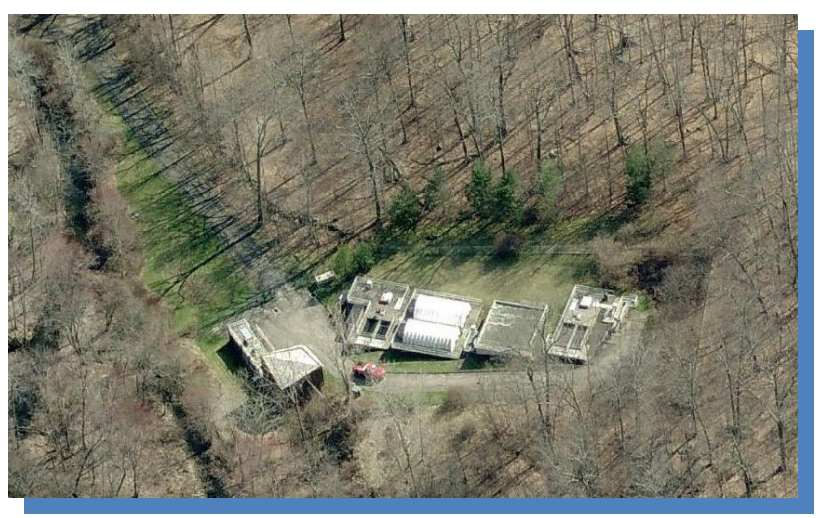
Draft Report to the Town of Ridgefield, Connecticut on the Phase 1 Wastewater Facilities Plan Volume 2

April, 2015



AECOM

**DRAFT REPORT TO THE
TOWN OF RIDGEFIELD, CONNECTICUT
ON THE
PHASE 1 WASTEWATER FACILITIES PLAN**

April, 2015

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TECHNICAL MEMORANDUM NO. 1 – SMOKE TESTING

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Technical Memorandum No. 1

To	Ridgefield WPCA	Page	
CC	C. Fisher, J. O'Brien, J. Pereira, J. Pennell		
Subject	Town of Ridgefield, CT Phase 1 Wastewater Facilities Plan Technical Memorandum No. 1 - Smoke Testing		
From	Jon Pearson and Alberto Angles		
Date	February 19, 2014		

INTRODUCTION

This Technical Memorandum summarizes the findings of the smoke testing program conducted under the Phase 1 Wastewater Facilities Plan. The entire Sewer District 1 collection system was smoke tested to identify sources of inflow. Where possible, estimates of inflow rates from sources identified during the smoke testing have been made. Recommendations to eliminate identified direct inflow sources are presented as well as recommendations for further investigations of suspect and indirect sources of inflow.

BACKGROUND

As part of the last major upgrade of the South Street Wastewater Treatment Facility (WWTF) in the early 1990s, the Town undertook a sewer rehabilitation program to address infiltration/inflow (I/I) in the wastewater collection system. This program consisted of lining mainline sewers, as well as sealing of leaking manholes.

In 2005, as part of the scope of services under the Town's contract for wastewater operation services with United Water, the Town initiated a program to clean and television inspect the wastewater collection system. As part of a 5 year contract, approximately 20 percent of the collection system per year was flushed, cleaned, and televised to locate leakage as well as structural defects in the system.

In 2007, the Town completed an I/I analysis of the wastewater collection system (Sewer Districts 1 and 2). The purpose of the investigation was to estimate the amount of I/I entering the wastewater collection system and to develop a prioritized program of additional investigations to identify sources of I/I for subsequent rehabilitation. Based on flow metering conducted during the 2007 I/I analysis, flows in Sewer District 1 were observed to exhibit a significant response to rainfall events, while flows in Sewer District 2 did not. As a result of these field investigations a number of collection system issues in Sewer District 1 were identified including:

- Areas of high infiltration
- Areas of high inflow

- Areas of sewer surcharging (bottlenecks)
- 21 specific locations of infiltration (from TV inspections)

As a result of the 2007 I/I analysis, a number of recommendations were made. These recommendations included:

- Continued yearly TV inspection of the sewers to prioritize the rehabilitation of I/I sources and defects
- Sewer District 1 Inflow Investigations including:
    - Smoke testing
    - Dye testing and dye water flooding (rainfall simulation) of suspect and indirect sources based on the findings of the smoke testing.
    - House-to-house inspections
- Sewer rehabilitation of specific sewer infiltration sources or defects which included:
    - Repair of leaking joints
    - Repair of cracked and broken pipes
    - Reduction of root intrusion by chemical root treatment
    - Rehabilitation of 75 lateral service connections
    - Excavation and replacement or lining of 1,000 linear feet of sewer

Subsequent to the 2007 I/I analysis, a sewer rehabilitation contract was undertaken to address the identified pipeline defects. The sewer rehabilitation work involved chemical root control; joint testing and sealing; spot sewer repairs; cured-in-place lining of mainline sewers; and testing and sealing of lateral service connections. The sewer rehabilitation project was completed by the National Water Main Cleaning Company in May 2010.

The recommended inflow investigations for Sewer District 1 consisting of house-to-house inspections and dye water testing and dye water flooding are anticipated to be undertaken during the Phase 2 Facilities Plan. Smoke testing including identifying areas for subsequent dye water testing and dye water flooding (rainfall simulation) is the subject of this memorandum.

DATA COLLECTION

Smoke testing is performed primarily to detect inflow sources such as downspouts, catchbasins, cellar drains and area drains by introducing smoke into sewer manholes and visually observing its discharge points. Smoke testing services were provided by Stacy DePasquale Engineering (SDE) under subcontract to AECOM. The smoke testing was initiated in September 2013 and completed in October 2013.

Smoke testing was performed throughout the six subareas of Sewer District 1 as shown on Figure 1, attached. Approximately 90,000 linear feet of sewers were smoke tested. As smoke was introduced into the wastewater collection system, the surrounding area was inspected for locations emitting smoke, indicating an inflow source. A sketch was prepared of physical features adjacent to each smoke testing site where smoke was observed. All smoke testing sketches are included in the smoke testing report. A copy of the smoke testing report is included as Attachment A.

The smoke testing program identified both positive and suspect inflow sources. A positive inflow source is identified through smoke testing by smoke emanating from that source. Suspect inflow sources are potential sources of inflow which did not smoke during smoke testing but may be expected to be connected to the sanitary sewer. The Sewer District 1 collection system shown in Figure 1 has been updated to indicate sewers encountered during the field work which had not been previously mapped.

ANALYSIS

Table 1, attached, lists a total of 78 inflow sources (45 direct and 33 indirect) where smoke was observed during smoke testing operations. Direct inflow sources are those which significant smoke was observed during the smoke testing operations. Indirect inflow sources are those which smoked lightly during the smoke testing. Direct inflow sources identified include open service connection cleanouts, downspouts and catchbasins. Five sump pumps discharging to the sewer system have also been identified by these investigations. Indirect sources of inflow identified include catchbasins, a drain culvert, manholes that smoked in the area surrounding the corbel frame and cover, and areas where smoke emanated from soil seams. Further investigation including manhole inspections and dye water flooding in conjunction with television inspection of the adjacent sewer (dye water tracing) is warranted to quantify the inflow and identify the location of indirect sources identified.

Where possible, estimates of the peak inflow rate (gallons per day) entering the sewer system were calculated for each inflow source identified. Sump pumps can introduce a wide range of inflow depending on the size of the installed unit and its frequency of operation. For example a 15 gallon per minute pump running for 4 hours per day will contribute 3,600 gallons per day to the sewer system, while a 60 gallon per minute pump running continuously will contribute 86,400 gallons per day to the sewer system. As a general guideline, literature values for sump pump inflow removal suggest that, for normal rain events, a range of 3 to 6 gallons per minute be used to estimate inflow removal for sump pump redirection. For the purpose of this evaluation, sump pumps are estimated to have an average capacity of 6 gallons per minute and operate continuously. Inflow rates from all other sources were estimated using the Rational Method with a design storm recurrence of one year and a rainfall duration of six hours. The one-year, six-hour storm produces approximately 1.83 inches of rainfall in the Ridgefield area, with a peak intensity of 1.02 inches per hour and an average intensity of 0.30 inches per hour. The peak intensity for the one-year, six-hour storm and the appropriate runoff coefficients for the drainage area tributary to the inflow source were used to estimate the peak inflow rate. One of the inflow sources (identified as inflow source No. 68 in Table 1) was identified by smoke emanating from a drain culvert behind 7 Main Street in the vicinity of Wilton Road. The smoke was light, which is indicative of an indirect inflow source. Based on the topography, the area tributary to this culvert may be up to 14 acres. Due to the potentially large area tributary to this culvert, the potential inflow could be great. However, further investigation of this source is needed to estimate the potential inflow. Therefore, no inflow has been estimated for this inflow source at this time. A total peak inflow rate of approximately 287,500 gallons per day (gpd) is estimated to be contributed by inflow sources identified by smoke testing.

Table 2, attached, lists those properties identified with suspect inflow sources. Suspect inflow sources include driveway or yard drains, downspouts piped underground, and buildings with flat roofs which may be connected to the sanitary sewer. A total of 784 suspect inflow sources were identified. Of the 784 suspect sources identified, 684 were located at the Casagmo, Quail Ridge, and Fox Hill condominium complexes. Another 13 suspect sources were identified at the Ridgefield Recreation Center. Generally suspect sources identified during smoke testing warrant follow-up investigation, including dye water testing for sewer connection verification.

SUMMARY AND RECOMMENDATIONS

Table 1 summarizes the inflow sources identified during smoke testing and includes an estimate of the peak inflow rate for each source as well as recommendations for rehabilitation and associated costs including an allowance for engineering and contingencies. The smoke testing program located and documented a total of 78 inflow sources. These sources are estimated to contribute inflow to the Ridgefield Sewer District 1 collection system at a peak rate of 0.287 mgd. Of the 78 inflow sources identified, 45 have been identified as direct and 33 have been identified as indirect inflow sources. The total estimated cost, including an allowance for engineering and contingencies, of rehabilitating and further investigating inflow sources as summarized in Table 1 is approximately $79,000.

Additionally, 784 suspect inflow sources were identified. Further investigation of these suspect sources is recommended to verify whether or not they are sources of inflow to the wastewater collection system. The total estimated cost, including an allowance for engineering and contingencies, to further investigate these suspect sources through dye water testing is approximately $29,000.

Finally a house-to-house internal building inspection program is recommended to identify the presence of sump pumps connected to the wastewater collection system. The total estimated cost, including an allowance for engineering and contingencies, associated with conducting a house-to-house internal building inspection program is approximately $176,000.

Based on the smoke testing performed, it is recommended that the Town implement a program to eliminate the inflow sources identified. The program would consist of three components: Capping and redirection of direct inflow sources, manhole rehabilitation, and further investigations of indirect and suspect sources identified during smoke testing and to locate additional direct inflow sources such as sump pumps. Each of the recommended rehabilitation components are summarized below.

Capping and Redirection of Direct Inflow Sources

As summarized in Table 1, 45 direct inflow sources have been identified and are recommended for repair. Direct inflow sources observed include 34 open or broken cleanouts, 4 downspouts, and 5 sump pumps connected to the wastewater collection system. Two privately owned catchbasins, source numbers 47 and 74, were also identified as being directly connected to the wastewater collection system. It has been reported that these catchbasins have been disconnected from the system since the smoke testing was conducted and no further rehabilitation of these catchbasins is recommended at this time. The estimated peak inflow rate from these direct sources is 154,400 gpd. The elimination of these direct inflow sources should be a high priority for the Town. The stormwater runoff contributed by these sources may have a significant impact on the flows during wet weather conditions. To repair these defects, it is recommended that the Town implement the design and construction of capping and redirection of these direct inflow sources.

It is important to note that of the 78 inflow sources identified, 60 sources, which represents 76% of the total, are located on private property. In Ridgefield the Town owns the mainline sewer and manholes, and each property owner owns the lateral sewer from the mainline sewer to the house. With the large percentage of sources idenfified located on private property, the Town needs to develop a policy and procedure regarding correction of privately owned inflow sources. The program should consist of a public education effort, which could include bill stuffer notices, notices on the Town website, as well as press releases and newspaper articles explaining the significance of inflow in the sewer system and that inflow is an illegal discharge that is the homeowner's responsibility to correct. The inflow correction procedure should define what is required to permanently remove inflow sources (i.e. how a cleanout is permanently capped and sealed, how downspouts and area drains are to be removed and permanently redirected, and how sump pumps are to be permanently redirected). It is strongly recommended that the inflow correction procedure make provisions for verification by Town staff that an identified private inflow source has been correctly and satisfactorily removed from the collection system. Information on a sample private inflow source removal program that is currently in use by the Town of Greenwich, CT is included as Attachment B.

Recommended repairs consist of capping open or broken cleanouts and the redirection of downspouts and sump pumps. Given the varied nature of sump pump configurations, the estimated cost of disconnecting and rerouting sump pumps is based on a licensed plumber disconnecting the sump pump from the sewer system and hard piping the discharge to the closest location outside of the building. Similarly, the estimated cost of disconnection and rerouting of downspouts is based on a licensed plumber disconnecting the downspouts, capping the sewer connection, and installing a bend and splash pad.

Table 3 presents a summary of the recommended capping and redirection of these direct inflow sources along with estimated costs, including an allowance for engineering and contingencies. The total estimated cost of the capping and redirection of direct inflow sources is approximately $38,000.

TABLE 3. SUMMARY OF RECOMMENDED CAPPING AND REDIRECTION OF DIRECT INFLOW SOURCES

Component	Quantity	Estimated Peak Inflow Rate (gpd)	Estimated Cost
Cap and Seal Cleanout	34	15,500	$24,000
Disconnect and Reroute Downspouts	4	52,500	$3,000
Disconnect and Reroute Sump Pumps	5	43,200	$11,000
Disconnect and Reroute Catchbasins	2	43,200	*(1)*
Total	45	154,400	$38,000

Notes: 1. Catchbasins have reportedly been disconnected.

Manhole Rehabilitation

As summarized in Table 1, 13 manholes were identified as sources of inflow during smoke testing. One of these manholes is a telephone manhole (source number 53) and two are old structures with granite and concrete covers (source numbers 20 and 39). To determine the full extent of repairs necessary, inspection of these structures is warranted. Of the 13 manholes identified as inflow sources, 5 have already been inspected as part of the manhole inspections conducted in Subarea 1 in November of 2013. The results of these manhole inspections are currently being reviewed to develop rehabilitation recommendations which will be presented in a separate Technical Memorandum. The remaining 8 manhole structures are recommended for inspection which will likely result in the identification of defects requiring additional repairs. Implementation of manhole rehabilitation recommendations resulting from the manhole inspections is not included in the estimated costs as the extent of rehabilitation work is unknown at this time.

Minimum recommendations for repair of the identified inflow sources have been made, where possible. The recommended manhole repairs consist of raising or resetting manhole frames and covers, sealing manhole corbels and frames and installing stainless steel manhole inserts in easement areas. To repair the inflow defects, it is recommended that the Town implement the design and construction of manhole rehabilitation measures. Table 4 presents a summary of the recommended manhole repairs along with estimated costs, including an allowance for engineering and contingencies. The total estimated cost of the manhole rehabilitation measures is approximately $16,000.

TABLE 4. SUMMARY OF RECOMMENDED MANHOLE REHABILITATION

Component	Quantity	Estimated Peak Inflow Rate (gpd)	Estimated Cost
Raise Manhole Frame and Cover	6	5,100	$6,000
Reset Manhole Frame and Cover	1	500	$1,000
Seal Manhole Corbel and Frame	2	10,100	$7,000
Install Stainless Steel Manhole Inserts	6	*(1)*	$2,000
Total	15	15,700	$16,000

Notes: 1. Estimated peak inflow rate accounted for in other components.

Further Investigations

As noted above, 13 manholes were identified as inflow sources. It is recommended that 8 of these manholes be inspected to assess their condition and recommend rehabilitation measures as necessary. Also, 20 inflow sources were identified which require further investigation to verify the presence of the connection and to quantify the inflow of the sources identified. These sources include 9 catchbasins, 1 drain culvert and 10 locations where smoke was observed emanating from seams in the soil. It is recommended that these sources be dye water flooded in conjunction with television inspection of the adjacent sewer (dye water tracing).

In addition, 784 suspect inflow sources were identified during the smoke testing. Of the 784 suspect sources, 684 have been identified at the Casagmo, Quail Ridge, and Fox Hill condominium complexes, and another 13 suspect sources were identified at the Ridgefield Recreation Center. Generally, it would be recommended that all of the 784 suspect inflow sources identified be dye water tested. However, it is estimated that the cost of conducting 784 dye water tests would be in excess of $100,000. As the name implies, these have not been confirmed but are suspected inflow sources which may or may not contribute inflow into the wastewater collection system. It may be possible to discount a number of similar suspect inflow sources by dye water testing a representative number of those suspect sources. For example, if 10% of the suspect sources identified at one of the condominium complexes were tested, and all of those tests came back negative (meaning none of the suspect sources dye water tested were found to be connected to the wastewater collection system), then given the similar age, construction and environmental conditions, it is likely that the results of dye water testing the rest of the suspect sources in that complex would also be negative, and no further investigation would be warranted. On the other hand, if some or all of the representative number of suspect sources dye tested prove to be connected to the sewer system, then the remaining suspect sources in that complex could not be discounted and it would be recommended that the remaining suspect sources in the complex be dye water tested. It is therefore recommended that the Town conduct dye water testing on a representative sample of 10% of the 697 suspect inflow sources identified at the Casagmo, Quail Ridge, and Fox Hill condominium complexes as well as the Ridgefield Recreation Center. Because the remaining 87 suspect inflow sources identified throughout the Town do not necessarily share the same similarities in age, construction or environmental conditions, it is recommended that all of the remaining 87 suspect inflow sources be dye water tested. This brings the total to 160 suspect sources recommended to be dye water tested at this time. Based on the results of the dye water testing, rehabilitation recommendations can be made as well as a determination of the need conduct further dye water testing. Implementation of the rehabilitation recommendations resulting from the dye water testing and further dye water testing is not included in the estimated costs as the extent of the rehabilitation work and further dye water testing is unknown at this time.

Finally, with the discovery of 5 sump pumps during the smoke testing, this provides evidence of the presence of sump pumps in Sewer District 1. As a result, it is recommended that the Town undertake a two phase program to identify and remove sump pumps from the wastewater collection system in District 1. In the first phase, the Town should undertake the necessary investigations to locate sump pumps. This will involve conducting a house-to-house internal building inspection program to identify sump pumps connected to the sewer collection system. The second phase will involve development and implementation of a program to redirect sump pump discharges out of the sanitary sewer system.

A wide range of approaches have been used by municipalities to implement sump pump removal programs. Sump pumps discharging to the sanitary sewer are illegal under Ridgefield's Sewer Use Regulations. Some communities have taken the approach that property owners with identified sump pump connections are in violation of the Sewer Use regulations, and the connection must be permanently removed from sewer system at the homeowner's expense. The Town typically requires a post removal inspection to confirm that the sump pump discharge has been redirected with rigid piping, and not flexible hose that can be easily redirected back to the sewer. At the other end of the spectrum, other communities have taken the approach where the Town undertakes a project to redirect the sump discharges as a Town administered and funded project. This approach involves the development of a Town funded construction project where a contractor completes the sump pump discharge redirection in the individual buildings with sump pumps. Agreements for access between the Town and the homeowner are necessary to allow this work to be completed.

In Attachment C, information outlining sump pump removal programs used in several other communities is provided. Based on AECOM's experience, the most successful sump pump redirection programs have involved the use of some form of an Amnesty Program. Using this approach, the Town undertakes a public relations/education program through the local paper, mailing, and the Town website regarding the sump pump problem and its effects on the treatment plant. As part of the public relations/education program, it is noted that any homeowner that has a sump pump connected to the system has a certain period of time to notify the Town of the connection, and to have the pump discharge permanently redirected to an alternate location, typically to a dry well, a storm drain, or an adjacent low lying area on their property. Once the work is completed, the homeowner notifies the Town, and an inspection of the redirection is completed by Town staff. The most successful of these programs involve some payment to the homeowner for completing the redirection. Some communities have elected to set a fixed amount for homeowner reimbursement, say $500 or $1,000. Other communities have elected to reimburse the homeowner for the full amount of the redirection, with the cost supported by invoices for the completed work from the homeowner's contractor. Other communities have elected to undertake the work as noted above either with their own forces or using contracted services. Once the "amnesty" period ends, if a homeowner is discovered to have a sump pump connected to the sewer system, the Town levies a fine, the homeowner is required to permanently redirect the sump pump with no funding assistance from the Town, and a follow-up redirection inspection is conducted. To implement this approach, Ridgefield's Sewer Use Regulations would need to be amended to incorporate the fine. The amnesty programs have been successful because of the financial incentive typically offered to homeowners. It is recommended that the Town develop and implement a sump pump removal program to locate and remove sump pumps from the collection system.

It should also be recognized that the I/I investigation and reduction effort is not a onetime event. The nature of sanitary sewer systems is such that as the system ages, deterioration of pipes and structures occurs which can allow leakage. Additionally, over time, new sump pumps may be connected to the system. The ongoing program to address I/I is recommended to be continued in light of these factors, and elimination of sump pumps from the system is an essential component of the program.

Table 5 presents a summary of the recommended further investigations along with estimated costs, including an allowance for engineering and contingencies. The total estimated cost of the recommended further investigations is approximately $230,000.

TABLE 5. SUMMARY OF RECOMMENDED FURTHER INVESTIGATIONS

Component	Quantity	Estimated Peak Inflow Rate (gpd)	Estimated Cost
Inspect Manholes	6	7,000	$1,000
Inspect Structures *(1)*	2	2,700	$2,000
Dye Water Tracing of Indirect Sources *(2)*	20	107,700	$22,000
Dye Water Testing of Suspect Sources	160	--	$29,000
House to House Inspections	1,760	--	$176,000
Total	1,888	117,400	$230,000

Notes: 1. A portion of the estimated peak inflow rate is accounted for in other components.
2. No inflow estimate has been made for indirect source number 68. Further investigation necessary to estimate inflow rate.

Table 6 presents a summary of the estimated capital costs for all components of the recommended program. However, at this time, it is emphasized that the costs presented in this table are only planning level cost estimates for budgeting purposes. A more accurate estimate of the anticipated costs may be determined during design phases of the recommended program.

TABLE 6. SUMMARY OF ESTIMATED COSTS

Component	Total Estimated Cost
Capping and Redirection of Direct Inflow Sources (Total from Table 3)	$38,000
Manhole Rehabilitation (Total from Table 4)	$16,000
Further Investigations (Total from Table 5)	$230,000
Total	$284,000

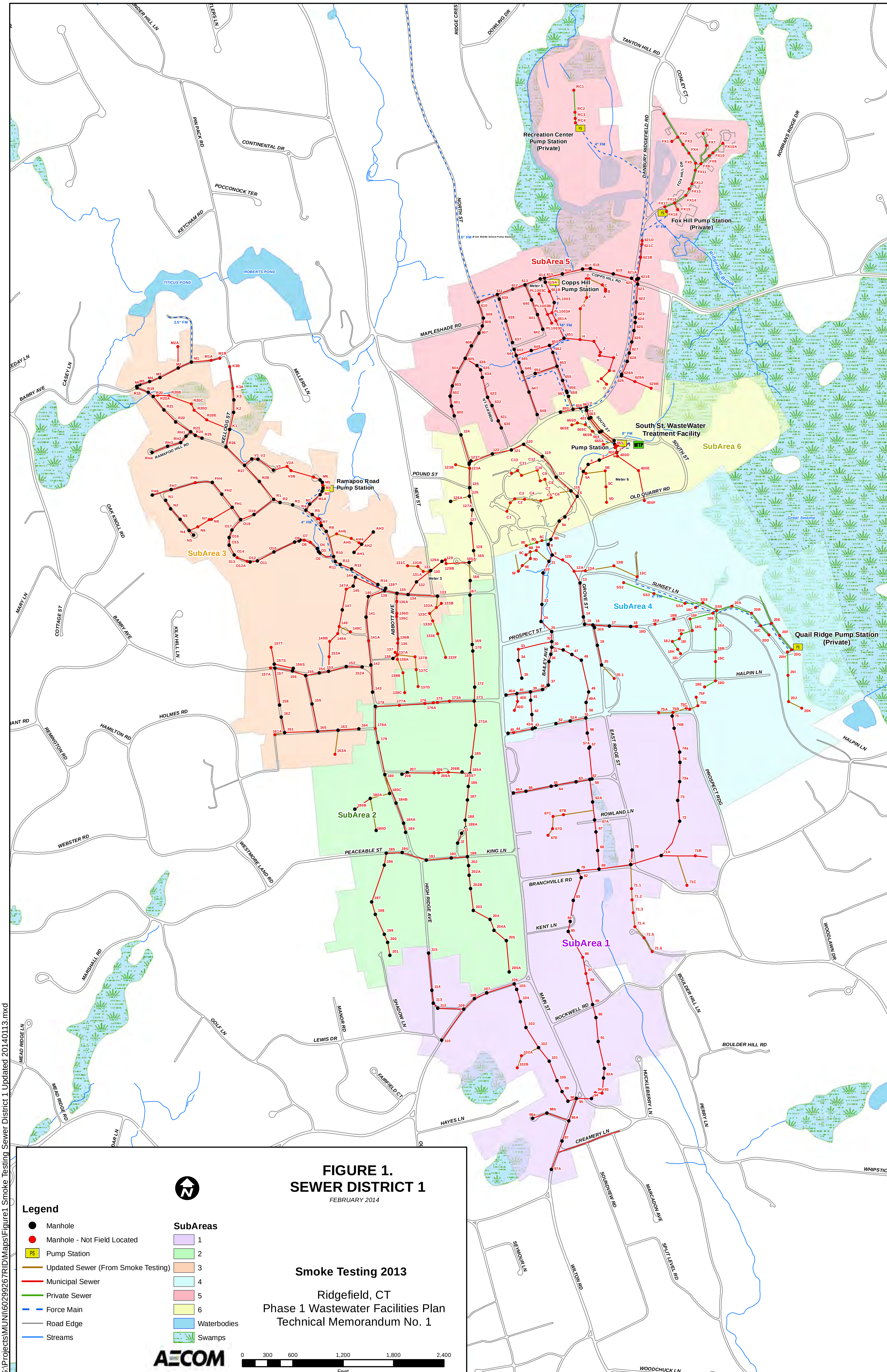

FIGURE 1.
SEWER DISTRICT 1

FEBRUARY 2014

Smoke Testing 2013

Ridgefield, CT
Phase 1 Wastewater Facilities Plan
Technical Memorandum No. 1

G:\Projects\MUNI\60299267RID\Maps\Figure1 Smoke Testing Sewer District 1 Updated 20140113.mxd

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING

Source No.	Sub-area	From MH	To MH	Address	Source Description: Sector	Source Description: Type	Source Description: Location	Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
1	1	68A	62	25 Rowland Lane	Private	Cleanout	Yard - Front	103	Cap and seal cleanout	$ 700.00
2	1	89	85	154 Kent Lane	Public	Sewer Manhole	Yard - Back	189	Raise frame and cover, install ss mh insert, implement manhole inspection recommendations	$ 1,300.00
3	1	75B	73A	84 Governor Street A	Private	Cleanout	Yard - Back	51	Cap and seal cleanout	$ 700.00
4	1	75B	73A	84 Governor Street B	Private	Cleanout	Yard - Back	51	Cap and seal cleanout	$ 700.00
5	1	75B	73A	84 Governor Street C	Private	Service Connection	Yard - Back	26	Dye water tracing	$ 1,100.00
6	1	75B	73A	58 Prospect Ridge Street	Private	Cleanout	Yard - Back	51	Cap and seal cleanout	$ 700.00
7	1	85	79	29 Branchville Road A	Private	Cleanout	Yard - Front	515	Cap and seal cleanout	$ 700.00
8	1	85	79	29 Branchville Road B	Private	Cleanout	Yard - Back	4,540	Cap and seal cleanout	$ 700.00
9	1	98A, 97A	95	SMH 98A	Public	Sewer Manhole	Paved Asph.	218	Raise frame and cover, implement manhole inspection recommendations	$ 1,300.00
10	1	110	104	45 West Lane	Private	Sewer Manhole	Yard - Front	26	Raise frame and cover, install ss mh insert, inspect manhole	$ 1,500.00

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description			Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
					Sector	Type	Location			
11	1	110	104	58 West Lane	Private	Cleanout	Yard - Front	*(1)*	Cap and seal cleanout	$ 700.00
12	1	115	109	55 High Ridge Ave	Private	Cleanout	Yard - Front	26	Cap and seal cleanout	$ 700.00
13	1	115	109	23 High Ridge Ave	Public	Catchbasin	Curb	13,621	Dye water tracing	$ 1,100.00
14	1	115	109	3 Parley Lane	Private	Cleanout	Yard - Front	26	Cap and seal cleanout	$ 700.00
15	1	73A	72	SMH 74	Public	Sewer Manhole	Field	*(1)*	Raise frame and cover, install ss mh insert, implement manhole inspection recommendations	$ 1,300.00
16	1	66A	62	CB A at SMH 63	Public	Catchbasin	Curb	17,026	Dye water tracing	$ 1,100.00
17	1	66A	62	CB B at SMH 63	Public	Catchbasin	Curb	17,026	Dye water tracing	$ 1,100.00
18	1	66A	62	CB behind 316 Main Street	Public	Catchbasin	Yard - Back	129	Dye water tracing	$ 1,100.00
19	1	66A	62	316 Main Street	Public	Cleanout	Yard - Front	51	Cap and seal cleanout	$ 700.00
20	2	205A	189	149 Main Street	Private	Sewer Manhole	Driveway	1,362	Inspect structure	$ 1,100.00
21	2	205A	189	21 King Lane A 1	Private	Downspout Connection	Yard - Back	13,621	Disconect and re-route downspout	$ 700.00
22	2	205A	189	21 King Lane A 2	Private	Downspout Connection	Yard - Back	13,621	Disconect and re-route downspout	$ 700.00
23	2	205A	189	21 King Lane	Private	Sump Pump	N/A	8,640	Disconnect and re-route sump pump	$ 2,100.00
24	2	205A	189	21 King Lane B	Private	Service Connection	Yard - Back	257	Dye water tracing	$ 1,100.00

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description			Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
					Sector	Type	Location			
25	2	205A	189	21 King Lane C	Private	Catchbasin	Yard - Back	2,573	Dye water tracing	$ 1,100.00
26	2	205A	189	74 High Ridge Road	Private	Cleanout	Yard - Back	3,027	Cap and seal cleanout	$ 700.00
27	2	205A	189	74 High Ridge Road	Private	Cleanout	Yard - Back	3,027	Cap and seal cleanout	$ 700.00
28	2	205A	189	74 High Ridge Road	Private	Cleanout	Yard - Back	3,027	Cap and seal cleanout	$ 700.00
29	2	201	197	63 High Ridge Road	Private	Sump Pump	N/A	8,640	Disconnect and re-route sump pump	$ 2,100.00
30	2	197	189	87 High Ridge Road - CB	Public	Catchbasin	Paved Asph.	13,621	Dye water tracing	$ 1,100.00
31	2	197	189	87 High Ridge Road	Private	Service Connection	Yard - Side	103	Dye water tracing	$ 1,100.00
32	1	67E	67C	SMH 67B	Public	Sewer Manhole	Yard - Back	4,540	Raise frame and cover, install ss mh insert, inspect manhole	$ 1,500.00
33	1	71.3	71	SMH 71.2 - Below Grade	Public	Sewer Manhole	Driveway	103	Raise frame and cover, install ss mh insert, implement manhole inspection recommendations	$ 1,300.00
34	1	71.3	71	58 Branchville Road	Private	Cleanout	Yard - Front	51	Cap and seal cleanout	$ 700.00
35	1	71.3	71	64 Branchville Road	Private	Downspout	Yard - Front	13,621	Disconect and re-route downspout	$ 700.00

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description			Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
					Sector	Type	Location			
36	1	71.3	71	SMH 71.3 - Loose Frame	Public	Sewer Manhole	Driveway	515	Reset frame and cover, install ss mh insert, implement manhole inspection recommendations	$ 1,400.00
37	2	184	178	2 Peaceable Street	Private	Cleanout	Yard - Front	103	Cap and seal cleanout	$ 700.00
38	2	184	178	129 High Ridge Road	Private	Cleanout	Yard - Front	51	Cap and seal cleanout	$ 700.00
39	2	184	178	145 High Ridge Road	Private	Sewer Manhole	Driveway	1,362	Inspect structure	$ 1,100.00
40	2	184	178	CB at 150 High Ridge Road	Public	Catchbasin	Paved Asph.	6,810	Dye water tracing	$ 1,100.00
41	4	25	21	490 Main Street A	Private	Cleanout	Yard - Back	*(1)*	Cap and seal cleanout	$ 700.00
42	4	25	21	490 Main Street B	Private	Cleanout	Yard - Back	*(1)*	Cap and seal cleanout	$ 700.00
43	4	18D	14	54 Prospect Street A	Private	Downspout	Yard - Side	11,578	Disconect and re-route downspout	$ 700.00
44	4	18D	14	54 Prospect Street B	Private	Sewer Manhole	Driveway	6,810	Inspect manhole	$ 200.00
45	2	172	167	421 Main Street	Private	Sewer Manhole	Paved Asph.	545	Seal corbel and frame, inspect manhole	$ 3,500.00
46	2	172	167	29 Gilbert Street	Public	Sump Pump	N/A	8,640	Disconnect and re-route sump pump	$ 2,100.00
47	2	185	172	353 Main Street	Private	Catchbasin	Paved Asph.	42,905	Corrected	-

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description			Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
					Sector	Type	Location			
48	2	185	172	325 Main Street	Private	Cleanout	Yard - Back	51	Cap and seal cleanout	$ 700.00
49	2	177A	173	34 Catoonah Street	Private	Service Connection	Yard - Side	51	Dye water tracing	$ 1,100.00
50	2	177A	173	35 Catoonah Street Sump 1	Private	Sump Pump	N/A	8,640	Disconnect and re-route sump pump	$ 2,100.00
51	2	177A	173	35 Catoonah Street Sump 2	Private	Sump Pump	N/A	8,640	Disconnect and re-route sump pump	$ 2,100.00
52	4	40D, 40A	36	24 Bailey Avenue	Private	Cleanout	Yard - Front	103	Cap and seal cleanout	$ 700.00
53	4	40D, 40A	36	27 Bailey Avenue	Private	Telephone Manhole	Paved Asph.	136	Inspect manhole	$ 200.00
54	4	13C	13A	4 Sunset Lane	Private	Cleanout	Yard - Side	64	Cap and seal cleanout	$ 700.00
55	4	13C	13A	47 Sunset Lane	Private	Cleanout	Yard - Side	64	Cap and seal cleanout	$ 700.00
56	3	133: A,B,C, D,E,F	133	25 Gilbert - Recreational Building	Public	Cleanout	Yard - Side	39	Cap and seal cleanout	$ 700.00
57	3	136, 137A, 138, 138: A,B,C	136:A ,C,D, 135	25 Abbott Avenue	Private	Cleanout	Paved Conc.	3	Cap and seal cleanout	$ 700.00
58	3	149C, 149A	147, 147A	14 Mulvaney Court	Private	Cleanout	Yard - Front	3	Cap and seal cleanout	$ 700.00
59	3	160	155, 156, 154	10 Greenfield Ave (CB) B	Public	Catchbasin	Paved Asph.	19,069	Dye water tracing	$ 1,100.00

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description: Sector	Source Description: Type	Source Description: Location	Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
60	3	160	155, 156, 154	10 Greenfield Ave (CB) A	Public	Catchbasin	Paved Asph.	16,345	Dye water tracing	$ 1,100.00
61	3	164, 163A, 161	160	21 Bryon Ave	Private	Cleanout	Yard - Front	26	Cap and seal cleanout	$ 700.00
62	3	164, 163A, 161	160	19 Bryon Ave A	Private	Cleanout	Yard - Front	26	Cap and seal cleanout	$ 700.00
63	3	164, 163A, 161	160	19 Bryon Ave B	Private	Cleanout	Yard - Front	26	Cap and seal cleanout	$ 700.00
64	3	O10	R10, O8, O7, O6, O5 ,O4 ,O3, O2	20 Overlook Drive	Private	Cleanout	Yard - Front	64	Cap and seal cleanout	$ 700.00
65	3	AH1, AH3	AH4, AH5, AH6	10 Arrow Head Pl	Private	Cleanout	Yard - Side	13	Cap and seal cleanout	$ 700.00
66	3	R14	R12, R11, R10, R9	SMH R10	Public	Sewer Manhole	Paved Asph.	9,535	Seal corbel and frame, inspect manhole	$ 3,500.00
67	1	106	95	57 Main Street	Private	Service Connection	Yard - Back	103	Dye water tracing	$ 1,100.00

TABLE 1. SUMMARY OF INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)

Source No.	Sub-area	From MH	To MH	Address	Source Description			Calculated Peak Inflow Rate (gpd)	Recommendation	Estimated Rehabilitation Cost
					Sector	Type	Location			
68	1	106	95	7 Main Street	Private	Drain Culvert	Yard - Back	*(2)*	Dye water tracing	$ 1,100.00
69	3	R28	V2	99 Ramapoo Road	Private	Service Connection	Yard - Side	*(1)*	Dye water tracing	$ 1,100.00
70	3	R28	V2	102 Ramapoo Road	Private	Cleanout	Yard - Front	64	Cap and seal cleanout	$ 700.00
71	3	R25, RH4	R22	4 Ramapoo Hill Road	Private	Cleanout	Yard - Front	103	Cap and seal cleanout	$ 700.00
72	3	R25, RH4	R22	131 Ramapoo Road	Private	Cleanout	Yard - Front	51	Cap and seal cleanout	$ 700.00
73	3	M1A	M6	20 Mulberry Street	Private	Cleanout	Yard - Side	51	Cap and seal cleanout	$ 700.00
74	5	642, 611	614	35 Copps Hill Road	Private	Catchbasin	Yard - Front	257	Corrected	-
75	6	131, 167	128	18 Gilbert Street A	Private	Service Connection	Yard - Back	257	Dye water tracing	$ 1,100.00
76	6	131, 167	128	18 Gilbert Street B	Private	Service Connection	Yard - Back	257	Dye water tracing	$ 1,100.00
77	6	131, 167	128	18 Gilbert Street C	Private	Service Connection	Yard - Back	257	Dye water tracing	$ 1,100.00
78	6	8	116	SMH 116	Private	Service Connection	Non - Paved	189	Dye water tracing	$ 1,100.00
Totals								**287,316**		**$78,300**

Notes: 1. Possible inflow source above ground surface. No inflow rate estimate for source.

2. Further investigation necessary to estimate inflow rate. No inflow estimate has been made for indirect source number 68.

3. Direct inflow source has been disconnected. No rehabilitation cost is estimated.

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
29 Branchville Road	Downspout	Private	Downspout	Yard - Front
29 Branchville Road	Downspout	Private	Downspout	Yard - Back
48 Branchville Road	Downspout	Private	Downspout	Yard - Front
48 Branchville Road	Downspout	Private	Downspout	Yard - Back
50 Branchville Road	Downspout	Private	Downspout	Yard - Front
50 Branchville Road	Downspout	Private	Downspout	Yard - Back
32 Main Street	Downspout	Private	Downspout	Yard - Front
32 Main Street	Downspout	Private	Downspout	Yard - Back
88 Main Street	Driveway Drain / Downspout	Private	Downspout	Yard - Front
88 Main Street	Driveway Drain / Downspout	Private	Driveway Drain	Yard - Back
27 Rockwell	Downspout	Private	Downspout	Yard - Front
27 Rockwell	Downspout	Private	Downspout	Yard - Back
5 East Ridge	Downspout	Private	Downspout	Yard - Front
5 East Ridge	Downspout	Private	Downspout	Yard - Back
114 Main Street	Driveway Drain / Downspout	Private	Downspout	Yard - Front
114 Main Street	Driveway Drain / Downspout	Private	Driveway Drain	Yard - Back
45 Branchville Road	Downspout	Private	Downspout	Yard - Front
45 Branchville Road	Downspout	Private	Downspout	Yard - Back
78 Prospect Street	Downspout	Private	Downspout	Yard - Front
78 Prospect Street	Downspout	Private	Downspout	Yard - Back
61 High Ridge Ave	Downspout	Private	Downspout	Yard - Front

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
61 High Ridge Ave	Downspout	Private	Downspout	Yard - Back
21 King Lane	Downspout	Private	Downspout	Yard - Front
21 King Lane	Downspout	Private	Downspout	Yard - Back
145 Main Street	Downspout	Private	Downspout	Yard - Front
145 Main Street	Downspout	Private	Downspout	Yard - Back
125 High Ridge Ave	Downspouts	Private	Downspout	Yard - Front
111 High Ridge Ave	Downspouts	Private	Downspout	Yard - Front
1 Wilton Road	Yard Drain	Private	Area Drain	Yard - Front
353 Main Street	Downspout	Private	Downspout	Yard - Front
378 Main Street	Downspout	Private	Downspout	Yard - Front
378 Main Street	Downspout	Private	Downspout	Yard - Back
396 Main Street	Downspout	Private	Downspout	Yard - Front
396 Main Street	Downspout	Private	Downspout	Yard - Back
470 Main Street	Downspout	Private	Downspout	Yard - Front
470 Main Street	Downspout	Private	Downspout	Yard - Back
443 Main Street	Downspout	Private	Downspout	Yard - Front
443 Main Street	Downspout	Private	Downspout	Yard - Back
381, 385, 387 Main Street	Downspout	Private	Downspout	Yard - Front
381, 385, 387 Main Street	Downspout	Private	Downspout	Yard - Back
51 Prospect - Housing Authority	Downspout	Private	Downspout	Yard - Front
51 Prospect - Housing Authority	Downspout	Private	Downspout	Yard - Back
70 Ramapoo Road	Downspout	Private	Downspout	Yard - Front

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
8 Victor Drive	Driveway Drain	Private	Driveway Drain	Paved Conc.
9 Victor Drive	Driveway Drain	Private	Driveway Drain	Paved Conc.
11 Victor Drive	Driveway Drain	Private	Driveway Drain	Paved Conc.
15 Victor Drive	Driveway Drain	Private	Driveway Drain	Paved Conc.
17 Victor Drive	Downspout	Private	Downspout	Yard - Front
85 Ramapoo Road	Downspout	Private	Downspout	Yard - Front
86 Ramapoo Road	Driveway Drain	Private	Driveway Drain	Paved Conc.
10 Millstore Court	Downspout	Private	Downspout	Yard - Front
102 Ramapoo Road	Downspout	Private	Downspout	Yard - Front
6 Rochambeau Ave	Downspout	Private	Downspout	Yard - Front
11 Rochambeau Ave	Driveway Drain	Private	Driveway Drain	Paved Conc.
14 Rochambeau Ave	Driveway Drain	Private	Driveway Drain	Paved Conc.
1 Washington Ave	Driveway Drain	Private	Driveway Drain	Paved Conc.
27 Mountain View	Driveway Drain	Private	Driveway Drain	Paved Conc.
16 Roberts Lane	Downspout	Private	Downspout	Yard - Front
10 Roberts Lane	Downspout	Private	Downspout	Yard - Front
20 Roberts Lane	Driveway Drain	Private	Driveway Drain	Paved Conc.
26 Roberts Lane	Downspout	Private	Downspout	Yard - Front
15 Danbury Road	Downspout	Private	Downspout	Yard - Front
Recreation Center	Downspouts	Private	Downspout	Yard - Front
Recreation Center	Downspouts	Private	Downspout	Yard - Side
Recreation Center	Downspouts	Private	Downspout	Yard - Back

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
Frog Hollow	Downspouts	Private	Downspout	Yard - Side
Grape Lane	Downspouts	Private	Downspout	Yard - Side
Hollyberry Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Juneberry Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Kumquat Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Lemon Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Meadow Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Island Path *(1)*	Downspouts	Private	Downspout	Yard - Side
Island Path *(1)*	Downspouts	Private	Downspout	Yard - Back
Dogberry Lane *(1)*	Downspouts	Private	Downspout	Yard - Side
Cypress lane	Downspouts	Private	Downspout	Yard - Side
Blueberry Lane	Downspouts	Private	Downspout	Yard - Side
Quince	Downspouts	Private	Downspout	Yard - Back
Raspberry	Downspouts	Private	Downspout	Yard - Front
Sandlewood *(1)*	Downspouts	Private	Downspout	Yard - Front
Sandlewood *(1)*	Downspouts	Private	Downspout	Yard - Side
Outpost *(1)*	Downspouts	Private	Downspout	Yard - Side
Outpost *(1)*	Downspouts	Private	Downspout	Yard - Front
Teaberry *(1)*	Downspouts	Private	Downspout	Yard - Side
Winterberry *(1)*	Downspouts	Private	Downspout	Yard - Front
Apricot *(1)*	Downspouts	Private	Downspout	Yard - Side
Apricot *(1)*	Downspouts	Private	Downspout	Yard - Back

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
353 Main Street	Downspouts	Private	Downspout	Yard - Side
35 Copps Hill	Downspouts	Private	Downspout	Yard - Front
35 Copps Hill	Downspouts	Private	Downspout	Yard - Back
35 Copps Hill	Downspouts	Private	Downspout	Yard - Side
Sugar Maple	Downspouts	Private	Building Drain/Flat Roof	--
Redwood	Downspouts	Private	Downspout	Yard - Side
Redwood	Downspouts	Private	Area Drain	Yard - Back
Redwood	Downspouts	Private	Building Drain/Flat Roof	--
Quarry Corner	Downspouts	Private	Downspout	Yard - Side
Quarry Corner	Downspouts	Private	Building Drain/Flat Roof	--
Persimmon	Downspouts	Private	Building Drain/Flat Roof	--
Olive	Downspouts	Private	Building Drain/Flat Roof	--
Nectar	Downspouts	Private	Stairwell Drain	Yard - Side
Nectar	Downspouts	Private	Building Drain/Flat Roof	--
Melon	Downspouts	Private	Building Drain/Flat Roof	--
Kiwi	Downspouts	Private	Building Drain/Flat Roof	--
Lime/Juniper *(1)*	Downspouts	Private	Downspout	Yard - Side
Lime/Juniper *(1)*	Downspouts	Private	Downspout	Yard - Front
Lime/Juniper *(1)*	Downspouts	Private	Building Drain/Flat Roof	--
Honeysuckle/Juniper *(1)*	Downspouts	Private	Downspout	Yard - Side
Honeysuckle/Juniper *(1)*	Downspouts	Private	Downspout Connection	Yard - Front
Honeysuckle/Juniper *(1)*	Downspouts	Private	Building Drain/Flat Roof	--

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
Greenbrier/Honeysuckle *(1)*	Downspouts	Private	Downspout Connection	Yard - Side
Greenbrier/Honeysuckle *(1)*	Downspouts	Private	Downspout	Yard - Side
Greenbrier/Honeysuckle *(1)*	Downspouts	Private	Building Drain/Flat Roof	--
Forest Lane	Downspouts	Private	Downspout	Yard - Side
Forest Lane	Downspouts	Private	Building Drain/Flat Roof	--
Edelweiss Lane *(1)*	Downspouts	Private	Downspout	Yard - Front
Edelweiss Lane *(1)*	Downspouts	Private	Building Drain/Flat Roof	--
Edelweiss Lane *(1)*	Downspouts	Private	Downspout	Yard - Back
Daisy	Downspouts	Private	Downspout	Yard - Side
Daisy	Downspouts	Private	Downspout	Yard - Back
46-60 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
46-60 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
64-72 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
13-28 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
29-44 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
29-44 Lawson *(1)*	Downspouts	Private	Area Drain	Yard - Back
13-28 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
13-28 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Back
13-28 Lawson *(1)*	Downspouts	Private	Area Drain	Yard - Back
13-28 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Side
73-84 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Front
73-84 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Back

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
87-99 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
87-99 Olcott *(1)*	Downspouts	Private	Area Drain	Yard - Back
87-99 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Side
87-99 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Back
100-117 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
100-117 Olcott *(1)*	Downspouts	Private	Area Drain	Yard - Back
100-117 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Side
100-117 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Back
118-127 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
118-127 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Side
1-12 Stebbins Close *(1)*	Downspouts	Private	Downspout	Yard - Back
1-12 Stebbins Close *(1)*	Downspouts	Private	Downspout	Yard - Back
1-8 Quincy Close *(1)*	Downspouts	Private	Downspout	Yard - Back
1-8 Quincy Close *(1)*	Downspouts	Private	Downspout	Yard - Front
9-24 Quincy *(1)*	Downspouts	Private	Downspout	Yard - Side
9-24 Quincy *(1)*	Downspouts	Private	Downspout	Yard - Front
9-24 Quincy *(1)*	Downspouts	Private	Downspout	Yard - Back
62-86 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
62-86 Olcott *(1)*	Downspouts	Private	Area Drain	Yard - Back
62-86 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Back
50-61 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
50-61 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Back

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
34-49 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Back
18-26 Keeler Court *(1)*	Downspouts	Private	Downspout	Yard - Back
18-26 Keeler Court *(1)*	Downspouts	Private	Downspout	Yard - Front
1-6 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Side
1-6 Olcott *(1)*	Downspouts	Private	Downspout	Yard - Front
1-12 Lawson *(1)*	Downspouts	Private	Downspout	Yard - Back
1-8 Cook Close *(1)*	Downspouts	Private	Downspout	Yard - Back
1-8 Cook Close *(1)*	Downspouts	Private	Downspout	Yard - Back
1-6 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
1-6 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
1-6 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
1-6 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
7-9 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
7-9 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
7-9 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
10-14 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
10-14 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
10-14 Quail Ridge 2 *(1)*	Downspouts	Private	Driveway Drain	Driveway
10-14 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
15-18 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
15-18 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
15-18 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
15-18 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard -

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
				Side
20 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
20 Quail Ridge 2 *(1)*	Downspouts	Private	Driveway Drain	Driveway
20 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
21-22 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
21-22 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
21-22 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
21-22 Quail Ridge 2 *(1)*	Downspouts	Private	Windown Well Drain	Driveway
23-28 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
23-28 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
23-28 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
29-31 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
29-31 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
29-31 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
32-35 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
32-35 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
32-35 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
32-35 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
36-41 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
36-41 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
36-41 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
50-46 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
50-46 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
50-46 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
45-42 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
45-42 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
51-54 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
51-54 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
51-54 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
55-60 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
55-60 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
55-60 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
61-62 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
61-62 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
63-65 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
63-65 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Side
63-65 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
66-68 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
66-68 Quail Ridge 2 *(1)*	Downspouts	Private	Area Drain	Yard - Back
66-68 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
69-70 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
69-70 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Back
71-72 Quail Ridge 2 *(1)*	Downspouts	Private	Downspout	Yard - Front
60-63 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
60-63 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
60-63 Quail Ridge *(1)*	Downspouts	Private	Area Drain	Yard - Back
56-59 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
56-59 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
56-59 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Side
52-55 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
52-55 Quail Ridge *(1)*	Downspouts	Private	Driveway Drain	Driveway
52-55 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
49-51 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
49-51 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
43-45 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Side
43-45 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
47-48 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
47-48 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
37-42 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
37-42 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
37-42 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Side
36 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
36 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
29-32 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
29-32 Quail Ridge *(1)*	Downspouts	Private	Driveway Drain	Driveway
29-32 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
29-32 Quail Ridge *(1)*	Downspouts	Private	Area Drain	Yard - Back
35-33 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
35-33 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
1-14 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
1-14 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
1-14 Quail Ridge *(1)*	Downspouts	Private	Area Drain	Yard - Back
1-14 Quail Ridge *(1)*	Downspouts	Private	Driveway Drain	Driveway
1-14 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
1-14 Quail Ridge *(1)*	Downspouts	Private	Area Drain	Yard - Back
19-20 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
19-20 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
19-20 Quail Ridge *(1)*	Downspouts	Private	Driveway Drain	Driveway
15-18 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
15-18 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Side
15-18 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
21-23 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
21-23 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
25 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Front
25 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Side
25 Quail Ridge *(1)*	Downspouts	Private	Downspout	Yard - Back
14 Danbury Road	Downspout	Private	Downspout	Yard - Front
8 Govenor St (Elementary School)	Flat Roof	Private	Building Drain/Flat Roof	Roof
10 East Ridge (Middle School)	Flat Roof	Private	Building Drain/Flat Roof	Roof
Stop & Shop Complex at Copps Hill Plaza	Flat Roof	Private	Building Drain/Flat Roof	Roof
316 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof

TABLE 2. SUMMARY OF SUSPECT INFLOW SOURCES IDENTIFIED DURING SMOKE TESTING (CONT.)				
Address	**Suspect Source Note**	**Sector**	**Suspect Source Type**	**Location**
374 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
378 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
394 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
418 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
420 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
422 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
426 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
404 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
389 Main Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
18 Bailey Ave	Flat Roof	Private	Building Drain/Flat Roof	Roof
183 High Ridge Ave	Flat Roof	Private	Building Drain/Flat Roof	Roof
46 Danbury Road	Flat Roof	Private	Building Drain/Flat Roof	Roof
10 South Street	Flat Roof	Private	Building Drain/Flat Roof	Roof
90 Danbury Road	Flat Roof	Private	Building Drain/Flat Roof	Roof

Notes: 1. Multiple suspect sources recorded.

ATTACHMENT A

EST
Associates, Inc.

sde
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ENGINEERING

SMOKE TESTING REPORT

for

Ridgefield, CT

Prepared by:

SDE, Inc.
354 Merrimack St, Suite 200
Lawrence, MA 01843

2013

EST Associates, Inc.

sde civil+environmental ENGINEERING

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Suspect Sources: Potential inflow sources that did not smoke and will need further investigation to determine connectivity to the sanitary sewer.

Positive Sources: A source that did smoke and a connection to the sanitary sewer was evident.

I. Tables

EST Associates, Inc.

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Table 1: Summary of Findings

	Sector	Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	
14-		Clean out	

Date	Positive Source Address	Line Section		Source Note	Footage	Sector	Source Type	Location	Area ($feet^2$)	Runoff Coefficient	Sump Pump Connected to Sewer
9/9/2013	25 Rowland Lane	68A	62	Positive	854	2	14	6	40	0.17	
9/9/2013	154 Kent Lane	89	85	Positive	912	1	13	7	50	0.25	
9/9/2013	84 Governor Street A	75B	73A	Positive		2	14	7	20	0.17	
9/9/2013	84 Governor Street B	75B	73A	Positive	768	2	14	7	20	0.17	
9/9/2013	84 Governor Street C	75B	73A	Positive		2	1	7	10	0.17	
9/9/2013	58 Prospect Ridge Street	75B	73A	Positive		2	14	7	20	0.17	
9/9/2013		92	89	Negative	768				xxx		
9/9/2013		79	71	Negative	837				xxx		
9/9/2013		72	71	Negative	1283				xxx		
9/9/2013	29 Branchville Road A	85	79	Positive		2	14	6	200	0.17	
9/9/2013	29 Branchville Road B	85	79	Positive	1044	2	14	7	600	0.5	
9/10/2013	SMH 98A	98A, 97A	95	Positive	1145	1	13	2	16	0.9	
9/10/2013	45 West Lane	110	104	Positive		2	13	6	10	0.17	
9/10/2013	58 West Lane	110	104	Positive	1454	2	14	6	above ground		
9/10/2013	55 High Ridge Ave	115	109	Positive		2	14	6	10	0.17	
9/10/2013	23 High Ridge Ave	115	109	Positive		1	10	5	1000	0.9	
9/10/2013	3 Parley Lane	115	109	Positive	1000	2	14	6	10	0.17	
9/10/2013	SMH 74	73A	72	Positive	480	1	13	11	above ground		
9/10/2013		98	92	Negative	876				xxx		
9/11/2013	CB A at SMH 63	66A	62	Positive		1	10	5	1250	0.9	
9/11/2013	CB B at SMH 63	66A	62	Positive		1	10	5	1250	0.9	
9/11/2013	CB behind 316 Main Street	66A	62	Positive		1	10	7	50	0.17	
9/11/2013	316 Main Street	66A	62	Positive	935	1	14	6	20	0.17	
9/11/2013		62	57A	Negative	361				xxx		
9/11/2013	149 Main Street	205A	189	Positive		2	13	3	100	0.9	
9/11/2013	21 King Lane A 1	205A	189	Positive		2	7	7	1000	0.9	
9/11/2013	21 King Lane A 2	205A	189	Positive		2	7	7	1000	0.9	
9/11/2013	21 King Lane	205A	189	Positive		2	--	--	--	--	✓
9/11/2013	21 King Lane B	205A	189	Positive		2	1	7	100	0.17	
9/11/2013	21 King Lane C	205A	189	Positive		2	10	7	1000	0.17	
9/11/2013	74 High Ridge Road A	205A	189	Positive		2	14	7	1000	0.2	
9/11/2013	74 High Ridge Road B	205A	189	Positive		2	14	7	1000	0.2	
9/11/2013	74 High Ridge Road C	205A	189	Positive	1440	2	14	7	1000	0.2	
9/11/2013	63 High Ridge Road	201	197	Positive	788	2	--	--	--	--	✓
9/11/2013	87 High Ridge Road - CB	197	189	Positive		1	10	2	1000	0.9	
9/11/2013	87 High Ridge Road	197	189	Positive	1056	2	1	8	40	0.17	
9/11/2013		J2, 189	187	Negative	816				xxx		
9/12/2013		180D, 180B	SMH180	Negative	1029				xxx		
9/12/2013	SMH 67B	67E	67C	Positive	763	1	13	7	600	0.5	
9/12/2013	SMH 71.2 - Below Grade	71.3	71	Positive		1	13	3	40	0.17	
9/12/2013	58 Branchville Road	71.3	71	Positive		2	14	6	20	0.17	
9/12/2013	64 Branchville Road	71.3	71	Positive		2	6	6	1000	0.9	
9/12/2013	SMH 71.3 - Loose Frame	71.3	71	Positive	1078	1	13	3	200	0.17	
9/12/2013	2 Peaceable Street	184	178	Positive		2	14	6	40	0.17	
9/12/2013	129 High Ridge Road	184	178	Positive		2	14	6	20	0.17	
9/12/2013	145 High Ridge Road	184	178	Positive		2	13	3	100	0.9	
9/12/2013	CB at 150 High Ridge Road	184	178	Positive	1441	1	10	2	500	0.9	
9/12/2013		208, 187	185	Negative	1288				xxx		
9/24/2013		14	13	Negative	402				xxx		
9/24/2013	490 Main Street A	25	21	Positive		2	14	7	above ground		
9/24/2013	490 Main Street B	25	21	Positive	864	2	14	7	above ground		
9/24/2013	54 Prospect Street A	18D	14	Positive		2	6	8	850	0.9	
9/24/2013	54 Prospect Street B	18D	14	Positive	727	2	13	3	500	0.9	
9/24/2013		20	16	Negative	683				xxx		
9/24/2013		52, 57A	47	Negative	1535				xxx		
9/24/2013	421 Main Street	172	167	Positive		2	13	2	40	0.9	
9/24/2013	29 Gilbert Street	172	167	Positive	1056	1	--	--	--	--	✓
9/24/2013	353 Main Street	185	172	Positive		2	10	2	3150	0.9	
9/24/2013	325 Main Street	185	172	Positive	841	2	14	7	20	0.17	
9/24/2013		178	177A	Negative	282				xxx		
9/24/2013	34 Catoonah Street	177A	173	Positive		2	1	8	20	0.17	
9/24/2013	35 Catoonah Street Sump 1	177A	173	Positive		2	--	--	--	--	✓
9/24/2013	35 Catoonah Street Sump 2	177A	173	Positive	839	2	--	--	--	--	✓
9/24/2013		35	32	Negative	769				xxx		
9/24/2013		36, 47	25	Negative	626				xxx		
9/24/2013	24 Bailey Avenue	40D, 40A	36	Positive		2	14	6	40	0.17	
9/24/2013	27 Bailey Avenue	40D, 40A	36	Positive	1020	2	1	2	10	0.9	
9/24/2013		45	39	Negative	745				xxx		
9/25/2013		75E, 75A	75	Negative	603				xxx		
9/25/2013		9F	21	Negative	661				xxx		
9/25/2013		20J	20G	Negative	864				xxx		
9/25/2013		20D	20G	Negative	896				xxx		
9/25/2013		18E	20D	Negative	834				xxx		
9/25/2013		19D	18E	Negative	968				xxx		
9/25/2013		18L	18E	Negative	960				xxx		
9/25/2013		SS 2, 18C	18E	Negative	1242				xxx		

Table 1: Summary of Findings

	Sector	Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	
14-		Clean out	

Date	Positive Source Address	Line Section		Source Note	Footage	Sector	Source Type	Location	Area (feet^2)	Runoff Coefficient	Sump Pump Connected to Sewer
9/25/2013	4 Sunset Lane	13C	13A	Positive		2	14	8	25	0.17	
9/25/2013	47 Sunset Lane	13C	13A	Positive	948	2	14	8	25	0.17	
9/26/2013		133, 131: A,B,C	132	Negative	628				xxx		
9/26/2013	25 Gilbert - Recreational Building	133: A,B,C,D,E,F	133	Positive	1215	1	14	8	15	0.17	
9/26/2013	25 Abbott Avenue	136, 137A, 138, 138: A,B,C	136:A,C,D, 135	Positive	1161	2	14	1	1	0.17	
9/26/2013		137D	137: A, B	Negative	546				xxx		
9/26/2013		143	141A, 141, 140	Negative	1083				xxx		
9/26/2013	14 Mulvaney Court	149C, 149A	147, 147A	Positive	678	2	14	6	1	0.17	
9/26/2013		152, 152A	153A, 149A, 149B	Negative	832				xxx		
9/26/2013	10 Greenfield Ave (CB) B	160	155, 156, 154	Positive		1	10	2	1400	0.9	
9/26/2013	10 Greenfield Ave (CB) A	160	155, 156, 154	Positive	1325	1	10	2	1200	0.9	
9/26/2013		158, 157T, 156S, 157S	157	Negative	881				xxx		
9/26/2013		162, 161A	161	Negative	312				xxx		
9/26/2013	21 Bryon Ave	164, 163A, 161	160	Positive		2	14	6	10	0.17	
9/26/2013	19 Bryon Ave A	164, 163A, 161	160	Positive		2	14	6	10	0.17	
9/26/2013	19 Bryon Ave B	164, 163A, 161	160	Positive	1180	2	14	6	10	0.17	
9/27/2013		O16, O15, O14	O18, PH1, N8	Negative	913				xxx		
9/27/2013		FH8, FH7	FH4, FH3, FH1	Negative	1143				xxx		
9/27/2013		N1, N5	N4, N6, N7	Negative	784				xxx		
9/27/2013		O12, O13	O10, O9	Negative	522				xxx		
9/27/2013	20 Overlook Drive	O10	R10,O8,O7,O6, O5,O4,O3,O2	Positive	855	2	14	6	25	0.17	
9/27/2013	10 Arrow Head Pl	AH1, AH3	AH4, AH5, AH6	Positive	777	2	14	8	5	0.17	
9/27/2013	SMH R10	R14	R12, R11, R10, R9	Positive	875	1	13	2	700	0.9	
9/27/2013		139?, 144, 145, 147A, 140	135, 134	Negative	1113				xxx		
9/27/2013		18	R1	Negative	465				xxx		
10/1/2013		K3A, R20C	R26	Negative	1324				xxx		
10/1/2013		R22	R20C	Negative	1130				xxx		
10/1/2013	57 Main Street	106	95	Positive		2	1	7	40	0.17	
10/1/2013	7 Main Street	106	95	Positive	1248	2	1	7	could not locate		
10/1/2013		V2	M1	Negative	991				xxx		
10/1/2013	99 Ramapoo Road	R28	V2	Positive		2	1	8	0	0.17	
10/1/2013	102 Ramapoo Road	R28	V2	Positive	1134	2	14	6	25	0.17	
10/1/2013	4 Ramapoo Hill Road	R25, RH4	R22	Positive		2	14	6	40	0.17	
10/1/2013	131 Ramapoo Road	R25, RH4	R22	Positive	922	2	14	6	20	0.17	
10/1/2013		R8, R3	M1	Negative	920				xxx		
10/1/2013	20 Mulberry Street	M1A	M6	Positive	1245	2	14	8	20	0.17	
10/2/2013		614, 615A	620	Negative	1151				xxx		
10/2/2013		629	625	Negative	1273				xxx		
10/2/2013		651O	651I	Negative	785				xxx		
10/2/2013		651A, 651I	651	Negative	1649				xxx		
10/2/2013		654, 656, 649	650	Negative	1038				xxx		
10/2/2013		643, 648	649	Negative	988				xxx		
10/2/2013		630	605	Negative	921				xxx		
10/2/2013	35 Copps Hill Road	642, 611	614	Positive	1178	2	10	6	100	0.17	
10/2/2013		600	607	Negative	1089				xxx		
10/2/2013		637, 607	611	Negative	1231				xxx		
10/2/2013		615A, PL1003C, PL1003D	651	Negative	1134				xxx		
10/3/2013		RC1	PS	Negative	443				xxx		
10/3/2013		621D, 625	620	Negative	1157				xxx		
10/3/2013		FX1	FX11	Negative	626				xxx		
10/3/2013		FX7,FX9,FX10A	FX12,FX11	Negative	1262				xxx		
10/3/2013		FX12	FX17	Negative	712				xxx		
10/10/2013		123A	120	Negative	1038				xxx		
10/10/2013		128	123A	Negative	1609				xxx		
10/10/2013	18 Gilbert Street A	131, 167	128	Positive		2	1	7	100	0.17	
10/10/2013	18 Gilbert Street B	131, 167	128	Positive		2	1	7	100	0.17	
10/10/2013	18 Gilbert Street C	131, 167	128	Positive	1185	2	1	7	100	0.17	
10/10/2013		C13	C7	Negative	741				xxx		
10/10/2013		C1	C7	Negative	657				xxx		
10/10/2013		21, 13A, 13	8	Negative	816				xxx		
10/10/2013	SMH 116	8	116	Positive	836	2	1	9	50	0.25	
10/10/2013		8E	8B	Negative	365				xxx		
10/15/2013		664	400, 665E	Negative	733				xxx		
10/15/2013		650	664	Negative	965				xxx		
10/15/2013		S1	400	Negative	535				xxx		
10/15/2013		5D	5	Negative	644				xxx		
10/15/2013		116	4	Negative	392				xxx		
10/15/2013		120	116	Negative	1021				xxx		

EST Associates, Inc.

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Table 2: Suspect Source List

	Sector	Suspect Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain/Flat Roof	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	Roof
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location
9/9/2013	29 Branchville Road	Downspout	2	6	6
9/9/2013	29 Branchville Road	Downspout	2	6	7
9/9/2013	48 Branchville Road	Downspout	2	6	6
9/9/2013	48 Branchville Road	Downspout	2	6	7
9/9/2013	50 Branchville Road	Downspout	2	6	6
9/9/2013	50 Branchville Road	Downspout	2	6	7
9/9/2013	32 Main Street	Downspout	2	6	6
9/9/2013	32 Main Street	Downspout	2	6	7
9/9/2013	88 Main Street	Driveway Drain / Downspout	2	6	6
9/9/2013	88 Main Street	Driveway Drain / Downspout	2	2	7
9/9/2013	27 Rockwell	Downspout	2	6	6
9/9/2013	27 Rockwell	Downspout	2	6	7
9/9/2013	5 East Ridge	Downspout	2	6	6
9/9/2013	5 East Ridge	Downspout	2	6	7
9/9/2013	114 Main Street	Driveway Drain / Downspout	2	6	6
9/9/2013	114 Main Street	Driveway Drain / Downspout	2	2	7
9/9/2013	45 Branchville Road	Downspout	2	6	6
9/9/2013	45 Branchville Road	Downspout	2	6	7
9/9/2013	78 Prospect Street	Downspout	2	6	6
9/9/2013	78 Prospect Street	Downspout	2	6	7
9/11/2013	61 High Ridge Ave	Downspout	2	6	6
9/11/2013	61 High Ridge Ave	Downspout	2	6	7
9/11/2013	21 King Lane	Downspout	2	6	6
9/11/2013	21 King Lane	Downspout	2	6	7
9/11/2013	145 Main Street	Downspout	2	6	6
9/11/2013	145 Main Street	Downspout	2	6	7
9/12/2013	125 High Ridge Ave	Downspouts	2	6	6
9/12/2013	111 High Ridge Ave	Downspouts	2	6	6
9/12/2013	1 Wilton Road	Yard Drain	2	5	6
9/24/2013	353 Main Street	Downspout	2	6	6
9/24/2013	378 Main Street	Downspout	2	6	6
9/24/2013	378 Main Street	Downspout	2	6	7
9/24/2013	396 Main Street	Downspout	2	6	6
9/24/2013	396 Main Street	Downspout	2	6	7
9/24/2013	470 Main Street	Downspout	2	6	6
9/24/2013	470 Main Street	Downspout	2	6	7
9/24/2013	443 Main Street	Downspout	2	6	6
9/24/2013	443 Main Street	Downspout	2	6	7
9/24/2013	381, 385, 387 Main Street	Downspout	2	6	6
9/24/2013	381, 385, 387 Main Street	Downspout	2	6	7
9/25/2013	51 Prospect - Housing Authority	Downspout	2	6	6
9/25/2013	51 Prospect - Housing Authority	Downspout	2	6	7
10/1/2013	70 Ramapoo Road	Downspout	2	6	6
10/1/2013	8 Victor Drive	Driveway Drain	2	2	2
10/1/2013	9 Victor Drive	Driveway Drain	2	2	2
10/1/2013	11 Victor Drive	Driveway Drain	2	2	2
10/1/2013	15 Victor Drive	Driveway Drain	2	2	2
10/1/2013	17 Victor Drive	Downspout	2	6	6
10/1/2013	85 Ramapoo Road	Downspout	2	6	6
10/1/2013	86 Ramapoo Road	Driveway Drain	2	2	2
10/1/2013	10 Millstore Court	Downspout	2	6	6
10/1/2013	102 Ramapoo Road	Downspout	2	6	6
10/2/2013	6 Rochambeau Ave	Downspout	2	6	6
10/2/2013	11 Rochambeau Ave	Driveway Drain	2	2	2
10/2/2013	14 Rochambeau Ave	Driveway Drain	2	2	2
10/2/2013	1 Washington Ave	Driveway Drain	2	2	2
10/2/2013	27 Mountain View	Driveway Drain	2	2	2
10/2/2013	16 Roberts Lane	Downspout	2	6	6
10/2/2013	10 Roberts Lane	Downspout	2	6	6
10/2/2013	20 Roberts Lane	Driveway Drain	2	2	2
10/2/2013	26 Roberts Lane	Downspout	2	6	6
10/2/2013	15 Danbury Road	Downspout	2	6	6
10/3/2013	Recreation Center	Downspouts	2	6	6
10/3/2013	Recreation Center	Downspouts	2	6	8

Table 2: Suspect Source List

	Sector	Suspect Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain/Flat Roof	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	Roof
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location
10/3/2013	Recreation Center	Downspouts	2	6	7
10/3/2013	Frog Hollow	Downspouts	2	6	8
10/3/2013	Grape Lane	Downspouts	2	6	8
10/3/2013	Hollyberry Lane	Downspouts	2	6	8
10/3/2013	Juneberry Lane	Downspouts	2	6	8
10/3/2013	Kumquat Lane	Downspouts	2	6	8
10/3/2013	Lemon Lane	Downspouts	2	6	8
10/3/2013	Meadow Lane	Downspouts	2	6	8
10/3/2013	Island Path	Downspouts	2	6	8
10/3/2013	Island Path	Downspouts	2	6	7
10/3/2013	Dogberry Lane	Downspouts	2	6	8
10/3/2013	Cypress lane	Downspouts	2	6	8
10/3/2013	Blueberry Lane	Downspouts	2	6	8
10/3/2013	Quince	Downspouts	2	6	7
10/3/2013	Raspberry	Downspouts	2	6	6
10/3/2013	Sandlewood	Downspouts	2	6	6
10/3/2013	Sandlewood	Downspouts	2	6	8
10/3/2013	Outpost	Downspouts	2	6	8
10/3/2013	Outpost	Downspouts	2	6	6
10/3/2013	Teaberry	Downspouts	2	6	8
10/3/2013	Winterberry	Downspouts	2	6	6
10/3/2013	Apricot	Downspouts	2	6	8
10/3/2013	Apricot	Downspouts	2	6	7
10/3/2013	353 Main Street	Downspouts	2	6	8
10/3/2013	35 Copps Hill	Downspouts	2	6	6
10/3/2013	35 Copps Hill	Downspouts	2	6	7
10/3/2013	35 Copps Hill	Downspouts	2	6	8
10/3/2013	Sugar Maple	Downspouts	2	9	--
10/3/2013	Redwood	Downspouts	2	6	8
10/3/2013	Redwood	Downspouts	2	5	7
10/3/2013	Redwood	Downspouts	2	9	--
10/3/2013	Quarry Corner	Downspouts	2	6	8
10/3/2013	Quarry Corner	Downspouts	2	9	--
10/3/2013	Persimmon	Downspouts	2	9	--
10/3/2013	Olive	Downspouts	2	9	--
10/3/2013	Nectar	Downspouts	2	4	8
10/3/2013	Nectar	Downspouts	2	9	--
10/3/2013	Melon	Downspouts	2	9	--
10/3/2013	Kiwi	Downspouts	2	9	--
10/3/2013	Lime/Juniper	Downspouts	2	6	8
10/3/2013	Lime/Juniper	Downspouts	2	6	6
10/3/2013	Lime/Juniper	Downspouts	2	9	--
10/3/2013	Honeysuckle/Juniper	Downspouts	2	6	8
10/3/2013	Honeysuckle/Juniper	Downspouts	2	7	6
10/3/2013	Honeysuckle/Juniper	Downspouts	2	9	--
10/3/2013	Greenbrier/Honeysuckle	Downspouts	2	7	8
10/3/2013	Greenbrier/Honeysuckle	Downspouts	2	6	8
10/3/2013	Greenbrier/Honeysuckle	Downspouts	2	9	--
10/3/2013	Forest Lane	Downspouts	2	6	8
10/3/2013	Forest Lane	Downspouts	2	9	--
10/3/2013	Edelweiss Lane	Downspouts	2	6	6
10/3/2013	Edelweiss Lane	Downspouts	2	9	--
10/3/2013	Edelweiss Lane	Downspouts	2	6	7
10/3/2013	Daisy	Downspouts	2	6	8
10/3/2013	Daisy	Downspouts	2	6	7
10/3/2013	46-60 Lawson	Downspouts	2	6	6
10/3/2013	46-60 Lawson	Downspouts	2	6	6
10/3/2013	64-72 Lawson	Downspouts	2	6	6
10/3/2013	13-28 Lawson	Downspouts	2	6	6
10/3/2013	29-44 Lawson	Downspouts	2	6	6
10/3/2013	29-44 Lawson	Downspouts	2	5	7
10/3/2013	13-28 Lawson	Downspouts	2	6	6
10/3/2013	13-28 Lawson	Downspouts	2	6	7
10/3/2013	13-28 Lawson	Downspouts	2	5	7

Table 2: Suspect Source List

	Sector	Suspect Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain/Flat Roof	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	Roof
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location
10/3/2013	13-28 Lawson	Downspouts	2	6	8
10/3/2013	73-84 Lawson	Downspouts	2	6	6
10/3/2013	73-84 Lawson	Downspouts	2	6	7
10/3/2013	87-99 Olcott	Downspouts	2	6	6
10/3/2013	87-99 Olcott	Downspouts	2	5	7
10/3/2013	87-99 Olcott	Downspouts	2	6	8
10/3/2013	87-99 Olcott	Downspouts	2	6	7
10/3/2013	0-117 Olcott	Downspouts	2	6	6
10/3/2013	0-117 Olcott	Downspouts	2	5	7
10/3/2013	0-117 Olcott	Downspouts	2	6	8
10/3/2013	0-117 Olcott	Downspouts	2	6	7
10/3/2013	8-127 Olcott	Downspouts	2	6	6
10/3/2013	8-127 Olcott	Downspouts	2	6	8
10/3/2013	1-12 Stebbins Close	Downspouts	2	6	7
10/3/2013	1-12 Stebbins Close	Downspouts	2	6	7
10/3/2013	1-8 Quincy Close	Downspouts	2	6	7
10/3/2013	1-8 Quincy Close	Downspouts	2	6	6
10/3/2013	9-24 Quincy	Downspouts	2	6	8
10/3/2013	9-24 Quincy	Downspouts	2	6	6
10/3/2013	9-24 Quincy	Downspouts	2	6	7
10/3/2013	62-86 Olcott	Downspouts	2	6	6
10/3/2013	62-86 Olcott	Downspouts	2	5	7
10/3/2013	62-86 Olcott	Downspouts	2	6	7
10/3/2013	50-61 Olcott	Downspouts	2	6	6
10/3/2013	50-61 Olcott	Downspouts	2	6	7
10/3/2013	34-49 Olcott	Downspouts	2	6	7
10/3/2013	18-26 Keeler Court	Downspouts	2	6	7
10/3/2013	18-26 Keeler Court	Downspouts	2	6	6
10/3/2013	1-6 Olcott	Downspouts	2	6	8
10/3/2013	1-6 Olcott	Downspouts	2	6	6
10/3/2013	1-12 Lawson	Downspouts	2	6	7
10/3/2013	1-8 Cook Close	Downspouts	2	6	7
10/3/2013	1-8 Cook Close	Downspouts	2	6	7
10/3/2013	1-6 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	1-6 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	1-6 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	1-6 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	7-9 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	7-9 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	7-9 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	10-14 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	10-14 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	10-14 Quail Ridge 2	Downspouts	2	2	3
10/3/2013	10-14 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	15-18 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	15-18 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	15-18 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	15-18 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	20 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	20 Quail Ridge 2	Downspouts	2	2	3
10/3/2013	20 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	21-22 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	21-22 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	21-22 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	21-22 Quail Ridge 2	Downspouts	2	3	3
10/3/2013	23-28 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	23-28 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	23-28 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	29-31 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	29-31 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	29-31 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	32-35 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	32-35 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	32-35 Quail Ridge 2	Downspouts	2	6	8

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Table 2: Suspect Source List

	Sector	Suspect Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain/Flat Roof	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	Roof
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location
10/3/2013	32-35 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	36-41 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	36-41 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	36-41 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	50-46 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	50-46 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	50-46 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	45-42 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	45-42 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	51-54 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	51-54 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	51-54 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	55-60 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	55-60 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	55-60 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	61-62 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	61-62 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	63-65 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	63-65 Quail Ridge 2	Downspouts	2	6	8
10/3/2013	63-65 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	66-68 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	66-68 Quail Ridge 2	Downspouts	2	5	7
10/3/2013	66-68 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	69-70 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	69-70 Quail Ridge 2	Downspouts	2	6	7
10/3/2013	71-72 Quail Ridge 2	Downspouts	2	6	6
10/3/2013	60-63 Quail Ridge	Downspouts	2	6	7
10/3/2013	60-63 Quail Ridge	Downspouts	2	6	6
10/3/2013	60-63 Quail Ridge	Downspouts	2	5	7
10/3/2013	56-59 Quail Ridge	Downspouts	2	6	6
10/3/2013	56-59 Quail Ridge	Downspouts	2	6	7
10/3/2013	56-59 Quail Ridge	Downspouts	2	6	8
10/3/2013	52-55 Quail Ridge	Downspouts	2	6	7
10/3/2013	52-55 Quail Ridge	Downspouts	2	2	3
10/3/2013	52-55 Quail Ridge	Downspouts	2	6	6
10/3/2013	49-51 Quail Ridge	Downspouts	2	6	6
10/3/2013	49-51 Quail Ridge	Downspouts	2	6	7
10/3/2013	43-45 Quail Ridge	Downspouts	2	6	8
10/3/2013	43-45 Quail Ridge	Downspouts	2	6	6
10/3/2013	47-48 Quail Ridge	Downspouts	2	6	6
10/3/2013	47-48 Quail Ridge	Downspouts	2	6	7
10/3/2013	37-42 Quail Ridge	Downspouts	2	6	6
10/3/2013	37-42 Quail Ridge	Downspouts	2	6	7
10/3/2013	37-42 Quail Ridge	Downspouts	2	6	8
10/3/2013	36 Quail Ridge	Downspouts	2	6	6
10/3/2013	36 Quail Ridge	Downspouts	2	6	7
10/3/2013	29-32 Quail Ridge	Downspouts	2	6	7
10/3/2013	29-32 Quail Ridge	Downspouts	2	2	3
10/3/2013	29-32 Quail Ridge	Downspouts	2	6	7
10/3/2013	29-32 Quail Ridge	Downspouts	2	5	7
10/3/2013	35-33 Quail Ridge	Downspouts	2	6	6
10/3/2013	35-33 Quail Ridge	Downspouts	2	6	7
10/3/2013	1-14 Quail Ridge	Downspouts	2	6	7
10/3/2013	1-14 Quail Ridge	Downspouts	2	6	6
10/3/2013	1-14 Quail Ridge	Downspouts	2	5	7
10/3/2013	1-14 Quail Ridge	Downspouts	2	2	3
10/3/2013	1-14 Quail Ridge	Downspouts	2	6	6
10/3/2013	1-14 Quail Ridge	Downspouts	2	5	7
10/3/2013	19-20 Quail Ridge	Downspouts	2	6	6
10/3/2013	19-20 Quail Ridge	Downspouts	2	6	7
10/3/2013	19-20 Quail Ridge	Downspouts	2	2	3
10/3/2013	15-18 Quail Ridge	Downspouts	2	6	6
10/3/2013	15-18 Quail Ridge	Downspouts	2	6	8
10/3/2013	15-18 Quail Ridge	Downspouts	2	6	7

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Table 2: Suspect Source List

	Sector	Suspect Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain/Flat Roof	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	Roof
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location
10/3/2013	21-23 Quail Ridge	Downspouts	2	6	6
10/3/2013	21-23 Quail Ridge	Downspouts	2	6	7
10/3/2013	25 Quail Ridge	Downspouts	2	6	6
10/3/2013	25 Quail Ridge	Downspouts	2	6	8
10/3/2013	25 Quail Ridge	Downspouts	2	6	7
10/10/2013	14 Danbury Road	Downspout	2	6	6
10/10/2013	8 Govenor St (Elementary School)	Flat Roof	2	9	13
10/10/2013	10 East Ridge (Middle School)	Flat Roof	2	9	13
10/10/2013	Stop & Shop Complex at Copps Hill Plaza	Flat Roof	2	9	13
11/11/2013	316 Main Street	Flat Roof	2	9	13
11/11/2013	374 Main Street	Flat Roof	2	9	13
11/11/2013	378 Main Street	Flat Roof	2	9	13
11/11/2013	394 Main Street	Flat Roof	2	9	13
11/11/2013	418 Main Street	Flat Roof	2	9	13
11/11/2013	420 Main Street	Flat Roof	2	9	13
11/11/2013	422 Main Street	Flat Roof	2	9	13
11/11/2013	426 Main Street	Flat Roof	2	9	13
11/11/2013	404 Main Street	Flat Roof	2	9	13
11/11/2013	389 Main Street	Flat Roof	2	9	13
11/11/2013	18 Bailey Ave	Flat Roof	2	9	13
11/11/2013	183 High Ridge Ave	Flat Roof	2	9	13
11/11/2013	46 Danbury Road	Flat Roof	2	9	13
11/11/2013	10 South Street	Flat Roof	2	9	13
11/11/2013	90 Danbury Road	Flat Roof	2	9	13

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Table 3: No Smoke Observed from Stack

	Sector	Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location	Area (feet^2)
9/9/2013	28 Branchville Road	No Smoke				
9/9/2013	32 Main Street	No Smoke				
9/9/2013	26 Rowland	No Smoke				
9/9/2013	20 Rowland	No Smoke				
9/9/2013	27 Rowland	No Smoke				
9/9/2013	17 Rowland	No Smoke				
9/9/2013	14 Rowland	No Smoke				
9/9/2013	43 Rockwell	No Smoke				
9/9/2013	41 Rockwell	No Smoke				
9/9/2013	45 Rockwell	No Smoke				
9/9/2013	47 Rockwell	No Smoke				
9/9/2013	15 Rockwell	No Smoke				
9/9/2013	88 Main Street	No Smoke	2	6, 2	6, 7	1600
9/10/2013	35 High Ridge	No Smoke				
9/10/2013	15 High Ridge	No Smoke				
9/10/2013	48 High Ridge	No Smoke				
9/10/2013	57 High Ridge	No Smoke				
9/10/2013	63 High Ridge	No Smoke				
9/10/2013	51 High Ridge	No Smoke				
9/10/2013	45 High Ridge	No Smoke				
9/10/2013	31 High Ridge	No Smoke				
9/10/2013	29 High Ridge	No Smoke				
9/11/2013	17 Jackson Court	No Smoke				
9/11/2013	11 Jackson Court	No Smoke				
9/11/2013	12 Jackson Court	No Smoke				
9/10/2013	5 High Ridge	No Smoke				

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Table 3: No Smoke Observed from Stack

	Sector	Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location	Area (feet^2)
9/10/2013	58 West Lane	No Smoke				
9/12/2013	159 High Ridge Ave	No Smoke				
9/12/2013	13, 15, 16, 27, 8 Griffith	No Smoke				
9/12/2013	10 West Lane	No Smoke				
9/12/2013	1 Wilton Road	No Smoke				
9/24/2013	368 Main Street	No Smoke				
9/24/2013	34 Bailey	No Smoke				
9/24/2013	22, 23, 28 Catoonah Street	No Smoke				
9/24/2013	111 East Ridge	No Smoke				
9/24/2013	109 East Ridge	No Smoke				
9/24/2013	116 East Ridge	No Smoke				
9/24/2013	41 Catoonah Street	No Smoke				
9/24/2013	41A Catoonah Street	No Smoke				
9/24/2013	43, 43A Catoonah Street	No Smoke				
9/24/2013	45 Catoonah Street	No Smoke				
9/26/2013	26, 30, 32, 36, 37, 42 Bryon Ave	No Smoke				
9/26/2013	15, 17 Greenfield Ave	No Smoke				
9/26/2013	27, 29, 33 Barry Ave	No Smoke				
9/26/2013	29, 35, 49, 55, 61, 80 Overlook Drive	No Smoke				
9/26/2013	6, 7, 10, 11 Greenfield Ave	No Smoke				
9/26/2013	2 Farmhill Road	No Smoke				
9/27/2013	17, 22, 26, 29 Farm Hill Road	No Smoke				
10/1/2013	40, 44 Mullberry Street	No Smoke				
10/10/2013	4 North Salem Road	No Smoke				
10/10/2013	5 North Salem Road	No Smoke				
10/10/2013	7 North Salem Road	No Smoke				

Table 3: No Smoke Observed from Stack

	Sector	Source Type	Location
1-	Public	Service Connection	Paved Conc.
2-	Private	Driveway Drain	Paved Asph.
3-		Windown Well Drain	Driveway
4-		Stairwell Drain	Sidewalk
5-		Area Drain	Curb
6-		Downspout	Yard - Front
7-		Downspout Connection	Yard - Back
8-		Fountain Drain	Yard - Side
9-		Building Drain	Non - Paved
10-		Catch Basin	Creek Bottom
11-		Storm Ditch	Field
12-		Storm Manhole	Golf Course
13-		Sewer Manhole	
14-		Clean out	

Date	Address	Suspect Source Note	Sector	Suspect Source Type	Location	Area (feet^2)
10/10/2013	8 North Salem Road	No Smoke				
10/10/2013	9 North Salem Road	No Smoke				
10/10/2013	15 North Salem Road	No Smoke				
10/10/2013	16 North Salem Road	No Smoke				
10/10/2013	533 Main Street	No Smoke				
10/10/2013	23 Danbury Road	No Smoke				

Ridgefield Smoke Testing Suspect Source Additional Information

*YD= Yard Drain

*DD=Driveway Drain

Complex Name	Building Description	Front	Rear	Side	Flat Roof	Other
Casagamo	46-60 Lawson	6				
Casagamo	61-72 Lawson	3				
Casagamo	13-28 Lawson	5				
Casagamo	29-44 Lawson	4				1 Front YD
Casagamo	13-28 Lawson	5	8	1		1 Rear YD
Casagamo	73-84 Lawson	5	5			
Casagamo	87-99 Olcott	5	1	2		1 Front YD
Casagamo	100-117 Olcott	6	1	1		2 Front YD
Casagamo	118-127 Olcott		1	1		
Casagamo	1-12 Stebbins Close		10			3 Rear YD
Casagamo	1-8 Quincy Close	6	6			
Casagamo	9-24 Quincy	8	5	1		
Casagamo	62-86 Olcott	9	7			1 Front YD
Casagamo	50-61 Olcott	5	5			
Casagamo	34-49 Olcott		2			
Casagamo	18-26 Keeler Ct	2	2			
Casagamo	1-6 Olcott Way	2		12		
Casagamo	1-12 Lawson		4			
Casagamo	1-8 Cook Close	4	4			
Quail Ridge 2	1-6 Quail Ridge 2	7	10	3		1 Rear YD
Quail Ridge 2	7-9 Quail Ridge 2	7	4	1		
Quail Ridge 2	10-14 Quail Ridge 2	6	6			2 Front DWay, 1 Front YD
Quail Ridge 2	15-18 Quail Ridge 2	4	5	2		1 Rear YD
Quail Ridge 2	20 Quail Ridge 2	3	3			1 Front DD
Quail Ridge 2	21-22 Quail Ridge 2	4	3			1 Front YD, DD side
Quail Ridge 2	23-28 Quail Ridge 2	11	8	2		
Quail Ridge 2	29-31 Quail Ridge 2	5	6	2		2 Front YD

Complex Name	Building Description	Front	Rear	Side	Flat Roof	Other
Quail Ridge 2	32-35 Quail Ridge 2	8	5	2		1 Front YD
Quail Ridge 2	36-41 Quail Ridge 2	11	3	2		
Quail Ridge 2	50-46 Quail Ridge 2	11	7	1		
Quail Ridge 2	45-42 Quail Ridge 2	6	5			
Quail Ridge 2	51-54 Quail Ridge 2	7	5	2		
Quail Ridge 2	55-60 Quail Ridge 2	10	7	1		
Quail Ridge 2	61-62 Quail Ridge 2	5	6			
Quail Ridge 2	63-65 Quail Ridge 2	5	5	1		2 Front YD
Quail Ridge 2	66-68 Quail Ridge 2	4	3			2 Front YD
Quail Ridge 2	69-70 Quail Ridge 2	3	4			
Quail Ridge 2	71-72 Quail Ridge 2	5				
Quail Ridge 1	60-63 Quail Ridge	4	4			1 Front YD
Quail Ridge 1	56-59 Quail Ridge	6	6	1		Side YD
Quail Ridge 1	52-55 Quail Ridge	8	4			1 Rear DD
Quail Ridge 1	49-51 Quail Ridge	3	2			
Quail Ridge 1	43-45 Quail Ridge	5		2		
Quail Ridge 1	47-48 Quail Ridge	2	2			
Quail Ridge 1	37-42 Quail Ridge	8	7	1		
Quail Ridge 1	36 Quail Ridge	1	1			
Quail Ridge 1	29-32 Quail Ridge	7	4			2 Rear DD, 2 Front YD
Quail Ridge 1	35-33 Quail Ridge	1	6			
Quail Ridge 1	1-14 Quail Ridge	13	7	10		2 Side YD, 1 Side DD, 1 Front YD
Quail Ridge 1	19-20 Quail Ridge	4	3			1 Rear DD
Quail Ridge 1	15-18 Quail Ridge	4	3	2		1 Front Area Drain, 1 Side Area Drain
Quail Ridge 1	21-23 Quail Ridge	2	5			
Quail Ridge 1	25 Quail Ridge	1	2	1		
Quail Ridge 1	26-28 Quail Ridge	3	7	1		
Fox Hill	Sugar Maple				Yes	
Fox Hill	Redwood				Yes	Side YD
Fox Hill	Quarry Corner			1	Yes	
Fox Hill	Persimmon				Yes	

Complex Name	Building Description	Front	Rear	Side	Flat Roof	Other
Fox Hill	Olive				Yes	
Fox Hill	Nector				Yes	Side Stair Drain
Fox Hill	Melon				Yes	
Fox Hill	Kiwi				Yes	
Fox Hill	Lime/Juniper			9	Yes	Downspout Into Foundation
Fox Hill	Honeysuckle/Juniper			5	Yes	4 Open Elbow to Foundation
Fox Hill	Greenbrier/Honeysuckle		2			Downspout Into Foundation
Fox Hill	Forest Lane				Yes	Side YD
Fox Hill	Edelweis Lane/Daisy			3	Yes	1 Front YD
Fox Hill	Frog Hollow			1		
Fox Hill	Grape Lane			1		
Fox Hill	Holly Berry Lane			3		
Fox Hill	Juneberry Lane			5		
Fox Hill	Kumquat Lane			4		
Fox Hill	Lemon Lane			2		
Fox Hill	Meadow Lane			2		
Fox Hill	Island Path		1	3		
Fox Hill	Dogberry Lane			3		
Fox Hill	Cypress Lane			1		
Fox Hill	Blueberry Lane			1		
Fox Hill	Quinoc		1			
Fox Hill	Raspberry Lane	1				
Fox Hill	Sandlewood	2		4		
Fox Hill	Outpost	2		5		
Fox Hill	Teaberry			2		
Fox Hill	Winterberry	2				
Fox Hill	Apricot		1	1		
Rec Center						13 Downspouts total

II. Field Forms

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mk/ss/TH

Inspection Date/Time: 9-9-13

Location/Interceptor: Subarea 1

Set Up MH: SMH-67A

Map:

Upstream MH: SMH-68A

Sheet:

Downstream MH: SMH-62

Segment Length: 854'

Observations

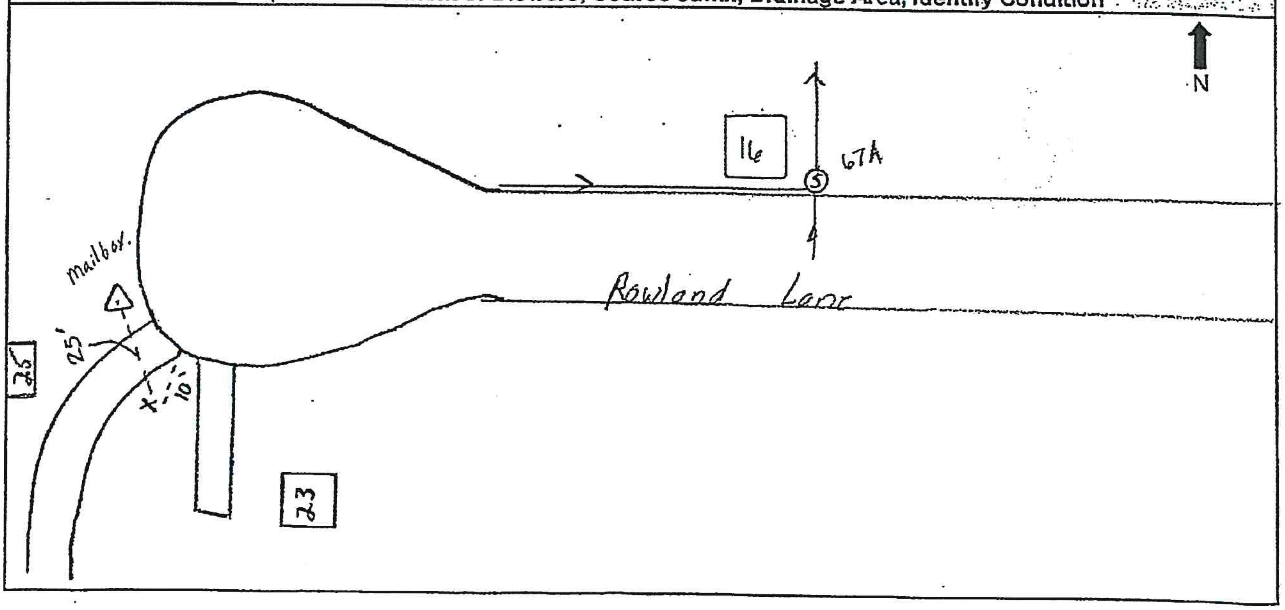
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
25 Rowland Lane	2	2	14	6	40'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



25 Rowland Lane, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde
environmental
ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mk/ss/TH

Inspection Date/Time: 9-9-13 1410

Location/Interceptor: S3-1

Set Up MH: SMH-86

Map:

Upstream MH: SMH-89

Sheet:

Downstream MH: SMH-85

Segment Length: 912

Observations

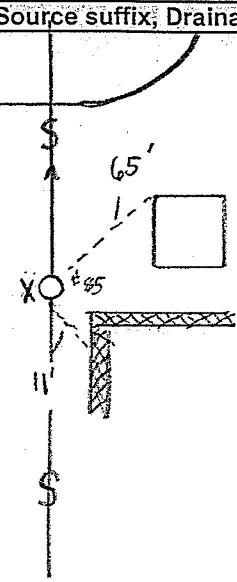
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
154 Kent Lane	2	1	13	7	50	.25	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



154 Kent Lane, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde civil+environmental ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 9-9-13
Set Up MH: SMH-75
Upstream MH: SMH-75B
Downstream MH: SMH-73A

Inspection Crew: MK/SS/TH
Location/Interceptor: Subarea 1
Map:
Sheet:
Segment Length: 768'

Observations

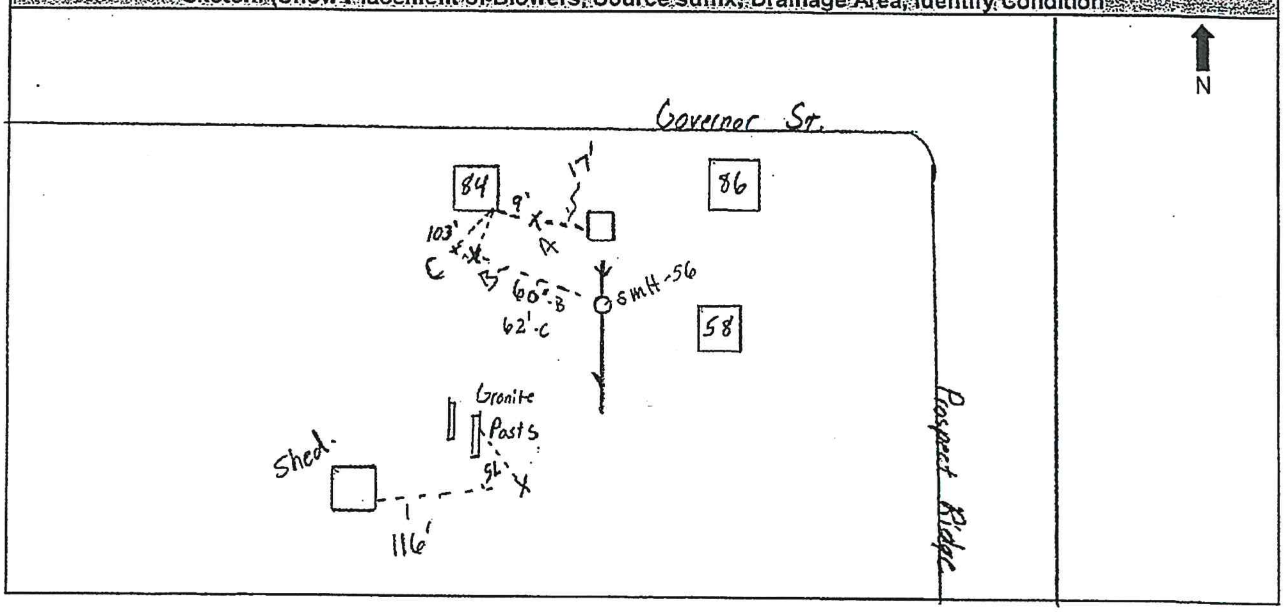
Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
84 Governor St. A	2	2	14	7	20'	.17	
84 Governor St. B	2	2	14	7	20'	.17	
84 Governor St. C	2	2	1	7	10'	.17	
58 Prospect Ridge St.	2	2	14	7	20'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



84 Govenor Street A, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

84 Govenor Street B,C, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

58 Prospect Ridge, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-9-13

Location/Interceptor: Subarea 1

Set Up MH: SMH-89

Map:

Upstream MH: SMH-92

Sheet:

Downstream MH: /

Segment Length: 768'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources

N

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mk/ss/TH

Inspection Date/Time: 9-9-13 1233

Location/Interceptor: Subarea 1

Set Up MH: SMH-69

Map:

Upstream MH: SMH-79

Sheet:

Downstream MH: SMH-71

Segment Length: 837'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources

N

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-9-13 1539

Location/Interceptor: Subarea 1

Set Up MH: SMH-71A

Map:

Upstream MH: SMH-71B, SMH-72

Sheet:

Downstream MH: SMH-71

Segment Length: 1283'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out.	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources

N

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Smoke Testing Form

Owner: Ridgefield CT
Inspection Crew: MK/SS/TH
Inspection Date/Time: 9-9-13 1146
Location/Interceptor: Subarea 1
Set Up MH: SMH 79
Map:
Upstream MH: SMH 85
Sheet:
Downstream MH: /
Segment Length: 1044'

Observations

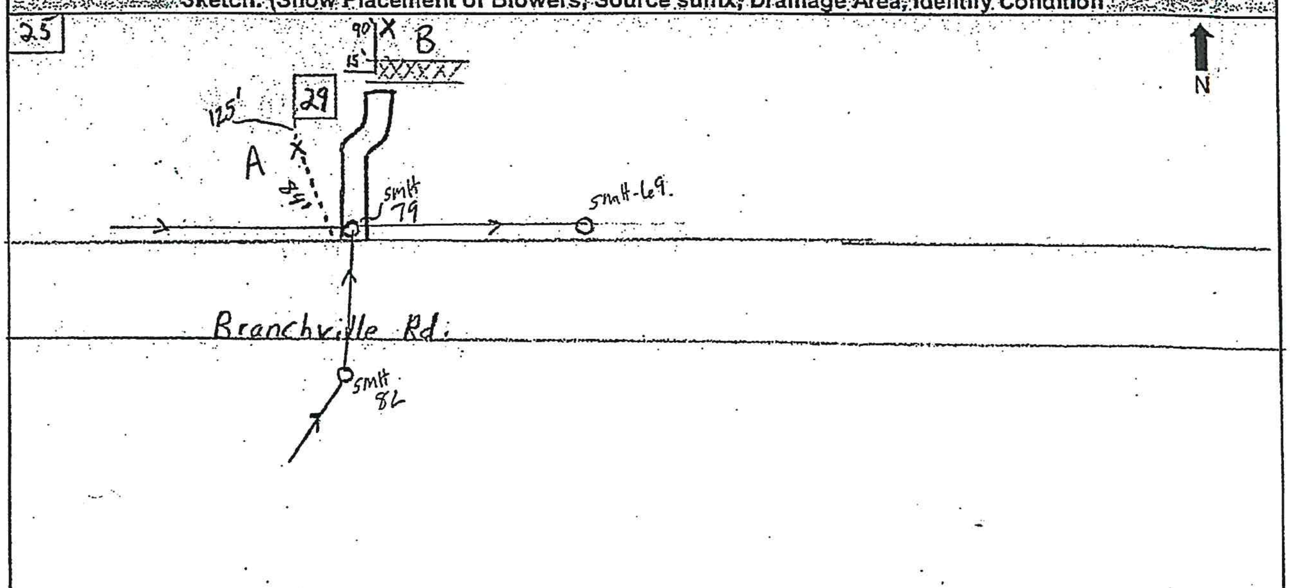
Weather/Ground: [X] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
29 Branchville Road A	2	2	14	6	200'	.17	
29 Branchville Road B	2	2	14	7	600'	.50	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



EST Associates, Inc.

sde civil+environmental ENGINEERING

29 Branchville A, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

EST Associates, Inc.

sde civil+environmental ENGINEERING

29 Branchville B, Ridgefield, CT
9/9/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT | Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-10-13 1425 | Location/Interceptor: Subarea 1

Set Up MH: SMH-98B | Map:

Upstream MH: SMH-98A, SMH-97A | Sheet:

Downstream MH: SMH-95 | Segment Length: 1145

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
SMH-98A	2	1	13	2	16'	.90	

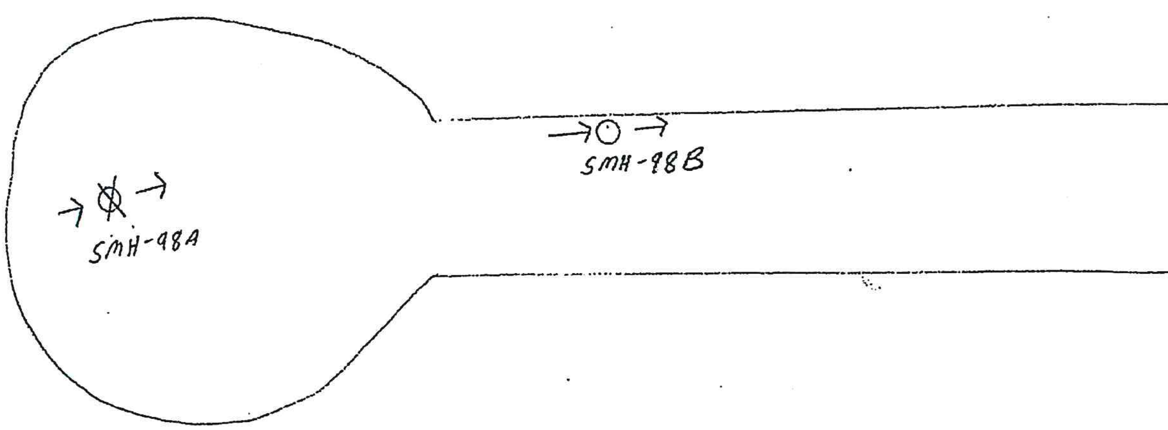
Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

Smoke was coming out
from around the frame

N



SMH - 98A, Ridgefield, CT
9/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-10-13

Set Up MH: SMH-107

Upstream MH: SMH-110

Downstream MH: SMH-104

Inspection Crew: MK /SS/TH

Location/Interceptor: Subarea 1

Map:

Sheet:

Segment Length: 1454'

Observations

Weather/Ground

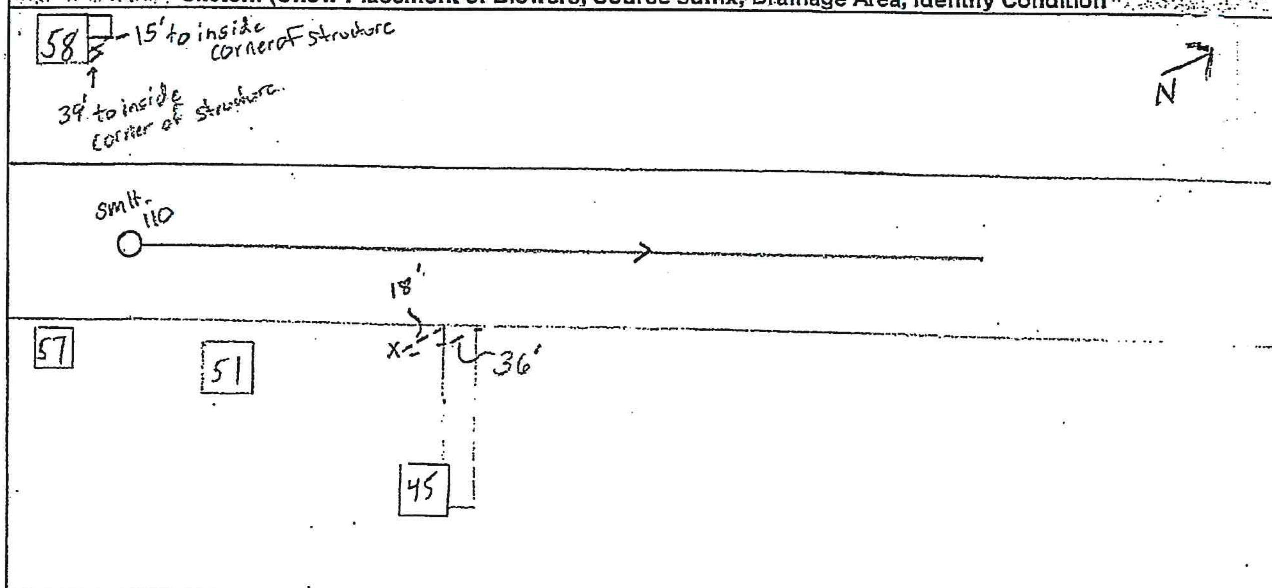
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
45 West Lane	2	2	13	6	10'	.17	
58 West Lane	2	2	14	6	/	-	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



45 West Lane, Ridgefield, CT
9/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

EST Associates, Inc.

58 West Lane, Ridgefield, CT
9/10/2013

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51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mk/ss/tH

Inspection Date/Time: 9-10-13 12:35

Location/Interceptor: Sub-1

Set Up MH: SMH-112

Map:

Upstream MH: SMH-115

Sheet:

Downstream MH: SMH-109

Segment Length: 1000'

Observations

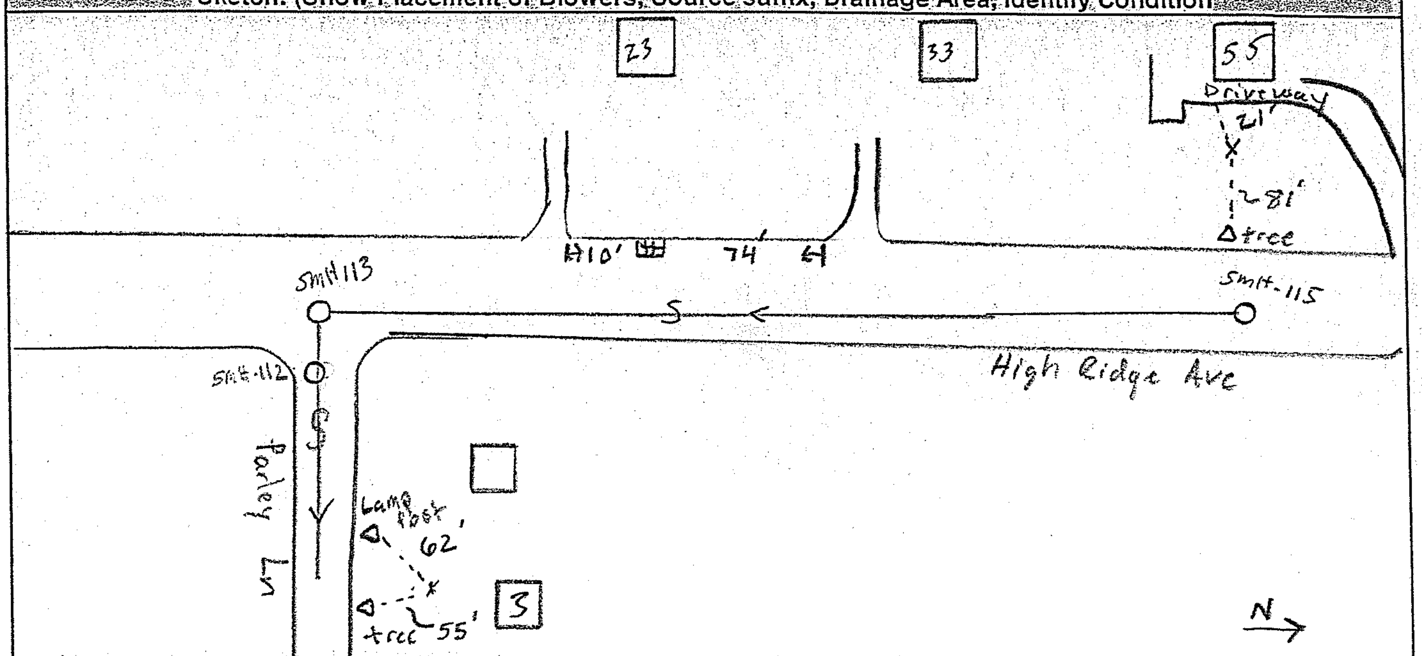
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
55 High Ridge Ave.	2	2	14	6	10'	.17	
23 High Ridge Ave	2	1	10	5	1000	.90	
3 Parley Ln.	2	2	14	6	10'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



55 High Ridge Ave, Ridgefield, CT
9/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

23 High Ridge Ave, Ridgefield, CT
9/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

3 Parley Lane, Ridgefield, CT
12/23/2014

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner:	Ridgefield, CT	Inspection Crew:	MK/KC/TM
Inspection Date/Time:	9-10-13 1030	Location/Interceptor:	Subarea 1
Set Up MH:	SMH-73	Map:	
Upstream MH:	SMH-73A	Sheet:	
Downstream MH:	SMH-72	Segment Length:	480'

Observations

Weather/Ground

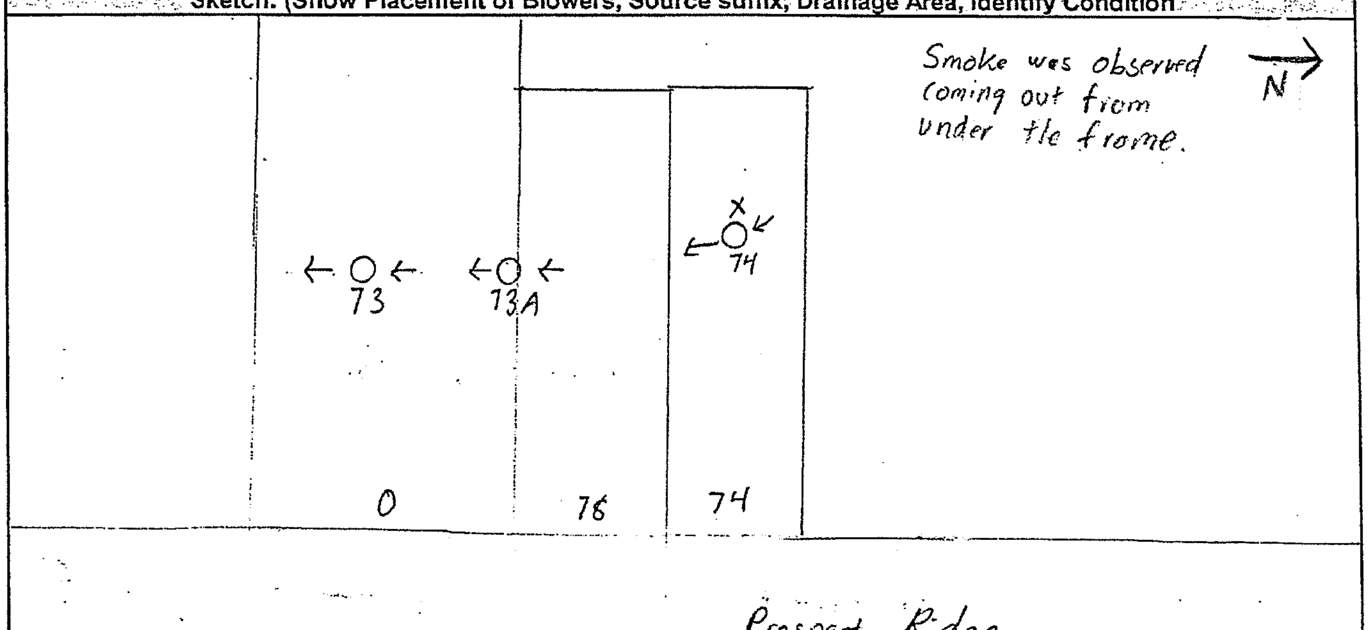
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
SMH-74	2	1	13	11	/	—	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



SMH - 74, Ridgefield, CT
9/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT	Inspection Crew: MK/SS/TH
Inspection Date/Time: 9-10-13 1455	Location/Interceptor: Subarea 1
Set Up MH: SMH-98	Map:
Upstream MH: /	Sheet:
Downstream MH: SMH-92	Segment Length: 876'

Observations

Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Results

N

sde

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/TH
Inspection Date/Time: 9-11-13 0820
Location/Interceptor: Subarea 1
Set Up MH: SMH - 63
Map:
Upstream MH: SMH-66A
Sheet:
Downstream MH: SMH-62
Segment Length: 935'

Observations

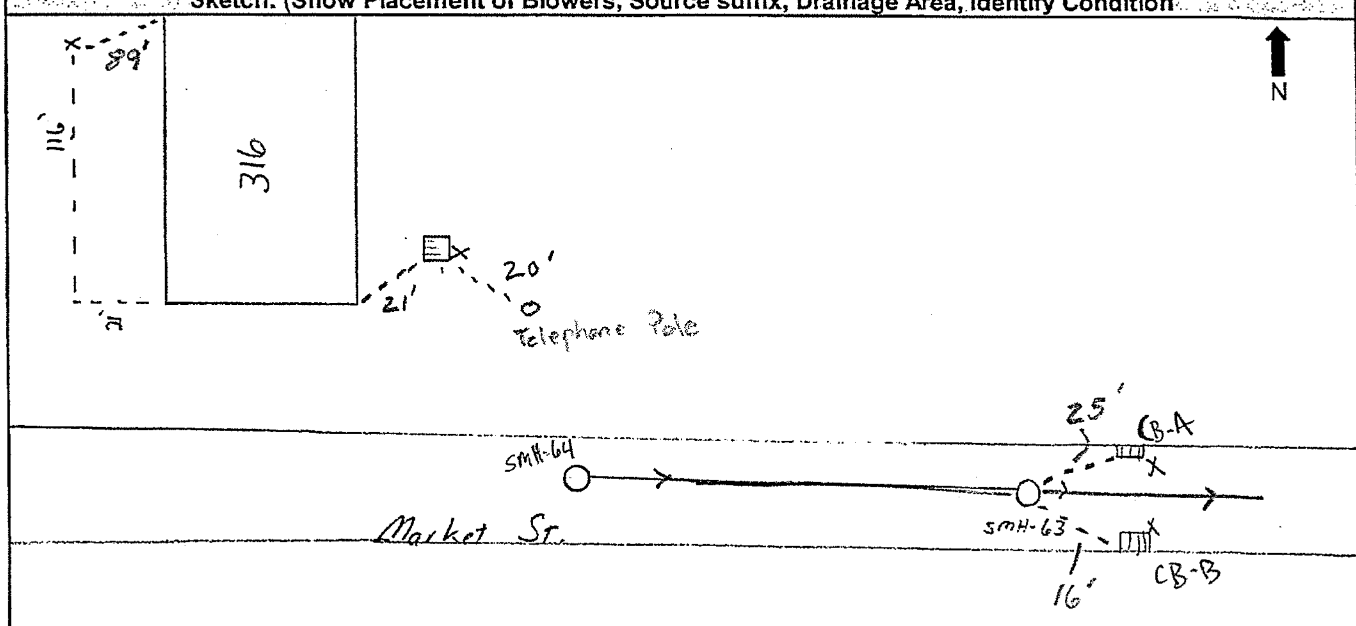
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
CB-A at SMH-63	2	1	10	5	1250'	.90	
CB-B at SMH 63	2	1	10	5	1250'	.90	
CB Behind 316 Main St	2	1	10	7	50'	.17	
316 Main St.	2	1	14	6	20'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



CB A At SMH 63, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

CB B At SMH 63, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

CB Behind 316 Main St, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

316 Main St, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK / SS / TH

Inspection Date/Time: 9-11-13 0830

Location/Interceptor: Subarea 1

Set Up MH: SMH-58

Map:

Upstream MH: SMH-62

Sheet:

Downstream MH: SMH-57A

Segment Length: 361'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers; Source suffix; Drainage Area; Identify Condition

No Positive Sources Found.

N

sde

Smoke Testing Form

Owner: Ridgefield, CT	Inspection Crew: MK/CS/TH
Inspection Date/Time: 9-11-13 1000	Location/Interceptor: Subarea 2
Set Up MH: SMH-203	Map:
Upstream MH: SMH-205A	Sheet:
Downstream MH: SMH-189	Segment Length: 1440'

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

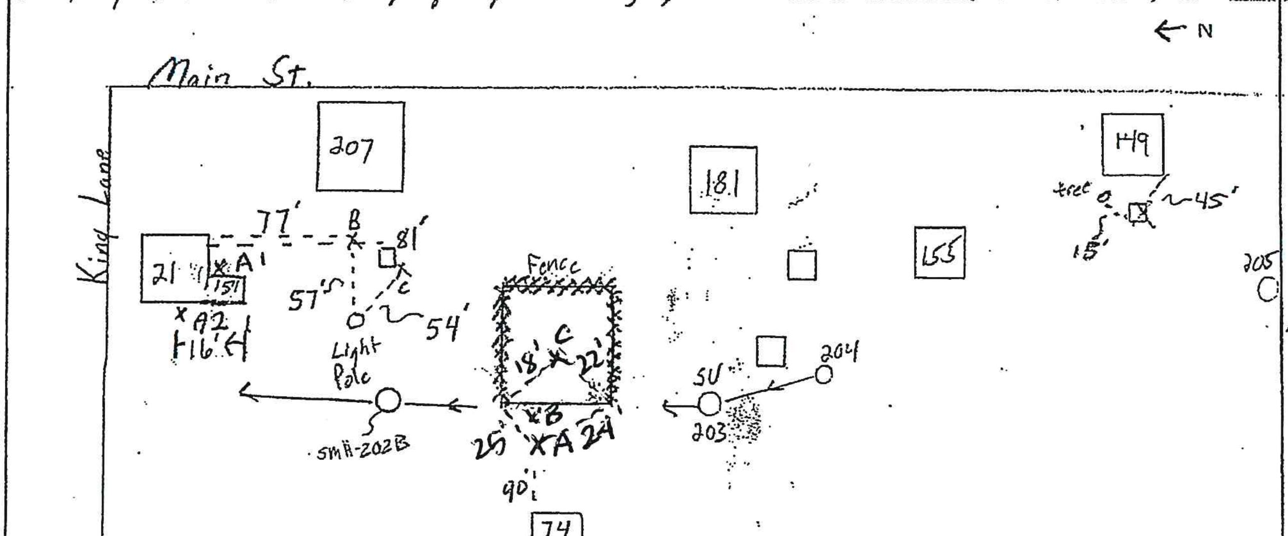
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
149 Main Street	2	2	13	3	100'	.90	
21 King Lane A1 + A2	2	2	7	7	1000'	.90	
21 King Lane B	2	2	1	7	100'	.17	
21 King Lane E	2	2	10	7	1000'	.17	
74 High Ridge Ave	2	2	14	7	100'	.21	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

21 King Lane has a sump pump discharging into the sewer line in basement



51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

EST Associates, Inc.

21 King Lane A1 & A2, Ridgefield, CT
9/11/2013

sde civil+environmental ENGINEERING

A1

A2

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

21 King Lane B, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

21 King Lane C, Ridgefield, CT
9/11/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

Associates, Inc.

civil+environmental ENGINEERING

74 High Ridge Ave A, B, C, Ridgefield, CT
9/11/2013

A

B

C

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-11-13 1200

Set Up MH: SMH - 199

Upstream MH: SMH - 201

Downstream MH: SMH - 197

Inspection Crew: MK/SS/TH

Location/Interceptor: Subarea 2

Map:

Sheet:

Segment Length: 788'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
63 High Ridge Ave	2	2	1				

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

N

Basement filled with smoke due to an open pipe connection. While in basement, it was observed there was a sump pump piped into the sewer line.

461
218
15

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-11-13 1300

Location/Interceptor: Subarea 2

Set Up MH: SMH-191

Map:

Upstream MH: SMH-197

Sheet:

Downstream MH: SMH-189

Segment Length: 1056'

Observations

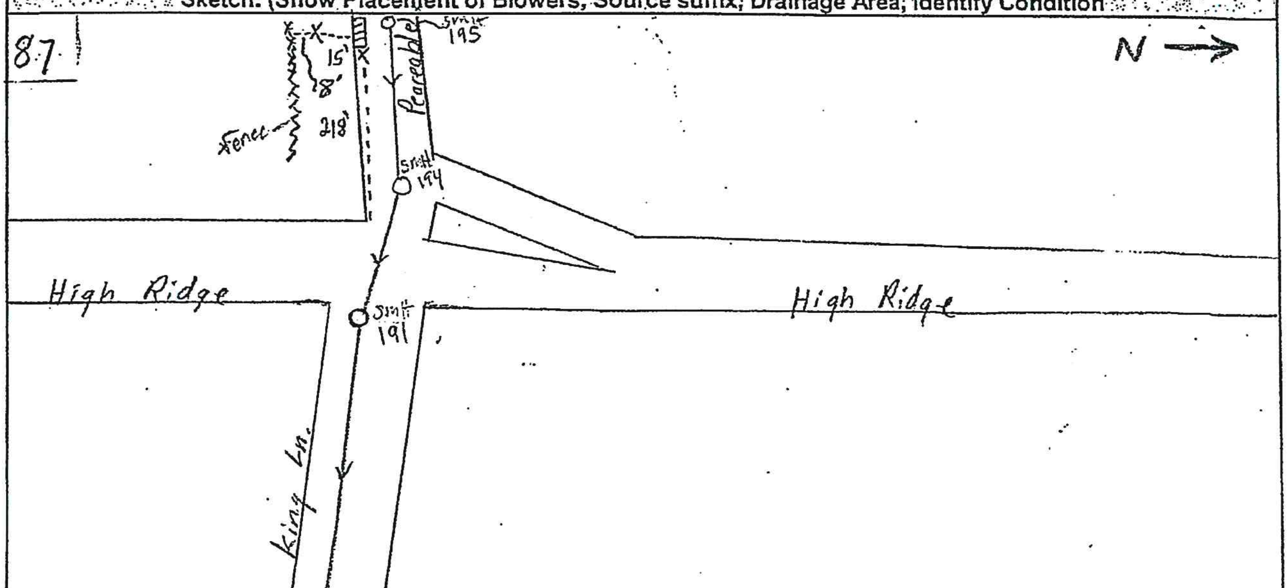
Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
87 High Ridge Ave-CB	2	1	10	3	1000'	.90	
87 High Ridge Ave	2	2	1	8	40'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



87 High Ridge Ave, CB, Ridgefield, CT
9/11/2013

sde

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 9-11-13
Set Up MH:
Upstream MH: SMH-J2, SMH-189
Downstream MH: SMH-187

Inspection Crew: MK/SS/TH
Location/Interceptor: Subarea 2
Map:
Sheet:
Segment Length: 816'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources

N

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mc/ss/TH

Inspection Date/Time: 9-12-13 1010

Location/Interceptor: Subarea 2

Set Up MH: SMH-180C

Map:

Upstream MH: SMH-180D, SMH-180B

Sheet:

Downstream MH: SMH-180

Segment Length: 1029'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard – Front
7-			Downspout Connection	Yard – Back
8-			Fountain Drain	Yard – Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources

N

117
79
279

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK /SS/TH

Inspection Date/Time: 9-12-13 0910

Location/Interceptor: Subarea 1

Set Up MH: SMH-67C

Map:

Upstream MH: SMH-67F

Sheet:

Downstream MH: ?

Segment Length: 763'

Observations

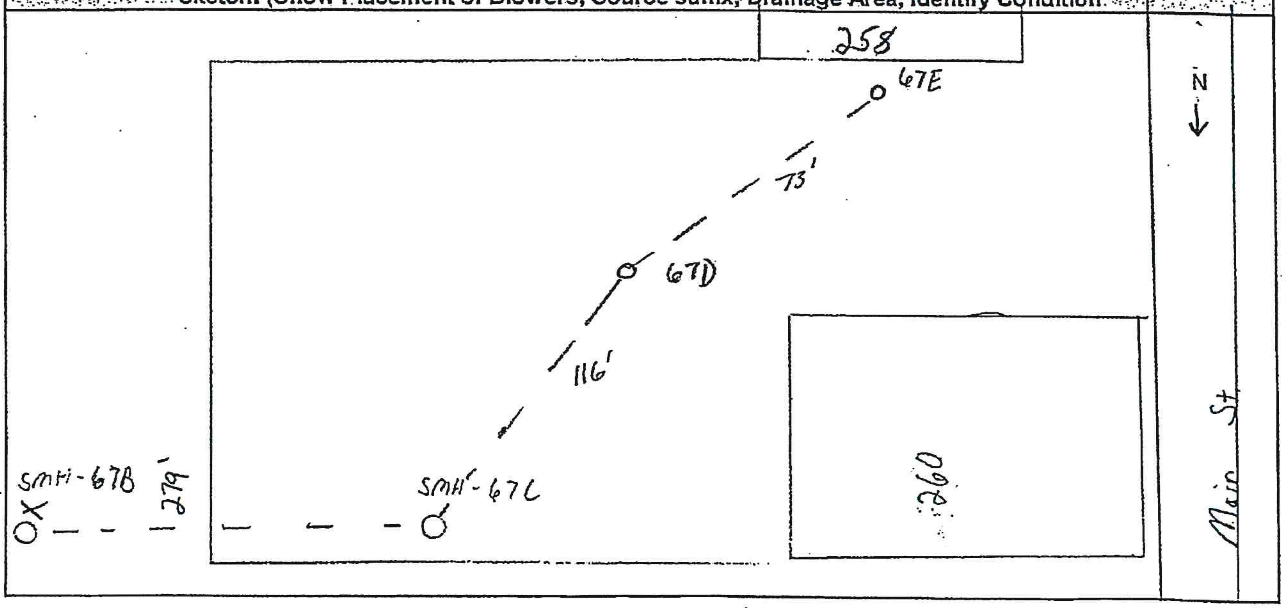
Weather/Ground: [X] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
SMH-67B	2	1	13	7	600'	.50	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



SMH-67B, Ridgefield, CT
9/12/2013

sde

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/TH
Inspection Date/Time: 9-12-13 0810
Location/Interceptor: Subarea 1
Set Up MH: SMH-71.1
Map:
Upstream MH: SMH-71.5
Sheet:
Downstream MH: SMH-71
Segment Length: 1078'

Observations

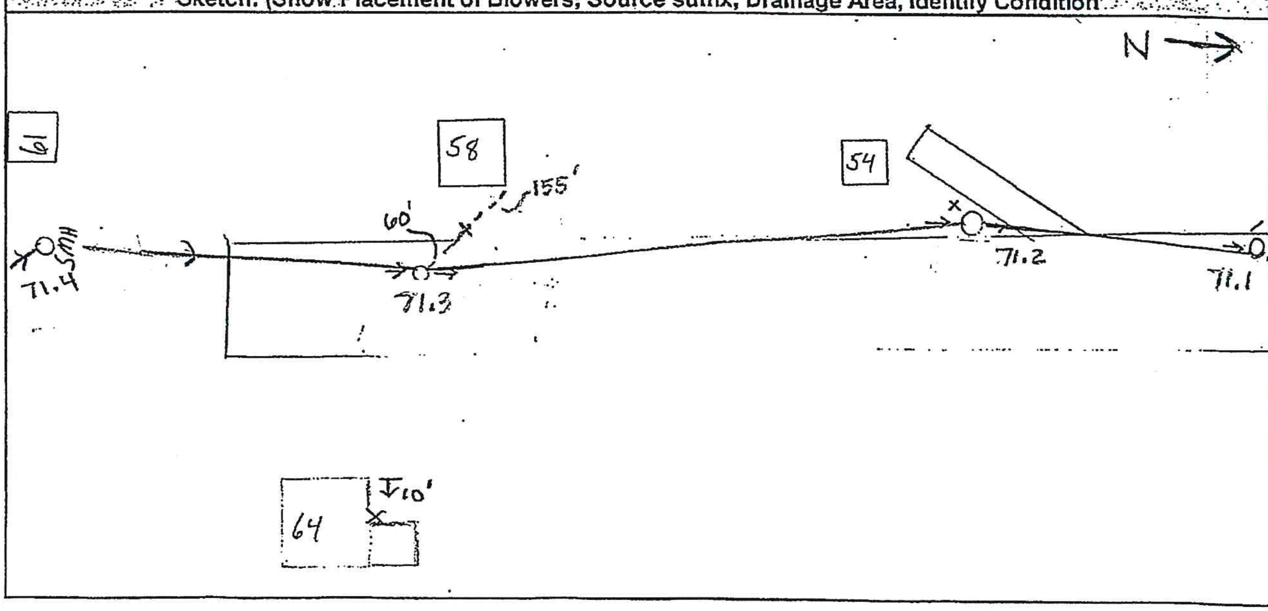
Weather/Ground: [X] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
SMH-71.2 - Below Grade	2	1	13	3	10'	.17	
58 Branchville Rd.	2	2	14	6	20'	.17	
64 Branchville Rd.	2	2	6	6	1000	.90	
SMH-71.3 - loose frame	2	1	13	3	5'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



SMH-71.2, Ridgefield, CT
9/12/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

64 Branchville Rd, Ridgefield, CT
9/12/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

SMH 71.3, Ridgefield, CT
12/23/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

.275.

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-12-13 0935

Location/Interceptor: Subarea 2

Set Up MH: SMH-180

Map:

Upstream MH: SMH-184

Sheet:

Downstream MH: SMH-178

Segment Length: 1441'

Observations

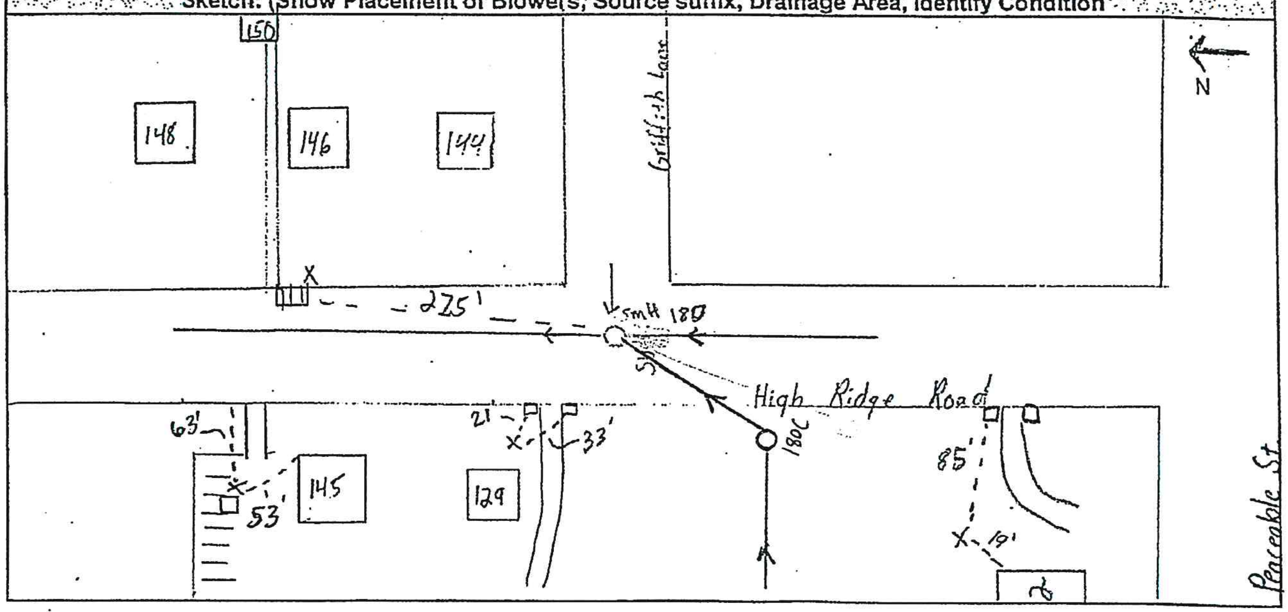
Weather/Ground: [X] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
2 Peaceable St.	2	2	14	6	40	.17	
129 High Ridge Rd.	2	2	14	6	20	.17	
145 High Ridge Rd.	2	2	13	3	100	.90	
CB@ 150 High Ridge Rd.	2	1	10	2	500	.90	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



Associates, Inc.

2 Peaceable Street, Ridgefield, CT
9/12/2013

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129 High Ridge Rd, Ridgefield, CT
9/12/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

145 High Ridge Rd, Ridgefield, CT
9/12/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

CB at 150 High Ridge Rd, Ridgefield, CT
9/12/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH

Inspection Date/Time: 9-12-13 1116

Location/Interceptor: Subarea 2

Set Up MH: SMH-206B

Map:

Upstream MH: SMH-208, SMH-167

Sheet:

Downstream MH: SMH-185

Segment Length: 1288'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources found.

N

sde
civil+environmental
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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/JC/TH/JD
Inspection Date/Time: 9-24-13 1335
Location/Interceptor: Subarea 4
Set Up MH: SMH-13
Map:
Upstream MH: SMH-14
Sheet:
Downstream MH: /
Segment Length: 402'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No. Positive Sources found.

N

sde
civil+environmental ENGINEERING

2.75
.75
1.00

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MV/SS/TC/TH/JD
Inspection Date/Time: 9-24-13 1400
Location/Interceptor: Subarea 4
Set Up MH: SMH-25
Map:
Upstream MH:
Sheet:
Downstream MH: SMH-21
Segment Length: 864'

Observations

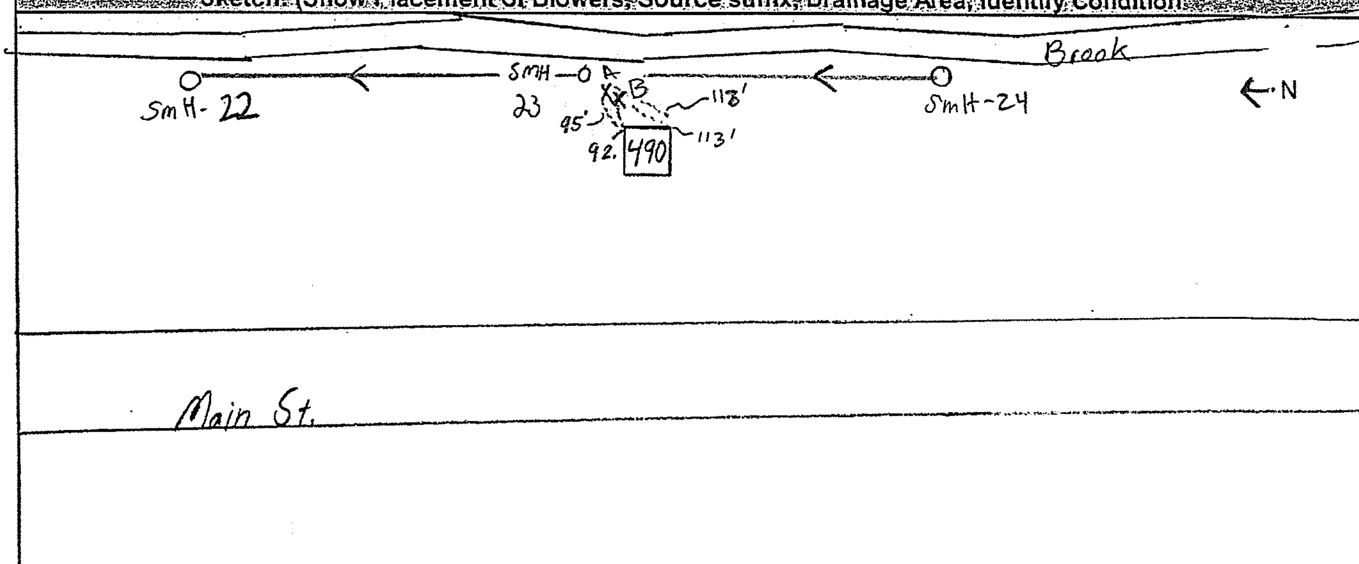
Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
490 Main St. A	2	2	14	7	1	1	
490 Main St B	2	2	14	7	1	–	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



Cleanouts A+B are Roughly 5 Feet higher than Brook - both are Raised up.

Associates, Inc.

490 Main St A, B, Ridgefield, CT
9/24/2013

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51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde
civil+environmental
ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 9-24-13
Set Up MH: SMH-17
Upstream MH: SMH-18D
Downstream MH: SMH-14

Inspection Crew: AK/SS/JC/TH/JD
Location/Interceptor: Subarea 4
Map:
Sheet:
Segment Length: 727'

Observations

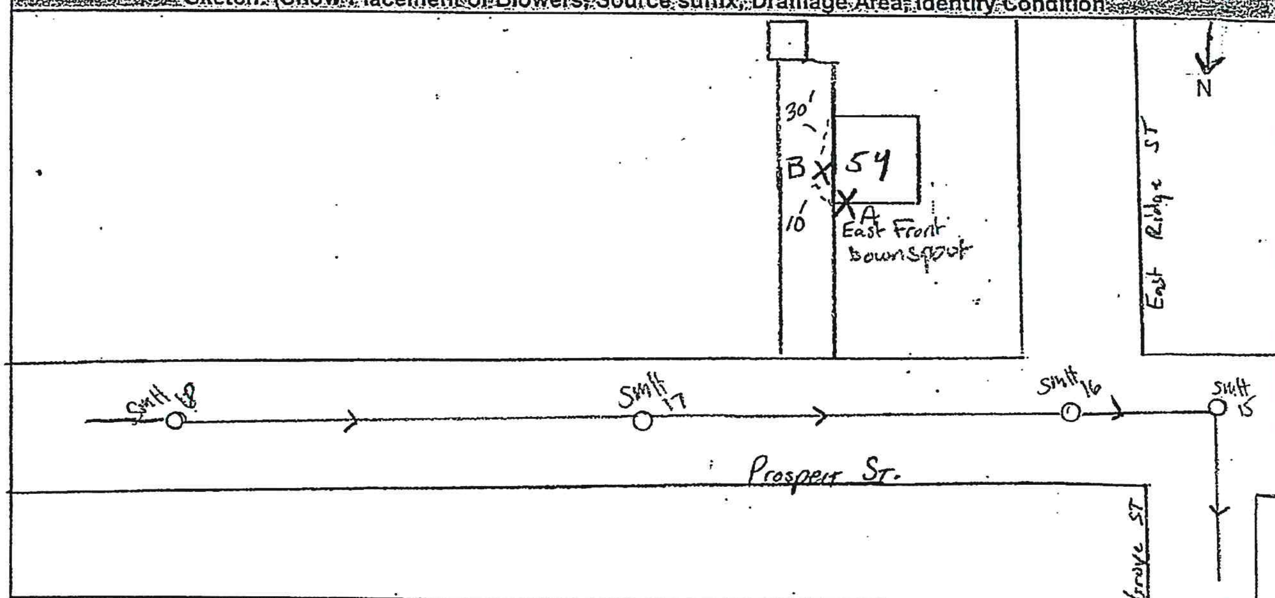
Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
54 Prospect St A	2	2	6	8	850'	.90	
54 Prospect St B	2	2	13	3	500'	.90	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



Associates, Inc.

54 Prospect St A, B, Ridgefield, CT
9/24/2013

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B

A

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde
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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TL/TH/JD

Inspection Date/Time: 9-24-13 1240

Location/Interceptor: Subarea 4

Set Up MH: SMH-20

Map:

Upstream MH: /

Sheet:

Downstream MH: SMH-16

Segment Length: 683'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No positive sources found.

N

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336

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 1225

Set Up MH: SMH-51

Upstream MH: SMH-52, SMH-57A

Downstream MH: SMH-47

Inspection Crew: MK/SS/TC/TH/JD

Location/Interceptor: Subarea 4

Map:

Sheet:

Segment Length: 1535'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 1055

Set Up MH: SMH-169

Upstream MH: SMH-172

Downstream MH: SMH-167

Inspection Crew: MK/SS/TH/JD

Location/Interceptor: Subarea 2

Map:

Sheet:

Segment Length: 1056'

Observations

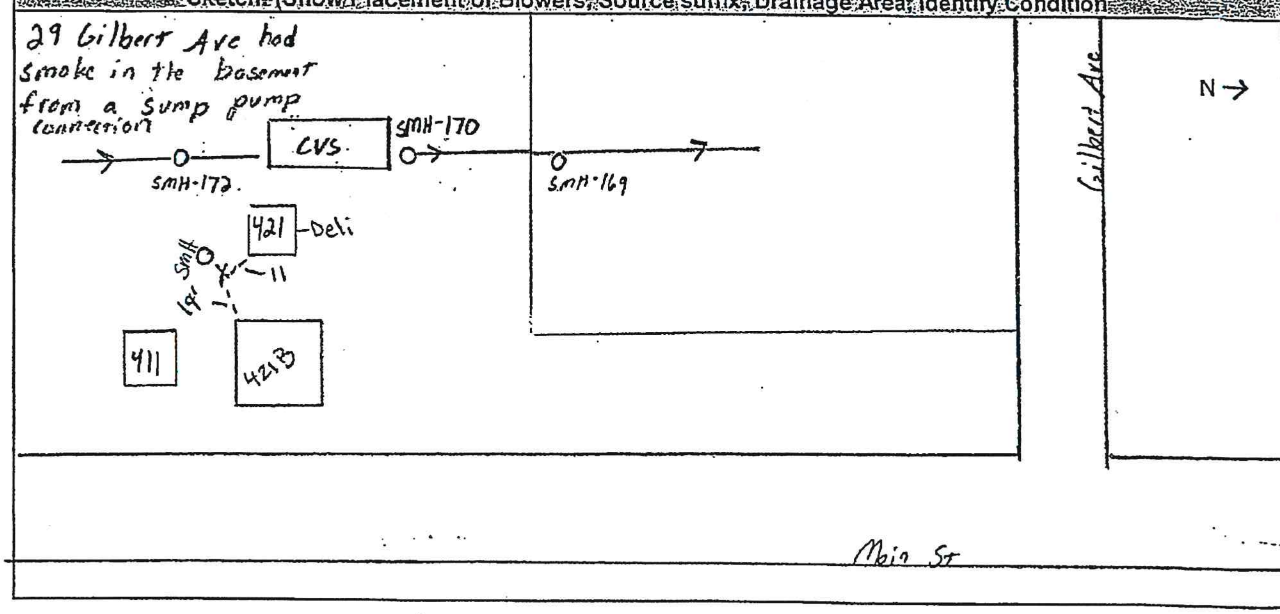
Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
421 Main St.	2	2	13	2	40'	.90	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



EST Associates, Inc.

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421 Main St, Ridgefield, CT
9/24/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 1024

Set Up MH: SMH-173A

Upstream MH: SMH-185

Downstream MH: SMH-172

Inspection Crew: MK/SS/FH/JD

Location/Interceptor: Subarea 2

Map:

Sheet:

Segment Length: 841'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

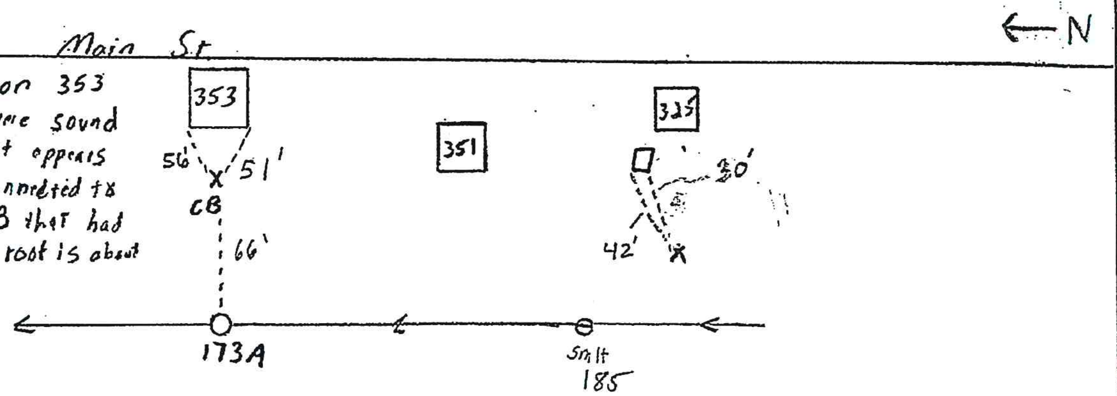
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
353 Main St	2	2	10	2	3150	.90	
325 Main St	2	2	14	7	20'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Roof leaders on 353 main St were sound tested and it appears they are connected to the same CB that had smoke. The roof is about 4600' sf.



EST
Associates, Inc.

353 Main St, Ridgefield, CT
9/24/2013

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51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

325 Main St, Ridgefield, CT
9/24/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH/SD

Inspection Date/Time: 9-24-13 1000

Location/Interceptor: Subarea 2

Set Up MH: SMH-177A

Map:

Upstream MH: SMH-178

Sheet:

Downstream MH: /

Segment Length: 282'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 9-24-13 0944
Set Up MH: SMH-176A
Upstream MH: SMH-177A
Downstream MH: SMH-173

Inspection Crew: MK/SS/TH/JD
Location/Interceptor: Subarea 2
Map:
Sheet:
Segment Length: 839'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

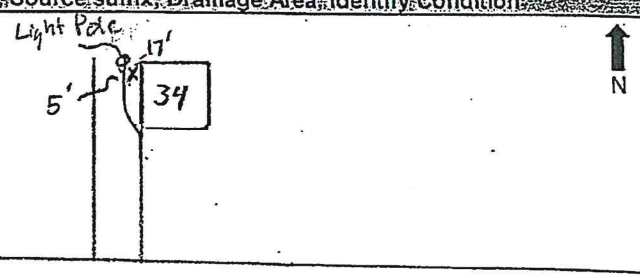
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
34 Catoonah St	2	2	1	8	20'		

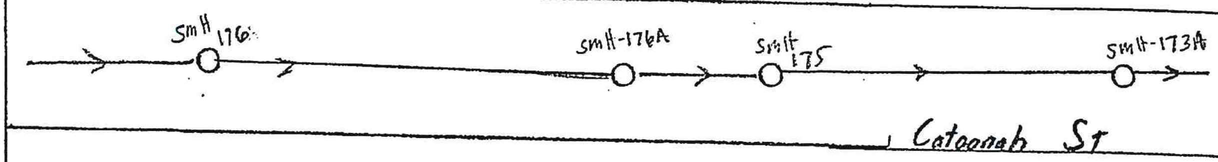
Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

35 Catoonah St has
2 sump pumps tied
into the sewer. Smoke
was observed coming
from the pits





34 Catoonah St, Ridgefield, CT
9/24/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 0916

Set Up MH: SMH-33

Upstream MH: SMH-35

Downstream MH: SMH-32

Inspection Crew: MK/SS/TH/JD

Location/Interceptor: Subarea 4

Map:

Sheet:

Segment Length: 769'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 0854

Set Up MH: SMH-30

Upstream MH: SMH-36, SMH-47

Downstream MH: SMH-25

Inspection Crew: MK/SS/JH/JD

Location/Interceptor: Subarea 4

Map:

Sheet:

Segment Length: 626'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources found.

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TH/JD

Inspection Date/Time:

Location/Interceptor: Subarea 4

Set Up MH: SMH-39

Map:

Upstream MH: SMH-40D, SMH-40A

Sheet:

Downstream MH: SMH-36

Segment Length: 1020'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

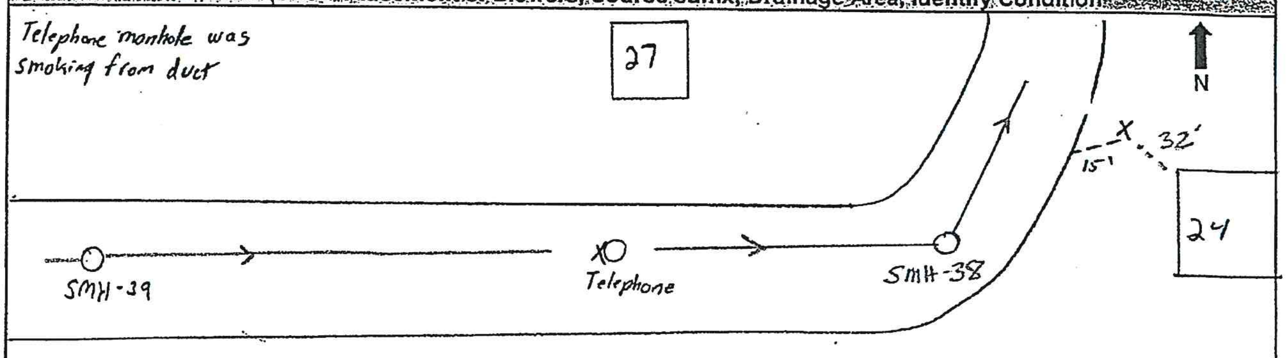
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
24 Bailey Ave	2	2	14	6	40'	.17	
27 Bailey Ave	2	1	1	2	10'	.90	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Telephone manhole was smoking from duct



24 Bailey Ave, Ridgefield, CT
9/24/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

27 Bailey Ave, Ridgefield, CT
9/24/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9-24-13 0800

Set Up MH: SMH - 43

Upstream MH: SMH - 45

Downstream MH: SMH-39

Inspection Crew:

Location/Interceptor: Subarea 4

Map:

Sheet:

Segment Length: 745'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No positive Sources Found.

N

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Smoke Testing Form

Owner: RidgeField, CT

Inspection Date/Time: 9/25/13 /1430

Set Up MH: 75C

Upstream MH: 75E 75A

Downstream MH: 75

Inspection Crew: JC, SS, TH

Location/Interceptor:

Map: 4

Sheet:

Segment Length: 603

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

NO POSITIVE SOURCES

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: JC, SS, TH
Inspection Date/Time: 9/25/13
Location/Interceptor:
Set Up MH: 9C
Map: 4
Upstream MH: 9F
Sheet:
Downstream MH: 21
Segment Length: 661'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

NO POSITIVE RESULTS

N

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 9/25/13 1145
Set Up MH: 207
Upstream MH: —
Downstream MH: 206

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: 4
Sheet:
Segment Length: 864

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources

N

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Smoke Testing Form

Owner: RidgeField, CT
Inspection Date/Time: 9/25/13 11:30
Set Up MH: 20F
Upstream MH: 20D
Downstream MH: 20G

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: 4
Sheet:
Segment Length: 896'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

NO POSITIVE SOURCES

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: JC/SS/TH
Inspection Date/Time: 9/25/13
Location/Interceptor:
Set Up MH: 20A
Map: 4
Upstream MH: 18E
Sheet:
Downstream MH: 20D
Segment Length: 834'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

NO POSITIVE SOURCES

N

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Smoke Testing Form

Owner: RidgeField, CT

Inspection Crew: JC, SS, TH

Inspection Date/Time: 9/25/13 1050

Location/Interceptor:

Set Up MH: 19B

Map: 4

Upstream MH:

Sheet:

Downstream MH: 18E

Segment Length: 968'

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers; Source suffix; Drainage Area; Identify Condition)

N

all QUAil RUN DOWNSPOOT GO INTO GROUND

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: JC, SS, TH

Inspection Date/Time: 9/25/13 10:20

Location/Interceptor:

Set Up MH: 18H

Map: 4

Upstream MH: 18L

Sheet:

Downstream MH: 18 E

Segment Length: 960

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
Quail Ridge	6	2	7	13			

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	all
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

no positive sources

N

sde
civil+environmental
ENGINEERING

Smoke Testing Form

Owner: Ridgfield, CT	Inspection Crew: VC, SS, TH
Inspection Date/Time: 9/25/13	Location/Interceptor:
Set Up MH: SS 4	Map: 4
Upstream MH: SS 2 SM 18C	Sheet:
Downstream MH: 18E	Segment Length: 1242'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

no positive sources

N

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civil+environmental
ENGINEERING

Smoke Testing Form

Owner:	Ridgefield, CT	Inspection Crew:	JC, SS, TH
Inspection Date/Time:	9/25/13 0845	Location/Interceptor:	
Set Up MH:	13C	Map:	4
Upstream MH:		Sheet:	
Downstream MH:	13A	Segment Length:	948'

Observations

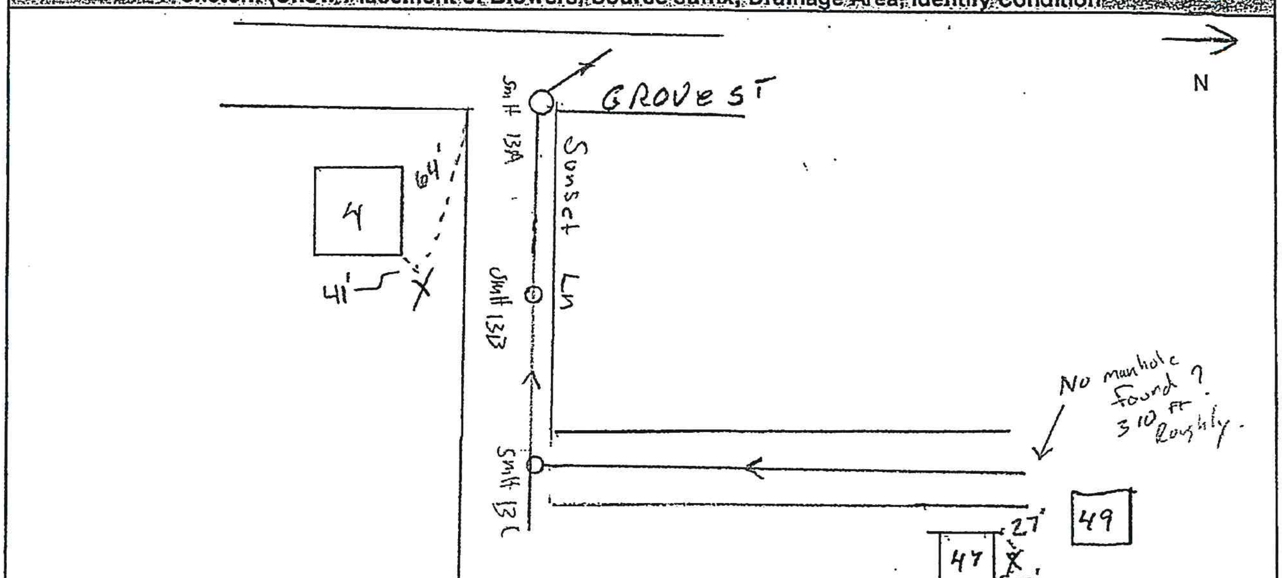
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
4 SUNSET LN	2	2	14	8	25'	.17	
47 SUNSET LN	2	2	14	8	25'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



4 Sunset Lane, Ridgefield, CT
9/25/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

47 Sunset Lane, Ridgefield, CT
9/25/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

sde
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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9/26/13

Set Up MH: 134

Upstream MH: 133, 131A, 131B, 131C

Downstream MH: 132,

Inspection Crew: SS/SC/TH

Location/Interceptor:

Map: 3

Sheet:

Segment Length: 628'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive sources found.

N

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT | Inspection Crew: SS/JC/TH

Inspection Date/Time: 9/26/13 | Location/Interceptor:

Set Up MH: 133 | Map: 3

Upstream MH: 133, A, B, C, D, E, F | Sheet:

Downstream MH: | Segment Length: 1215

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
25 Gilbert - Recreation Building.	2	1	14	8	15	.17	

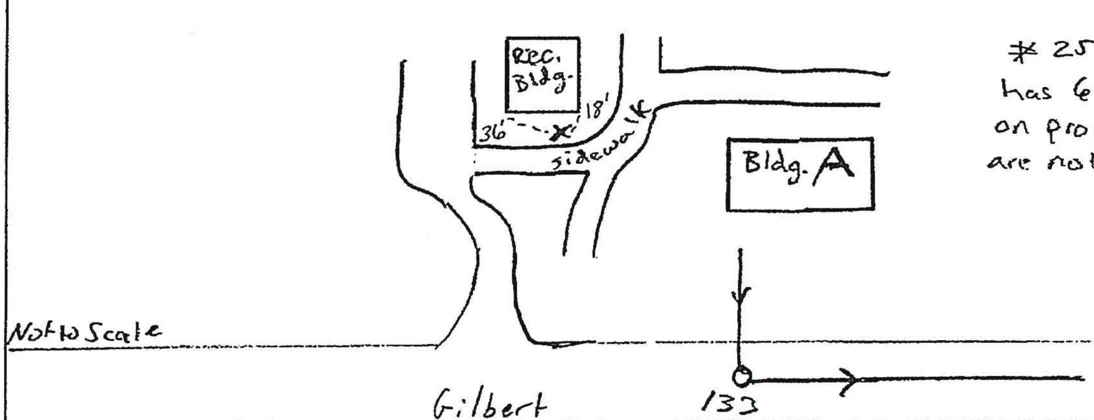
Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Cleanout with a drain cover smoked. In between sidewalk and Recreation Building.

N



* 25 Gilbert has 6 manholes on property that are not on map.

25 Gilbert, Ridgefield, CT
9/26/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, ct.

Inspection Crew: SS/JC/TH

Inspection Date/Time: 9/26/13

Location/Interceptor:

Set Up MH: 136B

Map: 3

Upstream MH: 136, 137A, 138, 138A,B,C

Sheet:

Downstream MH: 136C, 136D, 136A, 135

Segment Length: 1161

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

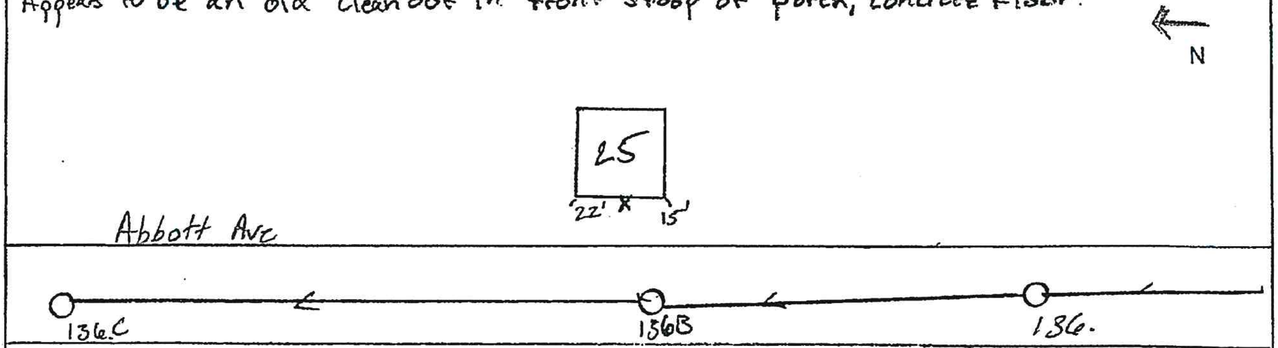
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
25 Abbott Ave.	2	2	14	1	1	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Appears to be an old Clean out in front stoop of porch, Concrete Floor.



25 Abbott, Ridgefield, CT
9/26/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: SS/TH/JC

Inspection Date/Time: 9/26/13

Location/Interceptor:

Set Up MH: 137C

Map: 3 + 4

Upstream MH: 137D

Sheet:

Downstream MH: 137B, 137A

Segment Length: 546'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found

N

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9/26/13

Set Up MH: 142

Upstream MH: 143

Downstream MH: 141A, 141, 140

Inspection Crew: SS/JC/TH

Location/Interceptor:

Map: 3

Sheet:

Segment Length: 1083'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive sources found.

N

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civil+environmental
ENGINEERING

Smoke Testing Form

Owner: Ridgefield CT

Inspection Date/Time: 9/26/13

Set Up MH: 149

Upstream MH: 149C, 149A

Downstream MH: 147, 147A

Inspection Crew: SS/JC/TH

Location/Interceptor:

Map: 3

Sheet:

Segment Length: 678'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

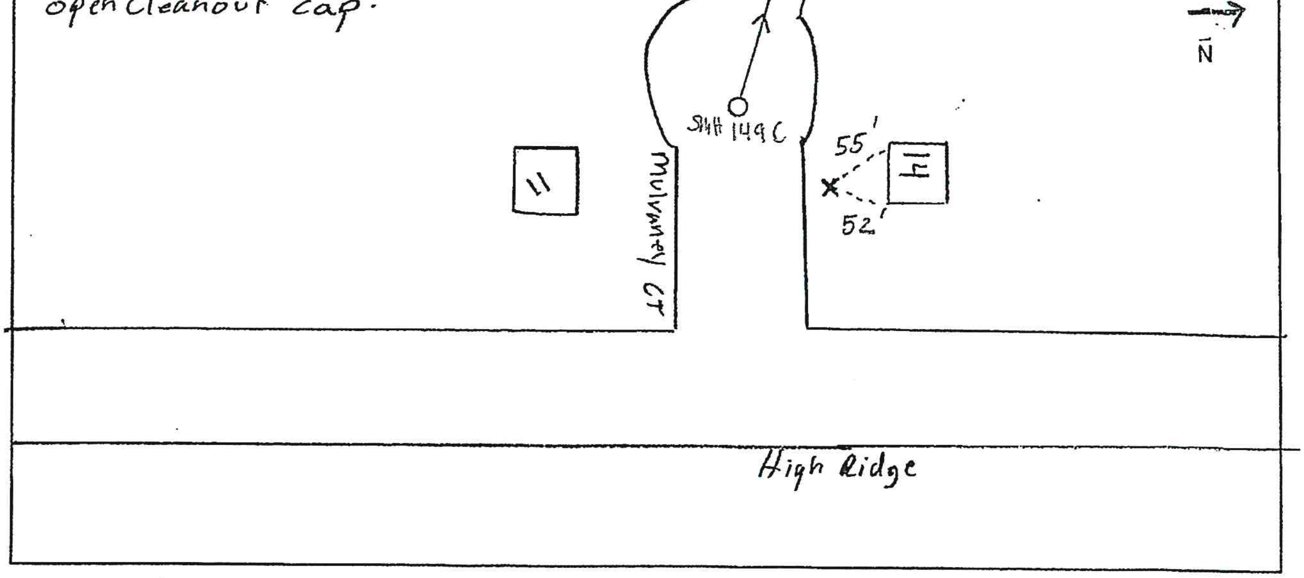
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
14 Mulvaney CT	2	2	14	6	1	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

open Cleanout cap.



14 Mulvaney, Ridgefield, CT
12/23/2013

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ENGINEERING

Smoke Testing Form

Owner: RidgeField CT

Inspection Crew: JC, SS, TH

Inspection Date/Time: 9/26/13

Location/Interceptor:

Set Up MH: 153

Map: 3

Upstream MH: 152, 152A

Sheet:

Downstream MH: 153A, 149A, 149B

Segment Length: 832'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive Sources found.

N

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ENGINEERING

Smoke Testing Form

Owner: RidgeField, CT
Inspection Date/Time: 9/26/13
Set Up MH: 159
Upstream MH: 160
Downstream MH: 155, 156, 154

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: Subarea 3
Sheet:
Segment Length: 1325'

Observations

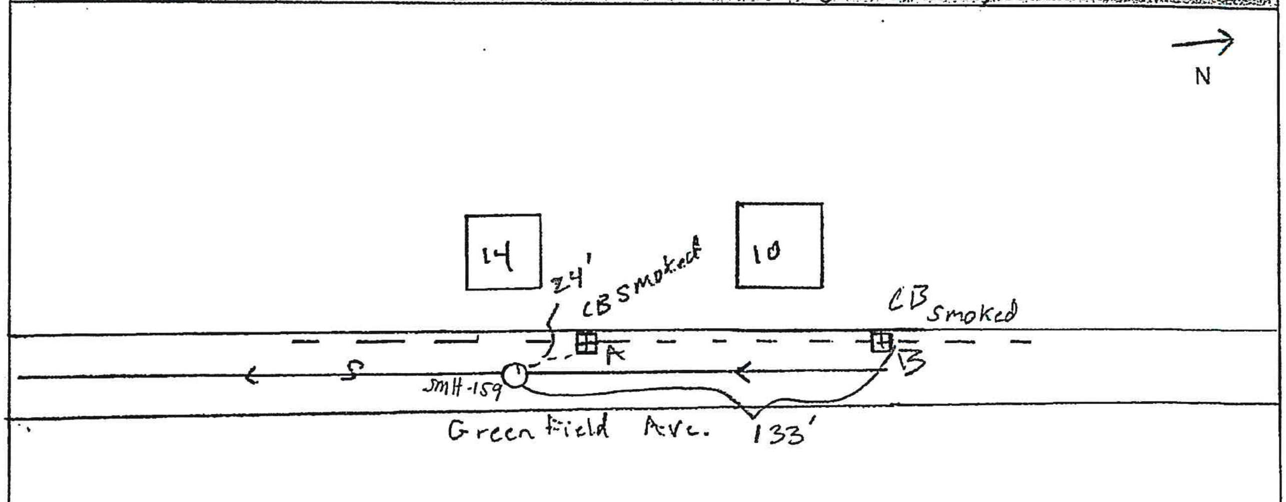
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

	Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
B	10 Greenfield Ave (CB)	2	1	10	2	400	.90	
A	10 Greenfield Ave (CB)	2	1	10	2	1200	.90	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



2 Catch basins smoked Lightly.

10 Greenfield A&B, Ridgefield, CT
9/26/2013

B

A

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield CT

Inspection Date/Time: 9/26/13

Set Up MH: 157A,

Upstream MH: 158, 157T, 156S, 157S

Downstream MH: 157

Inspection Crew: JC, SS, TH

Location/Interceptor:

Map: 3

Sheet: –

Segment Length: 881'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Source Found.

N

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield CT
Inspection Date/Time: 9/26/13
Set Up MH: 161
Upstream MH: 162, 161A
Downstream MH: —

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: 3
Sheet:
Segment Length: 312'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found.

N

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ENGINEERING

Smoke Testing Form

Owner: Ridge Field, CT
Inspection Date/Time: 9/26/13
Set Up MH: 163
Upstream MH: 164, 163A 161
Downstream MH: 160

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: 3
Sheet: —
Segment Length: 1180'

Observations

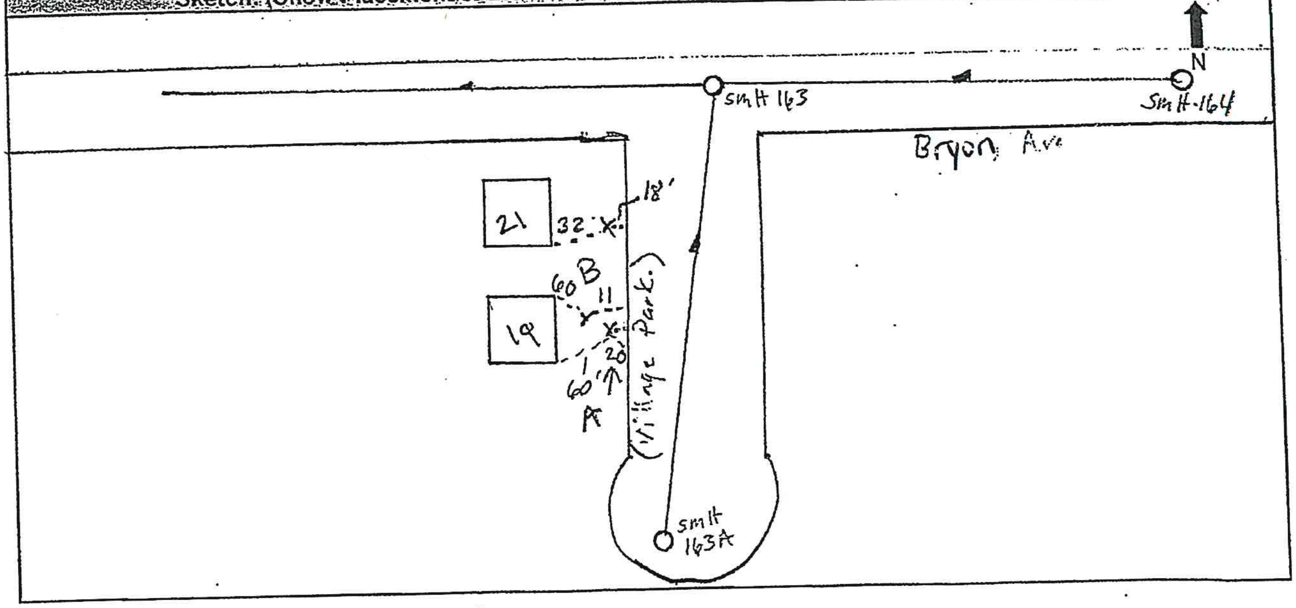
Weather/Ground
- [✓] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
21 Bryon Ave	2	2	14	6	10	.17	
19 Bryon Ave. A	2	2	14	6	10	.17	
19 Bryon Ave. - B	2	2	14	6	10	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard – Front
7-			Downspout Connection	Yard – Back
8-			Fountain Drain	Yard – Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



21 Bryon Ave, Ridgefield, CT
9/26/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

19 Bryon Ave A&B, Ridgefield, CT
9/26/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: SS/JC/TH

Inspection Date/Time: 9/27/13

Location/Interceptor:

Set Up MH: 017

Map: 3

Upstream MH: 016, 015, 014

Sheet:

Downstream MH: 018, FH1, N8

Segment Length: 913'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

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Smoke Testing Form

Owner: RidgeField, CT

Inspection Crew: JC, SS, TH

Inspection Date/Time: 9/27/13 10:55

Location/Interceptor:

Set Up MH: FH5

Map: 3

Upstream MH: FH 8 FH7

Sheet:

Downstream MH: FH4, FH2, FH1

Segment Length: 1143'

Observations

Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Results

N

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9/24/13 10:15

Set Up MH: N3

Upstream MH: N1, N5

Downstream MH: N4, N6, N7

Inspection Crew: JC, SS, TH

Location/Interceptor:

Map: 3

Sheet:

Segment Length: 784'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

NO POSITIVE RESULTS

N

sde
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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: SS/TH/JC

Inspection Date/Time: 9/27/13

Location/Interceptor:

Set Up MH: 011

Map: Subarea 3

Upstream MH: 012, 013

Sheet:

Downstream MH: 010, 09

Segment Length: 522'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found

N

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ENGINEERING

Smoke Testing Form

Owner: RidgeField, CT
Inspection Date/Time: 9/27/13 0955
Set Up MH: 09
Upstream MH: 010
Downstream MH: R10, 08, 07, 06, 05, 04, 03, 02

Inspection Crew: JC, SS, TH
Location/Interceptor:
Map: 3
Sheet:
Segment Length: 855'

Observations

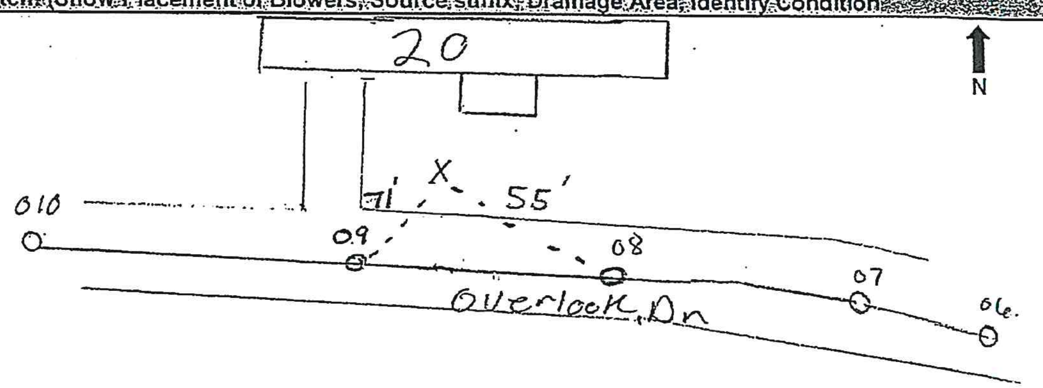
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
20 overlook Dr	2	2	14	6	25	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



20 Overlook Dr, Ridgefield, CT
9/27/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: SS/JC/TH

Inspection Date/Time: 9/27/13
Location/Interceptor:

Set Up MH: AH2
Map: 3

Upstream MH: AH1, AH3
Sheet:

Downstream MH: AH4, AH5, AH6
Segment Length: 777'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

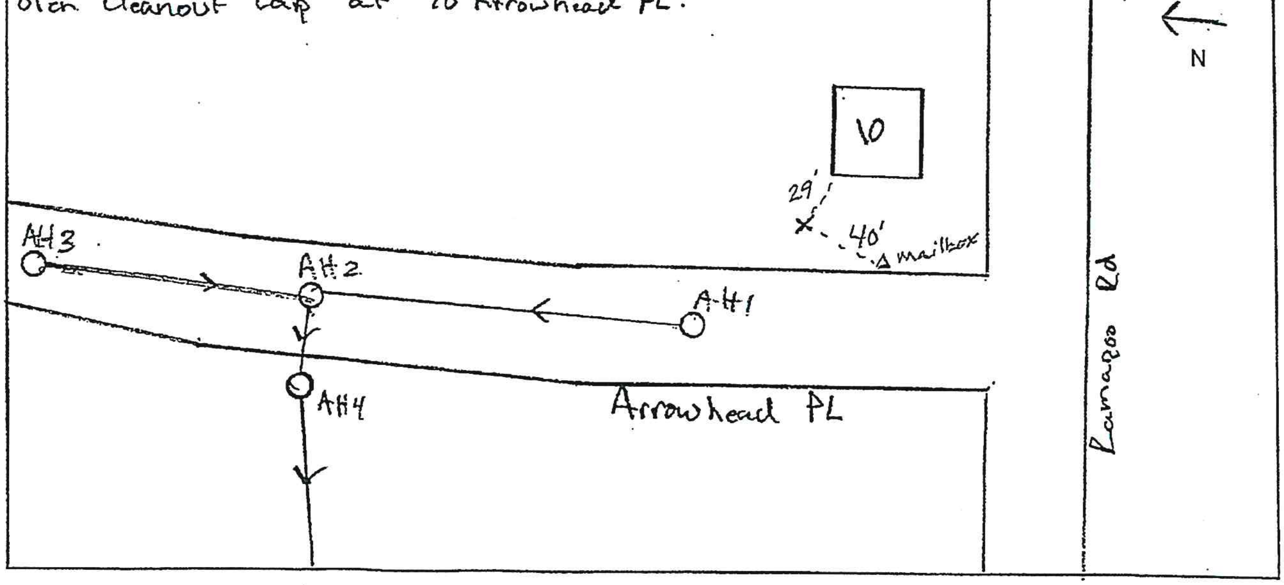
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
10 Arrow Head. PL	2	2	14	8	5	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Open Cleanout Cap at 10 Arrowhead PL.



10 Arrowhead Place, Ridgefield, CT
9/27/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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ENGINEERING

Smoke Testing Form

Owner: Ridgefield CT

Inspection Crew: SS/TH/JC

Inspection Date/Time: 9/27/13

Location/Interceptor:

Set Up MH: R13

Map: 3

Upstream MH: R14

Sheet:

Downstream MH: R12, R11, R10, R8

Segment Length: 875'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
Sewer Manole R-10	2	1	13	2	700	.90	
Has Cracked Pavement Surrounding							

Codes

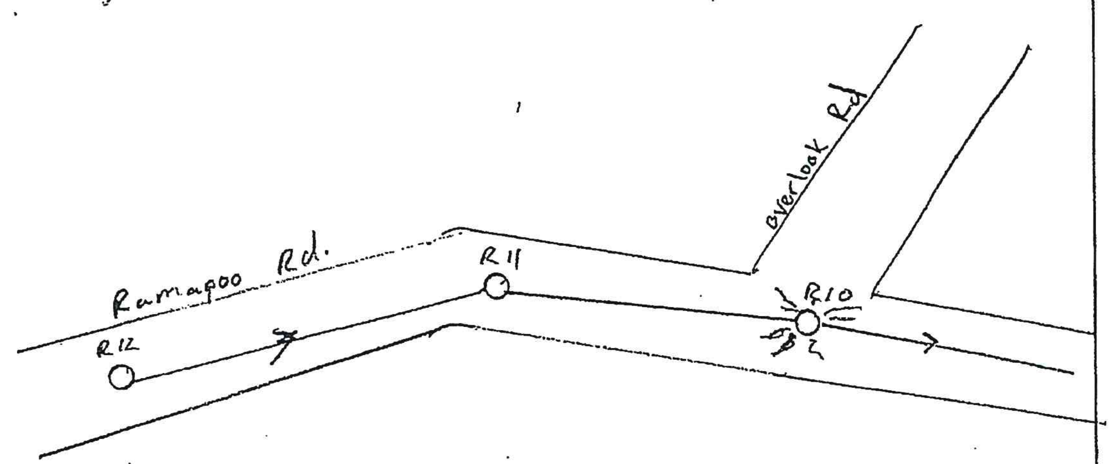
	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Cracked Pavement Surrounding manhole R10 Smoking.

700 sqft. Drainage Area.

N



SMH-R10, Ridgefield, CT
9/27/2013

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Smoke Testing Form

Owner: Ridgefield, CT	Inspection Crew: SS/JC/TH.
Inspection Date/Time: 9/27/13	Location/Interceptor:
Set Up MH: 139	Map: 3
Upstream MH: 139?, 144, 145, 147A, 140	Sheet:
Downstream MH: 135, 134	Segment Length: 1113'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 9/27/13

Set Up MH: 019

Upstream MH: 018

Downstream MH: R1

Inspection Crew: JC, SS, TH

Location/Interceptor:

Map: 3

Sheet:

Segment Length: 465'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

NO POSITIVE RESULTS

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10-1-13

Set Up MH: SMH-K1

Upstream MH: SMH-K3A, SMH-R20C

Downstream MH: SMH-R26

Inspection Crew: MK/SS/TC/TH

Location/Interceptor: Subarea 3

Map:

Sheet:

Segment Length: 1324'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

19 Kellogg St. had smoke,
discharging from the dishwasher

N

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630'
500'

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-1-13 1120
Set Up MH: SMH - R15
Upstream MH: SMH - R22
Downstream MH: SMH - R20C

Inspection Crew: MK/SS/SC/TH
Location/Interceptor: Subarea 3
Map:
Sheet:
Segment Length: 1130

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-1-13 1020
Set Up MH: SMH - 104
Upstream MH: 106 , 102A, 102B
Downstream MH: 95

Inspection Crew: MK/TC/SS/TH
Location/Interceptor: Subarea 1
Map:
Sheet:
Segment Length: 1248'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
57 Main St	2	2	1	7	40'	.17	
7 Main St	2	2	1	7	-	-	

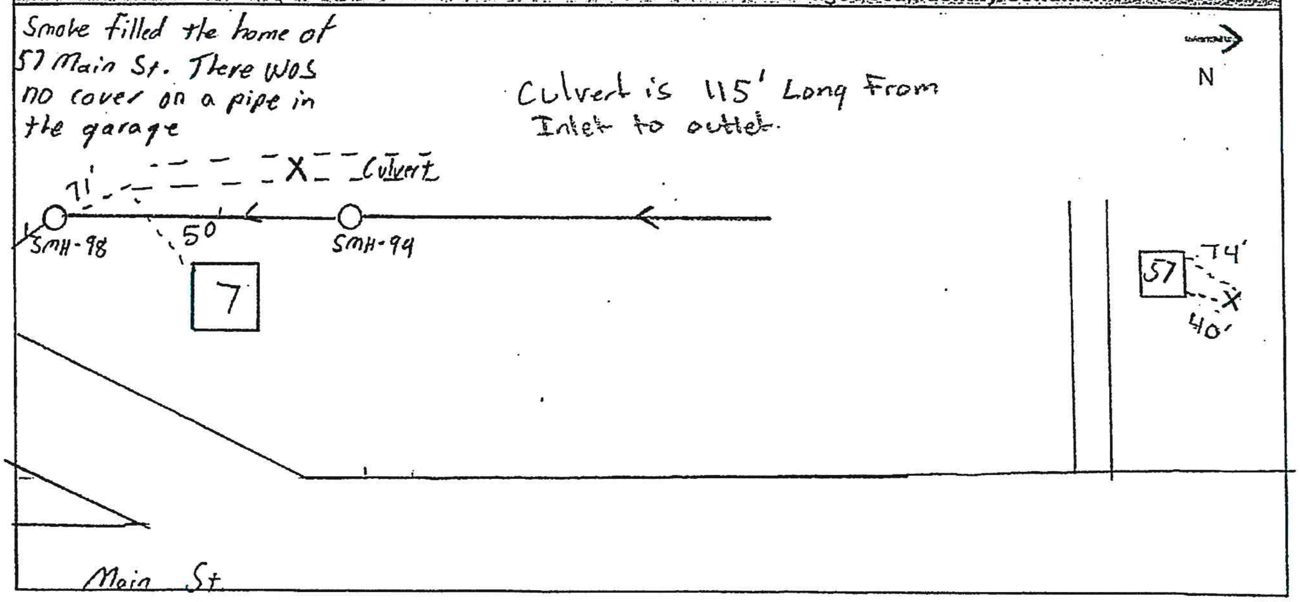
Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Smoke filled the home of 57 Main St. There was no cover on a pipe in the garage

Culvert is 115' Long From Inlet to outlet.



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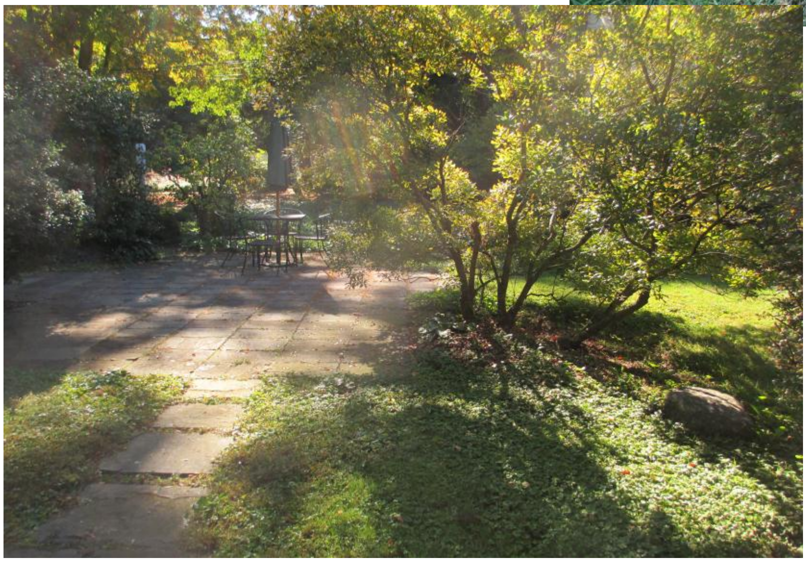
57 Main St, Ridgefield, CT
10/1/2013



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7 Main St, Ridgefield, CT
10/1/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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127
~~768~~
864

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/SC/TH

Inspection Date/Time: 10-1-13

Location/Interceptor:

Set Up MH: SMH-M6

Map: Subarea 3

Upstream MH: SMH-V2

Sheet:

Downstream MH: SMH-M1

Segment Length: 991'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

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624
196

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-1-13 0907
Set Up MH: SMH-R27
Upstream MH: SMH-R28, SMH-R-2
Downstream MH: SMH-V2

Inspection Crew: MK/SS/TC/TH
Location/Interceptor: Subarea 3
Map:
Sheet:
Segment Length: 1134'

Observations

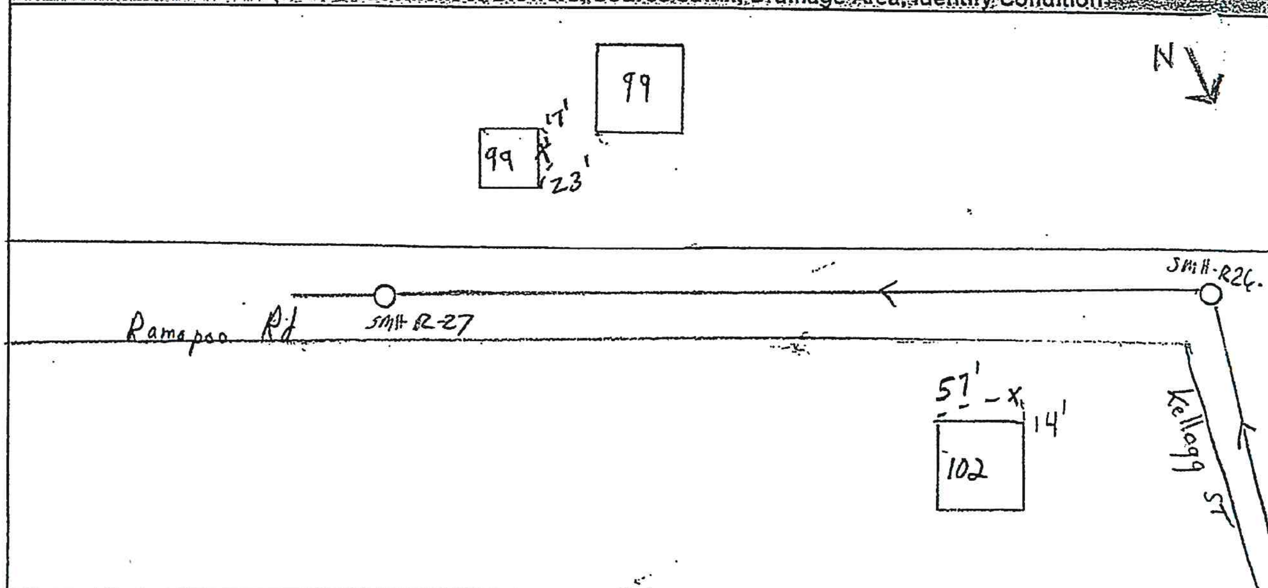
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
99 Ramapoo Rd.	2	2	1	8	0'	.17	
102 Ramapoo Rd.	2	2	14	6	25'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



99 Ramapoo Rd, Ridgefield, CT
10/1/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

102 Ramapoo Rd, Ridgefield, CT
10/1/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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222
366
334

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-1-13
Set Up MH: SMH-RH-2
Upstream MH: SMH-R25, SMH-RH4
Downstream MH: SMH-R22

Inspection Crew: MK/SS/TC/TH
Location/Interceptor: Subarea 3
Map:
Sheet:
Segment Length: 922'

Observations

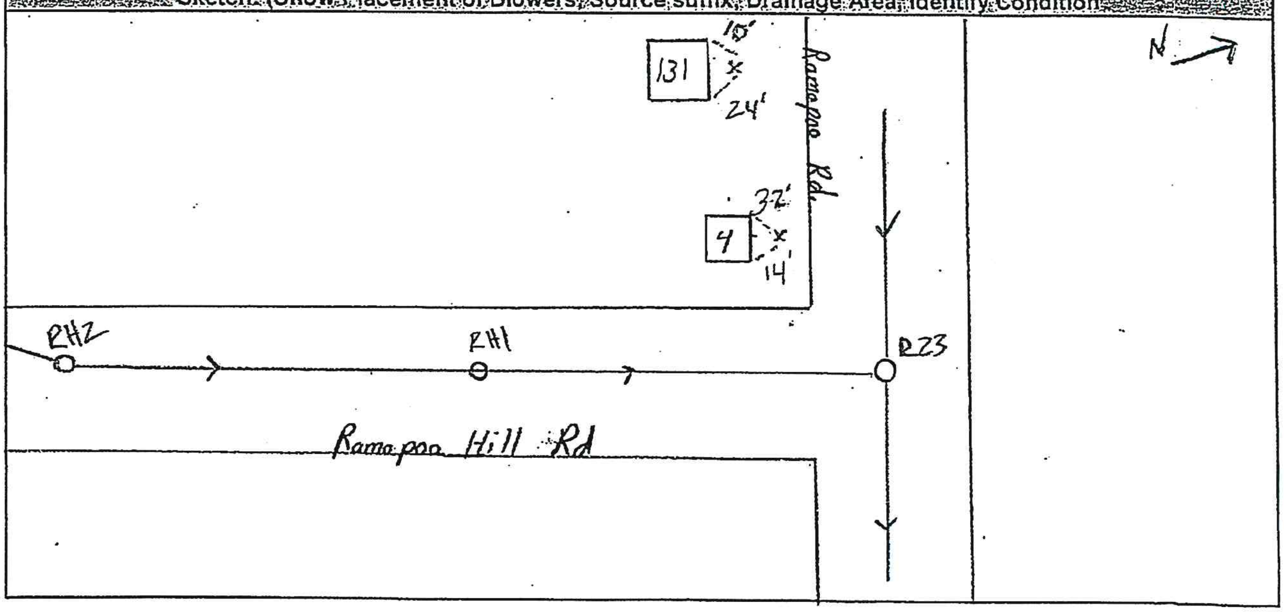
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
4 Ramapoo Hill Rd	2	2	14	6	40'	.17	
131 Ramapoo Rd.	2	2	14	6	20'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition



4 Ramapoo Rd, Ridgefield, CT
10/1/2013

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131 Ramapoo Rd, Ridgefield, CT
10/1/2013

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747
178

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/TL/TH

Inspection Date/Time: 10-1-13 0815

Location/Interceptor: Subarea 3

Set Up MH: SMH- R7.

Map:

Upstream MH: SMH-R8, SMH- R3

Sheet:

Downstream MH: SMH-M1

Segment Length: 920'

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/TH

Inspection Date/Time: 10-1-13 0942

Location/Interceptor: Subarea 3

Set Up MH: SMH-M3

Map:

Upstream MH: SMH-M1A

Sheet:

Downstream MH: SMH-M6

Segment Length: 1245'

Observations

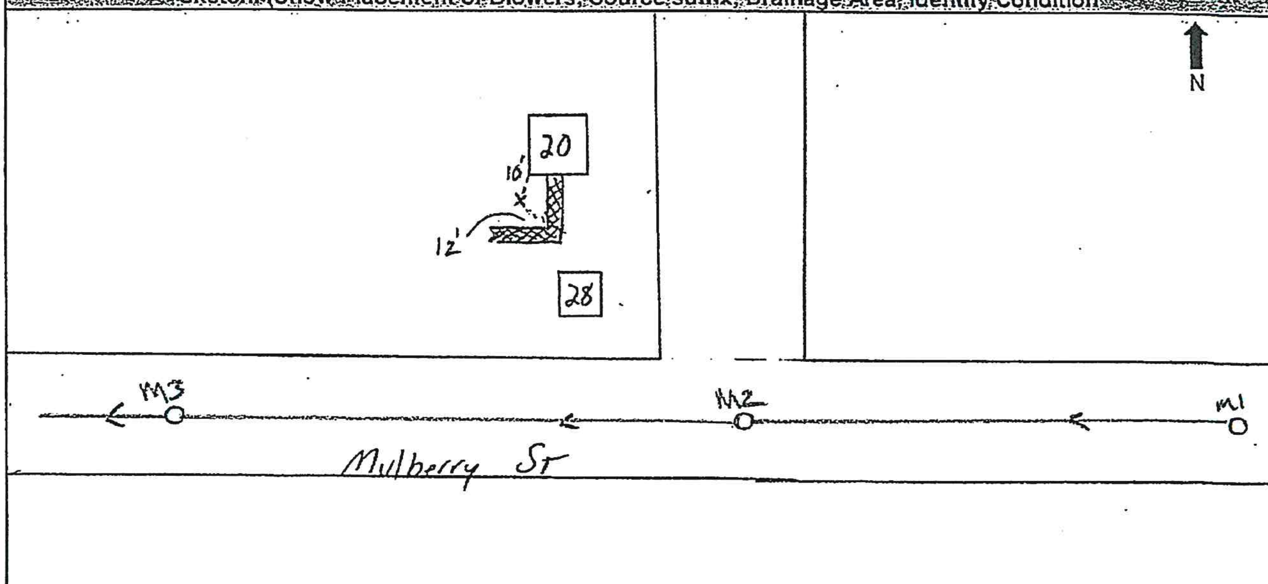
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
20 Mulberry St	2	2	14	8	20'	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



20 Mulberry St, Ridgefield, CT
10/1/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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Smoke Testing Form

Owner: Ridgefield CT

Inspection Crew: SS/JC/TH

Inspection Date/Time: 10/2/13

Location/Interceptor:

Set Up MH: 618

Map: 5

Upstream MH: 614, 615A

Sheet:

Downstream MH: 620

Segment Length: 1151'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

sde
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ENGINEERING

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10-2-13

Set Up MH: SMH-628

Upstream MH: SMH-629 B

Downstream MH: SMH-625

Inspection Crew: MK/SS/TC/TH

Location/Interceptor: Subarea 5

Map:

Sheet:

Segment Length: 1273'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Source Found.

N

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ENGINEERING

570'   115
100

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-2-13   1305
Set Up MH: SMH-651M
Upstream MH: SMH-651O
Downstream MH: SMH-651 I

Inspection Crew: MK/SS/TI/TH
Location/Interceptor: Subarea 5
Map:
Sheet:
Segment Length: 785'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

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ENGINEERING

5

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK

Inspection Date/Time: 10-2-13 1215

Location/Interceptor: Subarea 5

Set Up MH: SMH-651 H

Map:

Upstream MH: SMH-651 , SMH-651 I

Sheet:

Downstream MH: SMH-651

Segment Length: 1649'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

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283'
323'

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/TH

Inspection Date/Time: 10-2-13 1000

Location/Interceptor: Subarea 5

Set Up MH: SMH-653

Map:

Upstream MH: SMH-654, SMH-656, SMH-649

Sheet:

Downstream MH: SMH-650

Segment Length: 1038'

Observations

Weather/Ground: [X] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive sources found.

N

sde
civil+environmental
ENGINEERING

280
165
543

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-2-13 0935
Set Up MH: SMH-646
Upstream MH: SMH-643, SMH-648
Downstream MH: SMH-649

Inspection Crew: MK/JL/TH/SS
Location/Interceptor: Subarea 5
Map:
Sheet:
Segment Length: 988'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/JL/TH
Inspection Date/Time: 10-21-13 0930
Location/Interceptor: Subarea 5
Set Up MH: SMH-633
Map:
Upstream MH: SMH-630
Sheet:
Downstream MH: SMH-605
Segment Length: 921'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No positive sources found

N

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ENGINEERING

357
243
578

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10-2-13 0845

Set Up MH: SMH-613

Upstream MH: SMH-642, SMH-611

Downstream MH: SMH-614

Inspection Crew: MK/SS/JC/TH

Location/Interceptor: Subarea 5

Map:

Sheet:

Segment Length: 1178'

Observations

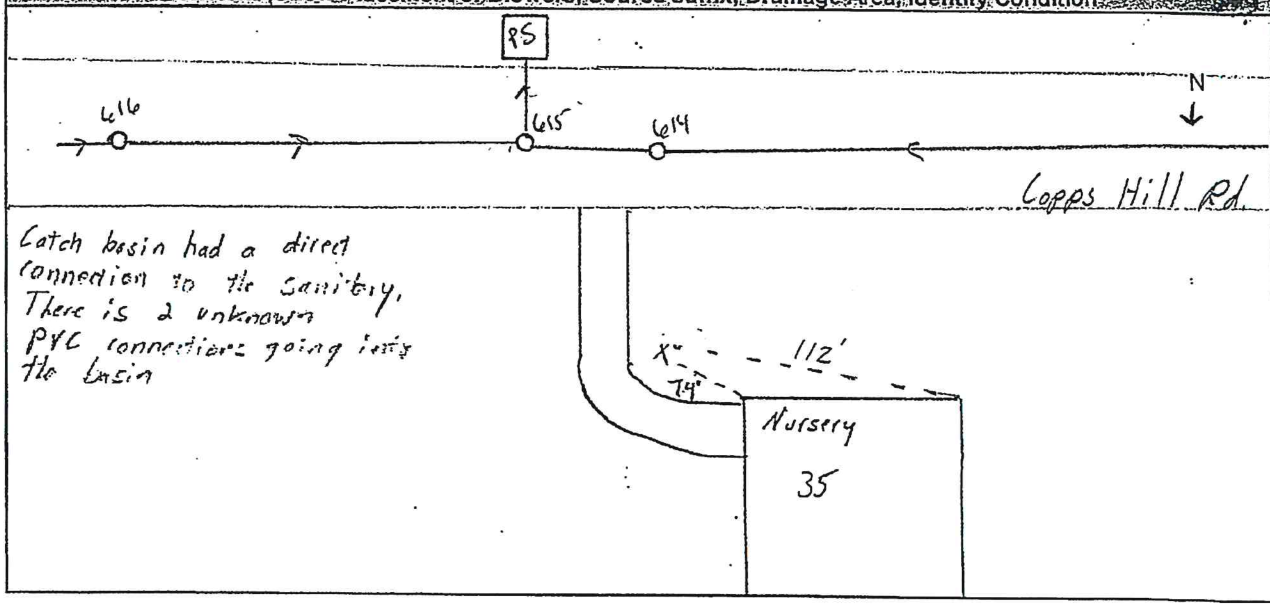
Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
35 Copps Hill Rd	2	2	10	6	100	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



Catch basin had a direct connection to the sanitary. There is 2 unknown PVC connections going into the basin

35 Copps Hill Rd, Ridgefield, CT
10/2/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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536
553

60r

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/SC/TH
Inspection Date/Time: 10-2-13
Location/Interceptor: Subarea 5
Set Up MH: SMH - 604
Map:
Upstream MH: SMH - 600
Sheet:
Downstream MH: SMH - 607
Segment Length: 1089

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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249

608

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-2-13
Set Up MH: SMH-611
Upstream MH: SMH-637, SMH-607
Downstream MH: /

Inspection Crew: MK/SS/JE/TH
Location/Interceptor: Subarea 5
Map:
Sheet:
Segment Length: 1231'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/JC/TH
Inspection Date/Time: 10-2-13 1035
Location/Interceptor: Subarea 5
Set Up MH: PL1003A
Map:
Upstream MH: SMH-615A, SMH-PL1003C, SMH-PL1003D
Sheet:
Downstream MH: SMH-651
Segment Length: 1134'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: SS/JC/TH

Inspection Date/Time: 10/3/13

Location/Interceptor:

Set Up MH: RC3

Map: 5

Upstream MH: RC1

Sheet:

Downstream MH: P.S.

Segment Length: 443'

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10/3/13

Set Up MH: 622

Upstream MH: 621D, 625

Downstream MH: 620

Inspection Crew: SS/JC/TH

Location/Interceptor:

Map: Subarea 5

Sheet:

Segment Length: 1157'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10/3/13 9:55

Set Up MH: FX3

Upstream MH: FX1

Downstream MH: FX11

Inspection Crew: SS/JC/TH

Location/Interceptor:

Map: Subarea 5

Sheet:

Segment Length: 626'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive sources found.

N

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Smoke Testing Form

Owner: RidgeField, CT
Inspection Crew: JC, SS, TH
Inspection Date/Time: 10/3/13 10:05
Location/Interceptor:
Set Up MH: FX8
Map: 5
Upstream MH: FX7, FX9, FX10A
Sheet:
Downstream MH: FX12, FX11
Segment Length: 1,262

Observations

Weather/Ground: [✓] 1. Dry [ ] 2. Moderate [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

N

NO POSITIVE RESULTS

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: SS/JC/TH.

Inspection Date/Time:

Location/Interceptor:

Set Up MH: FX 14

Map: 5

Upstream MH: FX 12

Sheet:

Downstream MH: FX 13

Segment Length: 712'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No positive Results found.

N

sde
civil+environmental
ENGINEERING

341
644

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/TH

Inspection Date/Time: 10-10-13

Location/Interceptor: Subarea 6

Set Up MH: SMH-122

Map:

Upstream MH: SMH-123A, SMH

Sheet:

Downstream MH: SMH-120

Segment Length: 1038'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/EH

Inspection Date/Time: 10-10-13 1040

Location/Interceptor: Subarea 6

Set Up MH: SMH-127A

Map:

Upstream MH: SMH-128

Sheet:

Downstream MH: SMH-123A

Segment Length: 1609'

Observations

Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

6209

sde civil+environmental ENGINEERING

129
672
384

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/SC/TH
Inspection Date/Time: 10-10-13 1038
Location/Interceptor: Subarea 6
Set Up MH: SMH-165A
Map:
Upstream MH: SMH-131, SMH-167
Sheet:
Downstream MH: SMH-128
Segment Length: 1185'

Observations

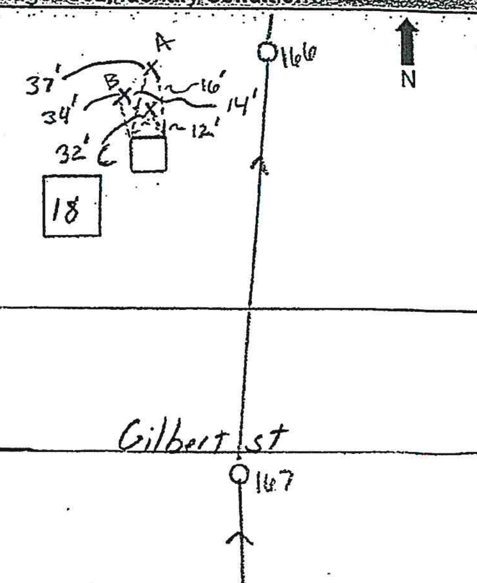
Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
18 Gilbert St A	2	2	1	7	100	.17	
18 Gilbert St B	2	2	1	7	100	.17	
18 Gilbert St C	2	2	1	7	100	.17	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)



4600

18 Gilbert A,B&C, Ridgefield, CT
10/10/2013

51 Fremont Street Needham MA, 02494
tel: 781-455-0003 fax: 781-455-8336

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584
157

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10-10-13 0930

Set Up MH: SMH - C11

Upstream MH: SMH-C13

Downstream MH: SMH-C7

Inspection Crew: MK/SS/JL/TM

Location/Interceptor: Subarea 6

Map:

Sheet:

Segment Length: 741

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

N

3415

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/TH

Inspection Date/Time: 10-10-13 0910

Location/Interceptor: Subarea 6

Set Up MH: SMH-64

Map:

Upstream MH: SMH-61

Sheet:

Downstream MH: SMH-67

Segment Length: 657'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

2674

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/JC/TH

Inspection Date/Time: 10-10-13

Location/Interceptor: Subarea 6

Set Up MH: SMH -9

Map:

Upstream MH: SMH-21, SMH-13A, SMH-13

Sheet:

Downstream MH: SMH-8

Segment Length: 816'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Date/Time: 10-10-13 0810
Set Up MH: SMH-8A
Upstream MH: SMH-8
Downstream MH: SMH-116

Inspection Crew: MK/SS/JL/TH
Location/Interceptor: Subarea 6
Map:
Sheet:
Segment Length: 836'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

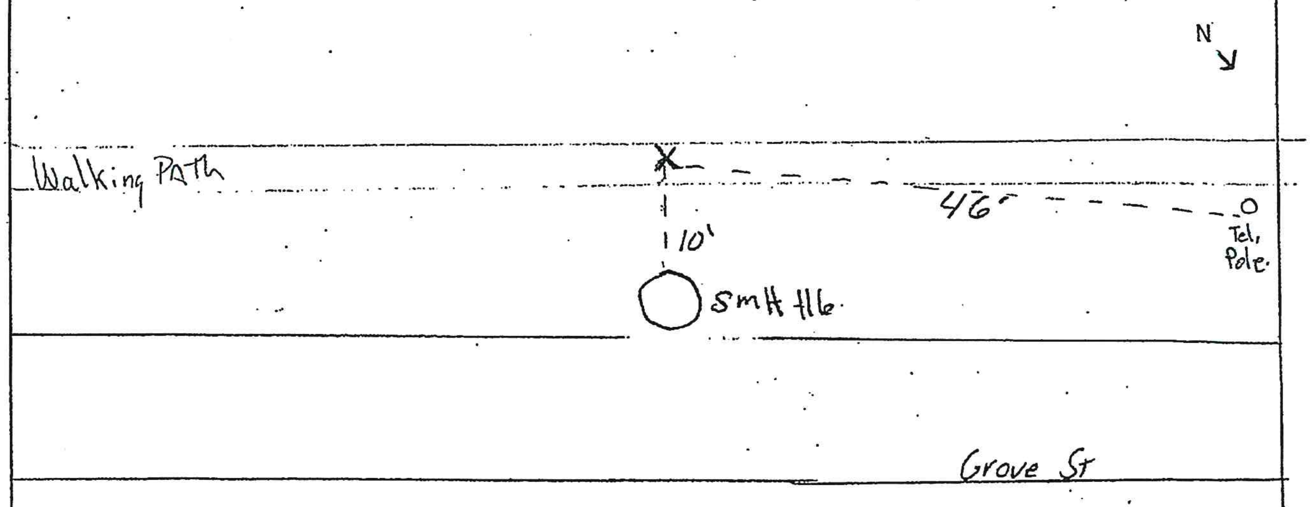
Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)
SMH-116 – Ground Smoking Area	2	2	1	9	50'	.25	

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

Smoke coming from ground By SMH-16.



SMH-116 Area, Ridgefield, CT
10/10/2013

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Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/TC/TH

Inspection Date/Time: 10-10-13 0835
Location/Interceptor: Subarea 6

Set Up MH: SMH-8D
Map:

Upstream MH: SMH-8E
Sheet:

Downstream MH: SMH-8B
Segment Length: 365'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Sewer Manhole	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found.

N

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793

Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: MK/SS/SC/TH/JS

Inspection Date/Time: 10-15-13 1151

Location/Interceptor: Subarea 6

Set Up MH: SMH-664

Map:

Upstream MH: SMH-665E

Sheet:

Downstream MH: SMH-406

Segment Length: 733'

Observations

Weather/Ground
- [X] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources found.

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Date/Time: 10-15-13 1115

Set Up MH: SMH-658

Upstream MH: SMH-650

Downstream MH: ~~[illegible]~~ SMH-664

Inspection Crew: mk/ss/sc/jm/zs

Location/Interceptor: Subarea 6

Map:

Sheet:

Segment Length: 965'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found.

N

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434

Smoke Testing Form

Owner: Ridgefield, CT	Inspection Crew: MK/SS/SC/FH/JTS
Inspection Date/Time: 10-15-13	Location/Interceptor: Subarea 6
Set Up MH: SMH-401	Map:
Upstream MH: SMH-51	Sheet:
Downstream MH: SMH-400	Segment Length: 535'

Observations

Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No positive sources found.

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183

Smoke Testing Form

Owner: Ridgefield, CT
Inspection Crew: MK/SS/KI/TH/JS
Inspection Date/Time: 10-15-13 1040
Location/Interceptor: Subarea 6
Set Up MH: SMH-5C
Map:
Upstream MH: SMH-5D
Sheet:
Downstream MH: SMH-5
Segment Length: 644'

Observations

Weather/Ground
- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found

N

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew: mk/ss/jc/TH/JS

Inspection Date/Time: 10-15-13 1010

Location/Interceptor: Subarea 6

Set Up MH: SMH-6

Map:

Upstream MH: SMH-116

Sheet:

Downstream MH: SMH-4

Segment Length: 392'

Observations

Weather/Ground

- [x] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition)

No Positive Sources Found.

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Smoke Testing Form

Owner: Ridgefield, CT

Inspection Crew:

Inspection Date/Time: 10-15-13

Location/Interceptor: Subarea 6

Set Up MH: ~~SMH-111~~ SMH-117

Map:

Upstream MH: SMH-120

Sheet:

Downstream MH: SMH-116

Segment Length: 1021'

Observations

Weather/Ground
- [ ] 1. Dry
- [ ] 2. Moderate
- [ ] 3. Wet

Source Note / Address	Results	Sector	Source Type	Location	Area	Runoff C	Flow (grams)

Codes

	Results	Sector	Source Type	Location
1-	Negative	Public	Service Connection	Paved Conc.
2-	Postive	Private	Driveway Drain	Paved Asph.
3-	Cannot Test		Windown Well Drain	Driveway
4-	+ Dye Tested		Stairwell Drain	Sidewalk
5-	-Dye Tested		Area Drain	Curb
6-	Suspect		Downspout	Yard - Front
7-			Downspout Connection	Yard - Back
8-			Fountain Drain	Yard - Side
9-			Building Drain	Non - Paved
10-			Catch Basin	Creek Bottom
11-			Storm Ditch	Field
12-			Storm Manhole	Golf Course
13-			Man Sewer	
14-			Clean out	

Sketch: (Show Placement of Blowers, Source suffix, Drainage Area, Identify Condition

No Positive Sources Found

N

III. Daily Location Reports

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/3/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Kevin Jackson 978-382-0034	Sub 1	Flyering	Governor St Main St E. Ridge St Market St Prospect Rdg Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Parley Ln High Ridge Ave Wilton Rd Huckleberry Ln Lewis Dr Shadow Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/3/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/5/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	**Subarea**	**Activity**	**Street Location**
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw (617) 590-6613	Sub 2	Flyering	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln Shadow Ln Main St West Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/5/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/6/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw (617) 590-6613	Sub 1	Flyering	Main St Governor St Market St Rowland Ln Prospect Ridge Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Highridge Ave Parley Ln Lewis Dr Shadow Ln Ascot Way Huckleberry Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/6/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/9/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
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Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
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Mr. Jeff Pennell
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Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Lucas Chapman (978) 857-3142 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 1	Smoke testing and Flyering	Main St Governor St Market St Rowland Ln Prospect Ridge Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Highridge Ave Parley Ln Lewis Dr Shadow Ln Ascot Way Huckleberry Ln
	Sub 2	Flyering,	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/9/2013

Crew No.	Subarea	Activity	Street Location
			Jackson Ct King Ln Shadow Ln Main St West Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/10/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
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Ridgefield Fire Department
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Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Lucas Chapman (978) 857-3142 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 1	Smoke testing	Main St Governor St Market St Rowland Ln Prospect Ridge Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Highridge Ave Parley Ln Lewis Dr Shadow Ln Ascot Way Huckleberry Ln
	Sub 2	Flyering	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/10/2013

Crew No.	Subarea	Activity	Street Location
			Jackson Ct King Ln Shadow Ln Main St West Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/11/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Lucas Chapman (978) 857-3142 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 1	Smoke testing	Main St Governor St Market St Rowland Ln
	Sub 2	Smoke testing, Flyering	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/11/2013

Crew No.	Subarea	Activity	Street Location
			Jackson Ct King Ln Shadow Ln Main St West Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/12/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
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Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
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Chief Heather Burford
Ridgefield Fire Department
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 1	Smoke Testing	Main St Market St Rowland Ln Branchville Rd Kent Ln Rockwell Rd
	Sub 2	Smoke Testing, Flyering	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/12/2013

Crew No.	Subarea	Activity	Street Location
			Shadow Ln Main St West Ln
	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/13/2013

Attention:

Ms. Diana Van Ness
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Captain Bryan Terzian
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/13/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/18/2013

Attention:

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Captain Bryan Terzian
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Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Tim Hickey (617) 212-6714 Matt Kershaw (617) 590-6613	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/18/2013

Crew No.	Subarea	Activity	Street Location
			Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/19/2013

Attention:

Ms. Diana Van Ness
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Captain Bryan Terzian
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Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw (617) 590-6613	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/19/2013

Crew No.	Subarea	Activity	Street Location
			Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/20/2013

Attention:

Ms. Diana Van Ness
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Captain Bryan Terzian
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw (617) 590-6613	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/20/2013

Crew No.	Subarea	Activity	Street Location
			Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/23/2013

Attention:

Ms. Diana Van Ness
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Captain Bryan Terzian
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw (617) 590-6613 Tim Hickey (617) 212-6714	Sub 4	Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/23/2013

Crew No.	Subarea	Activity	Street Location
			Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	2	Flyering	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln Shadow Ln Main St West Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/24/2013

Attention:

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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw Tim Hickey John Corrigan Jeff Devine	Sub 4	Smoke testing, Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 2	Smoke testing	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/24/2013

Crew No.	Subarea	Activity	Street Location
			Shadow Ln Main St West Ln
	Sub 3	Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/25/2013

Attention:

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Phone No. 203.431.2734
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Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
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Chief Heather Burford
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Mr. Alberto Angles
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Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw Tim Hickey John Corrigan Jeff Devine	Sub 4	Smoke testing, Flyering	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Smoke testing	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/25/2013

Crew No.	Subarea	Activity	Street Location
			Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/25/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
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Captain Bryan Terzian
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw Tim Hickey John Corrigan Jeff Devine	Sub 4	Smoke testing	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Smoke testing, Flyering	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/25/2013

Crew No.	Subarea	Activity	Street Location
			Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	Sub 5	Flyering	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/26/2013

Attention:

Ms. Diana Van Ness
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Phone No. 203.431.2734
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Captain Bryan Terzian
Ridgefield Police Department
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw Tim Hickey John Corrigan Jeff Devine	Sub 4	Smoke testing	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 3	Smoke testing, Flyers	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/26/2013

Crew No.	Subarea	Activity	Street Location
			Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	Sub 5	Flyers	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/26/2013

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/27/2013

Attention:

Ms. Diana Van Ness
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Captain Bryan Terzian
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Mr. Alberto Angles
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Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Tim Hickey John Corrigan	Sub 3	Smoke testing, Flyers	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/27/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/30/2013

Attention:

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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan	Sub 3	Smoke testing, Flyers	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	Sub 1	Flyers	Main St
	Sub 5	Flyers	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 9/30/2013

Crew No.	Subarea	Activity	Street Location
			Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/1/2013

Attention:

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Phone No. 203.431.2734
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Mr. Alberto Angles
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Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan	Sub 3	Smoke testing, Flyers	Ramapoo Rd Overlook Dr Farm Hill Rd Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	Sub 1	Smoke testing	Main St
	Sub 5	Flyers	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/1/2013

Crew No.	Subarea	Activity	Street Location
			Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct
	Sub 6	Flyers	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/2/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
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Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
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Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 5	Smoke testing, Flyers	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct
	Sub 6	Notifications	Danbury Rd Grove St South St Ligis Way

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/2/2013

Crew No.	Subarea	Activity	Street Location
			Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/3/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 5	Smoke testing	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct
	Sub 6	Notifications	Danbury Rd Grove St South St Ligis Way

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/3/2013

Crew No.	Subarea	Activity	Street Location
			Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/4/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 6	Notifications	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/4/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/9/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 6	Notifications	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close
	Sub 4	Notifications	Grove St Prospect St Sunset Ln Quail Ridge Complex Halpin Ln
	Sub 3	Notifications	Prospect Ridge Governor St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/9/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/10/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
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Chief Heather Burford
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Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 6	Smoke testing	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close
	Sub 4	Smoke testing	Grove St Prospect St Sunset Ln Quail Ridge Complex Halpin Ln
	Sub 1	Smoke testing	Prospect Ridge Governor St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/10/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/14/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
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Phone. 203.395.6229
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Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 6	Notifications	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close
	Sub 4	Notifications	Grove St Prospect St Sunset Ln Quail Ridge Complex Halpin Ln
	Sub 1	Notifications	Prospect Ridge Governor St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/14/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/15/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Chief Heather Burford
Ridgefield Fire Department
Phone No. 203.994.7566
Fax No. 203.431.2562
Email: rfdchief@ridgefieldct.org

Mr. Jeff Pennell
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Mr. Alberto Angles
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Phone No. 781.224.6405
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Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Matt Kershaw John Corrigan Tim Hickey	Sub 6	Smoke testing	Danbury Rd Grove St South St Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close
	Sub 4	Smoke testing	Grove St Prospect St Sunset Ln Quail Ridge Complex Halpin Ln
	Sub 1	Smoke testing	Prospect Ridge Governor St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 10/15/2013

Crew No.	Subarea	Activity	Street Location

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/23/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
Fax No. 203.431.2741
Email: rpdudc@ridgefieldct.org

Mr. Alberto Angles
AECOM Water
Phone No. 781.224.6405
Fax No. 781.224.6676
Email: alberto.angles@aecom.com

Mr. Jeff Pennell
United Water
Phone. 203.395.6229
Fax No. 203.438.7051
Email: Jeff.Pennell@UnitedWater.com

Please be advised that smoke testing crews will be working in the following area(s):

Crew No.	Subarea	Activity	Street Location
Stacey DePasquale Engineering			
Shawn Slowey (781) 726-2443 Lucas Chapman (978) 857-3142	Sub 1	Measurement Collection	Main St Governor St Market St Rowland Ln Prospect Ridge Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Highridge Ave Parley Ln Lewis Dr Shadow Ln Ascot Way Huckleberry Ln
	Sub 2	Measurement Collection	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln Shadow Ln Main St West Ln
	Sub 3	Measurement Collection	Ramapoo Rd Overlook Dr Farm Hill Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/23/2013

Crew No.	Subarea	Activity	Street Location
			Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
	Sub 4	Measurement Collection	Governor St Haplin Ln East Ridge St Prospect Rdg Prospect St Grove St Sunset Ln Quail Ridge Complex Main St Old Quarry Rd Cook Close Keeler Close Olcott Way
	Sub 5	Measurement Collection	Copps Hill Rd Mapleshade Rd North St Lafayette Ave Danbury Rd Farmingville Rd Ligis Way South St Lawson Ln Island Hill Rd Roberts Ln Mountain View Rd Hillsdale Ave Washington Ave Rochambeau Ave Fox Hill Dr Stone Dr Daisy Ln Grape Ln Outpost Ln Hilltop Ct
	Sub 6	Measurement Collection	Danbury Rd Grove St South St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/23/2013

Crew No.	Subarea	Activity	Street Location
			Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/24/2013

Attention:

Ms. Diana Van Ness
Ridgefield WPCA
Phone No. 203.431.2734
Fax No. 203.431.2737
Email: dvanness@ridgefieldct.org

Captain Bryan Terzian
Ridgefield Police Department
Phone No. 203.431.2799
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Mr. Alberto Angles
AECOM Water
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Shawn Slowey (781) 726-2443 Lucas Chapman (978) 857-3142	Sub 1	Measurement Collection	Main St Governor St Market St Rowland Ln Prospect Ridge Branchville Rd Kent Ln Rockwell Rd Olmstead Ln Highridge Ave Parley Ln Lewis Dr Shadow Ln Ascot Way Huckleberry Ln
	Sub 2	Measurement Collection	Gilbert St Catoonah St Bryon Ave GriffithLn High Ridge Ave Peaceable St Jackson Ct King Ln Shadow Ln Main St West Ln
	Sub 3	Measurement Collection	Ramapoo Rd Overlook Dr Farm Hill Rd

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/24/2013

Crew No.	Subarea	Activity	Street Location
			Nutmeg Ct Ramapoo Hill Rd Kellogg St Victor Dr Mulberry St Millston Ct New St High Ridge Rd Barry Ave Mulvaney Ct Abbott Ave Gilbert Rd
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	Sub 6	Measurement Collection	Danbury Rd Grove St South St

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

DAILY LOCATION REPORT
For
Smoke Testing

Date: 12/24/2013

Crew No.	Subarea	Activity	Street Location
			Ligis Way Old Quarry Rd Pound St Olcott Way Lawson Ln Cook Close Keeler Close

Should you have any questions please contact _Lucas Chapman_ at _978-857-3142_

IV. Notifications

Town of Ridgefield

Water Pollution Control Authority

Town Hall Annex, 66 Prospect Street
Ridgefield, Connecticut 06877
(203) 431-2734 tel ● (203) 431-2737 fax

Notice to Residents

Smoke Testing

The Ridgefield Water Pollution Control Authority (WPCA) will be conducting smoke testing of the sewer system in your area. Stacey DePasquale Engineering, Inc (SDE), under contract to the Town's consulting engineer, AECOM, will be conducting smoke testing on behalf of the Ridgefield WPCA to find leaks in the sanitary sewer system. The smoke testing is scheduled to begin on September 9, 2013 and end in mid October.

Please note that during this smoke testing an environmentally safe, non-toxic smoke will be released in the sanitary sewer system. This smoke will reveal otherwise unseen fresh water infiltration/inflow (I/I) sources, including points where surface waters may enter the sanitary sewer. Finding these fresh water I/I sources will help the Ridgefield WPCA reduce costs related to treatment of water that does not belong in the sanitary sewer system. Field crews from SDE will be recording smoke test data during these dates. Records may include photographs and/or video recording.

During this test fans will blow the smoke throughout the sewer system. Typically, smoke should not enter your home. However, smoke may enter your building under the following conditions:

- **The ventilation system for your house's sanitary sewer lateral is defective, installed incorrectly, broken, or undersized.**
- **The lateral traps under sinks, showers, floor drains, etc. are not installed properly, nonexistent, or dried out.**
- **The service connection from your house to the sanitary sewer is damaged, or installed improperly.**
- **The seals of your buildings sanitary sewer system are damaged, missing, etc.**

In preparation for the smoke testing, please make sure that the traps for seldom-used drains, sinks, showers, floor drains, etc. have water in them by pouring water into each drain.

If smoke does enter your home please be aware that:

- **The smoke leaves no residual coloration, odor, or stains.**
- **The smoke has no adverse effects on plants, animals, or humans**
- **The smoke has a slight, non-offensive odor**

The Ridgefield Fire and Police departments have been notified and are anticipating this smoke test. If you observe smoke in your home, please do not call the Fire Department, but contact the field crew conducting the smoke test at 978.857.3142.

Should you have any questions, please do not hesitate to contact Alberto Angles of AECOM at 781.224.6405 or Diana Van Ness, WPCA Administrator at 203.431.2734.

We thank you in advance for your cooperation.

IMPORTANT

PLEASE READ

Smoke Testing of Sanitary Sewers

The Ridgefield WPCA's engineering consultant AECOM and their subconsultant Stacey DePasquale Engineering, Inc (SDE) will be conducting Smoke Testing in your area to find leaks in the sanitary sewer system. The testing will begin the week of September 9, 2013 and continue for several weeks.

During this test fans will blow the smoke throughout the sewer system. Smoke should not enter your home. However, smoke may enter your building under the following conditions:

- The ventilation system for your house's sanitary sewer lateral is defective, installed incorrectly, broken, or undersized.
- The lateral traps under sinks, showers, floor drains, or other plumbing fixture are not installed properly, nonexistent, or dried out.
- The service connection from your house to the sanitary sewer is damaged, or installed improperly.

If smoke does enter your building while smoke testing is being performed, please do not call the Fire Department, but contact the field crew conducting the testing. It may be necessary for field personnel from SDE to enter your building and inspect the basement. Inspectors will have picture identification. **Please do not let anyone in your house that does not have SDE identification.**

The Ridgefield Fire and Police departments have been notified and are anticipating this smoke test. Tests will generally be conducted from 8:00 a.m. to 5:00 p.m.

If you have any questions please contact SDE's field crew leader, Lucas Chapman, at (978) 857-3142, or Alberto Angles of AECOM at (781) 224-6405, or Diana Van Ness, WPCA Administrator at (203) 431-2734.

The Ridgefield WPCA appreciates your cooperation

IMPORTANT

PLEASE READ

Smoke Testing of Sanitary Sewers

The Ridgefield WPCA's engineering consultant AECOM and their subconsultant Stacey DePasquale Engineering, Inc (SDE) will be conducting Smoke Testing in your area to find leaks in the sanitary sewer system. The testing will begin the week of September 9, 2013 and continue for several weeks.

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If smoke does enter your building while smoke testing is being performed, please do not call the Fire Department, but contact the field crew conducting the testing. It may be necessary for field personnel from SDE to enter your building and inspect the basement. Inspectors will have picture identification. **Please do not let anyone in your house that does not have SDE identification.**

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If you have any questions please contact SDE's field crew leader, Lucas Chapman, at (978) 857-3142, or Alberto Angles of AECOM at (781) 224-6405, or Diana Van Ness, WPCA Administrator at (203) 431-2734.

The Ridgefield WPCA appreciates your cooperation

ATTACHMENT B

Search this website

Sewer Division

Private Inflow Source Removal Program

Program History : Types of Illegal Discharges : How to Comply: Disconnection Permit Process
Program Contacts : Email Us

Program History
The Town of Greenwich is under orders from the U.S. Department of Justice, the U.S. Environmental Protection Agency (USEPA), and the Connecticut Department of Environmental Protection (CTDEP) to remove inflow sources from the Town's sanitary sewer collection system.

How is this being addressed? This program is ongoing, with the remainder of Greenwich under investigation in our second investigation phase. The letters going out to residents include those for:

- Confirmed illegal connection: where the physical connection of an illegal sources to the sanitary collection system was documented during an inspection. This letter mandates disconnection.
- Flexible connection: where the sump pump discharge is flexibly connected to its discharge point, even if the current discharge point is acceptable. This letter mandates installation of hard piping, to prevent future connection to an inappropriate location.
- Suspected connection: where preliminary investigation in the area strongly indicates an illegal connection. This letter mandates an inspection to perform testing which will either negate or confirm the connection.
- Request for Inspection: where initial attempts to schedule an inspection were not successful, for whatever reason. This letter mandates that the property owner schedule an inspection.

What is inflow? Inflow is ground or storm water discharged by connection to the sanitary sewer through basement sump pumps, floor drains, roof leaders, foundation and yard drains, and catch basins. These types of connections to the sanitary sewer are illegal as dictated by the Town Sewer Code. Inflow sources contribute to high flows in the system, resulting in sanitary sewer overflows. Such overflows can have a detrimental effect on the ecology of the Long Island Sound, reduce water quality for recreation, and create unhealthy environmental conditions for Town residents.

How is it Found? To help identify inflow sources, the Town of Greenwich embarked on a major investigation of its collection system. In the first phase, flow monitoring was conducted in several neighborhoods including Belle Haven, Byram, Old Greenwich, and Riverside. As a result of this monitoring, particular areas were targeted for more specific investigation in the form of smoke testing and building inspections.

How much was found?: From these inflow investigations, we found a total of 181 sump pumps and 30 drains directly connected to the sewer. Another ? sump pumps have the potential to be connected to the sewer because of an unknown discharge location or flexible discharge pipe. The confirmed illegal connections have the potential to discharge 1.55 million gallons of inflow during a storm, approximately 15% of the Grass Island Wastewater Treatment Plant's average daily flow. This is clearly a significant issue for our collection system and treatment plant facilities.

News & Department Info
- Frequently Asked Questions

Board Information
- Planning & Zoning Board of Appeals
- Building Code Board of Standards & Appeals

Services

Permits

Building Inspection
- Information & Hours
- Forms
- Inspections
- Certificates of Occupancy
- Code Questions & Info
- Archives

Building Construction & Maintenance
- Information & Hours

Engineering
- Information & Hours
- Plans, Projects & Bids
- Traffic Signs, Signals & Regulations
- Stormwater Information
- Flood & Erosion Control Board

Highway
- Information & Hours
- Leaf Collection
- Snow Removal
- Animal Disposal
- Call Before You Dig

Sewer
- Information & Hours
- Private Inflow Removal
- Smoke Testing Program
- Sewer Extension Projects

Waste Disposal
- Information & Hours
- Trash
- Recycling
- Hazardous Waste Day

Important Links
- Report Tree Problems

· Report Street Light Problems
· Contractor Payments

Related Links

· Police Dept., Traffic Section
· Parking Services Department
· CT Dept. of Transportation

FEATURED SECTIONS OF OUR SITE:

Representative Town Meeting

Town Employees

Find your Polling Place, Local Districts

View or Pay Taxes

WATCH COMMUNITY VIDEOS HERE

GCTV Greenwich Community Television

The Greenwich Community Covenant

Community First
Responsive Professionals • Integrated Technology

Solarize Greenwich!
Solar. Simple. Together.

Private Inflow Source Removal Program

Types of Illegal Discharges

Program History : Types of Illegal Discharges : How to Comply: Disconnection Permit Process
Program Contacts : Email Us

Types of Illegal Discharges

Illegal discharges include the following, when connected to the sanitary sewer:

- Roof leaders
- Sump pumps
- Open Cleanouts / floor drains
- Other miscellaneous drains (except sinks, toilets, other utilities meant to discharge to the sanitary sewer)

In addition, flexible sump pump discharge piping is not acceptable, given the ease with which it may be moved and connected inappropriately.

Acceptable methods for handling stormwater or other drainage you may need to address on your property are shown in the following downloadable documents:

- **Illegal Connection Schematics**
- **Legal Connection Schematics**

News & Department Info

- Frequently Asked Questions

Board Information

- Planning & Zoning Board of Appeals
- Building Code Board of Standards & Appeals

Services

Permits

Building Inspection

- Information & Hours
- Forms
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Building Construction & Maintenance

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Engineering

- Information & Hours
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Highway

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- Leaf Collection
- Snow Removal
- Animal Disposal
- Call Before You Dig

Sewer

- Information & Hours
- Private Inflow Removal
- Smoke Testing Program
- Sewer Extension Projects

Waste Disposal

- Information & Hours
- Trash
- Recycling
- Hazardous Waste Day

Important Links

Search this website

Private Inflow Source Removal Program

How To Comply

Program History : Types of Illegal Discharges : How to Comply: Disconnection Permit Process
Program Contacts : Email Us

How To Comply

If you have received one of the following letters, please click on the link to see the steps you can take to comply with the program:

- Confirmed Illegal Connection
- Flexible Connection
- Suspected Connection
- Request for Inspection Access

Confirmed Illegal Connection
If you have a confirmed illegal connection, you must modify the plumbing on your property to redirect your inflow source to an appropriate location. Please note: your new chosen drainage location should not create a nuisance condition for your neighbors or in a public right of way. Please consider this when developing your discharge strategy.

Owners who have been identified as having an illegal connections will be receiving a letter. The Town has hired an inflow removal Program Coordinator (PC) to assist property owners with compliance issues. The contact phone number for the PC is 203-622-2285. Please note that more than 400 illegal connections have been identified to date and more are expected as the inspection process proceeds. To keep the number of people requesting permit approvals and related project inspections to a manageable level Notice of Confirmed Illegal Connection letters are being sent to property owners in batches with approximately 30 being sent every month rather then sending all at once. Batch mailings will be grouped by neighborhood to facilitate the permitting and inspection processes.

The following outlines the basic steps in the process.

1. Determine how you will be removing your inflow source from the sanitary sewer. Options include discharge to:
   - The property at least 5 feet from the building: Placing the drainage at least 5 feet from your building lessens the likelihood of water reentering your structure or causing you wet foundation conditions.
   - A dry well or other in ground drainage system on your property.
   - Nearby storm drainage system: This is strongly recommended, as it provides you with a reliable discharge location which avoids nuisance conditions on your property or those adjacent to you. However, your site may allow you to consider alternatives.
2. Obtain a plumbing permit. Connecticut Building Code requires a property owner to have any plumbing modifications inspected. Plumbing permits must be obtained at Town Hall.
3. If you are connecting to the storm drain system, you will also be required to obtain a Highway Permit from the Highway Division. This permit will allow you to open the road and connect to the storm drain system.
4. Upon receipt of all permits, the work may be performed.
5. Obtain final plumbing inspection. This inspection will also serve to document that you have successfully removed your inflow source from the sanitary sewers.

Flexible Connection
If you received a letter noting you had a flexible connection on your sump pump discharge, you are required to replace this with a hard piped connection. Please follow these steps:

1. Obtain a plumbing permit. Connecticut Building Code requires a property owner to have any plumbing modifications inspected. Plumbing permits must be obtained at Town Hall.

Suspected Connection
Your property may have a suspected connection as a result of the preliminary investigations performed during our field work. To get the final answer, we are requesting that you:

1. Schedule an inspection (see below)

Request for Inspection Access:
Suspected Connections or Initial Appointments

News & Department Info

- Frequently Asked Questions

Board Information

- Planning & Zoning Board of Appeals
- Building Code Board of Standards & Appeals

Services

Permits

Building Inspection

- Information & Hours
- Forms
- Inspections
- Certificates of Occupancy
- Code Questions & Info
- Archives

Building Construction & Maintenance

- Information & Hours

Engineering

- Information & Hours
- Plans, Projects & Bids
- Traffic Signs, Signals & Regulations
- Stormwater Information
- Flood & Erosion Control Board

Highway

- Information & Hours
- Leaf Collection
- Snow Removal
- Animal Disposal
- Call Before You Dig

Sewer

- Information & Hours
- Private Inflow Removal
- Smoke Testing Program
- Sewer Extension Projects

Waste Disposal

- Information & Hours
- Trash
- Recycling
- Hazardous Waste Day

Important Links

1. We are now in our second round of scheduling with residents. We have also identified properties with suspected connections that must schedule inspections to confirm or negate the connection.
2. Please call 1-877-402-6847 to schedule an appointment. CDM, the Town's consultants on this project will take your call and schedule one of their inspectors.
3. Based on the results of the inspection, you will either need to proceed no further or you will be directed to remove a confirmed inflow source.

Private Inflow Source Removal Program

Sewer Division Program Contacts

Private Inflow Source Removal and Smoke Testing Programs
For more information about the Private Inflow Source Removal Program Dye Testing / Inflow Confirmation work, please call our consultants, CDM, at their toll free number; 877-402-6847. CDM staff try to return calls as quickly as possible, and we appreciate your patience.

Sewer Division - All Programs
For all programs and other Sewer Division questions, you are welcome to contact the Sewer Division directly.

- Richard Feminella
  Wastewater Division Manager
  Department of Public Works
  203-622-7760
- **Email:** Sewer Division

Inflow Inspector: To schedule compliance inspections or to ask questions about your inflow removal permit, you can contact our Inflow Inspector at:

203-496-0833

Please remember our Inspector is part time but will get back to you - please leave a message!

Program History • Types of Illegal Discharges •
How to Comply • Program Contacts • Email Us

News & Department Info
- Frequently Asked Questions

Board Information
- Planning & Zoning Board of Appeals
- Building Code Board of Standards & Appeals

Services

Permits

Building Inspection
- Information & Hours
- Forms
- Inspections
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- Code Questions & Info
- Archives

Building Construction & Maintenance
- Information & Hours

Engineering
- Information & Hours
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- Call Before You Dig

Sewer
- Information & Hours
- Private Inflow Removal
- Smoke Testing Program
- Sewer Extension Projects

Waste Disposal
- Information & Hours
- Trash
- Recycling
- Hazardous Waste Day

Important Links
- Report Tree Problems

Town Hall - 101 Field Point Road, Greenwich, CT 06830. Phone: (203) 622-7700

ATTACHMENT C

TOWN OF CHESHIRE, CONNECTICUT

SAMPLE
SUMP PUMP
REMOVAL PROGRAMS

METCALF & EDDY | AECOM

1 Village of Glen Ellyn, Illinois

2 City of Indianapolis, Indiana

3 Town of Mansfield, Massachusetts

4 City of New Brighton, Minnesota

5 City of Vadnais Heights, Minnesota

VILLAGE OF GLEN ELLYN
PUBLIC WORKS DEPARTMENT
30 S. LAMBERT ROAD
GLEN ELLYN IL 60137

PRESORTED
STANDARD
U.S. Postage
PAID
Permit 149
Glen Ellyn, IL

Enhanced Carrier Route
Walk Sequence Saturation

POSTAL CUSTOMER LOCAL
GLEN ELLYN, ILLINOIS 60137

'CLEARWATER' VS 'WASTEWATER' WHAT'S THE DIFFERENCE?

Clearwater (rainwater) is collected and discharged without any treatment into the DuPage River through the Glen Ellyn **storm** sewer system.

The storm sewer system is separate from, and does not connect with, the **sanitary sewer** (*wastewater*) system; *wastewater* must undergo a complicated treatment process before it can be discharged.

INSPECTIONS OF INSIDE PLUMBING AND CORRECTION OF ILLEGAL SUMP PUMP CONNECTIONS WILL BE REQUIRED EFFECTIVE OCTOBER 1, 2006

The Clearwater Removal Program has three components. The first, the grant component will pay 50% of the cost to eliminate an illegal sump pump connection to the sanitary sewer up to a maximum of $2500 and may include both internal and external plumbing modifications. Participation in the grant component is voluntary. Grants will be offered only on illegal connection elimination work resulting from an inspection that occurs between October 1, 2006 and September 30, 2007.

The second component requires an inspection of the interior plumbing system before the sale of a home to confirm that there are no illegal sump pump connections to the sanitary sewer. If an illegal connection is found, modifications must be made before a real estate transfer tax stamp will be issued. Effective October 1, 2006 anyone selling a home will be required to schedule an inspection within the 3-month period before the scheduled date of sale—a home inspection is only valid for a 3-month period. In instances where corrections to the plumbing system are required, the correction must be made and the internal plumbing system reinspected before the real estate transfer tax stamp will be issued.

The third component requires an inspection of the interior home plumbing system as part of a major remodeling project or when a home improvement project involves plumbing. Any illegal sump pump connection in a home undergoing these types of improvements must be corrected either as part of the improvement or by a separate contract. Final inspection approval that allows permanent residence in the building will not be issued if an illegal sump pump connection exists.

VILLAGE OF GLEN ELLYN

1ST EDITION - JULY 2006

CLEARWATER REMOVAL PROGRAM

Special points of interest:

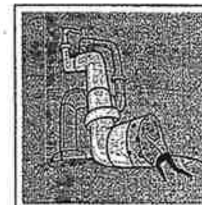
- Effective October 1, 2006 Inspections for illegal connections to the sanitary sewer system will be required before the sale of a home.
- The grant component of the program goes into effect on October 1, 2006 and is in effect for 12 months only.
- The new program will help eliminate sanitary sewer back-ups and flooding during major rain events.

VILLAGE OF GLEN ELLYN
PUBLIC WORKS DEPARTMENT
30 S. LAMBERT ROAD
GLEN ELLYN IL 60137
(630) 469-6756
Fax: (630) 369-3128

NEW PROGRAM AIMS TO REDUCE SANITARY SEWER BACK-UPS

The Village's Clearwater Removal Program was implemented to reduce the amount of clearwater (rainwater) improperly entering the sanitary sewer system, thereby reducing the strain on this system during major rain events.

The sanitary sewer system consists of a private and a public portion. The public sanitary sewer pipes, owned and maintained by the Village of Glen Ellyn, are usually located under the street or adjacent public parkway. The private portion, owned and maintained by the property owner, is generally 6" in diameter, located at right angles to the curb and provide service for one building. The sanitary sewer system is designed to transfer only sanitary waste. During a major storm, clearwater entering sanitary sewers can overload the system causing sewage to back-up into homes. Clearwater can enter the sanitary sewer system from defects in the public (Village) portion of the system (some of which dates back to 1912) and from defects and illegal connections in the private (homeowner's) portion of the sanitary sewer system. Engineers estimate that approximately 45% of the clearwater enters the sanitary sewer system from the private portion.



The new program will reduce sanitary sewer back-ups.

A continuing program to reduce the amount of clearwater entering the public portion of the sanitary sewers is a major component of the Village's Clearwater Removal Program. The program includes engineering studies used to help pin point defects in the public sewer followed by sewer line repair, sewer lining and replacement. All major road improvement projects include work to eliminate clearwater from entering the public portion of the sanitary sewer system.

Clearwater illegally entering the sanitary sewer system affects everyone in our community—please be part of the solution. Call Public Works at (630) 469-6756 for an inspection of your inside plumbing.

WHERE SHOULD RAINWATER FROM DOWNSPOUTS, SUMP PUMPS AND AREA DRAINS BE DIRECTED IF NOT INTO THE SANITARY SEWER SYSTEM?

Rainwater and groundwater should be discharged to the ground near the point it falls and allowed to flow aboveground where it can be collected by the storm sewer system. In certain cases, sump pumps can be connected directly into the Village/public storm sewer system.

"Call Public Works at 469-6756 up to 3 months before the date of title transfer to set up an inspection of the home plumbing system."

DO ILLEGAL SUMP PUMP CONNECTIONS REALLY HAVE A MAJOR IMPACT ON THE SEWER

Yes—the impact can be great. A typical 8-inch sanitary sewer main can handle wastewater from about 460 homes yet it can take only 12 sump pumps operating at full capacity to overload the sewer causing backups and flooding.

I'M SELLING MY HOUSE— WHAT DO I NEED TO DO?

1. Call Public Works at 469-6756 up to 3 months before the date of title transfer to set up an inspection of the home plumbing system. The purpose of the inspection is to determine if an illegal sump pump connection exists. If the home does not close within the 3-month period, an additional inspection is required. Prior to September 30, 2007 there will be no charge for this inspection. After September 30, 2007 a $50 inspection fee will be required.
2. If no illegal connections are found, you will receive an approved inspection report indicating compliance with the code requirements and authorizing the issuance of a Real Estate Transfer Tax Stamp.
3. If an illegal connection is found, the property owner must make modifications to bring the plumbing system into compliance with the plumbing code.

- Corrections must be made before the Village will issue a Real Estate Transfer Tax Stamp.
- A building permit must be secured prior to start of work.
- The work must pass an inspection by the Village plumbing inspector.
- If the correction cannot be made before the property closes, either the buyer or seller must create a cash escrow account (held by the Village of Glen Ellyn) to assure that the repair is made. Repairs must be made within 6 months of the sale of a home.

I HAVE A BUILDING PERMIT THAT INVOLVES PLUMBING WORK—HOW WILL THE NEW PROGRAM AFFECT MY PROJECT?

Inside plumbing will be checked for illegal sump pump connections to the sanitary sewer along with building permit inspections that are associated with your work.

If an illegal sump pump connection is found, the property owner must correct the problem before final inspection approval is issued.

WHAT IS AN 'ILLEGAL CONNECTION?

An illegal connection occurs when a pipe that would normally be discharged to the ground surface outside of a home or connected to the storm sewer system is connected to the sanitary sewer system. This allows clearwater (rainwater) to end up at the Glenbard Wastewater Plant instead of being transported through the storm sewer system for discharge directly to the DuPage River. Illegal connections include roof downspouts, sump pumps and area drains around a building. Although any connection that allows rainwater or groundwater to enter the sanitary sewer system is considered an illegal connection, only illegal *sump pump* connections are eligible under the grant program.

I'M NOT SELLING MY HOME OR INVOLVED IN ANY PERMIT WORK—WHY SHOULD I GET INVOLVED IN THE PROGRAM NOW?

That's easy—if a voluntary inspection of your plumbing system is made between October 1, 2006 and September 30, 2007 and an illegal sump pump-sanitary sewer connection is found, the Village will share in the cost of repairs up to $2500. The grant program is in effect for 12 months <u>only</u>.

Questions?
Call Public Works at 469-6756

HOW DO I APPLY FOR THE GRANT PROGRAM?

An inspection of the interior plumbing must take place between October 1, 2006 and September 30, 2007.

If an illegal sump pump connection to the sanitary sewer system is found, you will be given a copy of the inspection report and a Grant Application form.

1. To be considered for the grant you must submit a Grant Application and at least 2 estimates from licensed plumbing contractors (3 are recommended) to the Public Works Department for evaluation and approval.
2. Once approved, the applicant must obtain a building permit from the Village of Glen Ellyn and pay the associated fees.
3. The work must be completed and pass an inspection by the Village plumbing inspector.
4. Upon completion of the work and final inspection by the Village, the applicant will be reimbursed for 50% of the cost to eliminate the illegal connection or $2500, whichever is less. Only illegal connection elimination work resulting from an inspection that occurs between October 1, 2006 and September 30, 2007 will be eligible for the grant program.
6. The homeowner must submit a paid contractor's invoice to Public Works to qualify for payment .

New construction, major additions and commercial properties are <u>not</u> eligible for the grant program.

The **grant component** *of the program is in effect from October 1, 2006 to September 30, 2007* ***<u>only</u>***.

HOW DO I FIND A PLUMBING CONTRACTOR?

The following is a non-inclusive list of contractors who have successfully performed work directly with the Village and have indicated that they are willing to give estimates to property owners within the Village.

This list should not be viewed as a recommendation by the Village or a guarantee of the past or future performance of these contractors. Contractors are listed in alphabetical order.

Armbrust Plumbing	(630) 668-6273	Jim Dhamer Plumbing	(630) 668-7999
James Harold Beutler Plumbing	(630) 260-1773	Russ All Plumbing	(630) 932-8617

City of Indianapolis
Department of Public Works

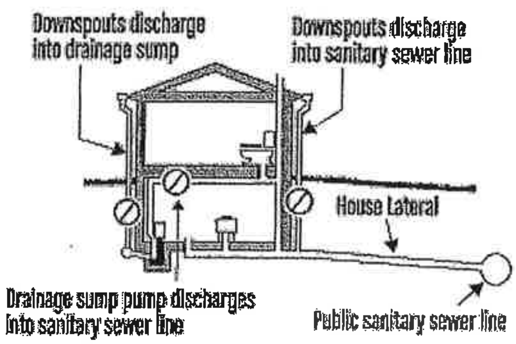
Correct Connect

Whether your home is connected to the sanitary sewer or a combined sewer, it's important for you to have a Correct Connect.

Each household or business that redirects stormwater out of the sewer helps prevent sewage from backing up into our basements or overflowing into our waterways.

Are the downspouts from your roof connected to the city sewer? What about the sump pump keeping water out of your basement?

If a downspout or sump pump is connected to the city sewer, it is taking up space needed to carry sewage to our treatment plants. These incorrect and possibly illegal connections can cause sewage to back up into your basement or overflow into our rivers and streams.



IMPROPER INSTALLATION

correct connect

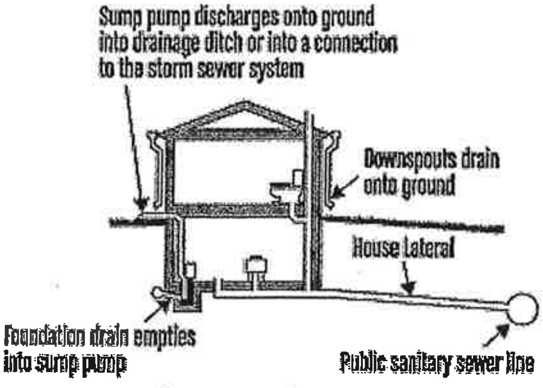
To learn how to disconnect your incorrect connections, click on the how-to instructions below or in the left-hand column.

If you have further questions or need assistance, call the Mayor's Action Center at 327-4MAC (4622).

Plumber and Contractor Training & Certification

Certified Correct Connect Contractors and Plumbers

Hardware Store Partners



Incorrect connections cause problems.

Illegal connections cause sewage to back up into basements and streets

Our sewer system doesn't have unlimited capacity. In areas with separate sewers, rainwater should flow to storm sewers and sewage to sanitary sewers. But sometimes downspouts and sump pumps are illegally connected to the sanitary sewers, adding more flow than the sewers are meant to handle. **In a neighborhood of 200 homes it only takes six to eight sump pumps working full time in wet weather to cause a backup into basements, streets or our waterways.**

When sanitary sewers are overloaded, they can back up into our homes, businesses and streets.

Overloaded sewers also may overflow into our rivers and streams, especially in neighborhoods with combined sanitary and storm sewers. More than 6 billion gallons of contaminated, untreated sewage flow into our neighborhood waterways each year.

Even though improvements to our sewer system will help reduce the amount of sewage flowing into our waterways, we still need your help. If we can redirect some water away from our sewer system it will put us that much closer to cleaner rivers and streams.

Follow the links below for more information:

- How to disconnect your sump pump
- How to disconnect your downspout
- Q&A

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Last Updated: 10/29/2009 7:11 AM

Q&A

Why do I need to disconnect my downspouts or sump pump?

When downspouts and sump pumps are connected to the city sanitary sewer system, their flow is taking up space needed to carry sewage to our treatment plants. These incorrect and possibly illegal connections can cause sewage to back up into your basement or overflow into our rivers and streams. In a neighborhood of 200 homes, it only takes six to eight sump pumps working full time during a rain storm to cause sanitary sewers to back up into basements, streets and our waterways.

How do I know if my downspouts or sump pump are connected?

If your downspouts disappear into the ground, they are most likely incorrectly connected to the city's sanitary sewer system. The water from your downspouts should discharge into your yard, a storm sewer or other appropriate drainage structure.

The pipe from your sump pump should also discharge into your yard. If your sump pump is connected to any other pipe in your home, it is most likely incorrectly connected to the city sewer system. However, if your sump pump is connected to your washing machine or water softener, it should be directed to the sanitary sewer and not to your yard.

Does the city plan to do testing to verify illegal/incorrect connections? The city is conducting surveys and inspections of targeted neighborhoods where incorrect connections are suspected. If you are not sure whether your home is correctly connected, contact your plumber or the Mayor's Action Center at 327-4MAC (4622).

How much will it cost to disconnect?

Disconnection costs will vary depending on the type of incorrect connection. You can disconnect most downspout connections yourself for $100 or less.

Sump pump disconnections are often more complex and the cost associated with the disconnections will vary. You must be familiar with plumbing and electrical work to disconnect a sump pump. Your plumber or home improvement professional can give you an estimate for the work.

Can I perform the work on my own?

Yes. It is possible to disconnect your downspouts and sump pumps on your own. The Department of Public Works and the Indianapolis Clean Stream Team have developed helpful how-to brochures and video to guide you through the process. To request a copy of the how-to materials contact 327-4MAC or go to http://www.indycleanstreams.org/ to view the materials on-line. If you are unfamiliar with plumbing work, do not attempt to disconnect your sump pump; contact a licensed and bonded plumber or approved home improvement professional for help.

How do I find a licensed and bonded plumber or approved home improvement professional?

Ask your friends, co-workers or neighbors to recommend a plumber or home improvement specialist. Always ask these professionals to show you evidence they are licensed and bonded.

Where should I direct the water flow?

The overflow from a downspout or sump pump should flow onto your property and percolate into the ground. Never direct the water onto a neighbor's property, street, right of way or easement.

Can I get around obstacles and slope problems using basic downspout material?

Yes. You can use a combination of elbows and extensions to help route water away from property lines, trees, shrubs, and pathways to a proper location.

Can downspouts and sump pumps be hooked to a storm sewer?

Yes. Clear water sources such as downspouts and sump pumps can be hooked up to a storm sewer. However, if your sump pump contains water from your water softener, washing machine, bathtub or shower, it should not be connected to the storm sewer.

Do I need a permit to direct my downspout and sump pump overflow to a storm sewer?

Yes. If you are redirecting clear stormwater to the storm sewer you must contact the city for a permit before beginning the work. Contact 327-4MAC for more information.

What kind of water should not be discharged into my yard or property?

Only clear, stormwater should discharge into your yard. Drainage from sinks, washers, bathtubs, showers, water softeners, swimming pools and toilets must discharge into the sanitary sewer.

Why does the stormwater fee on my property tax bill not cover the cost of processing the water from my connected downspouts or sump pumps?

The stormwater fee was created by the City-County Council in 2001 to fund flood control, drainage and stormwater quality improvement projects in Marion County. It funds the design, repair and installation of storm sewers in high priority areas determined by the Stormwater Master Plan. It does not fund projects at our wastewater treatment plants or sanitary sewer system.

Does city law prevent hooking up downspouts and sump pumps to sanitary sewers?

Yes. Clear water sources such as downspouts and sump pumps cannot be hooked up to sanitary sewers because they steal capacity needed to transport sewage. Sanitary sewers are not large enough to carry stormwater and can overflow from the impacts of just a few of these illegal connections. If your downspouts and sump pumps are connected to the sanitary sewer system, you must disconnect them.

What if disconnecting my downspout or sump pump will cause flooding in my neighbor's yard or the street, and there is no other alternative?

Downspouts can provide a source of water for your garden and landscape. In locations where the stormwater causes ponding in your yard or the street, you could install a rain barrel, rain garden, drainage swale or pond. Talk to a home improvement professional for ideas and information that will fit your yard's size and configuration. There are also good information sources on the Internet. One Web site with links to many on-line resources is http://www.rainscapes.org/, a partnership involving government and non-profit groups in Maryland.

What if I choose not to disconnect?

If a homeowner refuses to correct their incorrect/illegal downspout or sump pump connection or to seek assistance in correcting the connection, the City may use its authority to enforce compliance. The City has authority to assess a fine of up to $2500 and to recover costs if necessary. The City will not pursue penalties against any homeowner who makes a good-faith effort to rectify the improper connection.

The City's aim is to gain voluntary compliance. All residents will benefit from keeping rainwater out of the sewers. Reducing the waterflow to our treatment plants will help keep our sewer rates down and help keep our rivers and streams clean.

What if I can't afford to pay to have my downspouts or sump pump disconnected?

The City will make every effort to work with a homeowner to correct an incorrect connection of a downspout or sump pump. The City will provide notice to the homeowner with incorrect connections and provide adequate time to correct the problem. The City also will offer advice to the homeowner on low-cost ways to gain assistance if they cannot make the correction themselves or cannot afford to hire someone to make the correction.

Print This Page

INDY GOV

Welcome to the Official Web Site of Indianapolis and Marion County, Indiana

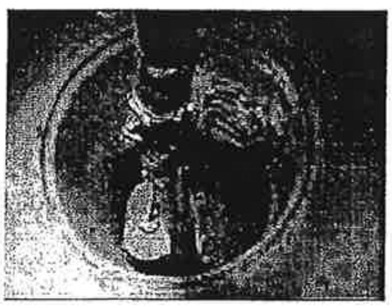
Monday, January 18 2010

City of Indianapolis

Department of Public Works

How to disconnect your sump pump

To view the instructional video, click here.



Find your sump pump. If the sump pump is connected to any other pipe in your home, it is most likely improperly connected. The drainage pipe from your sump pump should go from the pump directly outside your home at ground level. When a sump pump is rerouted to return collected ground water to the yard, that water no longer takes up space in the sewer system.

Before you disconnect make sure your sump pump is only draining clear floodwater from your basement. Sump pumps used to drain a washing machine or sink drain should NOT be discharged into your yard.

In a neighborhood of 200 homes it only takes six to eight sump pumps working full time in wet weather to cause a backup into basements, streets or our waterways. So you can see, even with only a few sump pumps incorrectly connected major problems can arise.

Disconnecting your own sump pump is possible if you are skilled at plumbing and electrical work. If you arenÕt familiar with plumbing work, please contact a licensed and bonded plumber or home improvement professional for help.

WHAT WILL I NEED?	
Piping	Valves
Concrete Drill	Splashguard
Measuring Tape	Caulk
Fittings	Concrete

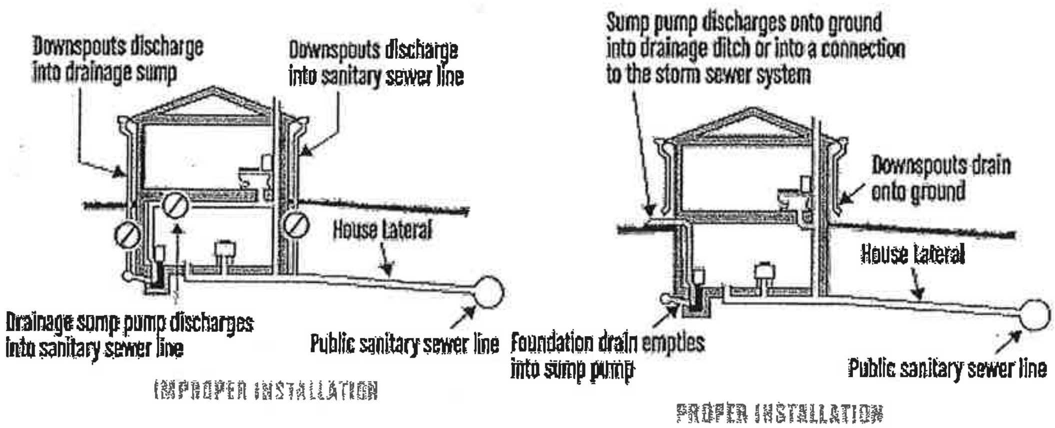
The sump pump disconnection will involve several steps:

STEP 1: TURN OFF THE ELECTRICAL SUPPLY

STEP 2: REMOVE OLD PIPES

STEP 3: SEAL OFF CONNECTION TO SEWER

STEP 4: REDIRECT THE WATER FLOW



Water should be directed into your yard and away from your home so that it doesn't puddle along the wall and seep back into your basement.

Remember: Sump pump discharges should not be directed onto neighboring properties.

If you need to dig, make sure you are not cutting service lines leading into your house. Before you dig, contact your utility company or Indiana Underground at 1-800-382-5544.

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Last Updated: 7/16/2008 2:27 PM

Search Sitemap Contact

Correct Connect
Certified Contractors and Plumbers

Through its Correct Connect program, the Indianapolis Department of Public Works (DPW) is working with residents and businesses in Indianapolis to ensure that improper clear water connections from roof downspouts and sump pumps are disconnected from the sanitary sewer. Downspouts and sump pumps that connect to the city sewer send rainwater into the sewer system. During wet weather, the clear water that flows directly into the sanitary sewer overwhelms our system and causes sewers to overflow into our rivers and streams.

In most cases, downspout and sump pump disconnection can be a do-it-yourself project. However, for those property owners preferring professional services, DPW is holding Correct Connect Contractor and Plumber Workshops. To date, contractors and plumbers that have become certified are:

Company	Address	Phone Number
Marv Fix-It	1036 Wild Ivy Trail	(317) 439-0501
A-Danny Phillips Plumbing	2417 W. 79th St.	(317) 876-9959
Paul E. Smith Plumbing Co.	8171 W. 10th St.	(317) 845-4455
JR Design & Associates	1417 Commerce Ave.	(317) 624-9511
Rex May Plumbing & Pump Service	11630 Ware St.	(317) 823-6379
R.T. Moore Co. Inc.	6340 La Pas Trail	(317) 291-1052
Insurance Construction Specialists Inc.	129 N. 2nd Ave.	(317) 784-0500
William J. Ciriello Plumbing Co. Inc.	3304 S. Emerson Ave.	(317) 787-5391
The Drainman Inc.	2244 Profit Drive	(317) 822-9290
A-1 Superior Excavating Inc.	7254 Picton Drive	(317) 568-0672
McDougalle Water & Sewer Service	3217 S. Oxford St.	(317) 787-8312
Homefax Excavating & Construction	4350 Carrollton Ave.	(317) 283-5337
Village Plumbing	6542 E. Westfield Blvd.	(317) 253-8300
A.R.S./Rescue Rooter	25 Woodrow Ave.	(317) 390-5555
Tramco Inc.	P.O. Box 26858	(317) 356-3514 x 6
Ideal Plumbing Systems	47 N. Warman Ave.	(317) 636-2766
Ron's Plumbing	4635 Ferguson Road	(317) 590-3015
Citizens Mechanical Services	6805 Hillsdale Court	(317) 595-3000
Mr. Rooter Plumbing	3609 Developers Road	(800) 863-6098
Morris Trucking and Blacktop	1630 Milburn St.	(317) 631-0450
Adams Water & Sewer Service Inc.	7451 Acton Road	(317) 862-5031
English Excavating Inc.	7402 Lake Road	(317) 888-2282
Meuser Construction Co.	5464 E. Orange St.	

Note: Contractors and plumbers are licensed by the Department of Metropolitan Development (DMD). Please check with DMD to make sure that the plumber or contractor you have selected is still in good standing with the city. Current lists of licensed contractors and plumbers are available by calling 327-3698 or online at www.indy.gov/eGov/City/CodeEnforcement/Licenses/ContractorLicenses/Pages/contractors.aspx.

For more information on Correct Connect, please visit www.indycleanstreams.org.

TOWN OF MANSFIELD, MASSACHUSETTS
Engineering Department
Six Park Row, Mansfield, MA 02048

MEMORANDUM

TO: Board of Selectmen

FROM: John D. Sullivan, Jr., Town Engineer
David J. Field, P.E., Senior Engineer

DATE: August 27, 2003

SUBJECT: Sewer I&I/House-to-House Inspection Program

Over the past few years, we have been concentrating on the removal of infiltration from our sewer system, by repairing manholes and relining sewer pipes. This work has made an impact on reducing the groundwater infiltration into the sewer system.

We now need to reduce the amount of sewer inflow that enters the sewer system through sump pumps, downspouts and yard drains. A house-to-house inspection program was started in 1991 by our consultants, CDM, and briefly followed up in 1998 using Town personnel. While these inspections were fairly successful in finding and eliminating obvious connections, the program lacked definite procedures for follow-up testing of suspected property and a process to encourage compliance, with collection of penalties, if it becomes necessary.

Attached is a draft of our proposed House-to-House Inspection Program, which addresses those prior concerns. We are on the Selectmen's agenda for Wednesday, September 3, 2003 to explain and discuss this Draft Policy and Procedures.

Our intent with this program is to eliminate unnecessary flow that enters our sewer system through cooperation with the residents and property owners.

Attachment
Draft House-to-House Inspection Program for Removal of Private Sewer Inflow, dated September 2003.

Cc: John D'Agostino, Town Manager
Lee Azinheira, DPW Director

JDS/dr

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Town of Mansfield
Engineering Department
6 Park Row
Mansfield, MA 02048
(508) 261-7377

Town of Mansfield

House-to-House Inspection Program For Removal of Private Sewer Inflow

September 2003

Adopted by the Board of Selectmen 9/3/2003

House-to-House Inspection Program for Removal of Private Sewer Inflow
September 2003

Executive Summary

The Town of Mansfield Engineering Department in a continuing effort to reduce inflow and infiltration into the sanitary sewer system is proposing to perform house-to-house (HTH) inspections of private homes and businesses in an effort to identify and remove sources of private inflow that are contributing to the overall inflow and infiltration problem in the Mansfield sanitary sewer system.

This document describes the current inflow and infiltration (I/I) situation, current sewer use regulations, and options for performing inspections and enforcing compliance. In addition, past HTH inspections are summarized and complete procedures for carrying out town wide inspections are recommended.

The Mansfield Sanitary Sewer System

The Town of Mansfield sanitary sewer system is comprised of approximately 296,000 linear feet of sewer mains ranging from 6 to 42 inches in diameter, 1,400 manholes, and 3,000 sewer users. Mansfield also receives wastewater from neighboring towns, Foxboro and Norton, and conveys this sewerage to the Mansfield Water Pollution Control Facility located in Norton, on the Taunton town line. The treatment plant has a design capacity of 3.14 million gallons a day, but frequently receives flows that exceed the design capacity due to inflow and infiltration (I&I).

Inflow and Infiltration (I&I)

Infiltration is generally groundwater that enters the sanitary sewer system through defects, such as cracks or breaks, in pipes and manholes; while inflow refers to stormwater or groundwater which enters the sanitary sewer system through improperly connected sump pumps, down spouts and yard drains. I&I not only causes higher flows to the treatment plant, but also takes up valuable capacity that could otherwise be used to sewer additional homes and businesses. Increased flows within the sewers caused by I&I can also lead to pipe surcharges as well as overflows into streets, rivers, streams, and basements.

The Town of Mansfield has appropriated $1,550,000 to date to find and remove I&I from sewer mains and manholes and has repaired over 200 manholes and lined approximately 2 miles of sewer main in an effort to reduce the amount of I&I in the sanitary sewer system. These repairs have been successful in reducing infiltration into the system, but inflow still has a significant impact on, and is a major component of the sanitary sewer system.

Previous House-to-House Inspections

1991 Inspections
A house-to-house inspection program was conducted in October of 1991 by CDM. In this program inspectors went door to door on a street-by-street basis to try and inspect buildings connected to Town sewer. The result of those inspections found 15 sump pumps connected to the sewer out of 1,052 homes and businesses inspected. Another 758 potential sources of inflow were identified but not investigated further. In addition, inspections were not made on 260 homes because there was either no one home, or entry was refused.

1998 Inspections
In June of 1998 the Town of Mansfield Engineering Department under the advice of CDM set up a program to conduct HTH inspections using town personnel. Inspections were attempted on the 260 homes that were not inspected in 1991. Letters were sent to the property owners of those homes and appointments set up to perform inspections. A $50 per month penalty was set up for properties who did not let inspectors into their property or who refused to disconnect illegal connections. Town forces were used to conduct the inspections in teams of two. Because of the need to access people's homes, inspections are conducted periodically on nights and weekends as well as during normal working hours. 241 properties were inspected. Of those inspected, 22 were found to be connected to the sewer and 15 more were suspected of being connected.

The average cost for the inspections utilizing Town personnel was approximately $9.50 per property compared to an industry standard of $50.00. Unfortunately, while the program was fairly successful in finding illegal connections and getting most people to disconnect additional inspections and follow-up testing of suspected property was not performed due to the lack of in house capabilities to create, send and process bills for the $50 per month penalties.

Current Sewer Regulations

The current Town of Mansfield Sewer Use Regulations adopted 2/21/1996 by the Board of Selectmen, were reviewed by the CDM in 1998, and summarized as follows:

> *The Sewer Use Regulations clearly show that the Town has the authority to:*
> - *inspect all public and private residences for violations of the Sewer Use Regulations;*
> - *require owners to repair or disconnect services which violate the regulations;*
> - *require owners to pay for all work in connection with repairs or disconnections on their property; and*
> - *assess fines if owners remain non-complaint with the regulations.* [1]

Specifically the Sewer Use Regulations state the "no person shall make connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly to a

[1] Letter from CDM to Town Engineer Lee Azinheira titled "Town of Mansfield Continued I/I Services, Sump Pump Separation Program," dated 4/3/1998

public sanitary sewer.[2]" Town Counsel also reviewed the existing Sewer Use Regulations and the proposed inspection program recommended by CDM and "...generally concur[ed]..." with those observations, but noted that, "Town officials are not authorized to go upon private property for inspections of sewer facilities without the owner's permission or a court order. An owner's refusal to grant permission for access would constitute a violation of the Regulations for which a civil penalty could be assessed."[3] Town Counsel also suggested using the term "civil penalty" instead of "surcharge" as was proposed by CDM.

Proposed Inspections

The primary goal of house-to-house inspections is to remove sources of private inflow from the sanitary sewer system. There are many ways or combinations of ways to accomplish this goal. Some of these strategies include reimbursement programs, sewer banks, voluntary compliance, mandatory compliance, waiver periods, or removal by the Town. It is our belief from past inspections and experiences of other communities that the most important characteristic of any program is that residents feel they are being treated equally and are not being singled out. For this reason it is suggested that a one time town wide inspection program be undertaken to inspect all properties believed to be connected to the sewer system, utilizing a mandatory compliance approach.

Mandatory compliance requires that property owner disconnect or redirect any private inflow source(s) discovered during the inspection process within a provided time period. Failure to disconnect or redirect illegal connection(s) would result in penalties or fines. It is also recommended that the penalty remain $50 per month, as it was in the 1998 inspections, until the inflow source is removed and verified by Town inspectors. *Note: The fee schedule in the 1998 inspections was $50 per month for one year and then $50 per day until violation removed. To simplify billing procedures, it is proposed that the SEWER INLFOW PENALTY remain $50 per month until the violation has been remedied.*

The intention of the $50 per month penalty is to encourage property owners to disconnect and is not to raise revenue. The $50 per month penalty would be reflected on the property owner's water and sewer bill under a separate line item labeled *SEWER INFLOW PENALTY.* Costumers who receive quarterly bills will be assessed a $150 penalty while those who are billed monthly will be assessed a $50 penalty. This will be clearly stated in informational letters to residents about the program. Upon notification of the violation and the expiration of the specified grace period to remedy the violation, the penalty will be included on the next regularly scheduled water and sewer bill regardless of when the notification is given. The $50 per month or $150 per quarter fee will not be prorated.

Once a *SEWER INFLOW PENALTY* has been added to a water and sewer bill, it will be handled as any other water or sewer bill and collected as per the long standing DPW policy. Failure to pay any portion of the sewer or water bill, including the *SEWER INFLOW PENALTY*, will result a past due notice, urgent past due notice, and finally a shut of notice. Appeals of the SEWER INFLOW PENALTY portion of the bill will be handled in accordance with the current DPW policy.

[2] Town of Mansfield Sewer Use Regulations, 1995

[3] Letter from Town Counsel Robert Mangiaratti to Town Engineer Lee Azinheira titled, "Opinion No. 98-08, Municipal Sewer Private Inflow Source Identification Program," dated 6/9/1998

Procedure

Public Education and Notification

Since many property owners are not aware that it is illegal to discharge stormwater and/or groundwater into the sanitary sewer, or that there is even a difference between sanitary sewerage and stormwater, it is important to educate the public prior to the start of inspections.

It is recommended that the upcoming inspections and reasons for the inspections be presented before the Board of Selectmen. Also notices of the inspections should be posted in the local papers. It is also recommended to include a notice of the upcoming inspections in residents sewer and water bills, as well as make information available on cable access and the Town website.

Inspectors

Inspectors will be Town personnel from various departments such as Engineering, Highway, Water, and Wastewater, and may include additional staff from other departments as necessary. All inspectors will be trained by the Engineering Department about how to conduct the inspection and how to correctly complete inspection documentation. Inspectors will be required to carry and display Town issued photo ID badges and shall drive in clearly marked Town vehicles. It is noted that the vehicles should be parked in a centrally located areas when possible while inspectors are walking from building-to-building. Inspectors will travel in teams of two and should be equipped with flashlights, clipboards, inspection forms, two-way radios and any other tools necessary to perform a thorough inspection of the sewer facilities inside and out side of the building, such as picks, shovels, screw drivers, or wrenches.

Blanket Inspections

Initial inspections will be performed on a street-by-street approach in which inspectors knock on doors and attempt to inspect as many properties as possible. For properties that could not be inspected because the owner was not available, a notice will be left at the door stating that inspectors were by and would try a second time in approximately one to two weeks. When the owner is available the inspectors will introduce themselves and explain briefly that the Town is conducting house-to-house inspections in an attempt to reduce the amount of clean water that enters the sewer system.

Inspectors will be trained to explain the owners rights, and that no entry will be made without permission. If an owner does not feel comfortable with allowing the inspectors into or on the property, the owner has the option of deferring or requesting the inspectors come back at another time, calling the police department to verify the inspectors identity, or as a last resort requesting a time when a police officer could escort them into the property. The owner will be notified that failure to allow inspectors into the home will result in *Sewer Inflow Penalty* of $50 per month or $150 per quarter depending on how they are billed. Inspections will only be conducted if the owner or adult representative of the owner is present at the time.

If an owner wishes to defer an inspection for any reason, it is the responsibility of the owner to reschedule that inspection. If an owner does not reschedule a deferred inspection within 2 weeks of the original inspection attempt, then a written notice will be sent to the owner as described below and the inspection process will proceed as an inspection by appointment.

Depending on the number of requests for police detail escorts, appointments may need to be scheduled so that the police detail time is used efficiently.

Inspection schedules will be set up to allow for 2nd attempt inspections to be conducted in the same neighborhood approximately one to two weeks later. If the owner is not available on the 2nd attempt inspection, a notice will be left at the door requesting that the owner call the Engineering Department to set up an appointment for an inspection.

Inspection By Appointment

For properties that could not be entered on the first or second attempt, owners will be asked to call the Engineering Department to schedule an appointment to have their property inspected. Appointments will be scheduled in blocks at various times throughout the week to try and accommodate as many owners as possible. Property owners will have the option of choosing the time that is most convenient for them. If an owner does not contact the Town to schedule an inspection within 2 weeks of the notice or within 2 weeks of deferring an inspection, a written letter will be sent to the property owner requesting an appointment be made to conduct the inspection. The letter will clearly spell out the time frame to schedule an inspection. If an inspection appointment has not been made within 30 days of the written notice a final notice will be sent to the owner via certified mail or hand delivery which states that the owner has 30 days to make an appointment before a *SEWER INFLOW PENALTY* of $50 per month (or $150 per billing cycle for customers billed quarterly) will be added to the next regularly scheduled water and sewer bill.

Other Inspections

Supervisors of the inspection teams will conduct periodic quality control inspections to ensure that inspectors are recording observations correctly and completely. During these quality control inspections property owners will be informed that these routine inspections are only to verify what the inspectors are recording.

Buildings that are suspected of having improper connections to the sanitary sewer but could not be verified during the initial inspection will be re-inspected by a follow-up team equipped with a main-line sewer camera, a lateral camera, smoke testing equipment and dye tablets. The follow-up team will perform the appropriate tests or inspection(s) to determine if an improper connection exists. If the re-inspection team cannot gain access to the property because the owner was not available, a notice will be left at the property and the same procedure for performing inspections by appointment used as previously described. Whenever possible the Town will attempt to have a re-inspection team available at the time of the initial inspection to reduce administrative workload and eliminate the potential for rescheduling.

Properties Improperly Connected

Properties found to have an improper connection to the sanitary sewer system will be notified at the time of inspection and again latter by a letter. The inspectors will suggest possible options for redirecting the inflow source and will provide standard documentation and details for some general alternatives when possible.

A letter notifying the owner of the improper connection will be sent after the inspection within approximately one month. The letter will clearly spell out the requirements of the owner to disconnect or redirect the inflow source and to schedule a time for inspectors to verify it has been removed. If the owner does not contact the Town within 30 days, a final notice will be sent out. If, after another 30 days, the inflow source has not been removed and verified by the Town, notification will be given to the DPW to add the *SEWER INFLOW PENALTY* to that customers water and sewer bill until the violation has been remedied. The *SEWER INFLOW PENALTY* will be $50 per month or $150 per cycle for those customers who receive quarterly bills.

Appendix

TOWN OF MANSFIELD, MASSACHUSETTS
Engineering Department
Six Park Row, Mansfield, MA 02048
Phone (508) 261-7377
Fax (508) 261-7343

NOTICE TO SEWER CUSTOMERS:

ATTENTION SEWER CUSTOMERS: THIS FALL THE TOWN OF MANSFIELD WILL BE CONDUCTING HOUSE-TO-HOUSE INSPECTIONS OF ALL PROPERTIES CONNECTED TO TOWN SEWER. INSPECTIONS ARE TO VERIFY THAT RAINWATER AND GROUNDWATER ARE NOT BEING DISCHARGED INTO THE SANITARY SEWER SYSTEM BY SUMP PUMPS, ROOF LEADERS, OR FOUNDATION AND YARD DRAINS. RAINWATER AND GROUNDWATER THAT ENTERS THE SANITARY SEWER SYSTEM CAN OVERLOAD THE SYSTEM, AND CAN CAUSE BACK-UPS, OVERFLOWS, AND IMPACTS THE OVERALL CAPACITY OF THE TREATMENT PLANT AND IT'S COST OF OPERATION. IF IMPROPER CONNECTIONS EXIST, THE PROPERTY OWNER WILL BE GIVEN GUIDANCE, AND AN OPPORTUNITY TO REDIRECT THOSE CONNECTIONS. THE INSPECTIONS, WHICH ARE CONDUCTED BY TOWN EMPLOYEES, USUALLY TAKE LESS THAN 10 MINUTES. PLEASE WATCH FOR ADDITIONAL INFORMATION IN THE LOCAL PAPER, ON CABLE ACCESS, AND ON THE TOWN WEBSITE (WWW.MANSFIELDMA.COM.) IF YOU HAVE ANY QUESTIONS, PLEASE CALL THE ENGINEERING DEPARTMENT AT (508) 261-7377.

TOWN OF MANSFIELD, MASSACHUSETTS
Engineering Department
Six Park Row, Mansfield, MA 02048
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Sun Chronicle
Mansfield News

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TOWN OF MANSFIELD, MASSACHUSETTS
Engineering Department
Six Park Row, Mansfield, MA 02048
Phone (508) 261-7377
Fax (508) 261-7343

MEMORANDUM OF UNDERSTANDING BETWEEN THE TOWN OF MANSFIELD, MASSACHUSETTS AND

____
(Property Owner/Representative)

____
(Property Address)

CONCERNING THE TIME EXTENSION TO REMOVE A PRIVATE INFLOW SOURCE FROM THE TOWN SEWER SYSTEM

This Memorandum of Understanding (MOU) is entered into this _______ day of____________ by and between the Town of Mansfield, Massachusetts, hereinafter referred to as the Town, located at 6 Park Row, Mansfield, MA 02048 and ______________________________________ ______________________________, hereinafter referred to as the Property Owner.

The purpose of this Memorandum is to grant a time extension to allow for the removal and relocation of the private inflow source(s) previously identified at the property address listed above. Since a good faith effort has been demonstrated, the Town hereby agrees to extend the time allowed to complete the removal and relocation of the inflow source from the original date of billing, ____________(approximately 30 days from the date of the letter titled "Connection Notice-Final Notification,") to the new date of billing, ____________; with the understanding that failure to remove the inflow sources and schedule a verification inspection on or before the new date of billing will result in a ***SEWER INFLOW PENALTY*** of $50 per month being be added to the sewer and water bill retroactive to the original date of billing listed above.

IN WITNESS WHEREOF, the parties hereto affix their signatures in execution of this Memorandum.

______________________________________ ________________________
Town Engineer (Date)
Town of Mansfield, Massachusetts

______________________________________ ________________________
(Property Owner/Representative) (Date)

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Thank You
Mansfield Sewer Users

Our House-to-House Sewer Inspection Program of the over 3,000 Mansfield Sewer Users is 99% complete, and we thank the Residents and Business Owners for their cooperation.

Our inspections, by Engineering and DPW personnel, identified 60 sump pumps, which during high groundwater and heavy rainfall could have contributed over 300,000 gallons per day of unnecessary water to the sanitary sewer system. This is equivalent to over 900 three-bedroom homes!

We note that 70% of those properties that were identified have already satisfactorily removed or redirected those improper connections; and the majority of the remaining ones are already taking action to disconnect in the near future.

Reducing these sources of unnecessary rainwater and groundwater from entering the Mansfield Sewer System helps prevent overloading the system, with resulting backups and overflows. It also reduces the impact on the overall capacity of the Wastewater Treatment Plant, and ultimately the cost to taxpayers for the unnecessary treatment of clean rainwater and groundwater.

Again, thank you for your cooperation.

The Mansfield Engineering Department

Why is the City initiating a Sump Pump Inspection Program?

- Sump pumps that are connected to the sanitary sewer contribute significant amounts of clean water to treatment plants. Cities are billed for the volume of waste water that is sent to the area treatment plant.
- Treatment plant capacity is being taken up by clean water coming from infiltration (see page of groundwater into cracks in sanitary sewer lines) and inflow (surface water getting into the sanitary sewer system through holes in manhole covers and illegally installed sump pumps).
- New Brighton will receive a significant surcharge from Metropolitan Council Environmental Services (MCES) for excessive infiltration and inflow (I/I) beginning in 2007.
- The City can opt out of the surcharge by having an approved I/I elimination plan in place.

What it Costs You as a Taxpayer?

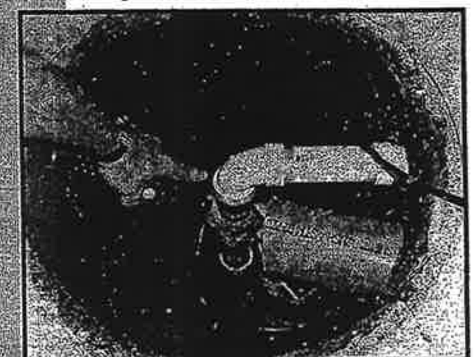
- MCES will impose a $136,500 surcharge to the City of New Brighton over 5 years beginning in 2007 ($27,300 annually).
- New Brighton will provide monetary incentives of up to $500 for the disconnection of the illegal sump pump connection. The City will not pay for routine sump pump maintenance.
- Citizens who refuse the inspection or refuse to disconnect their sump pump from the sanitary sewer will be subject to a $100 fine per utility billing quarter.

city of NEW BRIGHTON
the city that works for you
803 Old Highway 8 NW
New Brighton, MN 55112

City Inspectors will be in your neighborhood in the next week or so.

New Brighton's Sump Pump Inspection Program

MN.



The City of New Brighton has initiated a 5 year Sump Pump Inspection Program to reduce the volume of clear water that is being directed into the sanitary sewer system. This mandatory program involves the inspection of every home and business in the community and should result in reduced waste water treatment fees.

city of NEW BRIGHTON *the city that works for you* **Public Works**

Background of the Problem

The City of New Brighton operates and maintains over 90 miles of sanitary sewer pipes that collect waste water from homes and businesses in the City. The waste water is conveyed for treatment to St. Paul's Pigs Eye treatment plant which is operated by Metropolitan Council Environmental Services (MCES). The treated waste water is eventually discharged into the Mississippi River. The MCES charges the City of New Brighton about $1 million annually for the treatment and disposal of sanitary waste water. New Brighton's charges are based on the volume of waste water that is received/recorded within the MCES regional interceptor system.

Some of the water treated, however, isn't actually waste water. It is water that comes from 'Infiltration and Inflow," or I/I. Infiltration is seepage of groundwater into the sanitary sewer mains and service pipes through joints and cracks. New Brighton inspects about 20% of the sanitary sewer system each year and cracks and joints are sealed when problems are found. Infiltration is not a big problem in New Brighton as it is in cities with sandy soil.

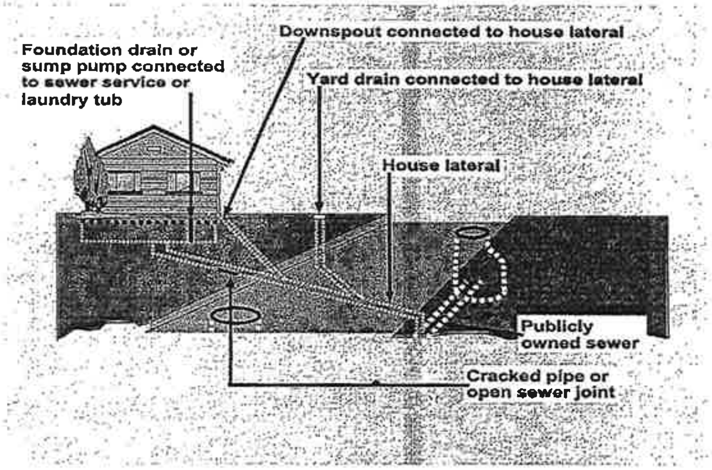
Inflow refers to surface or ground water getting into the sanitary sewer system at single points. New Brighton and other cities have identified two significant sources of inflow. One source is through pick holes and vent holes in sanitary sewer manhole covers located in areas that flood during heavy rain storms. The other significant source of inflow is through **sump pumps illegally connected to sanitary sewer systems in homes and businesses.**

The majority of houses in New Brighton were constructed when it was common practice to install drain tile and a sump basket in the basement floor.

To prevent wet basements, a sump pump was installed and connected to the sanitary sewer service as an easy way to correct the problem. It has been determined that these sump pumps are contributing significant amounts of water to the waste water treatment plants. The treatment plant capacity, which was planned for new growth and development, is being used up by clean water I/I.

Cities that have already completed sump pump inspection programs have found as many as 7% of sump pumps to be illegally installed. **Sump pumps that are connected to the sanitary sewer have to be disconnected and re-plumbed to discharge to the lawn or street gutter.** The MCES will be imposing a surcharge on communities that do not act to eliminate excessive I/I. New Brighton will receive a five year $136,500 surcharge beginning in 2007. The City can opt out of the surcharge by having an approved plan in place that includes expenditures for I/I elimination equal to or greater than the yearly surcharge of $27,300.

New Brighton has developed an I/I elimination plan. It includes the manhole cover replacement project and a sump pump inspection program beginning in 2006.



What You Can Expect from the City:

- Current City staff will be used to conduct the Sump Pump Inspection Program. Building Inspectors and the Fire Marshal will inspect buildings that are in process. Public Works personnel will do inspections on existing properties during non-snow days of January, February and March.
- One area of the City will be inspected each year, for 5 years, until all homes and buildings have been inspected.
- The City will waive the plumbing inspection fee to the property owner. The City will transfer a $60 payment to the City's general fund from the sanitary sewer fund for each inspection.
- City inspection personnel will make nonscheduled stops during regular business hours shortly after residents/businesses received mailed information about the program. It is hoped that 80% of the inspections can be done through unscheduled stops.
- The residents/businesses that cannot be reached will be left a notice instructing them to make an appointment for the inspection.
- City personnel will need to inspect the basement of the premises for a sump pump and determine if it is connected properly. The inspection is expected to take approximately 10 minutes. City Personnel will have official New Brighton badges identifying themselves.

For further information, contact Public Works, 651-638-2050, or go to the City's website www.newbrightonmn.gov/sump

City of New Brighton
803 Old Highway 8 NW
New Brighton, MN 55112
(651) 638-2050
www.newbrightonmn.gov/sump

SUMP PUMP INSPECTION PROGRAM

YOUR SUMP PUMP SYSTEM AND/OR ROOF DRAIN SYSTEM HAS BEEN FOUND TO BE CONNECTED TO THE MUNICIPAL SANITARY SEWER SYSTEM.

1. IT IS THE PROPERTY OWNERS RESPONSIBILITY TO DISCONNECT AND REROUTE THE DISCHARGE LINE TO THE OUTSIDE OF THE PROPERTY, PREFERABLY TO THE LAWN AREA. ***(PLEASE SEE DISCHARGE AREAS BELOW)***

2. THE DISCONNECTION MUST BE COMPLETED, INSPECTED, AND APPROVED BY THE CITY OF NEW BRIGHTON WITHIN THE CALENDAR YEAR OF THE INITIAL INSPECTION. ***(PLEASE SEE INCENTIVES AND PENTALTIES SECTION BELOW)***

3. THE DISCONNECT CAN BE DONE BY THE HOMEOWNER OR A LICENSED PLUMBER. IN ANY CASE, A SUMP PUMP PERMIT IS REQUIRED. ***(A BLANK SUMP PUMP PERMIT IS INCLUDED WITH THIS INFORMATION FOR YOUR CONVENIENCE OR DOWNLOAD IT FROM OUR WEBSITE. YOU OR YOUR PLUMBER CAN COMPLETE THE PERMIT FORM AND MAIL IT TO THE CITY OF NEW BRIGHTON. THE SUMP PUMP PERMIT FEE HAS BEEN WAIVED FOR THIS PROGRAM)***

4. THE FINAL PLUMBING INSPECTION AND APPROVAL OF THE DISCONNECTION MAY ONLY BE MADE BY A CITY BUILDING INSPECTOR OR LICENSED PLUMBER. FINAL INSPECTION FORM CAN BE DOWNLOADED FROM THE WEB PAGE AND A COPY MUST BE RETURN TO CITY HALL.

5. THE CITY WILL REIMBURSE THE ACTUAL EXPENSES OF THE DISCONNECT UP TO $500.00 WITH AN ITEMIZED RECEIPT. ***(PLEASE SEE INCENTIVES AND PENTALTIES SECTION BELOW)***

6. **DISCHARGE AREAS** Pick the discharge area that works for you and your neighbors. Some sumps run everyday all the time. Others run only during spring melt or heavy rains. Soil type and the plants in your yard effect how well the water is able to infiltrate into the ground. The preferred discharge area is the lawn but may not be possible at all sites.

   Street, Driveways, Curb or Sidewalk – Discharges to pave surfaces increase Stormwater pollution, runoff, and stream bank erosion. Pave surface runoff to pond or streams which are connected by pipes and eventually flow to the Mississippi River. The water moves out of our local watershed area and does not replenish the groundwater we use for drinking water.

   Yard – Discharges to the lawn should be far enough from the building to prevent groundwater from recycling back into your basement (anywhere from few feet to about ten feet depending on soil type). Wet yard areas make great spots to build raingardens. The roots of plants in raingardens act like a sponge and absorb almost all the water. Yard grass has short root structure and typically only absorbs 25% of the water flowing over it. Information on where to buy native plants and how to build raingardens can be found at Rice Creek Watershed District's web page http://ricecreek.org/bluethumb.

   Underground or Above Ground Storage – Part or all of the discharges can be directed to various types of storage devices (cisterns, rain barrels, underground vaults) with overflows directed to either yard or pave surface. The collected water can then be used for lawn irrigation which will lower your water bill. To limit mosquito habitat, use tight screens or close the outside access when not in use for these devices.

7. **INCENTIVES AND PENALTIES**

   Incentives – The City will reimburse property owners up to $500 (with an itemized receipt) of the cost to properly disconnect existing sump pumps and drains that are illegally connected into the sanitary sewer system. If a property owner chooses to do the work himself, the City will pay for the materials (with an itemized receipt) and a flat amount of $100 for labor, up to the total amount of $500. Please note that routine pump maintenance and new pumps will not be reimbursed.

   Penalties – The City will impose a $100 per quarter penalty fee on the sanitary sewer utility bill of property owners who refuse to allow their homes to be inspected for illegal connections to the sanitary sewer system or refuse to disconnect an illegal connection after being so ordered by the City of New Brighton.

List of Plumbing Contractors

** have current 2006 plumbing license on file*

~ ~ as of 12/7/06 ~ ~

Bonfe's Plumbing & Heating *	505 Randolph Avenue, St. Paul	651-228-7140
Circle Plumbing *	3882 Edith Lane, Circle Pines	763-784-2267
Commercial Plumbing & Heating *	24428 Greenway Avenue, Forest Lake	651-464-2988
Dean's Professional Plumbing *	20080 Dassel Lane, Corcoran	763-428-1321
Gavic & Sons *	12725 Nightingale St. NW, Coon Rapids	763-755-6468
HP Pipeworks*	3670 Dodd Road, Eagan	651-365-1340
Hugo Plumbing & Pump Services, Inc.*	9600 180th Street N, Forest Lake , MN	651-433-4866
Joe's Plumbing *	23375 Drake Street NW, St. Francis	763-427-7132
Kramer Plumbing & Heating Inc.*	5365 Stacy Trail, Stacy, MN	651-462-2194
Larson Plumbing *	3095 162nd Lane NW, Andover	763-427-7680
Mid-City Mechanical*	9103 Davenport Street, Blaine	763-757-7100
Mr. Rooter Plumbing	2800 Campus Drive Dr., Ste 40, Plymouth	763-551-0555
Norblom Plumbing *	2905 Garfield Avenue S., Minneapolis	612-827-4033
North Anoka Plumbing*	22590 Rum River Blvd.	763-753-3373
Pipe Right Plumbing*	107 10 Mississippi Bld, Coon Rapids	612-868-9174
Polar Plumbing *	6087 46th Street N., Oakdale	651-777-7525
Randy Lane & Sons*	1501 W. Broadway Avenue N, Mpls.	612-521-8835
St. Paul Plumbing & Heating *	640 Grand Avenue, St. Paul	651-228-9200
Tim's Quality Plumbing *	523 Central Avenue, Osseo	763-571-0454
Tschida Bros. Plumbing *	1036 Front Avenue, St. Paul	651-488-2596
KS Distributing*	925 227th Ave, Bethel	763-286-2485

Disclaimer: This list is just to provide residents with some of the licensed plumbers doing business in the City of New Brighton.
It is the responsibility of the resident to contact the plumber(s) and get estimates before selecting a contractor.
It is recommend that you contact several plumbers for an estimate. The City in no way recommends or guarantees the work of any contractor.

License plumbers must submit an itemize bill for reimbursement. The itemized bill must detail cost of labor and materials. Reimbursement will not be given unless an detailed itemized receipt is received by the City.

City of New Brighton — the city that works for you

City of New Brighton
Sump Pump Permit Application
(Sump Pump Disconnection from Sanitary Sewer System)

Please mail or bring completed permit form to City Hall: **City of New Brighton,**
803 Old Highway 8 NW,
New Brighton, MN 55112 ***651-638-2050***
www.newbrightonmn.gov/sump ***651-638-2044 (fax)***

Job Site Address: ____________________

Project Valuation: $ N/A ____________ The Applicant is: ☐ Owner and Occupant ☐ Contractor

Property Owner

Name ____________________
Address ____________________ Unit # ________
City ____________________ State ______ Zip ________
Phone ( )

Contractor

Name ____________________
Address ____________________
City ____________________ State ______ Zip ________
Phone ( ) License #

Property Use	Type of Structure	Type of Work	FEES
X Residential	**X Principal Bldg**	☐ New Bldg	Permit Fee: -0-
☐ Commercial	☐ Garage	☐ Existing Bldg	Admin Fee: -0-
☐ Industrial	☐ Temporary Bldg	☐ Addition	Plan Review Fee: -0-
☐ Institutional	☐ Accessory Bldg	**X Remodel**	Other: ________
☐ Public	☐ Pool/ Spa	☐ Repair / Replace	State Surcharge: -0-
	☐ Other ________	☐ R.P.Z. Overhaul/ Replacement	Investigation Fee: -0-
			TOTAL DUE: WAIVED

Plumbing Item(s) *(indicate quantity for each)*

___ Bathtub w/out Shower	___ Floor Drain	___ Sewage Ejector	___ Water Pipe
___ Coffeemaker	___ Garbage Disposal	___ Shower	___ Water Softener
___ Dishwasher	___ Grease Interceptor	___ Sillcock / Hose Bib	___ Whirlpool
___ Drinking Fountain	___ Ice Maker	___ Sink - Bar	X **Other**

Specific Description of Work to be Completed

Disconnect existing sump pump from the municipal sanitary sewer system.

Permit will become void 180 day from date of issuance. Permits issued and inspections made by the City are a public service and do not constitute any representation, guarantee or warranty, either implied or expressed, to any person as to the condition of the building or conformance to applicable construction codes. The Undersigned acknowledges that this application has been read and that the above is correct and agrees to comply with all the ordinances and laws of the City of New Brighton regulating building construction.

Applicant's Signature ____________________ **Date** ________

For Office Use Only

Permit # ________ Project # ________ Entered ________ Approved ________ Issued ________

Moving Outside

Because ground-water discharge cannot be purged into the household plumbing system, piping must be connected to deliver the water outdoors. The easiest approach is to bore through the rim joist of the house and run the piping through the joist and outer wall. From there, it needs to be carried far enough from the house that water won't return to the basement.

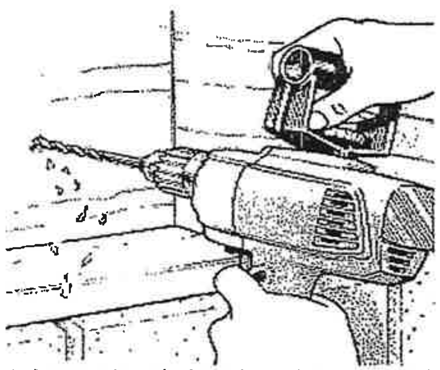
To avoid splintering the hole and damaging the exterior siding, it's best to bore from the outside in. To locate the hole on the outside, first bore a 1/4-in. hole through the rim joist and siding from the inside (**Fig. 13**). Then, install a 2-in. bit in your drill and, using the small hole as a pilot, bore the finished hole from the outside.

Alternatively, you could do the job with a holesaw, working from both sides of the wall and using the 1/4-in. pilot hole as a guide.

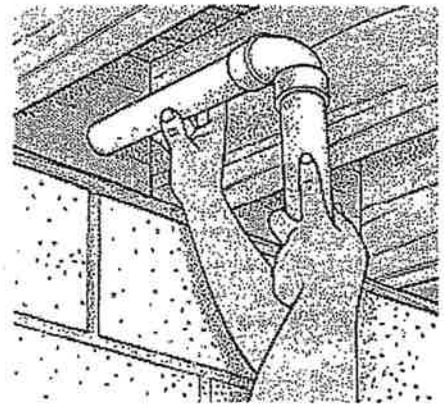
With the hole in place, slide a length of PVC pipe through the joist and bring the end near the vertical riser coming from the pump. Hold a 90-degree PVC elbow fitting against the two pipes and mark the height of the vertical riser.

Trim the riser to exact length and assemble the pipes and elbow with PVC glue (**Fig. 14**). Check to make sure that the riser is plumb before moving outdoors to complete the discharge piping.

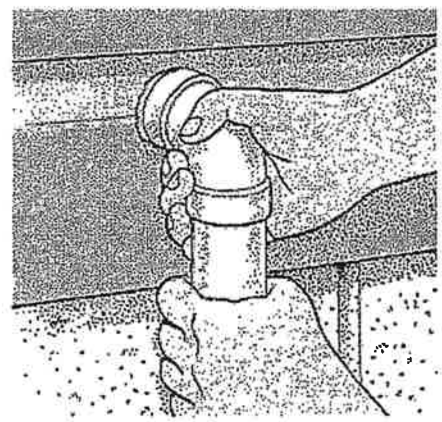
Once outside, cut all but 1/2 in. from the horizontal pipe that extends through the siding. Then, glue a 90-degree elbow to the end of the pipe so it points downward (**Fig. 15**).



13 Bore a pilot hole through the rim joist and siding. Then move outside, and enlarge the hole with a 2-in. bit.



14 Slide a pipe through the hole in the wall and connect it to the vertical riser with a 90-degree elbow. Glue all pipe joints.



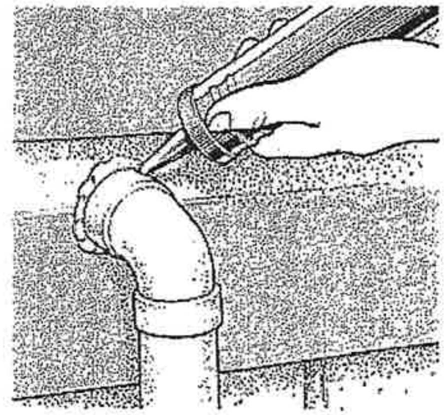
15 Outside, cut the horizontal pipe to length and extend it down with an elbow and a straight length of pipe.

Final Connections

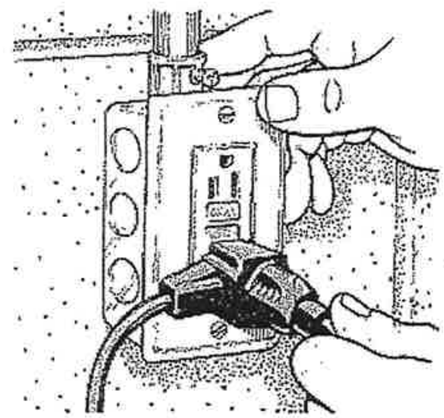
How you proceed from here depends on the slope of your yard and its specific landscaping features. The goal is to move the purged water away from the house in a manner that keeps it away. In cases where the yard slopes away rapidly, the pipe can discharge onto a long splash block, much like a downspout.

In other cases, the purge pipe can be extended over the ground, or just underground, until it can terminate a safe distance away. As long as the horizontal run has sufficient slope, the pipe will drain after the pump stops and freezing shouldn't be a problem.

After the discharge line is installed, caulk the rim joist opening on both the inside and outside of the house **(Fig. 16)**. Use a high-grade, silicone-based caulk that's flexible enough to absorb the vibration of the pump. With the pump and all piping in place, finish the job by plugging the pump into a nearby GFCI-protected receptacle **(Fig. 17)** and test your work with about 5 gal. of water.



16 Use silicone-based caulk to seal the space between the piping and the wall. Seal the basement side as well.



17 Plug the pump into a GFCI receptacle. On this pump, one cord powers motor while the other powers electric float.

Sump Pump Reimbursement Procedures

The following criteria must be met to receive your reimbursement for Sump Pump repairs.

- The sump pump must be inspected before any repairs have been completed to verify that it is an illegal hook up.
- A plumbing permit and an itemized receipt must be submitted to the City by either the homeowner or a licensed contractor. The plumbing permit fee will be waived for this repair.
- The itemized receipt must include:
  - Plumber – the number of hours worked and his rate, break down of materials used by quantity and unit price.
  - Homeowner – a store receipt that includes a breakdown of materials used by quantity and unit price.
- An inspection must be scheduled with the Building Department to verify that the sump pump has been properly repaired.
- If the inspection passes, a purchase order will be submitted for your reimbursement. It may take up to three weeks for the check to be cut.

The City will reimburse the following amounts:

- Work done by a Licensed Plumber – The City will reimburse up to a total of $500.00
- Homeowner – The City will reimburse the owner $100.00 for labor and then up to $400.00 in materials.

Please note that the City will not reimburse for a new sump pump.

To contact the City to schedule an inspection for a sump pump repair, please call 651-638-2050.

Vadnais Heights Sump Pump Inspections

A guide for residents

Vadnais Heights

History and Requirements

The City of Vadnais Heights initiated a Sump Pump Inspection Program in 2006.

The goal of this program is to reduce the amount of infiltration and inflow of freshwater into the sanitary sewer system. This program will also ultimately reduce the cost of treatment and maintenance of the waste water treatment plant equipment.

What is inflow and infiltration?
Inflow and infiltration are terms used to describe the ways freshwater (groundwater and storm water) enter the sanitary sewer system. Infiltration occurs when groundwater seeps into the sewer pipes through cracks, leaky joints, or deteriorated manholes. Inflow occurs when water is directed from sump pumps or downspout drains into the sanitary sewer.

Why is this water a problem?
Freshwater entering the waste water treatment system creates two main problems.

First, it consumes system capacity. It is estimated that for every inch of rainfall the average roof sheds about 1,000 gallons of water. An 8-inch sanitary sewer can handle domestic wastewater flow from up to 200 homes, but only 8 sump pumps, operating at full capacity, or six homes with downspouts connected to the sewer, will overload this same 8-inch line. If freshwater is directed into the sanitary sewer the capacity can be ultimately overwhelmed, causing sewer back-ups into houses, and the system to eventually overflow from manholes causing flooding of raw sewage into the environment. This creates health and safety issues that could have significant costs associated with it.

Secondly, freshwater that reaches the waste water treatment plant is treated unnecessarily. This increases the cost of treatment and adds to the wear-n-tear of the equipment, reducing it's life span. The added cost of operations is then passed onto each customer.

What is the solution?
Inflow water needs to be directed to the ground surface where it can then make its way to drainage ditches or storm sewers. The Sump Pump Inspection Program will identify those sump pumps or rain gutter drains that are improperly connected to the sanitary sewer and will provide direction on how to remedy this problem.

What is a sump pump?
The sump pump is a mechanical device, which is located in the sump pit and is used to regulate the level of water within the sump. This device enables ground water to be discharged onto the surface or to the storm sewer system. In those areas that are adjacent to a lake, ravine, river, embankment or in areas that have a very high ground water table, it is required to connect the foundation drainage system to a storm service for the purpose of minimizing soil erosion.

Sump Pump Discharge
The sump removes water from the drain

tile (a perforated pipe adjacent to the foundation walls designed to collect ground water), which flows to the sump pit. Once the water in the sump pit reaches a certain level, the sump pump starts and pumps the groundwater through the discharge pipe. The sump pump discharge pipe is usually located at the side of the house. In most areas, the sump pump discharge spills onto a splash pad, concrete sidewalk or through a flexible hose to the common drainage swale. It is important to provide a splash pad and/or a flexible hose below the discharge point. This helps minimize soil erosion at the foundation wall and the re-circulation of the ground water back to the drain tile. In addition, the flexible hose and/or splash pad should be directed to the adjacent drainage swales. However, the flow should not be directed onto an adjacent property or City property.

Lot Drainage Tips

1. Install an effective drainage system and keep downspouts clean.
2. Keep your drainage system clear so that water can move freely down and away from the side of your house.
3. Attach extensions so that water is delivered at least 10 feet from the foundation.
4. Disconnect any downspouts or 'clear' water connections that drain directly into the sanitary sewer system.
5. Grade and landscape your lot to move water away from the house.
6. Ensure a positive slope away from the wall for at least the first 10 feet. The ground should drop a minimum of 6 inches in this area.
7. Use landscaping to disperse the water more evenly.
8. Seal the cracks between your house and your driveway or sidewalk.

If you have a sump pump…

- Maintain your approved lot grade plan. Do not change this plan when you landscape your property. Sump pump pipes should discharge water at least one foot from the foundation wall. *(The flow from here should meet or exceed the slope of 6 inches for the first 10 feet).*
- If your sump pump discharges on the ground, place a splash pad below where the sump pump discharge pipe comes through the foundation wall.
- Never turn off your sump pump.
- **Do not hook up your sump drainage to the sanitary sewer system.**
- The sanitary sewer system is designed to manage normal flows of sewage, not rainwater or water from sump pumps.
- It is dangerous to drain sump water onto the sidewalk. The resulting algae and ice build-up create a slippery surface that can create a liability issue.
- Consider a backup battery system for your sump pump in case of power outages.

Questions, Answers, and Facts

What type of piping and materials do I need to use?
Approved ridged piping such as ABS or PVC must be used. Flexible piping is not allowed inside the home. Permanent solid piping must be used. A check valve shall be installed as close to the discharge side of the pump as possible. *Flexible piping may be used on the outside of the home or in the yard.*

Do I have to participate in this program?
Yes, every residence must participate in this program. If you do not have a draintile system with a sump pump an inspection is still required for verification.

How will I know when my neighborhood will be inspected?
A letter will be sent out to your address. This may be included in your utility bill mailings.

What if I am an owner of a rental property in Vadnais Heights?
Every effort is made to notify the resident and the owner. The owner listed by Ramsey County's records is ultimately responsible for completing this inspection.

Does an adult have to be present for the inspection?
Yes.

Is there any financial assistance?
The City will reimburse your expenses relating to correcting a failed inspection up to $150.00. All you need to provide is a copy of your passed inspection along with a legible copy of your receipts. The City will reimburse for labor (from a licensed plumber only) and materials ***excluding sump pumps.***

What if I refuse to participate?
Unfortunately, after giving you reasonable time to comply the City will bill you $200.00 each quarter on your utility bill until your residence is in compliance.

City of Vadnais Heights
Phone 651.204.6000
Fax 651.204.6100

APPENDIX G

TECHNICAL MEMORANDUM NO. 3 – MANHOLE INSPECTIONS

AECOM
701 Edgewater Drive
Wakefield, MA 01880
www.aecom.com

781 246 5200 tel
781 224 6676 fax

Technical Memorandum No. 3

To	Ridgefield WPCA	Page	1 of 5
CC	C. Fisher, J. O'Brien, J. Pereira, J. Pennell		
Subject	Town of Ridgefield, CT Phase 1 Wastewater Facilities Plan Technical Memorandum No. 3 - Manhole Inspections		
From	Jon Pearson and Alberto Angles		
Date	March 19, 2014		

INTRODUCTION

This Technical Memorandum summarizes the findings of the manhole inspection program conducted under the Phase 1 Wastewater Facilities Plan. Manholes in Subarea 1 of the Sewer District 1 collection system were inspected to identify general condition and sources of infiltration and inflow. Recommendations to rehabilitate manholes are presented as well as concept level costs.

BACKGROUND

During periods of wet weather and high groundwater, the collection system serving Ridgefield's Sewer District 1 experiences high flows. Previous studies and recent field work indicate that a large amount of inflow enters the wastewater collection system during these conditions. As part of the Phase 1 Wastewater Facilities Plan, the Town is conducting follow up activities to the Infiltration/Inflow Study conducted in 2007. To date these follow up activities include smoke testing and a collection system bottleneck evaluation. In the period between the flow monitoring for the collections system bottleneck evaluation and the smoke testing field work, a sewer system overflow was reported on Rowland Lane in Subarea 1. In an effort to identify possible sources of inflow that may have contributed to the overflow, manhole inspections were conducted in Subarea 1.

DATA COLLECTION

Physical inspection of manholes is performed to identify manholes with active infiltration, inflow, signs of previous leakage, or physical defects. Manhole inspections were performed by Stacy DePasquale Engineering (SDE) under subcontract to AECOM. The manhole inspections were conducted in November of 2013.

63 manhole inspections were conducted in Subarea 1 of Sewer District 1 as shown in Figure 1, attached. Field technicians entered each manhole to conduct the inspection. The following data was recorded:

1. Manhole identification by number;
2. Manhole location (easement or pavement), if easement, height of manhole cover above surrounding grade;
3. Manhole cover type (standard or watertight – if watertight number of bolts and is gasket present), number of holes in cover, whether cover is subject to ponding, evidence of surface water entry;
4. Condition of manhole frame and number of manhole grade adjustments;
5. Cracks or breaks in the corbel, walls, shelf, or invert;
6. Leakage, estimated in gallons per minute (gpm);
7. Integrity of joints between barrel sections (precast) and mortar joints (brick);
8. Construction materials and condition;
9. Manhole depth;
10. Depth of high water mark if visible;
11. Condition of the corbel; and
12. Condition of steps.

After the manhole inspection was completed, line lamping of the influent and effluent lines in the manhole inspected was conducted. Line lamping provides a limited view of the condition of the sewer lines connected to the manhole inspected. This is accomplished by use of a high intensity spot light or flashlight and would allow the field technician to see infiltration, if present, in close proximity to the manhole. The following information was also recorded:

1. Size and type of pipe;
2. Offsets or misalignment of any part;
3. Protruding taps;
4. Root intrusion;
5. Visible leakage sources estimated in gallons per minute (gpm);
6. Type and depth of debris in pipe;
7. Sluggish flow or wastewater backing up into manhole; and
8. Condition of pipe or corrosion.

The manhole number designations on the inspection logs correspond to the manhole numbering system previously established by the Town on its map of the existing sewer system. Figure 1 attached is an updated version of the sewer system map that was previously prepared by AECOM. Where appropriate, revisions to the manhole numbering identified during the inspection have been made.

For each sewer manhole inspected, a manhole inspection log presenting the data collected was completed by the field crew. The manhole inspection logs are included in the manhole inspection report included as Attachment A.

ANALYSIS

Based on these inspections, the sewer manholes within the study area were generally found to be in fair condition. Some manholes were observed to have sediment/debris build up, loose or misaligned frames and covers, non-concealed pick holes in the covers, evidence of leaking walls, deteriorated benches and inverts, and missing benches. Concealed pick holes minimize leakage if the manhole cover is located in a low-lying area. 20 manholes were observed with evidence of leakage during the inspection, however, little quantifiable infiltration was observed. Evidence of leakage is visible mineral deposits or staining of concrete walls where leakage is likely to have entered the manhole structure previously. Table 1, attached, presents a summary of the manhole defects noted. A total of 54 manholes were identified as having at least one of the defects noted above.

One observation not recorded in the manhole inspection logs, but of significance, is the number of manholes in the areas subject to flooding that are not equipped with watertight, locking manhole covers. Areas subject to flooding are typically off-road areas adjacent to streams, swamps or other wetlands. Covers located in flood prone areas that are not watertight have the potential to be sources of inflow. It is recommended that these manhole covers be made watertight by either replacing them with watertight, locking manhole covers or installing manhole inserts to reduce the potential for inflow during periods of inundation. Another observation is the number of manholes in areas subject to flooding that have raised chimneys that are not watertight due to deteriorated masonry. Raised manholes located in flood prone areas that are not watertight have the potential to be sources of inflow. Based on conditions observed during AECOM's field visits it is recommended that these raised manhole chimneys be wrapped with a water tight material to reduce leakage during periods of inundation.

Another observation not recorded on the inspection logs, but may be of significance, is that 7 of the manholes inspected have a total of 11 small diameter force main connections discharging to them. Table 2, below, lists the manholes that have one or more small diameter force main connections in each.

TABLE 2. MANHOLES OBSERVED WITH SMALL DIAMETER FORCE MAIN DISCHARGES

Manhole Number	Location
98a	Ascot Way
86a	Off Rockwell Road
76	East Ridge Road
75	Governor Street
97a	Wilton Road
97	Wilton Road
115	High Ridge Avenue

These force main discharge connections should be investigated further to confirm that they are legitimate sewer service connections and not sump pump discharge connections.

During the field investigations, a number of manholes could not be inspected. These manholes were either buried, paved over, on private property or unable to be located. To fully complete the inspection of all of the manholes in Subarea 1 the Town should take the necessary steps to locate and inspect the manholes identified in Table 3, attached.

REHABILITATION ALTERNATIVES

Many different techniques are available for the rehabilitation of sewer manholes. Below is a brief discussion of techniques considered for rehabilitation of manholes in Ridgefield.

Manhole Rehabilitation

Techniques identified below may be used to reduce infiltration and inflow which enter the sanitary sewer system through defective manholes. Some of these techniques also provide improvements to the structural integrity of the manholes.

Replace Frame & Cover. When the frame and cover of a manhole is chipped, cracked, or perforated, inflow may enter the system. The defective frame and/or cover should be replaced with a new manhole frame and/or cover. Additionally, off-road manhole frames and covers should be replaced, if they are not the watertight, with watertight locking type frames and covers to minimize inflow.

Install Manhole Insert. Off-road manhole frames and covers that are not watertight, may have manhole inserts installed to reduce inflow. The insert sits in the existing frame, preventing water entry into the manhole. Stainless steel inserts are recommended over plastic for durability. It should be noted that the inserts will require routine maintenance and may be subject to freezing in place.

Raise Manhole. Manholes can be raised by removing the frame and cover and building onto the existing brick work or corbel to the desired higher elevation. This technique may be used in paved or unpaved areas. The existing frame and cover may be reused if in good condition. Raising a manhole may reduce inflow quantities in those situations where the manhole is located in an area that accumulates water.

Reset Frame & Cover. Leaking around the manhole frame and cover may only require the frame be reset. This can reduce the amount of inflow during storm events. Resetting assumes the existing frame and cover are in good condition.

Repair Chimney. Chimney repair consists of sealing the manhole frame to the brick masonry of the chimney and patching any visible leaks to minimize inflow or infiltration sources. This repair may only be effective if the overall condition of the manhole is good. If the manhole condition is poor, additional repairs to seal the manhole from top to bottom may be required such as chemical sealing and interior coating or manhole relining.

Wrap Manhole Chimney. Raised manholes located in flood prone areas that are not watertight have the potential to be sources of inflow. The exterior portions of the manhole exposed can be wrapped with a heat shrinkable material (e.g. WrapidSeal™) for protection. The existing frame and cover can be reused if in good condition. Wrapping the manhole chimney may reduce inflow quantities in those situations where the manhole is located in an area which accumulates water. Raised manholes in easement areas should be wrapped to reduce inundation during wet weather.

Root Control. Trees and shrubs adjacent to sewer manholes often cause damage to manholes with their roots. Roots may enter the manhole through loose or missing mortar, under frames or at pipe connections. The resultant openings that the roots create allow infiltration to enter the sewer manhole. Further, the roots can block the pipe and restrict flow through the manhole. When this occurs, the roots may be removed by grinding and cutting. After removal, an herbicide is applied to kill the roots in the immediate vicinity of the manhole. Resultant root damage may be repaired by other means such as chemical sealing.

Chemical Sealing. Chemical sealing can be effective in reducing and/or eliminating infiltration through defects in manhole walls, bases, inverts, and pipe to manhole connections. One or more holes are drilled in the wall of a manhole through which chemical grout is injected. When the chemicals react, they create an impermeable plug. If the manhole is in poor structural condition, however, this repair may not be effective in sealing the entire manhole since infiltration tends to migrate and leak through other locations within the manhole. As a result, chemical sealing together with interior coating of the manhole may be required.

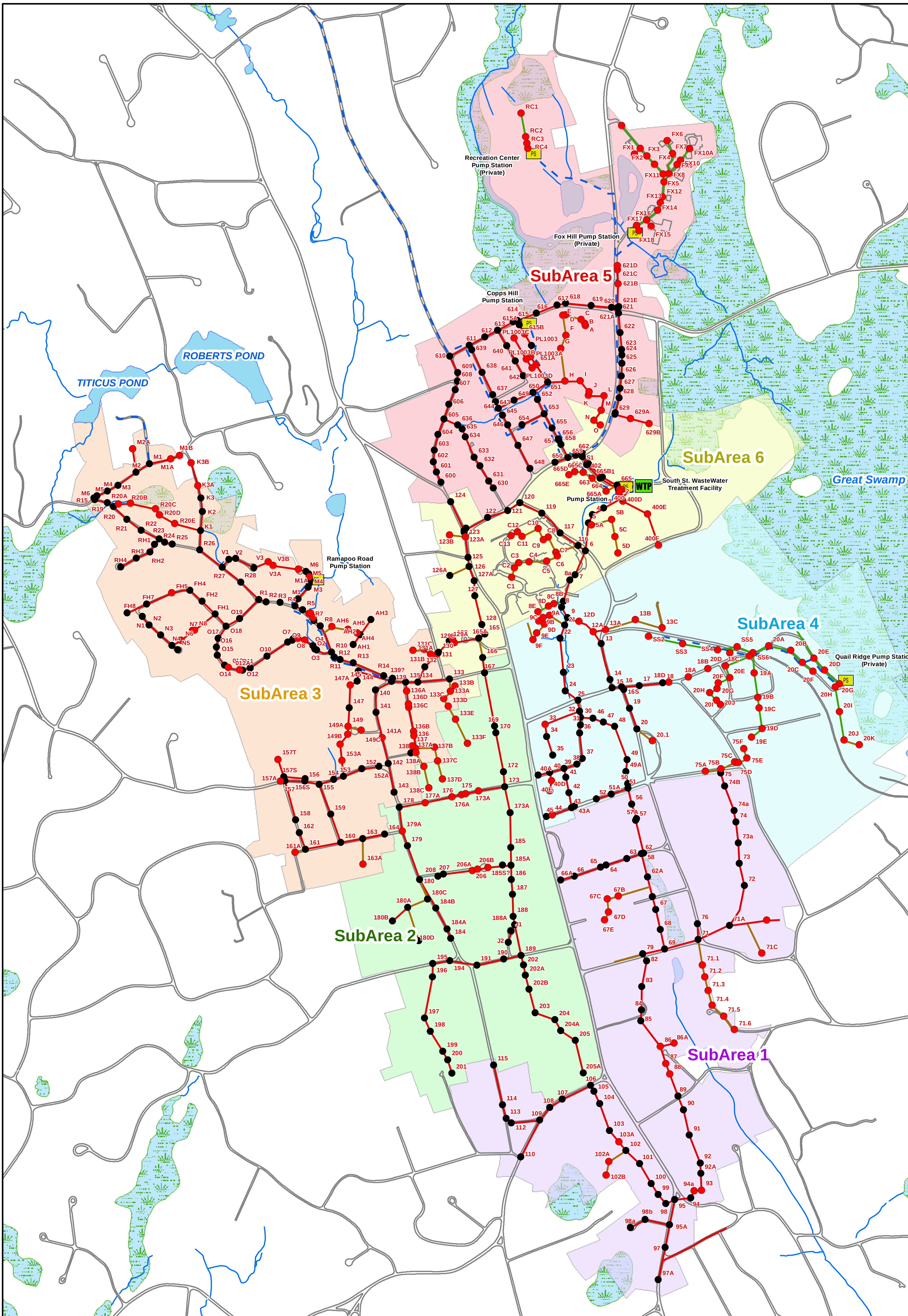
Interior Coating. Interior coating of a manhole may be effective in sealing interior walls against infiltration when a manhole is in good structural condition. An impermeable coating, such as epoxy or polyurethane, is sprayed on manhole walls to seal against any leaks. Typically, the entire manhole is sealed, not just a limited area. However, as mentioned above, chemical sealing of the manhole prior to interior coating may be necessary.

Manhole Replacement or Lining. Under some circumstances, the rehabilitation techniques described above may not be sufficient and replacement of the defective manholes may be recommended. However, lining a manhole may be more cost-effective than replacing it with a new one depending on the manhole location and extent of the defects. Brick manholes that are old will often have several defects that could require multiple repairs and also have minor structural defects. A simple interior coating can reduce leakage, but lining can be more thorough and provide some additional structural support.

SUMMARY AND RECOMMENDATIONS

As summarized in Table 4, attached, there are a total of 54 manholes which were identified as requiring repair of defects and/or cleaning to remove sediment and debris accumulated on the bench or in the invert of the manhole. To repair the defects, it is recommended that the town incorporate the design and construction of manhole rehabilitation measures into a manhole rehabilitation project combined with additional manhole rehabilitations as recommended in Technical Memorandum No. 1. Furthermore, as summarized in Technical Memorandum No. 2, it is recommended that the remaining manholes in Sewer District 1, approximately 550, be inspected to identify additional sources of leakage and to assess the general condition of manholes in Sewer District 1.

Table 4 presents a summary of the recommended manhole repairs along with estimated costs, including an allowance for engineering and contingencies. The manhole repairs generally include resetting or replacing frames and covers, chemical sealing and/or interior coating of walls, and repairs to the chimney, bench and invert areas. The total estimated cost of the manhole repairs is approximately $177,000. It should be noted, however, that Town forces could perform portions of the manhole repair work (i.e., manhole cleaning, resetting of manhole frames and covers, and installing manhole inserts). This would likely reduce the overall cost of the manhole repairs.

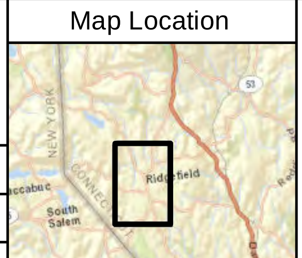


AECOM

Drawn: BC 3/6/2014

Approved: AA 3/6/2014

Map Location



Legend

- Manhole
- Manhole - Not Field Located
- PS Pump Station
- Updated Sewer (From Smoke Testing)
- Municipal Sewer
- Private Sewer
- Force Main
- Streams

SubAreas

- 1
- 2
- 3
- 4
- 5
- 6

N

0 200 400 800 Feet

FIGURE 1: SEWER DISTRICT 1
MARCH 2014

COLLECTION SYSTEM BOTTLENECK EVALUATION
MANHOLE INSPECTIONS 2013 - SUBAREA 1
RIDGEFIELD, CT
PHASE 1 WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 3

G:\Projects\MUNI\60299267RID\Maps\Figure1 Sewer District 1 Updated 20140306.mxd

TABLE 1. MANHOLE DEFECTS

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Sediment/ Debris Buildup	Defective Chimney	Loose/ Misaligned F & C	Defective F & C	Evidence/ Leaking Walls	Structural Defects	Deteriorated		Missing Bench	Deteriorated Connection to Manhole	Est. I/I (gpd)	Comments
											Bench	Invert				
1	98a	Ascot Way	70.0	Concrete Block			x									Inlet 1, 2-2" pump discharges
1	98b	Ascot Way	55.5	Concrete Block			x	x								
1	98	Wilton Road Easement	66.0	Brick	x											Roots in MH
1	100	Main Street Easement	86.0	Brick												MH lined through
1	104	Main Street Easement	115.0	Brick	x											Roots in MH; inlet 2 & outlet, gap between liner & pipe
1	89	Rockwell Road	62.0	Brick												
1	90	Main Street Easement	81.5	Brick			x									Inlet 1 high no drop
1	91	Main Street Easement	81.0	Brick	x											Roots in MH; roots in inlet 3
1	92	Main Street Easement	48.5	Brick												
1	86	Rockwell Road Easement	137.0	Brick												Roots in MH; roots in inlet 3; inlet 3 high no drop
1	86a	Rockwell Road Easement	99.8	Concrete Block					x							Inlet 2, 3-1" pump discharges; inlet 3, 2" pump discharge
1	87	Rockwell Road Easement	145.0	Brick				x								
1	85	Kent Lane	90.0	Brick					x		x					Inlets 1 & 3 discharge on bench
1	71b	East Ridge Middle School	141.5	Precast			x		x							Roots under frame
1	71C	Branchville Road Easement	49.0	Precast	x				x							
1	72	Prospect Ridge Easement	81.0	Brick				x	x							Inlet 2, possible infiltration
1	73	Prospect Ridge Easement	67.0	Brick						x						Evidence of surcharge @ 45"
1	73a	Prospect Ridge Easement	79.0	Brick					x						15	Evidence of surcharge @ 48"; MH coated; outlet pipe offset downstream
1	76	East Ridge Street	89.0	Brick	x	x			x							Roots in 8" inlet & outlet; 2" pump discharge
1	71	Branchville Road	118.5	Brick	x	x										Rootball in 10" inlet
1	69	Branchville Road	110.3	Brick					x						15	Evidence of surcharge @ 36"
1	79	Branchville Road	60.0	Brick	x				x					x	15	Roots in MH and inlets; 0.5" gap between liner and outlet pipe; inlet 4 100% debris

TABLE 1. MANHOLE DEFECTS

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Sediment/ Debris Buildup	Defective Chimney	Loose/ Misaligned F & C	Defective F & C	Evidence/ Leaking Walls	Structural Defects	Deteriorated		Missing Bench	Deteriorated Connection to Manhole	Est. I/I (gpd)	Comments
											Bench	Invert				
1	67A	Rowland Lane	68.5	Concrete Block					x	x					144	Evidence of surcharge @ 5"; manhole coated
1	68	Branchville Road Easement	92.5	Concrete Block	x				x					x	144	Roots, 15% in 4" inlet
1	62a	Market Street Easement	65.8	Concrete Block		x			x							
1	71.1	Branchville Road Easement	51.1	Concrete Block	x			x								Fine roots; ponding
1	71.3	Branchville Road Easement	101.0	Precast	x		x									Inlets 1 & 2 discharge on bench
1	112	Parley Lane	83.5	Brick		x										Roots in MH
1	74	Prospect Ridge Easement	67.5	Brick				x								Evidence of surcharge @ 48"; MH coated
1	75	Governor Street	93.5	Concrete Block				x								2" pump discharge
1	74b	Prospect Ridge Easement	63.5	Brick												Evidence of surcharge @ 58"; MH coated; inlet 2 and outlet reduced from 10" to 8" with liner; fine roots at outlet
1	67E	Aldrich Museum Easement	62.0	Precast	x								x			Possibly private MH; inlet compressed into oval shape; outlet 50% full of debris
1	67D	Aldrich Museum Easement	32.5	Concrete Block			x			x						Possibly private MH
1	67C	Aldrich Museum Easement	62.0	Precast	x	x	x		x	x						Possibly private MH
1	67B	Aldrich Museum Easement	51.0	Precast		x										Possible source of infil. between MH 67B and 67C; possibly private MH
1	58	Market Street	108.0	Brick	x				x						15	Debris, 100% in 8" inlet; evidence of surcharge
1	62	Market Street	112.0	Brick	x				x					x		
1	63	Market Street	81.0	Brick												
1	64	Market Street	92.5	Precast					x							
1	65	Market Street	83.5	Brick												Inlet 1 discharges on bench
1	75F	Prospect Ridge Easement	57.5	Precast	x			x								Sluggish flow
1	75E	Prospect Ridge Easement	81.5	Precast				x								
1	107	West Lane	108.0	Brick	x	x					x					Inlet 1 liner deformed at invert
1	94a	Wilton Road East Easement	130.3	Precast			x									

TABLE 1. MANHOLE DEFECTS

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Sediment/ Debris Buildup	Defective Chimney	Loose/ Misaligned F & C	Defective F & C	Evidence/ Leaking Walls	Structural Defects	Deteriorated		Missing Bench	Deteriorated Connection to Manhole	Est. I/I (gpd)	Comments
											Bench	Invert				
1	93	Wilton Road East Easement	81.5	Brick			x									Outlet smaller than inlet
1	94	Wilton Road East Easement	138.0	Brick												Roots in MH
1	99	Main Street Easement	81.0	Brick		x										Roots in MH
1	97a	Wilton Road	64.0	Brick	x											Inlet 2, 2" pump discharge; inlet 1, high, no drop
1	97	Wilton Road	60.5	Concrete Block				x								2" pump discharge
1	95	Wilton Road	176.0	Brick	x											Evidence of surcharge @54"; brick debris in inlet 2; inlet 3 high no drop
1	75A	Governor Street	40.8	Precast					x							
1	75D	Governor Street	42.0	Precast												
1	75B	Governor Street	80.0	Precast												
1	75C	Governor Street	88.0	Precast												
1	113	High Ridge Avenue	93.0	Brick	x		x									Roots in MH; Inlet 2, brick debris & roots
1	114	High Ridge Avenue	75.0	Brick												Fine roots in MH
1	115	High Ridge Avenue	79.0	Brick	x											Ponding MH; inlet 3, 2" pump discharge
1	109	West Lane	104.5	Brick	x											Outlet has gap between liner & pipe; roots in MH
1	101	Main Street Easement	61.0	Brick					x						15	Inlet 2 high no drop; inlet 2 roots 95%
1	103a	Main Street Easement	102.0	Brick												Buried MH; root in MH
1	102	Main Street Easement	101.0	Concrete Block				x								Outlet liner deformed
1	67	Rowland Lane Easement	64.8	Brick	x				x					x	2520	MH buried; 4" & 6" inverts discharge on bench; outlet dia. 10" due to liner; 12" inlet liner deformed
1	84	Main Street Easement	111.0	Brick			x	x	x				x			Roots in MH; inlet 3 high no drop
														Total =	2,883	

TABLE 3. MANHOLES NOT INSPECTED

Sewer Subarea	MH No.	Location	Reason
1	56	Veterans Park	Buried/Could not locate
1	57A	Veterans Park	Buried/Could not locate
1	57	Veterans Park	Buried/Could not locate
1	66	Market Street	Paved over
1	66A	Market Street	Paved over/Could not locate
1	71A	off Branchville Road	Buried/Could not locate
1	71.2	off Branchville Road	Private Property
1	71.4	off Branchville Road	Private Property
1	71.5	off Branchville Road	Private Property
1	71.6	off Branchville Road	Private Property
1	82	Branchville Road Easement	Could not locate
1	83	Branchville Road Easement	Could not locate
1	88	Judge's Lane Easement	Could not locate
1	92A	Main Street Easement	Could not locate
1	95A	Wilton Road West	Paved over/Could not locate
1	102A	off Main Street	Private Property
1	102B	off Main Street	Private Property
1	103	Main Street Easement	Under Birdbath
1	105	Main Street Easement	Could not locate
1	106	West Lane	Paved over/Could not locate
1	108	West Lane	Paved over/Could not locate
1	110	West Lane	Paved over/Could not locate

TABLE 4. MANHOLE REHABILITATION

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Manhole Cleaning	Repair Defective Chimney	Wrap Chimney	Reset F & C	Raise F & C	Replace Defective F & C	Install Manhole Insert	Root Control	Chemical Sealing	Chemical Sealing & Coating	Rebuild Bench & Invert	Chemical Sealing Connection
1	98a	Ascot Way	70.0	Concrete Block				x								
1	98b	Ascot Way	55.5	Concrete Block						x						
1	98	Wilton Road Easement	66.0	Brick							x	x	x			
1	100	Main Street Easement	86.0	Brick							x					
1	104	Main Street Easement	115.0	Brick								x	x			
1	89	Rockwell Road	62.0	Brick							x					
1	90	Main Street Easement	81.5	Brick				x								
1	91	Main Street Easement	81.0	Brick							x	x	x			
1	92	Main Street Easement	48.5	Brick							x					
1	86	Rockwell Road Easement	137.0	Brick							x	x	x			
1	86a	Rockwell Road Easement	99.8	Concrete Block							x		x			
1	87	Rockwell Road Easement	145.0	Brick						x	x					
1	85	Kent Lane	90.0	Brick							x		x		x	
1	71b	East Ridge Middle School	141.5	Precast				x			x		x			
1	71C	Branchville Road Easement	49.0	Precast	x						x		x			
1	72	Prospect Ridge Easement	81.0	Brick						x				x		
1	73	Prospect Ridge Easement	67.0	Brick			x				x			x		x
1	73a	Prospect Ridge Easement	79.0	Brick			x				x					x
1	76	East Ridge Street	89.0	Brick	x	x		x			x	x		x		x

TABLE 4. MANHOLE REHABILITATION

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Manhole Cleaning	Repair Defective Chimney	Wrap Chimney	Reset F & C	Raise F & C	Replace Defective F & C	Install Manhole Insert	Root Control	Chemical Sealing	Chemical Sealing & Coating	Rebuild Bench & Invert	Chemical Sealing Connection
1	71	Branchville Road	118.5	Brick		x			x		x					
1	69	Branchville Road	110.3	Brick										x		
1	79	Branchville Road	60.0	Brick	x							x		x		x
1	67A	Rowland Lane	68.5	Concrete Block										x		
1	68	Branchville Road Easement	92.5	Concrete Block					x		x			x		x
1	62a	Market Street Easement	65.8	Concrete Block		x	x		x		x		x			
1	71.1	Branchville Road Easement	51.1	Concrete Block	x					x		x	x			
1	71.3	Branchville Road Easement	101.0	Precast	x			x			x					
1	112	Parley Lane	83.5	Brick		x		x				x	x			
1	74	Prospect Ridge Easement	67.5	Brick			x			x	x					
1	75	Governor Street	93.5	Concrete Block						x	x					
1	74b	Prospect Ridge Easement	63.5	Brick							x					
1	67E	Aldrich Museum Easement	62.0	Precast	x										x	
1	67D	Aldrich Museum Easement	32.5	Concrete Block				x						x		
1	67C	Aldrich Museum Easement	62.0	Precast		x		x						x		
1	67B	Aldrich Museum Easement	51.0	Precast		x		x			x					
1	58	Market Street	108.0	Brick												
1	62	Market Street	112.0	Brick	x									x		x
1	63	Market Street	81.0	Brick												

TABLE 4. MANHOLE REHABILITATION

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Manhole Cleaning	Repair Defective Chimney	Wrap Chimney	Reset F & C	Raise F & C	Replace Defective F & C	Install Manhole Insert	Root Control	Chemical Sealing	Chemical Sealing & Coating	Rebuild Bench & Invert	Chemical Sealing Connection
1	64	Market Street	92.5	Precast									x			
1	65	Market Street	83.5	Brick												
1	75F	Prospect Ridge Easement	57.5	Precast	x											
1	75E	Prospect Ridge Easement	81.5	Precast						x	x					
1	107	West Lane	108.0	Brick	x	x		x							x	
1	94a	Wilton Road East Easement	130.3	Precast				x			x					
1	93	Wilton Road East Easement	81.5	Brick				x			x					
1	94	Wilton Road East Easement	138.0	Brick							x	x	x			
1	99	Main Street Easement	81.0	Brick		x		x			x	x		x		x
1	97a	Wilton Road	64.0	Brick	x											
1	97	Wilton Road	60.5	Concrete Block						x						
1	95	Wilton Road	176.0	Brick	x											
1	75A	Governor Street	40.8	Precast									x			
1	75D	Governor Street	42.0	Precast												
1	75B	Governor Street	80.0	Precast												
1	75C	Governor Street	88.0	Precast												
1	113	High Ridge Avenue	93.0	Brick				x				x	x			
1	114	High Ridge Avenue	75.0	Brick								x	x			
1	115	High Ridge Avenue	79.0	Brick				x								

TABLE 4. MANHOLE REHABILITATION

Sub-Area	MH No.	Description of Location	MH Depth (in)	MH Type	Manhole Cleaning	Repair Defective Chimney	Wrap Chimney	Reset F & C	Raise F & C	Replace Defective F & C	Install Manhole Insert	Root Control	Chemical Sealing	Chemical Sealing & Coating	Rebuild Bench & Invert	Chemical Sealing Connection
1	109	West Lane	104.5	Brick	x							x	x			
1	101	Main Street Easement	61.0	Brick							x					
1	103a	Main Street Easement	102.0	Brick							x	x	x			
1	102	Main Street Easement	101.0	Concrete Block						x	x					
1	67	Rowland Lane Easement	64.8	Brick					x		x			x		x
1	84	Main Street Easement	111.0	Brick						x	x	x		x	x	
				Total =	12	8	4	15	4	10	32	15	18	13	4	8
				Unit Cost =	$750	$1,000	$2,500	$1,000	$1,200	$1,500	$500	$1,300	$1,500	$3,000	$1,500	$1,000
				Subtotal Cost (1) =	$9,000	$8,000	$10,000	$15,000	$4,800	$15,000	$16,000	$19,500	$27,000	$39,000	$6,000	$8,000

Notes:

(1) The total estimated cost of $177,300 for the recommended manhole rehabilitation includes an allowance for engineering and contingency.

ATTACHMENT A

sde
civil+environmental
ENGINEERING

Phase 1 Wastewater Facilities Plan Ridgefield, Connecticut

Internal Manhole Inspections

November 2013

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e| info@sde-inc.com

sde-inc.com

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **58**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **108**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **52**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall**

If Yes, Infiltration Rate (GPM): **0.01**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Fair
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **1**

Joint Comments: **Crumbling mortar**

Manhole Comments: **Missing mortar, staining on walls. Some bricks corroded. Ragging on stair suggests past surcharge**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	10	10			12
Pipe Material	VC	VC	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	Sediment	None	None			None
Debris Depth (in)	8					
Pipe Conditon	Other	Normal	Normal			Normal

Inlet 1 Comments: **100% sediment and gravel.**

Inlet 2 Comments:

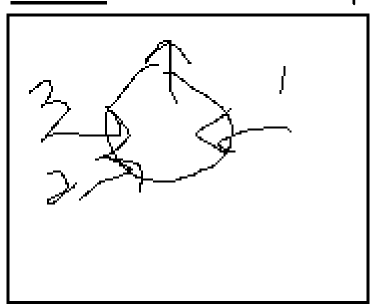
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 4"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **58**

Inspection Date: **11/6/2013**

Photos











Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 62

Inspection Date: 11/6/2013

Manhole Observations

Location: Pavement

Manhole Depth (inches): 112

Manhole Grade: At Grade

Height above Grade (inches):

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? Yes

If Yes, Location of Infiltration: Walls

If Yes, Infiltration Rate (GPM): 0

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: Unlabeled CI

Quantity of Cover Holes: 0

Quantity of Frame Grade Adjustments: 0

Joint Comments: Crumbling mortar

Manhole Comments: Two outlets. Infiltration at walls with missing mortar. High flow volume through outlets. Outlet 1 written up as inlet 5.

Pipe Data

Quantity of Inlets: 3

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	8			10	10
Pipe Material	HDPE	CIP Lined			VC	VC
Pro/Intruding Taps?	No	No			No	No
Roots?	No	No			No	No
I/I Observed?	Yes	No			No	No
I/I (GPM)	0					
Debris?	None	None			Rags	Rags
Debris Depth (in)					6	5
Pipe Conditon	Other	Normal			Normal	Normal

Inlet 1 Comments: Staining around wall joint suggests infiltration. Intrudes 4".

Inlet 2 Comments:

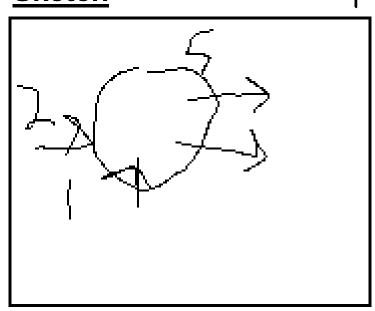
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments: Outlet

Outlet Comments:

Sketch N



Stacey DePasquale Engineering (SDE)/Lucas Chapman

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **62**

Inspection Date: **11/6/2013**

Photos










Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **62a**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **65.75**

Manhole Grade: **Above Grade**

Height above Grade (inches): **16**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall bench joint, wall, invert pipe joint**

If Yes, Infiltration Rate (GPM): **0**

Joint Comments: **Mortar missing.**

Manhole Comments: **Missing mortar at corbel cone walls blocks.**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Fair
Cone:	Concrete Block	Fair
Walls:	Concrete Block	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10					10
Pipe Material	HDPE					HDPE
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 35"**

Inlet 2 Comments:

Inlet 3 Comments:

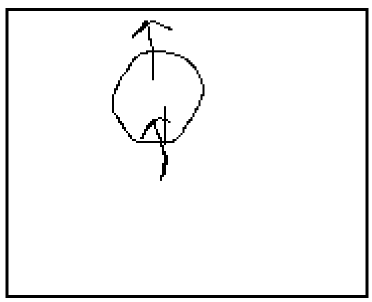
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 9"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: | **62a**

Inspection Date: **11/5/2013**

Photos







Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 63

Inspection Date: 11/6/2013

Manhole Observations

Location: Pavement

Manhole Depth (inches): 81

Manhole Grade: At Grade

Height above Grade (inches):

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? No

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: Sewer CI

Quantity of Cover Holes: 2

Quantity of Frame Grade Adjustments: 1

Pipe Data

Quantity of Inlets: 1

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	VC					VC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments:

Inlet 2 Comments:

Inlet 3 Comments:

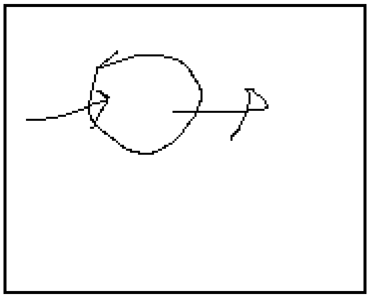
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **63**

Inspection Date: **11/6/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 64

Inspection Date: 11/6/2013

Manhole Observations

Location: Pavement

Manhole Depth (inches): 92.5

Manhole Grade: At Grade

Height above Grade (inches):

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? Yes

If Yes, Location of Infiltration: Cone wall joint

If Yes, Infiltration Rate (GPM): 0

Joint Comments: Fair due to infiltration

Manhole Comments: Infiltration staining at cone wall joint.

	Material	Condition
Frame:		Good
Corbel:	Cast in Place Concrete	Good
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Brick	Good
Steps:		Good
Joints:		Fair

Cover Type: Sewer CI

Quantity of Cover Holes: 0

Quantity of Frame Grade Adjustments: 1

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	8				8
Pipe Material	PVC	PVC				PVC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: Intrudes 1". PVC changes to VC after first segment

Inlet 2 Comments: Intrudes 1"

Inlet 3 Comments:

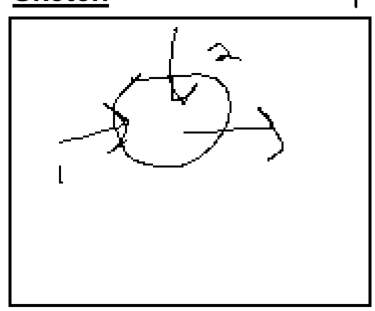
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: PVC changes to VC after first joint.

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **64**

Inspection Date: **11/6/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **65**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **83.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **1**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	8				8
Pipe Material	VC	VC				VC
Pro/Intruding Taps?	No	Yes				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Slight pipe offset three segments back. intrudes 12".**

Inlet 2 Comments: **Intruding tap three segemtns back. Inlet intrudes 1".**

Inlet 3 Comments:

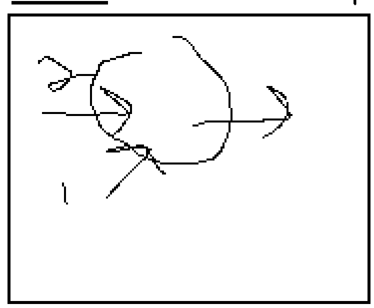
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **65**

Inspection Date: **11/6/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **64.75**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Walls, inlet joint**

If Yes, Infiltration Rate (GPM): **1**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Fair
Walls:	Brick	Poor
Bench:	Cast In Place Concrete	Fair
Steps:		Not Present
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Missing mortar, fine roots, missing bricks**

Manhole Comments: **Active infiltration runners. Evidence of surcharge, TP stuck under cover.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	4	6	12			10
Pipe Material	PVC	PVC	CIP Lined			HDPE
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	Yes			No
I/I (GPM)			0.75			
Debris?	None	None	None			Rags
Debris Depth (in)						3
Pipe Conditon	Other	Other	Other			Normal

Inlet 1 Comments: **Intrudes 9.5". Joint with wall in poor shape.**

Inlet 2 Comments: **Intrudes 18". Joint with wall in poor shape**

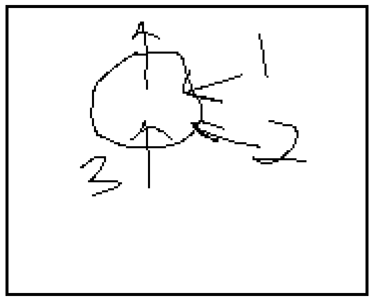
Inlet 3 Comments: **Wrinkle in liner, infiltration at joint. Intrudes 6"**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 3.5"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 67

Inspection Date: 11/7/2013

Photos









Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67A**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **68.5**

Manhole Grade: **Above Grade**

Height above Grade (inches): **4.5**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **5**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall, bench invert joint**

If Yes, Infiltration Rate (GPM): **0.1**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Fair
Cone:	Concrete Block	Good
Walls:	Concrete Block	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Gaps at blocks, missing mortar, infiltration on walls dripping. Mapped as 12" line observed as 10".**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10					10
Pipe Material	HDPE					HDPE
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments:

Inlet 2 Comments:

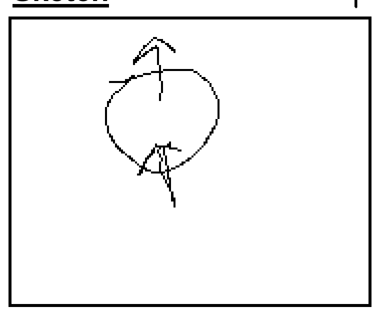
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67A**

Inspection Date: **11/5/2013**

Photos










Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67B**

Inspection Date: **11/6/2013**

Manhole Observations

Location: Easement

Manhole Depth (inches): 51

Manhole Grade: Below Grade

Height above Grade (inches):

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? No

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	NA	NA
Walls:	Precast	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Good

Cover Type: Unlabeled CI

Quantity of Cover Holes: 1

Quantity of Frame Grade Adjustments: 0

Joint Comments:

Manhole Comments: Gap along top of corbel. No cone. Sheet flow possible. At time of inspection line was running, upstream MH was observed dry.

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	4	6				6
Pipe Material	CI	VC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: Intrudes 3"

Inlet 2 Comments:

Inlet 3 Comments:

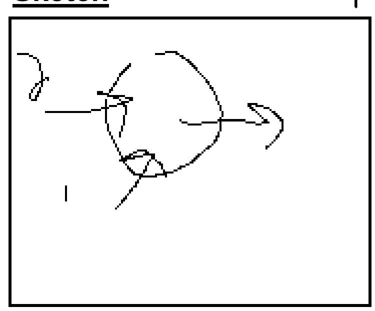
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67B**

Inspection Date: **11/6/2013**

Photos




Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67C**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **62**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **Multiple**

If Yes, Location of Cracks: **Walls and cone**

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall cracks**

If Yes, Infiltration Rate (GPM): **0**

	Material	Condition
Frame:		Good
Corbel:	Precast	Fair
Cone:	NA	NA
Walls:	Precast	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Poor

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **1**

Joint Comments: **Missing mortar internal structure shifted joints misaligned.**

Manhole Comments: **No cone, cracks throughout walls with staining suggesting infiltration. Corbel is slightly corroded.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	6				6
Pipe Material	VC	VC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	Sediment				None
Debris Depth (in)		0.5				
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments:

Inlet 2 Comments:

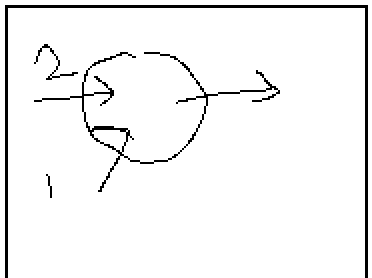
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67C**

Inspection Date: **11/6/2013**

Photos










Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67D**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **32.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Some deterioration of corbel.**

	Material	Condition
Frame:		**Good**
Corbel:	**Concrete Block**	**Fair**
Cone:	**Concrete Block**	**Good**
Walls:	**Concrete Block**	**Good**
Bench:	**Cast In Place Concrete**	**Good**
Steps:		**Not Present**
Joints:		**Good**

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	4				6
Pipe Material	PVC	VC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intruding 5.5"**

Inlet 2 Comments:

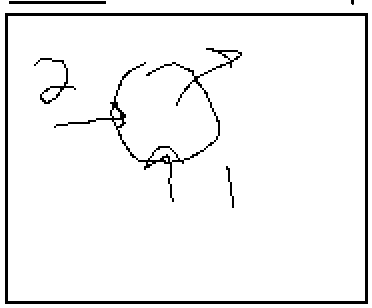
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 3.5"**

Sketch N



Stacey DePasquale Engineering (SDE)/Lucas Chapman

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67D**

Inspection Date: **11/5/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67E**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **62**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Precast	Good
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Precast	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Inlet has been compressed into oval. Slow flow with buildup of TP/fecal matter.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10					6
Pipe Material	PVC					PVC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	Rags					Rags
Debris Depth (in)	4					4
Pipe Conditon	Other					Other

Inlet 1 Comments: **Compressed, high water.**

Inlet 2 Comments:

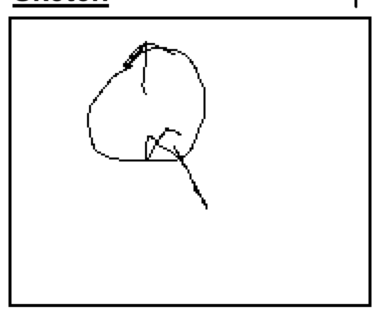
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Slow Flow**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **67E**

Inspection Date: **11/5/2013**

Photos







Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 68

Inspection Date: 11/5/2013

Manhole Observations

Location: Easement

Manhole Depth (inches): 92.5

Manhole Grade: Above Grade

Height above Grade (inches): 4

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? Cone

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? Yes

If Yes, Location of Infiltration: Wall, bench wall joint

If Yes, Infiltration Rate (GPM): 0.1

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Fair
Walls:	Concrete Block	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: Unlabeled CI

Quantity of Cover Holes: 2

Quantity of Frame Grade Adjustments: 0

Joint Comments: Eroded blocks near cone wall joint

Manhole Comments: Infiltration at wall. Blocks eroded at cone.

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12	4				12
Pipe Material	CIP Lined	AC				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	Yes				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	Rags	None				Rags
Debris Depth (in)	2					1
Pipe Conditon	Normal	Other				Normal

Inlet 1 Comments: Intrudes 5.5"

Inlet 2 Comments: Root ball 15% pipe. Intruding 7.75".

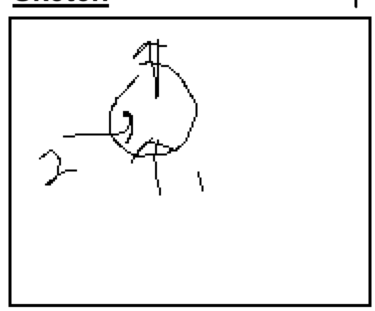
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Intruding 7.5"

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **68**

Inspection Date: **11/5/2013**

Photos











Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **69**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **110.3**

Manhole Grade: **Above Grade**

Height above Grade (inches): **2**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **36**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Bottom of wall near bench**

If Yes, Infiltration Rate (GPM): **0.01**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Poor
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Broken stairs. Flow meters prevented entry. High flow volume. Bottom of wall wet, some staining. Roots at wall outlet joint.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12	12				12
Pipe Material	CIP Lined	CIP Lined				CIP Lined
Pro/Intruding Taps?	Unknown	Unknown				Unknown
Roots?	Unknown	Unknown				Unknown
I/I Observed?	Unknown	Unknown				Unknown
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Other

Inlet 1 Comments: **Intruding 2"**

Inlet 2 Comments:

Inlet 3 Comments:

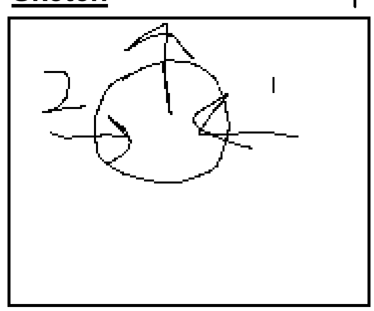
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Roots around wall joint at outlet. Intrudes 8"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **69**

Inspection Date: **11/5/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **118.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Top of cone missing mortar.**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Fair
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **1**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **4**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	10	10	8		10
Pipe Material	VC	AC	VC	PVC		CIP Lined
Pro/Intruding Taps?	No	No	No	No		No
Roots?	Yes	No	No	No		No
I/I Observed?	No	No	No	No		No
I/I (GPM)						
Debris?	None	None	Gravel	None		None
Debris Depth (in)			2.5			
Pipe Conditon	Other	Normal	Other	Normal		Normal

Inlet 1 Comments: **Root ball 65%**

Inlet 2 Comments: **Intruding 1.5"**

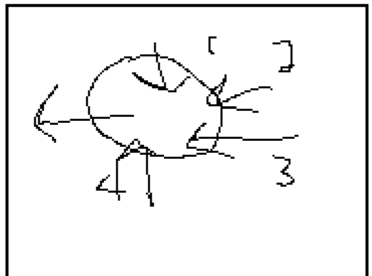
Inlet 3 Comments: **Capped inactive**

Inlet 4 Comments: **Intruding 2.75"**

Inlet 5 Comments:

Outlet Comments: **Intruding 1"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71**

Inspection Date: **11/5/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71.1**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **51.1**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **Yes**

Evidence of Surface Water Entry? **Yes**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Poor
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Concrete Block	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Roots at frame corbel joint and wall. Roots at inlet joint. Unable to lamp inlet due to small MH size. Cracked frame.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6					6
Pipe Material	VC					VC
Pro/Intruding Taps?	No					No
Roots?	Yes					Yes
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Other					Other

Inlet 1 Comments: **Root ball at MH**

Inlet 2 Comments:

Inlet 3 Comments:

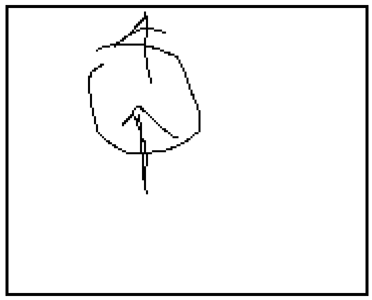
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Fine roots at MH joint**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71.1**

Inspection Date: **11/5/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71.3**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **101**

Manhole Grade: **Above Grade**

Height above Grade (inches): **6**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		**Good**
Corbel:	**NA**	**NA**
Cone:	**Precast**	**Good**
Walls:	**Precast**	**Good**
Bench:	**Precast**	**Good**
Steps:		**Good**
Joints:		**Good**

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **No corbel. Frame not attached to cone. Drop down inlets splash on bench.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	**6**	**8**	**6**			**8**
Pipe Material	**PVC**	**PVC**	**PVC**			**PVC**
Pro/Intruding Taps?	**No**	**No**	**No**			**No**
Roots?	**No**	**No**	**No**			**No**
I/I Observed?	**No**	**No**	**No**			**No**
I/I (GPM)						
Debris?	**None**	**None**	**None**			**Rags**
Debris Depth (in)						**0.25**
Pipe Conditon	**Other**	**Normal**	**Other**			**Offset**

Inlet 1 Comments: **Drop down. Intrudes 11".**

Inlet 2 Comments:

Inlet 3 Comments: **Drop inlet. Intrudes 11.5"**

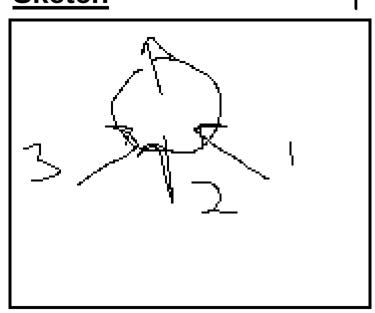
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Offset by angle**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71.3**

Inspection Date: **11/5/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71b**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **141.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Brick to precast transition on wall**

If Yes, Infiltration Rate (GPM): **0**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Precast	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **1**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Roots at frame corbel joint.**

Manhole Comments: **Some staining on wall suggesting infiltration.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	8				10
Pipe Material	AC	VC				AC
Pro/Intruding Taps?	No	No				No
Roots?	No	Yes				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intruding 2.5"**

Inlet 2 Comments: **Intruding 2". offset pipe joint interior.**

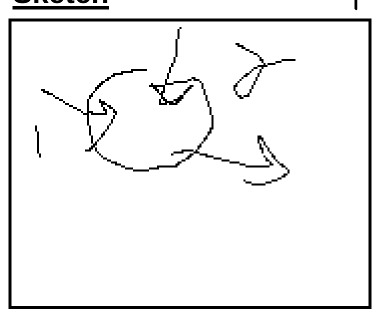
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 2.5**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71b**

Inspection Date: **11/4/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71C**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **49**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **Walls**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Small crack on wall**

If Yes, Infiltration Rate (GPM): **0**

	Material	Condition
Frame:		Good
Corbel:	Precast	Good
Cone:	Precast	Good
Walls:	Precast	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Small crack on wall with staining suggestion infiltration during high ground water.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	PVC					PVC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					Rags
Debris Depth (in)						1.5
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intruding 3"**

Inlet 2 Comments:

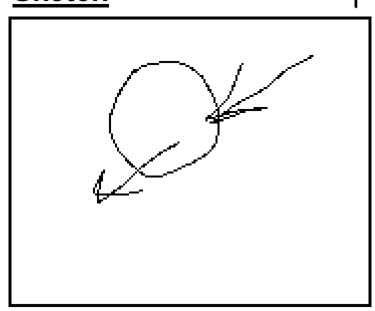
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 3"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **71C**

Inspection Date: **11/5/2013**

Photos




Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 72

Inspection Date: 11/5/2013

Manhole Observations

Location: Easement

Manhole Depth (inches): 81

Manhole Grade: Above Grade

Height above Grade (inches): 1

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? Yes

If Yes, Location of Infiltration: Wall bench joint

If Yes, Infiltration Rate (GPM): 0

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Fair

Cover Type: Sewer CI

Quantity of Cover Holes: 0

Quantity of Frame Grade Adjustments: 0

Joint Comments: Some gaps between wall bench and mortar on corbel

Manhole Comments: Gap at wall floor joint with staining suggesting infiltration. Stairs corroding. Cover does not fit frame, 1" gap.

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	6				10
Pipe Material	CIP Lined	AC				RCP
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	Yes				No
I/I (GPM)		0				
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: Intruding 2.25"

Inlet 2 Comments: Intruding 4.5". Staining at first joint suggest I/I

Inlet 3 Comments:

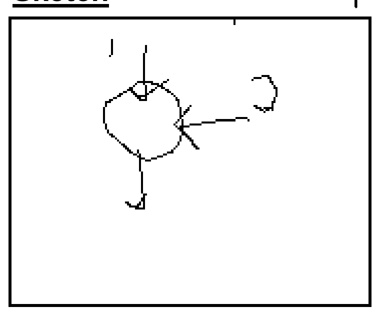
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Intruding 3"

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **72**

Inspection Date: **11/5/2013**

Photos






Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **73**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **67**

Manhole Grade: **Above Grade**

Height above Grade (inches): **17**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **45**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Poor
Bench:	Cast In Place Concrete	Fair
Steps:		Poor
Joints:		Poor

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Wall bench joint is missing mortar.**

Manhole Comments: **Steps corroding. Mortar missing at bench wall joint. Ragging on interior MH and top of outlet suggest past surcharge.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10					10
Pipe Material	VC					CIP Lined
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	Yes					No
I/I (GPM)	0					
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Other					Normal

Inlet 1 Comments: **Hairline crack with staining**

Inlet 2 Comments:

Inlet 3 Comments:

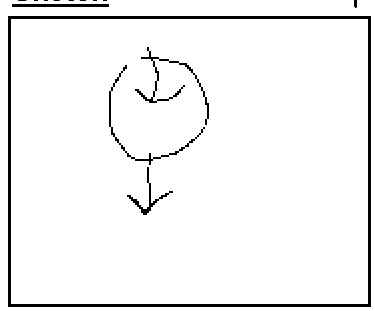
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 3.25"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **73**

Inspection Date: **11/5/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **73a**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **79**

Manhole Grade: **Above Grade**

Height above Grade (inches): **23**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **48**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Inlet joint**

If Yes, Infiltration Rate (GPM): **0.01**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Ragging on upper step at 63" suggest past surcharge. Ring of discoloration at 48".**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					10
Pipe Material	HDPE					VC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Other

Inlet 1 Comments: **Intruding 6.75"**

Inlet 2 Comments:

Inlet 3 Comments:

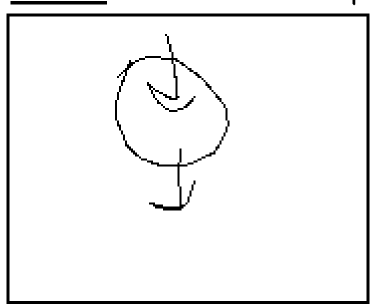
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Offset segments down line**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **73a**

Inspection Date: **11/5/2013**

Photos








Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **74**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **67.5**

Manhole Grade: **Above Grade**

Height above Grade (inches): **9.5**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **48**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **5**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **MH has been spray lined. Gaskets at inlet and outlet, rubber. Measured 8" diam, mapped as 10". 5 open holes in cover, likely 9 total.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	VC					HDPE
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Other					Normal

Inlet 1 Comments: **Gasketed**

Inlet 2 Comments:

Inlet 3 Comments:

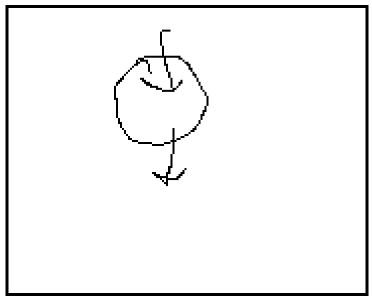
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 1.5"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **74**

Inspection Date: **11/5/2013**

Photos






Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **74b**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **63.5**

Manhole Grade: **Above Grade**

Height above Grade (inches): **13**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **58**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **MH has been spray lined.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	8				8
Pipe Material	VC	VC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				Yes
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Other				Other

Inlet 1 Comments:

Inlet 2 Comments: **Orig 10" now 8" w/ gasket**

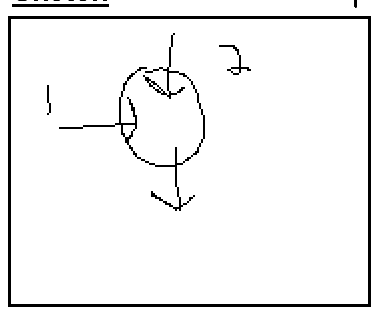
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Originally 10" now 8" w/ gasket. Fine roots at joint.**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 74b

Inspection Date: 11/5/2013

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **93.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **Yes**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Evidence of dripping from surface on walls. MH is not a starter as mapped, bench is half brick half Cast in Place. Outlet is 10" with 8" VC and gasket. 0.5" gap between cover and frame.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	2				8
Pipe Material	PVC	PVC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intrudes 15" at invert**

Inlet 2 Comments: **Ejector pump inlet.**

Inlet 3 Comments:

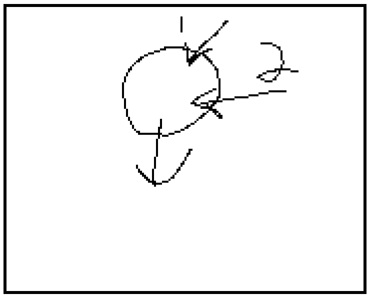
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75**

Inspection Date: **11/5/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75A**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **88**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall joint**

If Yes, Infiltration Rate (GPM): **0**

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2					8
Pipe Material	PVC					PVC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 6"**

Inlet 2 Comments:

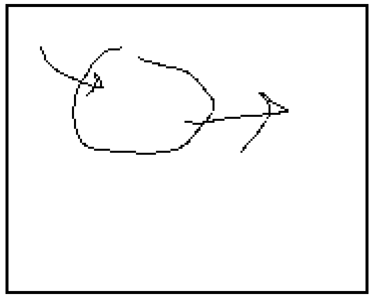
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75A**

Inspection Date: **11/7/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75B**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **80**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	8				8
Pipe Material	PVC	PVC				PVC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments:

Inlet 2 Comments: **Intrudes 28"**

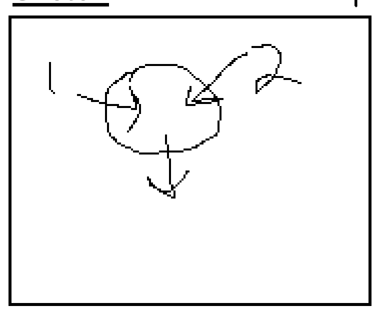
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 5"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75B**

Inspection Date: **11/7/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75C**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **40.75**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **No cone**

	Material	Condition
Frame:		Good
Corbel:	Precast	Good
Cone:	NA	NA
Walls:	Precast	Good
Bench:	Brick	Good
Steps:		Not Present
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	PVC					PVC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 5.75"**

Inlet 2 Comments:

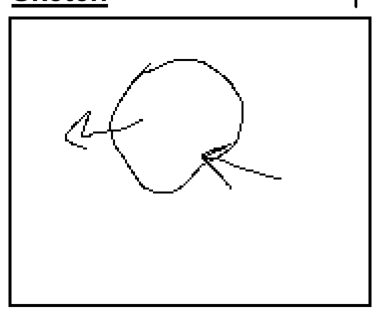
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75C**

Inspection Date: **11/7/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75D**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **42**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **No cone**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	NA	NA
Walls:	Precast	Good
Bench:	Brick	Good
Steps:		Not Present
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	PVC					PVC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 1.5"**

Inlet 2 Comments:

Inlet 3 Comments:

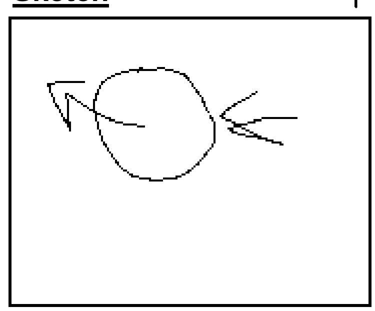
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 3"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75D**

Inspection Date: **11/7/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75E**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **81.5**

Manhole Grade: **Above Grade**

Height above Grade (inches): **2.75**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Precast	Good
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **6**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	6	6			8
Pipe Material	PVC	PVC	PVC			PVC
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Normal			Normal

Inlet 1 Comments: **Intrudes 0.75"**

Inlet 2 Comments: **Intrudes 2.5"**

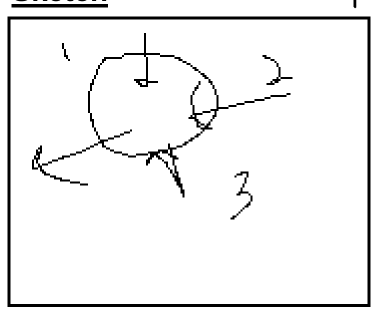
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 4.75"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75E**

Inspection Date: **11/6/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75F**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **57.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **4**

Cracks in Manhole Structure? **Walls**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Fine cracks on walls. No cone. In Quail Ridge.**

	Material	Condition
Frame:		Good
Corbel:	Precast	Good
Cone:	NA	NA
Walls:	Precast	Fair
Bench:	Brick	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer Cl**

Quantity of Cover Holes: **6**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	6				8
Pipe Material	PVC	PVC				PVC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				Rags
Debris Depth (in)						3
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intrudes 11" drop down inlet.**

Inlet 2 Comments: **Intrudes 11.5" drop down**

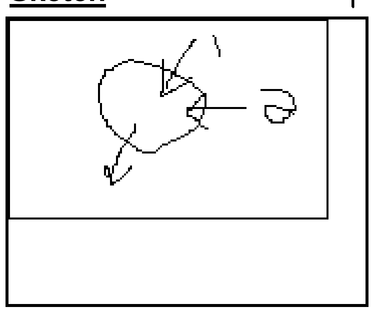
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 2.25"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **75F**

Inspection Date: **11/6/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 76

Inspection Date: 11/5/2013

Manhole Observations

Location: Pavement

Manhole Depth (inches): 89

Manhole Grade: Below Grade

Height above Grade (inches):

Ponding: Yes

Evidence of Surface Water Entry? Yes

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? Yes

If Yes, Location of Infiltration: Corbel eroding likely water entry from cove

If Yes, Infiltration Rate (GPM): 0

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Fair
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: Unlabeled CI

Quantity of Cover Holes: 2

Quantity of Frame Grade Adjustments: 0

Joint Comments:

Manhole Comments: MH in ditch of road, signs of surface water infiltration from sheet flow. Several large roots in MH from walls and pipes. Corbel eroding.

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2	8				8
Pipe Material	PVC	VC				VC
Pro/Intruding Taps?	No	No				No
Roots?	No	Yes				Yes
I/I Observed?	No	Yes				No
I/I (GPM)		0				
Debris?	None	Sediment				Sediment
Debris Depth (in)		1				0.25
Pipe Conditon	Other	Other				Other

Inlet 1 Comments: Drop down from possible pump.

Inlet 2 Comments: Root ball 75%

Inlet 3 Comments:

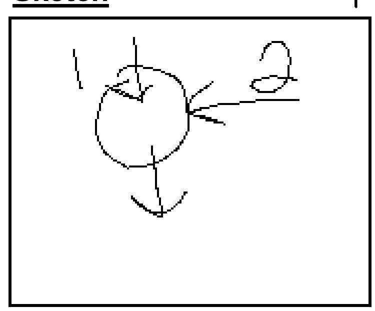
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Root ball 40%

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **76**

Inspection Date: **11/5/2013**

Photos











Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **79**

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **60**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall**

If Yes, Infiltration Rate (GPM): **0.01**

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Brick	Fair
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Fair
Steps:		Not Present
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **2**

Joint Comments: **Missing mortar**

Manhole Comments: **Missing mortar at corbel, cone, bench. Brick corrosion at wall near inlet. Roots through wall.**

Pipe Data

Quantity of Inlets: **5**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	8	4	6	4	12
Pipe Material	CIP Lined	VC	AC	VC	CI	CIP Lined
Pro/Intruding Taps?	No	No	No	No	No	No
Roots?	Yes	Yes	Yes	Yes	No	No
I/I Observed?	No	No	No	No	No	No
I/I (GPM)						
Debris?	None	None	Sediment	Sediment	Sediment	Rags
Debris Depth (in)			0.25	0.5	0.25	1.5
Pipe Conditon	Other	Other	Other	Other	Other	Other

Inlet 1 Comments: **Roots around inlet joint cracks in joint, missing mortar**

Inlet 2 Comments: **50% root ball in drop outlet. Offset joints.**

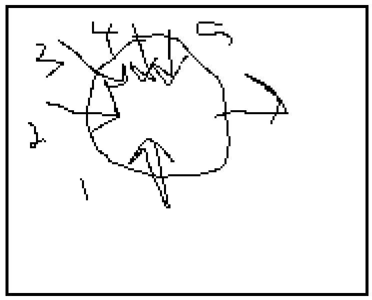
Inlet 3 Comments: **Offset internal pipe joints. Appears inactive.**

Inlet 4 Comments: **Roots at 4" to 6" joint. 100% sediment about 1' into line.**

Inlet 5 Comments: **Roots at wall joint**

Outlet Comments: **Old 12" VC now 10" CIP. 0.5" gap between liner and VC.**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **79**

Inspection Date: **11/5/2013**

Photos









Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **84**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **111**

Manhole Grade: **Above Grade**

Height above Grade (inches): **1**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **6**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Inlet joints, lower wall**

If Yes, Infiltration Rate (GPM): **Unknown**

	Material	Condition
Frame:		Poor
Corbel:	Brick	Poor
Cone:	Brick	Fair
Walls:	Brick	Fair
Bench:	Other	Unknown
Steps:		Good
Joints:		Poor

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Corbel poor due to frame offset.**

Manhole Comments: **Roots throughout structure. Unable to enter due to tree, too deep to safely enter without tether. Missing bricks on wall and cone. Frame offset. Hard to tell if I/I or splash from drop down inlets on walls. Frame and cover have gap. Unable to see bench.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2	12				12
Pipe Material	Unknown	CIP Lined				CIP Lined
Pro/Intruding Taps?	Unknown	Unknown				Unknown
Roots?	Unknown	Unknown				Unknown
I/I Observed?	Unknown	Unknown				Unknown
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intrudes 5", unknown material**

Inlet 2 Comments: **High inlet**

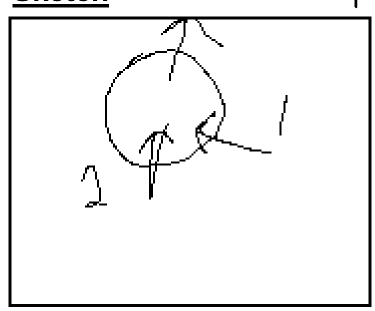
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrude 2"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **84**

Inspection Date: **11/7/2013**

Photos







Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **85**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **90**

Manhole Grade: **Above Grade**

Height above Grade (inches): **2.5**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Poor
Steps:		Not Present
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Discharge has eroded bench. hole in invert 1' long. need structural repair. Unable to do entry due to tree, unable to set up tripod. Too deep for safe entry without tether.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	12	6			12
Pipe Material	AC	CIP Lined	DI			CIP Lined
Pro/Intruding Taps?	Unknown	Unknown	Unknown			Unknown
Roots?	Unknown	Unknown	Unknown			Unknown
I/I Observed?	Unknown	Unknown	Unknown			Unknown
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Normal			Normal

Inlet 1 Comments: **Intruding 4"**

Inlet 2 Comments: **Intruding 2.5"**

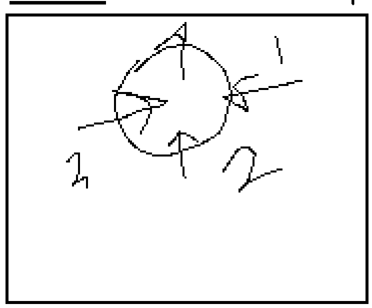
Inlet 3 Comments: **Intrudes 6". causing erosion of invert.**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 8"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **85**

Inspection Date: **11/4/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **86**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **137**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **One stair broken. Roots observed on south side of wall.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	12	6			12
Pipe Material	VC	CIP Lined	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			Yes
Roots?	No	No	Yes			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Other			Normal

Inlet 1 Comments: **Intruding 0.5"**

Inlet 2 Comments: **Intruding 2.5"**

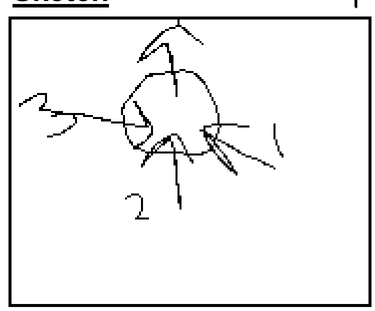
Inlet 3 Comments: **Root ball 20%**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 3"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **86**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **86a**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **99.75**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Wall joint**

If Yes, Infiltration Rate (GPM): **0**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Fair
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Gaps at some block joints**

Manhole Comments: **May have ejector pumps connected. Minor staining on wall suggesting possible infiltration.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	1	2			8
Pipe Material	AC	HDPE	PVC			AC
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Normal			Normal

Inlet 1 Comments: **Intruding 4.5"**

Inlet 2 Comments: **Intrudes 11-22"**

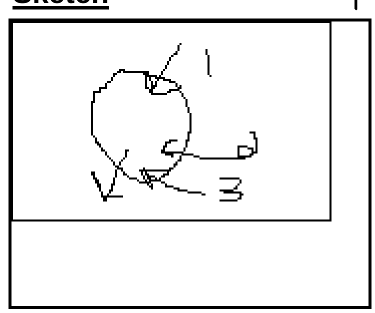
Inlet 3 Comments: **Intruding 6.5"**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **86a**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 87

Inspection Date: 11/4/2013

Manhole Observations

Location: Easement

Manhole Depth (inches): 145

Manhole Grade: Above Grade

Height above Grade (inches): 2

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? No

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: Located in flower bed.

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Good

Cover Type: Unlabeled CI

Quantity of Cover Holes: 18

Quantity of Frame Grade Adjustments: 0

Pipe Data

Quantity of Inlets: 1

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12					12
Pipe Material	AC					AC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: Intrudes 3"

Inlet 2 Comments:

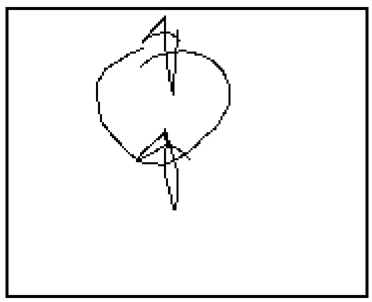
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Intrudes 4"

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **87**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **89**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **62**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Steps corroded. Two inlets are capped.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Fair
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	12	6			12
Pipe Material	VC	CIP Lined	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Other	Normal	Other			Normal

Inlet 1 Comments: **Capped**

Inlet 2 Comments: **Liner intruding 5"**

Inlet 3 Comments: **Capped**

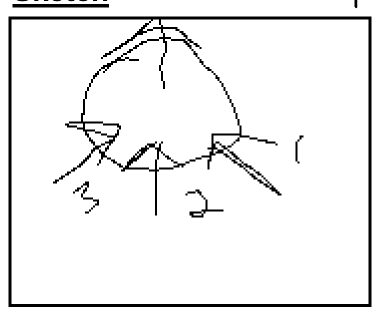
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 4"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **89**

Inspection Date: **11/4/2013**

Photos




Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 90

Inspection Date: 11/4/2013

Manhole Observations

Location: Easement

Manhole Depth (inches): 81.5

Manhole Grade: Above Grade

Height above Grade (inches): 6.5

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? No

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments: Frame slightly offset from corbel.

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: Unlabeled CI

Quantity of Cover Holes: 2

Quantity of Frame Grade Adjustments: 0

Pipe Data

Quantity of Inlets: 3

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	4	12	6			12
Pipe Material	AC	CIP Lined	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Other			Normal

Inlet 1 Comments: Intruding 7"

Inlet 2 Comments: Intruding 5"

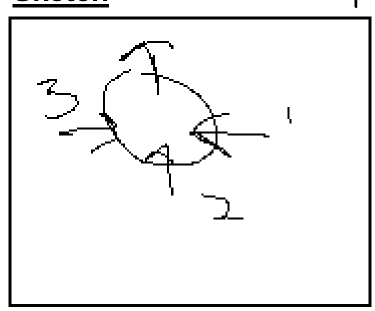
Inlet 3 Comments: Capped

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Intruding 4.5"

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **90**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **91**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **81**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Fair
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Stairs corroding. Some roots entry at frame corbel joint.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12	6	6			12
Pipe Material	CIP Lined	VC	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	Yes	Yes			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	Sediment	Sediment			None
Debris Depth (in)		2	2			
Pipe Conditon	Normal	Other	Other			Normal

Inlet 1 Comments: **Intruding 5.25"**

Inlet 2 Comments: **Capped. Intruding 1".**

Inlet 3 Comments: **VC starts 7" back from wall. fine roots. looks inactive.**

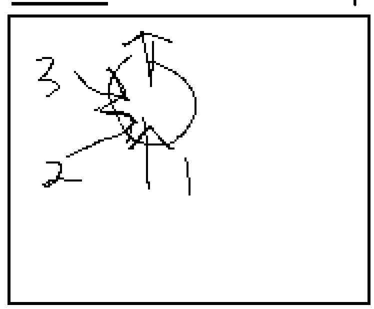
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 5"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **91**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **92**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **48.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Stair broken. Minor corrosion on frame.**

	Material	Condition
Frame:		Fair
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Poor
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12					12
Pipe Material	CIP Lined					CIP Lined
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intruding 5"**

Inlet 2 Comments:

Inlet 3 Comments:

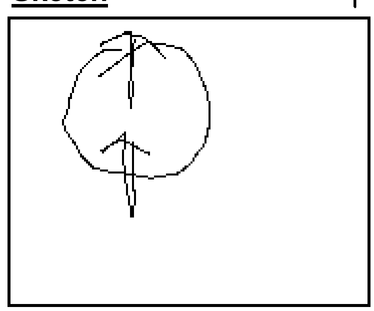
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 4"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **92**

Inspection Date: **11/4/2013**

Photos


Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **93**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **81.5**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments: **Frame offset from corbel.**

Manhole Comments: **Frame corbel offset.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	4	16				12
Pipe Material	PVC	DI				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **Intrudes 22"**

Inlet 2 Comments:

Inlet 3 Comments:

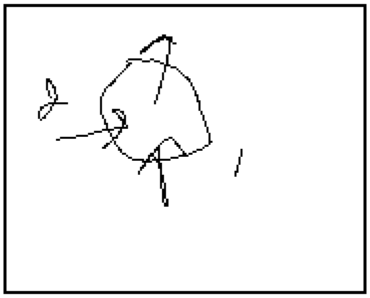
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Smaller outlet than inlet**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **93**

Inspection Date: **11/6/2013**

Photos




Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **94**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **138**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Rusting on frame. Root intrusion at cone and walls.**

	Material	Condition
Frame:		Fair
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Concrete Block	Good
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **4**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	4	12	6		16
Pipe Material	VC	PVC	CIP Lined	VC		DI
Pro/Intruding Taps?	No	No	No	No		No
Roots?	No	No	No	No		No
I/I Observed?	No	No	No	No		No
I/I (GPM)						
Debris?	None	None	None	None		None
Debris Depth (in)						
Pipe Conditon	Other	Normal	Normal	Other		Normal

Inlet 1 Comments: **Capped. intrudes 0.5"**

Inlet 2 Comments: **Intrudes 18"**

Inlet 3 Comments: **Intrudes 4.25"**

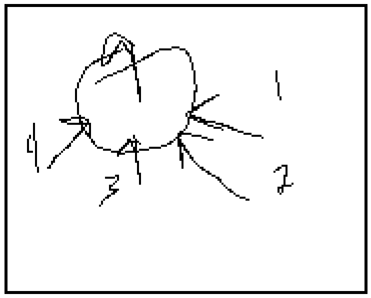
Inlet 4 Comments: **Capped.**

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **94**

Inspection Date: **11/6/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **94a**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **130.25**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Fair
Corbel:	Precast	Fair
Cone:	Precast	Good
Walls:	Precast	Good
Bench:	Concrete Block	Good
Steps:		Good
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Crumbling mortar.**

Manhole Comments: **Frame has some rust. Joints have crumbling mortar. Lift holes in cone and wall.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	16					16
Pipe Material	DI					Metal
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 1.3"**

Inlet 2 Comments:

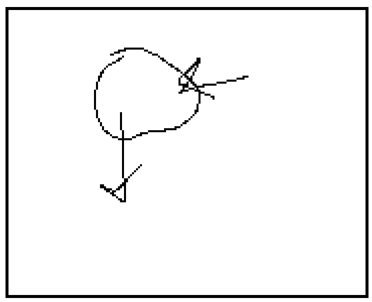
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 2.75". ductile iron?**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **94a**

Inspection Date: **11/6/2013**

Photos











Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **95**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **176**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **Yes**

If Yes, Height of High Water Mark (inches): **54**

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **TP on wall suggest past surcharge.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **1**

Pipe Data

Quantity of Inlets: **4**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	6	10	12		12
Pipe Material	VC	VC	VC	CIP Lined		CIP Lined
Pro/Intruding Taps?	No	No	No	No		No
Roots?	No	No	No	No		No
I/I Observed?	No	No	No	No		No
I/I (GPM)						
Debris?	None	Brick Debris	None	None		Rags
Debris Depth (in)		3				2
Pipe Conditon	Normal	Other	Normal	Other		Normal

Inlet 1 Comments:

Inlet 2 Comments: **Bricks in pipe**

Inlet 3 Comments:

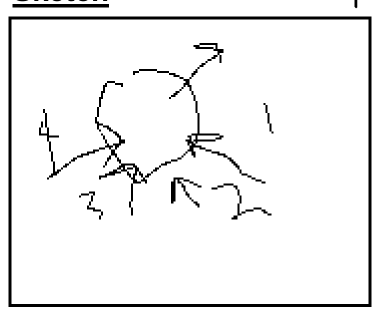
Inlet 4 Comments: **Liner wrinkled**

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **95**

Inspection Date: **11/7/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **97**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **60.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **Yes**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Frame cracked**

	Material	Condition
Frame:		Poor
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **1**

Quantity of Frame Grade Adjustments: **3**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2	6	4			6
Pipe Material	PVC	VC	VC			VC
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Normal			Normal

Inlet 1 Comments: **Intrudes 20.25"**

Inlet 2 Comments:

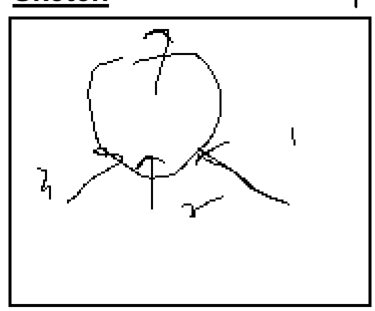
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 2.5"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **97**

Inspection Date: **11/7/2013**

Photos






Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **97a**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **64**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments:

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	4	2	4			4
Pipe Material	CI	PVC	VC			VC
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Normal			Normal

Inlet 1 Comments: **Intrudes 14"**

Inlet 2 Comments: **Intrudes 12"**

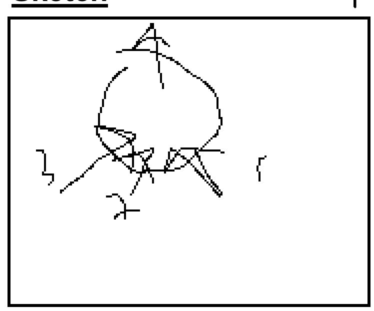
Inlet 3 Comments: **Intrudes 20.75"**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **97a**

Inspection Date: **11/7/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 98

Inspection Date: 11/4/2013

Manhole Observations

Location: Easement

Manhole Depth (inches): 66

Manhole Grade: Below Grade

Height above Grade (inches):

Ponding: No

Evidence of Surface Water Entry? No

MH Surcharged? No

High Water Mark? No

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? None

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? No

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Good

Cover Type: Unlabeled CI

Quantity of Cover Holes: 2

Quantity of Frame Grade Adjustments: 0

Joint Comments:

Manhole Comments: Roots entering MH from frame corbel joint. Steps corroding.

Pipe Data

Quantity of Inlets: 2

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	12				12
Pipe Material	VC	CIP Lined				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	Sediment	None				Rags
Debris Depth (in)	2					0.25
Pipe Conditon	Other	Normal				Other

Inlet 1 Comments: Bricked off

Inlet 2 Comments:

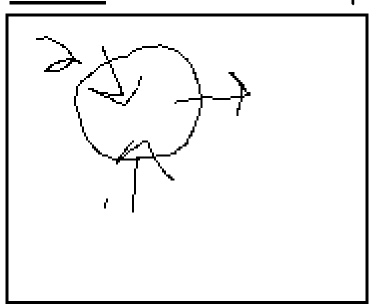
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: Fold in liner

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **98**

Inspection Date: **11/4/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **98a**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **70**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **Yes**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: **Paved CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **1**

Joint Comments: **Gaps present between bricks and blocks.**

Manhole Comments: **Corbel mortar deteriorating. Riser is loose on frame.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2 (x2)	8				8
Pipe Material	HDPE	AC				AC
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Normal

Inlet 1 Comments: **6" intruding into MH**

Inlet 2 Comments: **Intruding 6" into MH**

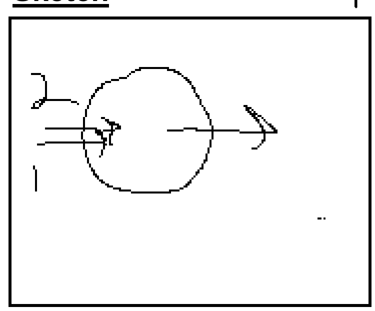
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intruding 4" into MH**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **98a**

Inspection Date: **11/4/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **98b**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **55.5**

Manhole Grade: **Varied**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Mortar at corbel deteriorating.**

Manhole Comments: **Cover wobbles on frame. Half of MH above grade, half below.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	AC					AC
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments: **Intrudes 1" from wall**

Inlet 2 Comments:

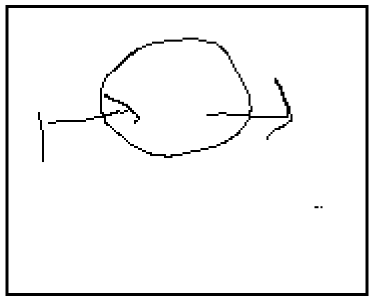
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 3" from wall**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **98b**

Inspection Date: **11/4/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **99**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **81**

Manhole Grade: **Above Grade**

Height above Grade (inches): **1**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Missing mortar on corbel. Roots in wall above outlet.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12	4	6			12
Pipe Material	CIP Lined	CI	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	None	None			None
Debris Depth (in)						
Pipe Conditon	Normal	Normal	Other			Normal

Inlet 1 Comments:

Inlet 2 Comments: **Service intrudes 26"**

Inlet 3 Comments: **Capped**

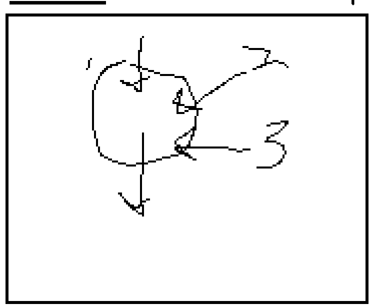
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **99**

Inspection Date: **11/6/2013**

Photos






Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **100**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **86**

Manhole Grade: **Above Grade**

Height above Grade (inches): **2**

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Fair
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Lined through with small access opening. Stairs corroding.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12					12
Pipe Material	CIP Lined					CIP Lined
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Other					Other

Inlet 1 Comments: **Lined through**

Inlet 2 Comments:

Inlet 3 Comments:

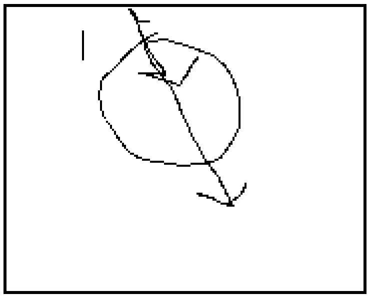
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Lined through**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **100**

Inspection Date: **11/4/2013**

Photos

Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **101**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **61**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **Yes**

If Yes, Location of Infiltration: **Lower wall**

If Yes, Infiltration Rate (GPM): **0.01**

Joint Comments:

Manhole Comments: **Infiltration evidence at bottom of wall.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12	4				12
Pipe Material	CIP Lined	VC				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	Yes				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Other				Normal

Inlet 1 Comments: **Intrudes 1.5"**

Inlet 2 Comments: **Intrudes 6.5". Root ball 95%**

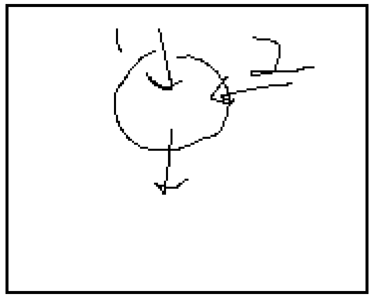
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **101**

Inspection Date: **11/7/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **102**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **101**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **MH was buried. Frame missing piece.**

	Material	Condition
Frame:		Poor
Corbel:	Concrete Block	Good
Cone:	Concrete Block	Good
Walls:	Concrete Block	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **1**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8	12				12
Pipe Material	VC	CIP Lined				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Normal	Normal				Other

Inlet 1 Comments: **Intrudes 1.25"**

Inlet 2 Comments: **Intrudes 1"**

Inlet 3 Comments:

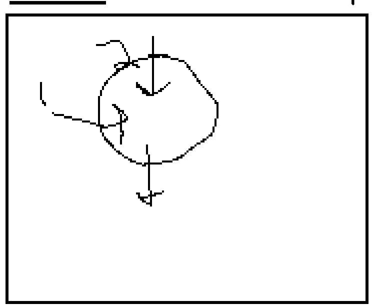
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Liner has slight wrinkle. Liner intrudes 3.5"**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **102**

Inspection Date: **11/7/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **103A**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Easement**

Manhole Depth (inches): **102**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Fair
Corbel:	Brick	Fair
Cone:	Brick	Fair
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Fair
Joints:		Fair

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **3**

Joint Comments: **Roots throughout**

Manhole Comments: **Unable to do internal inspection due to tree. MH was buried. Roots throughout structure.**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	12					12
Pipe Material	CIP Lined					CIP Lined
Pro/Intruding Taps?	Unknown					Unknown
Roots?	Unknown					Unknown
I/I Observed?	Unknown					Unknown
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments:

Inlet 2 Comments:

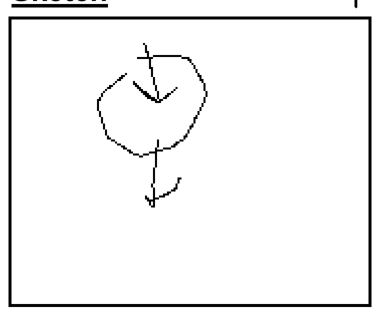
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **103A**

Inspection Date: **11/7/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **104**

Inspection Date: **11/4/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **115**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Not Present
Joints:		Fair

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments: **Roots**

Manhole Comments: **Two abandoned inlets with roots. Roots present at wall brick joints.**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	12	6			12
Pipe Material	VC	CIP Lined	VC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	Yes	No	Yes			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	Sediment	None	Sediment			None
Debris Depth (in)	0.25		0.5			
Pipe Conditon	Other	Other	Other			Other

Inlet 1 Comments: **Abandoned**

Inlet 2 Comments: **1" gap between liner and old VC pipe on W side.**

Inlet 3 Comments: **Abandoned. Clogged with roots and sediment.**

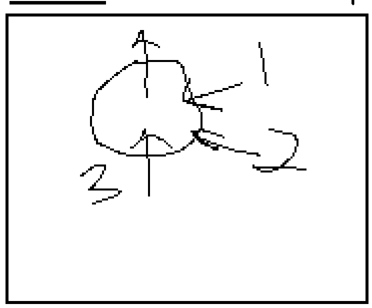
Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **About 0.5" gap between liner and old VC.**

Sketch

N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **104**

Inspection Date: **11/4/2013**

Photos








Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **107**

Inspection Date: **11/6/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **108**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Brick	Fair
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Fair
Steps:		Not Present
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **2**

Joint Comments:

Manhole Comments: **Corbel has eroded mortar and deteriorating bricks/conc block. Brick debris in MH invert. Service inlet to the north has eroded concrete on bench.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	10	6				10
Pipe Material	CIP Lined	VC				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Other	Normal				Normal

Inlet 1 Comments: **Liner is wrinkled at end**

Inlet 2 Comments:

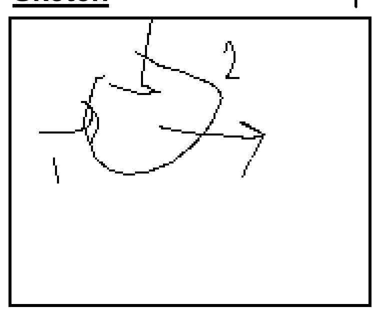
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 0.5"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **107**

Inspection Date: **11/6/2013**

Photos





Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **109**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **104.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Fine roots in walls**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Paved CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **3**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	8				10
Pipe Material	VC	CIP Lined				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	No				No
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	Rags	None				Rags
Debris Depth (in)	1					1.5
Pipe Conditon	Normal	Normal				Other

Inlet 1 Comments:

Inlet 2 Comments:

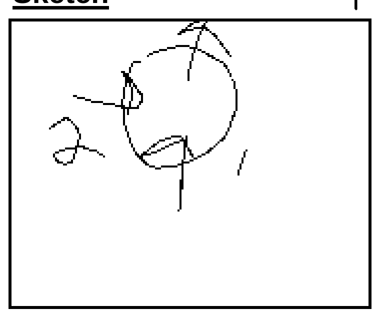
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Liner has 0.75" gap at lower part of pipe**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **109**

Inspection Date: **11/7/2013**

Photos







Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: 112

Inspection Date: **11/5/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **83.5**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

	Material	Condition
Frame:		Good
Corbel:	Brick	Fair
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Fair
Steps:		Good
Joints:		Good

Cover Type: **Sewer CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Joint Comments:

Manhole Comments: **Some fine roots through wall. Missing mortar on corbel and wall.**

Pipe Data

Quantity of Inlets: **2**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	8				8
Pipe Material	VC	CIP Lined				CIP Lined
Pro/Intruding Taps?	No	No				No
Roots?	No	Yes				Yes
I/I Observed?	No	No				No
I/I (GPM)						
Debris?	None	None				None
Debris Depth (in)						
Pipe Conditon	Offset	Other				Other

Inlet 1 Comments: **Offset joint in line. Intruding 1"**

Inlet 2 Comments: **Intruding 11.5". Fine roots at wall joint.**

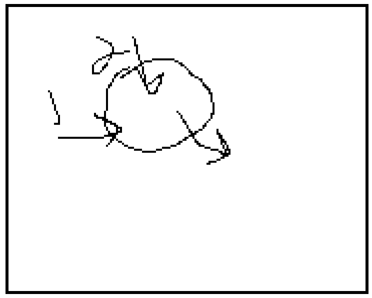
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Fine roots at wall joint**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **112**

Inspection Date: **11/5/2013**

Photos






Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **113**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **93**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Roots through walls**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Fair
Cone:	Brick	Good
Walls:	Brick	Fair
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Paved CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **0**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	2	6	8			8
Pipe Material	PVC	VC	CIP Lined			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	Yes	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	None	Brick Debris	None			None
Debris Depth (in)		6				
Pipe Conditon	Normal	Other	Normal			Normal

Inlet 1 Comments: **Intrudes 3.5"**

Inlet 2 Comments: **Full if bricks roots from joint**

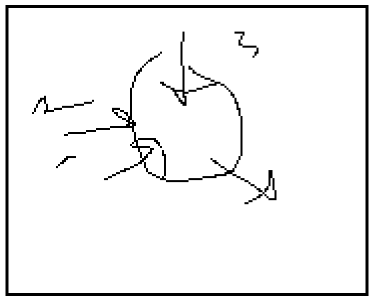
Inlet 3 Comments: **Intrudes 4"**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **113**

Inspection Date: **11/7/2013**

Photos








Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **114**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **75**

Manhole Grade: **At Grade**

Height above Grade (inches):

Ponding: **No**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Fine roots on wall**

	Material	Condition
Frame:		Good
Corbel:	Concrete Block	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Unlabeled CI**

Quantity of Cover Holes: **0**

Quantity of Frame Grade Adjustments: **1**

Pipe Data

Quantity of Inlets: **1**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	8					8
Pipe Material	CIP Lined					CIP Lined
Pro/Intruding Taps?	No					No
Roots?	No					No
I/I Observed?	No					No
I/I (GPM)						
Debris?	None					None
Debris Depth (in)						
Pipe Conditon	Normal					Normal

Inlet 1 Comments:

Inlet 2 Comments:

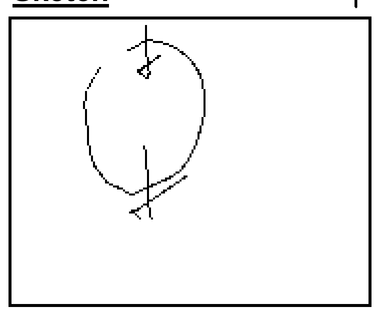
Inlet 3 Comments:

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments: **Intrudes 0.5"**

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **114**

Inspection Date: **11/7/2013**

Photos



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **115**

Inspection Date: **11/7/2013**

Manhole Observations

Location: **Pavement**

Manhole Depth (inches): **79**

Manhole Grade: **Below Grade**

Height above Grade (inches):

Ponding: **Yes**

Evidence of Surface Water Entry? **No**

MH Surcharged? **No**

High Water Mark? **No**

If Yes, Height of High Water Mark (inches):

Cracks in Manhole Structure? **None**

If Yes, Location of Cracks:

Evidence of Infiltation in Manhole? **No**

If Yes, Location of Infiltration:

If Yes, Infiltration Rate (GPM):

Joint Comments:

Manhole Comments: **Pavement around MH slightly subsided.**

	Material	Condition
Frame:		Good
Corbel:	Brick	Good
Cone:	Brick	Good
Walls:	Brick	Good
Bench:	Cast In Place Concrete	Good
Steps:		Good
Joints:		Good

Cover Type: **Paved CI**

Quantity of Cover Holes: **2**

Quantity of Frame Grade Adjustments: **2**

Pipe Data

Quantity of Inlets: **3**

	Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	Outlet
Diameter (inches)	6	4	2			8
Pipe Material	VC	PVC	PVC			CIP Lined
Pro/Intruding Taps?	No	No	No			No
Roots?	No	No	No			No
I/I Observed?	No	No	No			No
I/I (GPM)						
Debris?	Sediment	None	None			None
Debris Depth (in)	3					
Pipe Conditon	Other	Normal	Normal			Normal

Inlet 1 Comments: **Capped**

Inlet 2 Comments:

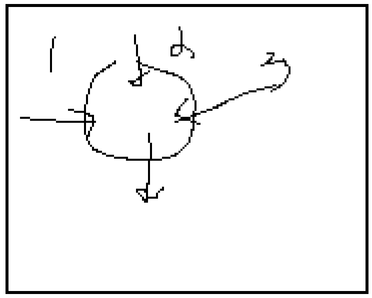
Inlet 3 Comments: **Intrudes 9.5"**

Inlet 4 Comments:

Inlet 5 Comments:

Outlet Comments:

Sketch N



Ridgefield Inflow/Infiltration Study
Internal Manhole Inspection Log

Manhole ID: **115**

Inspection Date: **11/7/2013**

Photos




APPENDIX H

TECHNICAL MEMORANDUM NO. 2 – COLLECTION SYSTEM BOTTLENECK EVALUATION

AECOM
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Technical Memorandum No. 2

To	Ridgefield WPCA	Page	1 of 17
CC	C. Fisher, J. O'Brien, J. Pereira, J. Pennell		
Subject	Town of Ridgefield, CT Phase 1 Wastewater Facilities Plan Technical Memorandum No. 2 – Collection System Bottleneck Evaluation		
From	Jon Pearson and Alberto Angles		
Date	February 19, 2014		

INTRODUCTION

This Technical Memorandum summarizes the evaluation conducted to identify the hydraulic limitations in the Sewer District 1 collection system which contribute to surcharging of the sewers during wet weather, high flow conditions. Recommendations to alleviate identified bottlenecks as well as a concept level opinion of project costs are presented.

BACKGROUND

There are a number of areas in the Sewer District 1 collection system that are reported to have capacity issues as certain sewers have been observed to surcharge or backup under wet weather conditions. Surcharges are typically indicative of a sewer that is undersized (or overloaded) or that has a defect or blockage that is not allowing it to convey wastewater as intended. These areas are "bottlenecks" in the collection system which have the potential to cause sewer system overflows (SSOs) or sewage backups into homes or businesses. An example of an area that is known to have surcharging issues is Grove Street in Sub Area 4 of Sewer District 1. The flow metering program conducted in 2007 for the Infiltration/Inflow Analysis also identified surcharging in relatively small storm events in the sewers on Governor Street, New Street, Arnolds Way Easement, and Olcott Way at the Casagmo condominiums.

DATA COLLECTION

To estimate the hydraulic capacities of the collection system under investigation, in the spring of 2012 AECOM obtained the services of Land Resource Consultants, Inc., of Cromwell, CT to conduct a field survey of the manholes on the sewers in the areas under investigation to collect information on sewer sizes, and gather rim and invert elevations. The extent of the field survey is shown on Figure 1, attached. For ease of reference, the collection system under analysis is referred to as the East Branch and the West Branch. The East Branch extends from MH 69 on Branchville Road to MH 2 at the South Street Wastewater Treatment Facility (WWTF). The West Branch extends from MH 189 on King Lane to MH 6 on Grove Street.

AECOM also obtained the services of ADS Environmental Services, of Congers, NY, to conduct continuous flow monitoring at selected locations along the sewers under investigation. Flow monitoring was conducted from April 17, 2013 through July 10, 2013 at nine locations and rainfall gauging was conducted at one location in the Sewer District 1 collection system. Flow meter locations are also indicated on Figure 1. The rain gauge was located at the South Street WWTF. The flow data was collected to identify areas of surcharging and to compare against the theoretical capacities of the collection system under investigation.

ANALYSIS

Review of Existing Television Inspection Data

Existing television inspection data provided by United Water was reviewed to identify the condition of the sewer reaches under investigation. The focus of the review was to identify pipe materials and to estimate the roughness coefficient (Manning's "n") for use in the hydraulic analysis.

Much of the collection system which makes up the East and West Branches is old. Many of the original vitrified clay piping sections have been lined or have undergone some type of rehabilitation to reduce I/I or prolong their useful life. Even after rehabilitation, the system exhibits signs that extraneous flows enter the collection system. This may be from inflow sources such as sump pumps, downspouts, or open abandoned service connections or cleanouts. Typical of many old clay sewers is that they have bends and sags which can inhibit the theoretical capacity of the pipeline.

Hydraulic Capacities

A hydraulic capacity spreadsheet model of the surveyed sections of the collection system was prepared using the survey data collected along with the roughness coefficients estimated to calculate the theoretical capacities of the sewers under investigation. Tables 1 and 2, attached, summarize the hydraulic characteristics (i.e. pipe diameters, slopes, etc.) of each manhole to manhole reach of the sewers under investigation. The tables also report the theoretical full flow conveyance capacity of the sewers as determined using the Manning Equation with "n" values assigned based on pipe material and condition.

Sewer design criteria typically require that a sewer be constructed with a slope equal to or greater than the minimum slope required to provide a velocity of 2.0 feet per second to keep solids in suspension. Sewers constructed with less than minimum slope may result in problems with sediment deposition and back-ups due to poor flow velocities in the sewer. These sewers can also act as "bottlenecks", restricting the flow. For comparison purposes, a listing of the minimum slopes (for a Mannings's "n" of 0.013) for a range of different pipe diameters is presented below:

Pipe Diameter	Minimum Slope (ft./ft.)
8”	0.004
10”	0.003
12”	0.0022
15”	0.0015
18”	0.0012
21”	0.0010

The majority of the wastewater collection system under investigation appears to have been constructed with slopes greater than or equal to the minimum slope recommended. However, two sewer reaches have been identified as having less than minimum slopes. They are sewer reach MH 57A to MH 56, between Market Street and Governor Street, and sewer reach MH 67 to MH 67A between Rowland Lane and Branchville Road. The sewer reach MH 67 to MH 67A was originally constructed as a 12-inch vitrified clay pipe (VCP) with a slope of 0.0028 which is adequate for that diameter pipe. However, this pipe has been slip lined and its effective diameter has been reduced to approximately 10-inches. As noted above, the minimum slope for a 10-inch diameter pipe is 0.003.

The only recourse on those lines identified as being constructed at less than minimum slope is to either clean the line regularly to remove any sediment build-up or replace the line if there is the ability to increase the slope. The survey data indicates that the upstream and downstream inverts are fixed (i.e. no drop inlet, no end manhole, etc.). As a result, replacement of the sewers with the same size pipes at the same elevations will not solve the problem. It is therefore recommended that the Town regularly monitor these two sections for sediment build-up and clean as necessary.

Flow Analysis

As noted above, continuous monitoring of wastewater flows was performed from April 17, 2013 through July 10, 2013 to help identify bottlenecks in the existing collection system. Rainfall data was also collected for this period. Both the rainfall and flow data were collected and reported in 15-minute increments.

Hydrograph plots, showing the flow and rainfall at each metered location for the entire monitoring period, have been prepared and are attached as Figures 2 through 10. Wastewater flow data is represented by the red line with its vertical axis on the left and rainfall data is represented by the blue bars extending downward from the top of the graph with its vertical axis on the right. A review of these hydrographs shows a clear and rapid response of high flows during rainfall events. This is indicative of inflow entering the collection system.

Due to a malfunction in the metering equipment at metered MH 122, no flow data was recorded May 26, 2013 through June 6, 2013 at this meter site. During the monitoring period a total of 13.56 inches of rainfall were recorded. Recorded rain events are summarized in the Table 3, attached.

Based on a review of the collected data on flow depth, four rainfall events triggered surcharging at various meter locations. A sewer is considered surcharged when the depth of flow in the pipe rises above the crown of the pipe at a manhole. Surcharge events recorded during the flow metering period are summarized in Table 4, attached.

The metering data was analyzed to characterize existing flows. Estimates of both dry and wet weather flows at each metering location have been made based on the metering data. For the purpose of this analysis, April 25, 2013 through May 7, 2013 are considered to be dry weather days. A dry weather day is considered to be one in which no rainfall occurred that day, and there is no appreciable rain (<= 0.01 in) four days prior to this period. Maximum wet weather flows recorded during the flow metering period occurred during the rain event on June 13-14, 2013.

To estimate flows between the metered locations, the incremental change in flow between meters has been distributed based on the length of the sewer reach under investigation. Similarly, flows upstream of the upstream most metered locations (MH 188A and MH 67A) have also been estimated based on a proportional allocation of flow relative to length of sewer main. Because of the meter malfunction at MH 122, noted above, this method has also been used to estimate flows between metered MH 127A and MH 116. Flows downstream of MH 6 have been estimated by adding the flows from metered MH 116 and MH 117. Tables 5 and 6 and Figures 11 and 12, attached, compare estimated dry and peak wet weather flows to theoretical capacities for each reach of the collection system under investigation.

During dry weather conditions the flows recorded at each of the metered locations on both the East Branch and the West Branch collection systems are well within the theoretical capacity of the existing sewers. This indicates that the collection system has adequate capacity to convey the collected wastewater in dry weather. However, estimated peak flows during wet weather conditions reach or exceed the capacity of the collection system at a number of locations. These portions of the collection system may be referred to as collection system bottlenecks. Tables 5 and 6 and Figure 13, attached, highlight these collection system bottlenecks.

Collection System Bottleneck Relief Options

Options available to relieve the identified bottlenecks generally include identifying and reducing Infiltration/Inflow (I/I), diverting flow around the bottlenecks, conducting collection system upgrades by constructing new sewers, and performing routine operation and maintenance (O&M).

Identify and Reduce I/I. Through previous investigations and recent field work, the Town has identified numerous public and private sources of inflow to its wastewater collection system such as catch basins, a drainage culvert, defective manholes, sump pumps, and roof leaders. Inflow entering the system through these sources is a contributing factor to the flow related problems that occur within the collection system under investigation during wet weather conditions.

One way to reduce I/I is to proceed with recommendations arising from the 2013 smoke testing and manhole inspection efforts. These efforts will be summarized in a separate Technical Memorandum on that subject. Rehabilitation of the inflow sources identified and quantified during smoke testing have the potential of removing an estimated peak inflow rate of 0.29 mgd from both the East and West Branches of the collection system during a one-year, six-hour design storm.

The peak inflow rate of positive inflow sources identified and quantified during smoke testing is based on a design storm recurrence of one year and a rainfall duration of six hours. This design storm is referred to as a one-year, six-hour storm and produces approximately 1.83 inches of rainfall in the Ridgefield area, with a peak rainfall intensity of 1.02 inches per hour (in/hr), and an average rainfall intensity of 0.30 in/hr. Peak inflow rates were calculated using the Rational Method with the peak rainfall intensity of 1.02 in/hr.

The largest flows recorded during the flow monitoring period occurred during the June 13-14, 2013 storm event which produced 2.12 inches of rainfall with a peak intensity of 0.35 in/hr. To adjust the design storm inflow rate to that of the June 13-14, 2013 storm event, the peak inflow rate has been recalculated using the peak rainfall intensity of 0.35 in/hr. This produces a peak inflow rate of approximately 0.13 mgd (for the inflow sources identified through the 2013 smoke testing efforts) during the June 13-14, 2013 storm event. The elimination of these inflow sources would free up some capacity in both branches of the collection system and lessen the bottlenecking effect on the system. However, to relieve the bottlenecks for the estimated peak wet weather flows experienced during the June 13-14, 2013 storm event, it would be necessary to reduce the peak inflow rate in the East and West Branches by an additional 1.89 mgd. This would require the identification and elimination of additional inflow sources throughout Sewer District 1. For example, the elimination of 219 sump pumps (operating at 6 gallon per minute 24 hours a day) or 735 downspouts draining roof areas of approximately 1,000 square feet (32’ X 32’) each may be enough to reduce the peak inflow rate by 1.89 mgd.

The total estimated cost associated with rehabilitating the collection system to remove the inflow sources identified during the 2013 smoke testing efforts, including allowances for engineering and contingencies, is approximately $108,000. The cost includes capping and redirecting of 45 direct inflow sources, rehabilitating 9 manholes, and further investigations (including inspection of 8 manholes and other structures and conducting rainfall simulation) to confirm and quantify positive and suspect inflow sources identified during smoke testing. Costs associated with implementing the recommendations arising from the further investigations, noted above, are not included as the scope of work required cannot be identified in advance of the investigations. It is emphasized, that the rehabilitation of these inflow sources identified during smoke testing alone will not be enough to entirely eliminate the bottlenecks throughout the system. Rather, it is recommended that further efforts be made to identify and eliminate sources of inflow. These efforts should consist of:

- Further manhole inspections as recommended in the 2007 Infiltration/Inflow Analysis Report and summarized in Technical Memorandum No. 1. The report recommends physical inspections of manholes to identify sources of leakage and to assess the general condition of the sewer manholes within the system. According to the 2007 I/I report there are 520 manholes in Sewer District 1. Approximately 90 additional manholes were located during the 2013 smoke testing. In November of 2013, 63 manholes were inspected in Subarea 1. Rehabilitation recommendations based on these inspections will be summarized in a separate Technical Memorandum. The total estimated cost associated with conducting the remaining approximately 550 manhole inspections, including allowances for engineering and contingencies, is approximately $88,000.

- Conducting house-to-house inspections as recommended in the 2007 Infiltration/Inflow Analysis Report and summarized in Technical Memorandum No. 1. Conducting house-to-house inspections are recommended to visually identify private inflow sources such as sump pumps, driveway drains, foundation drains, roof leaders, etc. which discharge directly to the wastewater collection system. Records provided by the Town indicate that there are 1,760 properties connected to the District 1 wastewater collection system. The total estimated cost associated with conducting 1,760 house-to-house inspections, including allowances for engineering and contingencies, is approximately $176,000.

- Conducting public education and outreach as summarized in Technical Memorandum No. 1. The Town should sponsor public education activities, including the preparation of a brochure to mail to residents, posting the brochure on the town's web site, bill stuffing and newspaper articles to inform the public. Costs associated with this effort should be included in the WPCA's operating budget.

We recommend that the Town proceed with recommendations arising from the 2013 smoke testing efforts and continue investigations to identify and eliminate sources of inflow as described above.

Divert Flows Around Bottlenecks. Another relief option is to divert flows around the bottlenecks identified. As part of the Phase 1 Wastewater Facilities Plan, AECOM is evaluating upgrade needs of the Route 7 Wastewater Treatment Facility (WWTF) Influent Pump Station and the Quail Ridge Pump Station. These efforts will be summarized in a separate Technical Memorandum. These are the two oldest pump stations that have not had significant upgrades for an extended period of time. As part of that evaluation the potential to eliminate the Quail Ridge Pump Station by construction of a gravity sewer to the South Street WWTF has been evaluated. Flows from the Quail Ridge Pump Station currently discharge to the gravity sewer on Sunset Lane, upstream of MH 9 on the East Branch of the collection system. Based on the topography it was determined that the Quail Ridge Pump Station could not be eliminated entirely as there is not sufficient elevation to convey the flow by gravity from Quail Ridge to the South Street WWTF. However, it is possible to relocate the pump station from its current location to the intersection of South Street and Old Quarry Road. Flows would be conveyed from the existing pump station location by a newly constructed 8-inch gravity sewer to a new pump station in the vicinity of the Goodwill Trailer on South Street. Flows from the new pump station would then be pumped directly to the South Street WWTF via approximately 1,200 linear feet of force main. Figure 14 illustrates the conceptual alignment of the gravity sewer from the site of the existing Quail Ridge Pump Station to the proposed pump station location based on the Town's GIS data. It is estimated that the relocation of the Quail Ridge Pump Station would remove a peak hourly flow of approximately 0.29 mgd from the East Branch collection system, downstream of MH 9. The 2003 Pump Station Preliminary Design Report, by AECOM (formerly Metcalf & Eddy) recommended the replacement of both the existing 2,300 linear foot force main and the pump station. An added benefit of relocating the pump station to the intersection of South Street and Old Quarry Road is that the existing pump station which serves the Ridgefield Department of Public Services at 60 South Street may be able to be eliminated. Regardless of its location, the pump station is recommended to be replaced. Therefore, for the purpose of estimating costs, only the costs for the gravity sewer and the differential cost of the force main, constructed by open cut construction methods, have been considered. The total estimated cost associated with the relocation of the Quail Ridge Pump Station, including allowances for engineering and contingencies, is approximately $900,000.

The relocation of the Quail Ridge Pump Station alone will not alleviate the bottlenecks however it would reduce flows upstream of a section of the wastewater collection system that has been identified as a bottleneck. Therefore, it is recommended that when the Quail Ridge Pump Station is upgraded, it be located at the new location as described above.

Conduct Collection System Upgrades. Upgrades to the collection system would be necessary to accommodate the estimated peak wet weather flows. Upgrades would consist of replacing portions of sewers in both the East Branch and West Branch collection systems. Pipelines with insufficient capacity to accommodate estimated peak wet weather flows would be increased in size to handle the additional flow. Some reaches of pipeline that have been identified as having sufficient capacity would also be increased in size to avoid potential hydraulic restrictions created by flows from an larger diameter upstream pipeline entering a smaller diameter downstream pipeline. Tables 7 and 8, attached, summarize the upgrades that would be required to accommodate the estimated peak wet weather flows. As an alternative to replacement of sewers with insufficient capacity to accommodate estimated peak wet weather flows, the construction of parallel relief sewers could be considered during design if sufficient space and elevation is available.

Upgrades to the East Branch of the collection system under investigation include replacing the entire length of the East Branch consisting of approximately 5,800 linear feet of existing sewers from MH 69 on Branchville Road to MH 2 at the South Street WWTF. Approximately 3,100 linear feet of existing sewers on the West Branch of the collection system, approximately 48% of the total length, would be replaced from MH 166, just north of Gilbert Street to MH 6 on Grove Street. Approximately 2,100 linear feet of the 3,100 linear feet of sewer that would be upgraded on the West Branch is in Grove Street. The majority of the East Branch and some of the West Branch of the collection system upgrades are located in off road areas, behind residential and through commercial properties. Replacement of these sewers would have impacts to residents, businesses, and traffic as well as adjacent wetlands. For the purpose of estimating costs, upgrades would be made by open cut construction methods. The total estimated cost associated with the collection system upgrades, including allowances for engineering and contingencies, is approximately $5,300,000 ($3,350,000 for East Branch upgrades and $1,950,000 for West Branch upgrades).

As noted previously, much of the collection system which makes up the East and West Branches is old and has undergone some sort type of rehabilitation to reduce I/I or to prolong its useful life. Portions of the collection system may warrant replacement, but because of the significant impacts that construction would have and the high capital costs, the upgrades presented above are not recommended at this time. It is recommended that the Town first continue to identify and eliminate sources of I/I as previously described. Following the efforts to identify and eliminate sources of I/I, then upgrades to specific sections of the East and West Branches that continue to exhibit signs of bottlenecking should be revisited.

Perform Routine Operation And Maintenance (O&M). Based on the results of the capacity analysis presented, there are sewers within the collection system under investigation that have been constructed at slopes less than the minimum typically used in the design of sanitary sewers. These sewers should be given priority when conducting routine O&M procedures. Because these sewers are more likely to experience flow related problems, the Town should implement a program of cleaning the sewers and inspecting the manholes for evidence of surcharging on a regular basis.

SUMMARY AND RECOMMENDATIONS

Previous studies and recent field work indicate that a large amount of inflow enters the Ridgefield wastewater collection system during high groundwater and wet weather conditions. The collection system has sufficient capacity to accommodate dry weather flows, but during wet weather conditions infiltration and inflow entering the system consume much of the system's capacity. Given the magnitude of inflow in the system, known inflow sources should be removed, and additional investigation efforts should be made to further identify and subsequently remove sources of inflow.

Generally, inflow sources are the most cost effective flows to remove. It is therefore recommended that the elimination of inflow sources be pursued prior to upgrading the system to accommodate these flows.

To alleviate bottlenecks identified in both the East Branch and the West Branch of the collection system it is recommended that the Town take measures to reduce I/I by implementing the recommendations summarized in Technical Memorandum No. 1. Eliminating I/I sources identified during the 2013 smoke testing would have the potential of removing a peak inflow rate of approximately 0.29 mgd during a one-year, six-hour design storm from the East and West Branches of the collection system.

It is also recommended that the Town implement the following additional measures to identify and reduce I/I:

- Implement manhole rehabilitation recommendations identified during 2013 manhole inspections (to be summarized in a separate Technical Memorandum)
- Conduct manhole inspections as recommended in the 2007 I/I Report and summarized in Technical Memorandum No. 1
- Conduct house-to-house inspections as recommended in the 2007 I/I Report and summarized in Technical Memorandum No. 1
- Conduct public education and outreach and summarized in Technical Memorandum No. 1

It is further recommended that the Town relocate the Quail Ridge Pump Station to the intersection of South Street and Old Quarry Road. It is estimated that the relocation of the Quail Ridge Pump Station remove a peak hourly flow rate of approximately 0.29 mgd from the East Branch collection system, downstream of MH 9.

Lastly, it is recommended that the Town include sewer reaches MH 57A to MH 56 and MH 67 to MH 67A on a list of sewers that should be cleaned and inspected on a regular basis as described earlier under Routine O&M Procedures.

A recommended program to reduce the bottlenecks in the collection system is described above. Implementation of the recommendations contained herein may not eliminate all of the bottlenecks identified in the collection system. However, it presents an approach to reduce peak flow rates which contribute the bottlenecking by eliminating known inflow sources and diverting flows around bottlenecks. It also presents a methodical approach to identifying additional sources of inflow and identifies areas which should be monitored for routine maintenance.

Following the recommended investigations (rainfall simulation, manhole inspections, and house-to-house inspections) rehabilitation recommendations will be made to further reduce extraneous flows entering the collection system. Implementation of the rehabilitation recommendations resulting from these investigations is not included in the estimated costs as the extent of rehabilitation work is not known at this time. After implementation of the rehabilitation recommendations are performed the Town should evaluate if collection system upgrades are required in addition to the elimination of inflow and diversion of flows around bottlenecks.

Table 9 below presents a summary of the estimated costs for the components of the recommended program. However, at this time, it is emphasized that the costs presented in this table are only planning level cost estimates for budgeting purposes. A more accurate estimate of the anticipated costs may be determined during subsequent phases of the recommended program.

TABLE 9. SUMMARY OF ESTIMATED COSTS

Component	Total Estimated Cost
Reduce I/I –	
Rehabilitate and Further Investigate Inflow Sources Identified During Smoke Testing	(1)
Rehabilitate I/I Sources Identified During 2013 Manhole Inspections	TBD
Conduct 550 manhole inspections as recommended in the 2007 I/I Report	$88,000
Conduct 1760 House-to-House inspections as recommended in the 2007 I/I Report	(1)
Conduct public education and outreach	N/A
Divert Flows Around Bottlenecks – Relocate Quail Ridge Pump Station	$900,000
Perform Routine O&M	N/A
Total	$988,000

Notes:

1. *Costs included in Technical Memorandum No. 1.*

TABLE 1. EAST BRANCH THEORETICAL CAPACITIES

Manhole Number		Pipeline Characteristics						
Up-stream	Down-stream	Diameter (in)	Material	Length (ft)	Slope (ft/ft)	Manning's "n"	Full Capacity (mgd)	Full Velocity (fps)
69	68	12	LNR	218	0.0028	0.0120	1.31	2.6
68	67	12	LNR	225	0.0053	0.0120	1.82	3.6
67	67A	10	LNR	143	**0.0028**	0.0120	0.83	2.3
67A	62A	10	LNR	217	0.0046	0.0120	1.06	3.0
62A	62	10	LNR	269	0.0033	0.0120	0.90	2.5
62	58	10	CIP	26	0.0038	0.0140	1.63	2.3
58	57	12	LNR	369	0.0043	0.0120	1.65	3.2
57	57A	12	LNR	18	0.0111	0.0120	2.64	5.2
57A	56	12	PVC	169	**0.0018**	0.0130	0.97	1.9
56	51	12	VCP	180	0.0033	0.0150	1.15	2.3
51	50	12	VCP	48	0.0041	0.0150	1.34	2.6
50	49A	12	PVC	136	0.0059	0.0130	1.77	3.5
49A	49	12	PVC	129	0.0047	0.0130	1.58	3.1
49	48	12	PVC	389	0.0026	0.0130	1.17	2.3
48	47	12	VCP	132	0.0672	0.0150	5.18	10.2
47	46	12	VCP	118	0.0195	0.0150	2.79	5.5
46	30	12	VCP	137	0.0058	0.0150	1.53	3.0
30	32	12	VCP	68	0.0074	0.0150	1.72	3.4
32	25	11	LNR	122	0.0049	0.0120	1.37	3.2
25	24	11	LNR	173	0.0133	0.0120	2.25	5.3
24	23	11	LNR	204	0.0172	0.0120	2.56	6.1
23	22	11	LNR	375	0.0278	0.0120	3.26	7.7
22	21	11	LNR	156	0.0186	0.0120	2.67	6.3
21	9	11	LNR	84	0.0118	0.0120	2.13	5.0
9	8	11	LNR	133	0.0203	0.0120	2.79	6.6
8	8A	11	LNR	309	0.0272	0.0120	3.22	7.6
8A	7	11	LNR	80	0.0075	0.0120	1.69	4.0
7	6	11	LNR	286	0.0461	0.0120	4.20	9.9
6	5	15	VCP	307	0.0127	0.0150	4.09	5.2
5	4	15	VCP	100	0.0190	0.0150	5.00	6.3
4	3	15	VCP	145	0.0104	0.0150	3.69	4.7
3	2	15	VCP	224	0.0944	0.0150	11.15	14.1

Notes:

1. *Highlighted rows indicate sewer reaches with less than recommended slopes.*
2. *Sewer reach MH 62 to MH 58 consists of two 10-inch sewers.*
3. *Abbreviations:*

LNR	*Liner*
CIP	*Cast Iron Pipe*
PVC	*Polyvinylchloride*
VCP	*Vitrified Clay Pipe*

TABLE 2. WEST BRANCH THEORETICAL CAPACITIES

Manhole Number		Pipeline Characteristics						
Up-stream	Down-stream	Diameter (in)	Material	Length (ft)	Slope (ft/ft)	Manning's "n"	Full Capacity (mgd)	Full Velocity (fps)
189	188A	12	LNR	344	0.0262	0.0120	3.61	7.7
188A	188	12	LNR	94	0.0267	0.0120	3.65	7.8
188	187	12	LNR	241	0.0254	0.0120	3.55	7.6
187	186	12	LNR	163	0.0141	0.0120	2.65	5.7
186	185A	12	LNR	155	0.0317	0.0120	3.97	8.5
185A	185	12	LNR	195	0.0327	0.0120	4.04	8.7
185	173A	12	LNR	383	0.0128	0.0120	2.52	5.4
173A	173	12	LNR	289	0.0159	0.0120	2.82	6.0
173	172	12	LNR	165	0.0054	0.0120	1.65	3.5
172	170	11	LNR	432	0.0201	0.0120	2.81	6.6
170	169	11	LNR	76	0.0183	0.0120	2.68	6.3
169	167	11	LNR	592	0.0155	0.0120	2.47	5.8
167	166	11	LNR	169	0.0336	0.0120	3.64	8.5
166	165A	11	LNR	217	0.0064	0.0120	1.59	3.7
165A	165	18	PVC	79	0.0089	0.0130	6.43	5.6
165	128	18	PVC	108	0.0037	0.0130	4.15	3.6
128	127	11	LNR	324	0.0065	0.0120	1.69	3.8
127	127A	11	LNR	164	0.0458	0.0120	4.51	10.1
127A	125	11	LNR	264	0.0220	0.0120	3.12	7.0
125	123A	11	LNR	180	0.0220	0.0120	3.12	7.0
123A	123	11	LNR	117	0.0214	0.0120	3.08	6.9
123	122	11	LNR	296	0.0643	0.0120	5.34	12.0
122	121	12	LNR	231	0.0290	0.0120	4.08	8.3
121	120	12	LNR	160	0.0063	0.0120	1.89	3.9
120	119	12	LNR	264	0.0057	0.0120	1.81	3.7
119	117	12	VCP	296	0.0047	0.0150	1.38	2.7
117	116	12	VCP	241	0.0344	0.0150	3.71	7.3
116	6	12	VCP	101	0.0158	0.0150	2.65	5.0

Notes:
1. *MH 125 paved over. Slope assumed constant between MH 127A and MH 123A.*
2. *Abbreviations:*

LNR	*Liner*
CIP	*Cast Iron Pipe*
PVC	*Polyvinylchloride*
VCP	*Vitrified Clay Pipe*

TABLE 3. SUMMARY OF RAINFALL EVENTS

Rainfall Event Date		Total Rainfall (inches)	Duration (hours)	Average Rainfall Intensity (in/hr)	Peak Rainfall Intensity (in/hr)
Start	End				
4/19/2013 23:45	4/20/2013 7:30	0.32	8.00	0.04	0.11
5/8/2013 8:15	5/8/2013 16:15	0.51	8.25	0.06	0.27
5/9/2013 12:45	5/9/2013 15:30	0.16	3.00	0.05	0.10
5/11/2013 2:00	5/11/2013 5:30	0.14	3.75	0.04	0.12
5/11/2013 16:30	5/11/2013 17:15	0.11	1.00	0.11	0.11
5/19/2013 5:45	5/19/2013 23:00	0.33	17.50	0.02	0.07
5/23/2013 10:15	5/24/2013 9:30	1.00	23.50	0.04	0.20
5/24/2013 16:30	5/25/2013 22:30	1.12	30.25	0.04	0.21
5/28/2013 14:30	5/29/2013 3:45	0.29	13.50	0.02	0.10
6/2/2013 20:45	6/3/2013 9:00	0.79	12.50	0.06	0.32
6/6/2013 18:15	6/8/2013 4:15	3.14	34.25	0.09	0.31
6/10/2013 13:45	6/11/2013 4:15	1.34	14.75	0.09	0.22
6/11/2013 15:15	6/11/2013 17:30	0.19	2.50	0.08	0.14
6/13/2013 8:30	6/14/2013 6:00	2.12	21.75	0.10	0.35
6/17/2013 13:30	6/17/2013 14:00	0.10	0.75	0.13	0.10
6/18/2013 16:45	6/18/2013 19:00	0.18	2.50	0.07	0.09
6/24/2013 20:00	6/24/2013 20:45	0.20	1.00	0.20	0.20
6/26/2013 19:30	6/26/2013 20:15	0.08	1.00	0.08	0.08
6/27/2013 22:30	6/28/2013 1:00	0.61	2.75	0.22	0.56
7/1/2013 10:45	7/1/2013 20:00	0.44	9.50	0.05	0.22
7/10/2013 13:00	7/10/2013 15:00	0.10	2.25	0.04	0.05

Notes:
1. *Highlighted rows indicate dates of sewer surcharges measured by the flow meters.*

TABLE 4. SUMMARY OF METERING DATA

Meter Location Manhole Number	Pipe Diameter (in)	*(1)* Average Dry Weather Flow (mgd)	Maximum Flow (mgd)	*(2)* Maximum Flow Depth (in)	*(3)* Maximum Surcharge Depth (in)	Surcharge Dates
MH 67A	10	0.10	1.44	50	40	5/23/13, 6/7-8/13, 7/1/13
MH 51	12	0.14	1.36	30	18	5/23/13, 6/8/13, 7/1/13
MH 25 *(3)*	11	0.13	1.71	11	N/A	N/A
MH 07	12	0.25	2.19	8	N/A	N/A
MH 188A	12	0.02	0.74	4	N/A	N/A
MH 172 *(3)*	11	0.09	1.73	7	N/A	N/A
MH 127A *(3)*	11	0.20	2.45	16	5	5/23/13, 6/7-8/13, 6/14/13, 7/1/13
MH 122	12	0.25	2.01	6	N/A	N/A
MH 116	12	0.31	2.89	89	77	5/23/13, 6/7-8/13, 7/1/13

Notes:
1. *Dry weather flows recorded April 25, 2013 through May 7, 2013.*
2. *Maximum flow depth is the depth of flow above the invert of the pipe.*
3. *Maximum surcharge depth is the depth of flow above the crown of the pipe.*
4. *Effective diameter of pipe reduces by liner.*

TABLE 5. EAST BRANCH - COMPARISON OF ESTIMATED FLOWS TO THEORETICAL CAPACITIES

Manhole Number		Diameter (in)	Theoretical Full Capacity (mgd)	Estimated Maximum Dry Weather Flow (mgd)	Estimated Maximum Wet Weather Flow (mgd)
Upstream	Downstream				
69	68	12	1.31	0.18	1.37
68	67	12	1.82	0.18	1.39
67	67A	10	0.83	0.19	1.42
67A	62A	10	1.06	0.19	1.44
62A	62	10	0.90	0.20	1.42
62	58	10	1.63	0.21	1.40
58	57	12	1.65	0.21	1.40
57	57A	12	2.64	0.22	1.38
57A	56	12	0.97	0.22	1.38
56	51	12	1.15	0.23	1.37
51	50	12	1.34	0.24	1.36
50	49A	12	1.77	0.24	1.37
49A	49	12	1.58	0.24	1.40
49	48	12	1.17	0.24	1.43
48	47	12	5.18	0.23	1.53
47	46	12	2.79	0.23	1.56
46	30	12	1.53	0.23	1.59
30	32	12	1.72	0.23	1.62
32	25	11	1.37	0.23	1.64
25	24	11	2.25	0.23	1.71
24	23	11	2.56	0.25	1.76
23	22	11	3.26	0.28	1.81
22	21	11	2.67	0.33	1.91
21	9	11	2.13	0.35	1.95
9	8	11	2.79	0.36	1.97
8	8A	11	3.22	0.38	2.01
8A	7	11	1.69	0.42	2.09
7	6	11	4.20	0.47	2.19
6	5	15	4.09	1.06	5.08
5	4	15	5.00	1.06	5.08
4	3	15	3.69	1.06	5.08
3	2	15	11.15	1.06	5.08

Notes:
1. *Highlighted cells indicate upstream metered manhole locations.*
2. *Estimated flows at metered manholes are based on observed flows at the flow meters.*
3. *Estimated flows at non-metered manholes are based on a proportional allocation of flow relative to the length of sewer upstream or between meter locations.*
4. *Red text indicates that estimated flow is at or exceeds theoretical capacity.*
5. *Sewer reach MH 62 to MH 58 consists of two 10-inch sewers.*
6. *Dry weather flows recorded April 25, 2013 through May 7, 2013.*
7. *Maximum wet weather flows recorded June 13-14, 2013.*

TABLE 6. WEST BRANCH - COMPARISON OF ESTIMATED FLOWS TO THEORETICAL CAPACITIES

Manhole Number		Diameter (in)	Theoretical Full Capacity (mgd)	Estimated Maximum Dry Weather Flow (mgd)	Estimated Maximum Wet Weather Flow (mgd)
Upstream	Downstream				
189	188A	12	3.61	0.05	0.64
188A	188	12	3.65	0.06	0.74
188	187	10	3.55	0.07	0.78
187	186	10	2.65	0.09	0.89
186	185A	10	3.97	0.14	0.97
185A	185	10	4.04	0.15	1.04
185	173A	12	2.52	0.17	1.13
173A	173	12	2.82	0.20	1.31
173	172	12	1.65	0.22	1.45
172	170	12	2.81	0.22	1.73
170	169	12	2.68	0.26	1.85
169	167	12	2.47	0.27	1.88
167	166	12	3.64	0.33	2.05
166	165A	12	1.59	0.39	2.23
165A	165		6.43	0.41	2.28
165	128	12	4.15	0.42	2.30
128	127	12	1.69	0.43	2.33
127	127A	12	4.51	0.46	2.43
127A	125	12	3.12	0.47	2.45
125	123A	11	3.12	0.48	2.50
123A	123	11	3.08	0.49	2.54
123	122	11	5.34	0.50	2.57
122	121	11	4.08	0.54	2.63
121	120	11	1.89	0.55	2.68
120	119	11	1.81	0.56	2.72
119	117	11	1.38	0.58	2.78
117	116	11	3.71	0.60	2.84
116	6	11	2.65	0.59	2.89

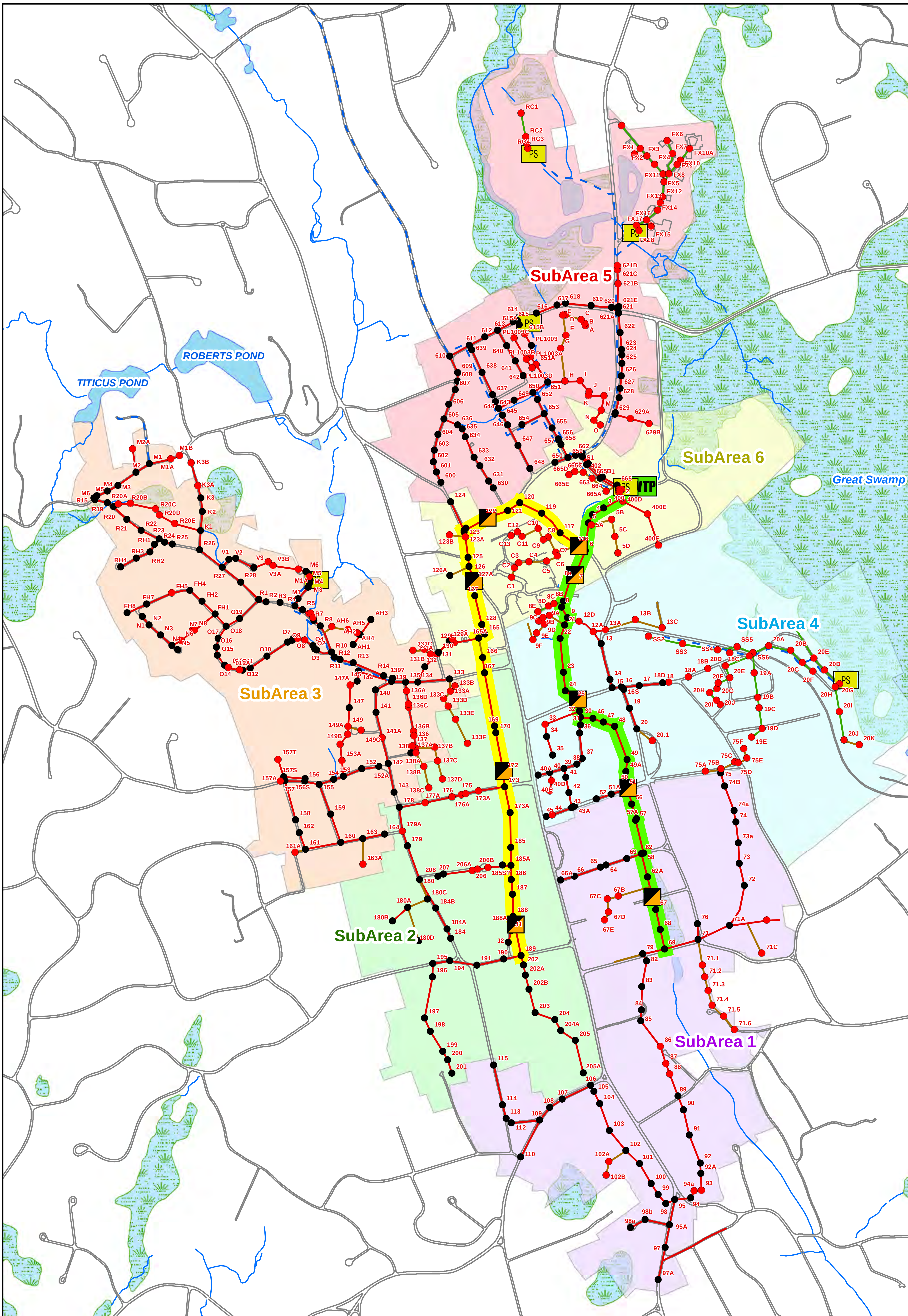
Notes:
1. *Highlighted cells indicate upstream metered manhole locations.*
2. *Estimated flows at metered manholes are based on observed flows at the flow meters.*
3. *Estimated flows at non-metered manholes are based on a proportional allocation of flow relative to the length of sewer upstream or between meter locations.*
4. *Red text indicates that estimated flow is at or exceeds theoretical capacity.*
5. *Due to a metering equipment malfunction estimated flows at metered MH 122 are based on a proportional allocation of flow relative to the length of sewer between metered MH 127A and MH 116.*
6. *Dry weather flows recorded April 25, 2013 through May 7, 2013.*
7. *Maximum wet weather flows recorded June 13-14, 2013.*

TABLE 7. EAST BRANCH - COLLECTION SYSTEM UPGRADES TO ACCOMMODATE ESTIMATED WET WEATHER FLOWS

Manhole Number		Existing		Upgrade	
Upstream	**Downstream**	**Diameter (in)**	**Material**	**Diameter (in)**	**Material**
69	68	12	LNR	15	PVC
68	67	12	LNR	15	PVC
67	67A	10	LNR	15	PVC
67A	62A	10	LNR	15	PVC
62A	62	10	LNR	15	PVC
62	58	10	CIP	15	PVC
58	57	12	LNR	15	PVC
57	57A	12	LNR	15	PVC
57A	56	12	PVC	15	PVC
56	51	12	VCP	15	PVC
51	50	12	VCP	15	PVC
50	49A	12	PVC	15	PVC
49A	49	12	PVC	15	PVC
49	48	12	PVC	15	PVC
48	47	12	VCP	15	PVC
47	46	12	VCP	15	PVC
46	30	12	VCP	15	PVC
30	32	12	VCP	15	PVC
32	25	11	LNR	15	PVC
25	24	11	LNR	15	PVC
24	23	11	LNR	15	PVC
23	22	11	LNR	15	PVC
22	21	11	LNR	15	PVC
21	9	11	LNR	15	PVC
9	8	11	LNR	15	PVC
8	8A	11	LNR	15	PVC
8A	7	11	LNR	15	PVC
7	6	11	LNR	15	PVC
6	5	15	VCP	18	PVC
5	4	15	VCP	18	PVC
4	3	15	VCP	18	PVC
3	2	15	VCP	18	PVC

TABLE 8. WEST BRANCH - COLLECTION SYSTEM UPGRADES TO ACCOMMODATE ESTIMATED WET WEATHER FLOWS

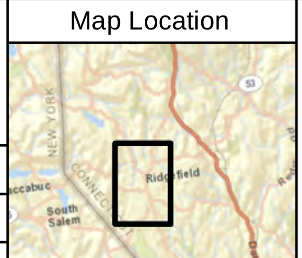
Manhole Number		Existing		Upgrade	
Upstream	Downstream	Diameter (in)	Material	Diameter (in)	Material
189	188A	12	LNR	-	-
188A	188	12	LNR	-	-
188	187	12	LNR	-	-
187	186	12	LNR	-	-
186	185A	12	LNR	-	-
185A	185	12	LNR	-	-
185	173A	12	LNR	-	-
173A	173	12	LNR	-	-
173	172	12	LNR		
172	170	11	LNR	-	-
170	169	11	LNR	-	-
169	167	11	LNR	-	-
167	166	11	LNR	-	-
166	165A	11	LNR	15	PVC
165A	165	18	PVC	15	PVC
165	128	18	PVC	15	PVC
128	127	11	LNR	15	PVC
127	127A	11	LNR	15	PVC
127A	125	11	LNR	15	PVC
125	123A	11	LNR	15	PVC
123A	123	11	LNR	15	PVC
123	122	11	LNR	15	PVC
122	121	12	LNR	15	PVC
121	120	12	LNR	15	PVC
120	119	12	LNR	15	PVC
119	117	12	VCP	15	PVC
117	116	12	VCP	15	PVC
116	6	12	VCP	15	PVC



Drawn: BC 2/13/2014

Approved: AA 2/13/2014

Map Location



Legend

- Manhole
- Manhole - Not Field Located
- PS Pump Station
- 2013 Meter Locations
- Updated Sewer (From Smoke Testing)
- Municipal Sewer
- Private Sewer
- Force Main
- Streams
- West Branch Sewer Manholes Surveyed
- East Branch Sewer Manholes Surveyed

SubAreas

- 1
- 2
- 3
- 4
- 5
- 6

N

0 200 400 800 Feet

FIGURE 1: SEWER DISTRICT 1
FEBRUARY 2014

COLLECTION SYSTEM BOTTLENECK EVALUATION
SURVEYED MANHOLES AND METER LOCATIONS
RIDGEFIELD, CT
PHASE 1 WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 2

G:\Projects\MUNI\60299267RID\Maps\Figure1 Sewer District 1 Updated 20140213.mxd

Figure 2. Meter MH 67A Flow Monitoring Period Hydrograph

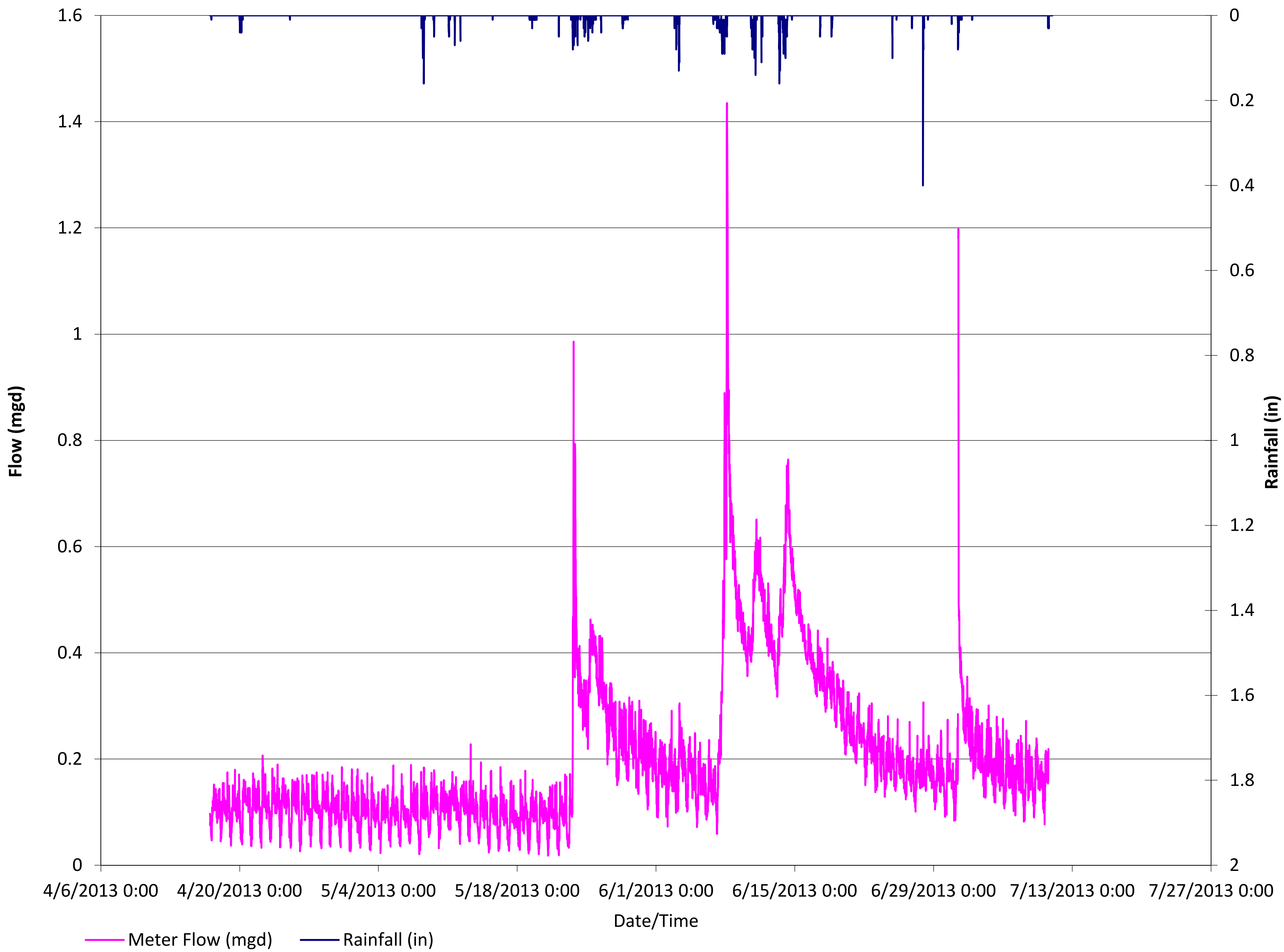


Figure 3. Meter MH 51 Flow Monitoring Period Hydrograph

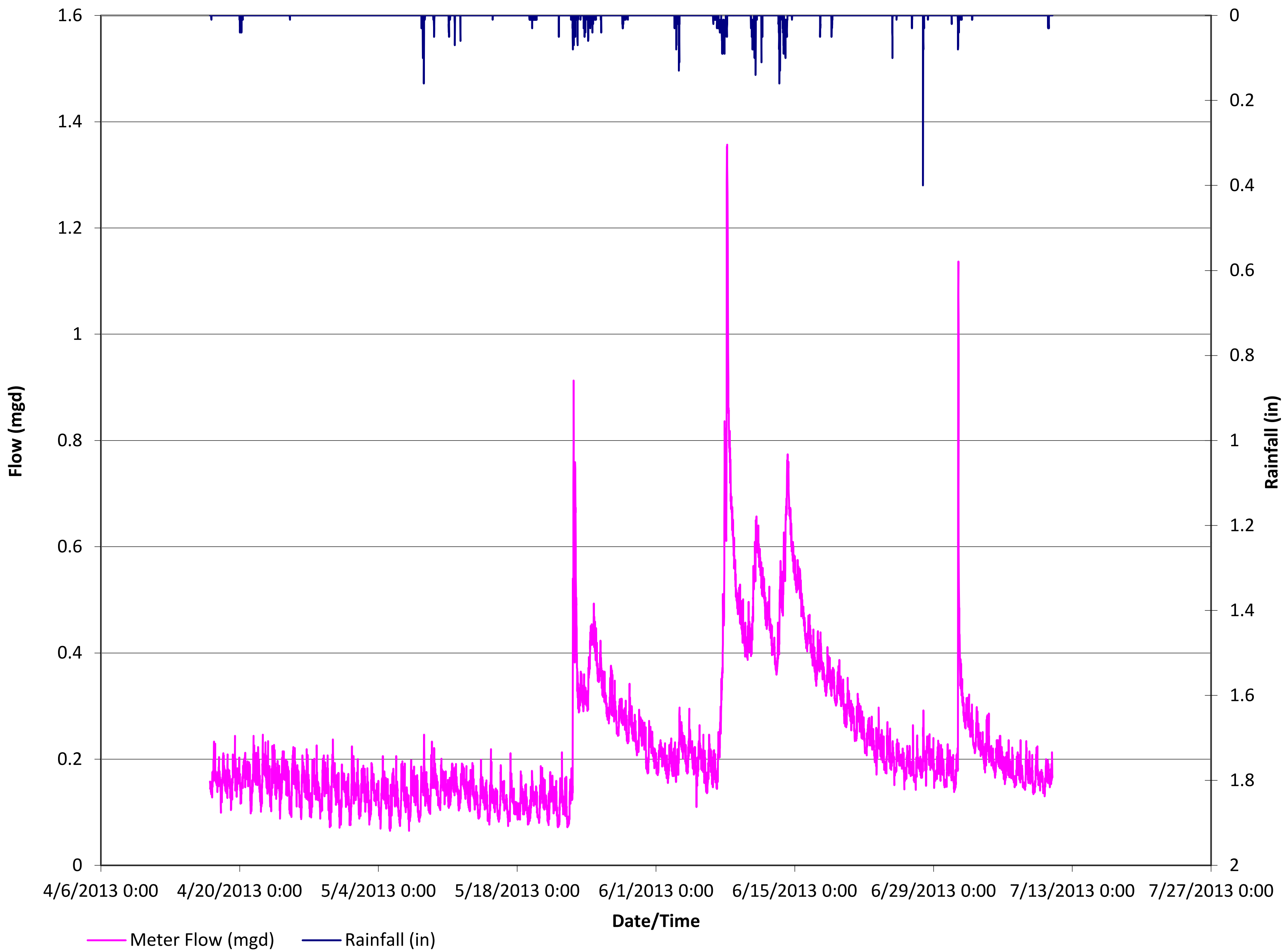


Table 4. Meter MH 25 Flow Monitoring Period Hydrograph

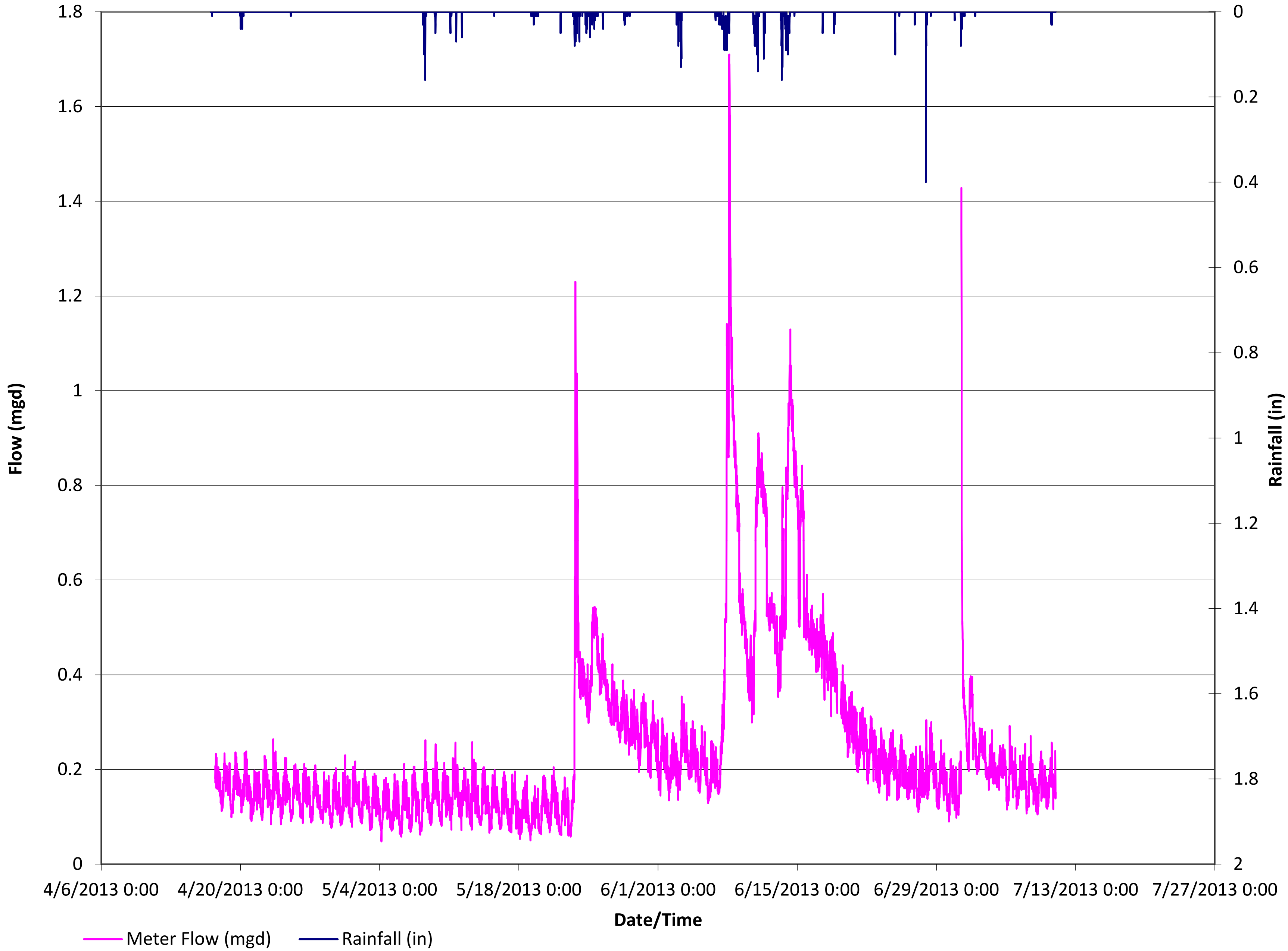


Figure 5. Meter MH 07 Flow Monitoring Period Hydrograph

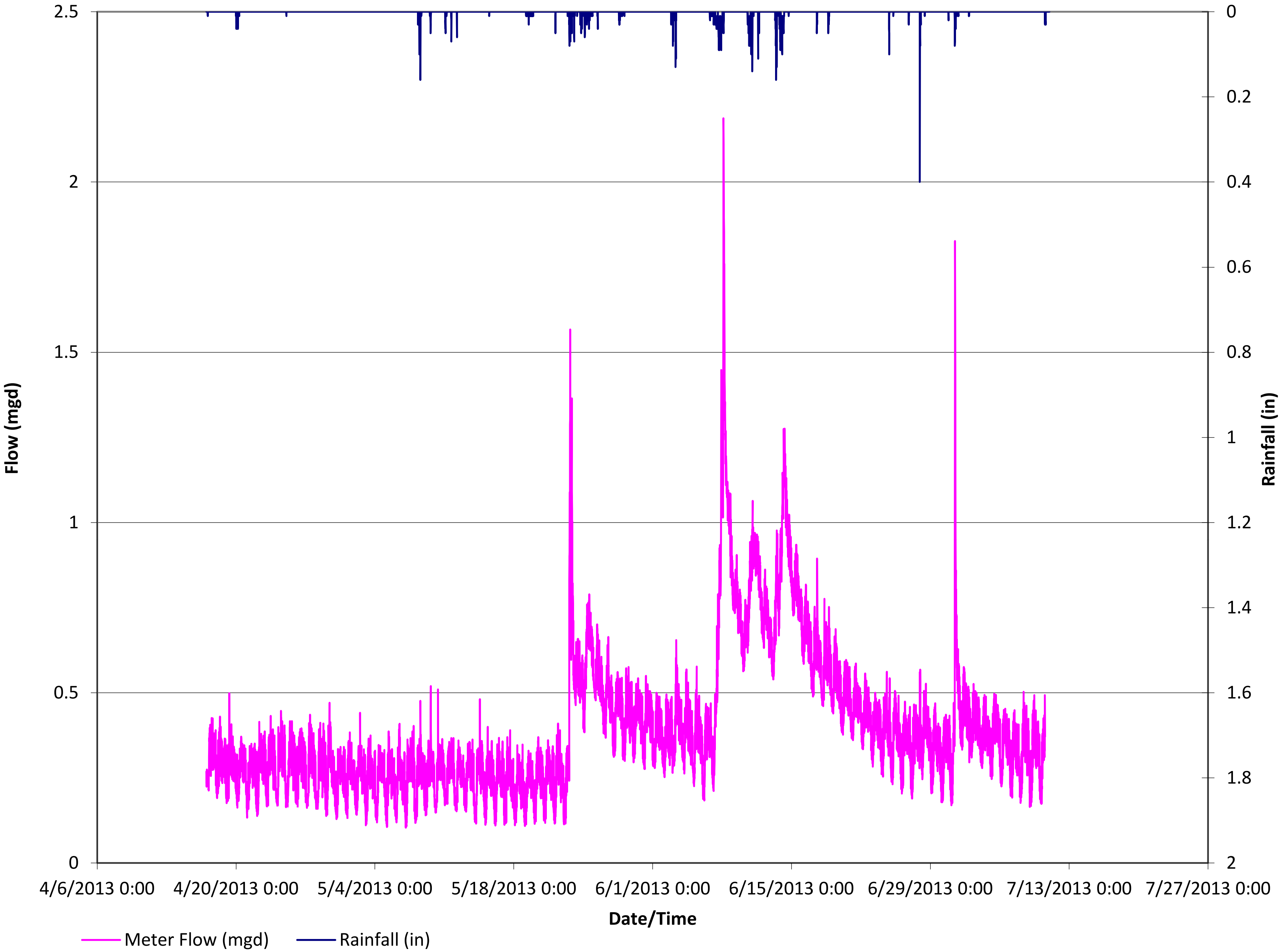


Figure 6. Meter MH 188A Flow Monitoring Period Hydrograph

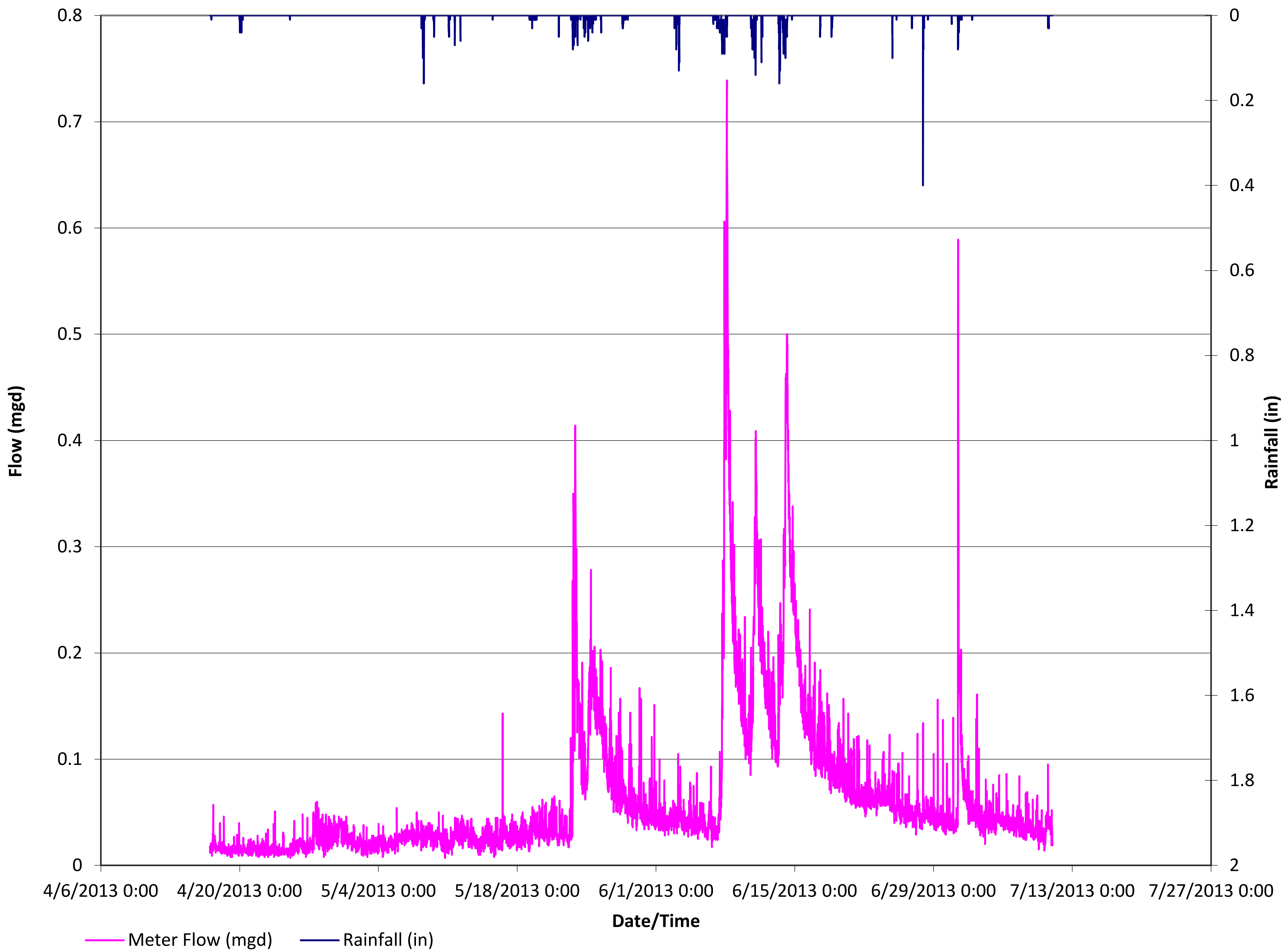


Figure 7. Meter MH 172 Flow Monitoring Period Hydrograph

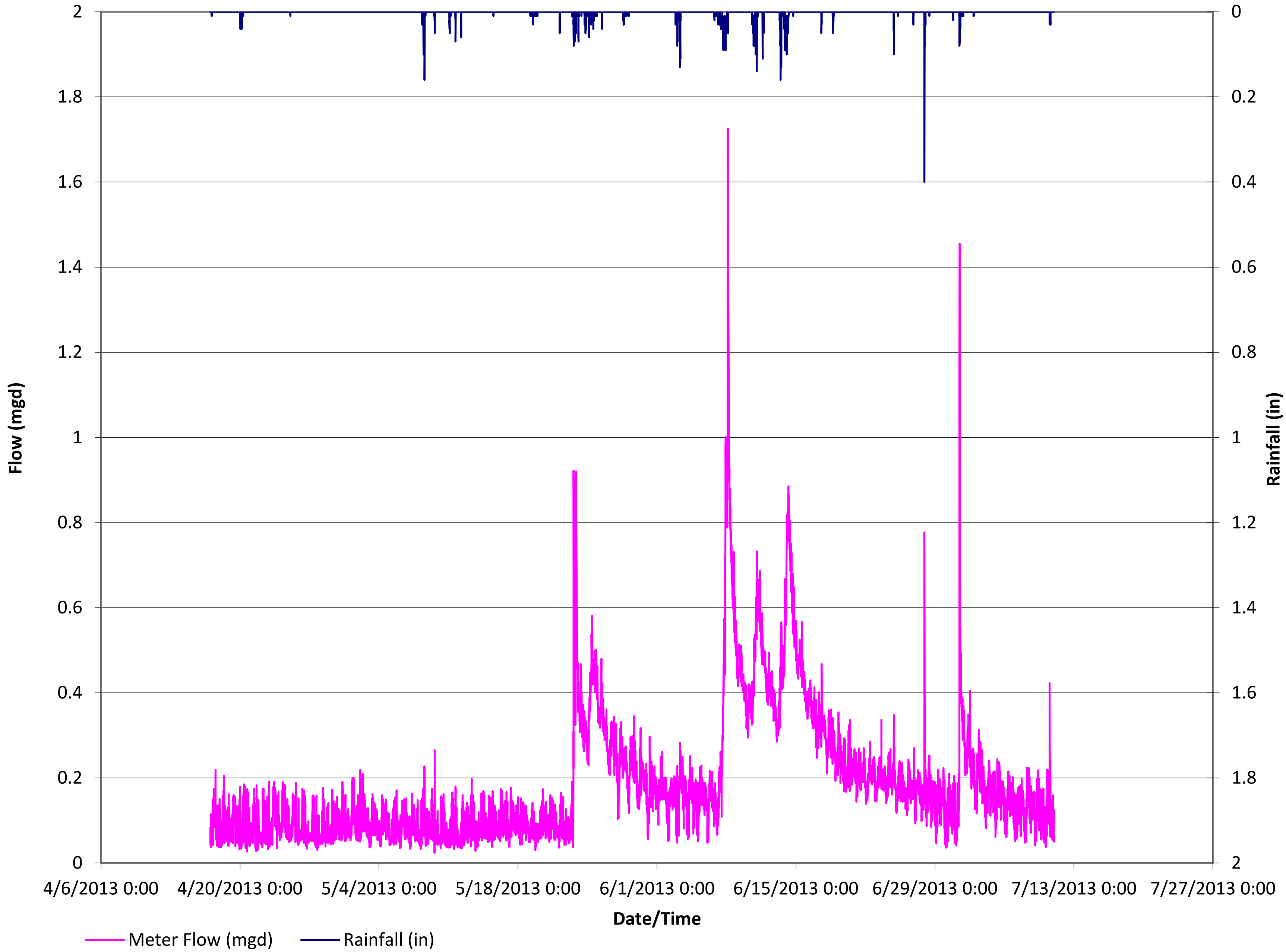


Figure 8. Meter MH 127A Flow Monitoring Period Hydrograph

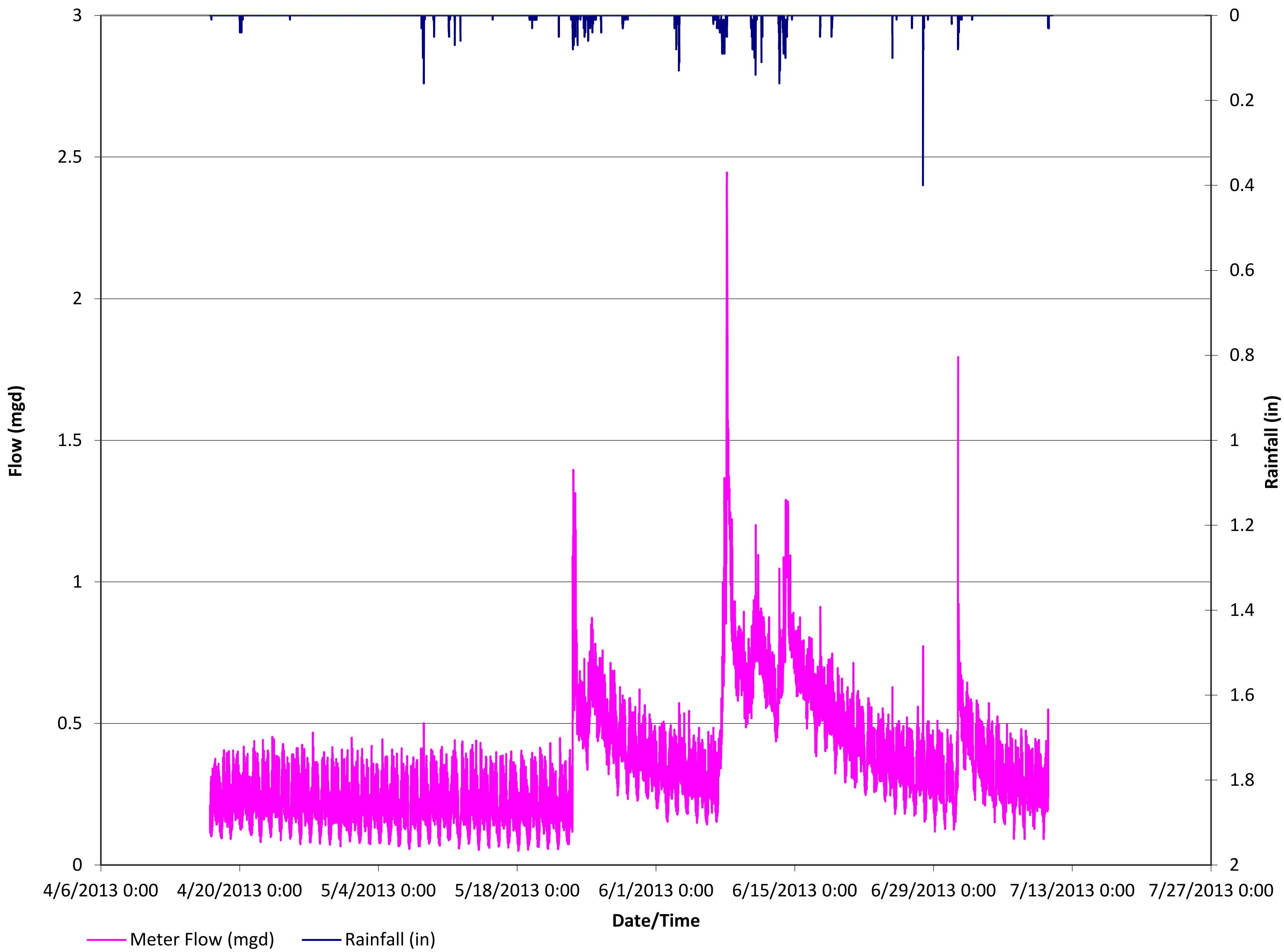


Figure 9. Meter MH 122 Flow Monitoring Period Hydrograph

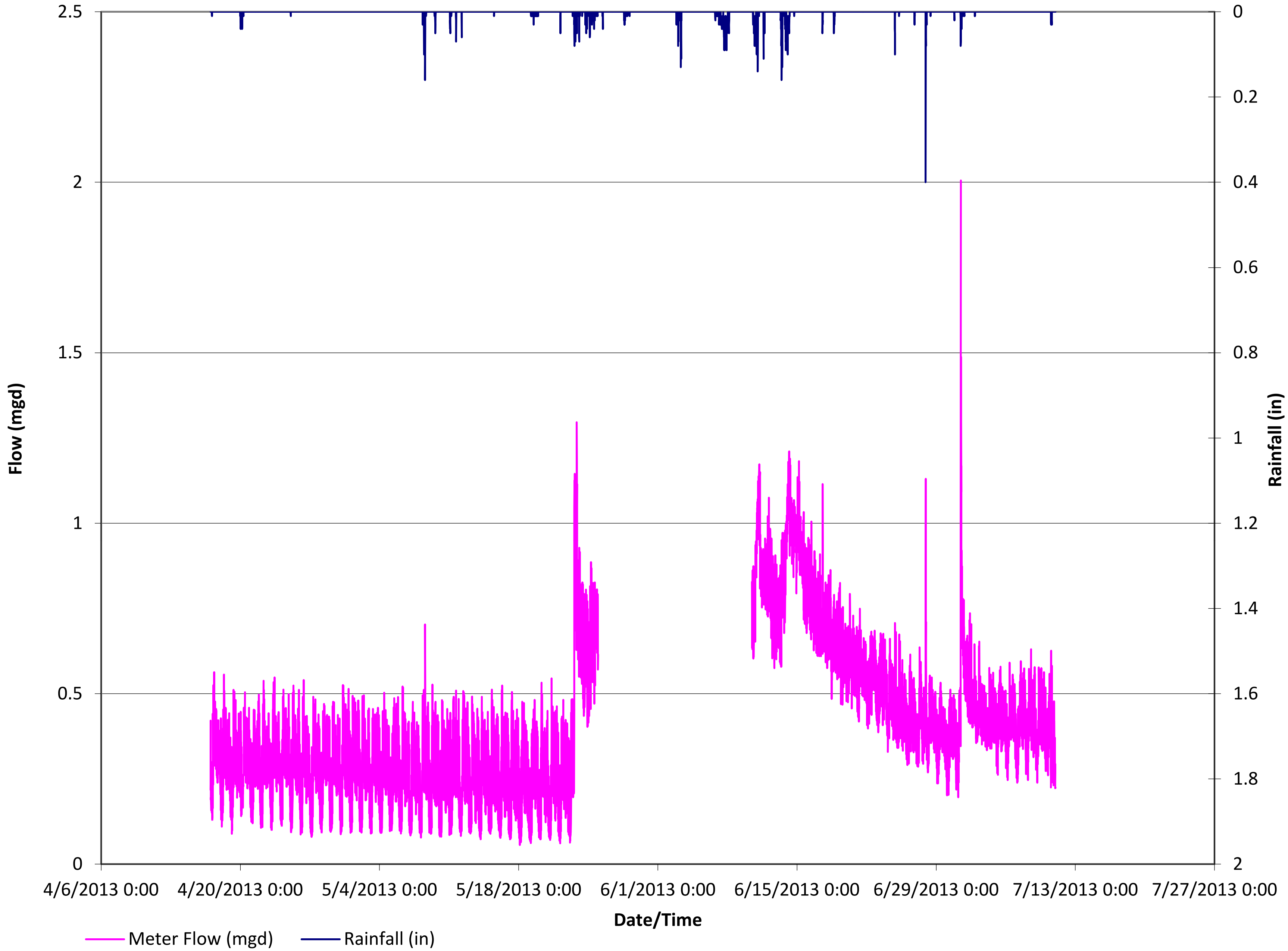


Figure 10. Meter MH 116 Flow Monitoring Period Hydrograph

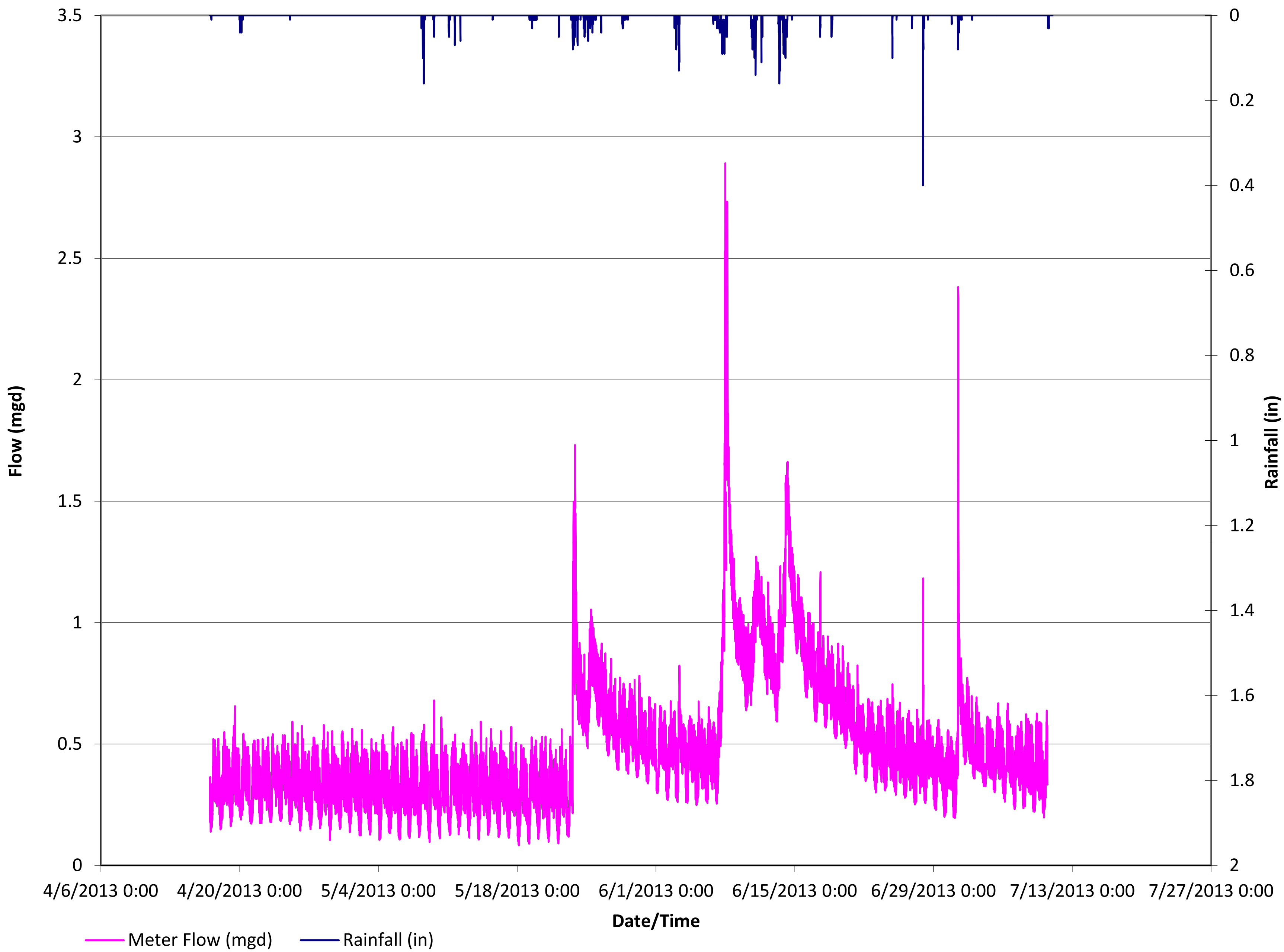


Figure 11. Theoretical Capacity vs Estimated Flows East Branch

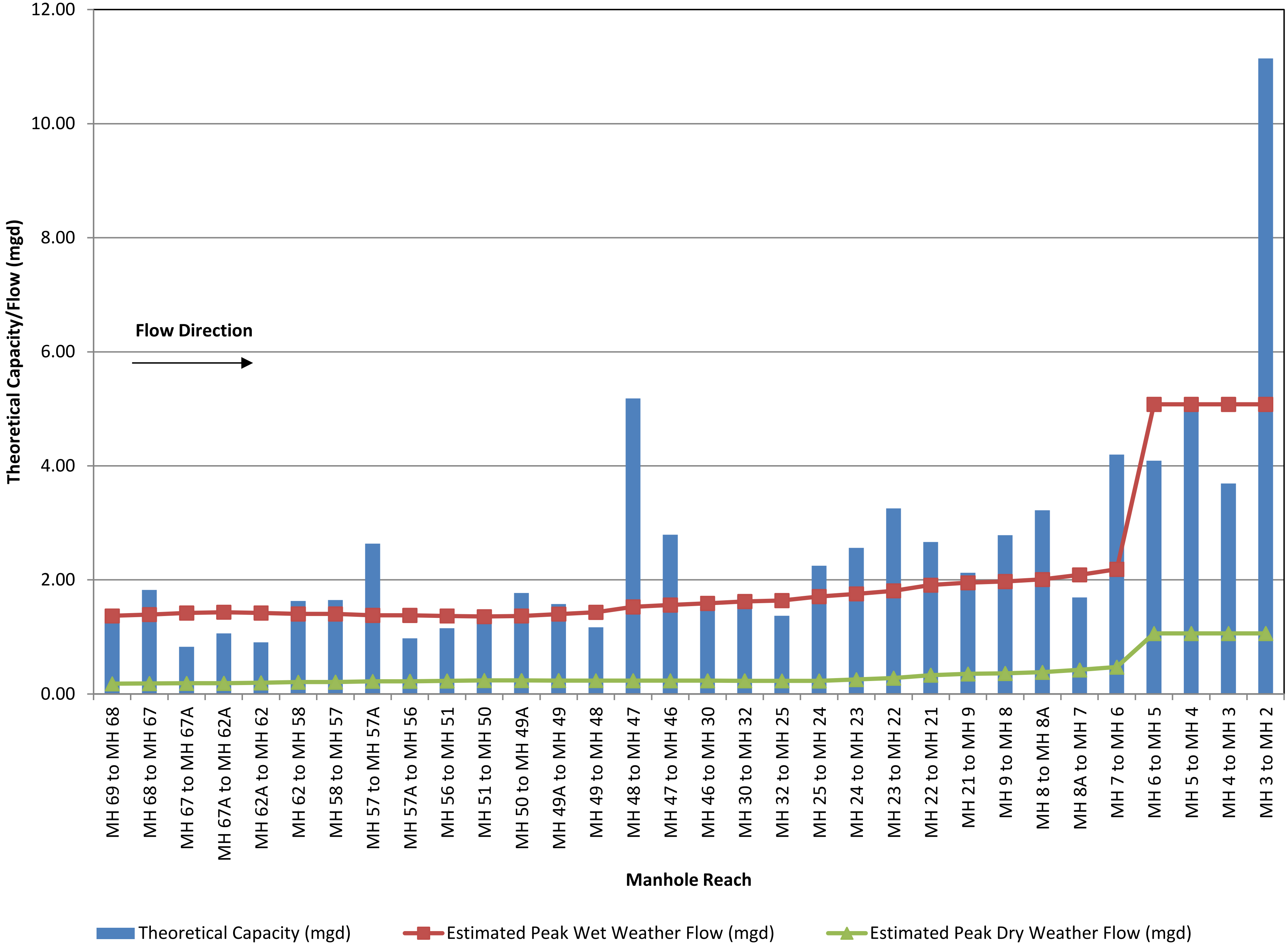
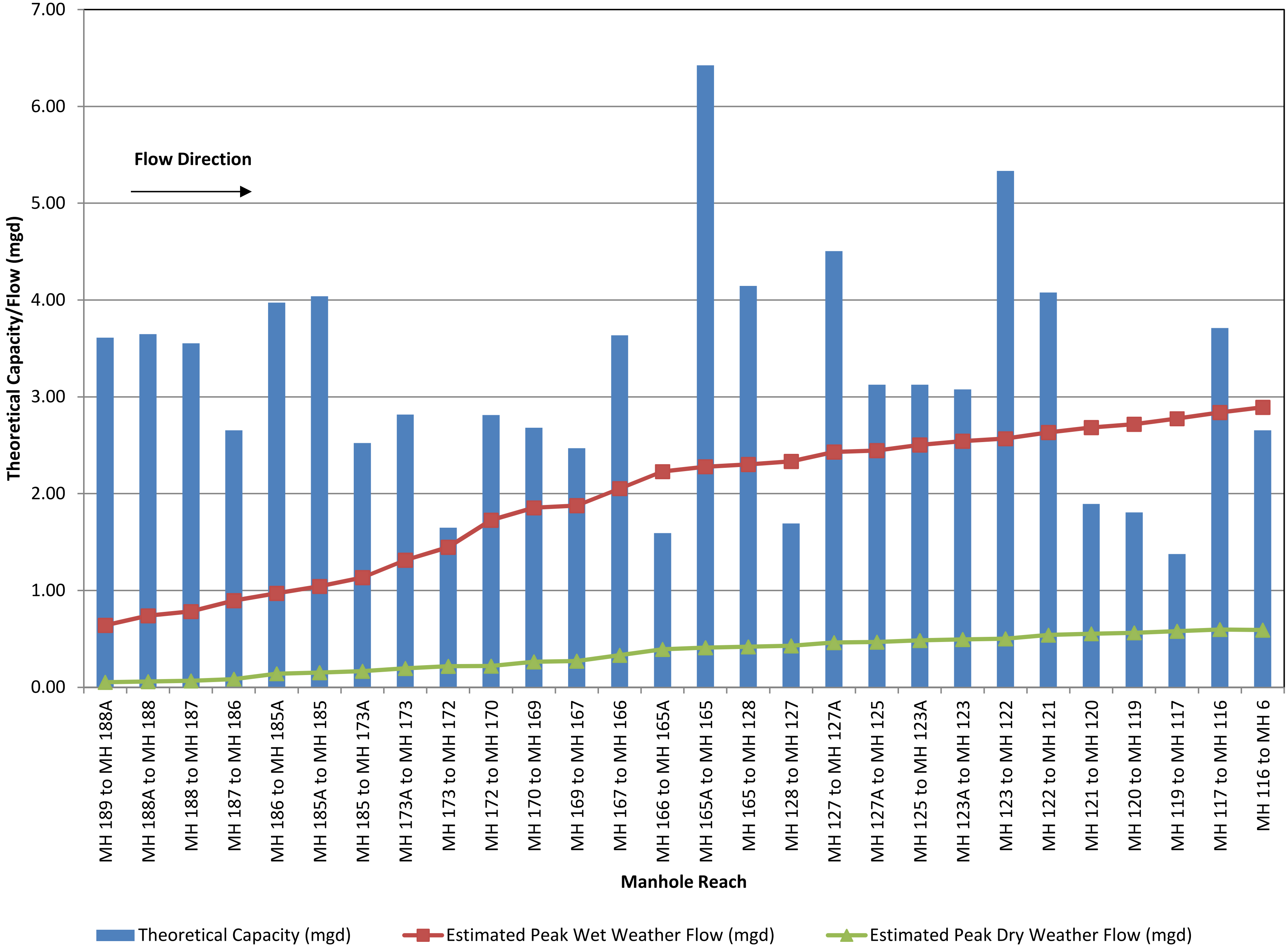
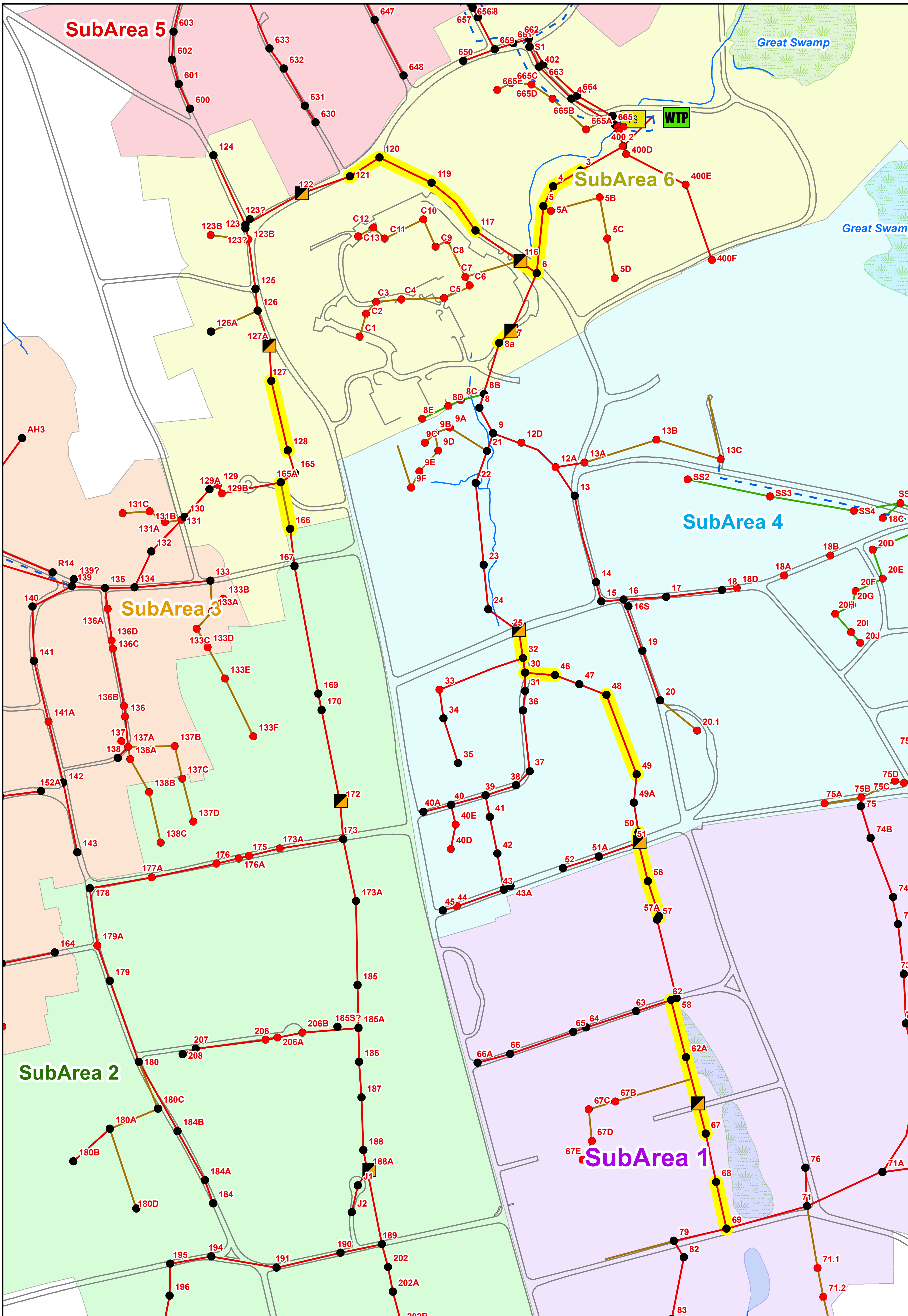


Figure 12. Theoretical Capacity vs Estimated Flows West Branch





AECOM

Drawn: BC 2/13/2014

Approved: AA 2/13/2014

Project #: 60284509

Map Location

Legend

- Manhole
- Manhole - Not Field Located
- Force Main
- Updated Sewer (from Smoke Testing)
- Municipal Sewer
- Private Sewer
- Estimated Flows Exceed Theoretical Capacity
- Road Edge
- Streams

SubAreas: 1, 2, 3, 4, 5, 6

- 2013 Meter Locations
- PS Pump Station

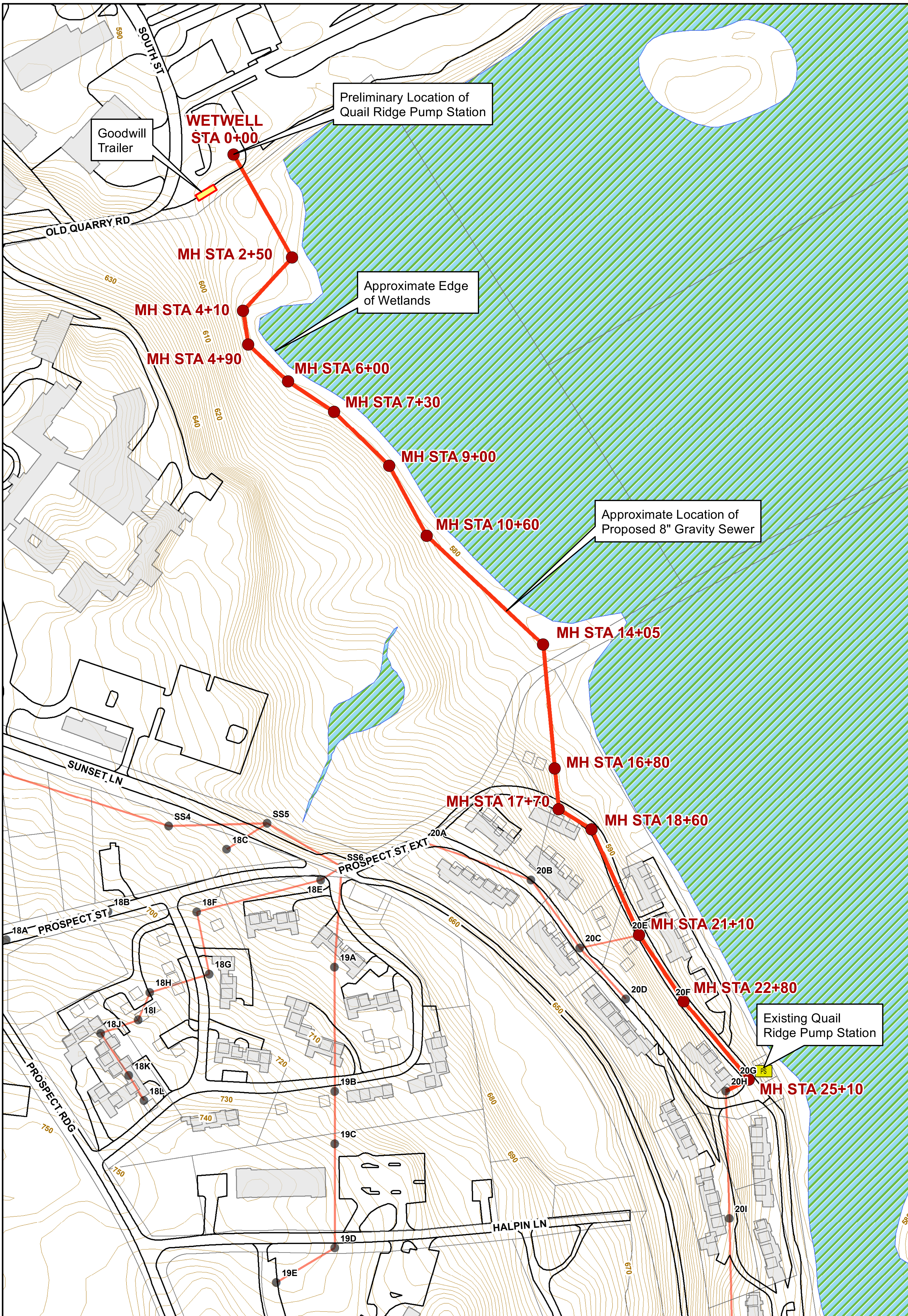
N

0 200 400 800 Feet

FIGURE 13: SEWER DISTRICT 1
FEBRUARY 2014

COLLECTION SYSTEM BOTTLENECK EVALUATION
COLLECTION SYSTEM BOTTLENECKS
RIDGEFIELD, CT
PHASE 1 WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 2

G:\Projects\MUNI\60299267RID\Maps\Figure 13 - Collection System Bottlenecks.mxd

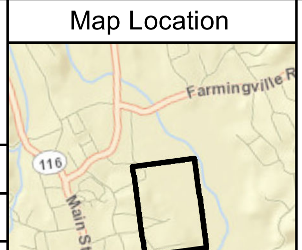


AECOM

Drawn: BC 2/17/2014

Approved: AA 2/17/2014

Map Location



Legend

- PS Existing Pump Station
- Proposed Manholes
- Proposed Sewer
- Manhole - Existing
- Existing Sewer
- Swamps
- Edge of Pavement
- Buildings
- Contour

N

0 100 200 400 Feet

FIGURE 14: SEWER DISTRICT 1
FEBRUARY 2014

COLLECTION SYSTEM BOTTLENECK EVALUATION
QUAIL RIDGE PUMP STATION RELOCATION
QUAIL RIDGE GRAVITY SEWER ALIGNMENT
RIDGEFIELD, CT
PHASE 1 WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 2

G:\Projects\MUNI\60299267RID\Maps\Figure 14 - Quail Ridge Pump Station Relocation.mxd

ATTACHMENT A

ADS ENVIRONMENTAL SERVICES®

UNDERGROUND INTELLIGENCE®
FOR ENHANCED COLLECTION SYSTEM PERFORMANCE and ENGINEERED SOLUTIONS

AECOM

Ridgefield, CT

Flow Monitoring Report

April 17, 2013 – July 10, 2013

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ADS ENVIRONMENTAL SERVICES®
A Division of ADS LLC

60 North Harrison Avenue
Unit 31
Congers, NY 10920
www.adsenv.com

July 31, 2013 - Revised 8/23/13

Alberto Angles, Jr.
AECOM Water
701 Edgewater Drive
Wakefield, MA 01880

Dear Mr. Angles,

ADS is pleased to submit the final report for the Ridgefield, CT Temporary Flow Monitoring Study. Data beginning Wednesday, April 17, 2013 through Wednesday, July 10, 2013 includes depth, velocity and quantity hydrographs as well as scattergraphs, longtables and 15-minute data in Excel format.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, please contact the Project Manager, Michael Armes at 603-625-1212 or me at 845-268-1201 ext. 222.

Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Rodianne Cadet
Data Manager

ADS® LLC

An IDEX Fluid & Metering Business
Accusonic
ADS Environmental Services
Hydra-Stop

Methodology

Introduction

Background

The AECOM Water entered into agreement with ADS Environmental Services to conduct flow monitoring at nine (9) metering locations and one (1) rain gauge in Ridgefield CT. The monitoring period began on Wednesday, April 17, 2013 and ended on Wednesday, July 10, 2013. The objective of this study was to measure depth, velocity, and quantify flows for a 10-week period.

Project Scope

The scope of this study involved using a temporary flow monitor to quantify wastewater flow at the designated locations. Specifically, the study included the following key components:

- Investigate the proposed flow-monitoring site for adequate hydraulic conditions.
- Flow monitor installation.
- Flow monitor confirmations and data collections.
- Flow data analysis.

Equipment and Methodology

Flow Quantification Methods

There are two main equations used to measure open channel flow: the Continuity Equation and the Manning Equation. The Continuity Equation, which is considered the most accurate, can be used if both depth of flow and velocity are available. In cases where velocity measurements are not available or not practical to obtain, the Manning Equation can be used to estimate velocity from the depth data based on certain physical characteristics of the pipe (i.e. the slope and roughness of the pipe being measured). However, the Manning equation assumes uniform, steady flow hydraulic conditions with non-varying roughness, which are typically invalid assumptions in most sanitary sewers. The Continuity Equation was used exclusively for this study.

<u>Continuity Equation</u>

The Continuity Equation states that the flow quantity (Q) is equal to the wetted area (A) multiplied by the average velocity (V) of the flow.

$$Q = A * V$$

This equation is applicable in a variety of conditions including backwater, surcharge, and reverse flow. Most modern flow monitoring equipment, including the ADS Models, measure both depth and velocity and therefore use the Continuity Equation to calculate flow quantities.

Flow Monitoring Equipment

The monitor selected for this project was the ADS FlowShark monitor. This flow monitor is an area velocity flow monitor that uses both the Continuity and Manning's equations to measure flow.

The ADS FlowShark monitor consists of data acquisition sensors and a battery-powered microcomputer. The microcomputer includes a processor unit, data storage, and an on-board clock to control and synchronize the sensor recordings. The monitor was programmed to acquire and store depth of flow and velocity readings at 15-minute intervals.

Three types of data acquisition sensors are available for the FlowShark monitor. The primary depth measurement device is the ADS quad-redundant ultrasonic level sensor. This sensor uses four independent ultrasonic transceivers in pairs to measure the distance from the face of the transceiver housing to the water surface (air range) with up to four transceiver pairs, of the available ones, active at one time. The elapsed time between transmitting and receiving the ultrasonic waves is used to calculate the air range between the sensor and flow surface based on the speed of sound in air. Sensors in the transceiver housing measure temperature, which is used to compensate the ultrasonic signal travel time. The speed of sound will vary with temperature. Since the ultrasonic level sensor is mounted out of the flow, it creates no disturbance to normal flow patterns and does not affect site hydraulics.

Redundant flow depth data can be provided by a pressure depth sensor, and is independent from the ultrasonic level sensor. This sensor uses a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube. Pressure depth sensors are typically used in large size channels and applications where surcharging is anticipated. Its streamlined shape minimizes flow distortion.

Velocity is measured using the ADS V-3 digital Doppler velocity sensor. This sensor measures velocity in the cross-sectional area of flow. An ultrasonic carrier is transmitted upstream into the flow, and is reflected by suspended particles, air bubbles, or organic matter with a frequency shift proportional to the velocity of the reflecting objects. The reflected signal is received by the sensor and processed using digital spectrum analysis to determine the peak flow velocity. Collected peak velocity information is filtered and processed using field confirmation information and proprietary software to determine the average velocity, which is used to calculate flow quantities. The sensor's small profile, measuring 1.5 inches by 1.15 inches by 0.50 inches thick, minimizes the affects on flow patterns and site hydraulics.

Installation

Installation of flow monitoring equipment typically proceeds in four steps. First, the site is investigated for safety and to determine physical and hydraulic suitability for the flow monitoring equipment. Second, the equipment is physically installed at the selected location. Third, the monitor is tested to assure proper operation of the velocity and depth of flow sensors and verify that the monitor clock is operational and synchronized to the master computer clock. Fourth, the depth and velocity sensors are confirmed and line confirmations are performed. A typical flow monitor installation is shown in Figure 2.1.

The installations depicted in Figures 2.1 are typical for circular or oval pipes up to approximately 104-inches in diameter or height. In installations into pipes 42-inches or less in diameter, depth and velocity sensors are mounted on an expandable stainless steel ring and installed one to two pipe diameters upstream of the pipe/manhole connection in the incoming sewer pipe. This reduces the affects of turbulence and backwater caused by the connection. In pipes larger than 42 inches in diameter, a special installation is made using two sections of the ring installed one to two feet upstream of the pipe/manhole connection; one bolted to the crown of the pipe for the depth sensor, and the other bolted to the bottom of the pipe (bolts are usually placed just above the water line) to hold the velocity sensor.

Figure 2.1 Typical Installation

Large Pipe (> 42" Diameter)

Small Pipe (8" to 42" Diameter)

Data Collection, Confirmation, and Quality Assurance
During the monitoring period, field crews visit each monitoring location to retrieve data, verify proper monitor operation, and document field conditions. The following quality assurance steps are taken to assure the integrity of the data collected:

- **Measure Power Supply:** The monitor is powered by a dry cell battery pack. Power levels are recorded and battery packs replaced, if necessary. A separate battery provides back-up power to memory, which allows the primary battery to be replaced without the loss of data.

- **Perform Pipe Line Confirmations and Confirm Depth and Velocity:** Once equipment and sensor installation is accomplished, a member of the field crew descends into the manhole to perform a field measurement of flow rate, depth and velocity to confirm they are in agreement with the monitor. Since the ADS V-3 velocity sensor measures peak velocity in the wetted cross-sectional area of flow, velocity profiles are also taken to develop a relationship between peak and average velocity in lines that meet the hydraulic criteria.

- **Measure Silt Level:** During site confirmation, a member of the field crew descends into the manhole and measures and records the depth of silt at the bottom of the pipe. This data is used to compute the true area of flow.

- **Confirm Monitor Synchronization:** The field crew checks the flow monitor's clock for accuracy.

- **Upload and Review Data:** Data collected by the monitor is uploaded and reviewed for comparison with previous data. All readings are checked for consistency and screened for deviations in the flow patterns, which indicate system anomalies or equipment failure.

Data Analysis and Presentation

Data Analysis

A flow monitor is typically programmed to collect data at either 15-minute or 5-minute intervals throughout the monitoring period. The monitor stores raw data consisting of (1) the air range (distance from sensor to top of flow) for each active ultrasonic depth sensor pair and (2) the peak velocity. If the monitor is equipped with a pressure sensor, then a depth reading from this sensor may also be stored. When the field personnel collects the data, the air range is converted to depth data based on the pipe height and physical offset (distance from the top of the pipe to the surface of the ultrasonic sensor). The data is imported into ADS's proprietary software and is examined by a data analyst to verify its integrity. The data analyst also reviews the daily field reports and site visit records to identify conditions that would affect the collected data.

Velocity profiles and the line confirmation data developed by the field personnel are reviewed by the data analyst to identify inconsistencies and verify data integrity. Velocity profiles are reviewed and an average to peak velocity ratio is calculated for the site. This ratio is used in converting the peak velocity measured by the sensor to the average velocity used in the Continuity equation. The data analyst selects which ultrasonic pairs and/or depth sensor entity will be used to calculate the final depth information. Silt levels present at each site visit are reviewed and representative silt levels established.

Occasionally the velocity sensor's performance may be compromised resulting in invalid readings sporadically during the monitoring period. This is generally caused by excessive debris (silt) blocking the sensor's crystals, shallow flows (~< 2") that may drop below the top of the sensor or very clear flows lacking the particles needed to measure rate. In order to use the Continuity equation to quantify the flow during these periods, a Sr. Analyst and/or Engineer will use the site's historical pipe curve (depth vs. velocity) data along with valid field confirmations to reconstitute and replace the false velocity recordings with expected velocity readings for a given historical depth along the curve.

Selections for the above parameters can be constant or can change during the monitoring period. While the data analysis process is described in a linear manner, it often requires an iterative approach to accurately complete.

Data Presentation

This type of flow monitoring project generates a large volume of data. To facilitate review of the data, results have been provided in graphical and tabular formats. The flow data is presented graphically in the form of scattergraphs and hydrographs. Tables are provided in daily average format. These tables show the flow rate for each day, along with the daily minimum and maximums, the times they were observed, the total daily flow, and total flow for the month (or monitoring period). The following explanation of terms may aid in interpretation of the tables and hydrographs.

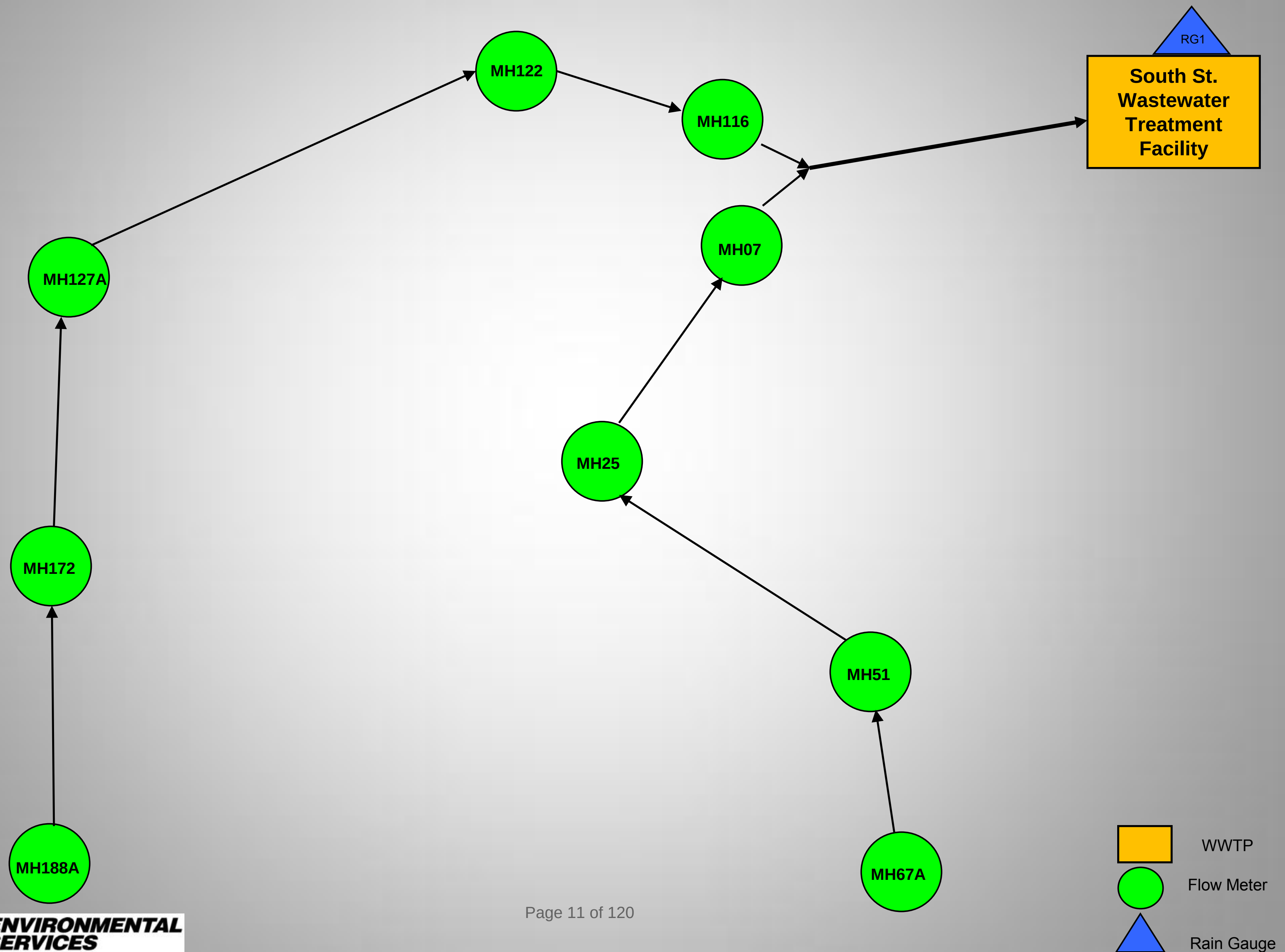
DEPTH - Final calculated depth measurement (in inches)

QUANTITY - Final calculated flow rate (in MGD)

VELOCITY - Final calculated flow velocity (in feet per second)

REPORT TOTAL - Total volume of flow recorded for the indicated time period (in MG)

Ridgefield, CT 2013 Flow Monitoring Study Schematic



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Site Commentary

Site Information

Ridgefield_MH07	
Pipe Dimensions (in.)	Circular (12.00 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH07 indicate this location experienced hydraulic jumps during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. A hydraulic jump develops when flow transitions between supercritical and subcritical conditions, which can arise in any sewer with near or above critical velocity. The jump may be caused by imperfections in the pipe and/or a fixed downstream condition. Standing waves are also likely in flow near critical velocity. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location. However it is possible that during the transition as the jump moves through the meter location, the flow rate calculation based on measured depth and velocity can have momentary error.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.30	3.28	0.391
Minimum	1.84	1.80	0.104
Maximum	8.42	6.08	2.187
Time of Minimum	5/7/2013 4:15 AM	5/8/2013 2:00 AM	5/7/2013 3:00 AM
Time of Maximum	6/8/2013 3:30 AM	6/8/2013 5:15 AM	6/8/2013 3:30 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

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a division of ADS LLC.

Site Report

FM Initials: CL/TS

Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_M07	Meter Type:	FLOWSHARK	Monitor S/N:	16095	Manhole #:	07
Address / Location:	7-10 OLCOTT WAY (CASSAGMO APARTMENTS)			Map Page #:			
				Pipe Height:		12 Inches	
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:		12 Inches	
				Phone Number:			

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 8, 2013	2:15 PM	Manhole Depth:	4 Feet		10 Inches
Site Hydraulics:	GOOD, WAVY FLOW		Manhole Material / Condition:	Brick		Good
			Active Drop Connections?			
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	LINED		Good
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL		
Downstream Manhole:			**Telephone Information:**			
Depth of Flow (Wet Dof):	3.25 +/-	0.38	Access Pole #:	N/A		
Range (Air Dof):	7.25 +/-	0.38	Distance From Manhole:	N/A Feet		
Peak Velocity:	3.75 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 41° 17' 14.78" W 73° 29' 44.79"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.75 PRESS SN 10228 OS 1.50

SCATTERGRAPH REPORT

Ridgefield_MH07

Flow Monitor

Ridgefield_MH07

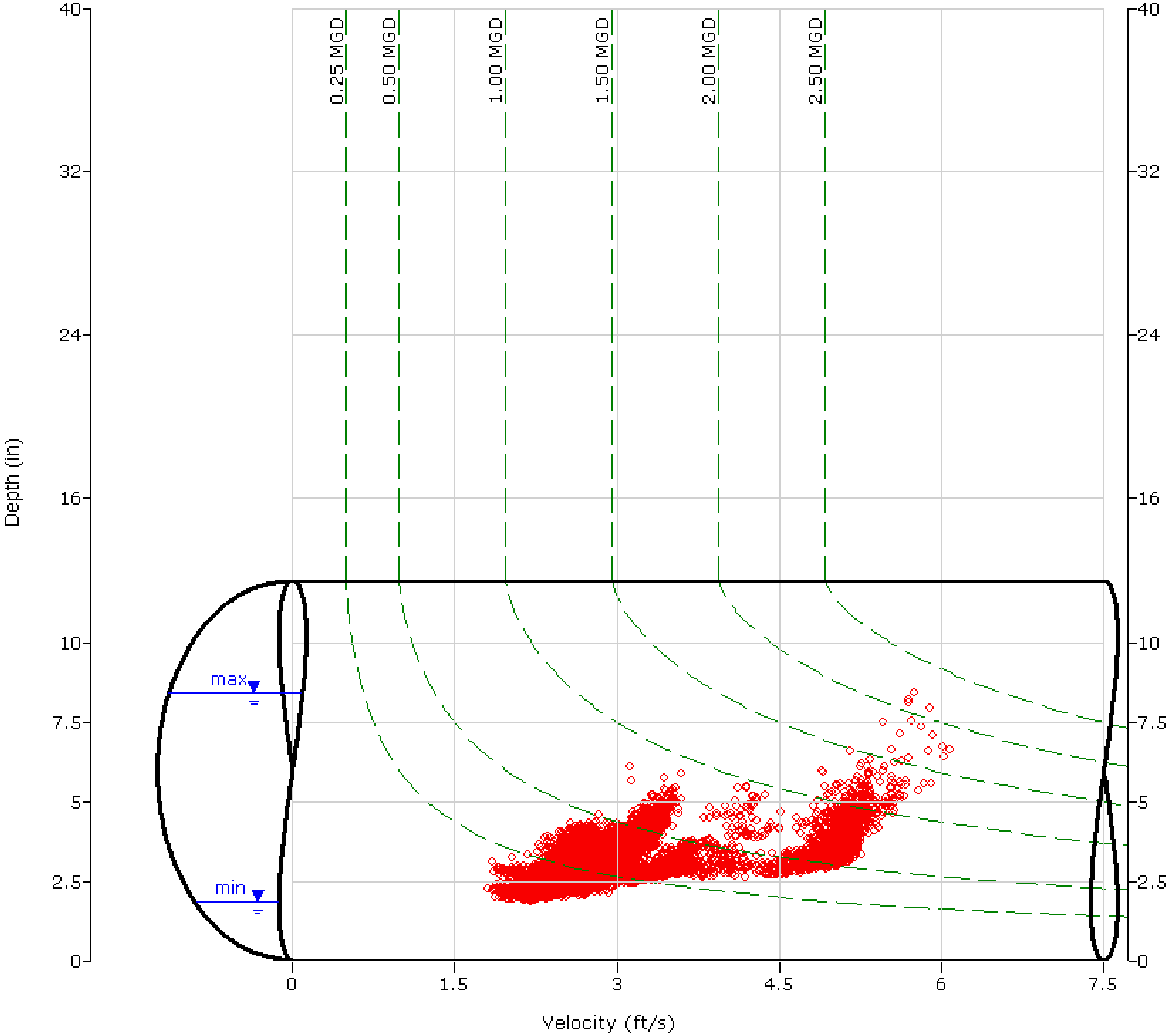
Pipe Height
12.00 in

Report Period

4/17/2013
To
7/10/2013

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



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HYDROGRAPH REPORT

Ridgefield_MH07

Flow Monitor

Ridgefield_MH07

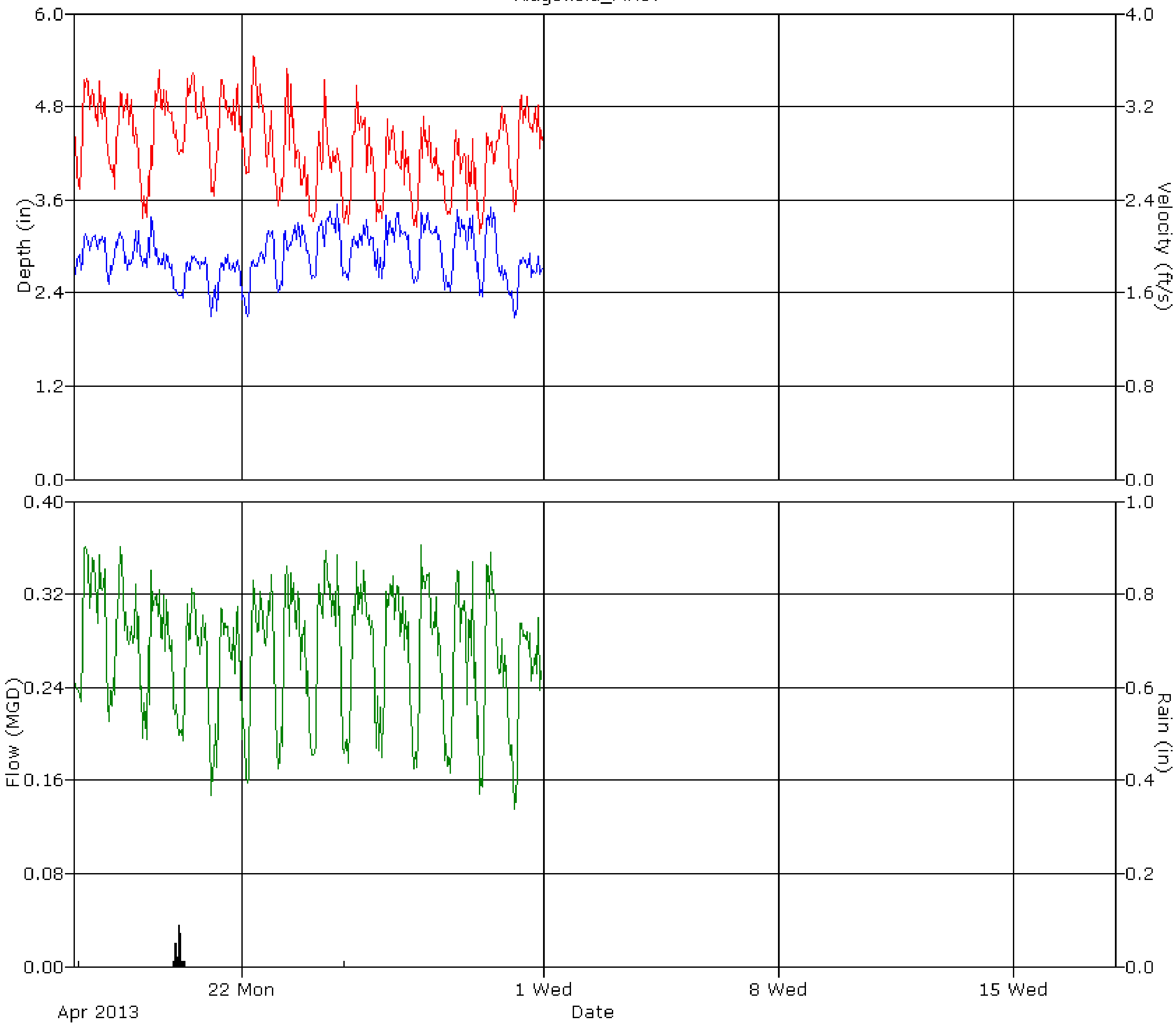
Pipe Height
12.00 in

Report Period

4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

Ridgefield_MH07

Flow Monitor

Ridgefield_MH07

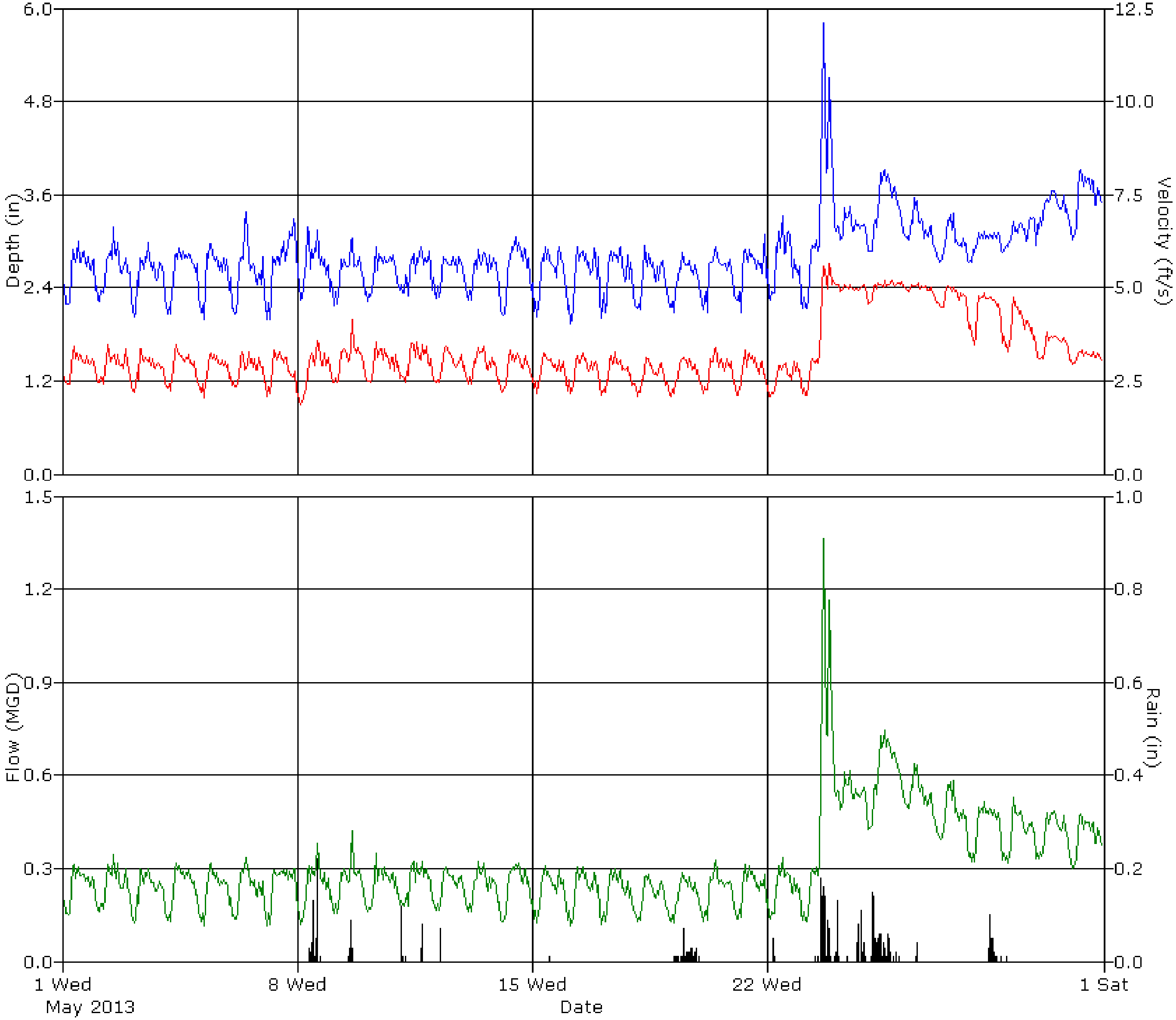
Pipe Height
12.00 in

Report Period

5/1/2013
To
5/31/2013

Legend

Depth
Velocity
Quantity
Rain



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HYDROGRAPH REPORT

Ridgefield_MH07

Flow Monitor

Ridgefield_MH07

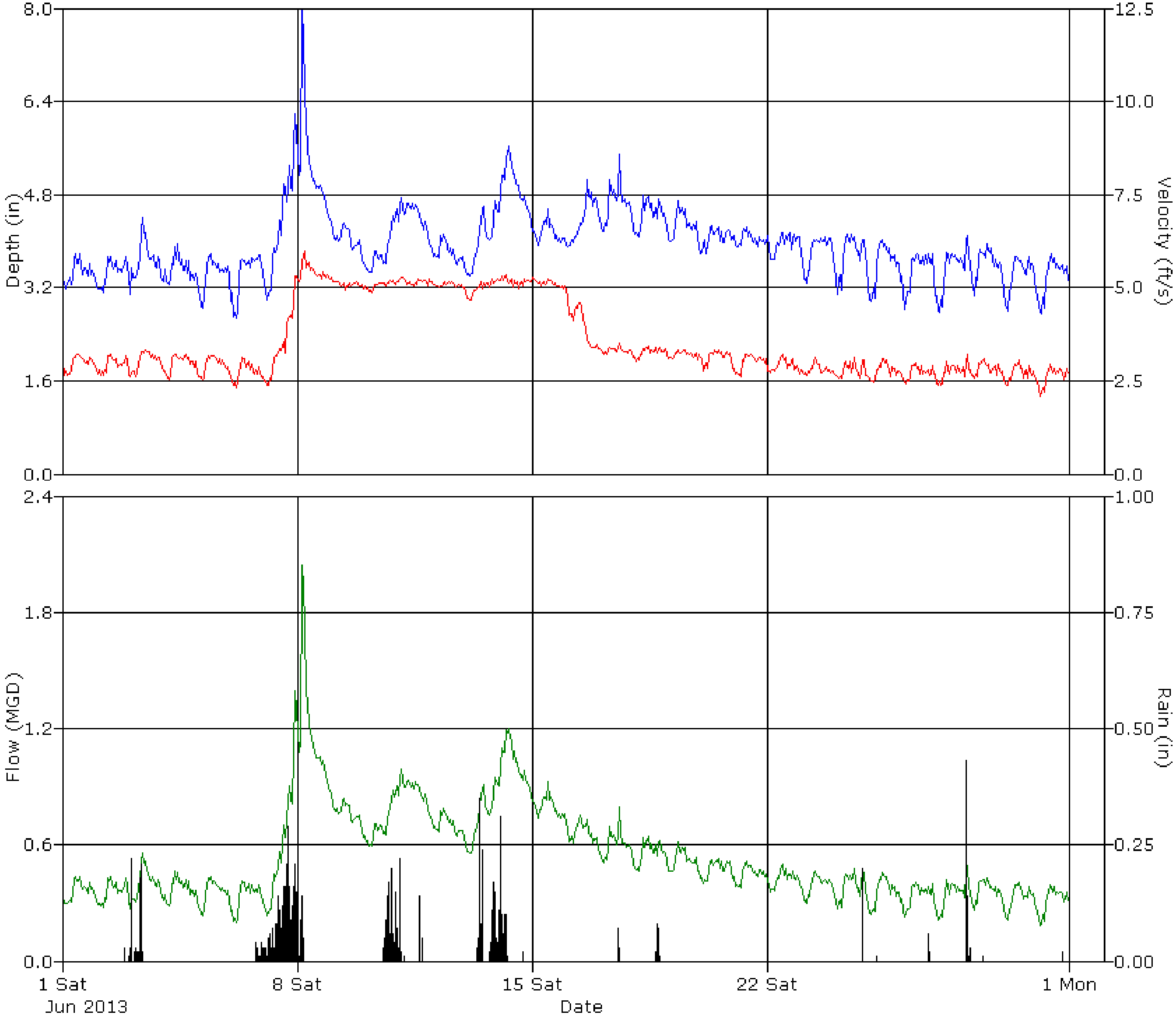
Pipe Height
12.00 in

Report Period

6/1/2013
To
6/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

Ridgefield_MH07

Flow Monitor

Ridgefield_MH07

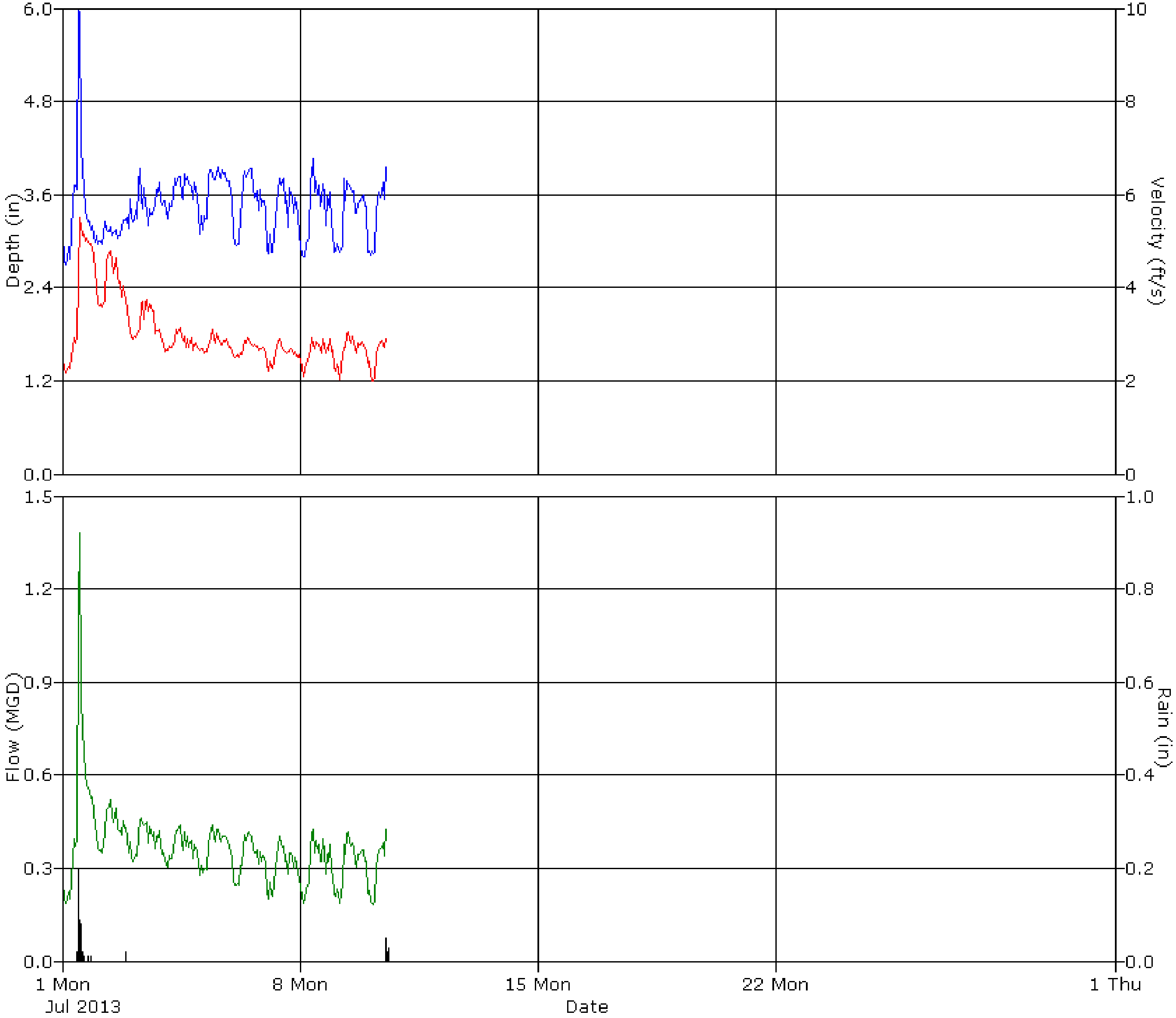
Pipe Height 12.00 in

Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

NE Temps 2013

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH07, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	05:15	2.52	15:15	3.77	2.97	03:15	2.47	13:00	3.66	3.09	05:45	0.213	13:00	0.426	0.305	0.305	0.01
4/18/2013	02:00	2.41	09:00	3.61	2.90	23:45	2.33	13:45	3.63	2.97	02:00	0.191	09:00	0.430	0.283	0.283	
4/19/2013	23:45	2.37	07:45	4.14	2.87	01:15	2.09	13:00	4.01	2.94	01:15	0.176	07:45	0.499	0.275	0.275	0.01
4/20/2013	02:30	2.15	22:45	3.19	2.66	03:00	2.55	10:30	3.71	3.13	03:00	0.163	12:30	0.371	0.265	0.265	0.31
4/21/2013	02:15	2.07	14:00	3.09	2.61	02:30	2.23	09:15	3.90	3.04	02:30	0.133	21:00	0.351	0.251	0.251	
4/22/2013	02:45	1.98	18:30	3.46	2.75	23:00	2.31	08:15	4.08	3.03	02:45	0.138	08:15	0.415	0.269	0.269	
4/23/2013	03:00	2.38	19:45	3.80	2.96	22:45	2.27	11:45	4.42	2.77	02:30	0.166	11:45	0.432	0.273	0.273	
4/24/2013	05:00	2.50	12:45	3.77	3.11	04:00	2.14	11:00	3.92	2.68	05:00	0.170	12:45	0.447	0.284	0.284	
4/25/2013	01:00	2.47	12:45	3.65	2.98	04:45	2.09	09:30	4.09	2.75	01:00	0.164	15:00	0.417	0.272	0.272	0.01
4/26/2013	00:15	2.49	01:30	3.69	3.08	00:30	2.03	19:00	3.81	2.67	05:00	0.167	14:15	0.396	0.279	0.279	
4/27/2013	03:15	2.49	12:45	3.87	3.02	03:15	2.13	10:00	3.70	2.65	03:15	0.162	11:00	0.436	0.271	0.271	
4/28/2013	05:00	2.38	19:15	3.88	2.99	17:00	1.85	11:45	3.19	2.61	01:45	0.159	11:45	0.412	0.262	0.262	
4/29/2013	23:45	2.20	10:00	4.02	2.86	02:00	2.07	21:15	3.47	2.74	02:00	0.138	10:00	0.471	0.257	0.257	
4/30/2013	03:45	2.02	23:15	3.41	2.62	03:00	2.25	06:15	3.56	2.93	03:00	0.129	12:30	0.341	0.244	0.244	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			3.789	0.34
Avg	2.88	2.86	0.271	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH07, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	05:30	2.07	11:00	3.48	2.63	05:30	2.27	08:45	3.65	2.93	05:30	0.133	11:00	0.384	0.245	0.245	
5/2/2013	03:00	2.09	12:15	3.58	2.65	05:00	2.37	08:15	3.60	2.93	04:15	0.142	12:15	0.441	0.247	0.247	
5/3/2013	03:30	1.96	13:15	3.40	2.58	02:00	2.02	07:30	3.62	2.86	02:00	0.111	13:15	0.375	0.234	0.234	
5/4/2013	03:30	2.00	00:30	3.15	2.61	05:00	2.09	09:30	3.59	2.91	05:00	0.119	09:15	0.347	0.242	0.242	
5/5/2013	04:15	1.92	09:00	3.61	2.60	05:00	1.92	10:15	3.57	2.80	05:00	0.106	09:00	0.387	0.232	0.232	
5/6/2013	04:00	1.98	11:30	3.68	2.61	04:15	2.11	07:45	3.64	2.83	04:15	0.119	11:30	0.409	0.235	0.235	
5/7/2013	04:15	1.84	21:45	4.02	2.72	03:00	1.87	07:30	3.63	2.79	03:00	0.104	21:45	0.403	0.247	0.247	
5/8/2013	02:15	2.22	08:15	3.69	2.70	02:00	1.80	10:30	3.65	2.79	02:00	0.118	14:00	0.476	0.244	0.244	0.51
5/9/2013	03:00	2.06	14:45	3.46	2.61	01:30	2.37	15:00	4.58	3.09	02:45	0.140	15:00	0.520	0.257	0.257	0.16
5/10/2013	02:45	2.15	08:45	3.39	2.62	05:00	2.31	08:45	4.33	2.99	02:45	0.148	08:45	0.510	0.249	0.249	
5/11/2013	01:00	2.21	22:00	3.35	2.65	05:00	2.41	19:45	3.70	3.06	01:00	0.170	22:00	0.367	0.257	0.257	0.25
5/12/2013	03:00	2.18	19:00	3.08	2.61	05:15	2.31	10:15	3.64	2.93	05:15	0.152	10:15	0.360	0.242	0.242	0.07
5/13/2013	03:45	2.20	20:15	3.32	2.63	04:45	2.35	13:45	3.62	2.92	04:45	0.151	20:15	0.363	0.244	0.244	
5/14/2013	03:45	1.97	14:00	3.68	2.64	02:15	2.03	14:00	3.64	2.85	05:00	0.116	14:00	0.481	0.242	0.242	
5/15/2013	04:30	1.92	09:00	3.50	2.61	03:30	2.02	12:15	3.53	2.83	03:30	0.112	09:00	0.400	0.235	0.235	0.01
5/16/2013	03:15	1.89	21:00	3.43	2.59	01:45	1.98	12:15	3.64	2.81	03:45	0.110	12:15	0.368	0.231	0.231	
5/17/2013	05:15	1.95	15:00	3.42	2.59	03:15	1.94	11:00	3.62	2.73	01:15	0.112	15:00	0.390	0.226	0.226	
5/18/2013	02:30	1.99	08:30	3.43	2.54	02:45	1.95	11:00	3.54	2.67	02:45	0.111	21:15	0.348	0.213	0.213	
5/19/2013	06:00	1.98	11:30	3.02	2.52	03:00	1.94	11:45	3.52	2.71	03:00	0.109	11:45	0.330	0.214	0.214	0.33
5/20/2013	01:30	1.98	17:15	3.32	2.60	02:30	2.00	10:00	3.65	2.82	02:30	0.115	11:15	0.370	0.234	0.234	
5/21/2013	05:15	2.01	22:30	3.42	2.64	04:00	1.93	11:00	3.67	2.79	04:00	0.118	11:00	0.361	0.235	0.235	
5/22/2013	04:00	2.06	11:15	3.73	2.75	03:00	1.95	12:45	3.42	2.64	03:00	0.116	11:15	0.410	0.237	0.237	0.06
5/23/2013	01:30	1.94	16:30	6.40	3.37	01:15	1.98	20:30	5.90	3.71	01:30	0.114	16:30	1.567	0.506	0.506	0.82
5/24/2013	23:30	2.91	15:15	3.75	3.20	23:45	4.64	21:45	5.26	5.01	23:45	0.452	11:00	0.658	0.545	0.545	0.48
5/25/2013	03:00	2.72	14:45	4.10	3.48	00:30	4.31	12:30	5.24	5.01	03:00	0.384	14:45	0.789	0.617	0.617	0.82
5/26/2013	23:00	2.87	09:45	3.80	3.18	20:45	4.64	00:15	5.22	5.00	23:45	0.444	09:45	0.701	0.541	0.541	0.05
5/27/2013	23:30	2.62	13:00	3.64	2.98	06:15	3.95	11:00	5.20	4.77	23:30	0.343	13:00	0.664	0.472	0.472	
5/28/2013	23:30	2.64	11:15	3.28	3.00	04:45	3.36	11:15	4.99	4.42	02:00	0.312	11:15	0.561	0.441	0.441	0.28
5/29/2013	01:15	2.73	22:00	3.51	3.12	04:30	3.19	08:00	4.89	3.98	04:30	0.300	14:00	0.576	0.419	0.419	0.01
5/30/2013	00:15	2.87	03:30	3.89	3.43	01:30	2.90	08:00	4.07	3.49	02:00	0.296	13:00	0.543	0.419	0.419	
5/31/2013	03:45	2.93	07:45	4.24	3.56	02:30	2.83	07:45	3.43	3.16	04:45	0.276	07:45	0.550	0.402	0.402	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			9.604	3.85
Avg	2.81	3.27	0.310	

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH07, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	00:45	3.01	15:00	4.05	3.46	04:30	2.52	09:15	3.42	2.99	05:00	0.279	09:15	0.500	0.364	0.364	
6/2/2013	04:45	2.89	22:15	4.11	3.46	07:15	2.50	21:00	3.34	2.93	04:45	0.252	09:30	0.495	0.358	0.358	0.04
6/3/2013	00:15	3.03	09:15	4.76	3.67	02:45	2.53	09:15	3.49	3.05	00:15	0.265	09:15	0.655	0.405	0.405	0.75
6/4/2013	22:00	3.10	08:45	4.48	3.52	04:45	2.50	16:00	3.36	2.98	04:45	0.263	10:00	0.569	0.373	0.373	
6/5/2013	04:15	2.82	10:30	4.45	3.43	05:45	2.48	10:30	3.37	2.92	04:15	0.226	10:30	0.577	0.354	0.354	
6/6/2013	02:15	2.63	20:45	3.92	3.44	05:00	2.14	09:00	3.35	2.75	05:00	0.184	20:45	0.469	0.335	0.335	0.16
6/7/2013	02:30	2.88	22:15	6.32	4.30	03:15	2.23	23:15	5.37	3.47	03:30	0.212	22:15	1.448	0.610	0.610	2.62
6/8/2013	23:30	4.26	03:30	8.42	5.32	01:00	4.95	05:15	6.08	5.43	23:30	0.815	03:30	2.187	1.187	1.187	0.36
6/9/2013	23:45	3.50	11:30	4.49	4.04	15:15	4.82	00:00	5.30	5.10	23:00	0.614	11:30	0.905	0.767	0.767	
6/10/2013	05:00	3.37	23:00	4.69	3.84	03:15	4.74	20:00	5.28	5.07	03:15	0.563	23:00	0.961	0.713	0.713	1.06
6/11/2013	23:45	3.80	02:00	5.00	4.44	21:15	4.86	14:15	5.34	5.17	23:45	0.712	02:00	1.064	0.881	0.881	0.47
6/12/2013	19:15	3.50	08:00	4.36	3.81	17:45	4.75	12:15	5.24	5.08	23:00	0.604	08:00	0.862	0.705	0.705	
6/13/2013	05:00	3.32	12:15	4.88	4.01	04:00	4.56	21:15	5.32	5.00	04:15	0.539	22:30	0.983	0.749	0.749	1.33
6/14/2013	23:45	4.19	07:30	5.82	4.95	14:45	4.82	05:15	5.44	5.17	23:45	0.814	07:30	1.276	1.022	1.022	0.81
6/15/2013	04:15	3.86	11:45	4.62	4.15	22:15	4.88	11:30	5.31	5.12	19:45	0.710	11:45	0.935	0.799	0.799	
6/16/2013	01:15	3.80	15:45	5.41	4.37	18:45	3.26	01:30	5.09	4.03	23:30	0.548	10:30	0.818	0.666	0.666	
6/17/2013	02:45	4.14	14:00	5.91	4.64	03:45	3.14	14:00	3.59	3.33	03:45	0.489	14:00	0.894	0.605	0.605	0.10
6/18/2013	03:45	4.07	07:30	5.39	4.46	02:30	3.00	11:45	3.53	3.27	04:30	0.461	07:30	0.776	0.563	0.563	0.18
6/19/2013	23:30	3.67	11:00	5.00	4.27	22:00	3.02	17:00	3.46	3.21	23:30	0.410	11:00	0.687	0.521	0.521	
6/20/2013	04:30	3.59	08:30	4.57	4.06	02:00	2.60	10:30	3.52	3.14	04:30	0.377	12:00	0.597	0.476	0.476	
6/21/2013	03:15	3.80	11:45	4.49	4.04	05:00	2.56	09:45	3.45	3.01	05:00	0.361	11:45	0.586	0.452	0.452	
6/22/2013	03:30	3.51	10:30	4.38	3.98	23:15	2.54	10:00	3.39	2.91	05:00	0.334	10:00	0.557	0.428	0.428	
6/23/2013	04:45	3.22	17:00	4.38	3.83	17:30	2.44	10:45	3.18	2.81	04:45	0.283	10:45	0.500	0.394	0.394	
6/24/2013	05:15	3.01	14:30	4.34	3.77	18:00	2.49	14:30	3.40	2.79	05:15	0.254	14:30	0.562	0.384	0.384	0.20
6/25/2013	03:00	2.93	09:15	4.34	3.59	04:30	2.39	10:15	3.38	2.77	04:30	0.231	10:15	0.506	0.358	0.358	0.01
6/26/2013	03:00	2.74	05:45	4.07	3.51	03:00	2.34	10:30	3.33	2.73	03:00	0.204	10:30	0.474	0.340	0.340	0.08
6/27/2013	02:15	2.73	22:30	4.48	3.51	04:00	2.17	23:30	3.31	2.75	04:00	0.189	23:30	0.568	0.345	0.345	0.57
6/28/2013	04:45	2.91	13:30	4.30	3.63	14:00	2.46	19:15	3.29	2.82	04:45	0.246	13:30	0.527	0.368	0.368	0.05
6/29/2013	04:00	2.76	06:45	4.01	3.43	03:00	2.26	12:00	3.27	2.71	02:30	0.205	11:30	0.469	0.328	0.328	
6/30/2013	04:45	2.72	11:30	3.88	3.37	03:00	1.99	22:15	3.16	2.62	04:15	0.179	13:30	0.436	0.311	0.311	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			16.164	8.81
Avg	3.94	3.57	0.539	

NE Temps 2013

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH07, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	03:45	2.65	11:45	7.52	3.51	03:00	1.87	12:30	5.62	3.82	03:00	0.170	11:45	1.827	0.503	0.503	0.44
7/2/2013	05:00	2.87	19:45	3.54	3.12	22:00	2.68	10:15	4.99	4.06	22:00	0.296	09:00	0.576	0.427	0.427	0.02
7/3/2013	13:15	3.10	10:00	4.22	3.48	23:45	2.64	12:45	3.92	3.25	04:00	0.310	08:45	0.526	0.397	0.397	
7/4/2013	03:00	3.19	10:30	4.10	3.63	05:15	2.46	12:00	3.36	2.82	05:15	0.279	11:00	0.494	0.368	0.368	
7/5/2013	04:15	2.98	07:00	4.21	3.67	04:15	2.51	10:00	3.32	2.80	04:15	0.247	10:30	0.497	0.370	0.370	
7/6/2013	03:45	2.90	14:15	4.10	3.52	08:30	2.36	11:15	3.17	2.69	03:45	0.225	13:30	0.453	0.337	0.337	
7/7/2013	05:45	2.80	21:30	4.12	3.37	06:00	2.10	11:45	3.10	2.58	06:00	0.192	11:45	0.449	0.306	0.306	
7/8/2013	02:15	2.71	09:30	4.57	3.39	02:30	1.92	11:30	3.24	2.62	02:15	0.177	09:30	0.503	0.314	0.314	
7/9/2013	03:30	2.66	11:45	4.04	3.38	00:45	1.92	10:15	3.31	2.65	00:45	0.165	11:45	0.493	0.317	0.317	
7/10/2013	01:30	2.69	13:00	4.13	3.27	03:15	1.90	13:00	3.19	2.49	04:45	0.174	13:00	0.493	0.286	0.161	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			3.500	0.56
Avg	3.44	3.00	0.366	

Site Commentary

Site Information

Ridgefield_MH116	
Pipe Dimensions (in.)	Circular (12.25 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph for Ridgefield_MH116 indicate this location functioned mostly in free-flow conditions for the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. The scattergraph also show the rain induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.55	6.06	0.477
Minimum	1.37	2.28	0.083
Maximum	89.19	8.62	2.892
Time of Minimum	5/23/2013 2:45 AM	5/18/2013 4:00 AM	5/18/2013 4:00 AM
Time of Maximum	6/8/2013 3:30 AM	6/11/2013 3:00 AM	6/7/2013 11:45 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC.

Site Report

FM Initials: CL/TS

Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_M116	Meter Type:	FLOWSHARK	Monitor S/N:	19063	Manhole #:	116
Address / Location:	80 GROVE STREET (ACROSS STREET IN GRASS)			Map Page #:			
				Pipe Height:	12.25 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	12.25 Inches		
				Phone Number:			

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 9, 2013	4:00 PM	Manhole Depth:	12 Feet		
Site Hydraulics:	FAST FLOW		Manhole Material / Condition:	Brick		Good
			Active Drop Connections?			
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	VCP		Good
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL		
Downstream Manhole:			**Telephone Information:**			
Depth of Flow (Wet Dof):	1.75 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	8.75 +/- 0.5		Distance From Manhole:	N/A Feet		
Peak Velocity:	4.75 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

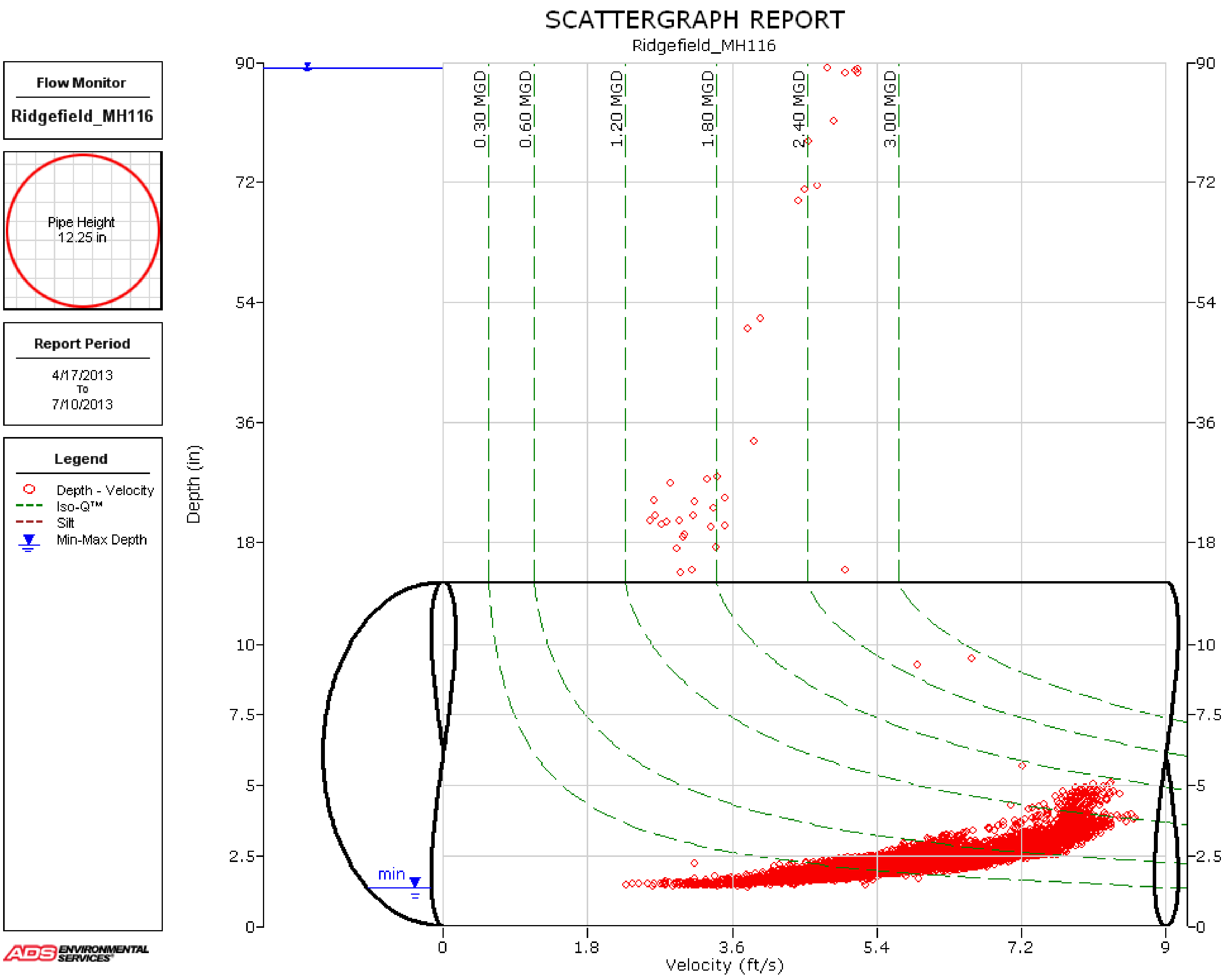
N 41° 17' 17.93" W 73° 29' 43.76"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.63 PRESS S/N 10175

QF 609001 Rev B0 06/17/2002



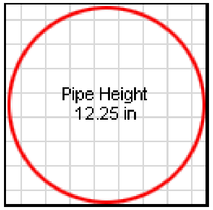
SCATTERGRAPH REPORT
Ridgefield_MH116
Flow Monitor
Ridgefield_MH116
Pipe Height
12.25 in
Report Period
4/17/2013
To
7/10/2013
Legend
Depth - Velocity
Iso-Q™
Silt
Min-Max Depth
0.30 MGD
0.60 MGD
1.20 MGD
1.80 MGD
2.40 MGD
3.00 MGD
min
Depth (in)
Velocity (ft/s)
90
72
54
36
18
10
7.5
5
2.5
0
1.8
3.6
5.4
7.2
9
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH116

Flow Monitor

Ridgefield_MH116



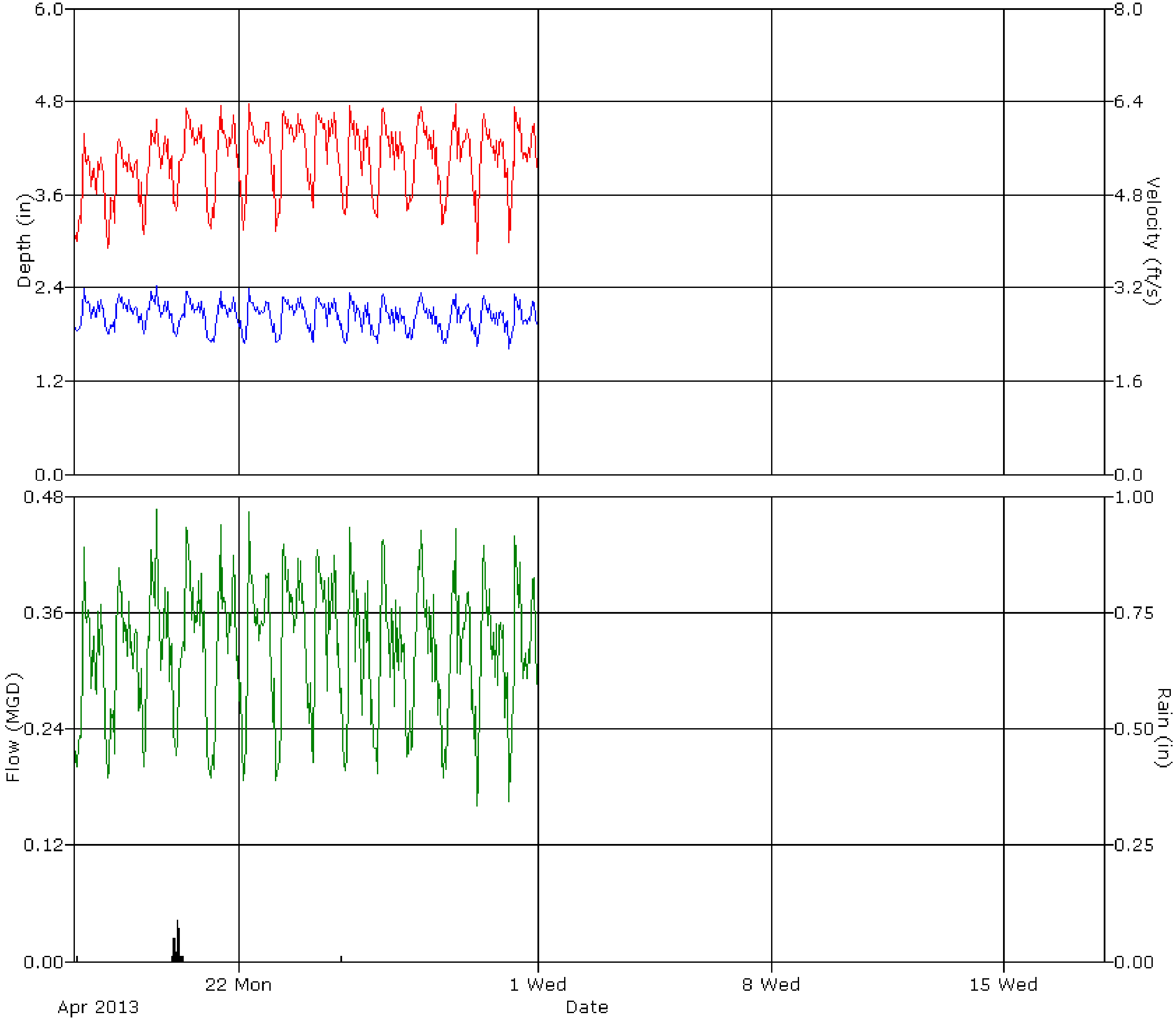
Report Period

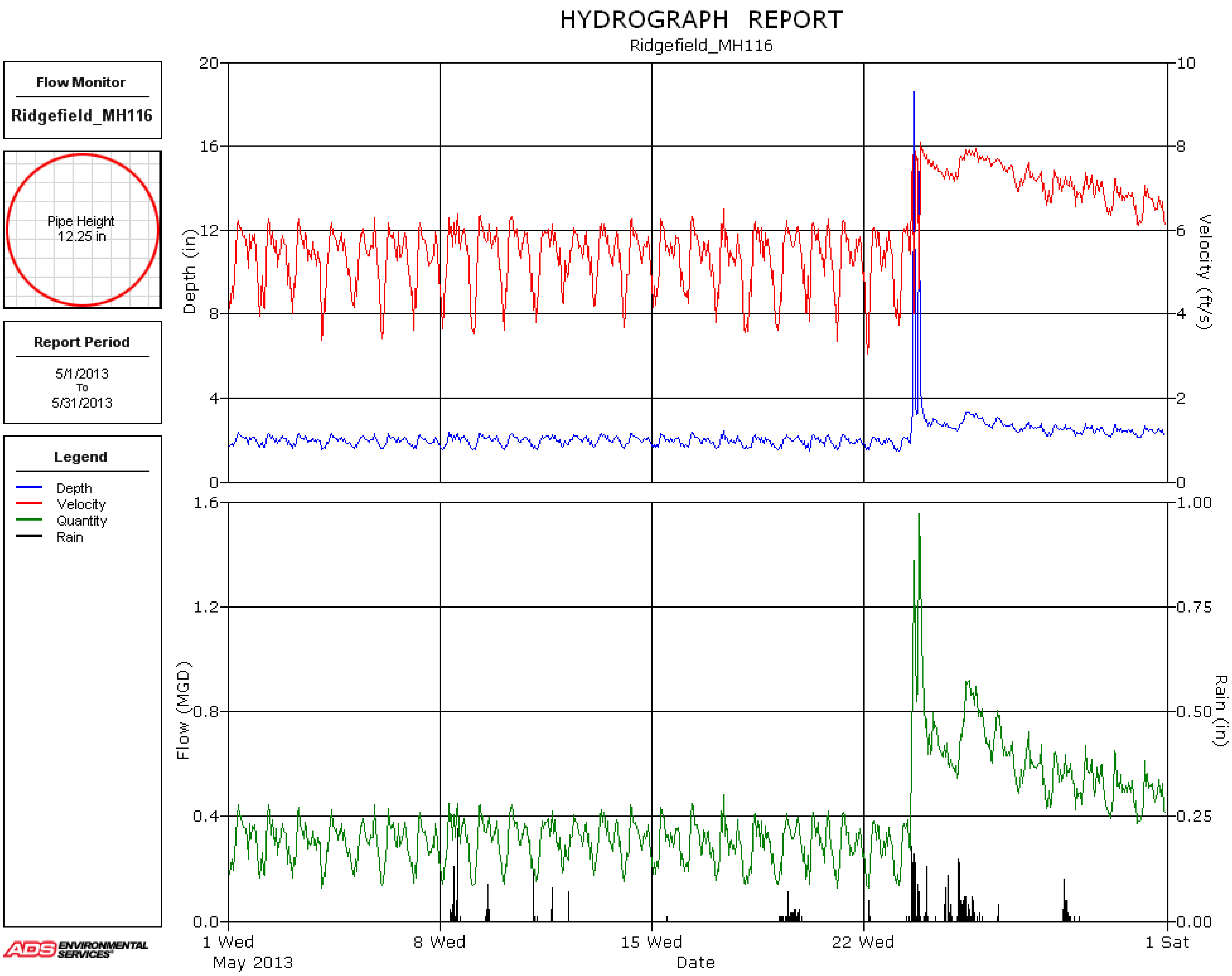
4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

ADS ENVIRONMENTAL SERVICES




HYDROGRAPH REPORT
Ridgefield_MH116
Flow Monitor
Ridgefield_MH116
Pipe Height
12.25 in
Report Period
5/1/2013
To
5/31/2013
Legend
Depth
Velocity
Quantity
Rain
Depth (in)
Velocity (ft/s)
Flow (MGD)
Rain (in)
1 Wed
May 2013
8 Wed
15 Wed
22 Wed
1 Sat
Date
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH116

Flow Monitor

Ridgefield_MH116

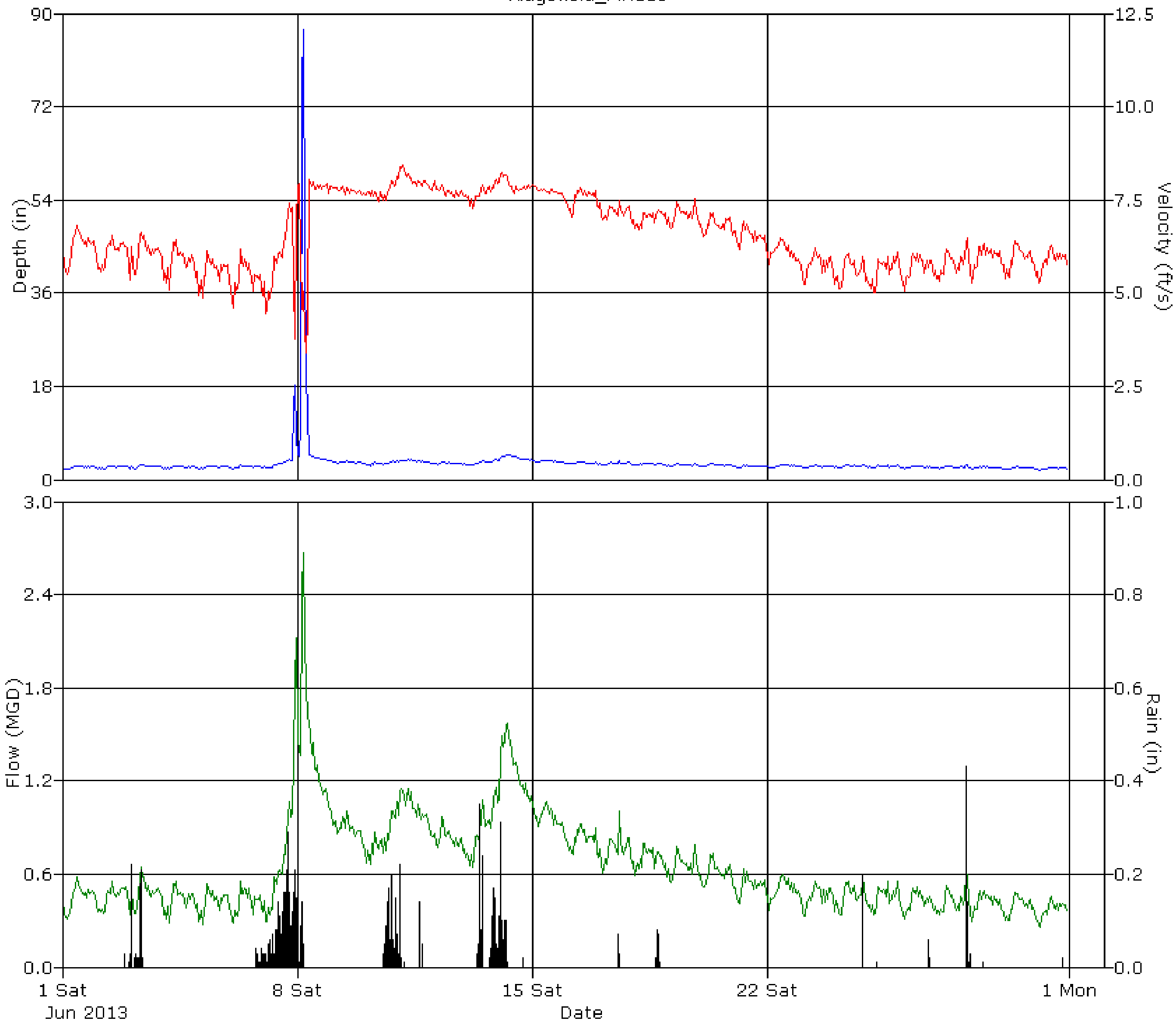
Pipe Height
12.25 in

Report Period

6/1/2013
To
6/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH116

Flow Monitor

Ridgefield_MH116

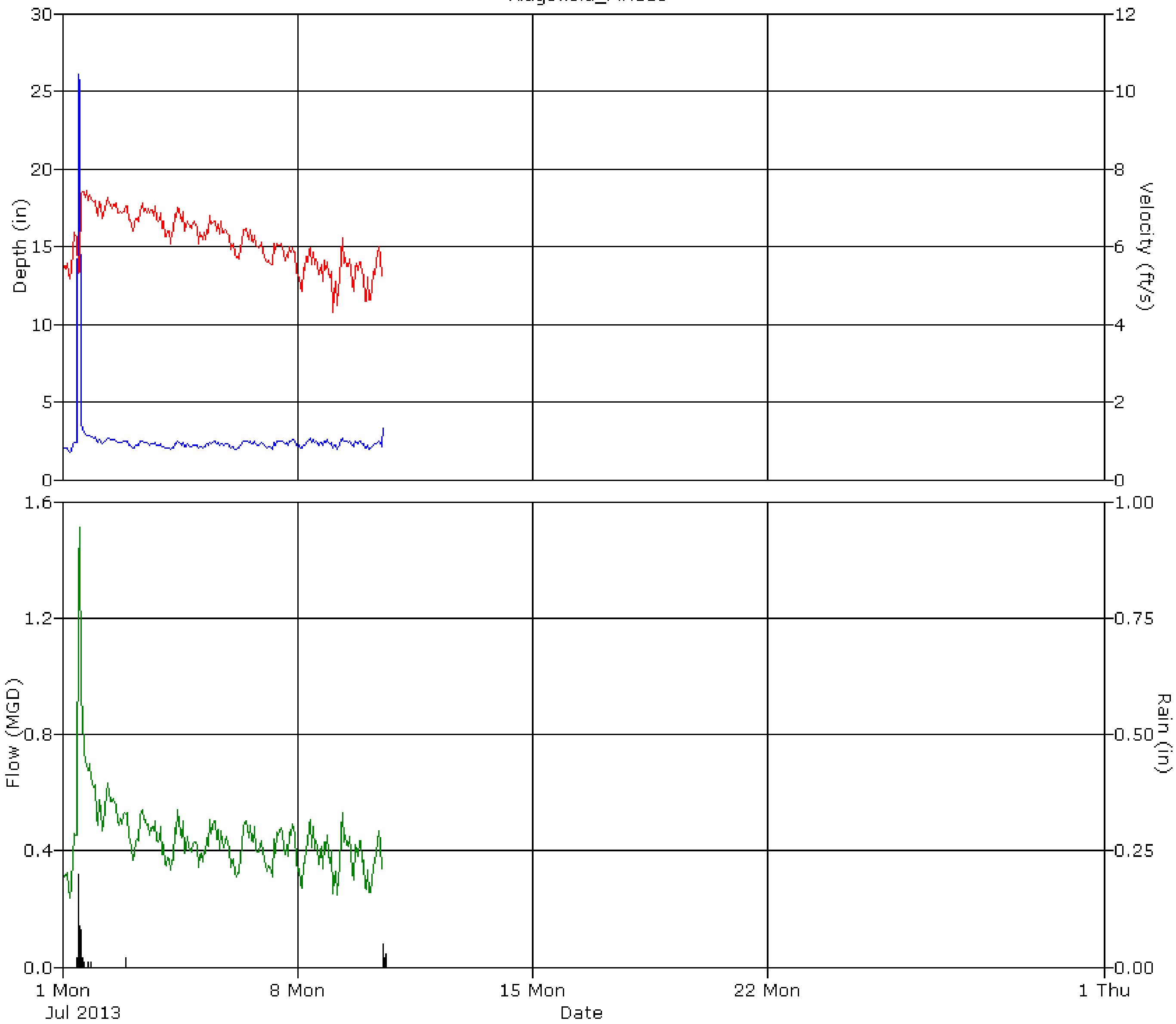
Pipe Height
12.25 in

Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH116, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	04:15	1.67	08:00	2.67	2.07	01:45	3.13	20:15	6.23	4.92	01:45	0.139	20:15	0.522	0.298	0.298	0.01
4/18/2013	02:30	1.63	10:30	2.67	2.08	01:30	3.48	10:30	6.45	5.07	01:30	0.148	10:30	0.549	0.309	0.309	
4/19/2013	03:30	1.74	12:30	2.88	2.11	02:15	3.38	12:30	6.92	5.33	02:15	0.161	12:30	0.656	0.332	0.332	0.01
4/20/2013	03:00	1.71	09:00	2.56	2.08	03:00	4.23	09:00	6.76	5.56	03:00	0.189	09:00	0.542	0.337	0.337	0.31
4/21/2013	05:45	1.65	19:30	2.51	2.02	01:30	3.96	11:00	6.72	5.42	03:45	0.172	19:30	0.517	0.319	0.319	
4/22/2013	03:15	1.65	07:30	2.51	2.06	01:30	4.00	21:00	6.77	5.53	01:30	0.175	21:00	0.528	0.332	0.332	
4/23/2013	03:30	1.67	08:15	2.54	2.06	02:45	4.07	08:15	6.81	5.58	04:00	0.178	08:15	0.540	0.336	0.336	
4/24/2013	03:30	1.68	13:00	2.54	2.07	01:30	4.09	08:00	6.84	5.67	03:30	0.183	13:00	0.536	0.343	0.343	
4/25/2013	02:00	1.63	07:45	2.67	2.01	01:30	3.94	07:45	6.95	5.47	02:00	0.170	07:45	0.592	0.318	0.318	0.01
4/26/2013	02:45	1.59	07:00	2.62	2.01	02:45	3.54	07:00	6.93	5.46	02:45	0.143	07:00	0.575	0.318	0.318	
4/27/2013	03:15	1.59	12:00	2.53	2.01	03:45	3.70	11:00	6.75	5.49	03:15	0.149	12:00	0.527	0.321	0.321	
4/28/2013	04:00	1.61	12:00	2.62	2.00	02:15	3.54	12:00	6.98	5.41	02:15	0.153	12:00	0.579	0.313	0.313	
4/29/2013	03:00	1.51	07:45	2.61	2.01	03:00	2.77	07:45	6.71	5.42	03:00	0.104	07:45	0.553	0.316	0.316	
4/30/2013	02:15	1.59	08:30	2.62	2.01	02:45	3.70	07:15	6.79	5.49	02:45	0.150	08:30	0.552	0.321	0.321	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			4.512	0.34
Avg	2.04	5.41	0.322	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH116, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	04:00	1.59	08:15	2.63	2.01	02:45	3.27	08:15	6.75	5.43	02:45	0.137	08:15	0.563	0.318	0.318	
5/2/2013	03:30	1.53	08:00	2.62	1.97	02:30	3.09	08:00	6.73	5.31	05:00	0.124	08:00	0.558	0.302	0.302	
5/3/2013	03:30	1.49	07:00	2.53	1.97	03:30	3.46	07:00	6.61	5.37	03:30	0.127	07:00	0.521	0.304	0.304	
5/4/2013	02:15	1.46	10:30	2.59	1.95	03:15	2.81	09:15	6.59	5.31	02:15	0.105	10:30	0.537	0.299	0.299	
5/5/2013	04:00	1.46	11:15	2.62	1.94	02:30	3.52	11:15	6.88	5.30	04:00	0.133	11:15	0.570	0.297	0.297	
5/6/2013	03:15	1.47	07:30	2.49	1.94	04:45	2.88	20:30	6.72	5.27	03:15	0.106	20:30	0.518	0.295	0.295	
5/7/2013	02:00	1.50	07:45	2.59	1.91	03:15	3.06	06:45	6.75	5.26	03:15	0.113	07:45	0.546	0.287	0.287	
5/8/2013	03:15	1.45	14:15	2.64	1.99	01:45	3.24	14:15	6.93	5.47	01:45	0.116	14:15	0.580	0.318	0.318	0.51
5/9/2013	02:15	1.46	14:45	2.88	1.97	03:45	2.62	14:45	7.17	5.36	03:45	0.096	14:45	0.680	0.307	0.307	0.16
5/10/2013	03:30	1.51	08:00	2.72	1.98	04:15	2.91	08:00	6.97	5.46	04:15	0.111	08:00	0.610	0.315	0.315	
5/11/2013	05:45	1.44	17:30	2.57	1.96	04:30	3.24	17:30	6.68	5.34	04:30	0.125	17:30	0.539	0.301	0.301	0.25
5/12/2013	05:15	1.50	12:15	2.50	1.98	02:15	3.36	15:30	6.57	5.38	02:15	0.128	12:15	0.503	0.306	0.306	0.07
5/13/2013	03:15	1.48	10:00	2.59	2.01	03:45	3.14	10:00	6.86	5.44	03:45	0.114	10:00	0.559	0.318	0.318	
5/14/2013	02:30	1.50	07:45	2.70	1.97	03:00	2.76	07:45	6.84	5.34	03:00	0.106	07:45	0.592	0.306	0.306	
5/15/2013	01:45	1.52	08:15	2.61	1.96	01:45	3.33	08:15	6.81	5.36	01:45	0.126	08:15	0.562	0.303	0.303	0.01
5/16/2013	04:30	1.43	08:00	2.59	1.96	03:00	3.16	09:15	6.81	5.35	03:00	0.117	08:00	0.553	0.305	0.305	
5/17/2013	04:45	1.46	09:00	2.65	1.94	03:30	3.08	09:45	6.89	5.30	03:30	0.114	09:45	0.571	0.296	0.296	
5/18/2013	05:15	1.45	09:15	2.43	1.89	04:00	2.28	09:15	6.65	5.15	04:00	0.083	09:15	0.495	0.278	0.278	
5/19/2013	02:45	1.41	11:15	2.50	1.92	04:30	2.61	11:15	6.81	5.26	04:30	0.090	11:15	0.528	0.291	0.291	0.33
5/20/2013	05:30	1.47	20:45	2.53	1.94	03:00	3.00	12:15	6.75	5.35	03:00	0.109	20:45	0.531	0.298	0.298	
5/21/2013	02:00	1.44	08:30	2.48	1.90	03:45	2.77	08:30	6.78	5.28	03:45	0.097	08:30	0.520	0.286	0.286	
5/22/2013	04:15	1.45	11:30	2.59	1.90	03:45	2.44	11:30	6.88	5.21	03:45	0.091	11:30	0.561	0.282	0.282	0.06
5/23/2013	02:45	1.37	16:15	26.99	3.61	16:30	2.58	21:15	8.26	5.88	04:15	0.118	20:00	1.731	0.598	0.598	0.82
5/24/2013	23:00	2.45	00:30	3.49	2.78	16:15	6.94	00:30	8.06	7.47	23:00	0.534	00:30	1.001	0.676	0.676	0.48
5/25/2013	02:30	2.32	10:45	3.68	2.99	01:30	6.80	17:00	8.13	7.69	02:30	0.483	10:45	1.054	0.776	0.776	0.82
5/26/2013	17:00	2.43	12:30	3.31	2.77	18:30	7.01	02:30	8.09	7.57	22:15	0.538	12:30	0.914	0.682	0.682	0.05
5/27/2013	23:15	2.23	11:15	3.15	2.57	03:45	6.64	11:15	7.90	7.21	23:15	0.441	11:15	0.851	0.585	0.585	
5/28/2013	04:45	2.11	08:30	3.02	2.48	03:15	6.44	19:30	7.65	7.04	04:45	0.393	08:30	0.774	0.545	0.545	0.28
5/29/2013	02:45	2.09	20:15	3.00	2.47	04:45	6.31	01:00	7.63	6.98	04:45	0.378	20:15	0.765	0.535	0.535	0.01
5/30/2013	01:15	2.08	07:30	3.06	2.39	01:45	5.98	07:30	7.56	6.75	01:45	0.363	07:30	0.781	0.495	0.495	
5/31/2013	01:45	2.04	21:30	2.86	2.37	04:15	5.84	07:30	7.42	6.55	04:15	0.338	07:30	0.693	0.475	0.474	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			11.978	3.85
Avg	2.17	5.82	0.386	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH116, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	02:15	1.95	10:30	2.83	2.36	01:45	5.41	10:30	7.12	6.26	02:15	0.298	10:30	0.658	0.453	0.453	
6/2/2013	04:15	1.90	11:30	2.93	2.40	03:00	5.07	11:30	6.97	6.09	04:15	0.269	11:30	0.677	0.450	0.450	0.04
6/3/2013	04:30	1.92	08:45	3.33	2.50	04:30	4.93	08:45	7.08	6.10	04:30	0.261	08:45	0.823	0.479	0.479	0.75
6/4/2013	04:45	1.91	08:45	2.81	2.40	23:30	4.75	09:45	6.75	5.84	04:00	0.258	09:45	0.615	0.432	0.432	
6/5/2013	02:15	1.94	07:15	3.03	2.43	03:00	4.57	07:15	6.63	5.59	02:15	0.248	07:15	0.676	0.421	0.421	
6/6/2013	04:30	2.04	07:45	3.00	2.45	02:00	4.41	07:45	6.49	5.40	04:30	0.257	07:45	0.652	0.415	0.415	0.16
6/7/2013	03:15	2.09	21:45	27.50	4.28	21:30	2.72	23:00	7.92	5.86	02:45	0.254	23:45	2.892	0.760	0.760	2.62
6/8/2013	23:45	3.38	03:30	89.19	13.64	07:30	2.95	08:00	8.31	7.05	23:45	0.923	04:00	2.734	1.446	1.446	0.36
6/9/2013	23:45	2.82	11:00	3.78	3.32	19:45	7.48	02:15	8.10	7.76	23:15	0.699	11:15	1.101	0.900	0.900	
6/10/2013	02:45	2.66	23:30	3.85	3.13	12:30	7.29	20:45	8.24	7.72	02:45	0.638	23:30	1.172	0.827	0.827	1.06
6/11/2013	22:45	3.03	02:15	3.97	3.55	23:00	7.54	03:00	8.62	8.06	22:45	0.793	02:15	1.272	1.029	1.029	0.47
6/12/2013	23:30	2.73	07:00	3.85	3.15	16:00	7.25	02:15	8.19	7.73	23:30	0.659	07:00	1.166	0.832	0.832	
6/13/2013	03:15	2.60	12:45	4.11	3.30	03:30	7.02	12:30	8.08	7.69	05:00	0.592	22:15	1.246	0.888	0.888	1.33
6/14/2013	23:30	3.52	06:45	5.04	4.24	10:30	7.42	01:45	8.43	7.91	23:30	0.967	06:45	1.662	1.289	1.289	0.81
6/15/2013	23:45	3.10	10:00	4.02	3.50	23:45	7.28	00:30	8.01	7.73	23:45	0.766	07:30	1.196	0.968	0.968	
6/16/2013	23:45	2.77	08:30	3.61	3.17	04:45	6.90	11:45	8.01	7.54	23:45	0.632	08:30	1.040	0.823	0.823	
6/17/2013	02:00	2.68	14:15	4.15	3.10	23:45	6.68	00:45	7.80	7.18	03:45	0.592	14:15	1.208	0.758	0.758	0.10
6/18/2013	23:30	2.62	08:30	3.55	2.99	03:45	6.49	18:30	7.57	7.02	23:30	0.565	08:30	0.943	0.704	0.704	0.18
6/19/2013	02:15	2.53	08:45	3.37	2.81	02:45	6.57	20:15	7.83	7.09	03:45	0.523	08:45	0.914	0.653	0.653	
6/20/2013	03:00	2.43	09:00	3.27	2.76	17:45	6.35	07:30	7.38	6.82	03:00	0.484	09:00	0.833	0.611	0.611	
6/21/2013	04:30	2.14	07:45	3.24	2.55	23:00	5.87	07:45	7.36	6.55	04:30	0.378	07:45	0.824	0.525	0.525	
6/22/2013	03:15	2.13	19:45	3.04	2.59	23:15	5.41	10:00	6.90	6.13	03:15	0.347	10:00	0.686	0.503	0.503	
6/23/2013	04:15	2.08	16:00	3.10	2.53	04:15	5.04	10:00	6.63	5.77	04:15	0.300	16:00	0.679	0.459	0.459	
6/24/2013	01:45	2.17	20:45	3.31	2.56	01:15	4.83	20:45	6.47	5.60	02:45	0.308	20:45	0.746	0.456	0.456	0.20
6/25/2013	04:45	2.14	14:15	3.13	2.53	04:45	4.68	13:30	6.32	5.62	04:45	0.290	14:15	0.671	0.448	0.448	0.01
6/26/2013	02:30	2.04	12:30	2.97	2.40	02:15	4.79	12:30	6.43	5.70	02:15	0.279	12:30	0.637	0.422	0.422	0.08
6/27/2013	04:15	1.93	22:45	4.21	2.39	02:45	4.66	22:45	7.34	5.81	02:45	0.251	22:45	1.182	0.430	0.430	0.57
6/28/2013	03:45	1.86	13:15	2.75	2.33	02:00	5.03	07:45	6.84	5.97	03:45	0.256	13:15	0.598	0.423	0.423	0.05
6/29/2013	05:45	1.74	11:30	2.73	2.22	03:15	4.98	09:00	6.97	5.93	05:45	0.229	11:30	0.600	0.394	0.394	
6/30/2013	02:00	1.65	11:00	2.58	2.14	02:00	4.70	11:00	6.87	5.86	02:00	0.200	11:00	0.557	0.369	0.368	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			19.567	8.81
Avg	3.19	6.58	0.652	

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH116, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	05:15	1.62	11:45	70.95	4.44	12:15	2.63	17:45	7.76	6.39	03:15	0.195	11:45	2.382	0.605	0.605	0.44
7/2/2013	23:00	2.10	13:00	3.10	2.47	23:00	6.30	14:15	7.63	6.97	23:00	0.380	09:30	0.773	0.535	0.535	0.02
7/3/2013	23:45	1.95	07:30	2.88	2.27	23:00	6.25	13:45	7.60	6.79	23:45	0.342	08:15	0.692	0.461	0.461	
7/4/2013	06:00	1.94	10:45	2.64	2.17	05:30	6.00	12:30	7.37	6.57	05:45	0.326	10:45	0.613	0.420	0.420	
7/5/2013	03:45	1.88	12:30	2.82	2.25	03:15	5.83	12:30	7.26	6.42	03:45	0.301	12:30	0.668	0.432	0.432	
7/6/2013	04:30	1.83	11:30	2.91	2.26	04:30	5.29	09:15	7.00	6.07	04:30	0.262	11:30	0.667	0.411	0.411	
7/7/2013	04:30	1.76	21:00	2.88	2.33	04:00	4.87	07:15	6.41	5.80	04:00	0.232	20:15	0.592	0.411	0.411	
7/8/2013	01:45	1.89	08:00	2.95	2.35	01:45	4.56	08:00	6.35	5.46	01:45	0.236	08:00	0.623	0.394	0.394	
7/9/2013	04:00	1.88	10:00	2.91	2.34	01:45	4.10	08:00	6.77	5.32	04:00	0.221	10:00	0.626	0.382	0.382	
7/10/2013	04:45	1.85	13:15	3.81	2.34	03:00	3.89	10:00	6.65	5.20	03:00	0.197	10:00	0.637	0.344	0.175	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			4.227	0.56
Avg	2.53	6.15	0.444	

Site Commentary

Site Information

Ridgefield_MH122	
Pipe Dimensions (in.)	Elliptical (11.87 in H, 11.75 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH122 indicate this location experienced both open channel flow and back-water conditions (increase in depth with a corresponding decrease in velocity) during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.16	6.03	0.400
Minimum	1.21	2.03	0.056
Maximum	6.23	9.88	2.005
Time of Minimum	5/22/2013 4:00 AM	5/23/2013 4:00 AM	5/18/2013 2:45 AM
Time of Maximum	7/1/2013 11:30 AM	6/11/2013 4:45 AM	7/1/2013 11:30 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below. Field crew repair on 5/30 was not successful

Percent Uptime	
Depth (in)	82
Velocity (ft/s)	82
Quantity (MGD)	82

Due to a CPU malfunction the site experienced downtime 5/26/13 - 6/10/13, Data was not recoverable

Site Report

ADS ENVIRONMENTAL SERVICES®
a division of ADS LLC.

FM Initials: CL/TS
Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH122	Meter Type:	FLOWSHARK	Monitor S/N:	20658	Manhole #:	122
Address / Location:	335 DANBURY ROAD ***DETAIL NEEDED***			Map Page #:			
				Pipe Height:	11.87 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	11.75 Inches		
				Phone Number:			

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 9, 2013	11:30 AM	Manhole Depth:	9 Feet		7 Inches
Site Hydraulics:	FAST, WAVY, FLOW		Manhole Material / Condition:	Brick		Good
			Active Drop Connections?			
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:			Good
Upstream Manhole:	DNI		Mini System Character:	COMMERCIAL		
Downstream Manhole:			**Telephone Information:**			
Depth of Flow (Wet Dof):	2 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	8.5 +/- 0.5		Distance From Manhole:	N/A Feet		
Peak Velocity:	5.9 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 41° 17' 22.17" W 73° 29' 53.22"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.5 PRESS SN 11015

SCATTERGRAPH REPORT

Ridgefield_MH122

Flow Monitor

Ridgefield_MH122

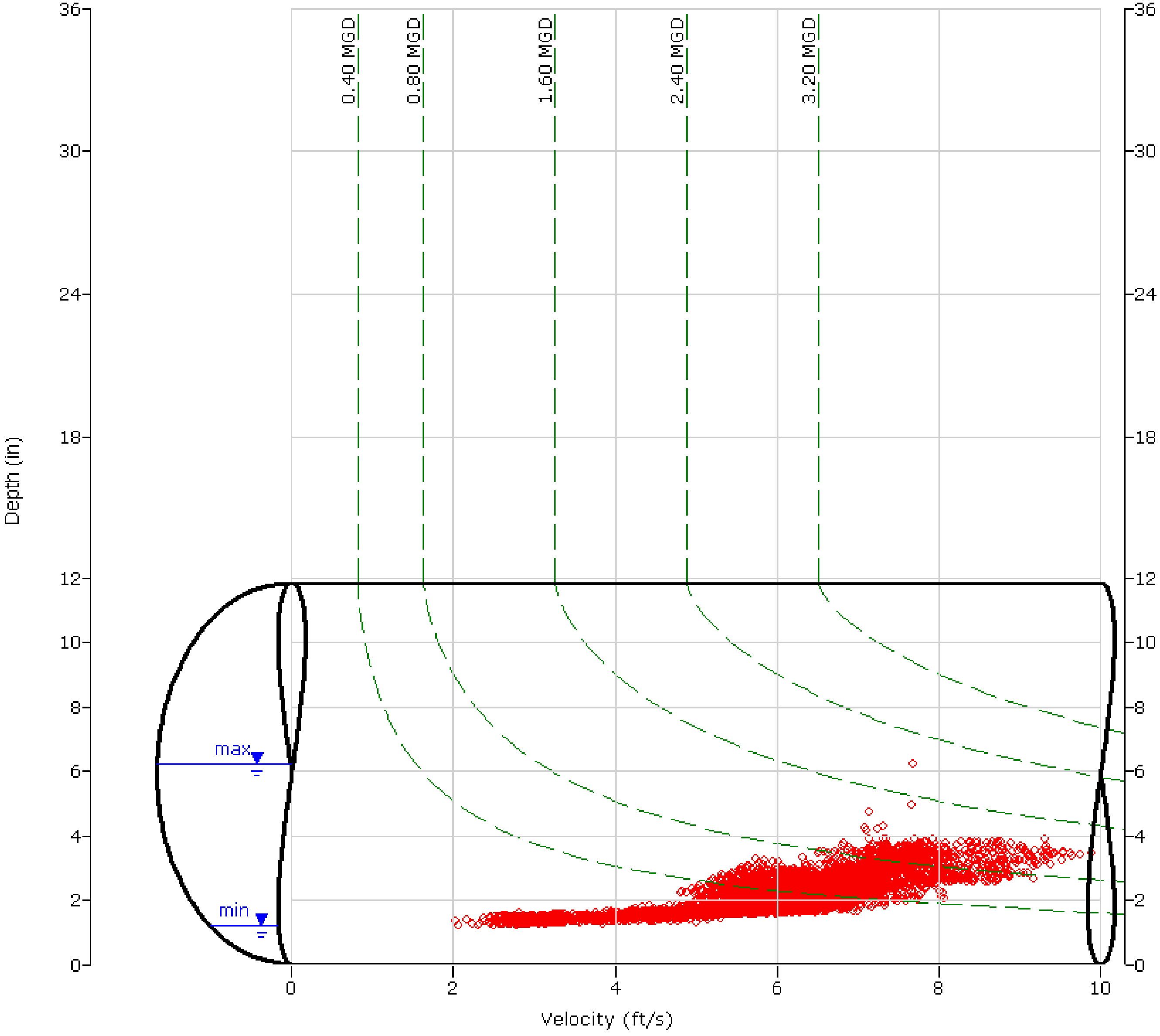
Pipe Height
11.87 in

Report Period

4/17/2013
To
7/10/2013

Legend

Depth - Velocity
Iso-Q™
Silt
Min-Max Depth



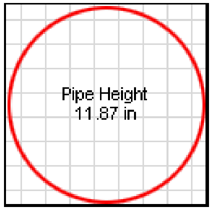
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH122

Flow Monitor

Ridgefield_MH122

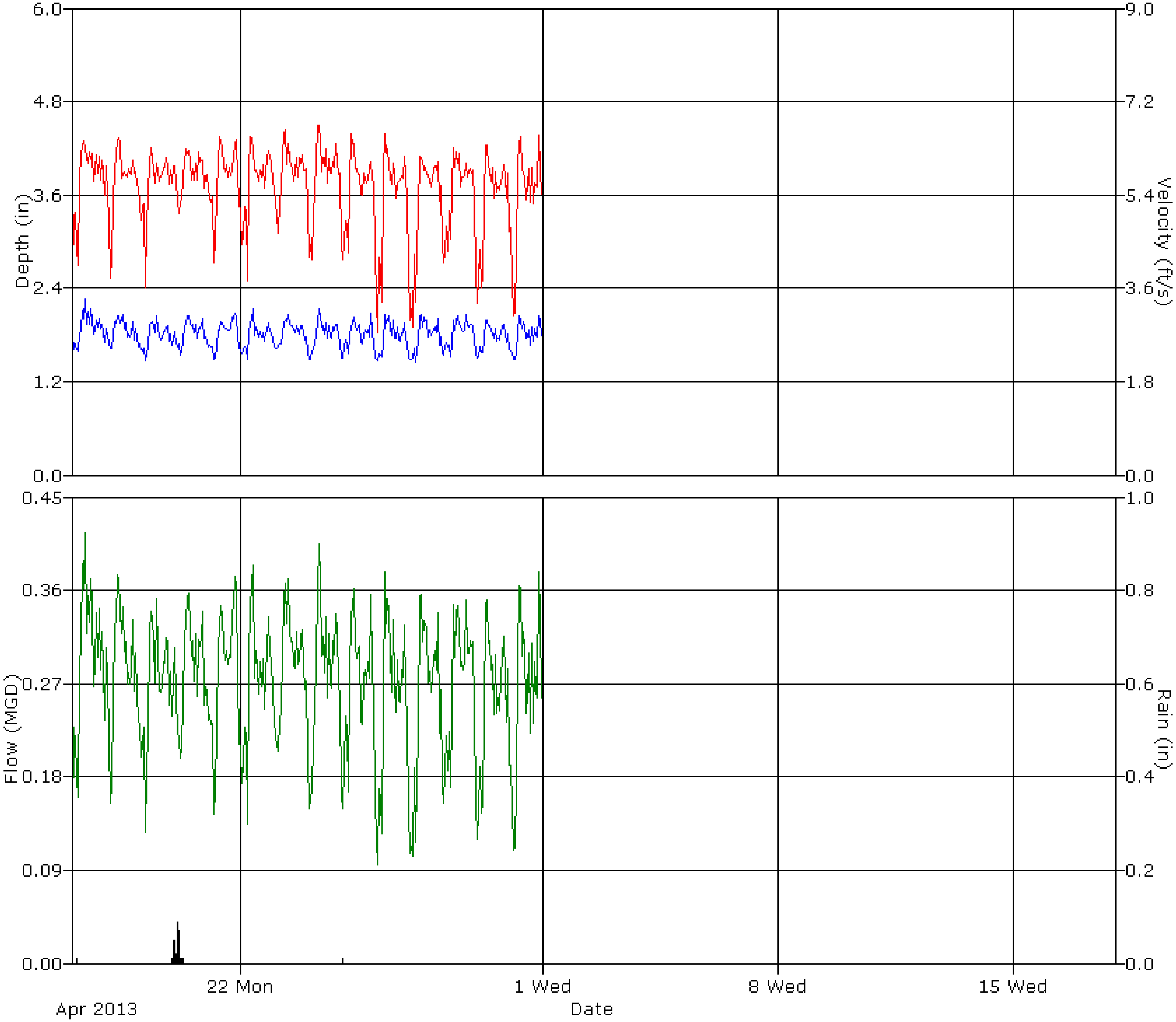


Report Period

4/17/2013
To
4/30/2013

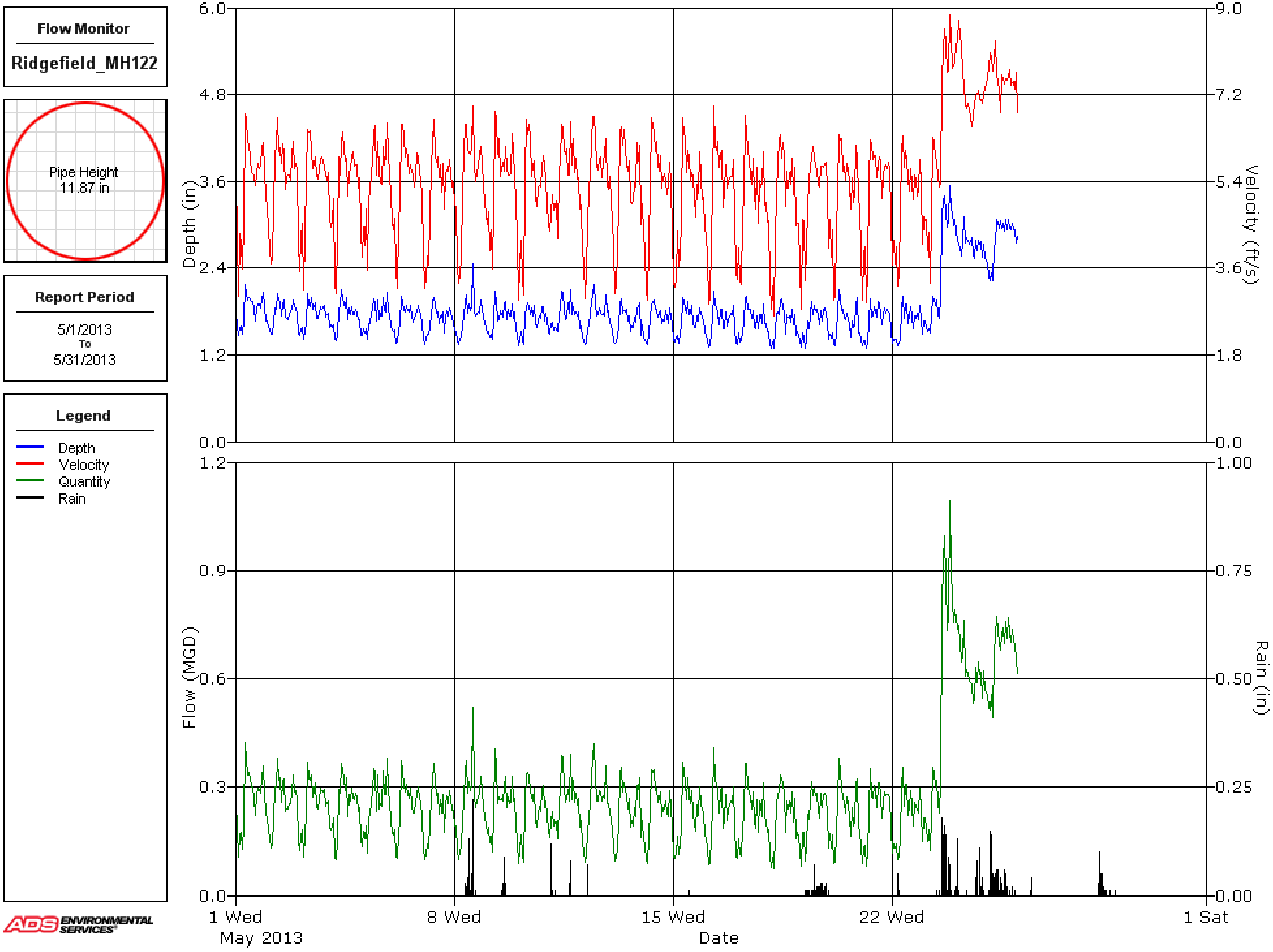
Legend

- Depth
- Velocity
- Quantity
- Rain



HYDROGRAPH REPORT

Ridgefield_MH122



Flow Monitor

Ridgefield_MH122

Pipe Height
11.87 in

Report Period

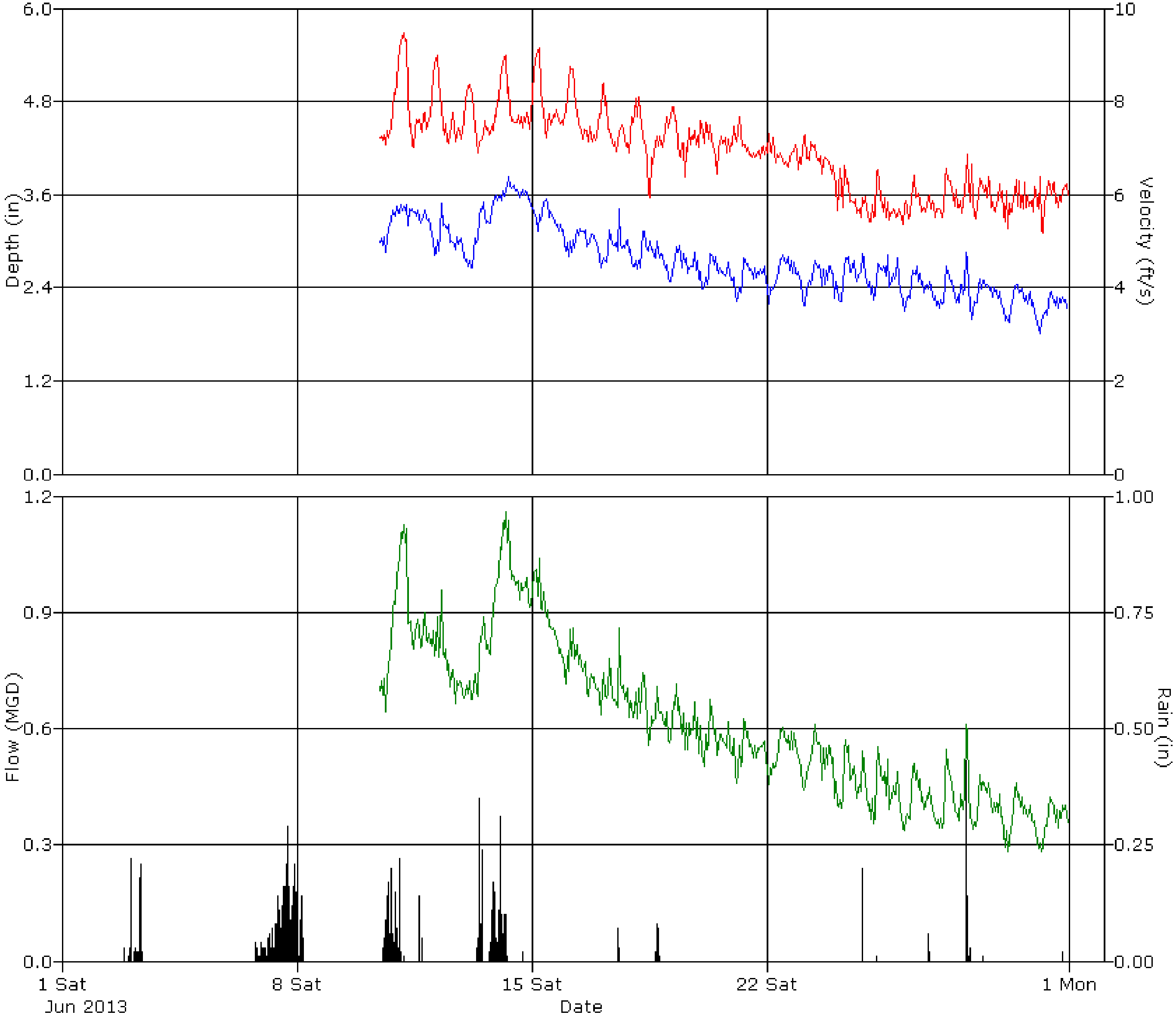
6/1/2013
To
6/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

HYDROGRAPH REPORT

Ridgefield_MH122

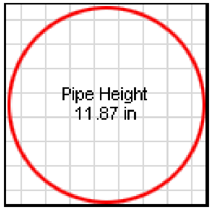


HYDROGRAPH REPORT

Ridgefield_MH122

Flow Monitor

Ridgefield_MH122

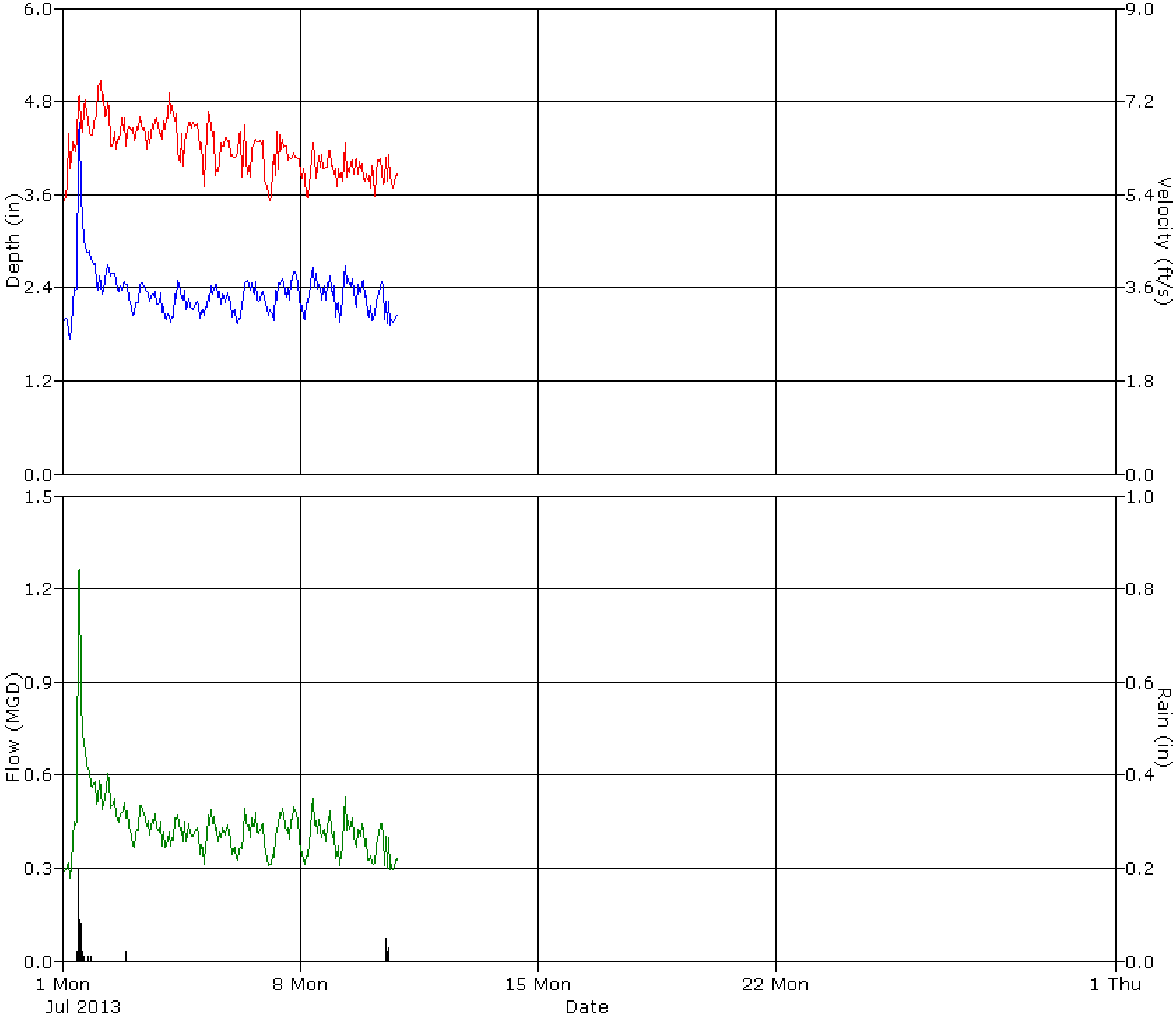


Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH122, Pipe Height: 11.87 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	04:45	1.54	09:00	2.64	1.90	04:15	3.38	05:30	7.26	5.75	04:15	0.131	09:00	0.563	0.298	0.298	0.01
4/18/2013	23:45	1.51	08:30	2.52	1.86	03:30	2.81	08:30	7.29	5.68	03:30	0.110	08:30	0.556	0.287	0.287	
4/19/2013	02:15	1.44	09:45	2.46	1.78	03:45	2.63	03:00	7.04	5.61	03:45	0.089	07:30	0.511	0.267	0.267	0.01
4/20/2013	02:15	1.46	11:00	2.50	1.83	03:15	3.95	01:00	7.13	5.82	02:15	0.141	11:00	0.504	0.286	0.286	0.31
4/21/2013	03:00	1.43	20:45	2.44	1.81	05:45	3.36	02:45	7.13	5.75	05:45	0.120	20:45	0.497	0.281	0.281	
4/22/2013	02:00	1.44	08:00	2.55	1.79	05:15	3.13	08:00	6.94	5.65	02:00	0.107	08:00	0.538	0.272	0.272	
4/23/2013	01:15	1.44	10:30	2.62	1.83	03:15	2.86	06:30	7.19	5.85	03:15	0.101	10:30	0.548	0.289	0.289	
4/24/2013	04:00	1.44	08:15	2.48	1.81	03:30	3.24	07:00	7.18	5.75	04:00	0.114	08:15	0.512	0.279	0.279	
4/25/2013	02:30	1.45	21:30	2.57	1.80	02:30	2.78	08:00	7.03	5.52	02:30	0.095	08:00	0.524	0.267	0.267	0.01
4/26/2013	04:45	1.43	09:15	2.54	1.77	01:15	2.52	04:00	7.04	5.30	01:15	0.087	09:15	0.540	0.252	0.252	
4/27/2013	05:00	1.41	11:15	2.52	1.78	04:15	2.38	09:00	7.01	5.15	04:15	0.080	08:00	0.491	0.249	0.249	
4/28/2013	06:00	1.46	11:15	2.47	1.82	04:15	2.65	08:00	6.92	5.46	04:15	0.094	10:15	0.470	0.270	0.270	
4/29/2013	02:45	1.45	10:15	2.40	1.77	02:15	2.65	07:00	6.89	5.26	02:15	0.095	08:00	0.476	0.250	0.250	
4/30/2013	02:30	1.46	07:30	2.58	1.79	02:30	2.55	21:15	7.19	5.33	02:30	0.088	07:30	0.525	0.259	0.259	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			3.805	0.34
Avg	1.81	5.56	0.272	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH122, Pipe Height: 11.87 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	02:45	1.45	10:30	2.46	1.82	02:15	2.64	07:15	7.11	5.37	02:15	0.092	07:15	0.494	0.270	0.270	
5/2/2013	01:00	1.41	10:30	2.46	1.77	04:45	2.81	22:15	6.91	5.45	04:45	0.093	10:30	0.495	0.260	0.260	
5/3/2013	04:30	1.36	07:15	2.38	1.75	02:45	2.60	18:00	7.03	5.35	02:45	0.090	20:30	0.459	0.251	0.251	
5/4/2013	05:15	1.37	08:30	2.40	1.75	04:15	2.84	11:30	7.12	5.31	04:15	0.092	11:30	0.503	0.249	0.249	
5/5/2013	06:00	1.35	20:45	2.40	1.72	05:15	3.01	11:30	7.01	5.37	01:15	0.097	20:45	0.490	0.249	0.249	
5/6/2013	00:30	1.34	08:45	2.44	1.71	03:30	2.92	07:45	7.28	5.35	03:30	0.090	07:45	0.521	0.245	0.245	
5/7/2013	02:30	1.32	21:30	2.38	1.69	03:00	2.76	06:15	7.17	5.20	03:00	0.084	08:15	0.476	0.235	0.235	
5/8/2013	05:15	1.30	14:00	2.99	1.74	04:15	2.50	09:00	7.24	5.42	04:15	0.078	14:00	0.703	0.258	0.258	0.51
5/9/2013	04:00	1.29	07:45	2.42	1.71	05:00	2.90	07:45	7.33	5.44	04:00	0.089	07:45	0.527	0.250	0.250	0.16
5/10/2013	01:00	1.28	08:15	2.34	1.68	05:00	2.72	07:00	7.42	5.14	05:00	0.081	07:00	0.481	0.231	0.231	
5/11/2013	06:00	1.26	10:15	2.39	1.75	00:45	2.93	03:00	7.31	5.51	00:45	0.086	17:00	0.509	0.261	0.261	0.25
5/12/2013	05:15	1.32	11:15	2.48	1.73	04:30	2.70	10:00	7.19	5.33	04:30	0.083	10:00	0.508	0.249	0.249	0.07
5/13/2013	02:00	1.31	08:45	2.46	1.67	03:30	2.84	08:30	7.07	5.25	03:30	0.090	07:45	0.492	0.232	0.232	
5/14/2013	01:45	1.27	07:00	2.30	1.69	04:15	2.48	07:00	7.33	5.23	04:15	0.073	07:00	0.491	0.236	0.236	
5/15/2013	03:45	1.29	07:15	2.47	1.68	02:15	2.94	10:30	7.06	5.07	04:00	0.089	07:15	0.512	0.228	0.228	0.01
5/16/2013	04:00	1.24	08:15	2.40	1.67	03:45	2.53	07:15	7.37	5.17	04:00	0.077	08:15	0.524	0.232	0.232	
5/17/2013	05:00	1.24	08:00	2.37	1.66	04:15	2.55	08:00	7.23	5.05	03:15	0.073	08:00	0.505	0.226	0.226	
5/18/2013	02:45	1.23	12:30	2.37	1.64	02:45	2.06	08:45	6.98	4.97	02:45	0.056	08:45	0.476	0.218	0.218	
5/19/2013	04:15	1.22	12:15	2.41	1.64	05:30	2.23	07:45	6.96	5.05	05:30	0.062	14:30	0.482	0.220	0.220	0.33
5/20/2013	05:00	1.27	07:00	2.45	1.66	04:30	2.55	07:00	7.26	5.13	04:30	0.073	07:00	0.532	0.226	0.226	
5/21/2013	04:15	1.24	07:30	2.48	1.68	04:15	2.59	07:30	7.32	5.15	04:15	0.071	07:30	0.545	0.234	0.234	
5/22/2013	04:00	1.21	11:30	2.35	1.65	04:00	2.31	11:30	6.98	5.01	04:00	0.061	11:30	0.482	0.220	0.220	0.06
5/23/2013	01:30	1.35	20:15	3.87	2.35	04:00	2.03	20:15	9.32	6.29	04:00	0.063	20:15	1.296	0.503	0.503	0.82
5/24/2013	21:45	2.14	02:15	3.25	2.75	14:00	5.60	02:30	9.17	7.38	21:45	0.403	02:15	0.928	0.640	0.640	0.48
5/25/2013	02:15	2.04	06:30	3.27	2.79	11:15	6.34	04:00	9.11	7.59	00:15	0.415	06:30	0.886	0.672	0.672	0.82
5/26/2013	23:45	2.84	23:45	2.84	2.84	23:45	6.81	23:45	6.81	6.81	23:45	0.615	23:45	0.615	0.615	0.615	0.05
5/27/2013																	
5/28/2013																	0.28
5/29/2013																	0.01
5/30/2013																	
5/31/2013																	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			7.095	3.85
Avg	1.81	5.46	0.284	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH122, Pipe Height: 11.87 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013																	
6/2/2013																	0.04
6/3/2013																	0.75
6/4/2013																	
6/5/2013																	
6/6/2013																	0.16
6/7/2013																	2.62
6/8/2013																	0.36
6/9/2013																	
6/10/2013	14:30	2.76	19:30	3.52	3.16	16:45	6.76	23:00	8.68	7.54	14:30	0.603	23:00	1.031	0.797	0.423	1.06
6/11/2013	23:45	3.00	06:45	3.57	3.35	11:15	6.53	04:45	9.88	8.02	23:45	0.744	04:45	1.173	0.916	0.916	0.47
6/12/2013	04:45	2.72	07:15	3.55	3.04	12:15	6.05	04:00	9.32	7.74	17:15	0.575	04:00	1.075	0.768	0.768	
6/13/2013	04:30	2.57	20:45	3.72	3.15	09:15	6.44	03:45	8.76	7.61	10:00	0.579	23:30	1.023	0.796	0.796	1.33
6/14/2013	23:30	3.34	07:30	3.89	3.63	22:30	6.63	05:00	9.32	7.93	22:30	0.794	05:00	1.211	1.010	1.010	0.81
6/15/2013	23:45	2.84	08:30	3.71	3.30	09:15	6.80	03:15	9.38	7.95	23:15	0.678	05:00	1.182	0.887	0.887	
6/16/2013	23:45	2.75	10:45	3.67	3.02	16:45	6.70	05:00	8.95	7.68	22:45	0.619	10:45	1.005	0.757	0.757	
6/17/2013	03:45	2.56	14:00	4.23	2.92	19:45	6.68	03:30	8.86	7.43	21:15	0.592	14:00	1.115	0.696	0.696	0.10
6/18/2013	01:45	2.54	08:45	3.38	2.84	11:45	5.62	04:15	8.64	7.18	11:45	0.485	08:45	0.863	0.647	0.647	0.18
6/19/2013	23:45	2.44	07:45	3.20	2.70	13:45	5.62	04:45	8.56	7.26	13:45	0.468	07:45	0.825	0.611	0.611	
6/20/2013	04:15	2.34	07:45	3.13	2.60	12:15	5.61	15:30	7.96	7.15	12:15	0.457	07:45	0.793	0.572	0.572	
6/21/2013	05:15	2.12	08:00	3.09	2.55	13:15	6.42	04:00	8.32	7.03	05:15	0.418	08:00	0.749	0.546	0.546	
6/22/2013	03:15	2.13	19:45	3.04	2.59	12:00	5.44	01:30	8.05	6.85	03:15	0.398	19:45	0.685	0.543	0.543	
6/23/2013	04:15	2.08	16:00	3.10	2.53	15:00	5.64	02:00	7.76	6.82	04:15	0.387	10:00	0.677	0.522	0.522	
6/24/2013	01:45	2.17	20:45	3.31	2.56	19:30	5.17	03:45	7.32	5.98	03:15	0.329	20:45	0.707	0.468	0.468	0.20
6/25/2013	04:45	2.14	14:15	3.13	2.53	15:15	5.00	06:45	7.18	5.73	23:30	0.322	06:45	0.674	0.441	0.441	0.01
6/26/2013	02:30	2.04	12:30	2.97	2.40	03:30	4.98	09:30	6.70	5.80	02:30	0.291	09:15	0.615	0.415	0.415	0.08
6/27/2013	04:15	1.93	22:45	4.21	2.39	19:30	4.98	22:45	7.24	5.97	04:15	0.286	22:45	1.130	0.427	0.427	0.57
6/28/2013	03:45	1.86	13:15	2.75	2.33	18:15	5.06	02:30	7.06	5.99	03:45	0.269	08:30	0.553	0.410	0.410	0.05
6/29/2013	05:45	1.74	11:30	2.73	2.22	02:45	4.93	10:00	7.24	5.86	02:45	0.237	10:30	0.532	0.375	0.375	
6/30/2013	02:00	1.65	11:00	2.58	2.14	05:30	4.77	00:45	7.14	5.96	02:00	0.202	10:15	0.512	0.362	0.361	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			12.593	8.81
Avg	2.75	6.91	0.613	

NE Temps 2013

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH122, Pipe Height: 11.87 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	05:15	1.62	11:30	6.23	2.66	05:15	4.86	11:45	8.02	6.46	05:15	0.196	11:30	2.005	0.560	0.560	0.44
7/2/2013	23:00	2.10	13:00	3.10	2.47	16:30	5.83	01:00	8.02	6.83	23:45	0.377	09:30	0.736	0.507	0.507	0.02
7/3/2013	23:45	1.95	07:30	2.88	2.27	12:45	5.80	00:15	7.34	6.64	23:00	0.345	08:15	0.653	0.436	0.436	
7/4/2013	06:00	1.94	10:45	2.64	2.17	10:30	5.07	04:45	7.74	6.71	02:30	0.334	08:15	0.576	0.414	0.414	
7/5/2013	03:45	1.88	12:30	2.82	2.25	04:30	4.81	06:45	7.50	6.33	04:45	0.262	11:30	0.579	0.412	0.412	
7/6/2013	04:30	1.83	11:30	2.91	2.26	23:00	4.88	04:00	7.48	6.23	04:45	0.247	09:15	0.591	0.407	0.407	
7/7/2013	04:30	1.76	21:00	2.88	2.33	03:30	5.13	08:00	6.90	6.03	03:30	0.239	12:30	0.595	0.414	0.414	
7/8/2013	01:45	1.89	08:00	2.95	2.35	05:30	4.90	03:00	6.97	5.92	05:30	0.247	13:00	0.630	0.411	0.411	
7/9/2013	04:00	1.88	10:00	2.91	2.34	04:00	4.77	08:00	6.74	5.89	04:00	0.239	07:45	0.577	0.405	0.405	
7/10/2013	13:00	1.75	10:00	2.90	2.12	02:15	4.95	07:15	7.21	5.79	13:00	0.225	13:15	0.626	0.348	0.333	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			4.299	0.56
Avg	2.32	6.28	0.432	

Site Commentary

Site Information

Ridgefield_MH127A	
Pipe Dimensions (in.)	Circular (11.25 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH127A indicate this location experienced open channel flows during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. The scattergraph further details the rain induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.30	1.54	0.343
Minimum	2.78	0.56	0.050
Maximum	15.95	5.48	2.446
Time of Minimum	5/18/2013 2:30 AM	5/14/2013 3:00 AM	5/18/2013 2:30 AM
Time of Maximum	5/23/2013 4:00 PM	6/8/2013 3:45 AM	6/8/2013 3:45 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

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a division of ADS LLC.

Site Report

FM Initials: CL/TS
Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH127A	Meter Type:	FLOWSHARK	Monitor S/N:	5215
Manhole #:	127A				
Address / Location:	593 MAIN STREET (IN FRONT YARD)	Map Page #:			
		Pipe Height:	11.25 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	11.25 Inches
				Phone Number:	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 12, 2013	2:50 PM	Manhole Depth:	8 Feet	7 Inches
Site Hydraulics:	SMOOTH EVEN FLOW		Manhole Material / Condition:	Brick	Poor
			Active Drop Connections?		
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	LINED	Fair
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL	
Downstream Manhole:			**Telephone Information:**		
Depth of Flow (Wet Dof):	4.5 +/- 0.25		Access Pole #:	N/A	
Range (Air Dof):	5.25 +/- 0.25		Distance From Manhole:	N/A Feet	
Peak Velocity:	1.41 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:
N 41° 17' 15.86" W 73° 29' 59.29"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:	0 Feet	WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.5 PRESS SN 77570 PO 3.0

SCATTERGRAPH REPORT

Ridgefield_MH127A

Flow Monitor

Ridgefield_MH127A

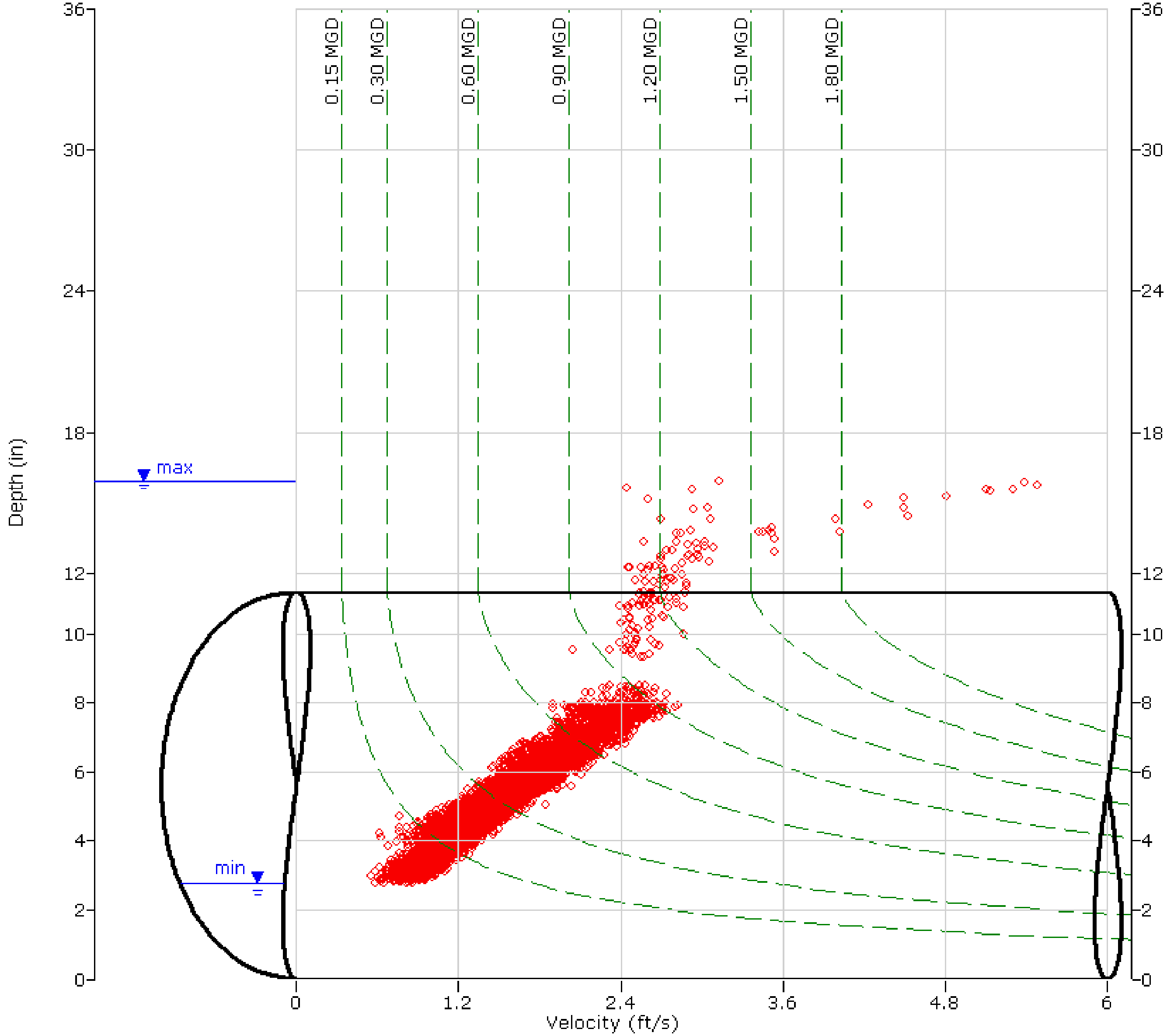
Pipe Height
11.25 in

Report Period

4/17/2013
To
7/10/2013

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH127A

Flow Monitor

Ridgefield_MH127A

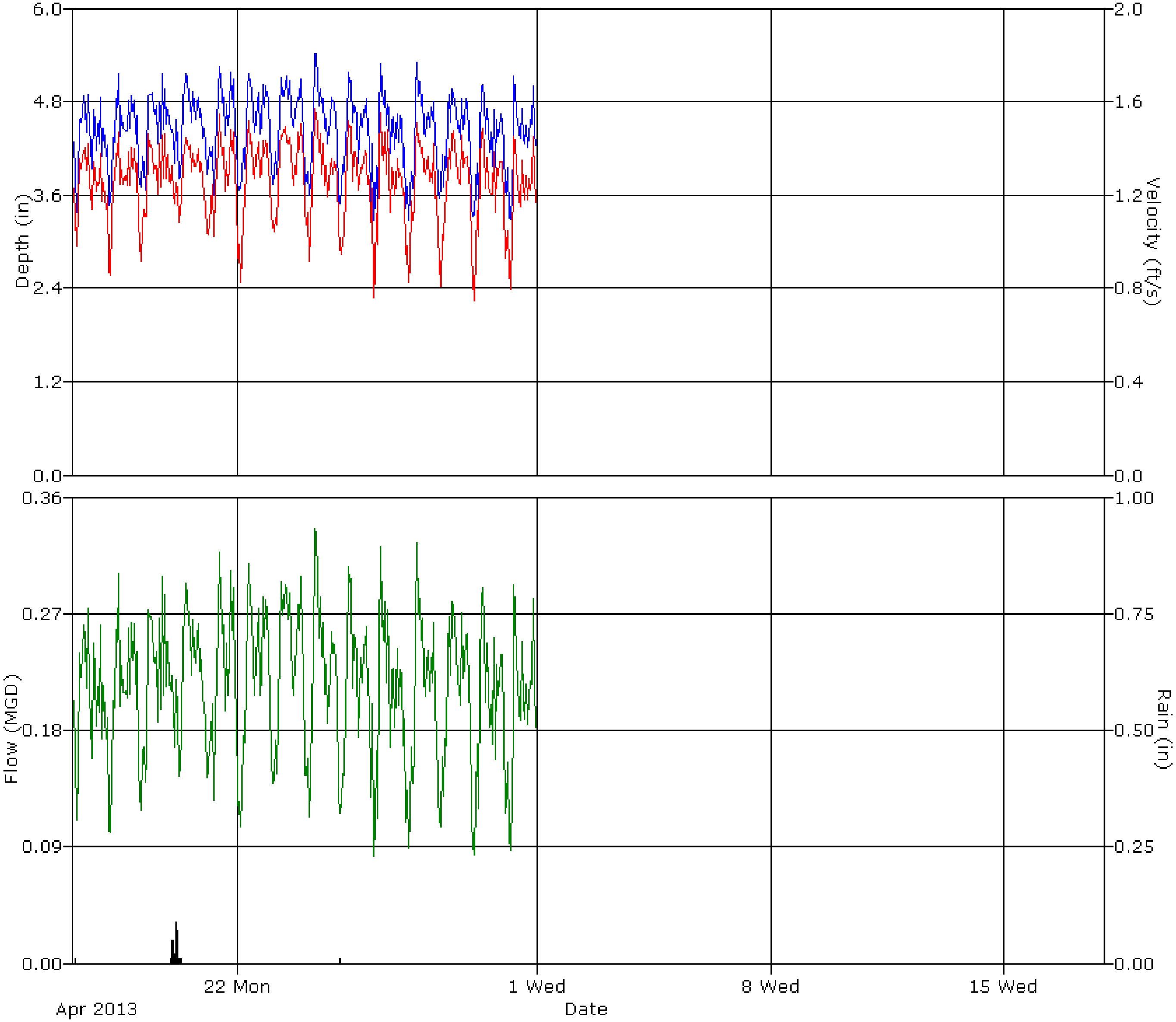
Pipe Height
11.25 in

Report Period

4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH127A

Flow Monitor

Ridgefield_MH127A

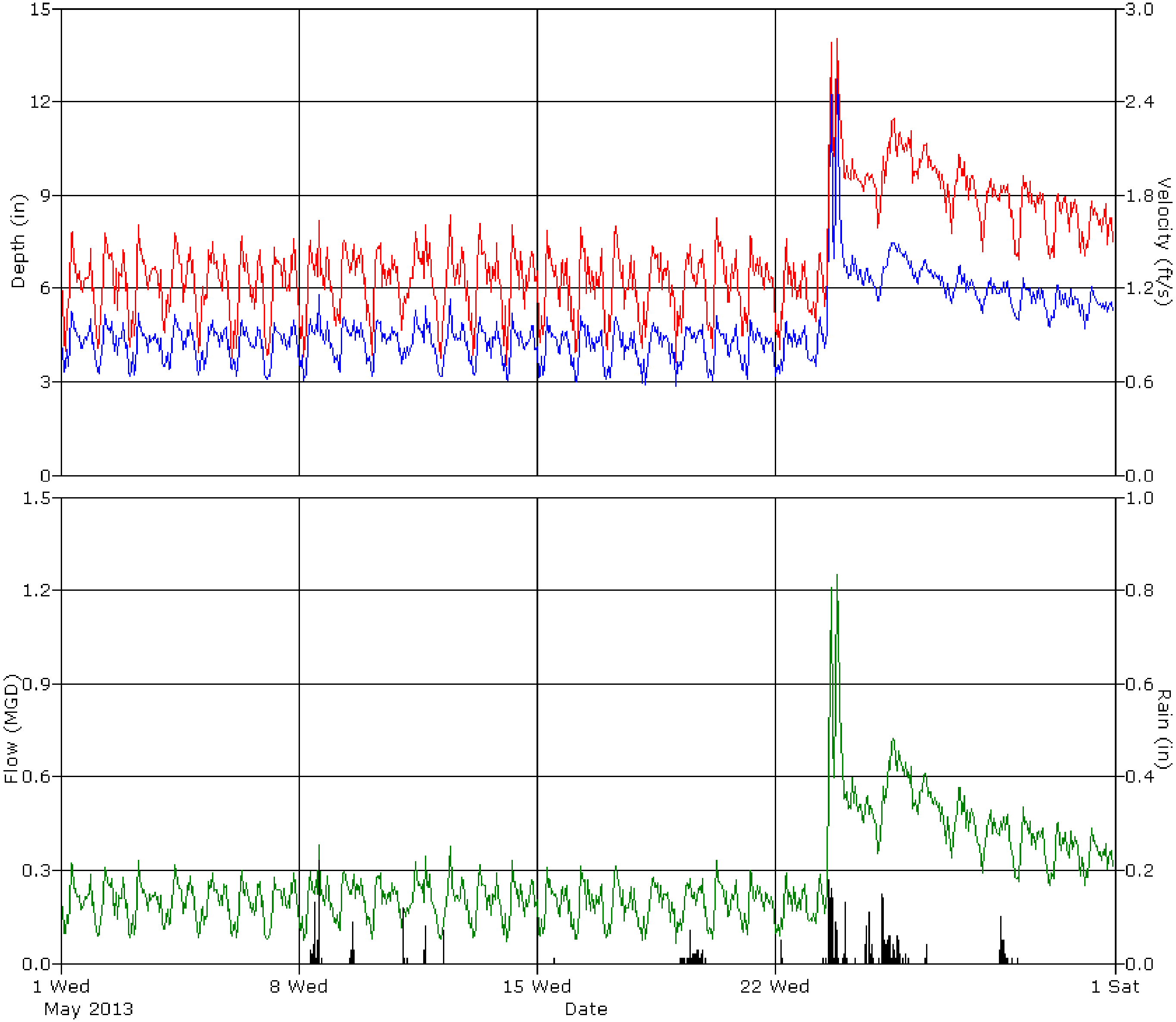
Pipe Height
11.25 in

Report Period

5/1/2013
To
5/31/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



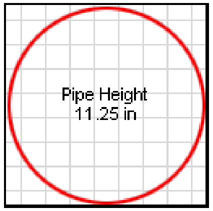
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH127A

Flow Monitor

Ridgefield_MH127A



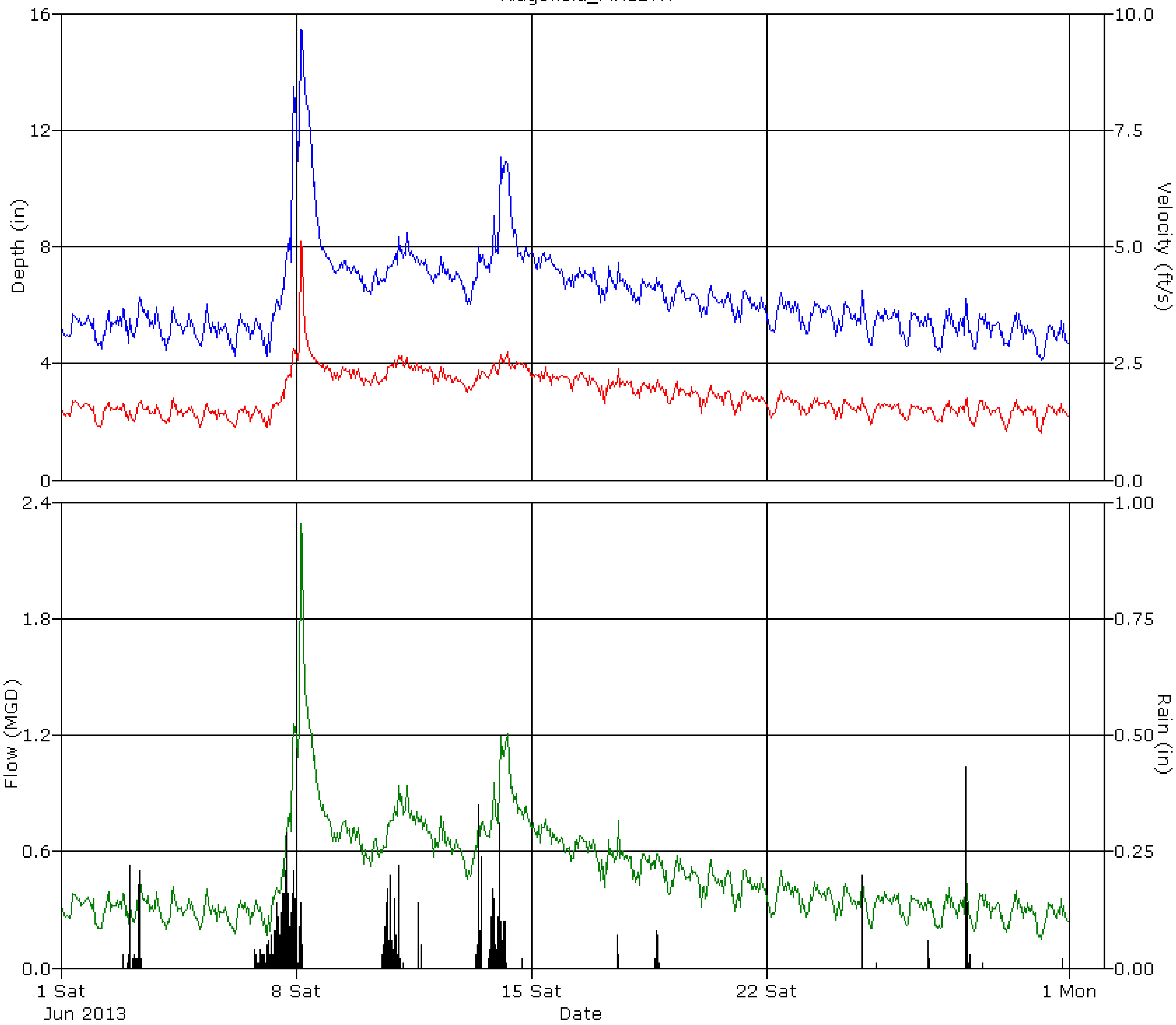
Report Period

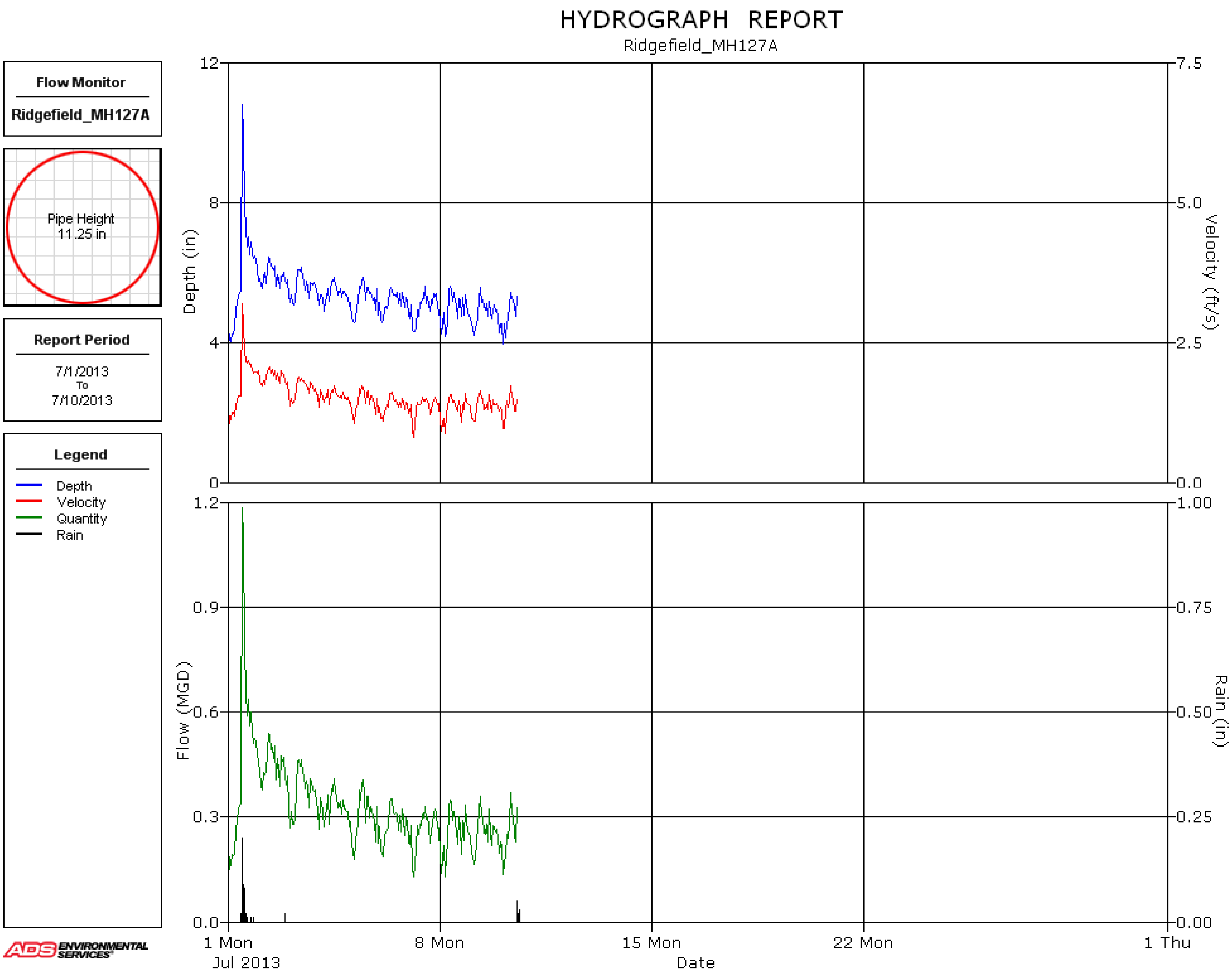
6/1/2013
To
6/30/2013

Legend

Depth
Velocity
Quantity
Rain

ADS ENVIRONMENTAL SERVICES




HYDROGRAPH REPORT
Ridgefield_MH127A
Flow Monitor
Ridgefield_MH127A
Pipe Height
11.25 in
Report Period
7/1/2013
To
7/10/2013
Legend
Depth
Velocity
Quantity
Rain
Depth (in)
Velocity (ft/s)
Flow (MGD)
Rain (in)
12
8
4
0
7.5
5.0
2.5
0.0
1.2
0.9
0.6
0.3
0.0
1.00
0.75
0.50
0.25
0.00
1 Mon
Jul 2013
8 Mon
15 Mon
22 Mon
1 Thu
Date
ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH127A, Pipe Height: 11.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	02:30	3.31	12:45	5.74	4.34	03:30	0.90	12:15	1.66	1.25	03:30	0.101	12:45	0.376	0.205	0.205	0.01
4/18/2013	01:45	3.33	10:00	5.89	4.42	04:45	0.77	21:45	1.73	1.25	04:30	0.094	10:00	0.406	0.210	0.210	
4/19/2013	03:15	3.44	17:15	5.99	4.46	02:15	0.78	08:15	1.75	1.26	02:15	0.092	08:15	0.405	0.214	0.214	0.01
4/20/2013	02:15	3.52	10:00	6.12	4.57	23:30	1.01	18:15	1.69	1.30	03:15	0.125	10:00	0.419	0.226	0.226	0.31
4/21/2013	04:30	3.43	11:15	6.13	4.55	02:00	0.92	11:15	1.76	1.29	04:30	0.107	11:15	0.438	0.225	0.225	
4/22/2013	05:00	3.36	10:30	6.05	4.53	03:00	0.70	08:15	1.82	1.28	03:00	0.081	08:15	0.442	0.223	0.223	
4/23/2013	04:15	3.40	07:30	6.29	4.60	03:15	0.87	07:30	1.77	1.33	03:15	0.099	07:30	0.453	0.235	0.235	
4/24/2013	04:00	3.42	08:30	6.13	4.52	03:30	0.75	09:15	1.74	1.29	03:30	0.087	09:15	0.428	0.224	0.224	
4/25/2013	03:00	3.35	20:30	5.89	4.44	02:30	0.82	09:45	1.79	1.27	02:30	0.093	20:30	0.414	0.217	0.217	0.01
4/26/2013	04:45	3.24	07:30	6.17	4.35	03:15	0.69	12:30	1.78	1.24	03:15	0.073	07:30	0.425	0.206	0.206	
4/27/2013	03:15	3.19	09:00	6.22	4.36	03:45	0.75	09:15	1.85	1.24	03:45	0.079	09:15	0.468	0.207	0.207	
4/28/2013	02:45	3.29	08:45	5.80	4.40	02:15	0.69	12:15	1.73	1.25	02:15	0.075	12:15	0.399	0.210	0.210	
4/29/2013	04:15	3.15	08:15	5.91	4.25	02:45	0.68	08:15	1.76	1.21	02:45	0.072	08:15	0.417	0.196	0.196	
4/30/2013	02:00	3.22	21:15	5.95	4.28	04:15	0.62	07:45	1.74	1.19	04:15	0.066	07:45	0.409	0.194	0.194	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.990	0.34
Avg	4.43	1.26	0.214	

NE Temps 2013

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH127A, Pipe Height: 11.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	04:15	3.26	07:30	6.03	4.33	03:15	0.76	07:30	1.85	1.23	03:15	0.083	07:30	0.450	0.203	0.203	
5/2/2013	04:45	3.05	08:30	5.79	4.28	02:30	0.78	08:30	1.77	1.24	02:30	0.078	08:30	0.410	0.202	0.202	
5/3/2013	01:15	3.09	07:30	5.86	4.18	04:15	0.71	07:30	1.79	1.23	04:15	0.073	07:30	0.421	0.195	0.195	
5/4/2013	03:30	2.94	09:45	6.05	4.24	03:00	0.78	09:45	1.82	1.25	03:00	0.077	09:45	0.445	0.201	0.201	
5/5/2013	01:45	3.09	21:00	5.80	4.22	01:45	0.73	09:30	1.77	1.23	01:45	0.073	09:30	0.409	0.197	0.197	
5/6/2013	03:30	2.97	08:00	5.79	4.19	00:30	0.67	08:00	1.78	1.19	01:30	0.066	08:00	0.413	0.190	0.190	
5/7/2013	04:00	2.89	12:30	5.67	4.15	03:00	0.61	21:45	1.71	1.20	03:00	0.057	12:30	0.381	0.189	0.189	
5/8/2013	02:30	2.90	14:00	6.84	4.31	03:30	0.68	06:45	1.82	1.23	02:00	0.066	14:00	0.501	0.205	0.205	0.51
5/9/2013	03:00	3.00	07:45	5.91	4.39	02:30	0.77	10:30	1.77	1.29	02:30	0.075	07:45	0.409	0.218	0.218	0.16
5/10/2013	04:15	3.03	07:15	5.86	4.29	04:30	0.67	10:00	1.81	1.24	04:30	0.068	10:00	0.418	0.204	0.204	
5/11/2013	04:45	3.03	17:00	6.01	4.41	01:30	0.79	17:00	1.82	1.30	02:15	0.087	17:00	0.441	0.219	0.219	0.25
5/12/2013	05:15	3.06	11:30	5.95	4.24	02:45	0.59	11:30	1.82	1.22	03:15	0.059	11:30	0.437	0.199	0.199	0.07
5/13/2013	04:45	3.01	20:30	6.03	4.20	03:15	0.72	11:30	1.86	1.25	02:30	0.075	20:30	0.440	0.200	0.200	
5/14/2013	04:30	2.94	07:15	5.91	4.17	03:00	0.56	07:00	1.84	1.23	03:00	0.053	07:00	0.432	0.195	0.195	
5/15/2013	01:45	2.94	21:15	5.78	4.19	04:30	0.63	21:15	1.73	1.23	04:30	0.061	21:15	0.399	0.195	0.195	0.01
5/16/2013	04:00	2.93	07:15	5.71	4.15	03:00	0.70	08:30	1.74	1.21	03:00	0.065	21:15	0.393	0.191	0.191	
5/17/2013	02:15	2.86	09:15	5.70	4.10	02:45	0.69	09:15	1.77	1.22	02:45	0.062	09:15	0.402	0.189	0.189	
5/18/2013	02:30	2.78	10:15	5.80	4.11	02:30	0.58	15:45	1.74	1.22	02:30	0.050	10:15	0.404	0.189	0.189	
5/19/2013	02:15	2.81	18:30	5.74	4.18	02:15	0.62	12:30	1.75	1.22	02:15	0.054	12:30	0.397	0.194	0.194	0.33
5/20/2013	03:30	2.78	07:15	5.82	4.12	01:45	0.72	10:00	1.85	1.24	04:00	0.063	07:15	0.415	0.194	0.194	
5/21/2013	04:00	2.89	08:45	5.89	4.14	03:00	0.62	07:45	1.84	1.23	03:00	0.057	07:45	0.431	0.193	0.193	
5/22/2013	03:00	2.79	07:45	5.99	4.15	03:00	0.65	07:45	1.86	1.18	03:00	0.056	07:45	0.449	0.186	0.186	0.06
5/23/2013	03:00	2.84	16:00	15.95	6.51	03:00	0.82	16:00	3.13	1.66	03:00	0.073	16:00	1.396	0.478	0.478	0.82
5/24/2013	23:00	5.66	00:00	7.96	6.52	01:00	1.69	00:00	2.33	1.92	23:00	0.400	00:00	0.786	0.517	0.517	0.48
5/25/2013	01:45	5.53	12:45	8.08	6.87	01:45	1.54	12:45	2.55	2.05	01:45	0.336	12:45	0.873	0.592	0.592	0.82
5/26/2013	23:45	5.74	10:45	7.80	6.47	20:30	1.64	14:45	2.42	1.99	23:45	0.397	14:45	0.758	0.531	0.531	0.05
5/27/2013	04:45	5.43	16:15	7.38	6.06	05:00	1.45	10:00	2.32	1.85	05:00	0.320	10:00	0.714	0.457	0.457	
5/28/2013	03:15	5.05	09:00	7.14	5.86	03:15	1.27	15:30	2.14	1.76	03:15	0.246	09:00	0.629	0.418	0.418	0.28
5/29/2013	02:45	4.93	07:15	6.85	5.66	04:00	1.19	09:00	2.13	1.71	04:00	0.233	09:00	0.591	0.387	0.387	0.01
5/30/2013	02:30	4.74	08:00	7.01	5.50	03:15	1.25	08:00	2.12	1.64	03:15	0.227	08:00	0.620	0.361	0.361	
5/31/2013	05:00	4.66	08:15	6.68	5.43	04:00	1.34	18:15	1.99	1.60	04:30	0.235	08:15	0.533	0.344	0.344	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			8.431	3.85
Avg	4.76	1.40	0.272	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH127A, Pipe Height: 11.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	03:30	4.41	19:15	6.47	5.31	03:00	1.21	18:15	1.93	1.55	03:00	0.199	18:15	0.507	0.326	0.326	
6/2/2013	05:30	4.23	20:15	6.80	5.21	04:15	0.98	12:00	1.87	1.44	04:15	0.153	12:00	0.494	0.297	0.297	0.04
6/3/2013	04:00	4.37	08:00	7.01	5.47	03:30	1.08	08:00	1.96	1.47	03:30	0.178	08:00	0.572	0.322	0.322	0.75
6/4/2013	04:45	4.31	08:00	6.73	5.21	05:15	1.12	08:00	1.96	1.44	05:15	0.181	08:00	0.545	0.297	0.297	
6/5/2013	04:15	4.11	08:15	6.82	5.14	03:15	0.89	16:00	1.80	1.41	03:15	0.149	08:15	0.485	0.285	0.285	
6/6/2013	03:15	4.05	06:45	6.52	5.09	03:15	0.99	19:00	1.85	1.39	03:15	0.143	19:00	0.485	0.279	0.279	0.16
6/7/2013	02:45	4.12	21:45	14.78	6.83	03:15	1.03	21:30	3.06	1.80	03:15	0.152	21:30	1.367	0.522	0.522	2.62
6/8/2013	23:00	7.34	03:30	15.86	10.69	23:45	2.16	03:45	5.48	2.88	23:45	0.693	03:45	2.446	1.170	1.170	0.36
6/9/2013	22:15	6.29	06:30	7.98	7.23	06:15	2.00	20:45	2.70	2.28	22:15	0.519	20:45	0.895	0.693	0.693	
6/10/2013	06:00	5.99	23:45	8.03	6.95	15:00	1.90	21:00	2.80	2.23	01:45	0.486	21:00	0.936	0.648	0.648	1.06
6/11/2013	23:45	6.74	01:45	10.01	7.64	22:30	2.08	01:45	2.86	2.44	22:30	0.613	01:45	1.201	0.789	0.789	0.47
6/12/2013	21:45	6.16	09:00	8.02	7.01	17:30	1.97	09:45	2.64	2.20	23:30	0.517	09:45	0.876	0.644	0.644	
6/13/2013	02:45	5.86	21:00	10.26	7.17	07:15	1.80	21:15	2.63	2.18	02:45	0.436	21:15	1.087	0.659	0.659	1.33
6/14/2013	18:45	7.35	06:00	11.59	8.86	23:45	2.02	02:00	2.89	2.48	23:45	0.677	02:00	1.290	0.921	0.921	0.81
6/15/2013	23:00	6.56	13:00	8.18	7.42	14:45	1.97	03:15	2.59	2.22	23:00	0.584	13:00	0.875	0.692	0.692	
6/16/2013	23:45	6.22	14:00	8.00	6.94	05:15	1.73	11:00	2.50	2.15	05:15	0.482	11:00	0.805	0.623	0.623	
6/17/2013	01:45	5.99	14:00	8.25	6.71	03:45	1.53	14:00	2.60	2.03	03:45	0.384	14:00	0.912	0.565	0.565	0.10
6/18/2013	23:30	5.93	17:00	7.91	6.51	05:15	1.64	18:45	2.43	1.95	01:45	0.402	18:45	0.747	0.525	0.525	0.18
6/19/2013	03:30	5.66	13:30	7.44	6.29	02:00	1.43	08:00	2.30	1.86	02:00	0.323	08:00	0.696	0.479	0.479	
6/20/2013	02:45	5.45	22:00	7.43	6.11	23:15	1.35	22:00	2.28	1.78	02:45	0.292	22:00	0.714	0.444	0.444	
6/21/2013	04:45	5.25	09:15	7.32	5.98	01:45	1.32	07:00	2.04	1.71	01:45	0.273	09:15	0.615	0.414	0.414	
6/22/2013	05:15	5.00	09:30	7.17	5.76	03:45	1.26	10:30	2.09	1.64	03:15	0.247	10:30	0.590	0.381	0.381	
6/23/2013	04:45	4.93	21:45	6.95	5.66	00:45	1.29	10:45	1.98	1.59	00:45	0.257	20:45	0.554	0.361	0.361	
6/24/2013	01:45	4.83	20:15	7.84	5.59	03:00	1.21	20:15	1.90	1.55	03:00	0.225	20:15	0.629	0.347	0.347	0.20
6/25/2013	05:00	4.56	12:00	6.68	5.44	03:00	1.04	05:45	1.88	1.52	03:00	0.180	12:00	0.509	0.330	0.330	0.01
6/26/2013	03:00	4.49	07:45	6.69	5.30	02:30	1.09	07:45	1.89	1.48	02:30	0.181	07:45	0.522	0.309	0.309	0.08
6/27/2013	04:15	4.32	22:45	8.32	5.22	01:45	1.10	22:45	2.18	1.48	01:45	0.174	22:45	0.773	0.307	0.307	0.57
6/28/2013	05:00	4.39	12:00	6.51	5.20	02:15	0.91	09:30	1.94	1.47	02:15	0.153	10:15	0.508	0.301	0.301	0.05
6/29/2013	03:00	4.27	09:15	6.61	5.10	03:00	0.76	21:00	1.92	1.43	03:00	0.118	09:15	0.510	0.287	0.287	
6/30/2013	05:30	4.01	09:30	6.23	4.81	04:00	0.89	11:30	1.89	1.40	04:00	0.127	09:30	0.478	0.261	0.261	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			14.478	8.81
Avg	6.26	1.82	0.483	

NE Temps 2013

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH127A, Pipe Height: 11.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	02:15	3.95	11:45	14.40	6.10	01:15	0.87	11:45	4.53	1.82	01:15	0.125	11:30	1.794	0.472	0.472	0.44
7/2/2013	23:15	5.27	09:45	6.98	5.90	02:45	1.50	09:45	2.22	1.89	23:15	0.329	09:45	0.645	0.449	0.449	0.02
7/3/2013	23:45	4.92	08:30	6.78	5.58	04:15	1.22	12:45	2.09	1.67	04:15	0.230	08:30	0.582	0.372	0.372	
7/4/2013	04:30	4.64	14:15	7.01	5.40	00:00	1.16	22:15	2.03	1.55	04:30	0.210	14:15	0.572	0.332	0.332	
7/5/2013	03:45	4.52	11:00	6.76	5.22	04:15	0.90	10:00	1.99	1.44	04:15	0.151	11:00	0.525	0.298	0.298	
7/6/2013	02:45	4.30	09:30	6.26	5.14	05:15	0.92	09:30	1.95	1.38	05:15	0.144	09:30	0.498	0.279	0.279	
7/7/2013	02:45	4.20	21:15	6.38	4.99	02:45	0.61	20:30	1.86	1.34	02:45	0.093	20:30	0.480	0.262	0.262	
7/8/2013	02:45	4.05	08:30	6.59	4.94	04:30	0.62	07:30	1.84	1.31	04:30	0.092	07:30	0.475	0.254	0.254	
7/9/2013	03:30	3.88	08:00	6.14	4.83	04:15	0.92	15:00	1.87	1.36	04:15	0.127	06:30	0.446	0.253	0.253	
7/10/2013	04:45	3.78	13:15	6.98	4.78	02:30	0.68	13:15	1.89	1.34	02:30	0.092	13:15	0.550	0.249	0.143	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			3.113	0.56
Avg	5.31	1.52	0.325	

Site Commentary

Site Information

Ridgefield_MH172	
Pipe Dimensions (in.)	Circular (11.00 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH172 indicate this location experienced hydraulic jumps during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. A hydraulic jump develops when flow transitions between supercritical and subcritical conditions, which can arise in any sewer with near or above critical velocity. The jump may be caused by imperfections in the pipe and/or a fixed downstream condition. Standing waves are also likely in flow near critical velocity. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location. However it is possible that during the transition as the jump moves through the meter location, the flow rate calculation based on measured depth and velocity can have momentary error.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.18	2.74	0.187
Minimum	1.44	0.60	0.024
Maximum	6.61	6.45	1.726
Time of Minimum	5/8/2013 4:45 AM	4/20/2013 4:45 PM	5/9/2013 2:15 PM
Time of Maximum	6/8/2013 3:15 AM	6/8/2013 3:15 AM	6/8/2013 3:15 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

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a division of ADS LLC.

Site Report

FM Initials: CL/TS

Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH172	Meter Type:	FLOWSHARK	Monitor S/N:	5235	Manhole #:	172
Address / Location:	CATOONAH STREET (BEHIND FIREHOUSE IN PARKING AREA)			Map Page #:			
				Pipe Height:	11 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	11 Inches		
				Phone Number:			

Investigation Information:		Manhole Information:		
Date/Time of Investigation:	April 11, 2013	Manhole Depth:	8 Feet	5 Inches
Site Hydraulics:	CHOPPY, FLUCTUATING FLOWS	Manhole Material / Condition:	Brick	Poor
		Active Drop Connections?		
Upstream Input: (L/S, P/S)	N/A	Pipe Material / Condition:	LINED	Fair
Upstream Manhole:	DNI	Mini System Character:	COMMERCIAL	
Downstream Manhole:		**Telephone Information:**		
Depth of Flow (Wet Dof):	2.1 +/- 0.25	Access Pole #:	N/A	
Range (Air Dof):	7.5 +/- 0.25	Distance From Manhole:	N/A Feet	
Peak Velocity:	3.3 fps	Road Cut Length:	N/A Feet	
Silt:	0 Inches	Trench Length:	N/A Feet	

Other Information:

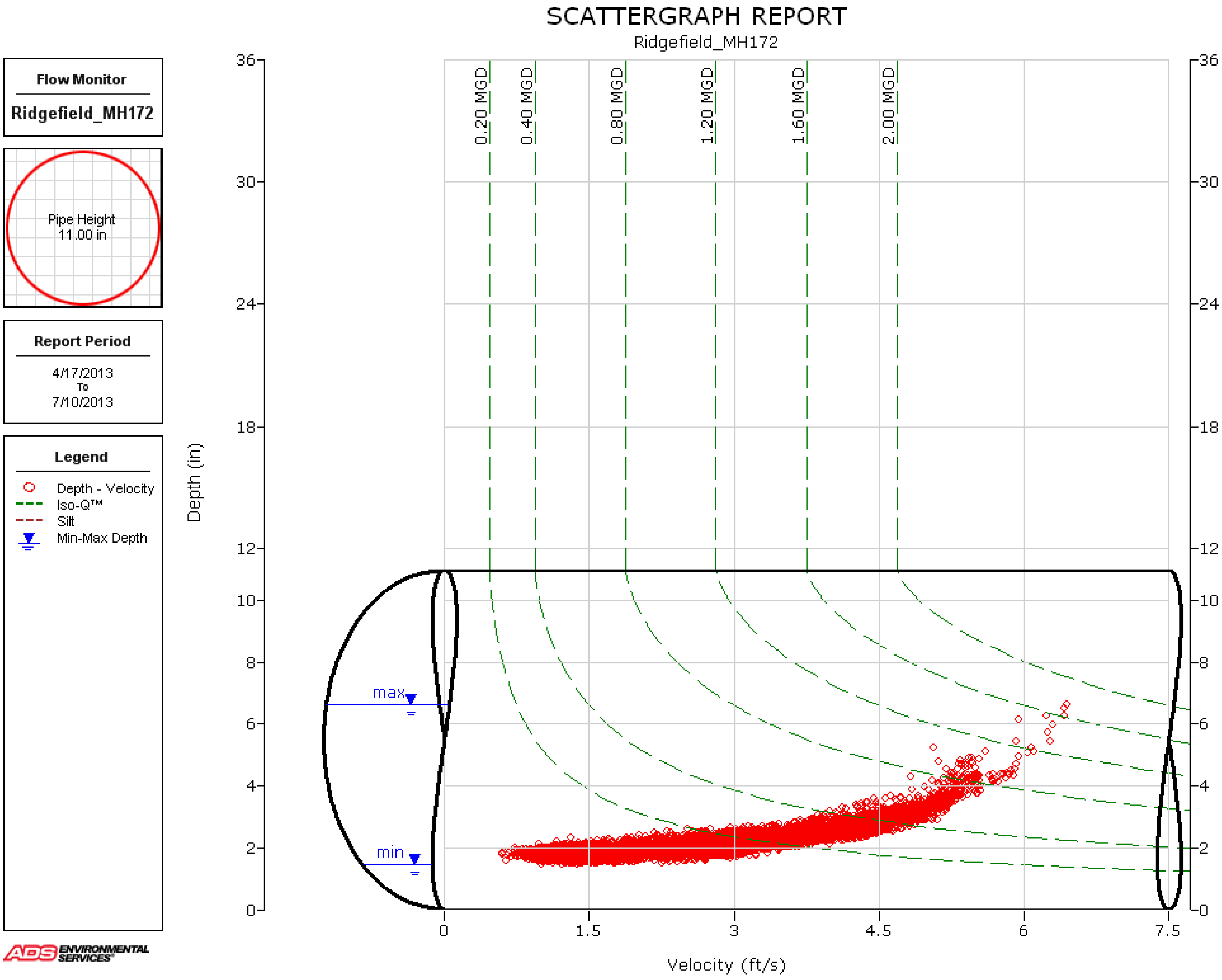
N 41° 16' 54.76" W 73° 29' 58.58"

Planar N

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:	0 Feet	WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.5 PRESS SN 76595



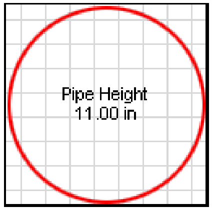
SCATTERGRAPH REPORT
Ridgefield_MH172
Flow Monitor
Ridgefield_MH172
Pipe Height
11.00 in
Report Period
4/17/2013
To
7/10/2013
Legend
Depth - Velocity
Iso-Q™
Silt
Min-Max Depth
Depth (in)
Velocity (ft/s)
0.20 MGD
0.40 MGD
0.80 MGD
1.20 MGD
1.60 MGD
2.00 MGD
max
min
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH172

Flow Monitor

Ridgefield_MH172

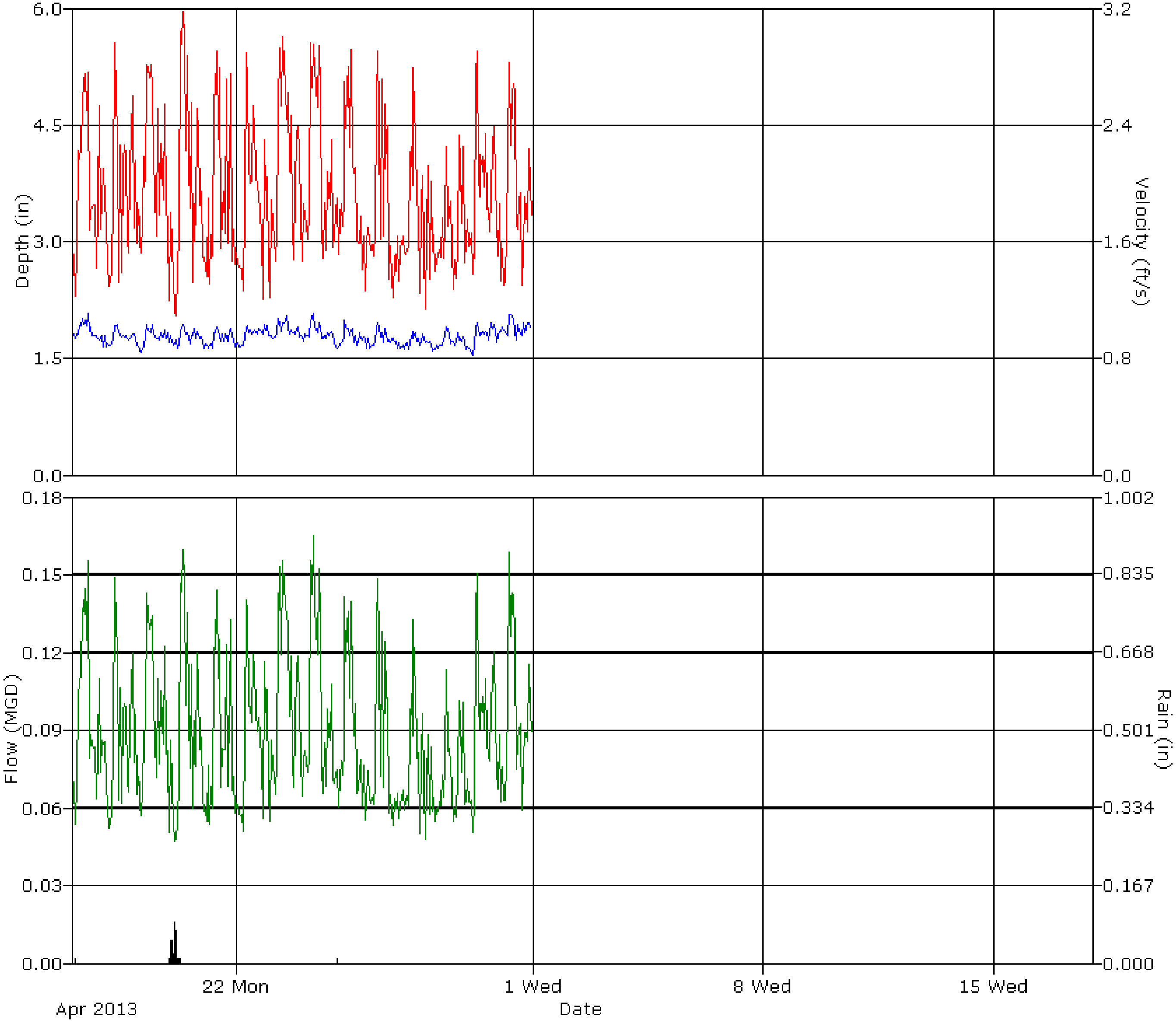


Report Period

4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH172

Flow Monitor

Ridgefield_MH172

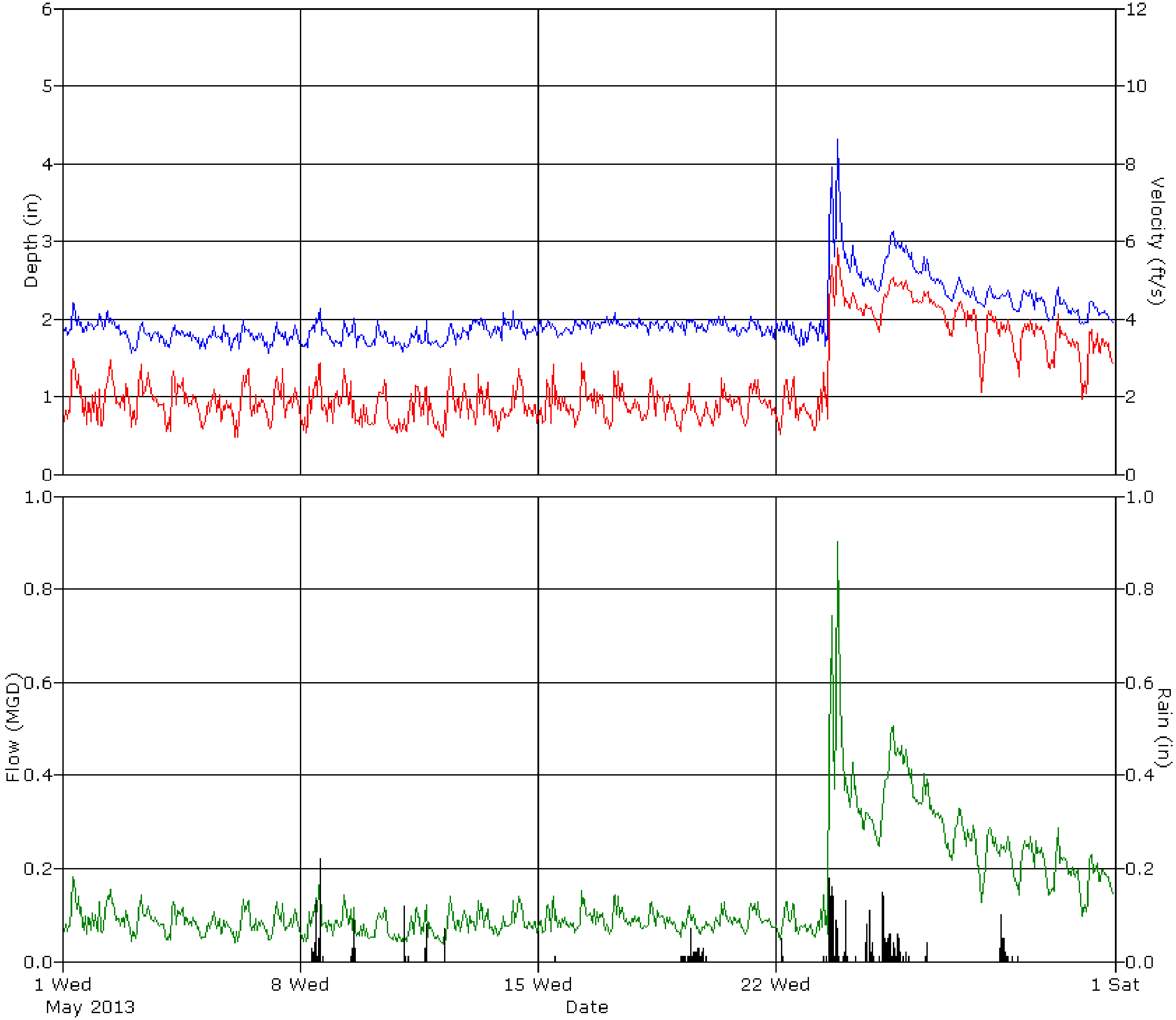
Pipe Height
11.00 in

Report Period

5/1/2013
To
5/31/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

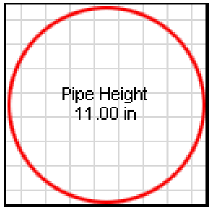


HYDROGRAPH REPORT

Ridgefield_MH172

Flow Monitor

Ridgefield_MH172

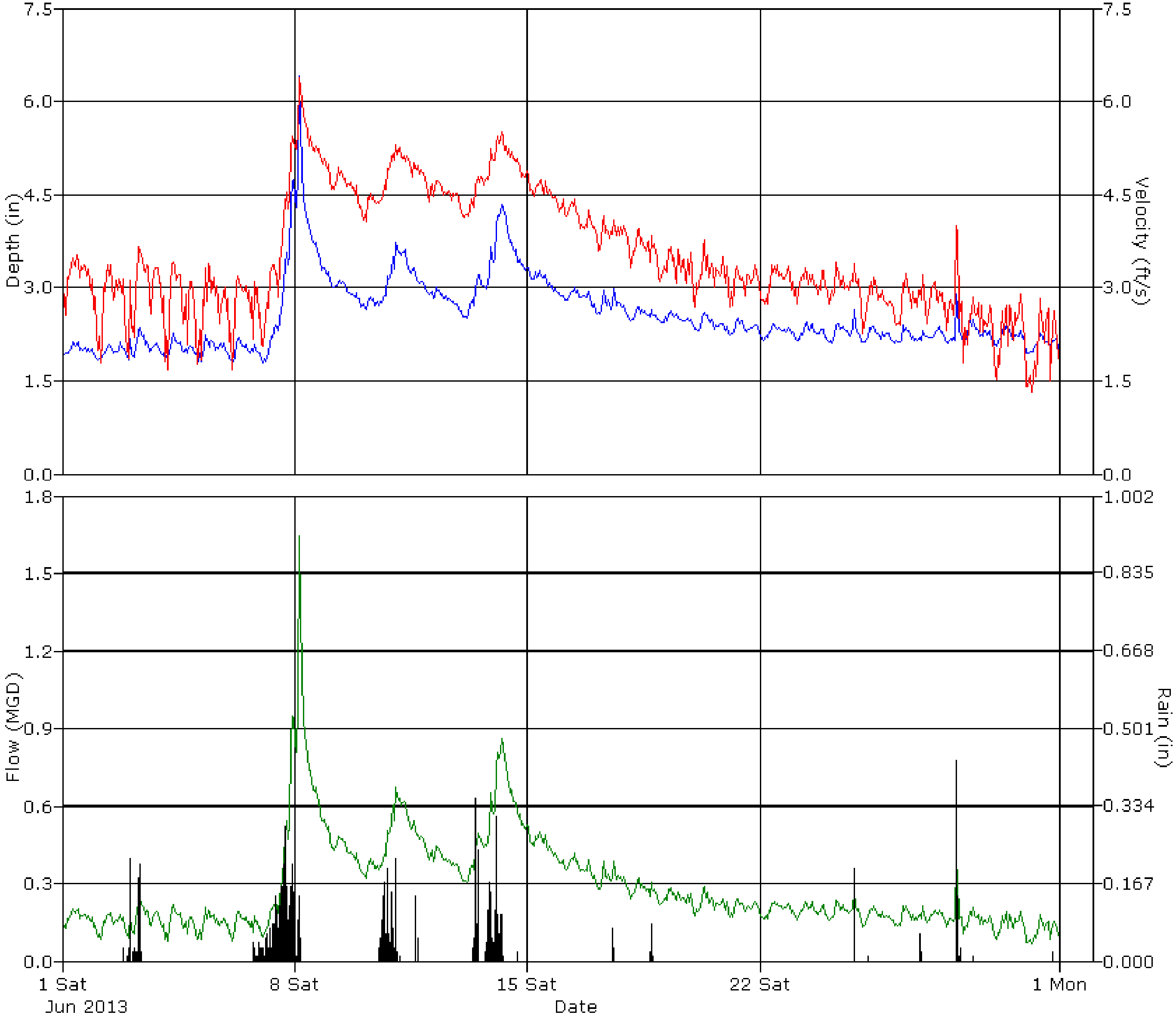


Report Period

6/1/2013
To
6/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH172

Flow Monitor

Ridgefield_MH172

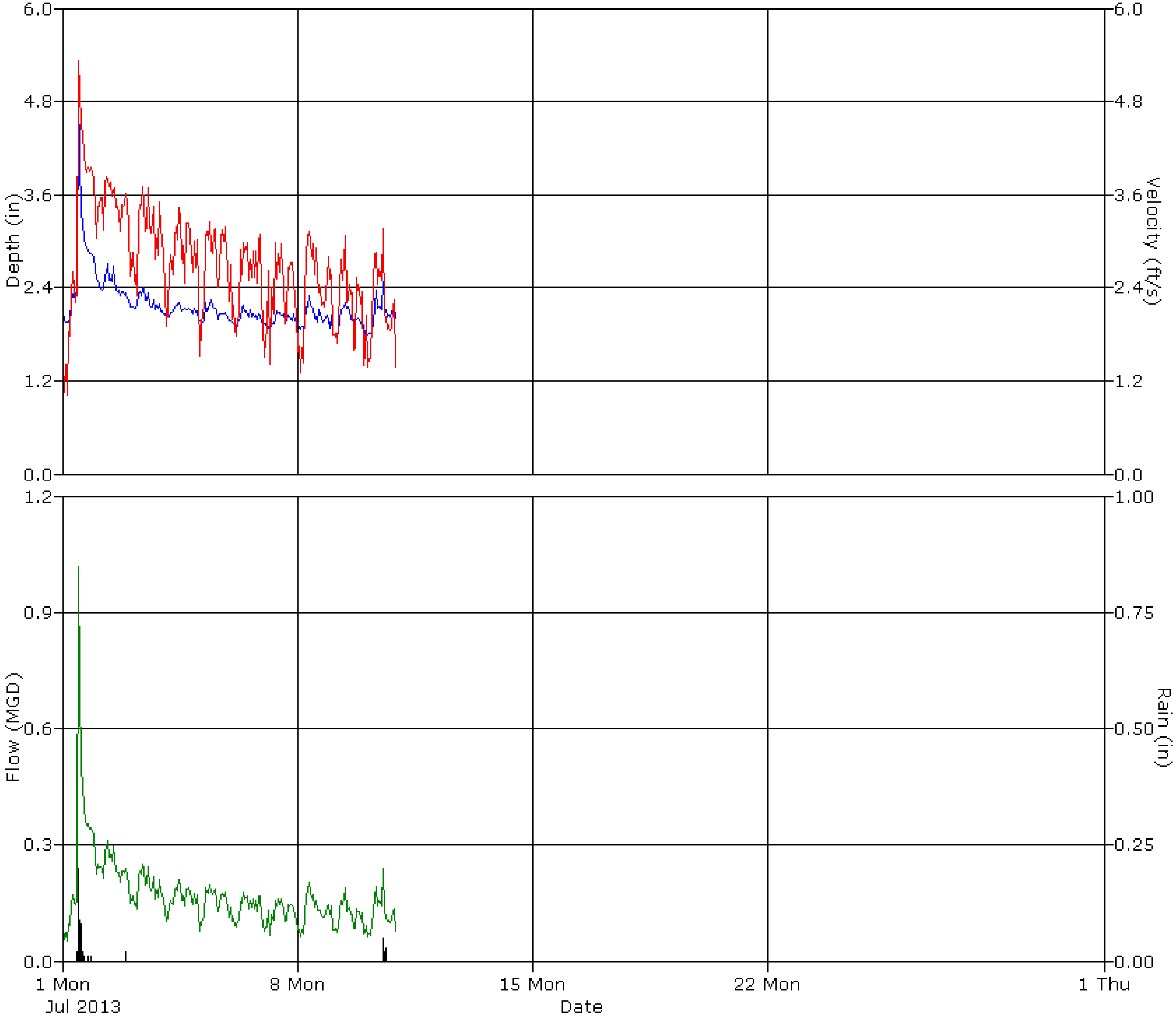
Pipe Height
11.00 in

Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH172, Pipe Height: 11 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	23:45	1.52	12:45	2.33	1.84	21:45	0.80	12:45	3.31	1.97	01:30	0.037	12:45	0.219	0.094	0.094	0.01
4/18/2013	23:45	1.53	09:00	2.13	1.77	02:15	0.88	09:00	3.55	1.92	02:15	0.037	09:00	0.206	0.087	0.087	
4/19/2013	02:15	1.50	22:45	2.01	1.76	22:30	0.77	08:30	3.09	2.08	22:30	0.033	08:30	0.160	0.093	0.093	0.01
4/20/2013	06:30	1.53	17:45	2.14	1.78	16:45	0.60	09:15	3.46	2.04	16:45	0.027	10:00	0.185	0.093	0.093	0.31
4/21/2013	18:15	1.57	16:00	2.13	1.75	15:00	0.65	16:00	3.15	1.91	15:00	0.028	16:00	0.183	0.085	0.085	
4/22/2013	00:15	1.59	22:15	2.20	1.81	19:00	0.67	08:45	3.30	1.89	19:00	0.032	22:15	0.192	0.089	0.089	
4/23/2013	05:00	1.67	13:45	2.24	1.86	17:15	0.74	10:45	3.39	2.12	17:15	0.035	10:45	0.191	0.103	0.103	
4/24/2013	01:00	1.61	08:15	2.23	1.84	22:45	1.08	06:30	3.27	2.10	22:45	0.049	07:15	0.190	0.100	0.100	
4/25/2013	02:00	1.55	15:00	2.14	1.76	21:00	1.01	15:00	3.24	1.96	21:00	0.042	15:00	0.189	0.088	0.088	0.01
4/26/2013	02:30	1.51	06:30	2.13	1.75	18:15	0.79	06:45	3.18	1.82	18:15	0.034	06:30	0.175	0.081	0.081	
4/27/2013	02:00	1.52	07:15	2.00	1.72	18:30	0.75	11:30	3.18	1.82	18:30	0.031	09:15	0.159	0.078	0.078	
4/28/2013	00:45	1.52	09:00	2.18	1.72	14:30	0.92	11:00	3.13	1.69	14:30	0.039	09:00	0.177	0.072	0.072	
4/29/2013	04:30	1.49	18:15	2.19	1.78	09:45	0.94	06:15	3.35	1.96	04:30	0.044	06:15	0.172	0.090	0.090	
4/30/2013	12:30	1.63	07:45	2.24	1.90	13:00	1.04	06:30	3.22	1.91	13:00	0.051	07:45	0.191	0.095	0.095	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			1.249	0.34
Avg	1.79	1.94	0.089	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH172, Pipe Height: 11 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	17:45	1.64	08:30	2.31	1.92	20:15	1.00	08:00	3.25	1.93	20:15	0.052	08:30	0.200	0.098	0.098	
5/2/2013	22:45	1.67	08:30	2.45	1.91	01:45	1.00	02:45	3.31	1.98	01:45	0.050	02:45	0.219	0.100	0.100	
5/3/2013	01:30	1.52	09:30	2.20	1.77	01:00	0.98	13:45	3.16	1.97	01:00	0.037	08:00	0.162	0.089	0.089	
5/4/2013	04:45	1.47	08:45	2.16	1.77	03:30	0.86	07:30	3.10	1.89	03:30	0.039	07:30	0.159	0.085	0.085	
5/5/2013	05:00	1.51	18:15	2.16	1.75	11:15	0.92	15:45	3.06	1.67	01:15	0.042	18:15	0.171	0.074	0.074	
5/6/2013	23:30	1.50	08:00	2.10	1.78	04:30	0.82	17:45	3.00	1.83	02:30	0.035	17:45	0.152	0.083	0.083	
5/7/2013	02:45	1.53	08:00	2.09	1.75	03:15	0.84	21:15	2.89	1.85	03:15	0.034	08:00	0.163	0.082	0.082	
5/8/2013	04:45	1.44	14:00	2.36	1.82	16:30	0.82	13:30	3.54	1.79	04:45	0.033	14:00	0.227	0.085	0.085	0.51
5/9/2013	16:45	1.53	14:30	2.50	1.78	14:15	0.64	14:30	3.65	1.81	14:15	0.024	14:30	0.265	0.082	0.082	0.16
5/10/2013	15:30	1.54	07:45	2.12	1.74	05:00	0.88	12:15	3.12	1.55	05:00	0.035	12:15	0.162	0.068	0.068	
5/11/2013	01:45	1.51	17:15	2.19	1.72	13:45	0.74	16:45	3.10	1.66	13:45	0.032	16:45	0.180	0.072	0.072	0.25
5/12/2013	14:30	1.55	10:00	2.02	1.76	08:30	0.83	10:45	2.98	1.71	08:30	0.035	10:00	0.160	0.077	0.077	0.07
5/13/2013	22:45	1.54	08:00	2.24	1.89	17:15	0.60	08:00	3.18	1.70	17:15	0.028	08:00	0.198	0.084	0.084	
5/14/2013	14:00	1.55	07:30	2.14	1.90	08:45	1.07	10:30	3.07	1.82	23:30	0.049	12:00	0.169	0.090	0.090	
5/15/2013	17:15	1.67	10:30	2.16	1.87	09:45	0.78	11:00	3.12	1.82	09:45	0.038	10:30	0.169	0.088	0.088	0.01
5/16/2013	14:45	1.70	07:00	2.15	1.92	19:45	1.04	07:30	3.09	1.89	04:45	0.051	07:00	0.174	0.095	0.095	
5/17/2013	23:15	1.75	07:00	2.19	1.95	03:15	0.79	06:30	3.00	1.81	03:15	0.037	07:00	0.177	0.092	0.092	
5/18/2013	06:00	1.67	00:45	2.10	1.92	10:15	0.85	07:15	2.88	1.81	05:00	0.043	00:45	0.155	0.090	0.090	
5/19/2013	08:30	1.62	14:15	2.21	1.92	18:15	0.62	11:00	2.74	1.57	18:15	0.030	11:00	0.142	0.078	0.078	0.33
5/20/2013	19:00	1.61	12:00	2.24	1.91	00:45	1.01	12:45	2.91	1.79	00:45	0.049	12:00	0.174	0.089	0.089	
5/21/2013	22:45	1.59	07:00	2.15	1.87	03:15	1.09	10:30	2.99	1.83	04:00	0.049	06:15	0.160	0.089	0.089	
5/22/2013	19:15	1.54	07:45	2.12	1.83	03:00	0.85	13:15	3.14	1.75	03:00	0.036	07:30	0.165	0.082	0.082	0.06
5/23/2013	13:00	1.51	14:30	4.57	2.52	13:15	0.74	20:00	5.89	3.04	13:15	0.038	14:30	0.922	0.292	0.292	0.82
5/24/2013	23:30	2.33	00:15	3.04	2.62	23:30	3.65	00:00	4.95	4.33	23:30	0.241	00:15	0.472	0.339	0.339	0.48
5/25/2013	02:30	2.29	11:15	3.44	2.82	01:45	3.53	10:15	5.16	4.67	02:30	0.230	11:15	0.581	0.407	0.407	0.82
5/26/2013	23:45	2.35	09:30	3.01	2.59	21:45	3.93	09:30	5.08	4.44	23:45	0.263	09:30	0.480	0.341	0.341	0.05
5/27/2013	23:45	2.18	16:15	2.57	2.34	23:00	3.17	16:15	4.54	4.02	23:45	0.191	16:15	0.344	0.268	0.268	
5/28/2013	03:30	2.12	08:15	2.58	2.28	01:00	1.69	09:30	4.48	3.62	01:00	0.103	09:30	0.332	0.232	0.232	0.28
5/29/2013	23:30	2.03	16:45	2.62	2.23	04:30	2.04	16:45	4.44	3.54	04:30	0.117	16:45	0.345	0.221	0.221	0.01
5/30/2013	05:00	1.94	08:00	2.52	2.13	22:30	2.45	08:15	4.36	3.34	05:00	0.127	08:15	0.318	0.195	0.195	
5/31/2013	02:00	1.91	06:15	2.43	2.06	02:15	1.10	06:15	4.25	3.07	02:15	0.056	06:15	0.297	0.171	0.171	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			4.341	3.85
Avg	2.00	2.37	0.140	

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH172, Pipe Height: 11 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	23:45	1.87	12:30	2.39	2.00	03:15	1.76	12:30	3.82	3.18	03:15	0.090	12:30	0.262	0.170	0.170	
6/2/2013	01:45	1.76	18:00	2.22	1.96	02:45	1.16	20:15	3.59	2.77	02:45	0.052	17:45	0.204	0.144	0.144	0.04
6/3/2013	00:00	1.76	07:30	2.54	2.08	00:15	1.08	09:00	3.86	3.06	00:15	0.048	07:30	0.283	0.174	0.174	0.75
6/4/2013	04:15	1.79	08:15	2.40	2.02	02:15	1.18	08:15	3.65	2.80	02:15	0.056	08:15	0.251	0.153	0.153	
6/5/2013	04:15	1.74	07:15	2.32	2.03	03:00	1.17	11:30	3.65	2.75	03:00	0.051	11:30	0.229	0.151	0.151	
6/6/2013	05:00	1.73	13:15	2.35	2.00	01:45	1.11	07:15	3.41	2.72	01:45	0.048	07:15	0.217	0.145	0.145	0.16
6/7/2013	01:00	1.72	21:45	4.90	2.74	01:45	1.45	22:15	5.48	3.56	01:45	0.066	22:00	1.001	0.339	0.339	2.62
6/8/2013	23:15	3.16	03:15	6.61	4.06	23:30	4.73	03:15	6.45	5.40	23:30	0.487	03:15	1.726	0.787	0.787	0.36
6/9/2013	23:30	2.74	00:15	3.37	2.99	22:45	4.13	07:00	5.07	4.67	22:45	0.347	00:15	0.541	0.438	0.438	
6/10/2013	13:30	2.59	23:00	3.62	2.87	04:30	3.80	22:45	5.20	4.51	04:30	0.295	23:00	0.624	0.402	0.402	1.06
6/11/2013	23:45	2.90	01:45	3.85	3.32	23:15	4.46	01:45	5.51	5.00	23:15	0.412	01:45	0.732	0.544	0.544	0.47
6/12/2013	23:30	2.57	06:45	3.16	2.84	23:00	4.11	06:45	4.88	4.54	23:30	0.322	06:45	0.494	0.396	0.396	
6/13/2013	04:15	2.49	21:00	3.70	2.95	02:00	3.85	21:45	5.36	4.58	02:00	0.285	21:00	0.667	0.427	0.427	1.33
6/14/2013	23:45	3.18	06:30	4.36	3.79	23:45	4.66	05:30	5.64	5.14	23:45	0.477	05:30	0.885	0.673	0.673	0.81
6/15/2013	23:45	2.89	13:45	3.42	3.12	23:15	4.19	00:00	5.04	4.57	23:15	0.377	00:00	0.570	0.455	0.455	
6/16/2013	23:45	2.64	12:45	3.07	2.86	17:30	3.69	02:00	4.59	4.17	23:30	0.309	10:45	0.429	0.369	0.369	
6/17/2013	02:30	2.49	14:00	3.28	2.73	00:00	3.39	14:00	4.39	3.90	02:30	0.247	14:00	0.468	0.322	0.322	0.10
6/18/2013	03:00	2.43	12:45	2.90	2.57	23:30	2.69	07:30	4.09	3.64	23:30	0.193	12:45	0.361	0.276	0.276	0.18
6/19/2013	23:15	2.39	06:45	2.86	2.51	19:45	2.35	06:45	4.02	3.35	19:45	0.168	06:45	0.354	0.246	0.246	
6/20/2013	23:30	2.28	08:00	2.73	2.42	09:45	2.31	10:30	4.10	3.23	01:15	0.167	10:30	0.336	0.225	0.225	
6/21/2013	02:00	2.18	19:45	2.65	2.36	02:15	2.35	07:30	3.59	3.12	02:15	0.144	19:45	0.270	0.210	0.210	
6/22/2013	02:45	2.12	10:45	2.67	2.30	01:15	2.31	08:00	3.57	3.10	01:15	0.139	10:45	0.285	0.200	0.200	
6/23/2013	02:30	2.11	14:30	2.88	2.28	00:30	2.50	14:30	3.78	3.07	02:30	0.146	14:30	0.337	0.197	0.197	
6/24/2013	03:30	2.10	20:15	2.94	2.30	02:15	2.40	20:15	3.80	3.06	02:15	0.141	20:15	0.348	0.199	0.199	0.20
6/25/2013	02:45	2.07	09:30	2.62	2.23	03:30	2.10	11:30	3.35	2.81	02:45	0.118	10:30	0.240	0.175	0.175	0.01
6/26/2013	01:00	2.00	07:30	2.58	2.21	23:30	1.72	21:30	3.69	2.80	23:30	0.106	21:30	0.270	0.172	0.172	0.08
6/27/2013	16:30	2.00	22:30	4.00	2.26	00:15	1.52	22:30	5.55	2.86	00:15	0.093	22:30	0.777	0.186	0.186	0.57
6/28/2013	03:30	2.09	08:45	2.66	2.29	15:15	1.46	01:00	3.32	2.49	15:15	0.084	10:15	0.253	0.161	0.161	0.05
6/29/2013	03:00	1.96	10:30	2.59	2.22	03:00	0.90	23:00	3.11	2.31	03:00	0.046	20:30	0.223	0.144	0.144	
6/30/2013	01:15	1.90	22:30	2.48	2.09	02:15	0.74	10:15	3.06	2.03	02:15	0.036	10:15	0.210	0.117	0.117	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			8.597	8.81
Avg	2.55	3.51	0.287	

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH172, Pipe Height: 11 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	02:00	1.94	11:30	6.14	2.70	03:30	0.82	11:30	5.94	3.10	03:30	0.041	11:30	1.455	0.291	0.291	0.44
7/2/2013	23:45	2.16	12:45	2.98	2.43	15:45	2.74	12:45	4.34	3.50	15:45	0.175	12:45	0.405	0.246	0.246	0.02
7/3/2013	22:15	2.06	10:30	2.68	2.21	05:45	2.00	09:30	4.22	3.09	04:30	0.117	09:30	0.313	0.191	0.191	
7/4/2013	04:15	1.98	11:00	2.31	2.11	02:45	1.55	11:00	3.70	2.83	02:45	0.082	11:00	0.241	0.162	0.162	
7/5/2013	04:00	1.95	10:15	2.51	2.07	02:15	1.19	13:15	3.66	2.72	02:15	0.062	06:30	0.244	0.153	0.153	
7/6/2013	04:15	1.86	09:15	2.29	2.02	04:45	1.21	12:15	3.54	2.52	04:45	0.060	09:15	0.215	0.137	0.137	
7/7/2013	04:00	1.77	17:30	2.30	1.99	01:30	1.04	12:30	3.36	2.34	01:30	0.052	17:30	0.199	0.124	0.124	
7/8/2013	02:45	1.74	08:45	2.44	2.02	02:00	0.99	09:00	3.50	2.38	01:00	0.048	06:15	0.224	0.131	0.131	
7/9/2013	01:30	1.72	09:45	2.36	1.99	01:45	0.93	08:45	3.36	2.21	01:45	0.041	09:45	0.218	0.118	0.118	
7/10/2013	05:00	1.74	13:00	3.07	2.05	03:30	0.81	13:00	4.35	2.12	03:30	0.037	13:00	0.423	0.121	0.116	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			1.670	0.56
Avg	2.16	2.69	0.168	

Site Commentary

Site Information

Ridgefield_MH188A	
Pipe Dimensions (in.)	Circular (11.50 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH188A indicate this location experienced hydraulic jumps during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. A hydraulic jump develops when flow transitions between supercritical and subcritical conditions, which can arise in any sewer with near or above critical velocity. The jump may be caused by imperfections in the pipe and/or a fixed downstream condition. Standing waves are also likely in flow near critical velocity. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location. However it is possible that during the transition as the jump moves through the meter location, the flow rate calculation based on measured depth and velocity can have momentary error.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.22	1.91	0.064
Minimum	0.59	0.58	0.007
Maximum	3.55	6.04	0.739
Time of Minimum	4/25/2013 3:00 AM	5/14/2013 6:15 AM	4/25/2013 3:00 AM
Time of Maximum	6/8/2013 3:45 AM	6/8/2013 3:45 AM	6/8/2013 3:45 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS ENVIRONMENTAL SERVICES®

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Site Report

FM Initials:	CL/TS
Project Name:	RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH188A	Meter Type:	FLOWSHARK	Monitor S/N:	5377	Manhole #:	188A
Address / Location:	12 JACKSON COURT (IN FRONT LAWN)			Map Page #:			
				Pipe Height:	11.5 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	11.5 Inches		
				Phone Number:			

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 10, 2013		Manhole Depth:	6 Feet	6 Inches	
Site Hydraulics:			Manhole Material / Condition:	Concrete		Fair
			Active Drop Connections?			
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:		LINED	Fair
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL		
Downstream Manhole:			**Telephone Information:**			
Depth of Flow (Wet Dof):	1 +/-	0.25	Access Pole #:	N/A		
Range (Air Dof):	9 +/-	0.25	Distance From Manhole:	N/A Feet		
Peak Velocity:	2.1 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 41° 16' 39.21" W 73° 29'59.82"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:	0 Feet	WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.5 PRESS SN 42318 PRESS PO 3.0

SCATTERGRAPH REPORT

Ridgefield_MH188A

Flow Monitor

Ridgefield_MH188A

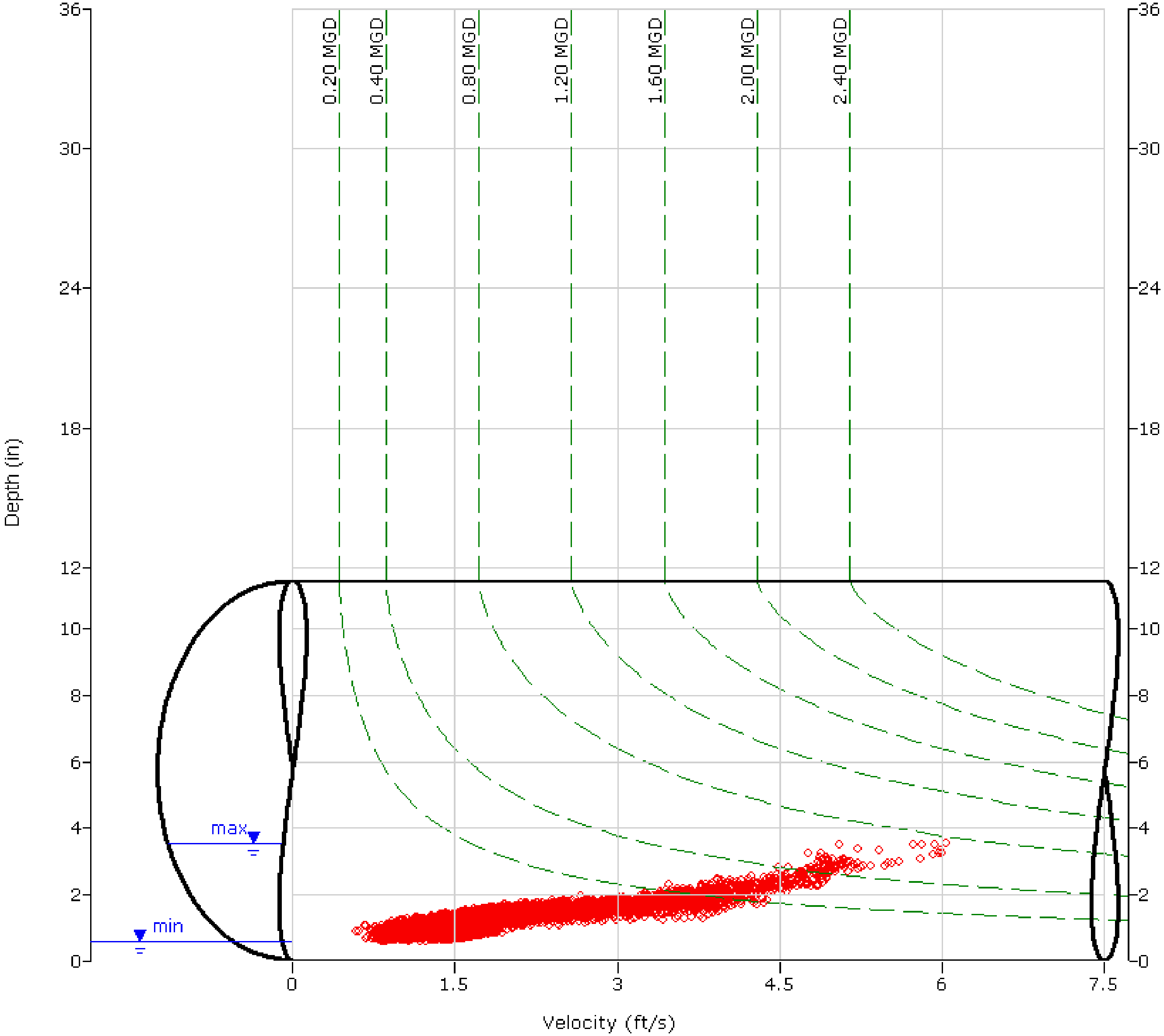
Pipe Height
11.50 in

Report Period

4/17/2013
To
7/10/2013

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

Flow Monitor

Ridgefield_MH188A

Pipe Height
11.50 in

Report Period

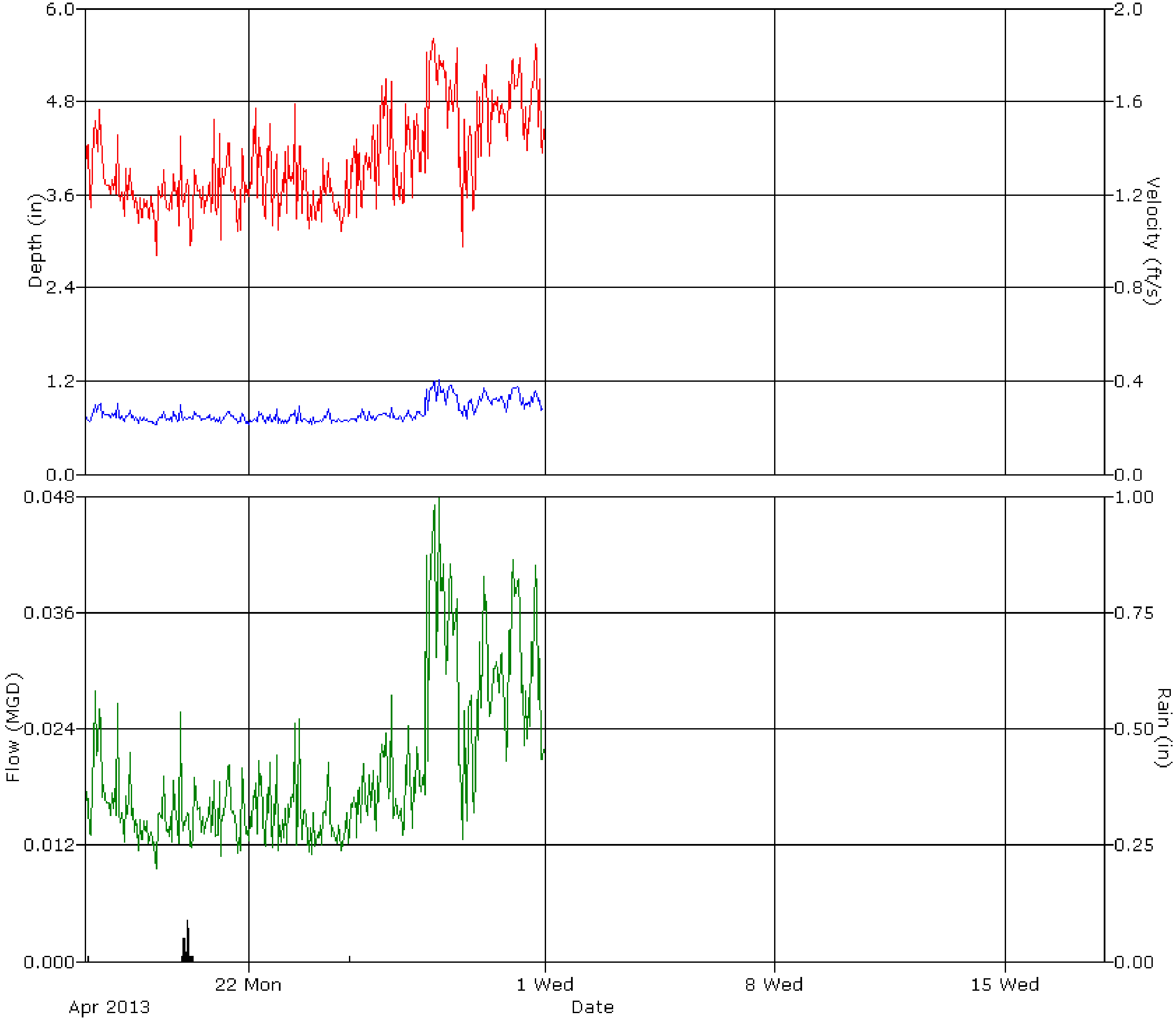
4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

HYDROGRAPH REPORT

Ridgefield_MH188A



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH188A

Flow Monitor

Ridgefield_MH188A

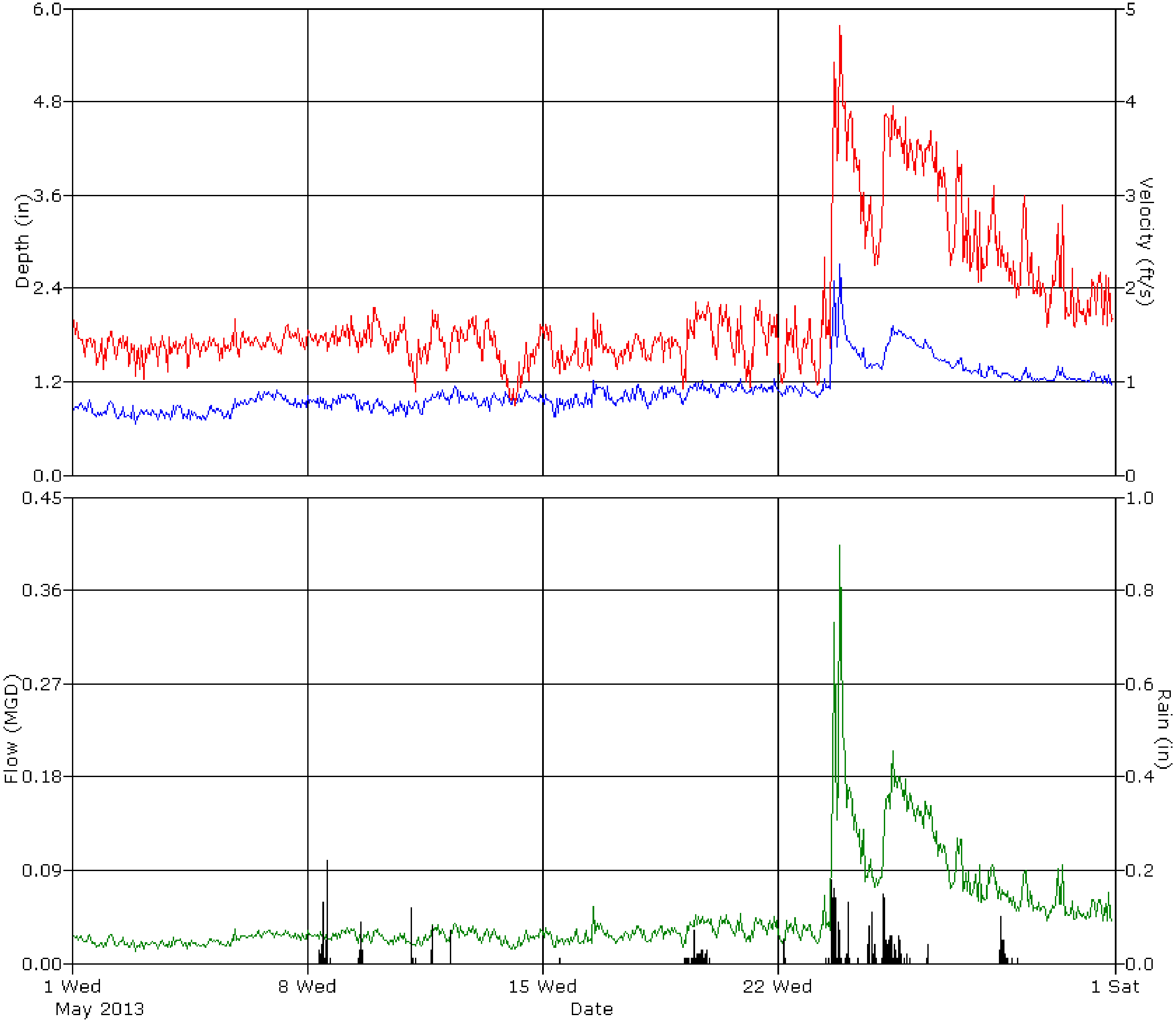
Pipe Height
11.50 in

Report Period

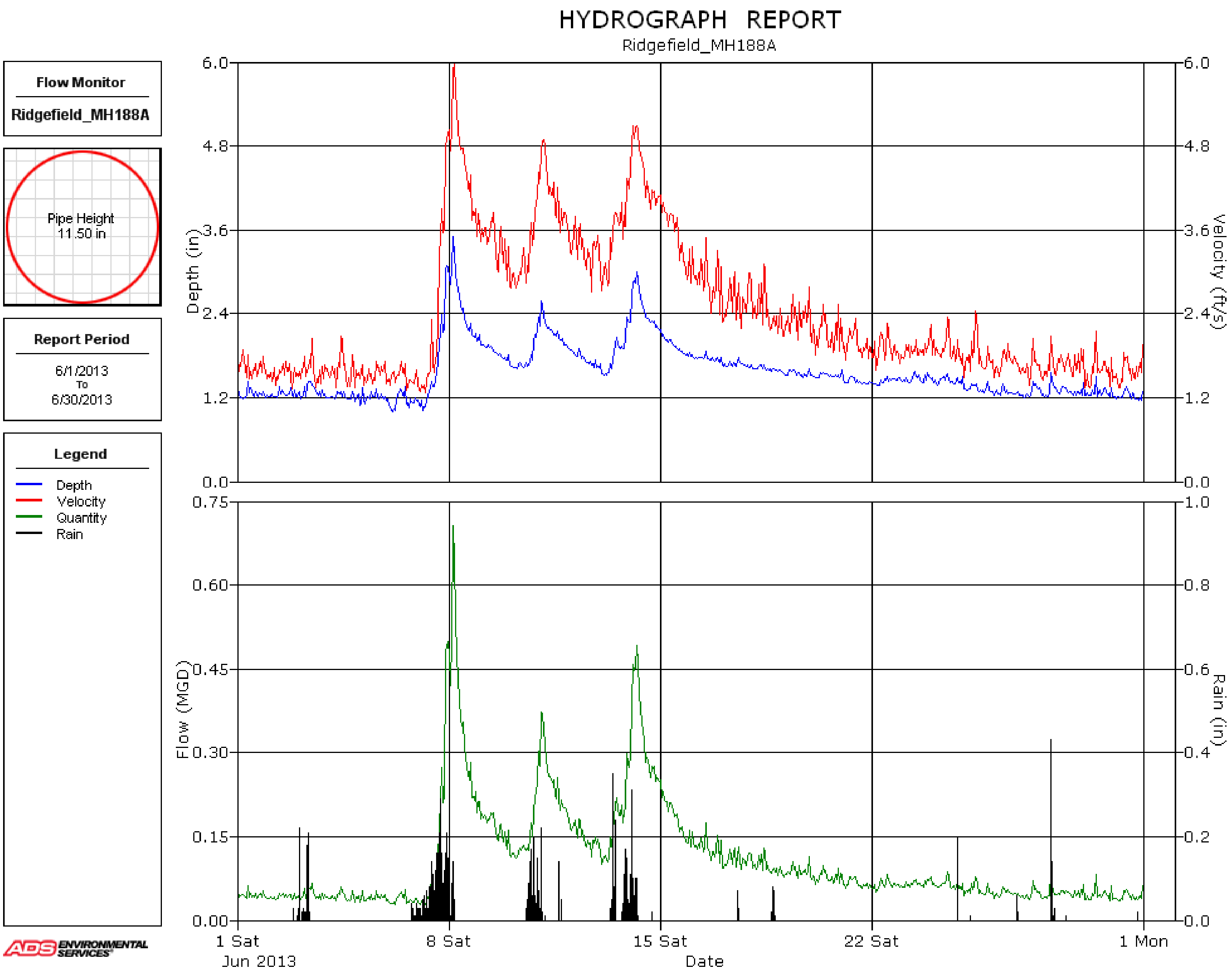
5/1/2013
To
5/31/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES


HYDROGRAPH REPORT
Ridgefield_MH188A
Flow Monitor
Ridgefield_MH188A
Pipe Height
11.50 in
Report Period
6/1/2013
To
6/30/2013
Legend
Depth
Velocity
Quantity
Rain
Depth (in)
Velocity (ft/s)
Flow (MGD)
Rain (in)
6.0
4.8
3.6
2.4
1.2
0.0
0.75
0.60
0.45
0.30
0.15
0.00
1.0
0.8
0.6
0.4
0.2
0.0
1 Sat
Jun 2013
8 Sat
15 Sat
22 Sat
1 Mon
Date
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH188A

Flow Monitor

Ridgefield_MH188A

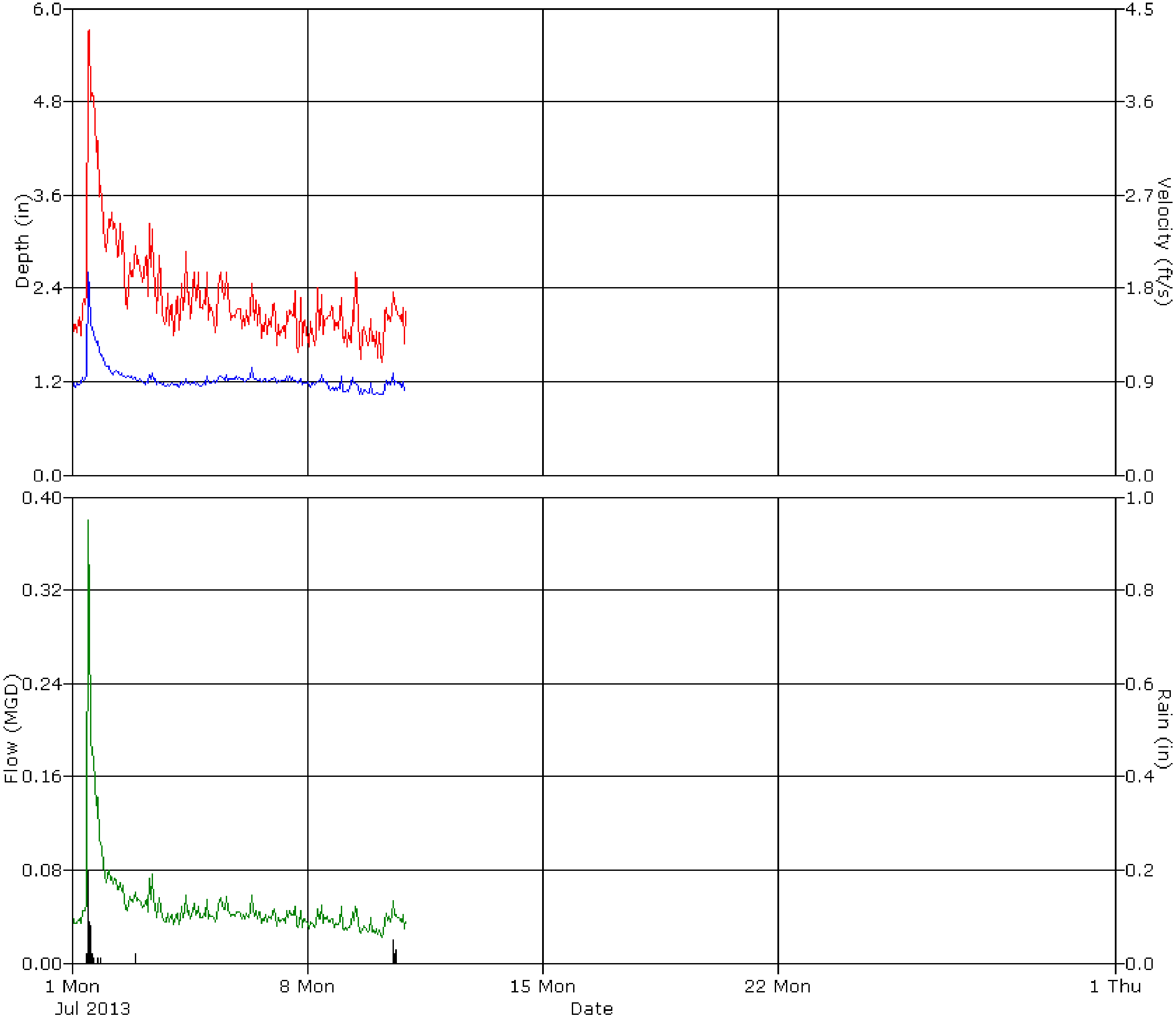
Pipe Height
11.50 in

Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

NE Temps 2013

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH188A, Pipe Height: 11.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	04:00	0.64	08:00	1.25	0.77	04:45	0.76	08:00	2.08	1.33	04:45	0.009	08:00	0.057	0.018	0.018	0.01
4/18/2013	18:00	0.63	09:45	1.18	0.73	18:00	0.94	09:45	1.81	1.19	18:00	0.009	09:45	0.046	0.015	0.015	
4/19/2013	04:00	0.60	22:30	1.18	0.72	04:00	0.87	22:45	1.93	1.18	04:00	0.008	22:30	0.040	0.015	0.015	0.01
4/20/2013	20:45	0.63	08:45	0.93	0.73	05:15	0.74	21:45	1.65	1.19	05:15	0.009	08:45	0.026	0.015	0.015	0.31
4/21/2013	05:15	0.62	19:15	0.96	0.72	00:45	0.77	09:45	1.75	1.23	22:30	0.008	19:15	0.028	0.015	0.015	
4/22/2013	21:00	0.60	20:15	1.17	0.71	21:00	0.86	07:00	1.70	1.28	21:00	0.008	20:15	0.034	0.016	0.016	
4/23/2013	11:15	0.59	13:30	1.30	0.71	11:15	0.85	10:15	2.03	1.26	11:15	0.008	13:30	0.051	0.015	0.015	
4/24/2013	12:45	0.61	10:45	1.15	0.70	21:30	0.88	10:15	1.67	1.18	21:30	0.008	09:15	0.031	0.014	0.014	
4/25/2013	03:00	0.59	11:45	1.25	0.73	03:00	0.83	09:30	1.77	1.30	03:00	0.007	12:15	0.042	0.016	0.016	0.01
4/26/2013	23:30	0.64	08:30	1.10	0.75	16:45	0.76	08:30	2.11	1.39	16:45	0.008	08:30	0.048	0.018	0.018	
4/27/2013	00:45	0.68	19:45	1.34	0.95	08:30	1.06	22:15	2.10	1.61	08:30	0.012	19:45	0.060	0.031	0.031	
4/28/2013	15:30	0.59	16:45	1.28	0.92	11:45	0.68	07:15	1.91	1.44	11:45	0.008	08:45	0.048	0.026	0.026	
4/29/2013	20:45	0.74	12:45	1.20	0.96	01:00	1.01	00:00	1.97	1.56	01:00	0.015	12:45	0.047	0.030	0.030	
4/30/2013	06:45	0.74	08:45	1.20	0.97	21:30	1.09	00:15	2.01	1.62	21:30	0.016	17:45	0.046	0.031	0.031	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			0.275	0.34
Avg	0.79	1.34	0.020	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH188A, Pipe Height: 11.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	19:45	0.66	12:00	1.22	0.84	07:30	0.93	03:15	1.83	1.41	17:30	0.012	12:00	0.038	0.022	0.022	
5/2/2013	21:00	0.61	19:15	1.13	0.80	16:30	0.75	11:30	1.76	1.36	21:00	0.008	11:30	0.038	0.020	0.020	
5/3/2013	22:45	0.65	10:15	0.96	0.79	03:45	0.82	08:45	1.89	1.32	03:45	0.011	08:45	0.028	0.018	0.018	
5/4/2013	12:00	0.63	11:15	1.15	0.79	10:30	0.69	08:00	1.82	1.37	10:30	0.008	00:30	0.039	0.019	0.019	
5/5/2013	15:15	0.66	20:15	1.27	0.83	23:15	0.83	20:15	1.93	1.39	16:00	0.011	20:15	0.054	0.021	0.021	
5/6/2013	15:15	0.83	17:00	1.15	0.98	08:45	1.21	21:30	1.70	1.44	15:15	0.019	21:30	0.038	0.028	0.028	
5/7/2013	14:45	0.83	20:45	1.22	0.96	10:00	1.08	10:45	2.04	1.45	12:15	0.018	20:45	0.050	0.027	0.027	
5/8/2013	12:15	0.77	07:30	1.21	0.94	07:45	0.77	00:15	1.81	1.47	07:45	0.014	00:15	0.042	0.027	0.027	0.51
5/9/2013	12:30	0.72	06:00	1.18	0.94	06:30	1.05	07:15	1.86	1.51	12:30	0.014	04:15	0.040	0.028	0.028	0.16
5/10/2013	17:00	0.59	12:15	1.20	0.86	17:00	0.83	21:00	1.98	1.51	17:00	0.007	02:30	0.050	0.025	0.025	
5/11/2013	09:45	0.63	23:30	1.18	0.94	05:30	0.76	17:15	2.02	1.35	09:45	0.010	19:15	0.045	0.025	0.025	0.25
5/12/2013	12:00	0.76	10:15	1.25	1.01	03:30	1.03	08:45	1.80	1.47	12:00	0.016	10:15	0.047	0.030	0.030	0.07
5/13/2013	09:30	0.78	13:45	1.13	0.96	22:45	0.88	09:15	1.93	1.36	19:00	0.016	09:15	0.044	0.025	0.025	
5/14/2013	18:00	0.82	19:15	1.18	0.99	06:15	0.58	22:30	1.91	1.14	06:15	0.010	22:30	0.044	0.022	0.022	
5/15/2013	15:45	0.65	20:15	1.36	0.92	15:45	0.74	05:00	1.90	1.33	15:45	0.008	20:15	0.045	0.024	0.024	0.01
5/16/2013	11:45	0.71	12:45	1.73	1.02	02:15	0.95	12:45	3.24	1.35	11:45	0.014	12:45	0.143	0.028	0.028	
5/17/2013	05:15	0.78	11:45	1.30	1.01	06:00	0.94	10:15	1.70	1.34	23:15	0.014	11:45	0.048	0.027	0.027	
5/18/2013	10:15	0.70	13:15	1.24	1.03	19:00	1.05	13:15	1.86	1.38	10:15	0.015	13:15	0.050	0.029	0.029	
5/19/2013	04:00	0.84	17:00	1.31	1.08	05:15	0.85	21:45	2.13	1.54	05:15	0.013	13:00	0.055	0.035	0.035	0.33
5/20/2013	05:00	0.89	12:00	1.31	1.12	18:15	1.07	13:00	2.51	1.53	05:00	0.018	13:00	0.062	0.036	0.036	
5/21/2013	06:30	1.00	05:00	1.30	1.11	02:45	0.89	17:45	2.37	1.47	02:45	0.019	17:45	0.065	0.034	0.034	
5/22/2013	17:45	0.97	18:30	1.39	1.09	03:00	0.90	06:30	2.25	1.35	02:15	0.019	06:30	0.061	0.031	0.031	0.06
5/23/2013	03:45	0.97	20:30	2.76	1.49	05:00	0.83	20:15	4.89	2.42	03:45	0.017	20:30	0.414	0.115	0.115	0.82
5/24/2013	17:00	1.33	00:15	2.01	1.55	20:30	1.98	00:15	4.20	3.07	20:30	0.062	00:15	0.229	0.118	0.118	0.48
5/25/2013	02:30	1.31	10:30	2.18	1.71	00:15	2.20	10:30	4.52	3.49	00:15	0.071	10:30	0.278	0.153	0.153	0.82
5/26/2013	19:45	1.42	09:30	1.95	1.60	18:30	2.49	13:45	4.35	3.38	18:30	0.088	09:30	0.203	0.134	0.134	0.05
5/27/2013	23:15	1.29	10:30	1.72	1.39	17:30	1.68	10:30	4.26	2.62	17:30	0.050	10:30	0.186	0.084	0.084	
5/28/2013	09:00	1.22	09:15	1.72	1.31	11:30	1.67	10:15	3.85	2.41	09:00	0.048	09:15	0.157	0.072	0.072	0.28
5/29/2013	06:15	1.18	09:45	1.64	1.25	15:45	1.40	07:15	3.76	2.18	15:45	0.036	09:45	0.144	0.060	0.060	0.01
5/30/2013	00:30	1.16	08:15	1.77	1.25	20:00	1.21	11:45	3.98	1.96	00:30	0.033	08:15	0.167	0.055	0.055	
5/31/2013	22:15	1.14	20:00	1.68	1.23	06:00	1.32	20:00	3.57	1.85	06:00	0.034	20:00	0.151	0.051	0.050	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			1.421	3.85
Avg	1.09	1.75	0.046	

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH188A, Pipe Height: 11.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	04:15	1.15	08:30	1.68	1.25	21:30	1.03	00:15	2.36	1.63	21:30	0.028	08:30	0.100	0.045	0.045	
6/2/2013	17:45	1.18	21:15	1.41	1.25	06:15	1.11	12:15	1.95	1.54	06:15	0.029	17:30	0.061	0.042	0.042	0.04
6/3/2013	02:00	1.15	05:30	1.71	1.29	20:15	1.06	11:00	2.88	1.58	20:15	0.029	05:30	0.105	0.046	0.046	0.75
6/4/2013	23:00	1.08	19:15	1.49	1.22	06:00	1.09	10:30	2.99	1.59	06:00	0.027	10:30	0.078	0.042	0.042	
6/5/2013	02:45	1.05	03:00	1.66	1.20	05:15	1.13	03:00	2.11	1.54	05:15	0.025	03:00	0.087	0.040	0.040	
6/6/2013	15:15	0.94	13:00	1.71	1.16	15:15	0.94	13:00	2.14	1.49	15:15	0.017	13:00	0.093	0.037	0.037	0.16
6/7/2013	03:15	0.98	21:30	3.50	1.68	05:30	1.08	23:30	5.09	2.41	05:30	0.024	21:30	0.606	0.138	0.138	2.62
6/8/2013	22:15	1.98	03:45	3.55	2.50	23:00	3.38	03:45	6.04	4.61	23:00	0.181	03:45	0.739	0.360	0.360	0.36
6/9/2013	21:45	1.69	00:15	2.18	1.87	22:45	2.61	11:15	4.26	3.44	22:45	0.112	00:30	0.235	0.171	0.171	
6/10/2013	13:00	1.56	23:00	2.45	1.77	13:00	2.24	23:15	4.69	3.24	13:00	0.085	23:00	0.328	0.151	0.151	1.06
6/11/2013	23:15	1.89	01:45	2.74	2.14	16:15	3.25	01:15	4.96	4.12	22:00	0.168	01:45	0.409	0.250	0.250	0.47
6/12/2013	23:15	1.56	07:30	2.02	1.76	17:30	2.49	08:00	4.24	3.34	17:30	0.101	07:30	0.220	0.151	0.151	
6/13/2013	07:00	1.48	21:15	2.41	1.83	01:45	2.58	22:00	4.64	3.50	07:00	0.093	22:00	0.317	0.173	0.173	1.33
6/14/2013	23:15	2.14	05:30	3.03	2.48	21:30	3.77	05:00	5.23	4.44	23:00	0.236	05:30	0.500	0.334	0.334	0.81
6/15/2013	22:15	1.78	00:00	2.18	1.94	21:15	2.71	00:00	4.29	3.56	21:15	0.128	00:00	0.264	0.187	0.187	
6/16/2013	23:15	1.67	12:15	2.14	1.77	23:15	2.15	12:15	4.03	2.90	23:15	0.090	12:15	0.241	0.132	0.132	
6/17/2013	20:00	1.60	13:45	1.96	1.68	18:00	2.00	11:15	3.83	2.61	18:00	0.083	00:15	0.191	0.111	0.111	0.10
6/18/2013	21:00	1.55	10:00	1.77	1.62	15:45	1.76	10:45	3.67	2.46	15:45	0.068	06:45	0.162	0.098	0.098	0.18
6/19/2013	17:30	1.43	22:00	1.87	1.55	11:45	1.80	11:00	3.47	2.32	11:45	0.069	22:00	0.157	0.087	0.087	
6/20/2013	16:45	1.44	09:30	1.63	1.51	17:15	1.62	09:30	3.53	2.11	17:15	0.057	09:30	0.143	0.077	0.077	
6/21/2013	21:15	1.36	00:30	1.73	1.44	06:30	1.58	06:45	3.35	1.98	03:30	0.054	10:45	0.122	0.067	0.067	
6/22/2013	06:00	1.36	07:15	1.59	1.44	03:00	1.43	13:00	3.19	1.89	03:00	0.046	07:15	0.118	0.064	0.064	
6/23/2013	05:45	1.39	20:00	1.70	1.47	06:00	1.41	23:00	2.96	1.90	06:00	0.047	23:00	0.107	0.066	0.066	
6/24/2013	02:30	1.37	09:30	1.63	1.44	19:30	1.53	13:30	3.20	1.89	23:15	0.050	13:30	0.123	0.064	0.064	0.20
6/25/2013	16:15	1.23	20:30	1.72	1.34	01:00	1.35	11:15	3.01	1.80	16:15	0.039	20:30	0.106	0.055	0.055	0.01
6/26/2013	05:15	1.22	08:00	1.54	1.28	05:15	1.36	12:45	2.85	1.69	05:15	0.036	12:45	0.084	0.048	0.048	0.08
6/27/2013	18:45	1.18	22:45	1.87	1.29	05:45	1.12	08:45	2.79	1.65	05:45	0.029	22:45	0.134	0.048	0.048	0.57
6/28/2013	18:45	1.21	00:30	1.47	1.30	02:30	1.37	22:15	2.06	1.68	16:00	0.038	06:30	0.065	0.049	0.049	0.05
6/29/2013	23:45	1.18	10:15	1.85	1.28	06:30	1.22	10:15	3.21	1.59	23:45	0.032	10:15	0.156	0.046	0.046	
6/30/2013	20:30	1.11	23:45	1.78	1.23	03:30	1.14	23:45	3.03	1.58	05:45	0.029	23:45	0.139	0.043	0.043	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			3.221	8.81
Avg	1.57	2.40	0.107	

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH188A, Pipe Height: 11.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	02:30	1.10	11:30	3.35	1.53	00:30	1.20	11:30	5.22	2.45	00:30	0.030	11:30	0.589	0.107	0.107	0.44
7/2/2013	21:30	1.20	01:30	1.45	1.30	12:15	1.39	12:30	3.63	2.14	14:45	0.039	12:30	0.103	0.062	0.062	0.02
7/3/2013	12:45	1.12	09:15	1.71	1.20	17:15	1.12	07:30	3.93	1.84	17:15	0.028	09:15	0.161	0.048	0.048	
7/4/2013	04:45	1.11	06:45	1.36	1.17	04:45	0.88	06:45	2.61	1.68	04:45	0.020	06:45	0.081	0.042	0.042	
7/5/2013	02:00	1.15	14:30	1.46	1.23	03:15	1.20	08:00	2.49	1.65	06:00	0.029	14:30	0.085	0.045	0.045	
7/6/2013	20:15	1.17	08:45	1.45	1.23	15:45	1.20	08:45	2.53	1.52	15:45	0.031	08:45	0.086	0.041	0.041	
7/7/2013	20:30	1.09	13:15	1.41	1.22	16:00	1.04	15:30	2.84	1.45	16:00	0.027	15:30	0.084	0.038	0.038	
7/8/2013	19:00	1.06	10:30	1.45	1.16	08:15	0.92	07:30	2.65	1.47	08:15	0.024	10:30	0.069	0.036	0.036	
7/9/2013	13:00	1.00	00:15	1.42	1.11	14:45	0.67	10:15	2.70	1.41	14:45	0.015	11:15	0.066	0.033	0.033	
7/10/2013	03:30	0.99	13:00	1.61	1.13	04:15	0.67	13:00	2.38	1.45	04:15	0.014	13:00	0.095	0.035	0.034	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			0.486	0.56
Avg	1.23	1.71	0.049	

Site Commentary

Site Information

Ridgefield_MH25	
Pipe Dimensions (in.)	Elliptical (10.50 in H, 11.38 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH25 indicate this location experienced open channel flows during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. The scattergraph further details the rain induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.68	0.99	0.249
Minimum	3.71	0.33	0.048
Maximum	10.52	4.06	1.710
Time of Minimum	5/23/2013 2:00 AM	5/4/2013 4:30 AM	5/4/2013 4:30 AM
Time of Maximum	7/1/2013 11:30 AM	6/8/2013 3:45 AM	6/8/2013 3:45 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below. Surcharge events in June indicate no backup occuring

Percent Uptime	
Depth (in) - Pressure depth replaced on 6/21	99
Velocity (ft/s)	99
Quantity (MGD)	99

ADS ENVIRONMENTAL SERVICES®

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Site Report

FM Initials: CL/TS

Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH25	Meter Type:	FLOWSHARK	Monitor S/N:	16056	Manhole #:	25
Address / Location:	PROSPECT STREET AT BAILEY AVENUE ***DETAIL NEEDED***			Map Page #:			
				Pipe Height:	10.5 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	11.38 Inches		
				Phone Number:			

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 10, 2013	1:00 PM	Manhole Depth:	8 Feet	3 Inches
Site Hydraulics:	SMOOTH, SLOW		Manhole Material / Condition:	Brick	Good
			Active Drop Connections?		
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	LINED	Good
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL	
Downstream Manhole:			**Telephone Information:**		
Depth of Flow (Wet Dof):	5.25 +/- 0.38		Access Pole #:	N/A	
Range (Air Dof):	3.25 +/- 0.38		Distance From Manhole:	N/A Feet	
Peak Velocity:	1 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 41° 17' 01.37" W 73° 29' 46.68"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.75 PRESS SN 79188

SCATTERGRAPH REPORT

Ridgefield_MH25

Flow Monitor

Ridgefield_MH25

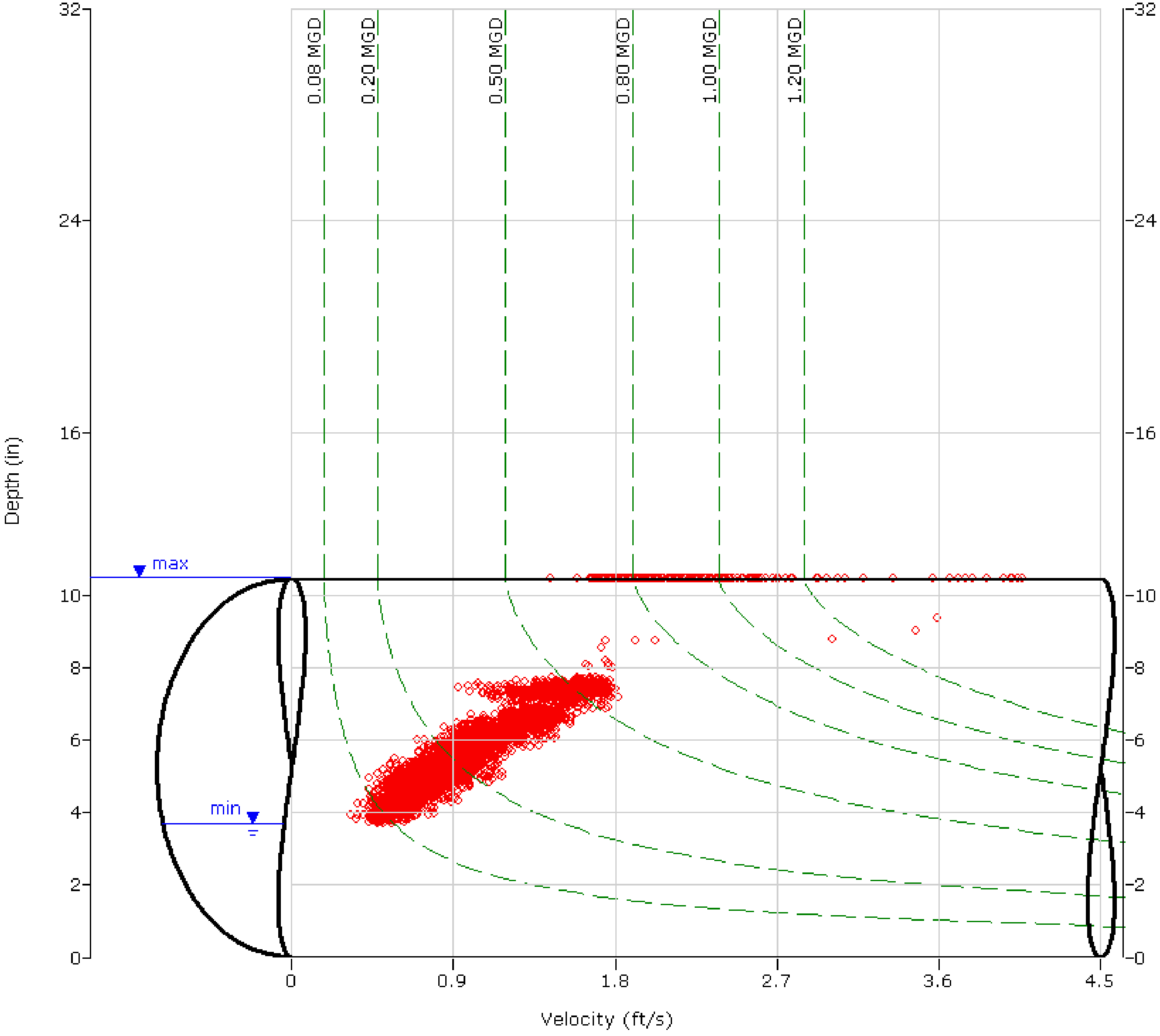
Pipe Height
10.50 in

Report Period

4/17/2013
To
7/10/2013

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH25

Flow Monitor

Ridgefield_MH25

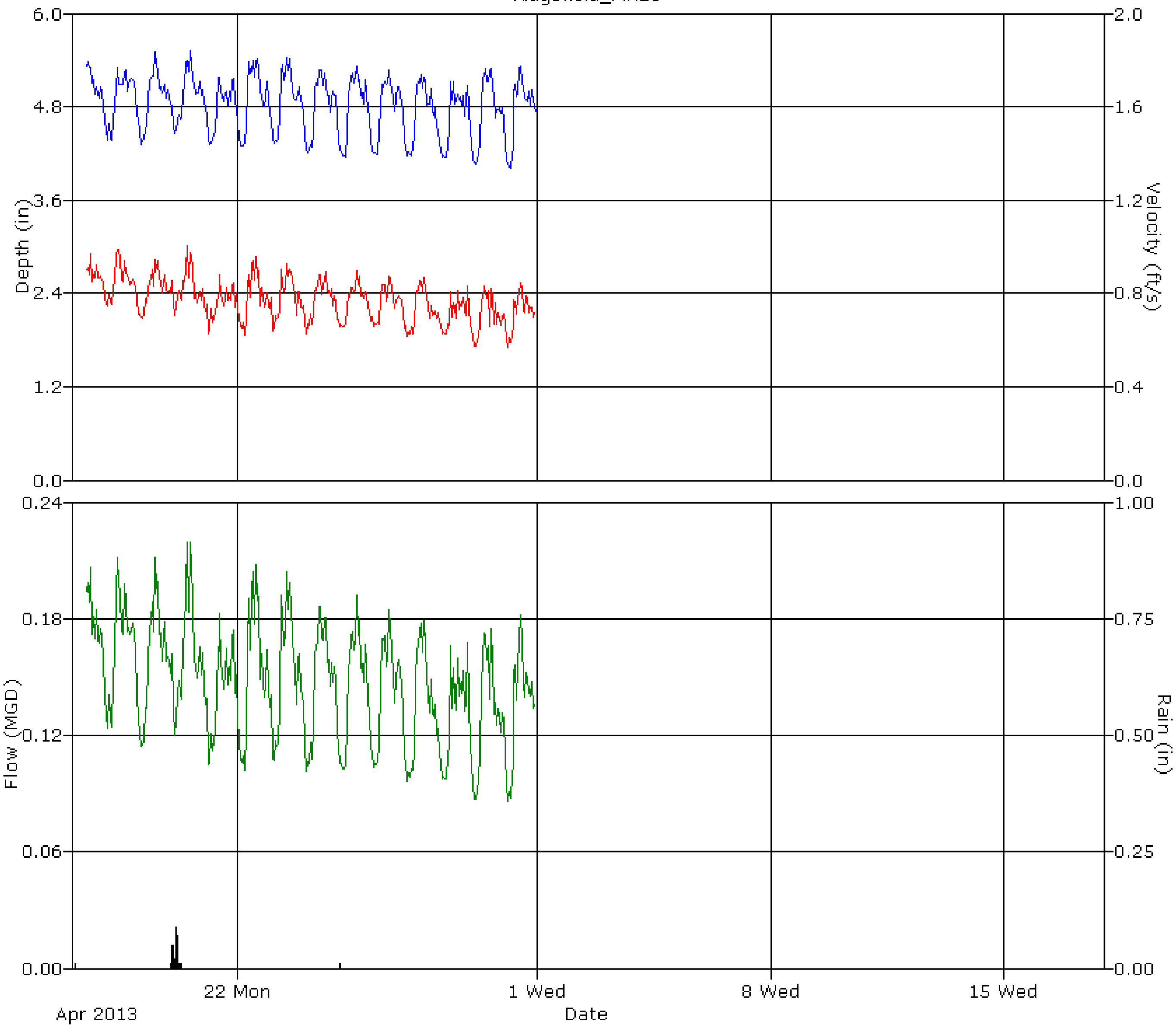
Pipe Height
10.50 in

Report Period

4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH25

Flow Monitor

Ridgefield_MH25

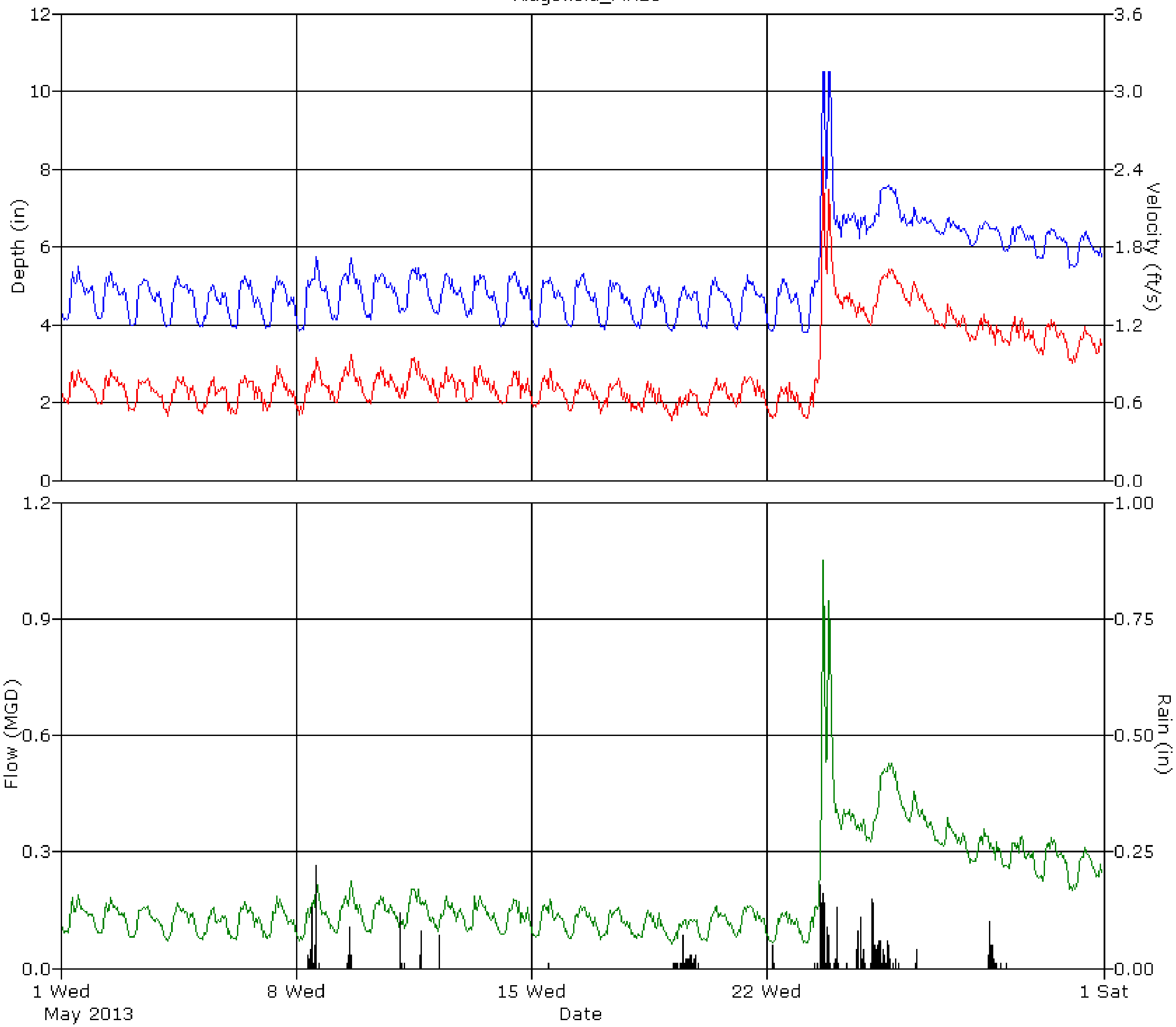
Pipe Height
10.50 in

Report Period

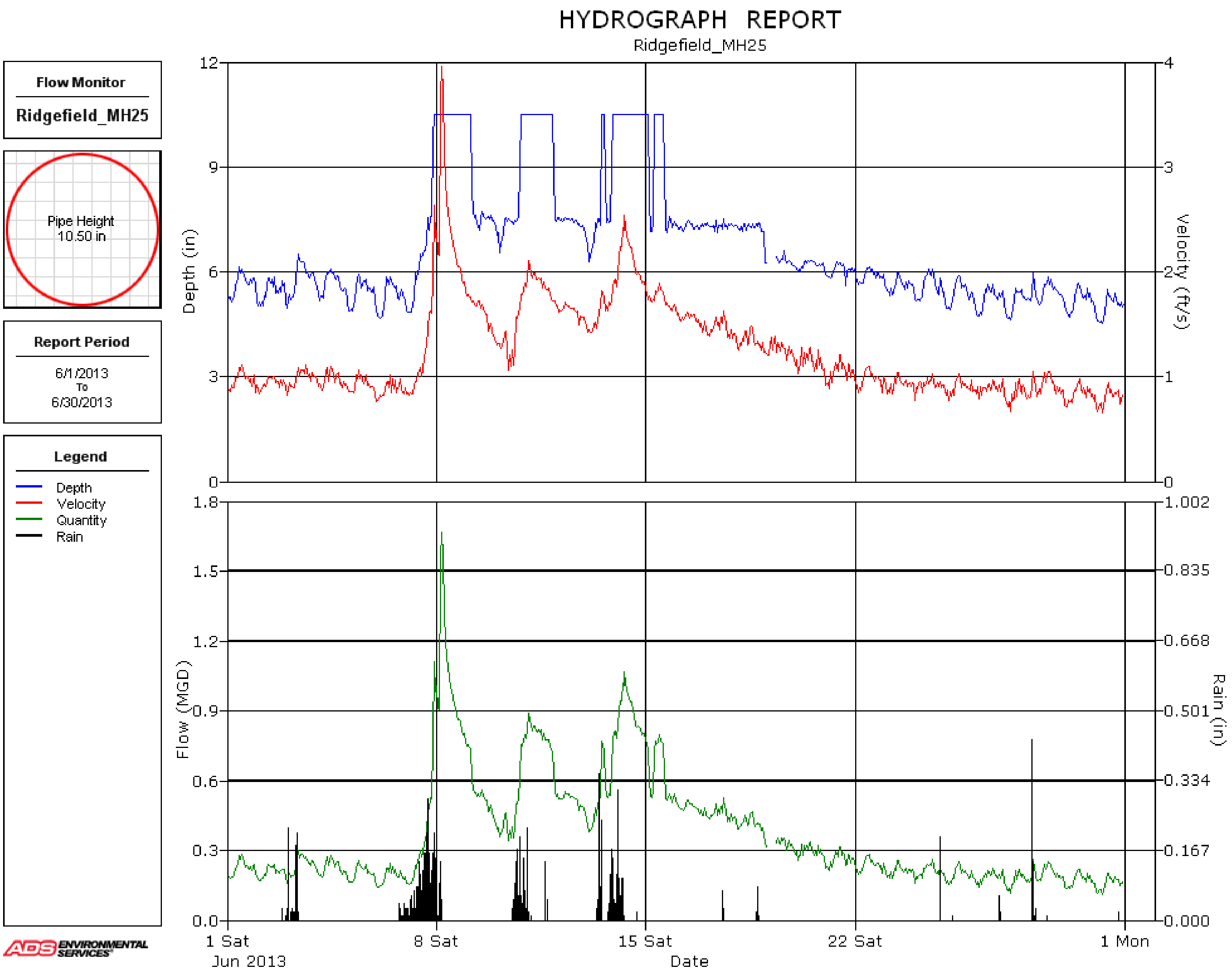
5/1/2013
To
5/31/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

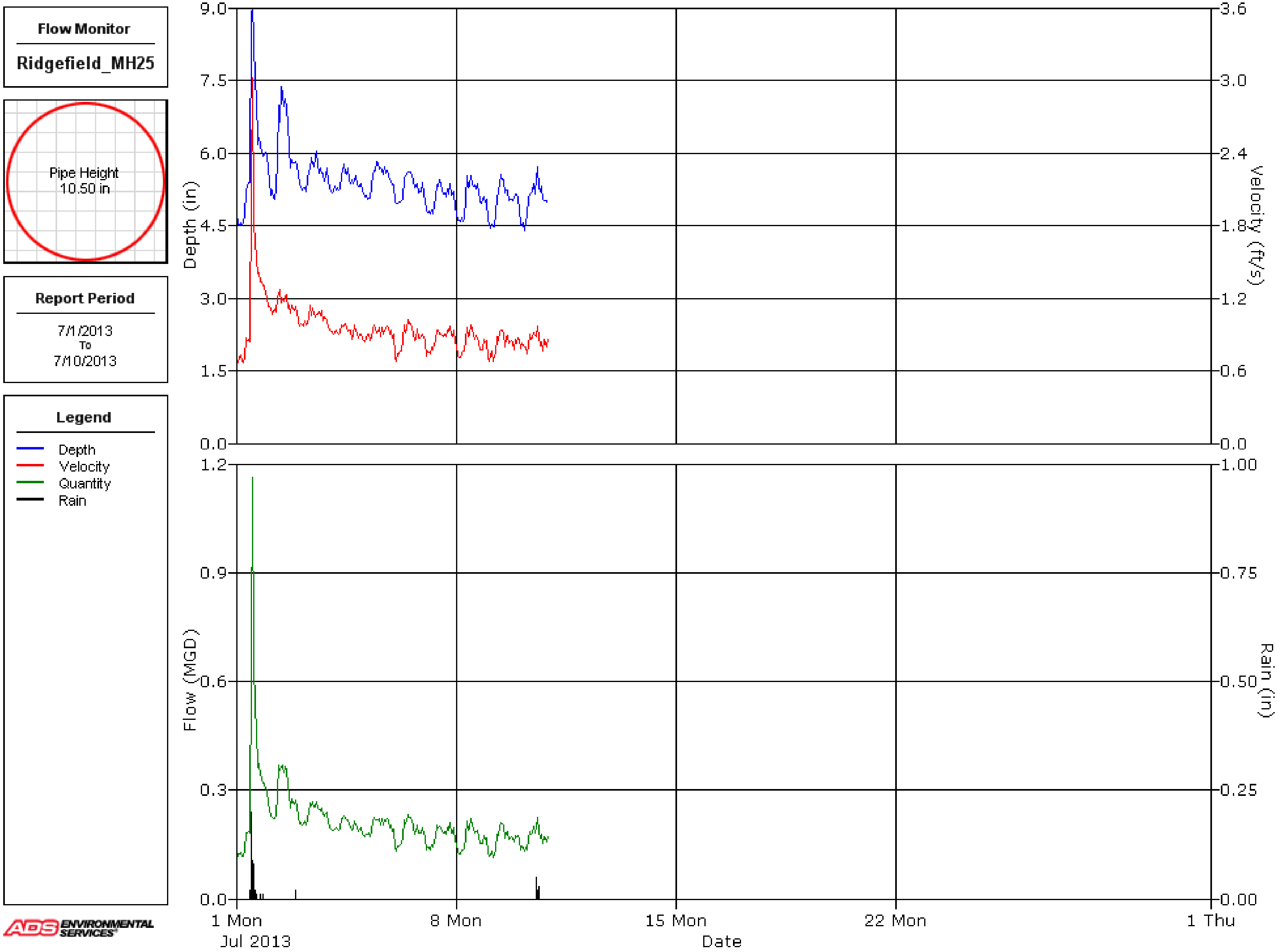


ADS ENVIRONMENTAL SERVICES


HYDROGRAPH REPORT
Ridgefield_MH25
Flow Monitor
Ridgefield_MH25
Pipe Height
10.50 in
Report Period
6/1/2013
To
6/30/2013
Legend
Depth
Velocity
Quantity
Rain
Depth (in)
Velocity (ft/s)
Flow (MGD)
Rain (in)
12
9
6
3
0
4
3
2
1
0
1.8
1.5
1.2
0.9
0.6
0.3
0.0
1.002
0.835
0.668
0.501
0.334
0.167
0.000
1 Sat
Jun 2013
8 Sat
15 Sat
22 Sat
1 Mon
Date
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH25



NE Temps 2013

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH25, Pipe Height: 10.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	23:00	4.64	13:00	5.59	5.09	13:45	0.77	12:45	1.02	0.88	23:00	0.144	13:00	0.233	0.179	0.093	0.01
4/18/2013	02:30	4.30	09:45	5.54	4.91	02:30	0.69	08:45	1.04	0.85	02:30	0.112	09:45	0.234	0.166	0.166	
4/19/2013	02:30	4.31	12:15	5.74	4.91	02:30	0.61	13:00	1.01	0.82	02:30	0.099	12:15	0.236	0.159	0.159	0.01
4/20/2013	02:45	4.36	13:45	5.71	4.96	02:45	0.66	14:00	1.05	0.83	02:45	0.109	14:00	0.238	0.163	0.163	0.31
4/21/2013	02:30	4.29	09:45	5.44	4.82	00:45	0.53	11:00	0.91	0.76	02:45	0.091	09:45	0.198	0.145	0.145	
4/22/2013	02:00	4.26	14:00	5.85	4.90	05:00	0.58	10:45	1.04	0.78	05:00	0.093	10:45	0.229	0.153	0.153	
4/23/2013	04:00	4.27	07:30	5.82	4.90	02:00	0.52	07:30	1.10	0.79	02:00	0.084	07:30	0.264	0.154	0.154	
4/24/2013	02:45	4.13	12:00	5.63	4.82	01:30	0.52	14:15	0.99	0.77	01:30	0.084	12:00	0.225	0.147	0.147	
4/25/2013	05:15	4.10	13:00	5.53	4.81	01:45	0.57	09:45	0.96	0.77	01:45	0.091	13:00	0.211	0.146	0.146	0.01
4/26/2013	04:15	4.10	19:00	5.45	4.79	06:30	0.53	10:00	0.97	0.76	06:30	0.087	10:00	0.212	0.143	0.143	
4/27/2013	05:45	4.08	12:45	5.43	4.71	02:00	0.58	12:45	0.95	0.73	03:00	0.088	12:45	0.209	0.136	0.136	
4/28/2013	02:45	4.09	11:00	5.35	4.66	06:45	0.57	09:45	0.90	0.71	06:45	0.087	09:45	0.194	0.130	0.130	
4/29/2013	02:30	4.00	10:30	5.45	4.73	03:15	0.52	14:30	0.92	0.70	03:15	0.077	14:30	0.203	0.131	0.131	
4/30/2013	03:00	3.95	12:45	5.67	4.74	02:00	0.55	12:45	0.99	0.72	02:00	0.082	12:45	0.230	0.134	0.134	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.000	0.34
Avg	4.83	0.77	0.148	

NE Temps 2013

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH25, Pipe Height: 10.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	04:15	4.09	12:00	5.71	4.79	05:30	0.52	12:45	0.98	0.72	05:30	0.079	12:45	0.217	0.137	0.137	
5/2/2013	04:00	4.10	10:45	5.47	4.75	05:15	0.55	11:45	0.91	0.71	05:15	0.086	12:45	0.198	0.134	0.134	
5/3/2013	03:45	3.94	08:30	5.39	4.66	00:45	0.47	11:45	0.91	0.67	00:45	0.072	11:45	0.191	0.124	0.124	
5/4/2013	02:15	3.93	11:45	5.37	4.67	04:30	0.33	15:15	0.92	0.67	04:30	0.048	15:15	0.182	0.124	0.124	
5/5/2013	04:00	3.86	12:15	5.36	4.50	07:45	0.47	12:15	0.88	0.65	05:00	0.071	12:15	0.190	0.113	0.113	
5/6/2013	05:15	3.78	11:00	5.64	4.60	04:00	0.40	11:00	0.92	0.68	04:00	0.058	11:00	0.212	0.122	0.122	
5/7/2013	02:30	3.80	07:15	5.49	4.60	16:15	0.48	10:45	0.95	0.69	03:00	0.068	12:00	0.206	0.124	0.124	
5/8/2013	01:45	3.78	14:30	6.01	4.73	02:00	0.45	14:30	1.05	0.71	02:00	0.062	14:30	0.262	0.134	0.134	0.51
5/9/2013	01:15	4.11	15:00	5.99	4.88	03:30	0.53	15:00	1.02	0.76	03:30	0.083	15:00	0.253	0.148	0.148	0.16
5/10/2013	05:00	4.11	11:00	5.49	4.83	05:45	0.52	12:00	0.97	0.73	05:45	0.081	12:00	0.214	0.141	0.141	
5/11/2013	02:30	4.14	15:00	6.17	4.94	05:15	0.45	15:15	1.01	0.78	05:15	0.073	15:00	0.257	0.154	0.154	0.25
5/12/2013	05:15	4.12	15:15	5.46	4.78	05:15	0.47	02:30	0.93	0.74	05:15	0.072	11:30	0.203	0.139	0.139	0.07
5/13/2013	02:30	4.08	07:45	5.94	4.76	06:30	0.45	07:45	1.05	0.72	06:30	0.073	07:45	0.258	0.136	0.136	
5/14/2013	03:45	3.92	08:30	5.46	4.72	16:00	0.53	10:00	0.94	0.70	04:45	0.083	11:45	0.205	0.131	0.131	
5/15/2013	05:30	3.92	13:30	5.48	4.65	01:00	0.43	13:45	0.95	0.70	01:00	0.066	13:45	0.199	0.128	0.128	0.01
5/16/2013	04:00	3.93	13:45	5.52	4.63	22:15	0.47	12:45	0.88	0.66	03:30	0.074	12:45	0.195	0.120	0.120	
5/17/2013	04:15	3.78	14:45	5.58	4.57	23:30	0.40	08:15	0.90	0.65	23:30	0.064	14:45	0.196	0.117	0.117	
5/18/2013	05:30	3.88	19:45	5.53	4.50	03:00	0.37	15:15	0.86	0.62	03:00	0.053	19:45	0.187	0.109	0.109	
5/19/2013	04:15	3.79	22:15	5.37	4.47	04:00	0.36	14:30	0.78	0.59	04:00	0.050	14:30	0.165	0.102	0.102	0.33
5/20/2013	05:30	3.81	11:00	5.45	4.59	06:00	0.43	12:30	0.88	0.64	06:00	0.063	12:30	0.187	0.115	0.115	
5/21/2013	04:00	3.76	10:45	5.54	4.64	02:30	0.46	12:15	0.95	0.70	02:30	0.067	12:15	0.205	0.126	0.126	
5/22/2013	02:45	3.74	14:45	5.54	4.54	23:45	0.37	16:15	0.85	0.61	23:45	0.060	14:45	0.183	0.109	0.109	0.06
5/23/2013	02:00	3.71	15:15	10.50	6.28	05:15	0.43	16:30	2.92	1.10	05:15	0.058	16:30	1.230	0.341	0.341	0.82
5/24/2013	05:00	6.08	00:00	7.30	6.65	22:30	1.13	00:00	1.61	1.37	20:30	0.311	00:00	0.503	0.384	0.384	0.48
5/25/2013	08:15	6.31	14:45	7.69	7.11	00:30	1.09	12:00	1.67	1.47	00:30	0.298	15:15	0.543	0.448	0.448	0.82
5/26/2013	08:00	6.39	10:00	7.36	6.68	19:45	1.23	08:45	1.59	1.40	23:45	0.340	10:00	0.486	0.395	0.395	0.05
5/27/2013	02:15	6.27	10:45	6.82	6.47	22:15	1.05	09:45	1.47	1.23	22:15	0.283	09:45	0.422	0.335	0.335	
5/28/2013	04:45	5.92	12:30	6.71	6.37	19:00	0.94	11:45	1.38	1.16	19:00	0.254	11:45	0.388	0.309	0.309	0.28
5/29/2013	01:30	5.78	10:30	6.56	6.23	10:00	0.92	14:00	1.36	1.13	01:30	0.231	14:00	0.368	0.294	0.294	0.01
5/30/2013	05:45	5.62	08:00	6.61	6.11	02:00	0.82	13:15	1.32	1.10	02:00	0.195	13:15	0.359	0.281	0.281	
5/31/2013	03:45	5.24	12:00	6.54	5.91	06:00	0.84	11:15	1.27	1.04	06:00	0.182	12:00	0.345	0.254	0.254	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			5.828	3.85
Avg	5.18	0.84	0.188	

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH25, Pipe Height: 10.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	04:00	5.02	10:30	6.28	5.66	01:30	0.73	10:30	1.17	0.97	06:00	0.145	10:30	0.308	0.225	0.225	
6/2/2013	03:15	4.79	09:30	6.04	5.44	02:45	0.65	11:45	1.11	0.94	02:45	0.135	11:45	0.277	0.207	0.207	0.04
6/3/2013	00:30	4.76	09:15	6.65	5.82	00:30	0.73	09:15	1.26	0.99	00:30	0.136	09:15	0.354	0.239	0.239	0.75
6/4/2013	03:15	5.01	10:15	6.16	5.67	09:00	0.74	11:45	1.20	0.97	18:45	0.174	11:45	0.302	0.226	0.226	
6/5/2013	01:30	4.74	09:45	6.02	5.44	23:45	0.74	09:45	1.17	0.93	23:45	0.147	09:45	0.292	0.205	0.205	
6/6/2013	01:30	4.55	10:45	6.03	5.30	01:00	0.66	19:15	1.15	0.88	01:00	0.129	08:45	0.260	0.188	0.188	0.16
6/7/2013	03:45	4.58	21:15	10.50	6.61	01:45	0.79	22:00	2.71	1.25	02:00	0.148	22:00	1.141	0.372	0.372	2.62
6/8/2013	00:00	10.50	00:00	10.50	10.50	23:45	1.75	03:45	4.06	2.46	23:45	0.737	03:45	1.710	1.035	1.035	0.36
6/9/2013	10:15	7.05	00:00	10.50	8.05	23:30	1.26	00:30	1.85	1.62	23:30	0.396	00:30	0.779	0.554	0.554	
6/10/2013	03:45	6.31	19:30	10.50	7.90	10:45	0.93	23:30	1.99	1.41	10:45	0.299	23:30	0.838	0.479	0.479	1.06
6/11/2013	22:30	7.28	00:00	10.50	10.31	21:00	1.59	02:15	2.16	1.89	22:30	0.524	02:15	0.910	0.784	0.784	0.47
6/12/2013	23:45	6.85	01:15	7.67	7.44	18:15	1.39	10:15	1.76	1.63	23:45	0.419	10:15	0.573	0.519	0.519	
6/13/2013	02:45	6.05	12:00	10.50	8.08	08:00	1.26	21:45	1.99	1.63	02:00	0.353	21:45	0.838	0.556	0.556	1.33
6/14/2013	00:00	10.50	00:00	10.50	10.50	00:15	1.83	07:30	2.68	2.14	00:15	0.771	07:30	1.129	0.903	0.903	0.81
6/15/2013	21:15	6.84	00:00	10.50	8.88	19:30	1.59	11:30	2.00	1.75	21:15	0.474	11:30	0.842	0.643	0.643	
6/16/2013	06:30	6.98	12:00	7.70	7.30	21:30	1.28	00:45	1.72	1.55	21:30	0.406	12:00	0.546	0.486	0.486	
6/17/2013	09:30	6.99	14:30	7.68	7.32	17:45	1.12	14:30	1.73	1.46	17:45	0.347	14:30	0.571	0.458	0.458	0.10
6/18/2013	05:00	7.01	19:15	7.41	7.28	09:45	0.99	13:45	1.54	1.34	09:45	0.312	13:45	0.488	0.417	0.417	0.18
6/19/2013	23:30	6.11	15:00	6.86	6.31	18:45	1.06	13:30	1.55	1.26	18:45	0.280	13:30	0.420	0.330	0.248	
6/20/2013	02:30	5.91	15:00	6.46	6.20	23:15	0.83	05:45	1.40	1.14	23:15	0.210	12:15	0.364	0.296	0.296	
6/21/2013	16:30	5.04	09:00	6.35	6.05	00:15	0.80	12:45	1.27	1.05	03:15	0.194	14:00	0.331	0.263	0.263	
6/22/2013	06:15	5.49	13:00	6.22	5.88	15:45	0.70	09:15	1.21	0.98	02:45	0.170	09:15	0.312	0.238	0.238	
6/23/2013	03:15	5.05	10:30	6.19	5.60	06:00	0.69	11:15	1.12	0.93	06:00	0.151	10:30	0.287	0.213	0.213	
6/24/2013	01:45	4.87	14:00	6.22	5.58	00:30	0.62	04:45	1.13	0.93	00:30	0.136	14:30	0.283	0.211	0.211	0.20
6/25/2013	01:00	4.88	12:30	6.24	5.38	05:00	0.69	10:45	1.12	0.90	01:15	0.136	10:45	0.273	0.196	0.196	0.01
6/26/2013	05:15	4.70	10:45	5.82	5.23	18:00	0.67	22:45	1.08	0.89	03:15	0.137	22:45	0.248	0.187	0.187	0.08
6/27/2013	04:00	4.56	23:30	6.35	5.19	06:00	0.61	23:30	1.14	0.84	04:15	0.110	23:30	0.304	0.176	0.176	0.57
6/28/2013	05:30	5.01	11:15	6.19	5.45	02:30	0.67	08:30	1.16	0.92	02:30	0.138	11:15	0.300	0.205	0.205	0.05
6/29/2013	02:45	4.69	10:30	5.88	5.19	01:15	0.63	11:00	1.08	0.83	05:15	0.117	11:00	0.262	0.174	0.174	
6/30/2013	04:00	4.46	16:30	5.76	4.99	06:15	0.52	11:15	0.98	0.80	06:15	0.090	11:15	0.222	0.159	0.159	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			11.062	8.81
Avg	6.69	1.24	0.372	

NE Temps 2013

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH25, Pipe Height: 10.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	05:15	4.45	11:30	10.52	5.95	00:00	0.52	12:00	3.59	1.21	00:00	0.098	12:00	1.428	0.323	0.323	0.44
7/2/2013	06:15	4.84	10:00	7.40	6.04	17:00	0.93	09:30	1.37	1.14	06:00	0.197	10:30	0.397	0.286	0.286	0.02
7/3/2013	02:15	5.05	13:30	6.15	5.56	22:30	0.87	08:45	1.21	1.03	23:45	0.184	08:45	0.287	0.234	0.234	
7/4/2013	01:00	5.11	13:45	6.31	5.40	06:15	0.73	11:15	1.11	0.93	06:15	0.157	13:45	0.283	0.202	0.202	
7/5/2013	04:30	4.94	11:45	6.09	5.45	23:15	0.77	20:45	1.07	0.91	07:00	0.157	17:00	0.252	0.201	0.201	
7/6/2013	02:15	4.91	08:45	5.98	5.28	02:30	0.59	08:45	1.18	0.87	02:30	0.115	08:45	0.292	0.186	0.186	
7/7/2013	06:15	4.61	22:00	5.65	5.08	01:30	0.62	22:00	1.10	0.86	01:30	0.117	22:00	0.254	0.175	0.175	
7/8/2013	01:15	4.55	11:30	5.99	5.05	01:30	0.61	11:30	1.09	0.83	01:30	0.107	11:30	0.271	0.168	0.168	
7/9/2013	05:00	4.38	10:30	5.88	5.00	01:30	0.62	11:45	1.02	0.82	04:00	0.105	12:45	0.238	0.164	0.164	
7/10/2013	04:00	4.35	14:15	5.96	5.01	18:00	0.59	14:15	1.04	0.84	18:00	0.116	14:15	0.257	0.168	0.161	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.099	0.56
Avg	5.38	0.94	0.211	

Site Commentary

Site Information

Ridgefield_MH51	
Pipe Dimensions (in.)	Elliptical (12.25 in H, 12.13 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH51 indicate this location experienced open channel flows during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. The scattergraph further details the rain induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.81	1.13	0.229
Minimum	3.10	0.55	0.065
Maximum	29.99	2.59	1.357
Time of Minimum	5/19/2013 3:45 AM	4/30/2013 2:00 AM	5/5/2013 4:00 AM
Time of Maximum	6/8/2013 3:45 AM	6/8/2013 4:15 AM	6/8/2013 4:15 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

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Site Report

FM Initials:	MEJ
Project Name:	RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH51	Meter Type:	5000	Monitor S/N:	16086	Manhole #:	51
Address / Location:	41 GOVERNORS STREET (IN FRONT OF BOYS/GIRLS CLUB)			Map Page #:			
				Pipe Height:	12.25 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	12.13 Inches		
				Phone Number:			

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 9, 2013	11:30 AM	Manhole Depth:	11 Feet		
Site Hydraulics:	SLOW EVEN FLOW, SIDE CONNECTIONS DON'T EFFECT FLOW		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?			
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	VCP		Fair
Upstream Manhole:	DNI		Mini System Character:	RESIDENTIAL		
Downstream Manhole:	DNI		**Telephone Information:**			
Depth of Flow (Wet Dof):	4.5 +/- 0.38		Access Pole #:	N/A		
Range (Air Dof):	6 +/- 0.38		Distance From Manhole:	N/A Feet		
Peak Velocity:	fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 41° 16' 51.21" W 73° 29' 41.21"

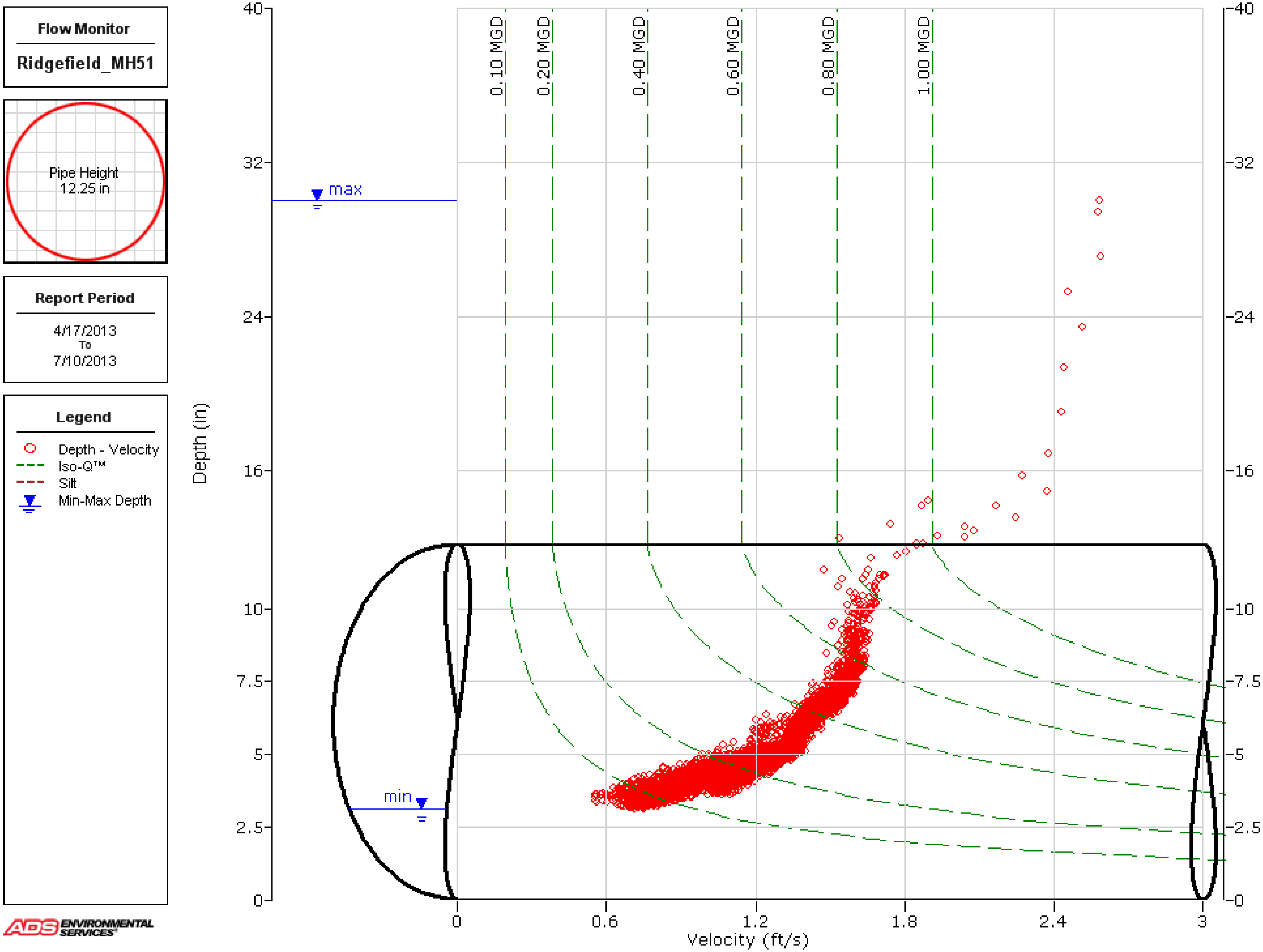
Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:		Other		X		

Additional Site Information / Comments:

QF 609001 Rev B0 06/17/2002

SCATTERGRAPH REPORT

Ridgefield_MH51

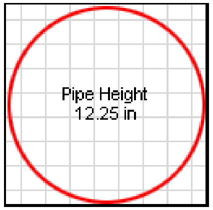


HYDROGRAPH REPORT

Ridgefield_MH51

Flow Monitor

Ridgefield_MH51

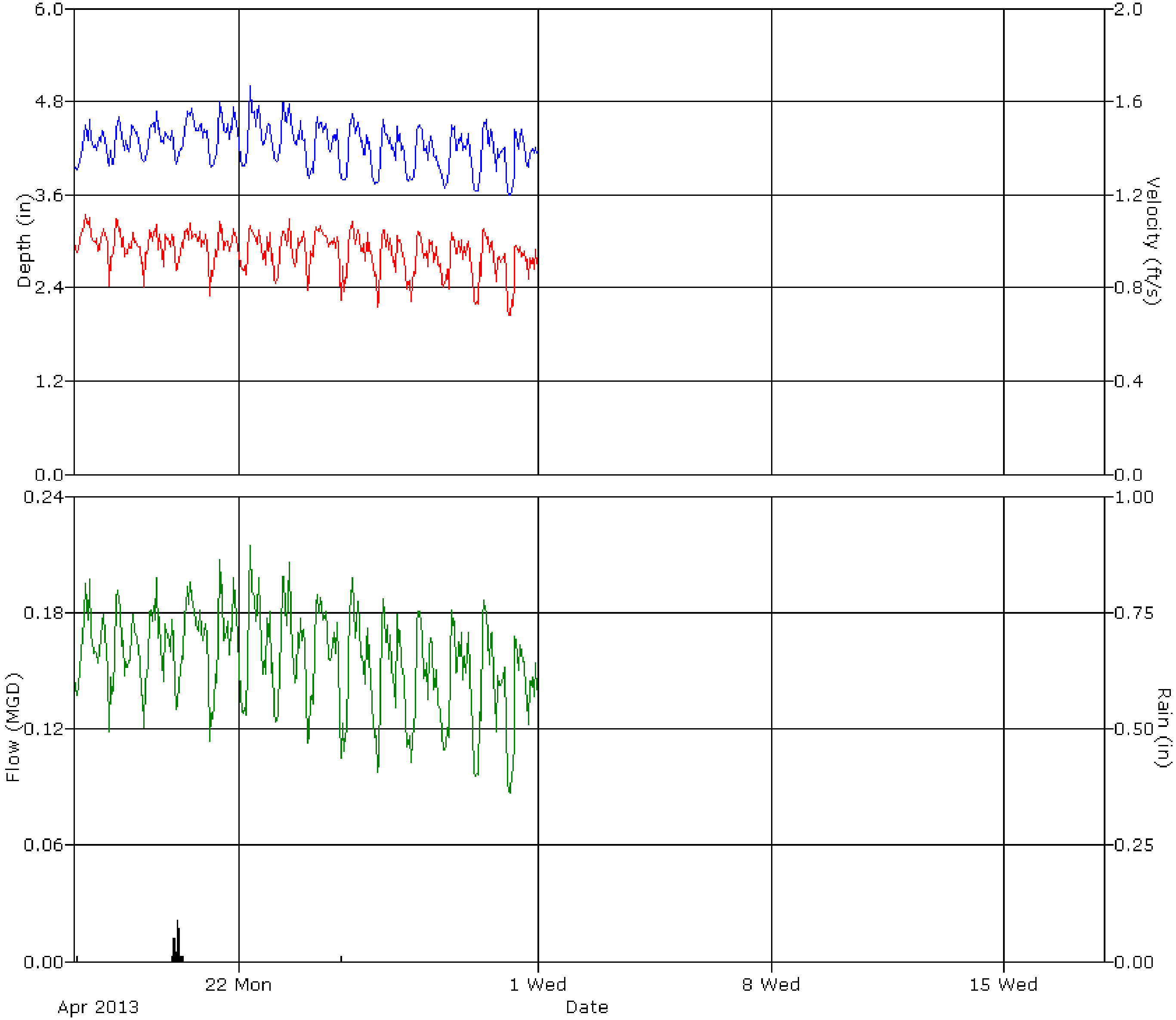


Report Period

4/17/2013
To
4/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



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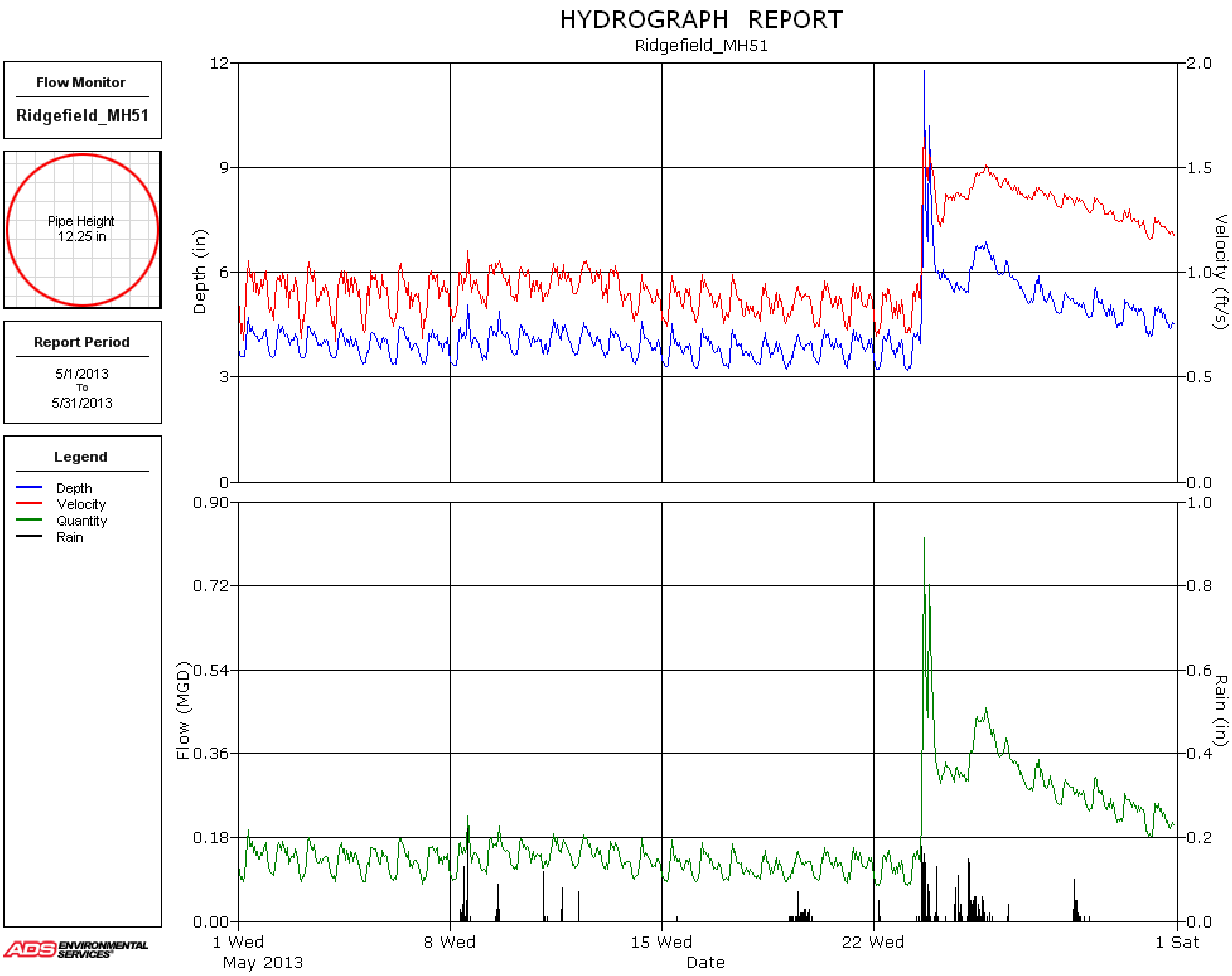


HYDROGRAPH REPORT
Ridgefield_MH51
Flow Monitor
Ridgefield_MH51
Pipe Height
12.25 in
Report Period
5/1/2013
To
5/31/2013
Legend
Depth
Velocity
Quantity
Rain
Depth (in)
Velocity (ft/s)
Flow (MGD)
Rain (in)
12
9
6
3
0
2.0
1.5
1.0
0.5
0.0
0.90
0.72
0.54
0.36
0.18
0.00
1.0
0.8
0.6
0.4
0.2
0.0
1 Wed
May 2013
8 Wed
15 Wed
22 Wed
1 Sat
Date
ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH51

Flow Monitor

Ridgefield_MH51

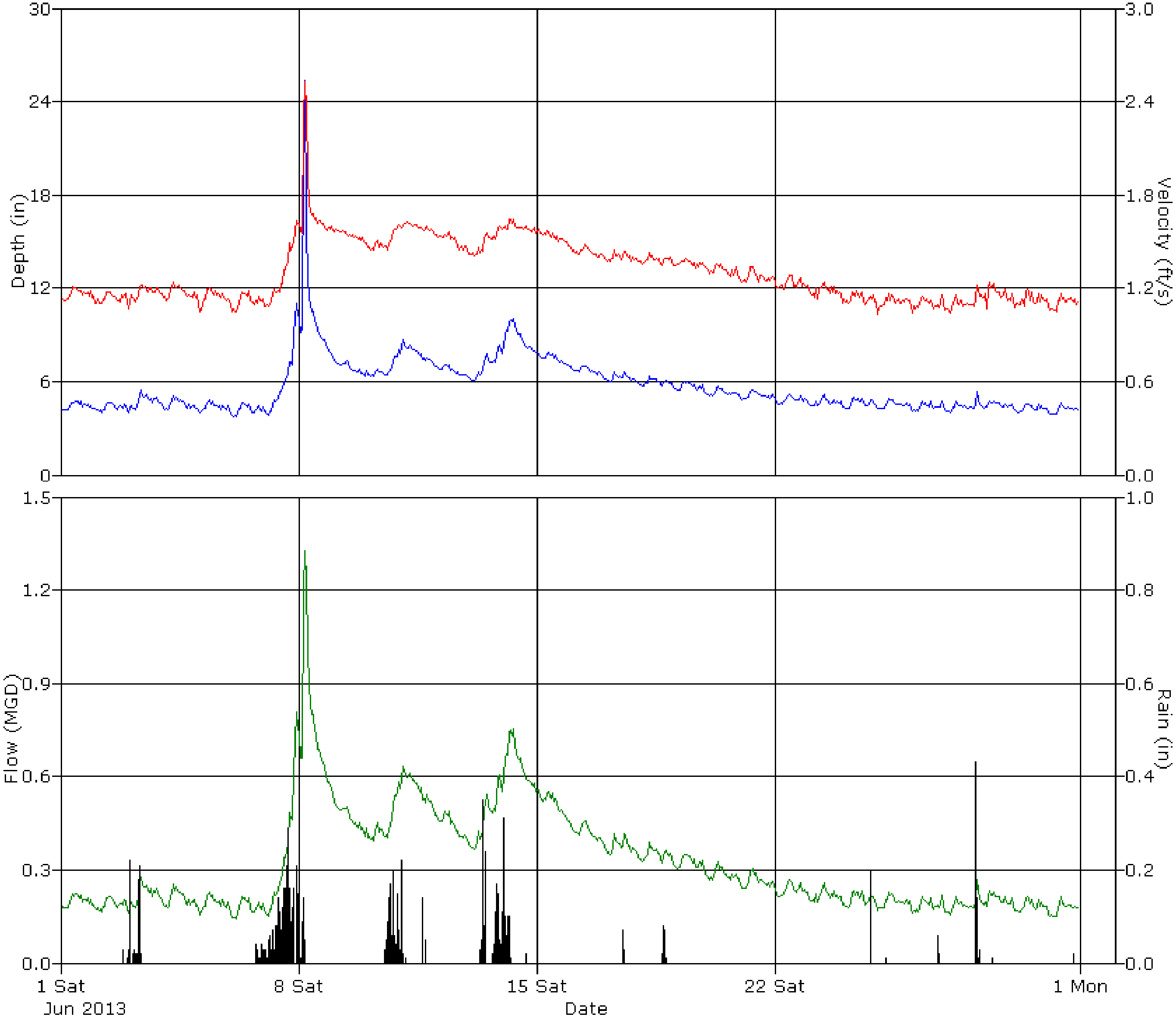
Pipe Height
12.25 in

Report Period

6/1/2013
To
6/30/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

Ridgefield_MH51

Flow Monitor

Ridgefield_MH51

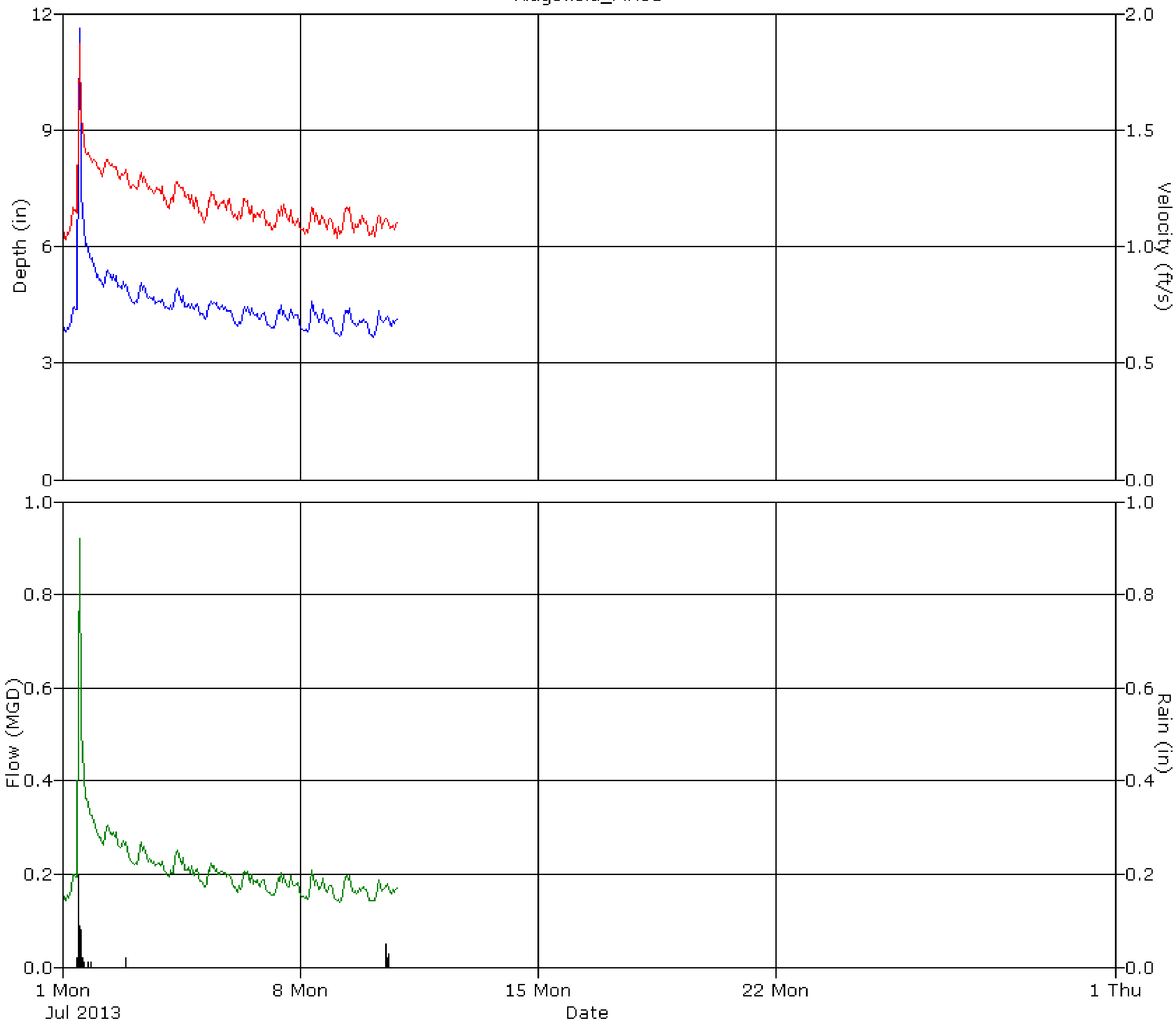
Pipe Height
12.25 in

Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH51, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	03:30	3.86	12:45	4.88	4.23	18:15	0.86	09:45	1.22	1.02	05:15	0.128	09:45	0.233	0.164	0.164	0.01
4/18/2013	05:15	3.88	18:45	4.71	4.28	02:30	0.68	08:30	1.15	0.99	02:30	0.099	08:30	0.211	0.161	0.161	
4/19/2013	03:45	4.00	12:30	4.99	4.32	03:00	0.69	12:30	1.22	0.98	03:00	0.104	12:30	0.244	0.163	0.163	0.01
4/20/2013	02:30	3.96	13:45	4.85	4.39	03:30	0.78	12:15	1.11	1.00	02:15	0.116	13:45	0.212	0.169	0.169	0.31
4/21/2013	03:30	3.94	09:30	5.14	4.39	02:30	0.66	09:30	1.17	0.97	02:30	0.098	09:30	0.244	0.165	0.165	
4/22/2013	01:45	3.91	08:00	5.18	4.39	03:45	0.69	20:45	1.21	0.97	03:45	0.101	08:00	0.246	0.165	0.165	
4/23/2013	04:15	3.94	11:30	5.01	4.38	04:15	0.70	09:30	1.14	0.96	04:15	0.102	11:30	0.227	0.163	0.163	
4/24/2013	04:45	3.79	08:15	4.80	4.26	01:45	0.63	06:45	1.13	0.99	01:45	0.088	08:15	0.215	0.161	0.161	
4/25/2013	04:45	3.76	13:15	5.01	4.22	05:15	0.65	09:30	1.16	0.96	05:15	0.091	10:15	0.223	0.154	0.154	0.01
4/26/2013	02:30	3.73	18:30	4.86	4.16	05:15	0.64	18:30	1.13	0.94	05:15	0.087	18:30	0.219	0.148	0.148	
4/27/2013	01:45	3.76	18:45	4.96	4.12	05:15	0.65	18:45	1.13	0.92	05:15	0.090	18:45	0.226	0.144	0.144	
4/28/2013	04:15	3.66	21:00	4.77	4.12	03:00	0.65	11:30	1.13	0.93	03:00	0.088	21:00	0.207	0.145	0.145	
4/29/2013	02:15	3.59	09:45	5.10	4.12	02:15	0.56	09:45	1.15	0.91	02:15	0.072	09:45	0.237	0.142	0.142	
4/30/2013	03:15	3.55	07:45	4.78	4.06	02:00	0.55	07:30	1.07	0.88	02:00	0.071	07:30	0.190	0.135	0.135	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.179	0.34
Avg	4.25	0.96	0.156	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH51, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	04:00	3.54	08:15	5.01	4.08	04:15	0.60	11:45	1.13	0.91	04:15	0.076	07:45	0.224	0.140	0.140	
5/2/2013	02:30	3.53	11:15	4.66	4.04	01:45	0.68	14:45	1.05	0.91	01:45	0.088	11:15	0.188	0.138	0.138	
5/3/2013	01:30	3.52	07:15	4.68	3.97	02:00	0.60	08:15	1.08	0.89	02:00	0.077	07:15	0.193	0.133	0.133	
5/4/2013	01:30	3.49	10:30	4.77	3.93	05:15	0.55	10:30	1.09	0.90	05:15	0.069	10:30	0.206	0.132	0.132	
5/5/2013	03:45	3.35	18:45	4.61	3.88	04:00	0.55	18:45	1.14	0.89	04:00	0.065	18:45	0.206	0.128	0.128	
5/6/2013	03:00	3.32	11:15	4.60	3.90	04:00	0.62	09:45	1.14	0.88	04:00	0.074	09:45	0.196	0.129	0.129	
5/7/2013	04:15	3.33	07:15	4.68	3.89	02:00	0.56	11:45	1.08	0.90	02:00	0.065	07:15	0.198	0.130	0.130	
5/8/2013	05:15	3.32	14:30	5.30	3.98	02:45	0.71	14:15	1.17	0.92	02:45	0.082	14:15	0.246	0.138	0.138	0.51
5/9/2013	03:15	3.43	09:15	5.10	4.10	04:45	0.75	14:45	1.14	0.97	05:15	0.097	09:15	0.233	0.150	0.150	0.16
5/10/2013	03:45	3.57	08:30	4.80	4.03	05:30	0.80	07:30	1.07	0.94	05:30	0.104	08:30	0.201	0.142	0.142	
5/11/2013	02:15	3.57	11:15	4.88	4.14	03:30	0.82	10:30	1.07	0.96	02:15	0.108	10:45	0.192	0.150	0.150	0.25
5/12/2013	02:30	3.59	10:00	4.69	4.04	02:30	0.80	11:00	1.08	0.98	02:30	0.103	10:00	0.192	0.148	0.148	0.07
5/13/2013	04:30	3.45	07:45	4.71	3.94	05:30	0.79	07:00	1.09	0.93	05:15	0.102	11:45	0.193	0.136	0.136	
5/14/2013	03:30	3.30	08:15	4.91	3.87	02:30	0.72	08:15	1.01	0.87	02:30	0.088	08:15	0.199	0.125	0.125	
5/15/2013	03:15	3.26	08:15	5.14	3.78	04:30	0.68	08:15	1.05	0.87	04:30	0.077	08:15	0.219	0.120	0.120	0.01
5/16/2013	03:15	3.24	07:45	4.67	3.78	03:30	0.73	08:15	1.04	0.87	03:30	0.082	08:15	0.189	0.121	0.121	
5/17/2013	01:45	3.19	08:00	4.85	3.72	01:45	0.69	08:00	1.09	0.85	01:45	0.074	08:00	0.211	0.115	0.115	
5/18/2013	06:00	3.27	08:30	4.59	3.72	01:00	0.73	08:30	0.99	0.85	01:00	0.086	08:30	0.177	0.115	0.115	
5/19/2013	03:45	3.10	11:45	4.52	3.75	01:45	0.69	11:45	1.01	0.85	01:45	0.077	11:45	0.178	0.117	0.117	0.33
5/20/2013	04:30	3.30	12:15	4.71	3.85	04:45	0.70	09:15	1.01	0.84	04:45	0.080	09:15	0.187	0.120	0.120	
5/21/2013	03:45	3.20	08:15	4.54	3.86	04:00	0.68	08:15	0.99	0.85	04:00	0.076	08:15	0.176	0.121	0.121	
5/22/2013	04:30	3.14	12:30	5.04	3.77	04:00	0.65	12:30	1.05	0.82	02:15	0.072	12:30	0.213	0.113	0.113	0.06
5/23/2013	03:30	3.15	16:30	13.26	5.50	01:45	0.64	16:30	1.74	1.09	01:45	0.072	16:30	0.913	0.289	0.289	0.82
5/24/2013	16:00	5.28	00:00	6.58	5.76	03:30	1.19	00:30	1.48	1.33	05:15	0.288	00:00	0.415	0.323	0.323	0.48
5/25/2013	02:45	5.35	17:45	7.17	6.35	01:45	1.31	17:45	1.55	1.44	01:45	0.291	17:45	0.493	0.396	0.396	0.82
5/26/2013	23:45	5.31	09:30	6.53	5.89	21:30	1.34	00:45	1.52	1.41	23:45	0.299	09:30	0.423	0.352	0.352	0.05
5/27/2013	06:00	5.00	11:00	6.22	5.34	00:15	1.31	11:45	1.46	1.37	06:00	0.267	11:00	0.376	0.300	0.300	
5/28/2013	03:45	4.72	09:15	5.65	5.10	15:45	1.27	07:15	1.39	1.34	03:45	0.244	11:30	0.314	0.276	0.276	0.28
5/29/2013	03:15	4.58	07:45	6.01	4.97	23:30	1.21	07:30	1.39	1.30	23:30	0.225	07:45	0.342	0.260	0.260	0.01
5/30/2013	01:45	4.38	07:45	5.39	4.84	14:00	1.17	07:15	1.33	1.25	23:45	0.205	07:15	0.293	0.240	0.240	
5/31/2013	04:00	4.03	10:30	5.20	4.58	02:15	1.12	07:30	1.33	1.20	04:00	0.173	07:30	0.272	0.215	0.214	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			5.512	3.85
Avg	4.33	1.01	0.178	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH51, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	04:15	3.94	10:45	4.88	4.45	04:30	1.08	09:00	1.24	1.16	04:15	0.170	10:45	0.236	0.200	0.200	
6/2/2013	05:00	3.86	13:00	4.97	4.35	04:30	1.07	02:45	1.21	1.14	05:00	0.155	13:00	0.239	0.190	0.190	0.04
6/3/2013	00:00	4.01	09:00	5.69	4.74	00:30	1.04	09:00	1.25	1.17	00:30	0.157	09:00	0.297	0.220	0.220	0.75
6/4/2013	23:15	4.05	08:30	5.64	4.53	17:15	1.08	08:30	1.25	1.17	19:45	0.171	08:30	0.295	0.207	0.207	
6/5/2013	02:00	3.46	09:30	5.25	4.38	02:00	0.90	08:00	1.25	1.14	02:00	0.110	09:30	0.264	0.193	0.193	
6/6/2013	04:00	3.65	08:45	5.09	4.21	03:00	1.01	10:30	1.25	1.12	03:15	0.136	08:45	0.246	0.179	0.179	0.16
6/7/2013	02:30	3.71	22:00	11.33	5.87	03:45	1.06	22:00	1.65	1.28	03:45	0.144	22:00	0.836	0.330	0.330	2.62
6/8/2013	23:30	7.74	03:45	29.99	10.87	02:00	1.53	04:15	2.59	1.73	23:15	0.557	04:15	1.357	0.773	0.773	0.36
6/9/2013	23:30	6.22	00:30	7.81	6.94	11:30	1.46	00:15	1.60	1.54	23:30	0.393	00:15	0.552	0.474	0.474	
6/10/2013	05:00	6.25	23:30	8.28	6.79	05:45	1.41	23:15	1.62	1.50	05:45	0.387	23:30	0.609	0.448	0.448	1.06
6/11/2013	23:00	7.12	01:45	8.79	7.82	01:15	1.55	01:30	1.64	1.60	23:45	0.489	03:15	0.657	0.564	0.564	0.47
6/12/2013	23:45	6.23	10:15	7.39	6.72	17:00	1.39	10:15	1.59	1.51	23:45	0.382	10:15	0.525	0.445	0.445	
6/13/2013	03:30	6.02	22:00	8.63	7.00	06:30	1.39	22:15	1.62	1.49	03:30	0.359	21:30	0.627	0.464	0.464	1.33
6/14/2013	00:45	7.68	08:45	10.20	8.82	21:00	1.54	05:45	1.67	1.59	00:45	0.535	06:45	0.774	0.642	0.642	0.81
6/15/2013	23:45	6.88	00:00	8.11	7.48	15:45	1.44	07:15	1.62	1.53	23:45	0.441	00:00	0.582	0.514	0.514	
6/16/2013	23:15	6.26	08:45	7.19	6.71	16:45	1.38	11:45	1.52	1.44	23:15	0.371	11:45	0.472	0.422	0.422	
6/17/2013	04:00	5.93	07:45	6.88	6.25	04:00	1.34	07:30	1.48	1.40	04:00	0.338	07:45	0.441	0.376	0.376	0.10
6/18/2013	17:00	5.63	07:15	6.53	5.97	16:00	1.32	07:45	1.46	1.38	03:45	0.319	07:15	0.411	0.350	0.350	0.18
6/19/2013	23:45	5.18	12:00	6.37	5.68	23:45	1.27	09:45	1.42	1.36	23:45	0.267	12:00	0.387	0.323	0.323	
6/20/2013	16:30	5.01	08:15	6.07	5.30	23:45	1.22	10:30	1.40	1.32	23:45	0.253	08:15	0.353	0.286	0.286	
6/21/2013	03:00	4.80	08:30	5.70	5.10	04:45	1.20	07:00	1.36	1.27	01:15	0.234	08:30	0.323	0.263	0.263	
6/22/2013	03:15	4.50	18:30	5.28	4.83	06:00	1.14	12:45	1.35	1.23	06:00	0.207	18:30	0.280	0.236	0.236	
6/23/2013	06:00	4.39	11:15	5.50	4.67	06:00	1.01	11:15	1.30	1.19	06:00	0.171	11:15	0.297	0.218	0.218	
6/24/2013	05:00	4.20	08:15	5.25	4.61	15:15	1.01	08:15	1.26	1.14	06:00	0.173	08:15	0.270	0.205	0.205	0.20
6/25/2013	04:30	4.25	08:15	5.06	4.54	01:00	0.93	06:30	1.18	1.12	01:00	0.151	08:15	0.237	0.197	0.197	0.01
6/26/2013	06:00	4.05	22:15	5.20	4.40	01:15	0.93	22:15	1.25	1.10	01:15	0.143	22:15	0.264	0.187	0.187	0.08
6/27/2013	04:00	4.00	23:30	5.62	4.38	04:45	0.95	23:15	1.25	1.10	04:45	0.142	23:30	0.292	0.186	0.186	0.57
6/28/2013	04:15	4.23	00:15	5.07	4.53	06:00	0.92	08:45	1.27	1.17	06:00	0.150	14:15	0.247	0.205	0.205	0.05
6/29/2013	04:30	3.93	18:15	4.81	4.28	01:30	0.97	11:15	1.24	1.13	01:30	0.146	11:15	0.235	0.184	0.184	
6/30/2013	05:45	3.85	10:15	4.83	4.19	02:45	1.04	15:30	1.21	1.11	02:45	0.147	10:15	0.228	0.176	0.176	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			9.655	8.81
Avg	5.68	1.30	0.322	

NE Temps 2013

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH51, Pipe Height: 12.25 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	02:30	3.76	12:00	14.18	5.53	02:00	0.98	12:00	2.17	1.29	02:00	0.138	12:00	1.137	0.311	0.311	0.44
7/2/2013	23:45	4.67	14:00	5.58	5.11	17:15	1.25	07:30	1.41	1.33	23:45	0.229	14:00	0.322	0.275	0.275	0.02
7/3/2013	03:45	4.38	08:30	5.40	4.69	22:30	1.20	08:30	1.34	1.26	18:00	0.206	08:30	0.298	0.232	0.232	
7/4/2013	04:30	4.23	13:45	5.31	4.52	03:15	1.06	08:15	1.34	1.21	04:30	0.175	13:45	0.286	0.214	0.214	
7/5/2013	05:15	4.07	16:45	4.86	4.39	04:45	1.06	16:45	1.26	1.17	04:45	0.165	16:45	0.244	0.198	0.198	
7/6/2013	05:30	3.86	14:00	4.81	4.21	12:45	1.06	14:00	1.24	1.15	04:45	0.153	14:00	0.236	0.183	0.183	
7/7/2013	06:15	3.82	18:45	4.75	4.15	07:45	1.01	18:45	1.26	1.12	04:30	0.147	18:45	0.236	0.175	0.175	
7/8/2013	05:30	3.75	08:30	4.94	4.10	03:30	1.03	09:00	1.21	1.10	05:30	0.142	08:30	0.234	0.170	0.170	
7/9/2013	04:15	3.61	11:30	4.74	4.03	17:45	0.98	09:30	1.23	1.10	02:00	0.134	11:30	0.224	0.166	0.166	
7/10/2013	04:15	3.61	08:15	4.53	4.01	05:00	1.01	08:30	1.19	1.09	05:00	0.130	08:30	0.200	0.163	0.156	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.080	0.56
Avg	4.48	1.18	0.209	

Site Commentary

Site Information

Ridgefield_MH67A	
Pipe Dimensions (in.)	Elliptical (10.13 in H, 10.00 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for Ridgefield_MH67A indicate this location experienced open channel flows during the monitoring period of Wednesday, April 17, 2013 to Wednesday, July 10, 2013. The scattergraph further details the rain induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Wednesday, April 17, 2013 to Wednesday, July 10, 2013 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.11	1.36	0.200
Minimum	2.10	0.31	0.018
Maximum	50.01	4.02	1.435
Time of Minimum	5/19/2013 4:45 AM	5/21/2013 3:00 AM	5/21/2013 3:00 AM
Time of Maximum	6/8/2013 3:30 AM	6/8/2013 3:45 AM	6/8/2013 3:45 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Wednesday, April 17, 2013 to the Wednesday, July 10, 2013 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

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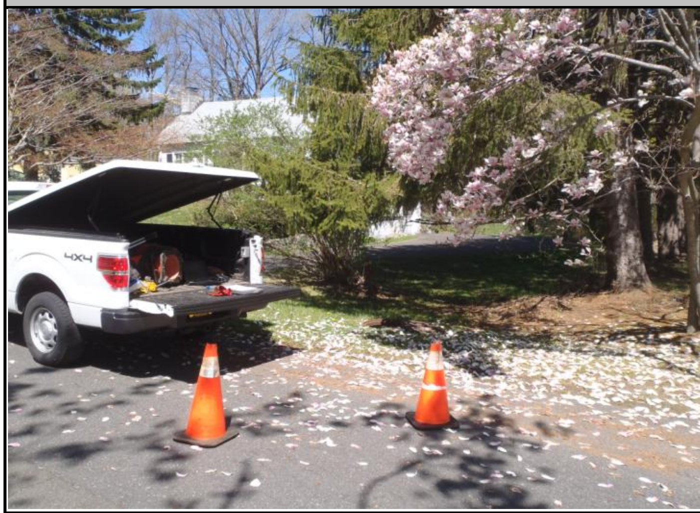
a division of ADS LLC.

Site Report

FM Initials:	CL/TS
Project Name:	RIDGEFIELD, CT

Site Name:	RIDGEFIELD_MH67a	Meter Type:	FLOWSHARK	Monitor S/N:	5239	Manhole #:	67a
Address / Location:	14 ROWLAND LANE (OFF ROAD JUST PAST DRIVEWAY)			Map Page #:			
				Pipe Height:	10 Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	10 Inches		
				Phone Number:			



Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 10, 2013		Manhole Depth:	5 Feet	5 Inches
Site Hydraulics:	SMOOTH, FLAT FLOW		Manhole Material / Condition:	BLOCK	Fair
			Active Drop Connections?		
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	LINED	Fair
Upstream Manhole:	CNL		Mini System Character:	RESIDENTIAL	
Downstream Manhole:	DNI		**Telephone Information:**		
Depth of Flow (Wet Dof):	3.38 +/-	0.28	Access Pole #:	N/A	
Range (Air Dof):	5.13 +/-	0.25	Distance From Manhole:	N/A Feet	
Peak Velocity:	0.58 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

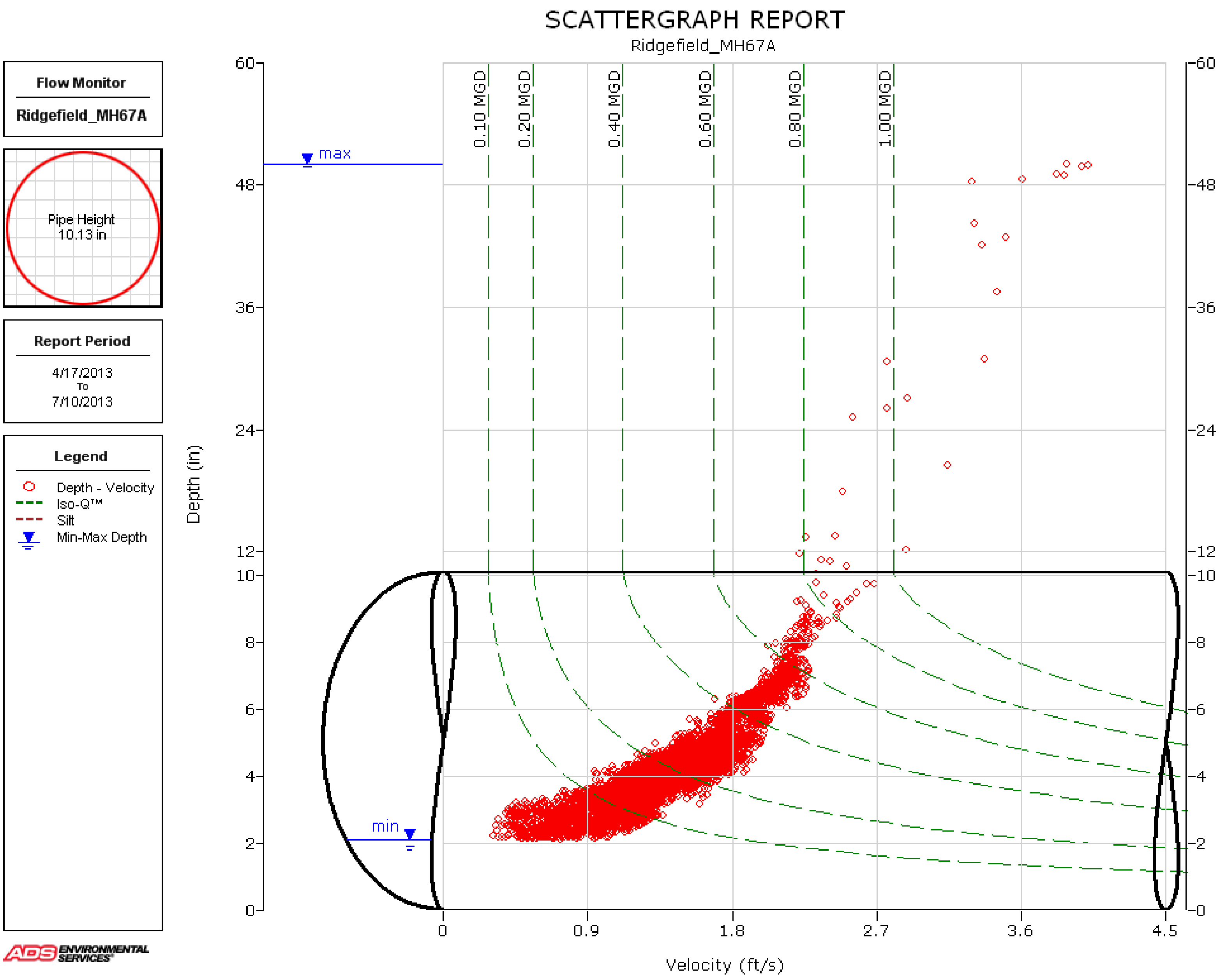
N 41° 16' 39.28" W 73° 29' 39.73"

Planar N ↑

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	Ultra, Velocity, Pressure (Non I.S.)	Lift/Pump Station		X		
Surcharge Height:	0 Feet	WWTP		X		
Rain Gauge Zone:	RG01	Other		X		

Additional Site Information / Comments:

ULTRA PO 1.75 PRESS SN 75488 PRESS PO 4.25



SCATTERGRAPH REPORT
Ridgefield_MH67A
Flow Monitor
Ridgefield_MH67A
Pipe Height
10.13 in
Report Period
4/17/2013
To
7/10/2013
Legend
Depth - Velocity
Iso-Q™
Silt
Min-Max Depth
max
min
0.10 MGD
0.20 MGD
0.40 MGD
0.60 MGD
0.80 MGD
1.00 MGD
Depth (in)
Velocity (ft/s)
0
0.9
1.8
2.7
3.6
4.5
60
48
36
24
12
10
8
6
4
2
0

HYDROGRAPH REPORT

Ridgefield_MH67A

Flow Monitor

Ridgefield_MH67A

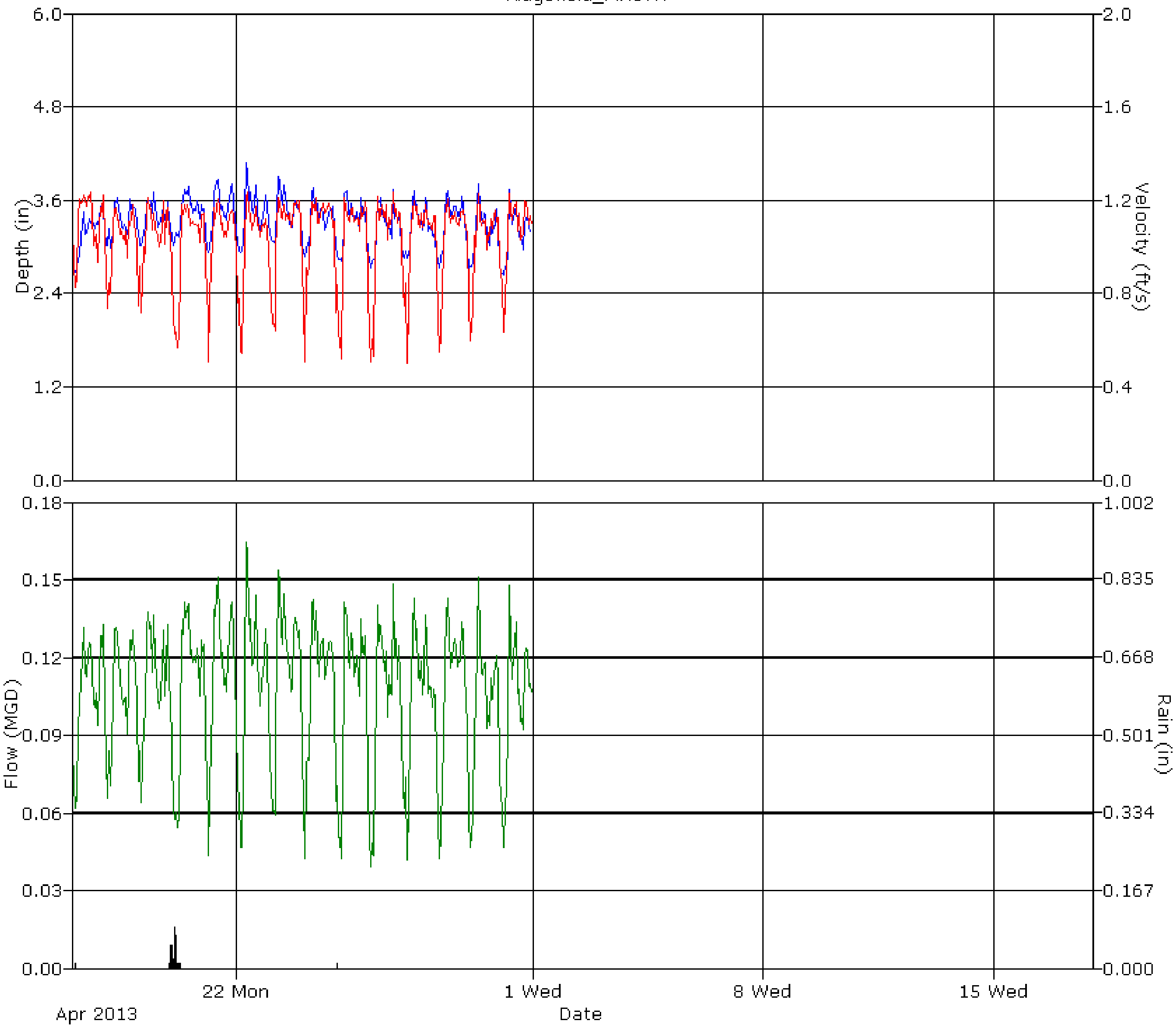
Pipe Height
10.13 in

Report Period

4/17/2013
To
4/30/2013

Legend

Depth
Velocity
Quantity
Rain



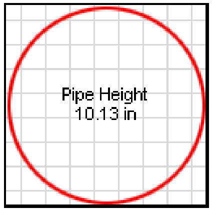
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH67A

Flow Monitor

Ridgefield_MH67A

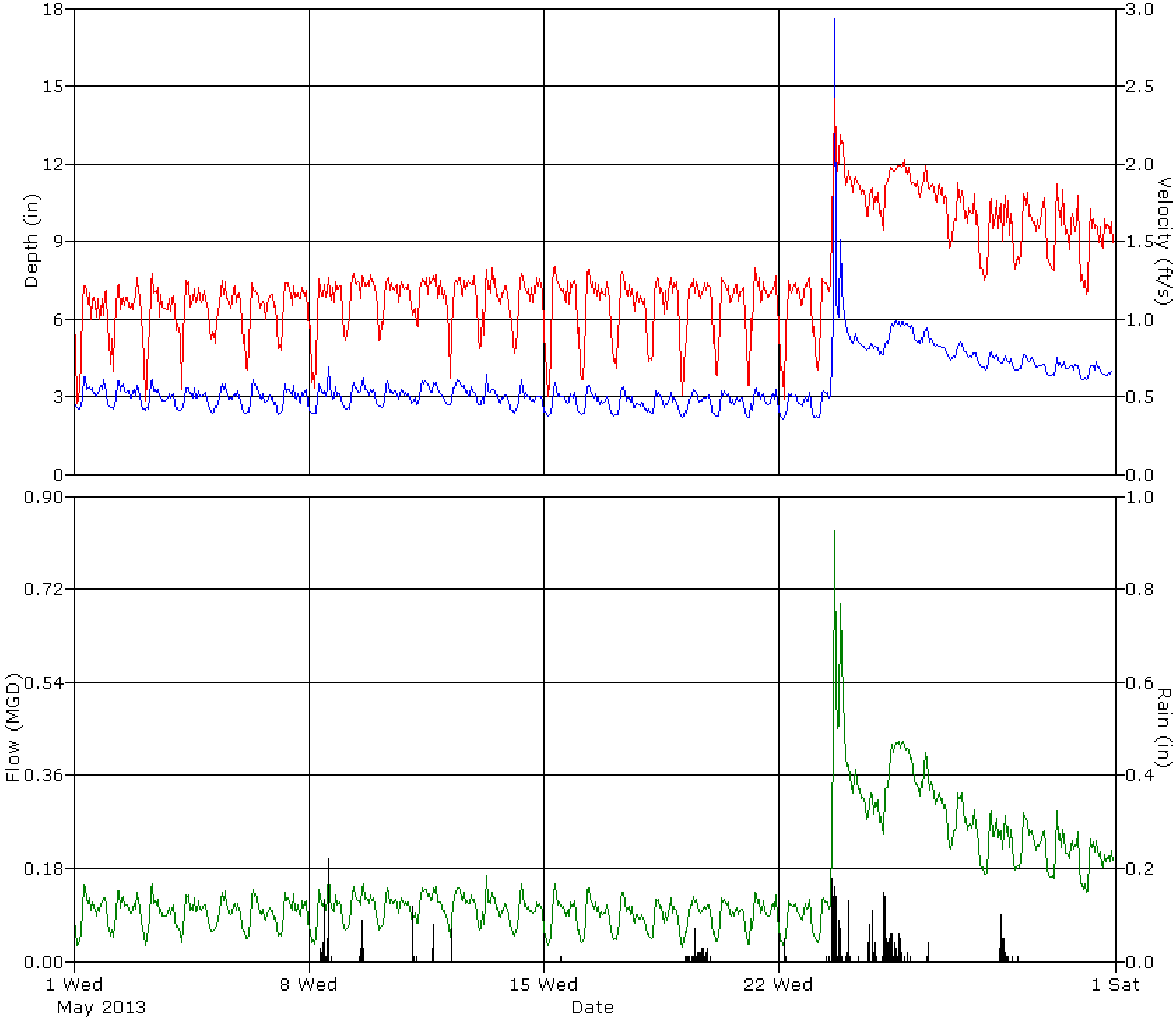


Report Period

5/1/2013
To
5/31/2013

Legend

Depth
Velocity
Quantity
Rain



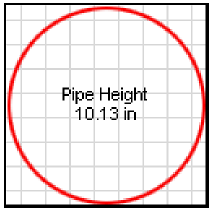
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_MH67A

Flow Monitor

Ridgefield_MH67A

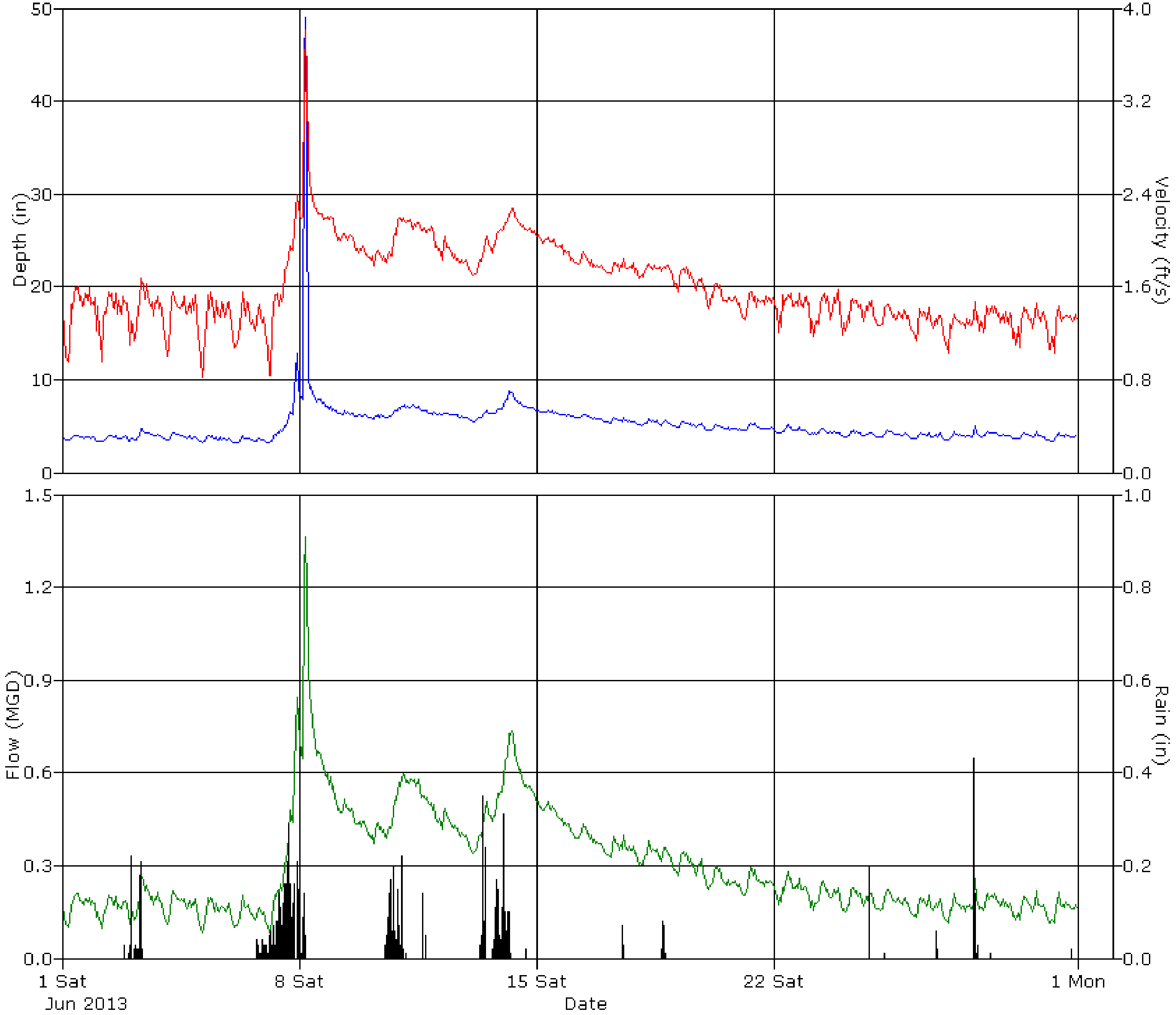


Report Period

6/1/2013
To
6/30/2013

Legend

Depth
Velocity
Quantity
Rain



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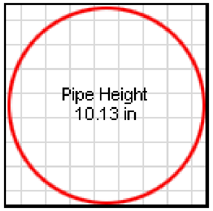
HYDROGRAPH REPORT

Ridgefield_MH67A

Flow Monitor

Ridgefield_MH67A



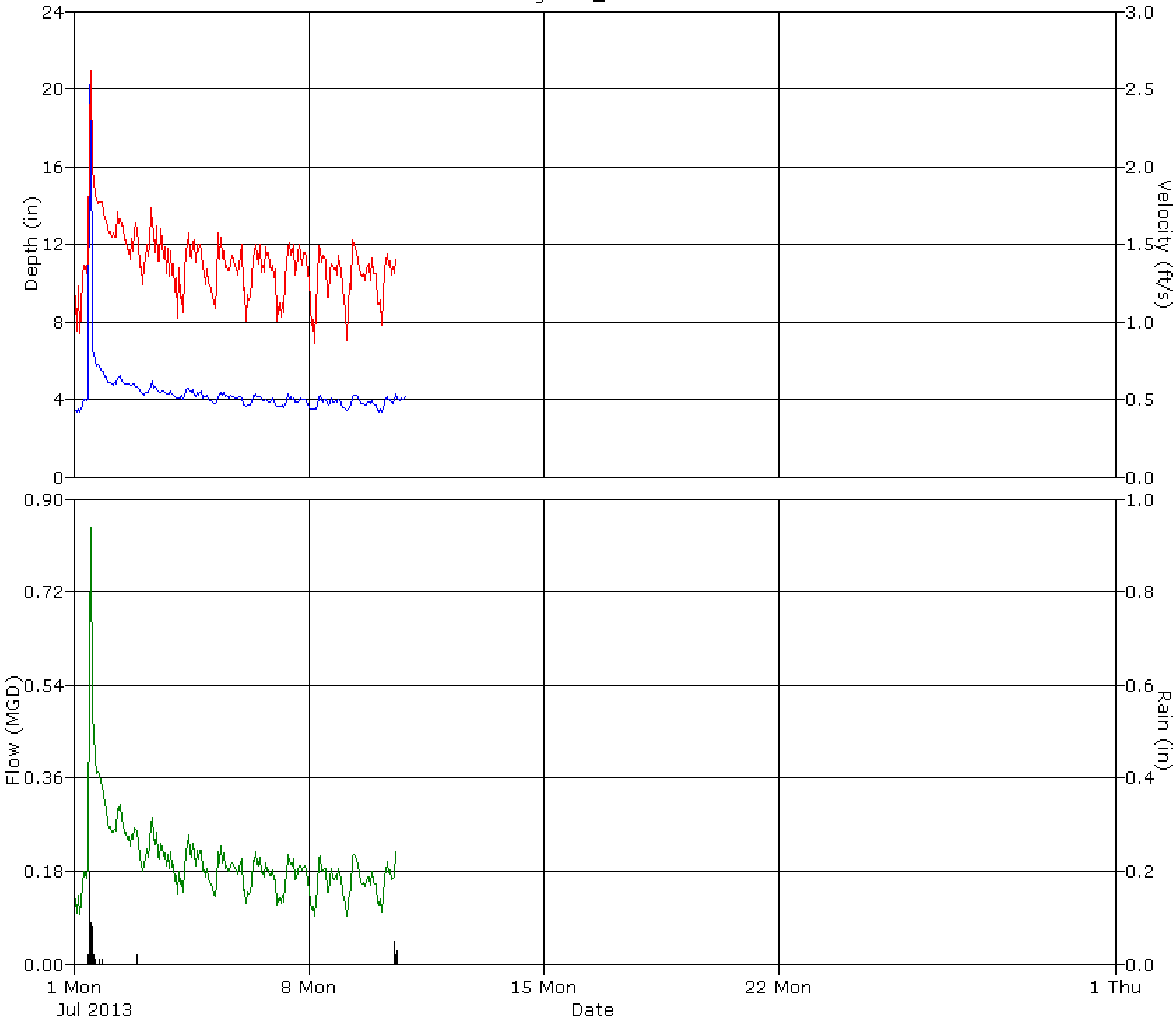
Report Period

7/1/2013
To
7/10/2013

Legend

- Depth
- Velocity
- Quantity
- Rain

ADS ENVIRONMENTAL SERVICES



Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_MH67A, Pipe Height: 10.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013	03:15	2.66	09:45	3.68	3.16	04:30	0.62	12:15	1.35	1.11	04:30	0.047	09:45	0.152	0.106	0.106	0.01
4/18/2013	01:45	2.96	18:30	4.08	3.32	02:15	0.51	22:30	1.31	1.03	02:15	0.045	18:30	0.175	0.106	0.106	
4/19/2013	00:45	2.97	12:30	4.21	3.36	03:00	0.41	21:00	1.32	1.04	03:00	0.037	12:30	0.180	0.109	0.109	0.01
4/20/2013	02:30	2.97	13:30	4.09	3.42	06:15	0.43	10:00	1.24	1.00	06:15	0.039	10:00	0.161	0.108	0.108	0.31
4/21/2013	03:45	2.88	10:45	4.15	3.43	04:45	0.42	08:45	1.32	1.03	04:45	0.036	08:45	0.173	0.112	0.112	
4/22/2013	03:45	2.86	07:45	4.64	3.42	05:00	0.39	07:15	1.31	1.01	05:00	0.033	07:45	0.207	0.110	0.110	
4/23/2013	01:30	3.02	07:15	4.34	3.43	02:30	0.49	19:45	1.32	1.05	02:30	0.044	19:45	0.190	0.114	0.114	
4/24/2013	03:15	2.82	08:30	3.91	3.33	01:45	0.41	10:30	1.30	1.06	01:45	0.034	08:30	0.164	0.110	0.110	
4/25/2013	03:30	2.79	12:45	4.01	3.31	03:30	0.41	07:30	1.28	1.03	03:30	0.033	19:30	0.164	0.107	0.107	0.01
4/26/2013	02:15	2.69	18:30	4.09	3.25	02:15	0.34	18:15	1.30	1.02	02:15	0.026	18:30	0.170	0.104	0.104	
4/27/2013	03:00	2.80	18:30	4.07	3.26	04:00	0.41	12:15	1.32	1.03	04:00	0.035	18:30	0.175	0.105	0.105	
4/28/2013	04:00	2.71	20:45	4.29	3.30	06:15	0.42	09:00	1.27	1.04	06:15	0.032	20:45	0.175	0.107	0.107	
4/29/2013	01:15	2.68	08:15	4.23	3.22	03:45	0.45	08:30	1.28	1.03	03:45	0.035	08:15	0.169	0.102	0.102	
4/30/2013	04:30	2.57	07:30	4.14	3.14	04:30	0.48	07:30	1.34	1.05	04:30	0.034	07:30	0.185	0.101	0.101	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			1.500	0.34
Avg	3.31	1.04	0.107	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_MH67A, Pipe Height: 10.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013	05:30	2.50	08:00	4.28	3.13	04:30	0.37	21:30	1.32	1.00	04:30	0.026	21:30	0.181	0.098	0.098	
5/2/2013	05:00	2.49	21:15	3.93	3.07	04:15	0.48	21:15	1.35	1.06	04:15	0.033	21:15	0.173	0.099	0.099	
5/3/2013	03:00	2.45	07:15	3.84	2.96	04:30	0.41	08:15	1.34	1.03	04:30	0.028	08:15	0.166	0.092	0.092	
5/4/2013	04:30	2.38	22:15	3.78	2.94	05:15	0.33	09:45	1.31	1.07	05:15	0.023	22:15	0.151	0.094	0.094	
5/5/2013	03:30	2.30	12:00	4.19	2.92	05:00	0.56	10:45	1.36	1.08	05:00	0.035	12:00	0.188	0.094	0.094	
5/6/2013	04:45	2.32	08:30	4.02	2.90	04:45	0.58	08:30	1.30	1.05	04:45	0.036	08:30	0.172	0.090	0.090	
5/7/2013	03:45	2.29	07:00	4.37	2.93	04:00	0.64	09:15	1.29	1.10	04:00	0.041	07:00	0.189	0.096	0.096	
5/8/2013	04:45	2.32	14:30	4.33	3.00	02:45	0.33	14:00	1.33	1.07	02:45	0.021	14:00	0.184	0.098	0.098	0.51
5/9/2013	05:00	2.49	15:15	4.09	3.10	02:00	0.76	14:30	1.42	1.16	02:00	0.053	14:30	0.179	0.110	0.110	0.16
5/10/2013	03:15	2.50	14:15	3.83	3.04	02:30	0.45	08:15	1.35	1.15	02:30	0.032	14:15	0.160	0.105	0.105	
5/11/2013	02:00	2.54	11:00	4.10	3.20	05:45	0.85	12:30	1.41	1.17	04:00	0.067	11:00	0.176	0.115	0.115	0.25
5/12/2013	04:30	2.65	15:00	3.99	3.15	05:15	0.54	16:30	1.35	1.15	05:15	0.040	20:45	0.158	0.110	0.110	0.07
5/13/2013	03:30	2.56	07:30	4.63	3.01	05:00	0.63	07:30	1.43	1.13	05:00	0.045	07:30	0.228	0.102	0.102	
5/14/2013	03:15	2.35	08:00	4.30	2.88	03:00	0.64	19:45	1.42	1.13	03:00	0.041	08:00	0.194	0.096	0.096	
5/15/2013	03:45	2.21	09:15	4.03	2.84	03:00	0.41	07:45	1.40	1.08	03:00	0.024	09:15	0.178	0.092	0.092	0.01
5/16/2013	02:45	2.27	07:30	4.15	2.81	02:45	0.45	08:00	1.38	1.08	02:45	0.027	07:30	0.185	0.090	0.090	
5/17/2013	03:30	2.16	09:30	3.72	2.72	04:15	0.46	08:00	1.43	1.07	04:15	0.027	09:30	0.159	0.086	0.086	
5/18/2013	03:30	2.30	19:30	3.96	2.76	06:30	0.48	19:30	1.38	1.09	06:30	0.029	19:30	0.178	0.088	0.088	
5/19/2013	04:45	2.10	13:15	3.80	2.78	03:45	0.39	11:15	1.38	1.08	03:45	0.022	13:15	0.161	0.089	0.089	0.33
5/20/2013	04:30	2.18	12:00	3.45	2.77	04:30	0.37	11:00	1.35	1.09	04:30	0.021	07:15	0.137	0.089	0.089	
5/21/2013	03:30	2.12	22:45	3.66	2.83	03:00	0.31	22:00	1.42	1.10	03:00	0.018	22:45	0.156	0.093	0.093	
5/22/2013	04:30	2.14	19:45	3.98	2.73	04:45	0.34	22:30	1.34	1.07	04:45	0.019	19:45	0.171	0.086	0.086	0.06
5/23/2013	04:15	2.14	16:30	26.12	4.74	04:45	0.59	16:30	2.76	1.45	04:45	0.033	16:30	0.986	0.265	0.265	0.82
5/24/2013	15:15	4.68	00:00	5.91	5.09	16:30	1.57	06:45	2.00	1.83	15:15	0.255	06:45	0.413	0.328	0.328	0.48
5/25/2013	03:15	4.43	09:30	6.27	5.48	03:15	1.46	18:00	2.04	1.90	03:15	0.219	09:30	0.463	0.376	0.376	0.82
5/26/2013	23:00	4.78	06:45	6.08	5.16	23:45	1.59	09:30	2.03	1.85	23:45	0.269	09:15	0.432	0.338	0.338	0.05
5/27/2013	18:15	4.28	10:45	5.62	4.65	02:30	1.31	08:45	1.94	1.67	02:30	0.190	09:30	0.343	0.268	0.268	
5/28/2013	04:30	4.01	19:45	4.96	4.37	02:00	1.12	15:15	1.89	1.57	02:00	0.151	07:45	0.308	0.232	0.232	0.28
5/29/2013	03:15	3.94	09:15	4.89	4.26	04:30	1.19	07:15	1.91	1.60	04:30	0.159	07:15	0.316	0.230	0.230	0.01
5/30/2013	03:00	3.71	12:00	4.83	4.09	05:30	1.08	07:30	1.93	1.57	05:30	0.134	07:45	0.310	0.213	0.213	
5/31/2013	03:15	3.54	11:45	4.59	3.93	03:45	0.94	07:30	1.81	1.49	03:45	0.105	11:45	0.268	0.192	0.192	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			4.553	3.85
Avg	3.43	1.25	0.147	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_MH67A, Pipe Height: 10.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013	04:45	3.43	14:30	4.27	3.78	02:15	0.84	10:30	1.73	1.40	04:30	0.090	10:30	0.236	0.172	0.172	
6/2/2013	03:30	3.29	14:00	4.69	3.67	04:00	0.72	14:00	1.80	1.39	04:00	0.073	14:00	0.291	0.164	0.164	0.04
6/3/2013	00:15	3.28	08:30	5.07	4.00	04:15	0.97	10:30	1.76	1.42	00:15	0.099	09:00	0.305	0.190	0.190	0.75
6/4/2013	03:15	3.49	09:45	4.44	3.85	03:15	0.92	22:30	1.70	1.38	03:15	0.101	22:30	0.249	0.173	0.173	
6/5/2013	01:30	3.27	10:45	4.34	3.62	03:15	0.72	23:15	1.63	1.32	03:15	0.072	10:45	0.231	0.153	0.153	
6/6/2013	01:30	3.09	08:30	4.39	3.50	02:15	0.90	08:15	1.67	1.31	02:15	0.086	08:30	0.236	0.144	0.144	0.16
6/7/2013	02:30	3.15	22:00	17.85	5.20	03:30	0.62	22:00	2.49	1.59	03:30	0.059	22:00	0.889	0.305	0.305	2.62
6/8/2013	23:15	6.43	03:30	50.01	12.22	21:00	2.11	03:45	4.02	2.43	23:15	0.525	03:45	1.435	0.751	0.751	0.36
6/9/2013	20:45	5.84	00:00	6.88	6.34	19:30	1.80	00:15	2.26	2.00	20:45	0.406	00:00	0.578	0.471	0.471	
6/10/2013	05:00	5.57	23:15	7.03	6.14	05:30	1.67	23:15	2.23	1.91	05:30	0.356	23:15	0.591	0.434	0.434	1.06
6/11/2013	22:00	6.03	03:15	7.87	6.84	23:45	1.96	07:00	2.28	2.13	19:45	0.460	03:15	0.651	0.546	0.546	0.47
6/12/2013	23:30	5.77	07:45	6.66	6.17	08:30	1.69	07:45	2.13	1.88	23:30	0.365	07:45	0.531	0.430	0.430	
6/13/2013	03:00	5.51	23:00	7.45	6.18	06:15	1.54	23:00	2.14	1.89	05:15	0.317	23:00	0.603	0.433	0.433	1.33
6/14/2013	23:30	6.70	05:00	9.21	7.53	21:45	2.02	08:15	2.34	2.14	23:30	0.512	08:15	0.764	0.610	0.610	0.81
6/15/2013	23:45	6.02	13:00	6.90	6.43	23:45	1.86	01:30	2.08	1.97	23:45	0.412	01:15	0.528	0.471	0.471	
6/16/2013	23:00	5.59	11:45	6.31	5.94	16:45	1.72	09:15	1.96	1.81	23:00	0.351	09:15	0.454	0.395	0.395	
6/17/2013	23:30	5.24	07:45	6.32	5.58	16:15	1.67	07:45	1.88	1.76	05:30	0.318	07:45	0.442	0.356	0.356	0.10
6/18/2013	16:30	4.97	07:15	6.20	5.36	02:15	1.62	07:15	1.86	1.75	02:15	0.289	07:15	0.427	0.336	0.336	0.18
6/19/2013	23:45	4.76	07:45	5.72	5.13	17:00	1.49	10:45	1.79	1.67	17:30	0.253	07:45	0.360	0.303	0.303	
6/20/2013	01:45	4.46	07:30	5.49	4.78	02:00	1.33	10:15	1.71	1.52	03:30	0.208	10:15	0.326	0.252	0.252	
6/21/2013	03:45	4.48	11:30	5.65	4.84	03:00	1.24	09:30	1.62	1.46	04:45	0.192	11:30	0.324	0.246	0.246	
6/22/2013	04:15	4.27	18:15	5.36	4.58	03:00	1.06	10:45	1.61	1.45	03:00	0.151	18:15	0.305	0.228	0.228	
6/23/2013	05:45	3.99	11:15	5.09	4.32	02:45	1.01	22:30	1.64	1.40	02:45	0.138	11:15	0.274	0.205	0.205	
6/24/2013	03:15	3.78	09:30	4.96	4.15	01:45	1.05	09:30	1.61	1.39	01:45	0.129	09:30	0.281	0.192	0.192	0.20
6/25/2013	02:00	3.77	09:00	5.00	4.11	03:00	1.13	09:00	1.56	1.36	04:15	0.140	09:00	0.275	0.185	0.185	0.01
6/26/2013	02:00	3.60	14:15	4.79	3.95	05:00	1.09	14:15	1.63	1.30	05:00	0.124	14:15	0.270	0.168	0.168	0.08
6/27/2013	03:30	3.47	23:15	5.40	3.96	04:15	0.92	23:15	1.59	1.27	04:15	0.101	23:15	0.307	0.165	0.165	0.57
6/28/2013	04:00	3.81	12:15	4.83	4.11	05:00	1.11	07:45	1.49	1.34	05:00	0.140	12:15	0.244	0.182	0.182	0.05
6/29/2013	03:30	3.54	18:30	4.71	3.90	03:45	0.93	18:00	1.56	1.30	03:45	0.105	18:00	0.254	0.166	0.166	
6/30/2013	04:45	3.36	10:00	4.91	3.80	07:15	0.87	10:00	1.60	1.28	03:45	0.091	10:00	0.274	0.158	0.158	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			8.981	8.81
Avg	5.13	1.61	0.299	

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_MH67A, Pipe Height: 10.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013	02:00	3.34	11:45	44.15	5.98	02:00	0.81	12:00	3.36	1.57	02:00	0.084	12:00	1.198	0.295	0.295	0.44
7/2/2013	23:45	4.41	09:45	5.69	4.81	18:00	1.25	21:30	1.79	1.55	18:00	0.196	09:45	0.355	0.260	0.260	0.02
7/3/2013	23:45	4.17	08:30	5.12	4.42	00:15	1.13	07:30	1.78	1.45	00:15	0.163	08:30	0.294	0.217	0.217	
7/4/2013	06:45	3.94	13:30	5.12	4.25	02:00	0.94	14:30	1.76	1.35	05:30	0.127	13:30	0.301	0.193	0.193	
7/5/2013	04:30	3.69	09:15	4.85	4.09	03:00	0.95	09:15	1.66	1.34	05:30	0.118	09:15	0.280	0.181	0.181	
7/6/2013	02:15	3.58	08:30	4.71	3.95	03:15	0.93	00:15	1.75	1.34	03:15	0.107	00:15	0.276	0.173	0.173	
7/7/2013	05:15	3.51	19:15	4.57	3.87	06:00	0.85	12:15	1.64	1.32	06:00	0.094	19:15	0.244	0.167	0.167	
7/8/2013	02:45	3.46	07:45	4.72	3.82	02:30	0.74	07:45	1.67	1.28	02:30	0.082	07:45	0.272	0.159	0.159	
7/9/2013	03:30	3.38	10:15	4.59	3.80	03:00	0.84	07:15	1.62	1.30	03:30	0.090	09:15	0.239	0.161	0.161	
7/10/2013	03:30	3.33	14:00	4.56	3.88	04:45	0.74	10:00	1.54	1.27	04:45	0.077	14:00	0.219	0.154	0.092	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			1.899	0.56
Avg	4.29	1.38	0.198	

Rainfall data

The rainfall measured at Ridgefield_RG01 from April 17, 2013 to July 10, 2013 is 13.56 inches.

A backup rain gauge was installed by ADS on 6/6/13 and used to confirm original gauge which was overstating heavy rainfall observed in late May and early June. The backup gauge was used after 6/6/13.

Date / Time	Maximum 15 Minute Rainfall (in.)
6/27/2013 10:30 PM	0.40

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC.

Site Report

FM Initials: CL/TS

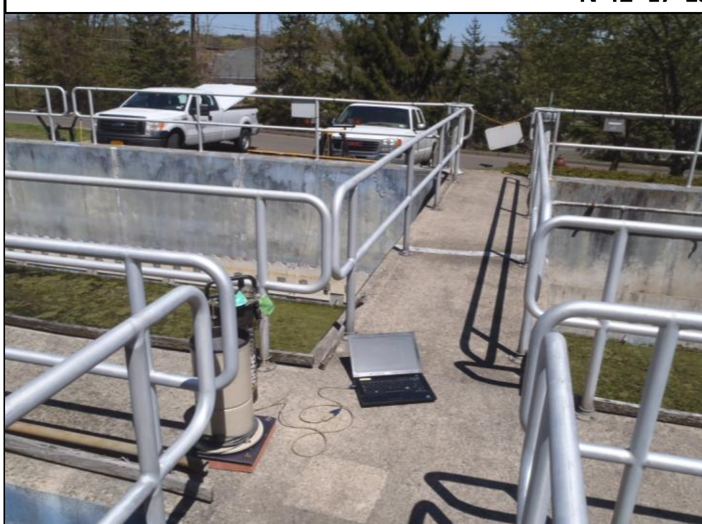
Project Name: RIDGEFIELD, CT

Site Name:	RIDGEFIELD_RG01	Meter Type:	FLOWSHARK	Monitor S/N:	16099	Manhole #:	N/A
Address / Location:	22 SOUTH STREET AT TREATMENT PLANT			Map Page #:	N/A		
				Pipe Height:	Inches		
Access:	DRIVE	Type of System:	SANITARY	Pipe Width:	N/A		
				Phone Number:	N/A		

Investigation Information:			Manhole Information:		
Date/Time of Investigation:			Manhole Depth:	N/A	Feet
Site Hydraulics:			Manhole Material / Condition:	N/A	
			Active Drop Connections?		
Upstream Input: (L/S, P/S)	N/A		Pipe Material / Condition:	N/A	
Upstream Manhole:	N/A		Mini System Character:		
Downstream Manhole:	N/A		**Telephone Information:**		
Depth of Flow (Wet Dof):	N/A	+/-	Access Pole #:	N/A	
Range (Air Dof):	N/A	+/-	Distance From Manhole:	N/A Feet	
Peak Velocity:	N/A	fps	Road Cut Length:	N/A Feet	
Silt:	N/A	0 Inches	Trench Length:	N/A Feet	

Other Information:

N 41° 17' 23.2" W 73° 29' 34.9"



Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Rain Gauge	Trunk		X		
Sensors / Devices:	Rain Gauge Tipping Bucket	Lift/Pump Station		X		
Surcharge Height:		WWTP		X		
Rain Gauge Zone:		Other		X		

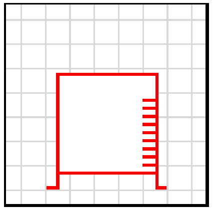
Additional Site Information / Comments:

HYDROGRAPH REPORT

Ridgefield_RG01

Rain Gauge

Ridgefield_RG01

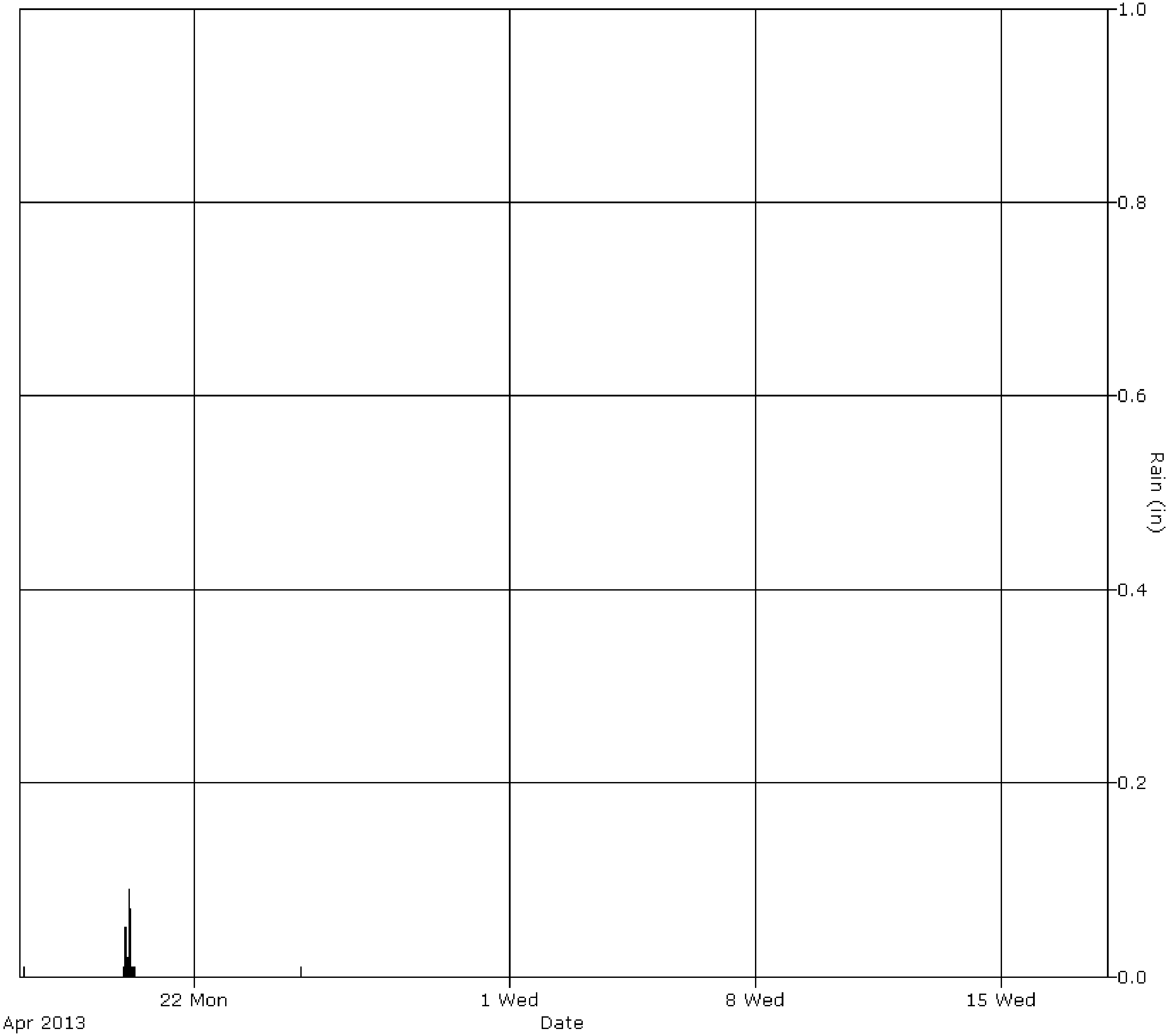


Report Period

4/17/2013
To
4/30/2013

Legend

Rain



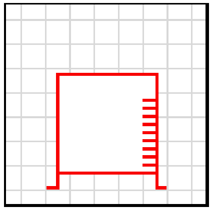
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_RG01

Rain Gauge

Ridgefield_RG01

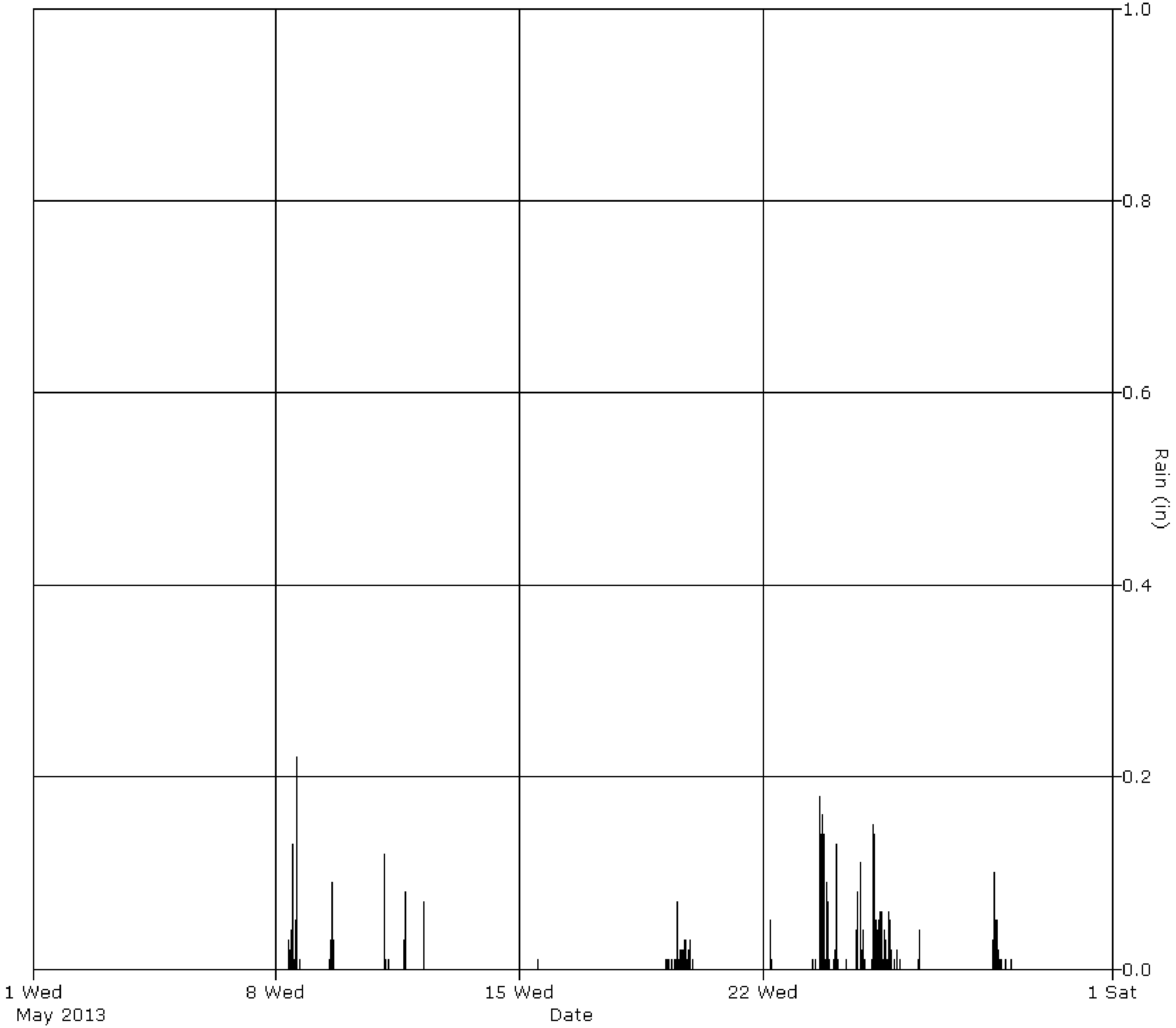


Report Period

5/1/2013
To
5/31/2013

Legend

Rain



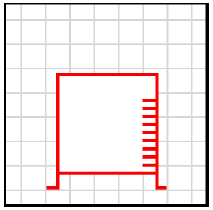
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_RG01

Rain Gauge

Ridgefield_RG01

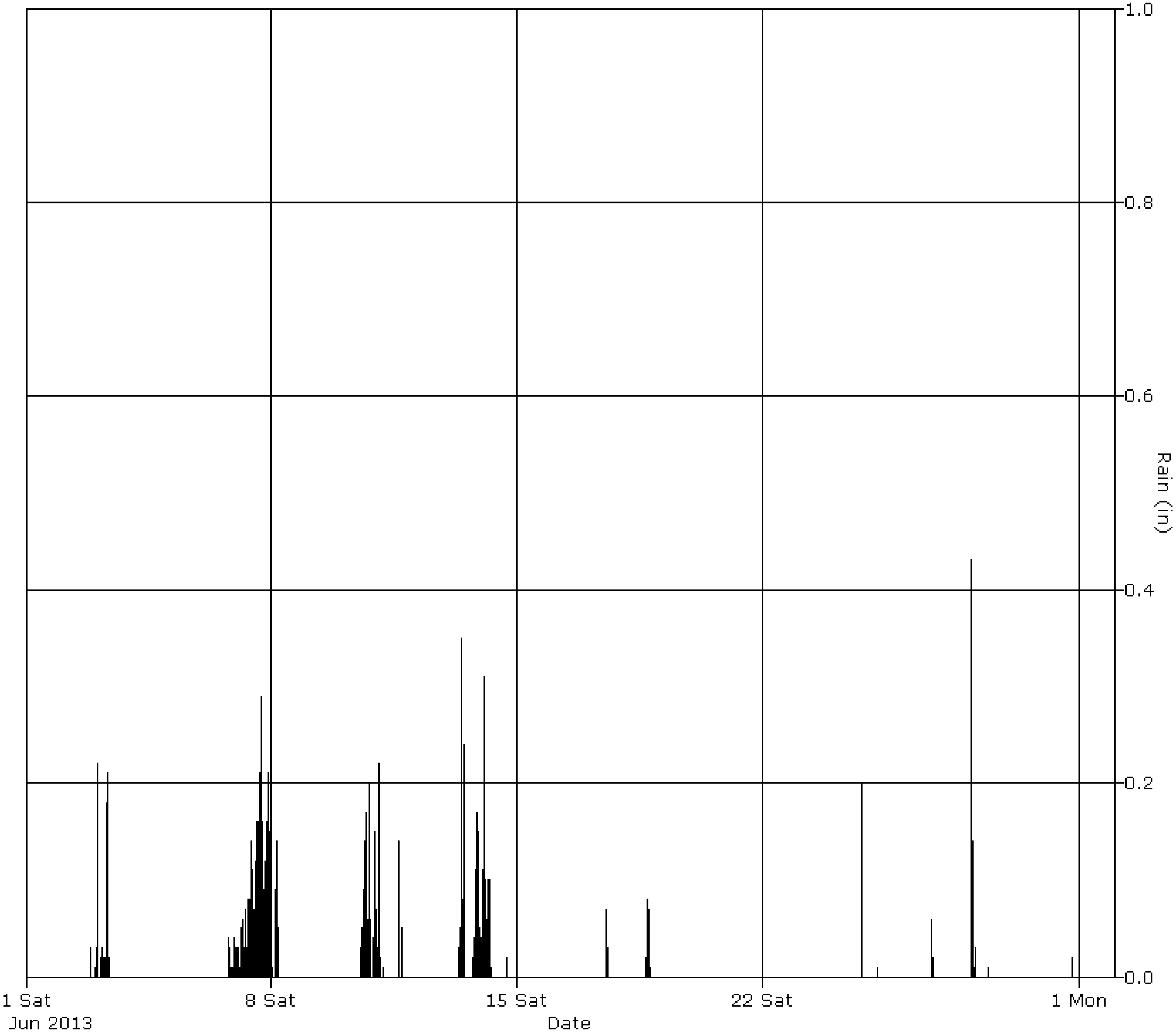


Report Period

6/1/2013
To
6/30/2013

Legend

Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Ridgefield_RG01

Rain Gauge

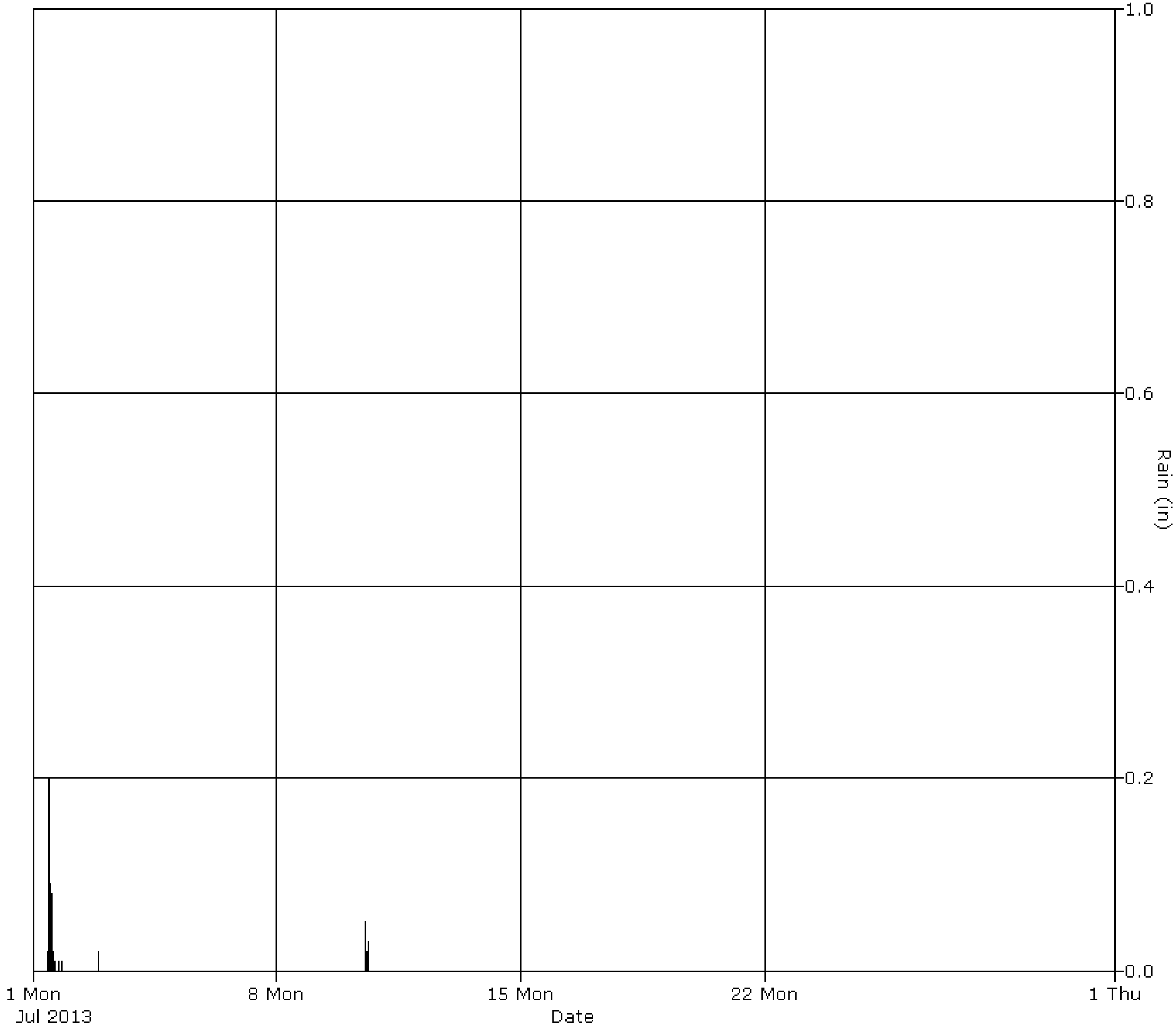
Ridgefield_RG01

Report Period

7/1/2013
To
7/10/2013

Legend

Rain



Daily Tabular Report For The Period 4/17/2013 - 4/30/2013

Ridgefield_RG01, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
4/17/2013																	0.01
4/18/2013																	
4/19/2013																	0.01
4/20/2013																	0.31
4/21/2013																	
4/22/2013																	
4/23/2013																	
4/24/2013																	
4/25/2013																	0.01
4/26/2013																	
4/27/2013																	
4/28/2013																	
4/29/2013																	
4/30/2013																	

Report Summary For The Period 4/17/2013 - 4/30/2013

	Rain (in)
Total	0.34
Avg	

Daily Tabular Report For The Period 5/1/2013 - 5/31/2013

Ridgefield_RG01, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/1/2013																	
5/2/2013																	
5/3/2013																	
5/4/2013																	
5/5/2013																	
5/6/2013																	
5/7/2013																	
5/8/2013																	0.51
5/9/2013																	0.16
5/10/2013																	
5/11/2013																	0.25
5/12/2013																	0.07
5/13/2013																	
5/14/2013																	
5/15/2013																	0.01
5/16/2013																	
5/17/2013																	
5/18/2013																	
5/19/2013																	0.33
5/20/2013																	
5/21/2013																	
5/22/2013																	0.06
5/23/2013																	0.82
5/24/2013																	0.48
5/25/2013																	0.82
5/26/2013																	0.05
5/27/2013																	
5/28/2013																	0.28
5/29/2013																	0.01
5/30/2013																	
5/31/2013																	

Report Summary For The Period 5/1/2013 - 5/31/2013

	Rain (in)
Total	3.85
Avg	

NE Temps 2013

Daily Tabular Report For The Period 6/1/2013 - 6/30/2013

Ridgefield_RG01, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2013																	
6/2/2013																	0.04
6/3/2013																	0.75
6/4/2013																	
6/5/2013																	
6/6/2013																	0.16
6/7/2013																	2.62
6/8/2013																	0.36
6/9/2013																	
6/10/2013																	1.06
6/11/2013																	0.47
6/12/2013																	
6/13/2013																	1.33
6/14/2013																	0.81
6/15/2013																	
6/16/2013																	
6/17/2013																	0.10
6/18/2013																	0.18
6/19/2013																	
6/20/2013																	
6/21/2013																	
6/22/2013																	
6/23/2013																	
6/24/2013																	0.20
6/25/2013																	0.01
6/26/2013																	0.08
6/27/2013																	0.57
6/28/2013																	0.05
6/29/2013																	
6/30/2013																	0.02

Report Summary For The Period 6/1/2013 - 6/30/2013

	Rain (in)
Total	8.81
Avg	

Daily Tabular Report For The Period 7/1/2013 - 7/10/2013

Ridgefield_RG01, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2013																	0.44
7/2/2013																	0.02
7/3/2013																	
7/4/2013																	
7/5/2013																	
7/6/2013																	
7/7/2013																	
7/8/2013																	
7/9/2013																	
7/10/2013																	0.10

Report Summary For The Period 7/1/2013 - 7/10/2013

	Rain (in)
Total	0.56
Avg	

APPENDIX I

TECHNICAL MEMORANDUM NO. 4 – PUMP STATION EVALUATION UPDATE

AECOM
701 Edgewater Drive
Wakefield, MA 01880
www.aecom.com

781 246 5200 tel
781 224 6676 fax

Technical Memorandum No. 4

To	Ridgefield WPCA	Page	1 of 18
CC	C. Fisher, J. O'Brien, J. Pereira, J. Pennell		
Subject	Town of Ridgefield, CT Phase 1 Wastewater Facilities Plan Technical Memorandum No. 4 – Pump Station Evaluation Update		
From	Jon Pearson/Alberto Angles		
Date	January 22, 2014		

INTRODUCTION

This Technical Memorandum summarizes the evaluation of the upgrade needs of the Quail Ridge Pump Station and the Route 7 Pump Station.

While the majority of the collection system pump stations have been upgraded in the past few years, the two oldest pump stations that have not received significant upgrades in many years are the Quail Ridge Pump Station and the Route 7 WWTF Influent Pump Station. Due to the age of these pump stations there is a concern they will not be able to provide reliable service for the next 20 years. These pump stations and the other pump stations in the collection system should be upgraded as needed to provide reliable service. Table 1 presents a listing of the pump stations and the year that they were built or last upgraded.

TABLE 1. MUNICIPAL PUMP STATION UPGRADES

Sewer District	Pump Station Name	Year of Construction / Last Upgrade
1	South Street WWTF Influent Pump Station	2007
1	Copps Hill Pump Station	2007
1	Middle School Pump Station	2003 (1)
1	Quail Ridge Pump Station	1985 (1)
1	Fox Hill Pump Station	2005
1	Ramapoo Road (Millstone Court) Pump Station	1998 (1)
2	Route 7 Influent Pump Station	1985 (1)

Notes: (1) Year of original construction.

The South Street WWTF Influent Pump Station, Copps Hill Pump Station, Quail Ridge Pump Station and Route 7 Influent Pump Station were evaluated and their upgrade needs were defined as part of the 2003 Final Pump Station Preliminary Design Report. The South Street Influent Pump Station and the Copps Hill Pump Station were subsequently upgraded as indicated in Table 1. As part of this task of the Phase 1 Facilities Plan, the evaluation and upgrade needs for the Quail Ridge Pump Station and Route 7 WWTF Influent Pump Station were revisited and the estimated upgrade project costs updated. In addition, the potential to eliminate the Quail Ridge Pump Station by construction of a gravity sewer to the South Street WWTF has been assessed. This information is presented in the following paragraphs.

QUAIL RIDGE PUMP STATION

Description

The Quail Ridge Pump Station is a Smith & Loveless package pump station consisting of a steel dry well and a precast concrete wet well. The pump station is about 29 years old, and is equipped with duplex 15 Hp pumps each with a rated capacity of approximately 100 gallons per minute (gpm). Both pump motors were rebuilt approximately 16 years ago. The pump stands, suction elbows and gate valves were replaced in 2001. The pump station is equipped with a bubble tube level detection system. A dehumidifier is located in the dry well on a wall-mounted shelf. A 30-kW Empire standby propane generator is housed in an aboveground wood framed structure at the site. A 6-foot chain-link fence is located around the entire pump station. The chain link fence is surrounded by a 6-foot wooden fence which provides a good visual barrier for the pump station. Three-phase power is not available at the site and a Ronk phase converter is located in the generator building. An existing conditions site plan is shown on Figure 1.

As noted above, the Quail Ridge Pump Station was evaluated and its upgrade needs were defined as part of the 2003 Final Pump Station Preliminary Design Report (2003 Report). The 2003 Report concluded that the pumping equipment was reaching the end of its design life and that it was in need of replacement to meet the projected design flows. In addition, it was recommended that the existing 4-inch force main be replaced with a 6-inch force main to improve the operating conditions at the pump station.

Since the 2003 Report, zoning changes have been implemented in the Quail Ridge Pump Station service area. These zoning changes impact the projected flows for the pump station. In addition to the zoning changes, the potential to eliminate the Quail Ridge Pump Station by construction of a gravity sewer to the South Street WWTF has been assessed. The following is an updated evaluation of the pump station.

Assessment of the Potential to Eliminate the Quail Ridge Pump Station

The potential to eliminate the Quail Ridge Pump Station by construction of a gravity sewer to the South Street WWTF has been assessed previously in Technical Memorandum No. 2 – Collection System Bottleneck Evaluation dated February 2014. To accomplish this, the elevations of the existing collection and pumping system as well as the surrounding topography were reviewed. The Quail Ridge Pump Station is located on Prospect Street Extension. The invert elevation of the 8-inch sewer just upstream of the wet well is approximately 585 ft (NAVD 88). The South Street WWTF is located approximately 0.6 miles to the northeast at 22 South Street. The invert elevation of the influent sewer at the South Street WWTF Influent Pump Station is approximately 600 ft. Since the elevation of the influent sewer at the South Street WWTF Influent Pump Station is higher than that of

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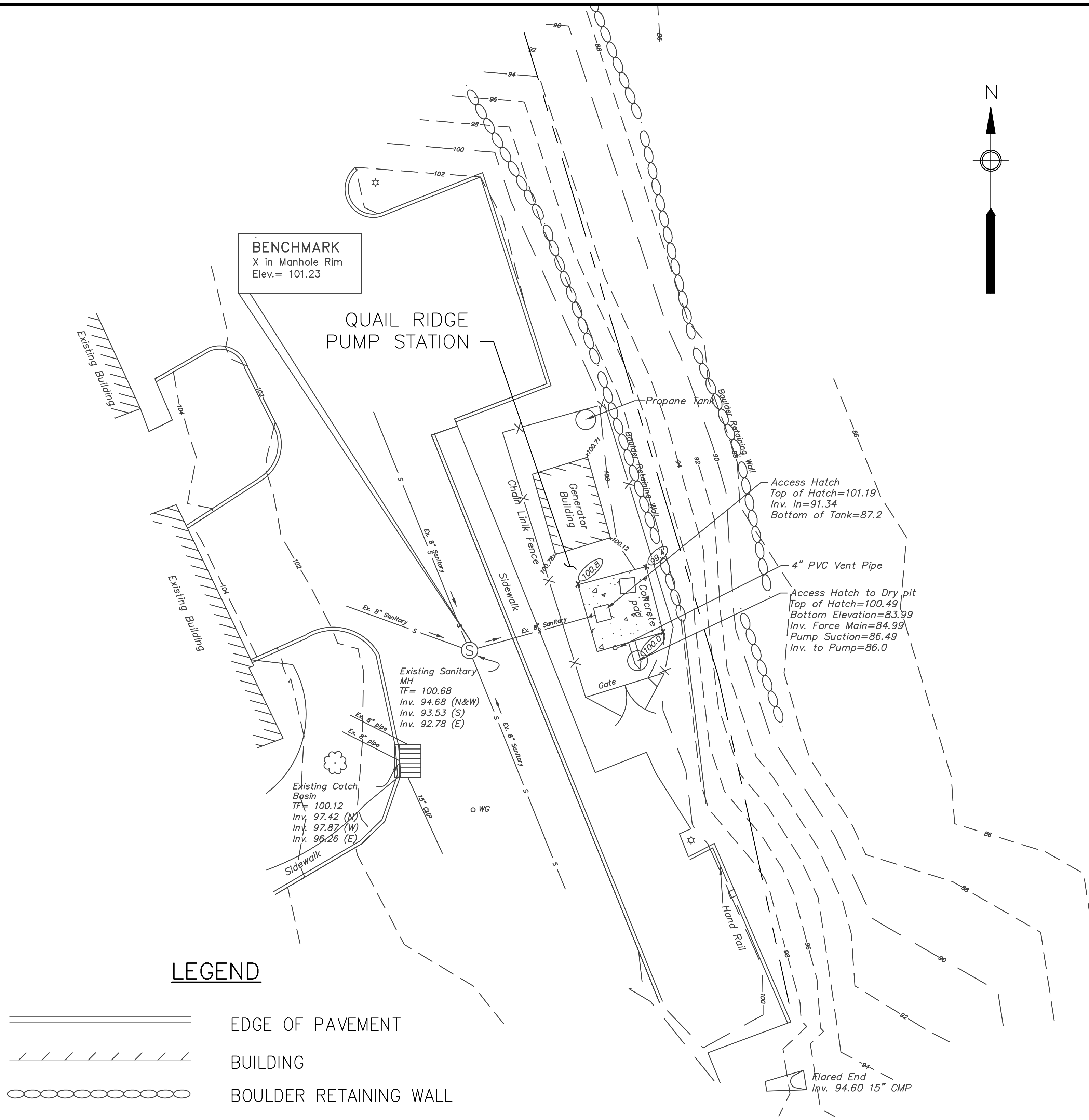
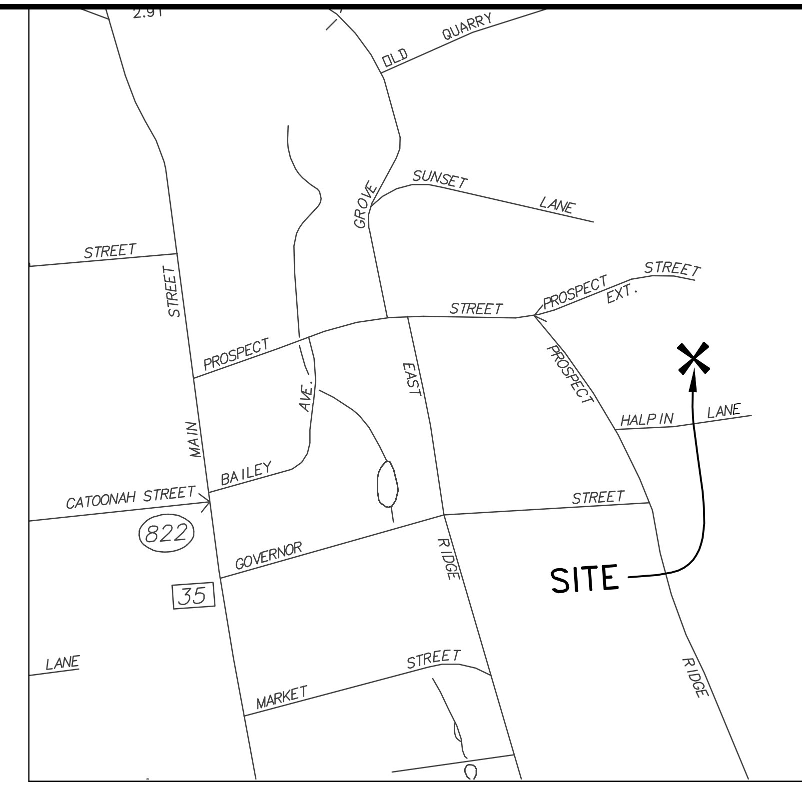
LAST UPDATE: Tuesday, September 16, 2014 10:09:49 AM   PLOT DATE: Thursday, January 15, 2015 3:08:19 PM



LEGEND

EDGE OF PAVEMENT
BUILDING
BOULDER RETAINING WALL
CHAIN LINK FENCE
PROPERTY LINE
LAMP POST
SANITARY MANHOLE
CATCH BASIN

0 20 40 60
1" = 20'
SCALE FEET



VICINITY MAP
SCALE: 1" = 1000'

NOTES:

1. THIS PLAN WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.
2. THIS SURVEY AND MAP HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC., ON SEPTEMBER 26, 1996.
3. THE TYPE OF SURVEY PERFORMED IS AND MAPPED FEATURES DEPICTED HEREON ARE IN ACCORDANCE WITH THE REQUIREMENTS OF A COMPILATION PLAN.
4. THERE IS NO BOUNDARY DETERMINATION.
5. WITH RESPECT TO THE PROPERTY LINES AND MAPPED FEATURES, THIS SURVEY CONFORMS TO CLASS D. WITH RESPECT TO THE TOPOGRAPHY, THIS SURVEY CONFORMS TO CLASS T-2.
6. THIS SITE WAS FIELD SURVEYED ON MARCH 5, 2002 AND THE CONTOURS DEPICTED HEREON ARE IN TWO FOOT INTERVALS AND ELEVATION ARE BASED ON ASSUMED DATUM.
7. LOCATION OF UNDERGROUND UTILITIES DEPICTED HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER GATES, ETC., AND COMPILING INFORMATION FROM PLANS SUPPLIED RESPECTIVE UTILITY COMPANIES AND GOVERNMENT AGENCIES. ALL CONTRACTORS ARE REQUIRED BY STATE REGULATIONS TO CONTACT CALL-BEFORE-YOU-DIG AT 1-800-922-4455 FOR LOCATION AND STAKEOUT OF UTILITIES PRIOR TO ANY EXCAVATION.

AECOM TECHNICAL SERVICES
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PHONE (781) 246-5200

AECOM

QUAIL RIDGE PUMP STATION
EXISTING CONDITIONS SITE PLAN
PUMP STATION EVALUATION UPDATE
RIDGEFIELD, CT
PHASE I WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 4

PROJECT NO:	60299267
CAD DWG FILE:	CZRGF002
DESIGNED BY:	A. ANGLES
DRAWN BY:	N. YEE
DATE:	SEPTEMBER 10, 2014
SCALE:	AS NOTED

FIGURE 1

ANSI B - 16-Sep-14

the low point in the Quail Ridge collection system, flows cannot be conveyed to this location by gravity.

Another potential gravity discharge location evaluated is an existing manhole located on Old Quarry Road. It is located approximately 0.5 miles to the northeast of the Quail Ridge Pump Station. The invert elevation at the manhole is approximately 640 ft. This location is also higher than that of the existing Quail Ridge collection system and therefore cannot receive the Quail Ridge flows by gravity. Based on this assessment, the existing pump station cannot be eliminated by constructing a gravity sewer cross country through easements.

As part of this evaluation, the feasibility of eliminating the Quail Ridge Pump Station by constructing a new pump station closer to the South Street WWTF was also considered. This would involve the construction of approximately 2,500 linear feet of gravity sewer from the current Quail Ridge Pump Station location, through easements across the northeastern portion of the former Schlumberger property, along the edge of the wetlands, to a new pump station located generally in the vicinity of the Goodwill trailer on South Street. Figure 2 illustrates the conceptual alignment of the gravity sewer from the existing Quail Ridge Pump Station site to the proposed pump station location based on the Town's GIS data. From the new pump station location a new force main would convey the wastewater flows either directly to the South Street WWTF or indirectly into the existing gravity sewer on Old Quarry Road which discharges to the South Street WWTF. A discussion of force main alternatives follows later in the text.

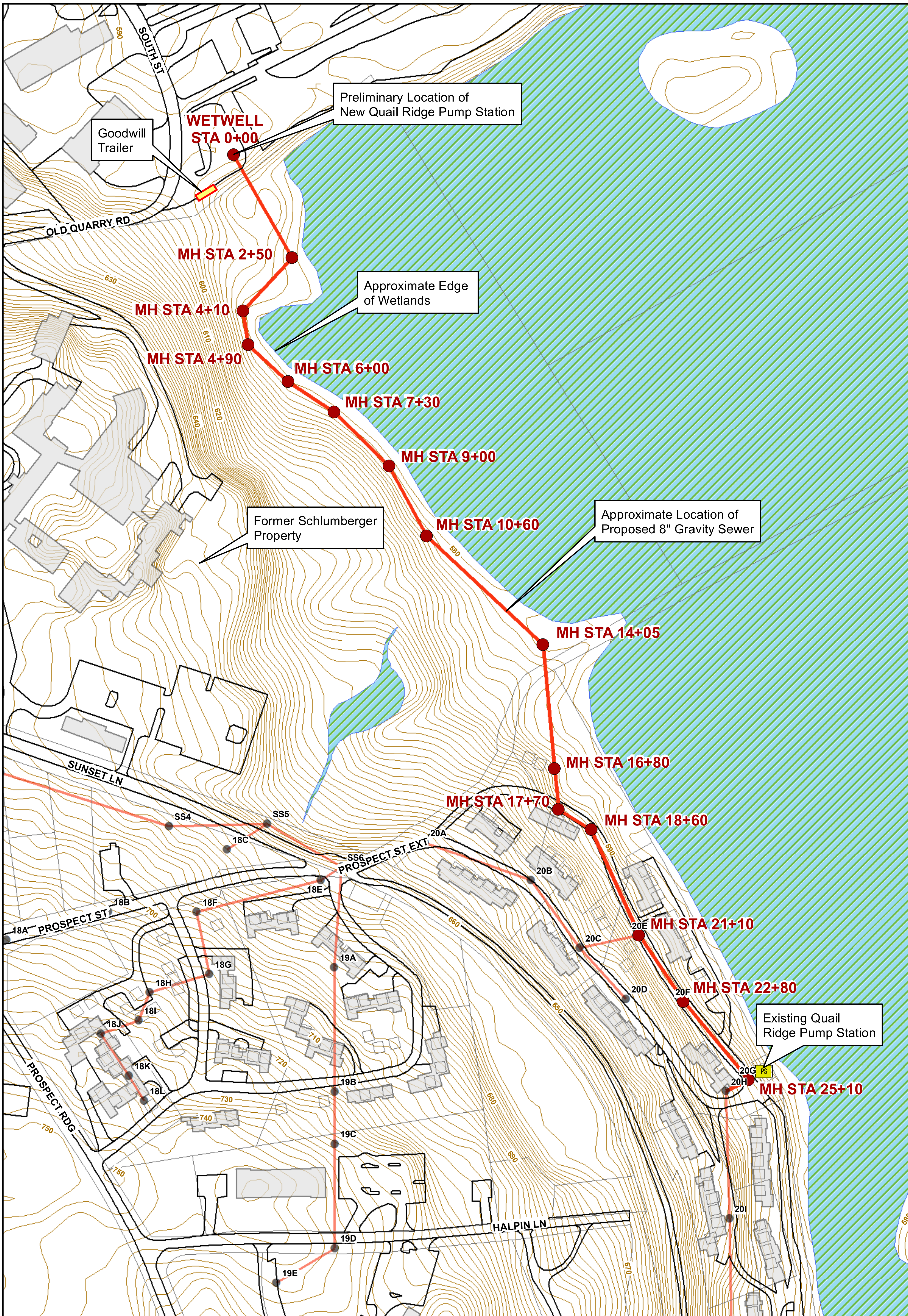
Due to the topography of the area, the routing of the gravity sewer described above may be outside the limits of the portion of the Schlumberger property being considered for sale. However, depending on the final determination of the location of the sewer related to the wetlands and 100-year flood plain, easements on the town owned parcel, formerly Schlumberger, may be required for the gravity sewer. Based on this assessment, the existing pump station could be located closer to the South Street WWTF.

The estimated cost to construct an 8-inch gravity sewer from the existing Quail Ridge Pump Station site to the new site is $900,000, including an allowance for engineering and contingencies.

Existing and Projected Flows

The following paragraphs present a general description of the Quail Ridge Pump Station Service area and an estimate of the existing and projected flows.

Description of Existing Service Area. The total existing service area of the pump station is approximately 45 acres. The service area is zoned primarily as residential. The residential zoning consists of residential 2 acre (RAA), residential 20,000 square feet (R-20), multifamily dwelling development (MFDD), and age-restricted housing district 8 units/acre (ARHD). The service area is located east of the center of town including properties on Sunset Lane, Prospect Street, Prospect Street Extension, Prospect Ridge Road and Halpin Lane.



AECOM	Map Location	Legend
Drawn: BC 1/19/2015		
Approved: AA 1/19/2015		

Legend
- PS Existing Pump Station
- Proposed Manholes
- Proposed Sewer
- Existing Manholes
- Existing Sewer
- Swamps
- Edge of Pavement
- Buildings
- Contour

0 100 200 400 Feet

N

FIGURE 2: QUAIL RIDGE
GRAVITY SEWER ALIGNMENT

PUMP STATION EVALUATION UPDATE
RIDGEFIELD, CT

PHASE 1 WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 4

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Estimate of Existing Flows Based on Pump Station Data. The Quail Ridge Pump Station is equipped with running time meters for each of the two pumps. No flow meter exists at the pump station to directly measure flow discharge rates. Therefore, flow discharge rates are currently calculated in gallons per day using the runtime for each pump multiplied by the rated pump discharge of approximately 100 gallons per minute (gpm).

Running time data for each of the two pumps were provided by United Water. Using the runtime data and the estimated pumping rate of 100 gpm, the current average daily flow to the pump station appears to be approximately 58,000 gal/day, or 40 gpm.

Existing Flows. Existing wastewater flows from the Quail Ridge service area were estimated based on pump station runtime data and the criteria outlined below. As noted above, the average daily flow to the pump station is approximately 58,000 gal/day. To estimate the peak hourly flow the average daily flow has been broken into two components: wastewater flow and infiltration. The infiltration component is estimated by multiplying the service area (45 acres) by an infiltration rate (200 gallons per acre per day (gad)). This equates to an average infiltration rate of 9,000 gal/day. The wastewater component is the difference between the average daily flow and the infiltration, which equates to 49,000 gal/day. Once the average daily flow has been broken into the wastewater and infiltration components, then each is multiplied by an appropriate peaking factor (3.4 for the wastewater component and 1.4 for the infiltration component). The peaked components are then added together to arrive at an estimated peak hourly flow. The estimated existing average daily and peak flows to the Quail Ridge Pump Station are approximately 58,000 gal/day and 180,000 gal/day, respectively or 40 gpm and 125 gpm. The estimated peak flow of 125 gpm exceeds the existing pump capacity.

Estimate of Projected Flows Based on Zoning and Land Use. Projected wastewater flows within the pump station service area are comprised of domestic flows which are determined by population and domestic flow allowances, commercial flows which are determined by flow allowances in gallons per acre per day (gad), and infiltration which is determined by the size of the service area. The basis for estimating these components for the Quail Ridge Pump Station tributary area is described below.

Domestic Wastewater Flow. Typically, the per capita flow allowance for domestic wastewater flow varies from 50 gallons per capita per day (gpcd) to 70 gpcd, representing 80 to 95 percent of the projected water consumption. An average per capita wastewater production of 60 gpcd was used for this evaluation. The population was estimated assuming 2.7 people per unit except for the areas zoned ARHD which was estimated assuming 2.0 people per unit. The 2.7 people per unit assumption was taken from 2010 U.S. Census data for Ridgefield. It is anticipated that fewer people per unit would reside in the ARHD zones. The WPCA provided billing record information to determine the number of units.

Commercial Flows. Estimates of flow from commercial areas are developed based on the net areas zoned as commercial. Using AECOM's standardized design data collected over a period of several years, the unit wastewater production rate for commercial zoned areas ranges from 800 to 1,500 gallons per acre per day (gad). For zoning district B-2, an allowance of 1,000 gad was used.

Wastewater Peaking Factors. A peaking factor is the ratio of a design peak hourly rate of flow to the corresponding average daily flow rate. Peaking factors are the largest for small populations or flow rates, and become smaller as the population or flow rate increases. This relationship is caused by the diversity of times of peaking of individual sources, and the attenuation of peaks as the wastewater flows through the system.

AECOM has adopted a standardized peaking factor curve for developing peaking wastewater flow from calculated average wastewater flows. Peaking factors taken from the curve are applied to the average domestic wastewater flow.

Infiltration Allowance. Infiltration is groundwater that enters the sewer system through defective pipe, pipe joints, connections or manhole walls. The infiltration component of the wastewater flow is computed based on the developed area serviced by the sewer. The unit rate is highest for small areas and decreases as the area increases. A typical infiltration rate of 200 gad was used for existing and future conditions.

The ratio of peak infiltration rates to average annual rates depends on the age and condition of the sewer and soil and water conditions of the tributary areas. A peaking factor of 1.1 has been calculated for Sewer District 1. However this appears to be low, therefore a standardized peaking factor of 1.4 has been used.

Projected Flows. Projected flows were estimated based on zoning and land use. The planning horizon for the projected flows is 20 years and assumes buildout conditions unless otherwise indicated. Two alternatives for the pump station have been considered based on the location of the pump station.

Alternative 1 considers the rehabilitation/replacement of the pump station at its current location on Prospect Street Ext. Alternative 2 considers the construction of a new pump station in the vicinity of the Goodwill trailer on South Street.

The projected flows for Alternative 1 include in-filling. Lands available for infilling included a few properties along Prospect Street in the Quail Ridge study area, that are not currently connected the Town's sewer system. The added units were converted to an increased population assuming 2.7 people per unit.

A summary of the Alternative 1 estimated projected flows to the pump station based on the above criteria is presented in Table 2. The estimated average daily and peak hour flow is approximately 59,000 gal/day and 183,000 gal/day, respectively or 45 gpm and 130 gpm.

TABLE 2. ESTIMATE OF PROJECTED FLOWS TO QUAIL RIDGE PUMP STATION BASED ON ZONING AND LAND USE (ALTERNATIVE 1)

Flow Category	Criteria for Estimating Flow	Average Daily Flow (gal/day)	Peaking Factor	Peak Hour Flow (gal/day)
Existing Flows	Pump Station Data	58,000	----	180,000
Additional Residentially Zoned Area (MFDD, R-20 & RAA)	8 people @ 60 gpcd	500	3.4	1,700
Additional Infiltration Allowance	2 acres @ 200 gad	400	1.4	600
TOTAL		58,900		182,300

Projected flows for Alternative 2 include expansion of the existing pump station service area northward to incorporate a portion of the Town owned Schlumberger parcel and the Town owned land occupied by the Highway Department. These parcels include areas zoned Business B-2 and RAA. The expansion remains within the Sewer District 1 area boundary. Land available for expansion was estimated based on area and zoning information. Expansion from new development outside the existing sewered area, but within the Sewered Area No. 1 boundary, was not considered because much of the open land surrounding the existing sewered area is wetland. The remaining nearby areas are either already sewered or would more logically be connected to the gravity sewer system not tributary to the Quail Ridge Pump Station.

A summary of the Alternative 2 estimated projected flows to the pump station based on the above criteria is presented in Table 3. The estimated average daily and peak hour flow is approximately 116,000 gal/day and 362,000 gal/day, respectively or 85 gpm and 260 gpm.

TABLE 3. ESTIMATE OF PROJECTED FLOWS TO QUAIL RIDGE PUMP STATION BASED ON ZONING AND LAND USE (ALTERNATIVE 2)

Flow Category	Criteria for Estimating Flow	Average Daily Flow (gal/day)	Peaking Factor	Peak Hour Flow (gal/day)
Existing Flows	Pump Station Data	58,000	----	180,000
Additional Residentially Zoned Area (MFDD, R-20 & RAA)	383 people @ 60 gpcd	23,000	3.4	78,200
Additional Commercially Zoned Area (B-2)	27 acres @ 1,000 gad	27,000	3.4	91,800
Additional Infiltration Allowance	40 acres @ 200 gad	8,000	1.4	11,200
TOTAL		116,000		361,200

Preliminary Design Criteria for Quail Ridge Pump Station and Force Main

As noted previously, it is not possible to provide gravity sewer service to this study area from the existing Quail Ridge sewerage system because of topography. A new pump station must therefore be constructed to pump wastewater from the Quail Ridge service area to the existing collection system in Sewer District 1.

Pump Capacity. The wastewater pumps would be designed to handle the peak hour flow estimated to be generated from the study area for a 20-year planning horizon. All associated piping and equipment should also be capable of handling the peak hour flow.

The design flow for the Quail Ridge Pump Station under Alternative 1 is 130 gpm. The design flow for the Quail Ridge Pump Station under Alternative 2 is 260 gpm. Under both the alternatives the pumps would be constant speed designed to operate intermittently on a fill and pump cycle. Two pumps are to be provided, each pump sized to accommodate the design flow.

Force Main. Hydraulic guidelines for the design of wastewater force mains indicate that ideal flow velocities should be maintained in the range of 3.5 to 5 feet per second (fps) to re-suspend solids that may settle when the pumps are not running and to allow for reasonable friction losses within the pipeline. Higher velocities may be allowed but should not exceed 8 fps. A minimum of 4 feet of ground cover is recommended for the force main in order to protect it from frost action and surface loads. Depending on subsurface conditions, the force main may need to be deeper to reduce interference with existing utilities.

Energy losses due to friction were calculated using the Hazen-Williams equation. The Hazen-Williams equation is used to determine energy losses based on pipe diameter, slope, and a coefficient of material roughness C. For this project it has been assumed that the C value will range from 140 for new pipe to 100 for older pipe.

A force main is required to convey flow from the pump station to the existing sewer system. For the purposes of this report, two scenarios have been evaluated for each of the alternatives described above.

The existing Quail Ridge force main is 4-inch PVC approximately 2,400 feet long and runs from the existing pump station location to an existing sanitary sewer manhole on Sunset Lane. The elevation rise from the wet well to the force main discharge is approximately 90 feet.

Under Alternative 1 two force main scenarios were considered: 1) use of the existing 4-inch force main; and 2) replace the existing 4-inch force main with a 6-inch force main. Preliminary force main sizing for Alternative 1 is presented in Table 4.

TABLE 4. SUMMARY OF QUAIL RIDGE PUMP STATION FORCE MAIN SIZING AT 130 GPM (ALTERNATIVE 1)

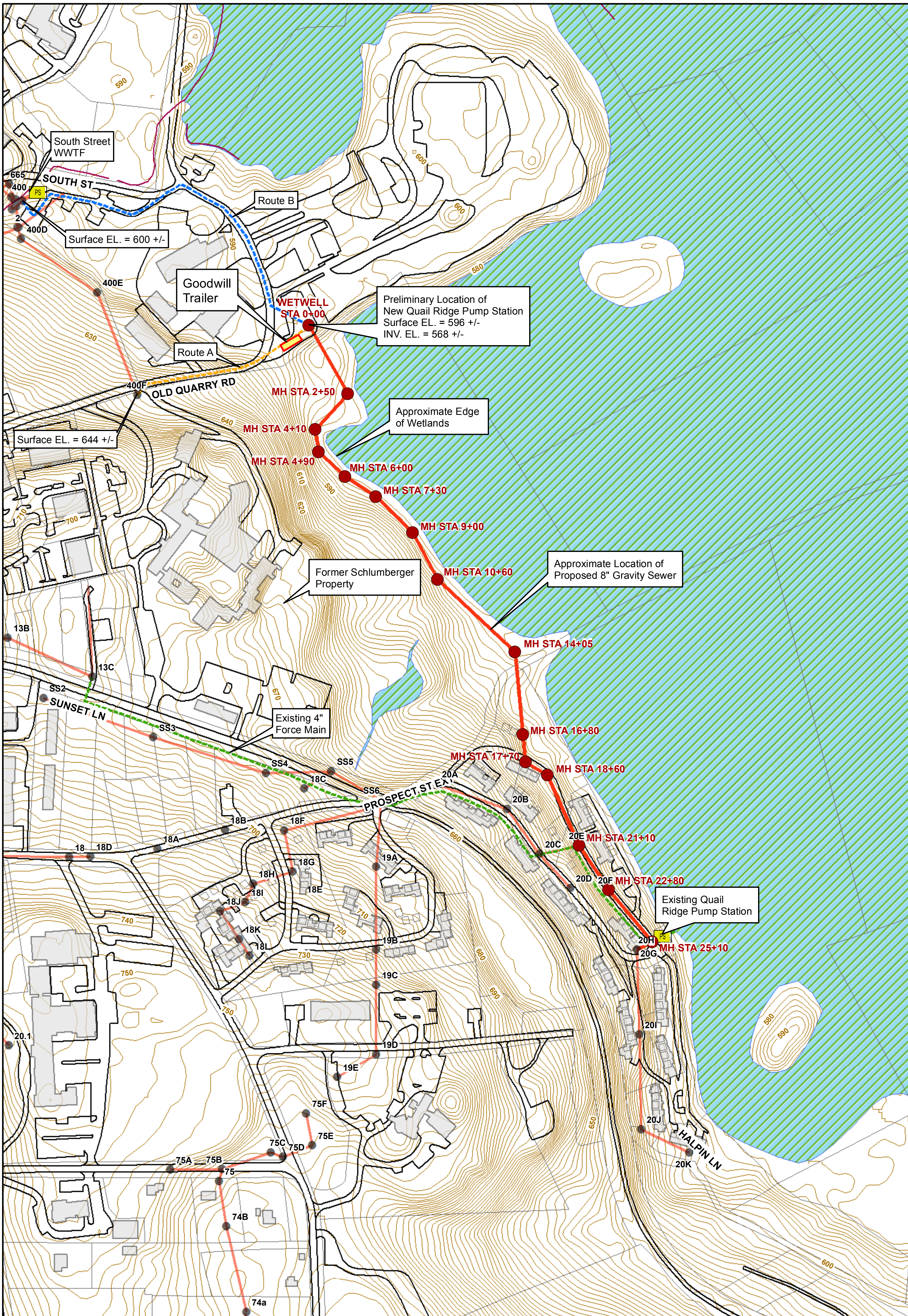
Criteria	Existing FM	New FM
Force Main Size (inches)	4	6
Velocity at Design Flow (fps)	3.3	1.5
Force Main Length ((feet)	2,400	2,400
Static Head (feet)	90	90
Friction Head (feet)	48	5
Total Dynamic Head at Design Flow (feet)	139	95

An evaluation of pumping scenarios for Alternative 1 has been considered based on the information provided in Table 4. The total dynamic head for a design flow of 130 gpm (Alternative 1) ranges from 95 feet to 139 feet depending on the size and age of the selected force main. For Alternative 1, the reuse of the existing 4-inch force main is recommended because the velocity in a new, larger diameter, 6-inch force main is below the recommended velocity at the design flow. Pump capacity would be increased to 136 gpm to maintain a minimum velocity of 3.5 fps in the 4-inch force main.

The two scenarios under Alternative 2 consider two preliminary routes. The two preliminary force main routes are shown on Figure 3. Both routes start at the Alternative 2 pump station location in the general vicinity of the Goodwill trailer on South Street. The ground elevation is approximately 596 feet at the proposed pump station location. Route A runs east on Old Quarry Road for approximately 650 feet and discharges to an existing 8-inch gravity sewer on Old Quarry Road. The ground elevation is approximately 644 feet at the Route A discharge manhole. Route B runs north on South Street for approximately 1,300 feet and discharges directly to the South Street WWTP. The ground elevation is approximately 600 feet at the Route B discharge manhole. Preliminary force main sizing for Alternative 2 is presented in Table 5.

TABLE 5. SUMMARY OF QUAIL RIDGE PUMP STATION FORCE MAIN SIZING (ALTERNATIVE 2)

Criteria	Scenario					
	A			B		
Force Main Size (inches)	4	6	6	4	6	6
Flow (gpm)	260	260	309	260	260	309
Velocity at Design Flow (fps)	6.6	3.0	3.5	6.6	3.0	3.5
Force Main Length ((feet)	650	650	650	1,300	1,300	300
Static Head (feet)	72	72	72	28	28	28
Friction Head (feet)	34	5	7	67	10	13
Total Dynamic Head at Design Flow (feet)	109	78	80	98	38	42

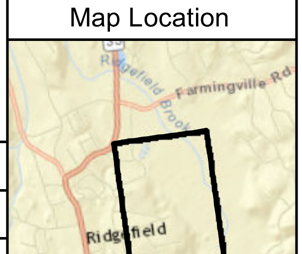


AECOM

Drawn: BC 1/19/2015

Approved: AA 1/19/2015

Map Location



Legend

- PS Existing Pump Station
- Proposed Manholes
- Proposed Sewer
- Existing Manholes
- Existing Sewer
- Proposed Force Main Route A
- Proposed Force Main Route B
- Existing Force Main
- Swamps
- Edge of Pavement
- Buildings
- Contour

0 100 200 400 Feet

N

FIGURE 3: QUAIL RIDGE PUMP STATION FORCE MAIN ROUTE ALTERNATIVES

PUMP STATION EVALUATION UPDATE
RIDGEFIELD, CT

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An evaluation of pumping scenarios for Alternative 2 has been considered based on the information provided in Table 5. Both routes were considered using a 4-inch and a 6-inch force main at a design flow of 260 gpm. Under both scenarios, a 4-inch force main will convey the design flow at velocities greater than the minimum required to resuspend solids. However, the 4-inch force main would create high friction losses which would require greater horse power motors. Using a 6-inch force main reduces the friction loses in the force main, but also reduces the velocity below the recommended 3.5 fps. Increasing the flow to 309 gpm increases the velocity in a 6-inch force main to within the recommended values.

Route A minimizes the length of force main construction. However, the total dynamic head is greater than that of Route B. Because a low total dynamic head translates into lower operating costs, Route B with a 6-inch force main for Alternative 2 is recommended.

Proposed Rehabilitation Options. As previously noted, the existing package pump station is approximately 29 years old and is showing signs of wear. The dry pit shows signs of deterioration and may not provide reliable service for another 20 years. The existing 8.7 ft. by 8.7 ft. below grade concrete wet well has an inadequate working volume for the design flows. The pumping equipment is reaching the end of its design life and is in need of replacement to meet the design flows.

Two alternatives were evaluated for the recommended submersible pump station. Alternative 1 considers the rehabilitation/replacement of the pump station at its current location on Prospect Street Extension. Alternative 2 considers the construction of a new pump station in the vicinity of the Goodwill trailer on South Street. Under both alternative two solids handling pumps would be used.

The existing concrete wet well appears to be in good condition, however it is not large enough to house the two submersible pumps proposed. The existing site is located in a residential area and is constricted by a roadway and sidewalk to the west, resident parking to the north, a walkway to the south, and a steep downward slope to the east. As such, there is very little room for expansion on the current site. It is recommended that a new wet well and valve pit be constructed in the location of the existing generator building. A new generator with sound attenuating enclosure would be required and could be located where the existing wet well and dry pit are currently situated. Because the existing generator would need to be demolished prior to constructing the new pump station, temporary standby power would be required throughout the construction period. The sewer and force main would also need to be extended to the location of the new wet well.

Three-phase power is not currently available at the existing Quail Ridge Pump Station site. A new electrical service consisting of underground cable, and a transformer would need to be installed to provide three-phase power to the site. The electrical service tie-in point is located approximately 1,400 feet from the Quail Ridge Pump Station. Because no other potential CL&P customers that would require three-phase power could be identified in the area, it is likely that the Town and/or the condominium association would be responsible for the full cost of providing three-phase power to the Quail Ridge Pump Station site. It is recommended that three-phase pump motors be provided at this site regardless of whether single-phase or three-phase power is available. If three-phase power is not provided, a phase converter would be required. Using three-phase power, both pumps would be able to operate simultaneously in the rare event that one pump was not sufficient to handle the flow to the pump station. However, due to the characteristics of centrifugal pumps, very little additional pumping capacity would be provided from the second pump. The proposed standby generator would supply three-phase power to the pumps and ancillary equipment such as lights, heaters, and control equipment in the event of a power failure. As such, it is recommended that the electrical service at the Quail Ridge Pump Station be replaced with three-phase service.

Alternative 1 includes replacement of electrical power supply components, such as the disconnect switch, motor starters, and site wiring. The existing propane generator would be replaced with a diesel-fired generator equipped with a transfer switch to automatically transfer power supply to/from the generator during a power outage. The generator would be sized to power both pumps, control equipment and ancillary equipment. A belly tank on the generator would provide fuel storage for up to 48 hours of generator operation at full load. In the event that single-phase power is retained, a small heated enclosure would be required if the phase converter is used in lieu of installing three-phase power to the site. The existing perimeter fence would be replaced and the site would be loamed and seeded.

Alternative 2 includes the construction of a new submersible pump station on town owned property in the vicinity of the Goodwill Trailer on South Street. A new 8-inch gravity sewer would need to be extended from the existing Quail Ridge Pump Station site to the location of the new wet well. A new 6-inch force main would also need to be constructed extending from the new wet well to the South Street WWTF as previously discussed.

Three-phase power is available at the Alternative 2 location. Electrical power supply components, such as the disconnect switch, motor starters, and site wiring would need to be provided under this alternative. Electrical components would be located outside in all-weather panels.

A diesel-fired generator located in a weather proof, sound attenuating enclosure would be provided. The new generator would have a transfer switch to automatically transfer power supply to/from the generator during a power outage. A belly tank on the generator would provide fuel storage for up to 48 hours of generator operation at full load. Grading, paving and site restoration, including a perimeter fence around the new pump station would be provided.

Under both alternatives, wet well level monitoring would be accomplished using a new submerged pressure transducer located in the wet well with backup float switches for high and low wet well level alarms. Flow metering and programmable logic controller (PLC) based pump controls would also be provided. The flow meter would have a local instantaneous and totalizer flow readout. Alarms from the pump station would be routed through a telemetry system to the town's alarm service. Backup float switches would be provided for high and low wet well level alarms.

An advantage of Alternative 2 is that the new pumps would operate at a lower total dynamic head than those at the current pump station. This would translate into lower operating costs. The existing Quail Ridge Pump Station force main currently discharges to an existing 12-inch gravity sewer in the easement adjacent to Grove Street. Another advantage of Alternative 2 would be the diversion of flows from this portion of the collection system that at times is overburdened. Alternative 2 also provides the opportunity to eliminate the Highway Department pump station by intercepting flows from the municipal buildings, which currently discharge to it, and redirecting them to the new pump station. A disadvantage of Alternative 2 is the higher capital costs associated with the construction of a new cross country gravity sewer and a new force main.

The estimated cost of Alternative 1 is $1,400,000 and the estimated cost of Alternative 2 is $2,200,000. Both costs include an allowance for engineering and contingencies. Based on the discussion presented above, AECOM recommends Alternative 2.

ROUTE 7 PUMP STATION

Description

The Route 7 Pump Station is a Smith & Loveless package pump station consisting of a steel dry well and a precast concrete wet well. The pump station, which has duplex 15 Hp pumps each with a rated capacity of approximately 500 gpm at 73 feet total dynamic head (TDH), is about 29 years old and contains most of its original equipment. The pump station has a 60 kW Kohler standby emergency generator that is diesel powered, and consists of a day tank, a subsurface fuel oil tank and a fiberglass generator enclosure located partially below ground. An existing conditions site plan is shown on Figure 4.

As noted above, the Route 7 Pump Station was evaluated and its upgrade needs were defined as part of the 2003 Final Pump Station Preliminary Design Report (2003 Report). The 2003 Report concluded that the pumping equipment was reaching the end of its design life and that it was in need of replacement to meet the projected design flows.

The following is an updated evaluation of the pump station.

Existing and Projected Flows

The following paragraphs present a general description of the Route 7 Pump Station Service area and an estimate of the existing and projected flows.

Description of Existing Service Area. The Route 7 Pump Station services Sewer District 2 and is the influent pump station to the Route 7 Wastewater Treatment Facility (WWTF). The existing service area of the pump station is the entire Sewer District 2 which is approximately 150 acres. The service area is zoned light industry and residential. 59 percent of the existing area is zoned as light industry and includes business (B-2) and the Gateway Enhancement Zone/Rt.7 (GZ7). The remaining 41 percent of the existing service area is zoned as residential consisting of multifamily dwelling development (MFDD), housing opportunity development (HOD), and age-restricted housing district (ARHD). The service area is located around the intersection of Route 7 and Route 35 and extends just north of Laurel Lane on Route 7 and south to the intersection of Route 7 and Great Pond Road.

Estimate of Existing Flows Based on Pump Station Data. The Route 7 Pump Station is equipped with running time meters for each of the two pumps. A flow meter to directly measure flow discharge rates from the pump station is not available. Flow discharge rates are calculated in gallons per day using the runtime for each pump multiplied by the rated pump discharge of approximately 500 gpm.

Running time data for each of the two pumps was provided by United Water. Using the runtime data and the estimated pumping rate of 500 gpm, the current average daily flow to the pump station appears to be approximately 84,000 gal/day, or 58 gpm.

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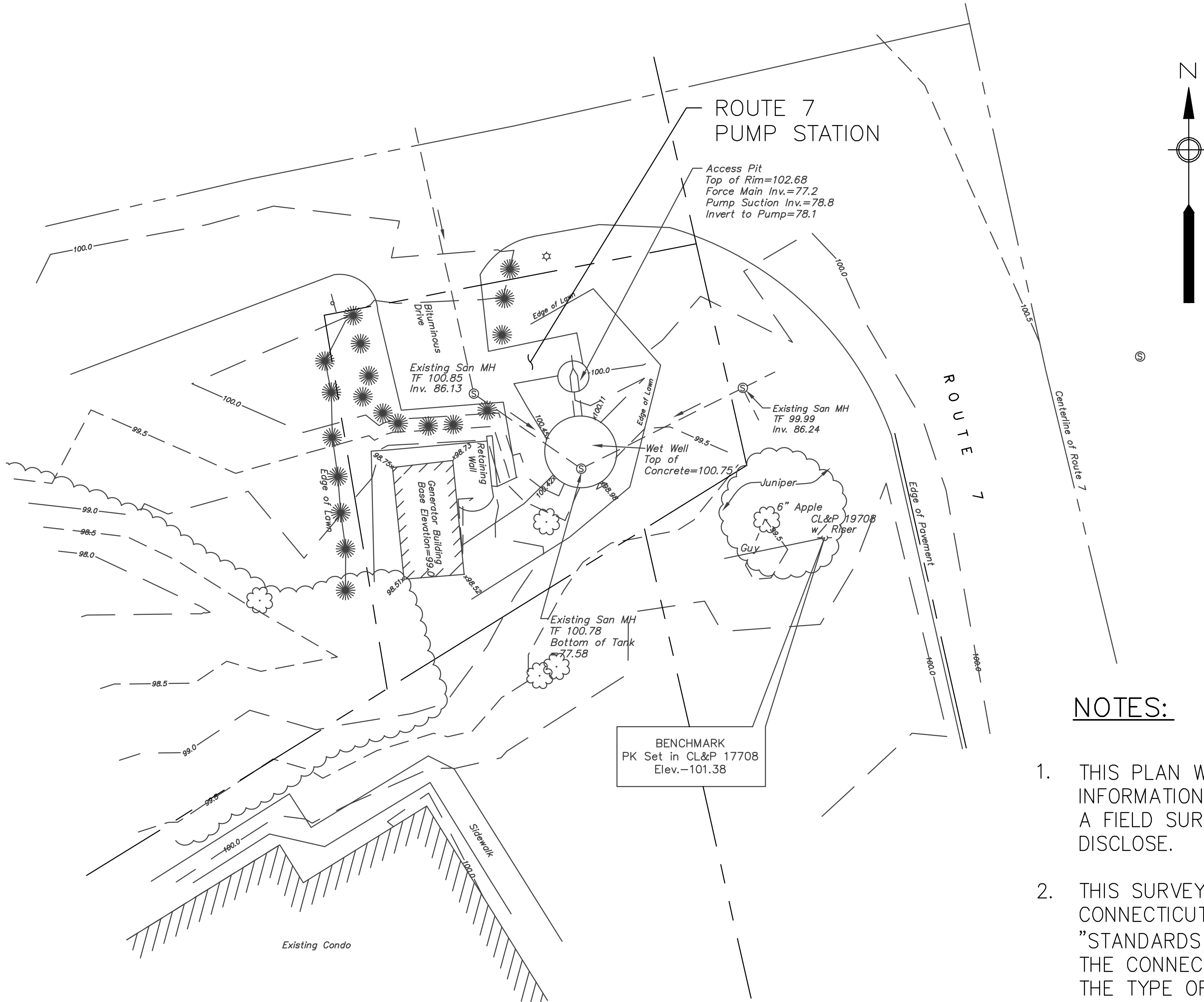
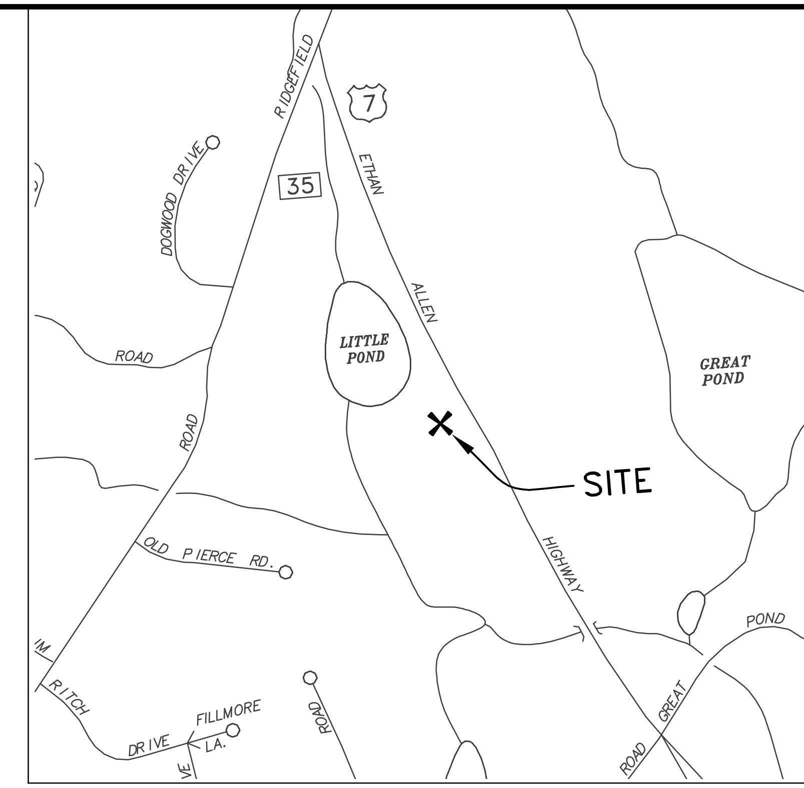
LAST UPDATE: Tuesday, September 16, 2014 10:55:54 AM PLOT DATE: Thursday, January 15, 2015 3:04:48 PM





VICINITY MAP
SCALE: 1" = 1000'

NOTES:

1. THIS PLAN WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

2. THIS SURVEY AND MAP HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20–300b–1 THROUGH 20–300b–20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC., ON SEPTEMBER 26, 1996. THE TYPE OF SURVEY PERFORMED IS AND MAPPED FEATURES DEPICTED HEREON ARE IN ACCORDANCE WITH THE REQUIREMENTS OF A COMPILATION PLAN.

3. THERE IS NO BOUNDARY DETERMINATION.

4. WITH RESPECT TO THE PROPERTY LINES AND MAPPED FEATURES, THIS SURVEY CONFORMS TO CLASS D. WITH RESPECT TO THE TOPOGRAPHY, THIS SURVEY CONFORMS TO CLASS T–2.

5. THIS SITE WAS FIELD SURVEYED ON MARCH 5, 2002 AND THE CONTOURS DEPICTED HEREON ARE IN TWO FOOT INTERVALS AND ELEVATION ARE BASED ON ASSUMED DATUM.

6. LOCATION OF UNDERGROUND UTILITIES DEPICTED HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER GATES, ETC., AND COMPILING INFORMATION FROM PLANS SUPPLIED RESPECTIVE UTILITY COMPANIES AND GOVERNMENT AGENCIES. ALL CONTRACTORS ARE REQUIRED BY STATE REGULATIONS TO CONTACT CALL–BEFORE–YOU–DIG AT 1–800–922–4455 FOR LOCATION AND STAKEOUT OF UTILITIES PRIOR TO ANY EXCAVATION.

LEGEND

EDGE OF PAVEMENT
BUILDING
TREELINE
CHAIN LINK FENCE
PROPERTY LINE
LAMP POST
SANITARY MANHOLE

0 20 40 60
1" = 20'
SCALE FEET

AECOM TECHNICAL SERVICES
701 EDGEWATER DRIVE
WAKEFIELD, MA 01880
PHONE (781) 246–5200

AECOM

ROUTE 7 PUMP STATION
EXISTING CONDITIONS SITE PLAN
PUMP STATION EVALUATION UPDATE
RIDGEFIELD, CT
PHASE I WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 4

PROJECT NO:	60299267
CAD DWG FILE:	CZRGF003
DESIGNED BY:	A. ANGLES
DRAWN BY:	N. YEE
DATE:	SEPTEMBER 10, 2014
SCALE:	AS NOTED

FIGURE 4

ANSI B – 16–Sep–14

Estimate of Existing Flows Based on Route 7 WWTF Data. Since the Route 7 Pump Station serves as an influent pump station to the Route 7 WWTF, pump station discharge rates can be compared to the flows at the WWTF. A flow meter to directly measure flow discharge rates from the WWTF is available.

WWTF flow data was provided by United Water. The current average daily and peak flows from the WWTF are approximately 54,000 gal/day and 357,000 gal/day respectively, or 38 gpm and 250 gpm.

Existing Flows. Because there is a discrepancy between the flows calculated from the pump station data as compared to those measured at the WWTF, and the pump station data is based on the original rated pump capacity, which has likely declined, the WWTF flows have been used. The estimated average daily and peak flows are approximately 54,000 gal/day and 357,000 gal/day respectively, or 38 gpm and 250 gpm. The estimated peak flow is below the existing pump capacity of 500 gpm.

Projected Flows. The projected flows are based on two factors: 1) the WWTF average daily flow capacity which has been allocated to the properties within the service area; and 2) the hydraulic capacity of the WWTF.

The Route 7 Pump Station service area is the entire Sewer District 2 service area. The average daily flow capacity of 120,000 gpd has been allocated to the properties within the district. No proposed additions to the existing service area are anticipated to address public health or pollution issues from septic systems. The projected increase in the average daily flow would be from the development of undeveloped or underdeveloped parcels within the existing service area.

The hydraulic capacity of the headworks at the Route 7 WWTF serves as limiting factor for the pump station peak flows. The current configuration of the WWTF will not allow any more than 720,000 gal/day through the headworks.

The projected average daily and peak flows are therefore approximately 120,000 gal/day and 720,000 gal/day respectively, or 85 gpm and 500 gpm. The projected peak flow does not exceed the existing pump capacity of 500 gpm.

Preliminary Design Criteria for the Route 7 Pump Station

Pump Capacity. The wastewater pumps would be designed to handle the peak hour flow estimated to be generated from the study area for a 20-year planning horizon. All associated piping and equipment should also be capable of handling the peak hour flow. The design flow for the Route 7 Pump Station is 500 gpm. It is recommended that the pumps be equipped with variable frequency drives (VFD's) to reduce flow surges at the Route 7 WWTF. The Route 7 Pump Station discharges directly to the Route 7 WWTF. It has been reported that the Route 7 treatment plant has experienced hydraulic overloading when the two existing 500 gpm pumps at the pump station operate simultaneously. As such, in lieu of providing two large pumps each sized for 500 gpm, three smaller pumps each sized to accommodate half of the design flow are recommended to be provided. It is anticipated that one pump would be adequate to keep up with pump station demand most of the time. It is anticipated that two pumps would be required to convey peak wastewater flows to the WWTF.

Existing Force Main. The existing Route 7 force main is 8-inch ductile iron, approximately 2,500 feet long and runs from the pump station directly to the Route 7 WWTF. The elevation rise from the wet well to the force main discharge is approximately 50 feet.

Hydraulic guidelines for the design of wastewater force mains indicate that ideal flow velocities should be maintained in the range of 3.5 to 5 feet per second (fps) to re-suspend solids that may settle when the pumps are not running and to allow for reasonable friction losses within the pipeline. Higher velocities may be allowed but should not exceed 8 fps. At the design pumping rates, the flow velocity within the existing force main would be in the range of 3.2 feet per second.

Energy losses due to friction were calculated using the Hazen-Williams equation. The Hazen-Williams equation determines energy losses based on pipe diameter, slope, and a coefficient of material roughness C. For this pump station it has been assumed that the C value would be 100 for the current condition of the force main and for the condition of the force main in 20 years. Energy losses due to friction are combined with other energy losses in order to determine size, power, and number of pumps needed.

The energy losses due to friction at the design pumping rate combined with the static head energy losses at this pump station would result in a total dynamic head of approximately 75 feet with the existing 8-inch force main.

Proposed Rehabilitation Options. As previously noted, the existing package pump station is approximately 29 years old. The dry pit appears to be in reasonably good condition although it is uncertain if it could provide reliable service for another 20 years. Installation of 3 pumps in the existing dry pit is not possible. Additionally, the current dry pit installation is a confined space requiring that special procedures be undertaken by personnel entering the station. The existing wet well consists of a below grade concrete structure located adjacent to the dry pit. The concrete wet well appears to be in good condition based on a visual inspection. The generally accepted design life of concrete structures is 50 years. The wet well is not large enough to locate the proposed pumps. As such, it is recommended that the existing dry pit installation be abandoned in favor of a new submersible wet well with an adjacent valve pit. The new structures could be located on the existing site.

The pumping equipment is reaching the end of its design life and is in need of replacement to meet the design flows. It is recommended that three VFD driven solids handling centrifugal submersible pumps be installed in a new concrete wet well. New wet well level monitoring using a submersible pressure transducer, flow metering, and PLC based pump controls would be provided. The flow meter would have a local instantaneous and totalizer flow readout. Alarms from the pump station would be routed through a telemetry system to the town's alarm service. Backup float switches would be provided for high and low wet well level alarms.

Electrical power supply components, such as the disconnect switch, motor starters, and site wiring would be replaced. Electrical components, such as the pump control panel and VFDs, would be located outside in all-weather panels.

The existing generator would be replaced with a new diesel-fired generator located in a pad mounted enclosure. The new generator would have a transfer switch to automatically transfer power supply to/from the generator during a power outage. A belly tank would provide diesel fuel storage for up to 48 hours of generator operation at full load. As requested, a perimeter fence would be provided around the new pump station and the site would be loamed and seeded.

The estimated cost of the Route 7 Pump Station Replacement is $1,500,000, including an allowance for engineering and contingencies.

ESTIMATED COSTS

Planning level cost estimates for the rehabilitation/replacement of each pump station have been developed. The pump station costs are based on costs developed for similar projects in Connecticut and New England. Total estimated costs for the rehabilitation include an allowance of 40 percent for engineering and contingencies. The estimated costs are presented in Table 6 below.

TABLE 6. ESTIMATED COSTS FOR PUMP STATION REHABILITATION / REPLACEMENT

Item	Total Estimated Cost
Quail Ridge Pump Station and Force Main (1)	$2,200,000
Route 7 Pump Station	$1,500,000

Notes: (1) Cost includes 2,500 feet of 8-inch gravity sewer and 1,300 feet of 6-inch force main (Route B on Figure 3).

APPENDIX J

TECHNICAL MEMORANDUM NO. 5 – LAND APPLICATION FEASIBILITY EVALUATION

AECOM
701 Edgewater Drive
Wakefield, MA 01880
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781 246 5200 tel
781 224 6676 fax

Draft Technical Memorandum No. 5

To	Ridgefield WPCA	Page	1 of 14
CC	C. Fisher, J. O'Brien, J. Pereira, J. Pennell		
Subject	Town of Ridgefield, CT Phase 1 Wastewater Facilities Plan Draft Technical Memorandum No. 5 – Land Application Feasibility Evaluation		
From	Jon Pearson and Mark Owen		
Date	February 24, 2015		

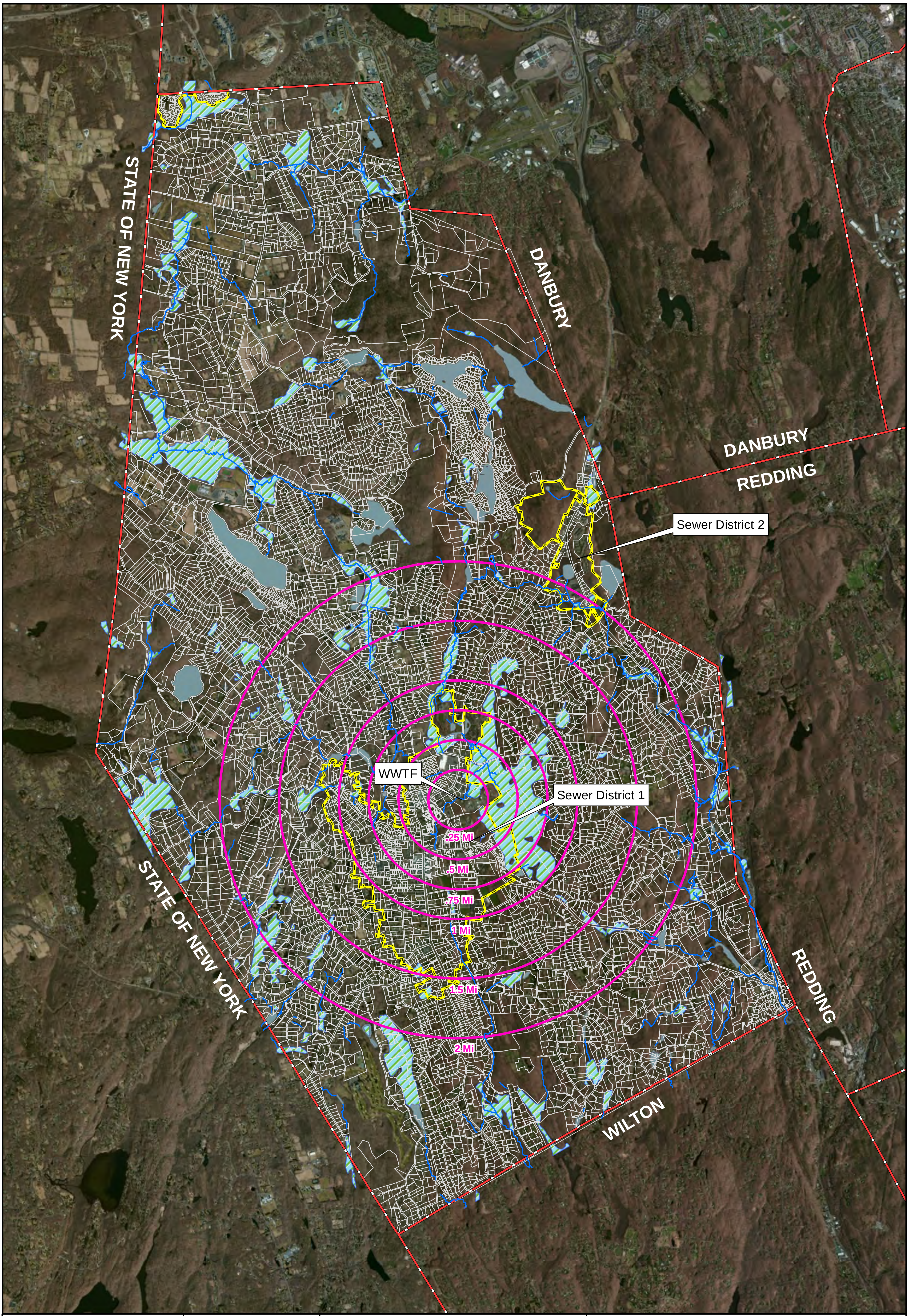
INTRODUCTION

This Technical Memorandum summarizes the evaluation conducted to identify potential locations for land application of effluent from the South Street Wastewater Treatment Facility (WWTF) within and in the vicinity of Sewer District 1 (Figure 1). The methodologies used as well as the results of the evaluation are presented.

BACKGROUND

Based on the anticipated more restrictive NPDES permit limit for phosphorus in the South Street WWTF effluent, an alternative to upgrading the WWTF to meet the more stringent phosphorus limit would be to land apply all or a portion of the WWTF effluent. Since it is anticipated that the WWTF effluent concentrations limits for land application of effluent will not be as stringent as the surface water discharge limits, there is the potential to reduce the overall expenditures and remain in compliance with the effluent discharge requirements with land application of all or a portion of the WWTF effluent.

There are a number of treatment alternatives to remove phosphorus from a WWTF effluent discharge prior to entering surface waters. Since the proposed phosphorus limit for the South Street WWTF is mass based, and not a concentration limit, an alternative to a surface water discharge and higher treatment levels is discharging all or a portion of the WWTF effluent to groundwater through land application. Land application allows the discharge to flow through subsurface soils prior to the discharge entering surface waters. Phosphorus has an affinity for soil particles which limits its travel in the groundwater. In other words, the soils treat the phosphorus in the effluent instead of at the WWTF. The result is very low levels of phosphorus, reaching the surface water with potential savings in treatment costs.



AECOM

Drawn:	BC	2/24/2015
Approved:	MO	2/24/2015

Map Location

Legend

- Waterbodies
- Streams
- NWI Wetlands
- Town Boundaries
- Sewer District Boundary
- Parcels
- WWTP Buffer Distance

N

0 2,000 4,000 8,000 Feet

FIGURE 1: LOCUS MAP
FEBRUARY 2015

LAND APPLICATION EVALUATION
RIDGEFIELD, CT
PHASE I WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 5

G:\Projects\MUNI\60299267RID\Flow Evaluation\Maps\Figure 1 - Locus Map.mxd

Land application of WWTF effluent would require new infrastructure such as pump stations, conveyance piping, and disposal infrastructure such as rapid infiltration basins or soil absorption systems. Land application can be a cost effective method to reduce phosphorus when compared to other treatment methods. However, as with other technologies there are variables that factor into the cost effectiveness of its application. In part, these variables include:

- Soils Type – Are the underlying soils favorable for land application? If the soils cannot uptake and transmit significant quantities of effluent, the site will probably not be favorable for a significant land application discharge. Soils favorability is discussed below.
- Acreage of Favorable Soils – Is there sufficient acreage of favorable soils for land application? Many parcels in Ridgefield have several soil types, often ranging from favorable (well to very well drained) to very poor (poorly to veryl poorly drained)soils for land application. The quantity of favorable soils at a site generally relates to the quantity of effluent that can be discharged at the site.
- Estimated Depth to Groundwater – In general, the greater the depth to groundwater at sites with favorable soils, the higher the land application discharge rate. Also considered is where the discharge will flow once in the groundwater. If there are no significant streams or rivers for the groundwater to discharge, this may limit the land application discharge rate.
- Parcel Ownership – Does the Town own the potential land application site? What is the value and use of the Town owned land? What is the potential purchase price of the parcel if not Town owned?
- Parcel Development – Is the property completely, partially or un-developed? The degree and type of parcel development can influence the type of infrastructure necessary, the installation costs of that infrastructure, and land application discharge rate.
- Distance from WWTF – In general, the greater the distance between the WWTF and potential land application site, the greater the transmission line infrastructure costs.

There are other factors that can influence the cost effectiveness of land application; however those listed above are generally the most significant factors in cost.

DATA COLLECTION

AECOM has reviewed and evaluated data through GIS to identify properties that may be favorable for land application of treated effluent. To identify and review potential parcels for land application, parcel data from several sources was acquired. AECOM obtained data from the following sources:

- US Geological Survey (USGS) maps and soils data.
- US Department of Agriculture (USDA) soils data.
- Parcel data from the Town's GIS database.

REVIEW OF EXISTING SOILS DATA

Soils data provided by USGS and USDA Natural Resources Conservation Service reports were reviewed to identify areas where sand or sand and gravel outwash deposits had been mapped. The review was conducted to identify parcels with soil characteristics conducive to land application of WWTF effluent. Only those parcels that appear to contain sand or sand and gravel soils were considered for further review. Parcels underlain only by till and/or bedrock, over 90 percent of the parcels reviewed, were eliminated from further review. Parcels mapped as having favorable soils were identified in GIS and mapped for further evaluation.

In general, areas that were mapped as sand, or sand and gravel are located in valleys along existing or former stream beds. This is the result of stream or river waters removing the finer soils (silt and clay) from the valley deposits, leaving behind coarser sands and gravels that are capable of transmitting enough water for land application. With the finer soils removed, valley deposits can be capable of transmitting large enough quantities of water for land application of WWTF effluent. Figure 2 shows areas mapped as having soils potentially favorable for land application.

Also noted was that the coarser valley soils are often low-lying, not having enough elevation above the abutting stream or river to allow a significant land application discharge. In addition, the favorable soils are often not aerially extensive or located close to a stream or river to, further limiting the size of the potential discharge area.

GIS DATABASE

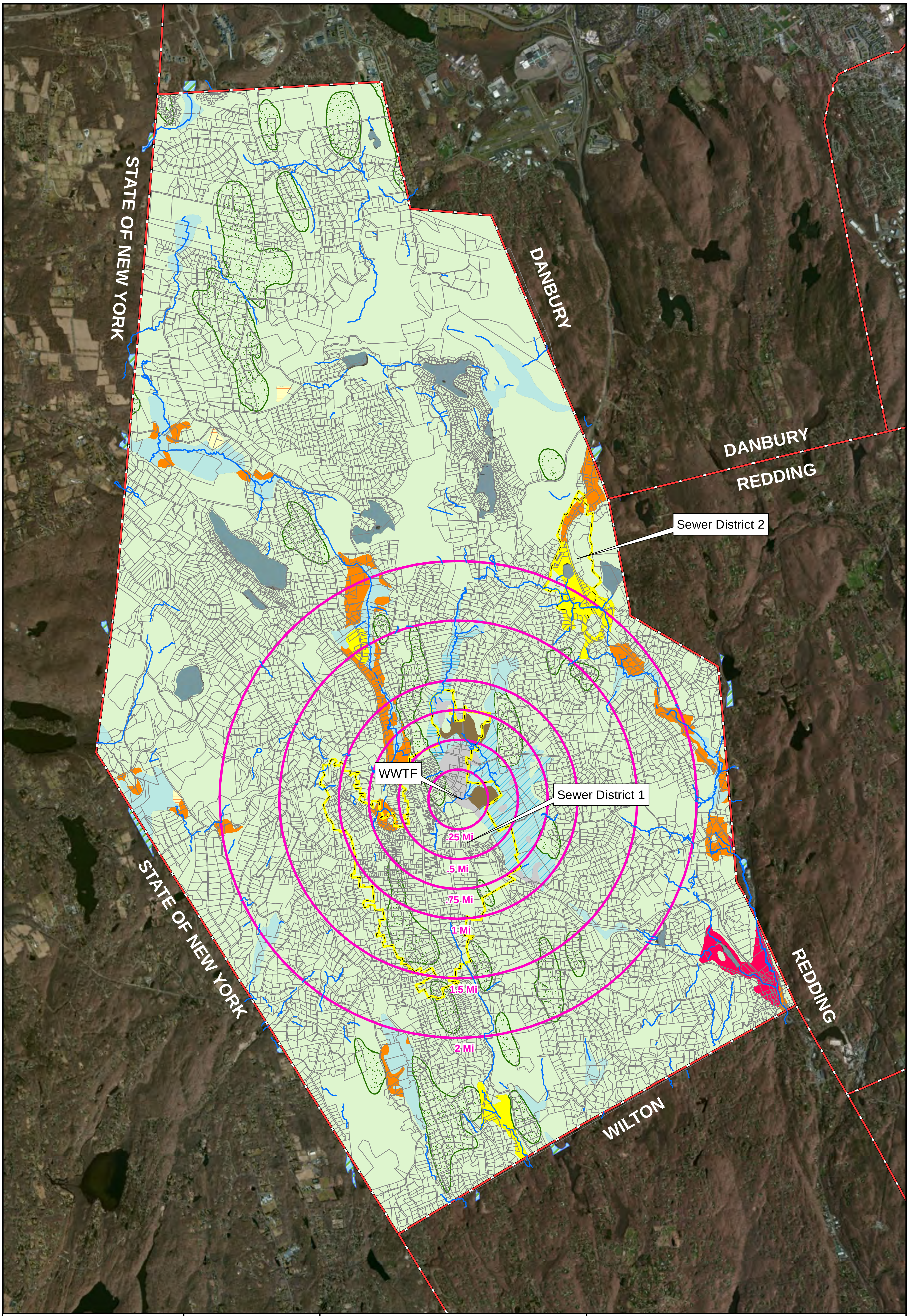
The GIS database consisted of the Town's GIS parcel database along with data from USDA (soils data), CT DEEP (surficial geology), and National Wetlands Inventory (NWI) (wetland areas). The GIS database was used to determine property ownership, parcel development, parcel acreage, acreage of each soil type per parcel, a straight-line distance between potential land application sites and the WWTF, as well as other parcel specific data.

PARCEL RATING CRITERIA AND ANALYSIS

Data for parcels identified with favorable soils characteristics were summarized in a matrix for further evaluation. Within the Town of Ridgefield there are 9,077 parcels. Of those parcels, 59 were identified as having some soils favorable for land application. The following criteria were used to evaluate and further shortlist these parcels by eliminating unfavorable parcels for further review.

1. Soil Type - Most parcels in Ridgefield are underlain by till and bedrock. Till contains a mixture of soils including clay, silt, sand gravel, cobbles and boulders. The unsorted mixture of these soils holds water, generally resulting in a high water table that is often only a few feet below the ground surface. Even in areas where there is a significant depth to groundwater, till is poor at allowing groundwater to flow through it. As a result, till can be suitable for small wastewater discharges such as single family septic systems, but not for larger WWTF discharges. As a result, sites underlain only by till and bedrock were eliminated for further review.

2. Developed Small Parcels - Also eliminated from review were developed, privately owned parcels less than 5 acres in size. A majority of these parcels are residential with little land remaining for land application. These smaller, developed parcels could be reevaluated if they abut or are located near a potential land application site.



AECOM

Drawn: BC 2/24/2015

Approved: MO 2/24/2015

Map Location

Legend

- Streams
- NWI Wetlands
- Town Boundaries
- Sewer District Boundary
- Parcels
- WWTP Buffer Distance

GLACIAL ICE-LAID DEPOSITS

- Thin Till
- Thick Till
- End Moraine Deposits

GLACIAL MELTWATER DEPOSITS

- Gravel
- Sand and Gravel
- Sand
- Sand Overlying Fines

POSTGLACIAL DEPOSITS

- Alluvium Overlying Undifferentiated Coarse Deposits
- Swamp Deposits
- Swamp Deposits Overlying Fines
- Swamp Deposits Overlying Sand Overlying Fines
- Artificial Fill

0 2,000 4,000 8,000 Feet

N

FIGURE 2: SURFICIAL GEOLOGY
FEBRUARY 2015

LAND APPLICATION EVALUATION
RIDGEFIELD, CT
PHASE I WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 5

G:\Projects\MUNI\60299267RID\Flow Evaluation\Maps\Figure 2 - Surficial Geology.mxd

3. Distance from the WWTF - The distance of the parcel from the WWTF was also used to eliminate parcels from further review. Significant infrastructure and cost are necessary to pump effluent from a WWTF to a land application site. In general, the greater the distance, the greater the cost, and the less cost effective land application becomes. At a point, the cost benefit of land application exceeds the additional treatment necessary to discharge directly to surface water. Parcels located over 2 miles from the South Street WWTF were generally eliminated from further consideration.

Once the criteria above were applied, 38 parcels remained for review. These shortlisted parcels were further evaluated using a matrix to rank sites. Parcel data for each was summarized in a matrix, described below.
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MATRIX

Using GIS, a matrix was created to summarize data for each of the shortlisted parcels. The matrix summarizes the data by parcel includes the following:

- Street Address
- Owner Name
- GIS Parcel ID
- Developed or Undeveloped Property
- Parcel Ownership Category
- Acreage of Parcel
- USDA Soils Grade
- USDA Soils Description
- Soils Drainage Classification
- Hydric Soils Classification
- Acreage of Soils Type by Parcel
- Distance of Potential Discharge from WWTF
- Map, Lot and Block Number
- Zoning Code
- Estimated Depth to Groundwater

As noted above, all shortlisted parcels having potentially favorable soils for land application were rated using several criteria. The GIS parcel data used to rank each parcel for land application are as follows:

- Parcel Ownership
- Parcel Development
- Soils Type
- Acreage of Favorable Soils
- Distance from WWTF
- Estimated Depth to Groundwater

Each parcel was ranked between 1 and 5 for each of the above criteria. A value of 5 was considered very favorable while a value of 1 was considered not favorable. The parcel data and rating criteria are summarized in Tables 1 and 2.

TABLE 1

SUMMARY OF RATING CRITERIA
RIDGEFIELD, CONNECTICUT

Parcel Data	Rating Criteria
Parcel Ownership: • Street Address • Owner Name	1 through 5 (Low to High) 1 = Private – Residential orState Owned Land 3 = Private – Commercial, Private - Conservation 5 = Town Owned Land
Parcel Development: • Developed/Undeveloped	1 through 5 (Low to High) 1 = Parcel Developed 3 = Partially Developed 5 = Parcel Undeveloped
Soils Type (See Table 2): • Soils Description • Soils Drainage Classification • Hydric Classification • Soils Grade	1 through 5 (Low to High) 1 = Poorly to Very Poorly Drained Soils, Somewhat Poorly Drained Soils, or Moderately Well Drained Soils. 3 = Well Drained Soils 5 = Excessively to Somewhat Excessively Drained Soils
Acreage of Favorable Soils: • Acreage of Well to Excessively Drained Soils	1 through 5 (Low to High) 1 = 0 to 1 acre 2 = 1 to 3 acres 3 = 3 to 7 acres 4 = 7 to 10 acres 5 = 10+ acres
Distance from WWTF: • Distance (Feet) • Distance (Miles)	1 through 5 (Low to High) 1 = 1.5+ miles 2 = 1.0 to 1.5 miles 3 = 0.5 to 1.0 miles 4 = 0.25 to 0.5 miles 5 = 0 to 0.25 miles
Estimated Depth to Groundwater: • Distance (Feet)	1 through 5 (Low to High) 1 = 0 to 10 feet 3 = 10 to 20 feet 5 = 20+ feet
Potential Range of Ratings	6 to 30

TABLE 2

SUMMARY OF SOILS RATING CRITERIA
RIDGEFIELD, CONNECTICUT

Soils Description	Drainage Classification	Rating
Canton and Charlton soils	Well Drained	4
Catden and Freetown soils	Very Poorly Drained	1
Charlton-Chatfield complex, very rocky	Well Drained	4
Chatfield-Rock outcrop complex - Urban land	Well Drained	4
Georgia and Amenia silt loams	Moderately Well Drained	3
Haven and Enfield	Well Drained	4
Hinckley gravelly sandy loam	Excessively Drained	5
Hollis-Chatfield-Rock outcrop complex	Well Drained	4
Paxton and Montauk fine sandy loams	Well Drained	4
Ridgebury, Leicester, and Whitman soils, extremely stony	Very Poorly Drained	1
Saco silt loam	Very Poorly Drained	1
Sutton fine sandy loam, extremely stony	Moderately Well Drained	3
Timakwa and Natchaug soils	Very Poorly Drained	1
Udorthents, smoothed	Varies	Varies
Udorthents	Varies	Varies

RANKING OF PARCELS

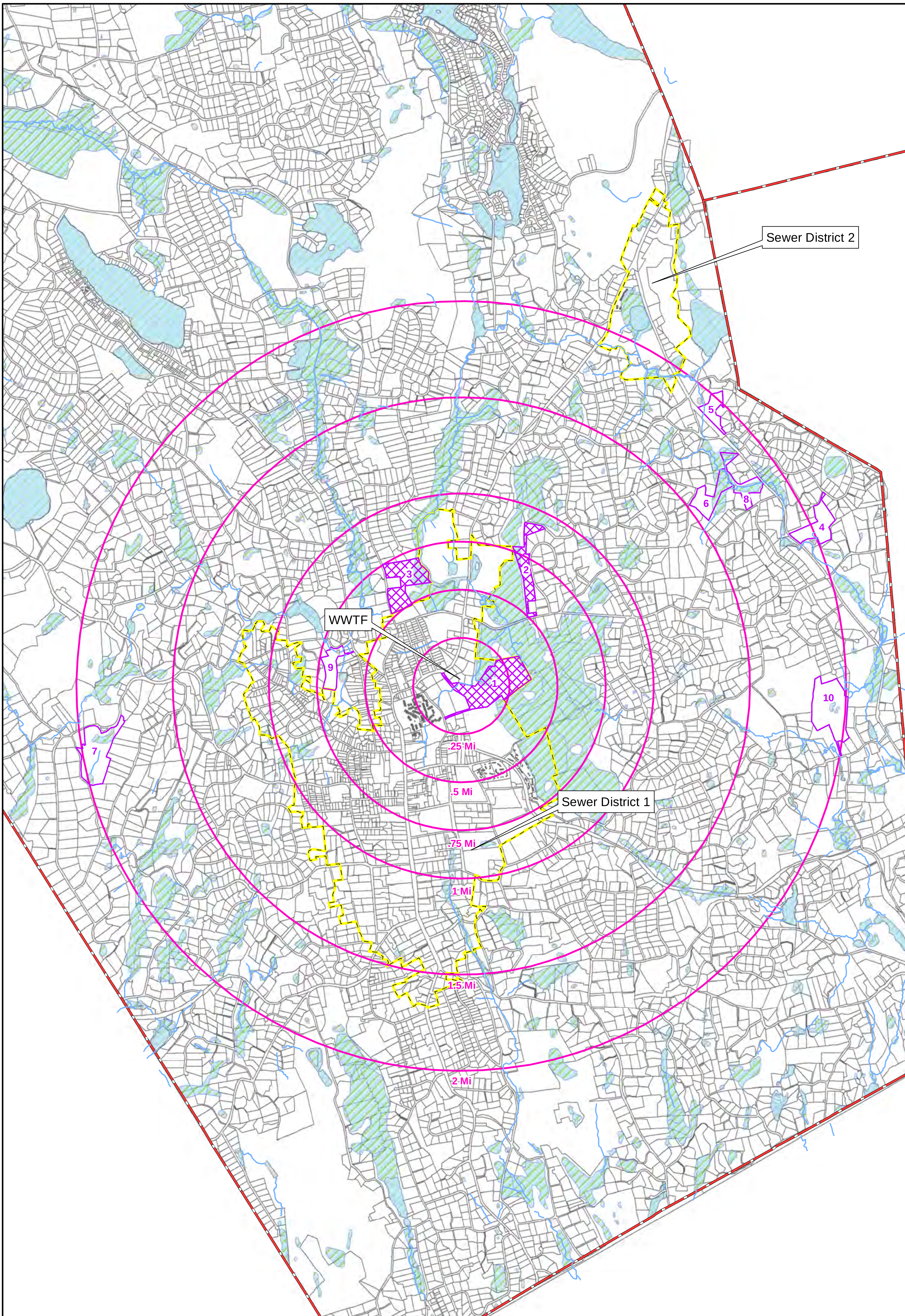
The criteria described above and detailed in Tables 1 and 2 were used to rank the shortlisted parcels in the matrix. The potential range of values for ranked parcels is between 6 and 30. Most parcels scored below 12. The highest ranking parcel was 23. The remainder of the shortlisted parcels ranked between 13 and 21. Overall these are relatively low rankings as typically there would be several parcels with rankings above 25. The lower overall ranking is due to several factors including few parcels with sand and gravel deposits, most sand and gravel deposits are low-lying valley deposits with little elevation above the water table, and many of these parcels are smaller parcels that have already been developed.

The ten highest ranking shortlisted parcels are summarized in Table 3 and shown on Figure 3. The ranking of each of the parcel criteria is summarized in Table 4. The pros and cons of the three highest ranking parcels are summarized in Table 5.

TABLE 3

RANKING OF MOST FAVORABLE PARCELS
RIDGEFIELD, CONNECTICUT

Number	Street Address	Parcel Ownership	Parcel Id Number	Total Rating
1	45 South St	Ridgefield Town Of	E14-0158	25
2	Norrans Ridge Dr	Ridgefield, Town Of	F13-0037	22
3	North St	St. Marys Corp	E13-0056	22
4	Bobbys Ct	Ridgefield Town Of	H12-0074	19
5	Ethan Allen Hwy	Ridgefield, Town Of	G11-0064	17
6	Stonehenge Rd	Ridgefield, Town Of	G12-0016	17
7	Peaceable Hill Rd	Ridgefield, Town Of	C14-0021	17
8	Ethan Allen Hwy	Ridgefield Town Of	G12-0048	16
9	15 Sawmill Hill Rd	Tighe Maureen	E13-0014	16
10	323 Florida Hill Rd	Julian Alexander	H14-0014	13

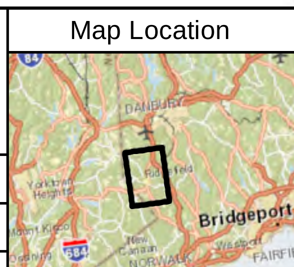


AECOM

Drawn: BC 2/25/2015

Approved: MO 2/25/2015

Map Location



Legend

- Streams
- Favorable Site
- Most Favorable Site
- WWTP Buffer Distance
- Sewer District Boundary
- Town Boundaries
- Waterbodies
- NWI Wetlands
- Parcels

0 1,250 2,500 5,000 Feet

N

FIGURE 3: AREA OF INVESTIGATION
FEBRUARY 2015

LAND APPLICATION EVALUATION
RIDGEFIELD, CT
PHASE I WASTEWATER FACILITIES PLAN
TECHNICAL MEMORANDUM NO. 5

G:\Projects\MUNI\60299267RID\Flow Evaluation\Maps\Figure 3 - Area of Investigation.mxd

TABLE 4

DETAILS OF 10 HIGHEST RANKED PARCELS
RIDGEFIELD, CONNECTICUT

	Parcel Address			Parcel Ownership		Development		Parcel Acreage		Soils Type				Acreage of Soils		Distance from WWTF			Parcel Data				Elevation	
Final Ranking	Street Address	Owner Name	Parcel ID	Parcel Ownership	Rating	Developed	Rating	Acreage	Rating	USDA Soils Description	Soils Drainage Classification	Hydric Soils Classification	Rating	Soil Area (Acre)	Soil Area Rating	Distance (Feet)	Distance (Miles)	Rating	Map	Block	Lot	Zoning Code	Depth to Groundwater Rating	Total Rating
1	NORRANS RIDGE DR	RIDGEFIELD, TOWN OF	F13-0037	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	14.13	5	Georgia and Amenia silt loams, 2 to 8 percent slopes	Moderately well drained	Partially hydric	3	12.58	5	2,554	0.48	4	F13	37	F13-0037	RAA	3	27
2	45 SOUTH ST	RIDGEFIELD, TOWN OF	E14-0158	Town of Ridgefield	5	Partially Developed/Aerial Photo	3	36.79	5	Urban land-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	Well drained	Partially hydric	4	8.46	4	0	0.00	5	E14	158	E14-0158	RAA	3	25
3	BOBBYS CT	RIDGEFIELD, TOWN OF	H12-0074	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	15.26	5	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	Well drained	Partially hydric	4	11.88	5	6,897	1.31	1	H12	74	H12-0074	RAA	3	24
4	NORTH ST	ST. MARYS CORP	E13-0056	Private - Commercial	3	Partially Developed/Aerial Photo	3	22.58	5	Ninigret and Tisbury soils, 0 to 5 percent slopes	Moderately well drained	Partially hydric	3	6.51	3	2,671	0.51	3	E13	56	E13-0056	RAA	5	22
5	ETHAN ALLEN HWY	RIDGEFIELD, TOWN OF	G11-0064	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	7.66	5	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	Well drained	Partially hydric	4	6.97	3	2,789	0.53	1	G11	64	G11-0064	RAA	3	22
6	STONEHENGE RD	RIDGEFIELD, TOWN OF	G12-0016	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	13.31	5	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	Well drained	Partially hydric	4	6.65	3	4,499	0.85	1	G12	16	G12-0016	RAA	3	22
7	PEACEABLE HILL RD	RIDGEFIELD, TOWN OF	C14-0021	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	28.38	5	Hinckley gravelly sandy loam, 3 to 15 percent slopes	Excessively drained	Partially hydric	5	3.17	3	8,392	1.59	1	C14	21	C14-0021	RAAA	3	22
8	ETHAN ALLEN HWY	RIDGEFIELD, TOWN OF	G12-0048	Town of Ridgefield	5	Undeveloped/Aerial Photo	5	11.20	5	Haven and Enfield soils, 3 to 8 percent slopes	Well drained	Partially hydric	4	1.80	2	4,122	0.78	1	G12	48	G12-0048	RAA	3	21
9	323 FLORIDA HILL RD	JULIAN ALEXANDER	H14-0014	Private - Residential	1	Partially Developed/Aerial Photo	3	29.00	5	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	Well drained	Partially hydric	4	22.67	5	9,526	1.80	1	H14	14	H14-0014	RAA	3	18
10	15 SAWMILL HILL RD	TIGHE MAUREEN	E13-0014	Private - Rasidential	1	Developed/Aerial Photo	1	9.92	5	Hinckley gravelly sandy loam, 3 to 15 percent slopes	Excessively drained	Partially hydric	5	0.11	1	3,202	0.61	3	E13	14	E13-0014	RAA	5	16

TABLE 5

PROS AND CONS OF THREE MOST FAVORABLE SOILS
RIDGEFIELD, CONNECTICUT

Number	Parcel ID	Pros	Cons
1	E14-0158	• Town owned Parcel. • Parcel approximately 36.5 acres • Approximately 8.5 acres of parcel mapped as favorable soils • Located within 0.25 miles of the WWTF. • Located inside of the Sewer District.	• Partially developed • Mapped as fill material • Moderate depth to groundwater under portions of site • The depth to groundwater may limit the discharge rate
2	F13-0037	• Town owned parcel • Undeveloped • Parcel approximately 14 acres • Approximately 12.5 acres of parcel mapped as favorable soils • Located within 0.5 miles of the WWTF	• Wetland and private property setbacks will likely limit the discharge area • Moderate depth to groundwater under portions of the site • Located outside of the Sewer District
3	E13-0056	• Parcel approximately 22.5 acres • Approximately 6.5 acres of parcel mapped as favorable soils • Located approximately 0.5 mile from WWTF • Moderate to high elevation over nearby surface waters	• Privately owned • Commercial property • Partially developed • Cemetery located on the southern portion of the property • Uncertain if northern half of parcel area is being used or if there are plans for its use • Located outside of the Sewer District.

POTENTIAL NEXT STEPS

According to the Connecticut Department of Energy and Environmental Protection's (DEEP) publication: "Guidance for Design of Large-Scale On-Site Wastewater Renovation Systems" (February, 2006), if the Town chooses to further investigate any of the above site(s) for land application, a hydrogeologic site investigation would need to be conducted at each potential location to evaluate the site's discharge capacity. At a minimum, the following steps would need to be taken at each site:

- Meet with Connecticut DEEP to discuss the Town's plans to investigate specific sites for land application of wastewater effluent for the purpose of lowering phosphorus concentrations to the watershed.

- Conduct a site walk to estimate the area of potential discharge and stake locations to conduct test pit excavations, soil borings and monitoring well installations.
- Perform test pit excavations to evaluate the depth to the water table and soils underlying the site(s).
- If the depths to groundwater and soil types are favorable, drill soil borings and install monitoring wells at each of the site(s). Soil borings are drilled to collect soil samples below the limits of the test pit excavations (generally 12 to 15 feet), confirm the water table depth, and evaluate the depth to till and/or bedrock. The monitoring wells will also be used to conduct slug tests to further evaluate the soils conductivity.
- Perform tests on the monitoring wells to estimate the soils transmitting capacity.
- Submit soil and groundwater samples to a laboratory to evaluate soil conductivity and groundwater quality.
- Estimate the area favorable for land application and estimate a land application rate for the parcel(s).
- Estimate the effluent discharge capacity of the site.
- Estimate the capacity of the site to remove phosphorus from the effluent discharge. This estimate is based on the size of the discharge area, soils type underlying the discharge, the depth to groundwater, the phosphorus concentration of the effluent and the anticipated discharge rate.
- Estimate infrastructure costs to convey and dispose of the South Street WWTF effluent at the potential land application site(s).
- Estimate the cost effectiveness of land application at the proposed sites(s) to higher treatment levels at the South Street WWTF.
- Submit the report detailing the hydrogeologic investigation and the design of the land application facilities.

SUMMARY, WPCA REVIEW, AND RECOMMENDATIONS

The review of available soils data indicate that a majority of the parcels within the area of interest are underlain by till and or bedrock. Other parcels have topography too steep for groundwater discharge. The steep slopes can also be an indication of thin till over bedrock.

A majority of the remaining parcels are low-lying, privately owned, or developed properties, not favorable for a groundwater discharge. Most of these properties are less than an acre in size, and are developed residential sites. Of the 9,077 parcels within the area of interest, only 38 parcels were identified as being a potential groundwater discharge location. The ten highest ranking of these parcels were summarized in Table 3. The ranking of these properties was between 13 and 23 out of a potential score of 30.

Prior to proceeding with a site visit or field investigations, the highest ranked parcels were presented to the WPCA for review and comment at the January 2015 WPCA meeting. The top ranked site on South Street was confirmed to be the former Town landfill. The landfill has been capped and according to the WPCA, CT DEEP has forbidden any future excavation on the site so that the cap is not disturbed. This eliminates this South Street site from further consideration as a potential discharge location.

The second highest ranked site is located off of Norrans Ridge Drive. At present, this parcel is the location of Aquarion's Water Company's Beechwood wellfield. The close proximity of the water supply to the potential groundwater discharge of treated WWTF effluent would likely not be permitted, precluding the site from consideration.

North Street, the third highest ranked site, is part of St. Mary's cemetery. The WPCA did not believe that the property owner would consent to using land intended as a cemetery for land application. For this reason, the site was eliminated from further consideration.

Six of the remaining seven parcels (Bobby's Ct, Stonehenge Rd, Peaceable Hill Rd, Florida Hill Rd, and two locations on Ethan Allen HWY) are located between 1.5 and 2.0 miles from the WWTF (Figure 3); the outside limit of the area of investigation. The actual length of infrastructure necessary to convey the treated effluent to any of these sites would be greater than two miles as existing roads would be the primary means of installing the conveyance infrastructure. Land application on these sites was therefore determined not be cost effective and eliminated from consideration.

The remaining parcel, Sawmill Hill Road, was ranked relatively low and could not discharge a significant portion of the WWTF's effluent due to the sites limited acreage of favorable soils, and presence of surface waters and wetlands. As there were no other sites where land application was feasible, the Sawmill Hill Road site was also determined not to be cost effective and eliminated from consideration.

Based on the WPCA's review and input, it was decided there were no sites that warrant a field visit or further site investigation. It was further agreed that AECOM would complete the technical memorandum on the evaluation of land application and conclude that no feasible sites within a reasonable distance of the WWTF were identified. AECOM therefore recommends that the WPCA consider other options for lowering effluent phosphorus levels to meet the CT DEEP proposed effluent total phosphorus limits, as necessary.