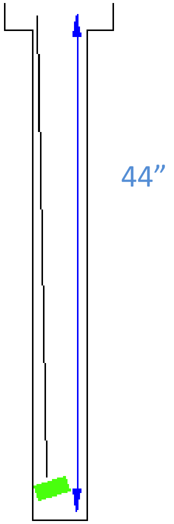
Detail Map



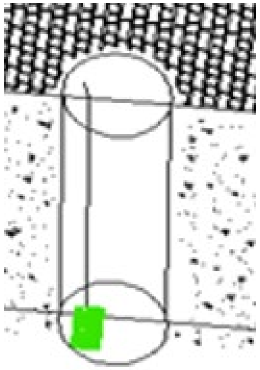
Site Area Overview

View from Top of Well

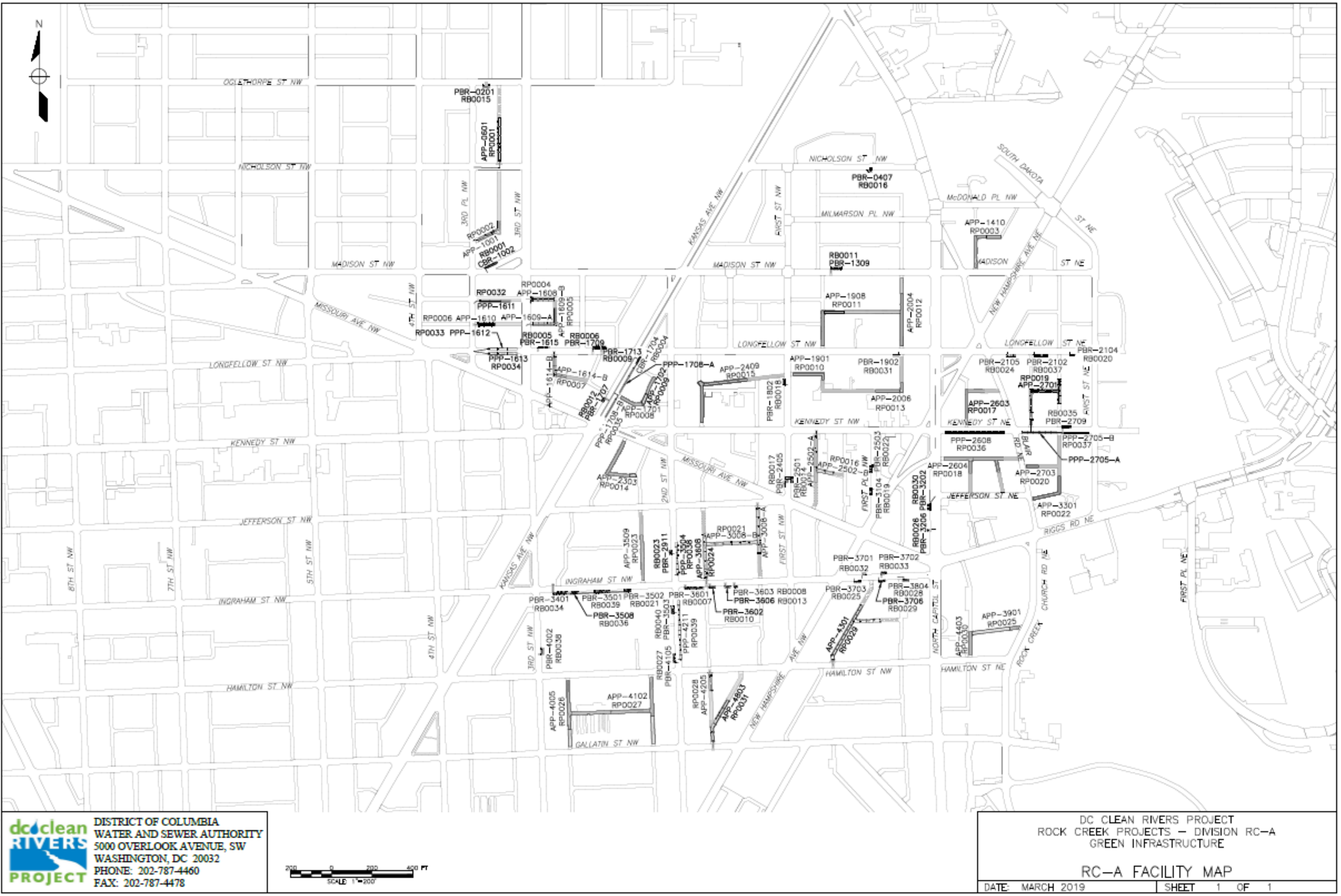
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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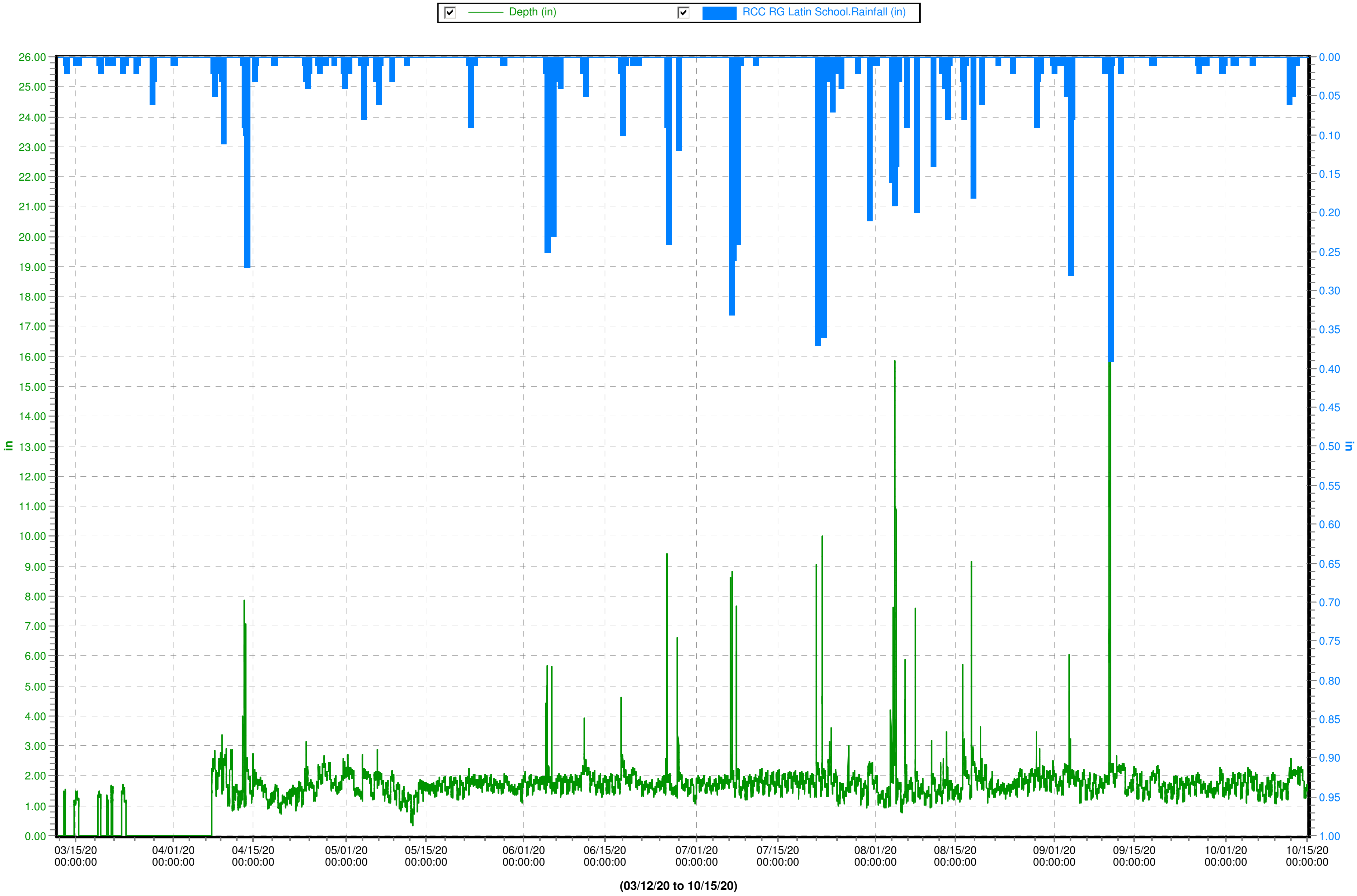
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

1610

5603 3rd ST NW-Well Depth (in): 44



Site Name/ Manhole ID: APP-1614

Address:238 Longfellow St NW

Latitude: N 38.957565°
Longitude: W -77.015689°

Investigation Date:3/3/2020
Crew: CP

Installation Date:3/10/2020
Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 2

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	39”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

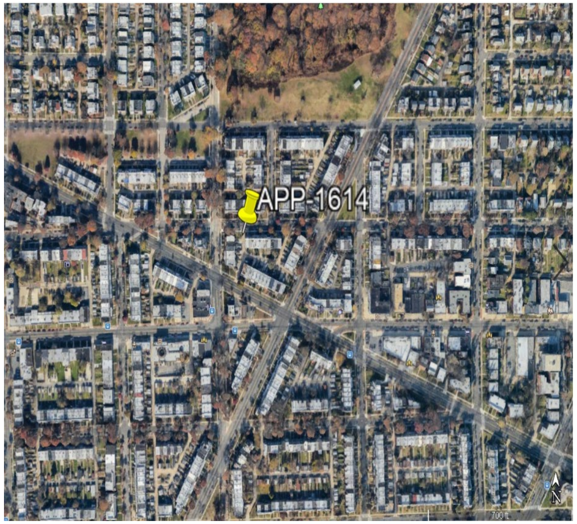
Sediment Present:

[✓ No]
Yes

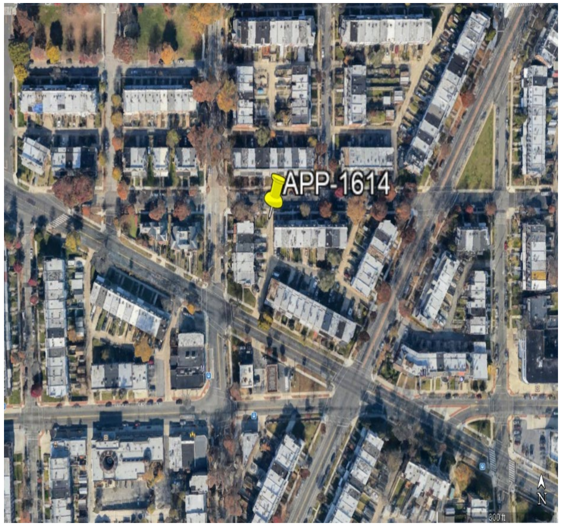
Hard Packed (in):

Soft (in):

Area Map



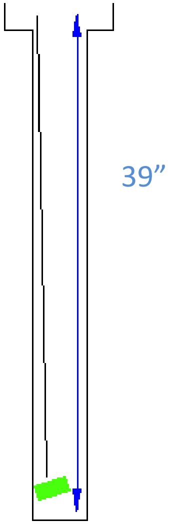
Detail Map



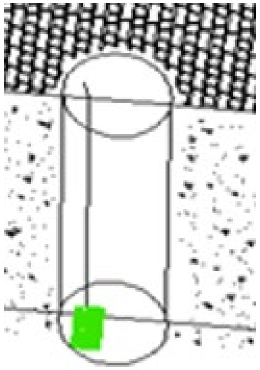
Site Area Overview

View from Top of Well

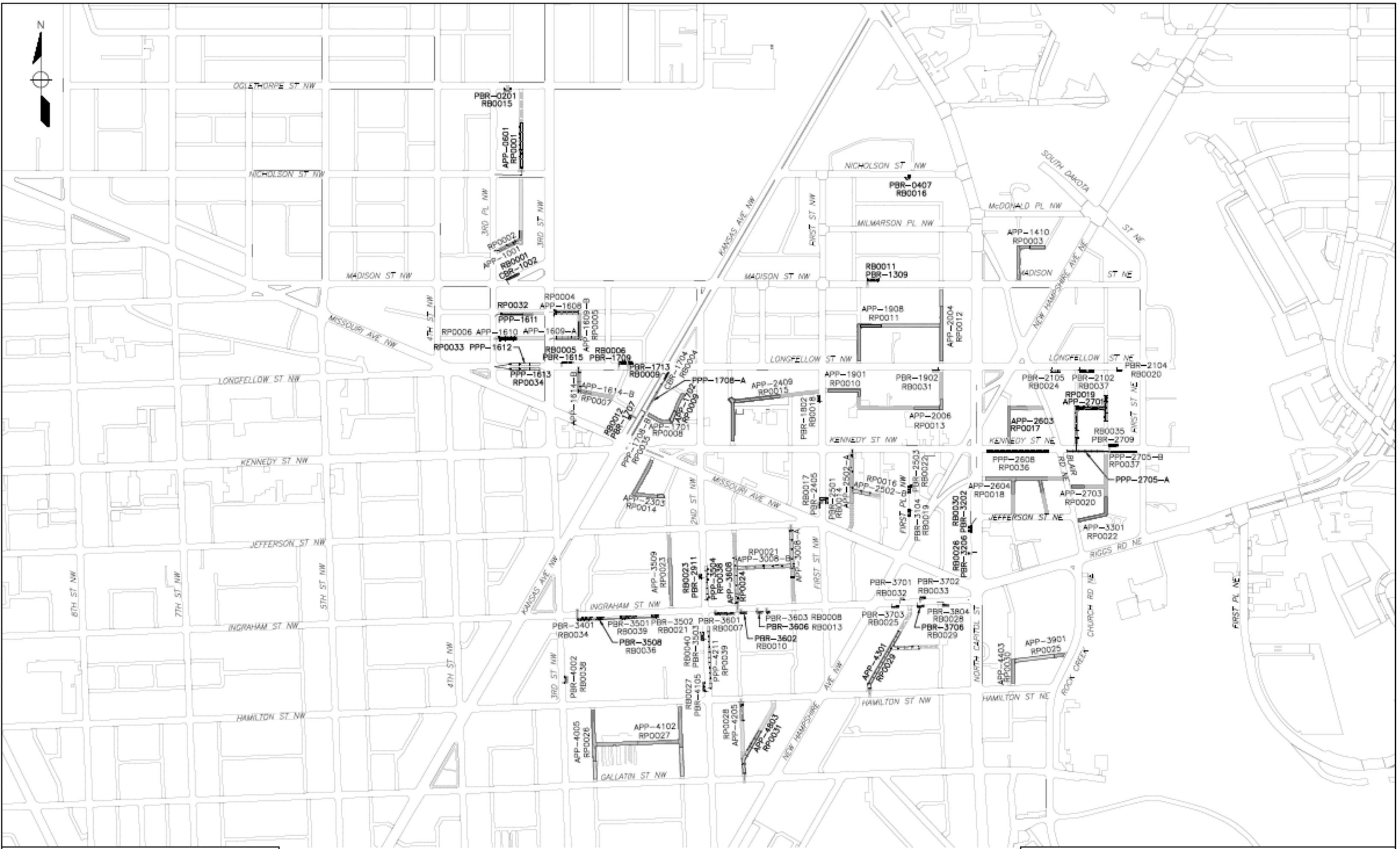
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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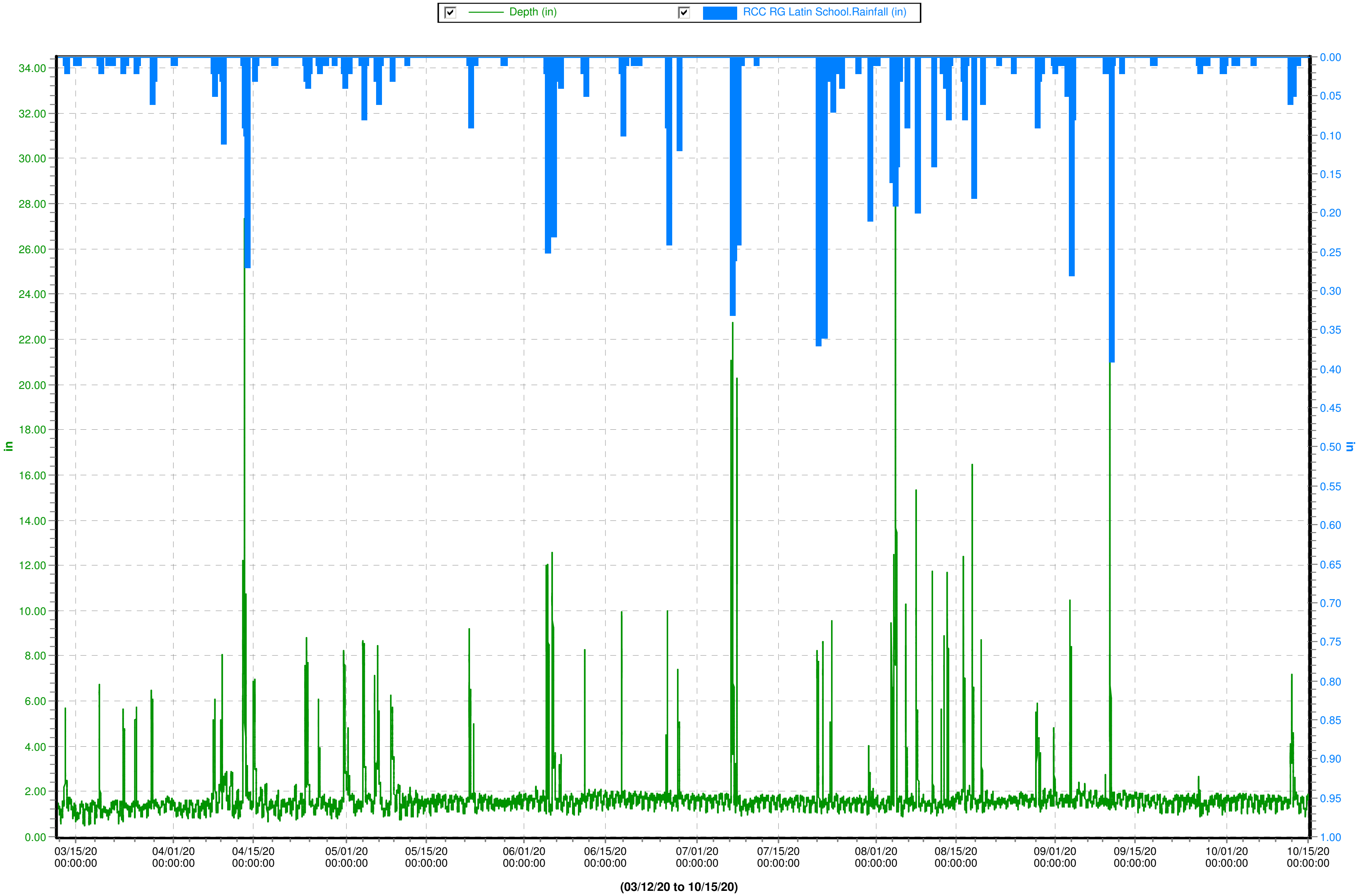
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

1614-B

238 Longfellow ST NW-Well Depth (in): 39



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: APP-1701

Address: Behind 223 Missouri Ave NW

Latitude: N 38.958366° Longitude: W -77.014363°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1.5

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	63”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

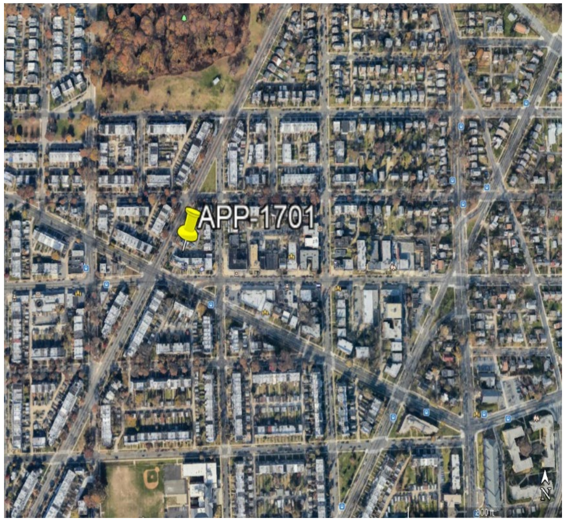
[✓ No]

Yes

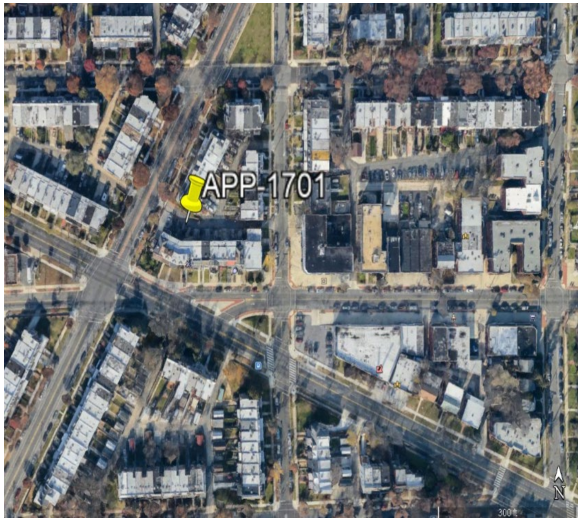
Hard Packed (in):

Soft (in):

Area Map



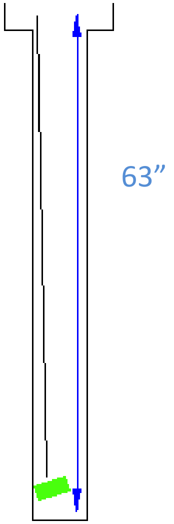
Detail Map



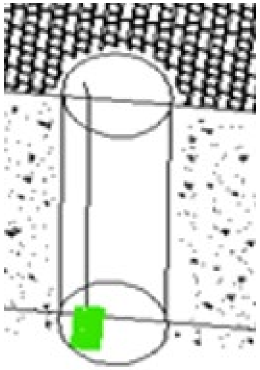
Site Area Overview

View from Top of Well

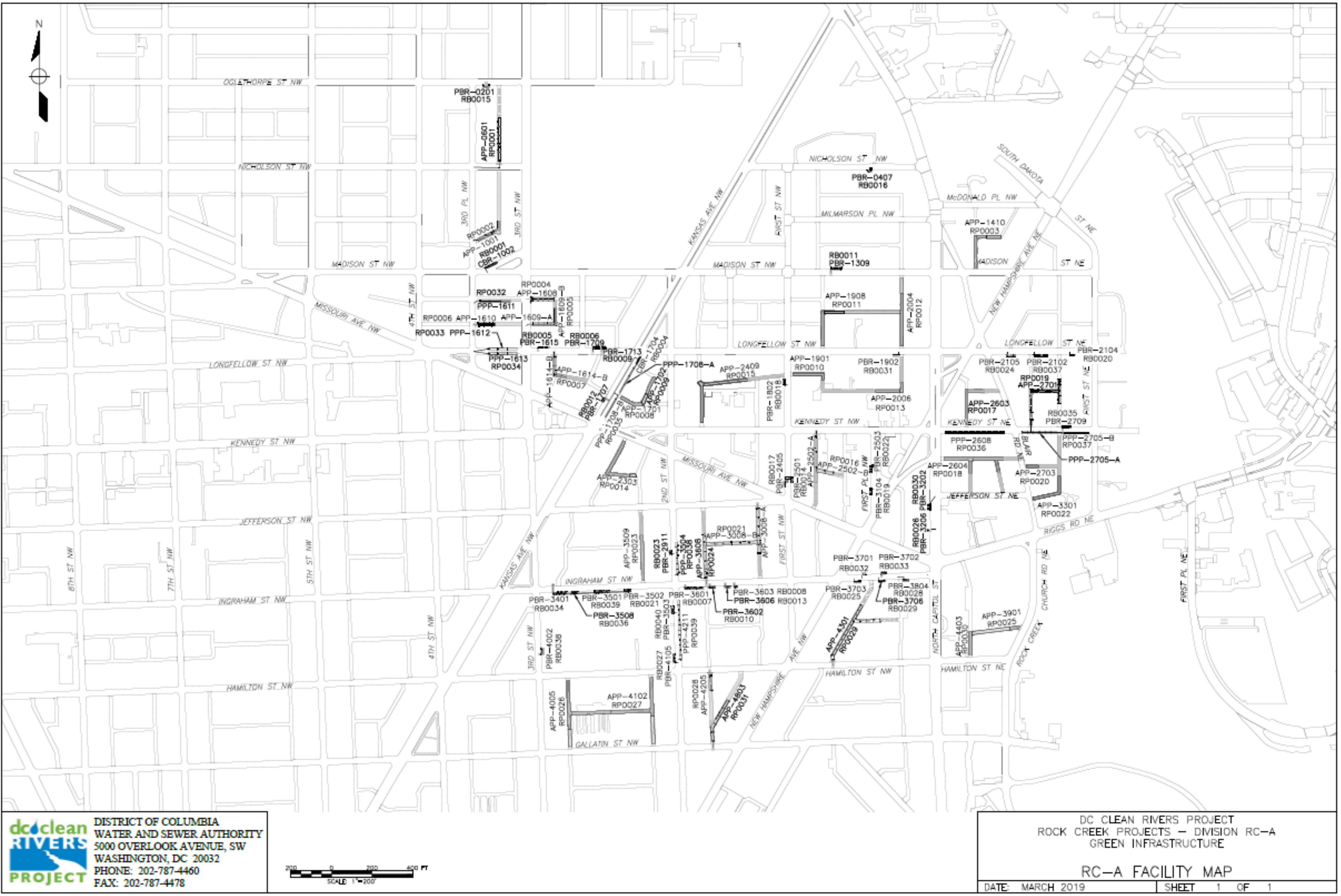
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

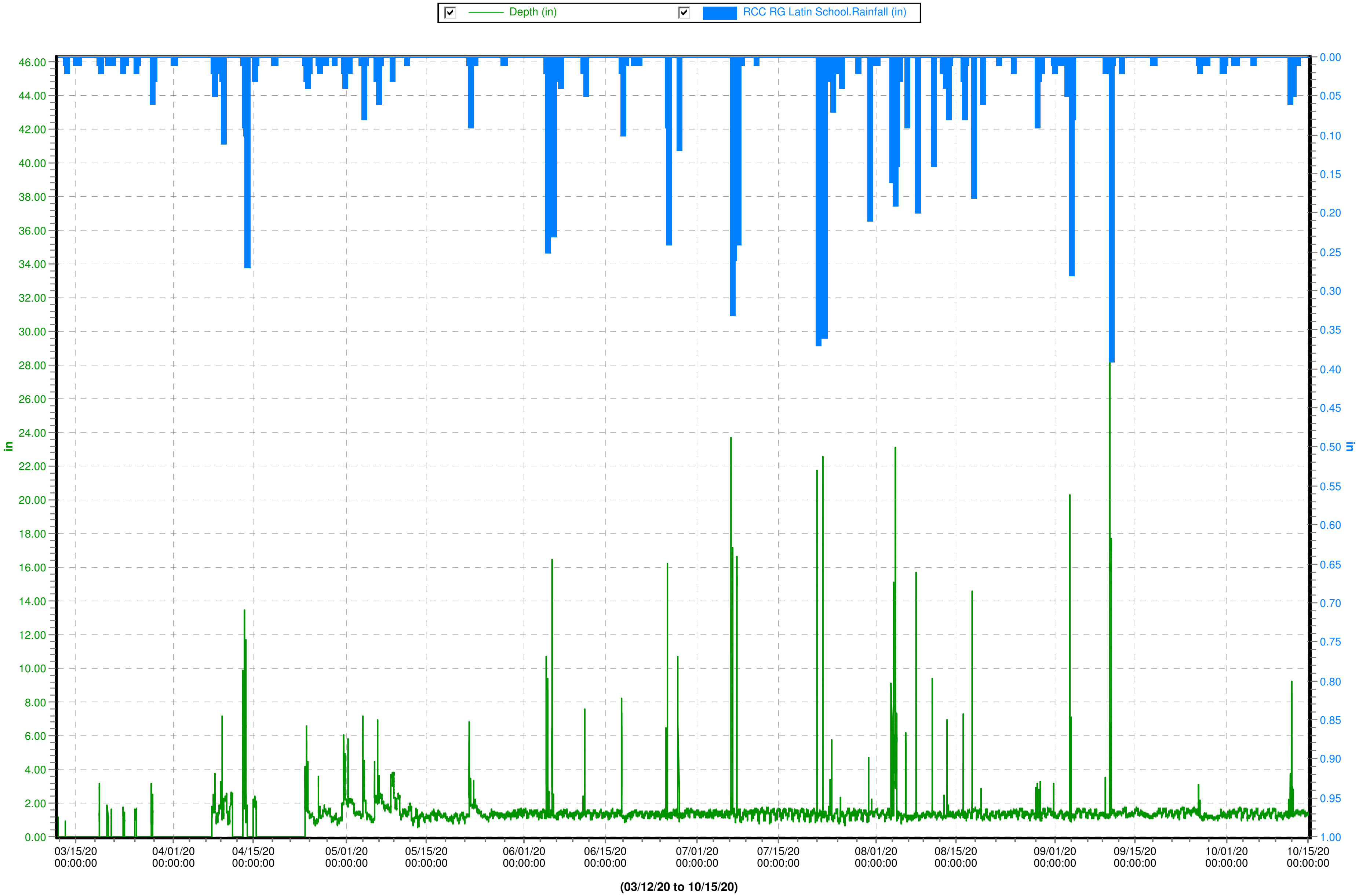


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1701

Behind 223 Missouri Ave NW-Well Depth (in): 63



Site Name/ Manhole ID: App-1702

Address: Behind 211 Missouri Ave NW

Latitude: N 38.956010°

Longitude: W -77.014226°

Investigation Date:

Crew:

Installation Date: 3/10/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	45”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

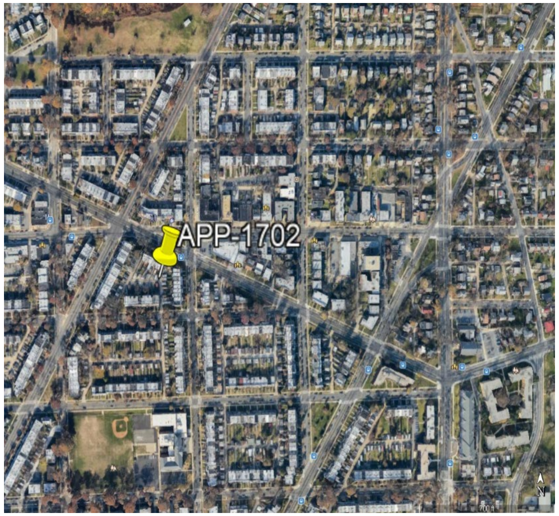
[✓ No]

Yes

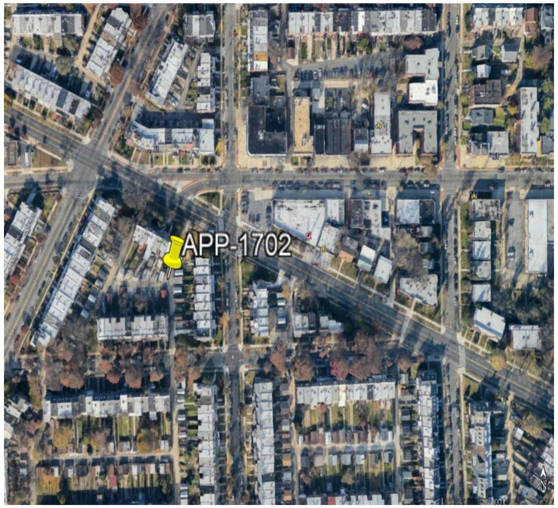
Hard Packed (in):

Soft (in):

Area Map



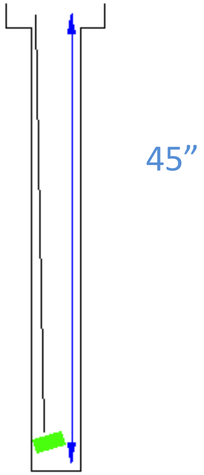
Detail Map



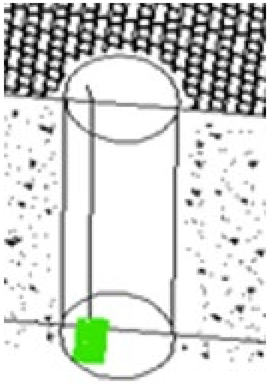
Site Area Overview

View from Top of Well

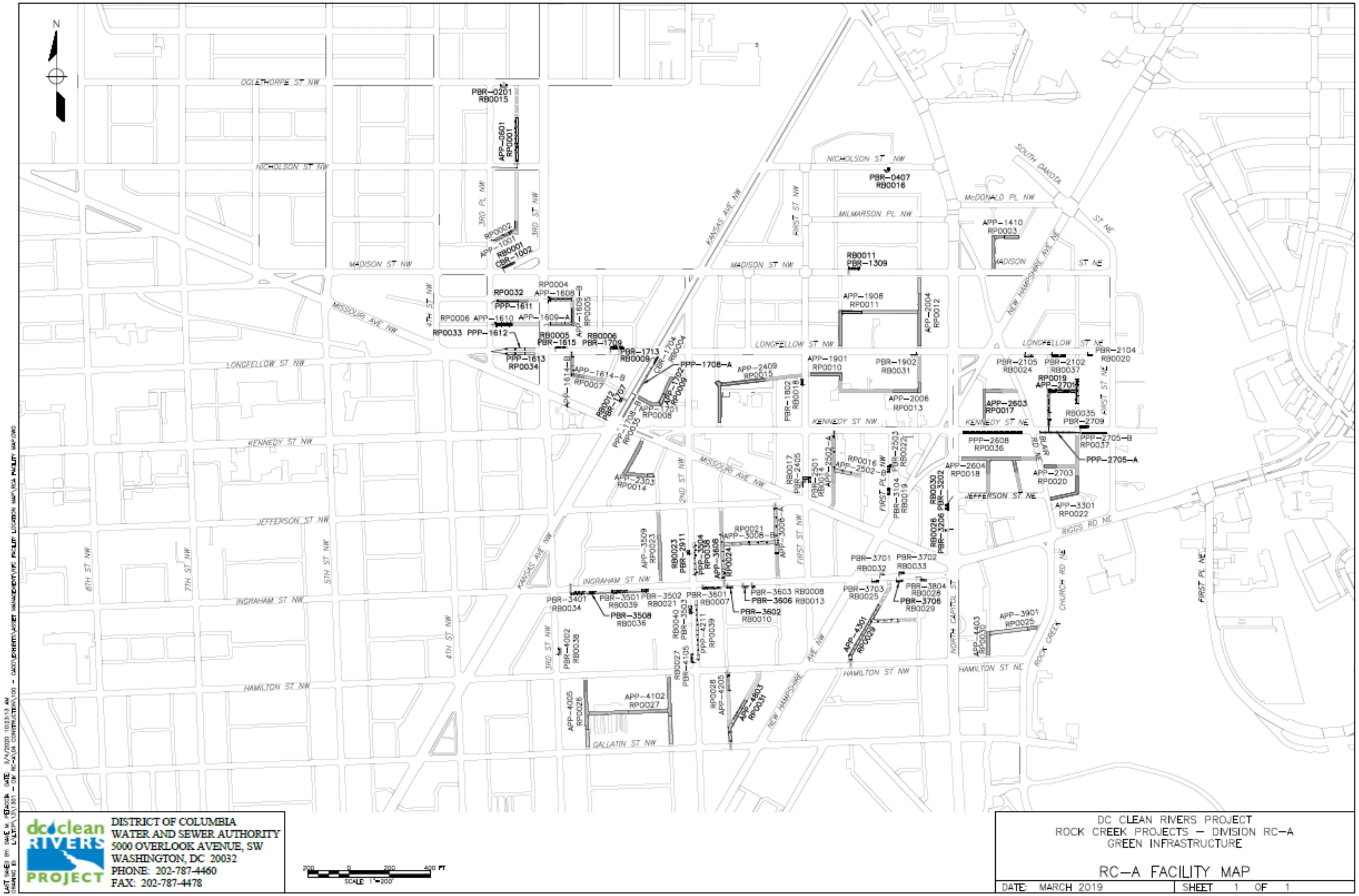
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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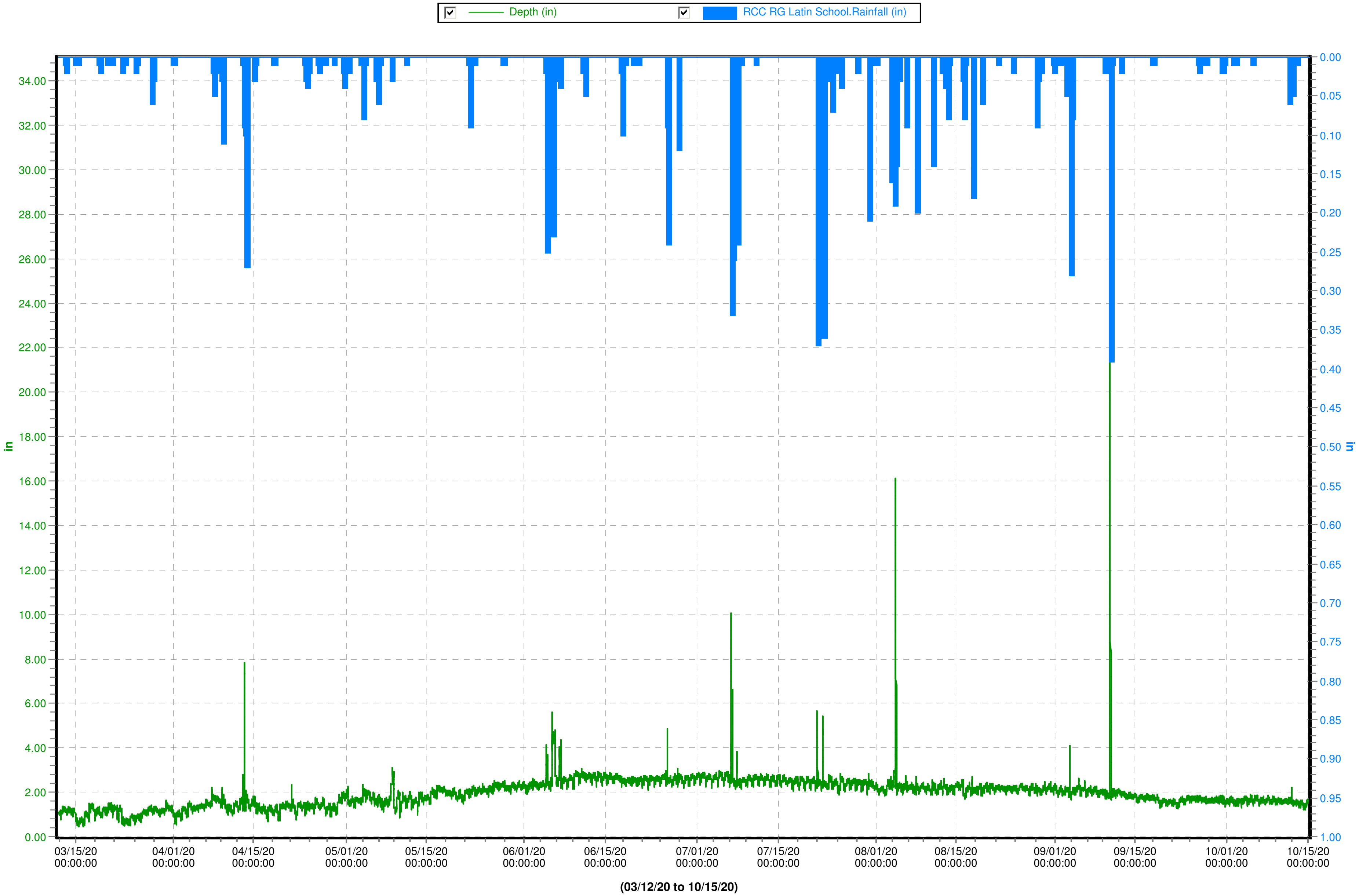
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

1702

Behind 211 Missouri Ave NW-Well Depth (in): 45



Site Name/ Manhole ID: APP-1901

Address: Across 5518 1st St NW

Latitude: N 38.957334°

Longitude: W -77.011490°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/11/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	44”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

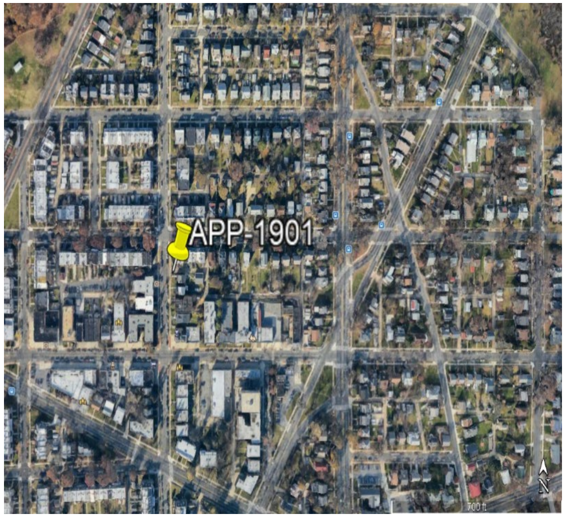
[✓ No]

Yes

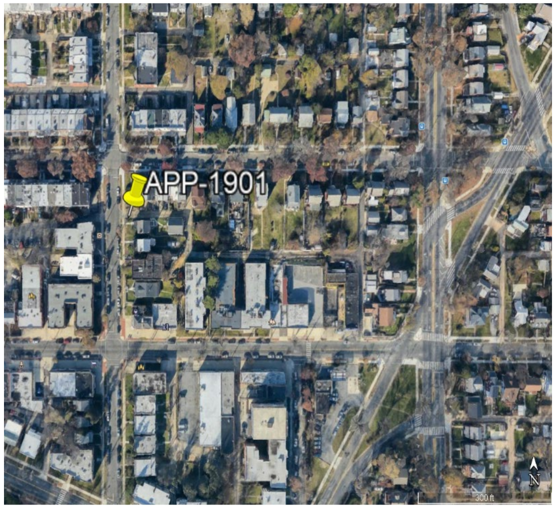
Hard Packed (in):

Soft (in):

Area Map



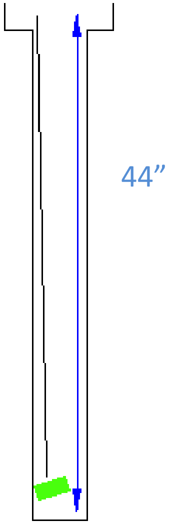
Detail Map



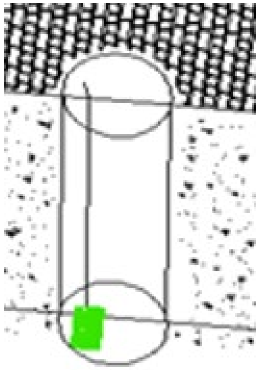
Site Area Overview

View from Top of Well

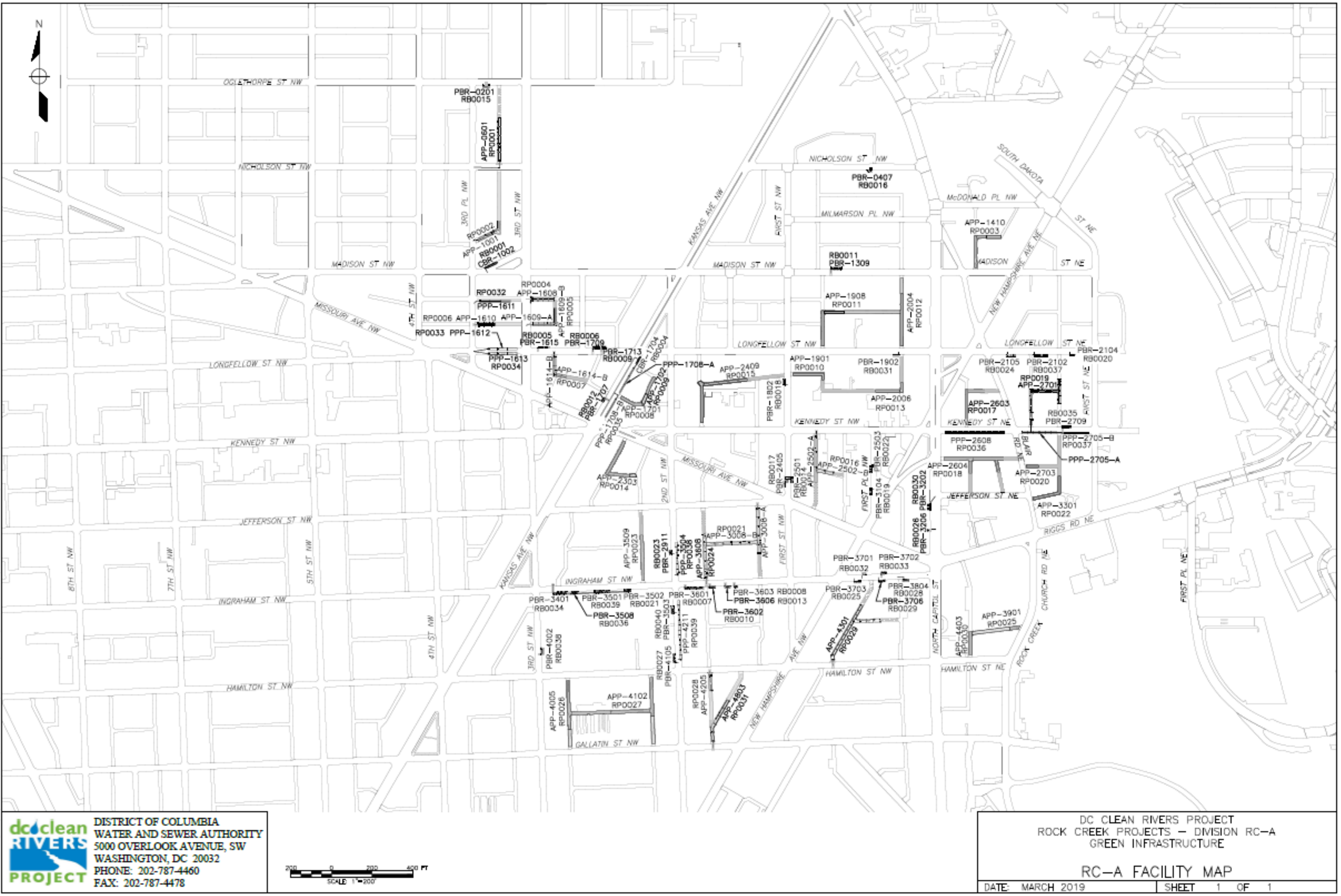
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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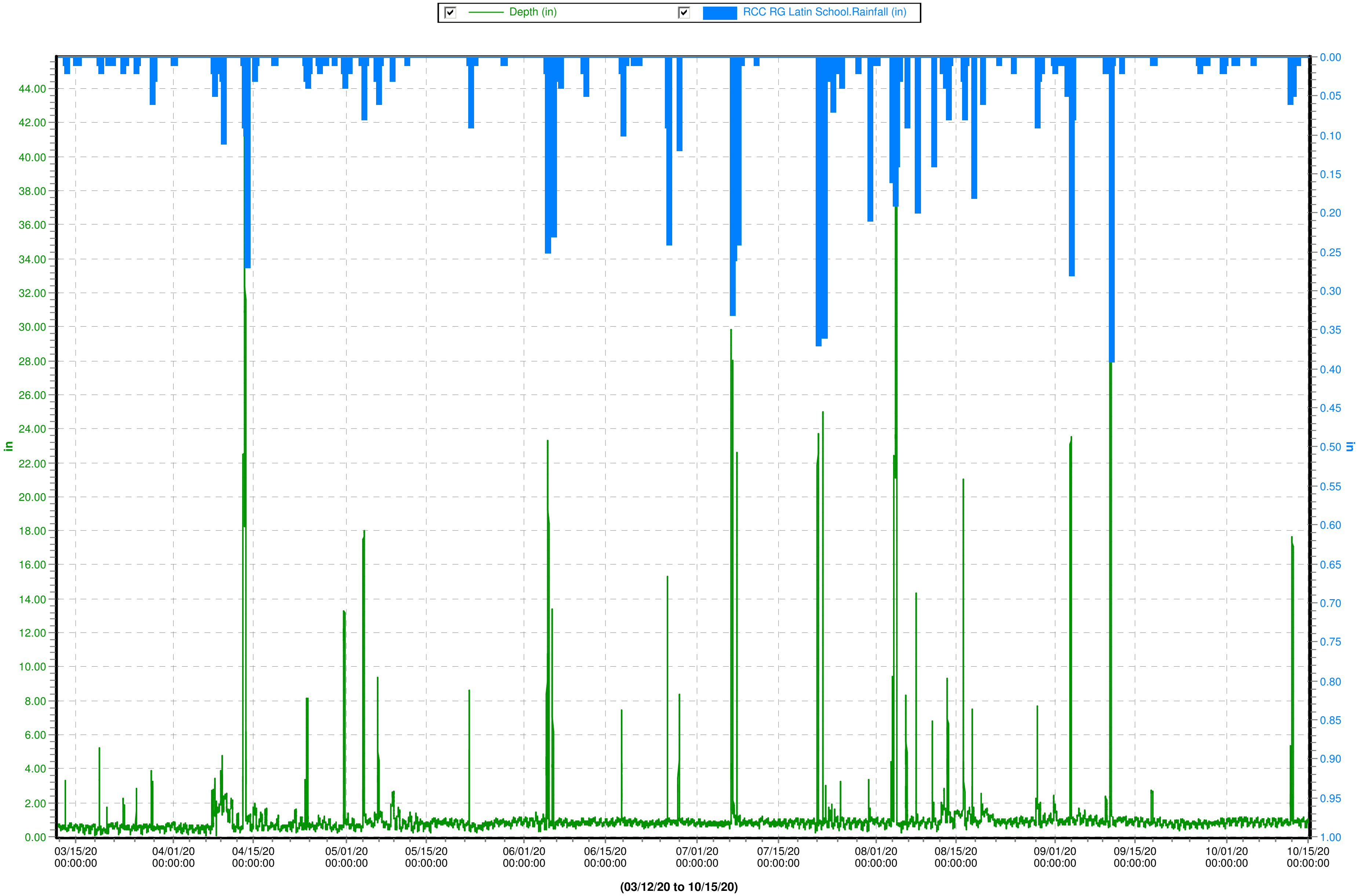
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

1901

Across 5518 1st ST NW-Well Depth (in): 44



Site Name/ Manhole ID:APP-1908

Address:18 Nicholson ST NW

Latitude: N 38.960079°	Longitude: W -77.010219°

Investigation Date:3/3/2020	Crew: CP

Installation Date:3/11/2020	Crew: DM/NMs

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	48	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

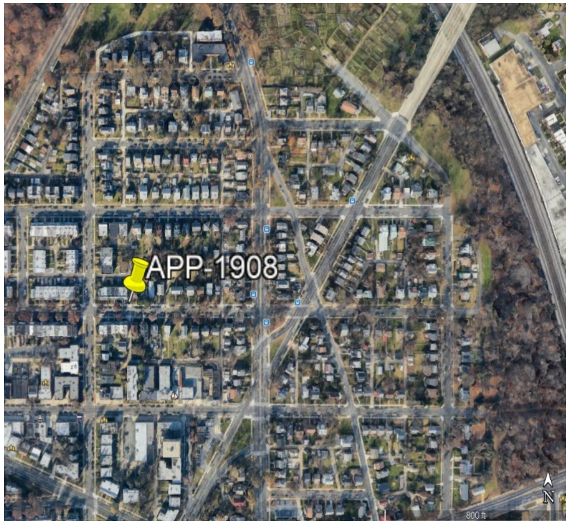
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

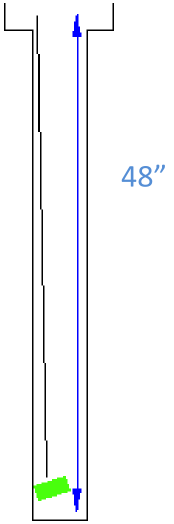


Detail Map

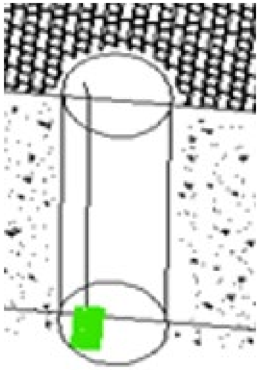
Site Area Overview

View from Top of Well

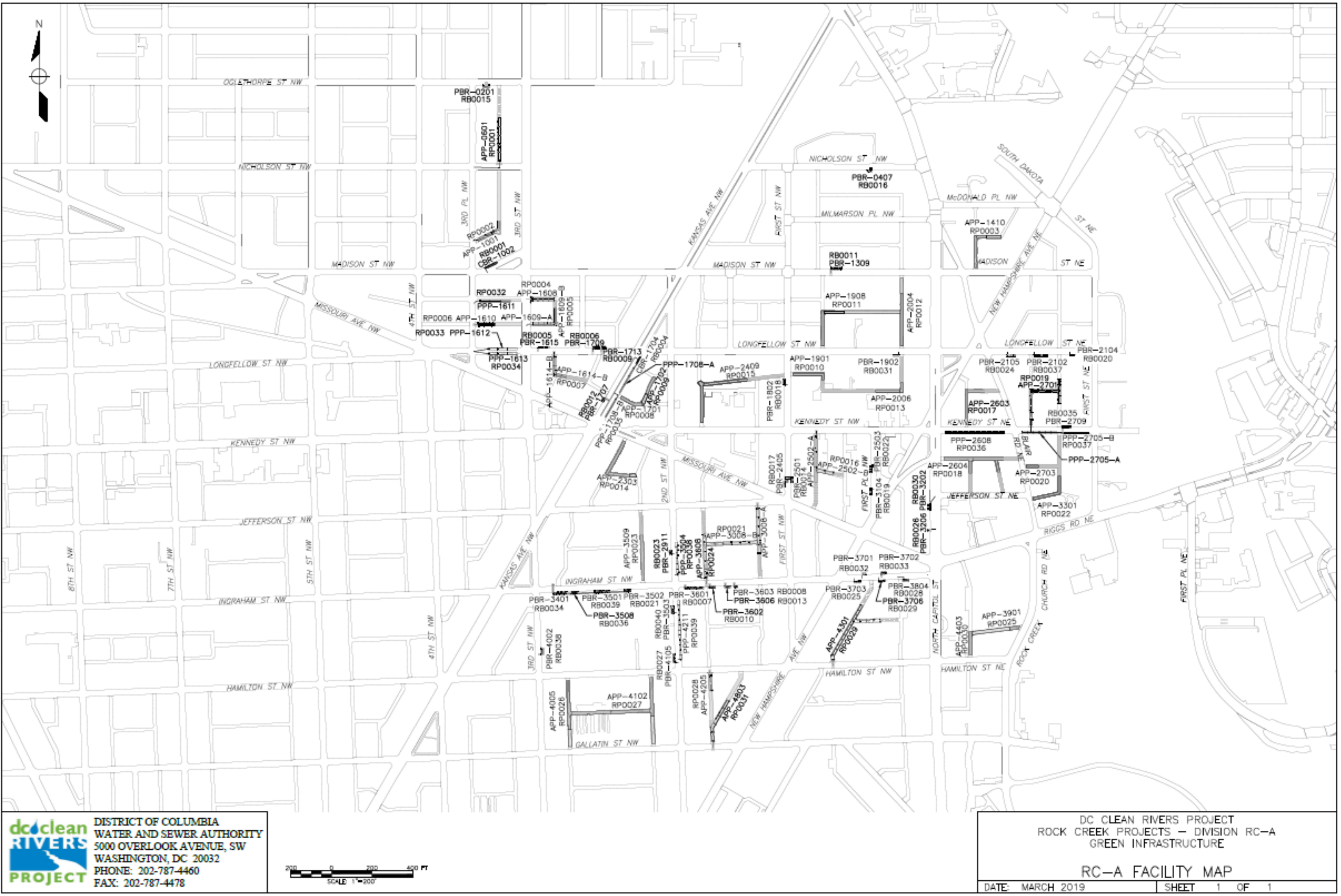
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

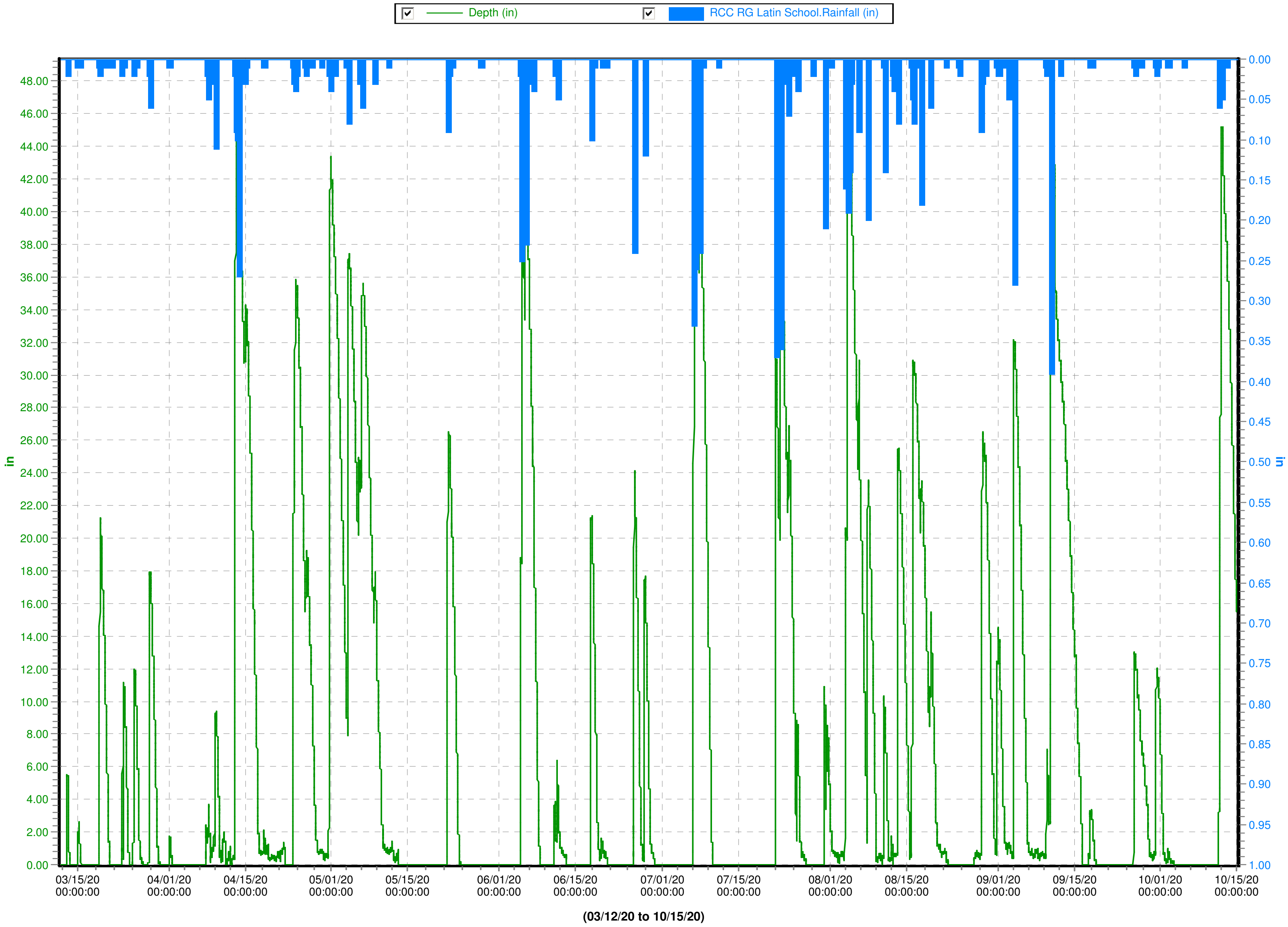


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1908

53 Longfellow ST NW-Well Depth (in): 48



Site Name/ Manhole ID:APP-2004

Address: Across 8 Longfellow ST

Latitude: N 38.957733°　Longitude: W -77.009640°

Investigation Date:3/3/2020　Crew: CP

Installation Date:3/11/2020　Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	43”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

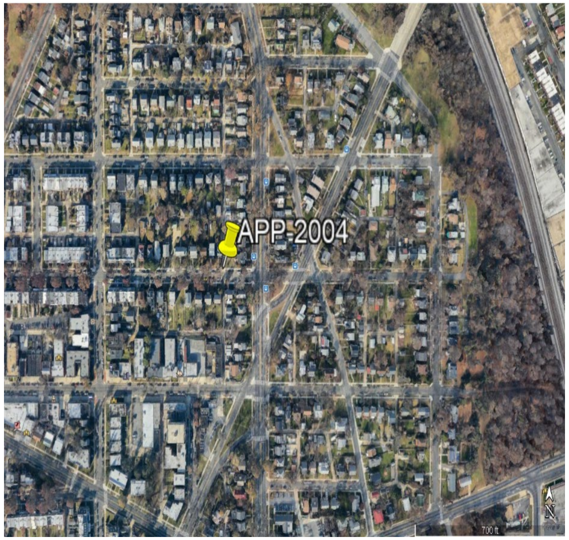
[✓ No]

Yes

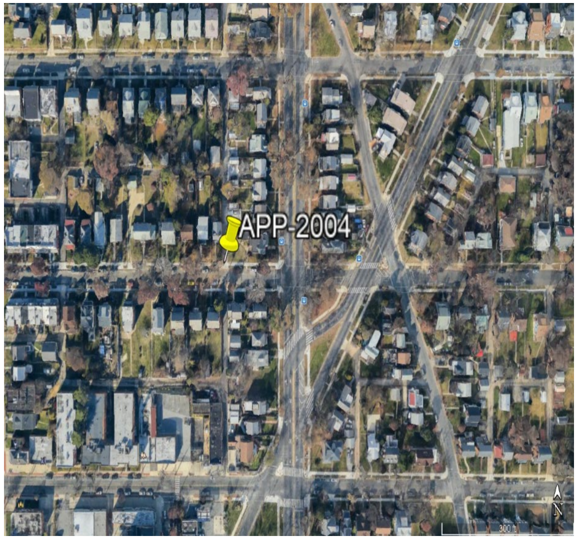
Hard Packed (in):

Soft (in):

Area Map



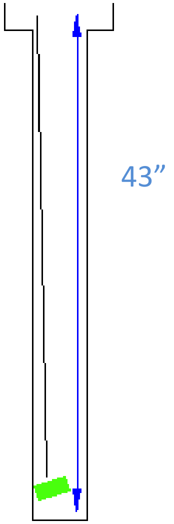
Detail Map



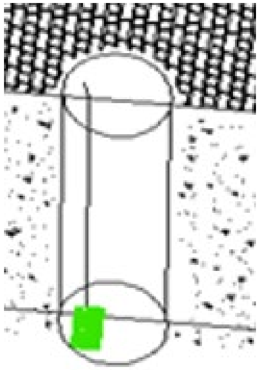
Site Area Overview

View from Top of Well

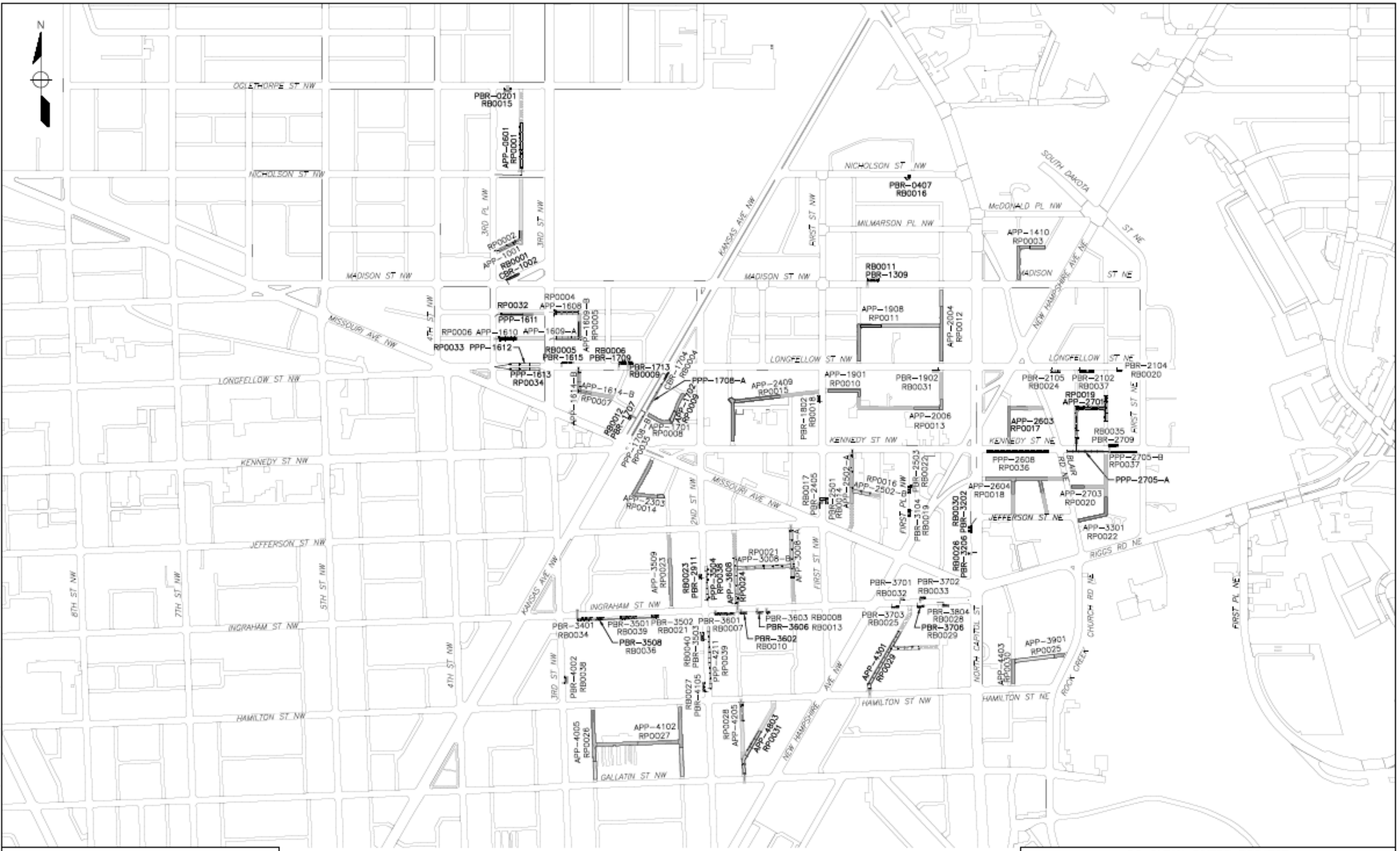
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



LAST SAVED BY: DAVE M. PETACCIA DATE: 3/4/2020 10:23:13 AM
DRAWING ID: L:\LTCP\13\1301 – GIW RC-A\04 CONSTRUCTION\100 – CADD\EXHIBITS\ASSET MANAGEMENT\RC FACILITY LOCATION MAP\RCA FACILITY MAP.DWG

DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, SW
WASHINGTON, DC 20032
PHONE: 202-787-4460
FAX: 202-787-4478

200 0 200 400 FT
SCALE: 1"=200'

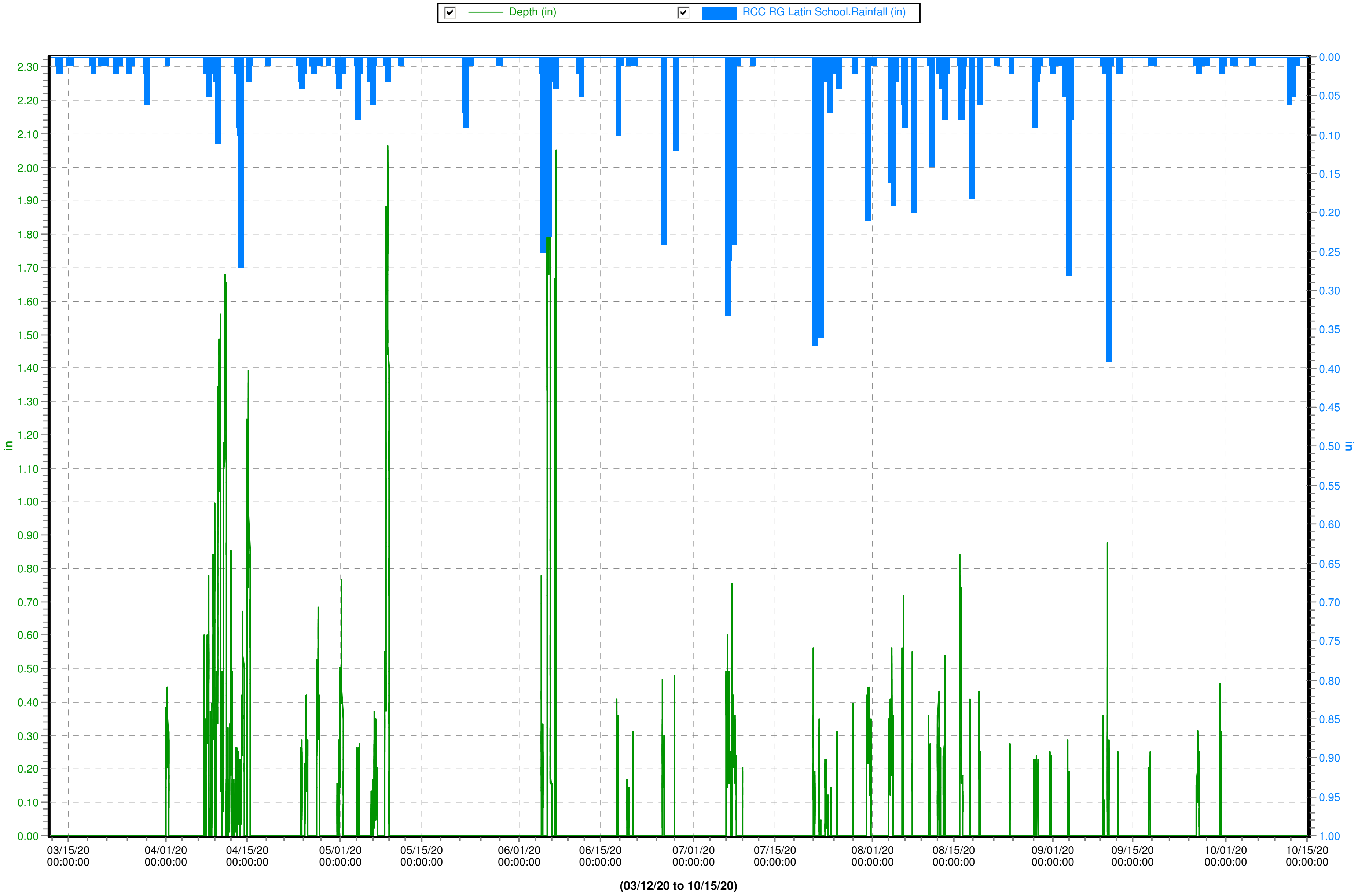
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

2004

Across 8 Longfellow ST NW-Well Depth (in): 43



Site Name/ Manhole ID: APP-2006-A

Address: Alley behind 8 Longfellow St NW

Latitude: N 38.957109°

Longitude: W -77.009640°

Investigation Date: 2/26/2020 Crew: LP/MH

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	33”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

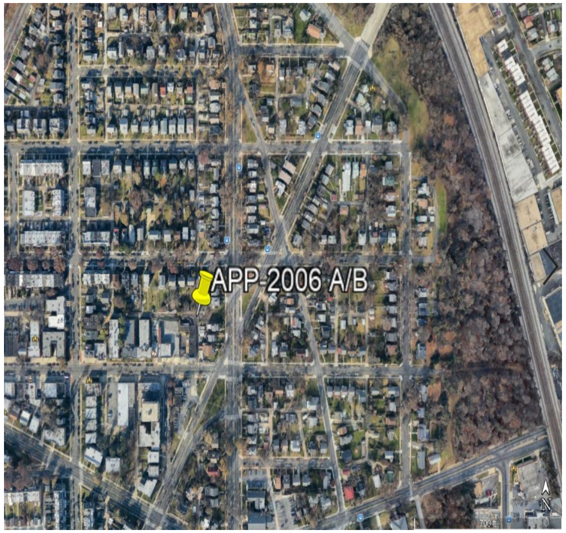
[✓ No]

Yes

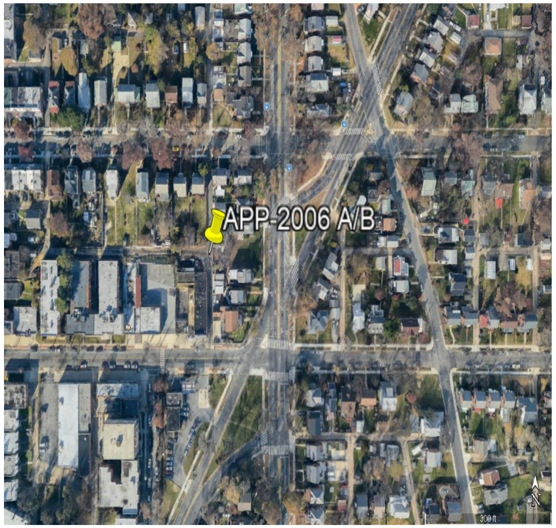
Hard Packed (in):

Soft (in):

Area Map



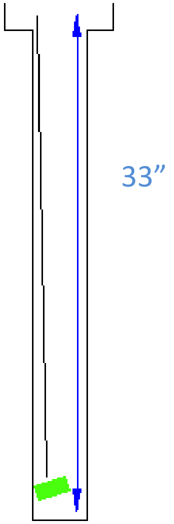
Detail Map



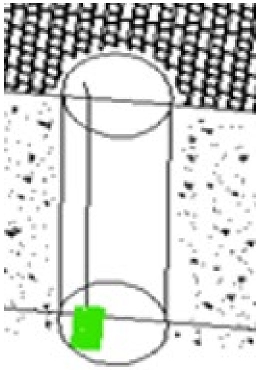
Site Area Overview

View from Top of Well

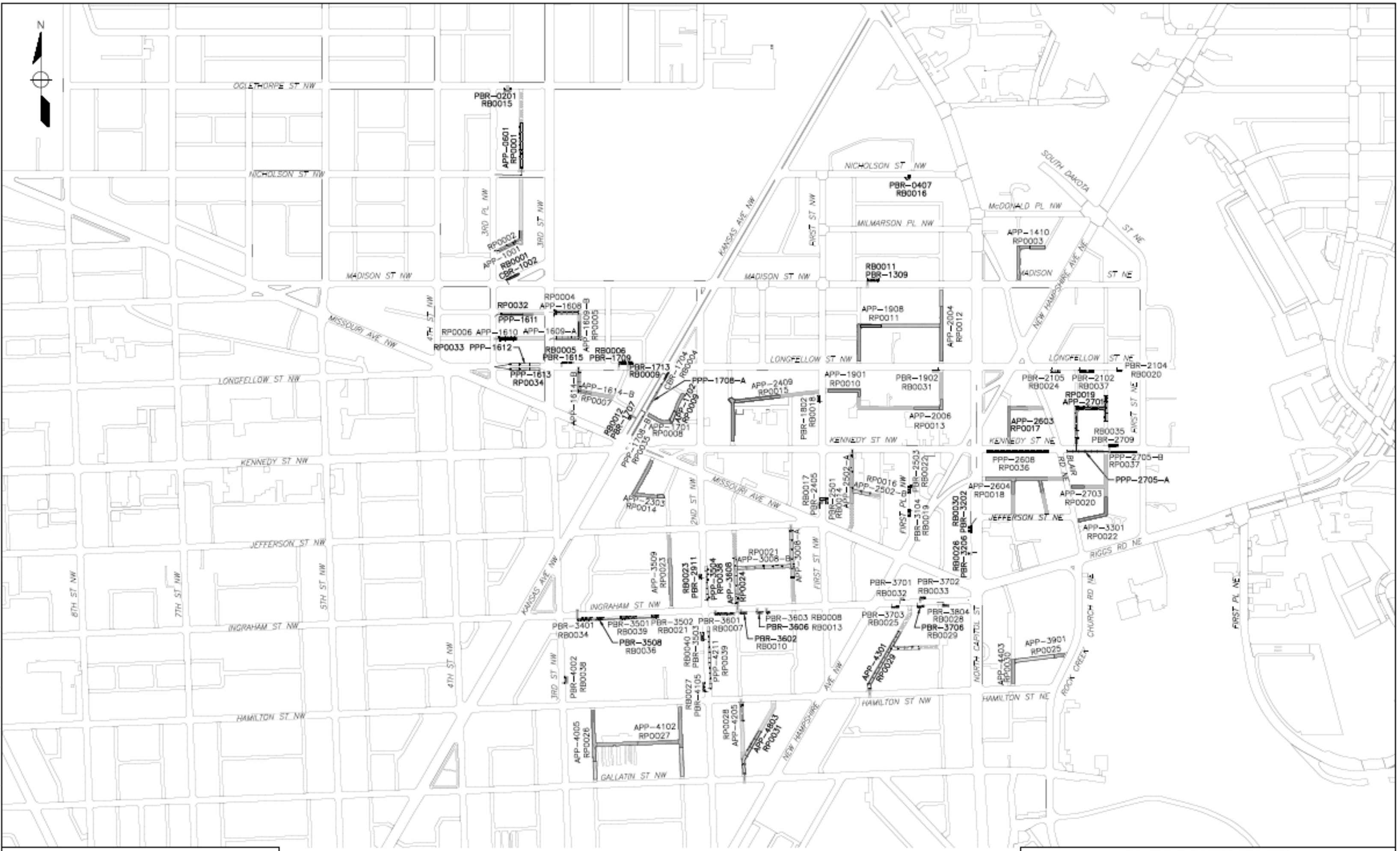
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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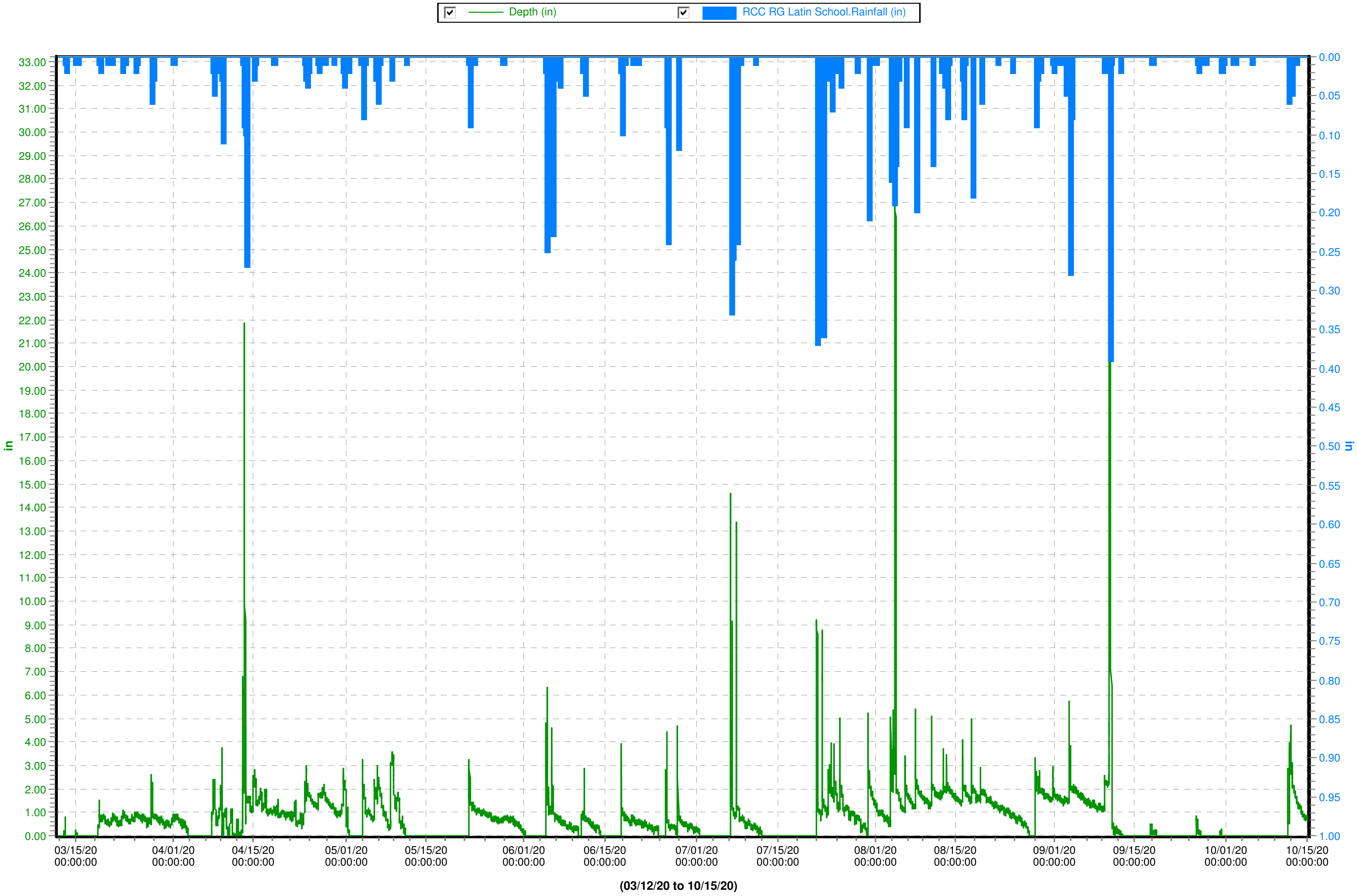
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

2006-A

Alley Behind 8 Longfellow ST NW-Well Depth (in): 34



Site Name/ Manhole ID: APP-2006-B

Address: Alley behind 8 Longfellow St NW

Latitude: N 38.957109° Longitude: W -77.009640°

Investigation Date:3/10/2020 Crew: SD/JP

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	32”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

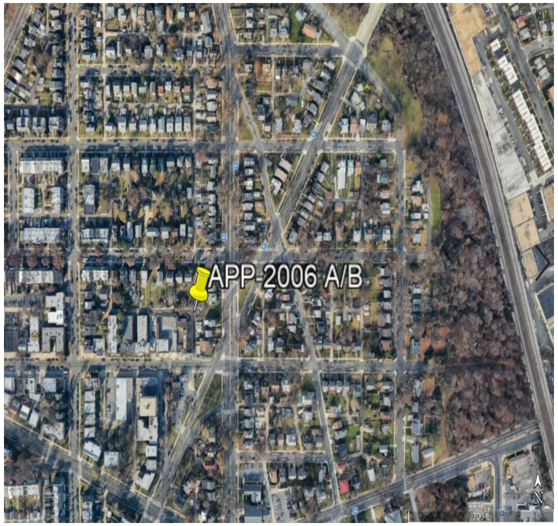
[✓ No]

Yes

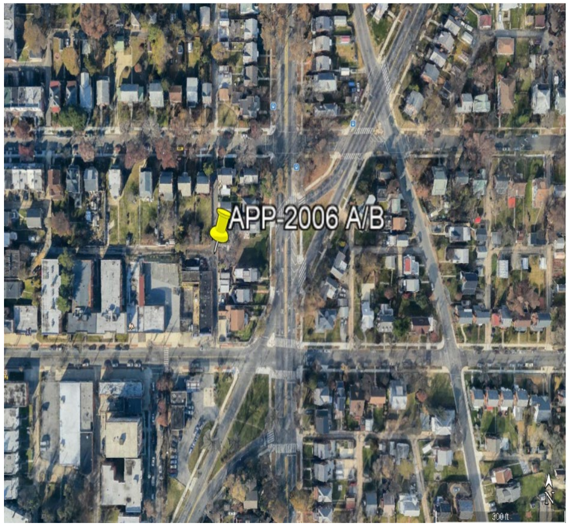
Hard Packed (in):

Soft (in):

Area Map



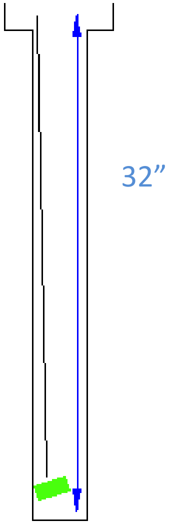
Detail Map



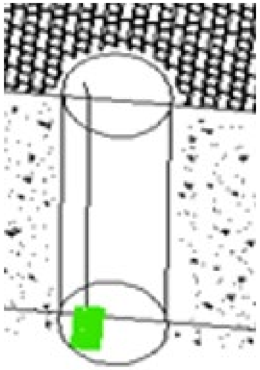
Site Area Overview

View from Top of Well

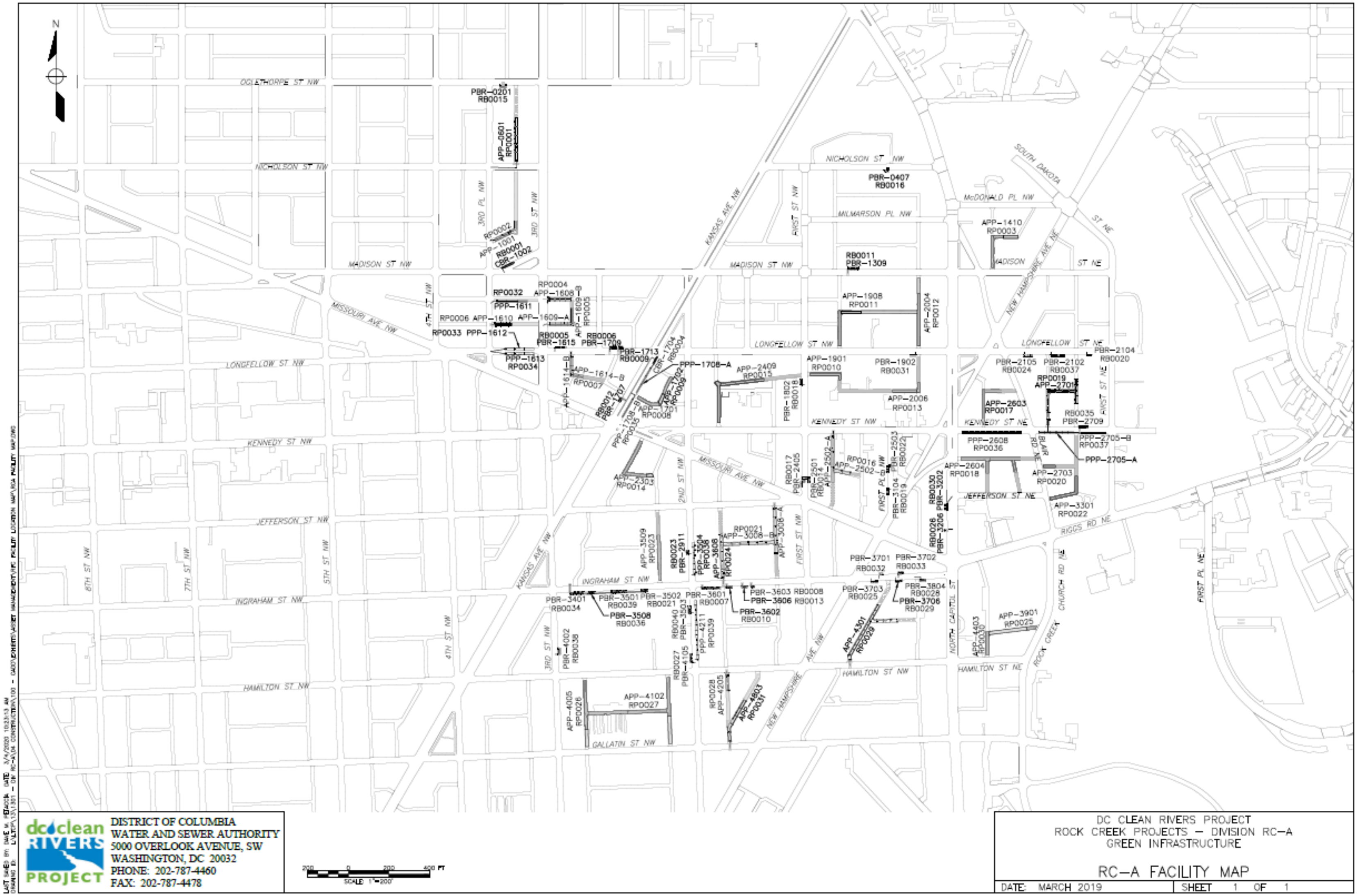
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

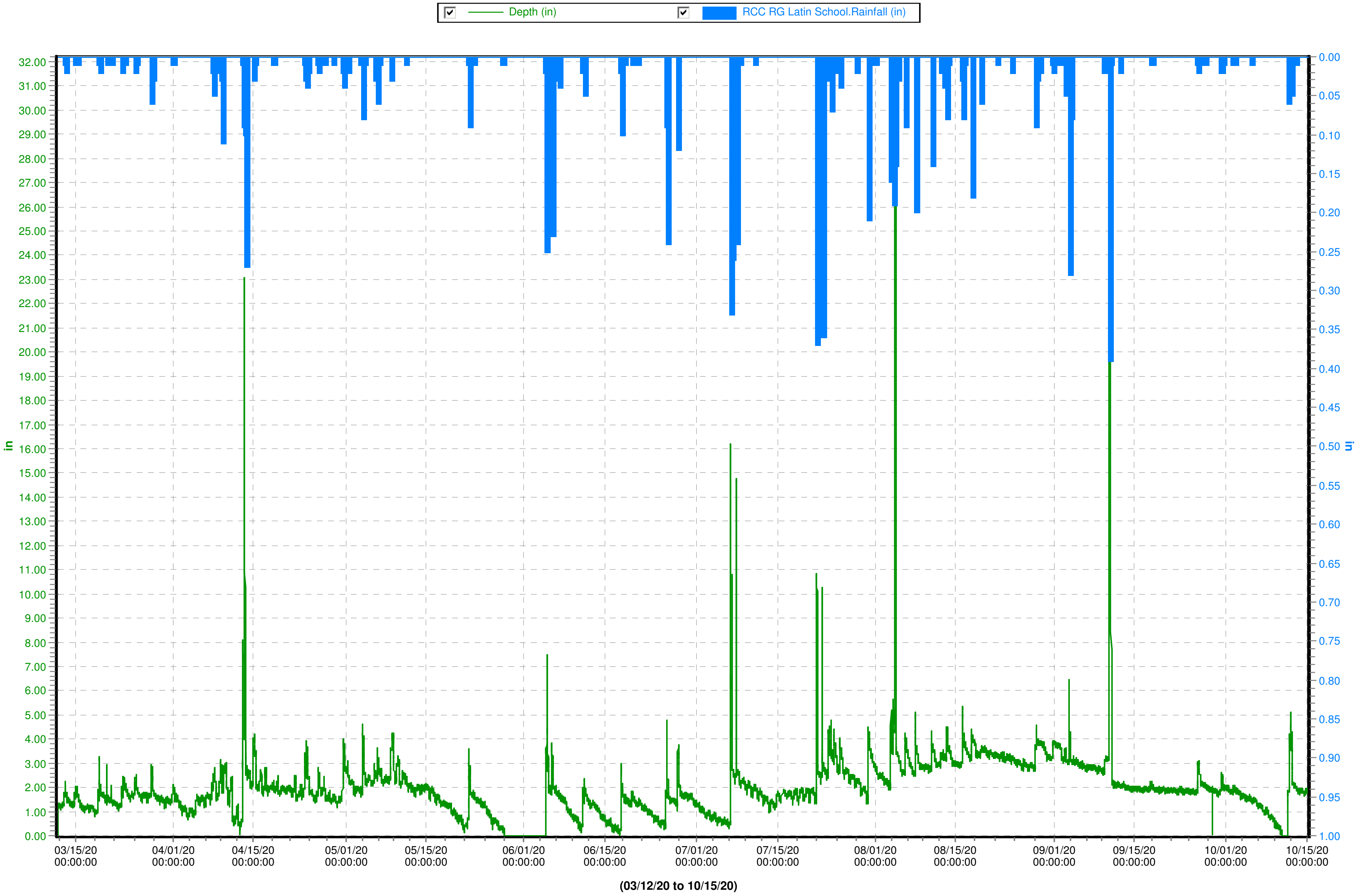


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2006-B

Alley Behind 8 Longfellow ST NW-Well Depth (in): 32



Site Name/ Manhole ID:APP-2303

Address:223 Missouri Ave NW

Latitude: N 38.957005° Longitude: W-77.014539 °

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 2

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	48”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

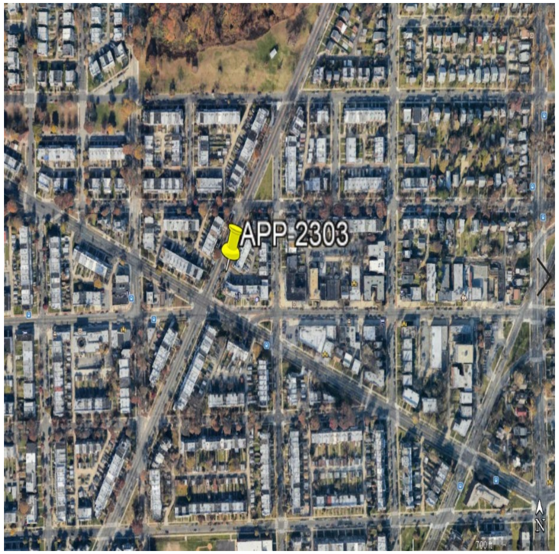
[✓ No]

Yes

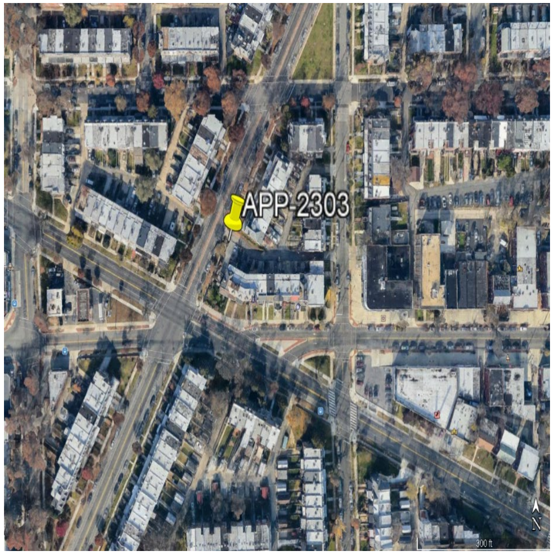
Hard Packed (in):

Soft (in):

Area Map



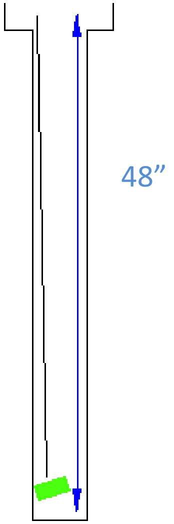
Detail Map



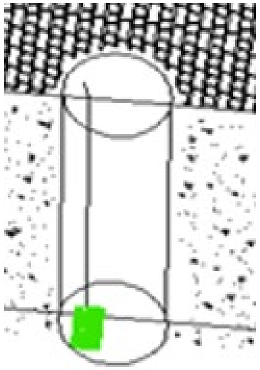
Site Area Overview

View from Top of Well

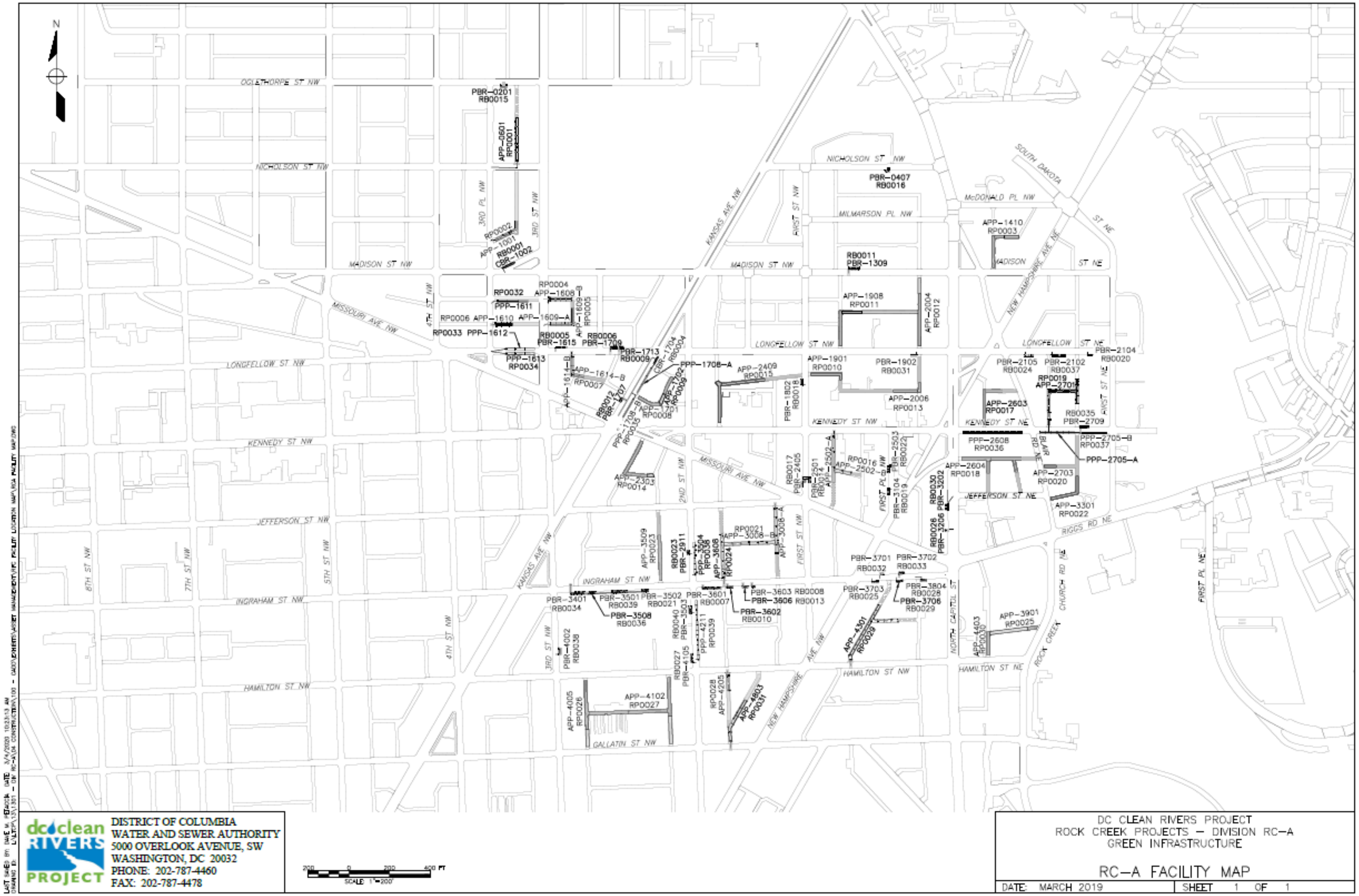
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

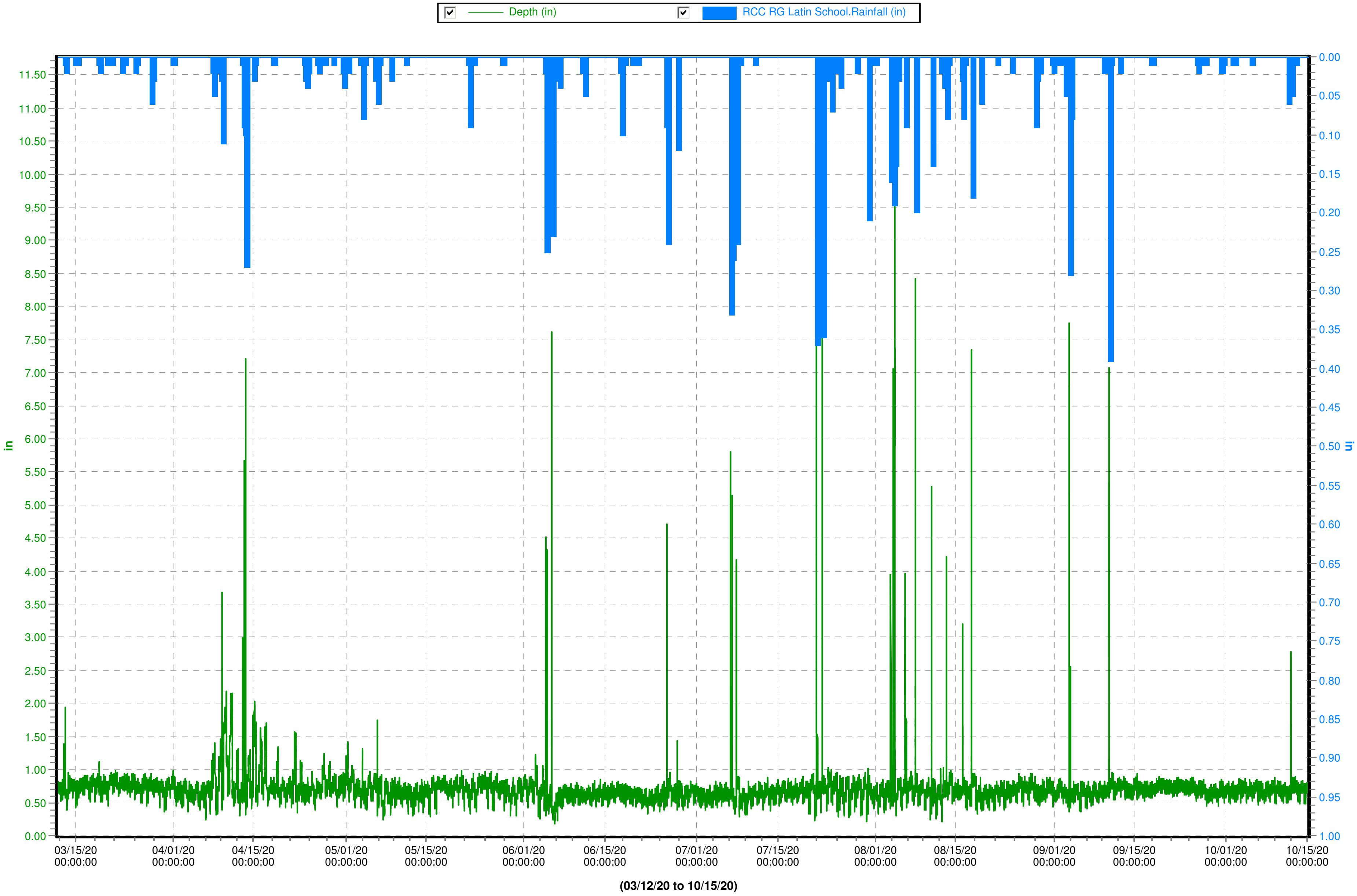


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2303

223 Missouri Ave NW-Well Depth (in): 48



Site Name/ Manhole ID: APP-2409

Address Kennedy ST NW and Sabb’s Alley:

Latitude: N 38.956673° Longitude: W -77.013112°

Investigation Date: 3/3/2020 Crew: CP

Installation Date: 3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .5

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	51”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

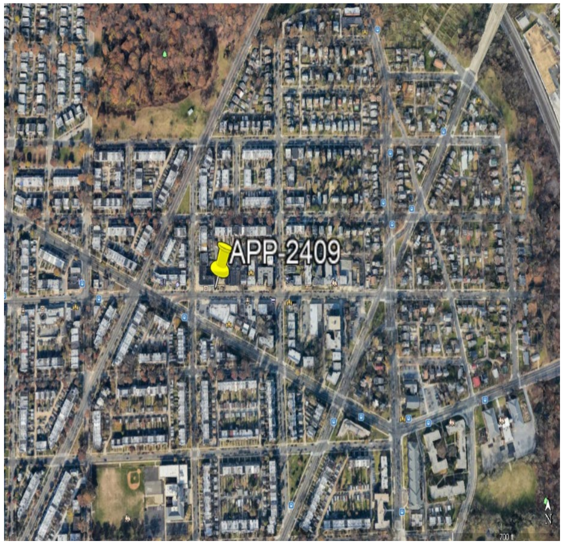
[✓ No]

Yes

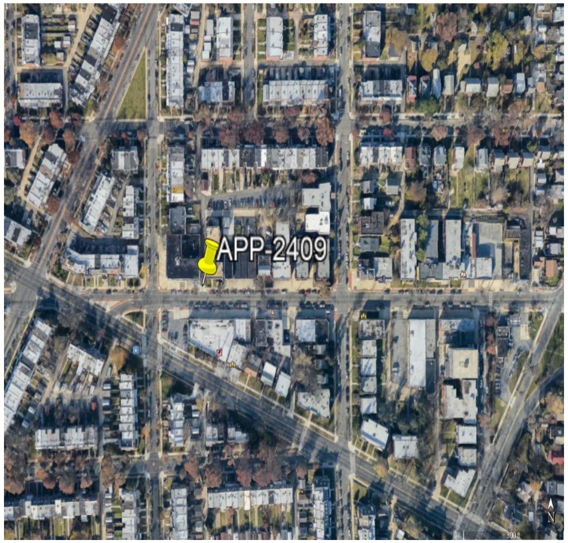
Hard Packed (in):

Soft (in):

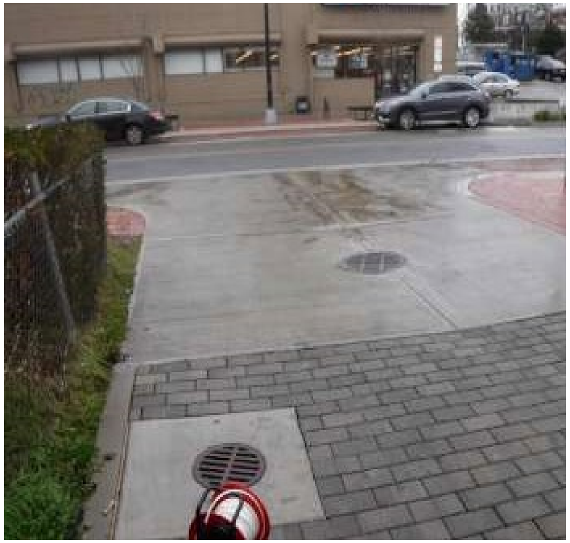
Area Map



Detail Map

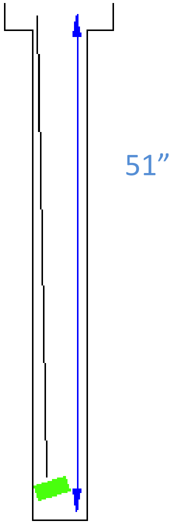


Site Area Overview

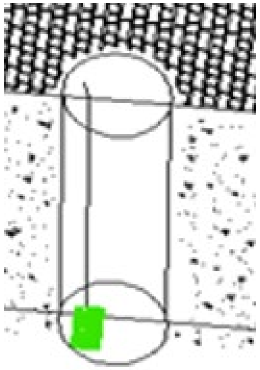


View from Top of Well

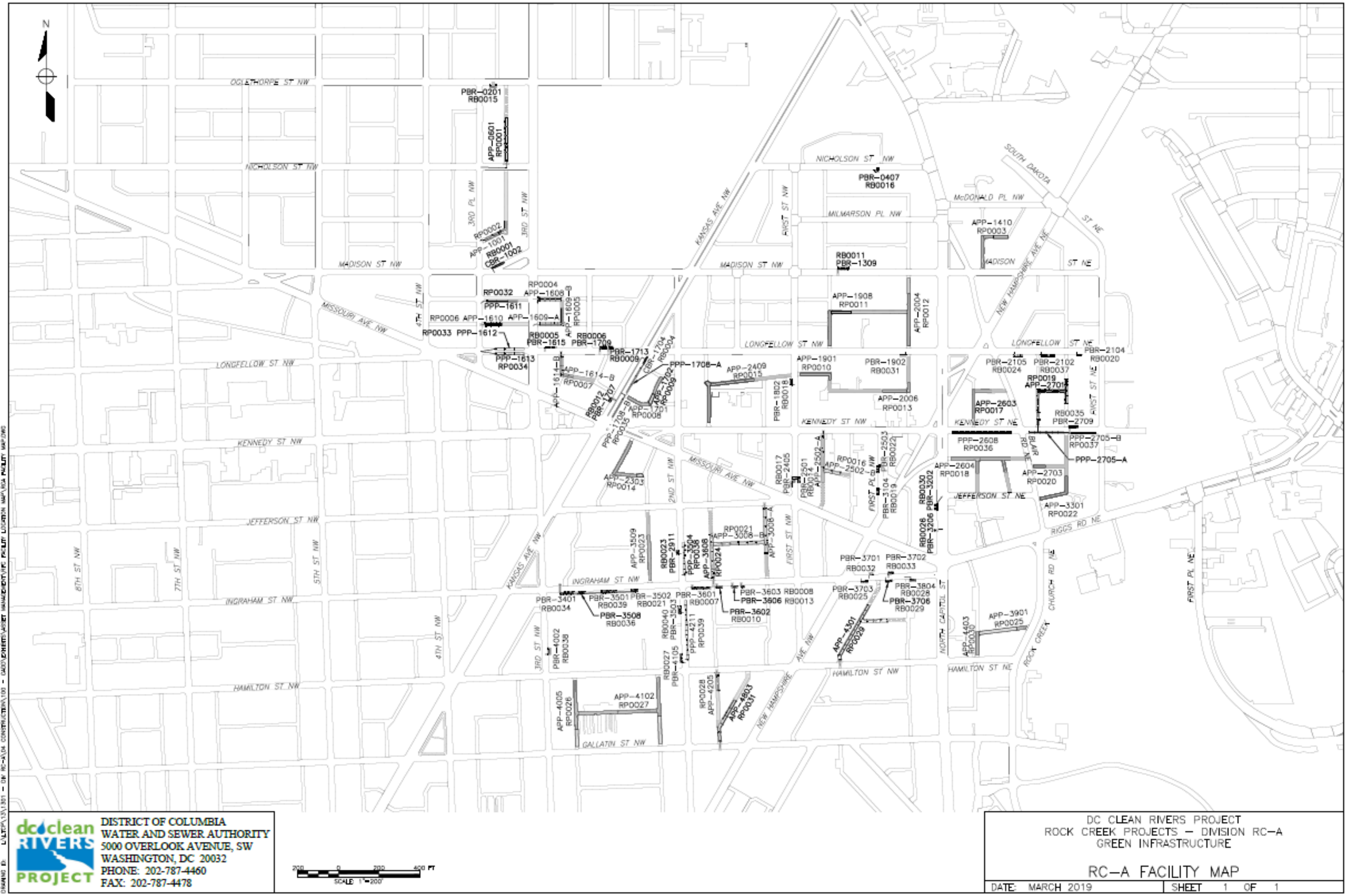
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

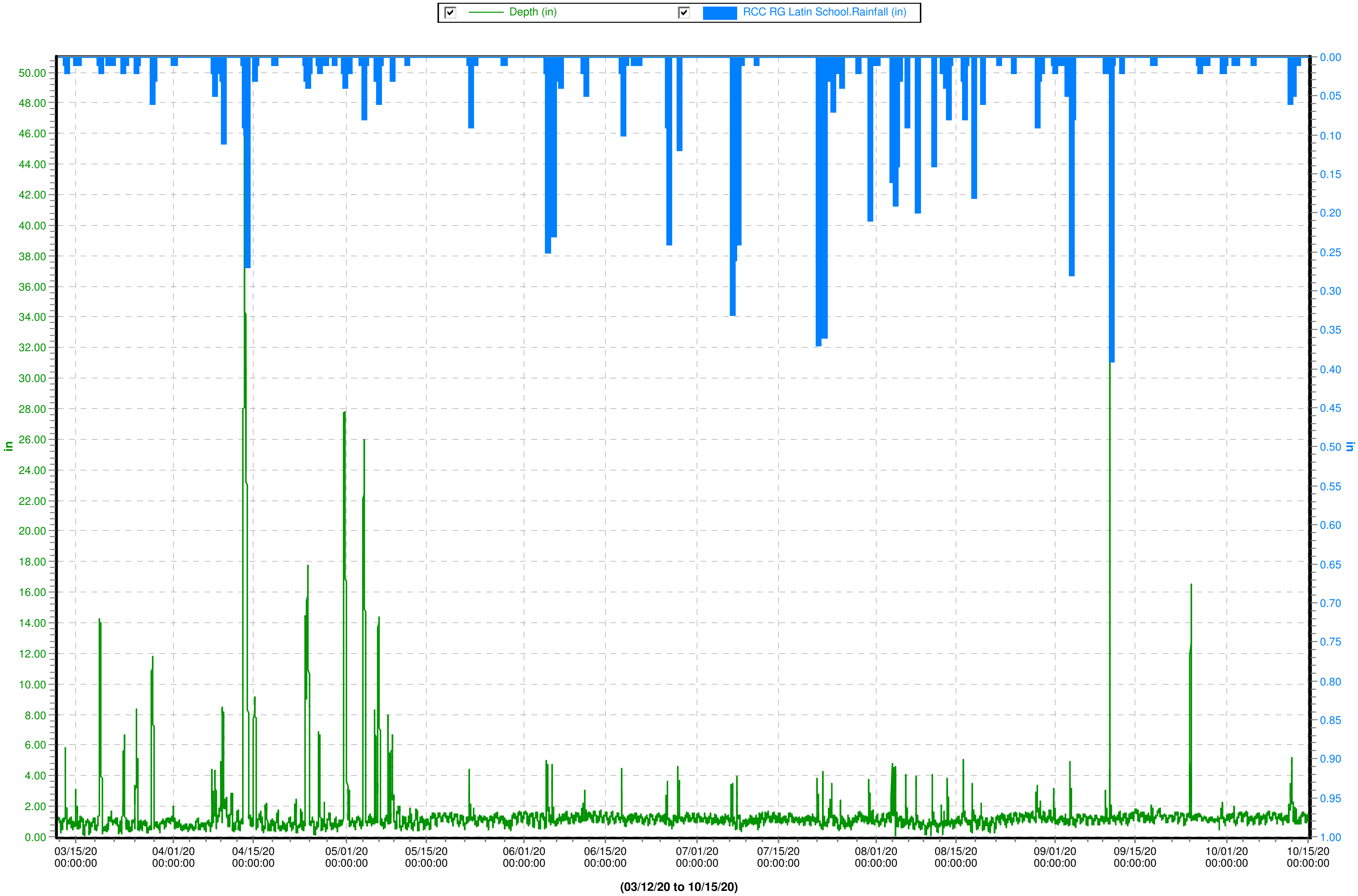


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2409

Kennedy ST NW and Sabb's Alley-Well Depth (in): 51



Site Name/ Manhole ID: APP-2502-A

Address: Across 67 Kennedy St NW

Latitude: N 38.956470°

Longitude: W -77.011136°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/11/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	39"	-	-	-	-	-
Width	8"	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

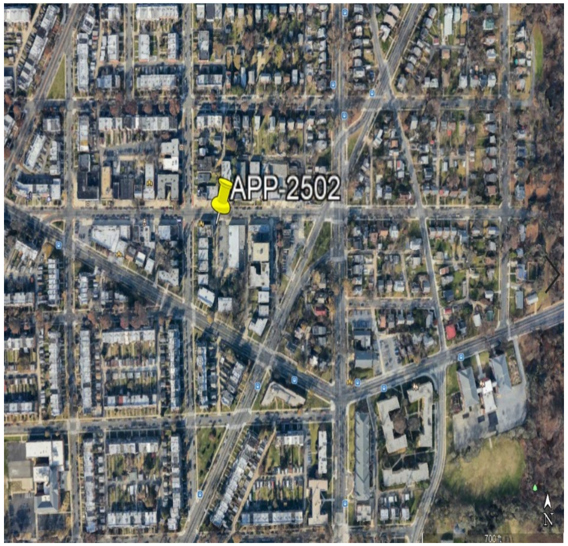
[✓ No]

Yes

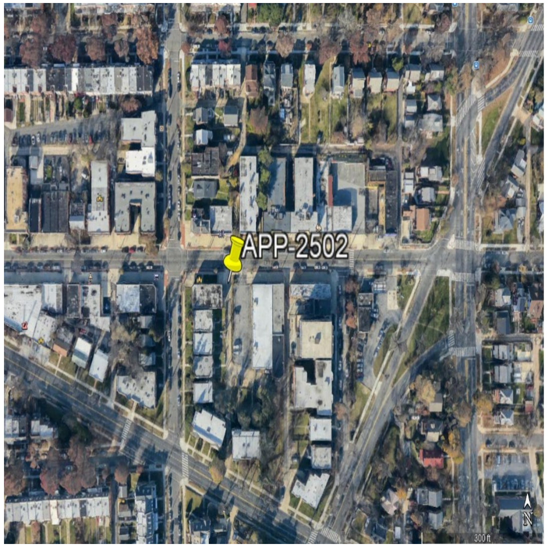
Hard Packed (in):

Soft (in):

Area Map



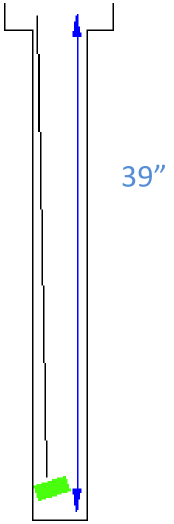
Detail Map



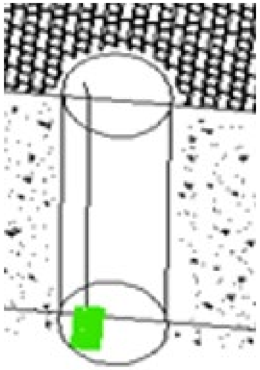
Site Area Overview

View from Top of Well

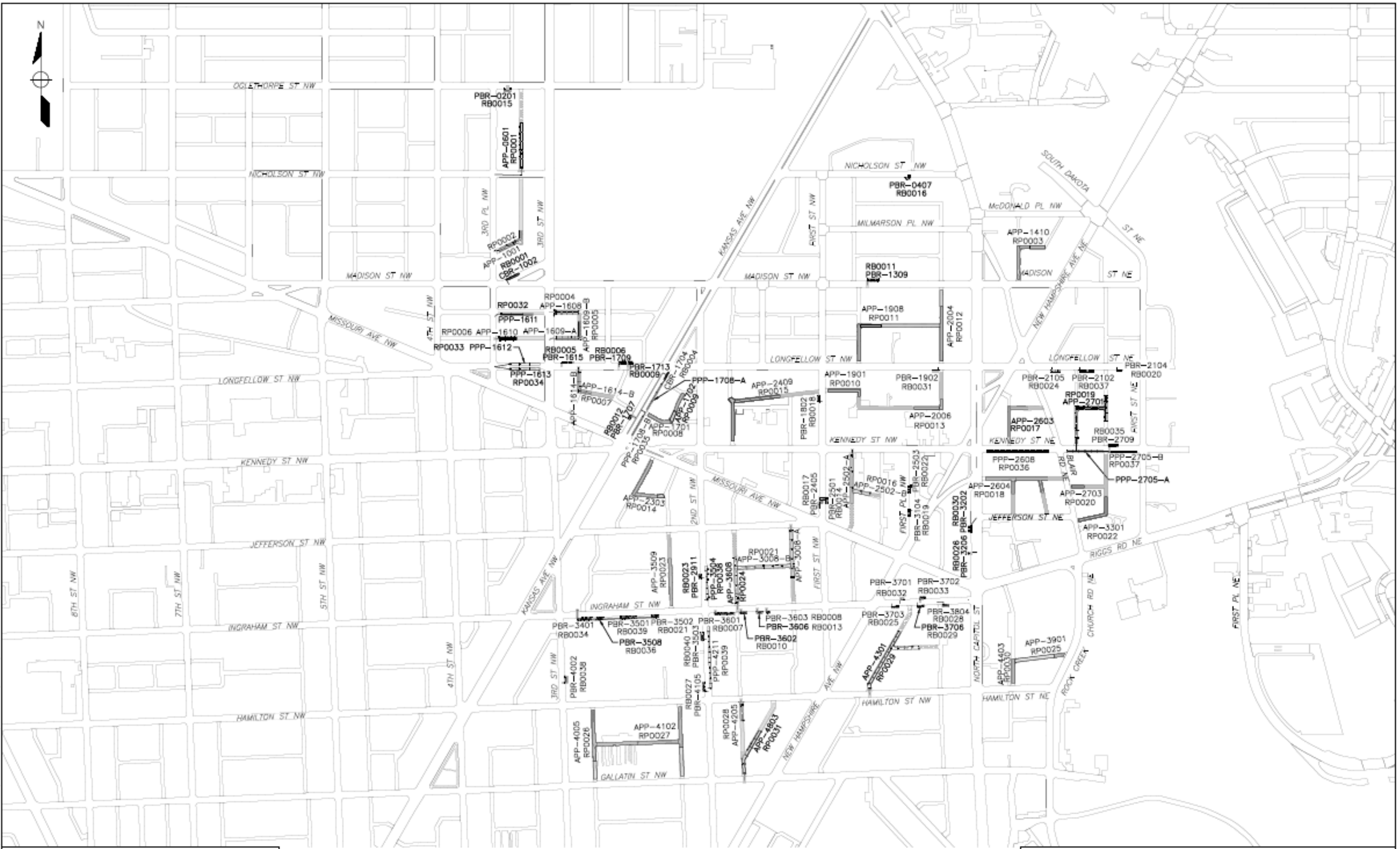
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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SCALE 1"=200'

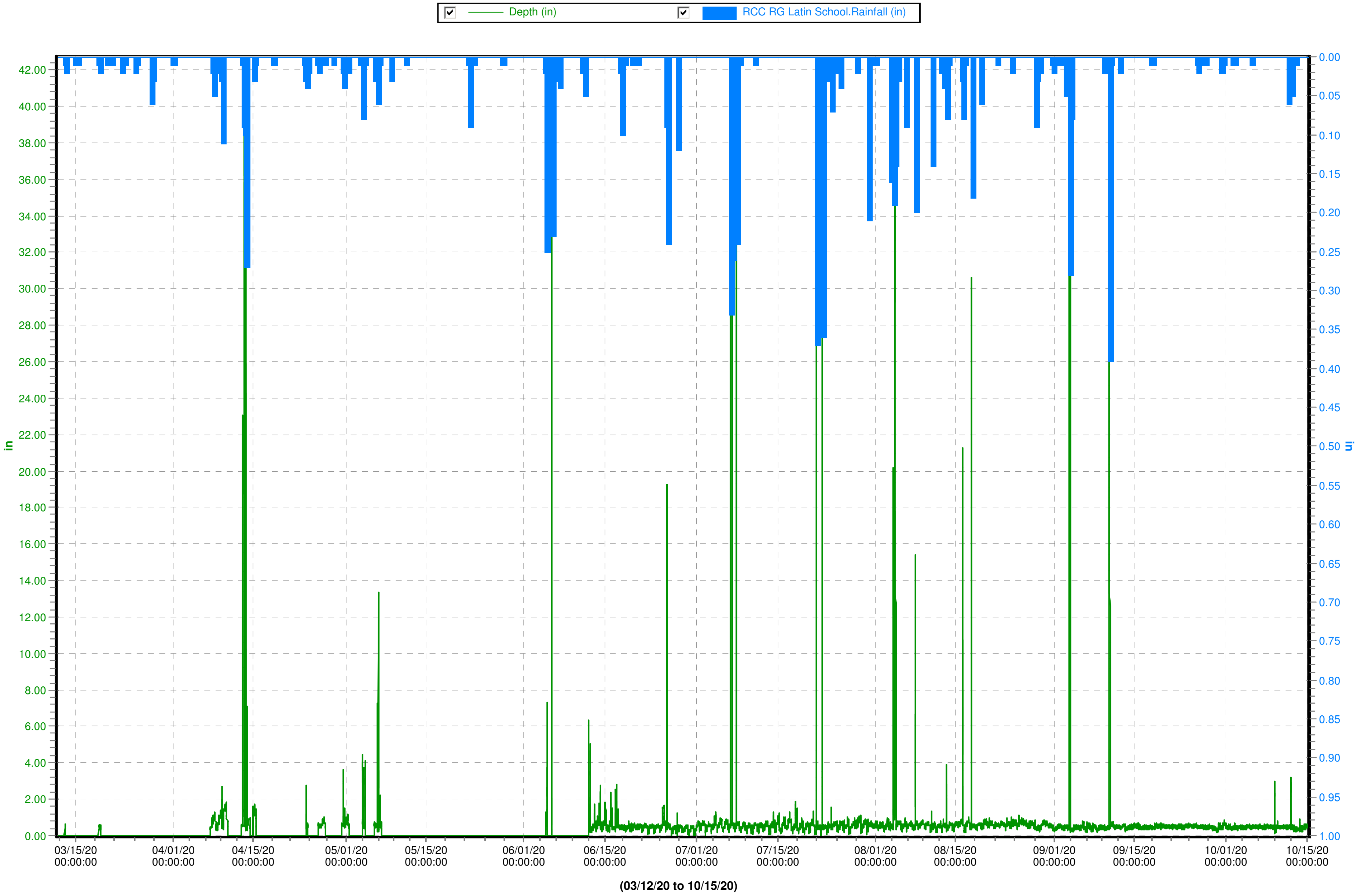
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

2502-A

Across 67 Kennedy ST NW-Well Depth (in): 39



Site Name/ Manhole ID: APP-2603

Address: Alley Way Behind Kennedy ST NE and New Hampshire Ave NE

Latitude: N 38.956695°
Longitude: W -77.008497°

Investigation Date:2/25/2020
Crew: LP/MH

Installation Date:3/10/2020
Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	50”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

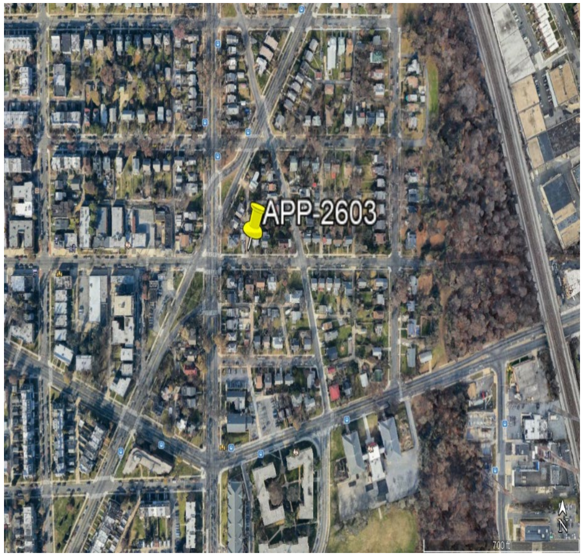
Sediment Present:

[✓ No] Yes

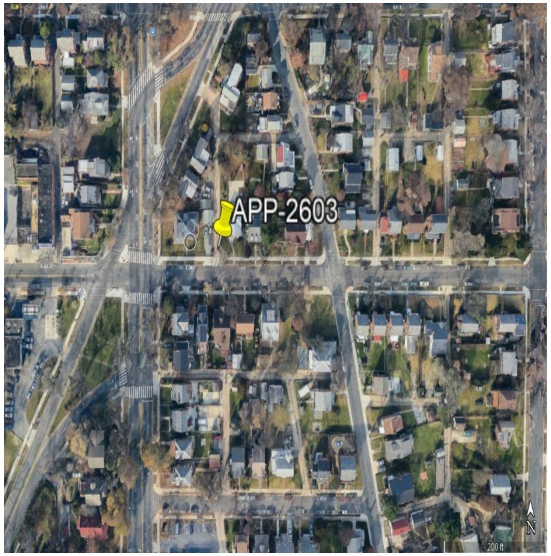
Hard Packed (in):

Soft (in):

Area Map



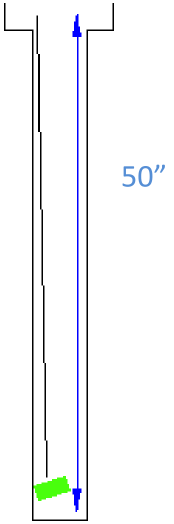
Detail Map



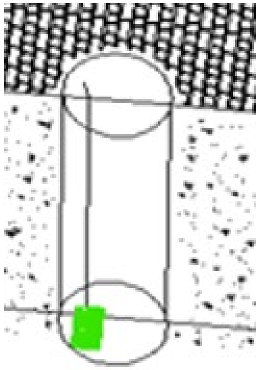
Site Area Overview

View from Top of Well

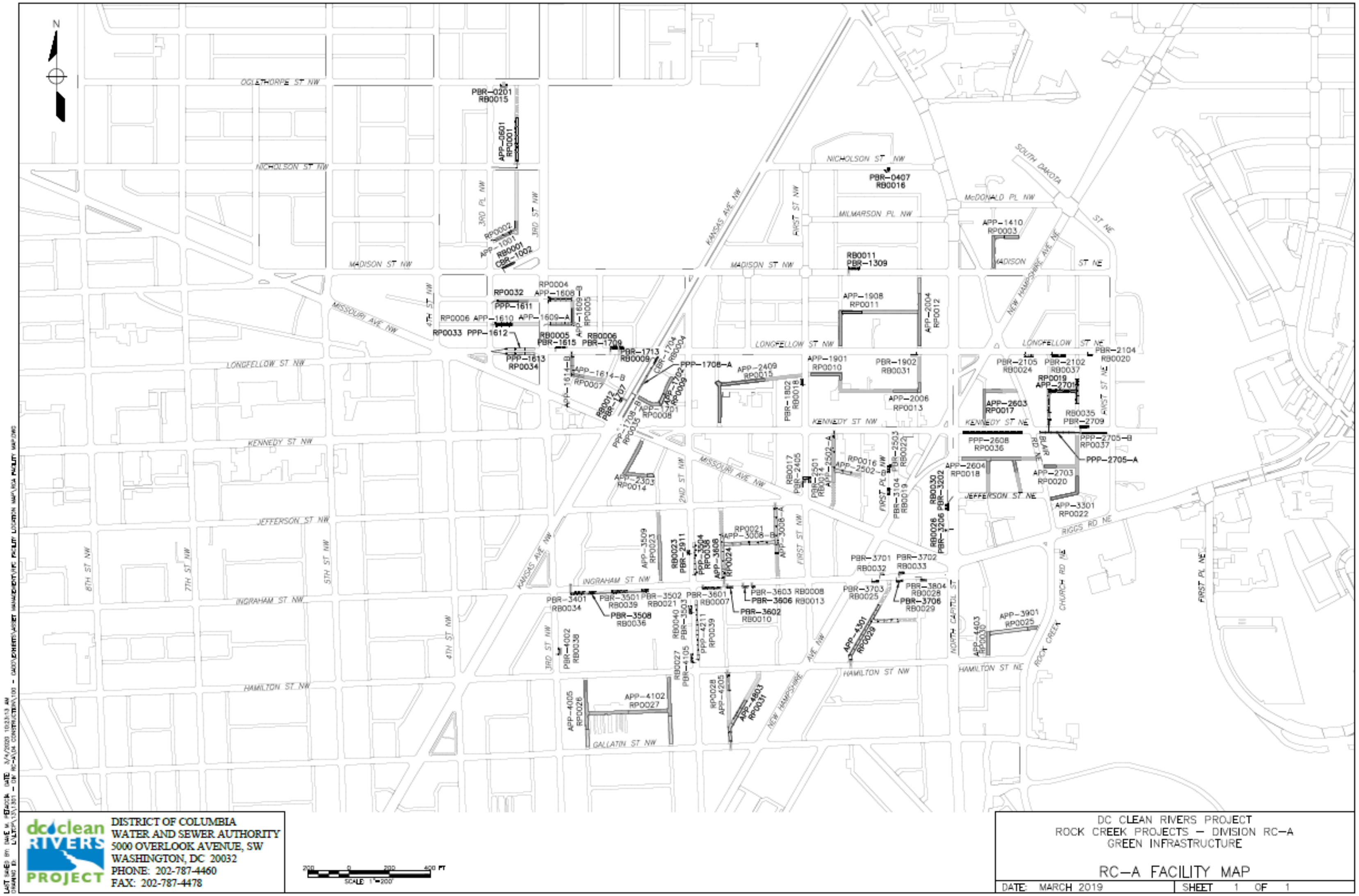
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

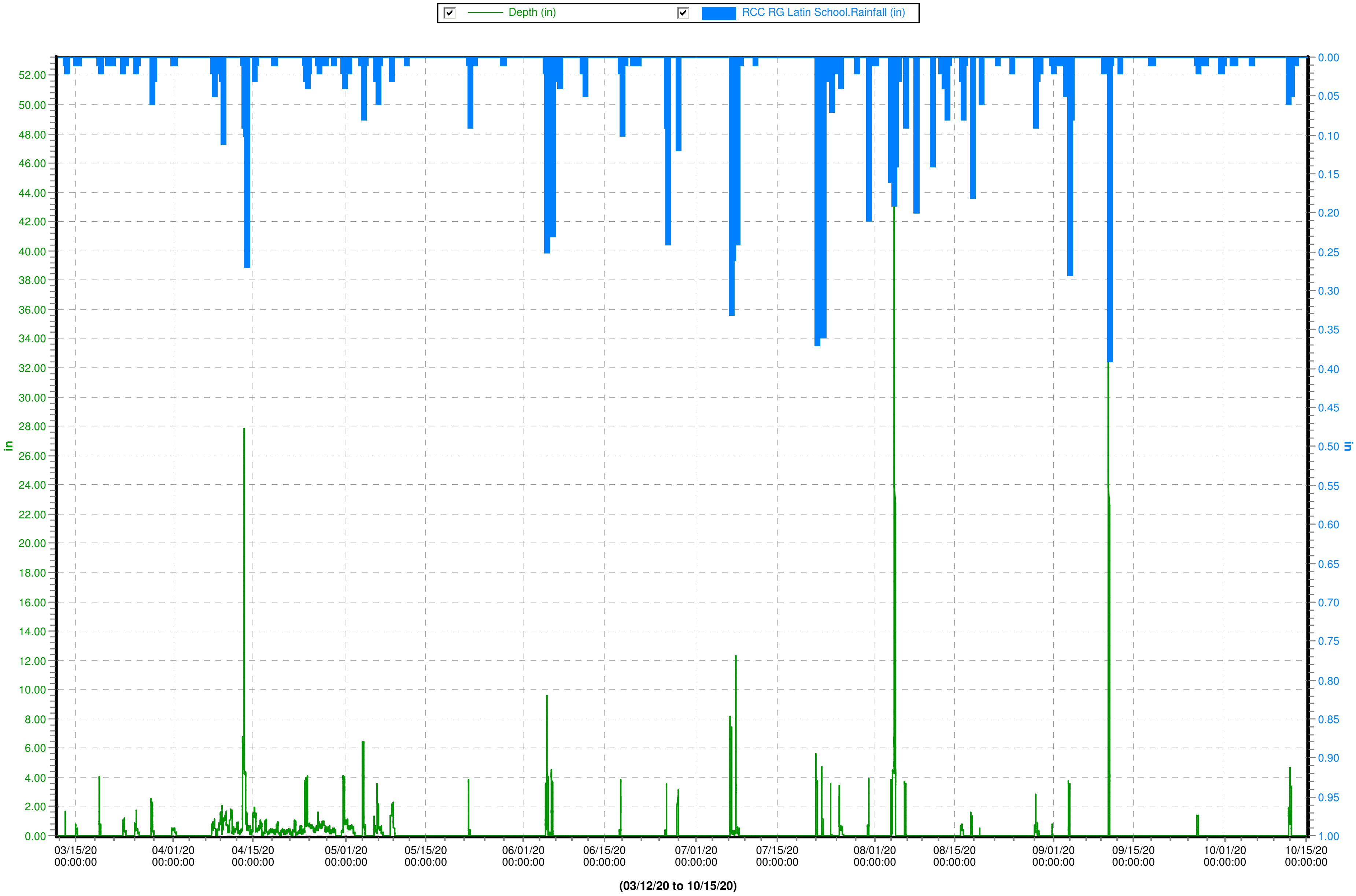


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2603

Alley behind Kennedy ST NE and New Hampshire Ave NE-Well Depth (in): 50



Site Name/ Manhole ID: APP-2604

Address:5411 Capitol St

Latitude: N 38.956184° Longitude: W -77.008816°

Investigation Date:2/25/2020 Crew: LP/MH

Installation Date: Crew:

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	47”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

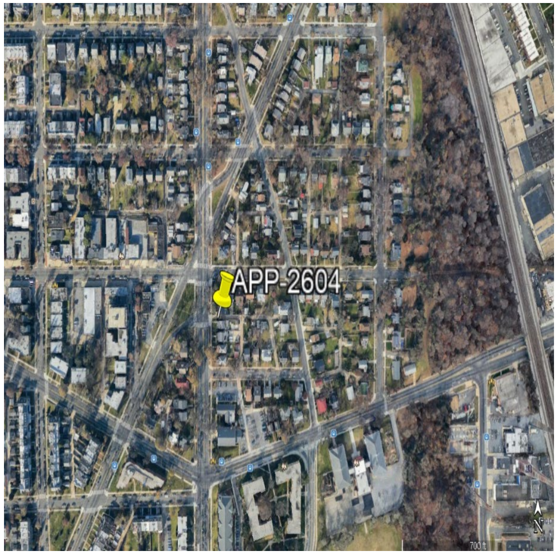
[✓ No]

Yes

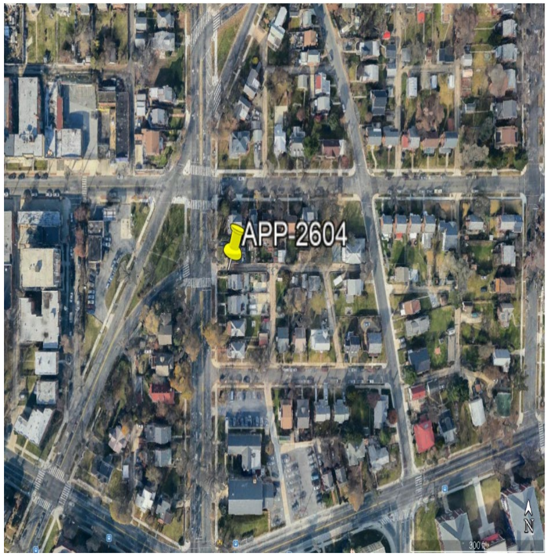
Hard Packed (in):

Soft (in):

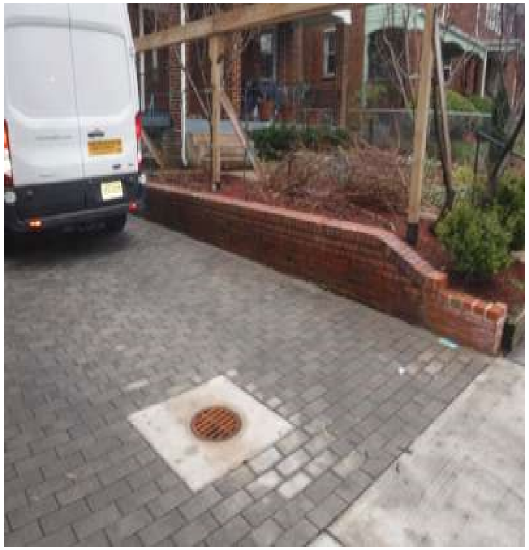
Area Map



Detail Map

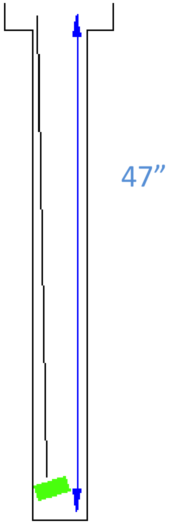


Site Area Overview

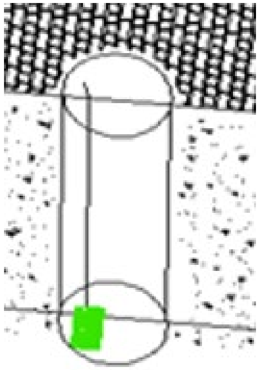


View from Top of Well

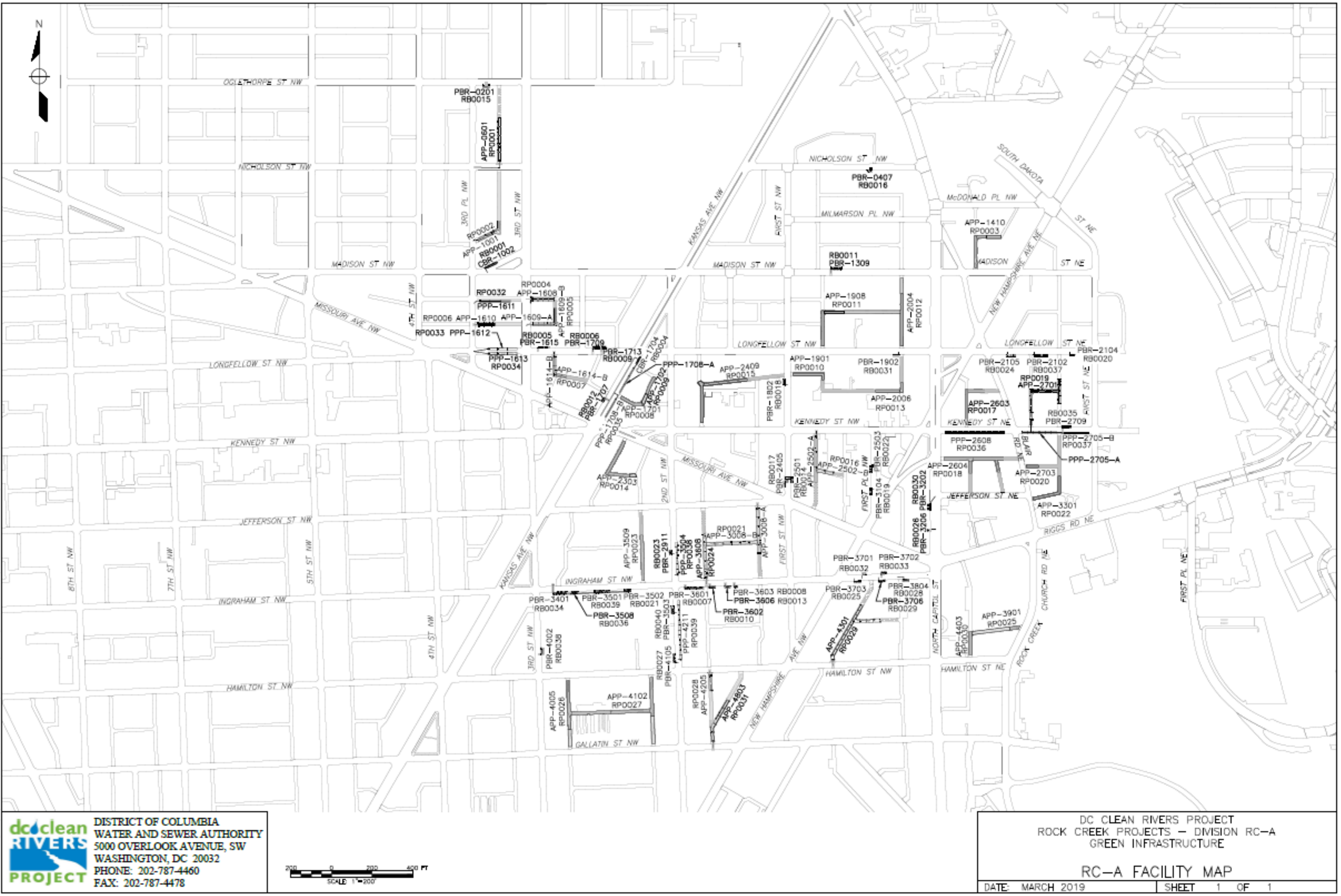
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

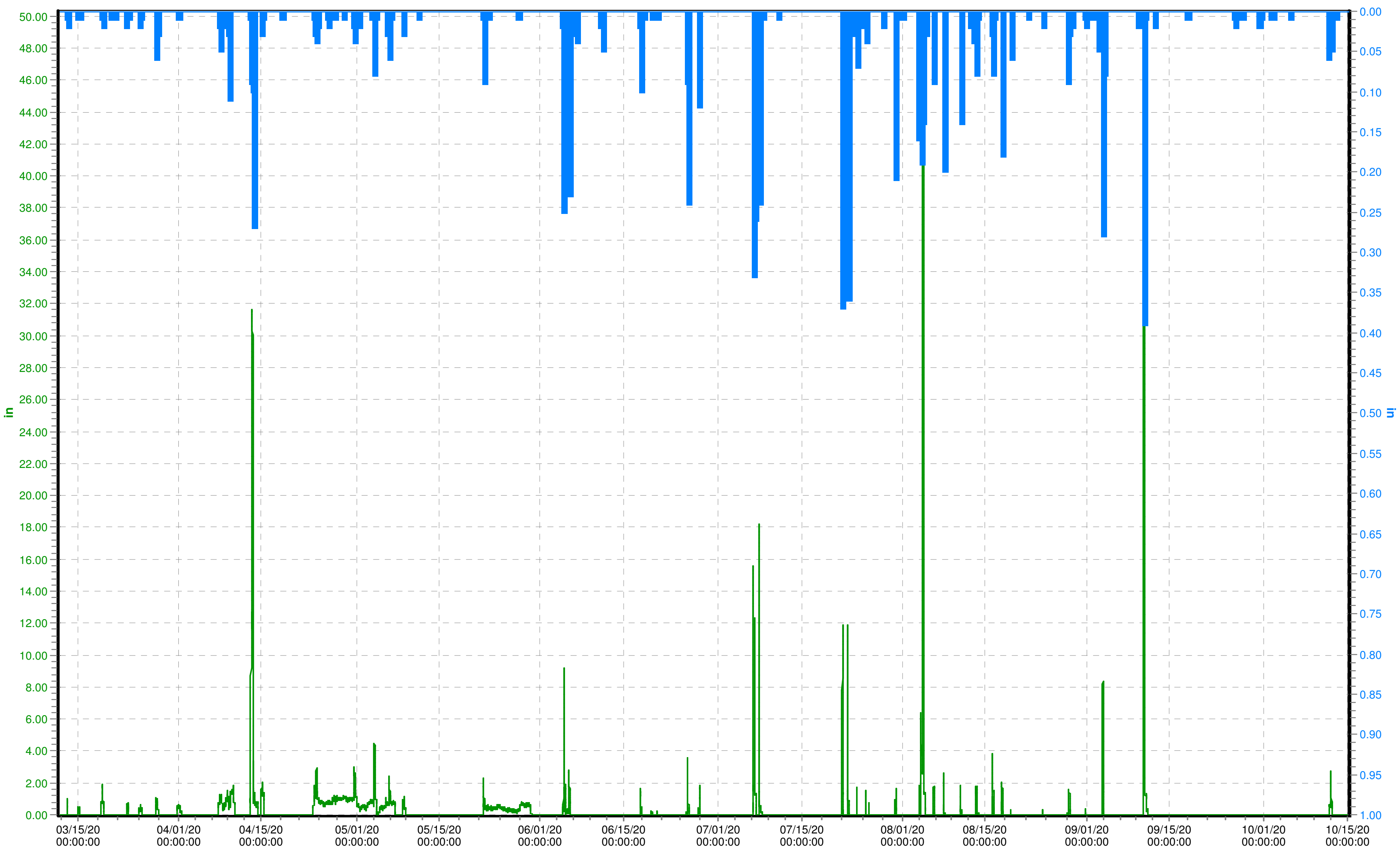
RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

2604

5411 Capitol ST-Well Depth (in): 40

☑ Depth (in) ☑ RCC RG Latin School.Rainfall (in)



(03/12/20 to 10/15/20)

Site Name/ Manhole ID:APP-2701

Address:38 Kennedy St NW

Latitude: N 38.956670°

Longitude: W -77.007393°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/11/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	46”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

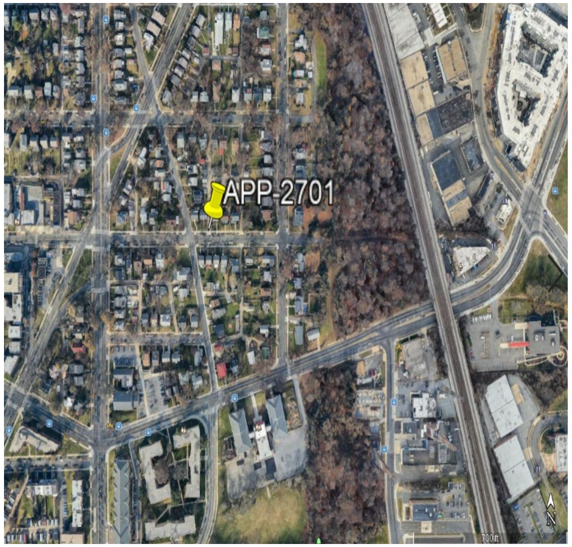
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

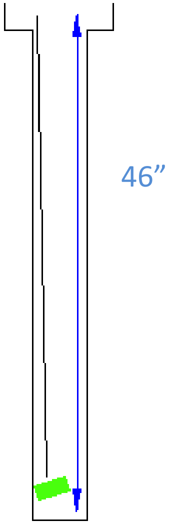


Detail Map

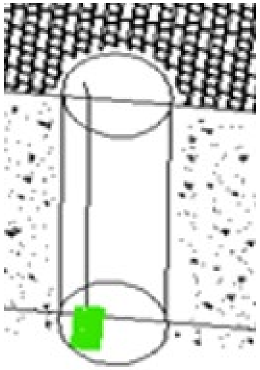
Site Area Overview

View from Top of Well

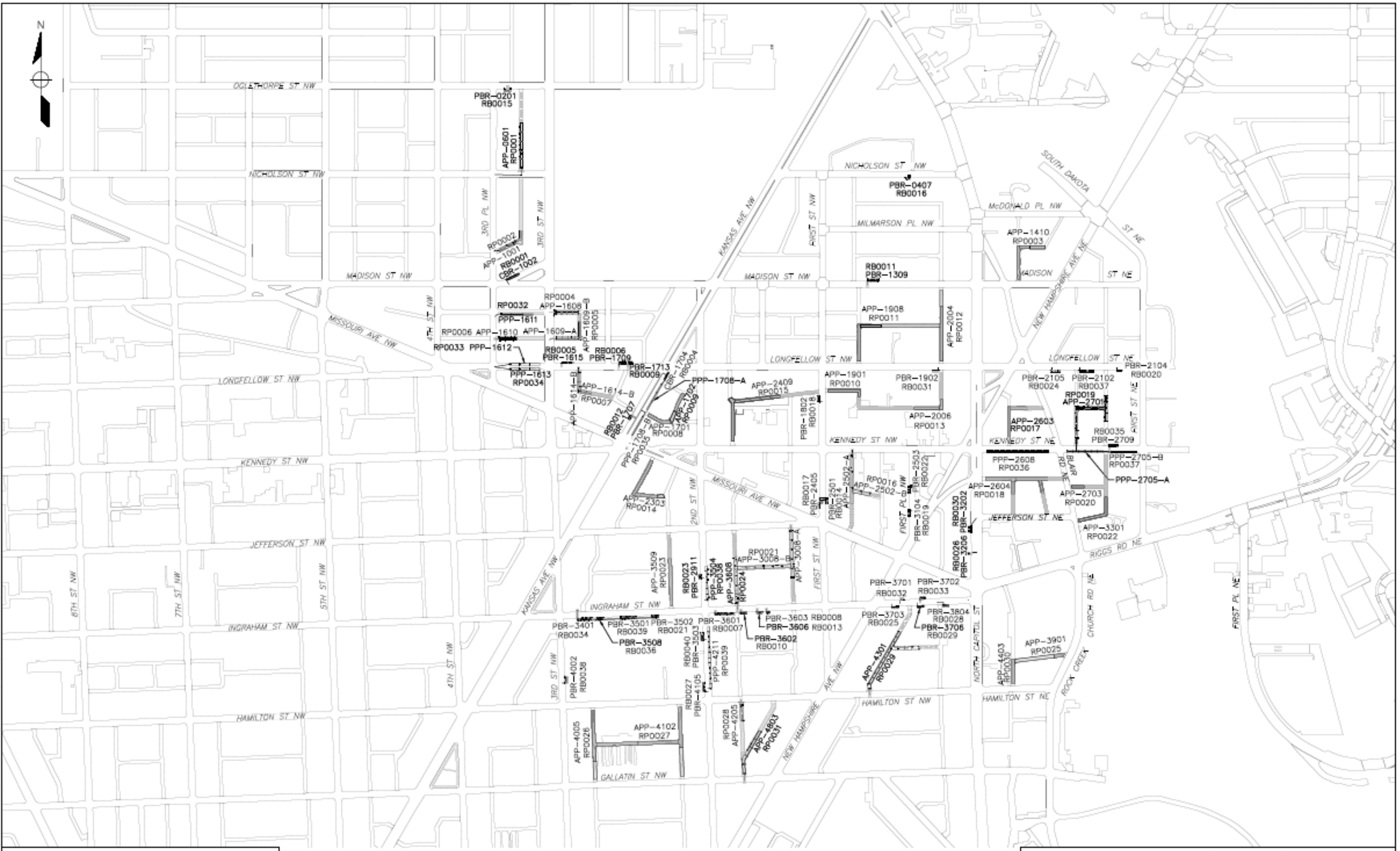
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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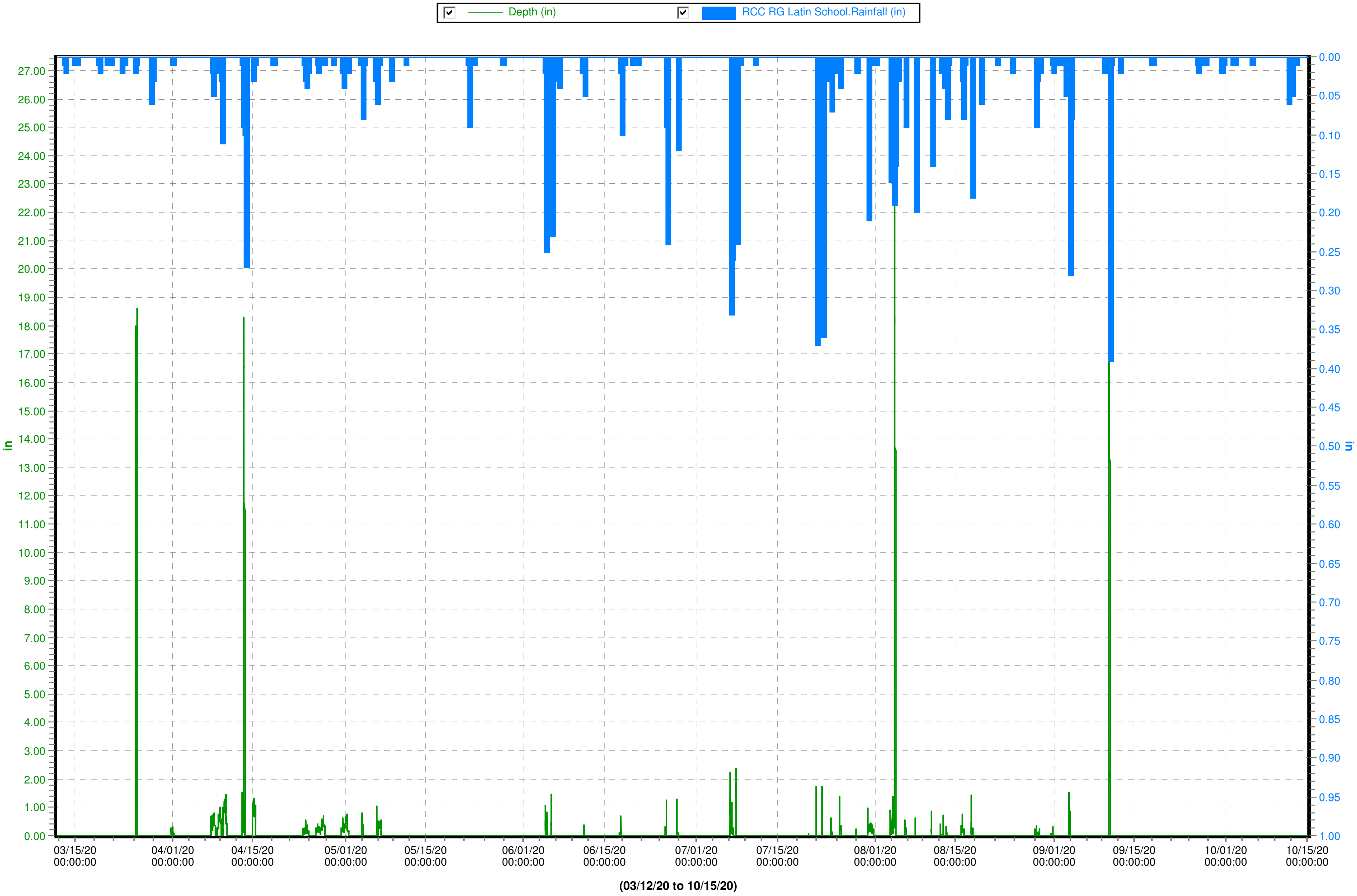
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

2701

38 Kennedy ST NW-Well Depth (in): 46



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: APP-2703

Address: 5425 Blair RD NE

Latitude: N 38.956098° Longitude: W -77.007455°

Investigation Date: 2/25/2020 Crew: LP/MH

Installation Date: 3/11/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	41”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

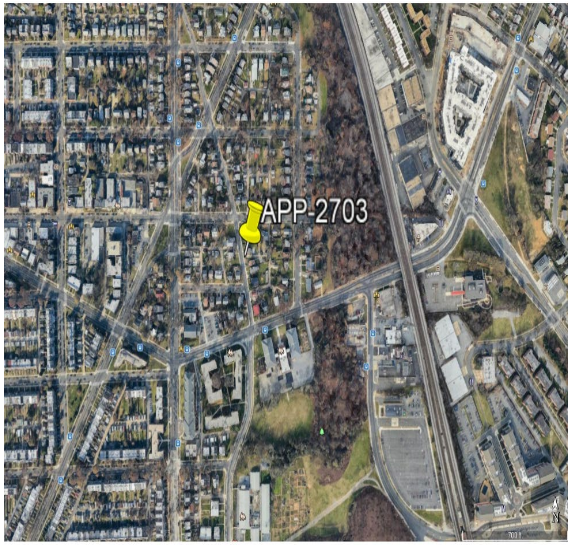
[✓ No]

Yes

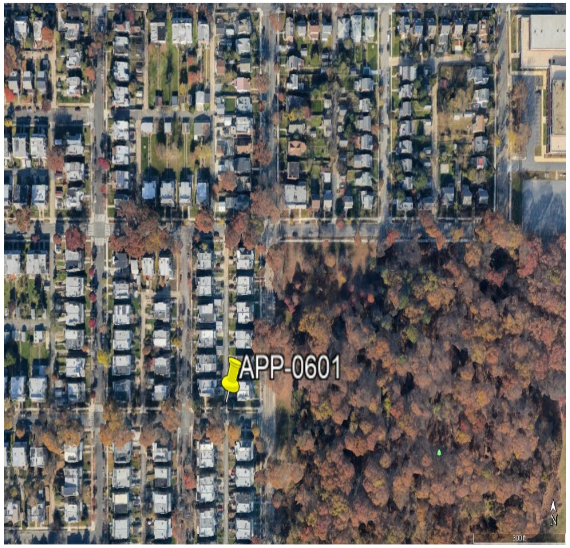
Hard Packed (in):

Soft (in):

Area Map



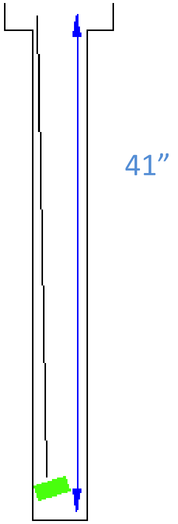
Detail Map



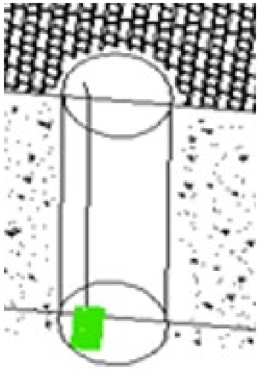
Site Area Overview

View from Top of Well

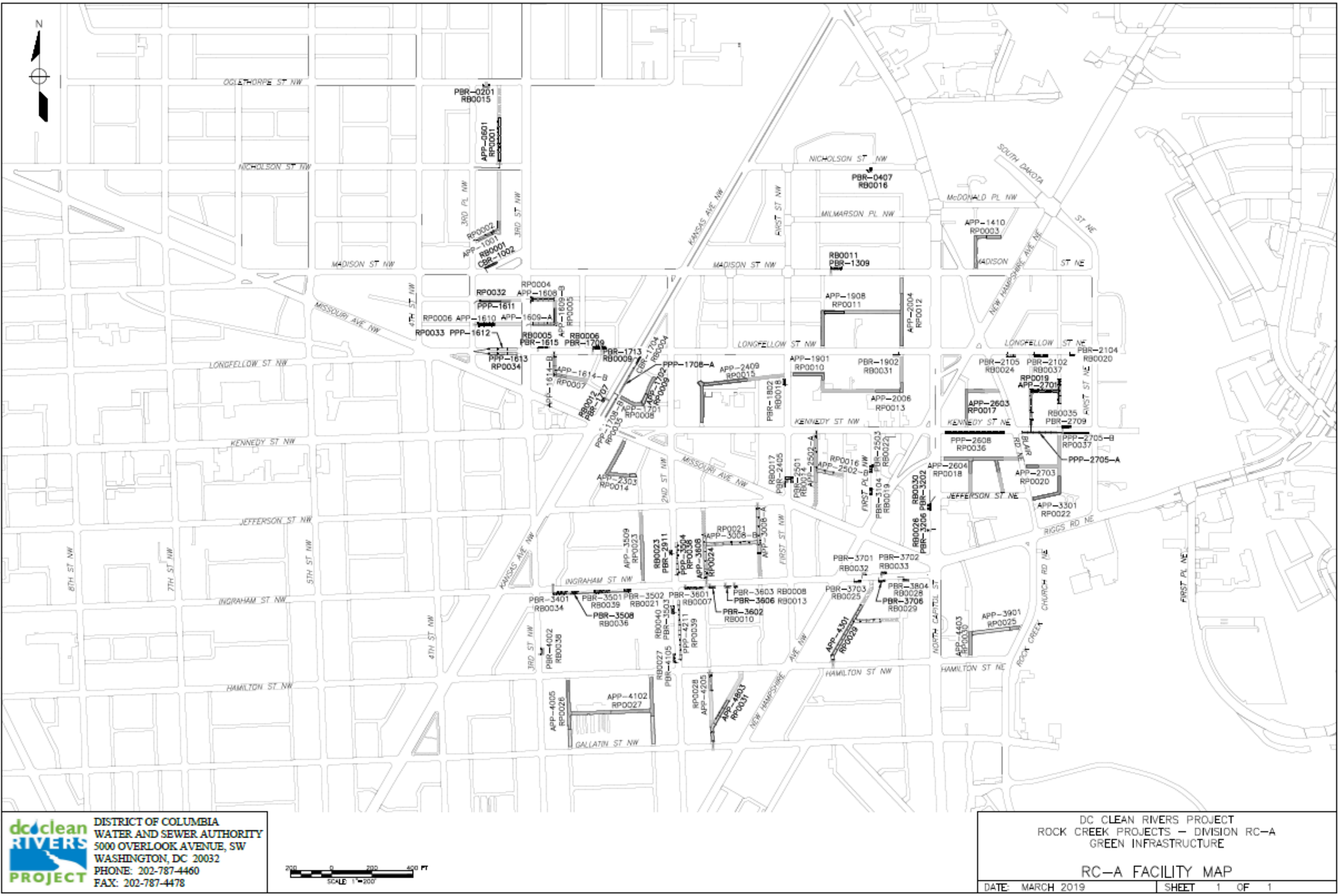
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

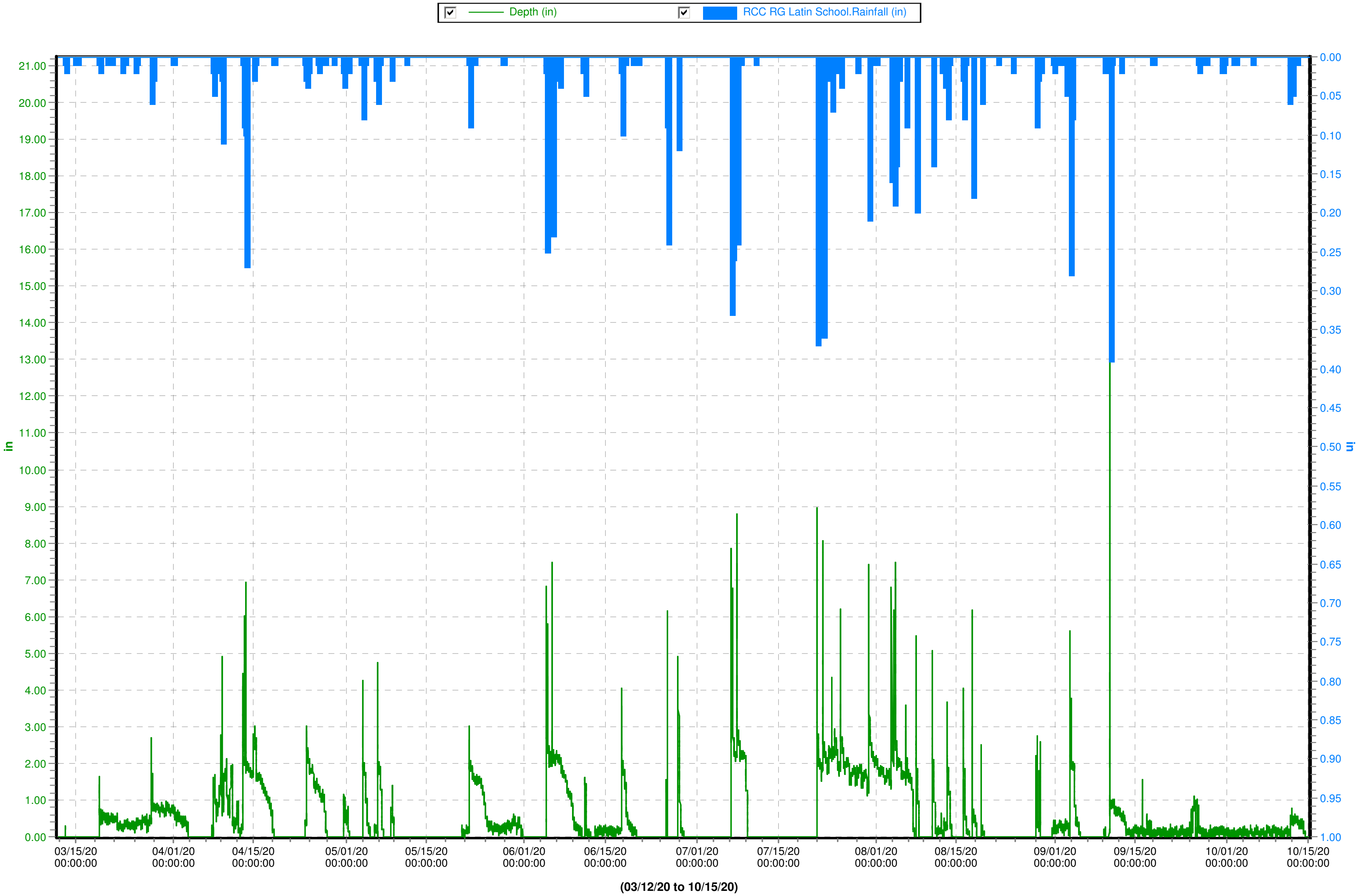


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2703

5425 Blair RD NE-Well Deoth (in): 41



Site Name/ Manhole ID:APP-3008-A

Address: 110 Jefferson ST NW

Latitude: N 38.955232° Longitude: W -77.012122°

Investigation Date: 2/26/2020 Crew: LP/MH

Installation Date: 3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	27"	-	-	-	-	-
Width	8"	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

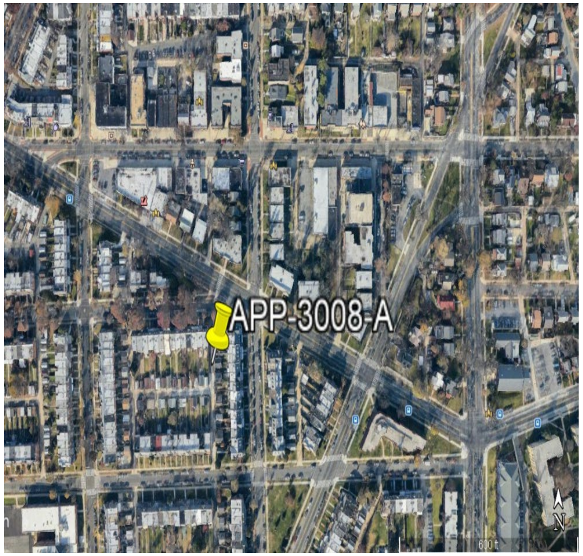
Yes

Hard Packed (in):

Soft (in):

Area Map

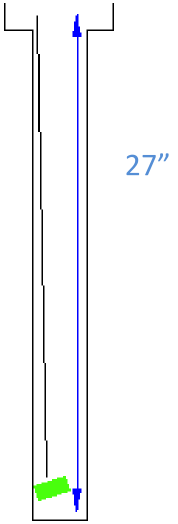
Detail Map



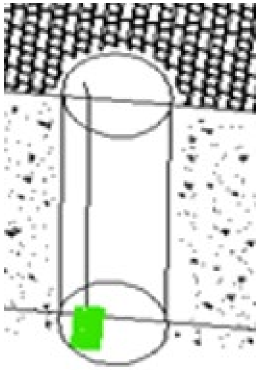
Site Area Overview

View from Top of Well

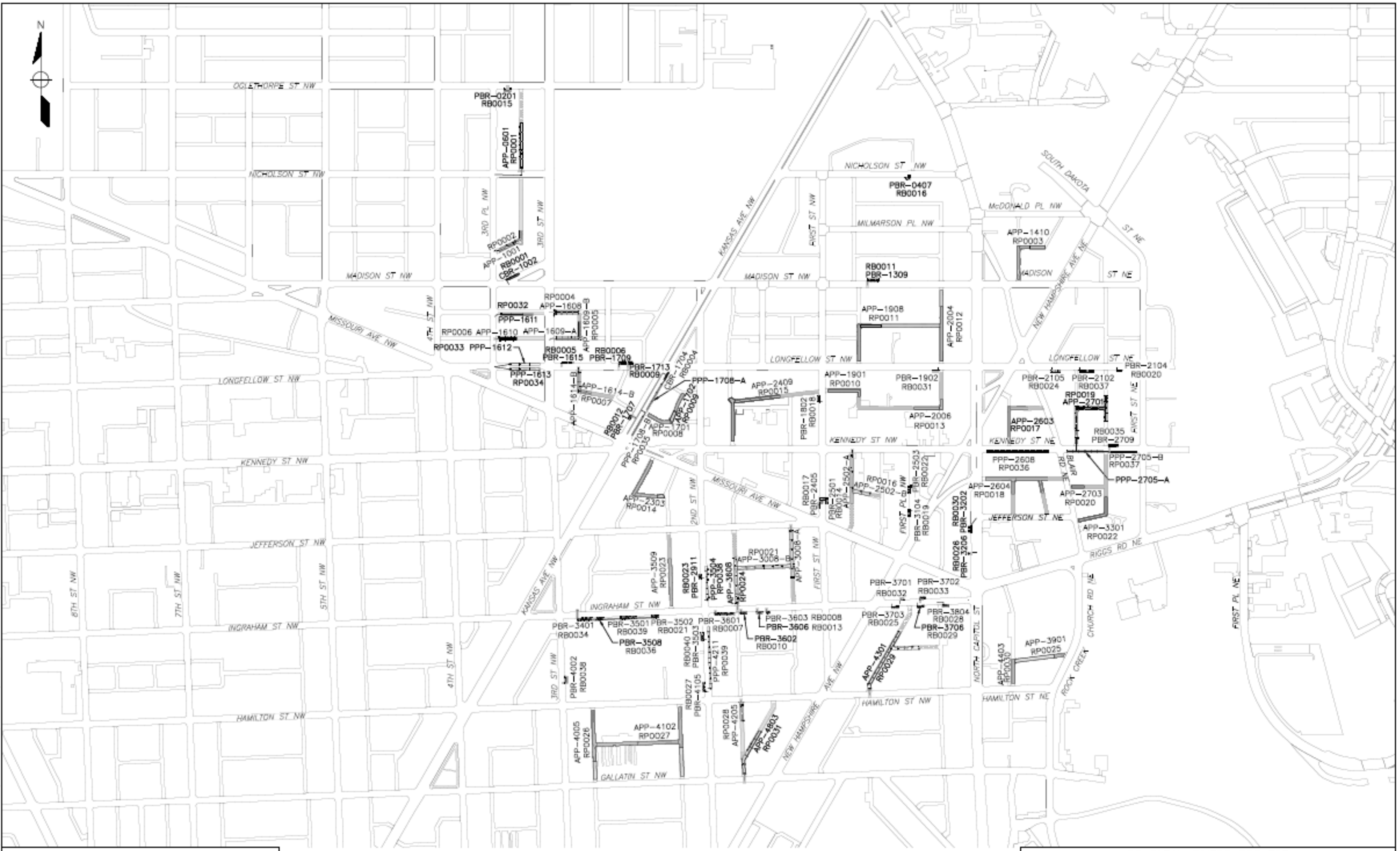
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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200 0 200 400 FT
SCALE: 1"=200'

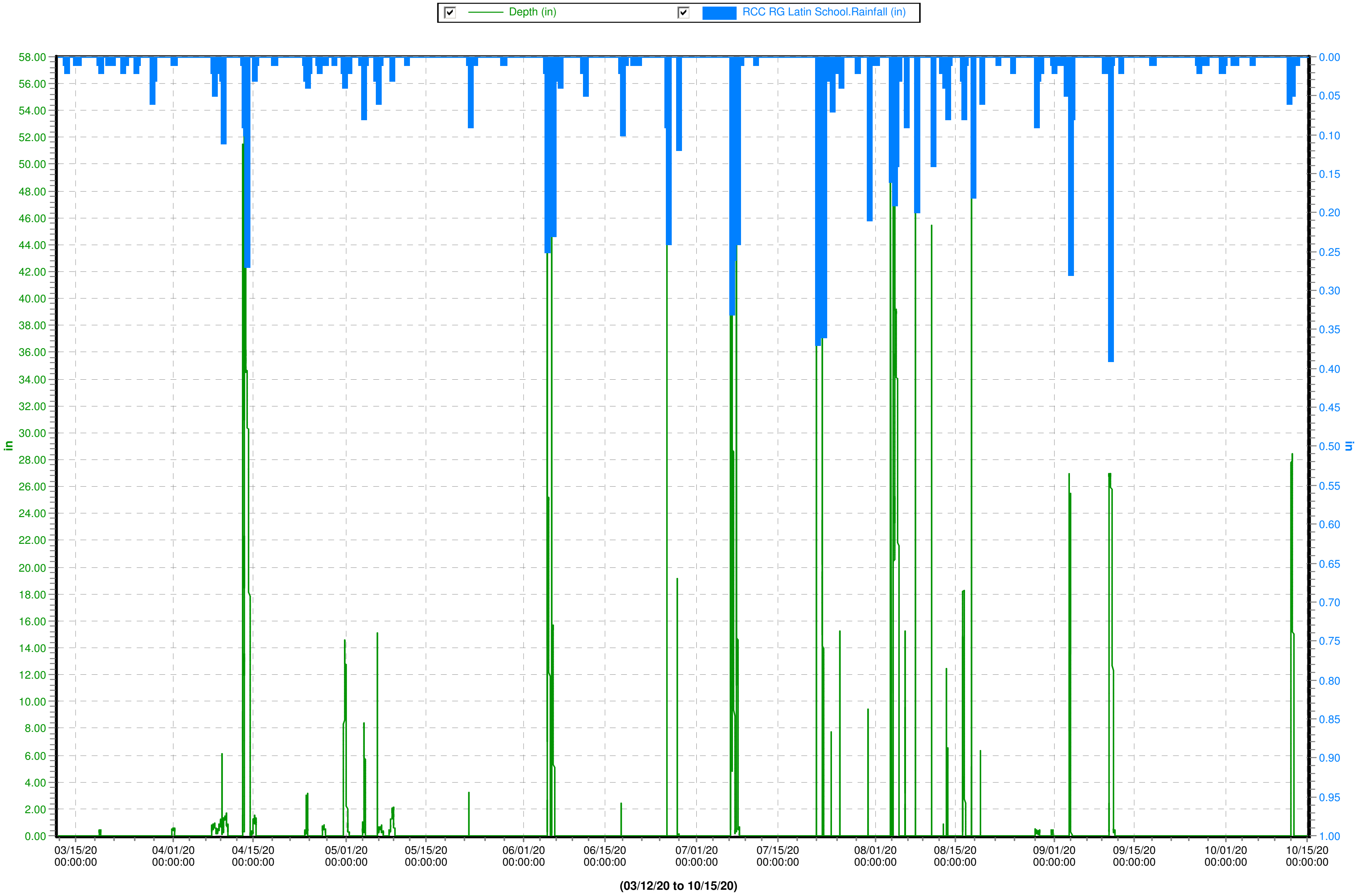
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

3008-A

110 Jefferson ST NW-Well Deoth (in): 52



Site Name/ Manhole ID:APP-3301

Address: 54 Riggs Rd NE

Latitude: N 38.955651° Longitude: W -77.007333°

Investigation Date:2/25/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	40.5”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

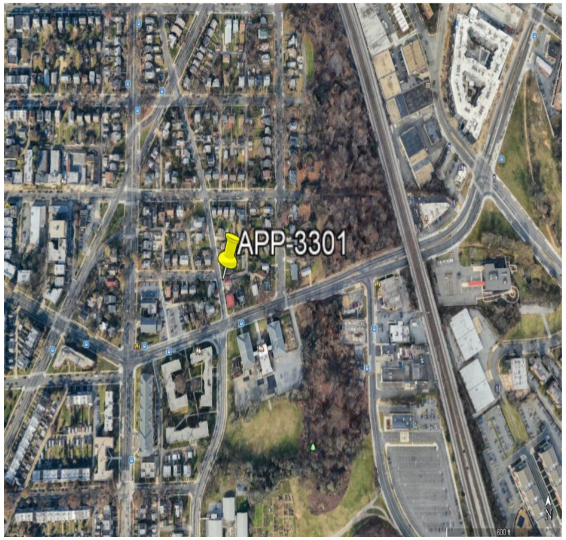
[✓ No]

Yes

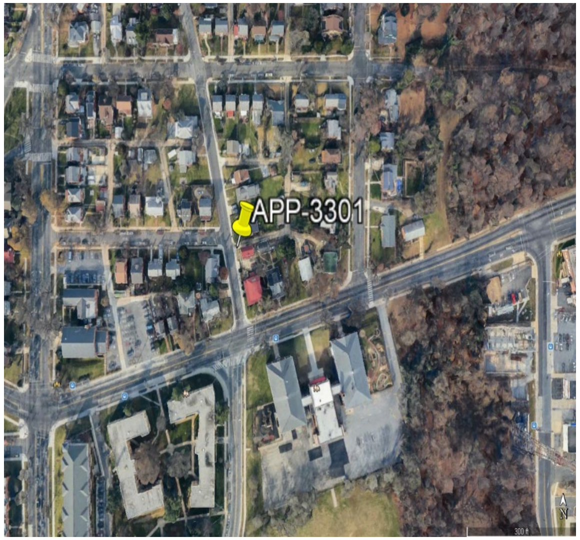
Hard Packed (in):

Soft (in):

Area Map



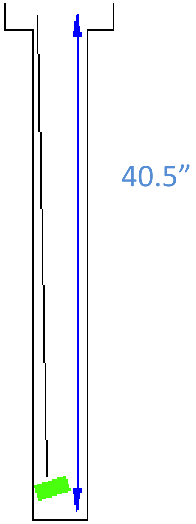
Detail Map



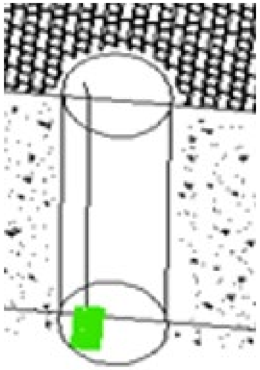
Site Area Overview

View from Top of Well

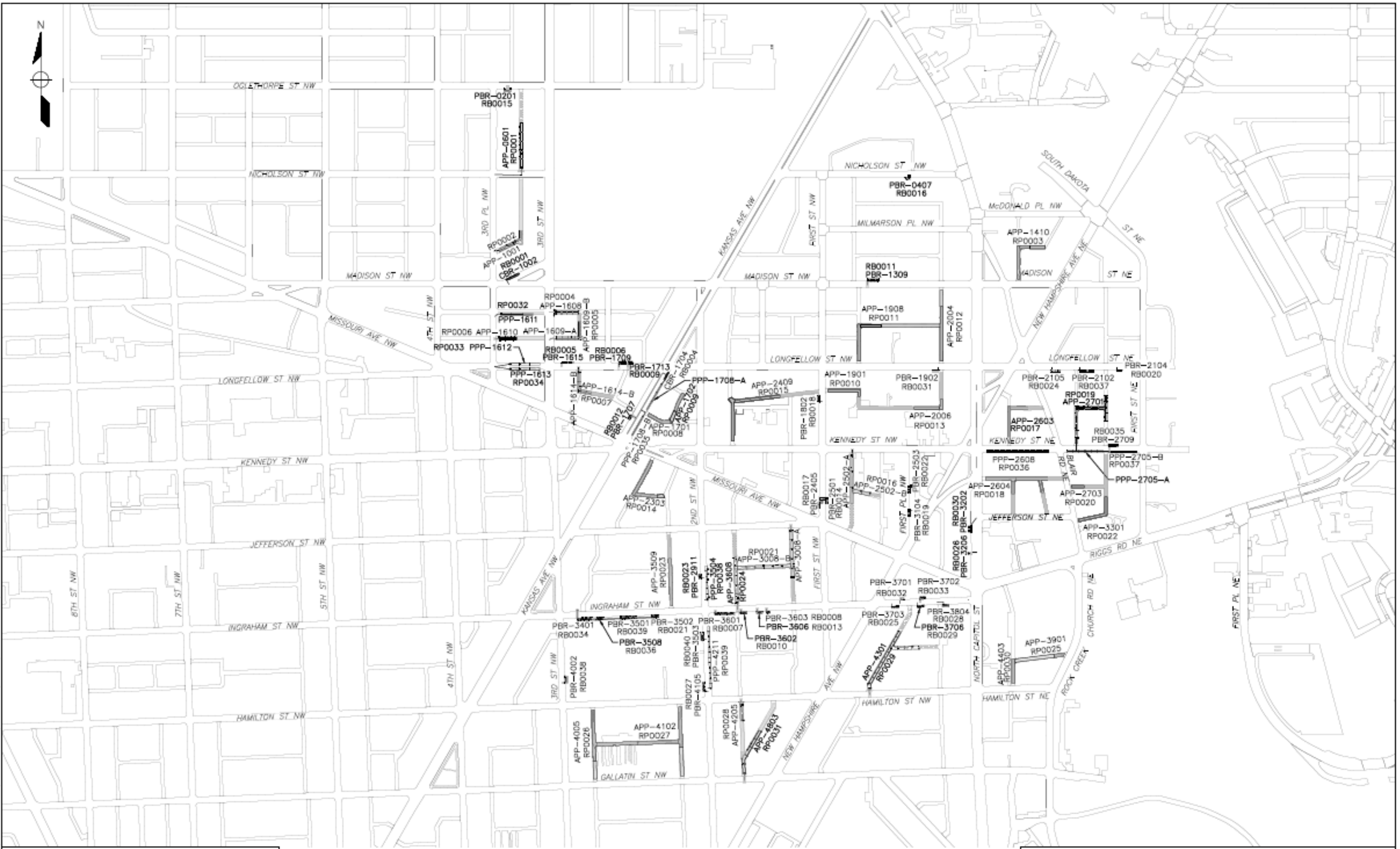
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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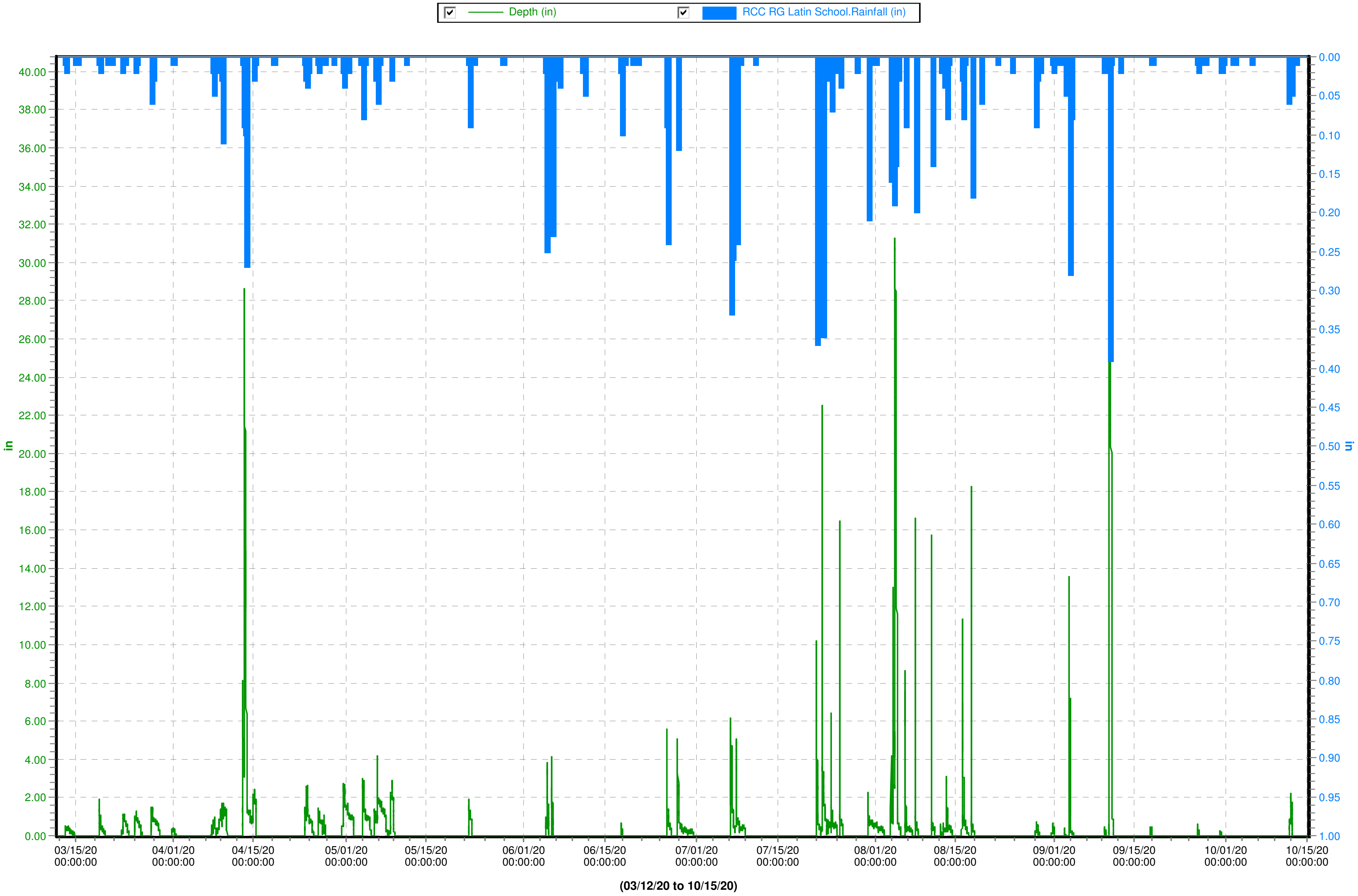
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

3301

54 Riggs RD NE-Well Deph (in): 40.5



Site Name/ Manhole ID: APP-3509

Address:217 Ingraham St NW

Latitude: N 38.954680°
Longitude: W -77.014156°

Investigation Date:2/26/2020
Crew: LP/MH

Installation Date:3/11/2020
Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	47”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

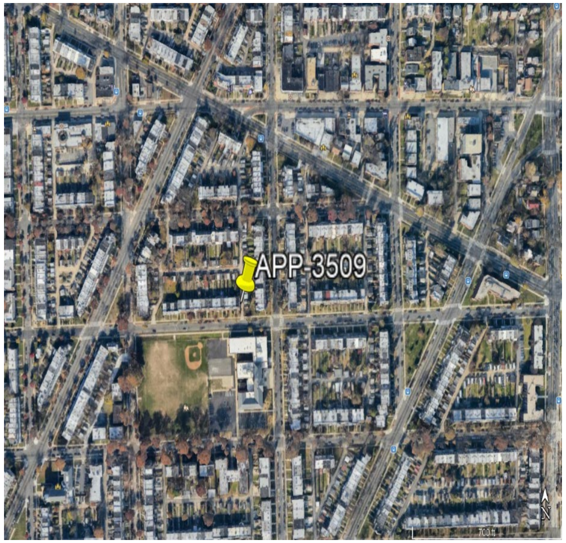
Sediment Present:

[✓ No]
Yes

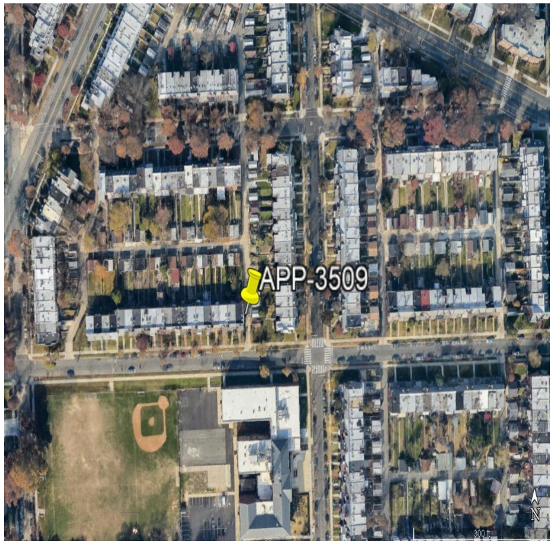
Hard Packed (in):

Soft (in):

Area Map



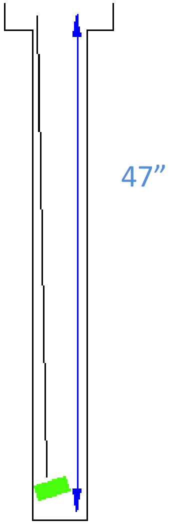
Detail Map



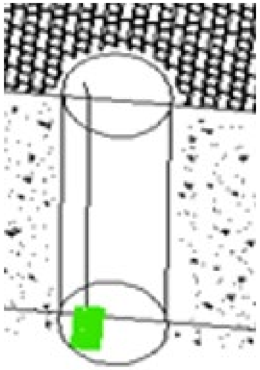
Site Area Overview

View from Top of Well

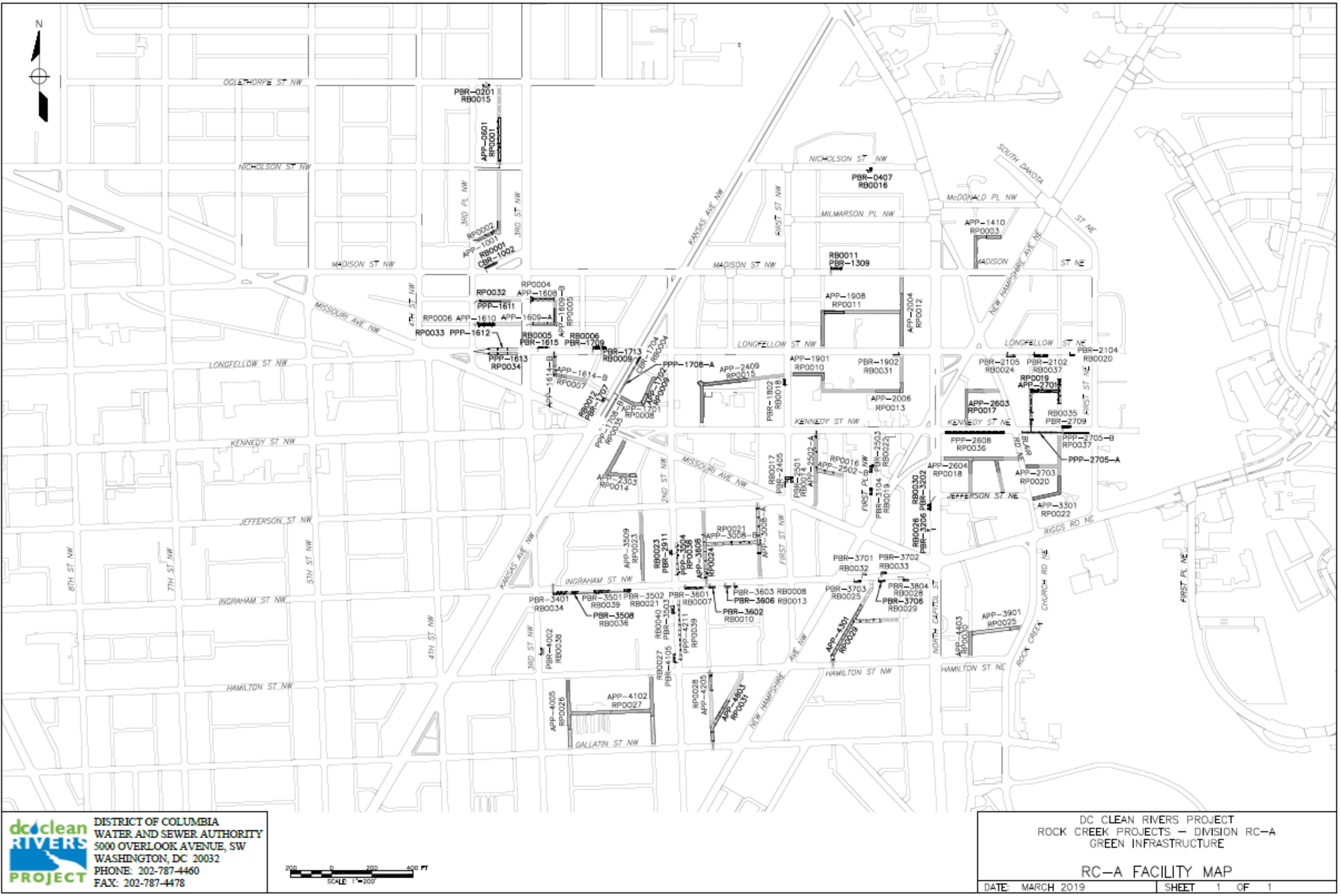
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

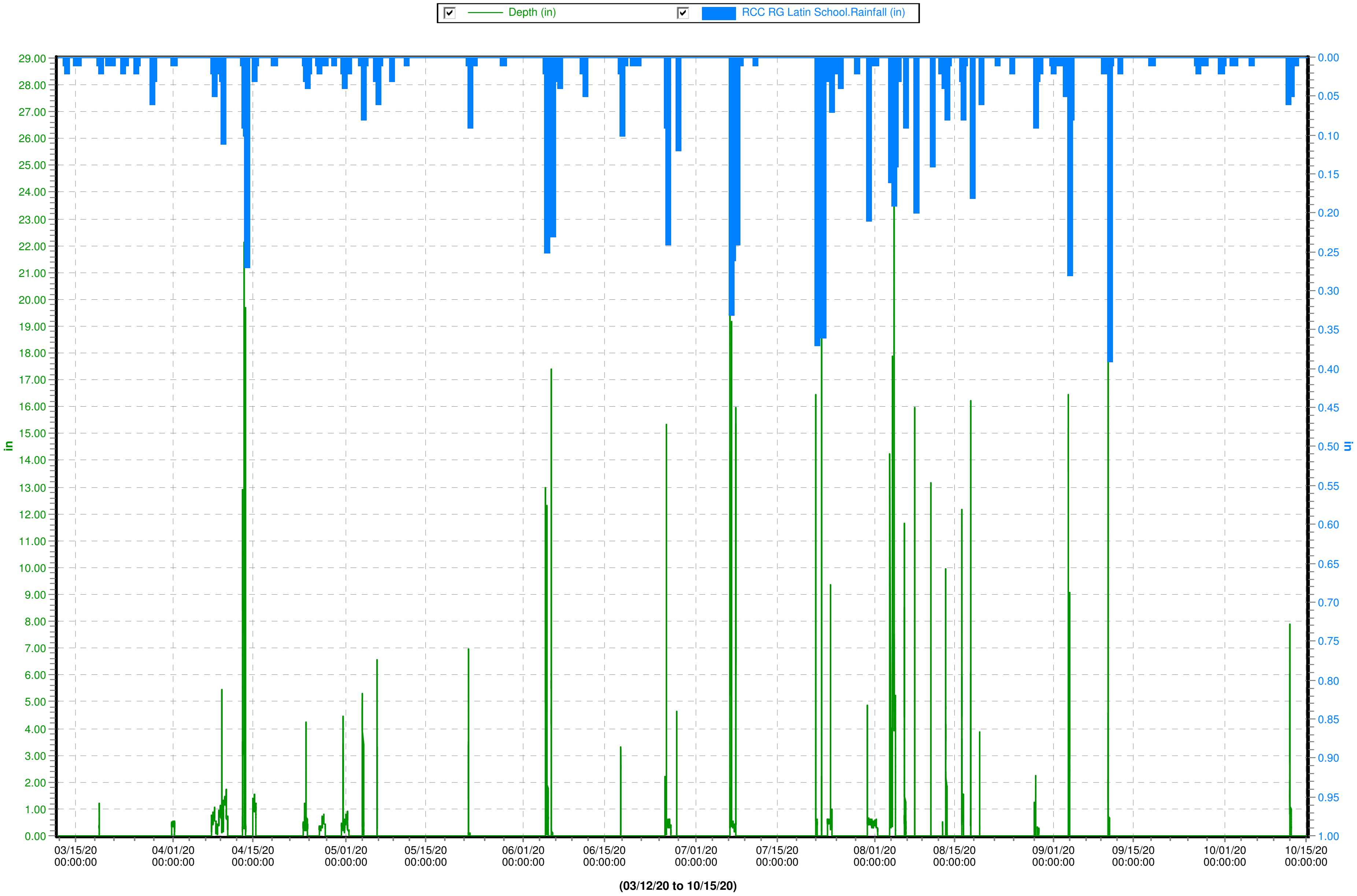


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3509

217 Ingraham ST NW-Well Deprh (in): 47



Site Name/ Manhole ID: APP-3901

Address:5231 Rock Creek Church Rd NE

Latitude: N 38.953895° Longitude: W -77.007607°

Investigation Date:2/25/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	40.5	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

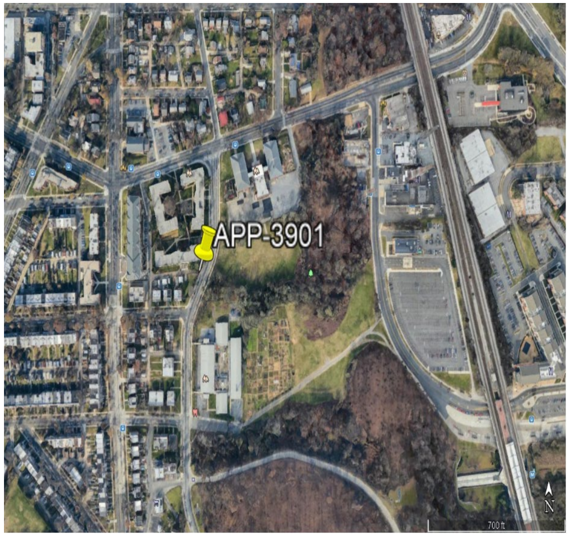
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

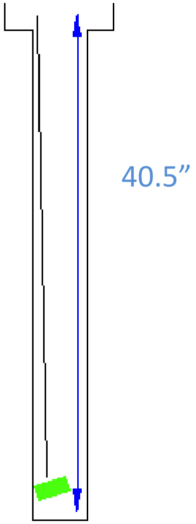


Detail Map

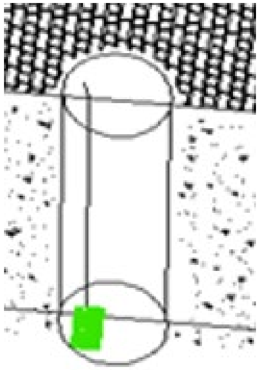
Site Area Overview

View from Top of Well

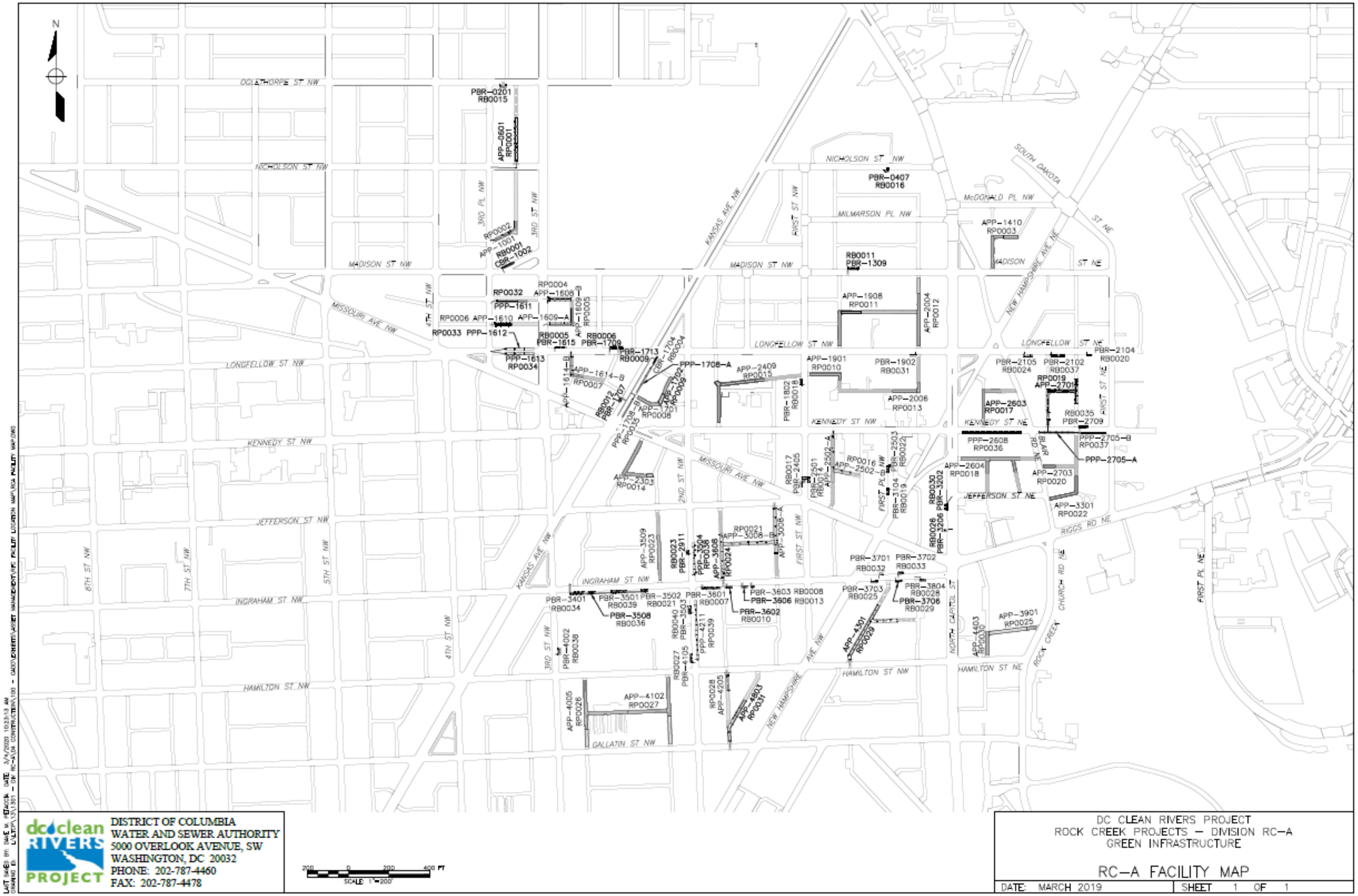
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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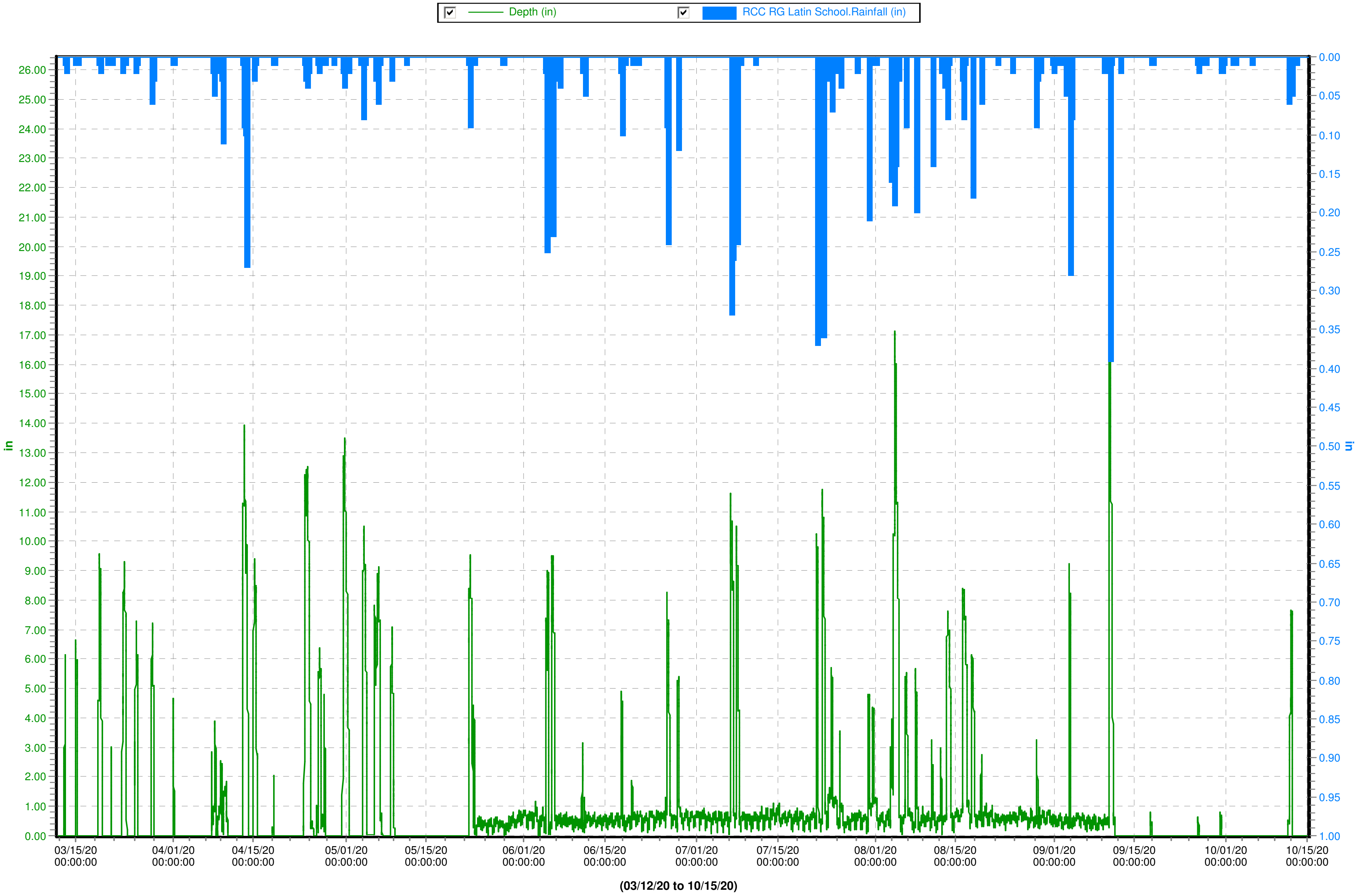
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

3901

5231 Rock Creek Church RD NE-Well Depth (in): 40.5



Site Name/ Manhole ID: APP-4005

Address: Behind 254 Hamilton St NW

Latitude: N 38.953091° Longitude: W -77.015438°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 3

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	40”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No] Yes

Hard Packed (in):

Soft (in):

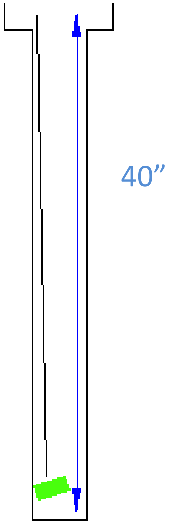
Area Map

Detail Map

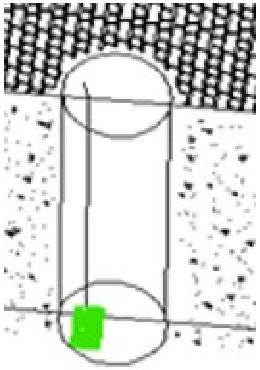
Site Area Overview

View from Top of Well

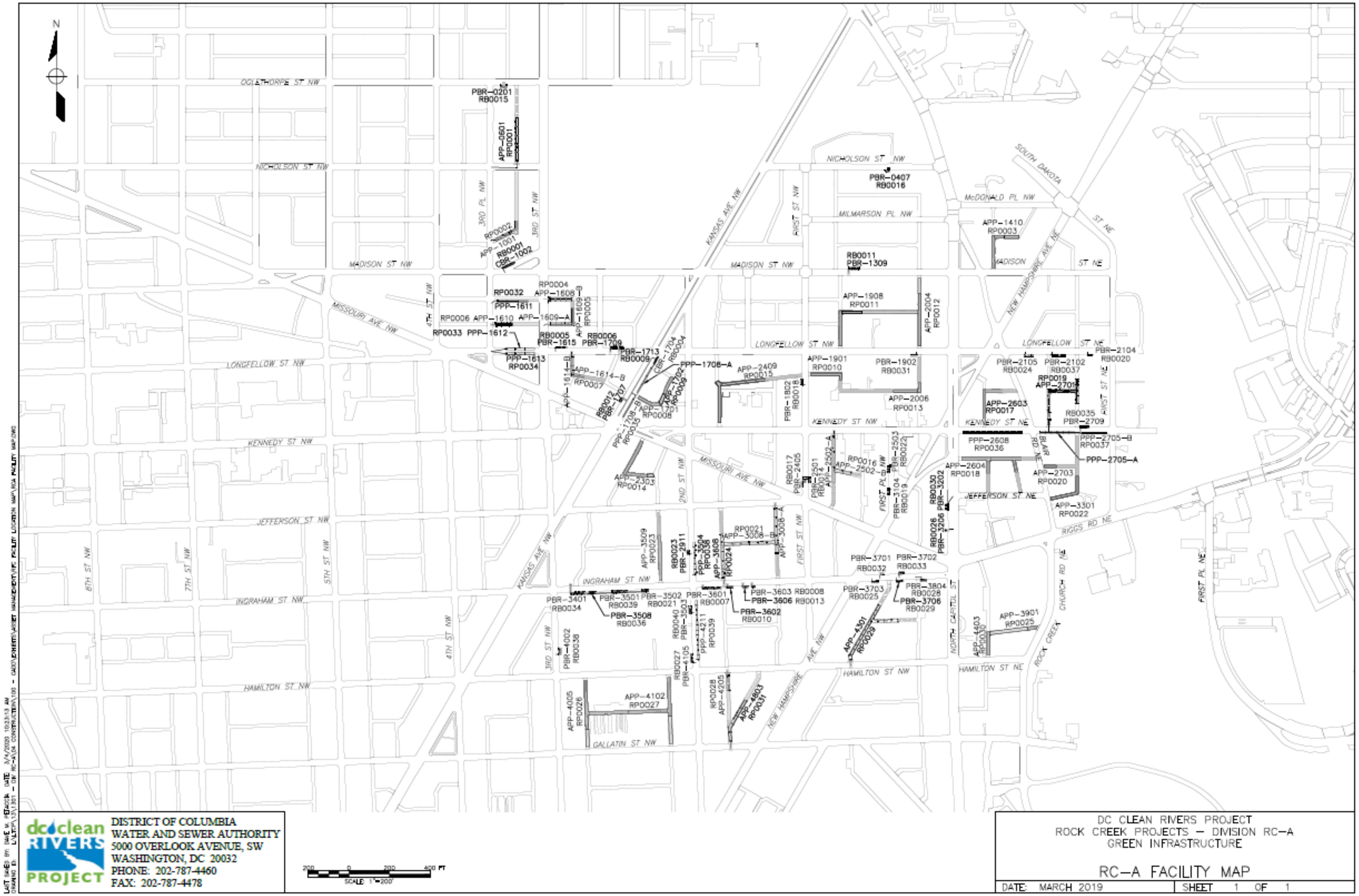
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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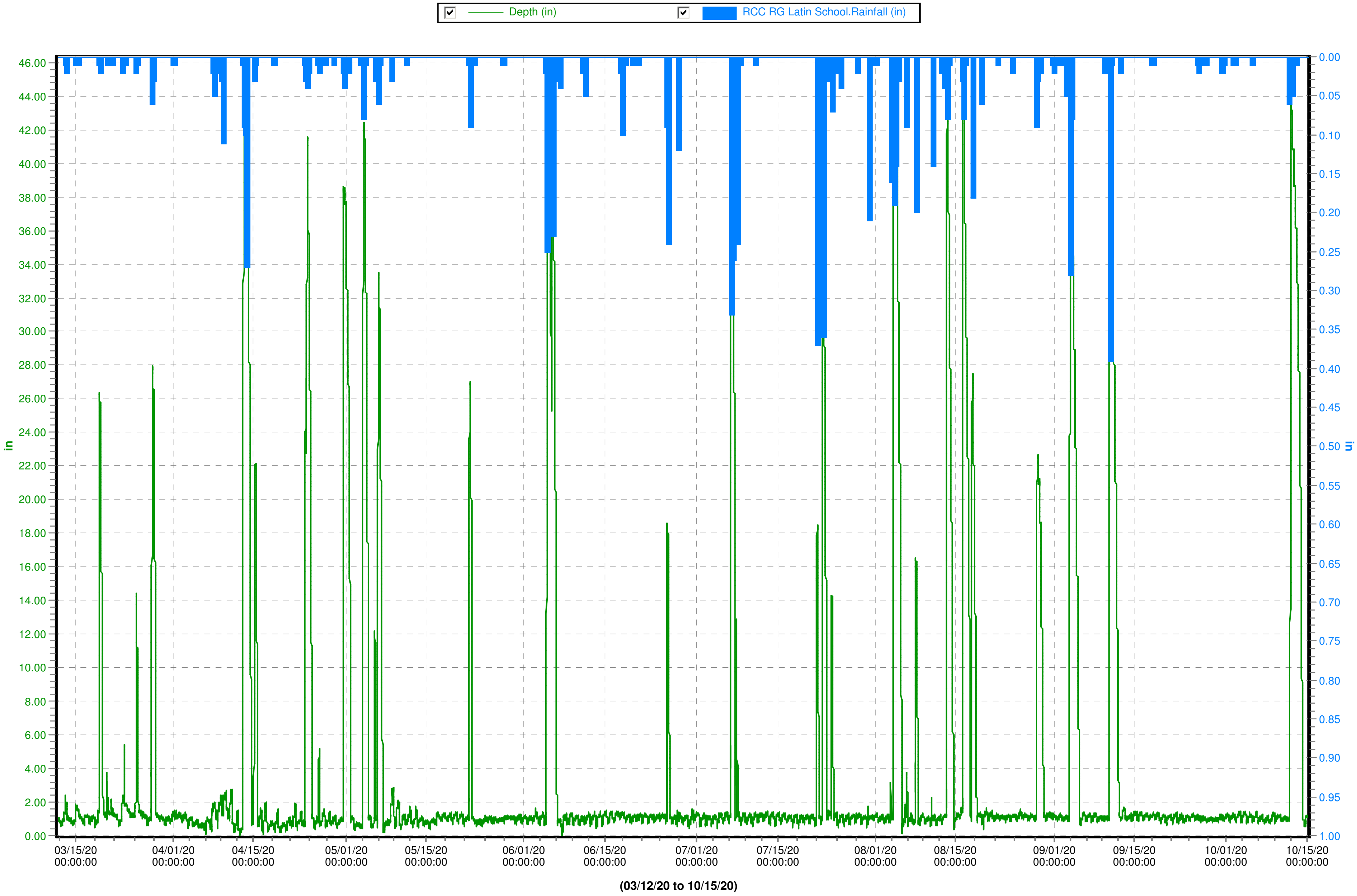
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

4005

Behond 254 Hamilton ST NW-Well Depth (in): 40



Site Name/ Manhole ID: APP-4102

Address: Behind 5100 2nd St NW

Latitude: N 38.952354° Longitude: W -77.013946°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	40”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

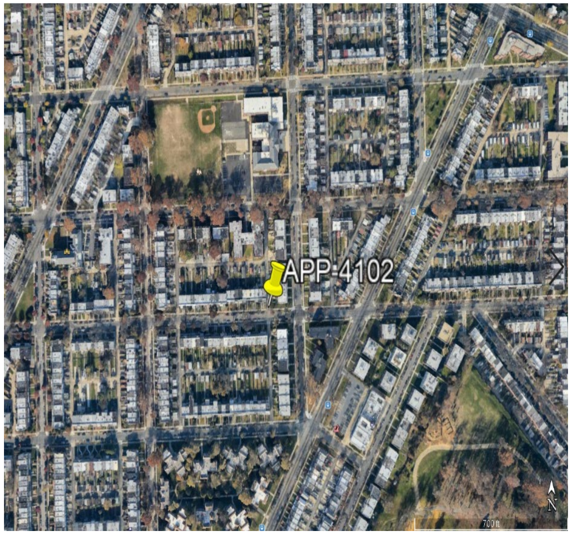
[✓ No]

Yes

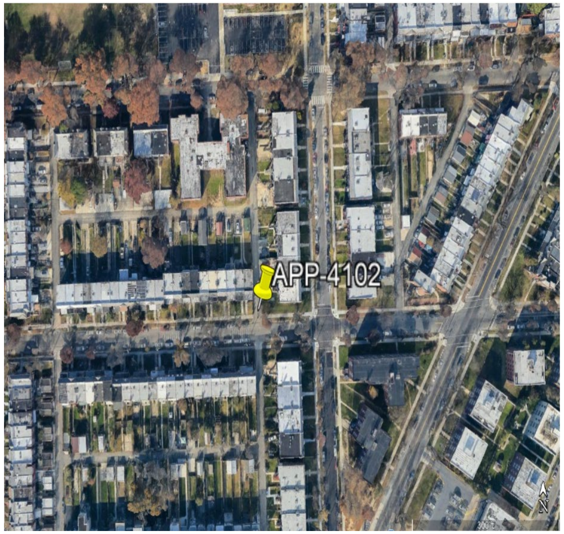
Hard Packed (in):

Soft (in):

Area Map



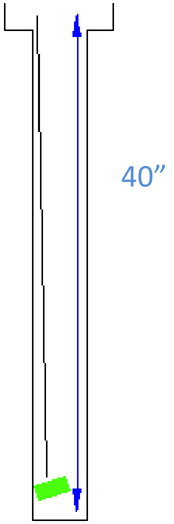
Detail Map



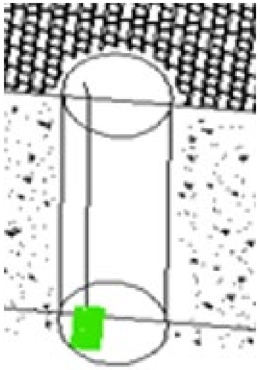
Site Area Overview

View from Top of Well

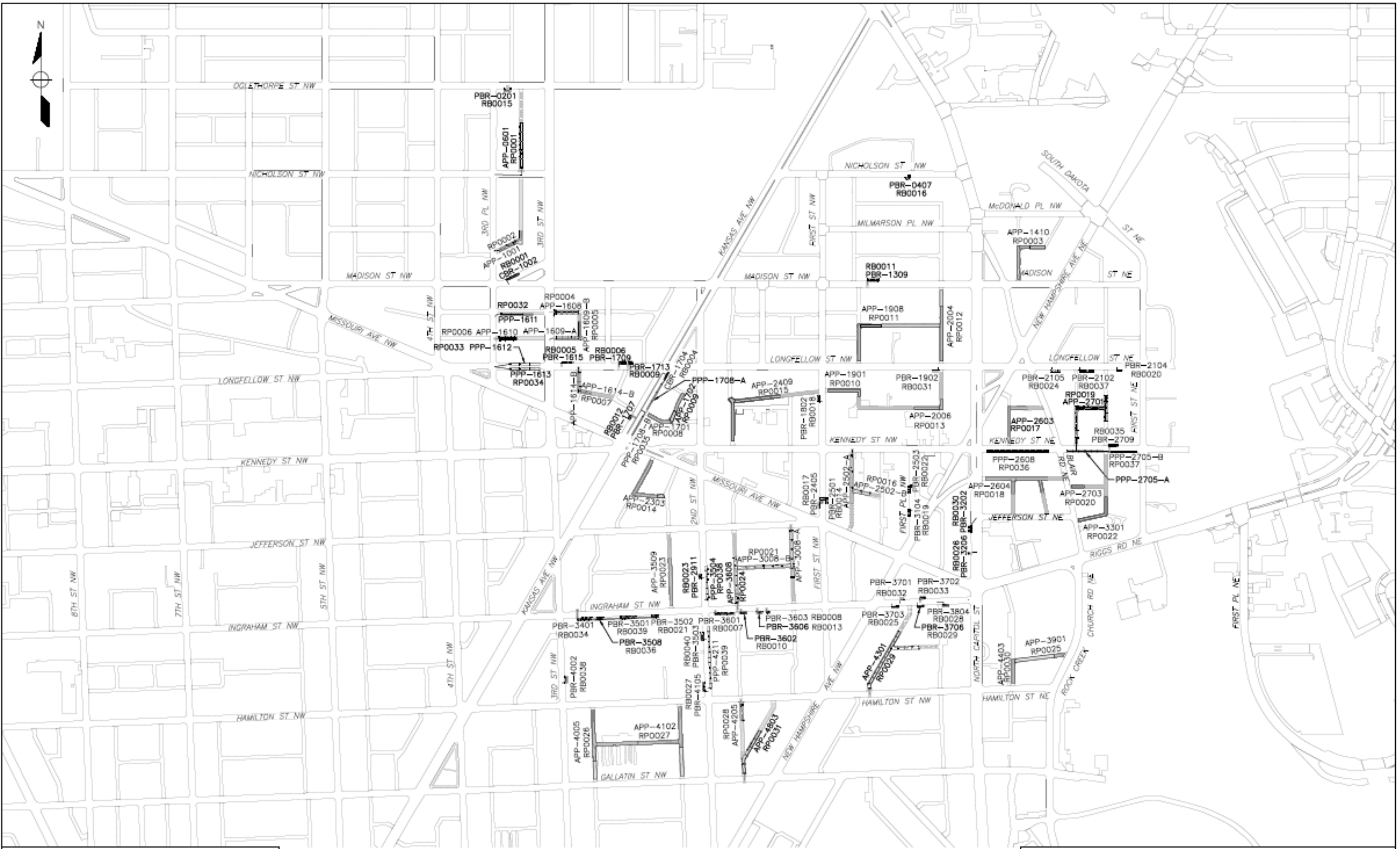
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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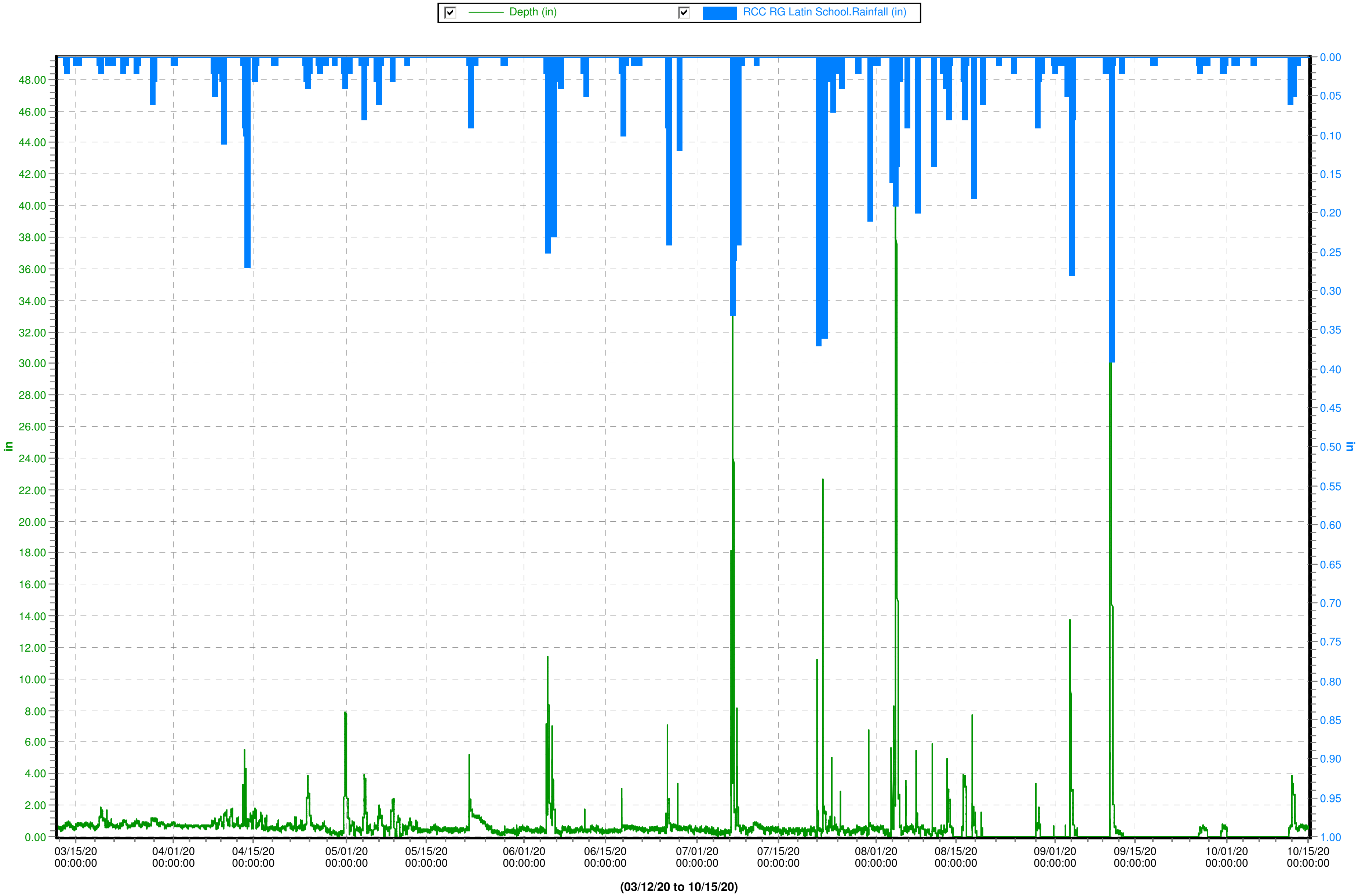
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

4102

Behind 5100 2nd ST NW-Well Depth (in): 40



Site Name/ Manhole ID: APP-4205

Address: 128 Hamilton St NW

Latitude: N 38.953236°

Longitude: W -77.012973°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	47”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

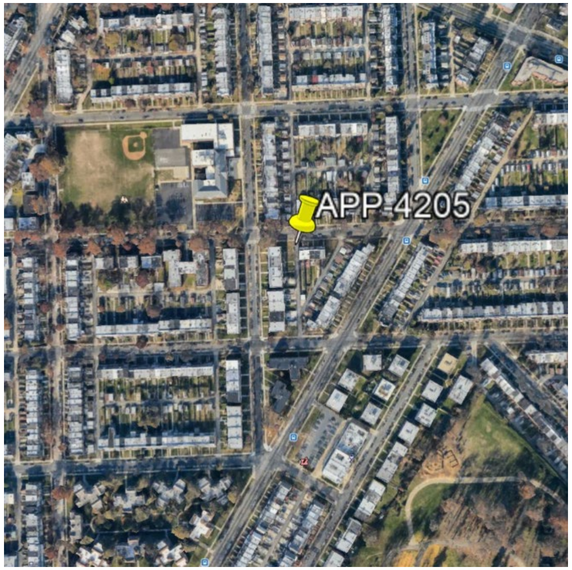
[✓ No]

Yes

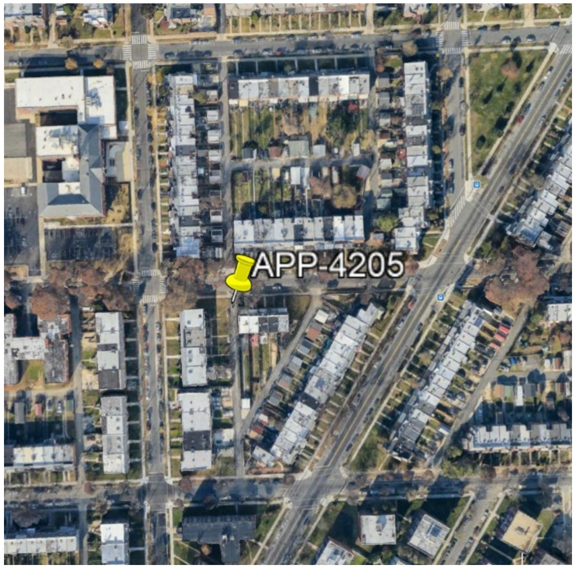
Hard Packed (in):

Soft (in):

Area Map



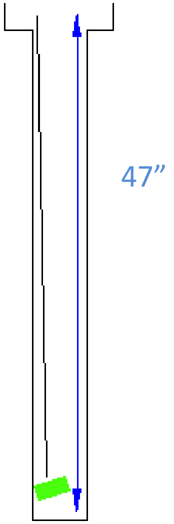
Detail Map



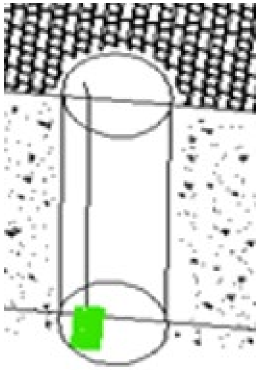
Site Area Overview

View from Top of Well

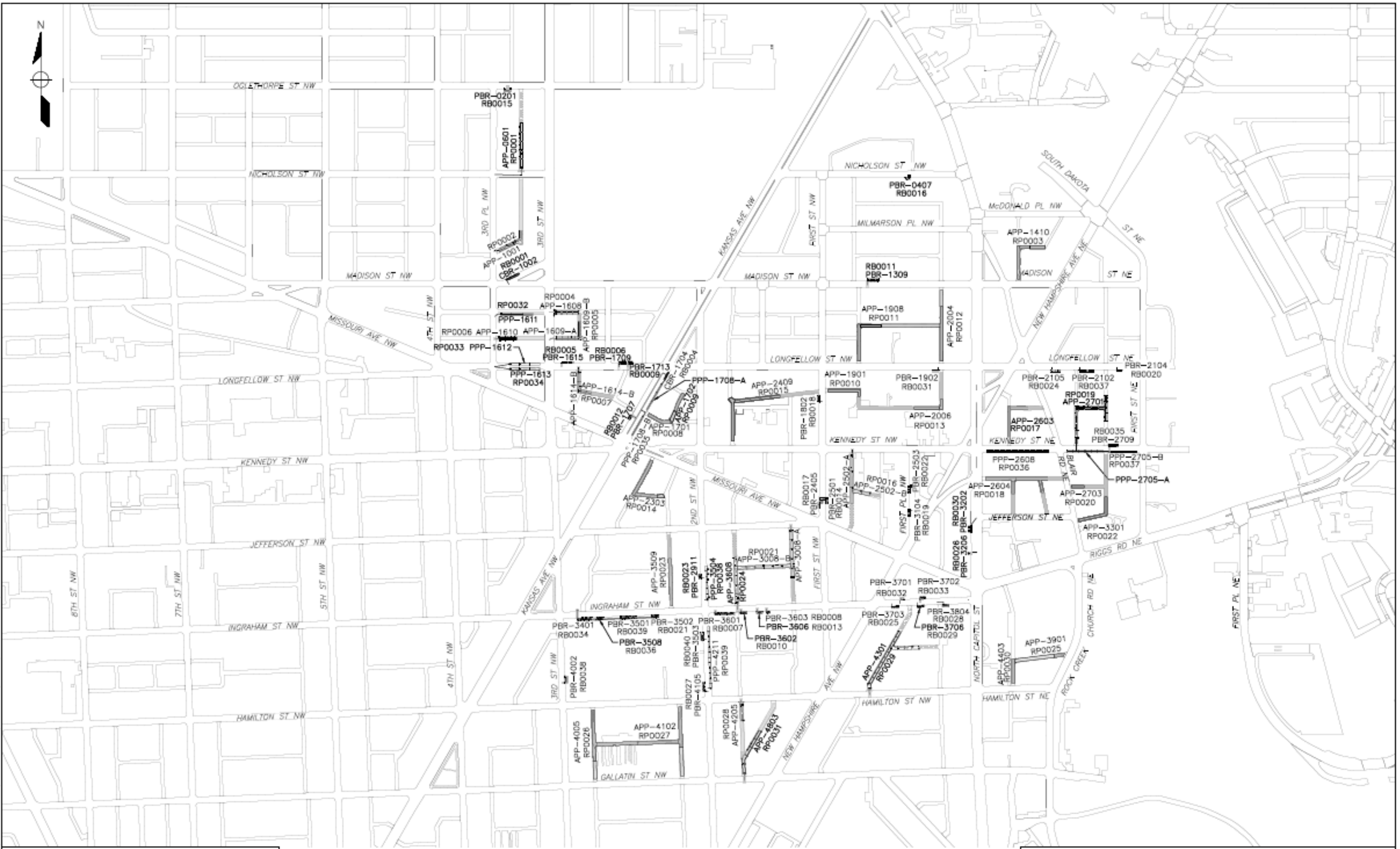
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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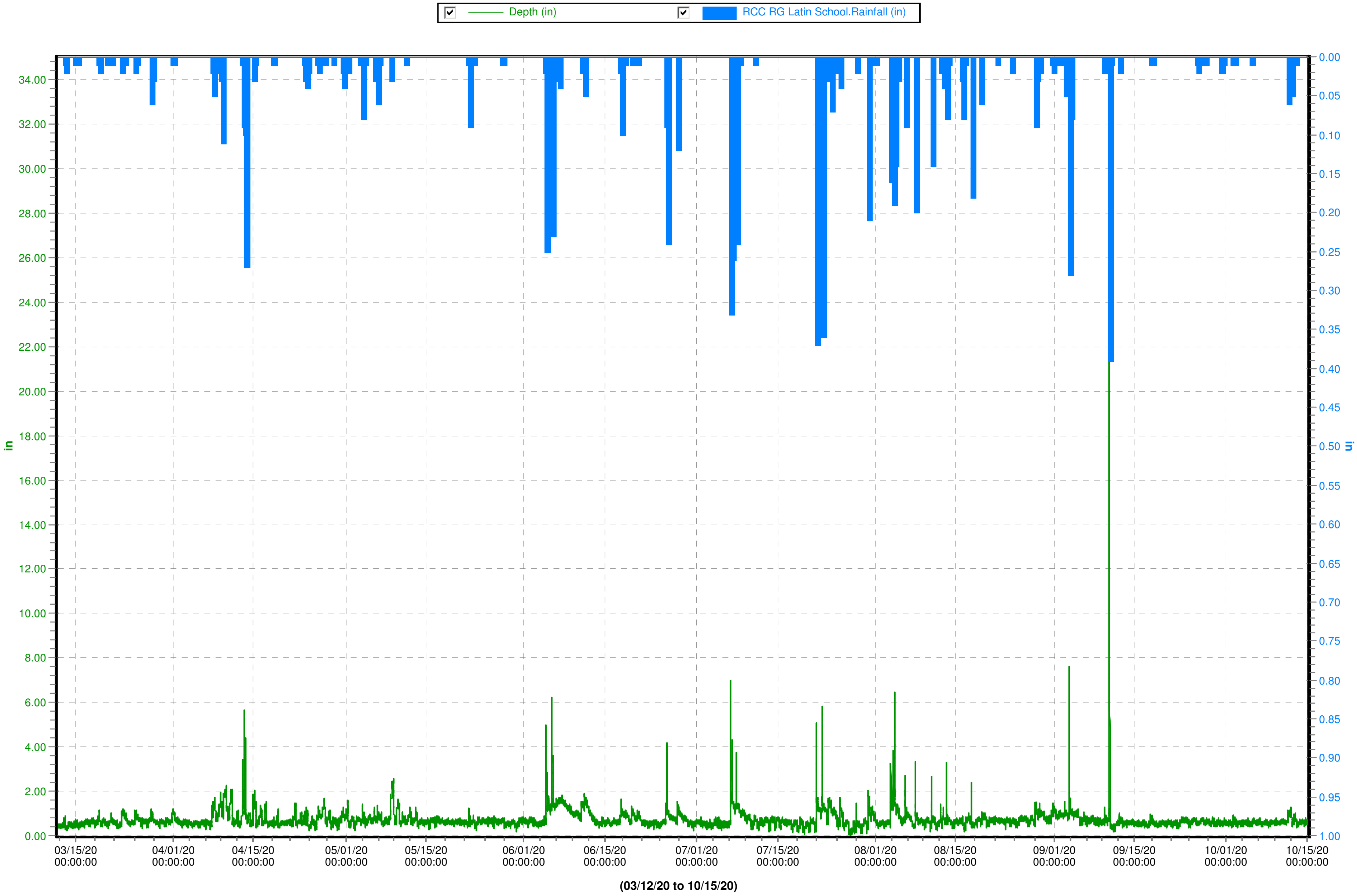
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

4205

128 Hamilton ST NW-Well Depth (in): 47



Site Name/ Manhole ID: APP-4301

Address54 HamiltonSt NW:

Latitude: N 38.952396° Longitude: W -77.011665°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	50.5	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

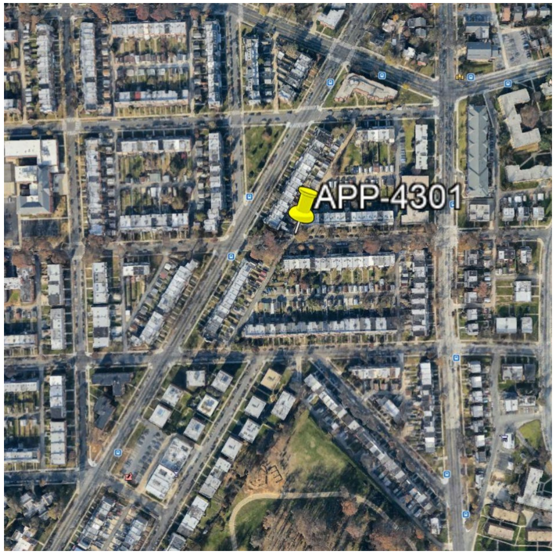
[✓ No]

Yes

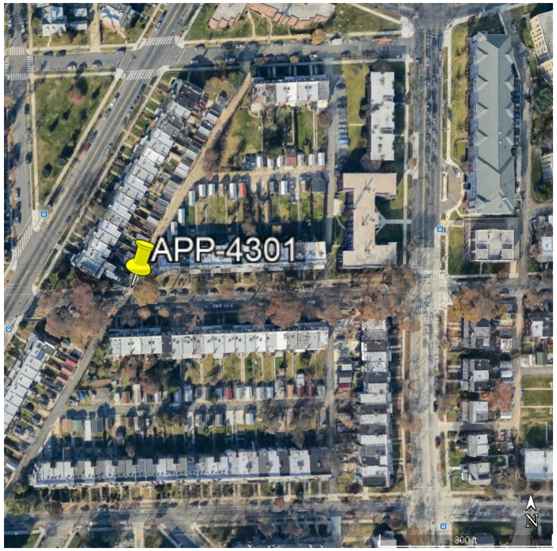
Hard Packed (in):

Soft (in):

Area Map



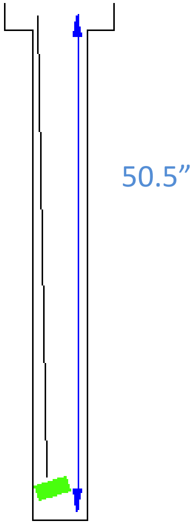
Detail Map



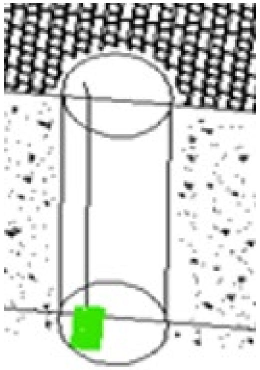
Site Area Overview

View from Top of Well

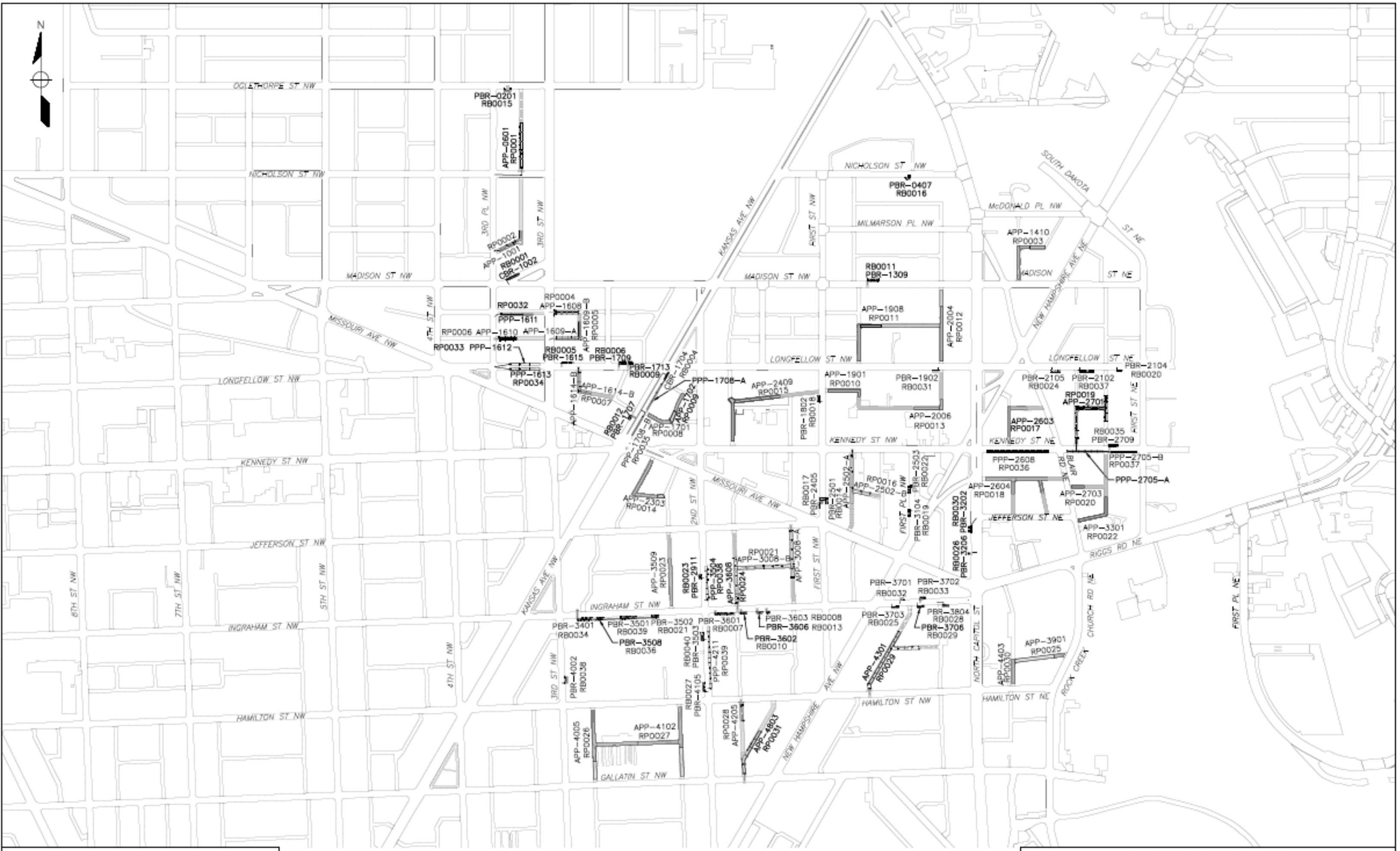
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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200 0 200 400 FT
SCALE 1"=200'

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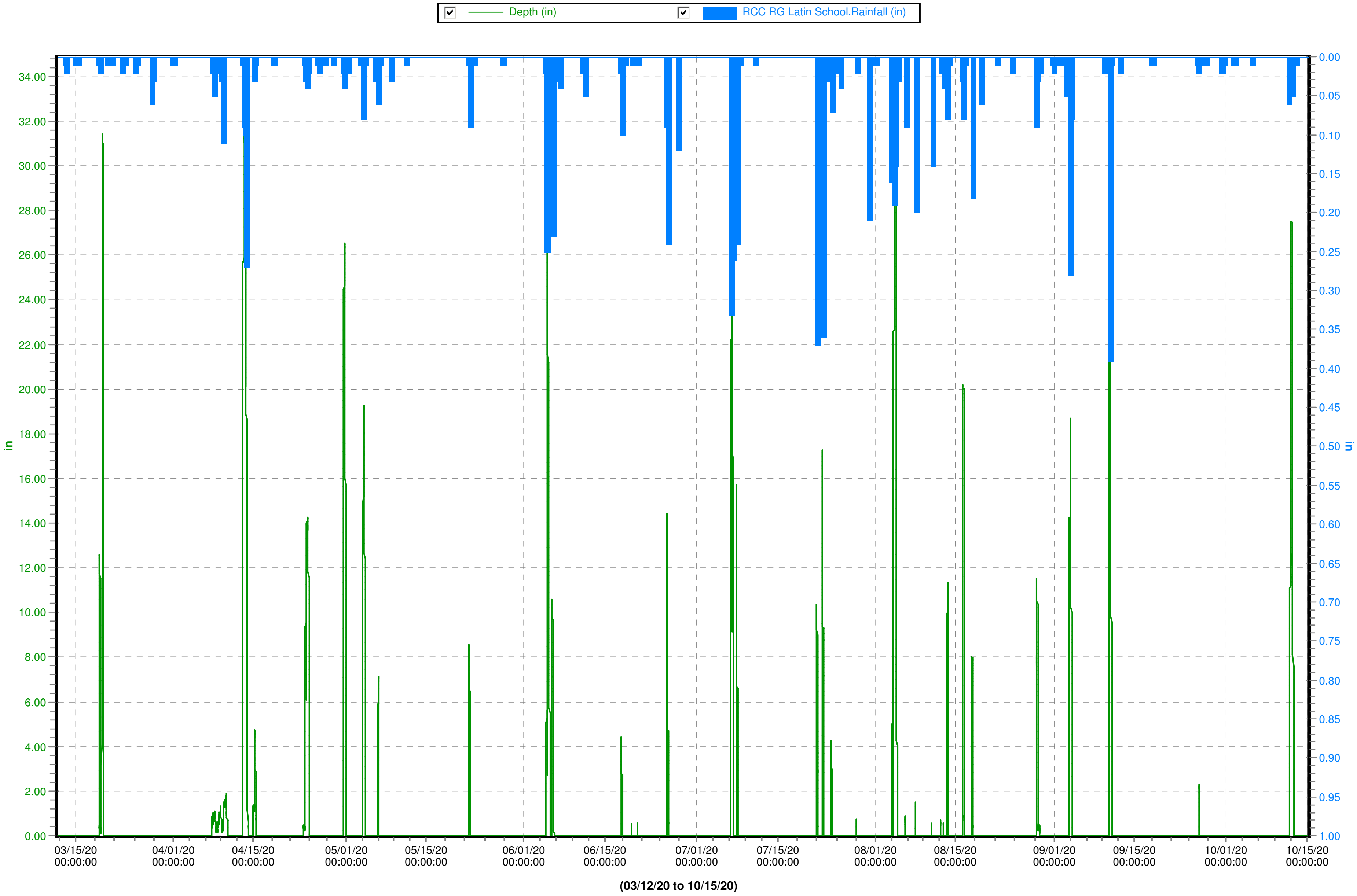
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

4301

54 Hamilton ST NW-Well Depth (in) 50.5



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: APP-4403

Address:6 Hamilton St NE

Latitude: N 38.953540°
Longitude: W -77.008434°

Investigation Date:2/25/2020
Crew: LP/MH

Installation Date:
Crew:

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	37”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

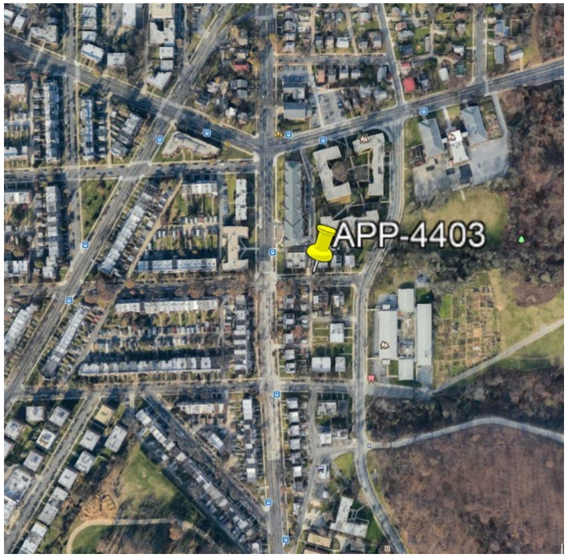
[✓ No]

Yes

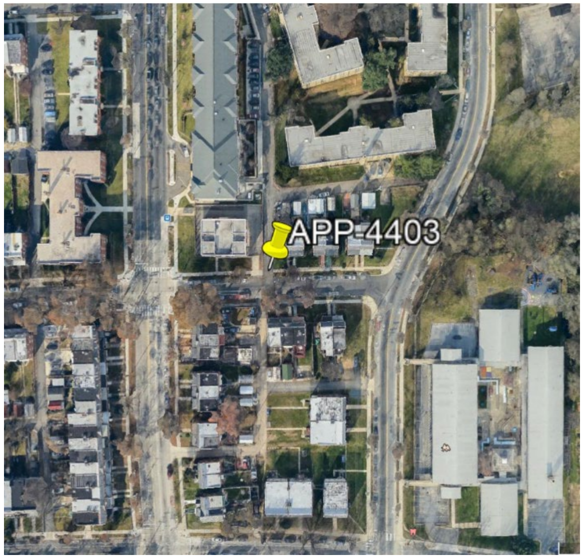
Hard Packed (in):

Soft (in):

Area Map



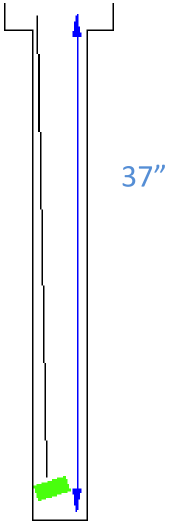
Detail Map



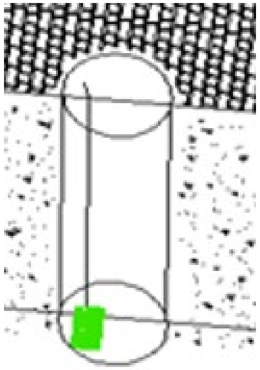
Site Area Overview

View from Top of Well

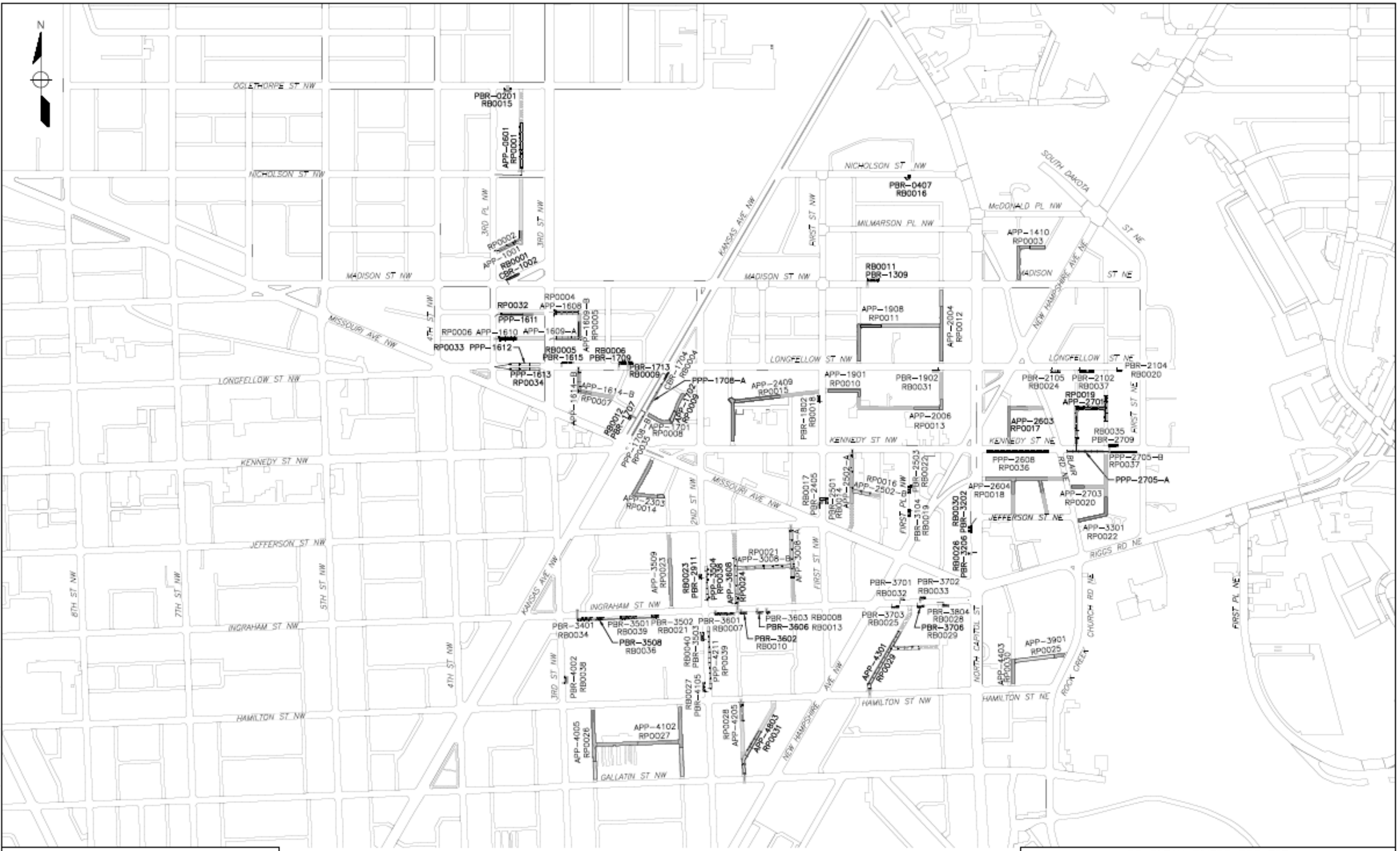
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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DRAWING ID: L:\LTCP\13\1301 – GW RC–A\04 CONSTRUCTION\100 – CADD\EXHIBITS\ASSET MANAGEMENT\RC FACILITY LOCATION MAP\RCA FACILITY MAP.DWG

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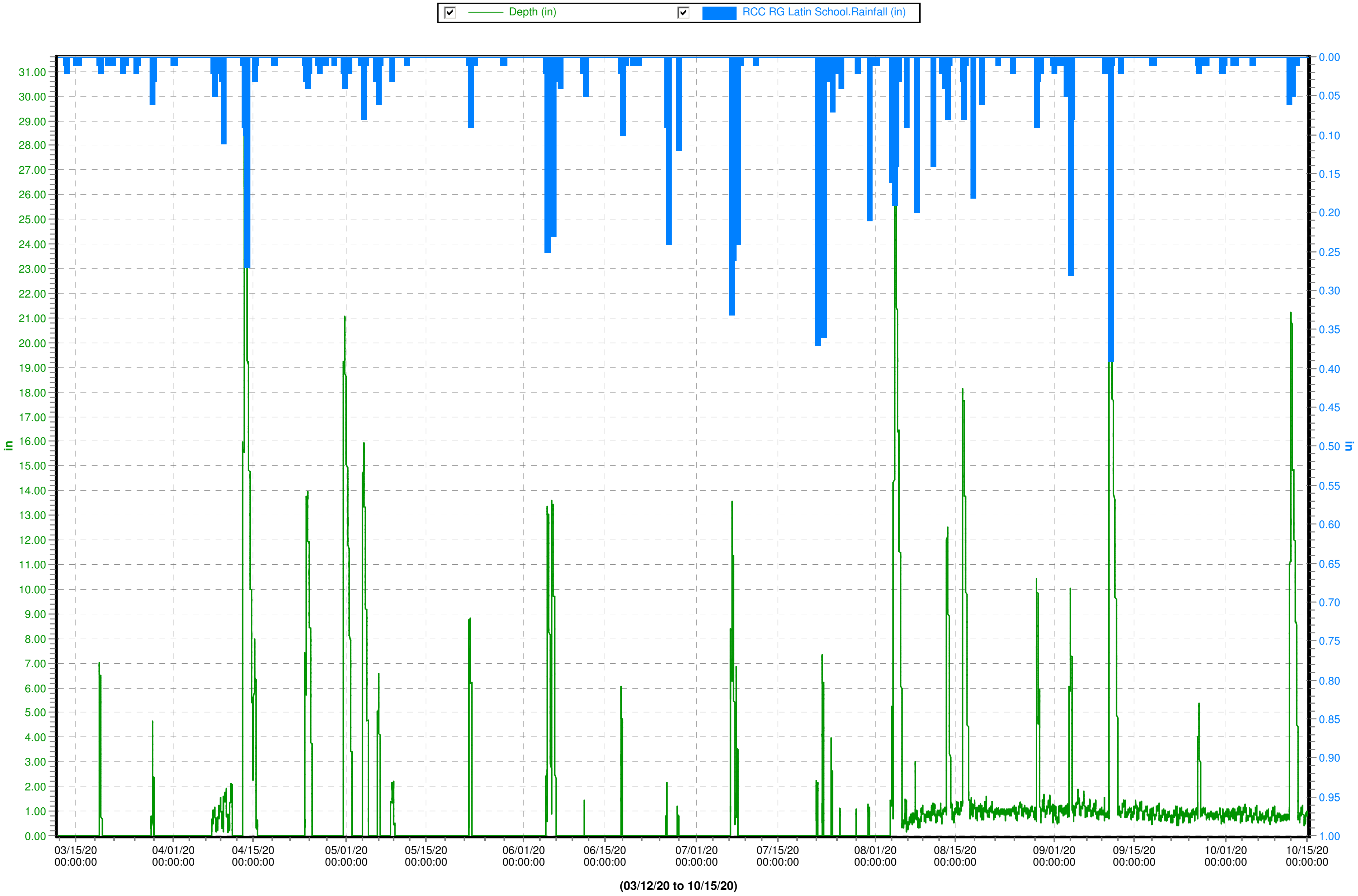
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

4403

6 Hamilton ST NE-Well Depth (in) 37



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: APP-4803

Address: 145 Gallatin ST NW

Latitude: N °38.952342 Longitude: W -77.012973°

Investigation Date: 2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: SD.JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	35”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

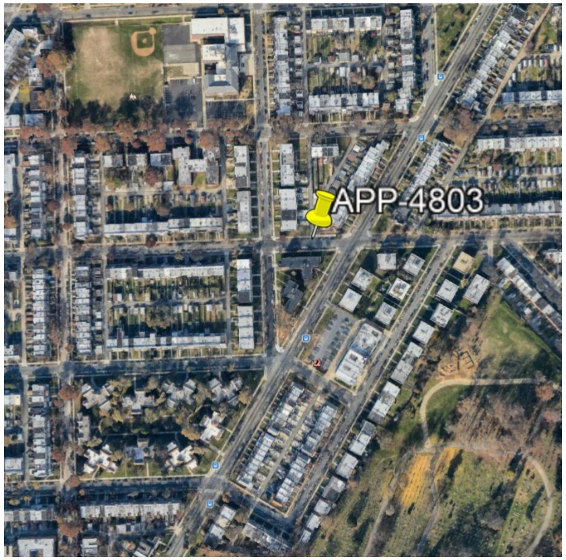
Sediment Present:

[✓ No] Yes

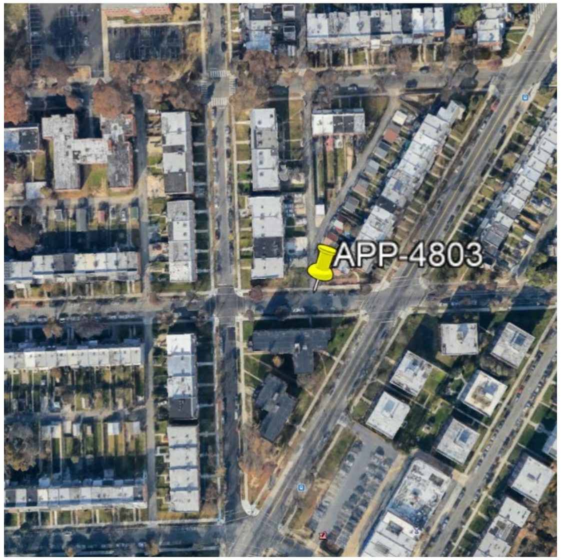
Hard Packed (in):

Soft (in):

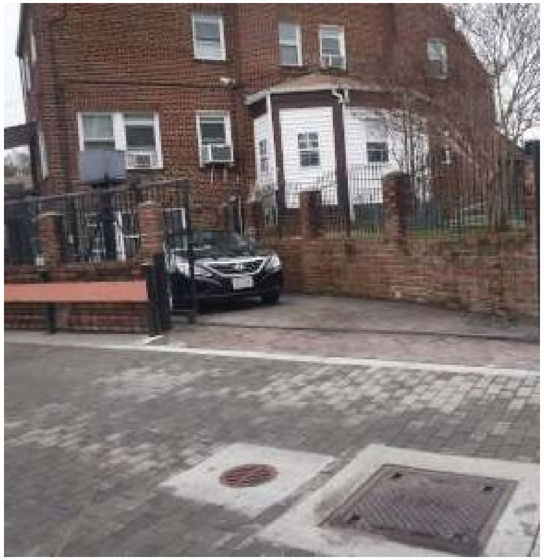
Area Map



Detail Map

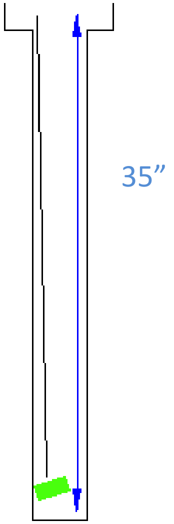


Site Area Overview

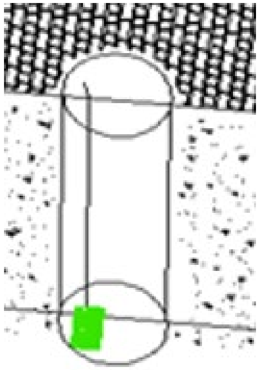


View from Top of Well

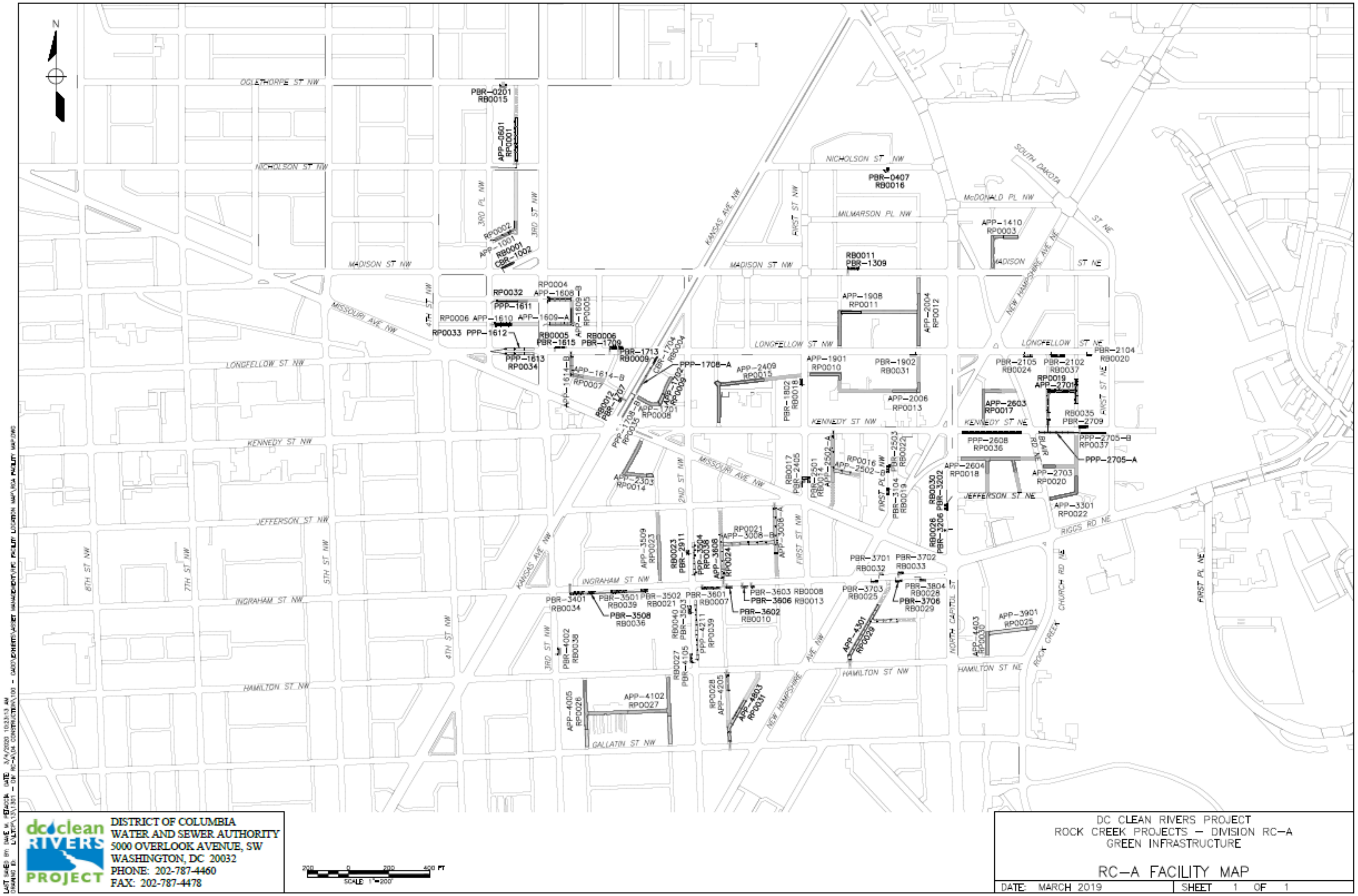
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

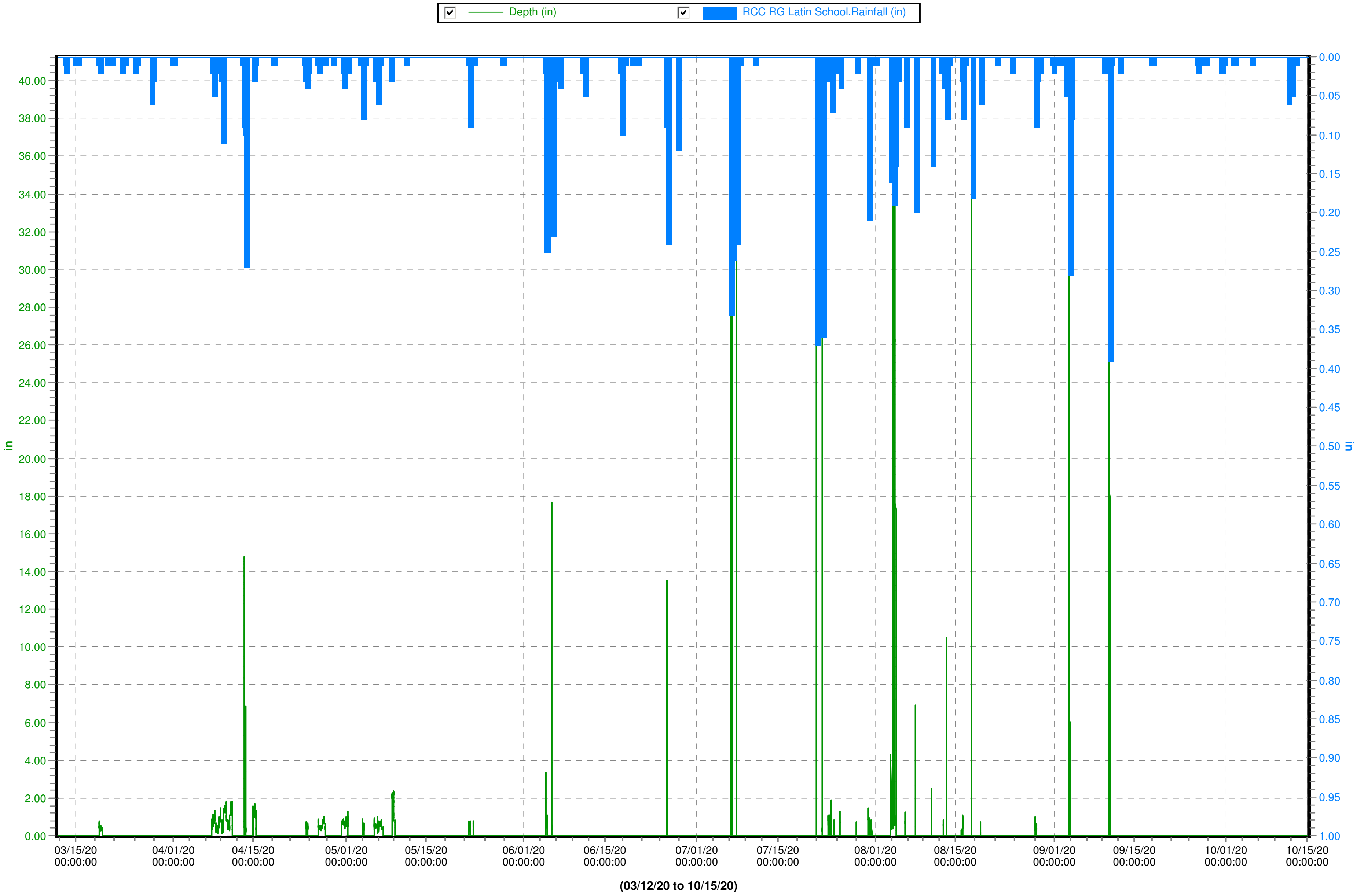


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



4803

145 Gallatin ST NW-Well Depth 9in): 35



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: PBR-0201

Address: Across 315 Oglethorpe St NW

Latitude: N 38.961277° Longitude: W -77.016865°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	49”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

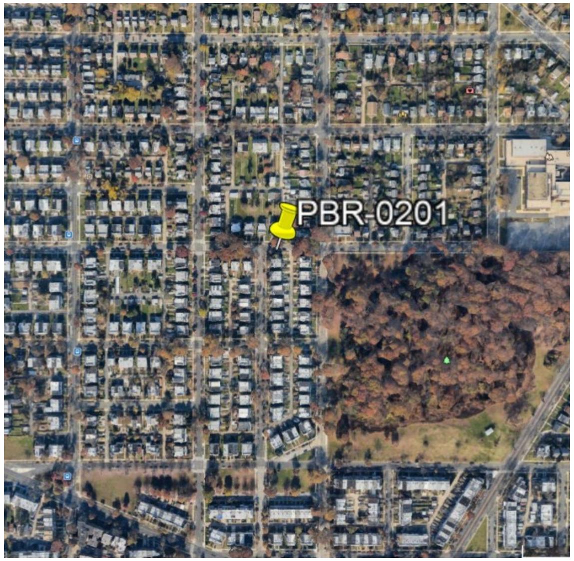
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

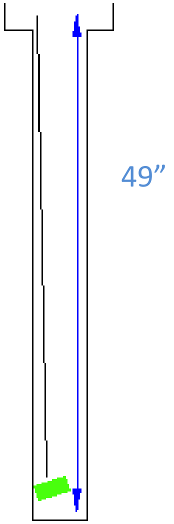


Detail Map

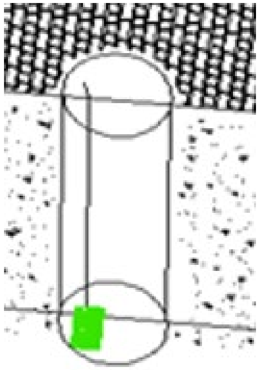
Site Area Overview

View from Top of Well

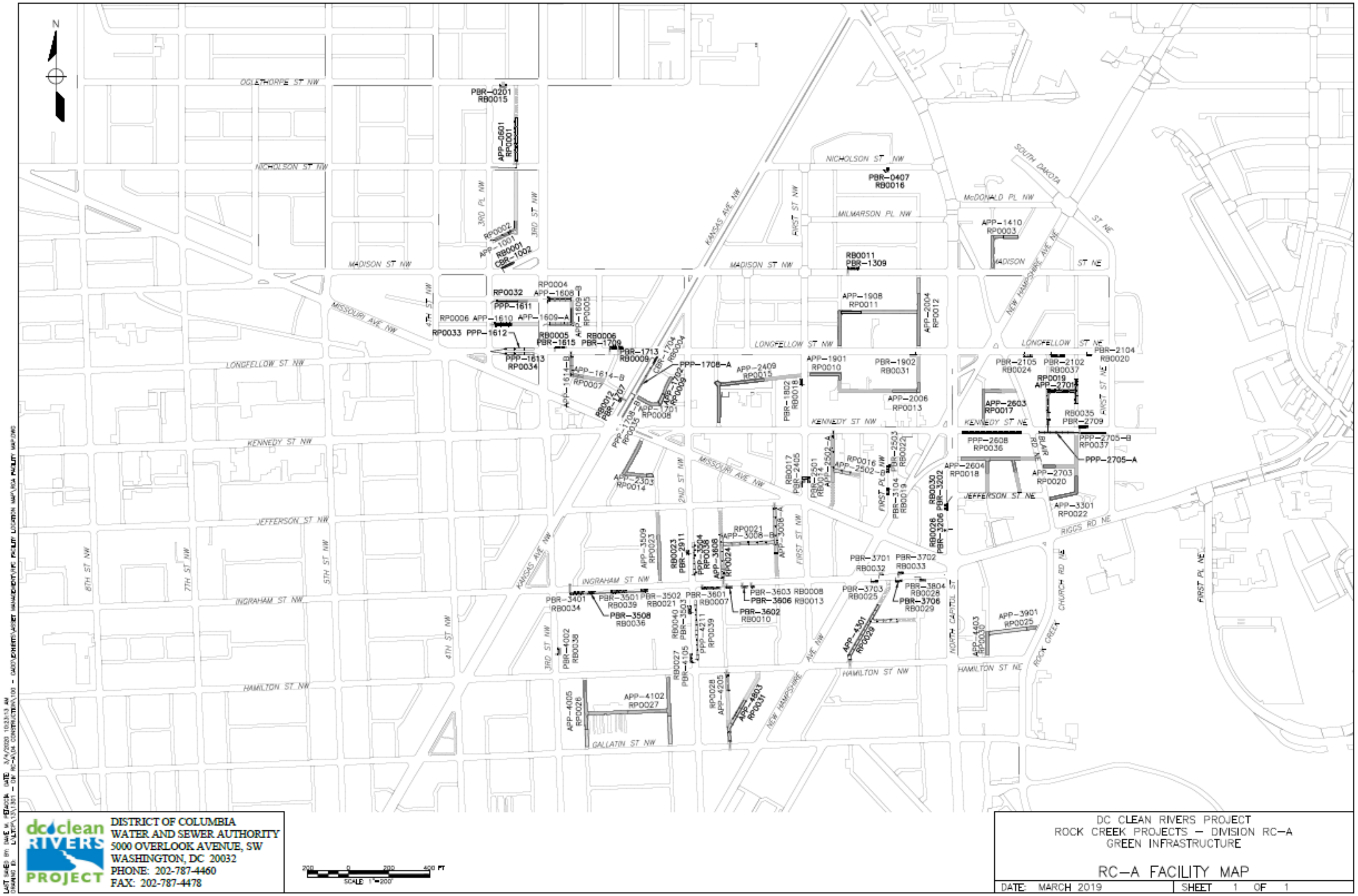
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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WASHINGTON, DC 20032
PHONE: 202-787-4460
FAX: 202-787-4478

DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

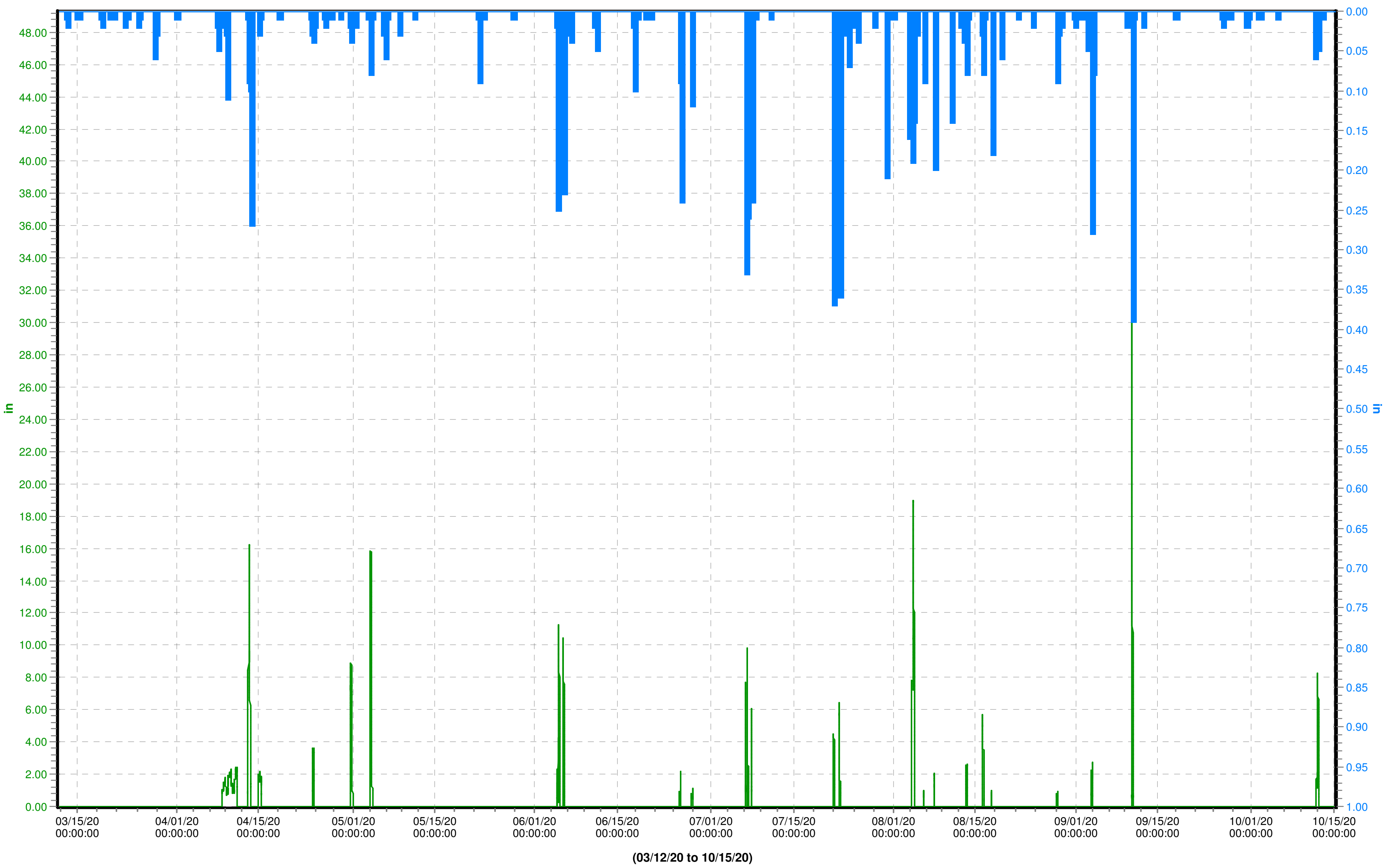
RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

0201

Across 315 Oglethorpe ST NW-Well Depth (in): 49

☑ Depth (in) ☑ RCC RG Latin School.Rainfall (in)



(03/12/20 to 10/15/20)

Site Name/ Manhole ID:PBR-0407

Address:18 Nicholson ST NW

Latitude: N 38.960079° Longitude: W -77.010219°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/11/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

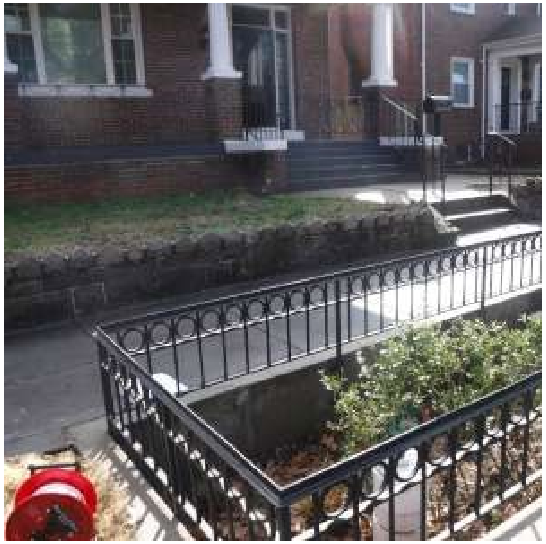
Hard Packed (in):

Soft (in):

Area Map

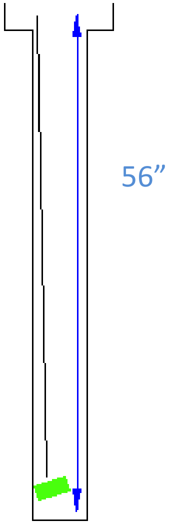
Detail Map

Site Area Overview

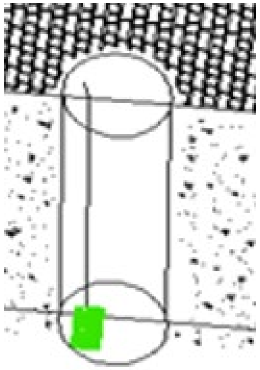


View from Top of Well

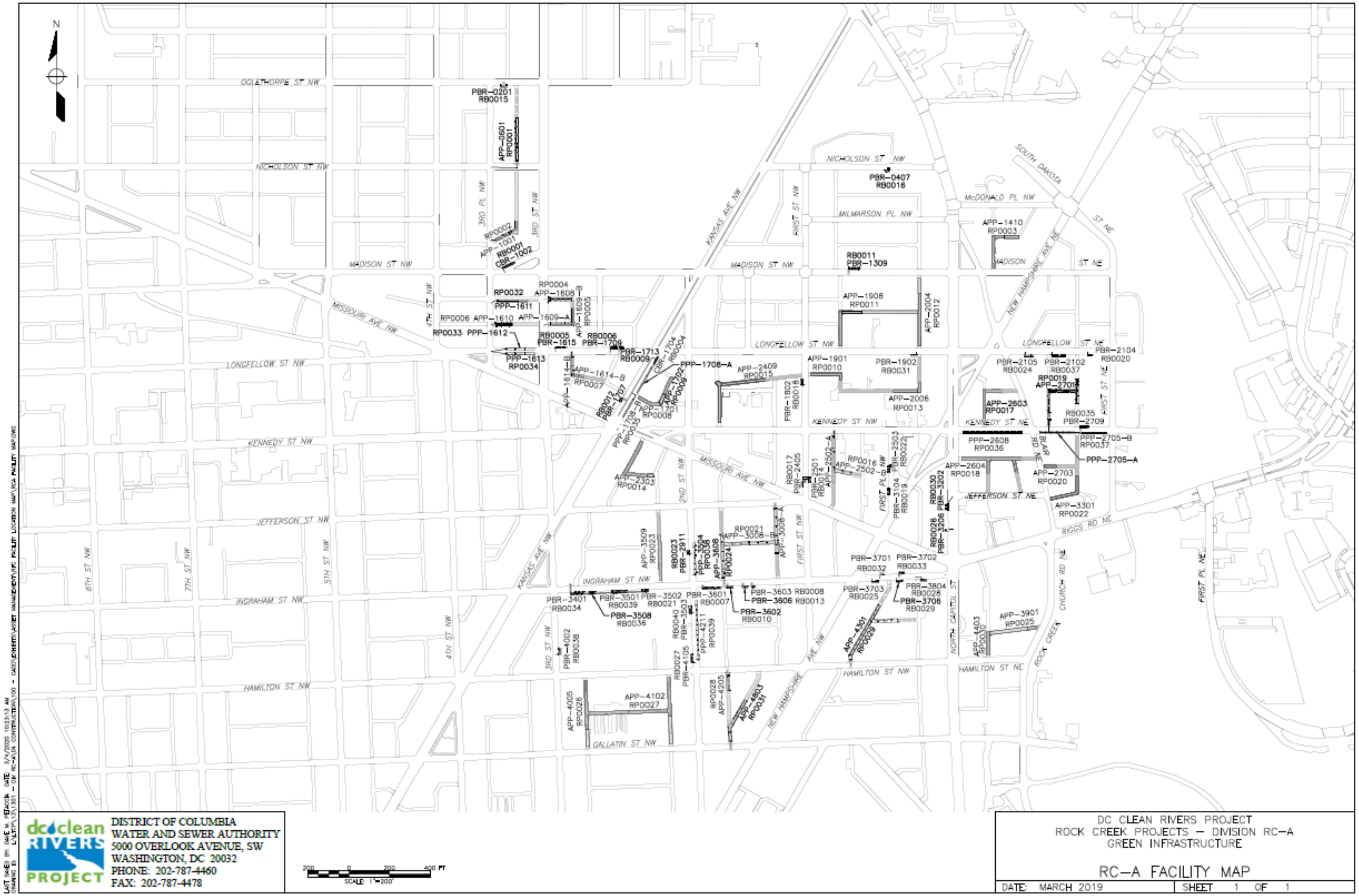
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

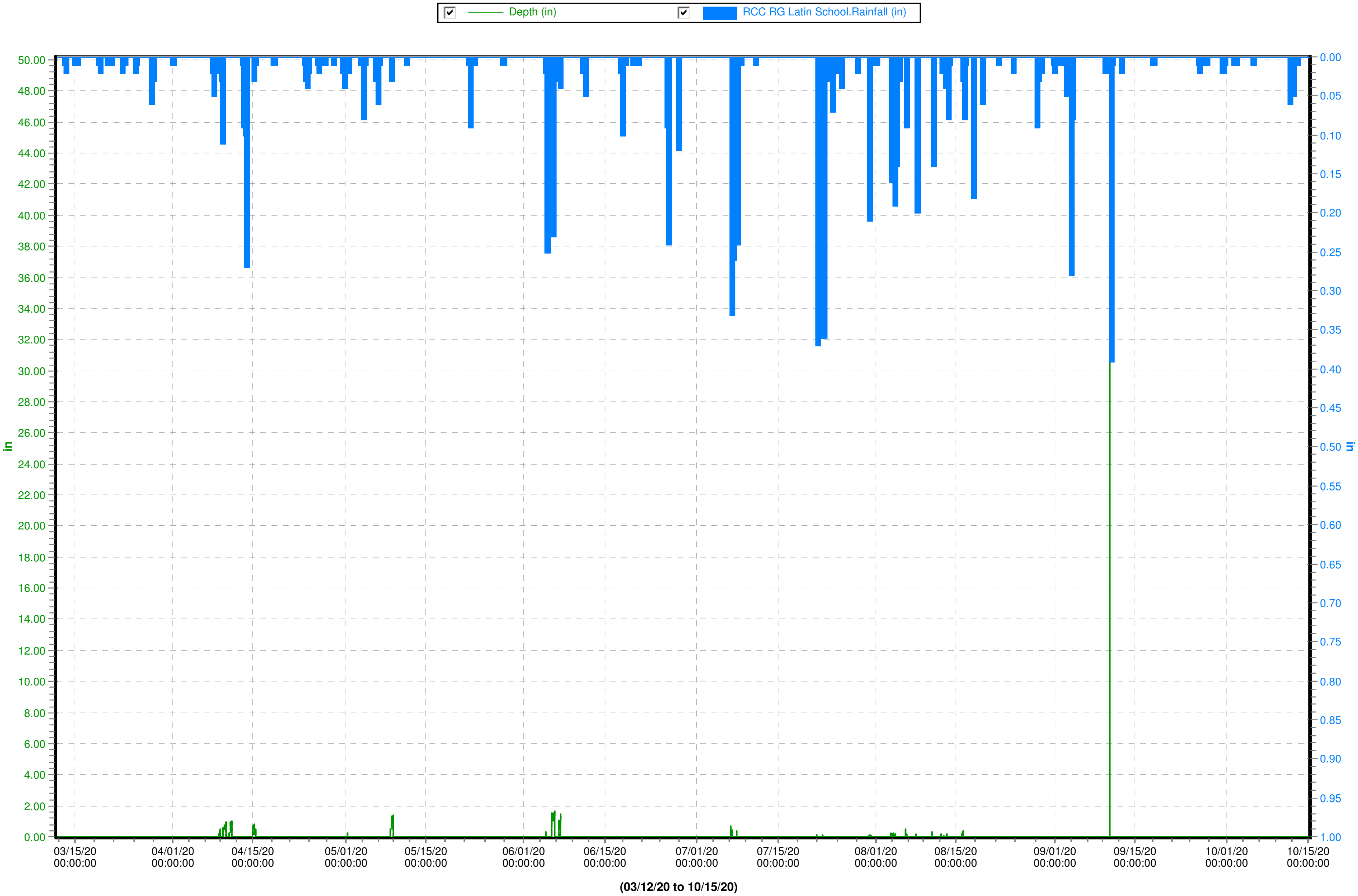


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



0407

18 Nicholson ST NW-Well Depth (in): 56



Site Name/ Manhole ID: PBR-1309

Address:38 Madison St NW

Latitude: N 38.958769° Longitude: W -77.010713°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 2

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	52”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

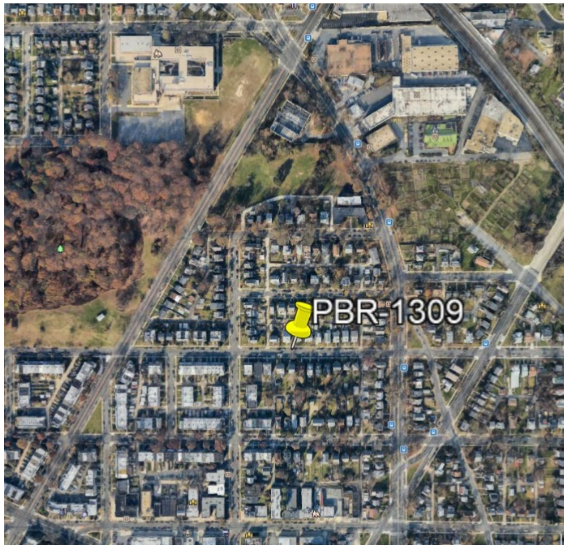
Sediment Present:

[✓ No]
Yes

Hard Packed (in):

Soft (in):

Area Map

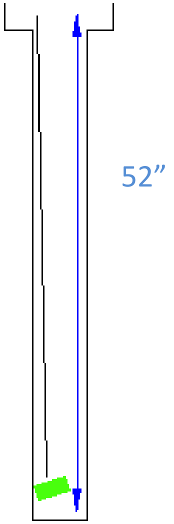


Detail Map

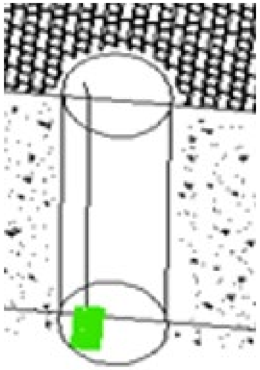
Site Area Overview

View from Top of Well

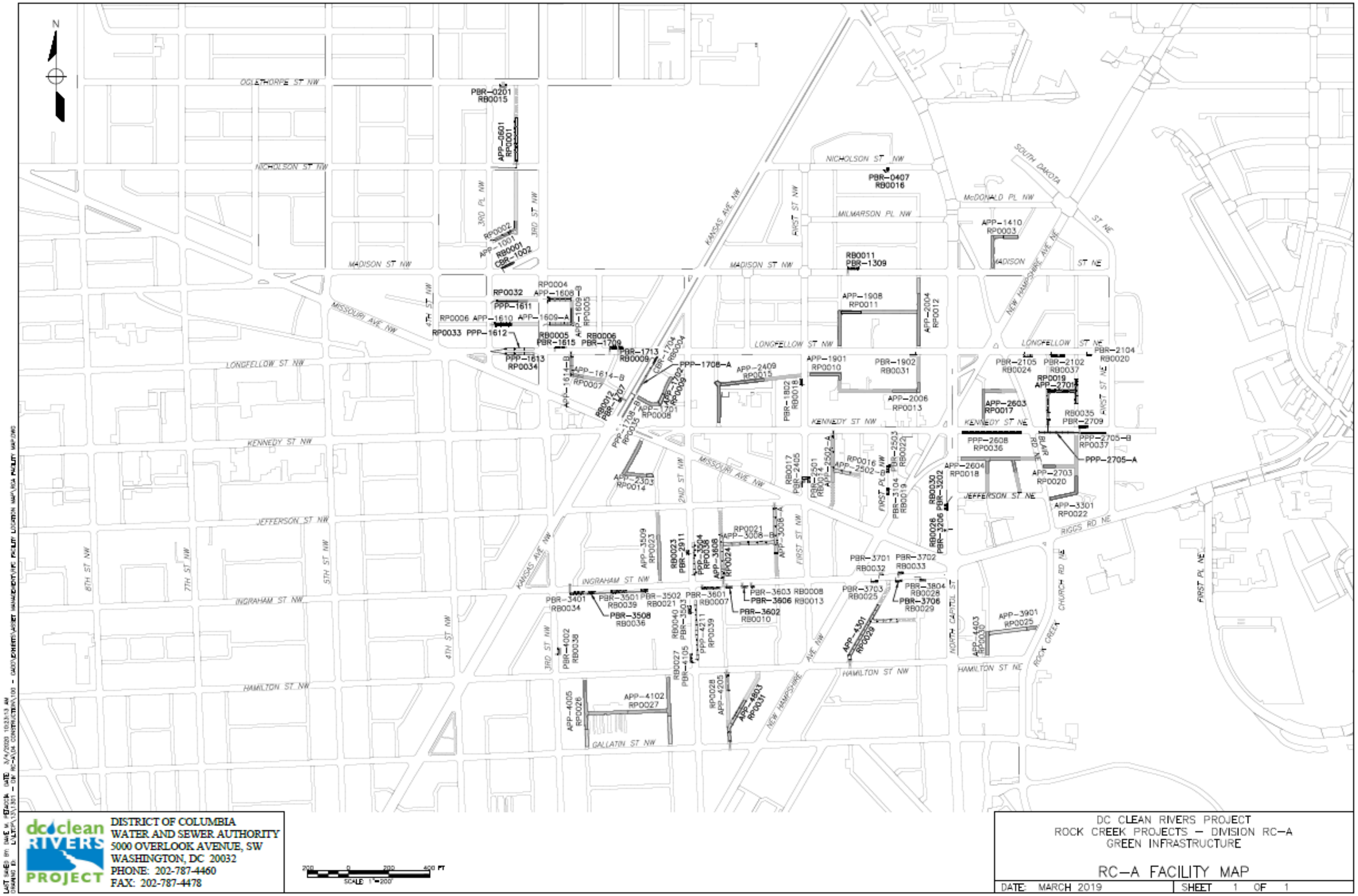
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

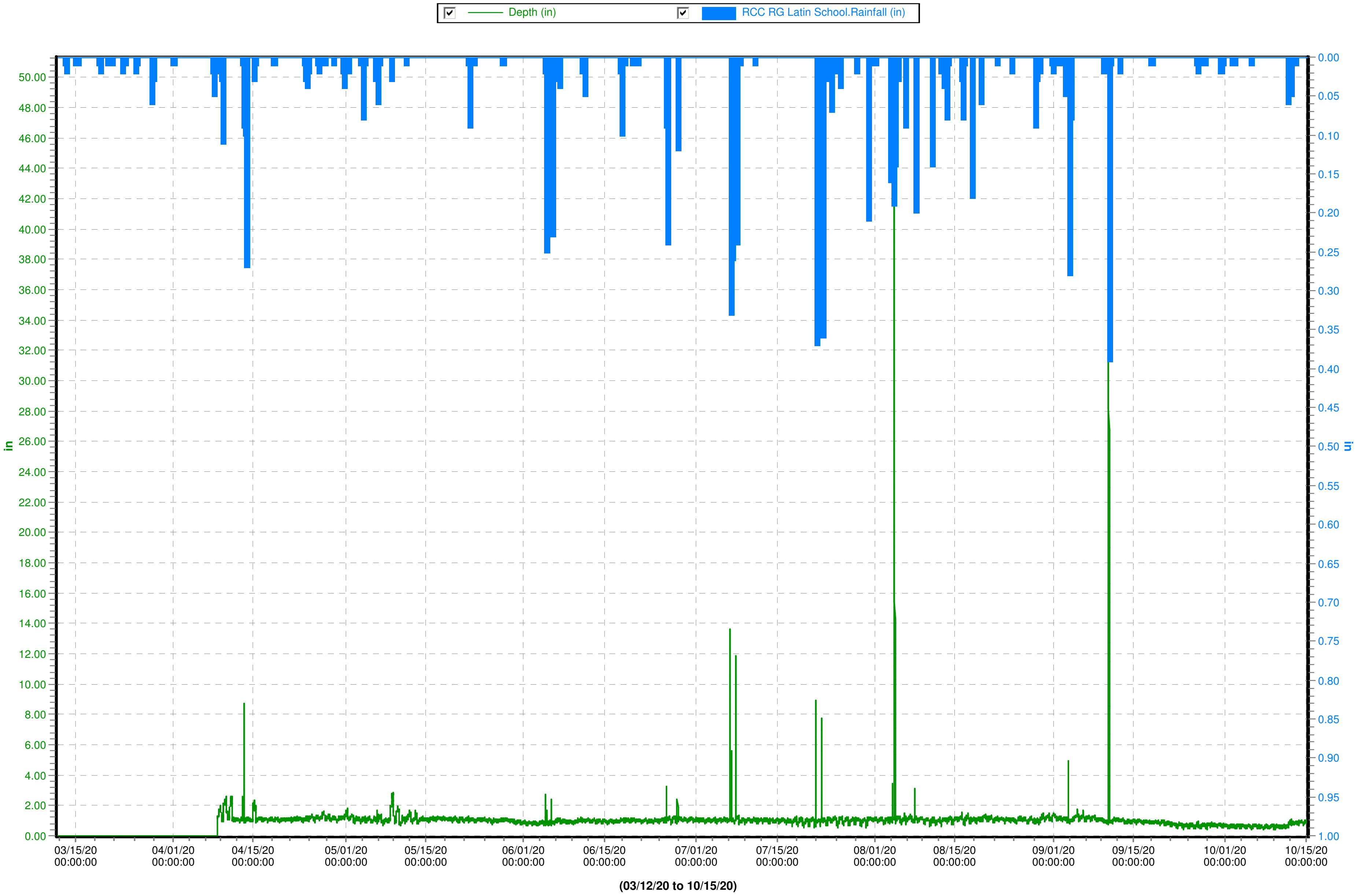


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1309

38 Madison ST NW-Well Depth (in): 51.5



Site Name/ Manhole ID: PBR-1615

Address:251 Longfellow St NW

Latitude: N 38.957717°

Longitude: W -77.015702°

Investigation Date:3/3/2020

Crew: CP

Installation Date:3/10/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	61”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

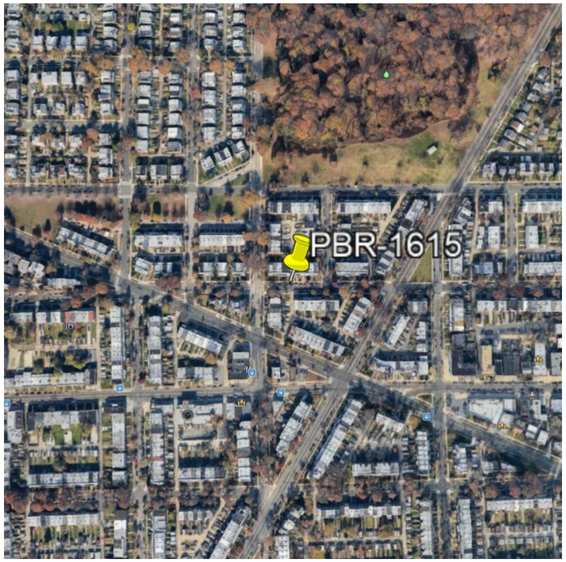
[✓ No]

Yes

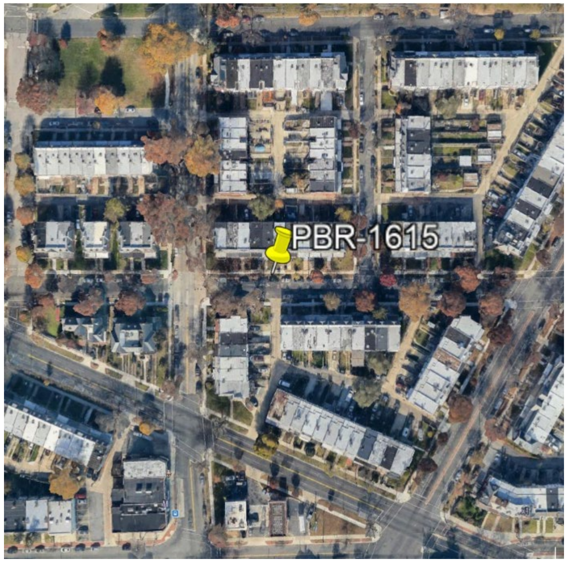
Hard Packed (in):

Soft (in):

Area Map



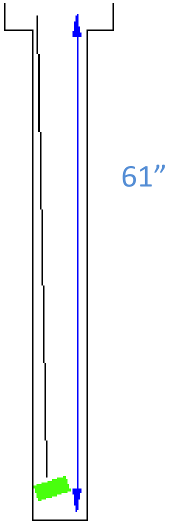
Detail Map



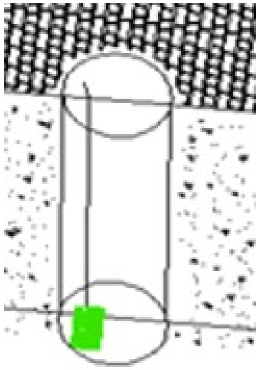
Site Area Overview

View from Top of Well

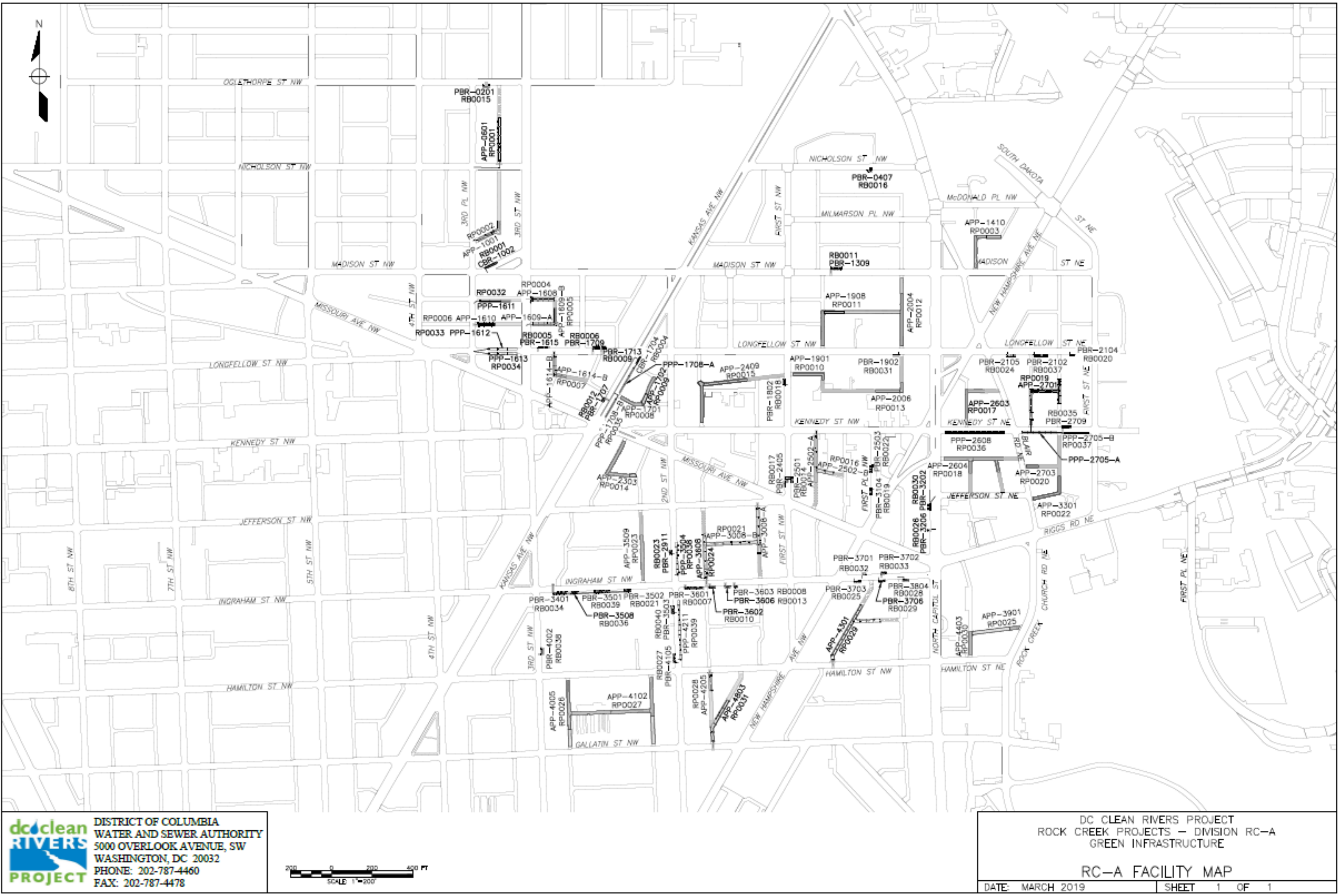
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

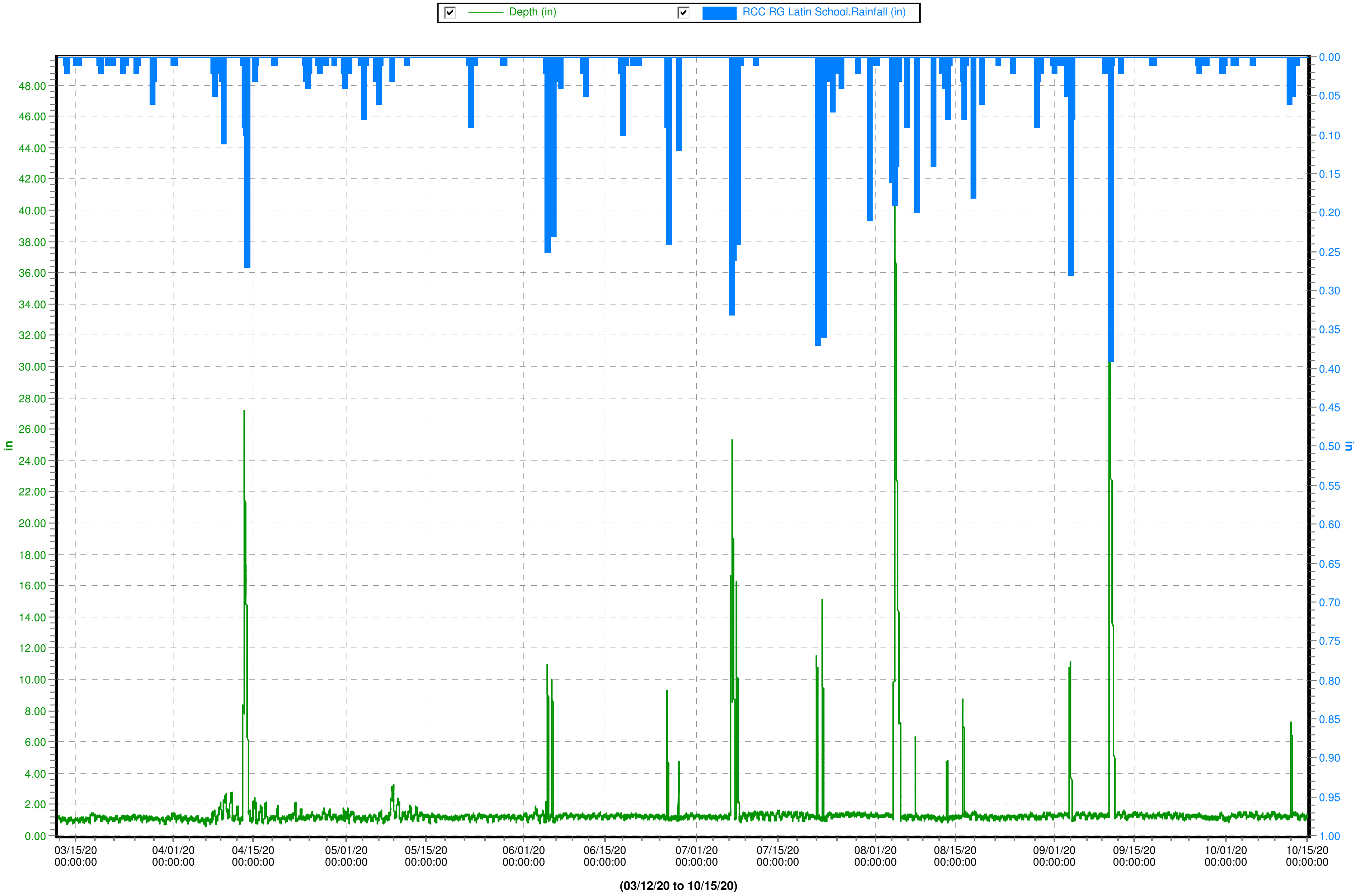


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1615

251 Longfellow ST NW-Well Depth (in): 60



Site Name/ Manhole ID: PBR-1707

Address:5508 Kansas Ave NW

Latitude: N 38.957119° Longitude: W -77.014748°

Investigation Date: 3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	43”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

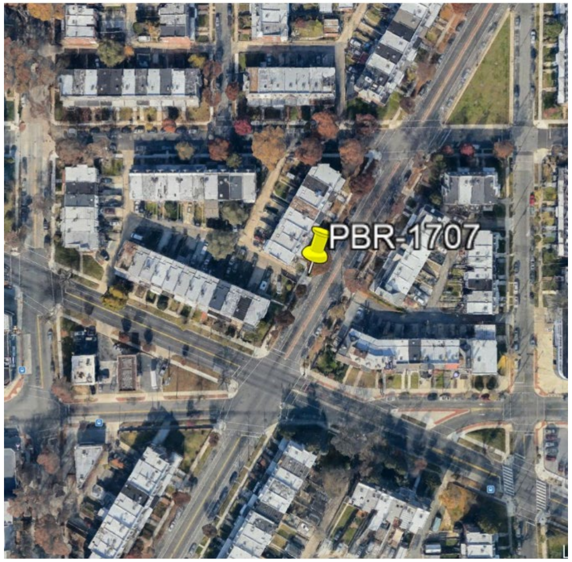
[✓ No]

Yes Hard Packed (in):

Soft (in):

Area Map

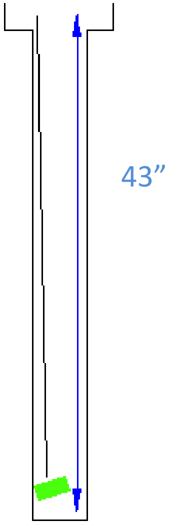
Detail Map



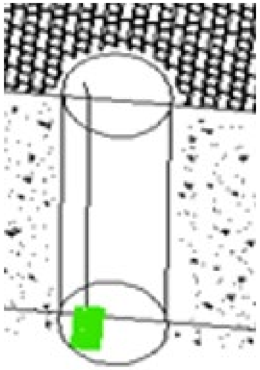
Site Area Overview

View from Top of Well

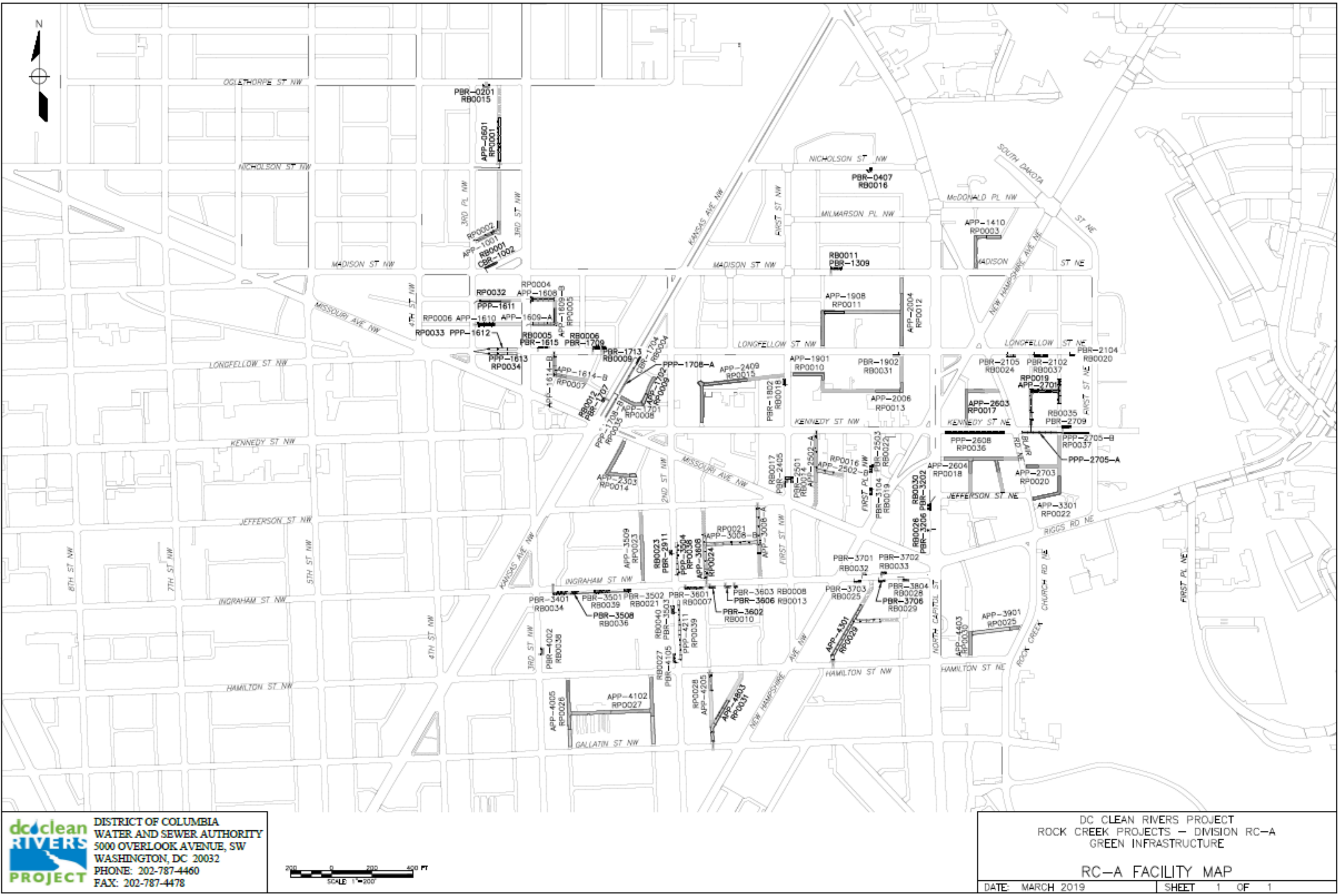
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

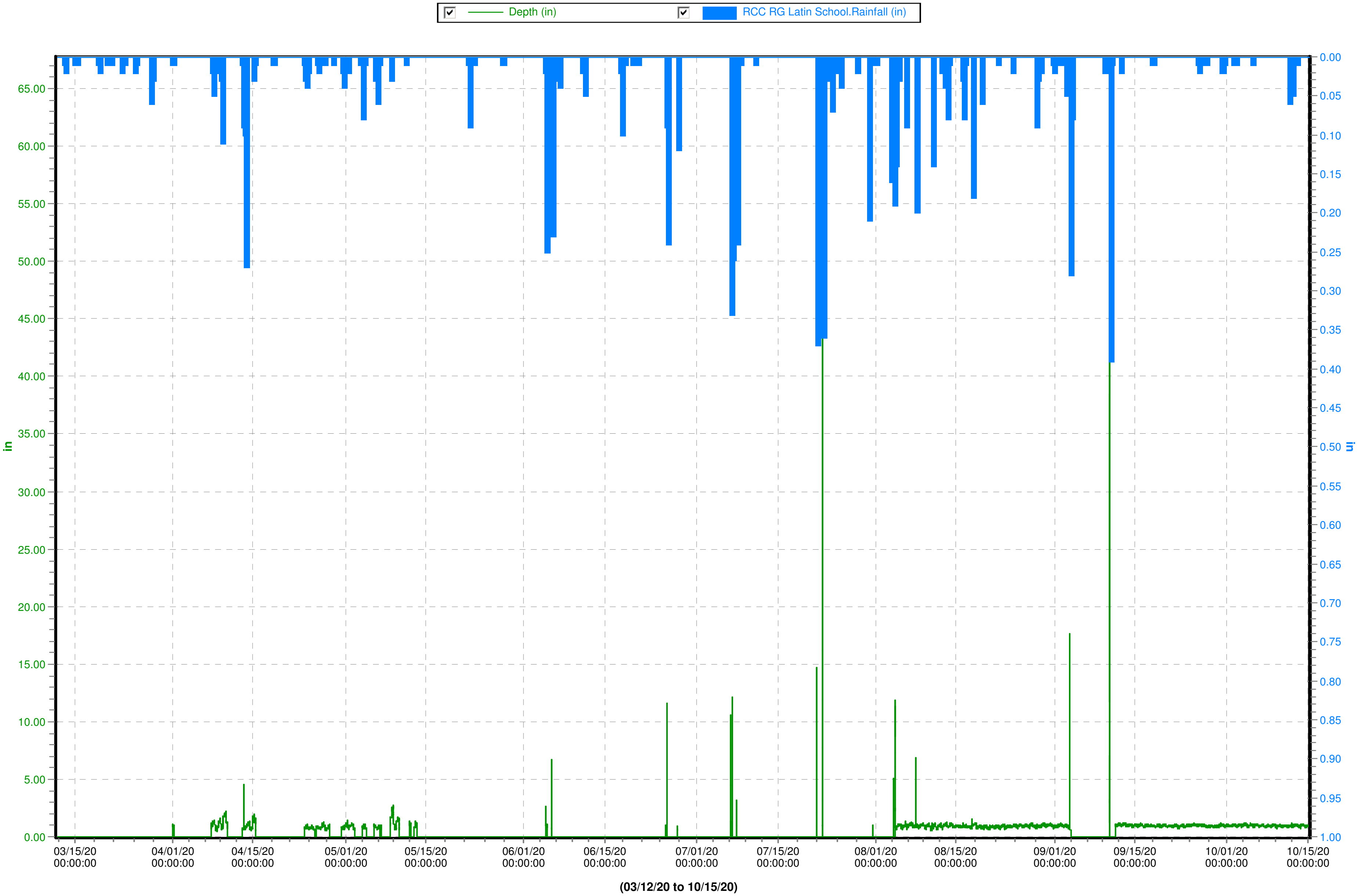


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1707

5508 Kansas Ave NW-Well Depth (in): 44



Site Name/ Manhole ID: PBR-1709

Address:227 Longfellow St NW

Latitude: N 38.957745°   Longitude: W -77.015025°

Investigation Date:3/3/2020   Crew: CP

Installation Date:3/10/2020   Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	55”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

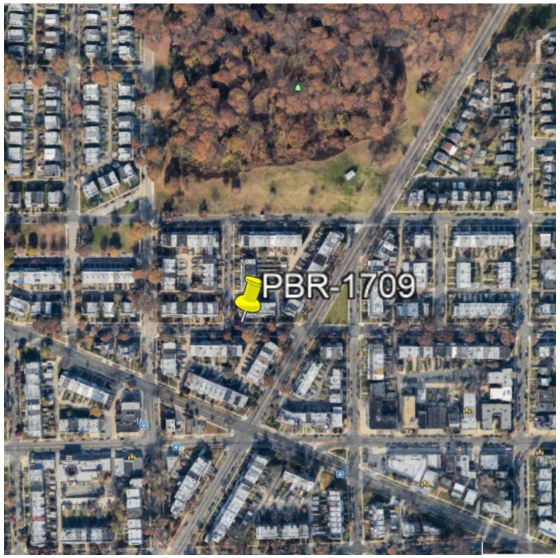
[✓ No]

Yes

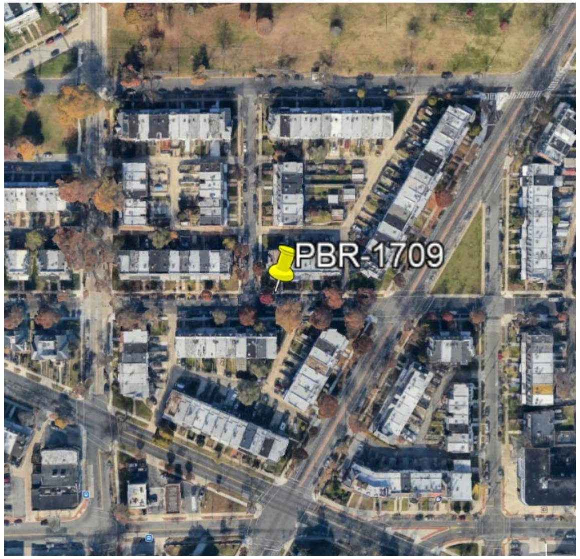
Hard Packed (in):

Soft (in):

Area Map



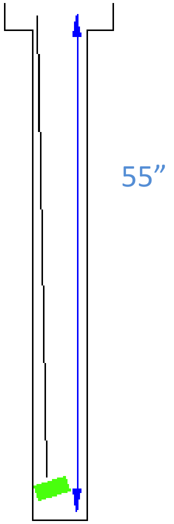
Detail Map



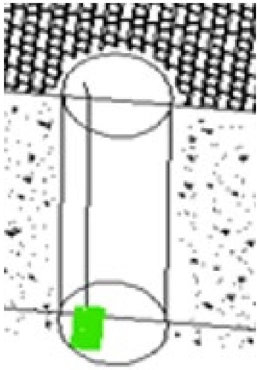
Site Area Overview

View from Top of Well

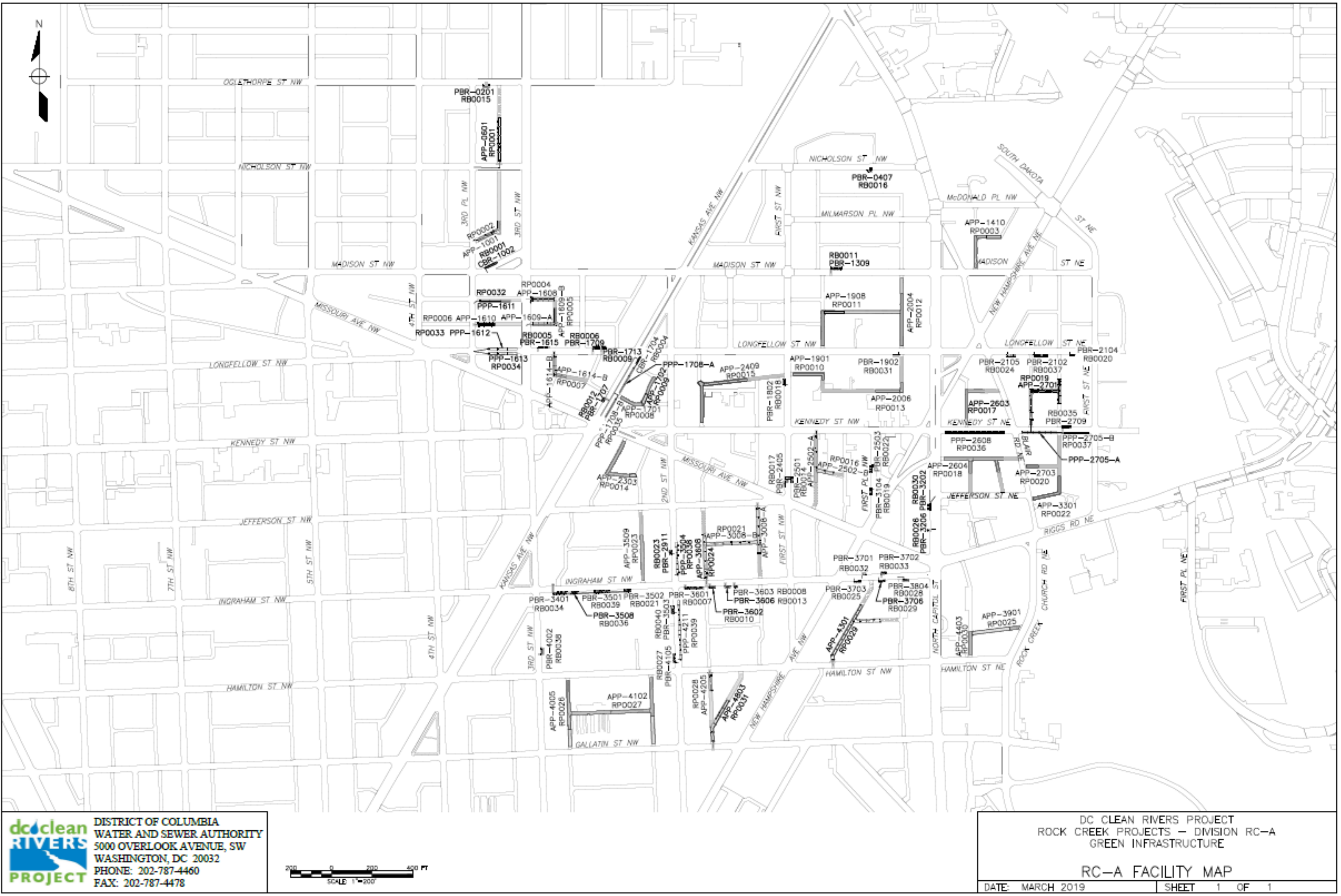
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
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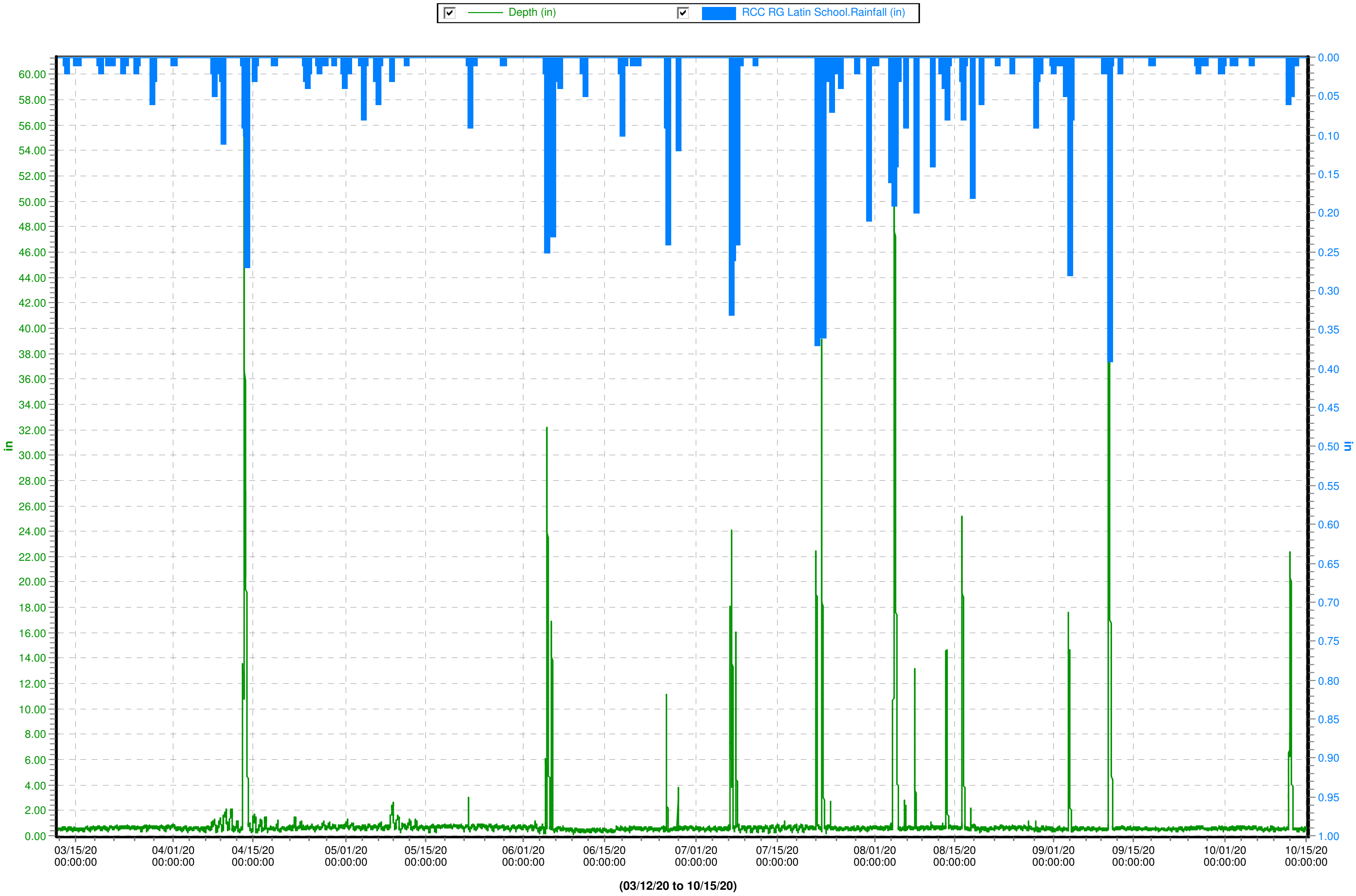
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

1709

227 Longfellow ST NW-Well Depth (in): 55



Site Name/ Manhole ID: PBR-1713

Address:223 Longfellow St NW

Latitude: N 38.957745°

Longitude: W -77.014811°

Investigation Date:3/3/2020

Crew: CP

Installation Date:3/10/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

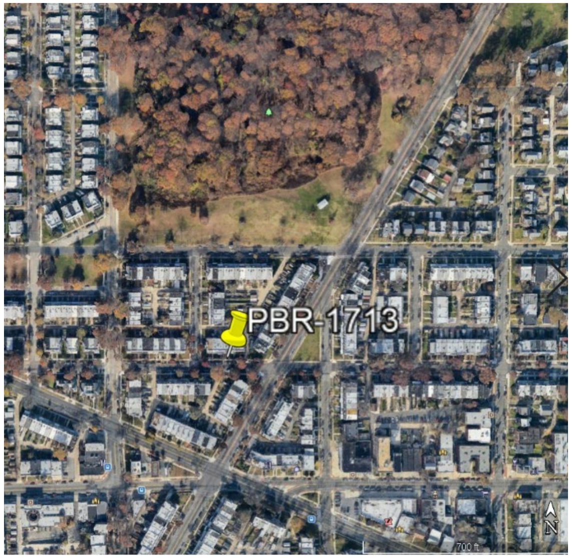
Sediment Present:

[✓ No] Yes

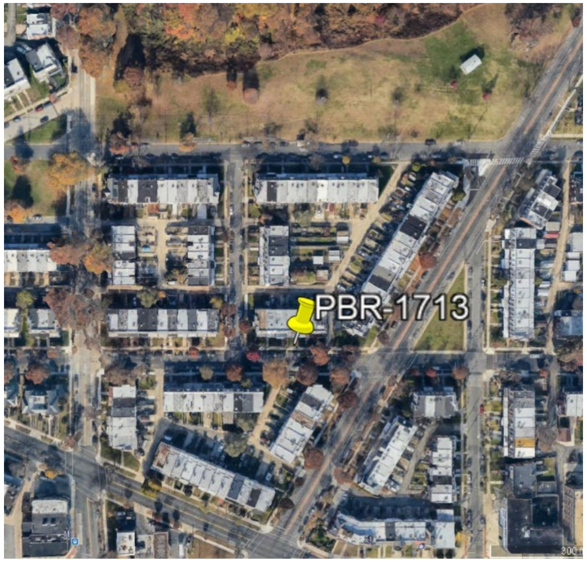
Hard Packed (in):

Soft (in):

Area Map



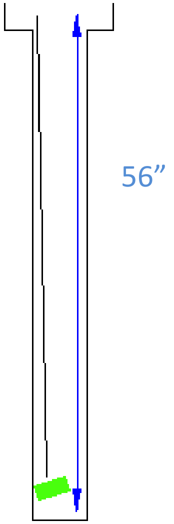
Detail Map



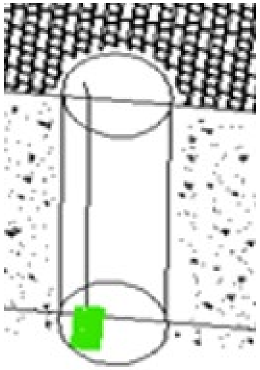
Site Area Overview

View from Top of Well

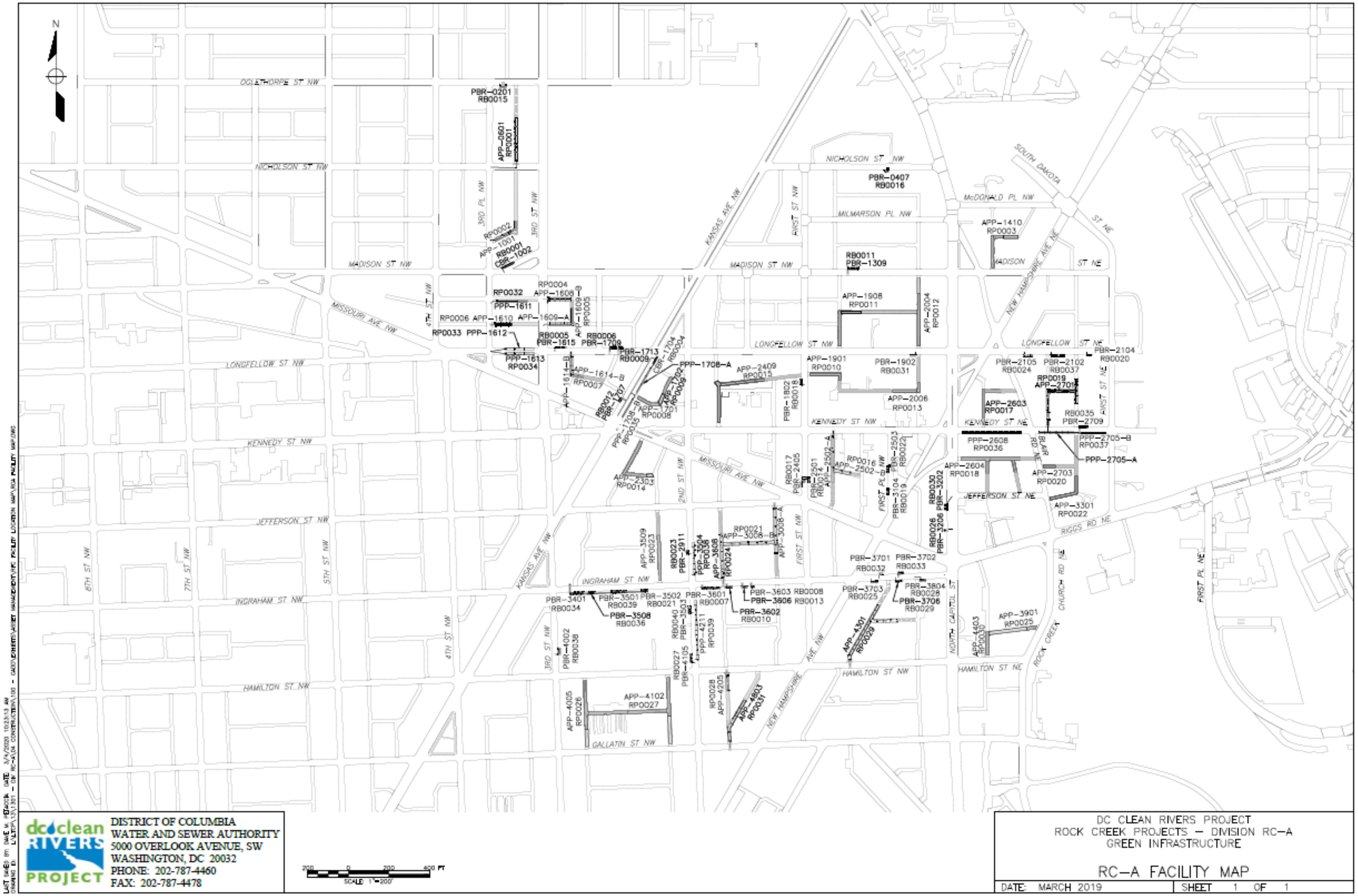
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

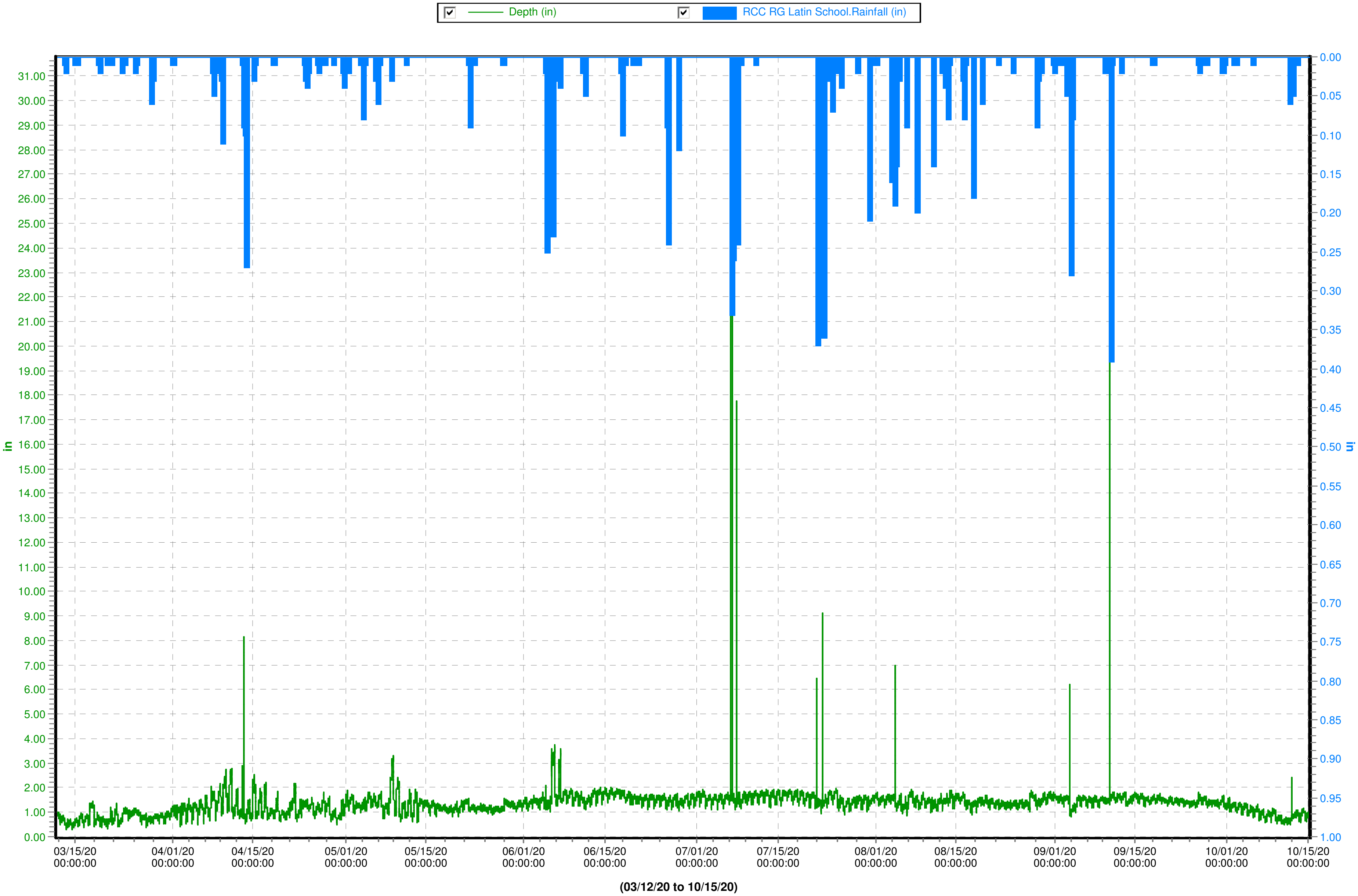


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1713

223 Longfellow ST NW-Well Depth (in): 56



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: PBR-1802

Address:5518 1st St NW

Latitude: N 38.957198°

Longitude: W -77.011696°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/11/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	54”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

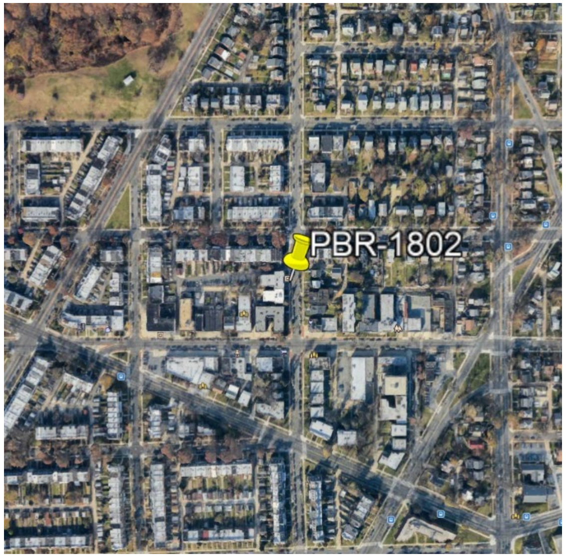
Sediment Present:

[✓ No] Yes

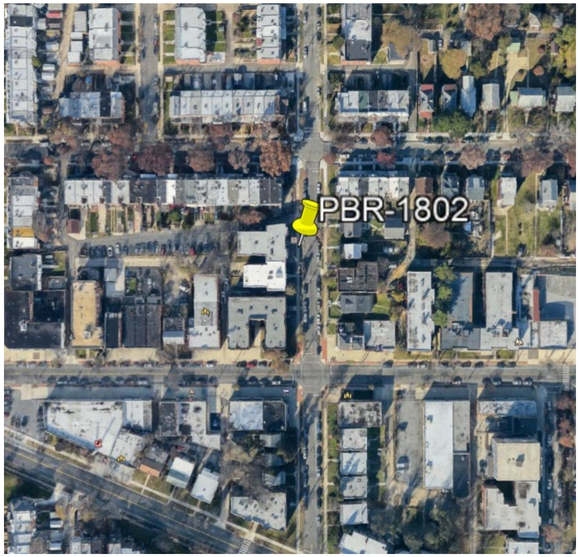
Hard Packed (in):

Soft (in):

Area Map



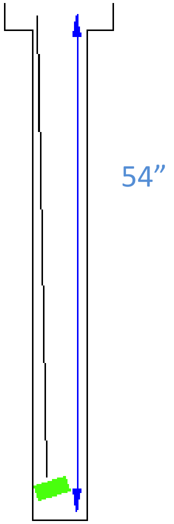
Detail Map



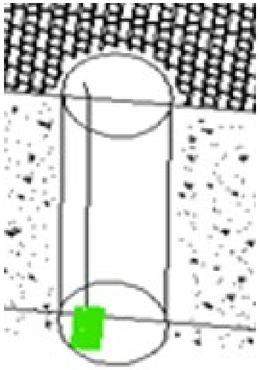
Site Area Overview

View from Top of Well

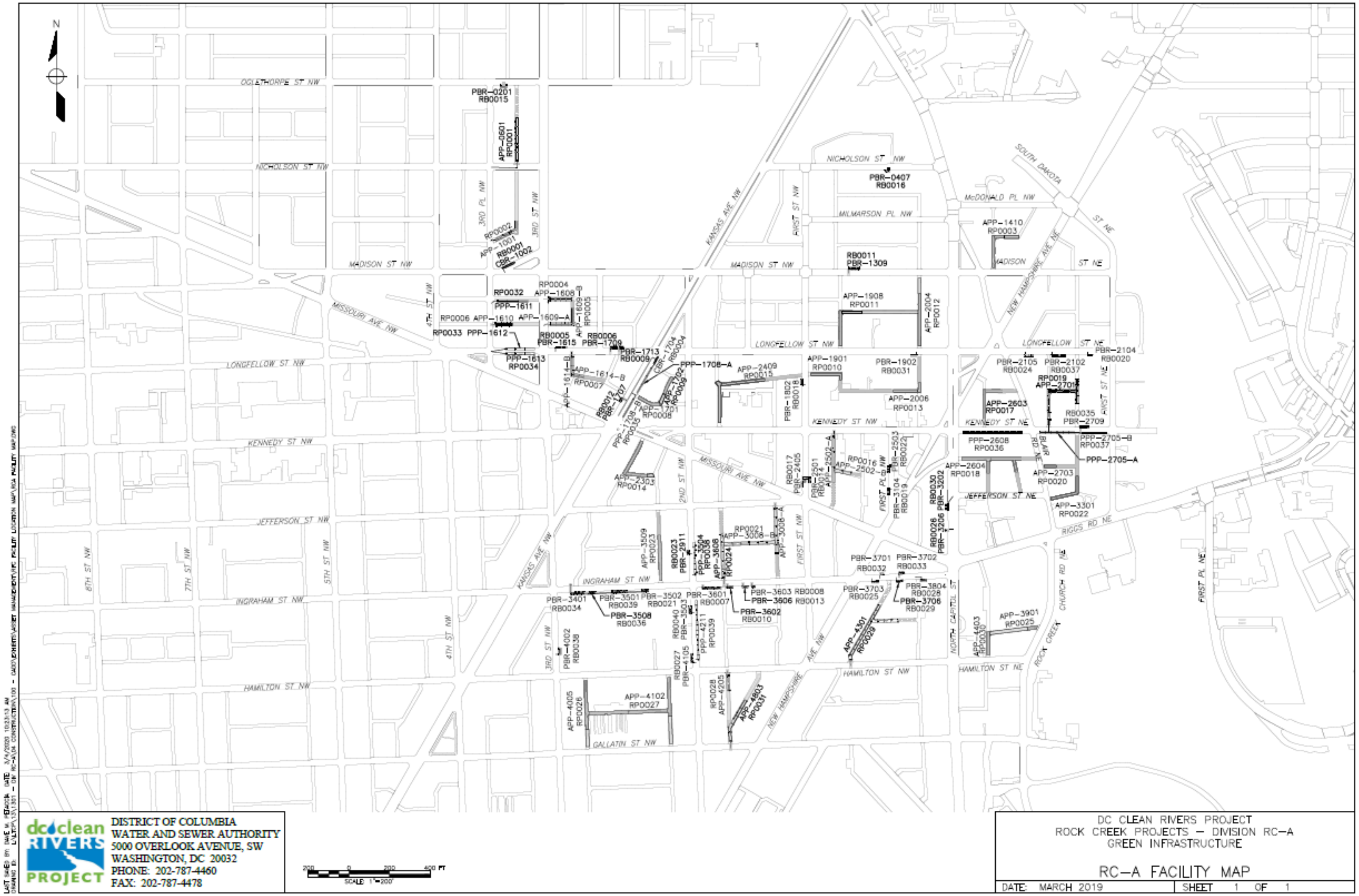
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



dc clean RIVERS PROJECT

DISTRICT OF COLUMBIA
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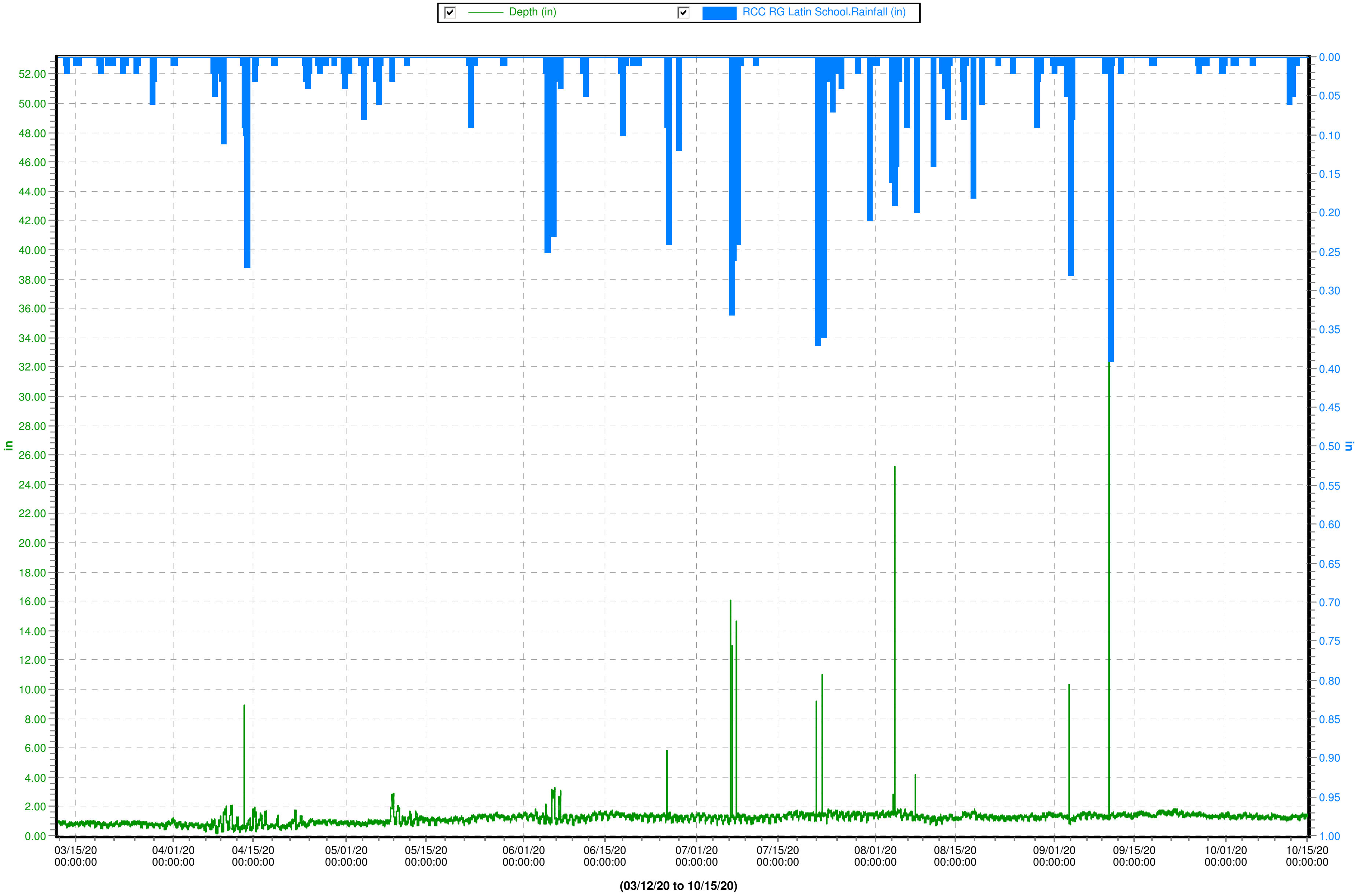
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

1802

5518 1st ST NW-Well Depth (in): 54



Site Name/ Manhole ID: PBR-1902

Address: 8 Longfellow St NW

Latitude: N 38.957579° Longitude: W-77.009566 °

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/11/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	60”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

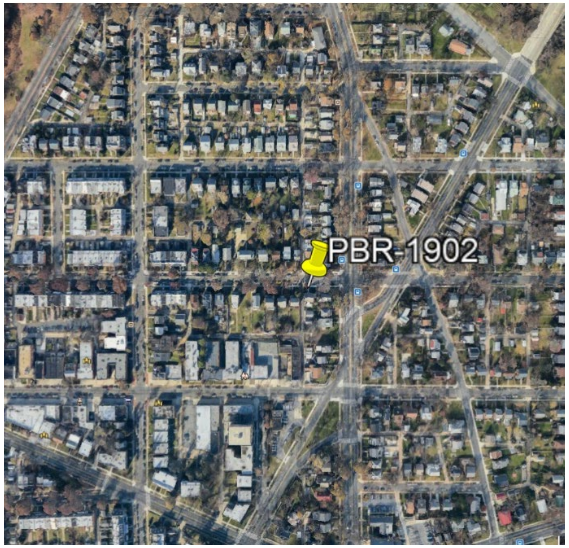
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

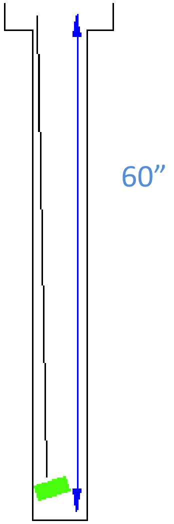


Detail Map

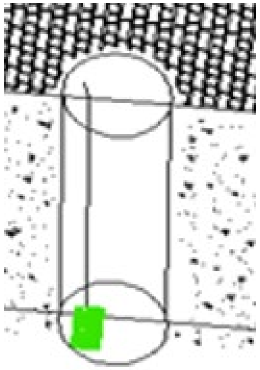
Site Area Overview

View from Top of Well

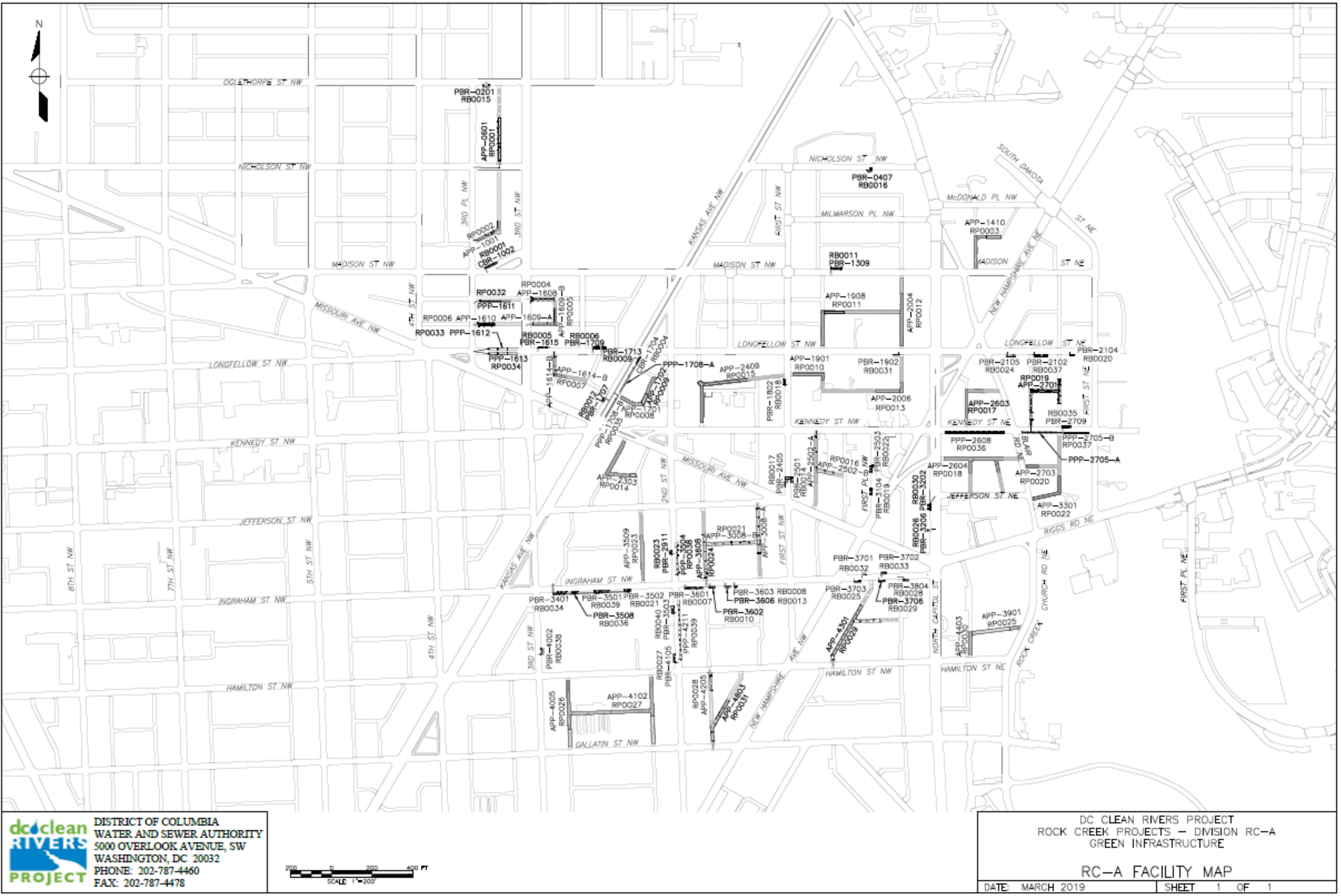
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

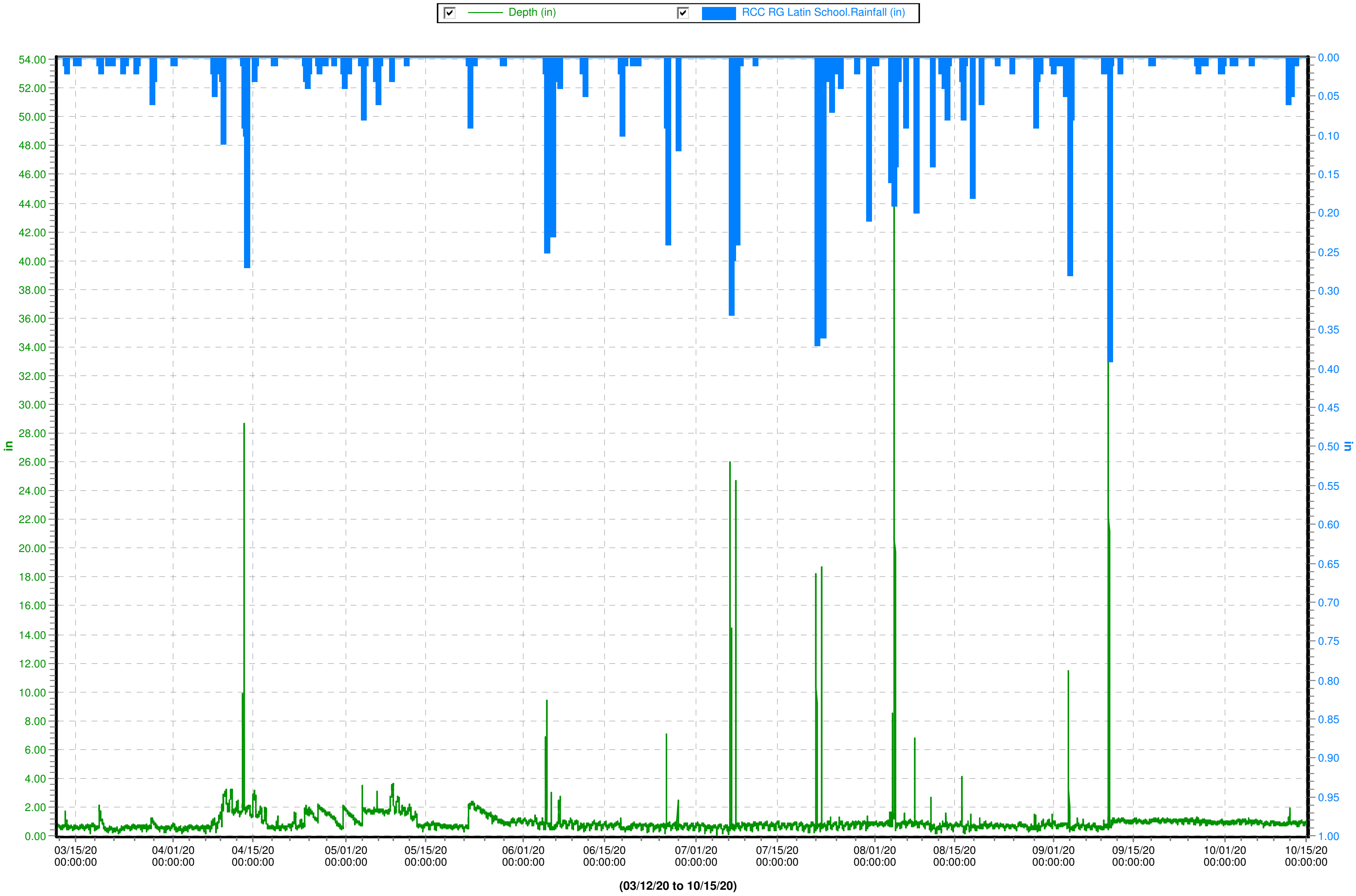


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1902

8 Longfellow ST NW-Well Depth (in): 60



Site Name/ Manhole ID: PBR-2102

Address:30 Longfellow St NW

Latitude: N 38.957576°

Longitude: W -77.010218°

Investigation Date:3/3/2020

Crew: CP

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	65”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

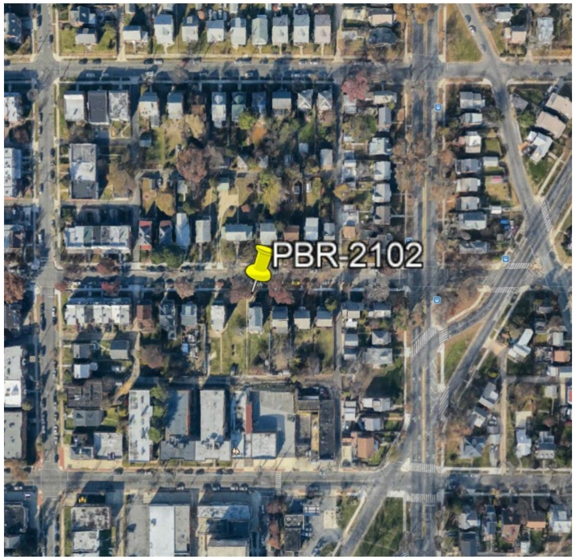
[✓ No] Yes

Hard Packed (in):

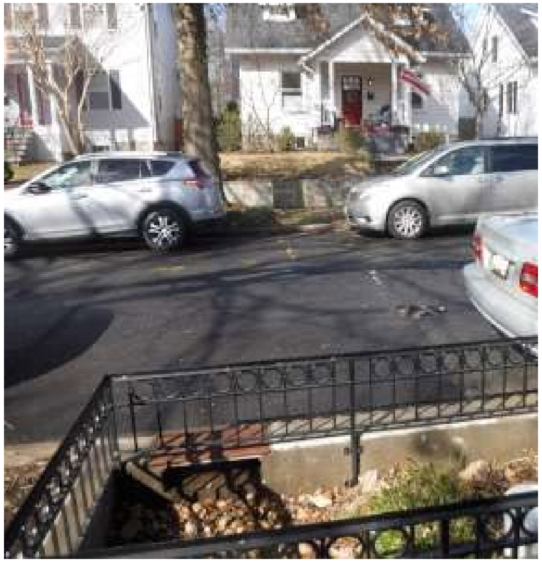
Soft (in):

Area Map

Detail Map

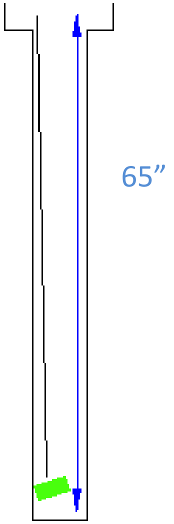


Site Area Overview

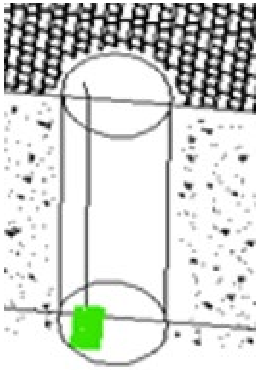


View from Top of Well

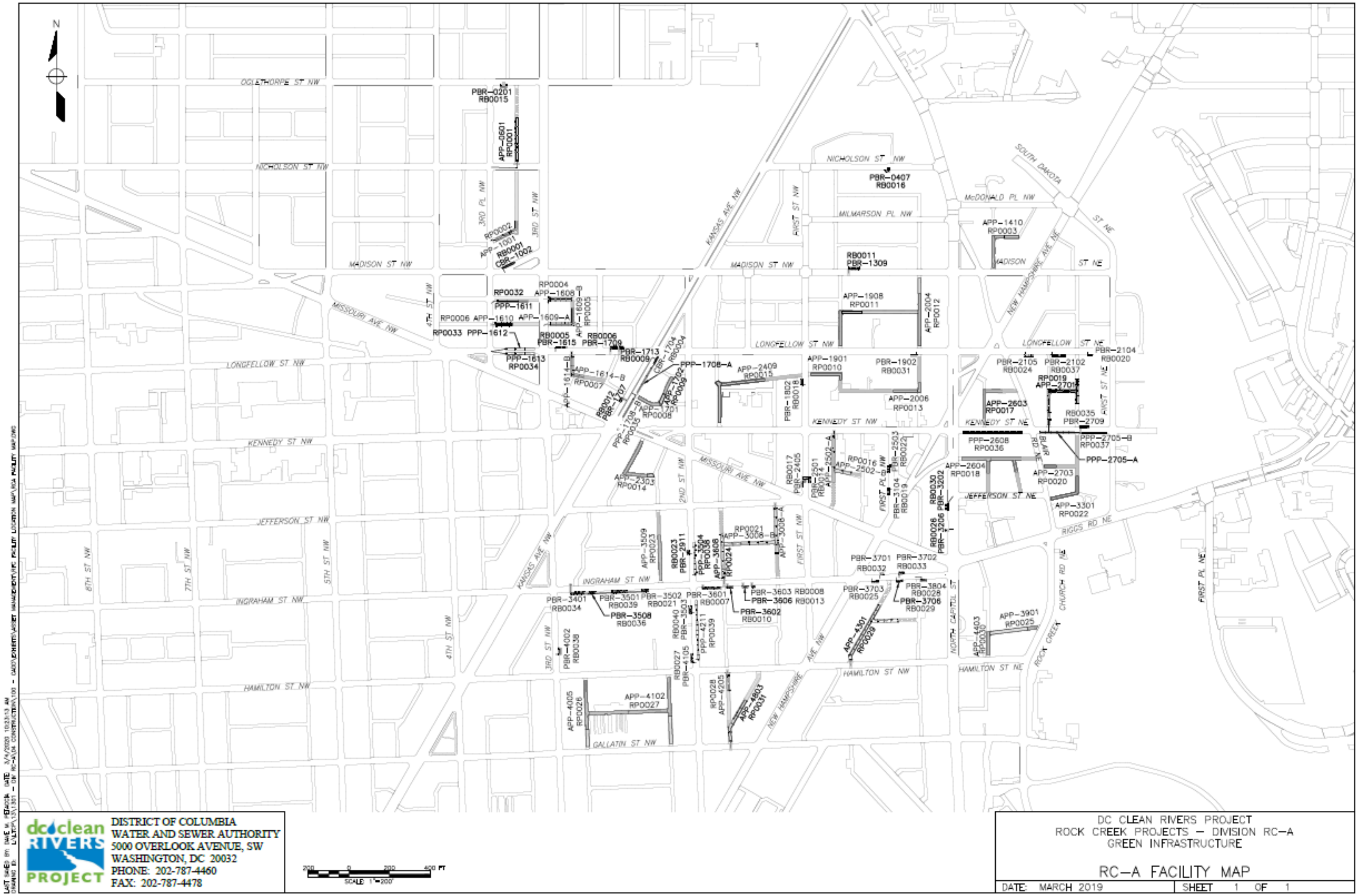
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

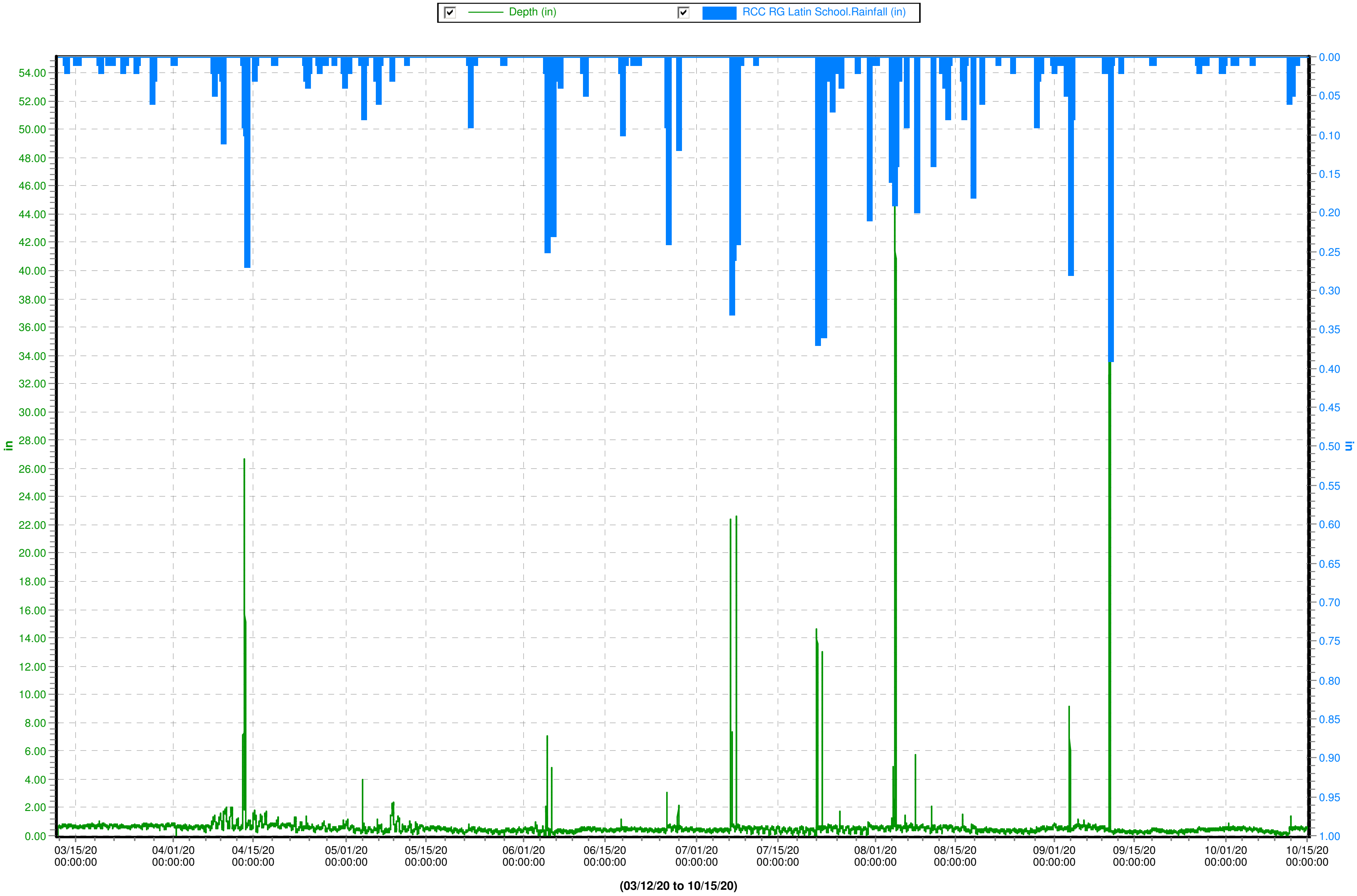


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2102

30 Longfellow ST NW-Well Depth (in): 65



Site Name/ Manhole ID: PBR-2104

Address:48 Longfellow St NW

Latitude: N 38.957563°

Longitude: W -77.009596°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	67”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

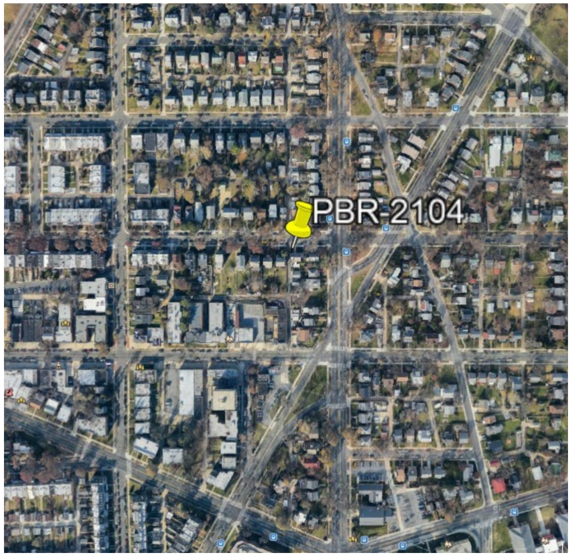
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

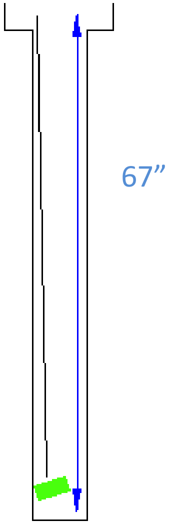


Detail Map

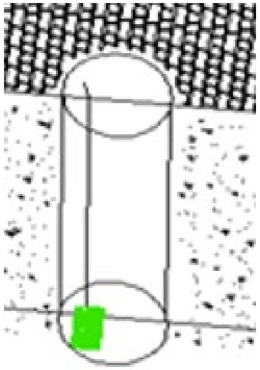
Site Area Overview

View from Top of Well

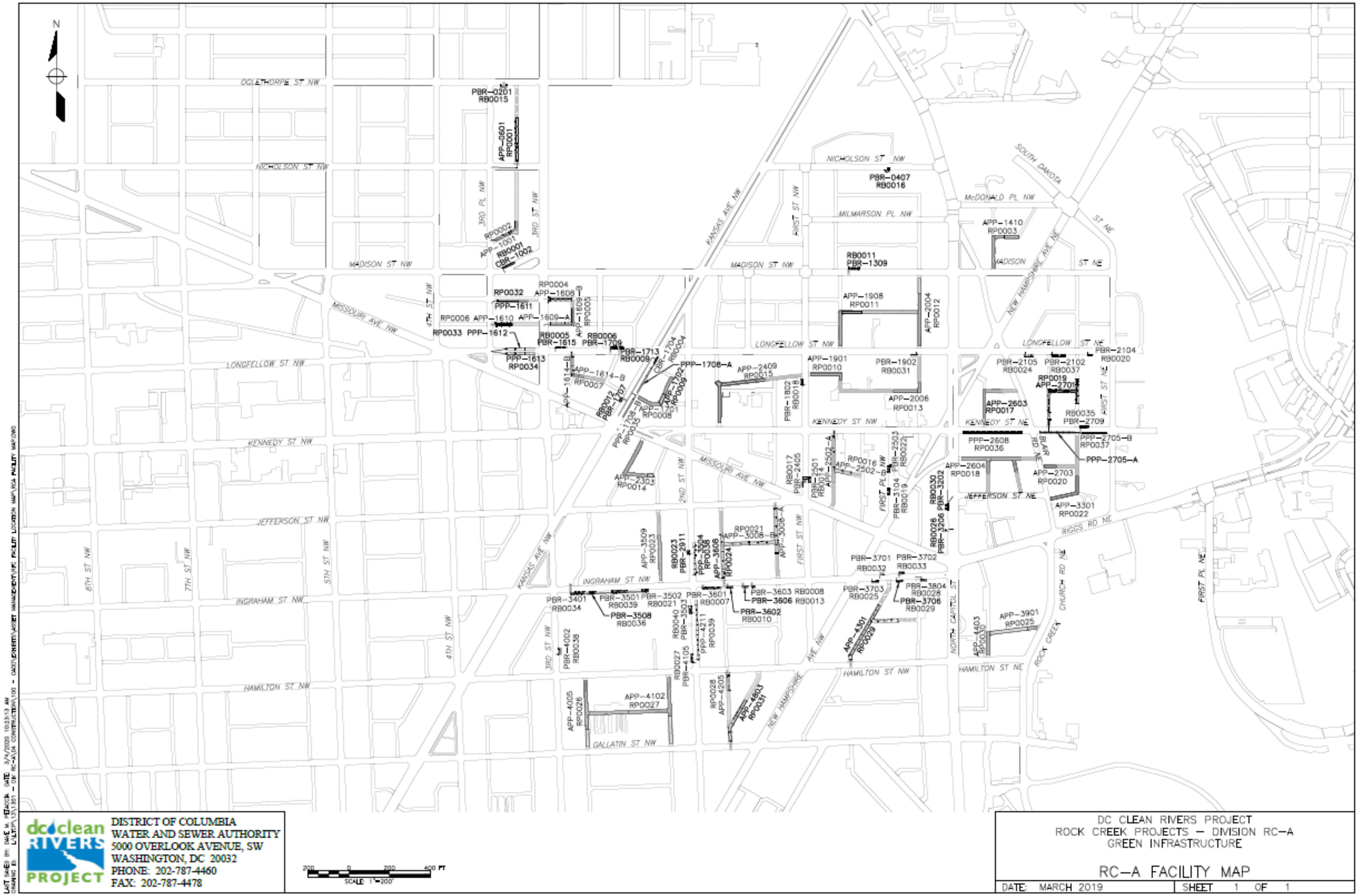
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

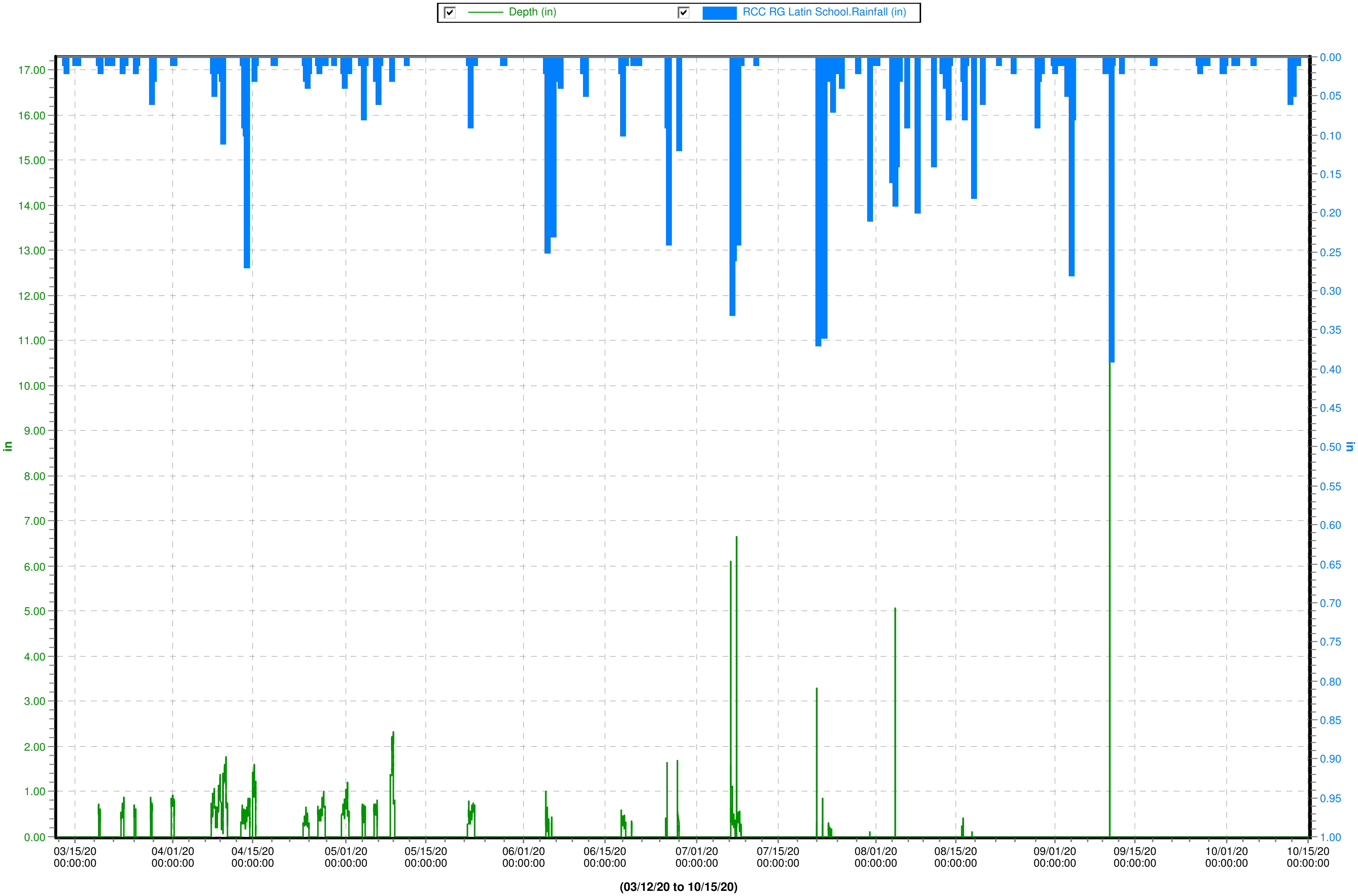


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2104

48 Longfellow ST NW - Well Depth (in): 67



Site Name/ Manhole ID: PBR-2105

Address:22 Longfellow St NW

Latitude: N 38.957548° Longitude: W -77.010512°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	60”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

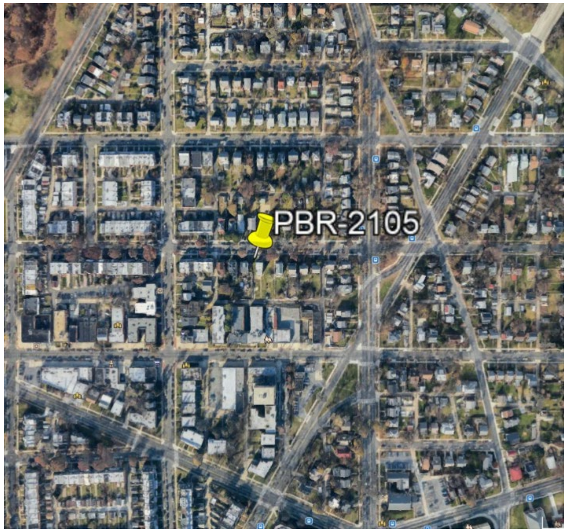
[✓ No]

Yes

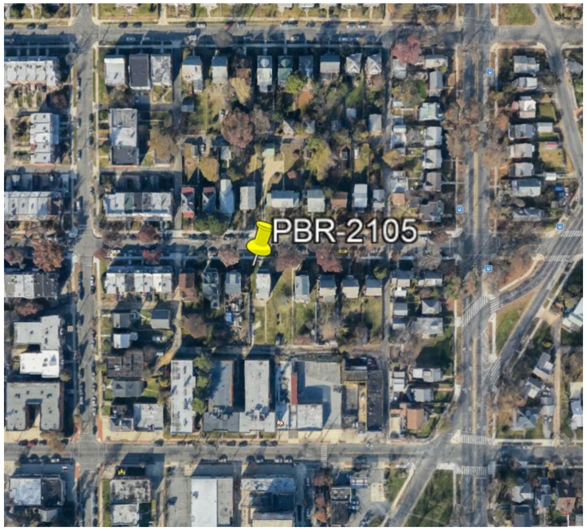
Hard Packed (in):

Soft (in):

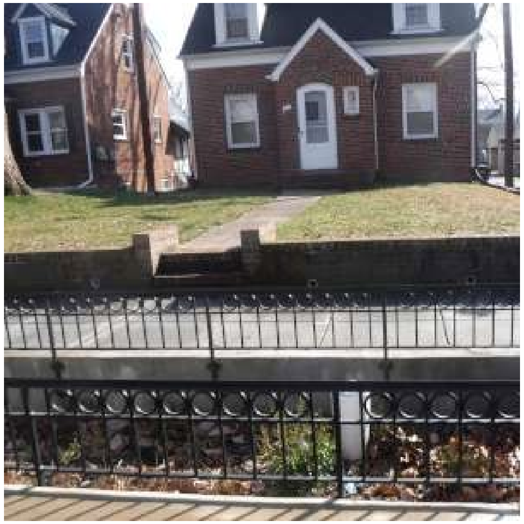
Area Map



Detail Map

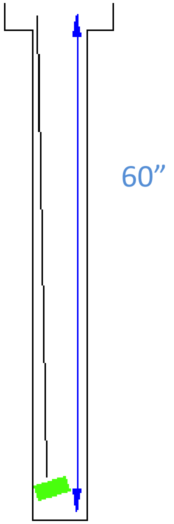


Site Area Overview

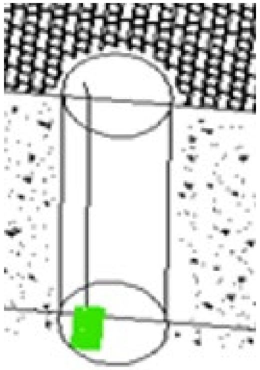


View from Top of Well

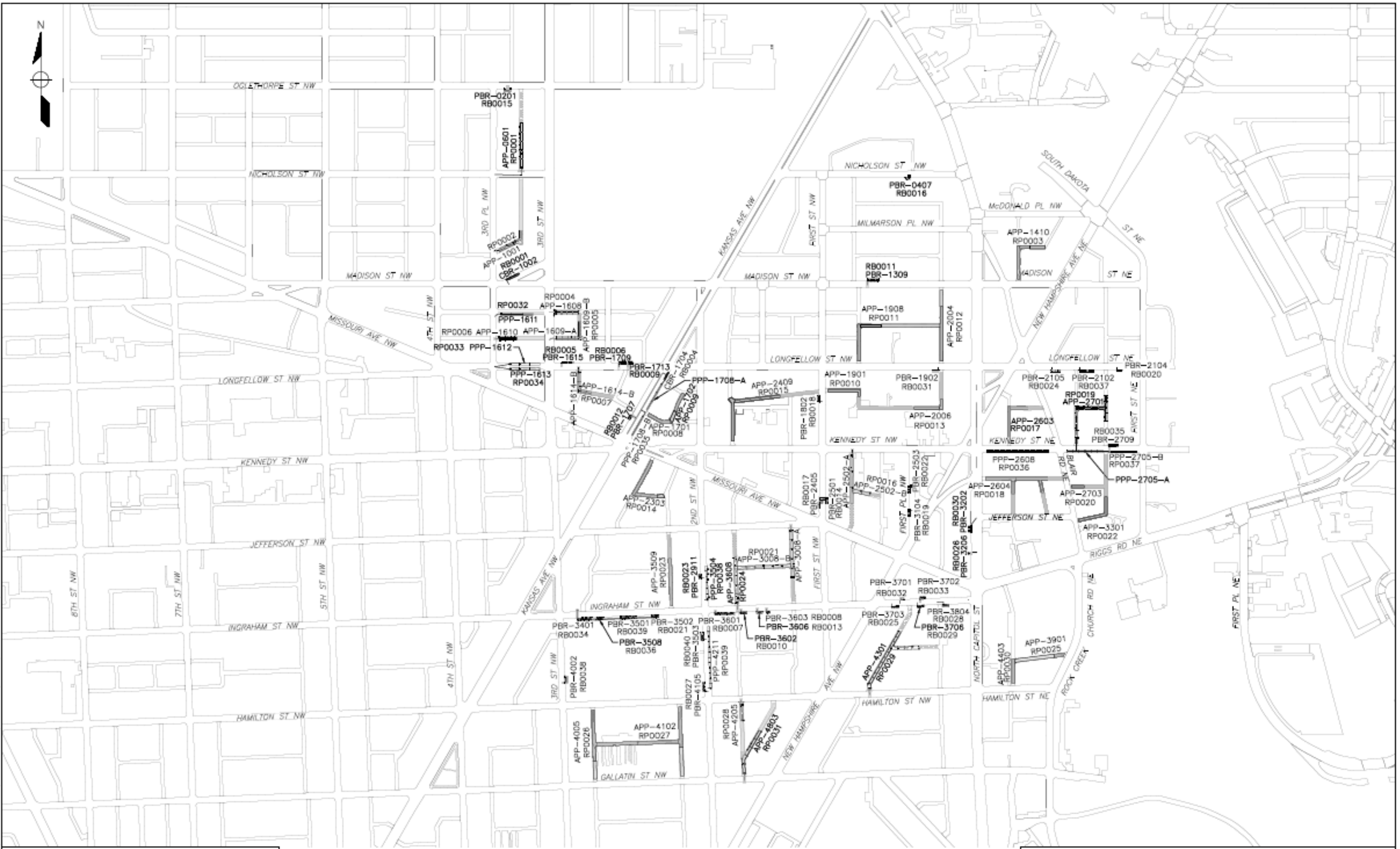
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



DISTRICT OF COLUMBIA
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FAX: 202-787-4478

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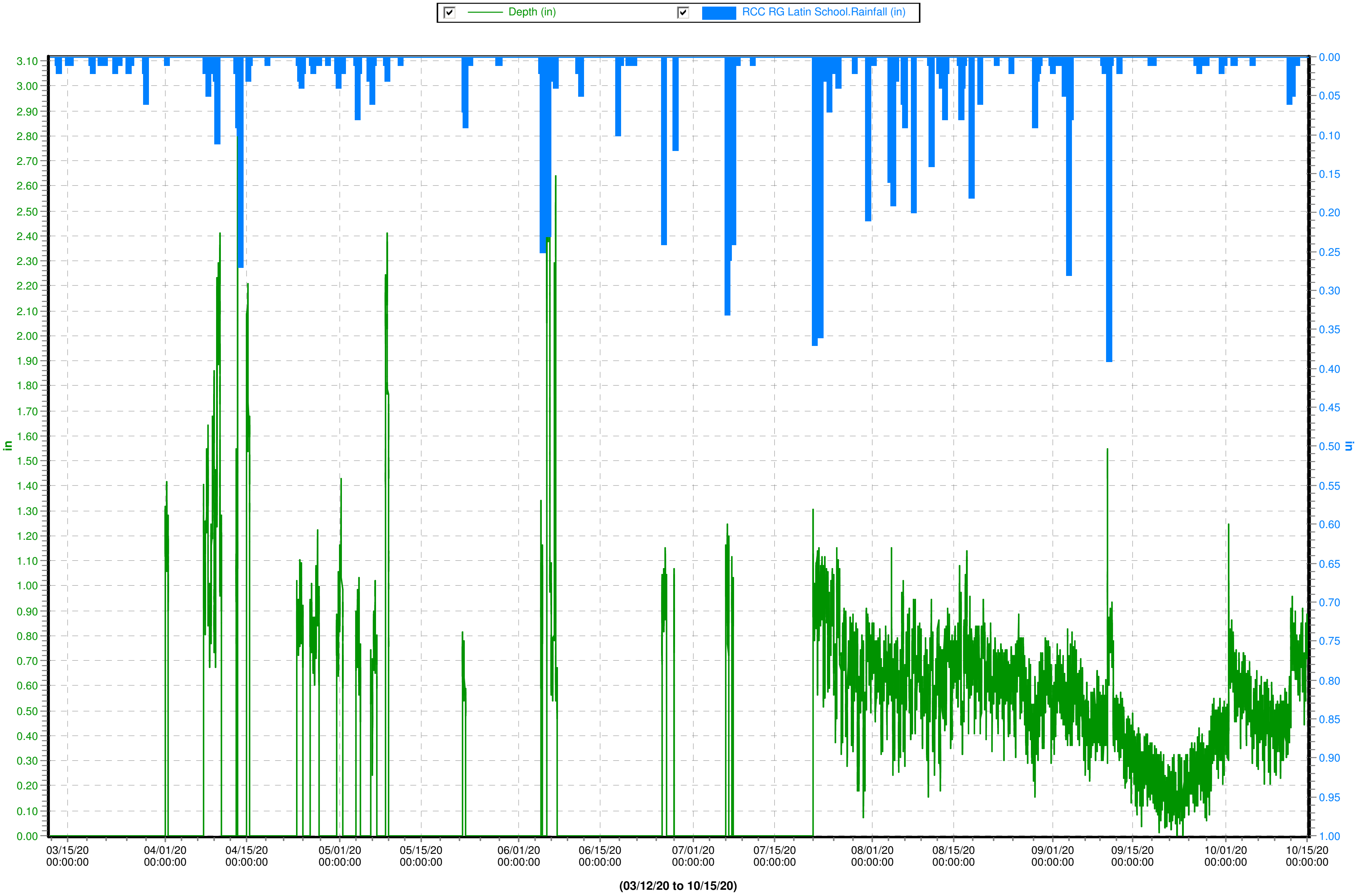
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

2105

22 Longfellow ST NW-Well Depth (in): 60



Site Name/ Manhole ID: PBR-2405

Address:5403 1st St NW

Latitude: N 38.955811°
Longitude: W -77.011680°

Investigation Date:2/26/2020
Crew: LP/MH

Installation Date:3/11/2020
Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	53”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

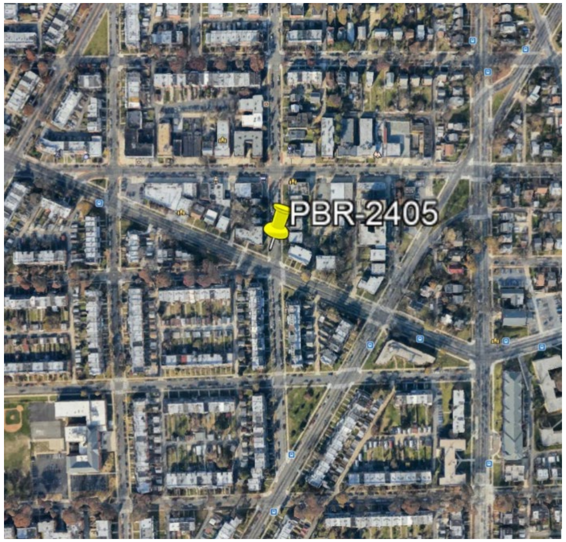
Sediment Present:

[✓ No]
Yes

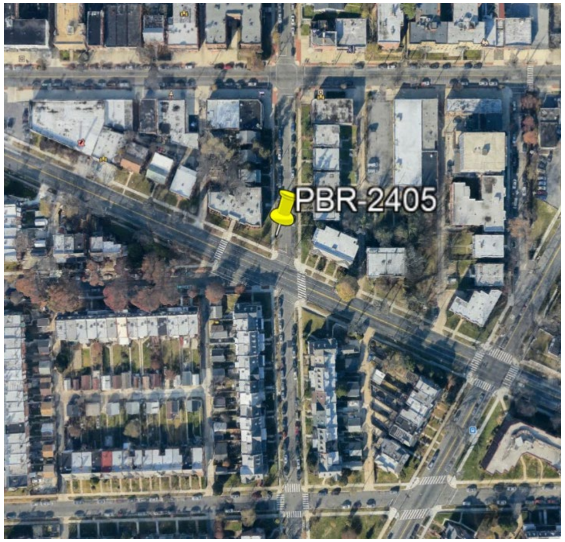
Hard Packed (in):

Soft (in):

Area Map



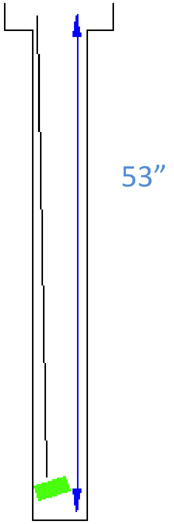
Detail Map



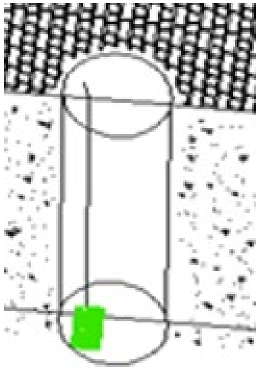
Site Area Overview

View from Top of Well

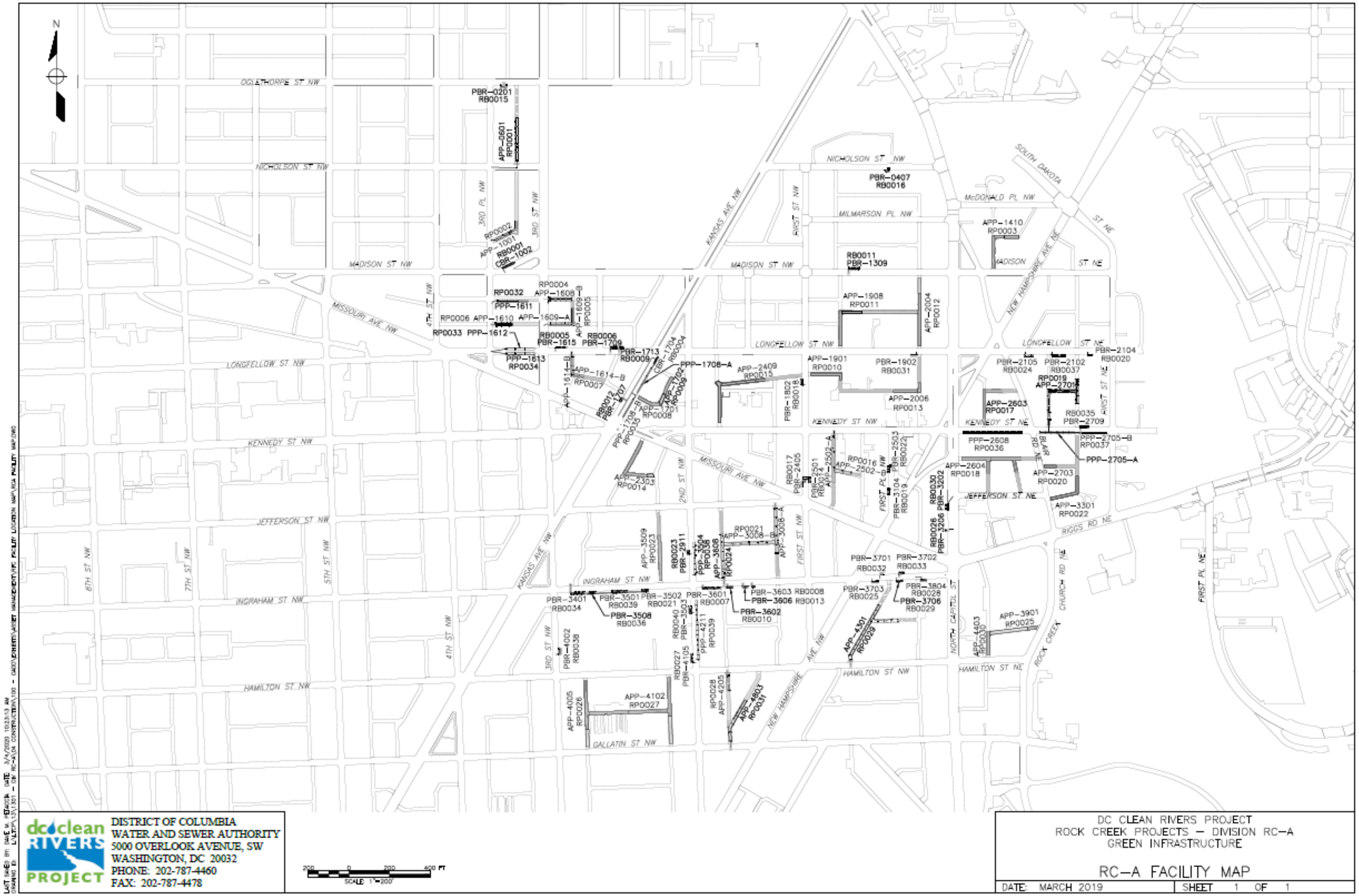
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

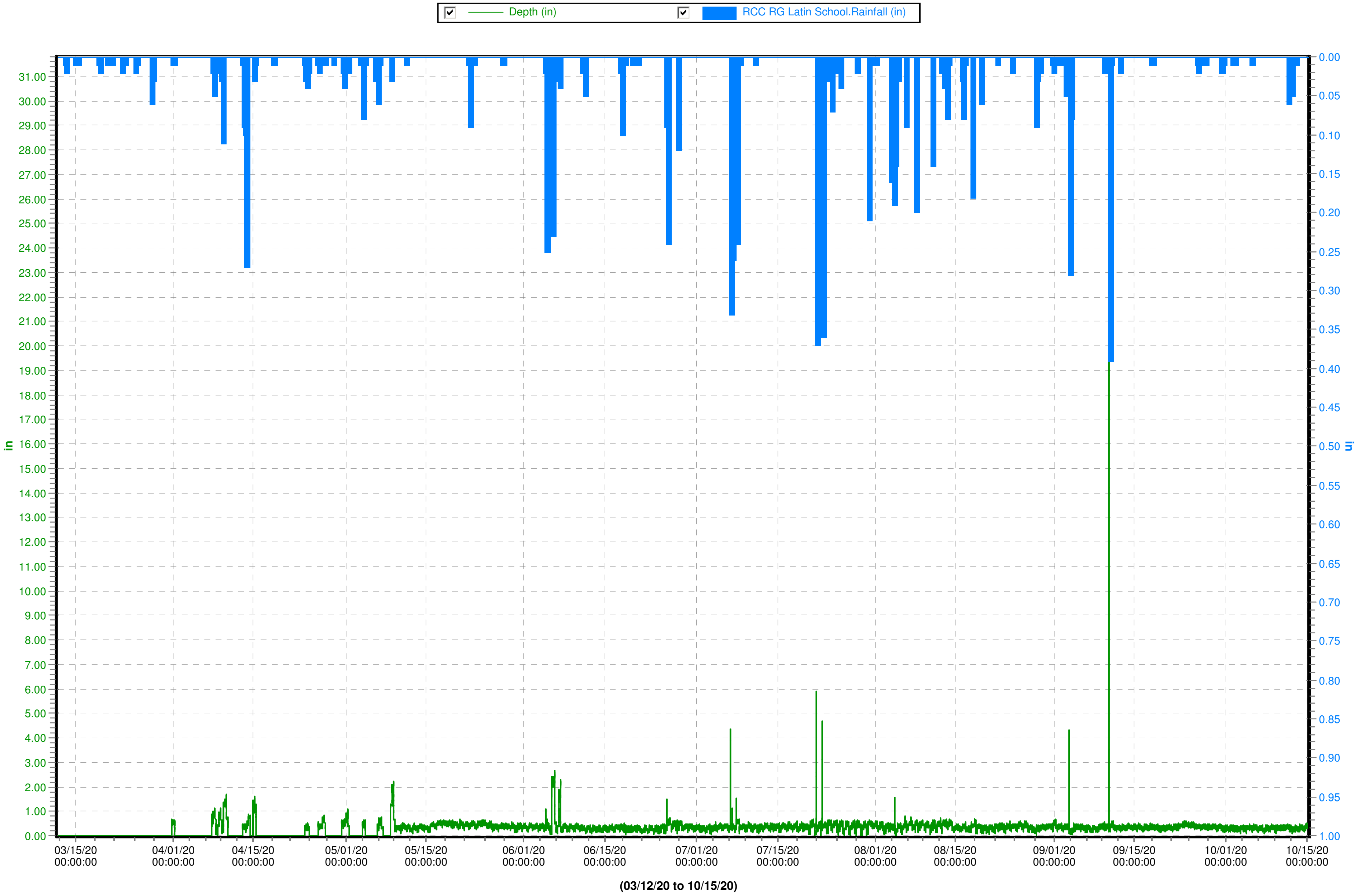


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2405

5403 1st ST NW-Well Depth (in): 53



Site Name/ Manhole ID: PBR-2501

Address:5404 1st St NW

Latitude: N 38.955775°

Longitude: W -77.011517°

Investigation Date:2/26/2020 Crew :LP/MH

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .75

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	54”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

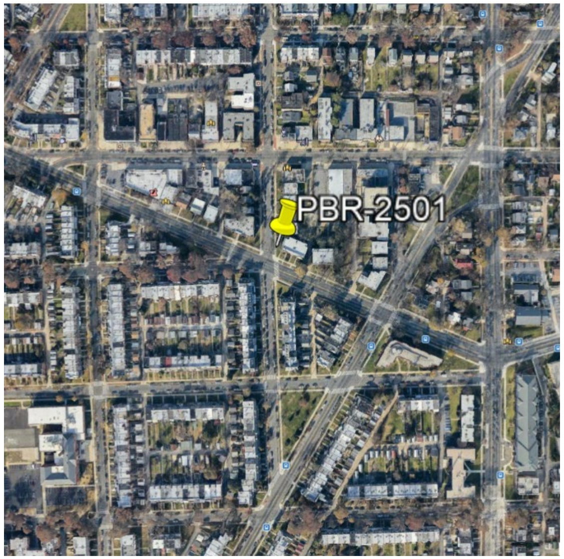
[✓ No]

Yes

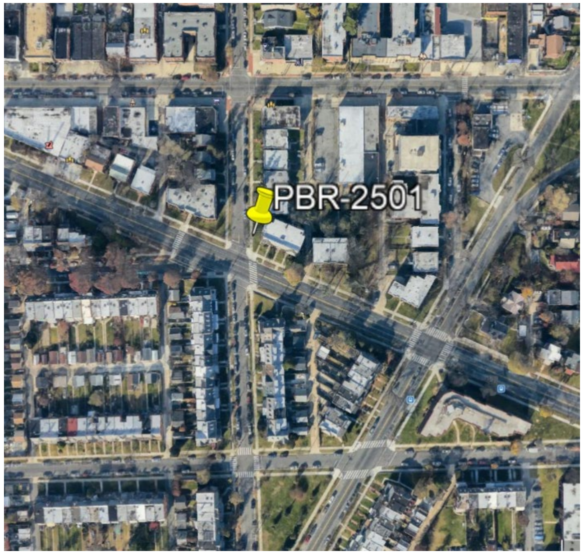
Hard Packed (in):

Soft (in):

Area Map



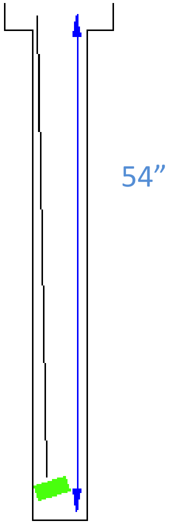
Detail Map



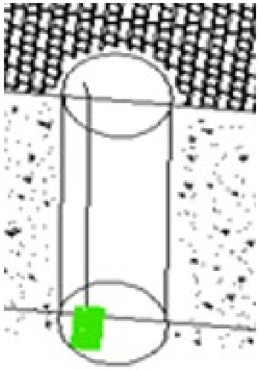
Site Area Overview

View from Top of Well

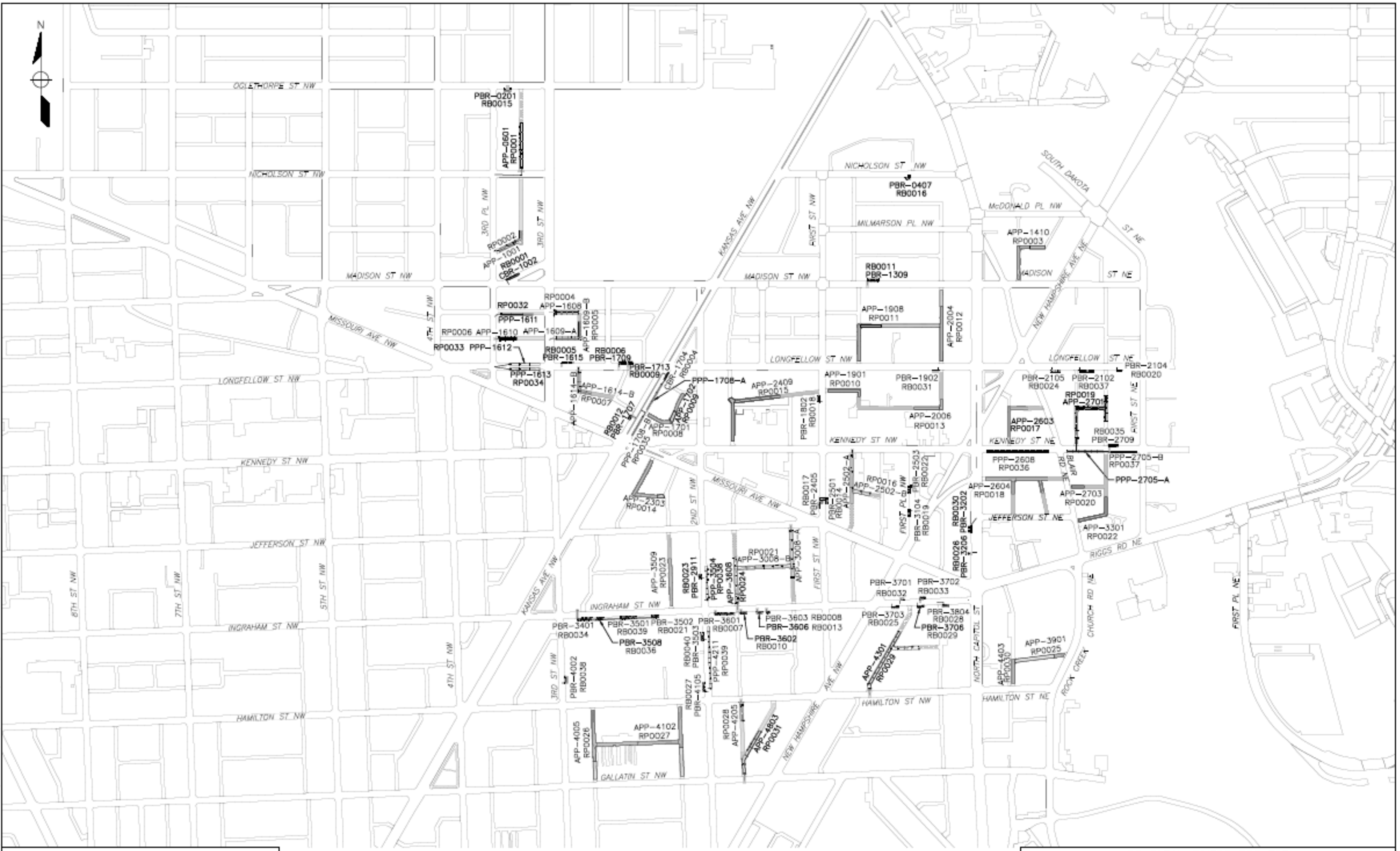
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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DRAWING ID: L:\LTCP\13\1301 – GW RC-A\04 CONSTRUCTION\100 – CADD\EXHIBITS\ASSET MANAGEMENT\RC FACILITY LOCATION MAP\RCA FACILITY MAP.DWG

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WATER AND SEWER AUTHORITY
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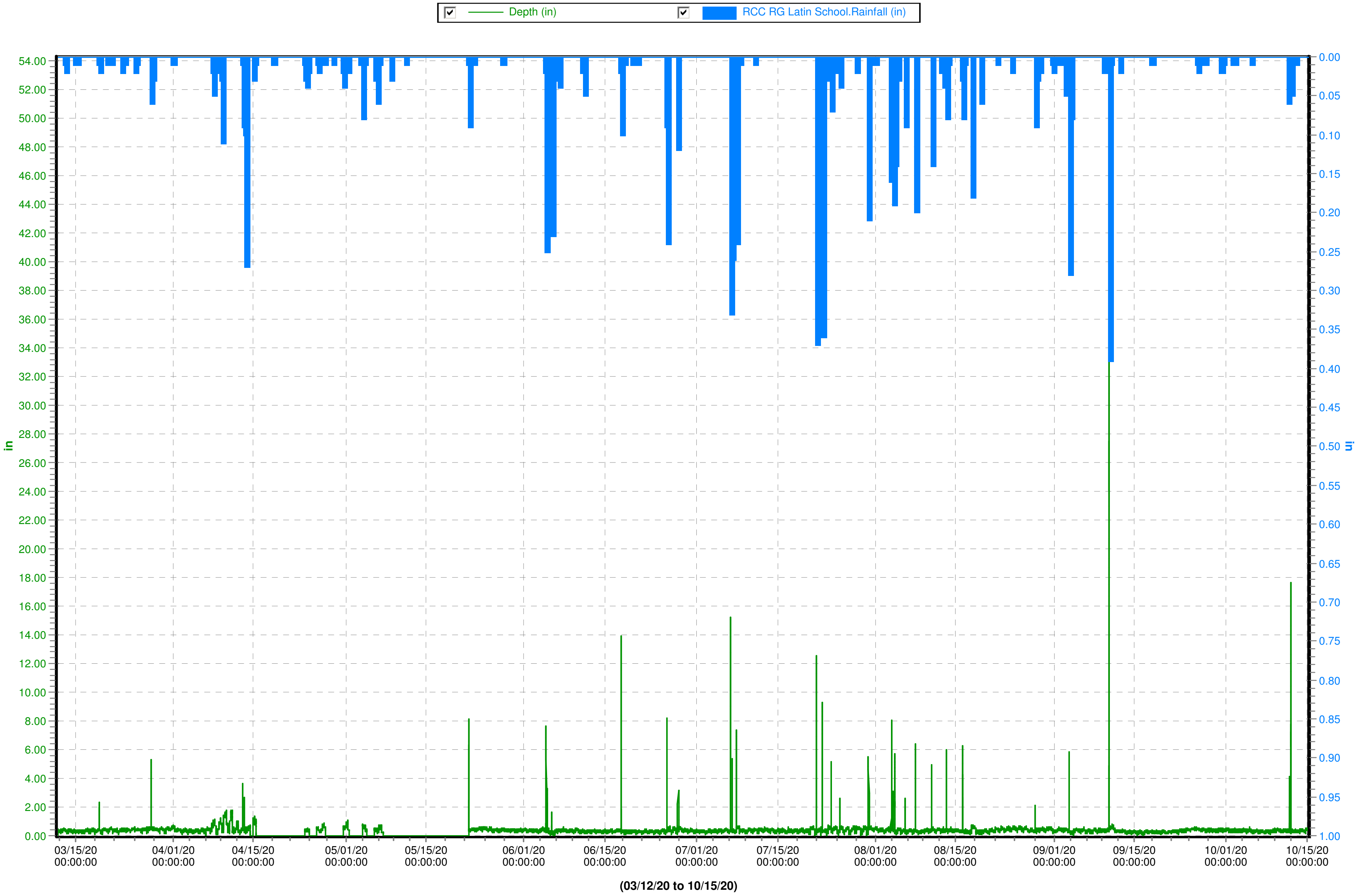
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

2501

5404 1st ST NW-Well Depth (in): 53



Site Name/ Manhole ID: PBR-2503

Address:5414 1st Pl NW

Latitude: N 38.956194° Longitude: W -77.010153°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	63”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

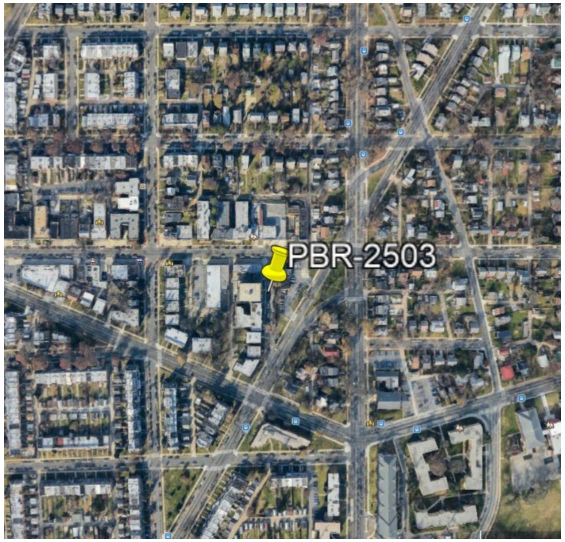
[✓ No]

Yes

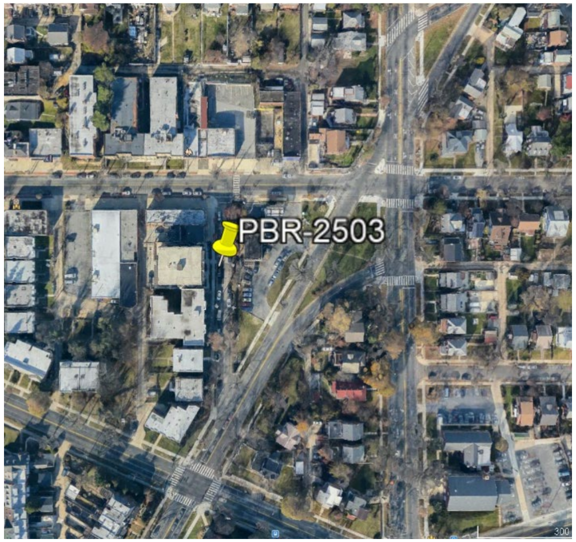
Hard Packed (in):

Soft (in):

Area Map



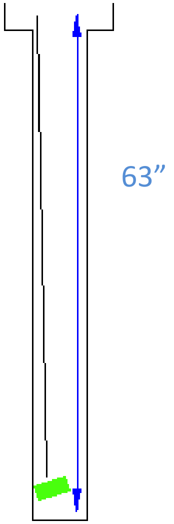
Detail Map



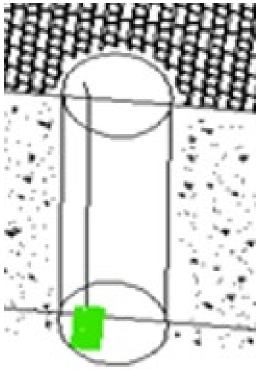
Site Area Overview

View from Top of Well

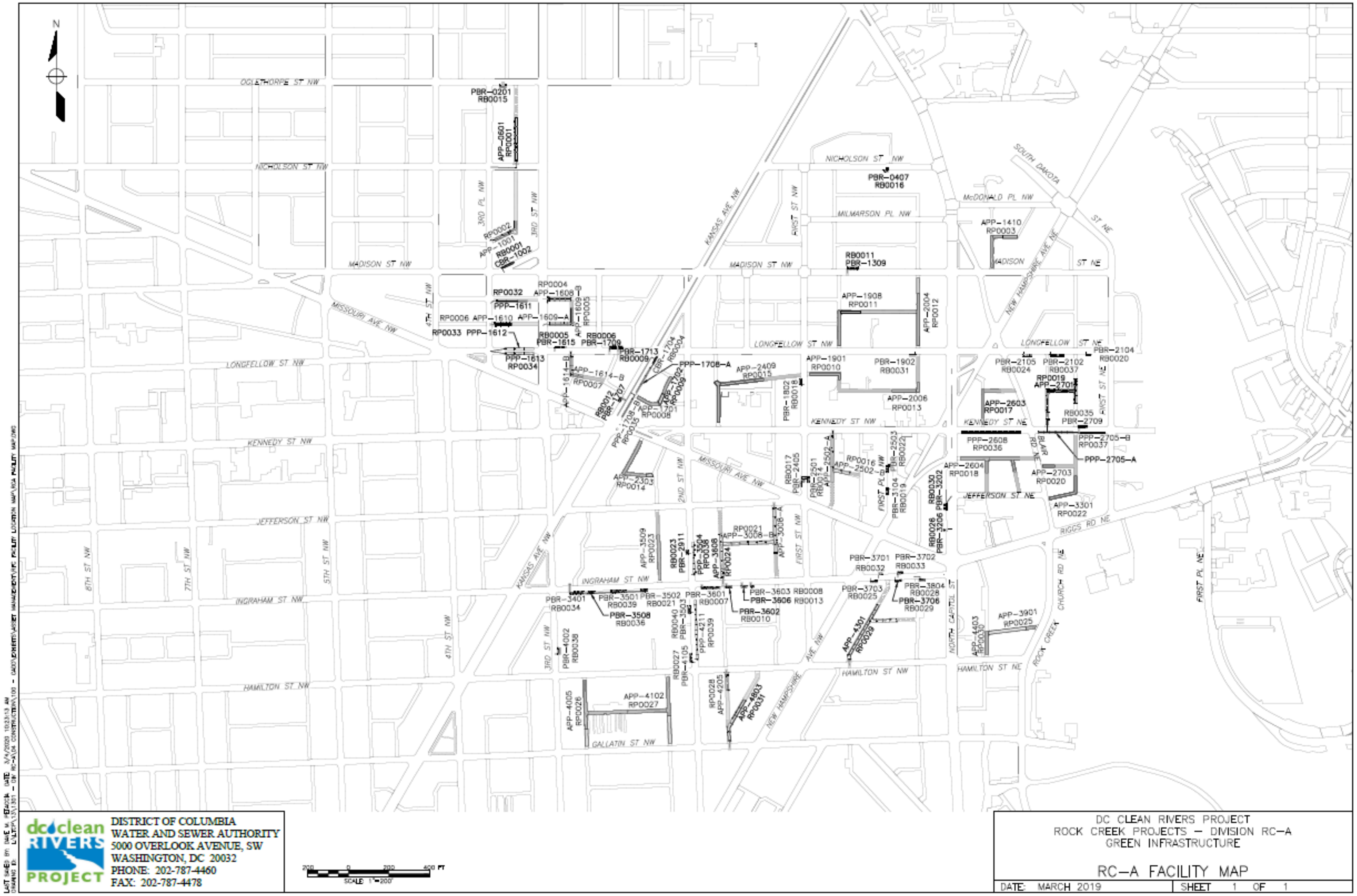
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

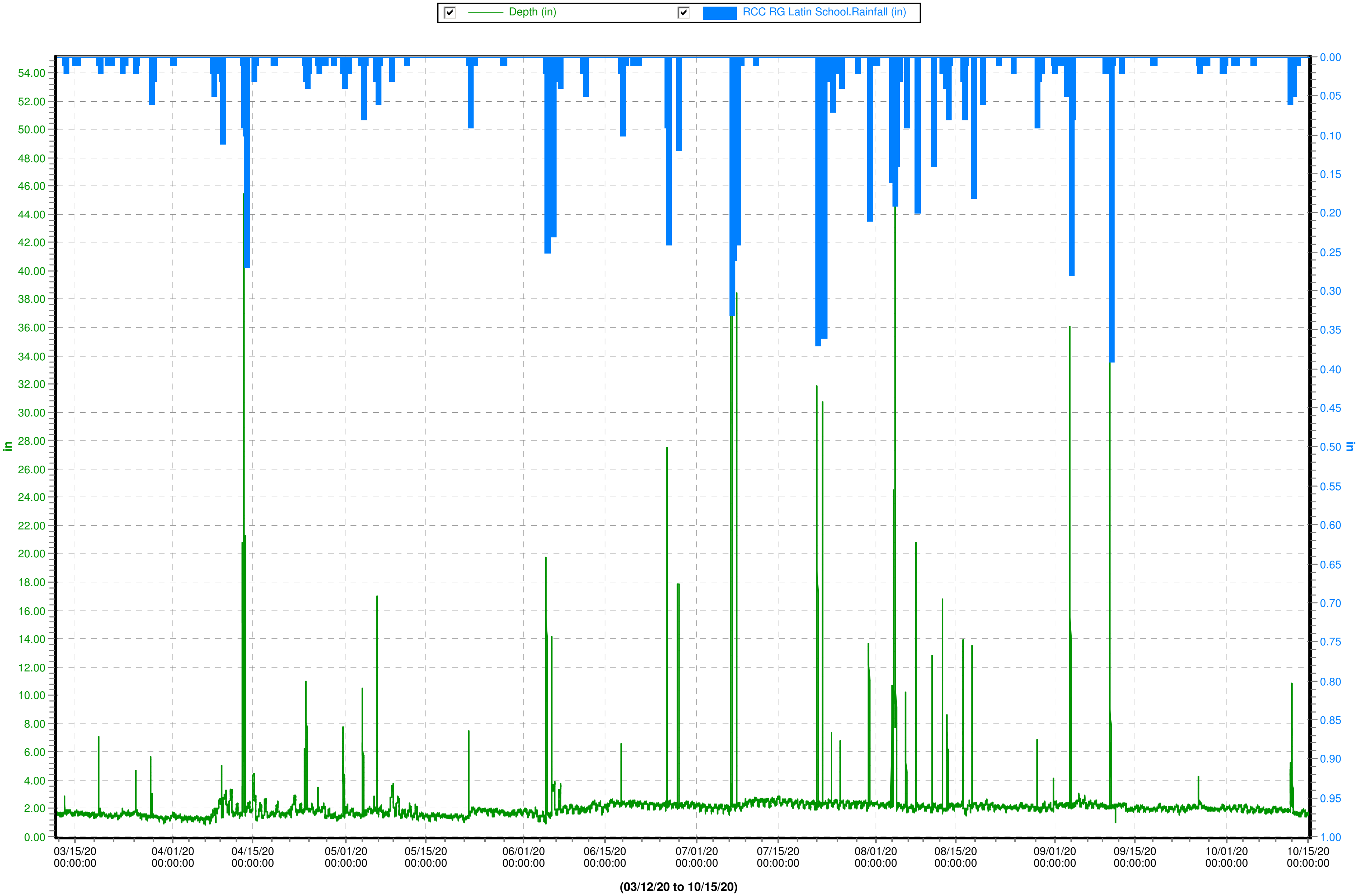


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2503

5414 1st PL NW-Well Depth (in): 63



Site Name/ Manhole ID: PBR-2709

Address: 35 Kennedy St NE

Latitude: N 38.956602° Longitude: W -77.007523°

Investigation Date: 2/25/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew SD/JP:

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	50”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

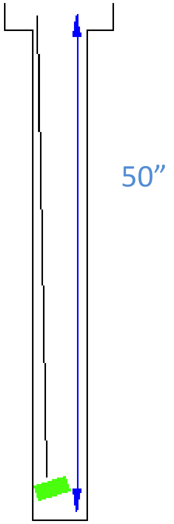
Area Map

Detail Map

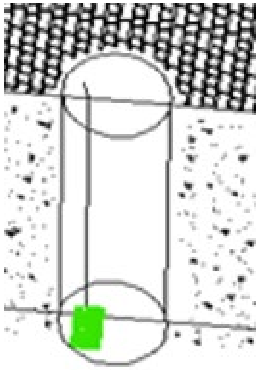
Site Area Overview

View from Top of Well

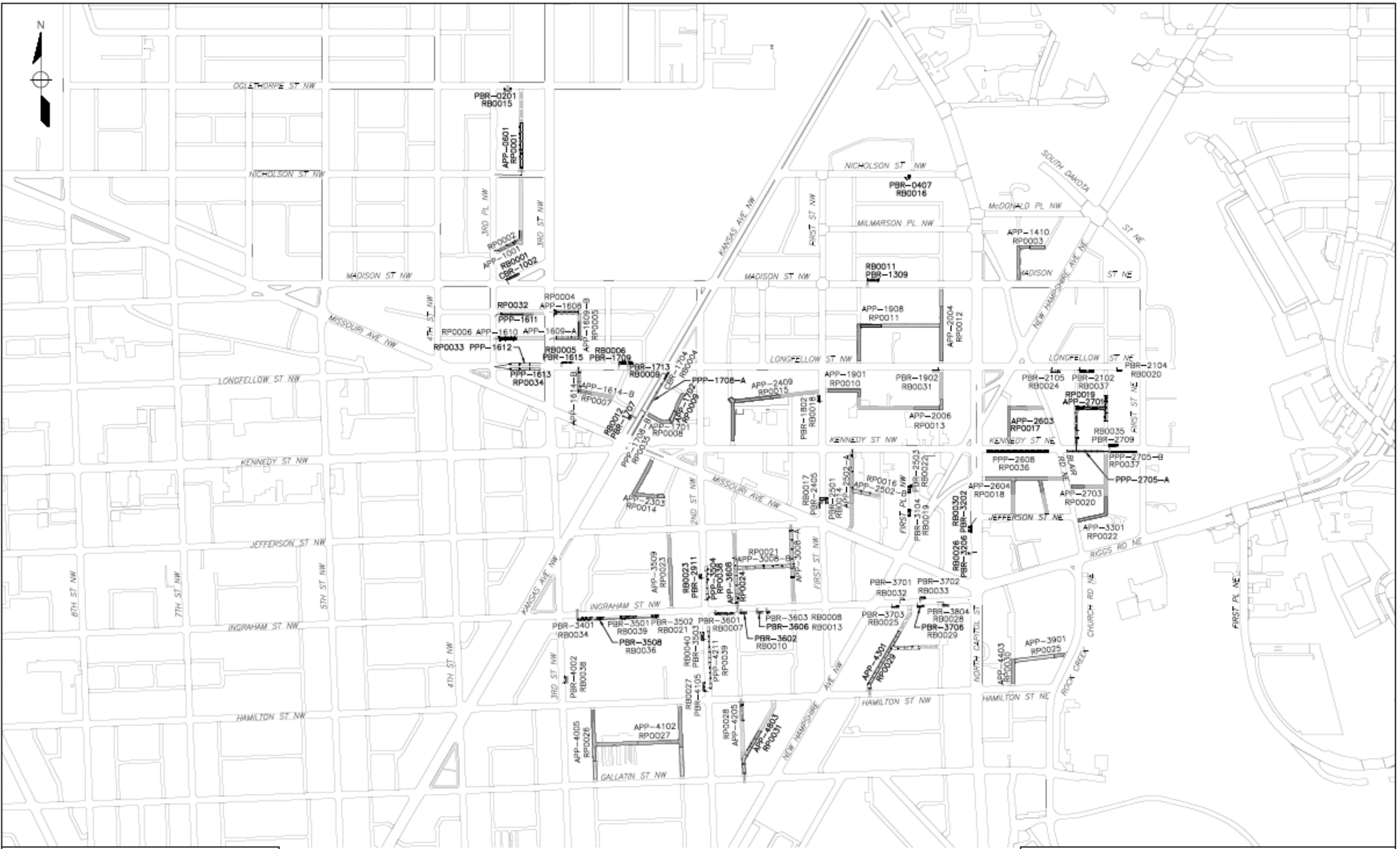
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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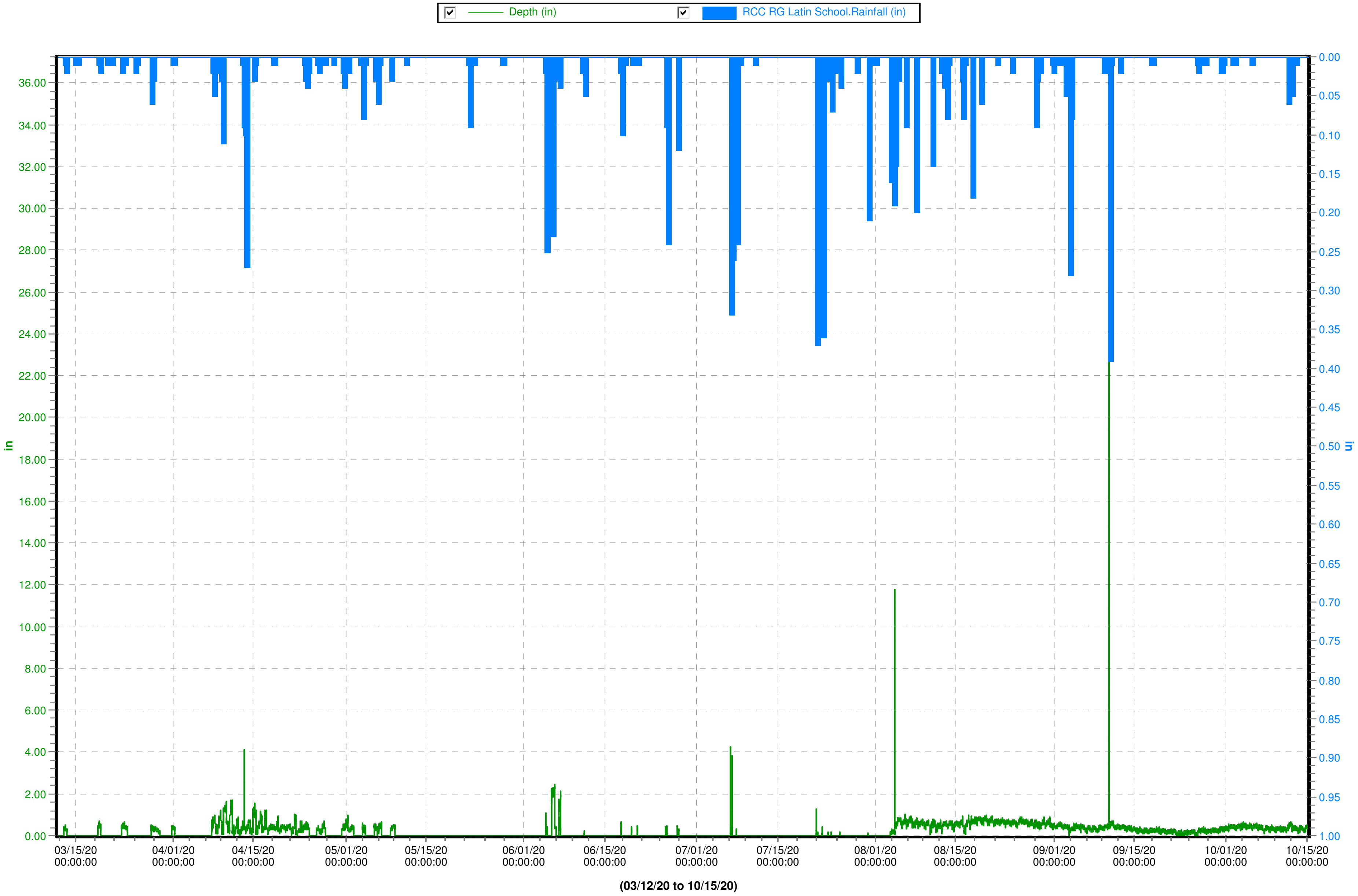
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

2709

35 Kennedy ST NE-Well Depth (in): 50



(03/12/20 to 10/15/20)

Site Name/ Manhole ID:PBR 2911

Address:5310 2nd St NW

Latitude: N 38.951886° Longitude: W -77.013649°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

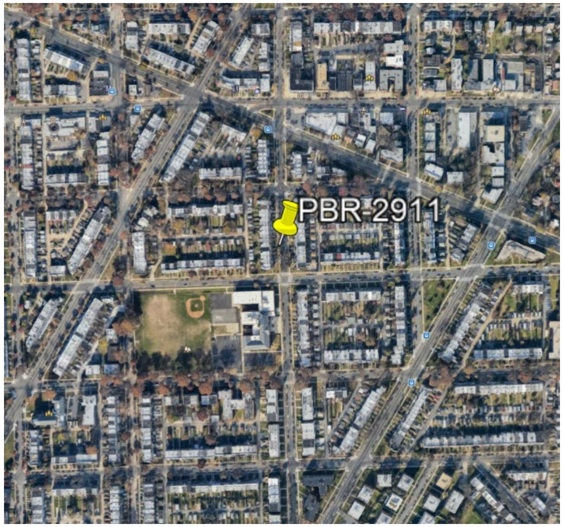
[✓ No]

Yes

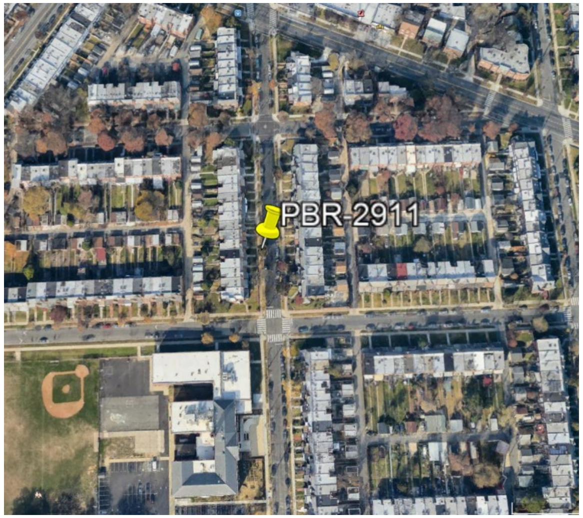
Hard Packed (in):

Soft (in):

Area Map



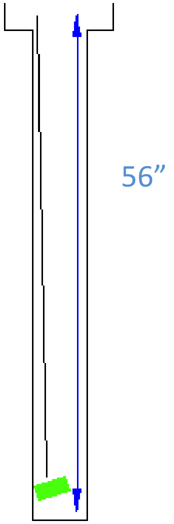
Detail Map



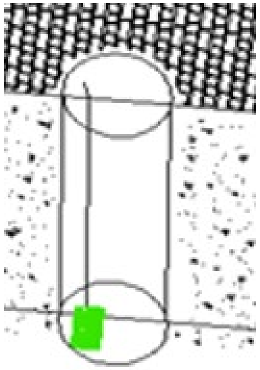
Site Area Overview

View from Top of Well

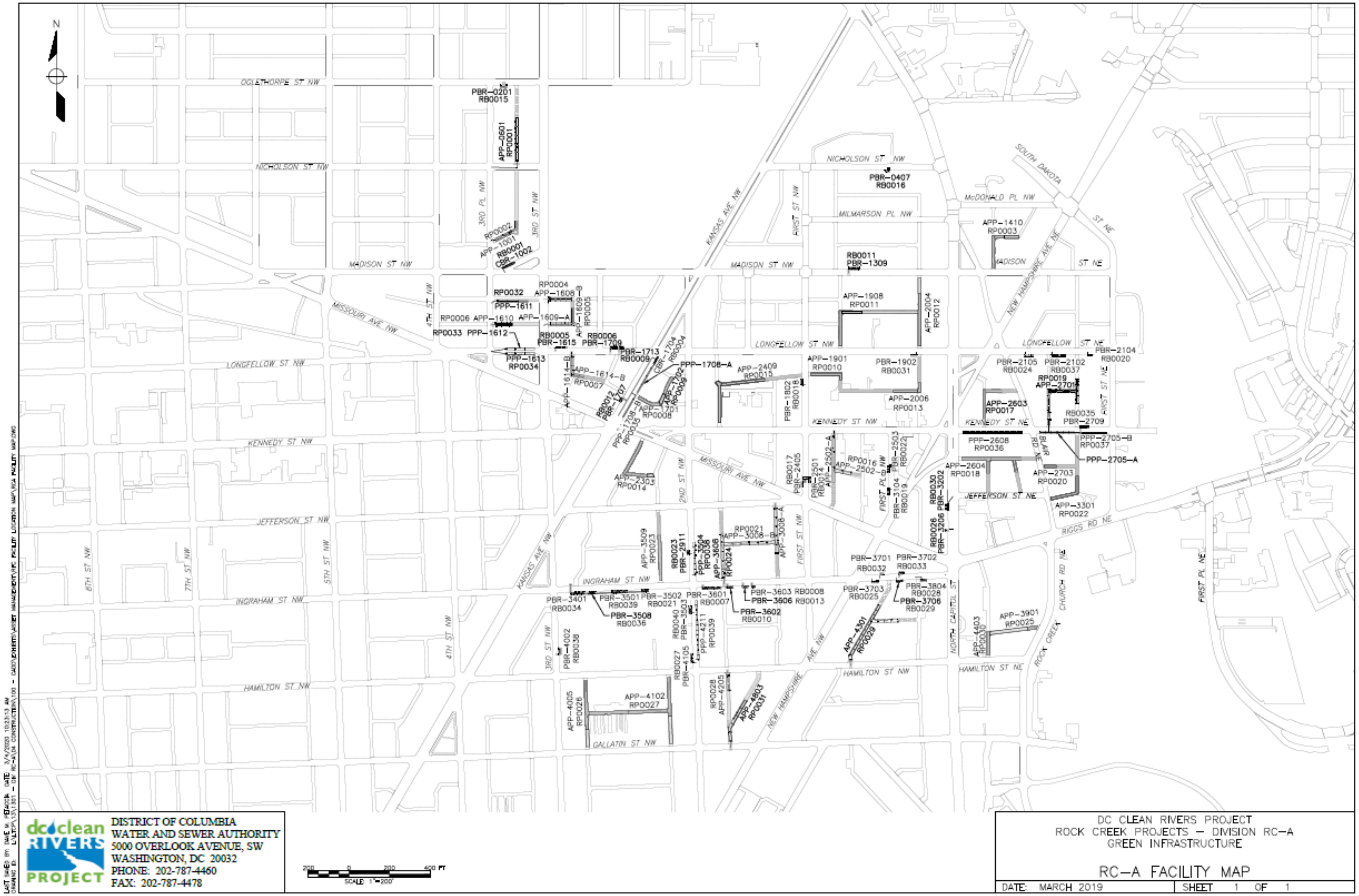
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

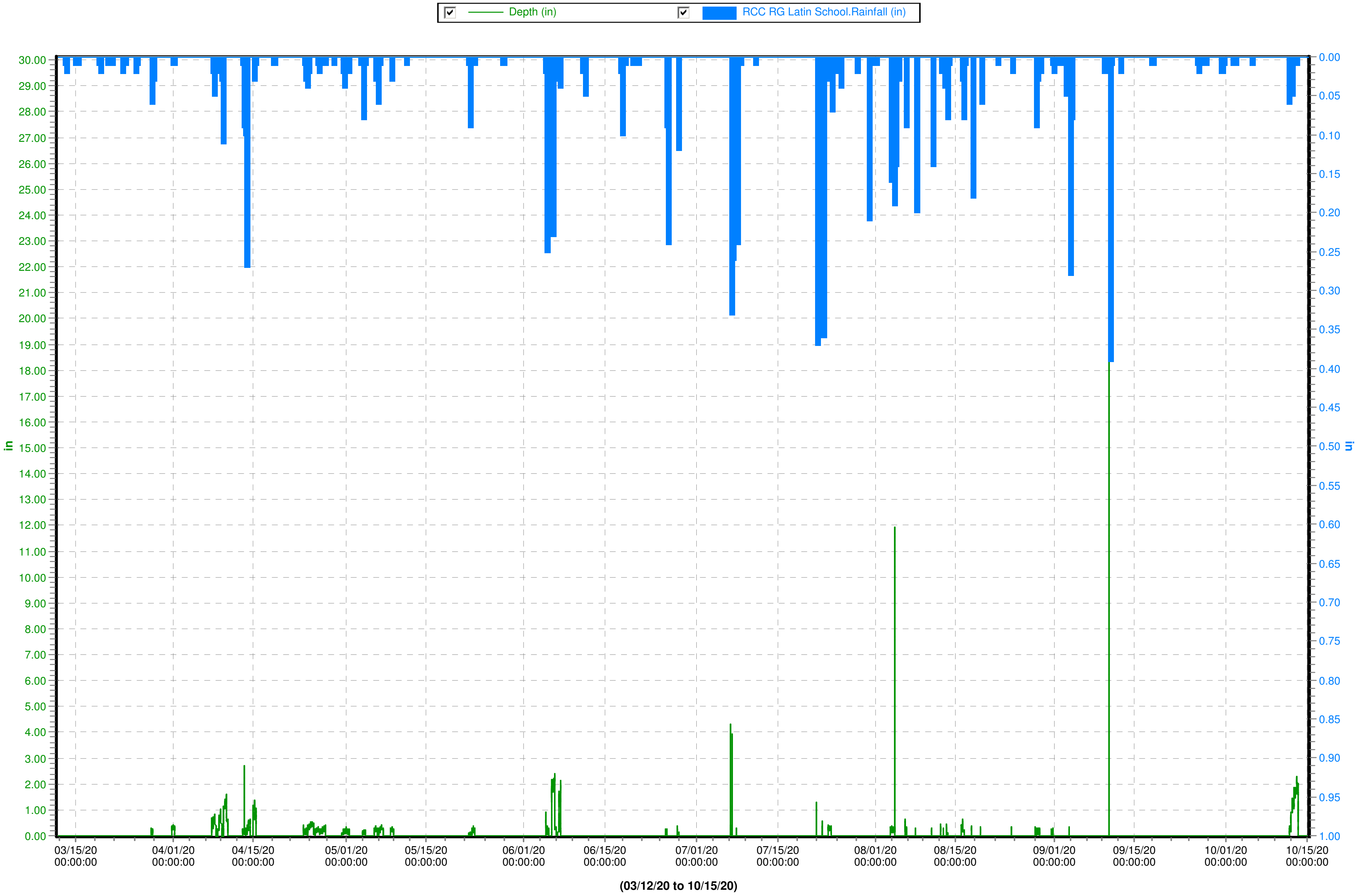
RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

LAST SAVED BY: DAVE M. PETACCIA DATE: 3/4/2020 10:23:13 AM
DRAWING ID: L:\LTP\135\1301 - GW RC-A\04 CONSTRUCTION\100 - CADD\EXHIBITS\ASSET MANAGEMENT\RC FACILITY LOCATION MAP\RCA FACILITY MAP.DWG

2911

5310 2nd ST NW-Well Depth (in): 56



Site Name/ Manhole ID: PBR-3104

Address:5404 1st ST NW

Latitude: N 38.955816° Longitude: W -77.010175°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	60”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

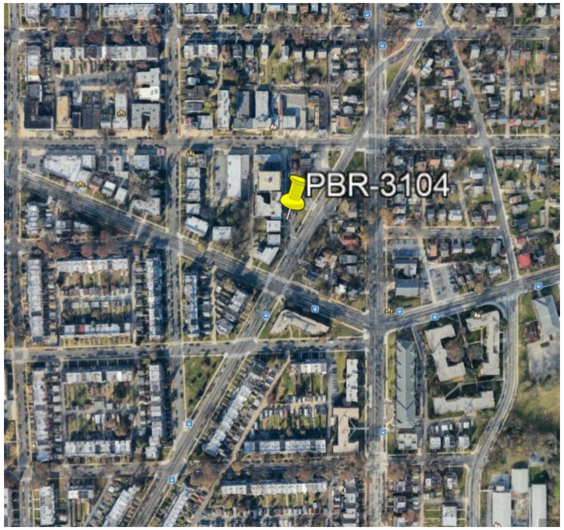
[✓ No]

Yes

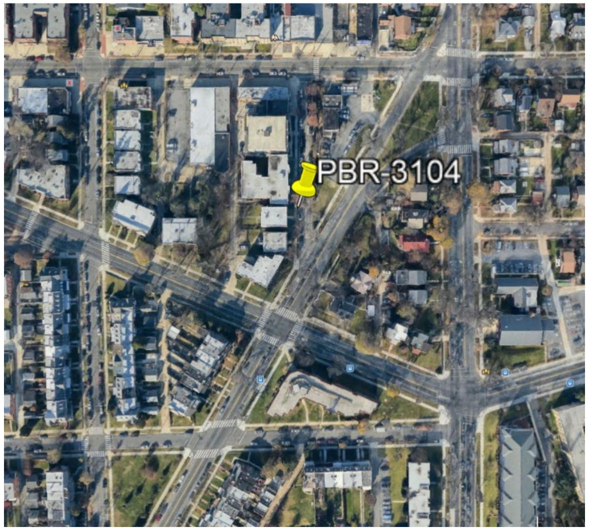
Hard Packed (in):

Soft (in):

Area Map



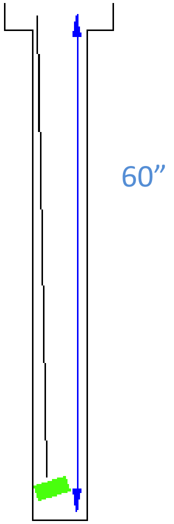
Detail Map



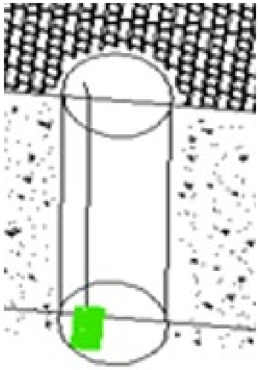
Site Area Overview

View from Top of Well

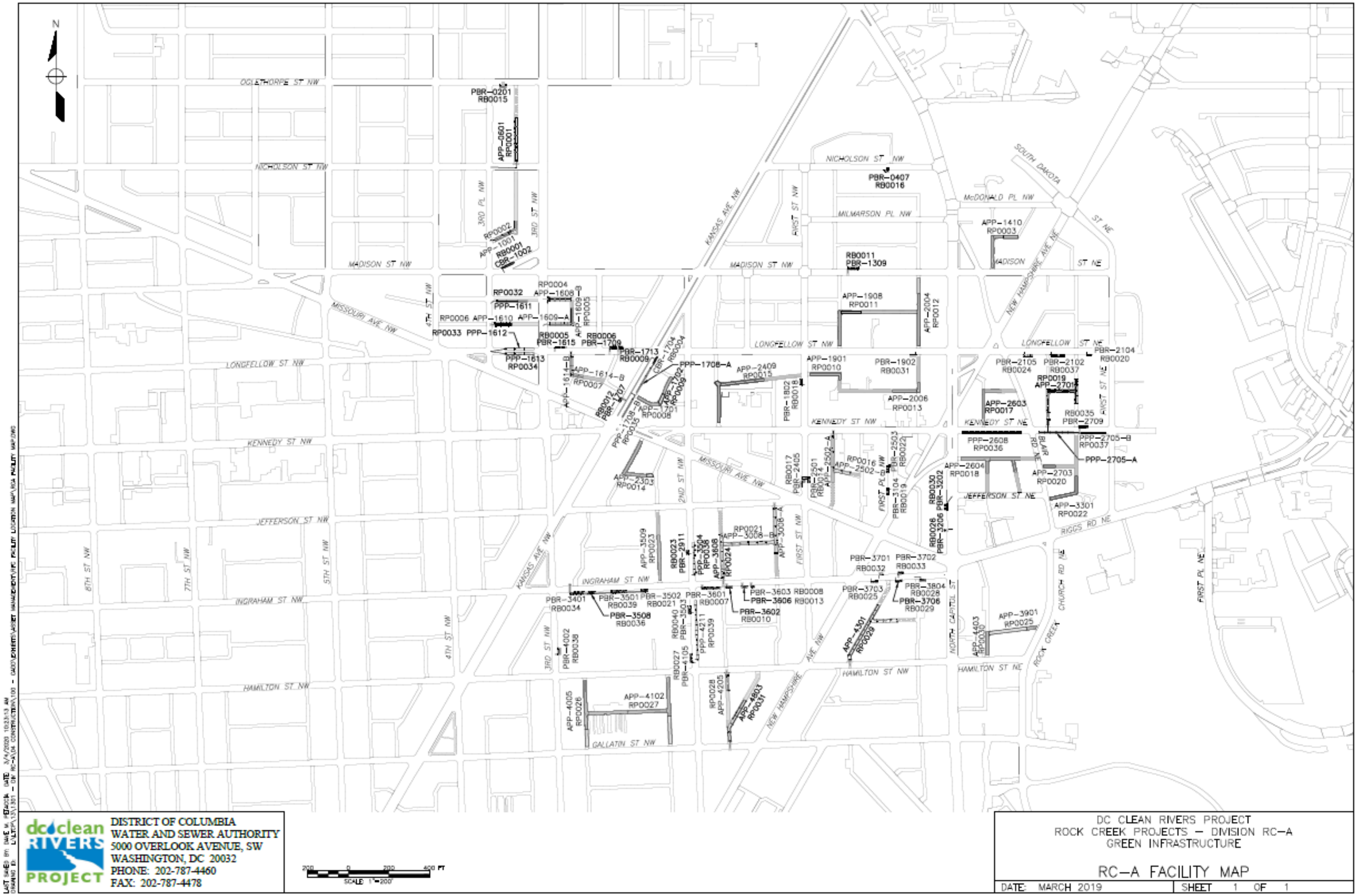
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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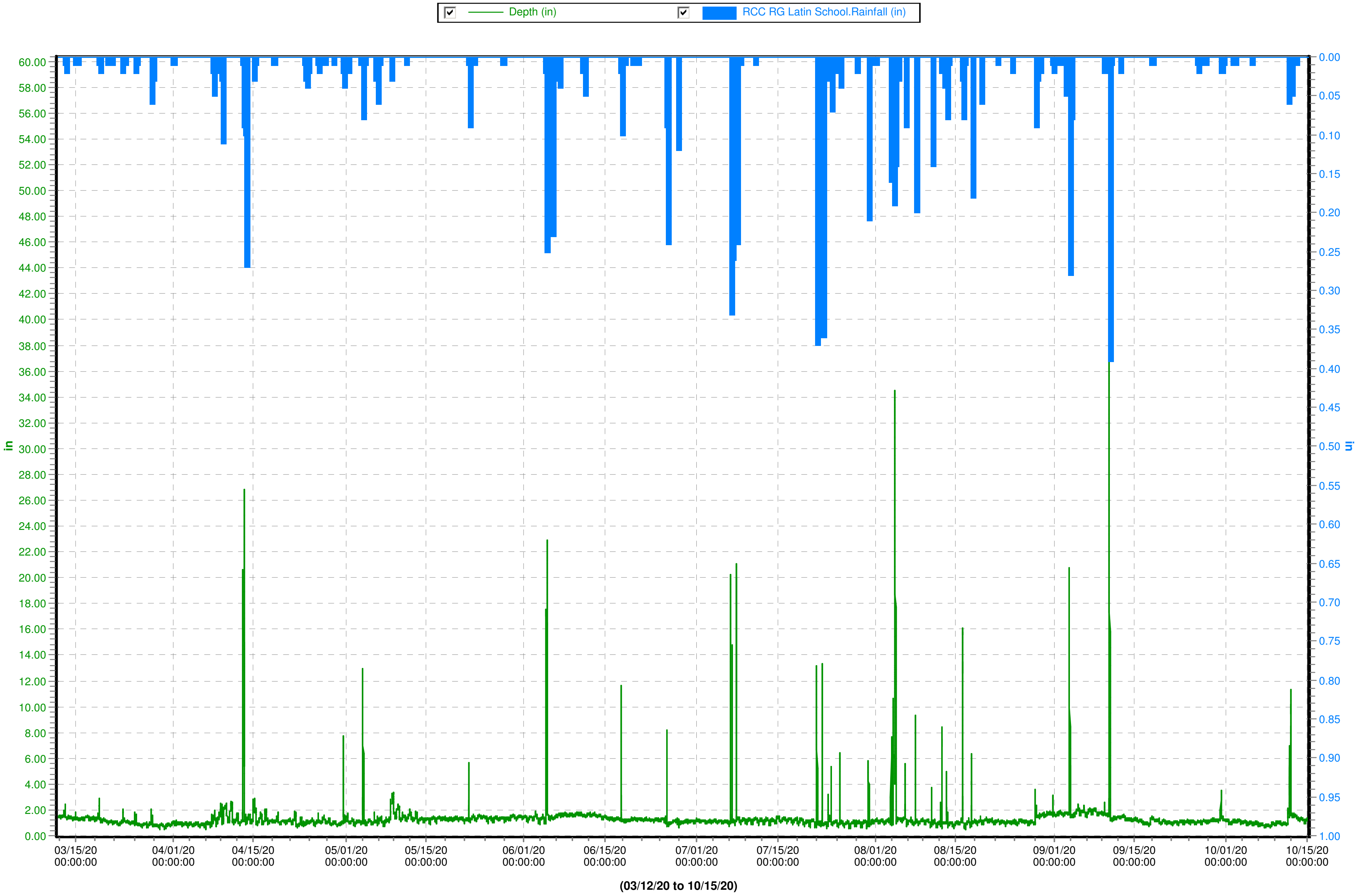
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

3104

5404 1st ST NW-Well Depth (in): 60



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: PBR-3202

Address:5416 North Capitol St

Latitude: N 38.955569° Longitude: W-77.009150 °

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	57.5	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

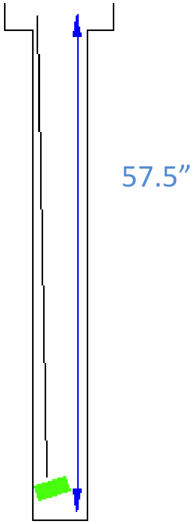
Area Map

Detail Map

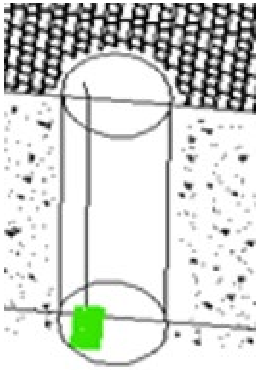
Site Area Overview

View from Top of Well

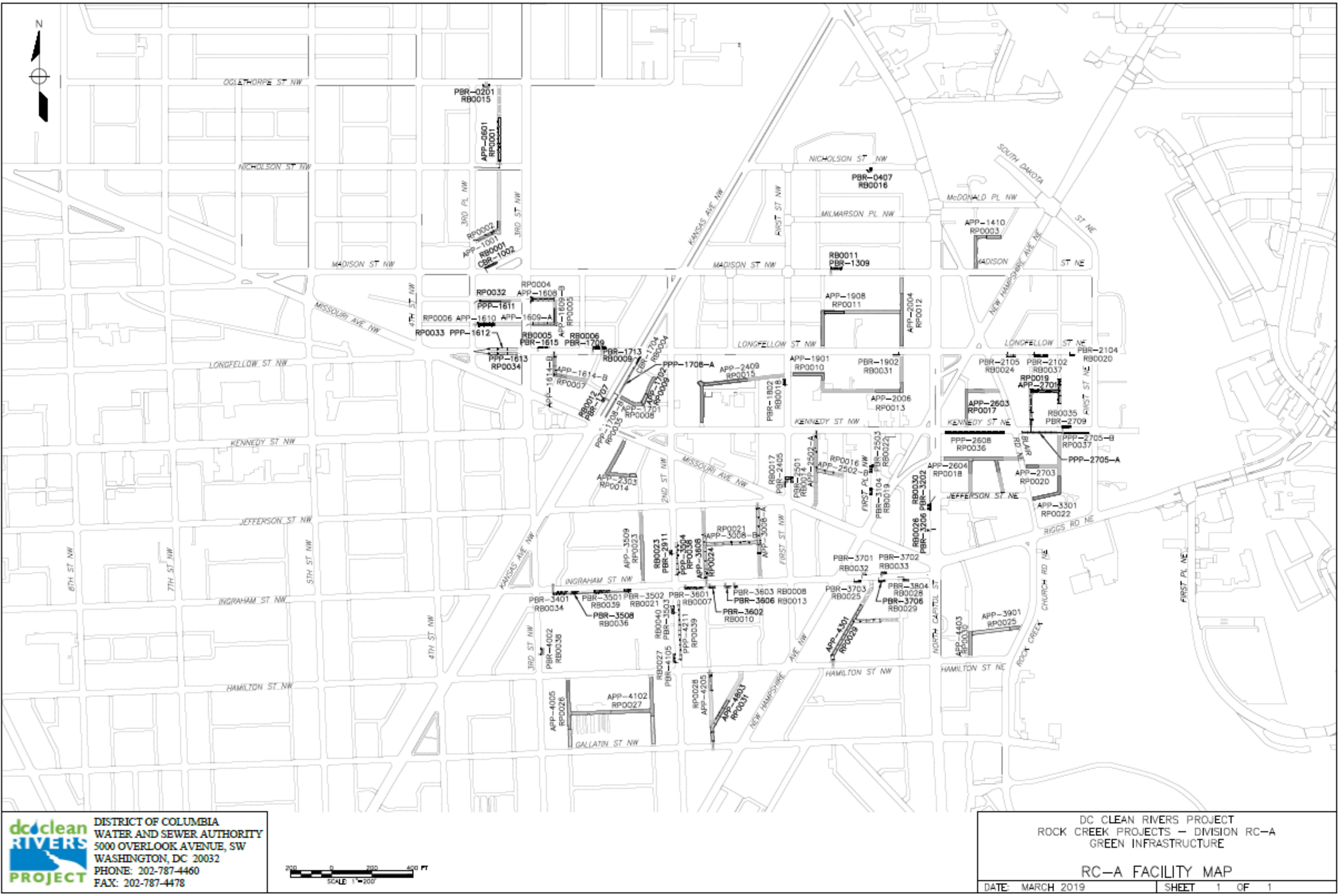
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

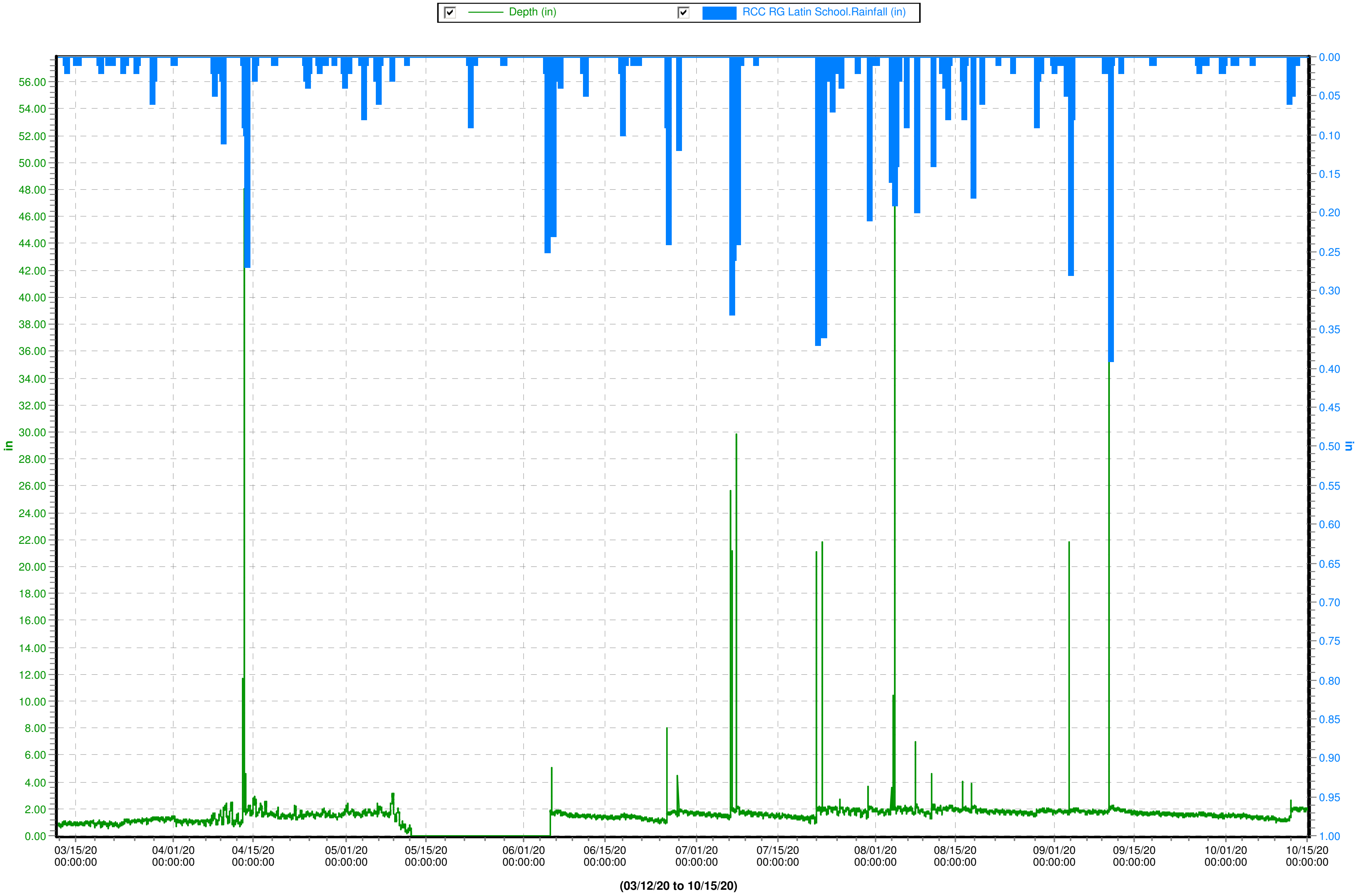


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3202

5416 North Capitol ST -Well Depth (in): 57.5



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: PBR-3206

Address:5308 North Capitol ST

Latitude: N 38.955193° Longitude: W -77.009146°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	54”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

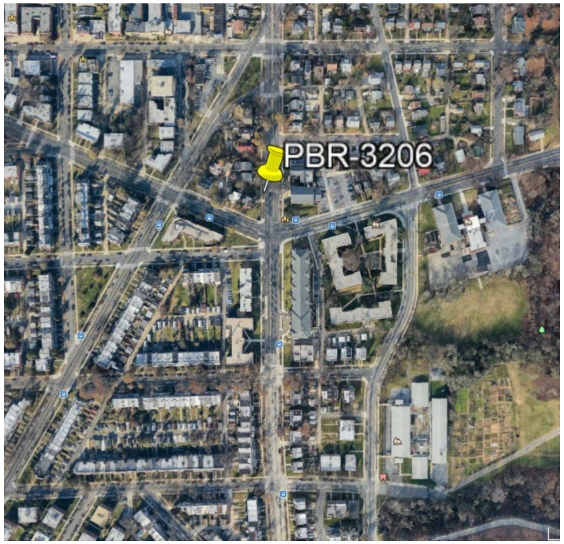
[✓ No]

Yes

Hard Packed (in):

Soft (in):

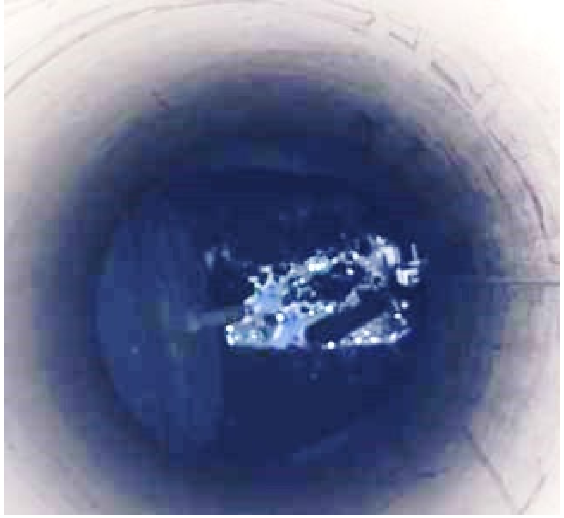
Area Map



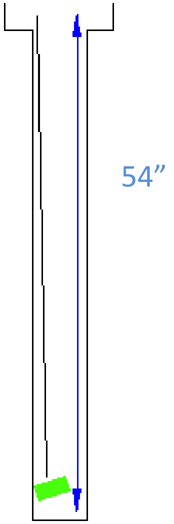
Detail Map

Site Area Overview

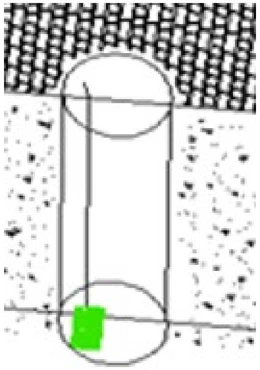
View from Top of Well



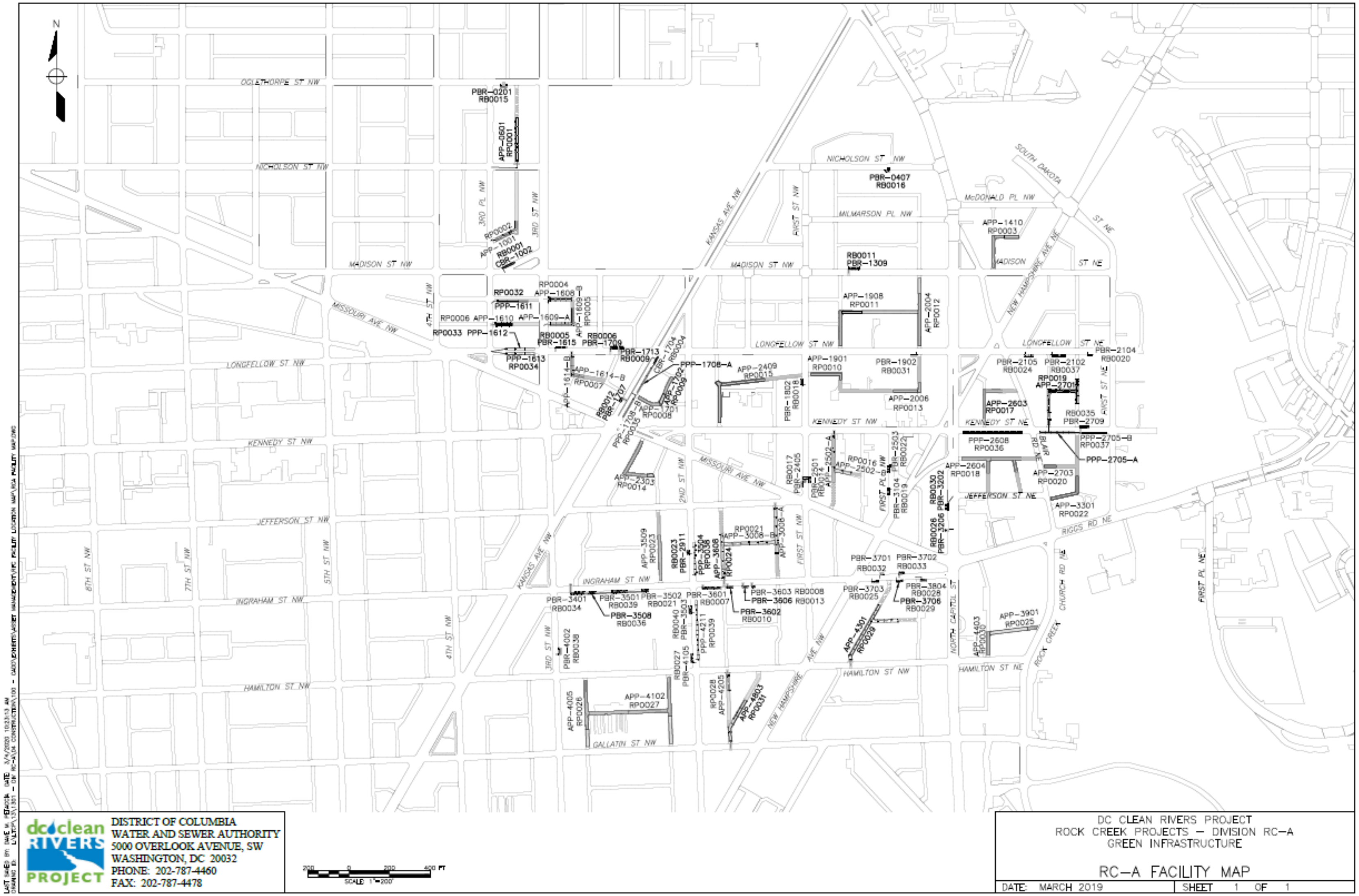
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

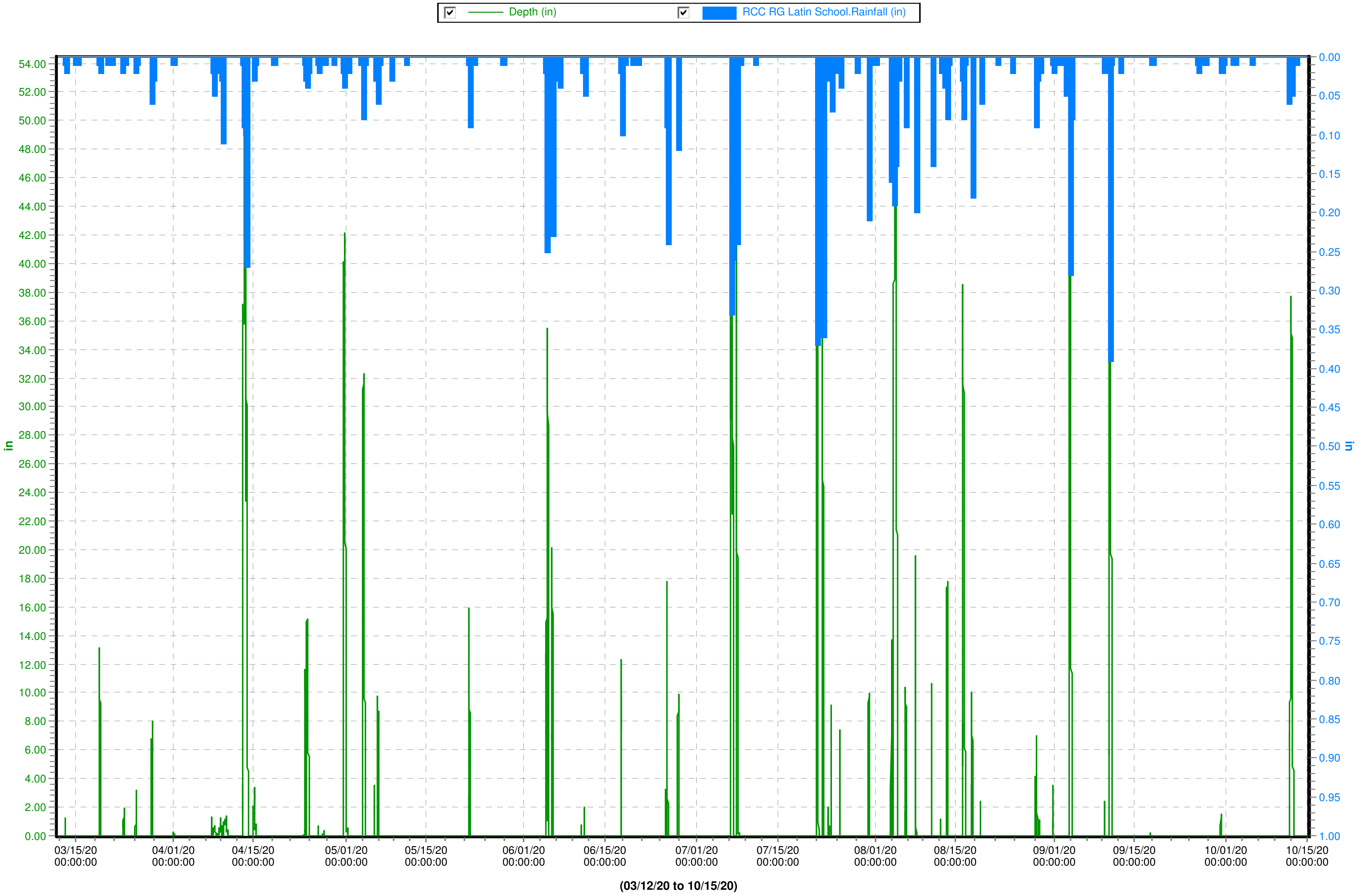


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3206

5308 North Capitol ST-Well Depth (in): 54



(03/12/20 to 10/15/20)

Site Name/ Manhole ID: PBR-3401

Address:249 Ingraham St NW

Latitude: N 38.954397°　Longitude: W -77.015531°

Investigation Date:2/26/2020　Crew: LP/MH

Installation Date:3/10/2020　Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	64”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

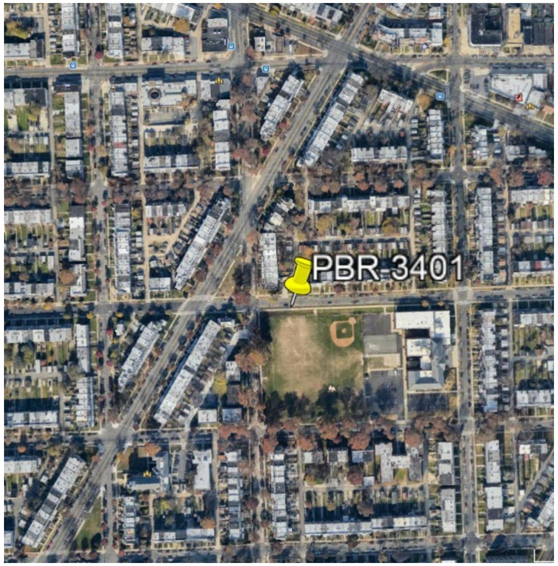
[✓ No]

Yes

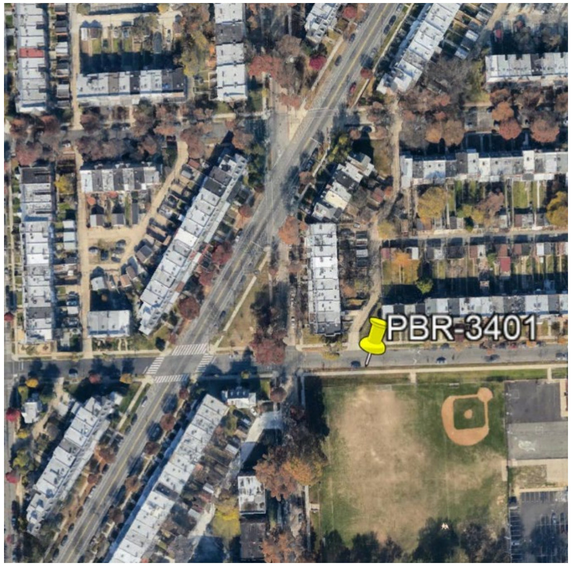
Hard Packed (in):

Soft (in):

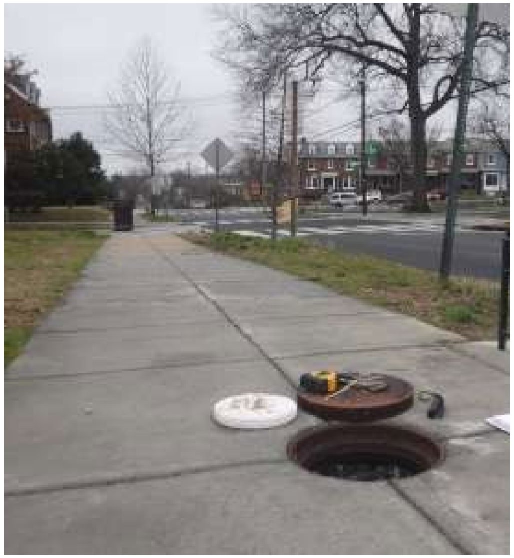
Area Map



Detail Map

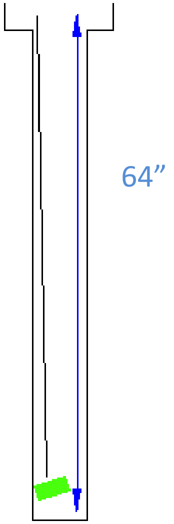


Site Area Overview

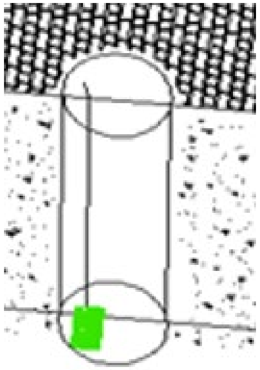


View from Top of Well

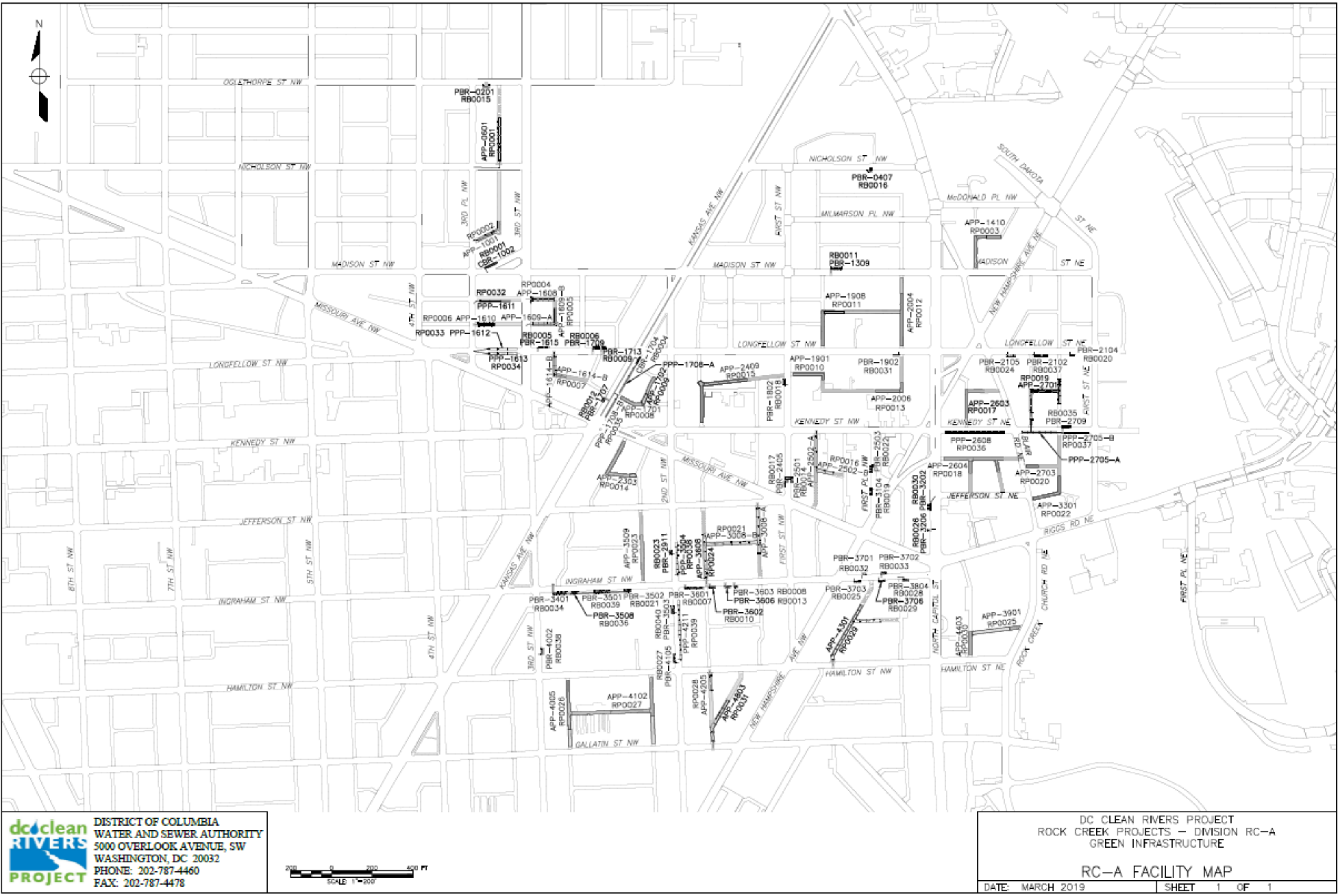
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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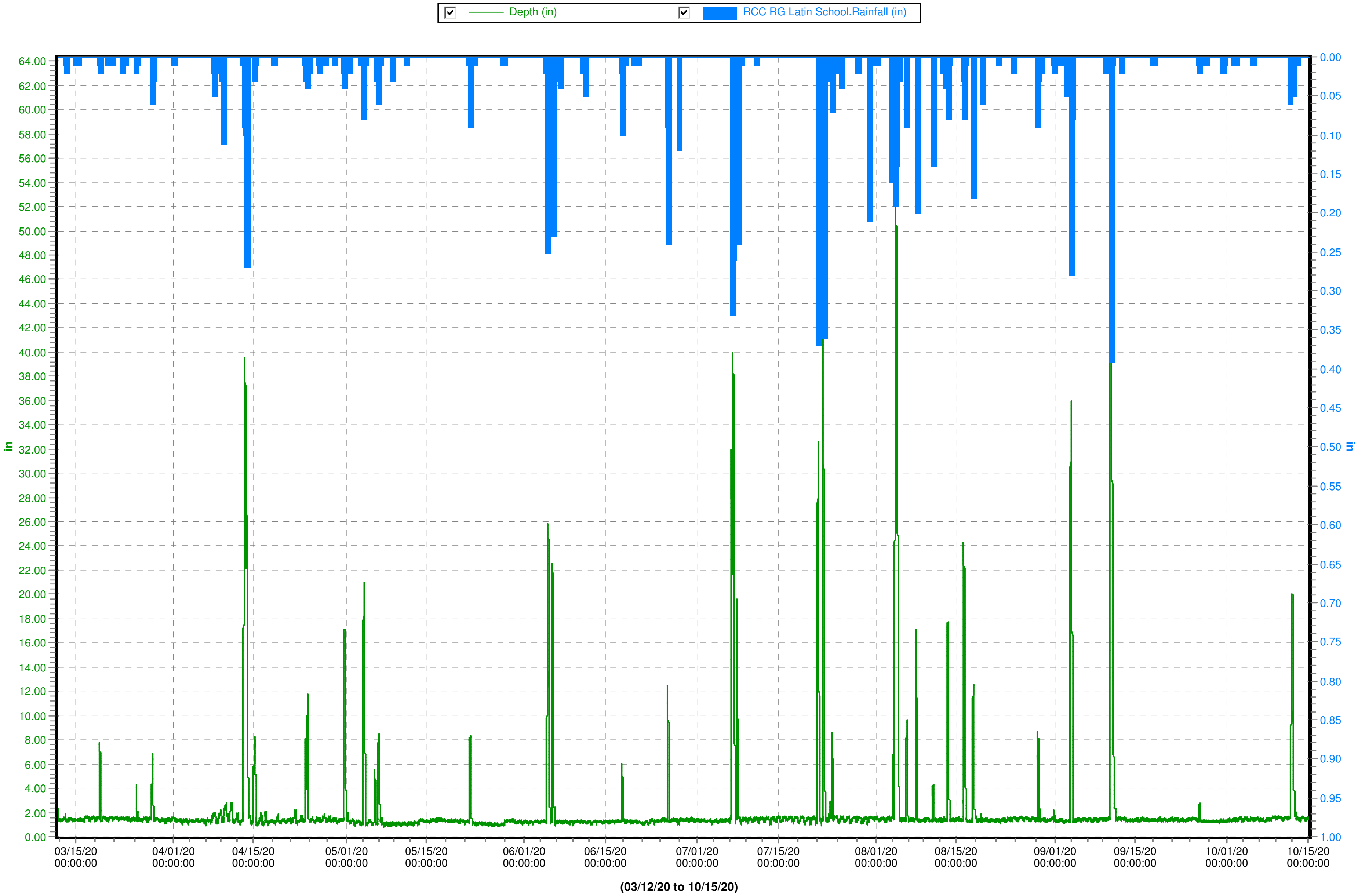
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

3401

249 Ingraham ST NW-Well Depth (in): 64



Site Name/ Manhole ID: PBR-3501

Address:235 Ingraham St NW

Latitude: N 38.954373°　Longitude: W -77.015105°

Investigation Date:2/26/2020　Crew: LP/MH

Installation Date:3/10/2020　Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	50”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

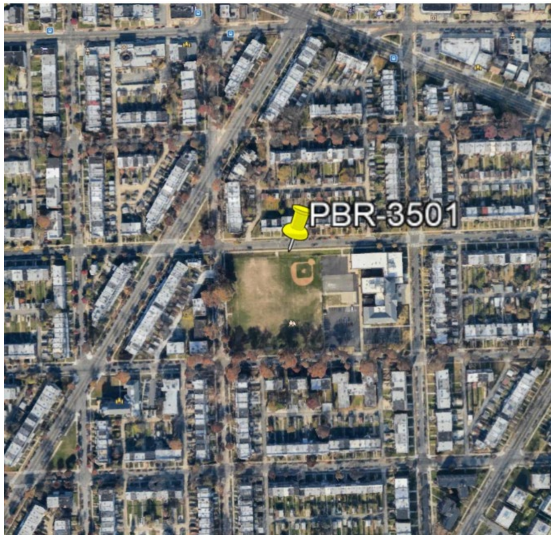
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

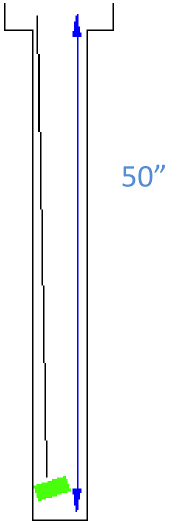


Detail Map

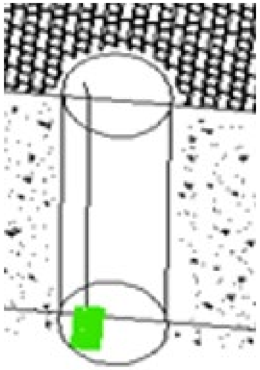
Site Area Overview

View from Top of Well

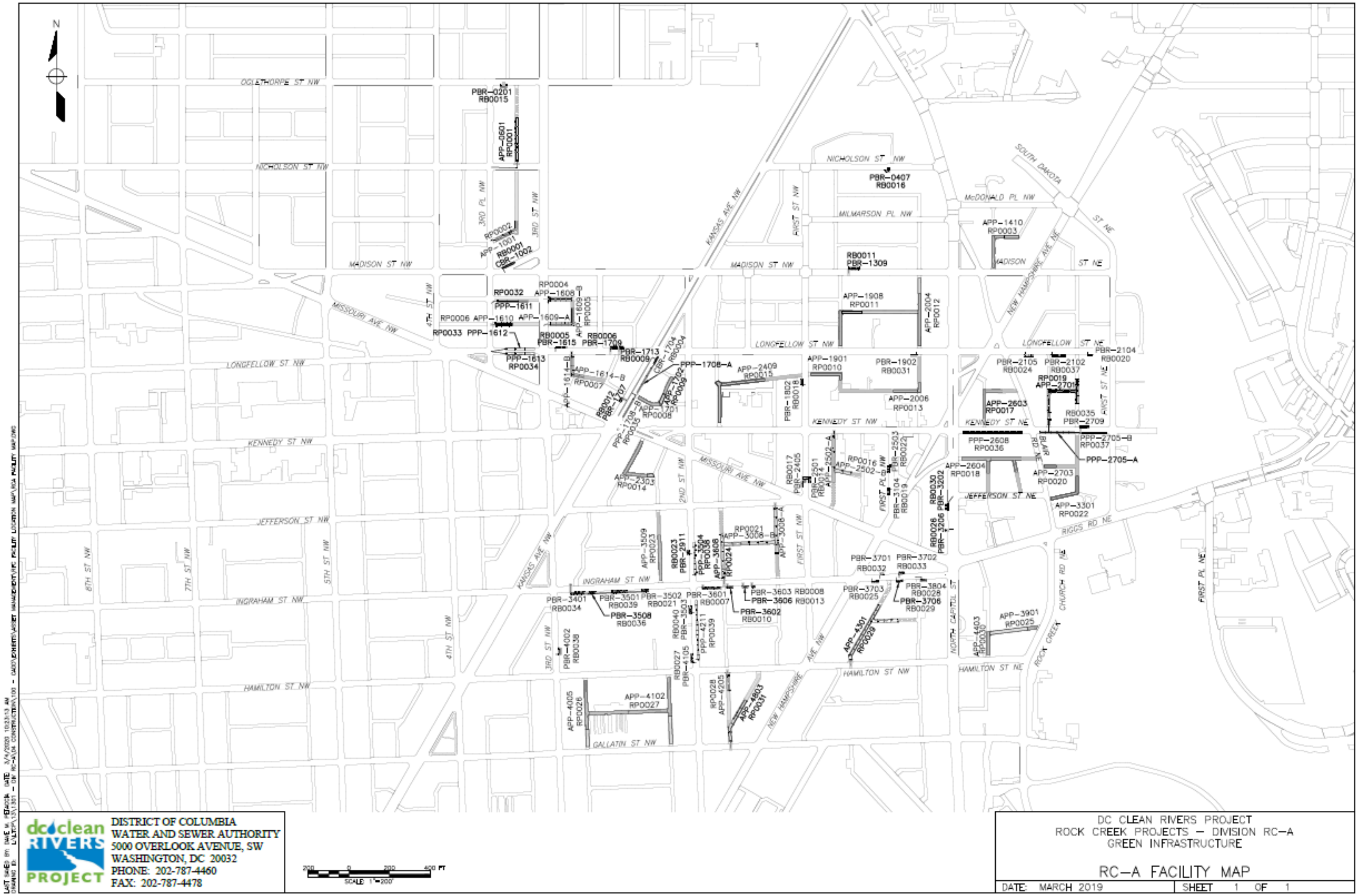
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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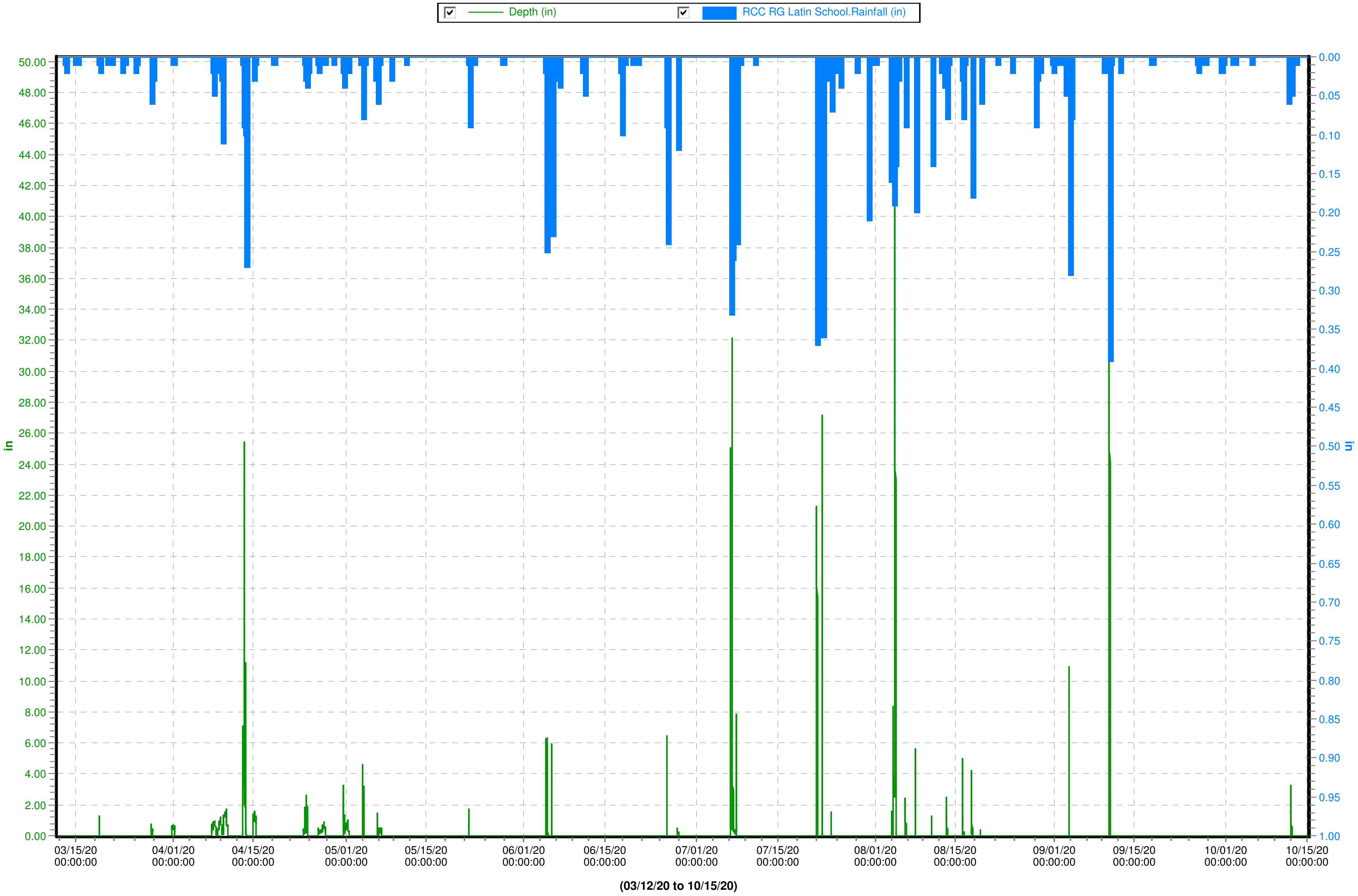
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

3501

235 Ingraham ST NW-Well Depth (in) 50



Site Name/ Manhole ID: PBR-3502

Address: 219 Ingraham St NW

Latitude: N 38.954373° Longitude: W -77.014545°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	57”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

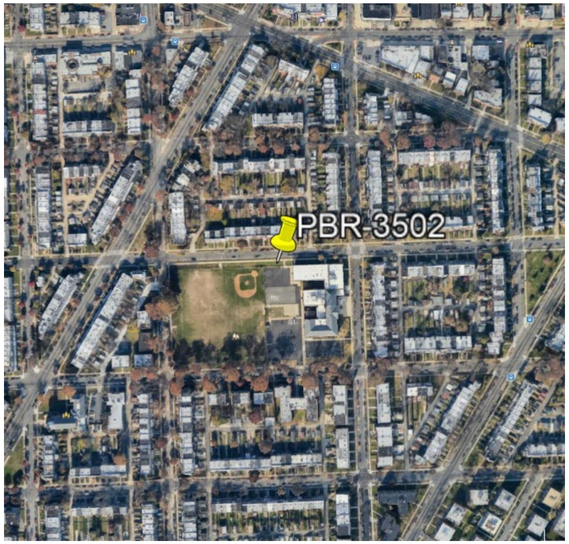
[✓ No]

Yes

Hard Packed (in):

Soft (in):

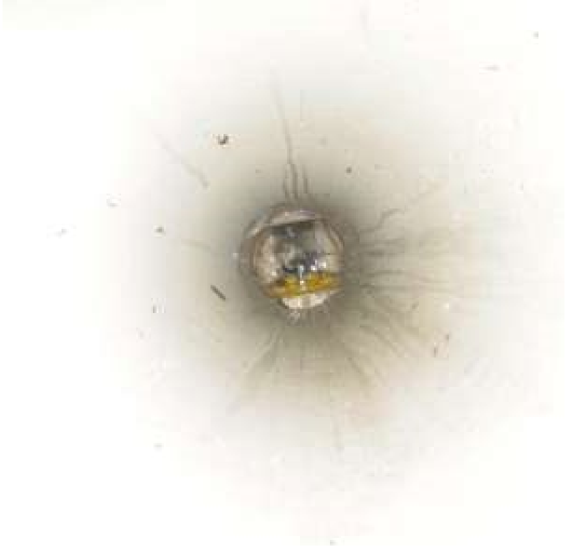
Area Map



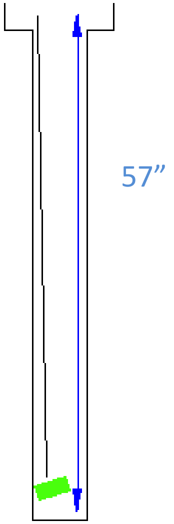
Detail Map

Site Area Overview

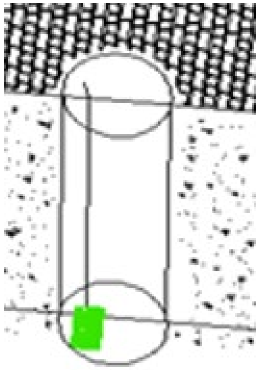
View from Top of Well



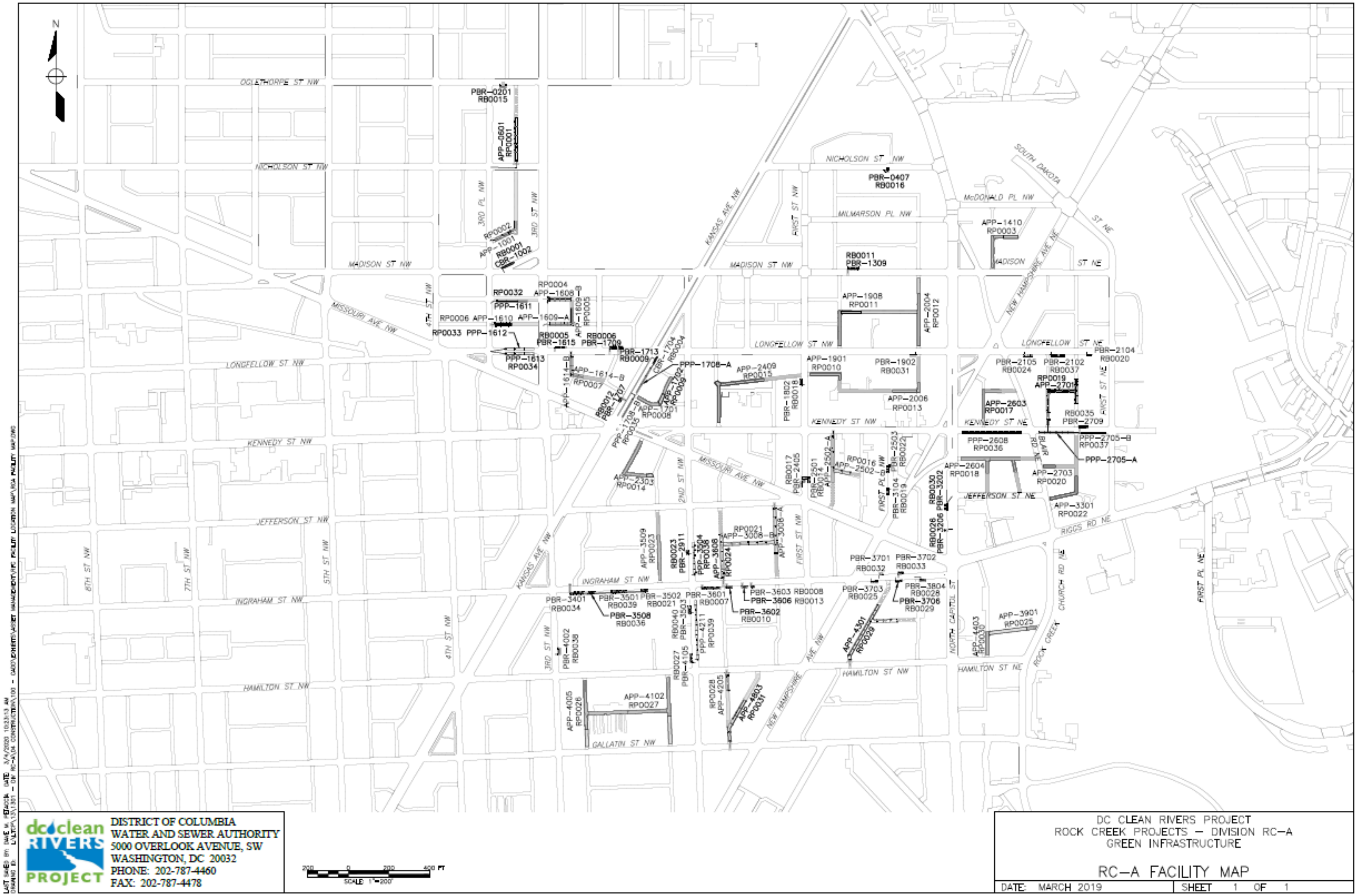
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



dc clean RIVERS PROJECT

DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, SW
WASHINGTON, DC 20032
PHONE: 202-787-4460
FAX: 202-787-4478

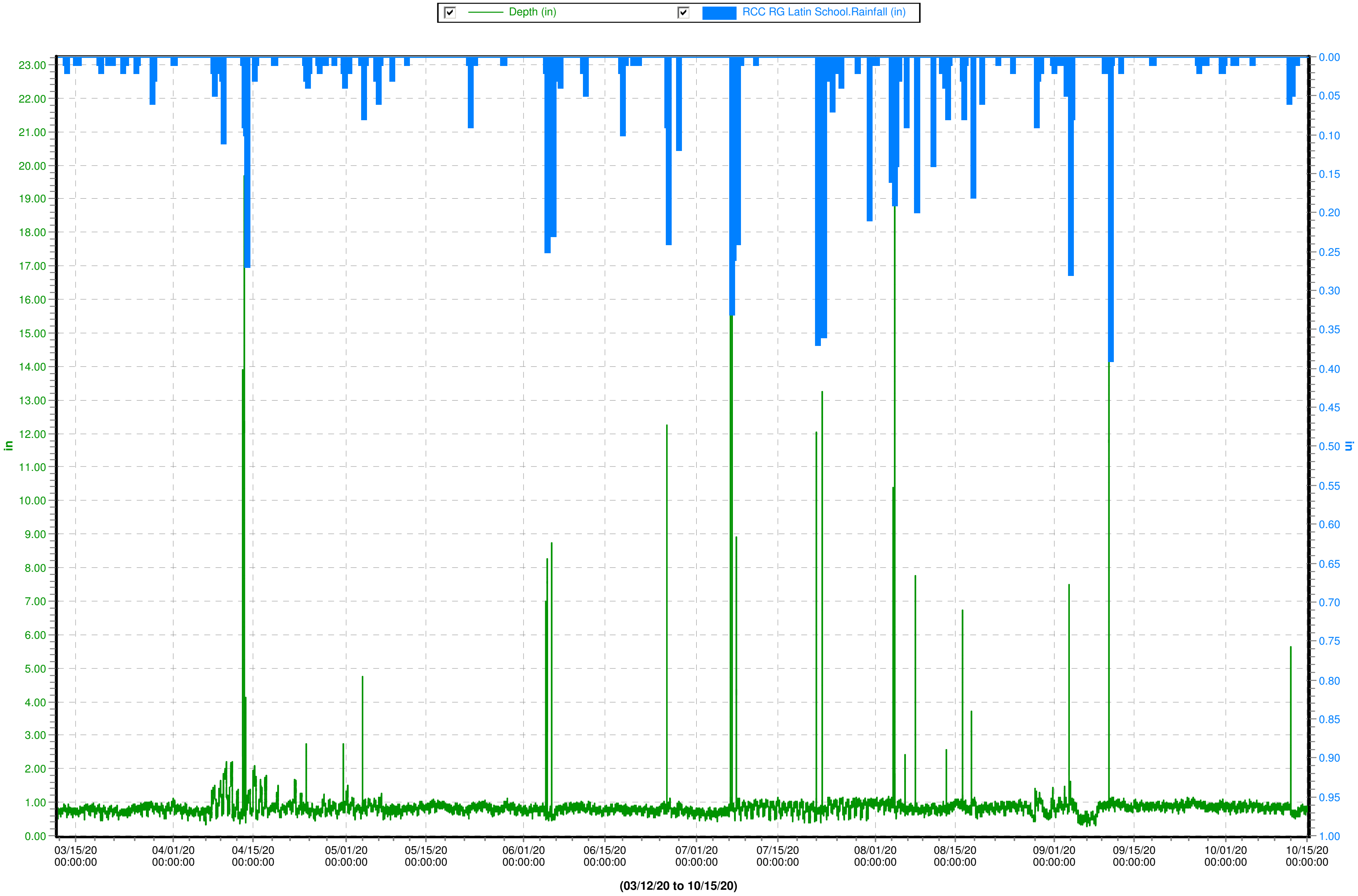
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019	SHEET 1 OF 1

3502

219 Ingraham ST NW-Well Depth (in): 57



Site Name/ Manhole ID: PBR-3508

Address:247 Ingraham St NW

Latitude: N 38.954375°

Longitude: W -77.015389°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/10/2020

Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	51”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

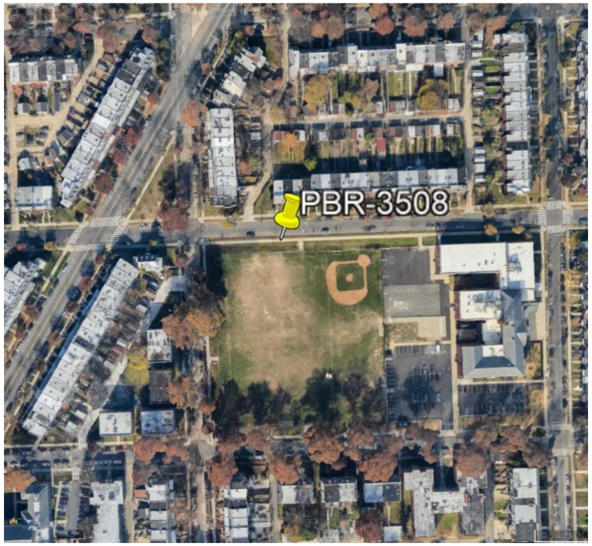
Yes

Hard Packed (in):

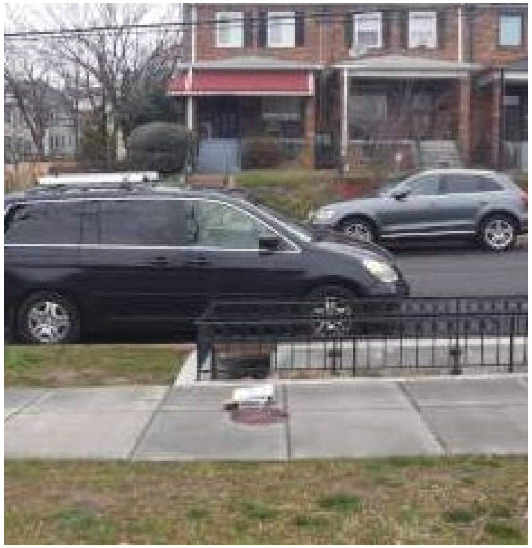
Soft (in):

Area Map

Detail Map

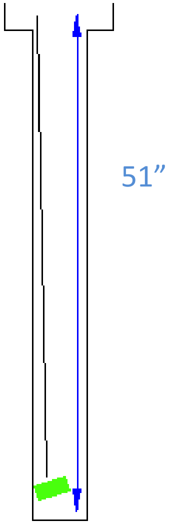


Site Area Overview

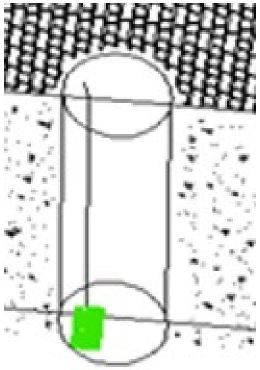


View from Top of Well

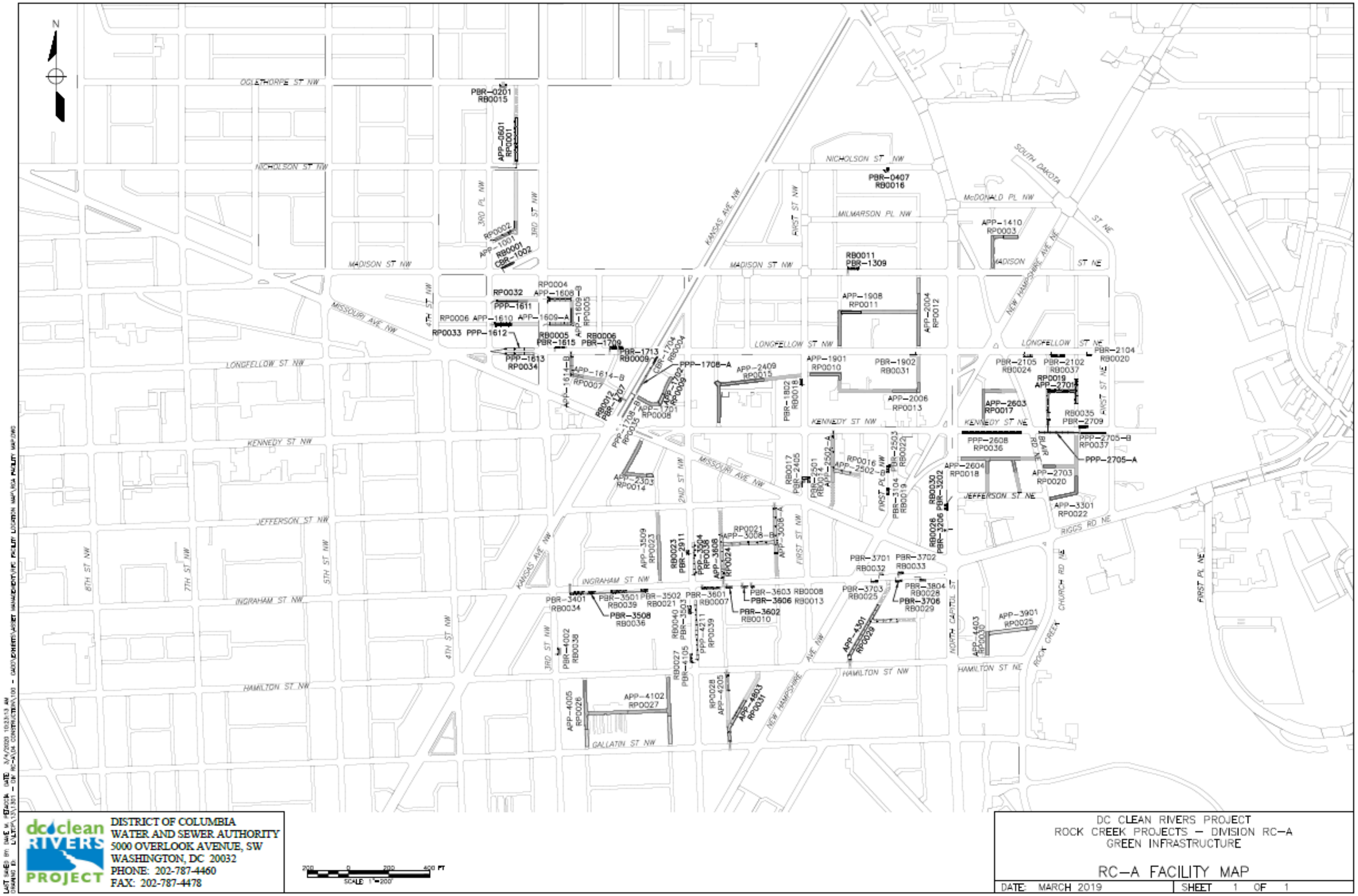
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

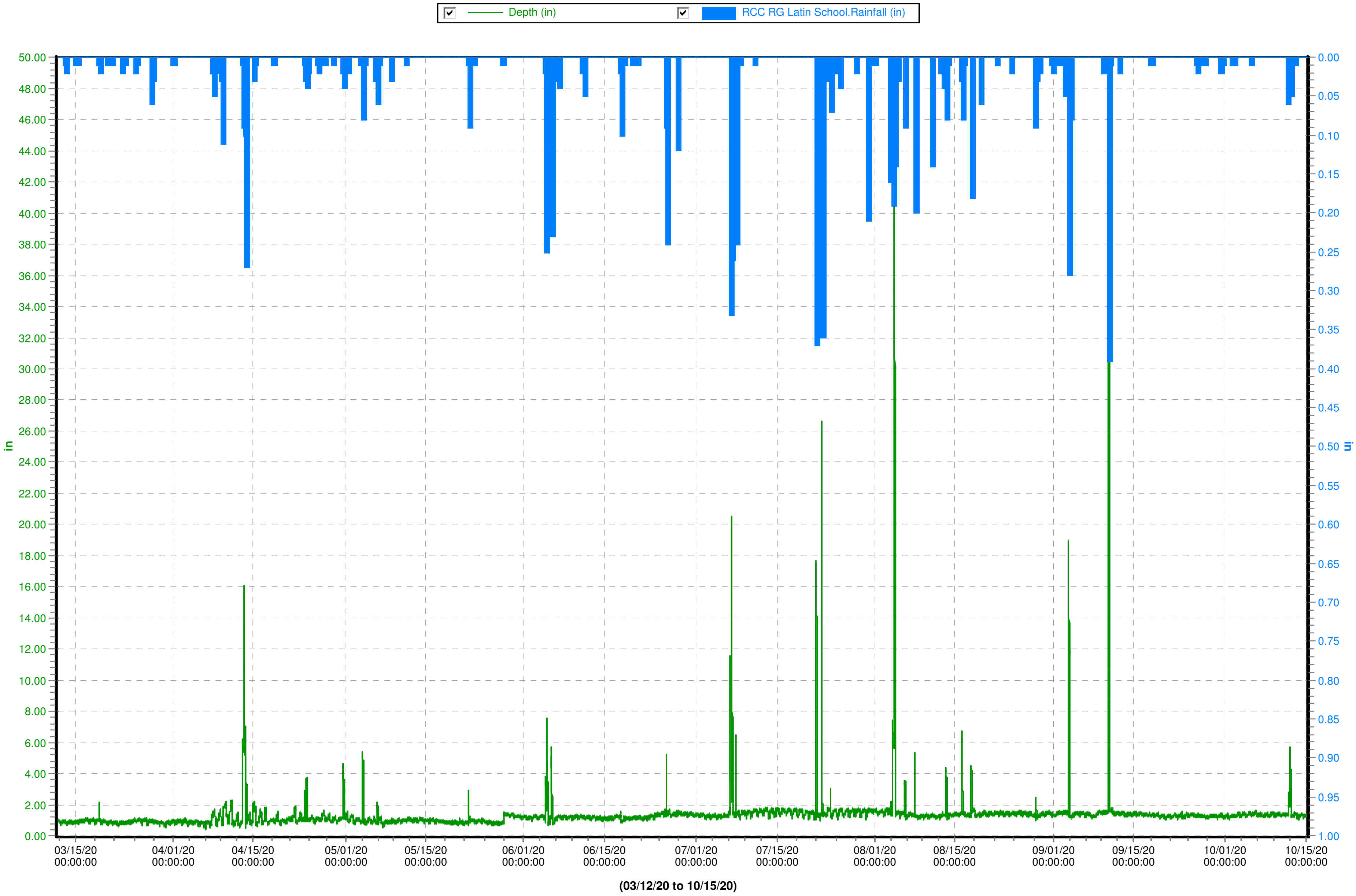


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3508

247 Ingraham ST NW-Well Depth (in): 51



Site Name/ Manhole ID: PBR-3601

Address: Corner of 2nd St NW and Ingraham St NW

Latitude: N 38.954451° Longitude: W -77.013260°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	61”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

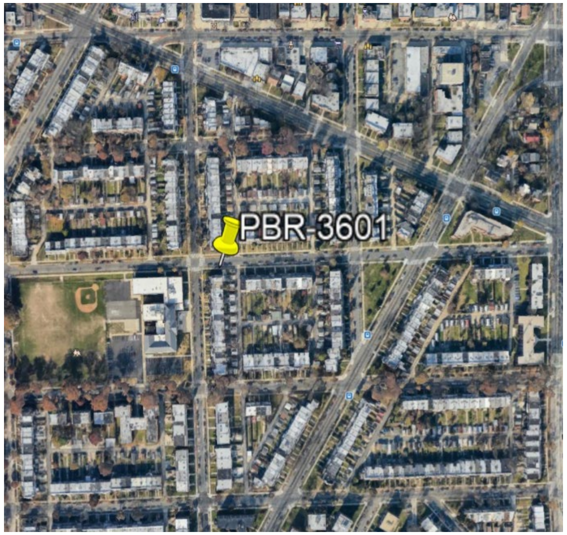
[✓ No]

Yes

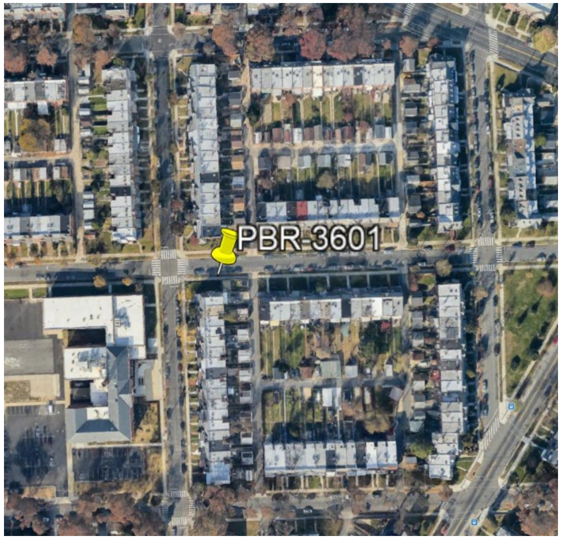
Hard Packed (in):

Soft (in):

Area Map



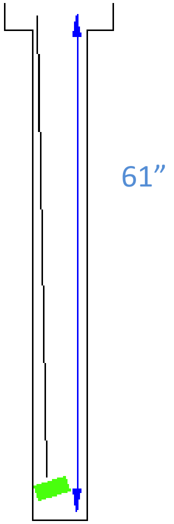
Detail Map



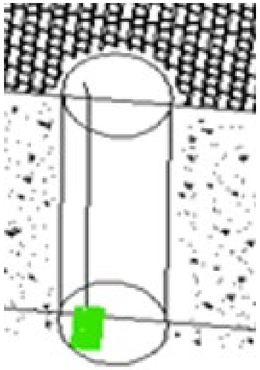
Site Area Overview

View from Top of Well

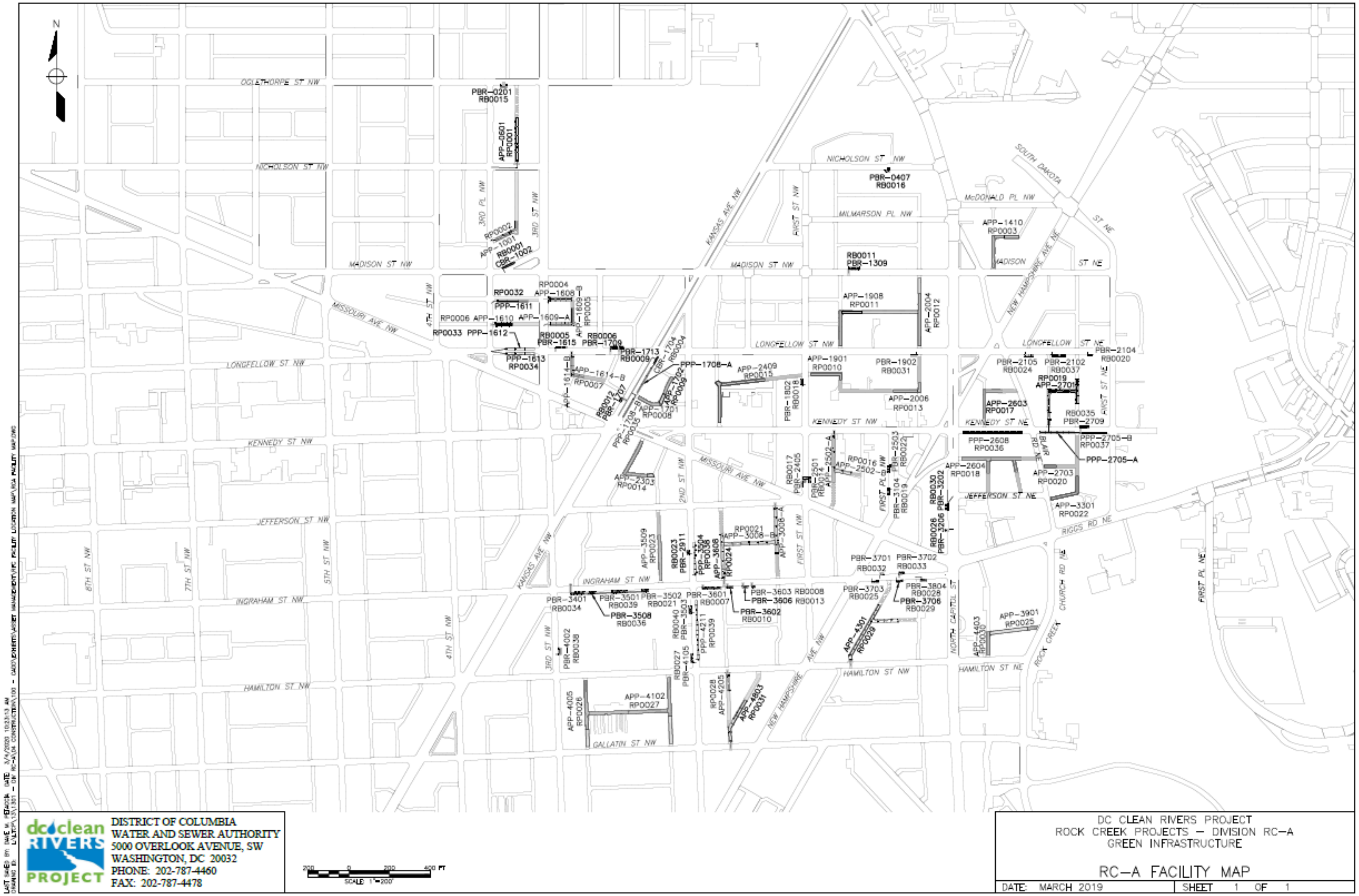
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

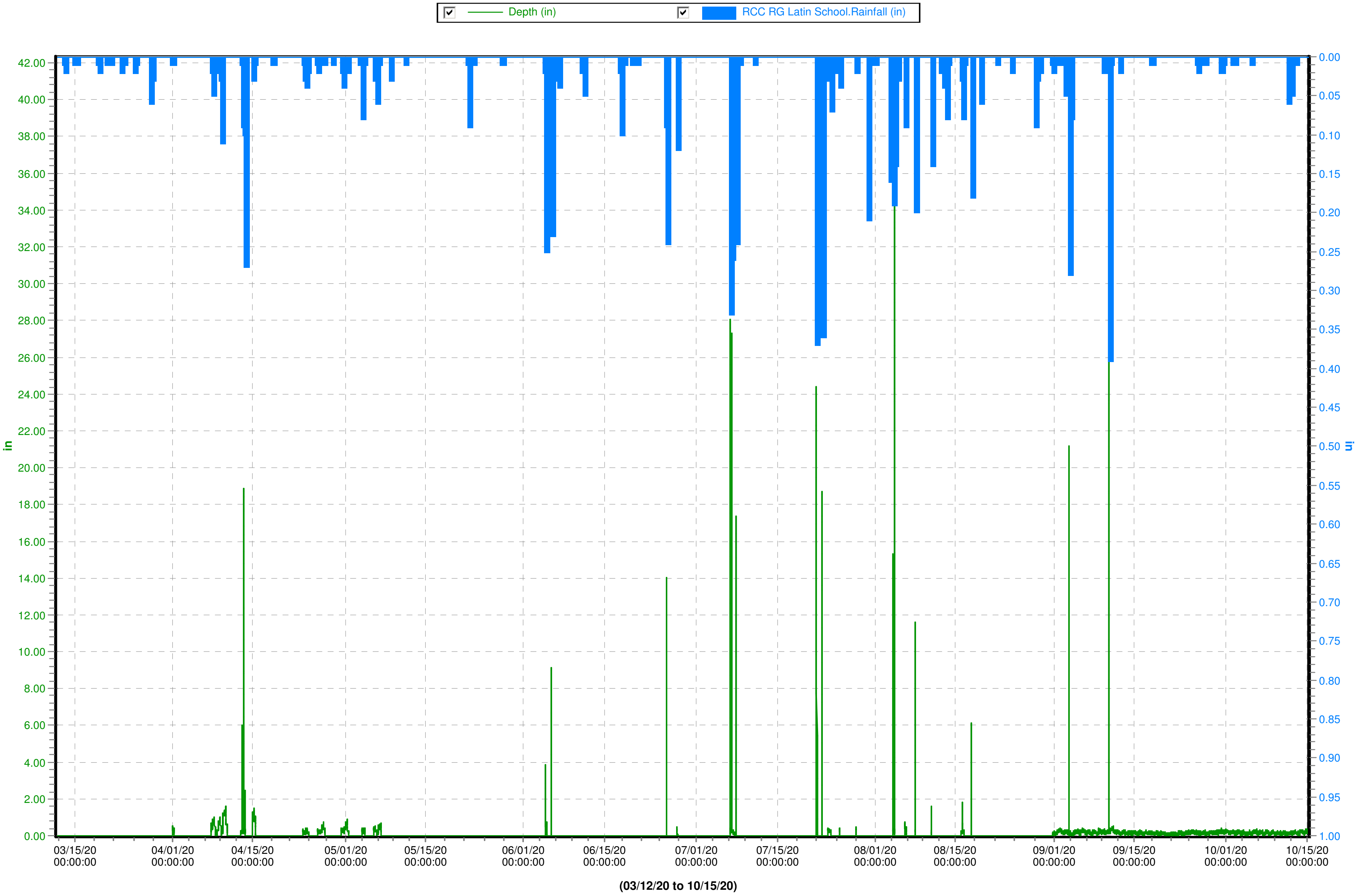


Site Location-Sketch or plat showing upstream and downstream manholes. connections and bends



3601

Corner of 2nd ST NW and Ingraham ST NW-Well Depth (in): 60



Site Name/ Manhole ID: PBR-3602

Address:136 Ingraham St NW

Latitude: N 38.954445°

Longitude: W -77.012979°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	66”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

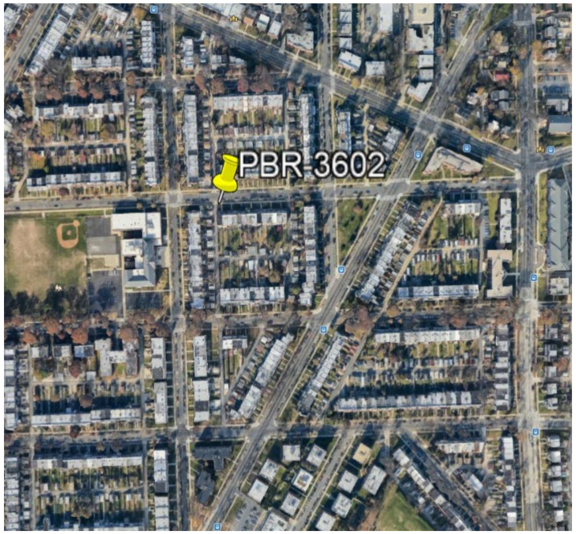
[✓ No]

Yes

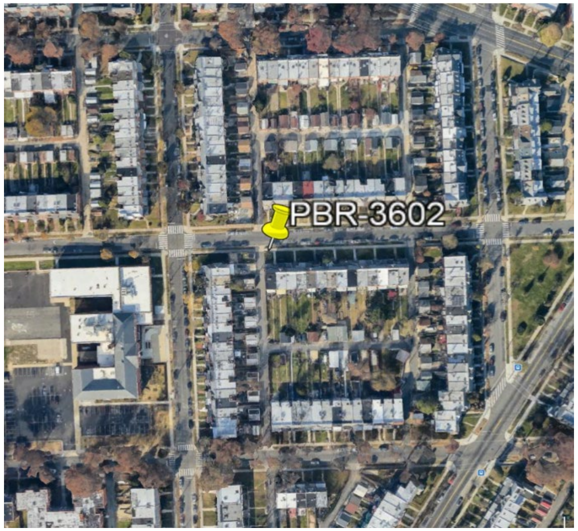
Hard Packed (in):

Soft (in):

Area Map



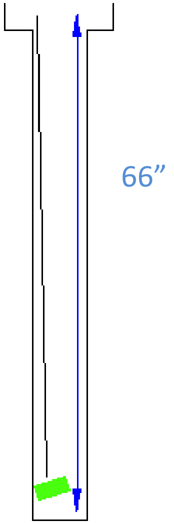
Detail Map



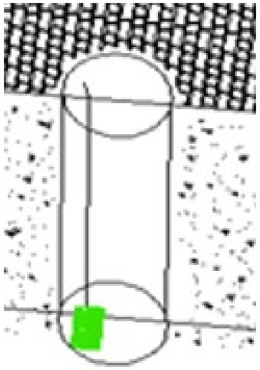
Site Area Overview

View from Top of Well

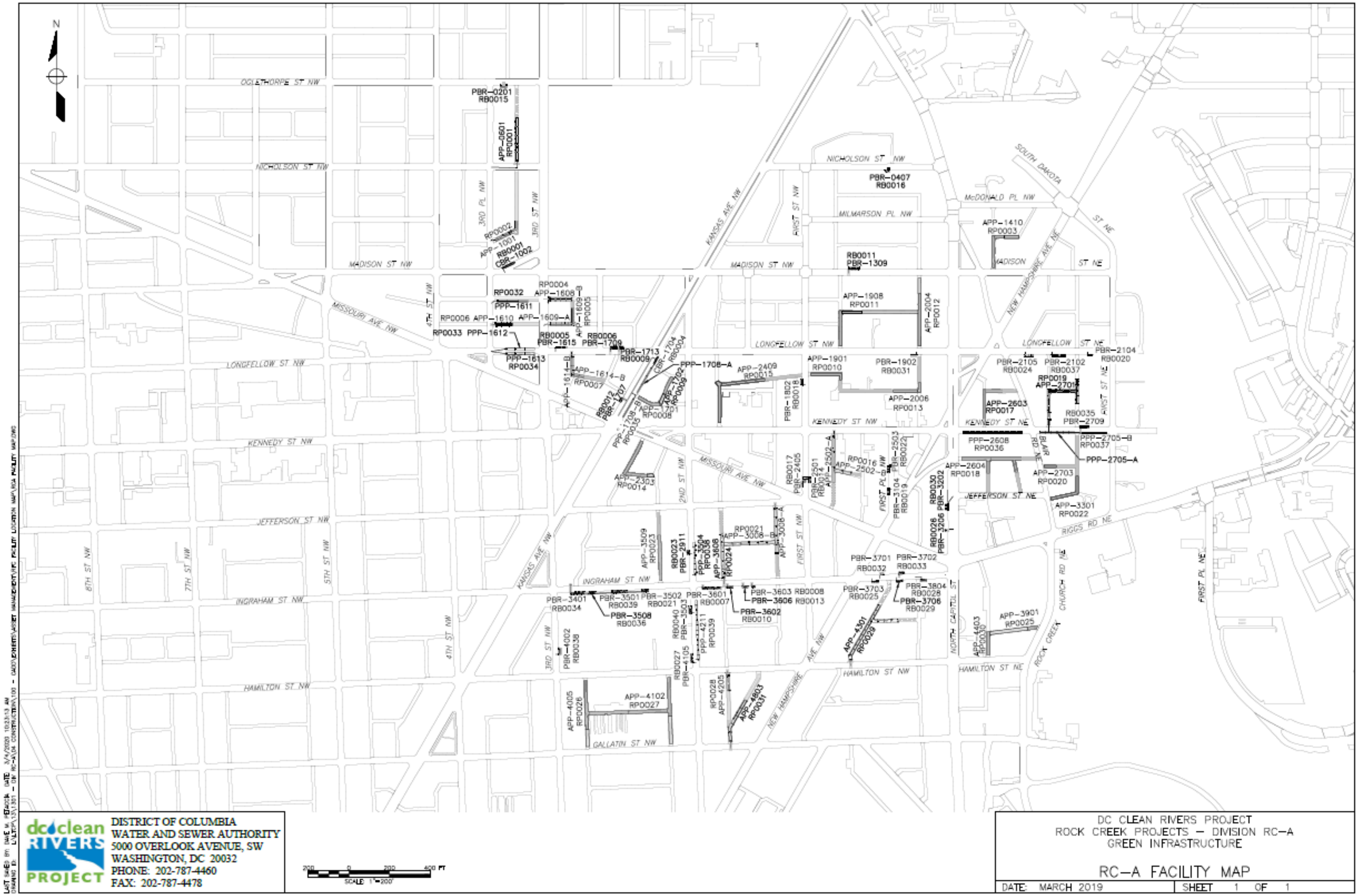
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

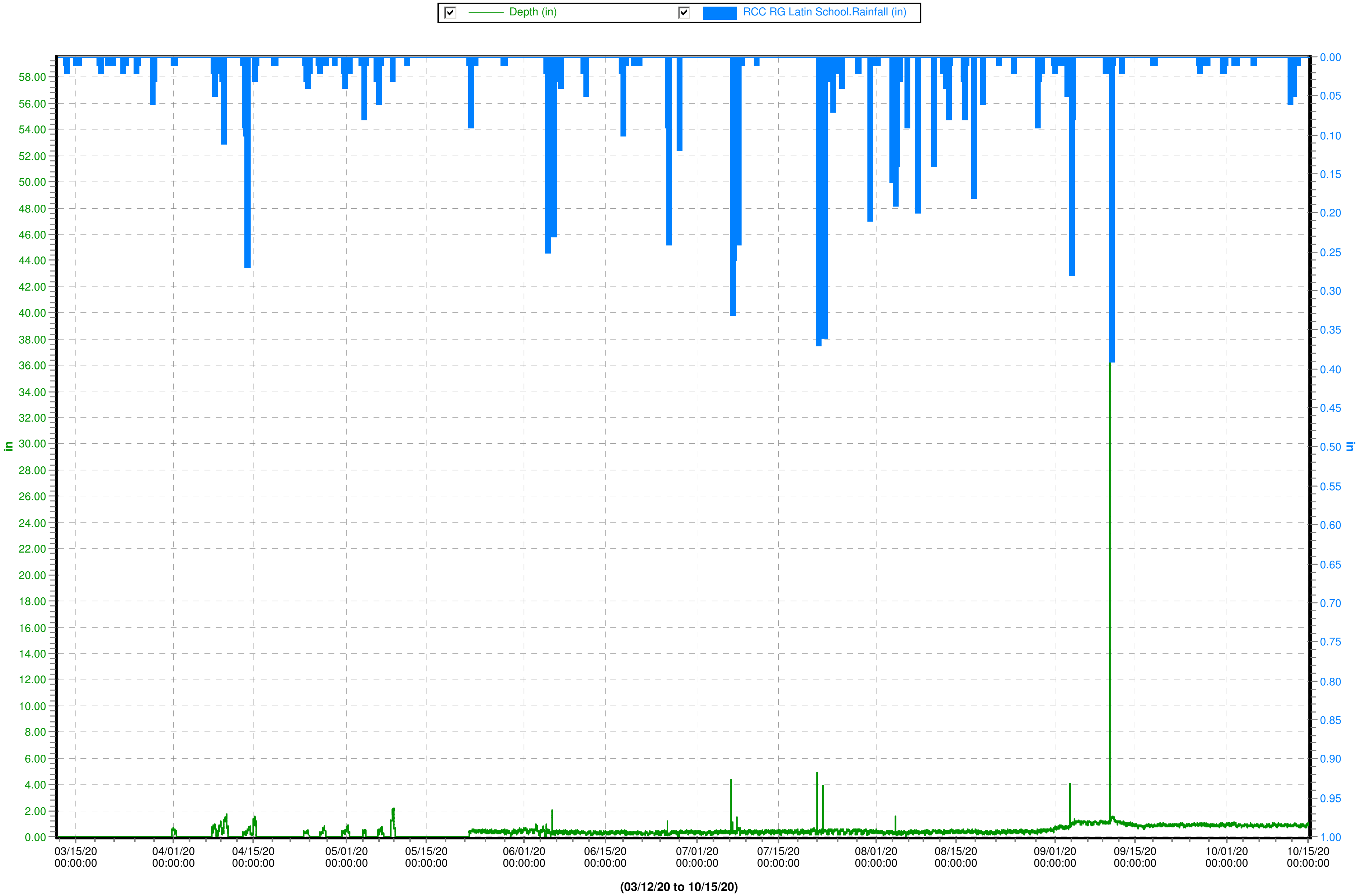


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3602

136 Ingraham ST NW-Well Depth (in): 66



Site Name/ Manhole ID:PBR-3603

Address:122 Ingraham St NW

Latitude: N 38.954448° Longitude: W -77.012540°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	64”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

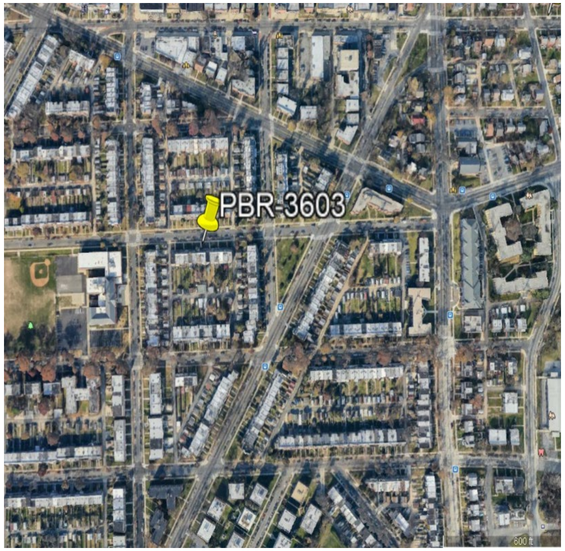
[✓ No]

Yes

Hard Packed (in):

Soft (in):

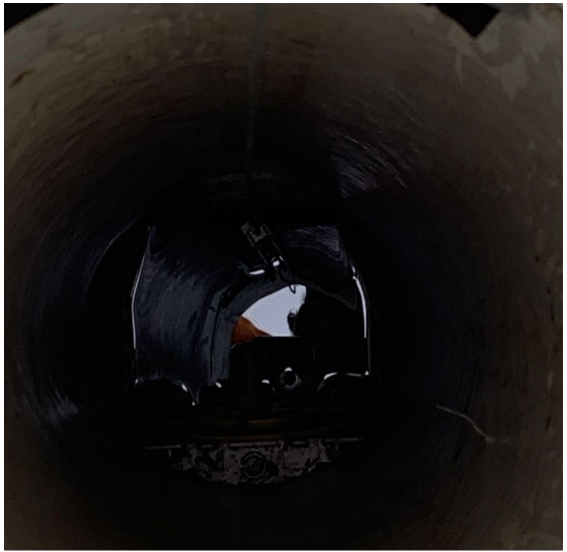
Area Map



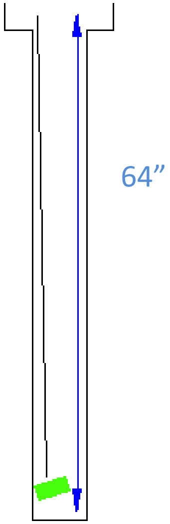
Detail Map

Site Area Overview

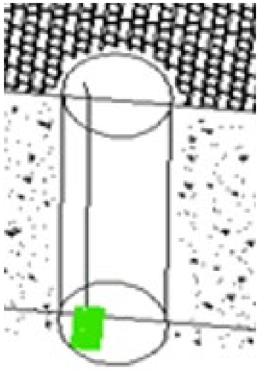
View from Top of Well



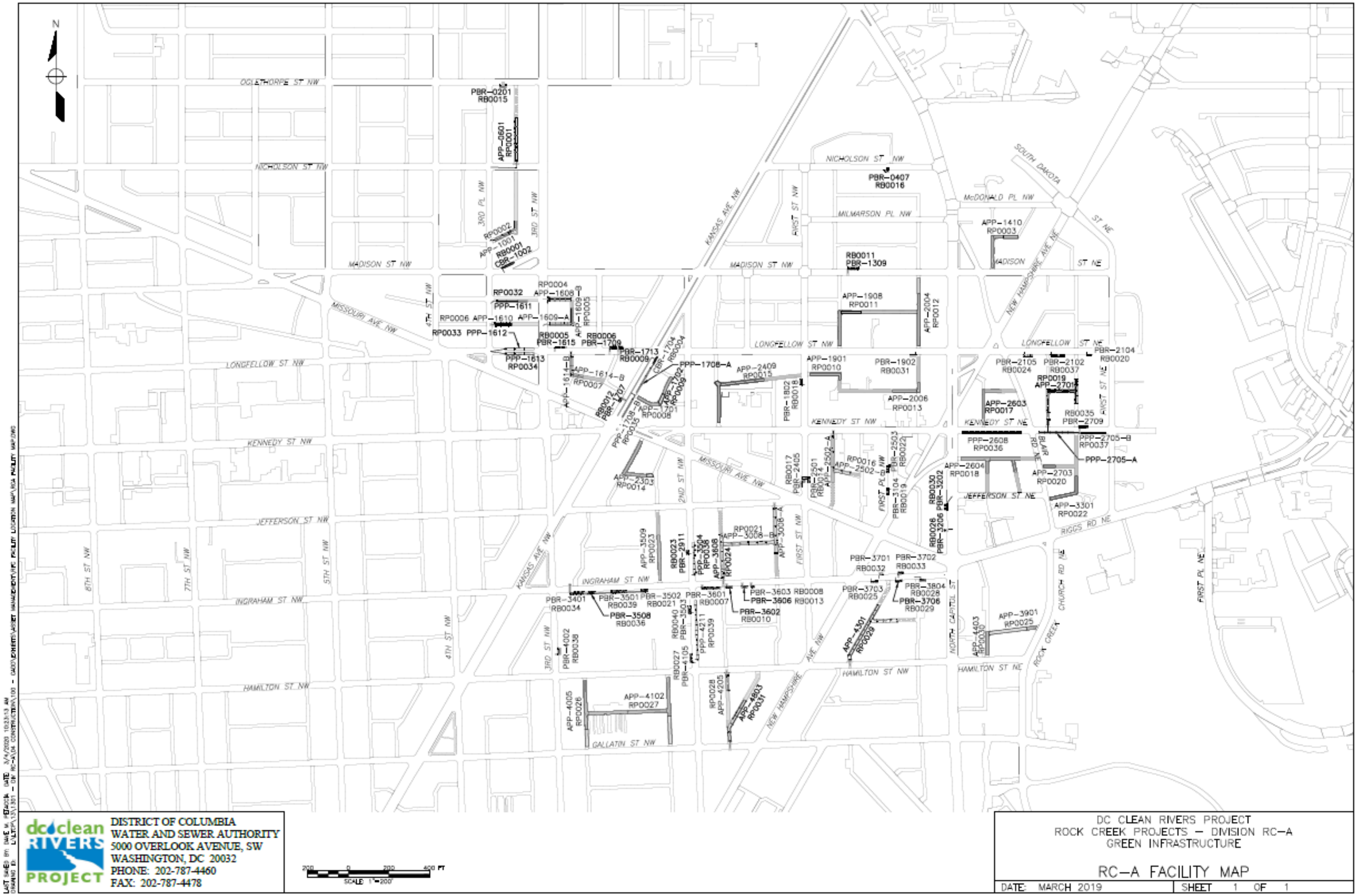
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

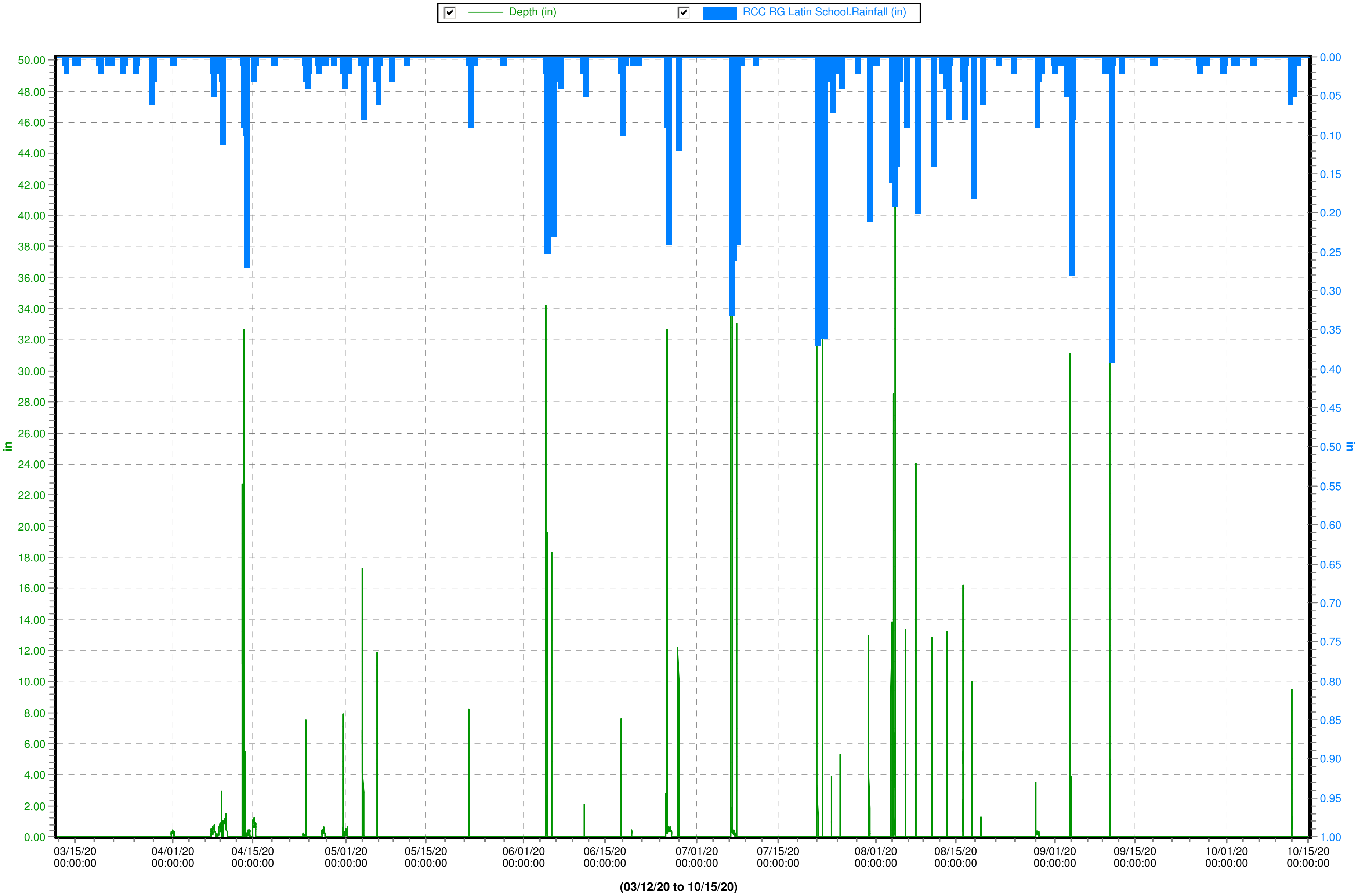


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3603

122 Ingraham ST NW-Well Depth (in): 64



Site Name/ Manhole ID: PBR 3606

Address: 126 Ingraham St NW

Latitude: N 38.954437° Longitude: W -77.012402°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date: Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	63”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

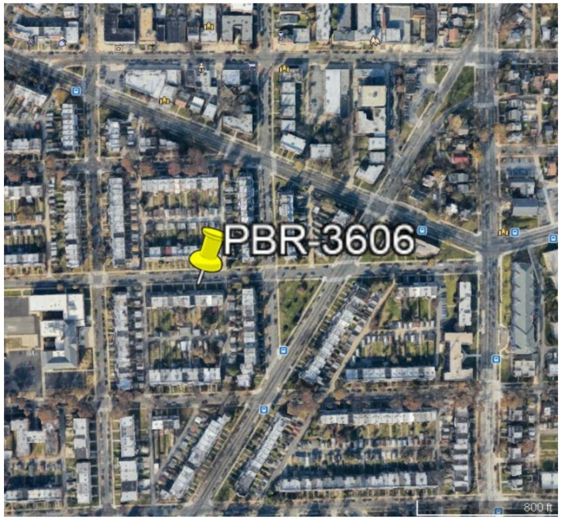
Yes

Hard Packed (in):

Soft (in):

Area Map

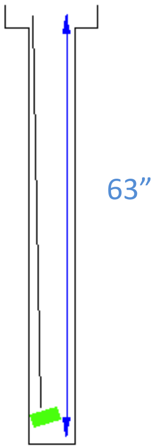
Detail Map



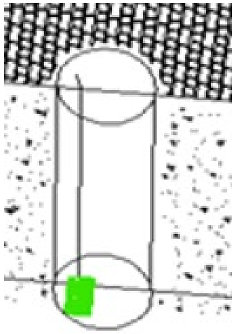
Site Area Overview

View from Top of Well

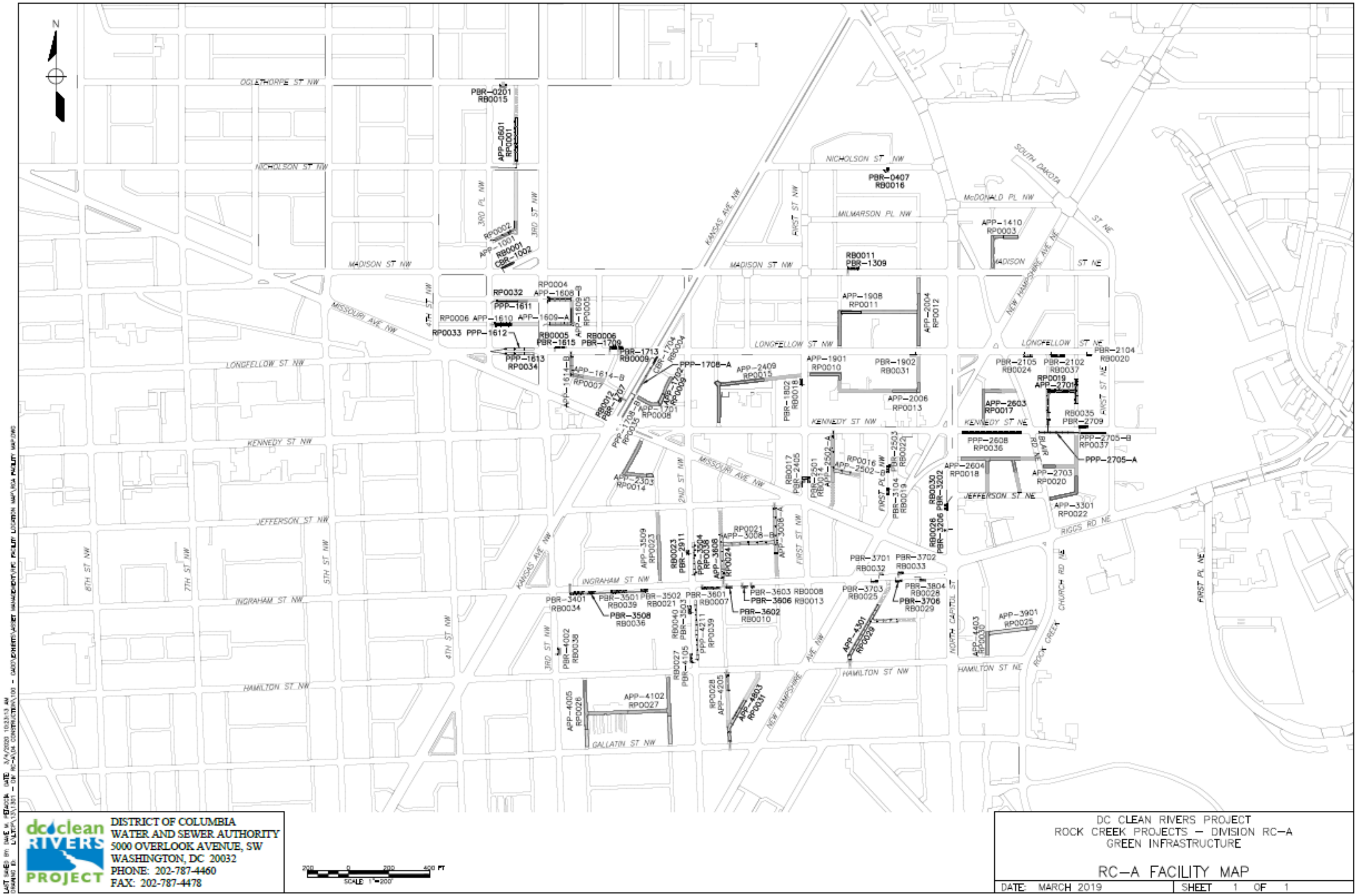
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

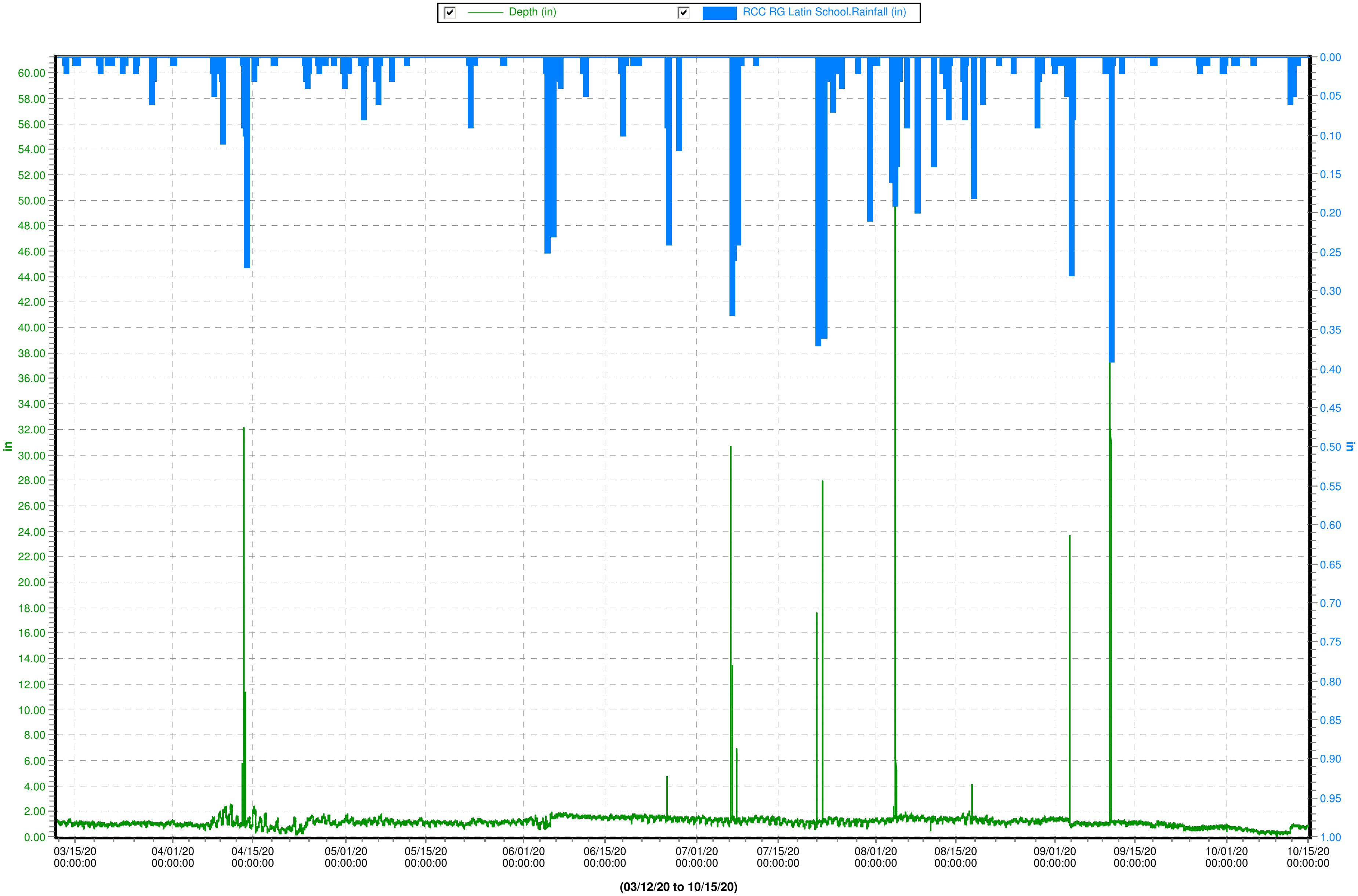


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3606

126 Ingraham ST NW-Well Depth (in): 63



Site Name/ Manhole ID:PBR-3701

Address:62 Ingraham St NW

Latitude: N 38.954518° Longitude: W -77.010541°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	73.5”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

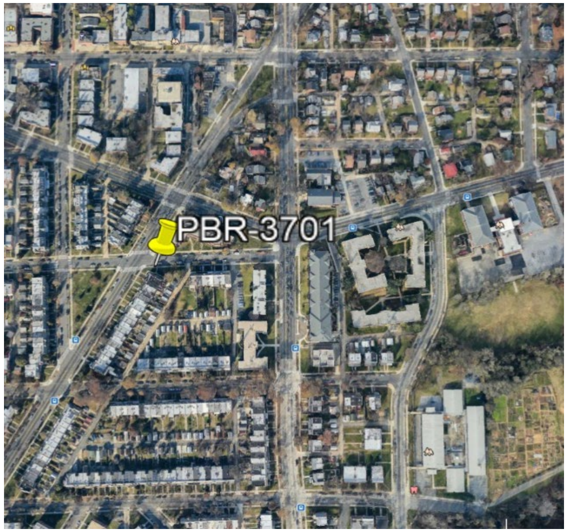
[✓ No]

Yes

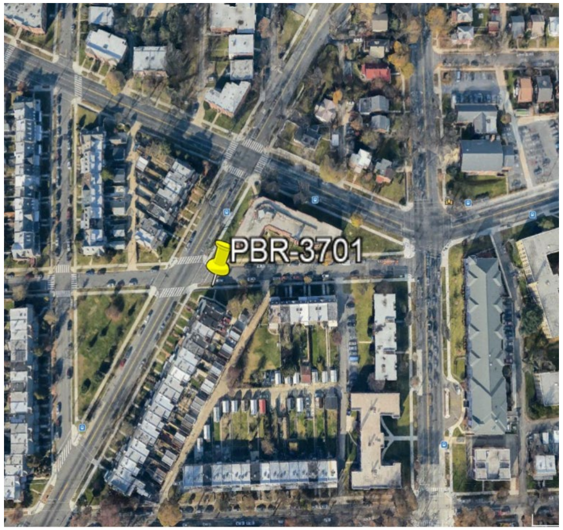
Hard Packed (in):

Soft (in):

Area Map



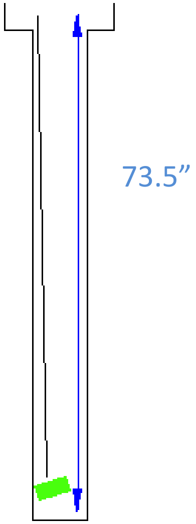
Detail Map



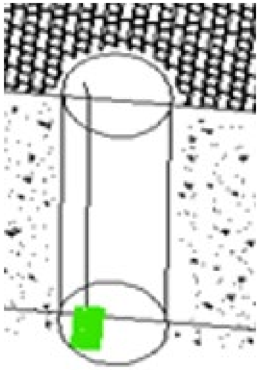
Site Area Overview

View from Top of Well

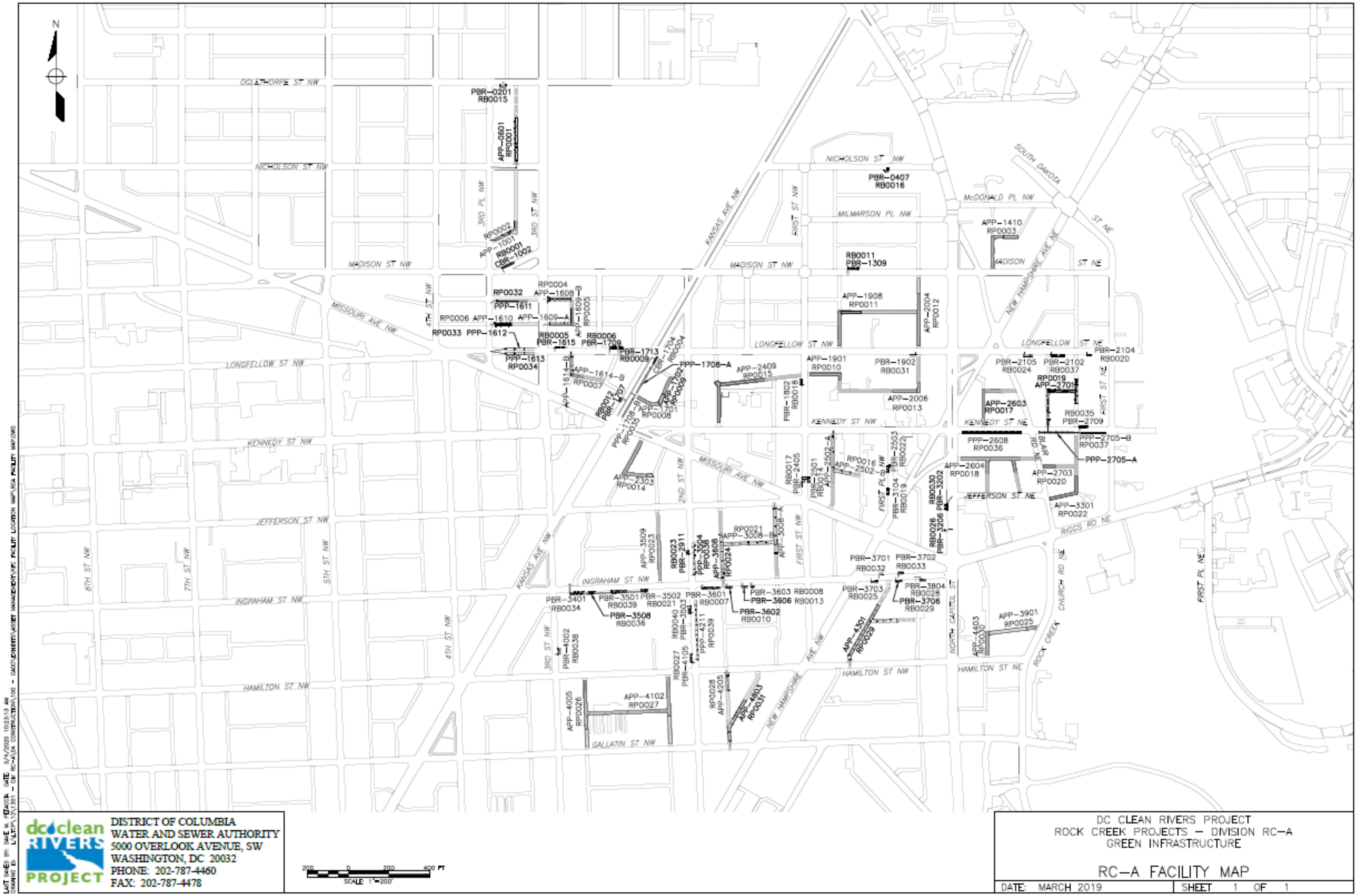
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

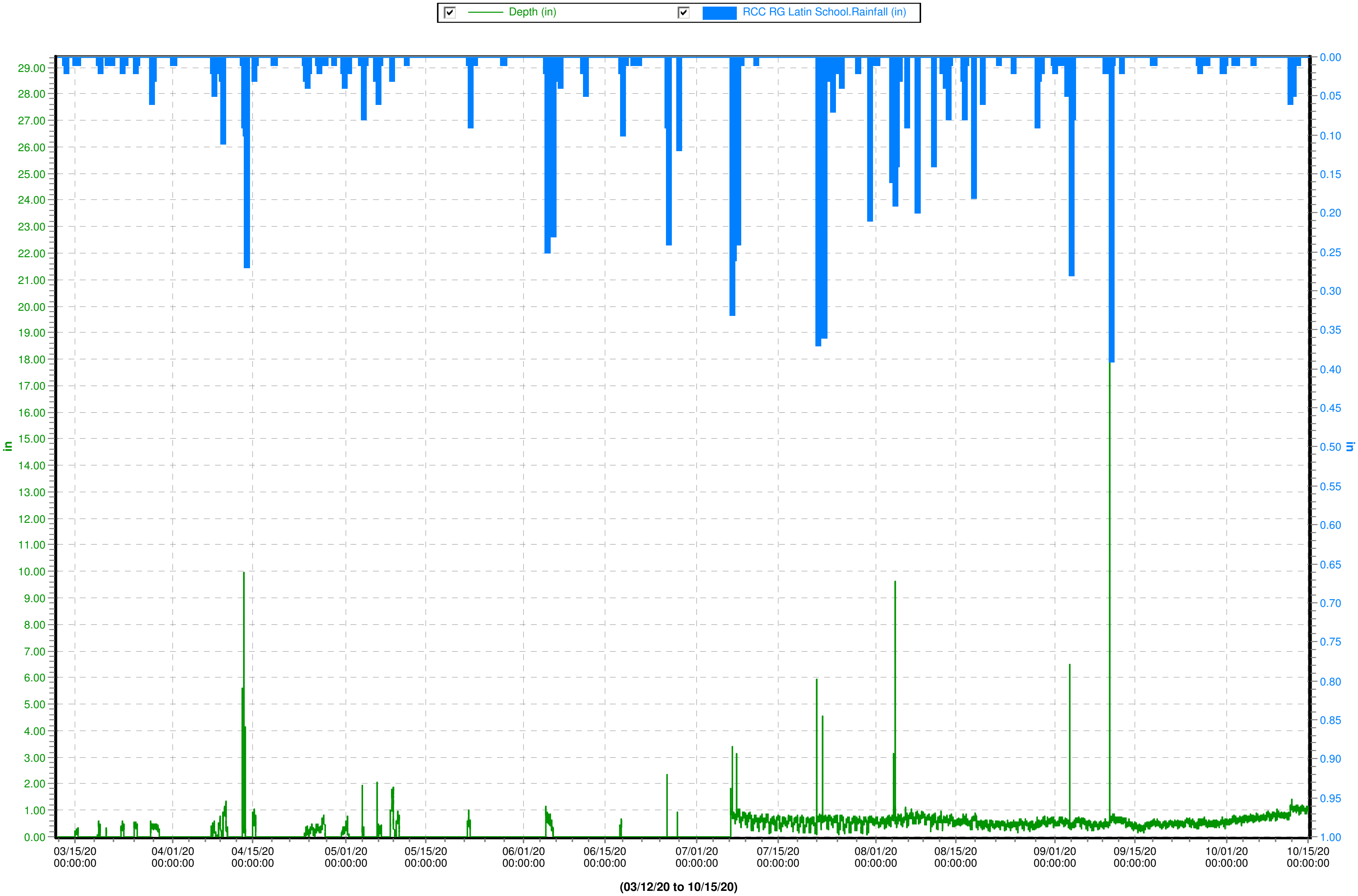


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3701

62 Ingraham ST NW-Well Depth (in): 73



Site Name/ Manhole ID: PBR-3702

Address: 18 Ingraham St NW

Latitude: N 38.954643°

Longitude: W -77.010001°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	53.5”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

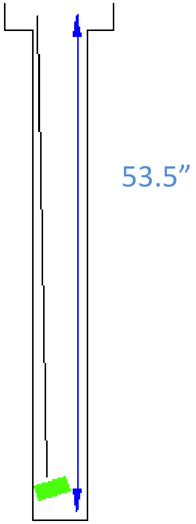
Area Map

Detail Map

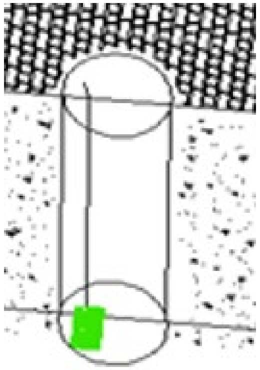
Site Area Overview

View from Top of Well

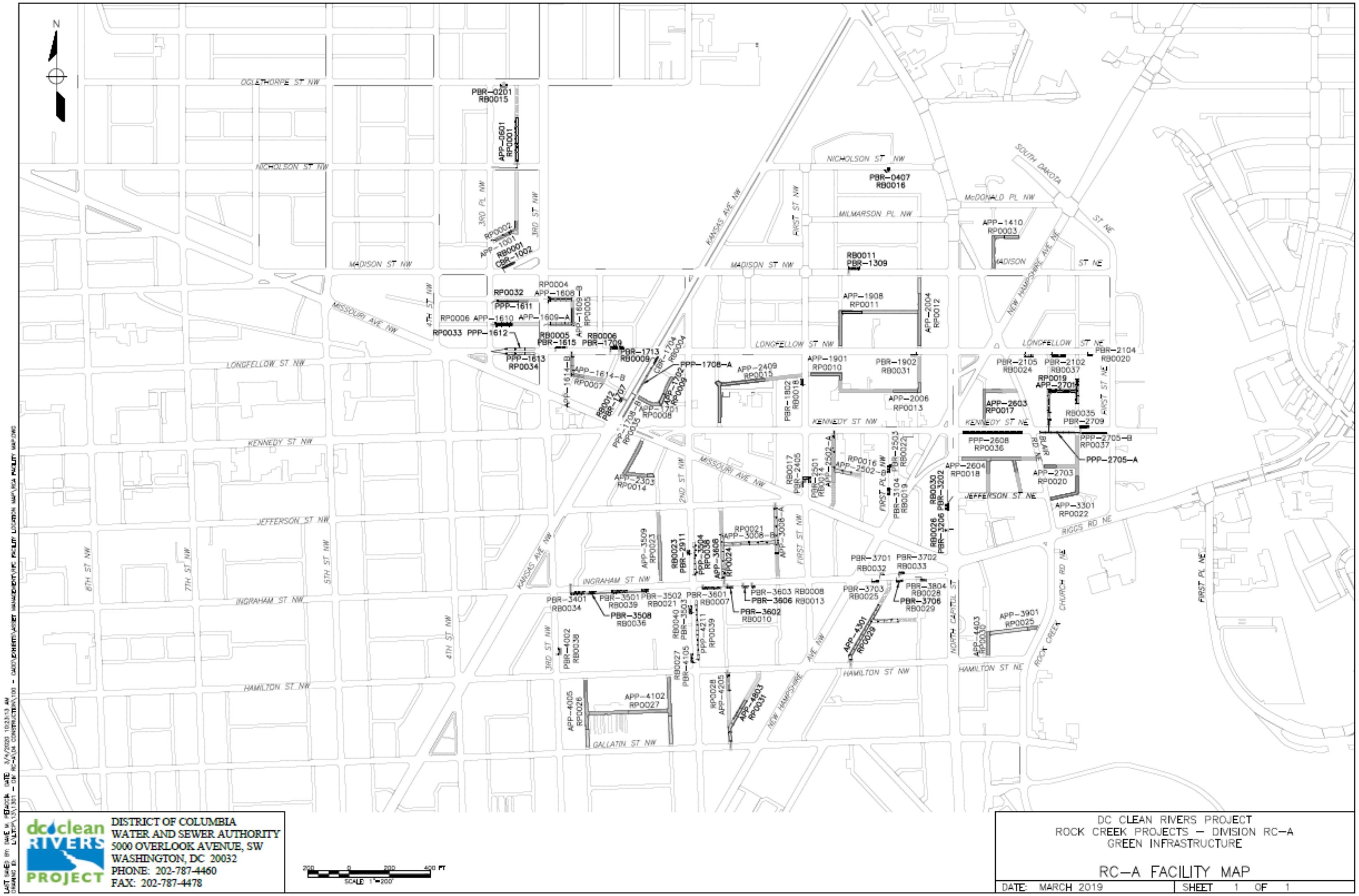
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, SW
WASHINGTON, DC 20032
PHONE: 202-787-4460
FAX: 202-787-4478

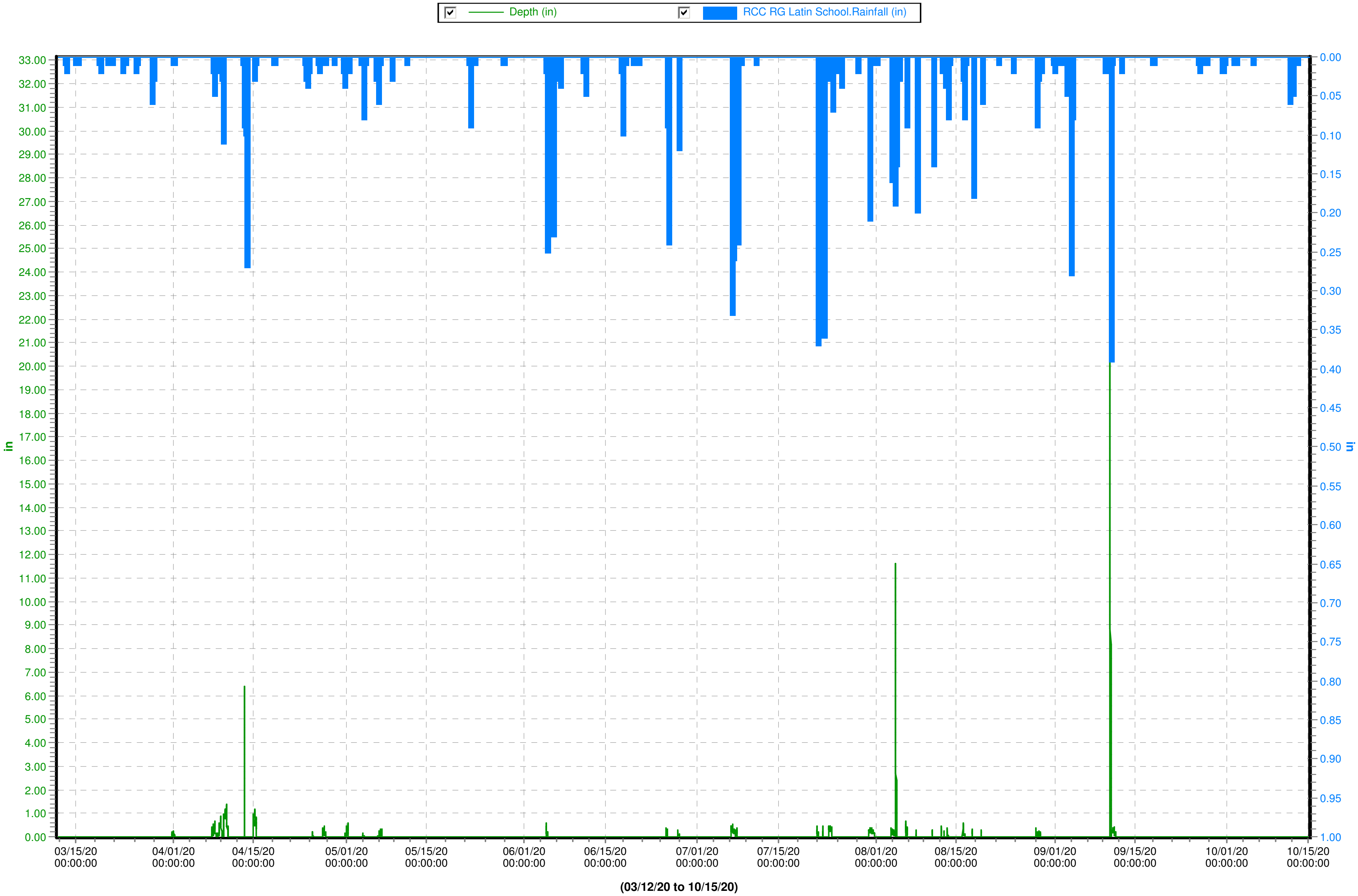
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019	SHEET 1 OF 1

3702

18 Ingraham ST NW-Well Depth (in): 53.5



Site Name/ Manhole ID:PBR 3703

Address:62 Ingraham St NW

Latitude: N 38.954521°
Longitude: W -77.010565°

Investigation Date:2/26/2020
Crew: LP/MH

Installation Date:3/10/2020
Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	66”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

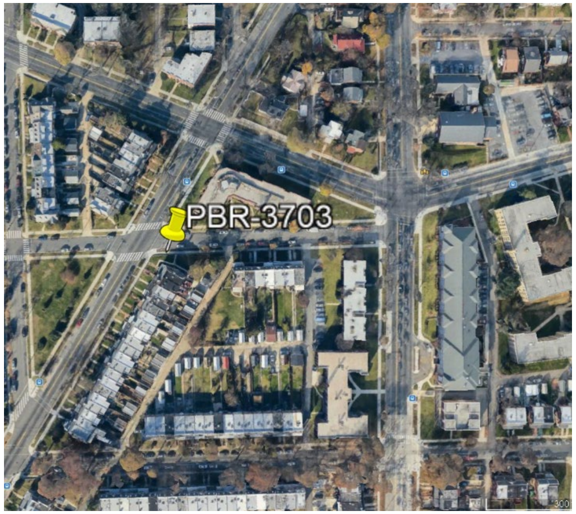
[✓ No]
Yes

Hard Packed (in):

Soft (in):

Area Map

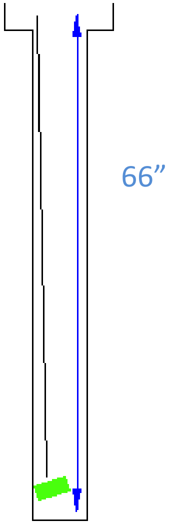
Detail Map



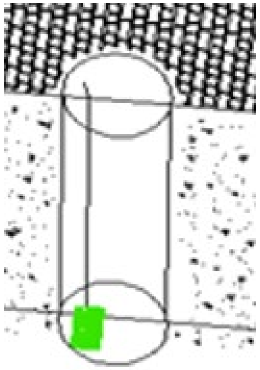
Site Area Overview

View from Top of Well

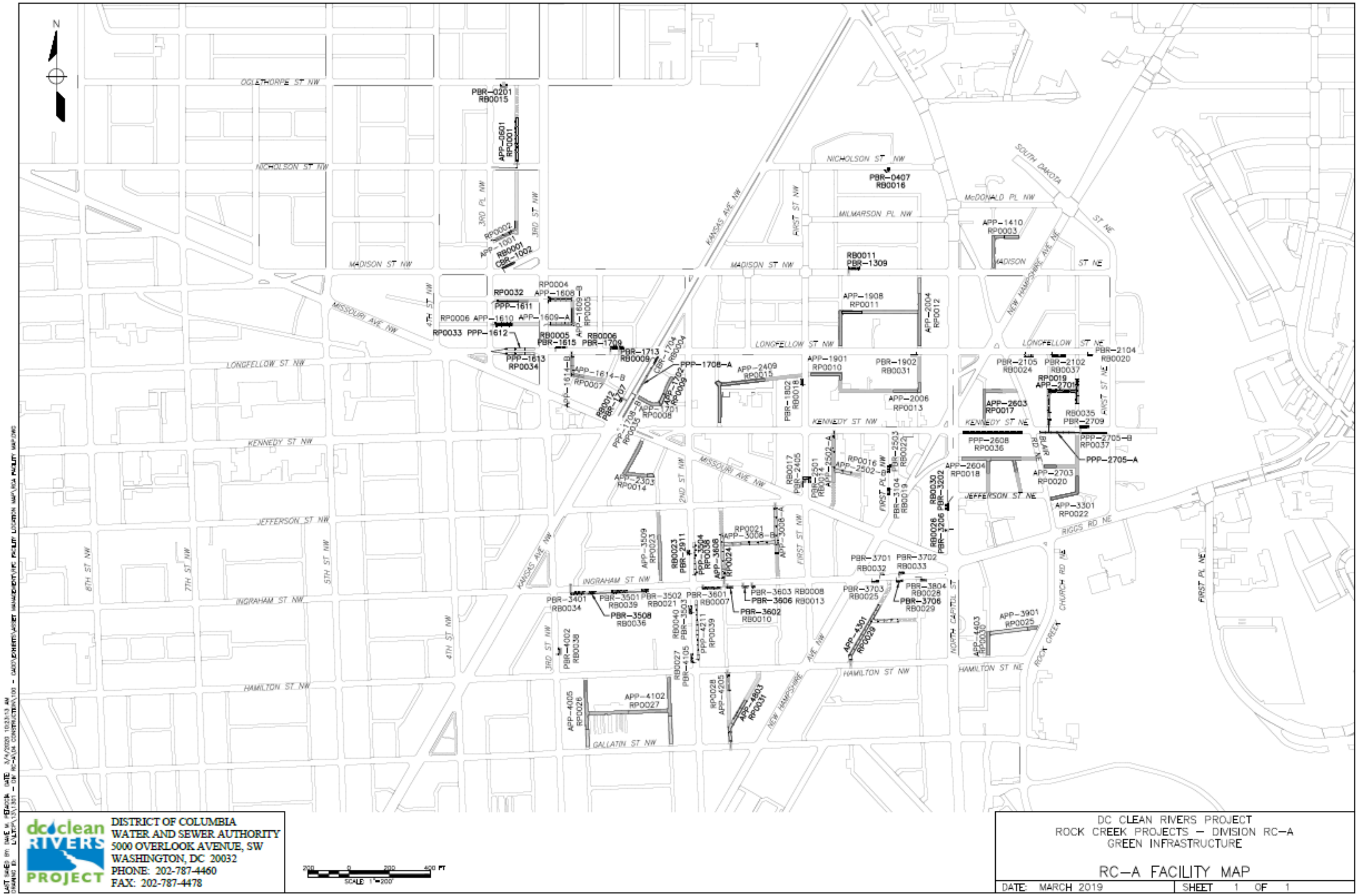
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

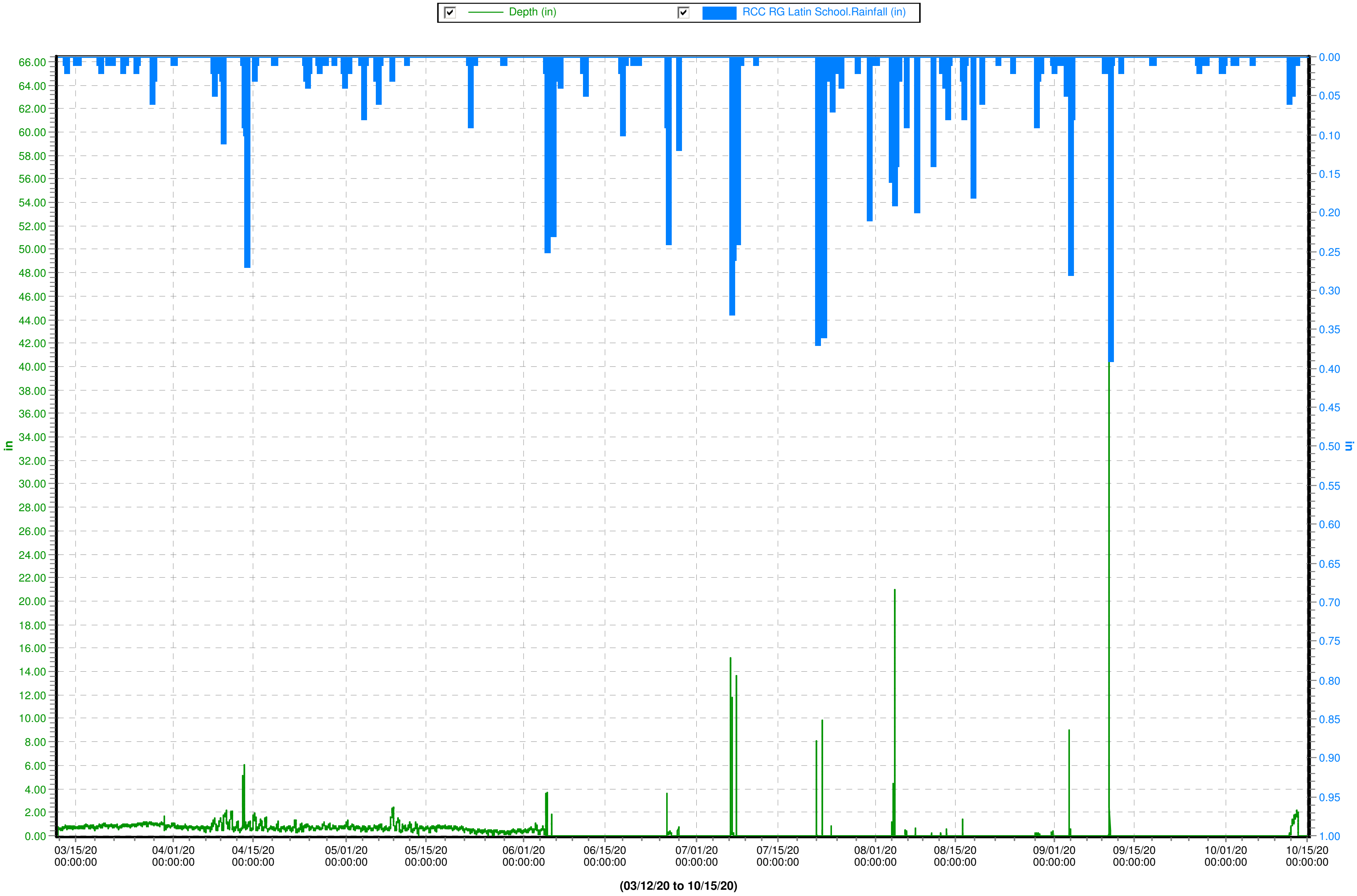


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3703

62 Ingraham ST NW-Well Deoth (in): 66



Site Name/ Manhole ID: PBR-3706

Address:18 Ingraham St NW

Latitude: N 38.954523°

Longitude: W -77.009995°

Investigation Date:2/26/2020

Crew: LP/MH

Installation Date:3/11/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	59”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

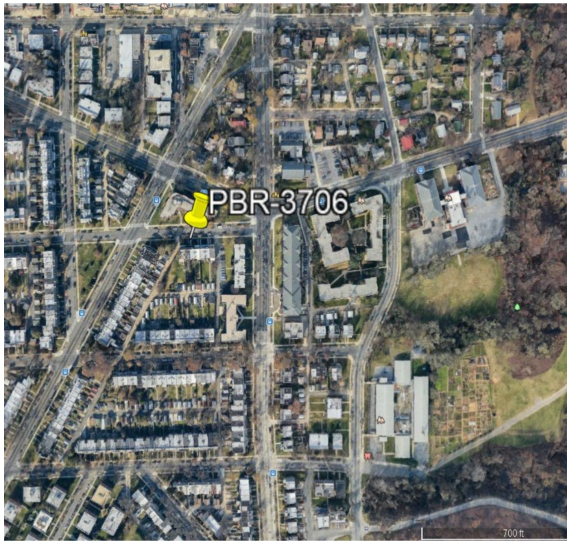
[✓ No]

Yes

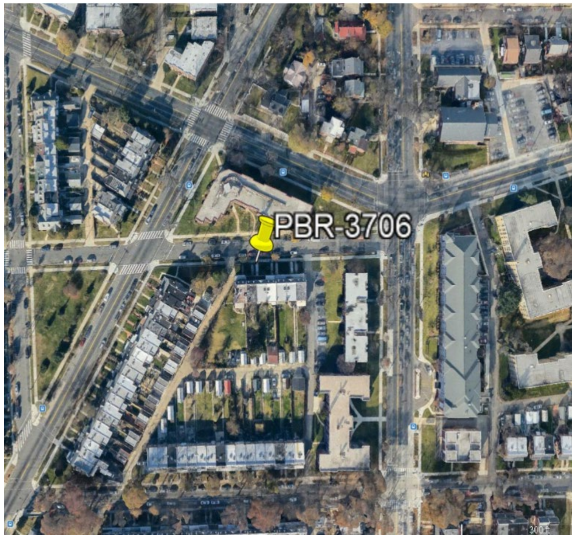
Hard Packed (in):

Soft (in):

Area Map



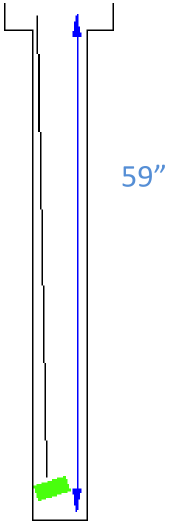
Detail Map



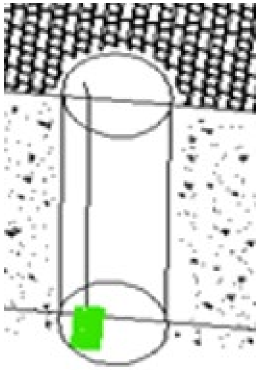
Site Area Overview

View from Top of Well

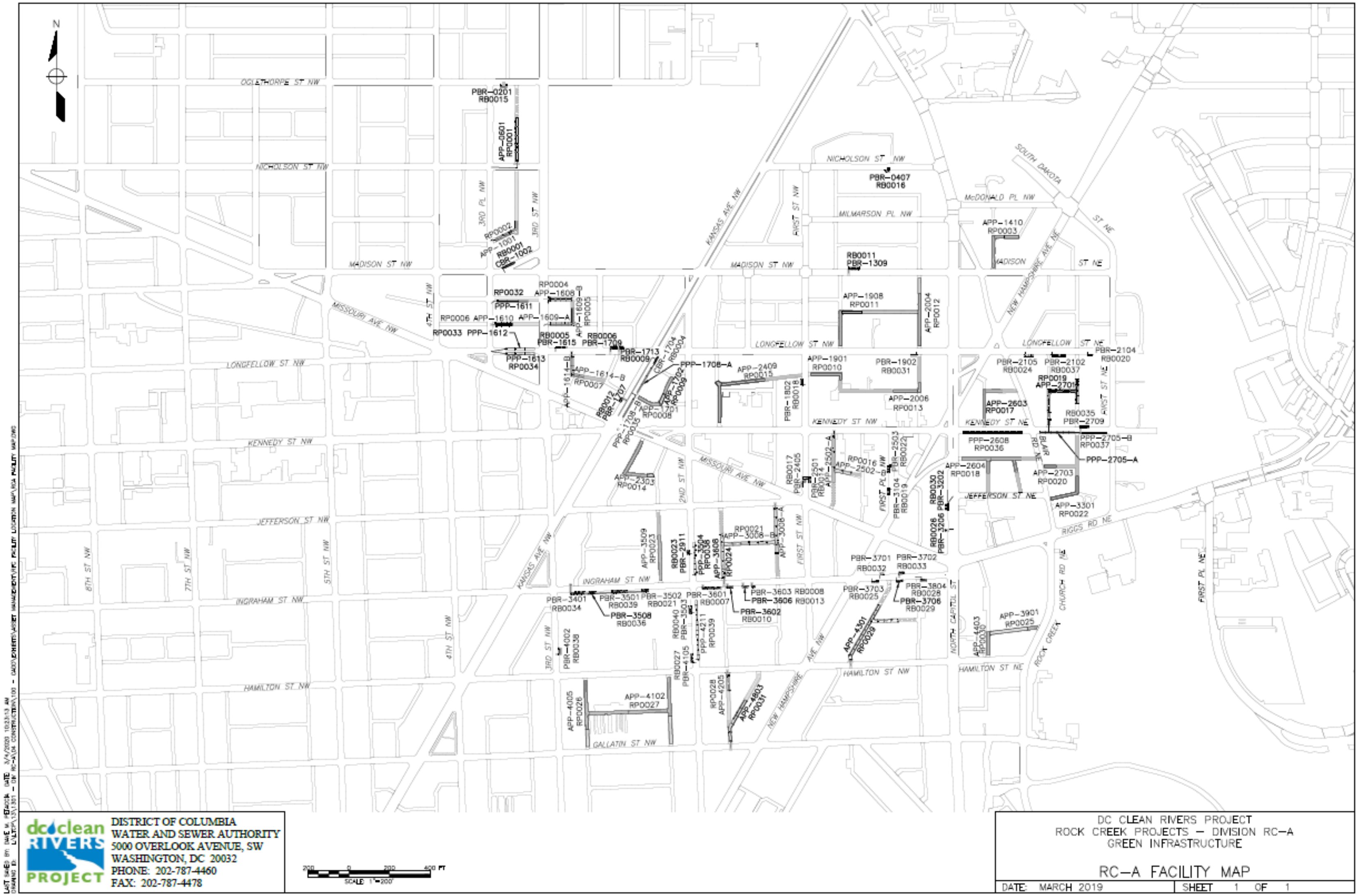
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

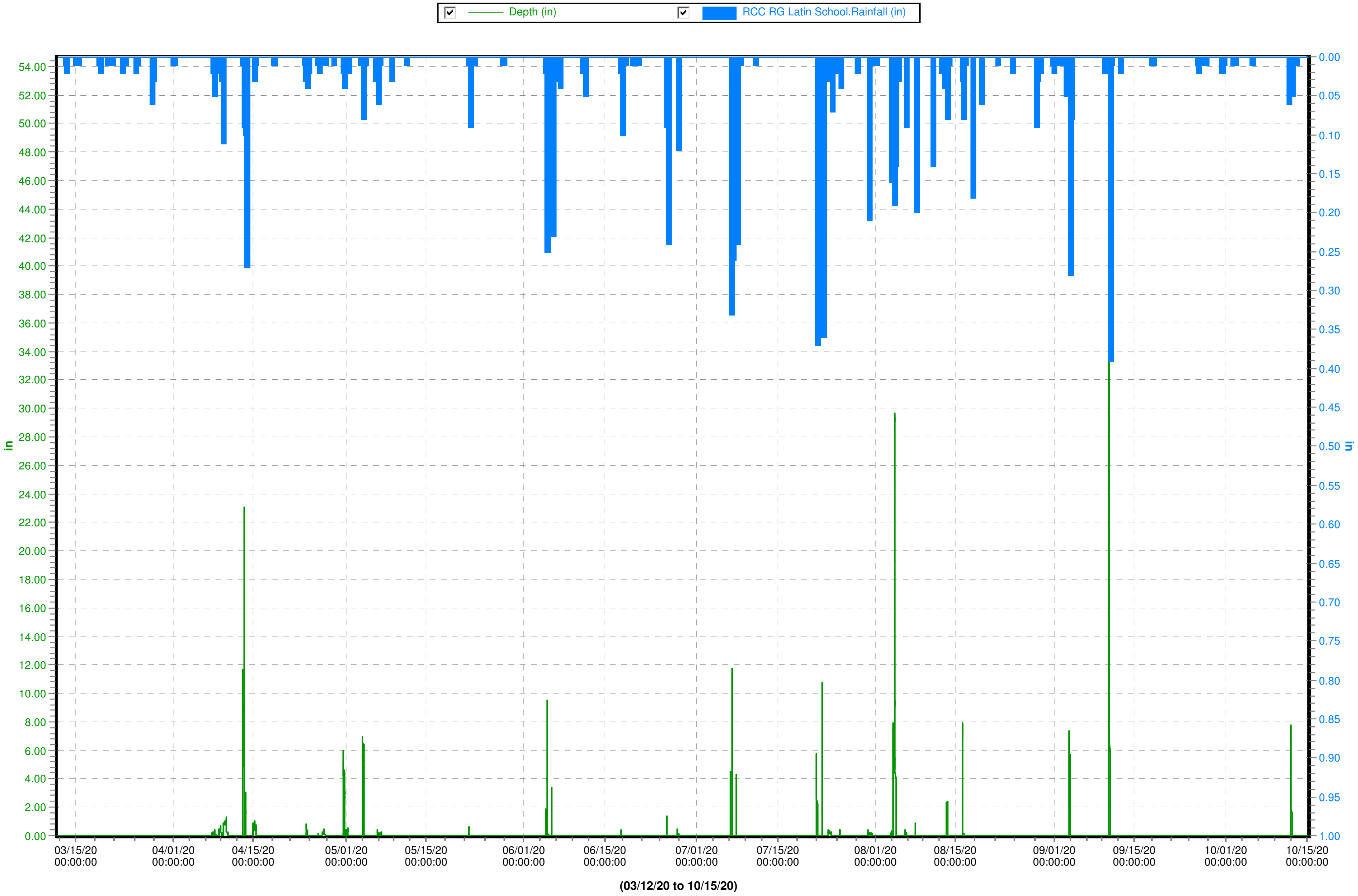


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3706

18 Ingraham ST NW-Well Depth (in): 59



Site Name/ Manhole ID: PBR-3804

Address:10 Ingraham St NW

Latitude: N 38.954511° Longitude: W -77.009508°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

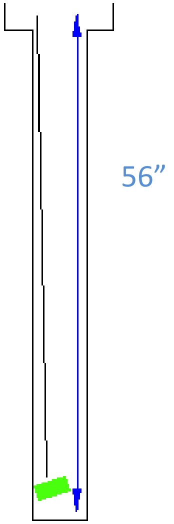
Area Map

Detail Map

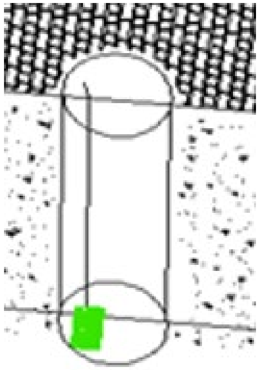
Site Area Overview

View from Top of Well

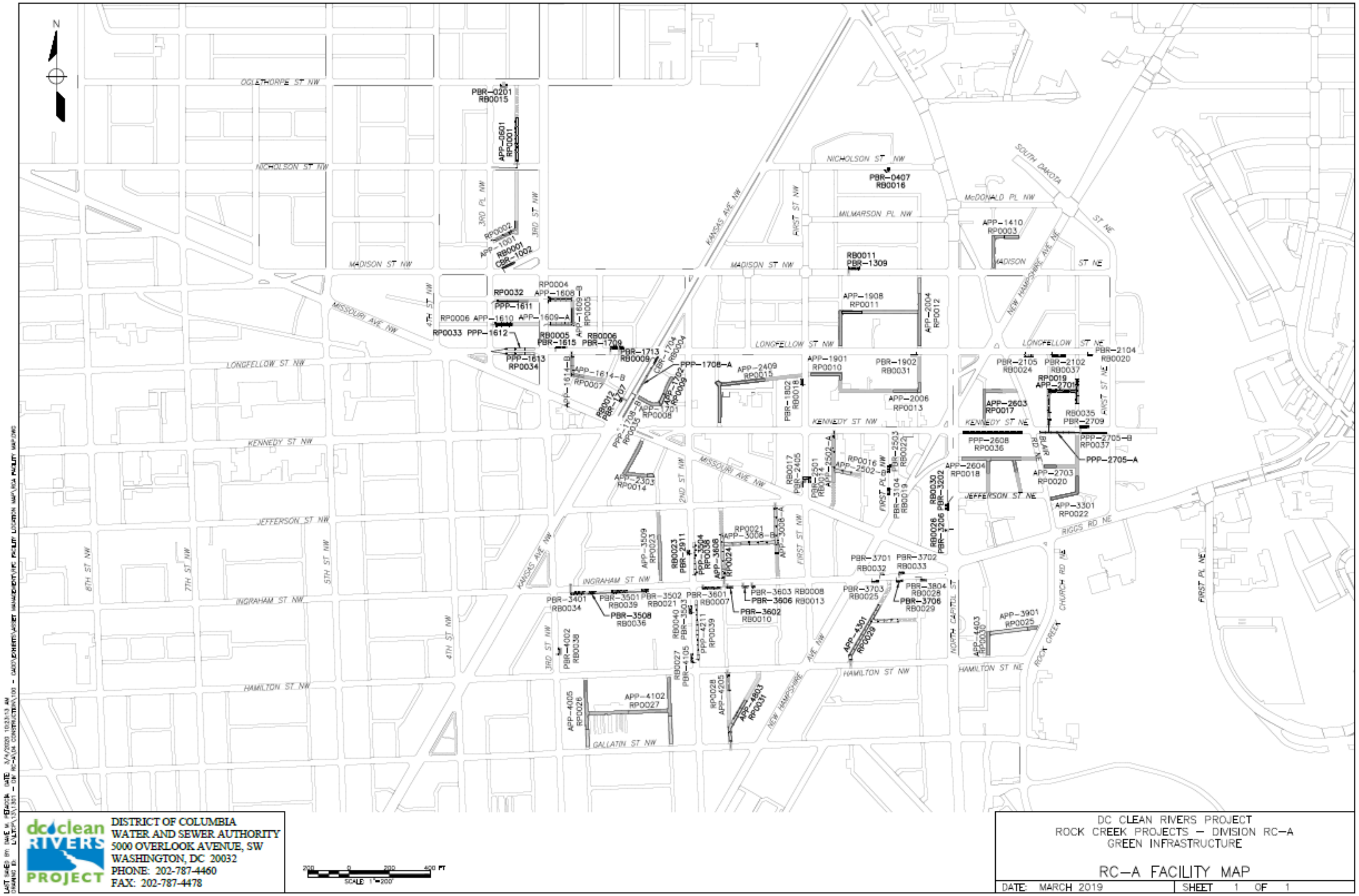
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

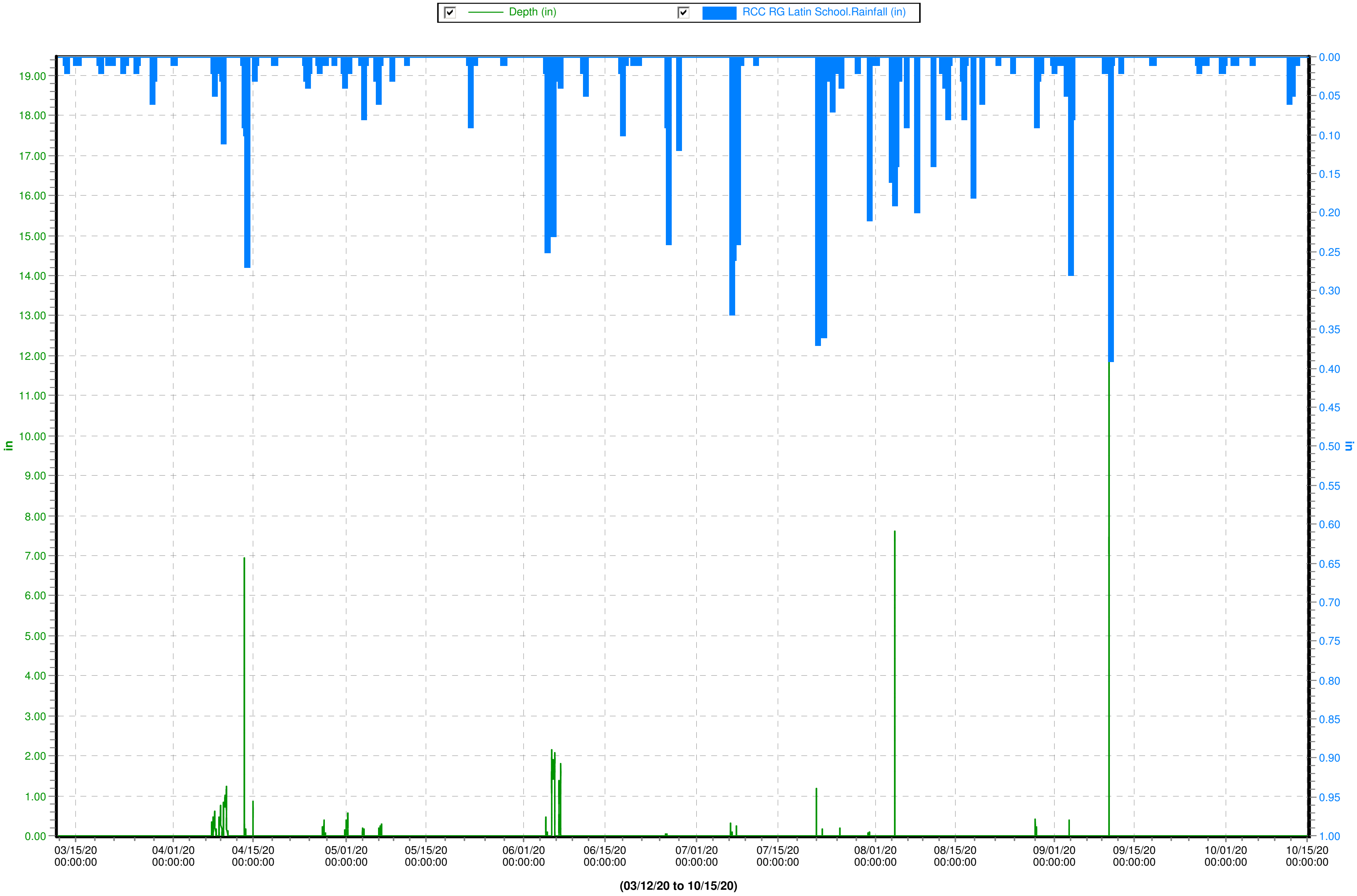


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3804

10 Ingraham ST NW-Well Depth (in): 56



Site Name/ Manhole ID: PBR-4002

Address:5204 3rd St NW

Latitude: N 38.953596°

Longitude: W -77.015904°

Investigation Date:2/26/2020 Crew: LP/MH

Installation Date:3/11/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	68”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

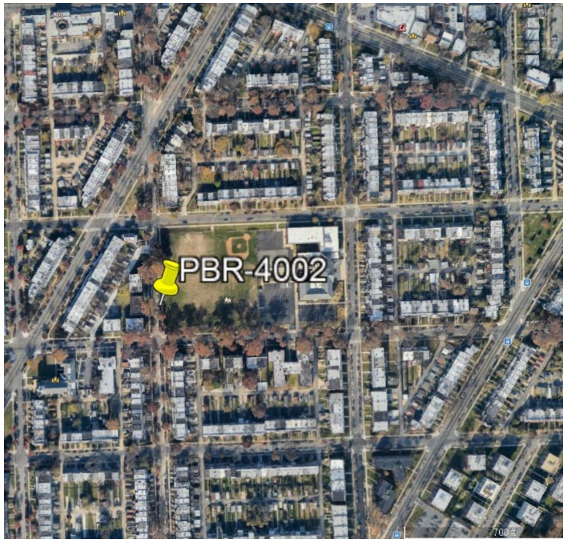
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

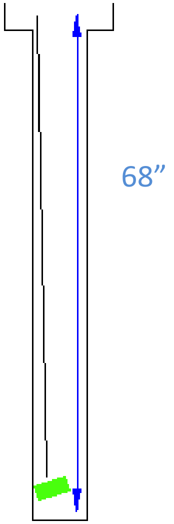


Detail Map

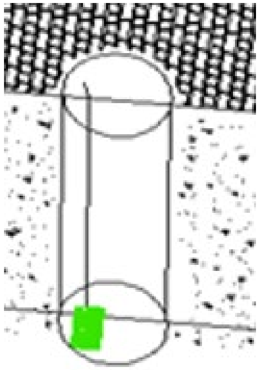
Site Area Overview

View from Top of Well

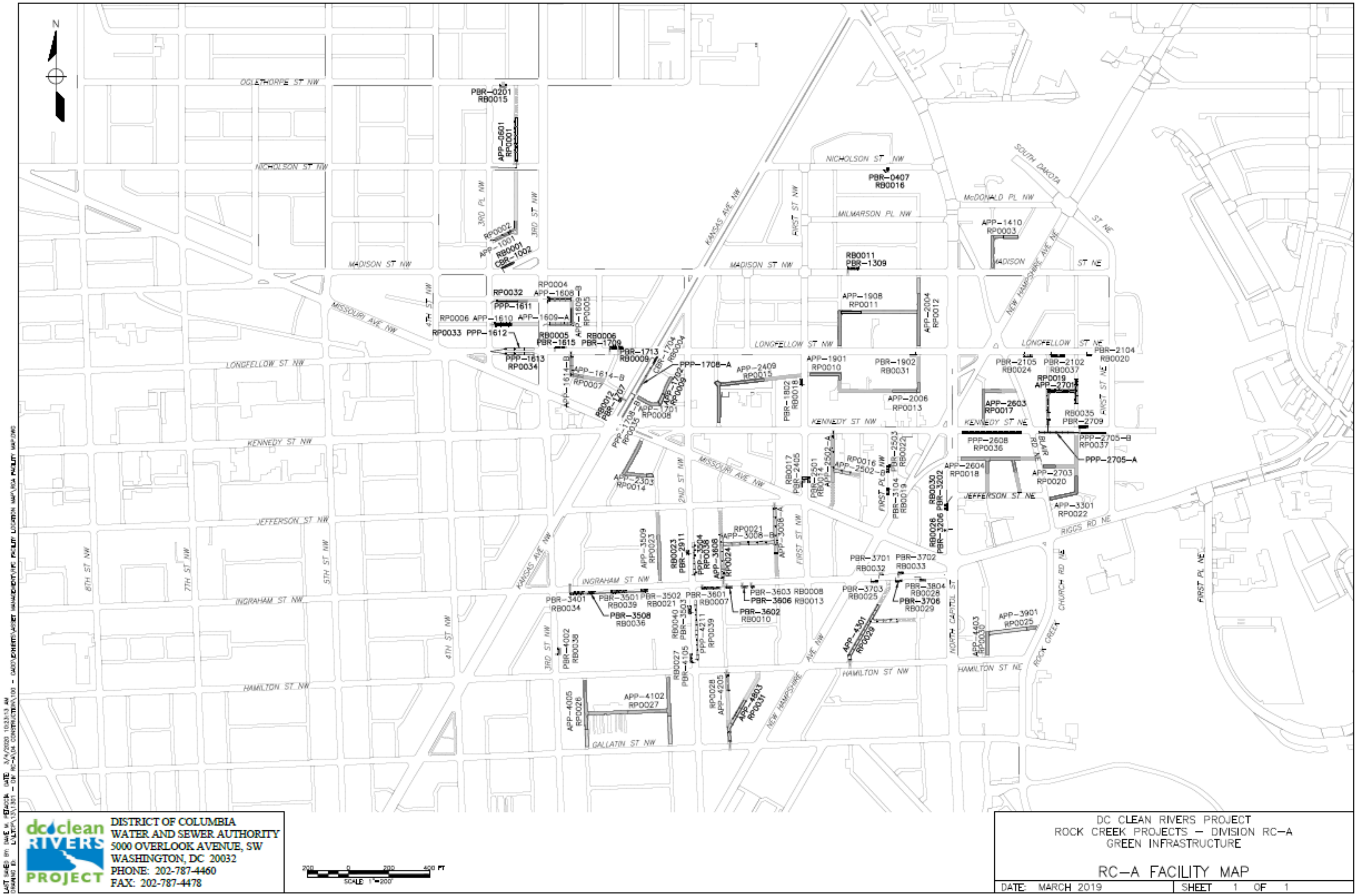
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

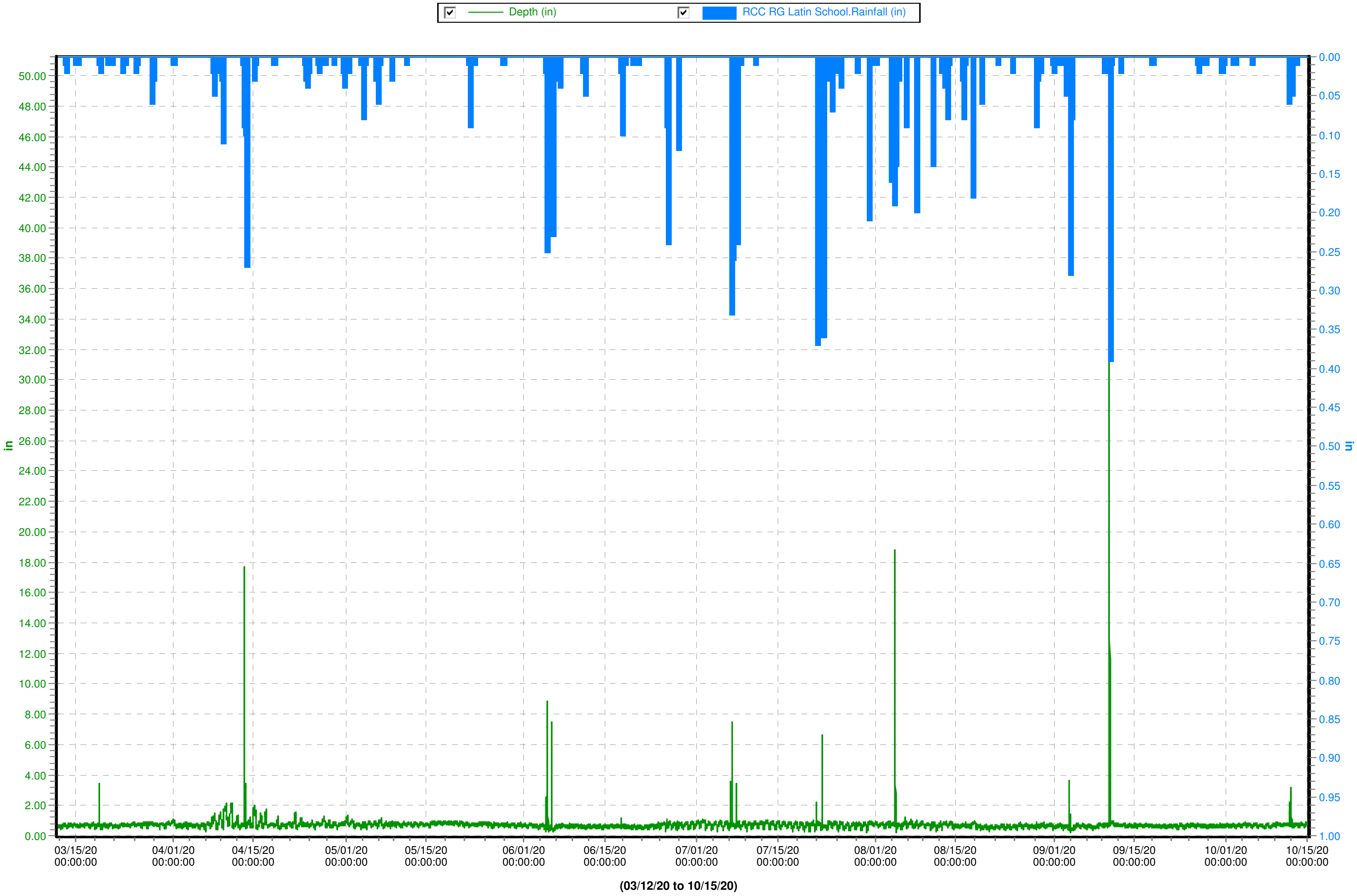


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



4002

5204 3rd ST NW-Well Depth (in): 67



Site Name/ Manhole ID: PPP-1611

Address: 316 Madison St NW

Latitude: N 38.958320° Longitude: W -77.016924°

Investigation Date:3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	37”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

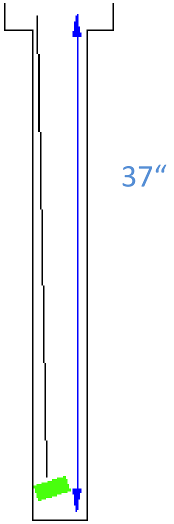
Area Map

Detail Map

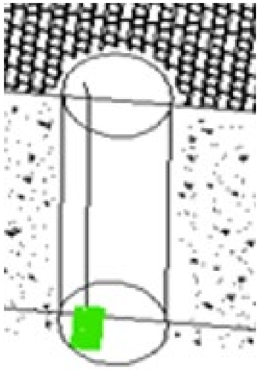
Site Area Overview

View from Top of Well

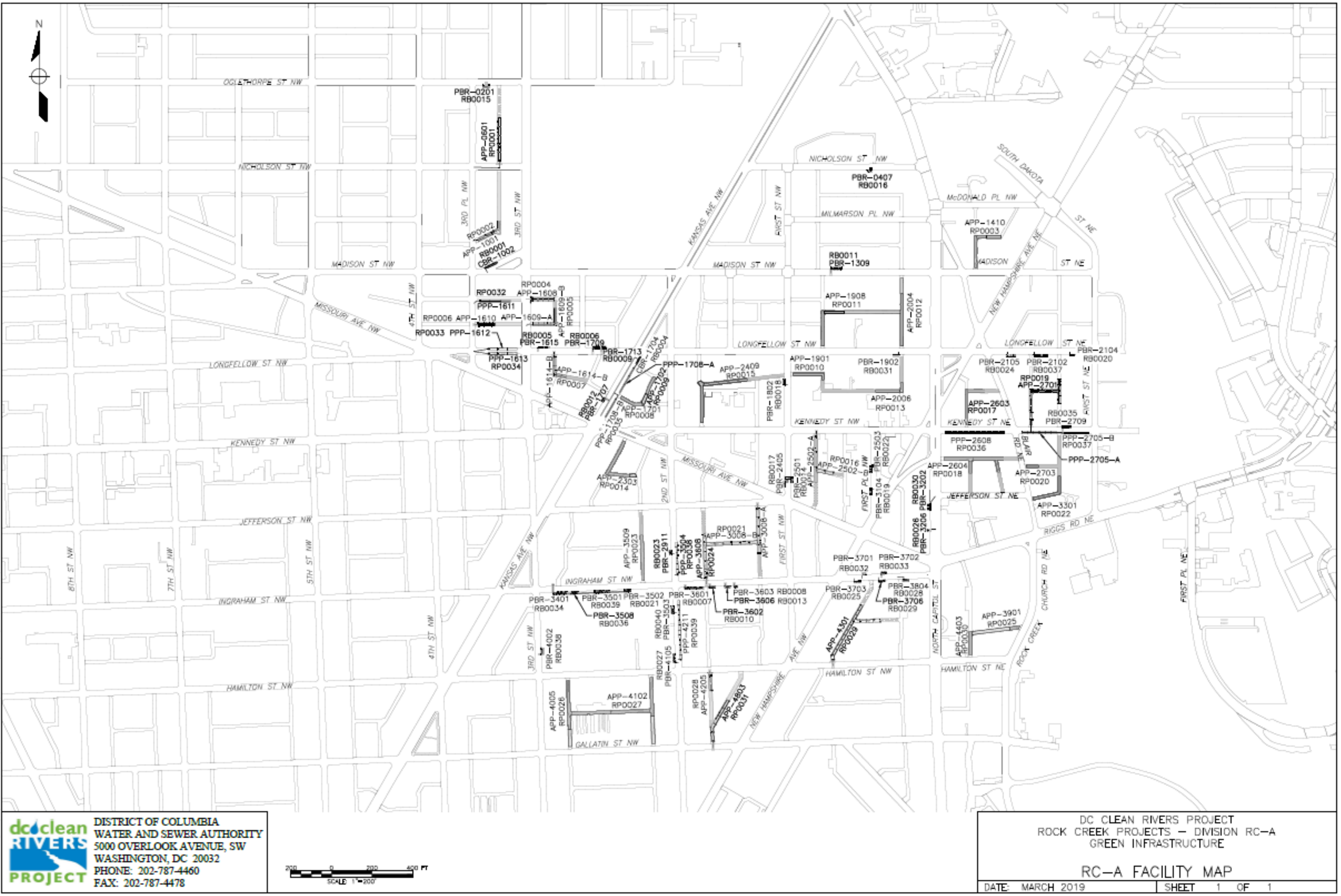
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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WASHINGTON, DC 20032
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FAX: 202-787-4478

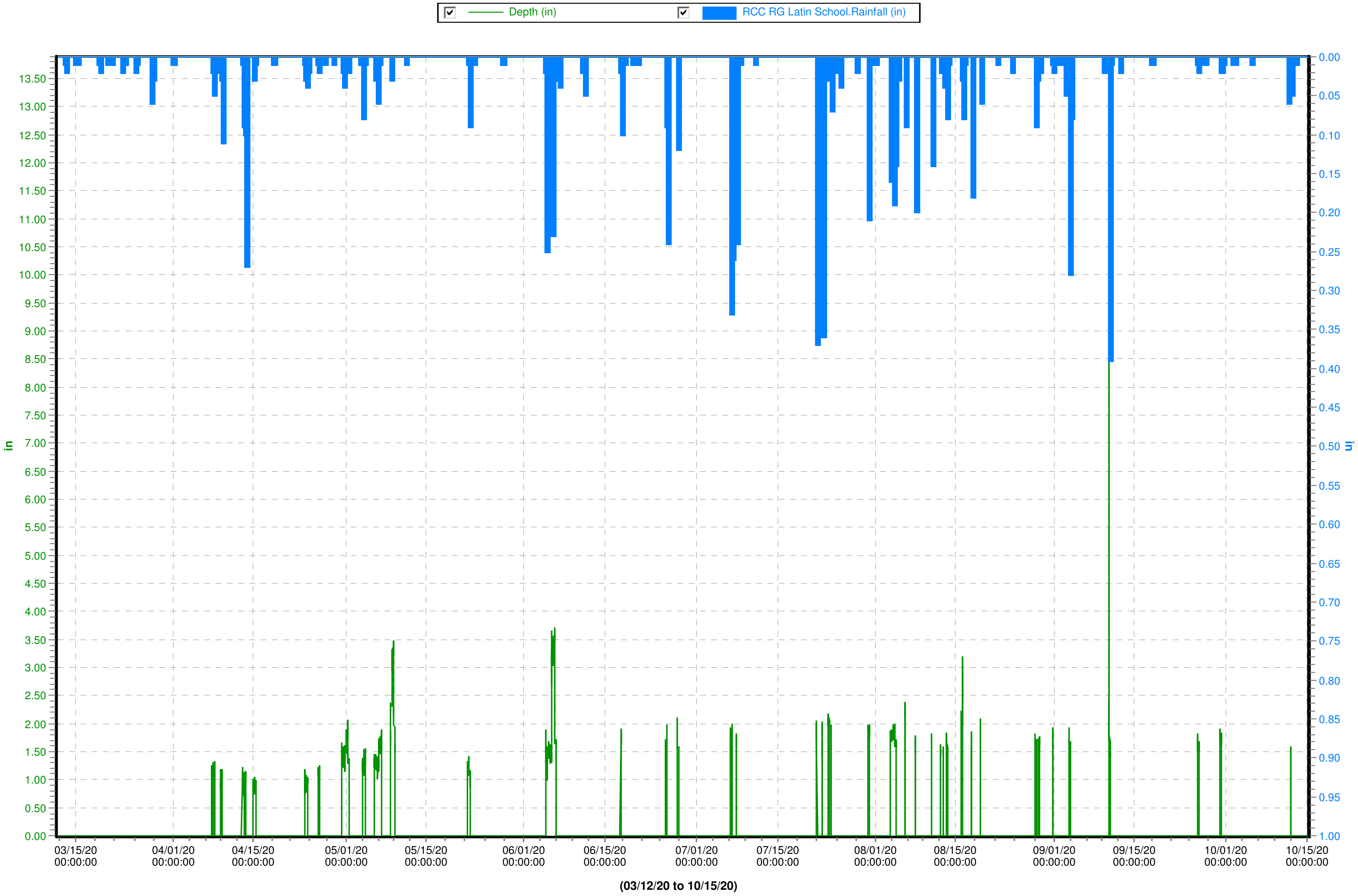
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019 SHEET 1 OF 1

1611

316 Madison ST NW-Well Depth (in): 37



Site Name/ Manhole ID: PPP-1612

Address:317 Longfellow St NW

Latitude: N 38.957730°   Longitude: W -77.016915°

Investigation Date:3/3/2020   Crew: CP

Installation Date:3/10/2020   Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	36”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor	
	Redundant:	
Velocity	Primary: N/A	
	Redundant:	

Comments:

Sediment Present:

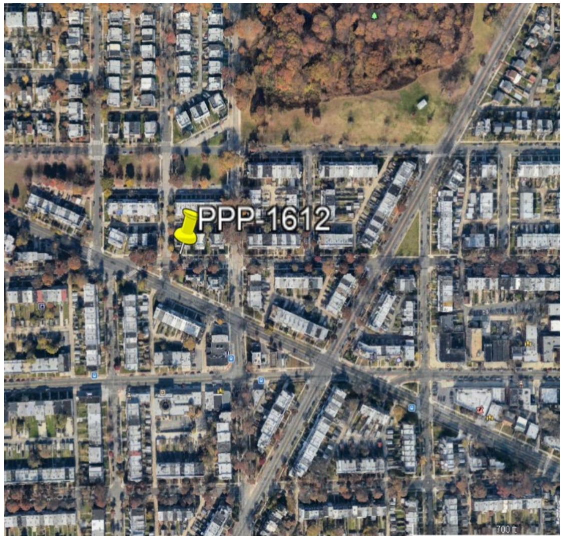
[✓ No]

Yes

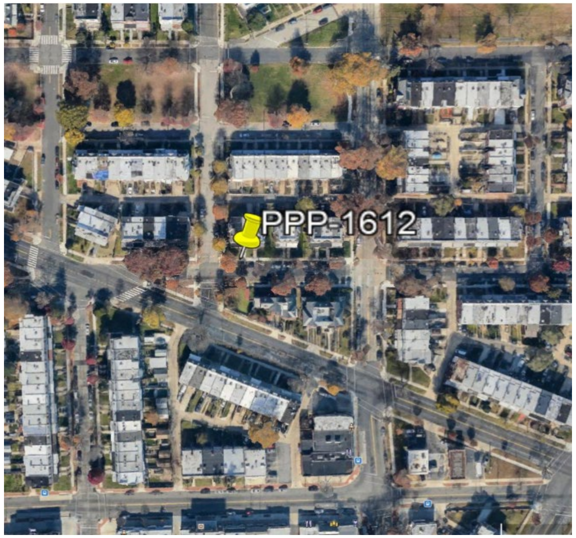
Hard Packed (in):

Soft (in):

Area Map



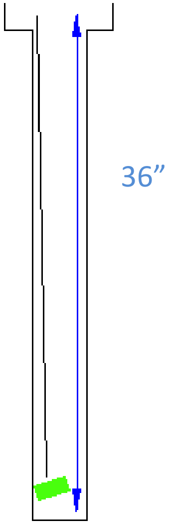
Detail Map



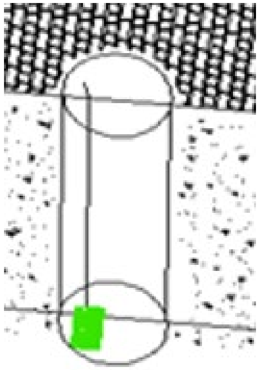
Site Area Overview

View from Top of Well

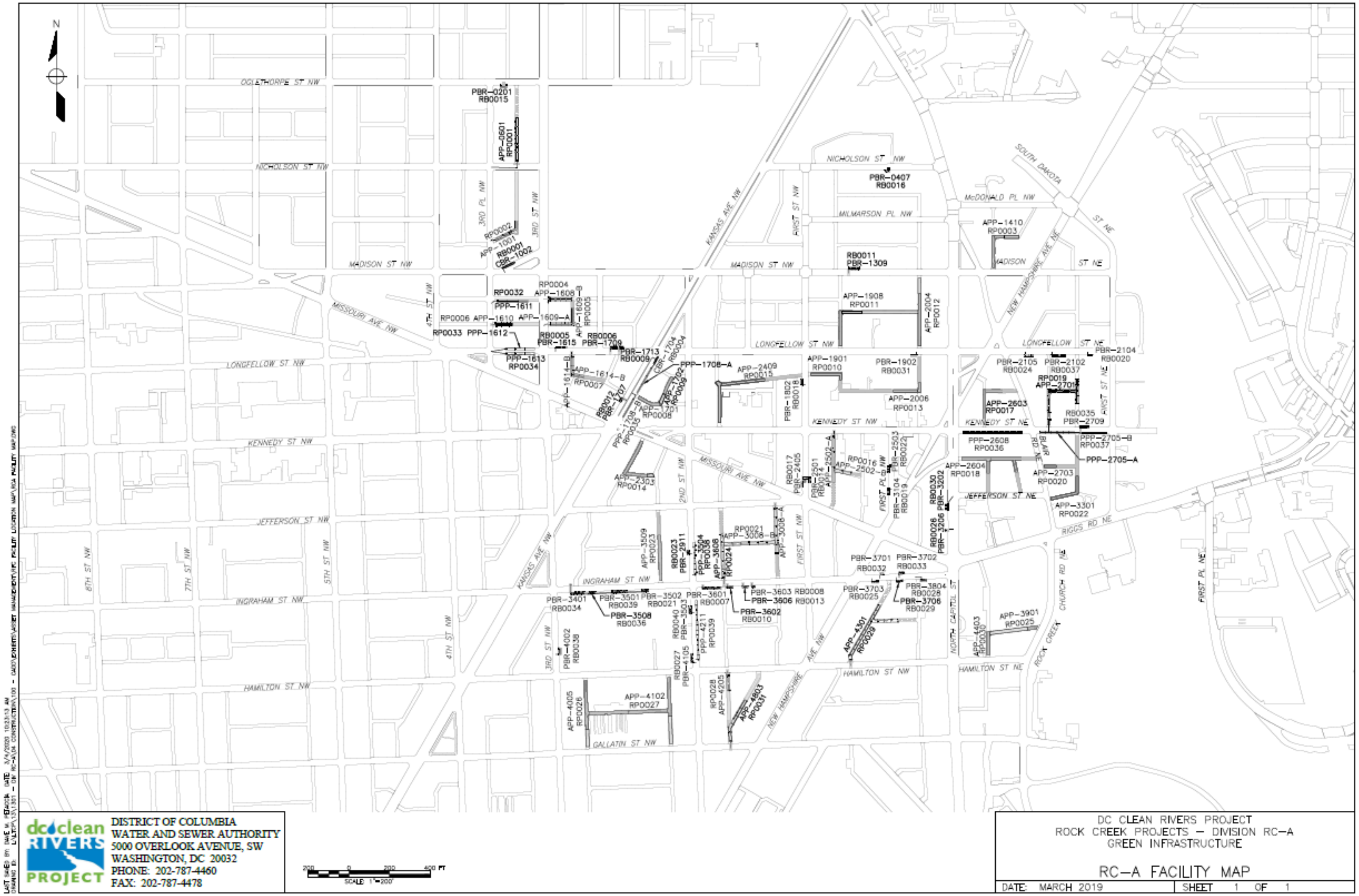
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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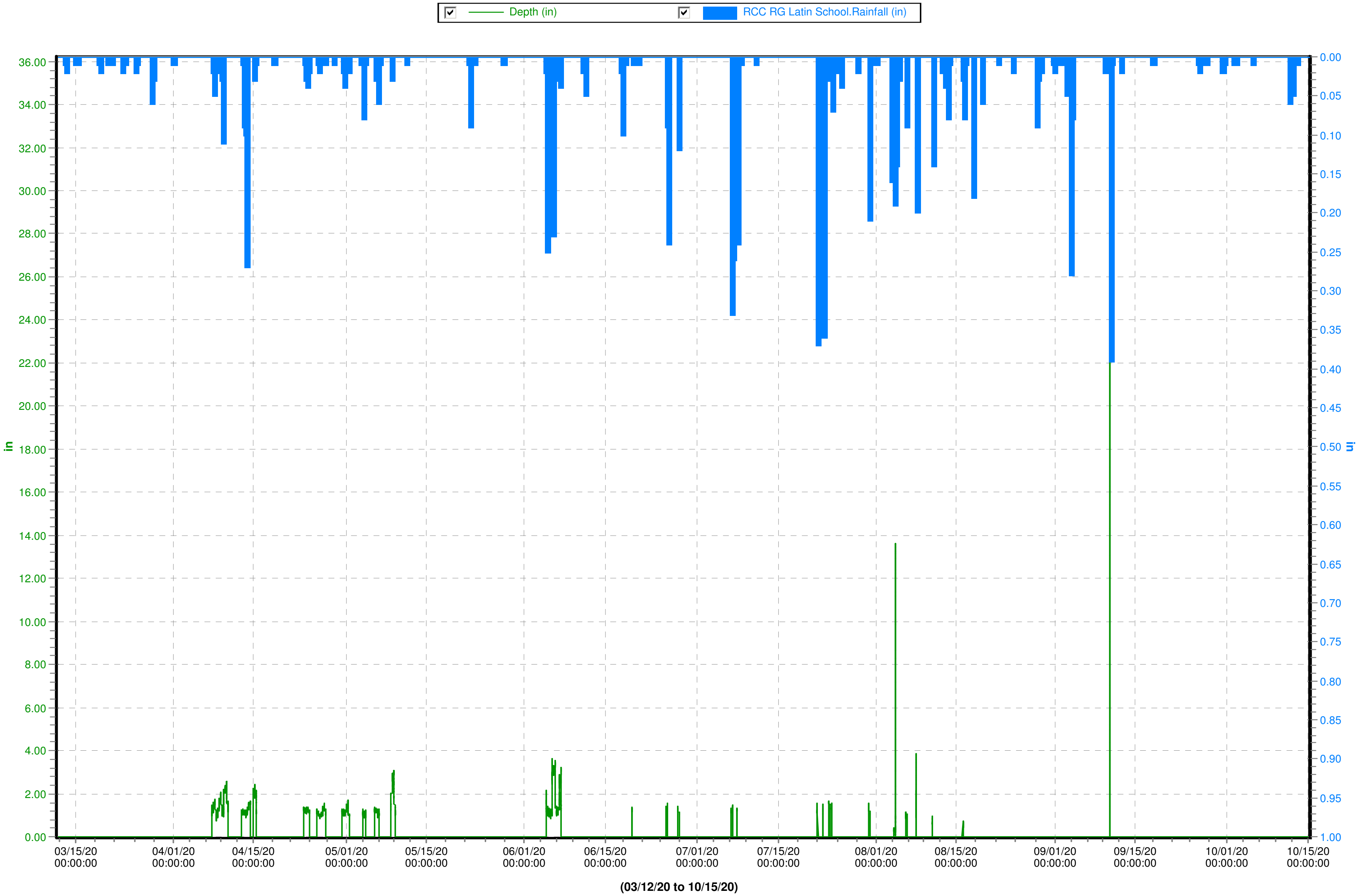
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

1612

317 Longfellow ST NW-Well Depth (in): 36



Site Name/ Manhole ID: PPP-1613

Address: 308 Longfellow St NW

Latitude: N 38.957564° Longitude: W -77.016709°

Investigation Date: 3/3/2020 Crew: CP

Installation Date:3/10/2020 Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	42”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

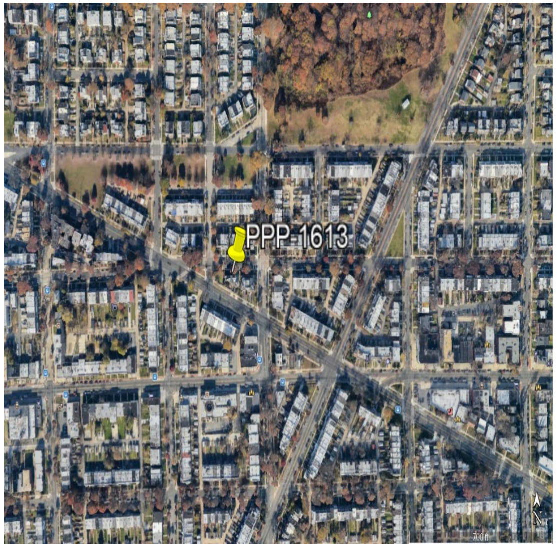
Sediment Present:

[✓ No] Yes

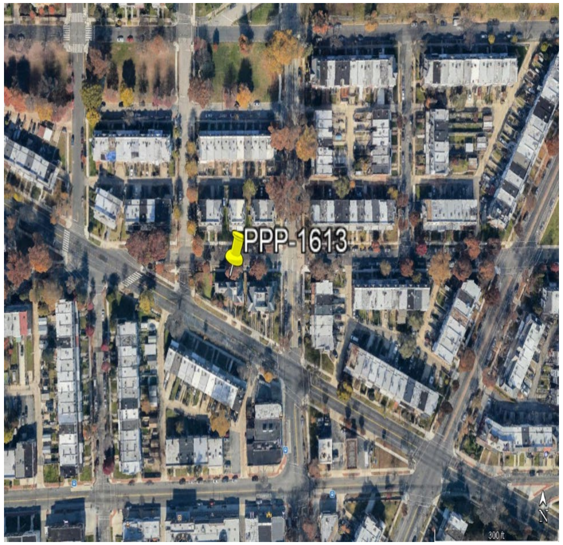
Hard Packed (in):

Soft (in):

Area Map



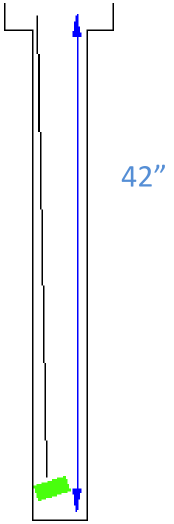
Detail Map



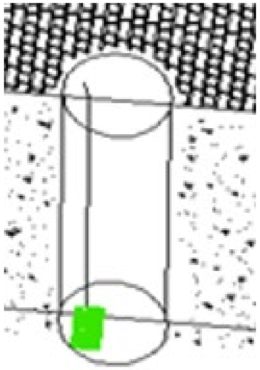
Site Area Overview

View from Top of Well

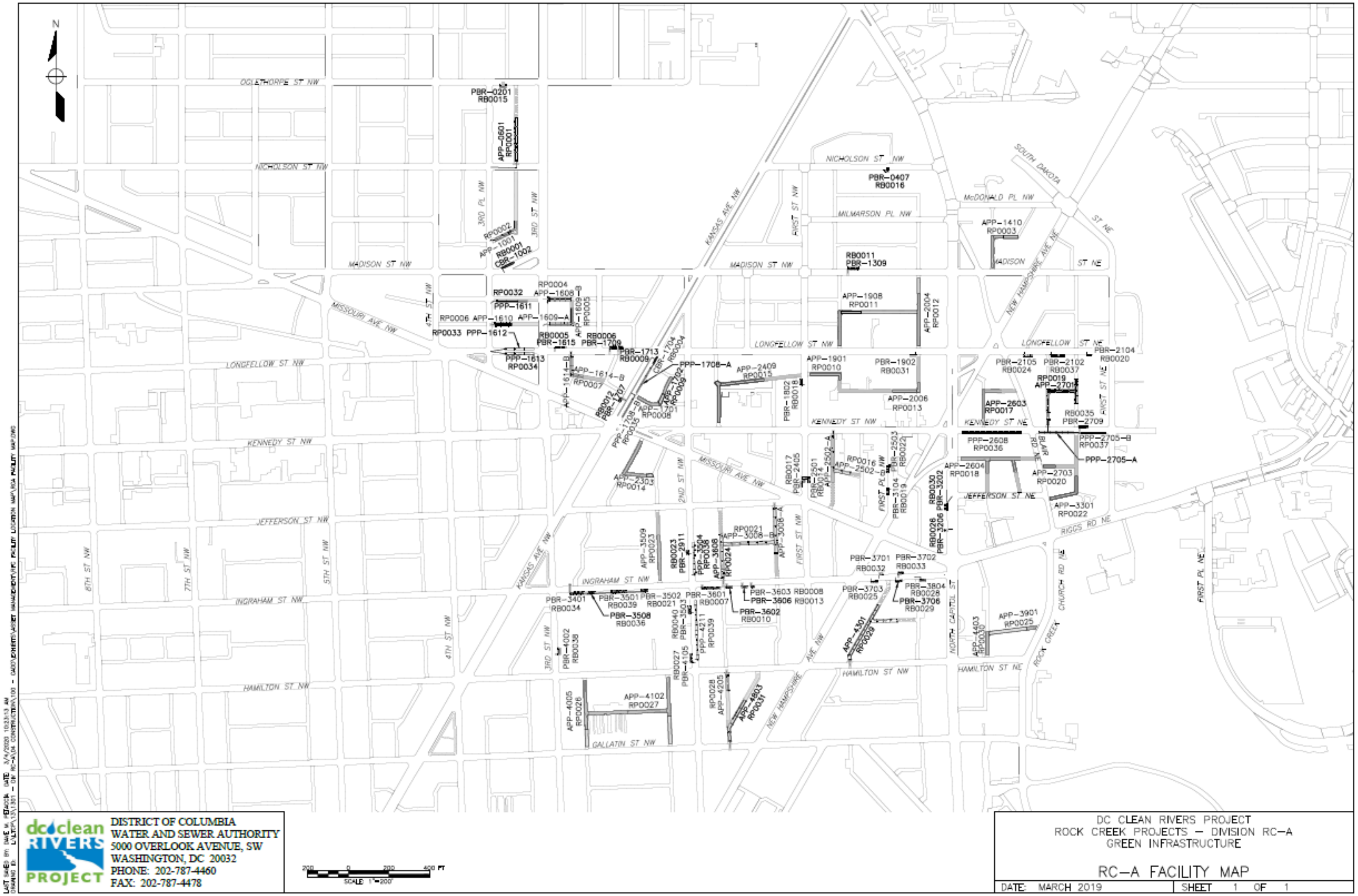
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

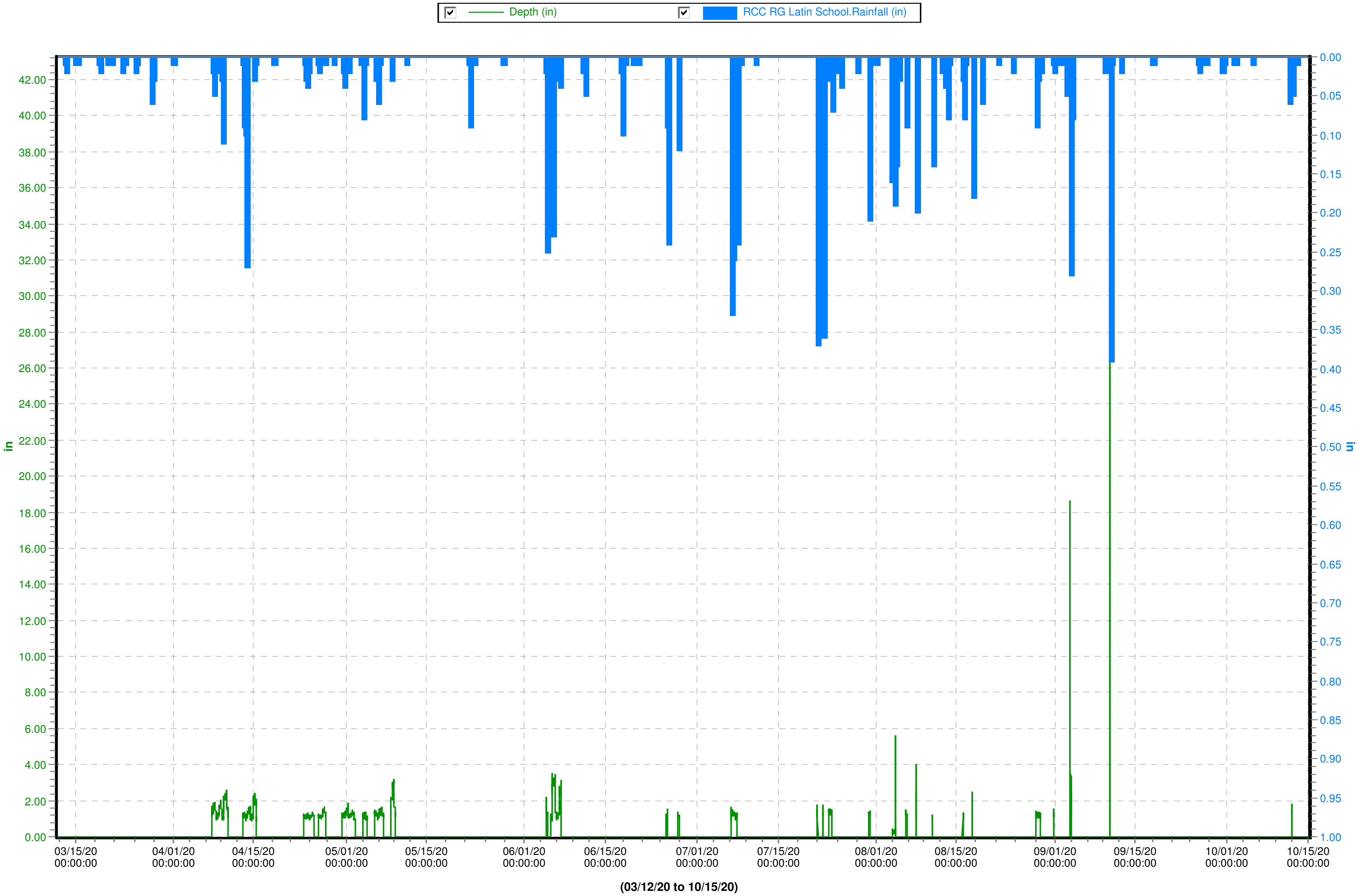


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



1613

308 Longfellow ST NW-Well Depth (in): 43



Site Name/ Manhole ID: PPP 1708

Address:5527 Kansas Ave St NW

Latitude: N 38.957240°   Longitude: W -77.014348°

Investigation Date: 3/3/2020   Crew: CP

Installation Date: 3/10/2020   Crew: DM/NM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good] (no problem accessing site)

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 1

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	29”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

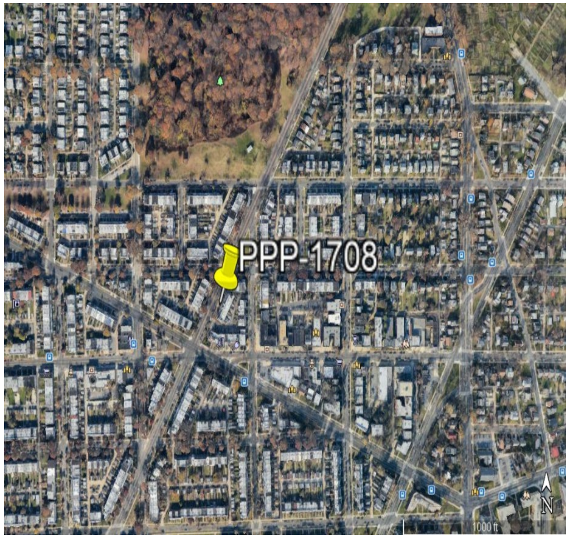
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

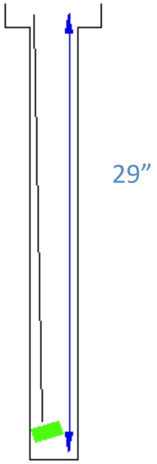


Detail Map

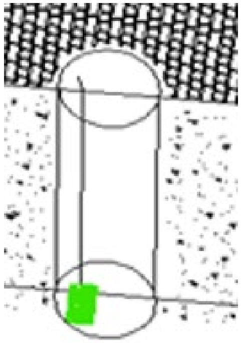
Site Area Overview

View from Top of Well

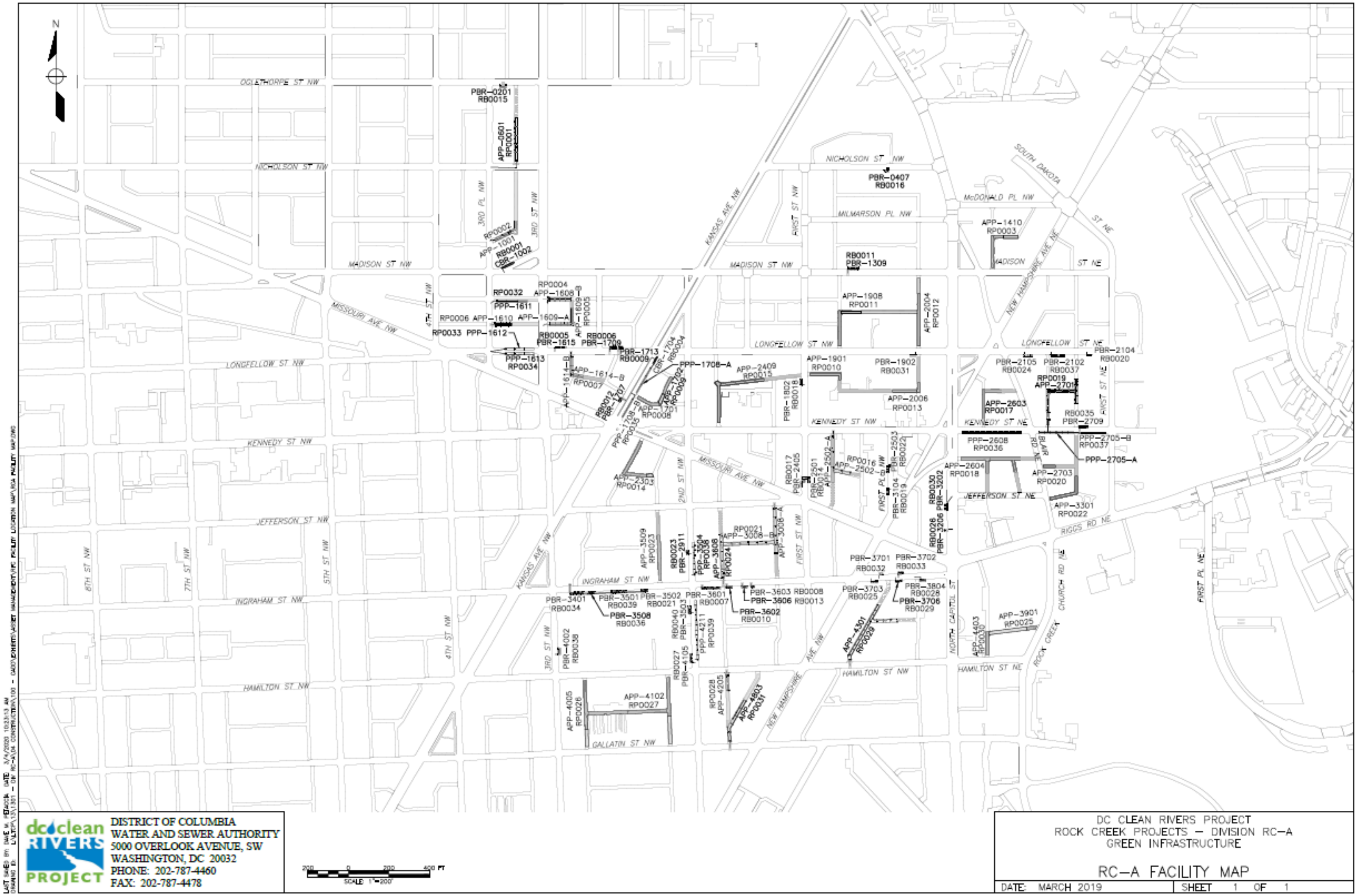
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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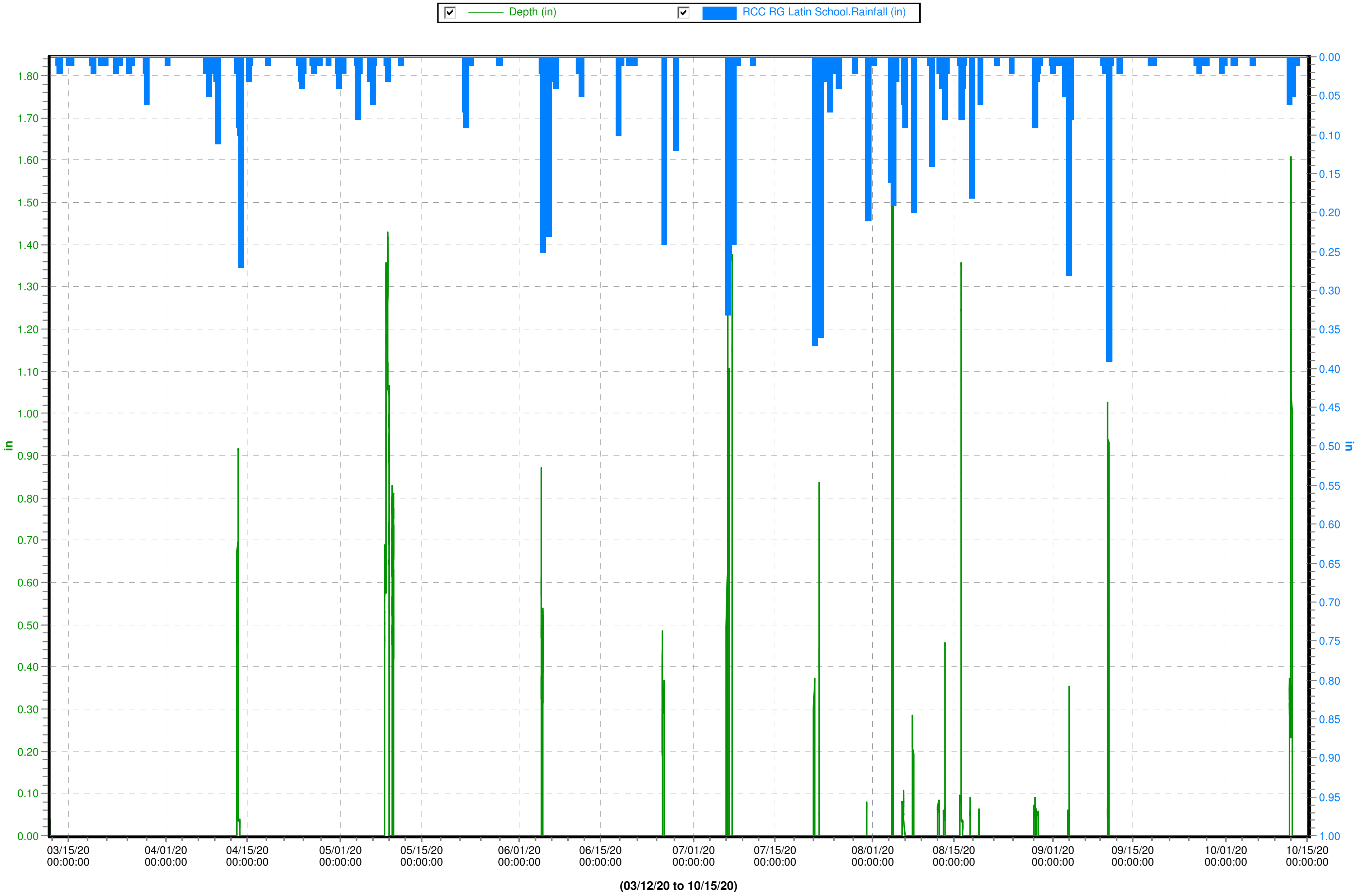
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019
SHEET 1 OF 1

1708

5527 Kansas Ave NW-Well Depth (in): 29



Site Name/ Manhole ID: PPP-2608

Address: Kennedy St NE and North Capitol St

Latitude: N 38.95637°

Longitude: W -77.008862°

Investigation Date:2/25/2020

Crew: LP/MH

Installation Date:3/10/2020

Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	54”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

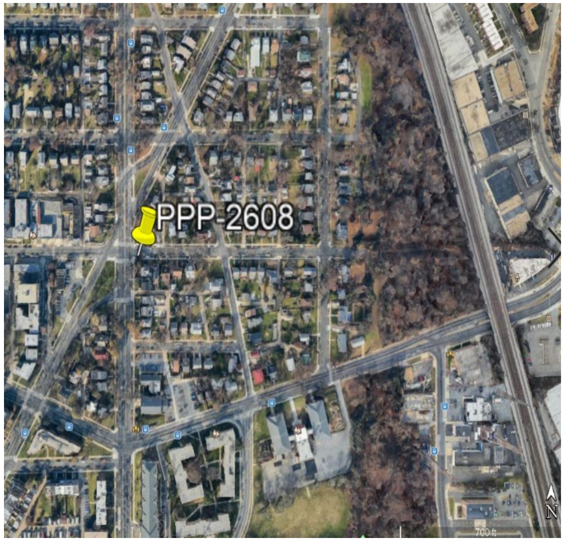
[✓ No]

Yes

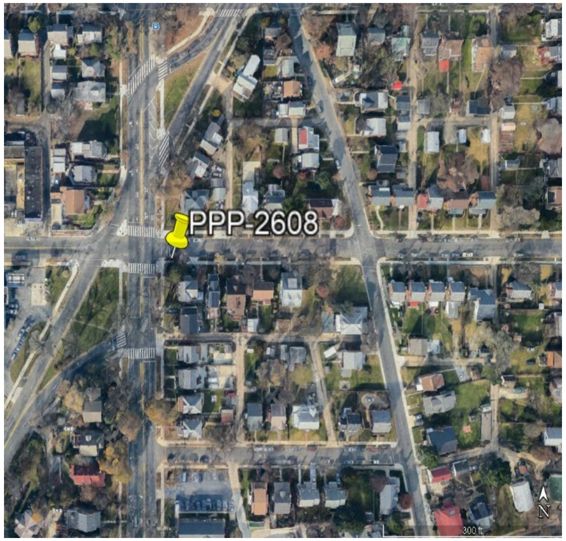
Hard Packed (in):

Soft (in):

Area Map



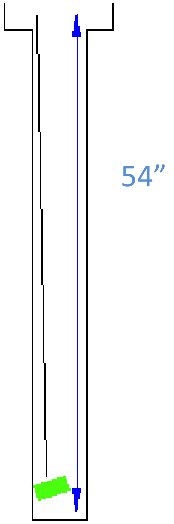
Detail Map



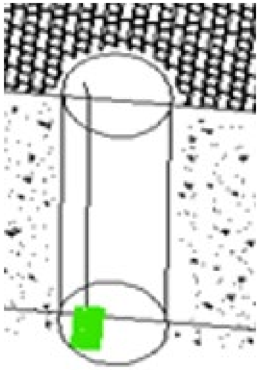
Site Area Overview

View from Top of Well

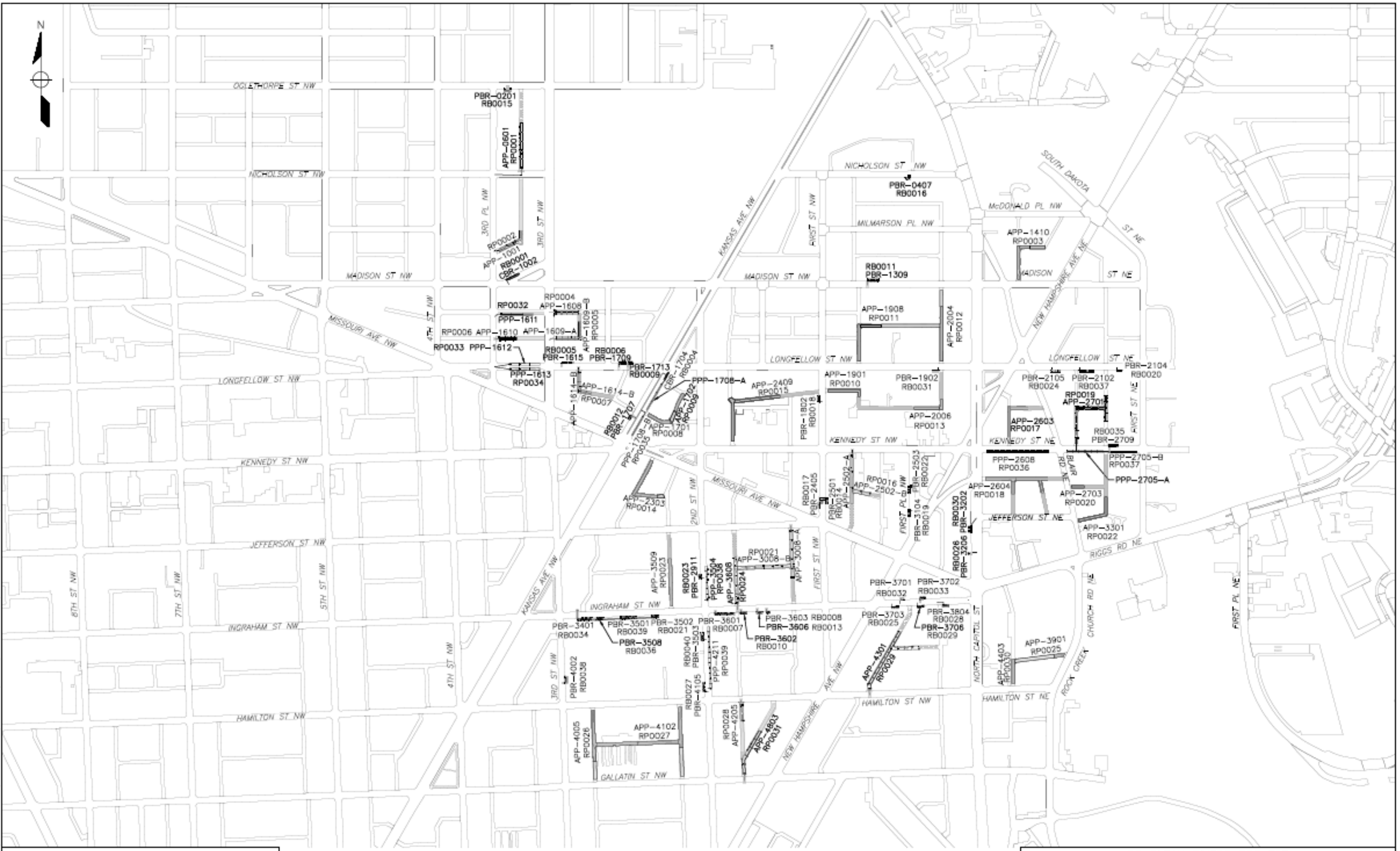
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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WATER AND SEWER AUTHORITY
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WASHINGTON, DC 20032
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FAX: 202-787-4478

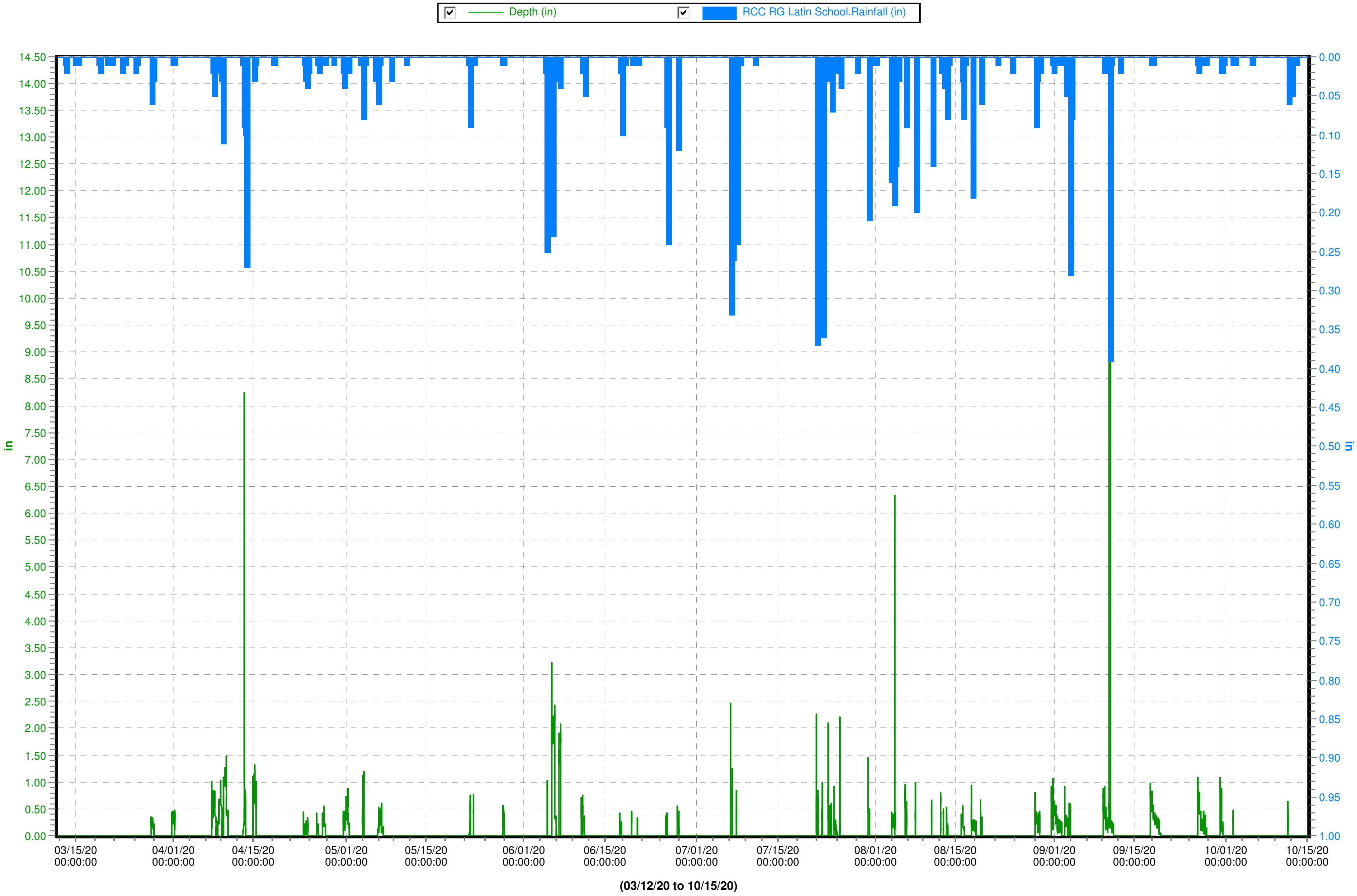
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

2608

Kennedy ST NE and North Capitol ST-Well Depth (in): 54



Site Name/ Manhole ID: PPP-2705-A

Address: 35 Kennedy ST NE

Latitude: N 38.956534°

Longitude: W -77.007522°

Investigation Date: 2/26/2020 Crew: LP/MH

Installation Date: 3/10/2020 Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	34”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

Yes

Hard Packed (in):

Soft (in):

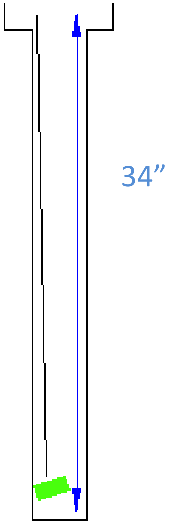
Area Map

Detail Map

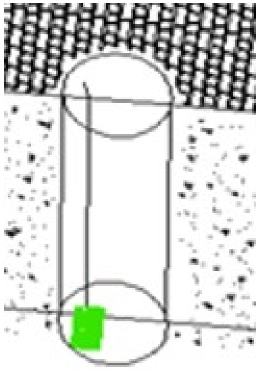
Site Area Overview

View from Top of Well

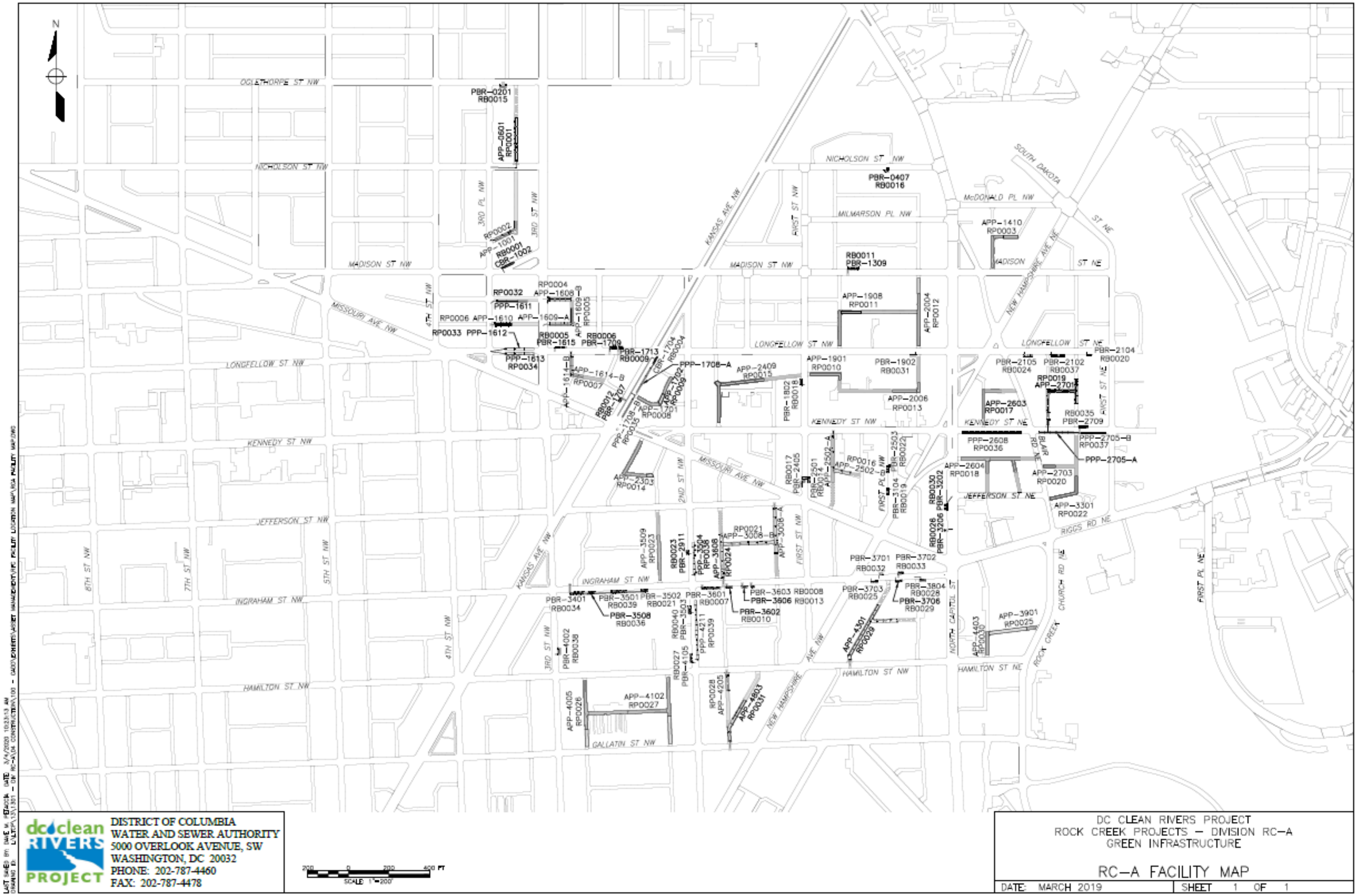
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

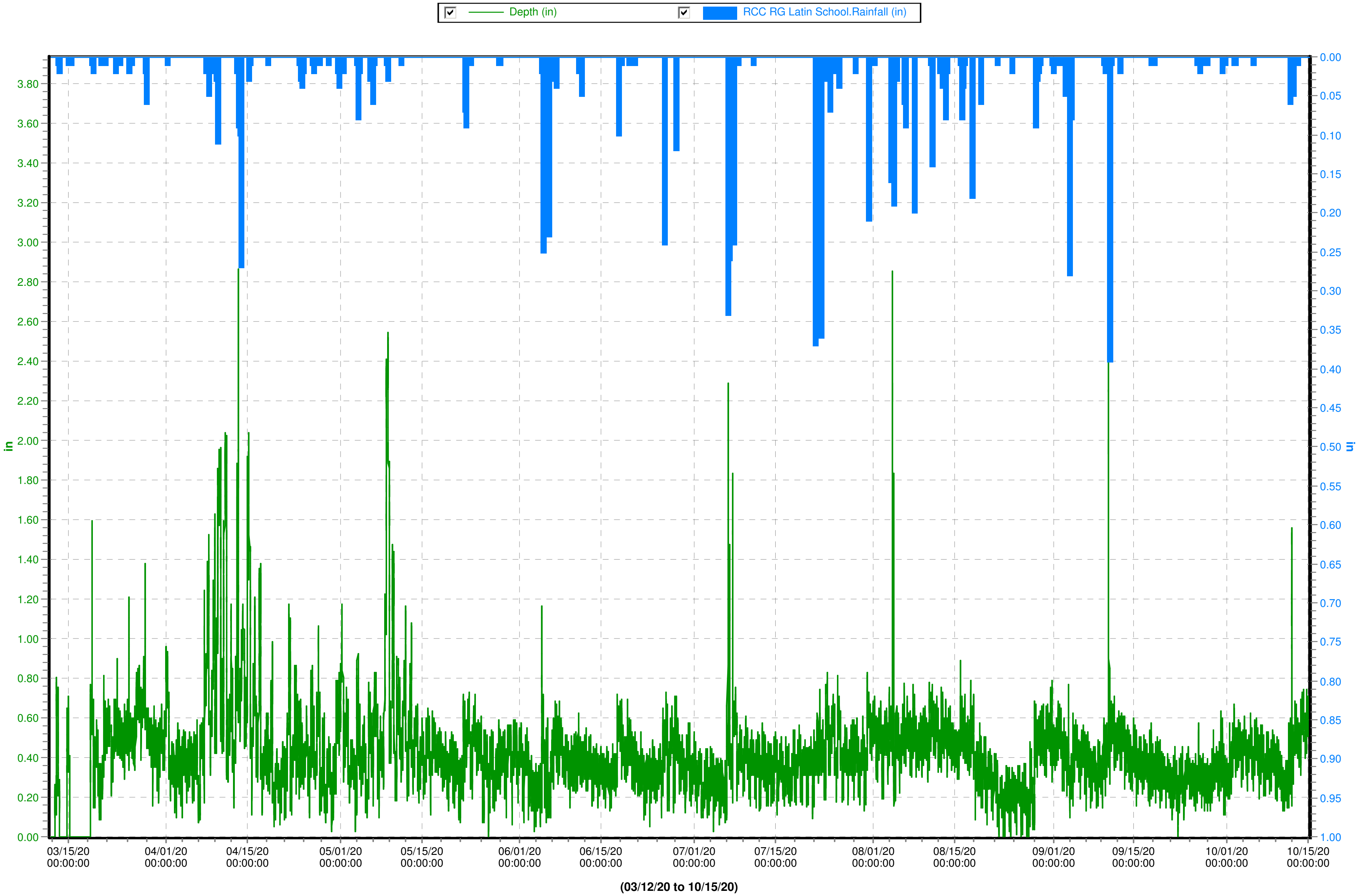


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2705-A

35 Kennedy ST NE-Well Depth (in): 34



Site Name/ Manhole ID: PPP-2705-B

Address: 42 Kennedy St NE

Latitude: N 38.956631°
Longitude: W -77.007311°

Investigation Date:2/26/2020
Crew: LP/MH

Installation Date:3/10/2020
Crew: SD/JP

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): .25

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	35”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

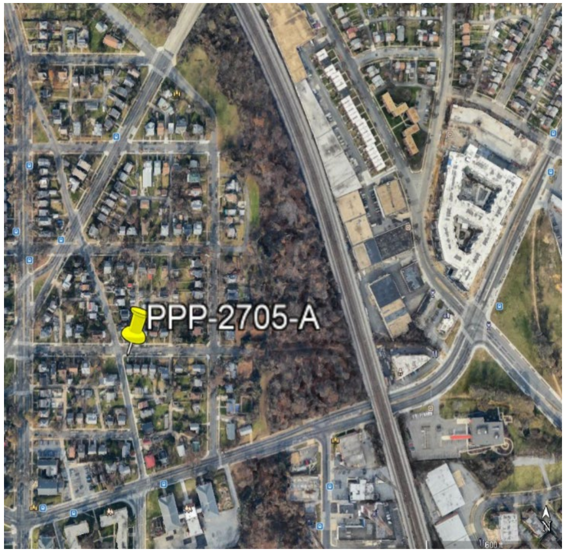
[✓ No]

Yes

Hard Packed (in):

Soft (in):

Area Map

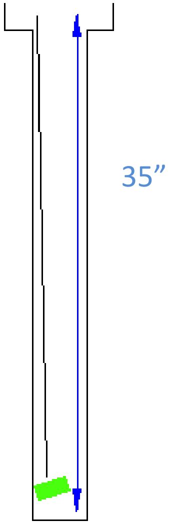


Detail Map

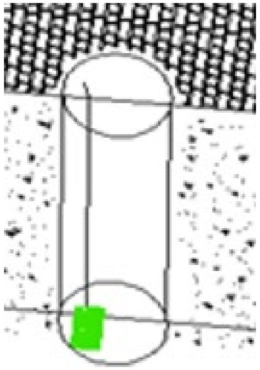
Site Area Overview

View from Top of Well

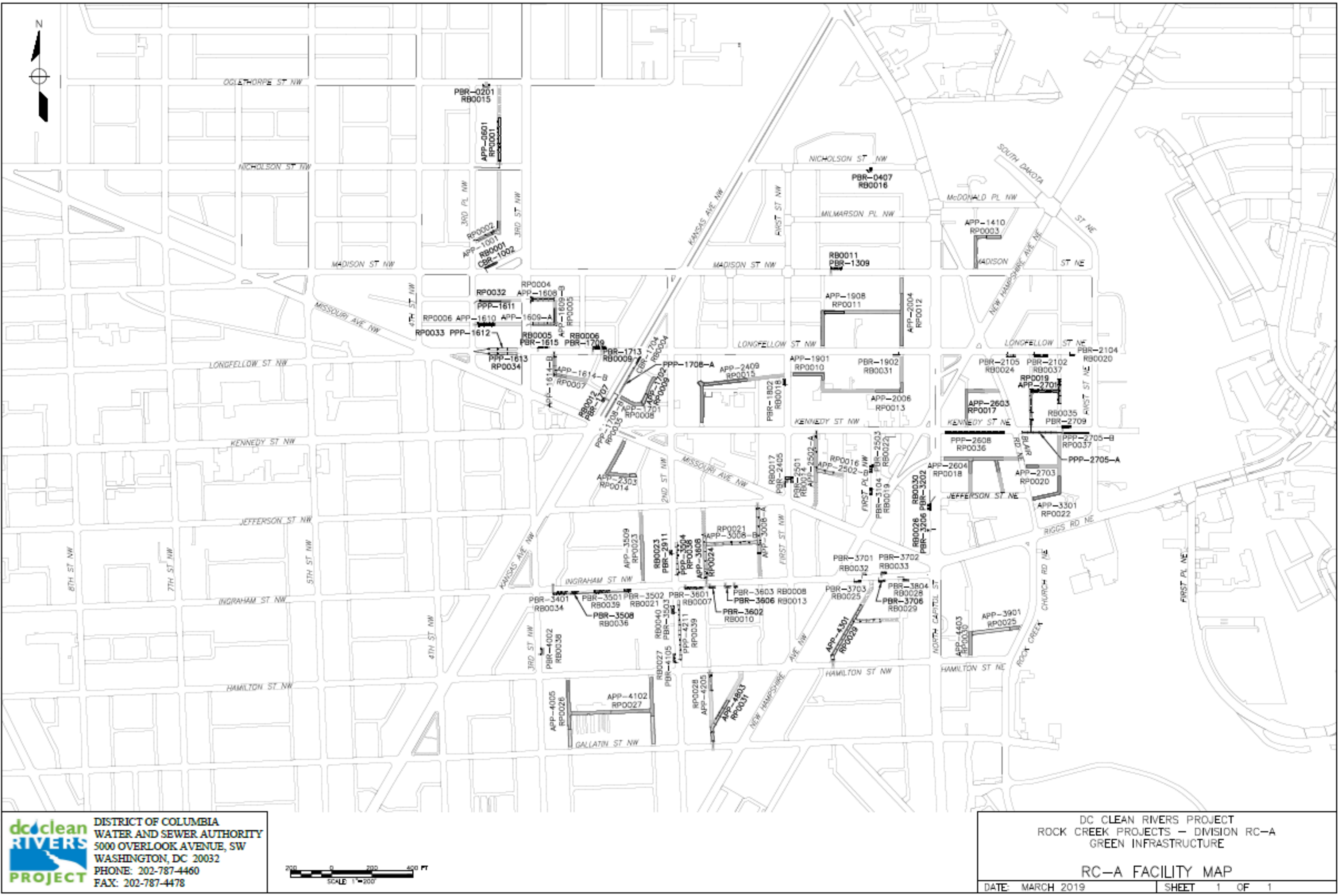
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

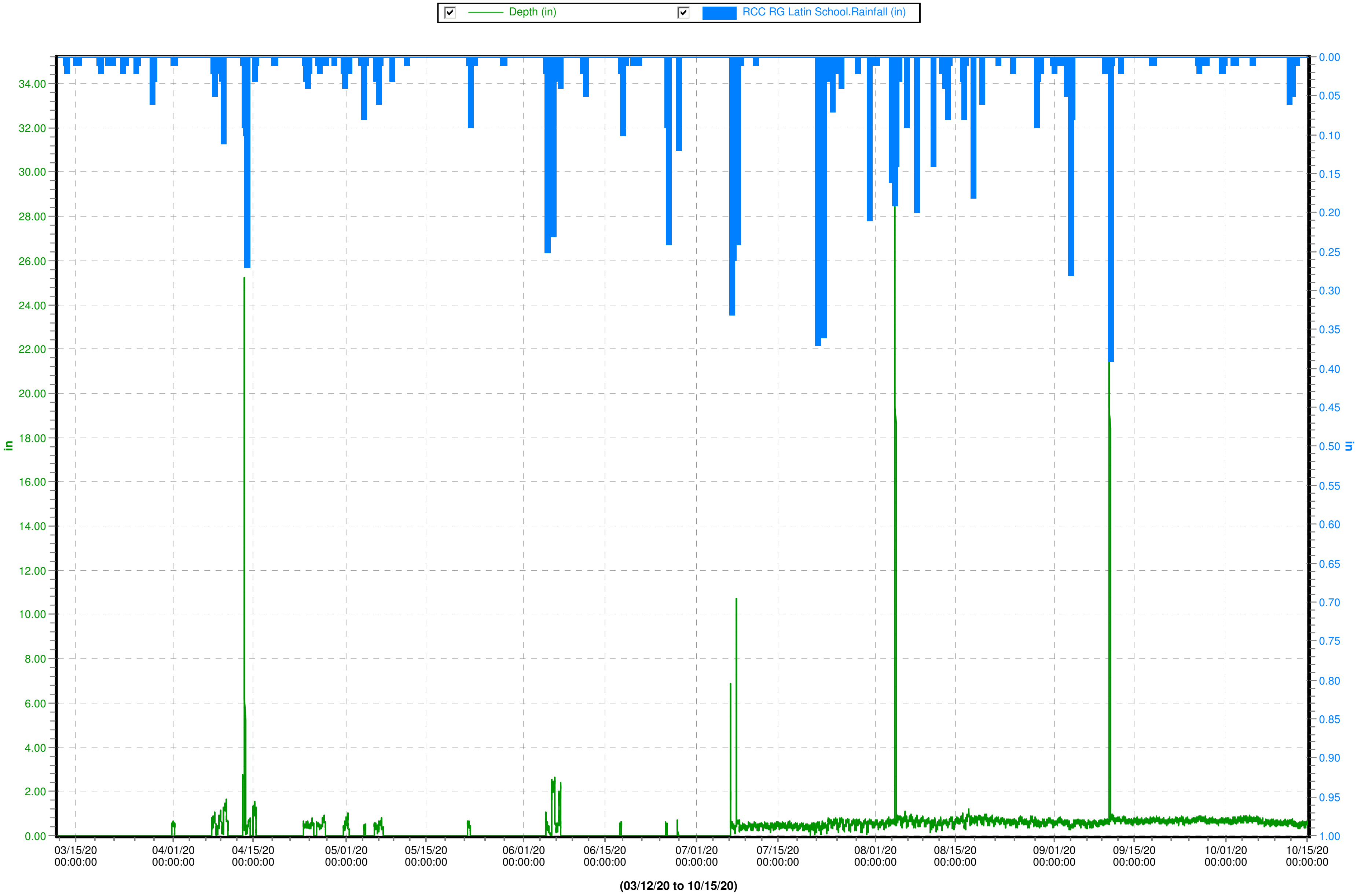


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



2705-B

42 Kennedy ST NE-Well Depth (in): 35



Site Name/ Manhole ID: PPP-3504

Address: 5301 2nd St NW

Latitude: N 38.954646°

Longitude: W -77.013525°

Investigation Date: 2/26/20

Crew: LP

Installation Date: 3/11/20

Crew: DM

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0”

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	47”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

[✓ No]

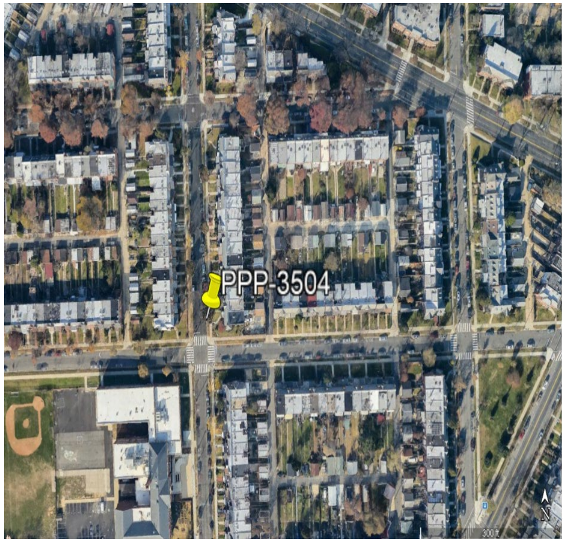
Yes

Hard Packed (in):

Soft (in):

Area Map

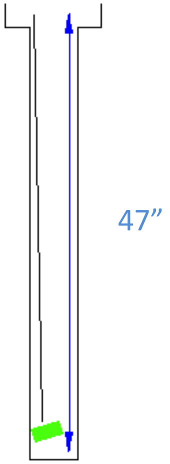
Detail Map



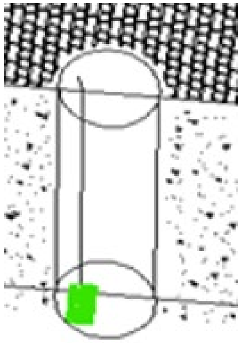
Site Area Overview

View from Top of Well

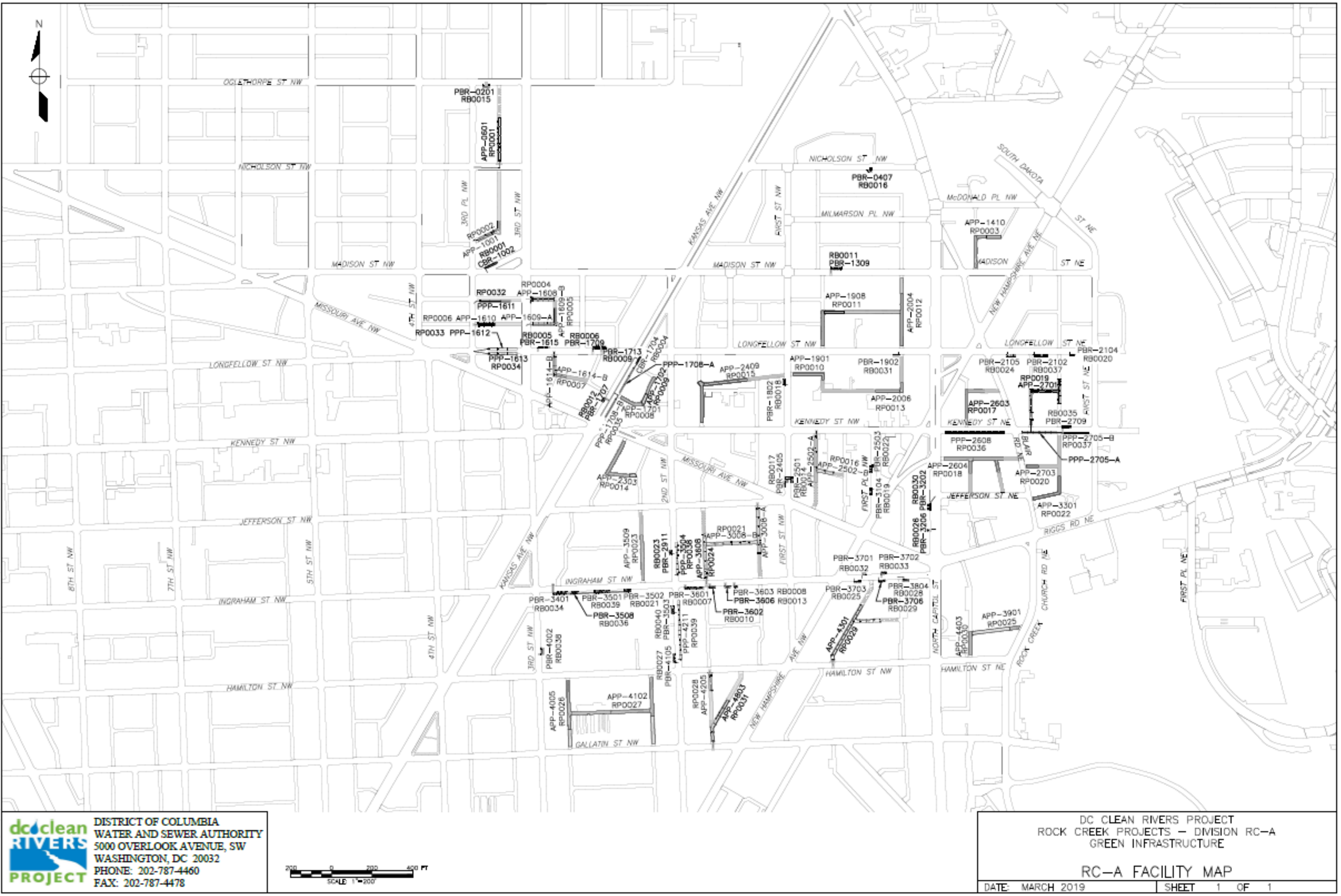
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation

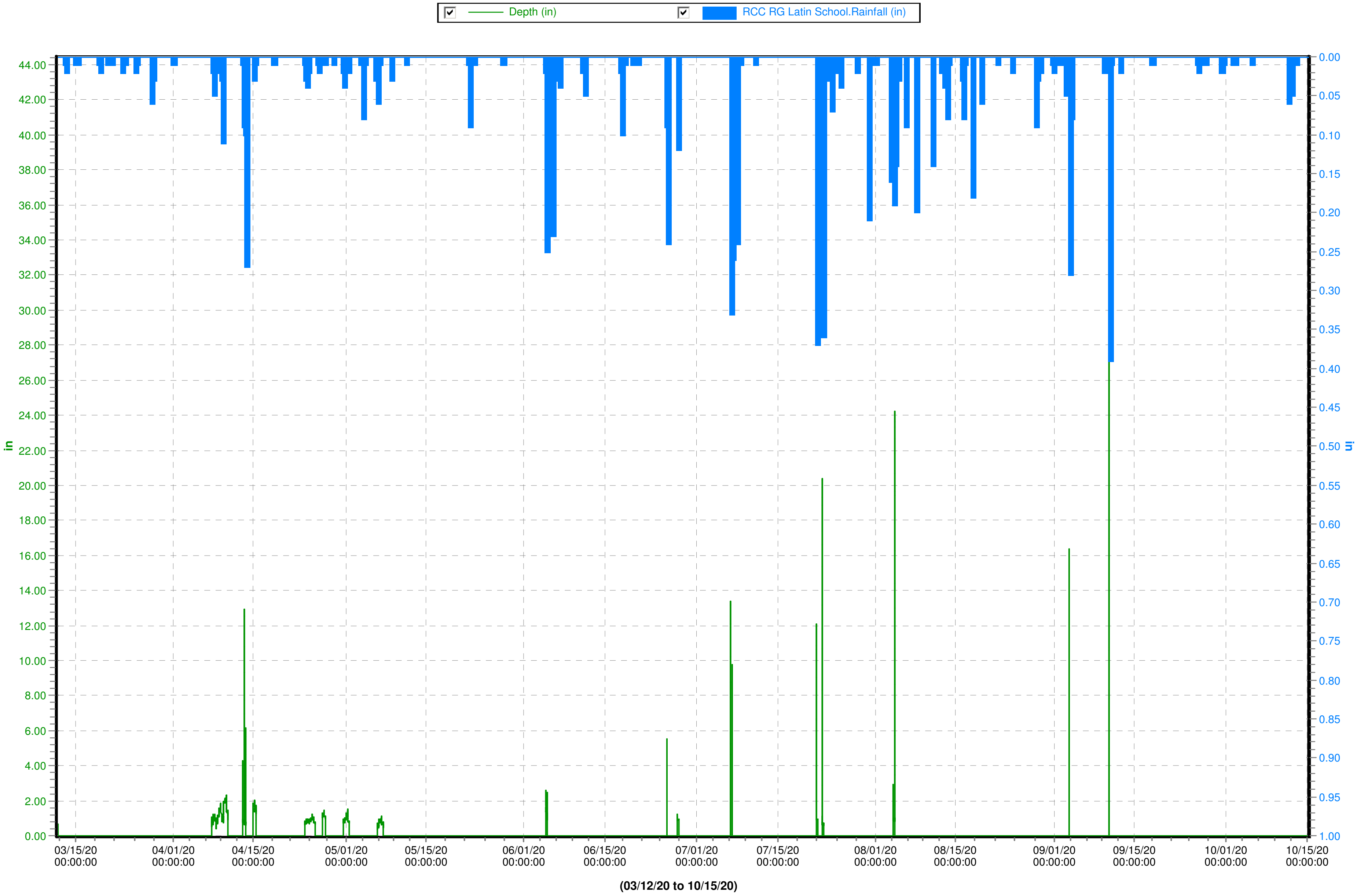


Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



3504

5301 2nd ST NW-Well Depth (in): 47



Site Name/ Manhole ID: CBR 1002

Address: 317 Madison ST NW

Latitude: N 38.958835° Longitude: W -77.016798°

Investigation Date: 4/28/2020 Crew: SD/JP/AE

Installation Date: 4/28/2020 Crew: SD/JP/AE

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

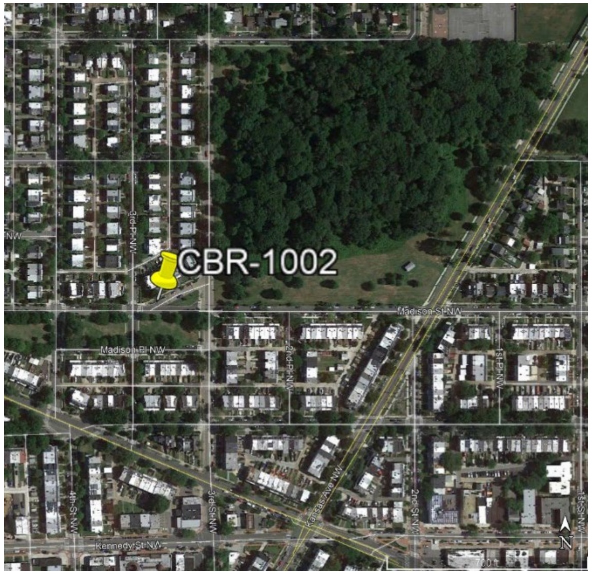
[✓ No]

Yes

Hard Packed (in):

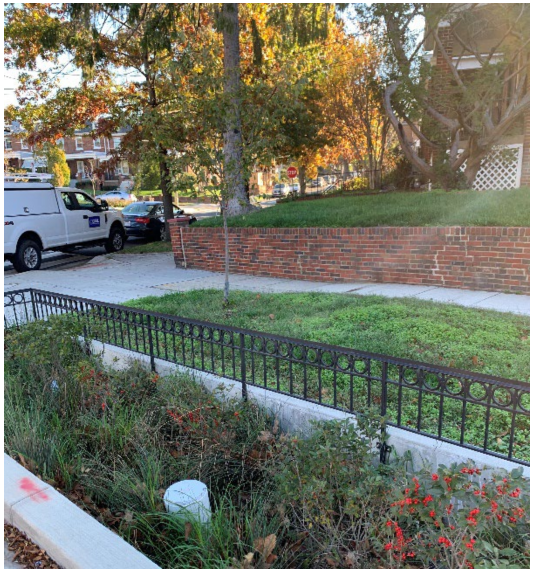
Soft (in):

Area Map



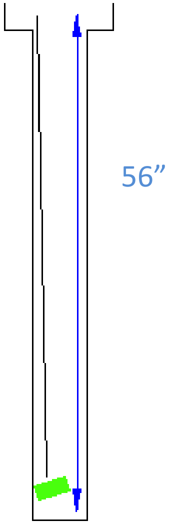
Detail Map

Site Area Overview

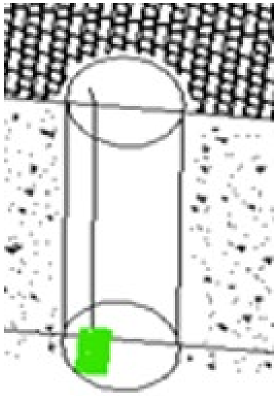


View from Top of Well

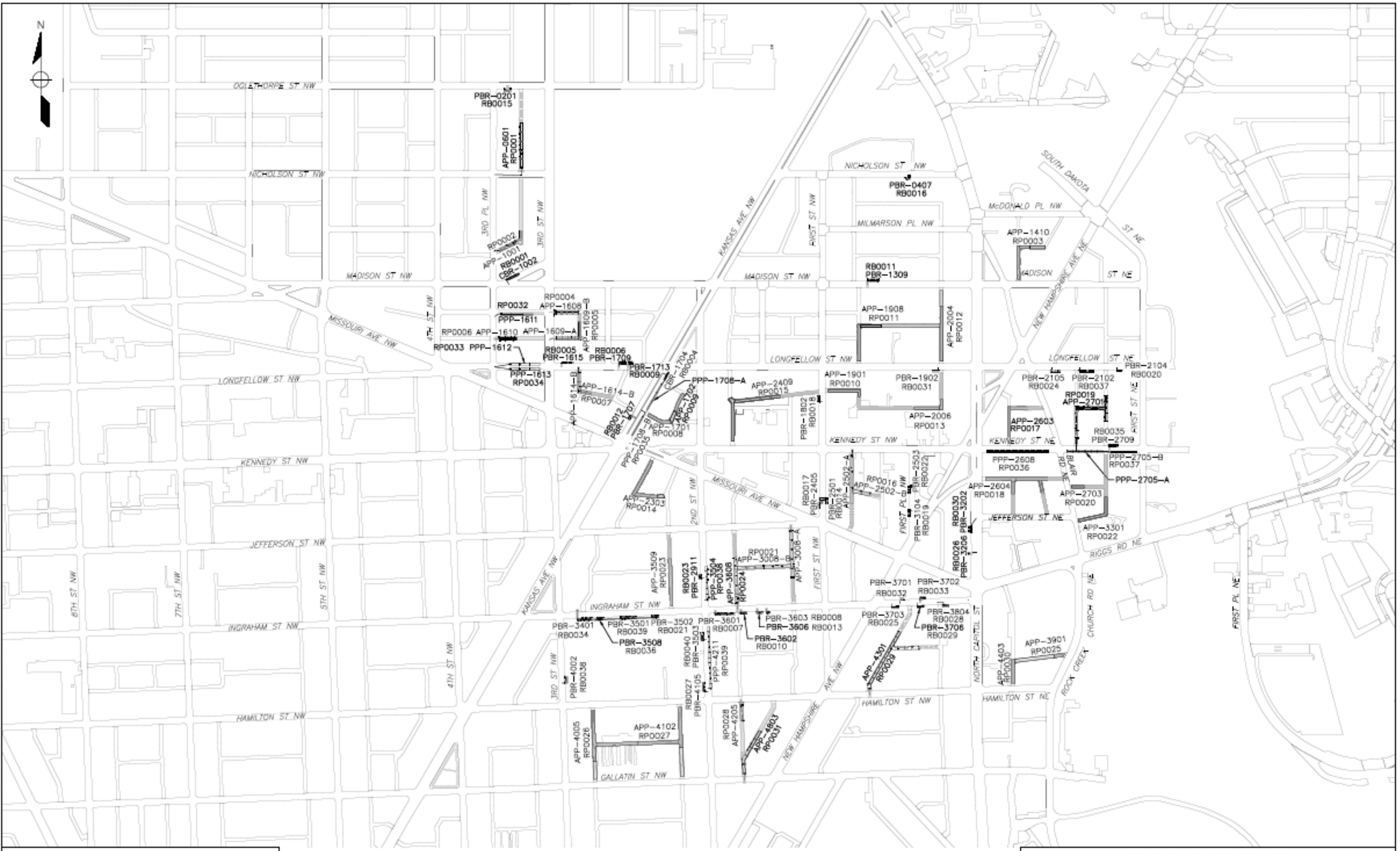
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



DC CLEAN RIVERS PROJECT

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DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC–A
GREEN INFRASTRUCTURE

RC–A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

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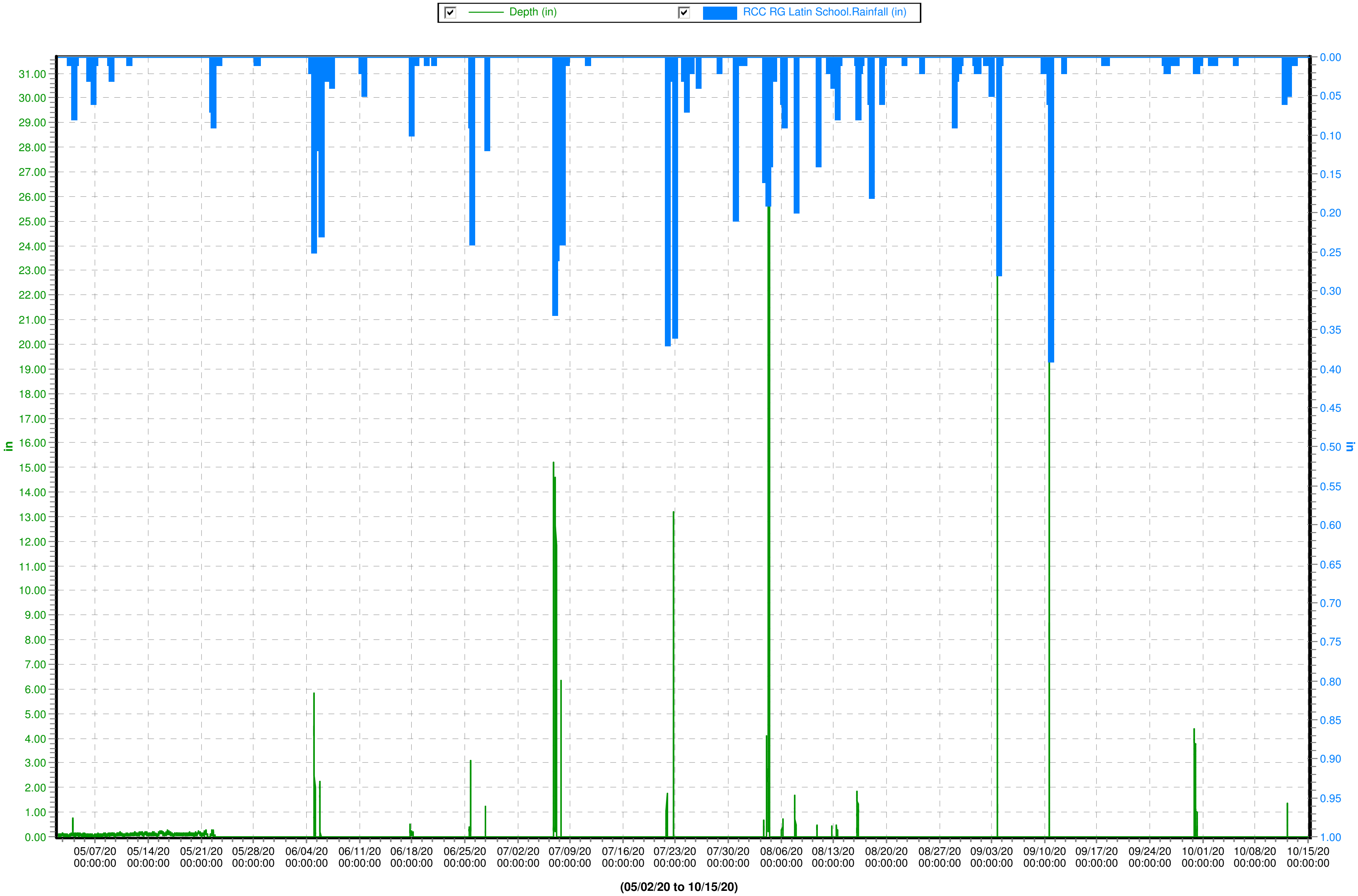
317 Madison ST NW-Well Depth (in): 56



Site Name/ Manhole ID: CBR 1704

Address: 5529 Kansas Ave NW

Latitude: N 38.957575° Longitude: W -77.014210°

Investigation Date: 4/28/2020 Crew: SD/JP/AE

Installation Date:5/1/2020 Crew: SD/JP/AE

Weather Conditions: [✓ Dry] Wet

Location: [✓ Primary] Alternate

Site Access:

[✓ Good (no problem accessing site)]

Fair (minor traffic control, truck accessible off-road site, can safely carry equipment to site)

Poor (remote areas, steel embankments, No safe place to park, elevated manhole >3 ft.)

Traffic Control (requires extra traffic control)

Unusabale (Document in Comment Section)

Hydraulic Conditions:

Depth (in): 0”

Site Location Characteristics:

	Well	Well	Well	Well	Well	Well
Height	56”	-	-	-	-	-
Width	8”	-	-	-	-	-
Material	PVC	-	-	-	-	-
Shape	Round	-	-	-	-	-

Sensor Configuration:

Level	Primary: HOBO- Water Depth Sensor
	Redundant:
Velocity	Primary: N/A
	Redundant:

Comments:

Sediment Present:

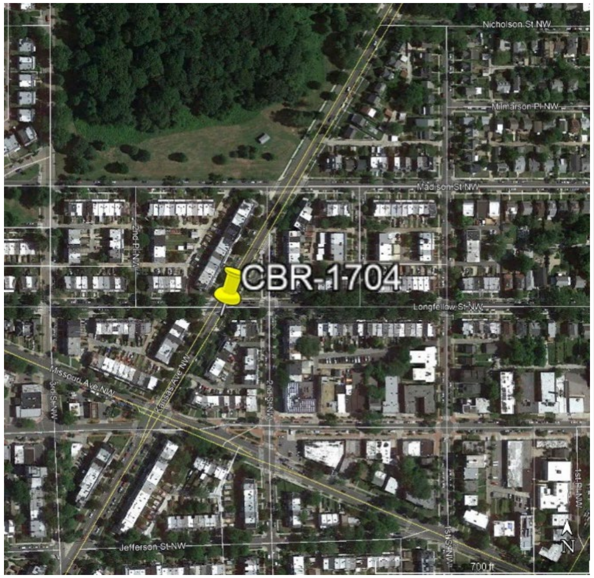
[✓ No]

Yes

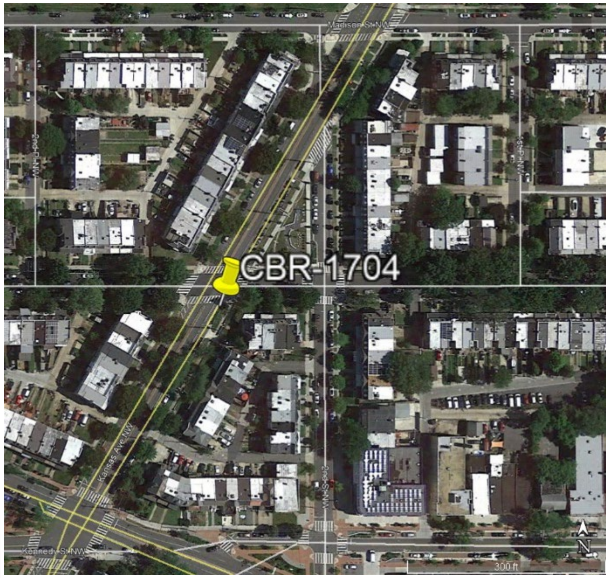
Hard Packed (in):

Soft (in):

Area Map



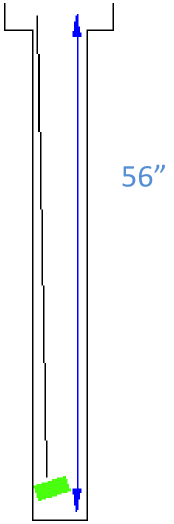
Detail Map



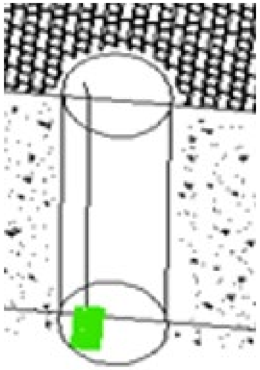
Site Area Overview

View from Top of Well

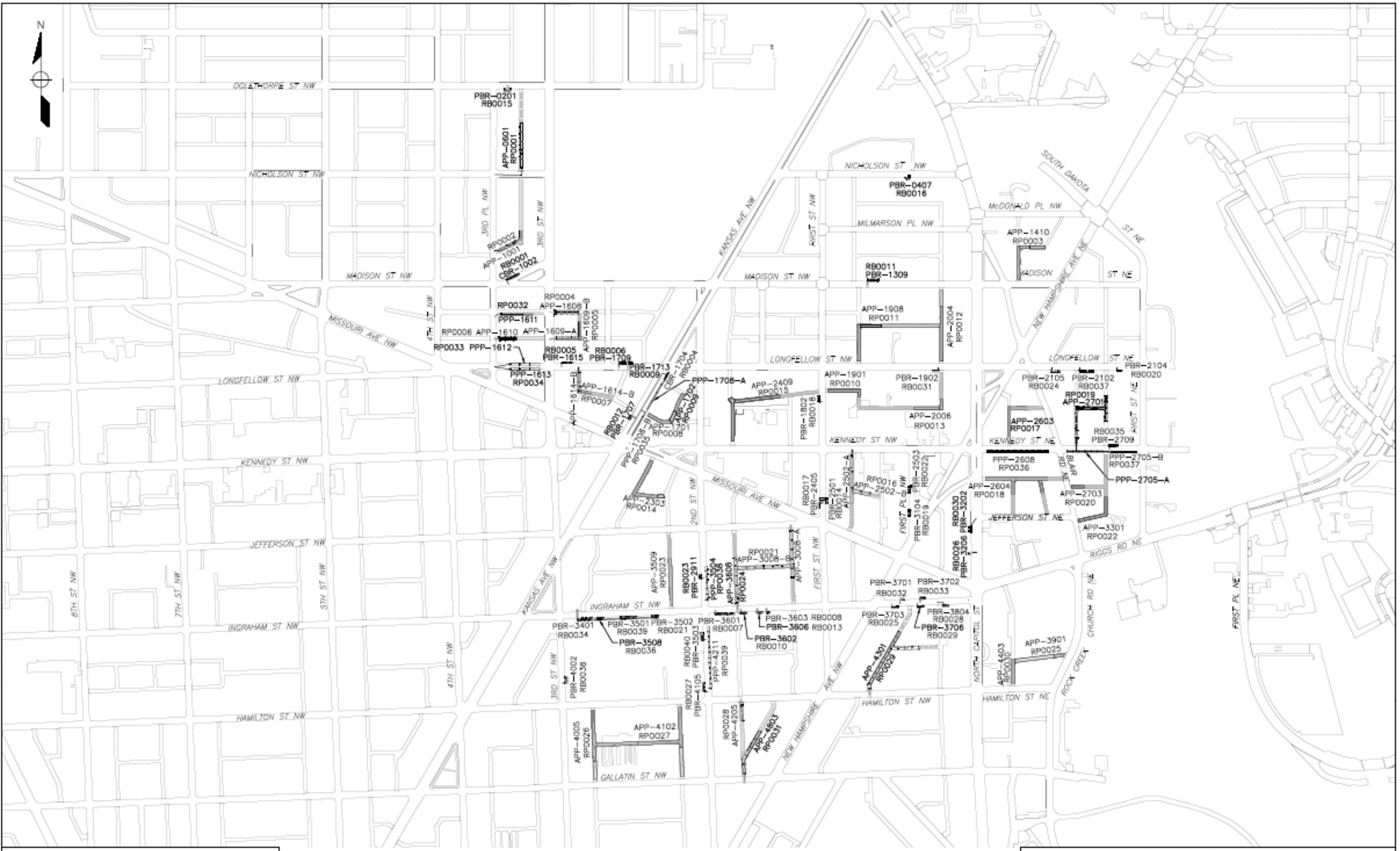
Dimensional Structure Profile View- Showing Location of Sensor(s)



Three Dimensional Cross Section Representation



Site Location-Sketch or plat showing upstream and downstream manholes, connections and bends



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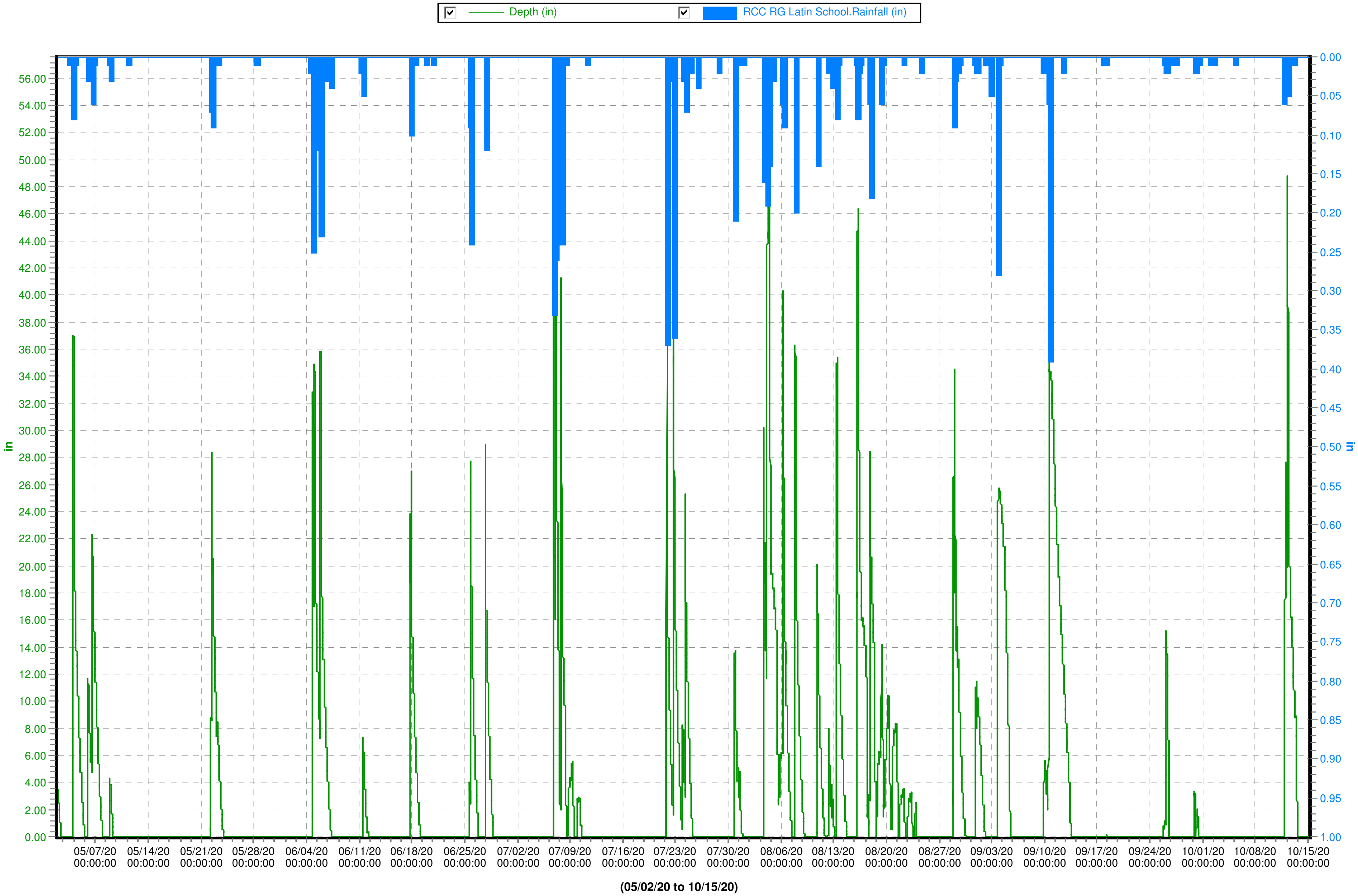
DC CLEAN RIVERS PROJECT
ROCK CREEK PROJECTS – DIVISION RC-A
GREEN INFRASTRUCTURE

RC-A FACILITY MAP

DATE: MARCH 2019 | SHEET 1 OF 1

1704

5529 Kansas Ave NW-Well Depth (in) 56



Site:	201				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:50		0	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/15/2020	12:20		0	JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:15		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:30		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:40		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/13/2020	14:10		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
9/2/2020				JP/AE	Download Water Depth Sensor
9/2/2020	13:10		0	JP/AE	Download Water Depth Sensor
9/14/2020	9:35		0	JP/AE	Download Water Depth Sensor
9/23/2020	8:50		0	JP/AE	Download Water Depth Sensor

9/29/2020	8:20		0	JP/AE	Download Water Depth Sensor
10/1/2020	11:00		0	JP/AE	Download Water Depth Sensor
10/8/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	7:25		0	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	407				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:32		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/11/2020	11:10		0	JP/AE	Download Water Depth Sensor
5/16/2020	12:10		0	JP/AE	Download Water Depth Sensor
5/21/2020	10:15		0	JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
6/5/2020	12:50		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:25		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	12:55		0	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/17/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:50		0	JP/AE	Download Water Depth Sensor
8/7/2020	12:00		0	JP/AE	Download Water Depth Sensor
8/31/2020				JP/AE	Download Water Depth Sensor
9/11/2020				JP/AE	Download Water Depth Sensor
9/18/2020	8:25		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:30		0	JP/AE	Download Water Depth Sensor
10/1/2020	11:55		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:10		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:20		0	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	601				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2002				SD/JP/AE	Download Water Depth Sensor
4/30/2020	11:20		0	JP/AE	Download Water Depth Sensor
5/1/2020	11:45		0.75	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:45		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:30		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:25		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
9/1/2020	13:25		0	JP/AE	Download Water Depth Sensor
9/2/2020				JP/AE	Download Water Depth Sensor
9/14/2020	9:30		0	JP/AE	Download Water Depth Sensor
9/23/2020	8:55		0	JP/AE	Download Water Depth Sensor
9/29/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/1/2020	11:00		0	JP/AE	Download Water Depth Sensor
10/8/2020	7:40		0	JP/AE	Download Water Depth Sensor

10/13/2020	9:40		0	JP/AE	Download Water Depth Sensor
10/16/2020	7:55		0	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1001				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:05		1.25	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/15/2020	12:10		1.00	JP/AE	Download Water Depth Sensor
5/21/2020	10:00		1.00	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		1.50	JP/AE	Download Water Depth Sensor
6/5/2020	10:10		1.50	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:50		1.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:55		1.25	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:40		1.00	JP/AE	Download Water Depth Sensor
8/13/2020	11:55		1.25	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
9/2/2020	12:25		1.00	JP/AE	Download Water Depth Sensor
9/14/2020	9:15		1.00	JP/AE	Download Water Depth Sensor
9/23/2020	8:30		1.00	JP/AE	Download Water Depth Sensor

9/28/2020	8:10		1.00	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	10:55		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	7:30		1.00	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	7:50		1.00	JP/AE	Download Water Depth Sensor
10/27/2020				JP/AE	Download Water Depth Sensor

Site:	1002				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
4/29/2020			0	SD/JP/AE	Install Water Depth Sensor
5/11/2020	11:15		0	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/19/2020	9:15		0	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/13/2020	11:55		0	JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	12:25		0	JP/AE	Download Water Depth Sensor
9/14/2020	9:35		0	JP/AE	Download Water Depth Sensor
9/17/2020	8:55		0	JP/AE	Download Water Depth Sensor
9/23/2020				JP/AE	Download Water Depth Sensor
9/24/2020	7:40		0	JP/AE	Download Water Depth Sensor
9/28/2020	7:55		0	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	10:50		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:15		0	JP/AE	Download Water Depth Sensor
10/13/2020				JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1309				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			2.00	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	11:45		1.00	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/11/2020	10:15		0.75	JP/AE	Download Water Depth Sensor
5/15/2020	12:55		1.00	JP/AE	Download Water Depth Sensor
5/22/2020	10:45		1.00	JP/AE	Download Water Depth Sensor
5/26/2020	11:45		1.00	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020	13:25		1.00	JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/17/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:25		1.00	JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	14:30		1.00	JP/AE	Download Water Depth Sensor
9/11/2020	11:45		1.00	JP/AE	Download Water Depth Sensor
9/18/2020	10:00		0.75	JP/AE	Download Water Depth Sensor
9/28/2020	9:10		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	11:50		2.00	JP/AE	Download Water Depth Sensor
10/7/2020	8:45		0.50	JP/AE	Download Water Depth Sensor
10/12/2020	8:35		1.00	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1410				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			2.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:05		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/15/2020	11:30		0	JP/AE	Download Water Depth Sensor
5/21/2020	15:20		0	JP/AE	Download Water Depth Sensor
5/22/2020	8:55		2.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:45		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		0.50	JP/AE	Download Water Depth Sensor
6/18/2020	11:20		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/17/2020	11:10		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:25		0	JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	13:10		0	JP/AE	Download Water Depth Sensor
9/11/2020	11:35		1.50	JP/AE	Download Water Depth Sensor
9/28/2020	9:00		0	JP/AE	Download Water Depth Sensor
10/1/2020	12:15		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:15		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:25		3.75	JP/AE	Download Water Depth Sensor
10/15/2020	11:35		0	JP/AE	Download Water Depth Sensor
10/23/2020				JP/AE	Download Water Depth Sensor

Site:	1608				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	10:45		1.50	JP/AE	Download Water Depth Sensor
5/1/2020	10:05		1.50	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		1.75	JP/AE	Download Water Depth Sensor
5/21/2020	12:40		1.5	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		1.75	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:05		2.00	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:30		2.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:15		1.75	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:40		2.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:35		1.50	JP/AE	Download Water Depth Sensor
8/13/2020	12:05		2.25	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	13:25		1.75	JP/AE	Download Water Depth Sensor

9/17/2020	8:20		1.75	JP/AE	Download Water Depth Sensor
9/24/2020	9:25		2.00	JP/AE	Download Water Depth Sensor
9/29/2020	7:55		1.75	JP/AE	Download Water Depth Sensor
10/1/2020	10:45		1.75	JP/AE	Download Water Depth Sensor
10/8/2020	7:35		1.75	JP/AE	Download Water Depth Sensor
10/13/2020	8:20		1.75	JP/AE	Download Water Depth Sensor
10/15/2020	7:40		1.75	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1609				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	11:25		3.75	JP/AE	Download Water Depth Sensor
5/1/2020	10:00		2.00	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/13/2020	11:45		1.00	JP/AE	Download Water Depth Sensor
5/22/2020	5:30		1.00	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		1.50	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:40		3.75	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	12:00		1.75	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:45		2.00	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	12:25		1.25	JP/AE	Download Water Depth Sensor
8/13/2020	14:10		2.00	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor

9/2/2020	13:50		1.25	JP/AE	Download Water Depth Sensor
9/17/2020	9:00		1.00	JP/AE	Download Water Depth Sensor
9/24/2020	10:05		1.00	JP/AE	Download Water Depth Sensor
9/29/2020	7:45		1.25	JP/AE	Download Water Depth Sensor
10/1/2020	10:40		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	7:45		1.00	JP/AE	Download Water Depth Sensor
10/13/2020	8:00		1.00	JP/AE	Download Water Depth Sensor
10/15/2020	7:50		1.00	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1610				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:35		1.75	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		1.25	JP/AE	Download Water Depth Sensor
5/28/2020	9:45		1.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:45		1.50	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:05		2.00	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:00		2.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		1.75	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/14/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:35		1.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	12:30		1.25	JP/AE	Download Water Depth Sensor
8/13/2020	11:35		2.00	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor

9/2/2020	12:30		1.50	JP/AE	Download Water Depth Sensor
9/14/2020	8:55		1.75	JP/AE	Download Water Depth Sensor
9/23/2020	8:25		1.25	JP/AE	Download Water Depth Sensor
9/29/2020	8:00		1.50	JP/AE	Download Water Depth Sensor
10/1/2020	10:50		1.50	JP/AE	Download Water Depth Sensor
10/8/2020	7:50		1.75	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	8:00		1.50	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1611				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/30/2020	10:30		1.50	JP/AE	Download Water Depth Sensor
5/1/2020	8:50		2.00	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020	15:00		0	JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:20		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
9/17/2020	8:30		0	JP/AE	Download Water Depth Sensor
9/24/2020	8:55		0	JP/AE	Download Water Depth Sensor
10/1/2020	10:50		0	JP/AE	Download Water Depth Sensor

Site:	1612				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:10		1.00	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		0	JP/AE	Download Water Depth Sensor
5/21/2020	8:15		0	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/18/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:50		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/24/2020	11:05		0	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	13:00		0	JP/AE	Download Water Depth Sensor
9/14/2020	10:00		0	JP/AE	Download Water Depth Sensor
9/23/2020	12:00		0	JP/AE	Download Water Depth Sensor
9/25/2020				JP/AE	Download Water Depth Sensor
9/29/2020	8:15		0	JP/AE	Download Water Depth Sensor
10/1/2020	11:10		0	JP/AE	Download Water Depth Sensor
10/7/2020	12:55		0	JP/AE	Download Water Depth Sensor
10/8/2020				JP/AE	Download Water Depth Sensor
10/13/2020				JP/AE	Download Water Depth Sensor
10/15/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1613				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	DM/NM	Install Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	9:25		1.25	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:55		0	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0	JP/AE	Download Water Depth Sensor
6/5/2020	12:50		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:20		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/14/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:05		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	12:20		0	JP/AE	Download Water Depth Sensor
9/14/2020	8:45		0	JP/AE	Download Water Depth Sensor
9/23/2020	7:55		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:15		0	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	11:10		0	JP/AE	Download Water Depth Sensor

10/8/2020	8:20		0	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	8:20		0	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1614-B				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			2.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:15		2.00	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.00	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		1.25	JP/AE	Download Water Depth Sensor
5/21/2020	16:40		1.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		1.25	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	12:05		1.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:45		1.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:35		1.25	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:20		1.25	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:55		1.25	JP/AE	Download Water Depth Sensor
8/13/2020	13:15		2.50	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	12:15		1.50	JP/AE	Download Water Depth Sensor
9/14/2020	9:25		1.75	JP/AE	Download Water Depth Sensor
9/29/2020	7:40		1.50	JP/AE	Download Water Depth Sensor

10/1/2020	10:35		1.50	JP/AE	Download Water Depth Sensor
10/8/2020	12:05		1.25	JP/AE	Download Water Depth Sensor
10/12/2020	9:15		2.00	JP/AE	Download Water Depth Sensor
10/13/2020				JP/AE	Download Water Depth Sensor
10/15/2020	8:55		1.50	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1615				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/16/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:20		1.00	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.00	JP/AE	Download Water Depth Sensor
5/13/2020	11:30		1.00	JP/AE	Download Water Depth Sensor
5/21/2020	11:40		1.00	JP/AE	Download Water Depth Sensor
5/28/2020	9:45		1.25	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:40		1.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:45		1.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:20		1.00	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:55		1.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:55		1.25	JP/AE	Download Water Depth Sensor
8/13/2020	13:15		1.00	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	12:05		1.00	JP/AE	Download Water Depth Sensor

9/14/2020	8:55		1.25	JP/AE	Download Water Depth Sensor
9/29/2020	7:40		1.00	JP/AE	Download Water Depth Sensor
10/1/2020	10:40		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	13:10		1.25	JP/AE	Download Water Depth Sensor
10/13/2020	8:50		1.25	JP/AE	Download Water Depth Sensor
10/15/2020	8:50		1.25	JP/AE	Download Water Depth Sensor
10/27/2020				JP/AE	Download Water Depth Sensor

Site:	1701				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.50	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	12:55		2.00	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.75	JP/AE	Download Water Depth Sensor
5/13/2020	11:35		1.00	JP/AE	Download Water Depth Sensor
5/21/2020	16:25		1.00	JP/AE	Download Water Depth Sensor
5/26/2020	10:45		1.25	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:40		1.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	12:20		1.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:00		1.00	JP/AE	Download Water Depth Sensor
8/13/2020	10:55		1.50	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor

9/2/2020	11:50		1.00	JP/AE	Download Water Depth Sensor
9/11/2020	13:20		1.25	JP/AE	Download Water Depth Sensor
9/24/2020	7:40		1.50	JP/AE	Download Water Depth Sensor
9/28/2020	8:45		1.00	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	11:20		1.25	JP/AE	Download Water Depth Sensor
10/7/2020	10:45			JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	9:40		1.25	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1702				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/Nm	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.50	JP/AE	Download Water Depth Sensor
5/21/2020	17:25		2.00	JP/AE	Download Water Depth Sensor
5/26/2020	10:45		2.00	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:15		2.50	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:05		2.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:35		2.25	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:40		2.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/13/2020	10:25		2.00	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2002				JP/AE	Download Water Depth Sensor
9/11/2020	13:20		1.75	JP/AE	Download Water Depth Sensor
9/24/2020	7:35		1.75	JP/AE	Download Water Depth Sensor
9/28/2020	8:30		1.50	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020				JP/AE	Download Water Depth Sensor
10/13/2020	11:25		1.75	JP/AE	Download Water Depth Sensor

10/15/2020	9:15		1.50	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1704				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
5/1/2020			0	SD/JP/AE	Install Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/19/2020	13:30		0	JP/AE	Download Water Depth Sensor
7/9/2020	12:20		0.25	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/13/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
9/2/2020	14:15		0	JP/AE	Download Water Depth Sensor
9/11/2020				JP/AE	Download Water Depth Sensor
9/14/2020				JP/AE	Download Water Depth Sensor
9/17/2020	9:35		0	JP/AE	Download Water Depth Sensor
9/23/2020				JP/AE	Download Water Depth Sensor
9/24/2020	9:10		0	JP/AE	Download Water Depth Sensor
9/25/2020				JP/AE	Download Water Depth Sensor
9/28/2020	8:30		0	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	11:20		0	JP/AE	Download Water Depth Sensor
10/7/2020	11:30		0	JP/AE	Download Water Depth Sensor
10/13/2020				JP/AE	Download Water Depth Sensor
10/15/2020	10:35		0	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1707				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/16/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:25		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	13:25		0	JP/AE	Download Water Depth Sensor
5/1/2020	12:40		0.75	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/13/2020	11:20		0	JP/AE	Download Water Depth Sensor
5/21/2020	10:30		0	JP/AE	Download Water Depth Sensor
5/26/2020	10:45		0	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:25		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:35		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:10		0.75	JP/AE	Download Water Depth Sensor
8/13/2020	11:20		0.75	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor

8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020				JP/AE	Download Water Depth Sensor
9/11/2020	13:20		0.25	JP/AE	Download Water Depth Sensor
9/23/2020	8:30		0.75	JP/AE	Download Water Depth Sensor
9/24/2020	12:05		0.75	JP/AE	Download Water Depth Sensor
9/28/2020	8:15		1.00	JP/AE	Download Water Depth Sensor
9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	11:25		1.00	JP/AE	Download Water Depth Sensor
10/7/2020	11:00		1.00	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/15/2020	9:20		1.00	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1708				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	10:15		0	JP/AE	Download Water Depth Sensor
5/1/2020				JP/AE	Could Not Access-Car on Well
5/8/2020				JP/AE	Could Not Access-Car on Well
5/13/2020				JP/AE	Could Not Access-Car on Well
5/21/2020				JP/AE	Could Not Access-Car on Well
5/28/2020				JP/AE	Could Not Access-Car on Well
6/2/2020				JP/AE	Could Not Access-Car on Well
6/5/2020				JP/AE	Could Not Access-Car on Well
6/10/2020				JP/AE	Could Not Access-Car on Well
6/15/2020				JP/AE	Could Not Access-Car on Well
6/18/2020				JP/AE	Could Not Access-Car on Well
6/19/2020				JP/AE	Could Not Access-Car on Well
6/26/2020				JP/AE	Could Not Access-Car on Well
7/6/2020				JP/AE	Could Not Access-Car on Well
7/16/2020				JP/AE	Could Not Access-Car on Well
7/17/2020	14:15		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
9/2/2020	11:30		0	JP/AE	Download Water Depth Sensor
9/14/2020	9:45		0	JP/AE	Download Water Depth Sensor
9/23/2020	11:20		0	JP/AE	Download Water Depth Sensor
9/24/2020	10:15		0	JP/AE	Download Water Depth Sensor
10/5/2020	14:30		0	JP/AE	Download Water Depth Sensor
10/15/2020	11:30		0	JP/AE	Download Water Depth Sensor
10/16/2020	11:10		0	SD/JP/AE	Download Water Depth Sensor

Site:	1709				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:55		0.50	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0.50	JP/AE	Download Water Depth Sensor
5/13/2020	11:45		0.50	JP/AE	Download Water Depth Sensor
5/21/2020	14:40		0.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0.75	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:10		0.75	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:10		0.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:25		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
8/13/2020	11:40		75.00	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	11:40		0.50	JP/AE	Download Water Depth Sensor

9/14/2020	8:55		0.50	JP/AE	Download Water Depth Sensor
9/29/2020	7:30		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
10/8/2020	13:25		0.50	JP/AE	Download Water Depth Sensor
10/13/2020	7:40		0.50	JP/AE	Download Water Depth Sensor
10/15/2020	9:20		0.50	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1713				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:15		1.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:45		1.25	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.00	JP/AE	Download Water Depth Sensor
5/13/2020	11:40		0.50	JP/AE	Download Water Depth Sensor
5/21/2020	9:05		1.00	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		1.00	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:35		1.75	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:05		1.50	JP/AE	Download Water Depth Sensor
8/13/2020	11:15		1.50	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	11:10		1.50	JP/AE	Download Water Depth Sensor
9/14/2020	8:45		1.50	JP/AE	Download Water Depth Sensor
9/23/2020	12:40		1.50	JP/AE	Download Water Depth Sensor

9/29/2020	7:30		1.25	JP/AE	Download Water Depth Sensor
10/1/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	13:35		1.00	JP/AE	Download Water Depth Sensor
10/13/2020	8:15		1.00	JP/AE	Download Water Depth Sensor
10/27/2020				JP/AE	Download Water Depth Sensor

Site:	1802				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0.25	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:15		0.75	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020	10:15		1.00	JP/AE	Download Water Depth Sensor
5/26/2020	12:20		1.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/24/2020	11:10		1.50	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/17/2020	9:35		1.00	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/11/2020	13:20		1.25	JP/AE	Download Water Depth Sensor
9/14/2020	9:15		1.50	JP/AE	Download Water Depth Sensor
9/18/2020	10:25		1.25	JP/AE	Download Water Depth Sensor
9/23/2020	8:05		1.50	JP/AE	Download Water Depth Sensor
9/28/2020	9:45		1.00	JP/AE	Download Water Depth Sensor
10/1/2020	11:40		1.25	JP/AE	Download Water Depth Sensor
10/7/2020	8:30		1.25	JP/AE	Download Water Depth Sensor
10/8/2020	8:35		1.25	JP/AE	Download Water Depth Sensor
10/13/2020	8:20		1.50	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1901				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020	12:25		0.50	SD/JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/21/2020	11:40		0.50	JP/AE	Download Water Depth Sensor
5/22/2020	8:50		4.00	JP/AE	Download Water Depth Sensor
5/26/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
7/17/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	11:20		0.50	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	12:10		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	9:50		1.25	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/11/2020	13:20		1.00	JP/AE	Download Water Depth Sensor
9/14/2020	8:00		1.00	JP/AE	Download Water Depth Sensor
9/18/2020	9:15		1.00	JP/AE	Download Water Depth Sensor
9/28/2020	9:15		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	11:40		0.75	JP/AE	Download Water Depth Sensor
10/7/2020	9:10		0.75	JP/AE	Download Water Depth Sensor

10/13/2020	8:45		1.00	JP/AE	Download Water Depth Sensor
10/15/2020	8:45		1.00	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1902				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	12:20		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/22/2020	10:30		2.00	JP/AE	Download Water Depth Sensor
5/26/2020	11:00		1.25	JP/AE	Download Water Depth Sensor
5/29/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
6/5/2020				JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:25		0.75	JP/AE	Download Water Depth Sensor
7/17/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/17/2020	14:15		0.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	11:05		1.00	JP/AE	Download Water Depth Sensor
9/11/2020	11:30		1.00	JP/AE	Download Water Depth Sensor
9/18/2020	8:40		1.00	JP/AE	Download Water Depth Sensor
9/28/2020	10:20		0.75	JP/AE	Download Water Depth Sensor
10/1/2020	12:25		0.75	JP/AE	Download Water Depth Sensor
10/7/2020	7:55		1.00	JP/AE	Download Water Depth Sensor
10/12/2020	9:40		1.00	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	1908				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:20		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/11/2020	10:15		0.75	JP/AE	Download Water Depth Sensor
5/15/2020	11:30		0	JP/AE	Download Water Depth Sensor
5/21/2020	12:40		0	JP/AE	Download Water Depth Sensor
5/22/2020	9:20		19.50	JP/AE	Download Water Depth Sensor
5/26/2020	16:00		0	JP/AE	Download Water Depth Sensor
5/29/2020	16:40		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/17/2020	12:00		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	11:30		0	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:45		8.50	JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/11/2020	12:20		32.25	JP/AE	Download Water Depth Sensor
9/18/2020	9:30		2.25	JP/AE	Download Water Depth Sensor
9/28/2020	9:05		4.00	JP/AE	Download Water Depth Sensor
10/1/2020	11:45		1.25	JP/AE	Download Water Depth Sensor
10/7/2020	8:05		0	JP/AE	Download Water Depth Sensor

10/12/2020	9:00		44.00	JP/AE	Download Water Depth Sensor
10/15/2020	10:20		0	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2004				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	10:35		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/11/2020	10:10		0	JP/AE	Download Water Depth Sensor
5/15/2020	11:15		0	JP/AE	Download Water Depth Sensor
5/22/2020	13:45		0	JP/AE	Download Water Depth Sensor
5/26/2020	16:15		0	JP/AE	Download Water Depth Sensor
5/29/2020	11:55		0	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:10		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:15		0	JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:40		0	JP/AE	Download Water Depth Sensor
7/17/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:50		0	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:40		0	JP/AE	Download Water Depth Sensor
8/17/2020	11:50		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	11:30		0	JP/AE	Download Water Depth Sensor
9/11/2020	11:35		0	JP/AE	Download Water Depth Sensor

9/18/2020	9:40		0	JP/AE	Download Water Depth Sensor
9/28/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/1/2020	12:25		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:45		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:10		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:10		0	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2006-A				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/17/2020				SD/JP	Install Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	8:05		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	10:35		1.75	JP/AE	Download Water Depth Sensor
5/11/2020	10:00		0	JP/AE	Download Water Depth Sensor
5/22/2020	6:45		2.75	JP/AE	Download Water Depth Sensor
5/26/2020	13:05		0.75	JP/AE	Download Water Depth Sensor
5/29/2002	12:25		0.75	JP/AE	Download Water Depth Sensor
6/5/2020	11:00		1.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:50		0.75	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:45		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/17/2020	11:00		1.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	10:25		1.50	JP/AE	Download Water Depth Sensor
9/4/2020	12:55		1.75	JP/AE	Download Water Depth Sensor
9/11/2020	11:20		0.25	JP/AE	Download Water Depth Sensor
9/18/2020	9:10		0.25	JP/AE	Download Water Depth Sensor
9/28/2020	10:10		0	JP/AE	Download Water Depth Sensor
10/1/2020	12:30		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:15		0	JP/AE	Download Water Depth Sensor

10/12/2020	9:15		2.25	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2006-B				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	8:35		1.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	9:25		2.00	JP/AE	Download Water Depth Sensor
5/11/2020	10:05		2.25	JP/AE	Download Water Depth Sensor
5/22/2020	9:20		3.50	JP/AE	Download Water Depth Sensor
5/26/2020	11:30		0.50	JP/AE	Download Water Depth Sensor
5/29/2020	10:40		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		2.00	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:45		1.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:25		1.50	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:05		1.25	JP/AE	Download Water Depth Sensor
7/24/2020	11:20		3.50	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	12:00		2.50	JP/AE	Download Water Depth Sensor
8/17/2020	12:25		3.00	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	10:40		3.25	JP/AE	Download Water Depth Sensor
9/4/2020	14:50		3.25	JP/AE	Download Water Depth Sensor
9/11/2020	11:20		2.00	JP/AE	Download Water Depth Sensor
9/18/2020	7:40		2.00	JP/AE	Download Water Depth Sensor

9/28/2020	10:00		2.00	JP/AE	Download Water Depth Sensor
10/1/2020	12:25		2.00	JP/AE	Download Water Depth Sensor
10/7/2020	8:30		1.00	JP/AE	Download Water Depth Sensor
10/12/2020	9:45		2.75	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2102				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	8:20		0.75	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/21/2020	12:50		0.25	JP/AE	Download Water Depth Sensor
5/22/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:40		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	10:50		0.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:30		0.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
7/9/2020	10:30		0.25	JP/AE	Download Water Depth Sensor
7/14/2020	11:00		0.25	JP/AE	Download Water Depth Sensor
7/23/2020	10:40		0.50	JP/AE	Download Water Depth Sensor
7/29/2020	11:40		0.25	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	11:45		0.25	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	9:10		0.75	JP/AE	Download Water Depth Sensor
9/4/2020	12:45		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	9:30		0.50	JP/AE	Download Water Depth Sensor
9/28/2020	7:45		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	7:40		0.50	JP/AE	Download Water Depth Sensor
10/7/2020	8:20		0.25	JP/AE	Download Water Depth Sensor

10/12/2020	8:30		0.50	JP/AE	Download Water Depth Sensor
10/15/2020	10:30		0.50	JP/AE	Download Water Depth Sensor
10/19/2020	8:00		0.75	SD/JP/AE	Download Water Depth Sensor

Site:	2104				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	install water depth sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	8:35		0	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020	9:35		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:35		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:40		0	JP/AE	Download Water Depth Sensor
7/23/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/29/2020	11:15		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:15		0	JP/AE	Download Water Depth Sensor
8/17/2020	11:50		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	9:10		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:10		0	JP/AE	Download Water Depth Sensor
9/11/2020	11:05		0	JP/AE	Download Water Depth Sensor
9/18/2020	8:10		0	JP/AE	Download Water Depth Sensor
9/28/2020	7:45		0	JP/AE	Download Water Depth Sensor
10/1/2020	7:45		0	JP/AE	Download Water Depth Sensor
10/7/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:15		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:15		0	JP/AE	Download Water Depth Sensor

10/19/2020	7:55		0	SD/JP/AE	Download Water Depth Sensor

Site:	2105				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:10		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	13:00		0	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/22/2020	13:35		0.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:45		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	12:05		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
7/9/2020	10:15		0	JP/AE	Download Water Depth Sensor
7/14/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/23/2020	11:40		1.00	JP/AE	Download Water Depth Sensor
7/29/2020	10:50		0.75	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	11:25		0.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	8:45		0.50	JP/AE	Download Water Depth Sensor
9/4/2020	12:55		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	11:10		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	10:00		0.25	JP/AE	Download Water Depth Sensor
9/28/2020	8:05		0.25	JP/AE	Download Water Depth Sensor
10/1/2020	7:40		0.50	JP/AE	Download Water Depth Sensor
10/7/2020	8:10		0.50	JP/AE	Download Water Depth Sensor

10/12/2020	8:45		0.75	JP/AE	Download Water Depth Sensor
10/19/2020	8:20		0.75	SD/JP/AE	Download Water Depth Sensor

Site:	2303				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			2.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0.50	JP/AE	Download Water Depth Sensor
5/22/2020	11:30		0.50	JP/AE	Download Water Depth Sensor
5/26/2020	10:40		0.50	JP/AE	Download Water Depth Sensor
5/29/2020	9:55		0.50	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:25		0.75	JP/AE	Download Water Depth Sensor
6/18/2020	11:20		0.75	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:25		0.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/14/2020	13:25		0.50	JP/AE	Download Water Depth Sensor
7/16/2020				JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	11:55		0.50	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	13:40		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	13:55		0.75	JP/AE	Download Water Depth Sensor
9/24/2020	8:30		0.75	JP/AE	Download Water Depth Sensor
9/25/2020				JP/AE	Download Water Depth Sensor
9/26/2020	12:55		0.75	JP/AE	Download Water Depth Sensor

10/5/2020	14:20		0.75	JP/AE	Download Water Depth Sensor
10/13/2020	9:35		0.75	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2405				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:35		0	SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	12:20		0.50	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
5/26/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:35		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:50		0.25	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020	10:25		0.25	JP/AE	Download Water Depth Sensor
7/14/2020	10:30		0.25	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:40		0.25	JP/AE	Download Water Depth Sensor
7/29/2020	11:10		0	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/17/2020	8:55		0.25	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/1/2020	12:25		0.25	JP/AE	Download Water Depth Sensor
9/4/2020	12:20		0.25	JP/AE	Download Water Depth Sensor
9/14/2020	8:20		0.25	JP/AE	Download Water Depth Sensor
9/23/2020	8:40		0.25	JP/AE	Download Water Depth Sensor

10/1/2020	8:30		0.25	JP/AE	Download Water Depth Sensor
10/7/2020	8:55		0.25	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0.25	JP/AE	Download Water Depth Sensor
10/13/2020	8:20		0.25	JP/AE	Download Water Depth Sensor
10/15/2020	10:20		0.25	JP/AE	Download Water Depth Sensor
10/22/2020	14:15		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	2409				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			5.00	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:55		0.75	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020				JP/AE	Download Water Depth Sensor
5/13/2020	11:45		0.50	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/21/2020	11:20		0.75	JP/AE	Download Water Depth Sensor
5/26/2020	10:45		0.75	JP/AE	Download Water Depth Sensor
6/5/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:30		1.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	12:25		0.75	JP/AE	Download Water Depth Sensor
7/9/2020	12:05		1.00	JP/AE	Download Water Depth Sensor
7/17/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	14:15		1.00	JP/AE	Download Water Depth Sensor
9/14/2020	9:30		1.50	JP/AE	Download Water Depth Sensor
9/23/2020	7:30		1.25	JP/AE	Download Water Depth Sensor
9/28/2020	8:30		1.00	JP/AE	Download Water Depth Sensor

9/29/2020				JP/AE	Download Water Depth Sensor
10/1/2020	11:30		1.50	JP/AE	Download Water Depth Sensor
10/7/2020	10:15		1.00	JP/AE	Download Water Depth Sensor
10/13/2020	8:10		1.00	JP/AE	Download Water Depth Sensor
10/27/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2501				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0.75	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:00		0	SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	12:05		0.75	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:30		0	JP/AE	Download Water Depth Sensor
5/26/2020	10:45		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	10:10		0.25	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:25		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:45		0.25	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
7/14/2020	11:50		0.25	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:20		0.25	JP/AE	Download Water Depth Sensor
7/29/2020	11:30		0.25	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/17/2020	8:30		0.25	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/1/2020	11:35		0.25	JP/AE	Download Water Depth Sensor
9/4/2020	12:30		0.25	JP/AE	Download Water Depth Sensor
9/14/2020	7:25		0.25	JP/AE	Download Water Depth Sensor
9/23/2020	7:20		0.25	JP/AE	Download Water Depth Sensor

10/1/2020	8:25		0.25	JP/AE	Download Water Depth Sensor
10/7/2020	8:20		0.25	JP/AE	Download Water Depth Sensor
10/9/2020	11:30		0.25	JP/AE	Download Water Depth Sensor
10/13/2020	8:40		0.50	JP/AE	Download Water Depth Sensor
10/15/2020	10:15		0.25	JP/AE	Download Water Depth Sensor
10/22/2020	14:15		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	2502-A				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	7:50		0	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/11/2020	11:00		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:20		0	JP/AE	Download Water Depth Sensor
5/22/2020	10:15		0	JP/AE	Download Water Depth Sensor
5/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:00		0.25	JP/AE	Download Water Depth Sensor
7/14/2020	11:30		0.50	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
7/30/2020	11:25		0.25	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/17/2020	7:30		0.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/11/2020	11:55		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	8:50		0.50	JP/AE	Download Water Depth Sensor
9/28/2020	9:35		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	8:35		0.50	JP/AE	Download Water Depth Sensor
10/7/2020	9:55		0.50	JP/AE	Download Water Depth Sensor
10/13/2020	10:00		0.25	JP/AE	Download Water Depth Sensor
10/22/2020	14:15		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	2503				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	9:45		1.50	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.50	JP/AE	Download Water Depth Sensor
5/22/2020	7:55		1.50	JP/AE	Download Water Depth Sensor
5/29/2020	8:25		1.50	JP/AE	Download Water Depth Sensor
6/5/2020	10:45		1.50	JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:45		2.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:30		2.00	JP/AE	Download Water Depth Sensor
7/9/2020	10:40		2.50	JP/AE	Download Water Depth Sensor
7/14/2020				JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:35		2.00	JP/AE	Download Water Depth Sensor
7/29/2020	11:10		2.00	JP/AE	Download Water Depth Sensor
8/17/2020	11:05		1.75	JP/AE	Download Water Depth Sensor
9/1/2020	12:10		2.00	JP/AE	Download Water Depth Sensor
9/11/2020	12:00		2.00	JP/AE	Download Water Depth Sensor
9/18/2020	8:25		2.00	JP/AE	Download Water Depth Sensor
9/28/2020	9:35		2.00	JP/AE	Download Water Depth Sensor
10/1/2020	8:40		2.00	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		2.00	JP/AE	Download Water Depth Sensor
10/12/2020	9:15		2.00	JP/AE	Download Water Depth Sensor

10/15/2020	10:25		2.00	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	2603				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	8:05		0.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	8:10		0.50	JP/AE	Download Water Depth Sensor
6/5/2020	10:35		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:30		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:25		0	JP/AE	Download Water Depth Sensor
7/14/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:10		0	JP/AE	Download Water Depth Sensor
8/17/2020	12:30		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	10:00		0	JP/AE	Download Water Depth Sensor
9/4/2020	13:10		0	JP/AE	Download Water Depth Sensor
9/11/2020	10:40		0	JP/AE	Download Water Depth Sensor
9/18/2020	7:50		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/1/2020	7:50		0	JP/AE	Download Water Depth Sensor
10/7/2020	8:20		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:20		1.00	JP/AE	Download Water Depth Sensor
10/19/2020	9:40		0	SD/JP/AE	Download Water Depth Sensor

Site:	2604				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	11:15		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	9:20		2.00	JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0.50	JP/AE	Download Water Depth Sensor
6/5/2020	11:00		0.25	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:25		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:25		0	JP/AE	Download Water Depth Sensor
7/14/2020	11:15		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:30		0	JP/AE	Download Water Depth Sensor
8/17/2020	11:55		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/4/2020	13:15		0	JP/AE	Download Water Depth Sensor
9/11/2020	11:15		0	JP/AE	Download Water Depth Sensor
9/18/2020	7:35		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:25		0	JP/AE	Download Water Depth Sensor
10/1/2020	7:55		0	JP/AE	Download Water Depth Sensor
10/7/2020	8:30		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:05		0.50	JP/AE	Download Water Depth Sensor

10/19/2020	9:20		0	JP/AE	Download Water Depth Sensor

Site:	2608				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:00		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:10		0	JP/AE	Download Water Depth Sensor
5/22/2020	8:45		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:35		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
7/14/2020	11:25		0	JP/AE	Download Water Depth Sensor
7/24/2020	12:00		0	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:50		0	JP/AE	Download Water Depth Sensor
8/17/2020	12:35		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	10:05		0	JP/AE	Download Water Depth Sensor
9/4/2020	13:35		0	JP/AE	Download Water Depth Sensor
9/11/2020	11:15		0	JP/AE	Download Water Depth Sensor
9/18/2020	8:25		0.25	JP/AE	Download Water Depth Sensor
9/28/2020	8:25		0	JP/AE	Download Water Depth Sensor
10/1/2020	7:50		0	JP/AE	Download Water Depth Sensor
10/7/2020	8:20		0	JP/AE	Download Water Depth Sensor

10/12/2020	8:15		0	JP/AE	Download Water Depth Sensor
10/19/2020	9:35		0	JP/AE	Download Water Depth Sensor

Site:	2701				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	SD/JP	install water depth, v1
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	11:10		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	12:10		0	JP/AE	Download Water Depth Sensor
5/22/2020	12:10		0	JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:45		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:40		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:15		0	JP/AE	Download Water Depth Sensor
7/14/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/22/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/29/2020	11:25		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:05		0	JP/AE	Download Water Depth Sensor
8/17/2020	11:10		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	8:15		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:00		0	JP/AE	Download Water Depth Sensor
9/11/2020	10:55		0	JP/AE	Download Water Depth Sensor
9/18/2020	7:55		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:15		0	JP/AE	Download Water Depth Sensor

10/1/2020	7:35		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:35		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:05		0	JP/AE	Download Water Depth Sensor
10/19/2020	8:30		0	JP/AE	Download Water Depth Sensor

Site:	2703				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:50		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	8:00		2.25	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	11:15		2.25	JP/AE	Download Water Depth Sensor
6/18/2020	11:25		1.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:45		0	JP/AE	Download Water Depth Sensor
7/9/2020	10:50		1.50	JP/AE	Download Water Depth Sensor
7/14/2020	11:35		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	11:55		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	8:05		0.25	JP/AE	Download Water Depth Sensor
9/4/2020	12:30		0.75	JP/AE	Download Water Depth Sensor
9/11/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	7:15		0.25	JP/AE	Download Water Depth Sensor
9/28/2020				JP/AE	Download Water Depth Sensor
10/1/2020	7:35		0	JP/AE	Download Water Depth Sensor
10/7/2020	7:25		0	JP/AE	Download Water Depth Sensor
10/12/2020	7:55		0.50	JP/AE	Download Water Depth Sensor

10/19/2020	9:10		0	SD/JP/AE	Download Water Depth Sensor

Site:	2705-A				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/16/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	9:20		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0.50	JP/AE	Download Water Depth Sensor
5/21/2020	14:50		0.25	JP/AE	Download Water Depth Sensor
5/22/2020	12:10		0.50	JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0.50	JP/AE	Download Water Depth Sensor
6/5/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:30		0.25	JP/AE	Download Water Depth Sensor
7/9/2020	11:10		0.50	JP/AE	Download Water Depth Sensor
7/14/2020	11:45		0.50	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
7/29/2020	10:35		0.25	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	11:45		0.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	8:25		0.50	JP/AE	Download Water Depth Sensor
9/4/2020	12:25		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	7:55		0.25	JP/AE	Download Water Depth Sensor

9/28/2020	7:25		0.25	JP/AE	Download Water Depth Sensor
10/1/2020	7:35		0.50	JP/AE	Download Water Depth Sensor
10/7/2020	7:25		0.50	JP/AE	Download Water Depth Sensor
10/12/2020	8:15		0.25	JP/AE	Download Water Depth Sensor
10/19/2020	8:40		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	2705-B				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/16/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:25		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:10		0.25	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:05		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:15		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/9/2020	9:55		0.25	JP/AE	Download Water Depth Sensor
7/14/2020	12:45		0.50	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:00		0.25	JP/AE	Download Water Depth Sensor
7/29/2020	11:30		0.25	JP/AE	Download Water Depth Sensor
8/17/2020	13:15		0.25	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	9:20		0.50	JP/AE	Download Water Depth Sensor
9/4/2020	13:00		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	11:00		0.75	JP/AE	Download Water Depth Sensor
9/18/2020	8:50		0.50	JP/AE	Download Water Depth Sensor
9/28/2020	7:20		0.50	JP/AE	Download Water Depth Sensor
10/1/2020	7:50		0.75	JP/AE	Download Water Depth Sensor
10/7/2020	8:00		0.75	JP/AE	Download Water Depth Sensor
10/12/2020	8:00		0.75	JP/AE	Download Water Depth Sensor

10/19/2020	7:10		0	SD/JP/AE	Download Water Depth Sensor

Site:	2709				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	9:30		0.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	12:55		0	JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/9/2020	11:30		0	JP/AE	Download Water Depth Sensor
7/14/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/24/2020	11:20		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	13:05		0.50	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	9:45		0.25	JP/AE	Download Water Depth Sensor
9/4/2020	12:30		0.25	JP/AE	Download Water Depth Sensor
9/11/2020	11:00		0.25	JP/AE	Download Water Depth Sensor
9/18/2020	8:10		0.25	JP/AE	Download Water Depth Sensor
9/28/2020	7:30		0.25	JP/AE	Download Water Depth Sensor
10/1/2020	7:50		0.50	JP/AE	Download Water Depth Sensor
10/7/2020	8:25		0.50	JP/AE	Download Water Depth Sensor
10/12/2020	8:10		0.50	JP/AE	Download Water Depth Sensor

10/19/2020	7:35		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	2911				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	11:45		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/29/2020	8:25		0	JP/AE	Download Water Depth Sensor
6/1/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:05		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:35		0	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:20		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/13/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:40		0	JP/AE	Download Water Depth Sensor
7/16/2020	11:15		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	11:35		0	JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/10/2020	8:25		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	14:05		0	JP/AE	Download Water Depth Sensor
9/4/2020	8:30		0	JP/AE	Download Water Depth Sensor
9/8/2020				JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0	JP/AE	Download Water Depth Sensor
9/16/2020	10:00		0	JP/AE	Download Water Depth Sensor
9/23/2020	12:45		0	JP/AE	Download Water Depth Sensor

9/25/2020	12:35		0	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0	JP/AE	Download Water Depth Sensor
10/8/2020	8:55		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:30		1.25	JP/AE	Download Water Depth Sensor
10/16/2020	10:35		0	JP/AE	Download Water Depth Sensor
10/22/2020	9:15		0	SD/JP/AE	Download Water Depth Sensor

Site:	3008-A				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	7:55		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/29/2020	11:30		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:45		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:50		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:50		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/10/2020	9:20		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
9/1/2020	9:25		0	JP/AE	Download Water Depth Sensor
9/4/2020	11:25		0	JP/AE	Download Water Depth Sensor
9/14/2020	11:35		0	JP/AE	Download Water Depth Sensor
9/24/2020	8:20		0	JP/AE	Download Water Depth Sensor
9/25/2020	13:40		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:30		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:00		25.00	JP/AE	Download Water Depth Sensor
10/22/2020	14:15		0	SD/JP/AE	Download Water Depth Sensor

Site:	3104				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	9:40		1.00	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	9:50		1.00	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.25	JP/AE	Download Water Depth Sensor
5/22/2020	7:35		1.25	JP/AE	Download Water Depth Sensor
5/29/2020	11:30		1.25	JP/AE	Download Water Depth Sensor
6/5/2020	10:20		1.25	JP/AE	Download Water Depth Sensor
6/12/2020				JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:35		1.00	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:30			JP/AE	Download Water Depth Sensor
7/9/2020	10:25		1.00	JP/AE	Download Water Depth Sensor
7/14/2020	11:10		1.25	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	10:50		1.00	JP/AE	Download Water Depth Sensor
7/29/2020	11:10		0.75	JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/17/2020	10:40		0.75	JP/AE	Download Water Depth Sensor
9/1/2020	11:45		1.75	JP/AE	Download Water Depth Sensor
9/11/2020	12:00		1.25	JP/AE	Download Water Depth Sensor
9/18/2020	9:35		1.25	JP/AE	Download Water Depth Sensor
9/28/2020	9:55		1.00	JP/AE	Download Water Depth Sensor
10/1/2020	8:40		1.25	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		1.00	JP/AE	Download Water Depth Sensor

10/12/2020	9:35		1.50	JP/AE	Download Water Depth Sensor
10/15/2020	10:20		1.00	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	3202				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	Install Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:50		1.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	11:55		1.50	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.50	JP/AE	Download Water Depth Sensor
5/22/2020	11:45		0	JP/AE	Download Water Depth Sensor
5/28/2020	12:05		0	JP/AE	Download Water Depth Sensor
6/5/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:20		1.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		1.75	JP/AE	Download Water Depth Sensor
7/9/2020	10:45		1.75	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:10		2.00	JP/AE	Download Water Depth Sensor
7/29/2020	11:35		1.75	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/17/2020	12:10		2.00	JP/AE	Download Water Depth Sensor
9/1/2020	12:35		2.00	JP/AE	Download Water Depth Sensor
9/11/2020	12:05		2.00	JP/AE	Download Water Depth Sensor
9/18/2020	9:15		1.75	JP/AE	Download Water Depth Sensor
9/28/2020	8:50		1.50	JP/AE	Download Water Depth Sensor
10/1/2020	7:55		1.50	JP/AE	Download Water Depth Sensor
10/7/2020	12:55		1.25	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		1.25	JP/AE	Download Water Depth Sensor
10/12/2020	10:10		1.25	JP/AE	Download Water Depth Sensor
10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	3206				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:50		0.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
4/30/2020	9:35		0.50	JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0.25	JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
6/18/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:45		0.25	JP/AE	Download Water Depth Sensor
7/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/29/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	12:55		0.75	JP/AE	Download Water Depth Sensor
8/17/2020	12:10		0	JP/AE	Download Water Depth Sensor
9/1/2020	12:55		0.25	JP/AE	Download Water Depth Sensor
9/11/2020	12:05		0	JP/AE	Download Water Depth Sensor
9/18/2020	9:25		0	JP/AE	Download Water Depth Sensor
9/28/2020	8:45		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:00		0	JP/AE	Download Water Depth Sensor
10/7/2020	13:35		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:35		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:10		10.00	JP/AE	Download Water Depth Sensor

10/23/2020				SD/JP/AE	Download Water Depth Sensor

Site:	3301				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	11:15		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	9:40		1.75	JP/AE	Download Water Depth Sensor
5/28/2020	9:50		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/18/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:25		0	JP/AE	Download Water Depth Sensor
7/8/2020	11:10		0.25	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/22/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:35		0.25	JP/AE	Download Water Depth Sensor
7/29/2020	11:05		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/7/2020	10:50		0	JP/AE	Download Water Depth Sensor
8/17/2020	11:50		0	JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/2/2020	8:15		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:25		0	JP/AE	Download Water Depth Sensor
9/11/2020	10:50		0	JP/AE	Download Water Depth Sensor
9/18/2020	7:55		0	JP/AE	Download Water Depth Sensor
9/28/2020	7:05		0	JP/AE	Download Water Depth Sensor
10/1/2020	7:25		0	JP/AE	Download Water Depth Sensor

10/7/2020	7:25		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:20		1.00	JP/AE	Download Water Depth Sensor
10/19/2020	9:20		0	SD/JP/AE	Download Water Depth Sensor

Site:	3401				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	13:10		1.25	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:55		1.25	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/22/2020	9:50		7.00	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:25		1.25	JP/AE	Download Water Depth Sensor
6/18/2020	11:10		1.25	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/27/2020	11:15		1.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	12:00		1.25	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:30		13.25	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	12:55		1.50	JP/AE	Download Water Depth Sensor
9/8/2020	11:10		1.25	JP/AE	Download Water Depth Sensor
9/11/2020	12:50		1.50	JP/AE	Download Water Depth Sensor
9/19/2020	10:30		1.25	JP/AE	Download Water Depth Sensor
9/25/2020	13:00		1.50	JP/AE	Download Water Depth Sensor
9/30/2020	11:25		1.25	JP/AE	Download Water Depth Sensor

10/2/2020	10:25		1.25	JP/AE	Download Water Depth Sensor
10/7/2020	12:30		1.25	JP/AE	Download Water Depth Sensor
10/8/2020	8:25		1.25	JP/AE	Download Water Depth Sensor
10/13/2020	1.5		1.50	JP/AE	Download Water Depth Sensor
10/16/2020	10:55		1.25	JP/AE	Download Water Depth Sensor
10/22/2020	9:05		1.75	SD/JP/AE	Download Water Depth Sensor

Site:	3501				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:20		0	JP/AE	Download Water Depth Sensor
5/11/2020				JP/AE	Download Water Depth Sensor
5/22/2020	9:30		1.75	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:30		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:30		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	13:30		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	12:35		0	JP/AE	Download Water Depth Sensor
9/8/2020	10:35		0	JP/AE	Download Water Depth Sensor
9/11/2020	13:00		0	JP/AE	Download Water Depth Sensor
9/18/2020	11:30		0	JP/AE	Download Water Depth Sensor
9/25/2020	12:00		0	JP/AE	Download Water Depth Sensor
9/30/2020	11:05		0	JP/AE	Download Water Depth Sensor

10/2/2020	10:25		0	JP/AE	Download Water Depth Sensor
10/8/2020	8:25		0	JP/AE	Download Water Depth Sensor
10/12/2020	10:00		0	JP/AE	Download Water Depth Sensor
10/13/2020				JP/AE	Download Water Depth Sensor
10/14/2020	9:10		0	JP/AE	Download Water Depth Sensor
10/16/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/22/2020	9:55		0	SD/JP/AE	Download Water Depth Sensor

Site:	3502				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	11:50		0.75	JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020	11:25		1.00	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
6/9/2020	11:30		0.75	JP/AE	Download Water Depth Sensor
6/18/2020	10:15		0.50	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:50		0.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:55		0.75	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	14:00		0.75	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	11:25		0.50	JP/AE	Download Water Depth Sensor
9/8/2020	10:45		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	13:00		0.75	JP/AE	Download Water Depth Sensor
9/18/2020	11:50		0.75	JP/AE	Download Water Depth Sensor
9/25/2020	12:05		1.00	JP/AE	Download Water Depth Sensor

9/30/2020	10:50		1.00	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0.75	JP/AE	Download Water Depth Sensor
10/8/2020	8:40		0.75	JP/AE	Download Water Depth Sensor
10/13/2020	9:05		0.75	JP/AE	Download Water Depth Sensor
10/16/2020	10:20		1.00	JP/AE	Download Water Depth Sensor
10/22/2020	9:40		0.75	SD/JP/AE	Download Water Depth Sensor

Site:	3504				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	DM/NM	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	11:35		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	12:05		0	JP/AE	Download Water Depth Sensor
5/29/2020	12:00		0	JP/AE	Download Water Depth Sensor
6/1/2020	12:10		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:45		0	JP/AE	Download Water Depth Sensor
6/10/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:25		0	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:15		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/13/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/16/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/23/2020	10:35		0	JP/AE	Download Water Depth Sensor
7/29/2020	11:50		0	JP/AE	Download Water Depth Sensor
7/30/2020	11:05		0	JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/10/2020	10:00		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	13:15		0	JP/AE	Download Water Depth Sensor
9/4/2020	8:30		0	JP/AE	Download Water Depth Sensor

9/8/2020				JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0	JP/AE	Download Water Depth Sensor
9/16/2020	7:50		0	JP/AE	Download Water Depth Sensor
9/23/2020	11:35		0	JP/AE	Download Water Depth Sensor
9/25/2020	12:00		0	JP/AE	Download Water Depth Sensor
10/2/2020	9:55		0	JP/AE	Download Water Depth Sensor
10/7/2020	13:30		0	JP/AE	Download Water Depth Sensor
10/9/2020	8:25		0	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/14/2020				JP/AE	Download Water Depth Sensor
10/16/2020	10:05		0	JP/AE	Download Water Depth Sensor
10/22/2020	10:00		0	SD/JP/AE	Download Water Depth Sensor

Site:	3508				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/24/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	12:00		1.00	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/22/2020	10:20		2.50	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020				JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:10		1.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:35		1.25	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	13:25		1.25	JP/AE	Download Water Depth Sensor
9/8/2020	10:40		1.25	JP/AE	Download Water Depth Sensor
9/11/2020	13:00		1.25	JP/AE	Download Water Depth Sensor
9/18/2020	11:20		1.50	JP/AE	Download Water Depth Sensor
9/25/2020	12:10		1.50	JP/AE	Download Water Depth Sensor
9/30/2020	10:10		1.25	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		1.25	JP/AE	Download Water Depth Sensor
10/8/2020	8:20		1.50	JP/AE	Download Water Depth Sensor

10/13/2020	9:15		1.50	JP/AE	Download Water Depth Sensor
10/16/2020	11:10		1.25	JP/AE	Download Water Depth Sensor
10/22/2020	9:15		1.50	SD/JP/AE	Download Water Depth Sensor

Site:	3509				
Site:	3509				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	12:00		0	JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020	8:10		2.00	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/1/2020	10:30		0	JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:35		0	JP/AE	Download Water Depth Sensor
6/9/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:30		0	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	13:20		0	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	14:20		0	JP/AE	Download Water Depth Sensor
9/8/2020	10:30			JP/AE	Download Water Depth Sensor
9/11/2020	13:00		0	JP/AE	Download Water Depth Sensor
9/18/2020	11:55		0	JP/AE	Download Water Depth Sensor

9/25/2020	12:35		0	JP/AE	Download Water Depth Sensor
9/30/2020	8:50		0	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0	JP/AE	Download Water Depth Sensor
10/9/2020				JP/AE	Download Water Depth Sensor
10/13/2020	9:35		0	JP/AE	Download Water Depth Sensor
10/16/2020	10:45		0	JP/AE	Download Water Depth Sensor
10/22/2020	10:00		0	SD/JP/AE	Download Water Depth Sensor

Site:	3601				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020	14:10		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/21/2020	11:10		0	JP/AE	Download Water Depth Sensor
5/22/2020	12:50		0	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/1/2020	11:05		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:40		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/13/2020				JP/AE	Download Water Depth Sensor
7/14/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/10/2020	9:40		0	JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	10:55		0	JP/AE	Download Water Depth Sensor
9/4/2020	8:50		0.25	JP/AE	Download Water Depth Sensor
9/16/2020	10:15		0.25	JP/AE	Download Water Depth Sensor
9/23/2020	11:40		0	JP/AE	Download Water Depth Sensor

9/24/2020	11:45		0.25	JP/AE	Download Water Depth Sensor
9/30/2020	8:40		0.25	JP/AE	Download Water Depth Sensor
10/5/2020	8:30		0.25	JP/AE	Download Water Depth Sensor
10/8/2020	10:45		0	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/16/2020	11:35		0	JP/AE	Download Water Depth Sensor
10/22/2020	8:25		0	JP/AE	Download Water Depth Sensor

Site:	3602				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:10		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2002	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:30		0.50	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/1/2020	11:15		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
6/18/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
6/26/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
7/24/2020	10:50		0.50	JP/AE	Download Water Depth Sensor
8/6/2002				JP/AE	Download Water Depth Sensor
8/10/2020	9:15		0.25	JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	11:25		0.5	JP/AE	Download Water Depth Sensor
9/4/2020	8:05		1.00	JP/AE	Download Water Depth Sensor
9/16/2020	9:45		0.75	JP/AE	Download Water Depth Sensor
9/23/2020	11:55		0.75	JP/AE	Download Water Depth Sensor
9/24/2020	11:40		0.75	JP/AE	Download Water Depth Sensor
10/5/2020	8:35		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	10:55		0.75	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/16/2020	11:10		1.00	JP/AE	Download Water Depth Sensor
10/22/2020	8:10		0.75	SD/JP/AE	Download Water Depth Sensor

Site:	3603				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:15		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/21/2020	11:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	6:05		0	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/1/2020	11:40		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/13/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:45		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	10:15		0	JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	9:30		0	JP/AE	Download Water Depth Sensor
9/4/2020	8:20		0	JP/AE	Download Water Depth Sensor

9/16/2020	9:40		0	JP/AE	Download Water Depth Sensor
9/17/2020				JP/AE	Download Water Depth Sensor
9/23/2020	11:45		0	JP/AE	Download Water Depth Sensor
9/24/2020	11:25		0	JP/AE	Download Water Depth Sensor
10/5/2020	9:00		0	JP/AE	Download Water Depth Sensor
10/8/2020	12:00		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:40		0	JP/AE	Download Water Depth Sensor
10/16/2020	11:55		0	JP/AE	Download Water Depth Sensor
10/22/2020	7:55		0	SD/JP/AE	Download Water Depth Sensor

Site:	3606				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/23/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:10		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		1.25	JP/AE	Download Water Depth Sensor
5/21/2020	11:30		0.75	JP/AE	Download Water Depth Sensor
5/22/2020	11:00		1.00	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/1/2020	11:55		1.25	JP/AE	Download Water Depth Sensor
6/5/2020	11:05		1.00	JP/AE	Download Water Depth Sensor
6/18/2020	10:15		1.50	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:15		1.00	JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/13/2020				JP/AE	Download Water Depth Sensor
7/14/2020	10:45		1.25	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	9:40		1.25	JP/AE	Download Water Depth Sensor
8/18/2020				JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	11:05		1.50	JP/AE	Download Water Depth Sensor
9/4/2020	8:20		1.50	JP/AE	Download Water Depth Sensor
9/15/2020	7:30		1.00	JP/AE	Download Water Depth Sensor
9/23/2020	11:20		0.50	JP/AE	Download Water Depth Sensor
9/24/2020	10:05		0.50	JP/AE	Download Water Depth Sensor

9/30/2020	8:50		0.50	JP/AE	Download Water Depth Sensor
10/2/2020				JP/AE	Download Water Depth Sensor
10/5/2020	8:35		0.50	JP/AE	Download Water Depth Sensor
10/8/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
10/12/2020				JP/AE	Download Water Depth Sensor
10/16/2020	11:45		0.75	JP/AE	Download Water Depth Sensor
10/22/2020	8:05		0.75	SD/JP/AE	Download Water Depth Sensor

Site:	3701				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	install water depth sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	13:05		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	10:25		0	JP/AE	Download Water Depth Sensor
6/1/2020	10:35		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:35		0	JP/AE	Download Water Depth Sensor
6/18/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:40		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:10		0.50	JP/AE	Download Water Depth Sensor
7/23/2020	10:35		0.50	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	9:35		0.50	JP/AE	Download Water Depth Sensor
8/13/2020	12:55		0.50	JP/AE	Download Water Depth Sensor
8/17/2020	12:25		0.50	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	9:20		0.50	JP/AE	Download Water Depth Sensor
9/4/2020	13:15		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0.75	JP/AE	Download Water Depth Sensor
9/16/2020	9:00		0.25	JP/AE	Download Water Depth Sensor
9/18/2020	10:15		0.50	JP/AE	Download Water Depth Sensor
9/24/2020	11:15		0.50	JP/AE	Download Water Depth Sensor

10/1/2020	8:10		0.50	JP/AE	Download Water Depth Sensor
10/9/2020	10:35		0.75	JP/AE	Download Water Depth Sensor
10/12/2020	8:05		1.00	JP/AE	Download Water Depth Sensor
10/16/2020	12:40		1.00	JP/AE	Download Water Depth Sensor
10/22/2020	8:00		1.00	JP/AE	Download Water Depth Sensor

Site:	3702				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:05		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/28/2020	9:55		0	JP/AE	Download Water Depth Sensor
5/29/2020				JP/AE	Download Water Depth Sensor
6/1/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/5/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:25		0	JP/AE	Download Water Depth Sensor
7/23/2020	11:00		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	8:40		0	JP/AE	Download Water Depth Sensor
8/13/2020	13:45		0	JP/AE	Download Water Depth Sensor
8/17/2020	12:25		0	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	9:05		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:50		0	JP/AE	Download Water Depth Sensor
9/11/2020	13:35		0	JP/AE	Download Water Depth Sensor
9/16/2020	8:10		0	JP/AE	Download Water Depth Sensor

9/18/2020	9:00		0	JP/AE	Download Water Depth Sensor
9/24/2020	10:40		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:05		0	JP/AE	Download Water Depth Sensor
10/7/2020	12:05		0	JP/AE	Download Water Depth Sensor
10/9/2020	8:40		0	JP/AE	Download Water Depth Sensor
10/12/2020	8:55		0	JP/AE	Download Water Depth Sensor
10/16/2020	11:45		0	JP/AE	Download Water Depth Sensor
10/22/2020	8:10		0	SD/JP/AE	Download Water Depth Sensor

Site:	3703				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			1.00	SD/JP	install water depth sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:05		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	11:10		0.25	JP/AE	Download Water Depth Sensor
6/1/2020	9:35		0.25	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:25		0	JP/AE	Download Water Depth Sensor
7/23/2020	10:35		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	9:35		0	JP/AE	Download Water Depth Sensor
8/13/2020	14:10		0	JP/AE	Download Water Depth Sensor
8/17/2020	12:25		0	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	10:00		0	JP/AE	Download Water Depth Sensor
9/4/2020	13:15		0	JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0	JP/AE	Download Water Depth Sensor
9/16/2020	8:30		0	JP/AE	Download Water Depth Sensor
9/18/2020	9:55		0	JP/AE	Download Water Depth Sensor
9/24/2020	11:20		0	JP/AE	Download Water Depth Sensor

10/1/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/7/2020	13:10		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/12/2020	7:55		1.00	JP/AE	Download Water Depth Sensor
10/16/2020	11:25		0	JP/AE	Download Water Depth Sensor
10/22/2020	8:25		0	SD/JP/AE	Download Water Depth Sensor

Site:	3706				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:35		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/1/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:55		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:25		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:45		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/23/2020	11:10		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/10/2020	8:20		0	JP/AE	Download Water Depth Sensor
8/17/2020	12:35		0	JP/AE	Download Water Depth Sensor
8/31/2020	9:10		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:35		0	JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0	JP/AE	Download Water Depth Sensor
9/16/2020	10:15		0	JP/AE	Download Water Depth Sensor
9/18/2020	9:00		0	JP/AE	Download Water Depth Sensor
9/24/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:05		0	JP/AE	Download Water Depth Sensor
10/7/2020	12:55		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0	JP/AE	Download Water Depth Sensor

10/12/2020	9:10		0	JP/AE	Download Water Depth Sensor
10/16/2020	12:20		0	JP/AE	Download Water Depth Sensor
10/22/2020	7:45		0	SD/JP/AE	Download Water Depth Sensor

Site:	3804				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	install water depth sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	13:35		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/1/2020	11:30		0	JP/AE	Download Water Depth Sensor
6/5/2020				JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:10		0	JP/AE	Download Water Depth Sensor
7/23/2020	10:15		0	JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/13/2020	13:55		0	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	9:05		0	JP/AE	Download Water Depth Sensor
9/4/2020	12:40		0	JP/AE	Download Water Depth Sensor
9/11/2020	13:30		0	JP/AE	Download Water Depth Sensor
9/16/2020	7:10		0	JP/AE	Download Water Depth Sensor
9/18/2020	9:40		0	JP/AE	Download Water Depth Sensor
9/24/2020	10:35		0	JP/AE	Download Water Depth Sensor
9/30/2020	8:55		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:05		0	JP/AE	Download Water Depth Sensor
10/7/2020	12:20		0	JP/AE	Download Water Depth Sensor

10/9/2020	10:20		0	JP/AE	Download Water Depth Sensor
10/12/2020	9:40		0	JP/AE	Download Water Depth Sensor
10/16/2020	12:05		0	JP/AE	Download Water Depth Sensor
10/22/2020	7:50		0	SD/JP/AE	Download Water Depth Sensor

Site:	3901				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:20		0.00	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0.00	JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	11:30		0.25	JP/AE	Download Water Depth Sensor
6/1/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
6/5/2020	10:45		0.25	JP/AE	Download Water Depth Sensor
6/18/2020	10:55		0.25	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/27/2020	10:30		0.25	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:10		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:15		7.50	JP/AE	Download Water Depth Sensor
8/17/2020	14:05		0.50	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/27/2020				JP/AE	Download Water Depth Sensor
9/4/2020	12:50		0.25	JP/AE	Download Water Depth Sensor
9/11/2020	10:50		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	7:05		0.00	JP/AE	Download Water Depth Sensor
9/25/2020	9:35		0.00	JP/AE	Download Water Depth Sensor
10/1/2020	8:20		0.00	JP/AE	Download Water Depth Sensor

10/7/2020				JP/AE	Download Water Depth Sensor
10/12/2020	7:35		6.75	JP/AE	Download Water Depth Sensor
10/16/2020	12:40		0.00	JP/AE	Download Water Depth Sensor
10/22/2020	7:25		0.00	SD/JP/AE	Download Water Depth Sensor

Site:	4002				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:35		0.75	JP/AE	Download Water Depth Sensor
5/14/2020				JP/AE	Download Water Depth Sensor
5/22/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:45		0.50	JP/AE	Download Water Depth Sensor
6/18/2020	10:40		0.25	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/13/2020	12:30		0.50	JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	13:30		0.50	JP/AE	Download Water Depth Sensor
9/8/2020	10:50		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	12:45		0.50	JP/AE	Download Water Depth Sensor
9/18/2020	11:05		0.50	JP/AE	Download Water Depth Sensor
9/25/2020	11:20		0.50	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0.50	JP/AE	Download Water Depth Sensor

10/8/2020	8:10		0.50	JP/AE	Download Water Depth Sensor
10/13/2020	8:55		0.75	JP/AE	Download Water Depth Sensor
10/16/2020	10:20		0.75	JP/AE	Download Water Depth Sensor
10/22/2020	8:55		0.50	SD/JP/AE	Download Water Depth Sensor

Site:	4005				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			3.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	10:10		26.50	JP/AE	Download Water Depth Sensor
5/8/2020				JP/AE	Download Water Depth Sensor
5/15/2020	11:55		0.50	JP/AE	Download Water Depth Sensor
5/21/2020	11:25		0.50	JP/AE	Download Water Depth Sensor
5/22/2020	8:20		2.00	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:55		35.00	JP/AE	Download Water Depth Sensor
6/9/2020	11:05		0.75	JP/AE	Download Water Depth Sensor
6/18/2020	10:35		1.00	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0.75	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/16/2020	10:35		1.00	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/5/2020				JP/AE	Download Water Depth Sensor
8/14/2020	13:05		0.75	JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	14:15		1.25	JP/AE	Download Water Depth Sensor
9/8/2020	11:00		1.00	JP/AE	Download Water Depth Sensor
9/11/2020	13:05		25.00	JP/AE	Download Water Depth Sensor

9/18/2020	10:10		1.00	JP/AE	Download Water Depth Sensor
9/25/2020	12:30		1.00	JP/AE	Download Water Depth Sensor
9/30/2020	7:20		1.00	JP/AE	Download Water Depth Sensor
10/2/2002	10:25		1.00	JP/AE	Download Water Depth Sensor
10/8/2020	8:00		1.00	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		1.00	JP/AE	Download Water Depth Sensor
10/13/2020	8:45		31.50	JP/AE	Download Water Depth Sensor
10/16/2020	10:05		1.00	JP/AE	Download Water Depth Sensor
10/22/2020	8:50		0.50	SD/JP/AE	Download Water Depth Sensor

Site:	4102				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	DM/NM	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/16/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	9:40		1.00	JP/AE	Download Water Depth Sensor
5/8/2020				JP/AE	Download Water Depth Sensor
5/15/2020	11:35		0.25	JP/AE	Download Water Depth Sensor
5/21/2020	11:00		0.50	JP/AE	Download Water Depth Sensor
5/22/2020	6:30		0.75	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:55		2.00	JP/AE	Download Water Depth Sensor
6/9/2020	10:35		0.25	JP/AE	Download Water Depth Sensor
6/18/2020	10:40		0.50	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:50		0.50	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/10/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:05		0.25	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:50		0	JP/AE	Download Water Depth Sensor
7/31/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	13:45		0	JP/AE	Download Water Depth Sensor
9/8/2020	11:15		0	JP/AE	Download Water Depth Sensor

9/11/2020	12:40		0.25	JP/AE	Download Water Depth Sensor
9/18/2020	10:35		0	JP/AE	Download Water Depth Sensor
9/25/2020	8:35		0	JP/AE	Download Water Depth Sensor
9/30/2020	11:45		0	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0	JP/AE	Download Water Depth Sensor
10/8/2020	8:15		0	JP/AE	Download Water Depth Sensor
10/13/2020	9:35		0	JP/AE	Download Water Depth Sensor
10/16/2020	9:15		0	JP/AE	Download Water Depth Sensor
10/22/2020	8:10		0.25	SD/JP/AE	Download Water Depth Sensor

Site:	4205				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			1.00	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	11:20		0.50	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	8:15		1.50	JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/15/2020	11:10		0.25	JP/AE	Download Water Depth Sensor
5/21/2020	11:40		0.50	JP/AE	Download Water Depth Sensor
5/22/2020	10:55		0.50	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	10:30		1.00	JP/AE	Download Water Depth Sensor
6/9/2020	10:45		1.00	JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	10:40		1.00	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:45		1.00	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:15		0.50	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:30		0.25	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	12:15		0.50	JP/AE	Download Water Depth Sensor
9/8/2020	9:55		0.50	JP/AE	Download Water Depth Sensor
9/11/2020	12:30		0.25	JP/AE	Download Water Depth Sensor
9/18/2020	10:25		0.25	JP/AE	Download Water Depth Sensor
9/25/2020				JP/AE	Download Water Depth Sensor

9/30/2020	8:45		0.50	JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0.75	JP/AE	Download Water Depth Sensor
10/8/2020	8:05		0.50	JP/AE	Download Water Depth Sensor
10/13/2020	9:40		0.50	JP/AE	Download Water Depth Sensor
10/16/2020	8:20		2.50	JP/AE	Download Water Depth Sensor
10/22/2020	8:15		0	SD/JP/AE	Download Water Depth Sensor

Site:	4301				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/13/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	13:05		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
4/27/2020				SD/JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	10:40		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	11:00		0	JP/AE	Download Water Depth Sensor
7/14/2020				JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/17/2020	13:05		0	JP/AE	Download Water Depth Sensor
9/4/2020	11:45		0	JP/AE	Download Water Depth Sensor
9/11/2020	12:25		0	JP/AE	Download Water Depth Sensor
9/18/2020	11:00		0	JP/AE	Download Water Depth Sensor
9/25/2020	8:35		0	JP/AE	Download Water Depth Sensor
10/1/2020	8:10		0	JP/AE	Download Water Depth Sensor
10/9/2020	10:30		0	JP/AE	Download Water Depth Sensor
10/12/2020	10:05		16.50	JP/AE	Download Water Depth Sensor
10/16/2020	13:05		0	JP/AE	Download Water Depth Sensor
10/22/2020	7:35		0	SD/JP/AE	Download Water Depth Sensor

Site:	4403				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/10/2020			0.25	SD/JP	Install Water Depth Sensor
3/17/2020				SD/JP	Download Water Depth Sensor
3/25/2020				SD/JP	Download Water Depth Sensor
4/1/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	10:45		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/8/2020	9:05		0	JP/AE	Download Water Depth Sensor
5/22/2020				JP/AE	Download Water Depth Sensor
5/29/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/1/2020	11:20		0	JP/AE	Download Water Depth Sensor
6/5/2020	10:40		6.50	JP/AE	Download Water Depth Sensor
6/18/2020	10:50		0	JP/AE	Download Water Depth Sensor
6/19/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:40		0	JP/AE	Download Water Depth Sensor
7/9/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:25		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/6/2020				JP/AE	Download Water Depth Sensor
8/17/2020	13:15		1.00	JP/AE	Download Water Depth Sensor
8/24/2020				JP/AE	Download Water Depth Sensor
8/31/2020	9:00		1.00	JP/AE	Download Water Depth Sensor
9/4/2020	12:20		1.00	JP/AE	Download Water Depth Sensor
9/11/2020	10:45		13.50	JP/AE	Download Water Depth Sensor
9/18/2020	9:40		1.00	JP/AE	Download Water Depth Sensor
9/25/2020	8:40		0.75	JP/AE	Download Water Depth Sensor
10/1/2020	8:15		0.75	JP/AE	Download Water Depth Sensor
10/7/2020				JP/AE	Download Water Depth Sensor
10/12/2020	7:35		19.00	JP/AE	Download Water Depth Sensor

10/16/2020	12:20		0.75	JP/AE	Download Water Depth Sensor
10/22/2020	7:30		0.50	SD/JP/AE	Download Water Depth Sensor

Site#	4803				
Date	Time	Meter Depth	Field Depth	Initials	Service Comments
3/11/2020			0	SD/JP	Install Water Depth Sensor
3/16/2020				SD/JP	Download Water Depth Sensor
3/26/2020				SD/JP	Download Water Depth Sensor
4/8/2020				SD/JP	Download Water Depth Sensor
4/15/2020				SD/JP/AE	Download Water Depth Sensor
4/21/2020				SD/JP/AE	Download Water Depth Sensor
4/23/2020	12:40		0	SD/JP/AE	Download Water Depth Sensor
4/24/2020				SD/JP/AE	Download Water Depth Sensor
5/1/2020	8:20		1	JP/AE	Download Water Depth Sensor
5/13/2020				JP/AE	Download Water Depth Sensor
5/15/2020	11:45		0	JP/AE	Download Water Depth Sensor
5/21/2020	17:05		0	JP/AE	Download Water Depth Sensor
5/22/2020	11:30		0.5	JP/AE	Download Water Depth Sensor
5/28/2020				JP/AE	Download Water Depth Sensor
6/2/2020				JP/AE	Download Water Depth Sensor
6/5/2020	11:10		0	JP/AE	Download Water Depth Sensor
6/9/2020	11:15		0	JP/AE	Download Water Depth Sensor
6/15/2020				JP/AE	Download Water Depth Sensor
6/18/2020	11:00		0	JP/AE	Download Water Depth Sensor
6/24/2020				JP/AE	Download Water Depth Sensor
6/26/2020	10:55		0	JP/AE	Download Water Depth Sensor
7/6/2020				JP/AE	Download Water Depth Sensor
7/16/2020	11:15		0	JP/AE	Download Water Depth Sensor
7/23/2020				JP/AE	Download Water Depth Sensor
7/30/2020	10:55		0	JP/AE	Download Water Depth Sensor
8/4/2020				JP/AE	Download Water Depth Sensor
8/14/2020				JP/AE	Download Water Depth Sensor
8/19/2020				JP/AE	Download Water Depth Sensor
8/31/2020	12:05		0	JP/AE	Download Water Depth Sensor
9/8/2020	10:40		0	JP/AE	Download Water Depth Sensor
9/11/2020	12:35		0	JP/AE	Download Water Depth Sensor
9/18/2020	9:40		0	JP/AE	Download Water Depth Sensor

9/25/2020	7:40		0	JP/AE	Download Water Depth Sensor
9/30/2020				JP/AE	Download Water Depth Sensor
10/2/2020	10:25		0	JP/AE	Download Water Depth Sensor
10/8/2020	8:15		0	JP/AE	Download Water Depth Sensor
10/13/2020	9:35		0	JP/AE	Download Water Depth Sensor
10/16/2020	7:55		0	JP/AE	Download Water Depth Sensor
10/22/2020	8:35		0	SD/JP/AE	Download Water Depth Sensor

- **Instrumentation Manuals**

HARDWARE

FLOWSHARK® TRITON

The new FlowShark® Triton from ADS is a "Fit-for-Purpose" open channel flow monitor for use in sanitary, combined, and storm sewers. It is designed to be the most adaptable and versatile flow monitoring device available for collection systems. It is a single pipe or dual pipe flow measurement system and is certified to the highest level of Intrinsic Safety.

FlowShark TRITON

This multiple technology flow monitor will power almost every available sensor technology that is used in wastewater applications today. It offers unparalleled versatility and redundancy and is also the lowest priced monitor on the market. The four multiple technology sensor options available in the FlowShark Triton include: a Peak Combo Sensor; Slimline Peak Combo Sensor; Surface Combo Sensor; and a Quadredundant Ultrasonic Sensor (see back for technology and specifications). This array of monitoring technologies provides a fit-for-purpose monitoring platform.

The FlowShark Triton is also adaptable to a wide range of customer applications and budgets. It can be configured as an economical single sensor monitor or a dual sensor monitor. It offers a longer battery life and fewer parts for a more reliable system. This provides a lower purchase price and a lower lifetime ownership cost. The FlowShark Triton provides the lowest power cost per data sample of any Intrinsically Safe flow monitor available.

About ADS

A leading technology and service provider, ADS Environmental Services® has established the industry standard for open channel flow monitoring and has the only ETV-verified flow monitoring technology for wastewater collection systems. These battery-powered monitors are specially designed to operate with reliability, durability, and accuracy in sewer environments.

FlowShark TRITON Features

- Versatile and adaptable multiple technology sensors
- Two sensor ports supporting three interchangeable sensors providing up to six sensor measurements at a time
- Supports single or dual pipe monitoring
- Wireless, land-line, or serial communication for field versatility
- Industry leading battery life with a GSM/GPRS wireless connection providing up to 15-months at the standard 15-minute sample rate (varies with sensor configuration)
- External power option available with an ADS External Modem Unit (EMU) or External Multiplexer (EMUX) and 12-volt DC power supply
- Data available using Modbus protocol via wireless or serial connection
- Monitor-Level Intelligence (MLI®) improves accuracy and allows the FlowShark Triton to operate in a wide range of hydraulic conditions
- Superior noise reduction design for maximizing acoustic signal detection from depth and velocity sensors
- Four reporting software packages for accessing flow information including: Profile® collection and reporting software; IntelliServe® web-based alarming, Sliicer.com® for I/I analysis, and FlowView Portal® for online access to flow data
- Intrinsically-Safe (IS) standard - certification by IECEx for use in Zone 0/Class I, Div. 1, Groups C & D, and ATEX Zone 0
- Thick, seamless, high-impact, ABS plastic canister with aluminum end cap - meets IP68 standard
- Electronics are protected eliminating exposure of circuits when opening the canister or changing the battery

ADS ENVIRONMENTAL SERVICES®
A Division of ADS LLC

Specifications subject to change without notice.

HARDWARE

Multiple Technology Sensors

The FlowShark Triton features three depths and two velocities with four sensor options. Each sensor provides multiple technologies for continuous running of comparisons.

Peak Combo Sensor

(Design Specifications)

Dimensions: 6.63"(l) x 1.5"(w) x 1.0"(h)

This versatile and economical sensor includes three measurement technologies in a single housing: The ADS patented continuous wave peak velocity, an uplooking ultrasonic depth, and a pressure depth.

Continuous Wave Velocity

Range: -30 ft/sec to +30 ft/sec

Operating Range: 1.5 inches - 5 feet

Resolution: 0.01 ft/sec

Accuracy: +/- 0.2 ft/sec or 4% of actual peak velocity (whichever is greater) in flow velocities between -5 and 20 ft/sec

Uplooking Ultrasonic Depth

Performs with rotation of up to 30 degrees from the horizontal axis of the invert

Operating Range: 1.5 inches - 5 feet

Resolution: 0.01"

Accuracy: The greater of 0.5% of reading or 0.125"

Pressure Depth

Range: 0-5 PSI (11.5') or 0-15 PSI (34.5')

Accuracy: +/- 1.0% of full scale

Resolution: 0.01"

Slimline Peak Combo Sensor

(Design Specifications)

Dimensions: 5.36"(l) x 1.25"(w) x 0.81"(h)

A continuous wave velocity sensor with uplooking ultrasonic depth designed specifically for measuring shallow flows.

Continuous Wave Velocity

Range: -30 ft/sec to +30 ft/sec

Operating Range: 1.0 inches - 5 feet

Resolution: 0.01 ft/sec

Accuracy: +/- 0.2 ft/sec or 4% of actual peak velocity (whichever is greater) in flow velocities between -5 and 20 ft/sec

Uplooking Ultrasonic Depth

Performs with rotation of up to 30 degrees from the horizontal axis of the invert

Operating Range: 1.0 inches - 5 feet

Resolution: 0.01"

Accuracy: The greater of 0.5% of reading or 0.125"

Quadredundant Ultrasonic Level Sensor *(Tested Specifications)*

Dimensions: 7.45"(l) x 4.13"(w) x 0.86"(h)

This non-intrusive, zero-drift sensing method results in a stable, accurate, and reliable flow depth calculation. Four independent ultrasonic transducers allow for independent cross-checking.

Quadredundant Ultrasonic Depth

(Does not require electronic offsets)

Minimum dead band: 0.5" from the face of the sensor or 5% of the maximum range; whichever is greater

Maximum operating air range: 10 feet

Resolution: 0.01"

Accuracy: +/- 0.125" with 0.0" drift Compensated for variations in air temperature

Surface Combo Sensor

(Design Specifications)

Dimensions: 9.56"(l) x 4.19"(w) x 2.26"(h)

This revolutionary new sensor features four technologies including surface velocity, quadredundant ultrasonic depth, surcharge continuous wave velocity, and pressure depth.

Surface Velocity *

Minimum air range of 3" from crown of pipe

Maximum air range of 48"

Range: 0.75 to 15 ft/sec

Resolution: 0.01 ft/sec

Accuracy: +/-0.25 ft/sec or 5% of actual reading (whichever is greater) in flow velocities between 0.75 and 15 ft/sec

Quadredundant Ultrasonic Depth

(*See* **Quadredundant Ultrasonic Depth** *Specifications Above*)

Surcharge Continuous Wave Velocity

(*Under submerged conditions provides the same accuracy and range as* **Continuous Wave Velocity** *for Peak Combo*)

Pressure Depth

(*Under submerged conditions provides the same accuracy and range as* **Pressure Depth** *for Peak Combo*)

Product Specifications

Connectors

U.S. Military spec. MIL-C 26482 series 1, for environmental sealing, with gold plated contacts

Communications Options

- Quad band GSM/GPRS wireless modem
- Direct connection to PC using serial communication cable
- Land-line telephone interface module
- Modbus interface via wireless or serial connection

Monitor Interfaces

Supports simultaneous interfaces with as many as two combo sensors

Power

Internal - Battery endurance with a GPRS modem and a full complement of sensors:

- Greater than 15-months at 15-minute sample rate*
- Greater than 6-months at 5-minute sample rate*

External - Optional external power available with ADS External Modem Unit (EMU), External Multiplexer (EMUX), and ADS or customer provided 12-volt DC power supply

* *Based on one data collection call per day (varies with sensor configuration)*

Intrinsic Safety Certification

- Certified under the ATEX European Intrinsic Safety standards for Zone 0 rated hazardous areas
- Certified under IECEx (International Electrotechnical Commission Explosion Proof) Intrinsic Safety standards for use in Zone 0/Class I, Div. 1, Groups C&D rated hazardous areas

Other Certifications/Compliances

- FCC Part 15 and Part 68 compliant
- Carries the EU CE mark
- ROHS (lead free) compliant
- Canada IC CS-03 compliant

Operating Temperature

-4 degrees to 104 degrees F

(-20 degrees to 40 degrees C)

ADS ENVIRONMENTAL SERVICES®

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ADS. An IDEX Water & Wastewater Business. IDEX

4940 Research Drive, Huntsville, AL 35805
Phone: 256-430-3366/ Fax: 256-430-6633
Toll Free: 1-800-633-7246

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* Flow conditions in some applications may prevent the surface velocity technology from being used.

ShortBoard
FLOW MONITORING SYSTEM
Area Velocity Flow Meter With Wireless Communications

FloWav
Measured by the Quality of Your Data.

Simple, Reliable, Proven.
The compact and lightweight FloWav ShortBoard Model Area Velocity Flow Meters combine our area velocity measurement technology with proven RTU (Recording Telemetry Unit) technology to provide a cost-effective, accurate and reliable way to measure flows.

Advanced Measurement Technology
The ShortBoard Models 1000 and 2000 come with a Pipeline PSA-AV sensor, a fully integrated, state-of-the-art, area velocity sensor. The PSA-AV combines proven continuous wave Doppler measurement technology with the signal processed utilizing state-of-the-art Progressive Spectral Analyzer* technology to provide an accurate, reliable, and low power consumption way to measure velocity.

Wireless Communication
Wireless communication is supported via packet switched cellular (e.g. 1xRTT or GPRS) and multiple antenna options are available, including a burial antenna that may be embedded in the street pavement producing a complete underground wireless monitoring solution. Additionally the Shortboard is capable of Communicating via: Local Connection/ Cellular/Land-line Telephone/Burial Antenna Option

ShortBoard Features:
- Lowest cost wireless area velocity meter
- Most advanced sensor technology available
- Easy to use
- Flexibility with quantity/site conditions
- Low power consumption
- Compact and lightweight
- Optional rain logger

Applications:
- I/I Studies
- Sewer Flow Metering
- Irrigation Systems
- CSO Monitoring
- Storm Water

TECHNICAL SPECIFICATIONS

ShortBoard
FLOW MONITORING SYSTEM

MANUFACTURED
IN THE USA

SHORTBOARD MODEL 2000 SPECIFICATIONS

Model Type	Area Velocity Flow Meter
Sensor Inputs	One or two sensors, any combination
	2x Pipeline model PSA-AV
	Pipeline model PSA-AV + StingRay Ultrasonic
Data Recording	Sample Rate: 3/sec up to 8 hours, each channel
	Data Interval: 3/sec up to 8 hours, each channel
Memory	Size: 512 kbytes RAM; 220 kbytes Data Storage
	Storage Method: wrap-around (first-in, first-out)
	Data Capacity: dynamically allocated to active
	Sensor Channels: 50,000 values per channel
Communications Options	Local RS-485
	Packet Switched Cellular
	1XRTT or GPRS
	Factory installed single 6V alkaline lantern battery
	Eveready Energizer Model 529
Battery Life Examples	Sample Rate: 5 minutes
	Battery Life: 1 to 4 months
	Sample Rate: 15 minutes
	Battery Life: 3 to 12 months
External Power	9 to 15 Vdc @ 1 A maximum
Enclosure	4.5 inch dia by 15.4 inch high
	Weight: 7 pounds
	Material: PVC
	Rating: IP67 (NEMA 6)
Temperature	0 to 70 deg C
Software	S-3PC Telogers for Windows
	DTU Palm Pilot with Telog software
	S-3EP Telog Enterprise

AREA VELOCITY SENSOR

Model Type	Pipeline Model PSA-AV, Area Velocity
Material	Epoxy encapsulated PVC housing
Dimensions	0.90 by 1.85 by 6.0 inch (height by width by length)
Cable	Urethane sensor cable with air vent
Cable Length	35 feet (custom lengths available on request)
Velocity Sensor	Doppler ultrasonic, twin PZT disks
	Operating Temperature: 32 to 160 deg F
	Typical minumum depth: 0.90 inch
	Operating Range: -5 to +20 ft/s
	Accuracy: +/-2% of reading
Pressure Sensor	Pressure Sensor with Ceramic Diaphragm
	Type: Ceramic Piezoresistive
	Range: 0 to 15 feet
	Maximum Allowable Range: 45 feet
	Accuracy: +/-0.25% full scale
	Compensated Range: 40 to 90 deg C

OPTIONAL ULTRASONIC LEVEL SENSOR

Model Type	M-30 Ultrasonic Level Sensor
Material	PVC, Custom PPA
Dimensions	1.90 by 3.08 inch (diameter by length)
Cable	5 conductor 22 AWG, PVC jacket
Cable Length	35 feet (custom lengths available on request)
Connector	8-pin circular connector rated IP67
Frequency	95 khz, nominal
Beam Angle	8 degrees conical
Operating Range	1 to 15 feet
Resolution	0.01 inch
Temperature	-4 to 149 deg F

FloWav
Measured by the Quality of Your Data.

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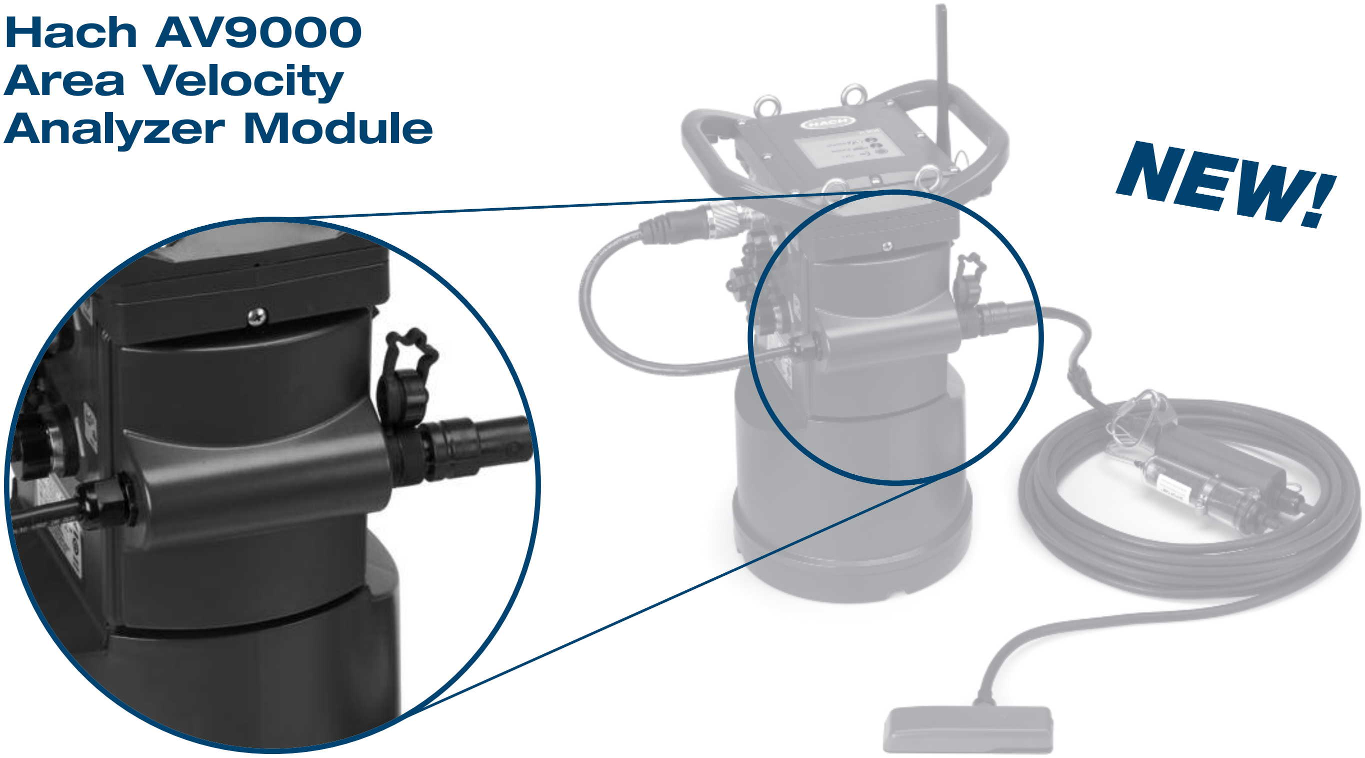
DATA SHEET

Hach AV9000 Area Velocity Analyzer Module

Flow



AV9000 Analyzer Module shown with Sub AV Sensor and Wireless FL904 Flow Logger. Sensor, analyzer module and logger are ordered separately.

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Features and Benefits

Advanced Diagnostic Tools and Settings for Difficult Sites

For ease of use in the majority of sites, our factory default settings have been carefully selected to streamline set up, maximize battery life, and provide reliable data. For difficult sites and users desiring in-depth analysis and custom settings, the full set of diagnostic tools and advanced architecture of the AV9000 Area Velocity Analyzer facilitate collection of useful flow data in even the most difficult sites. On demand, a quick graph shows the Doppler spectrum and validates measurement quality. New quality and diagnostic parameters may be logged alongside the flow data.

Improved Accuracy

The AV9000 Area Velocity Analyzer module is compensated for temperature, thus eliminating potential velocity errors of 2.7% over a 10°C seasonal swing*. Its advanced multi-scale digital Doppler analysis provides the optimal combination of resolution and noise immunity. Mirror Image Processing™ eliminates sign errors and the advanced Target Set Processing™ reduces the impact of dominant targets (particles) in the stream to deliver a more representative velocity. More accurate data produces more accurate billing.

**Calculated on a baseline temperature 10ºC, assuming ±5ºC shift between seasons.*

NOTE: Mirror Image Processing™ and Target Set Processing™ are patent-pending.

Confidence in Your Data

Don't risk missing an event. Have confidence in your data before you leave the site from real time sensor diagnostic feedback and measurement flags. The LED indicator on the FL900 Series logger will also verify correct programming sensor set up and telemetry success or failure.

Less Maintenance and Troubleshooting

Submerged AV sensors are available with either oil-filled or non-oil-filled cover plates. The oil-filled models are designed for sites susceptible to fouling. The cavity is filled with high-viscosity silicon oil to reduce the collection of sand, silt and grit on the pressure transducer. Use the non-oil-filled cover plate model in sites where the pipe could run dry.

Area Velocity Data on the Web

When using the AV9000 with the Hach FL900 Series Flow Logger with cellular modem (optional) get real-time Area Velocity flow data on the internet, make remote programming changes and define site-specific alarm conditions to receive an alert on your cell phone or by email.

DW = drinking water ***WW = wastewater municipal*** ***PW = pure water / power***
IW = industrial water ***E = environmental*** ***C = collections*** ***FB = food and beverage***

Be Right™

Specifications*

AV9000 Module

VELOCITY MEASUREMENT

Measurement Method
1 MHz Doppler Ultrasound

Doppler Analysis Type
Digital Spectral Analysis

Doppler Accuracy
±1% of reading or 0.025 fps (with electronically simulated Doppler signal, -25 to +25 fps equivalent velocity)

Power Requirements
Supply voltage: 9-15 Vdc

Peak Current
<130 mA @ 12 Vdc with Sub A/V Sensor

Energy Per Measurement
<15 Joules (typical)

Operating Temperature
-18 to 60°C (0 to 140°F) at 95% RH

GENERAL ATTRIBUTES

Dimensions
5 cm H x 17.5 cm W x 13 cm L
(2.0 in. H x 6.875 in. W x 5.0 in. L)

Enclosure
PC/ABS

Environmental Rating
NEMA 6P (IP67)

Compatible Instruments
FL900 Series Flow Loggers and Sigma Submerged Area Velocity Sensors.

Compatible Software
Flo-Ware software and FL900 Series driver v1.0.4.0 or greater for local programming and reporting. When using with FL900 Series Loggers with wireless option, use with FSDATA for web access and remote programming.

Submerged Area Velocity Sensor

VELOCITY MEASUREMENT

Method
Doppler ultrasonic; twin 1 MHz piezoelectric crystals

Typical Minimum Operating Depth
2 cm (0.8cm)

Recommended Range
-1.52 to 6.10 m/s (-5 to 20 ft/sec)

Accuracy
±2% of reading or 0.05 fps**

**Uniform velocity profile, known salinity, positive flow. Field performance is site specific.*

LEVEL MEASUREMENT

Method
Pressure transducer with stainless steel diaphragm

Accuracy (static)
±0.16% full scale ±1.5% of reading at constant temp (±2.5°C)
±0.20% full scale ±1.75% of reading from 0 to 30°C (32 to 86°F)
±0.25% full scale ±2.1% of reading from 0 to 70°C (32 to 158°F)

Velocity-Induced Depth Error
Compensated based on flow velocity

Level Range
Standard: 0–3 m (0–10 ft)
Extended: 0–9 m (0–30 ft)

Allowable Level
Standard: 10.5 m (34.5 ft)
Extended: 31.5 m (103.5 ft)

GENERAL ATTRIBUTES

Air Intake
Atmospheric pressure reference is desiccant protected

Operating Temperature
0 to 70°C (32 to 158°F)

Level Compensated Temperature Range
0 to 70°C (32 to 158°F)

Material
Noryl® outer shell with epoxy potting within

Power Consumption
Less than or equal to 1.2 W @ 12 Vdc

Cable
Urethane sensor cable with air vent

Connector
Hard anodized, satisfies Military Spec 5015

Cable Lengths Available
Standard: 9, 15, 23 and 30.5 m (30, 50, 75, 100 ft)
Custom: 30.75 m (101 ft) to 76 m (250 ft) maximum

Cable Diameter
0.91 cm (0.36 in.)

Dimensions
2.3 cm H x 3.8 cm W x 13.5 cm L
(0.9 in. H x 1.5 in. W x 5.31 in. L)

Compatible Instruments
910, 920, 930, 930T, 950, 900 Max Samplers, and AV9000 Interface Analyzer Module (for use with FL900 Series Flow Loggers)

Compatible Software
For FL900 Series Loggers: Flo-Ware software and FL900 Series driver v1.0.4.0 or greater.

For Sigma meters: InSight v5.7 or greater.

Both programs can be found at http://www.hachflow.com or ordered on a disk from customer service.

**Specifications subject to change without notice.*

Engineering Specifications

AV9000 AV Analyzer Module

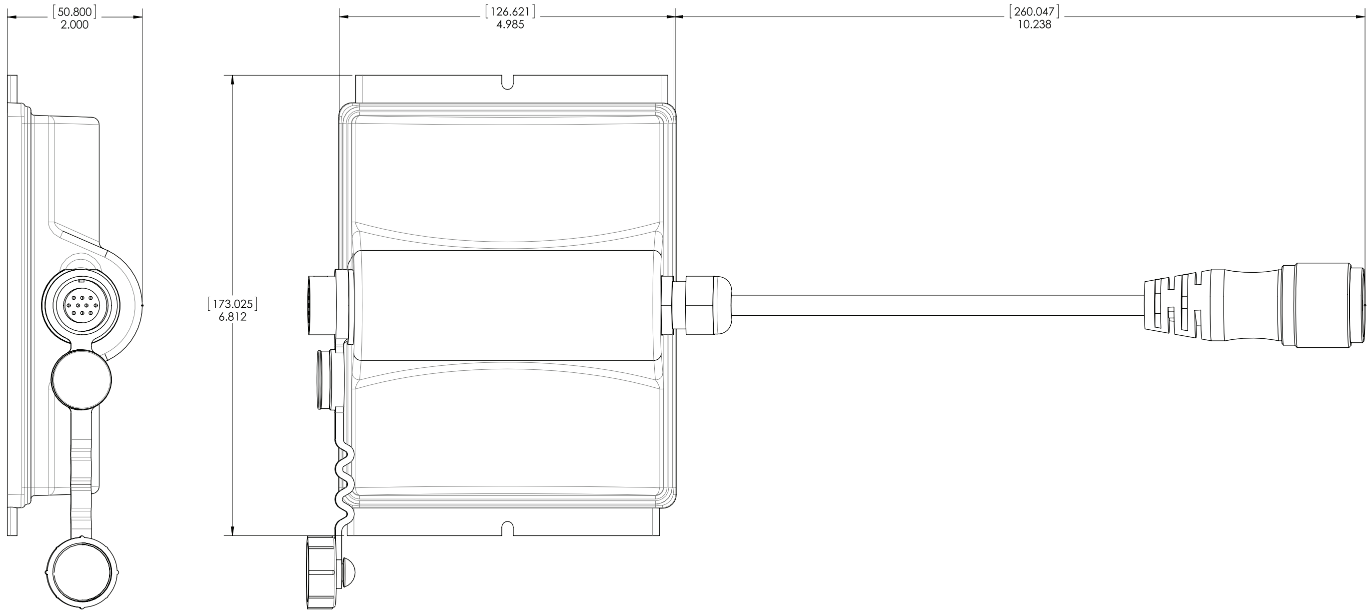
1. The module shall have the ability to perform advanced multi-scale Doppler analysis, Target Set Processing and Mirror Image Processing.
2. Flo-Ware software shall be used for programming.
3. The Doppler accuracy shall be 1% of reading (with electronically simulated Doppler, -25 to 25 fps equivalent velocity).
4. The module shall be the Hach AV9000 Area Velocity Analyzer Module manufactured by the Hach Company.

Submerged Depth/Velocity (AV) Sensor

1. The sensor shall be capable of directly measuring average velocity.
2. The method of velocity measurement shall employ transducer type that is twin 1-MHz piezoelectric crystals.
3. The method of depth measurement shall be pressure transducer with stainless steel diaphragm.
4. Velocity range shall be -1.52 to 6.10 m/s (-5 to 20 ft./s)
5. The range of depth measurement shall be 0 to 3 m (0 to 10 ft.), standard, and 0 to 9 m (0 to 30 ft.), extended.
6. The body material of the sensor shall be Noryl® plastic outer shell with epoxy potting.
7. The connector of the sensor shall be hard anodized and satisfy Military Spec 5015.
8. Power consumption of the sensor shall be less than or equal to 1.2 W at 12 Vdc.
9. The sensor shall be the Sigma AV Sensor Flow Sensor manufactured by Hach Company.

Dimensions

AV9000 AV Analyzer Module



Ordering Information

Analyzer Module

8531300	AV9000 Area Velocity Analyzer module

Submerged Area Velocity Sensors

77065-030	Non-oil filled with connector, 0 to 10 ft range, 30 ft cable
77065-050	Non-oil filled with connector, 0 to 10 ft range, 50 ft cable
77065-075	Non-oil filled with connector, 0 to 10 ft range, 75 ft cable
77065-100	Non-oil filled with connector, 0 to 10 ft range, 100 ft cable
77075-030	Non-oil filled with connector, 0 to 30 ft range, 30 ft cable
77075-050	Non-oil filled with connector, 0 to 30 ft range, 50 ft cable
77075-075	Non-oil filled with connector, 0 to 30 ft range, 75 ft cable
77075-100	Non-oil filled with connector, 0 to 30 ft range, 100 ft cable
77064-030	Oil filled with connector, 0 to 10 ft range, 30 ft cable
77064-050	Oil filled with connector, 0 to 10 ft range, 50 ft cable
77064-075	Oil filled with connector, 0 to 10 ft range, 75 ft cable
77064-100	Oil filled with connector, 0 to 10 ft range, 100 ft cable
77074-030	Oil filled with connector, 0 to 30 ft range, 30 ft cable
77074-050	Oil filled with connector, 0 to 30 ft range, 50 ft cable
77074-075	Oil filled with connector, 0 to 30 ft range, 75 ft cable
77074-100	Oil filled with connector, 0 to 30 ft range, 100 ft cable
77074-XXX	Oil filled with connector, 0 to 30 ft range, custom cable length - max 250'
7724800	Silicone oil refill kit, includes dispensing gun, dual 50 mL oil pack & hardware
7715300	Silicone oil/gel dispensing gun for oil-filled sensors

FL900 Series Flow Logger

FL900.97	FL900 Flow Logger, 1 sensor port, English
FL900AV.97	FL900 Flow Logger with AV9000 analyzer module, 1 sensor port, English

FL900 Series Flow Logger with Wireless Option

		Sensor Connector(s)	Country Code	Modem	Rain Gauge
FL90X Electronics (Flow Logger)	**Model FL90**	___	97	___	___
1 Sensor Connector		1			
2 Sensor Connectors		2			
4 Sensor Connectors		4			
None				X	
AT&T (Activated)				A	
GPRS no SIM				G	
Sprint (Inactive)				R	
Sprint (Activated)				S	
No Rain Gauge Connector					X
With Rain Gauge Connector					R

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At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

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E-mail: site@flow-tronic.com
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HACH®

Be Right™

HOBO® U20 Water Level Logger (U20-001-0x and U20-001-0x-Ti) Manual

The HOBO U20 Water Level Logger is used for monitoring changing water levels in a wide range of applications including streams, lakes, wetlands, tidal areas, and groundwater. The loggers are typically deployed in existing wells or stilling wells installed specifically for deploying the loggers. This logger features high accuracy at a great price and HOBO ease-of-use, with no cumbersome vent tubes or desiccants to maintain.

The logger uses a maintenance-free absolute pressure sensor and features a durable stainless steel or titanium housing (depending on model) and ceramic pressure sensor. The HOBO Water Level Titanium is recommended for saltwater deployment for recording water levels and temperatures in wetlands and tidal areas. The logger uses precision electronics to measure pressure and temperature and has enough memory to record over 21,700 combined pressure and temperature measurements.

HOBO Water Level Logger

Models:

- U20-001-01 (30-foot depth) and U20-001-01-Ti (30-foot depth/Titanium)
- U20-001-02 (100-foot depth) and U20-001-02-Ti (100-foot depth/Titanium)
- U20-001-03 (250-foot depth) and U20-001-03-Ti (250-foot depth/Titanium)
- U20-001-04 (13-foot depth) and U20-001-04-Ti (13-foot depth/Titanium)

Required Items:

- Coupler (COUPLER-2-B) with USB Optic Base Station (BASE-U-4) *or* HOBO Waterproof Shuttle (U-DTW-1)
- HOBOware® Pro

Accessories:

- Cable (CABLE-1-300 or CABLE-1-50) and Cable Crimp (CABLE-1-CRIMP)
- Replacement Coupler (Coupler2-B)

Specifications

Pressure and Water Level Measurements U20-001-01 andU20-001-01-Ti

Operation Range	0 to 207 kPa (0 to 30 psia); approximately 0 to 9 m (0 to 30 ft) of water depth at sea level, or 0 to 12 m (0 to 40 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 207 kPa (10 to 30 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 0.5 cm (0.015 ft) water Maximum error: ±0.1% FS, 1.0 cm (0.03 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.62 kPa (0.09 psi) maximum error
Resolution	< 0.02 kPa (0.003 psi), 0.21 cm (0.007 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-02 andU20-001-02-Ti

Operation Range	0 to 400 kPa (0 to 58 psia); approximately 0 to 30.6 m (0 to 100 ft) of water depth at sea level, or 0 to 33.6 m (0 to 111 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 400 kPa (10 to 58 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	500 kPa (72.5 psia) or 40.8 m (134 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 1.5 cm (0.05 ft) water Maximum error: ±0.1% FS, 3 cm (0.1 ft) water
Raw Pressure Accuracy**	±0.3% FS, 1.20 kPa (0.17 psi) maximum error
Resolution	< 0.04 kPa (0.006 psi), 0.41 cm (0.013 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-03 andU20-001-03-Ti

Operation Range	0 to 850 kPa (0 to 123.3 psia); approximately 0 to 76.5 m (0 to 251 ft) of water depth at sea level, or 0 to 79.5 m (0 to 262 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 850 kPa (10 to 123.3 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	1200 kPa (174 psia) or 112 m (368 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 3.8 cm (0.125 ft) water Maximum error: ±0.1% FS, 7.6 cm (0.25 ft) water
Raw Pressure Accuracy**	±0.3% FS, 2.55 kPa (0.37 psi) maximum error

Specifications (continued)

Pressure and Water Level Measurements U20-001-03 andU20-001-03-Ti (continued)

Resolution	< 0.085 kPa (0.012 psi), 0.87 cm (0.028 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-04 andU20-001-04-Ti

Operation Range	0 to 145 kPa (0 to 21 psia); approximately 0 to 4 m (0 to 13 ft) of water depth at sea level, or 0 to 7 m (0 to 23 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 145 kPa (10 to 21 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.075% FS, 0.3 cm (0.01 ft) water Maximum error: ±0.15% FS, 0.6 cm (0.02 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.43 kPa (0.063 psi) maximum error
Resolution	< 0.014 kPa (0.002 psi), 0.14 cm (0.005 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Temperature Measurements (All Models)

Operation Range	-20° to 50°C (-4° to 122°F)
Accuracy	±0.44°C from 0° to 50°C (±0.79°F from 32° to 122°F), see Plot A
Resolution	0.10°C at 25°C (0.18°F at 77°F), see Plot A
Response Time (90%)	3.5 minutes in water (typical)
Stability (Drift)	0.1°C (0.18°F) per year

Logger

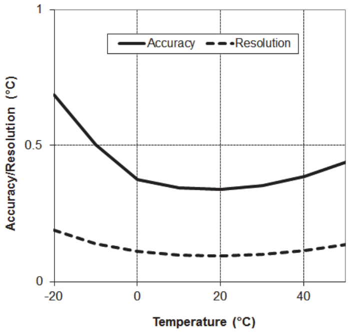
Real-time Clock	± 1 minute per month 0° to 50°C (32° to 122°F)
Battery	2/3 AA, 3.6 Volt lithium, factory-replaceable
Battery Life (Typical Use)	5 years with 1 minute or greater logging interval
Memory (Non-volatile)	64K bytes memory (approx. 21,700 pressure and temperature samples)
Weight	Stainless steel models: approximately 210 g (7.4 oz) Titanium models: approximately 140 g (4.8 oz)
Dimensions	2.46 cm (0.97 inches) diameter, 15 cm (5.9 inches) length; mounting hole 6.3 mm (0.25 inches) diameter
Wetted Materials	Stainless Steel models: 316 stainless steel, Viton® o-rings, acetyl cap, ceramic sensor Titanium models: Titanium, Viton o-rings, acetyl cap, ceramic sensor
Logging Interval	Fixed-rate or multiple logging intervals, with up to 8 user-defined logging intervals and durations; logging intervals from 1 second to 18 hours. Refer to the HOBOware software manual.
Launch Modes	Immediate start and delayed start
Offload Modes	Offload while logging; stop and offload
Battery Indication	Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile.
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* Water Level Accuracy: With accurate reference water level measurement and Barometric Compensation Assistant data

** Raw Pressure Accuracy: Absolute pressure sensor accuracy includes all pressure drift, temperature, and hysteresis-induced errors

*** Thermal Response Time: Maximum error due to rapid thermal changes is approximately 0.5%

Plot A



Software

HOBOware Pro software is required for logger operation. Using a reference water level, HOBOware Pro automatically converts the pressure readings into water level readings. The software also supports compensation for temperature, fluid density, and barometric pressure.

Communication

For launching and reading out the Water Level logger in the field, you can use a laptop computer with HOBOware Pro and an Onset Optic USB Base Station (BASE-U-4), with a coupler (COUPLER2-B) or the HOBO Waterproof Shuttle (U-DTW-1) with a coupler (COUPLER2-B).

The optical interface allows the logger to be offloaded without breaking the integrity of the seals. The USB compatibility allows for easy setup and fast downloads.

Barometric Compensation

The HOBO Water Level Logger records absolute pressure, which is later converted to water level readings by the software. In this application, absolute pressure includes atmospheric pressure and water head. Atmospheric pressure is nominally 100 kPa (14.5 psi) at sea level, but changes with weather and altitude. Left uncompensated, barometric variations could result in errors of 0.6 m (2 ft) or more.

To compensate for barometric pressure changes, you can use the HOBO U20 Water Level Logger as a barometric reference. The barometric reference is typically deployed in the same well or at the same location as the water level of interest, but rather than being placed in the water column, it is deployed above the water in air.

Barometric pressure readings are consistent across a region (except during fast-moving weather events), so you can generally use barometric pressure readings that are taken within 15 km (10 miles) of the logger or more, without significantly degrading the accuracy of the compensation.

Therefore, one U20 or weather station (HOBO U30 or H21 recommended) can be used to compensate all of the water level loggers in an area. The U20-001-01 model with its 0–9m (0–30 ft) range or the U20-001-04 with its 0–4 m (0–13 ft) range are both good barometric references due to their smaller range, temperature-compensated accuracy, and rugged stainless steel case. HOBOware Pro includes a Barometric Compensation Assistant for easy and accurate barometric compensation.

LEDs

A light (LED) in the communications window of the logger confirms logger operation.

The following table explains when the logger blinks during logger operation:

When:	**The Light:**
The logger is logging	Blinks once every one to four seconds (the shorter the logging interval, the faster the light blinks); blinks when logging a sample
The logger is awaiting a start because it was launched in Start At Interval or Delayed Start mode	Blinks once every eight seconds until logging begins

Calibration

The pressure sensor in each HOBO Water Logger is individually calibrated. During calibration, raw pressure sensor data is collected at multiple pressures and temperatures over the calibrated range of the logger (see the specifications table). This data is used to generate calibration coefficients that are stored in the logger's non-volatile memory. The calibration coefficients are then checked to be sure that the logger meets its stated accuracy over the calibrated range.

The pressure sensor can be used at pressures and temperatures that are outside of the calibrated range, but the accuracy cannot be guaranteed.

Important: Never exceed the burst pressure of the sensor!

Sleep Mode

The logger consumes significantly more power when it is "awake" and connected to a base station or shuttle. To conserve power, the logger will go into a low-power (sleep) mode if there has been no communication with your computer for 30 minutes. To wake up the logger, remove the logger from the coupler, wait a moment, then re-insert the logger.

Sample and Event Logging

The logger can record two types of data: samples and events. Samples are the sensor measurements recorded at each logging interval (for example, the pressure every minute). Events are independent occurrences triggered by a logger activity, such as Bad Battery or Host Connected. Events help you determine what was happening while the logger was logging.

The logger stores 64K of data, and can record over 21,700 samples of pressure and temperature.

Setup

Before you deploy the HOBO U20 Water Level Logger in the field, perform the following steps in the office:

1. Start HOBOware.
2. Connect the logger to the computer. See the next section.
3. Verify the status. Click Status on the toolbar and observe that the absolute pressure is near barometric pressure for the location and the temperature is near the actual temperature.

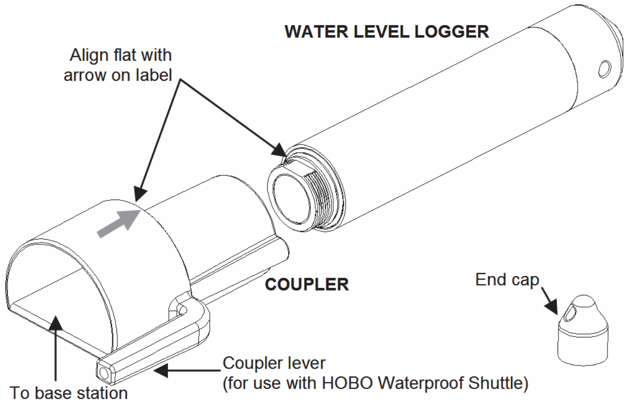
4. Launch the logger. See the *HOBOware User's Guide* for details.
    - Make sure both *Abs. Pressure* and *Temperature* are selected (temperature is required for temperature compensation of pressure).
    - *Logging Battery Voltage* is not essential since you can check the battery voltage using the Status screen at launch or readout of logger.

Connecting the Logger to a Computer

The HOBO Water Level Logger requires a coupler (COUPLER2-B) and USB Optic Base Station (BASE-U-4) or HOBO Waterproof Shuttle (U-DTW-1) to connect to the computer.

1. Follow the instructions that came with your base station or shuttle to attach the base station or shuttle to a USB port on the computer.
2. Unscrew the black plastic end cap from the logger by turning it counter-clockwise.
3. Attach the coupler to the base station or shuttle
4. Insert the logger into the coupler with the flat on the logger aligned with the arrow on the coupler label. Gently twist the logger to be sure that it is properly seated in the coupler (it should not turn).

NOTE: If you are using the Waterproof Shuttle, briefly press the coupler lever to put the shuttle into base station mode.

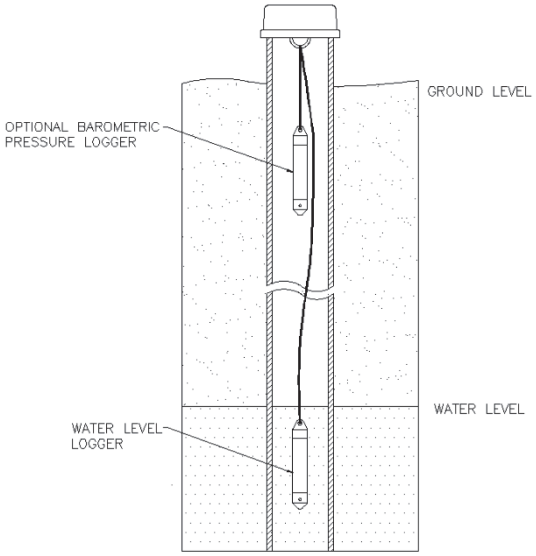


If the logger has never been connected to the computer before, it may take a few seconds for the new hardware to be detected by the computer.

Important: USB communications may not function properly at temperatures below 0°C (32°F) or above 50°C (122°F).

Deploying the Logger

The HOBO Water Level Logger is designed to be easy to deploy in many environments. The logger uses an absolute pressure sensor, so no vent tube is required. The small size of the logger is convenient for use in small wells and allows the logger to be mounted and/or hidden in the field.



Deployment Guidelines

Full Temperature Equilibrium

The pressure sensor is temperature compensated over the range of 0° to 40°C (32° to 104°F). To obtain the highest level of accuracy, the logger should be allowed to come to full temperature equilibrium (approximately 20 minutes) before the reference level is recorded.

Sudden Temperature Changes

Sudden temperature changes should be avoided. When deploying a HOBO Water Level Logger for barometric pressure reference, some consideration should be made to minimize the rate of temperature fluctuations. Ideally, the barometric pressure reference logger should be hung several feet below ground level in an observation well where ground temperatures are stable (while making sure the logger remains above the water level). If that is not possible (or if a well is not used), try to put the logger in a location where it will not be subject to rapid daily temperature cycles.

Venting

When deploying a HOBO Water Level logger in a well, make sure the well is vented to the atmosphere. Typically, a small hole can be drilled in the well cap to ensure that the pressure inside and outside the well is at equilibrium. If this is not possible, the barometric pressure reference logger should be used inside the same well.

Wire

Use a no-stretch wire to hang the water level logger. Any change in length of the wire will result in a 1-to-1 corresponding error in the depth measurement. Always pull-test a cable prior to deploying a logger in a well to make sure it does not stretch.

Stilling Well
If you are deploying the logger in a lake, river, or stream, you must first build a stilling well to protect the logger from vibration, shock, and movement.

A simple stilling well can be constructed with PVC or ABS pipe. A properly constructed stilling well helps to protect the logger from currents, wave action, and debris. Suspend the logger in the stilling well so it is always underwater, but not on the bottom to be buried by silt.

For more information, see the Technical Application Note for Constructing a Stilling Well at:
http://www.onsetcomp.com/water_level_stilling_well.html

Burst Pressure
Be very careful not to exceed the burst pressure for the logger. The pressure sensor will burst if the maximum depth is exceeded (see specifications table). The logger should be positioned at a depth where the logger will remain in the water for the duration of the deployment, but not exceed the rated bursting depth.

Deployment Procedure

1. Cut wire to suspend logger.
    a. Measure the physical depth to the surface of the water from the suspension point.
    b. Cut a piece of stranded, stainless steel wire (Teflon coated is best) so that the logger will be deep enough to always be in the water. Estimate the low water level and make the cable length such that the logger will be about 2 feet below that level.
2. Attach the wire to the suspension point and to the logger cap.
3. Relaunch the logger if desired (if a PC or a HOBO U-Shuttle is available).
4. Lower the logger into the well or stilling well.
5. Measure the water depth from the desired reference point (top of pipe, ground level, or sea level).
    - To maximize accuracy, allow 20 minutes after deploying the logger before measuring water depth to allow the logger to reach temperature equilibrium with the water.
    - If the well is too small in diameter to measure the water depth after deployment, measure the water depth before deployment, then deploy the logger immediately and record deployment time.
    - For well deployments: If the water level surface is below the reference point (such as referencing groundwater measurements to the top of the well), record the water level as a negative number. If the water level surface is above the reference point (such as height above sea level), record the water level as a positive number.
    - For lake, stream, and river deployments: If the water level is being referenced to some point above the logger (such as the top of the stilling well), record the water level as a negative number. If the water depth is being referenced to a point below the water surface such as the bottom of the stream, record the water level as a positive number.
6. Record the reference measurement date and time.

Deploying a U20 Logger for Barometric Pressure Data (Optional)

If you are using a U20 logger to record barometric pressure data, install one logger in one of the wells as follows:

1. Cut wire for suspending the logger.
    a. Measure the physical depth to the surface of the water from the suspension point.
    b. Cut a piece of stranded, stainless steel wire (Teflon coated is best) so that the logger will hang about 2 feet below the ground surface but always above the water surface.
2. Attach the wire to the suspension point and to the logger cap.
3. Relaunch the logger if desired (if a PC or a HOBO U-Shuttle is available)
4. Lower the logger into the well or stilling well. Make sure the logger does not go below the water surface.
5. Record the deployment time.

Collecting Data

For reading out the Water Level logger in the field, you can use either of the following:

- Laptop computer with HOBOware Pro and an Optic USB Base Station (BASE-U-4), with a coupler (COUPLER2-B)
- HOBO Waterproof Shuttle (U-DTW-1) with a coupler (COUPLER2-B)

1. Measure the water depth using the original reference point with the correct sign.
2. Record depth and date and time.
3. Pull the logger out of the well.
4. Remove the logger from its cap, leaving the suspension undisturbed.
5. Readout the data using one of the options listed above.
6. Save the data in a test folder location.
7. Redeploy the logger (optional). See below.

Barometric Pressure Data
To read out a U20 logger used for barometric pressure data:

1. Remove the logger from the well.
2. Readout the data using one of the options listed above.
3. Save the data in a test folder location.
4. Redeploy the logger (optional). See the next section.

Redeploying the Logger
If you are redeploying the logger, you must first make sure that it is launched. If you used the HOBO Waterproof Shuttle to offload data, the shuttle automatically performs a synchronized relaunch of the logger so that data is logged on the same measurement intervals. If you wish to change the launch settings, you must launch the logger using HOBOware Pro.

The existing suspension can be reused as long as the water level logger remained in the water and the barometric logger remained out of the water for the entire test interval. Take a new reference reading with the date and time as described in *Collecting Data*. Record this information in your field notebook to use later to calibrate your data, which will zero out any drift error.

Processing Data using Barometric Pressure Data

To determine water level using barometric pressure data, use the **Barometric Compensation Assistant** in HOBOware Pro, as described below.

If you are using barometric pressure data from a HOBO weather station, you can use the data file as if it were U20 barometric data. For data from sources other than Onset products, see *Barometric Data from Other Sources* below.

1. In HOBOware Pro, open the water depth data file. The **Plot Setup** window appears.
2. Uncheck all boxes except *Abs. Pressure*.
3. Run the Barometric Compensation Assistant.
    a. Click the **Process** button.
    b. Select the water density box that best describes the water that you are measuring or enter the actual water density.
    c. Check the *Use a Reference Water Level* box and enter the reference water level that you measured at the beginning of the deployment.
    d. Select the date and time from the pull-down menu that is closest to the recorded date/time for the measurement. If you measured the depth before deployment because of pipe size, then select a date/time after the start of the deployment.
    e. Check *Use Barometric Data file*.
    f. Click the **Choose** button. This will allow you to select the data file to use for barometric pressure compensation.
    g. Select and open the data file.
    h. Click the **Create New Series** button. A new Plot Setup window appears.
4. Select the *Water Level* box and any other series that you want plotted. Click the **Plot** button to obtain a plot of the resulting water level data.

Measurement Error
Measurement error can be caused by manual measurement error, sensor drift, or change in the suspension cable length. To quantify measurement error (which is ideally zero), compare the calculated water level at the end of the plot with the water level measured just before you removed the water level logger.

Barometric Data from Other Sources

Third Party Weather Station or Barometric Logger
If you choose to use barometric pressure from a third party weather station or barometric logger, you need to convert the date, time, and pressure data to a text file with special header requirements. For information on how to set up the text file, see the HOBOware Help or User Guide. It is easiest to do this work in EXCEL and then save it as a text file.

Online Weather Station
If you choose to use barometric pressure from an online weather station, such as the National Weather Service, the measured barometric pressure is modified to be at sea level. This sea level pressure is useable since all pressure offsets are zeroed when you enter the reference measurement.

In the Barometric Compensation Assistant, when you select the Barometric Data File, select the text file that you generated. HOBOware Pro will ask for the data format and data separation characters (tab or comma) and then import the barometric data.

Maintenance

Protecting the Logger

Important: Do not attempt to open the logger housing!
Unscrewing the metal nose cone of the logger will cause serious damage to the pressure sensor and logger electronics. There are no user serviceable parts inside the case. Contact Onset technical support if your logger requires servicing.

This logger can be damaged by shock. Always handle the logger with care. The logger may lose its calibrated accuracy or be damaged if it is dropped. Use proper packaging when transporting or shipping the logger.

Biofouling
Periodically inspect the logger for fouling. Biological growth on the face of the pressure sensor will throw off the pressure sensor’s accuracy. Organisms that grow inside the sensor nose cone and on the sensor itself can interfere with the sensor’s operation and eventually make the sensor unusable. If the deployment area is prone to biofouling, check the logger periodically for marine growth.

Solvents
Check a materials-compatibility chart before deploying the logger in locations where untested solvents are present.

The logger is shipped with Viton O-rings installed. Viton has an excellent resistance to most solvents and is suitable for deployments in water that contain a mixture of most fuels, solvents and lubricants. However, the Viton O-rings are sensitive to polar solvents (acetone, ketone), ammonia, and brake fluids.

The black acetyl cap is provided to help protect the communications window. Acetyl is resistant to most solvents, fuels, and lubricants.

The polycarbonate communications window is sealed as an additional barrier to water and dirt entering the logger housing.

Compensating for Drift

All pressure sensors drift over time. The drift for the pressure sensor and electronics in the HOBO Water Level logger is less than 0.3% FS (worst case) per year. In most applications, drift is not a significant source of error, because the offset created by any drift is zeroed out when you take a manual reference level measurement and use the logger software to automatically calculate the level readings relative to the reference measurement. In effect, you are re-zeroing the sensor each time you apply a reference reading to the data file.

Pressure sensor drift matters only when absolute pressure values are needed, or if there are no recent reference level or depth measurements available. For example, if the logger is deployed for one year and no new reference level readings are taken during the deployment, it is possible that the sensor could have drifted as much as 0.3% FS by the end of the deployment.

It is possible to determine the actual amount of drift during a deployment if a reference level is taken at the beginning and the end of a long-term deployment. The results of applying the two different reference levels (once at the beginning of the data file, and again at the end of the data file) can be compared. Any difference between the files indicates the amount of sensor drift (assuming accurate reference levels).

Verifying Accuracy

You can check the *differential accuracy* of your loggers for water level measurements by deploying the loggers at two depths and comparing the difference in level readings. When verifying the accuracy this way, be sure to allow the loggers' temperature to stabilize at each depth. Use the logger software to convert the readings from pressure to level. The level readings should be taken close enough together that the barometric pressure does not change.

You can check the *absolute pressure accuracy* of your HOBO Water Level Logger by comparing its ambient pressure readings to a second HOBO logger. Their readings should be within each other's specified accuracy. Alternatively, you can check the pressure reading against an accurate local barometer. If you use a non-local source of barometric information, such as the NOAA website, adjust for altitude.

Recalibration

If you would like to have your logger's absolute accuracy verified against a NIST standard, or to have your logger recalibrated, contact Onset or your place of purchase for pricing and return arrangements.

The Battery

The battery in the HOBO Water Level Logger is a 3.6 Volt lithium battery.

Battery Life

The battery life of the logger should be about five years or more. Actual battery life is a function of the number of deployments, logging interval, and operation/storage temperature of the logger. Frequent deployments with logging intervals of less than one minute, and continuous storage/operation at temperatures above 35°C will result in significantly lower battery life. For example, continuous logging at a one-second logging interval will result in a battery life of approximately one month.

To obtain a five-year battery life, a logging interval of one minute or greater should be used and the logger should be operated and stored at temperatures between 0° and 25°C (32° and 77°F).

Voltage

The logger can report and log its battery voltage. If the battery falls below 3.1 V, the logger will record a "bad battery" event in the datafile. If the datafile contains "bad battery" events, or if logged battery voltage repeatedly falls below 3.3 V, the battery is failing and the logger should be returned to Onset for battery replacement.

Replacing the Battery

To have your logger's battery replaced, contact Onset or your place of purchase for return arrangements. Do not attempt to replace the battery yourself. Severe damage to the logger will result if the case is opened without special tools, and the warranty will be voided.

⚠ **WARNING:** Do not cut open, incinerate, heat above 100°C (212°F), or recharge the lithium battery. The battery may explode if the logger is exposed to extreme heat or conditions that could damage or destroy the battery case. Do not dispose of the logger or battery in fire. Do not expose the contents of the battery to water. Dispose of the battery according to local regulations for lithium batteries.

HACH US9000 ULTRASONIC SENSOR SERIES:

Flow Monitoring & Level Alarming

Applications

- Wastewater
- Collection Systems
- Industrial Water

US9001 Down-Looking Ultrasonic Sensor

US9003 In-Pipe Ultrasonic Sensor

Hach US9001B Ultrasonic Sensor with Ballast

More ultrasonic sensor options to solve more flow monitoring challenges.

The Hach US9000 Ultrasonic Sensor Series provides you with a variety of independent level-measuring capabilities, giving you even more ways to ensure your flow data collection is consistent and accurate. These state-of-the-art non-contact sensors are excellent for both level measurement and alarming, or paired with a submerged AV sensor for redundant level measurement.

Hach US9001 Down-Looking Ultrasonic Sensor

Mounted perpendicular to the flow surface, the Hach US9001 Down-Looking Ultrasonic Sensor is often used with a hydraulic structure to determine flow, including weirs, flumes and configurable level-area and head-flow tables.

Hach US9001B Ultrasonic Sensor with Ballast

The US9001B resourcefully takes the Down-Looking Ultrasonic Sensor and adds cable-straightening ballast to create a highly reliable SSO and CSO alarming solution when coupled with a wireless Hach FL900 Series Flow Logger. And with highly accessible top-side mounting options that don't require confined space entry, installation and maintenance is quick and simple, making this an extremely economical approach. So now you can capture data from more sites in your network without crushing your budget. Simply use the proven accuracy of the FLO-DAR® AV Sensor to monitor your critical primary sites, and then employ this more economical alarming option at secondary locations to smartly expand your system awareness and still live within your financial plan. Plus, you can also capture additional flow data using Manning's equation.

Hach US9003 In-Pipe Ultrasonic Sensor

Configured to eliminate inherent ultrasonic deadband, the Hach US9003 provides accurate measurements even in near-full pipe conditions. This clever approach places the transducer parallel to the flow surface within an engineered enclosure that contains a 45° reflector. As a result, you can effectively collect flow level data in tight open-channel scenarios while greatly reducing this non-contact sensor's chances of fouling.

Constant Awareness

Combined with a wireless Hach FL900 Series Flow Logger to transmit data and alarms right to your desktop or mobile phone, these ultrasonic monitoring and alarming solutions from Hach are extraordinarily convenient. And real-time data is available 24/7 through FSDATA Online Data Manager software from anywhere you have internet access. Not only does this dramatically increase your timely knowledge of every event, it also reduces site visits for data collection, meter adjustments, or sensor cleaning.

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Specifications*

Hach US9001 Down-Looking Ultrasonic Sensor

Dimensions	Ø x L: Ø 3.02 x 10.31 cm (Ø 1.19 x 4.06 in.)
Enclosure	316 stainless steel
Weight	0.76 kg (1.68 lb) with 9.14 m (30 ft) cable
Mounting	Wall mount, adjustable arm mount
Frequency	120 kHz
Accuracy	0.2 mm/25.4 mm (0.008 in./in.) from the calibration point at steady state temperature, still air and ideal target
Measurement Range	13.34 to 396.24 cm (5.25 to 156 in.)
Power Requirements	12 VDC, 0.0416 A, 0.5 W
Operating Temperature	–18 to 60°C (0 to 140°F)
Operating Humidity	0 to 95%, non-condensing
Storage Temperature	–40 to 60°C (–40 to 140°F)
Resolution	2.54 mm (0.01 in.)
Cable Jacket Material	Polyurethane
Cable Diameter	6.10 mm (0.24 in.)
Cable Length	9.14 m (30 ft), 91.44 m (300 ft) maximum
Beam Angle	9° (half angle typical)
Enclosure Rating	NEMA 6P, IP68
Compatible Instrument	Hach FL900 Series Flow Logger
Certifications	CE

Hach US9001B Ultrasonic Sensor with Ballast

Specifications are identical to the US9001 Down-Looking Ultrasonic Sensor, plus the following Ballasting Kit:

Length	343.4 mm (13.52 in.) - Ballast Only 403.9 mm (15.9 in.) - Ballast with Sensor
Diameter	40.6 mm (1.60 in.)
Weight Total	1179.3 g (2.6 lb)

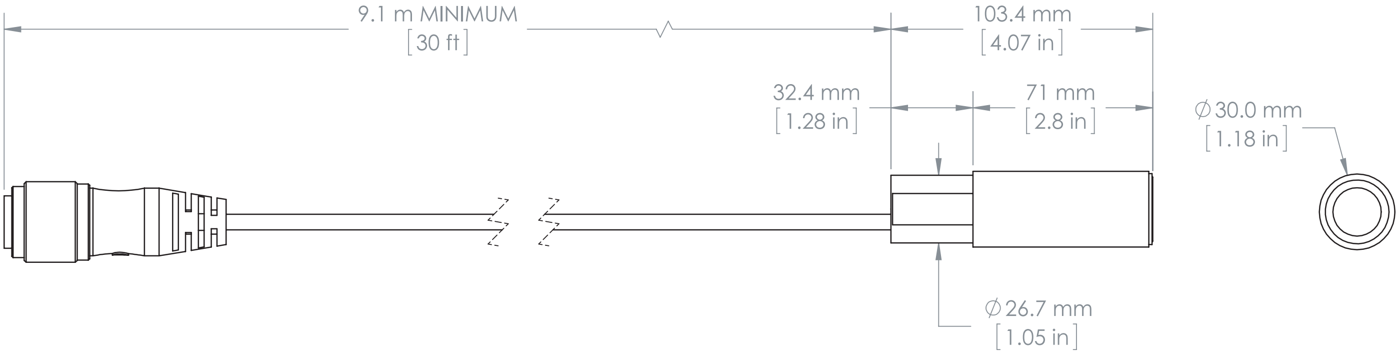
Hach US9003 In-Pipe Ultrasonic Sensor

Dimensions	Ø 4.06 x 28.04 cm (Ø 1.6 x 11.04 in.)
Enclosure	316 stainless steel and ABS
Weight	0.92 kg (2.03 lb) with 9.14 m (30 ft) cable
Mounting	In-pipe mount
Frequency	120 kHz
Accuracy	0.2 mm/25.4 mm (0.008 in./in.) from the calibration point at steady state temperature, still air and ideal target
Measurement Range	0 to 382.91 cm (0.00 to 150.75 in.)
Power Requirements	12 VDC, 0.0416 A, 0.5 W
Operating Temperature	–18 to 60 °C (0 to 140 °F)
Operating Humidity	0 to 95%, non-condensing
Storage Temperature	–40 to 60 °C (–40 to 140 °F)
Resolution	2.54 mm (0.01 in.)
Cable Jacket Material	Polyurethane
Cable Diameter	6.10 mm (0.24 in.)
Cable Length	9.14 m (30 ft), 91.44 m (300 ft) maximum
Beam Angle	6° (half angle typical)
Enclosure Rating	NEMA 6P, IP68
Compatible Instrument	Hach FL900 Series Flow Logger
Certifications	CE

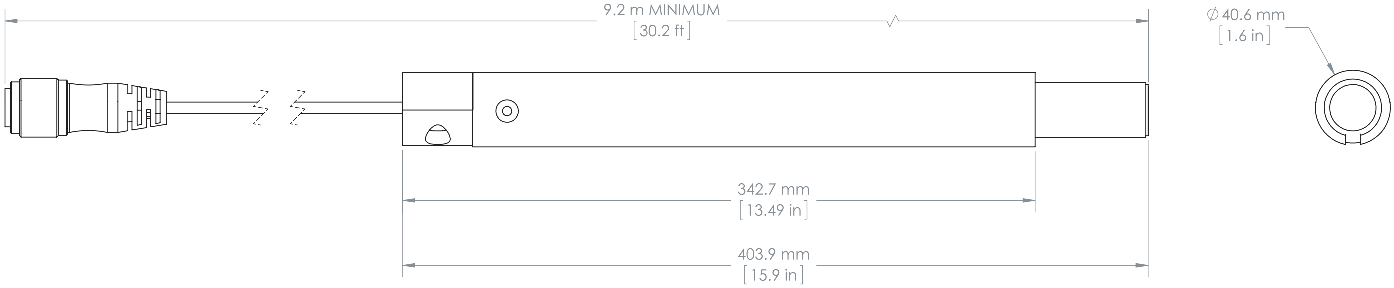
**Subject to change without notice.*

Dimensions

Hach US9001 Digital Down–Looking Ultrasonic Sensor



Hach US9001B Ultrasonic Sensor with Ballast



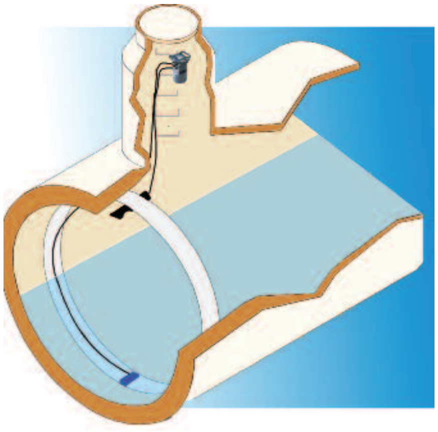
Hach US9003 Digital In-Pipe Ultrasonic Sensor

Installation

Hach US9001 Down-Looking Ultrasonic Sensor

Hach US9001B Ultrasonic Sensor with Ballast

Hach US9003 In-Pipe Ultrasonic Sensor



Ordering Information

9487100	US9001 Ultrasonic Down-looking Sensor, 9.1 m (30 ft) cable
9487300	US9003 Ultrasonic In-pipe Sensor, 9.1 m (30 ft) cable
9088800	US9001B Ultrasonic Sensor with Ballast, suspension kit and mounting hardware
9088200	Suspended Ballast Component Kit (sensor sold separately)
9088600	Calibration Target for US9001B
245000501	Q-Stick pole 12.4-7.3 m (8-24 ft) for calibration target

Cable Options for All Sensors in Series

9489000	Extension cable with connectors, 15.2 m (50 ft)
9488100	Extension cable, 82.3 m (270 ft), bare wire one end
9488000	Extension kit for conduit, includes: 82.3 m (270 ft) cable with bare wires and junction box with 61 cm (24 in.) cable and connector to logger *Note: Order the ultrasonic sensor, dispensing gun, and gel cartridges separately.*
7725600	Gel cartridges (Qty: 3) with feed tubes (Qty: 3), for the junction box
7715300	Dispensing gun for gel cartridge
9488200	Junction box with 61 cm (24 in.) cable for junction box to FL90X connection *Note: Order the dispensing gun and gel cartridges separately.*

US9003 Mounting Hardware Options

4021	15.2 cm (6 in.) spring ring
4022	20.3 cm (8 in.) spring ring
4023	25.4 cm (10 in.) spring ring
4024	30.5 cm (12 in.) spring ring
9706100	Scissor band for 38.1 (15 in.) pipe
9706200	Scissor band for 45.7 cm (18 in.) pipe
9706300	Scissor band for 53.3 (21 in.) pipe
9706400	Scissor band for 61 cm (24 in.) pipe
9706500	Scissor band for 68.6 cm (27 in.) pipe
9706600	Scissor band for 76.2 cm (30 in.) pipe
9706700	Scissor band for 83.8 cm (33 in.) pipe
9706800	Scissor band for 91.4 cm (36 in.) pipe
9706900	Scissor band for 106.7 cm (42 in.) pipe
3766	Scissor band for 38.1-106.7 cm (15-42 in.) pipe
3868	Mounting clip
3875	Mounting bracket, permanent

US9001 Mounting Hardware Options

2904	Mounting bracket, floor or wall, adjustable
2974	Mounting bracket, wall, permanent

US9001B Mounting Hardware Options

9088100	Standard mounting hardware kit (includes bracket, anchor, nut & washer)
9542	Spanner bar for 457.2-685.8 cm (18-27 in.) pipe
9557	Spanner bar for 711.2-1219.2 cm (28-48 in.) pipe
5713000	Instrument support bracket

For additional information on products mentioned in this datasheet, request the following literature:

Hach Wireless Level-Alarming Network Extension (LIT2806)
Redundant-Level Metering System (LIT2805)
Hach FL900 Series Flow Logger (DOC053.53.35081)
Hach FSDATA Online Data Manager Software (LIT2707)

HACH COMPANY World Headquarters: Loveland, Colorado USA

United States: 800-368-2723 tel 970-619-5150 fax hachflowsales@hach.com
Outside United States: 970-622-7120 tel
hachflow.com

LIT2804 Rev 2
Printed in U.S.A.

Be Right™

MASSASONIC™

FlatPack Series Sensor

Close Range | Uneven Surfaces | Reliable | Distance Measurement

MassaSonic™ FlatPack Sensors are low profile designed ultrasonic transmitter modules. They are optimized to provide continuous non-contact distance measurement of fluids, pastes, or uneven solid bulk materials in constrained working zones for application ranges from 1 inch (25 mm) to 13 feet (4 m). Incorporating state-of-the-art dual-transducer ultrasonic technology and processing algorithms, all FlatPack Series Sensors provide precision measurement for factory automation, warehouse materials control, pipe and conveyor belt level monitoring, or tank level applications with non-uniform surfaces.

FlatPack Sensors include an advanced diagnostic feature that will retrieve the ultrasonic waveforms for analysis and display it on a computer to aid users debugging complex installations. All available models are RoHS compliant, CE certified, and IP68 rated. Because of the unique dual transducer design with 15° beam angles, the maximum range capabilities will be less affected by solid materials with uneven surfaces than occurs with single transducer sensors with narrower beam angles.

FlatPack Sensors are field proven designs and come in a PVC housing suitable for use in all-weather resistant moderate chemical environ ments from -40°C to 70°C. An integrated mounting plate with preformed holes is provided for easy installation. All models are equipped with continuous temperature compensation to ensure precise speed of sound calibration and measurement accuracy. Some other user friendly features include diagnostic and monitoring outputs, protection from over voltage, short circuits, and reverse polarity.

Operating from 12 to 24 V DC, all Massa FlatPack Series Sensors provide a linear output of either 0 to 10 V DC or 4-20 mA, that are proportional to the measured distance to the target. The output range is readily programmable to accommodate a wide variety of user specific set-up and application conditions. In addition, this output voltage can be set to operate as a digital switch within zones defined by specified target set-point distances, enhancing the sensor's flexibility for use in non-routine applications.

The measurement parameters and outputs are programmed using a common standard RS-485 data link to ensure set-up uniformity. Compatible with Microsoft Windows® operating systems using a USB/RS-485 or RS-232/RS-485 converter, up to 32 sensors can be connected in parallel onto the same multi-drop communication network using the supplied protocol. This network also enables users to remotely program their sensors and read target distances for quick integration into control applications. All FlatPack Sensors are adjustable for sampling rate, averaging measurement, analog output slope, loss-of-echo time-out, set point hysteresis (digital switch mode) and provide a software sensor transmit trigger.

Massa FlatPack Series Sensors provides versatile distance measurement for non-uniform liquid or solid surfaces where mounting headroom is restricted or a minimal deadband is desired for accurate ranging with an affordable cost of ownership.

FlatPack Series Sensor

FEATURES

- Dual Transducers and Short Dead Band
- Works on Uneven Solids or Liquids
- Temperature Compensated
- Low Cost of Ownership (CoO)
- Up to 32 Sensors on RS-485 Multi-Drop Network
- Variety of Easy User Programmable Customizations
- Tamperproof & Rugged
- IP68 Enclosure Rating
- Accurate Under Demanding Environmental Conditions

APPLICATIONS

- Liquid Level Control
- Uneven Solids Control
- Bulk Material Management
- Pipe and Conduit Blockage Detection
- Conveyor Belt, Hopper and Chute Monitoring
- Position Detection

CE RoHS COMPLIANT

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FlatPack Series Ordering Information

FlatPack Series Ordering Code

FlatPack / S – V – 160 – P – W – 30 – 0

Example: FlatPack/S-V-160-P-W-30-0

Model Type
S: FlatPack (standard)

Analog Output Options
V: 0-10 Volt
I: 4-20 mA

Sensing Range Options
95: 4 inches to 13 feet for FlatPack (standard)
160: 1 inch to 5 feet for FlatPack (standard)

Housing Material Options
P: PVC

Cable Termination Options
W: Tinned Leads
***C1**: Bulgin Connector P/N PX0729/P

Cable Length Options
***6**: Six (6) feet
***15**: Fifteen (15) feet
30: Thirty (30) feet

Nonstandard Configurations
0: None

**Special Order Options*

Optional Items:

Serial Port Converters: USB/RS-485, P/N 8448-1 or RS-232(DB9)/RS-485, P/N 7868-1
Massa Software & Manuals: Go to **www.massa.com** to download the latest versions

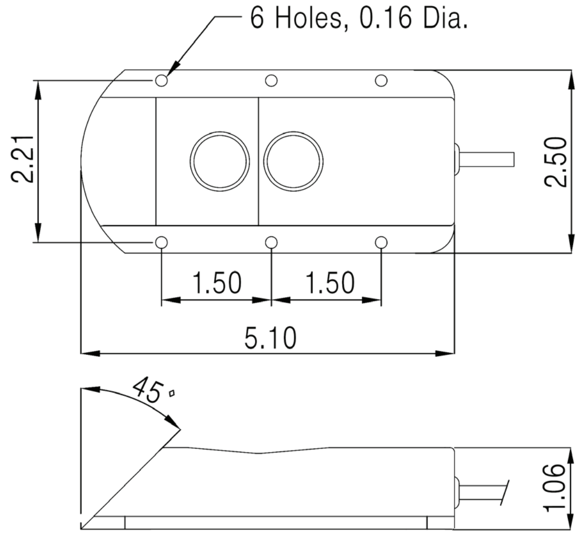
FlatPack Series Performance Specifications

(Typical 24 V DC, 22°C, and 50% RH Air)

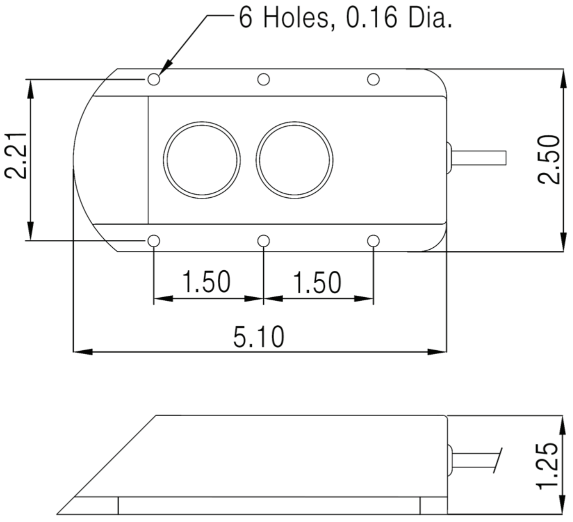
Performance		
Target Detection Distances	**Short Range (160 kHz)** 1 inch (25 mm) to 5 feet (1.5 m)	**Medium Range (95 kHz)** 4 inches (100 mm) to 13 feet (4 m)
Measurement Resolution	0.01 inches (0.25mm)	
Measurement Accuracy	± 0.1% of Target Range	
Echo Detection Sensitivity	User Selectable	
System Beam Angle	15° Conical	
Response Time	60 mS	
Resolution	11 bits	
Temperature Compensation	Internal Probe	
Mechanical *(See Outline Drawings)*		
Housing Material	PVC	
Transducer Surface	MassaPlast 102 (custom PPA)	
Cable	5 Conductor, 24 AWG, Shielded, PVC Jacket [User Extendable for RS-485 Communication to 5,000 feet (1,500m)]	
Environmental		
Operational Temperature	-40°C to 70°C	
Storage Temperature	-40°C to 85°C	
Relative Humidity	0 to 95%, non-condensing	
Enclosure Rating	IP68	

FlatPack Series User Interface Specifications

	Voltage Output Models	Current Output Models
Programmable Outputs	0 to 10 Volts	4-20 mA
Power Required	12 V DC to 24 V DC (reverse polarity protected), 30 mA, typical	12 V DC to 24 V DC (reverse polarity protected), 30 mA, typical (not including I-out)
Setpoints *(Progammable options in range min. to > max. detection range)*	0 or 10.25 V DC	0 or 20.5 mA DC
Output Impedance	100 ohms (both operational modes)	N/A
Current Loop Output	N/A	4 to 20 mA or 0 to 20 mA DC sourcing, invertible *Factory Default: 4 to 20 mA DC*
Zero & Span Voltage or Current	Programmable from 0 to 10.25 V DC *Factory Default: 0 to 10.0 V DC*	Programmable from 0 to 20.5 mA DC *Factory Default: 4 to 20.0 mA DC*
Loss of Echo Voltage or Current	Programmable from 0 to 10.25 V DC *Factory Default: 10.25 V DC*	Programmable from 0 to 20.5 mA DC *Factory Default: 20.5 mA DC*
Zero & Span Distance	Each Programmable over a range from min. distance to greater than max. distance *Factory Default:* ***160 kHz**: from 1 inch to 5 feet* ***95 kHz**: from 4 inches to 13 feet*	
Trigger Modes	Internal or Software Trigger	
Target Distance Averaging	Rolling Averages: from 1 to 32 samples, or Boxcar Average: from 1 to 1,024 samples *Factory Default: 1*	
Loss of Echo Time-Out	Programmable from 1 to 254 consecutive samples missed before time-out *Factory Default: 1*	
Sampling Rate	0.1 Hz to 20 Hz in 0.1 Hz increments *Factory Default: 10 Hz*	
Communications Converter	USB/RS-485 or RS-232/RS-485 with automatic send data control	
Operating System	Windows 10, 8, 7, Vista, and XP SP3	



160 kHz FlatPack Sensor
Outline Dimensions *(inches)*



95 kHz FlatPack Sensor
Outline Dimensions *(inches)*

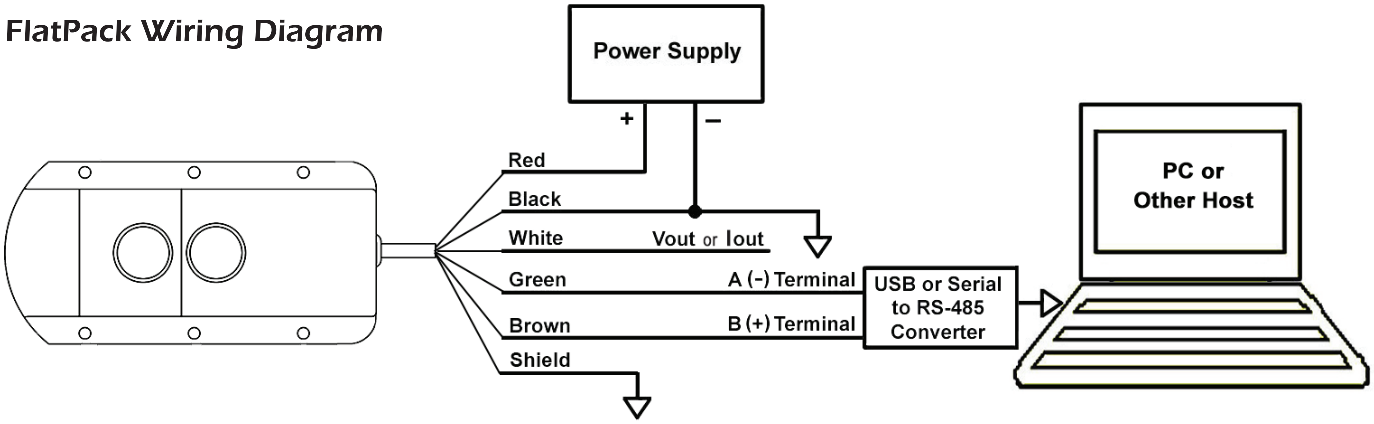
MASSASONIC™

FlatPack Series Wiring and Connector Information

To operate a MassaSonic™ FlatPack Series Sensor, it is only necessary to connect its red and black wires to a DC battery or power supply (12 to 24 V DC) as shown in the diagram below. The white wire will then indicate the distance to the target or its position to the setpoint.

To change the programmable parameters, or to observe the target distance digitally with the user-friendly software, the sensor can be connected to a computer or other host system with either an optionally supplied USB/RS-485 or RS-232/RS-485 converter. Before more than one FlatPack Sensor can be used simultaneously on the same RS-485 Communication Bus, each sensor must first be programmed with its own unique ID Tag. After this has been completed, the green and brown communication wires for all of the FlatPack Sensors should all be connected in parallel. Terminating resistors are not required for the RS-485 Network.

FlatPack Wiring Diagram



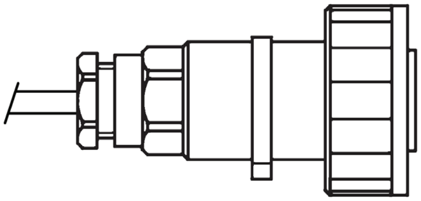
Cable:

5 Conductor, PVC Jacket, Shielded 24AWG

Red: +12 V DC to +24 V DC
Black: Ground
White: Vout
Green: RS-485-A
Brown: RS-485-B
Shield: Ground

Connector:

C1: Bulgin P/N PX0729/P *(Mating Connector: P/N PX0729/S*



All Specifications Subject to Change Without Notice

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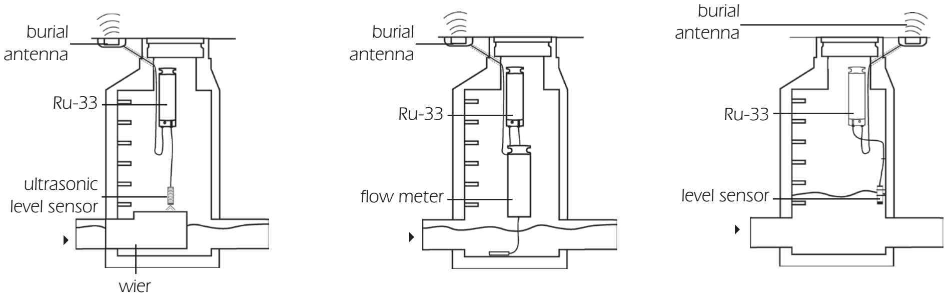
Ru-33 Recording Telemetry Unit

Wireless RTU for underground monitoring

Ru-33 pictured with the Telog ultrasonic sensor

Applications



Level/flow

Flow

Overflow

Telog's Ru-33 **R**ecording **T**elemetry **U**nit, (RTU), provides real-time monitoring and alarming of instruments and sensors found in the harsh environment of sewers and underground water vaults.

The Ru-33 has low power requirements and automatically monitors level, flow, pressure and water quality sensors. Data is forwarded wirelessly to a host computer operating Telog host application software, Telogers for Windows or Telog Enterprise. Data communication may be scheduled frequently (e.g. daily, hourly, every five minutes, etc.) and/or immediately in response to site alarm conditions.

The Ru-33 supports multiple sensor interface options including RS-232, RS-485, analog and digital inputs. For example, when connected to an open-channel flowmeter via RS-232, the RTU can interrogate the meter for it's most recent level, flow velocity and battery voltage measurements.

Telog also provides optional sensors that may be directly attached to the Ru-33 including ultrasonic and pressure level, water quality Sondes, temperature, level switches and a rain gauge.

Wireless communication is supported via an embedded, m2m cellular data modem. An optional burial antenna may be embedded in the street pavement producing a complete underground wireless monitoring solution.

The RTU is powered from a single, 6-volt lantern battery providing an operating life of six months to two years depending on sensor interface and call schedule.

Directly Monitor:
- **Popular Open-channel Wastewater Flowmeters**
- **Pressure Level Sensors**
- **Ultrasonic Level Sensors**
- **Water Quality Sensors and Sondes**

Communicate Via:
- **Local Connection**
- **Cellular**
- **Land-line Telephone**

Powered by:
- **6V Lantern Battery**
- **External DC**

Alarm Notification

Two Year Battery Life

Burial Antenna Option

Submersible Enclosure

Web Application Software

Ru-33 Specifications

(for more detailed specification information refer to Telog's Ru-33 Product Specification Paper, document #PS-33u)

Recorder

Model	Telog Ru-33
Type	Multi- channel underground RTU (Recording Telemetry Unit)
Recording	
Sample rate	Programmable from 1/sec up to 8 hours; each channel
Data interval	Programmable from 1/sec up to 8 hours; each channel
Memory	
Size:	512 Kbytes
Storage method	Wrap around (first-in; first-out),
Data capacity	Dynamically allocated to active channels, any combination of:
Analog input	270,000 values
Pulse input	200,000 values
Event input	67,000 values
ComSensor input	100,000 values
Communication:	
Standard:	Standard: 4 pin circular connector rated IP-67 Auto-selected baud rate to 19.2K
Optional	Land line telephone Telog M-324 2400 baud modem Auto-dial/Auto-answer FCC and CSA approved Cellular data modem Provides both 1xRTT packet switched and CDMA circuit switched data.
Inputs	Limited to one ComSensor + one analog + one digital
ComSensor/meter	Selectable RS-232 or RS-485 to 19.2 Kbaud. Protocol determined by meter or sensor
Analog	
Selectable ranges	0-1 VDC, 0-5 VDC, 4-20 ma
Excitation	Pulsed +5 or +12 VDC, (selectable duration)
Resolution	0.025%; 12 bits
Accuracy	±0.1% of full range at 25º C ±50 ppm
Digital (one channel)	
Type	Selectable pulse counter or event recorder
Input	Contact closure or logic driven input
Excitation	5 VDC at 20 µAmps (max)
Pulse width	10 mS minimum
Battery	
Factory installed	Single 6V alkaline lantern battery Eveready Energizer model 529
Battery Life Example:	
Input ComSensor	Sigma 900 series flowmeter
Sample rate	Five minutes
Communication	Wireless 1xRTT
Call schedule	
5 minutes	Battery life=1 month
15 minutes	Battery life=3 months
2 hours	Battery life=1 year
24 hours	Battery life=2 years
External Power Input	9 to 15 VDC @ 1 amp max
Enclosure	
Size	Cylindrical 4.5" x 15.4"
Weight	7 lbs.
Material	PVC
Environmental	
Temperature	0 to 70º C -30 to +70º C powered externally
Submersible	IP67 (NEMA 6)
Support Software	
S-3PC	Telogers for Windows
S-3EP	Telogers Enterprise
Data transfer unit	IP-67 rated PDA running Palm OS and Telog application program

Supported Sensors

Pressure Level Sensor	Submersible pressure sensor
Model	Telog PT-3Vu
Ranges	0-5 PSI thru 0-200 PSI
Accuracy	±0.25% of full scale
Construction	316 stainless steel
Vent	In-line dry box with user replaceable desiccant
Ultrasonic Level Sensor	Ultrasonic transmitter (ComSensor)
Model	Telog UT-33u/95
Frequency	95 KHz
Range	one foot to 13 feet
Beam Angle	8º conical
Accuracy	±0.25% over any range segment exceeding 12 inches (homogeneous environment)
Temperature Sensor	
Model	AT-3u ambient temperature sensor
Range	-20 to +70° C
Accuracy	±0.2° C
Size	Stainless Steel probe (4" x ¼") with 10 feet of cable

Ru-33 Telog Supplied Options

Burial Antenna

Ultrasonic sensor

Pressure sensor

Temperature sensor

Ru-33 Supported Meters & Sensors

Flowmeters	
Via RS-232 or RS-485	ADS Flow Shark
Interface to meter	Hach Sigma 900 Series
Serial interface port	FloWav PSA-AV
	ISCO 2150
	Marsh McBirney Flo-Dar & Flo-Tote3 Meters
	MGD ADFM & accQmin
Sensors	
	Hydrolab Sondes
	Hach WMD Pipe Sonde
Water Quality	
	Hach Hydrolab Multiparameter Sondes
	DataSonde 4a, MiniSonde 4a
	DS5X, DS5, MS5
	Hach WDM Pipe Sonde

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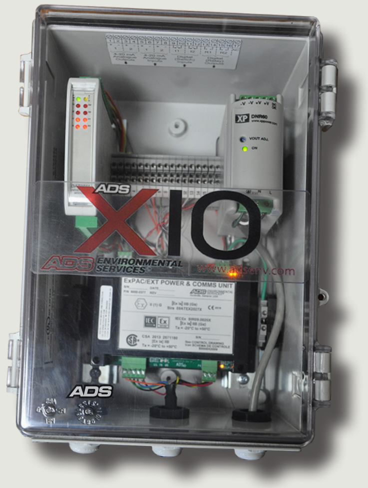
02/14

ADS' Self-Contained Solutions for Power, Communication, Analog and Digital I/O and Modbus

The *TRITON+* COMM+EXT PWR port is used for external power via the ADS XIO, XBUS or ExPAC devices, delivery of Modbus output values as well as for on-site, direct monitor communication.

XIO Features

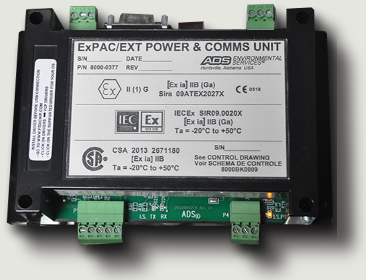


- Process variables measured by the ***TRITON+*** can be converted to two (2) 4-20mA loop output signals for SCADA systems or local display and control
- Logging capabilities of the ***TRITON+*** can be used for two (2) 4-20mA input process variables measured by other instrumentation
- Alarms produced by the ***TRITON+*** Monitor Level Intelligence (MLI) device can be output on the two (2) XIO relay contacts for process actuation
- Two (2) switch, solid state or dry contact digital inputs can be sampled and logged
- Design facilitates easy field wiring
- Supports easy plug and play configuration and start-up
- Associated Apparatus certification for use with approved equipment in Zone 0/Class I, Division 1, Groups C & D; ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Rugged indoor/outdoor NEMA 4x case with hinged clear cover
- Accepts 85-264 VAC, 120-375 VDC; 47-62 Hz; 1.1A@110/0.59A @250 VAC
- Supplies 8 – 11.5 VDC, 500mA power to the ***TRITON+*** flow monitors

XBUS Features

- Supports Modbus RTU, ASCII and TCP communications
- Wireless Modbus via ***TRITON+*** internal modem communications
- Connects to wired networks via RS485 or RS232
- Supports easy plug and play configuration and start-up
- Associated Apparatus certification for use with approved equipment in Zone 0/Class I, Division 1, Groups C & D; ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Rugged indoor/outdoor NEMA 4x case with hinged clear cover
- Accepts 85-264 VAC, 120-375 VDC; 47-62 Hz; 1.1A@110/0.59A @250 VAC
- Supplies 8 – 11.5 VDC, 500mA power to the ***TRITON+*** flow monitors

ExPAC Features



- Designed to be housed in another enclosure
- Associated Apparatus certification for use with approved equipment in Zone 0/Class I, Division 1, Groups C & D; ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Requires DC power input between 9 and 36 volts and a minimum of 15 watts
- Supplies DC power of 8 to 11.5 volts, 500mA to the ***TRITON+*** flow monitors
- RS485 and RS232 Modbus output connections to SCADA systems
- Wireless Modbus via ***TRITON+*** internal modem communications
- Supports Modbus RTU, ASCII and TCP/IP communications

ADS® LLC

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Toll Free: 1.800.633.7246

www.adsenv.com

HARDWARE

ADS TRITON+®

The ***ADS TRITON+***® is a "Fit-for-Purpose" open channel flow monitor for use in sanitary, combined, and storm sewers. It is designed to be the most versatile flow monitoring system available for wastewater collection applications. It supports single pipe or dual pipe flow measurement installations and is certified to the highest level of Intrinsic Safety.

ADS TRITON+

This multiple technology flow monitor will power almost every available sensor technology that is used in wastewater applications today. It is the most versatile and cost-effective, multiple-technology flow monitor on the market. The ***TRITON+*** includes four multiple technology sensor options: a Long Range Depth Sensor, a Peak Combo Sensor, a Surface Combo Sensor, and an Ultrasonic Level Sensor (see inside for technology and specifications). This array of monitoring technologies provides for unmatched flexibility in a fully integrated, fit-for-purpose monitoring platform.

The ***TRITON+*** platform adapts to a wide range of customer applications and budgets. It can be configured as an economical single sensor monitor or dual sensor monitor. It offers a longer battery life and fewer parts for a more reliable system. This provides a lower purchase price and a lower ownership cost over the life of the monitor. The ***TRITON+*** has the lowest operational cost per data sample of any Intrinsically Safe flow monitor available.

About ADS

A leading technology and service provider, ADS® LLC has established the industry standard for open channel flow monitoring and has the only ETV-verified flow monitoring technology for wastewater collection systems. These battery-powered monitors are specially designed to operate with reliability, durability, and accuracy in sewer environments.

TRITON+ Features

- Versatile performance that is easy to install and operate
- Two sensor ports supporting 4 interchangeable sensors providing up to 6 sensor readings at a time
- Single or dual pipe/monitoring point measurement capabilities
- Multi-carrier cellular 3G/4G UMTS/HSPA+ or Verizon® CDMA/EV-DO wireless communications; direct serial communications also available
- Industry-leading battery life with a wireless connection providing up to 15 months at the standard 15-minute sample rate (*varies with sensor configuration*)
- External power and Modbus network connectivity option available with an ADS External Power and Communications Unit (ExPAC™) and a 9-36 VDC power supply or an ADS XBUS™ which includes a power supply
- Analog and digital I/O expansion (4-20 mA and dry contacts) available with an ADS External I/O unit (XIO™)
- Modbus protocols enabling RTUs to help simplify SCADA system integration
- Supports the delivery of CSV files to an FTP site at user-defined intervals , and direct monitor SMS and e-mail messaging
- Supports actuation of a water quality sampler for flow proportional or level-based operation
- Monitor-Level Intelligence (MLI®) enables the ***TRITON+*** to effectively operate over a wide range of hydraulic conditions
- Superior noise reduction design for maximizing acoustic signal detection from depth and velocity sensors
- Five software packages for accessing flow information: Q*start*™ (configuration and activation); FlowView Operations (web-based alarming); Sliicer.com® (I/I analysis); FlowView Portal® (online data presentation and reporting); and Profile® (data collection, analysis, and reporting)
- Intrinsically-Safe (IS) certification by IECEx for use in Zone 0/Class I, Division 1, Groups C & D, ATEX Zone 0, and CSA Class I, Zone 0, IIB
- Thick, seamless, high-impact, ABS plastic canister with aluminum end cap (meets IP68 standard)
- Innovative circuit board dome-enclosure protects and limits exposure of electronics when opening the canister to change the battery

To Learn more, visit www.adsenv.com/TRITON+

ADS® LLC

Multiple Technology Sensors

The *TRITON+* features three depths and two velocities with three sensor options. Each sensor provides multiple technologies for continuous running of comparisons.

Peak Combo Sensor

Dimensions: 6.76 inches (172 mm) long x 1.23 inches (31 mm) wide x 0.83 inches (21 mm) high

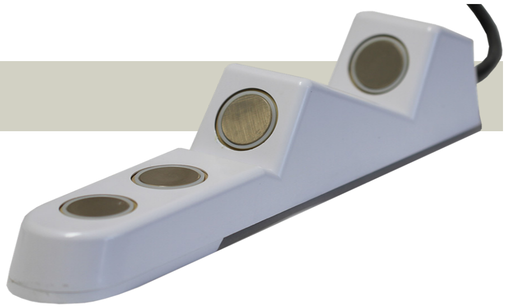
This versatile and economical sensor includes three measurement technologies in a single housing: ADS-patented continuous wave peak velocity, uplooking ultrasonic depth, and pressure depth.

Continuous Wave Velocity
Range: -30 feet per second (-9.1 m/s) to +30 ft/sec (9.1 m/s)
Resolution: 0.01 feet per second (0.003 m/s)
Accuracy: +/- 0.2 feet per second (0.06 m/s) or 4% of actual peak velocity (whichever is greater) in flow velocities between -5 and 20 ft/sec (-1.52 and 6.10 m/s)

Uplooking Ultrasonic Depth
Performs with rotation of up to 15 degrees from the center of the invert; up to 30 degrees rotation with Silt Mount Adapter
Operating Range: 1.0 inch (25 mm) to 5 feet (152 cm)
Resolution: 0.01 inches (0.254 mm)
Accuracy: 0.5% of reading or 0.125 inches (3.2 mm), whichever is greater

Pressure Depth
Range: 0-5 PSI up to 11.5 feet (3.5 m); 0-15 PSI up to 34.5 feet (10.5 m); or 0-30 PSI up to 69 feet (21.0 m)
Accuracy: +/-1.0% of full scale
Resolution: 0.01 inches (0.25 mm)

Surface Combo Sensor



Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high

This revolutionary new sensor features four technologies including surface velocity, ultrasonic depth, surcharge continuous wave velocity, and pressure depth.

Surface Velocity *
Minimum air range: 3 inches (76 mm) from the bottom of the rear, descended portion of the sensor
Maximum air range: 42 inches (107 cm)
Range: 1.00 to 15 feet per second (0.30 to 4.57 m/s)
Resolution: 0.01 feet per second (0.003 m/s)
Accuracy: +/-0.25 feet per second (0.08 m/s) or 5% of actual reading (whichever is greater) in flow velocities between 1.00 and 15 ft/sec (0.30 and 4.57 m/s)

** The flow conditions existing in some applications may prevent the surface velocity technology from being used.*

Ultrasonic Depth
(Does not require electronic offsets)
Minimum dead band: 1.0 inches (25.4 mm) from the face of the sensor or 5% of the maximum range, whichever is greater
Maximum operating air range: 10 feet (3.05 m)
Resolution: 0.01 inches (0.25 mm)
Accuracy: +/- 0.125 inches (3.2 mm) with 0.0 inches (0 mm) drift, compensating for variations in air temperature

Surcharge Continuous Wave Velocity *(Under submerged conditions, this technology provides the same accuracy and range as* Continuous Wave Velocity *for Peak Combo Sensors)*

Surcharge Pressure Depth *(Under submerged conditions, this technology provides the same accuracy and range as* Pressure Depth *for Peak Combo Sensors)*

Ultrasonic Level Sensor

This non-intrusive, zero-drift sennsing method results in s stable, accurate, and reliable flow depth calculation. Two independent ultrasonic transducers allow for independent cross-checking.

Long Range Depth Sensor

Dimensions: 9.15 inches (232.4 mm) long X 4.40 inches (111.8 mm) wide x 4.22 inches (107.2 mm) high (without bracket)

A narrow, powerful ultrasonic beam allows this depth sensor to perform well over long ranges. Integral Submersion Sensor provides detection of flooding at the point of interest.

Long Range Ultrasonic Depth
Minimum Dead Band: 0.0 inch (0.0 mm) from the bottom of sensor housing; Maximum Operating Air Range: 240 inches (6.1 m)
Beam Angle: +/- 3 degrees
Resolution: 0.01 inch (0.24 mm)
Accuracy: +/- 0.25% of sensor range measurement or 0.13 inches (3.2 mm) whichever is greater, in a homogeneous temperature air column
Drift: 0.0 inches (0.0 mm)
Temperature Compensation: Additional compensation for variable temperature air column supported

Submersion
Detects submersion when fully covered with liquid.

TRITON+ Specifications

Connectors
U.S. Military specification MIL-C 26482 series 1, for environmental sealing, with gold-plated contacts

Communications
- Verizon® CDMA/EV-DO cellular wireless modem, or Hepta band UMTS/HSPA+ cellular wireless modem
- Direct connection to PC using an ADS USB serial cable

Monitor Interfaces
- Supports simultaneous interfaces with up to two combo sensors
- Supports optional Analog and Digital I/O with ADS XIO: two 4-20 mA inputs and outputs, two switch inputs and two relay outputs

Power
Internal - Battery life with a cellular modem:
- Over 15 months at a 15-minute sample rate*
- Over 6 months at a 5-minute sample rate*

External - Optional external power available with ADS External Power and Communications Unit (ExPAC) with an ADS- or customer-supplied 9-36 Volt DC power supply

** Rate based on collecting data once a day and varies according to sensor configuration and operating temperature*

Operating and Storage Temperature
-4 degrees to 140 degrees F (-20 degrees to 60 degrees C)

Connectivity
- Modbus ASCII: Wireless; Wired using ADS ExPAC or XBUS
- Modbus RTU: Wireless; Wired using ADS ExPAC or XBUS
- Modbus TCP: Wireless only

Intrinsic Safety Certification
- Certified under the ATEX European Intrinsic Safety standards for Zone 0 rated hazardous areas
- Certified under IECEx (International Electro technical Commission Explosion Proof) Intrinsic Safety standards for use in Zone 0/Class I, Division 1, Groups C&D rated hazardous areas
- CSA Certified to CLASS 2258 03 - Process Control Equipment, Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations, Ex in IIB T3 (152 degrees C)

Other Certifications/Compliances

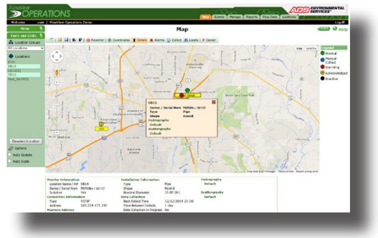
- FCC Part 15 and Part 68 compliant	- Carries the EU CE mark
- ROHS (lead-free) compliant	- Canada IC CS-03 compliant

ISO 9001 sira UKAS MANAGEMENT SYSTEMS
Certificate No: 940056

Ex CE IEC IECEx

Connected by VERIZON

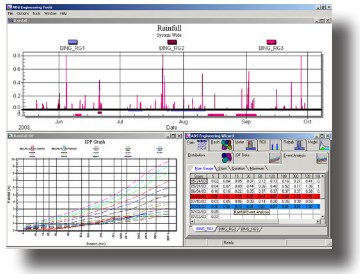
ADS Flow Monitoring Software



Q*start* is desktop software providing field crews with a simple, easy-to-use tool for quickly configuring and activating ADS flow monitors. Q*start* enables the user to collect and review the monitor's depth and velocity data in hydrograph and tabular views simultaneously.

FlowView Operations is web-hosted software providing near real-time operational intelligence on the status of flow activity throughout the wastewater collection system. FlowView Operations utilizes dynamic (or smart) alarming to inform clients about the occurrence of rain events, flow performance abnormalities, and data anomalies at the flow monitoring locations.

FlowView Portal is web-hosted software providing robust report delivery, enabling the user to manage data, customize reports, and select viewing parameters. FlowView Portal has a virtually unlimited database for storing and accessing historical data, using data for comparison and trend analysis purposes, and sharing information electronically.



Sliicer.com is web-hosted software providing a powerful set of engineering tools designed for both the consulting and municipal engineer. Sliicer.com's inflow and infiltration tools examine wastewater collection system dry and wet weather flow data and provide rigorous performance measurements in one-tenth the time of other analysis tools.

Profile is desktop software providing the industry's best data analysis tools, from basic flow monitoring data to complex hydraulic analysis. Profile is intuitive software that saves time and improves data quality by compiling project data into one location for analysis and reporting.

FLOW MONITORING APPLICATIONS

- Billing
- Inflow/Infiltration
- Model Calibration
- Combined Sewer Overflows (CSOs)
- Stormwater Monitoring
- Capacity Analysis
- Spill Notification