Westwood

A Traditional Neighborhood
in the heart of Amherst.

Sanitary Sewer Flow Capacity Study
Summary Review Report

December 1, 2014

Prepared For:

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Ciminelli Real Estate Corporation
350 Essjay Road
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TECsmith

water and wastewater monitoring specialists *www.tecsmithinc.com*

Sanitary Sewer Flow Capacity Study

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FIGURE A- NODE 1
Sheridan Drive
36" Sewer

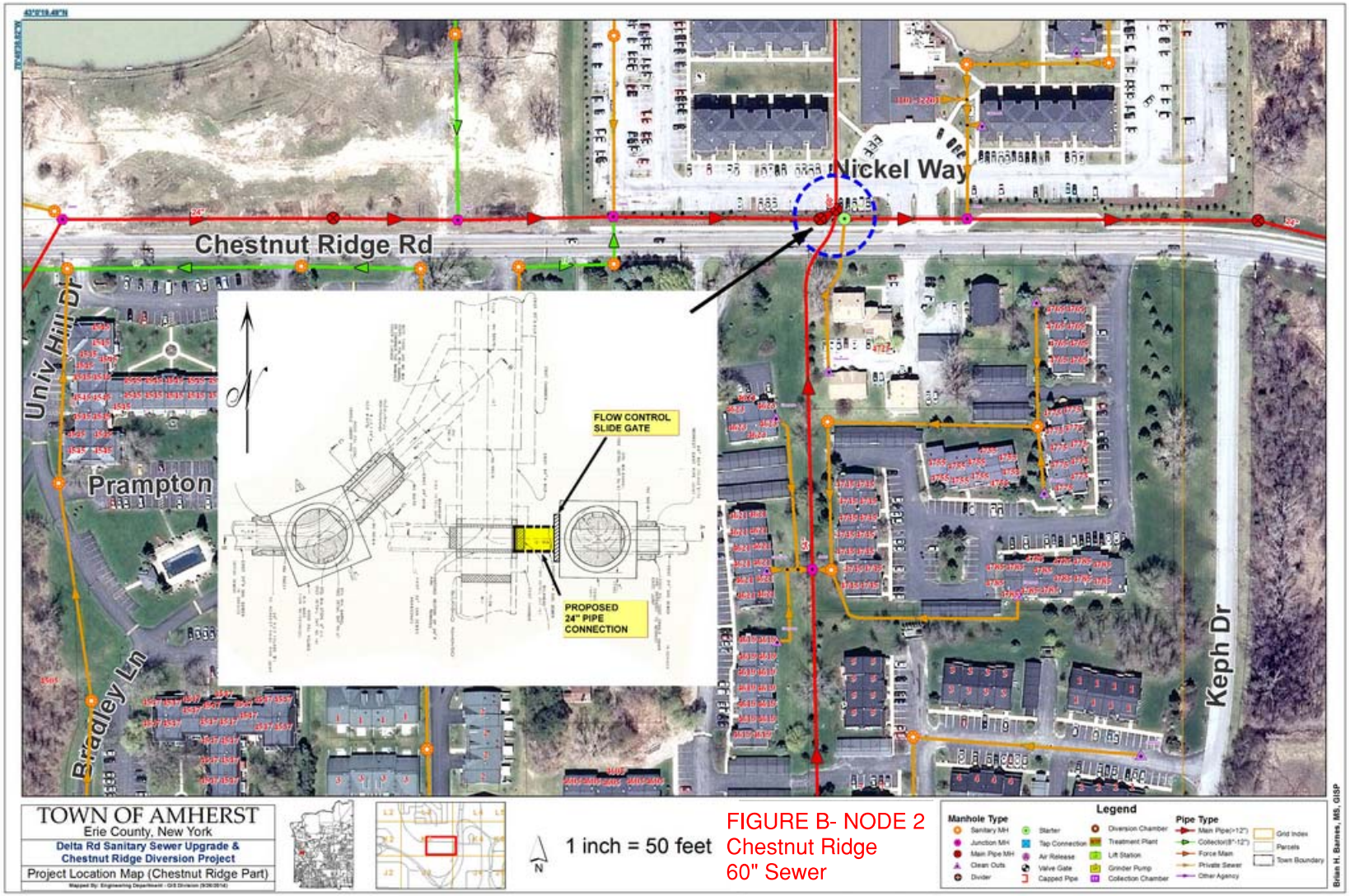

FIGURE B- NODE 2
Chestnut Ridge
60" Sewer

Sanitary Sewer Flow Capacity Study

SECTION I. Summary Review

Figure A- Node 1, Sheridan Drive 36" Sewer
Figure B- Node 2, Chestnut Ridge 60" Sewer

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Date: December 1, 2014

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For:

Brad Packard , AICP
Director of Development &Planning
Ciminelli Real Estate Corporation
350 Essjay Road
Williamsvile, NY 14221

Project Name: Westwood Project- Downstream Sanitary Sewer Flow Monitoring

Flow Monitoring Period: October 9, 2014 to November 6, 2014

Rain Events (> 0.5-inches) Monitored: October 17, 2014 (0.74)

Number of Monitoring Nodes: Five (3) downstream manholes

Node Locations and Descriptions:

- NODE 1 …. 4180 Sheridan Dr. (36")
- NODE 2 …. Chestnut Ridge (60")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below):

- One time did the flow depth exceed pipe diameter at any of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

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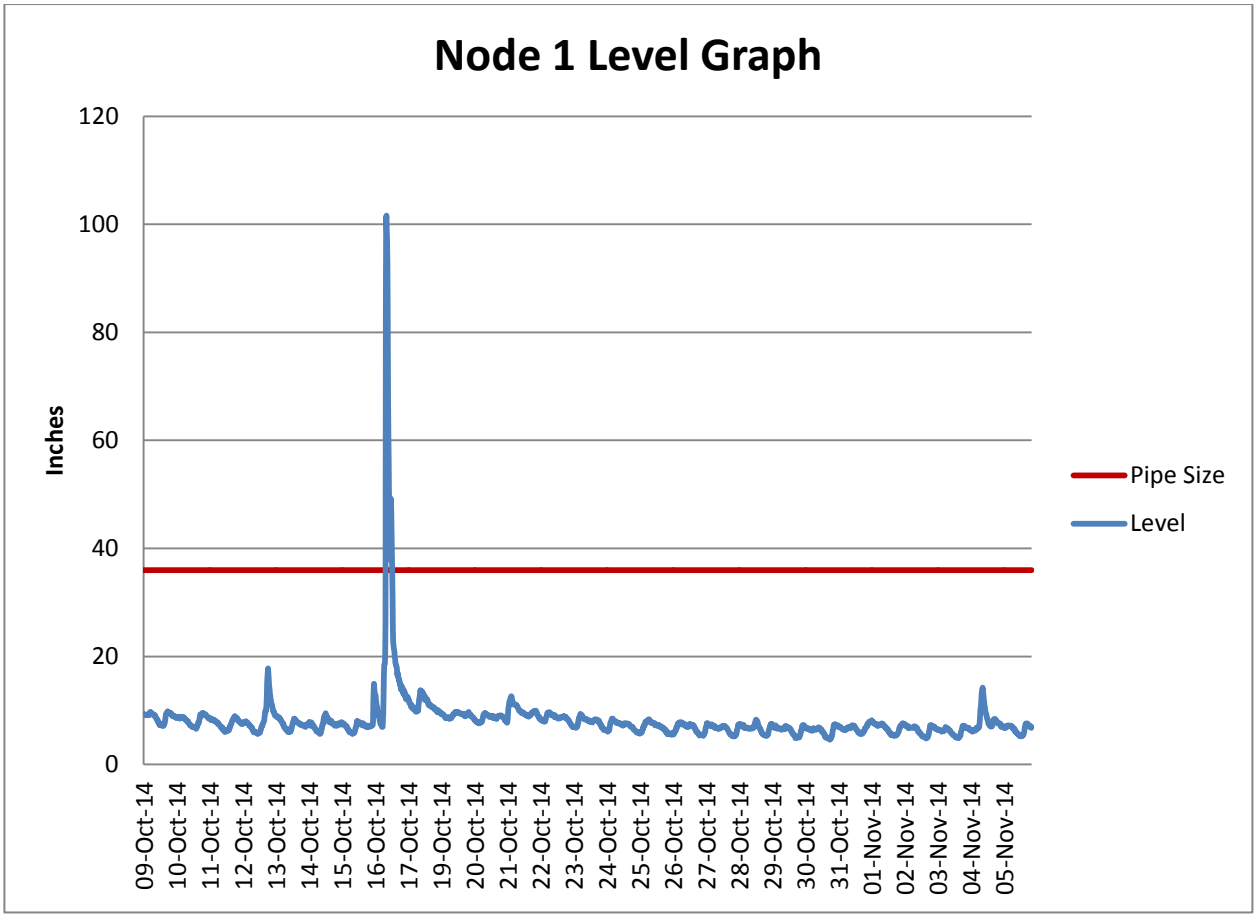
Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- One time during the monitoring period did depth of flow exceed pipe diameter at NODE 1.



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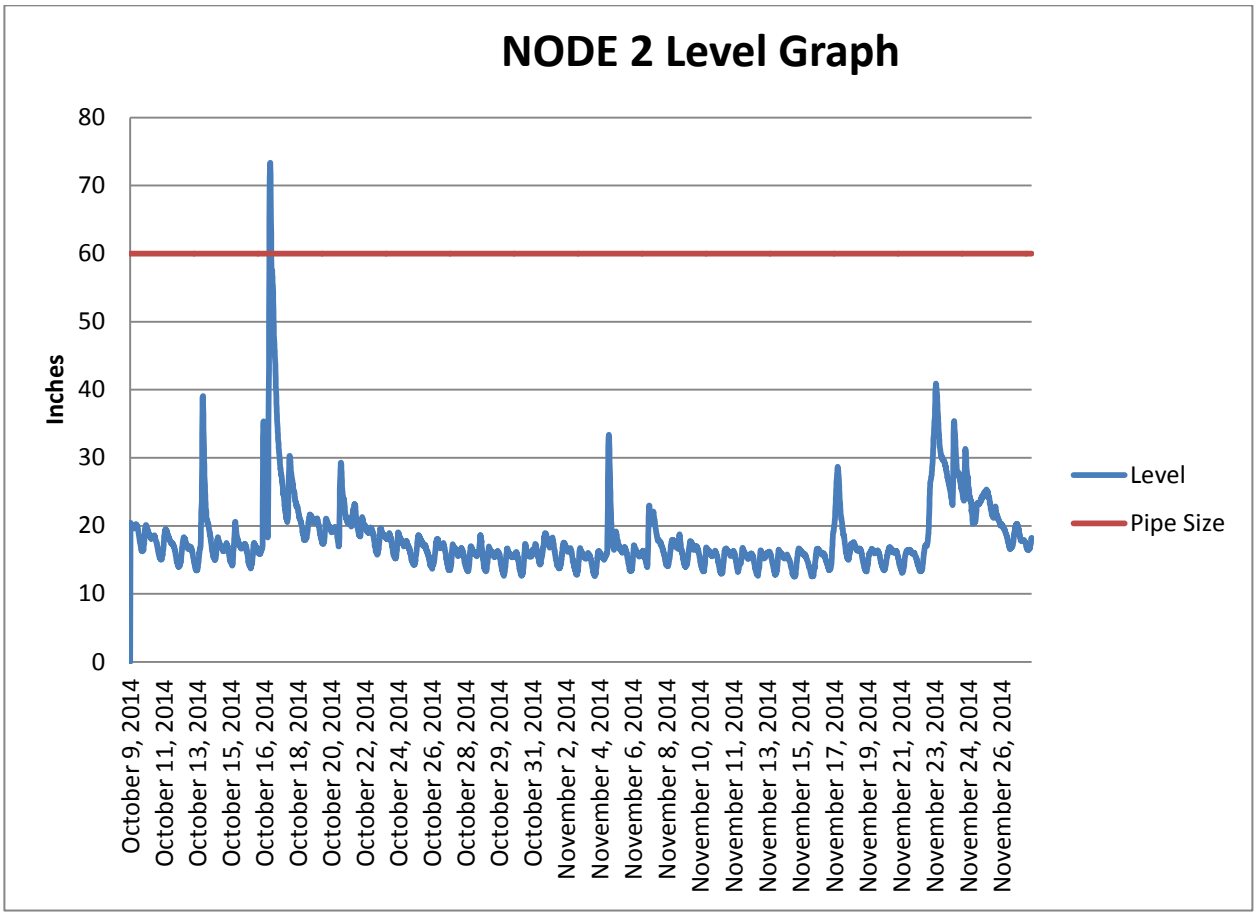
- One time during the monitoring period did depth of flow exceed pipe diameter at NODE 2.



Sanitary Sewer Flow Capacity Study

SECTION II. Monitoring Flow Summary Table

Date	NODE 1			NODE 2			Rain
	4180 Sheridan Dr. (36")			Chestnut Ridge (60")			
	FLOW (GAL x 1000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
10/09/14	1131.897	3.406	9.708	4796.819	11.931	20.463	0
10/10/14	2538.978	3.222	9.844	9433.790	11.612	20.138	0
10/11/14	2252.150	3.073	9.555	9069.942	11.668	19.520	0
10/12/14	2025.475	2.812	8.973	8763.148	11.318	18.318	0
10/13/14	2935.461	8.410	17.784	13272.707	38.816	39.069	0.34
10/14/14	2025.917	2.706	8.470	9918.837	12.067	18.351	0
10/15/14	2116.233	3.405	9.474	9658.432	13.262	20.613	0.07
10/16/14	2297.677	6.364	14.937	11049.750	32.334	35.374	0.05
10/17/14	9702.877	23.524	101.616	34942.969	66.600	73.333	0.74
10/18/14	4642.693	6.747	13.747	17360.666	27.292	30.304	0.13
10/19/14	3200.809	3.763	9.752	11328.887	13.425	21.680	0
10/20/14	2807.290	3.433	9.530	10076.116	12.052	21.082	0.04
10/21/14	3505.873	5.266	12.613	13521.714	24.273	29.280	0.14
10/22/14	2785.904	3.371	9.673	11244.236	13.957	23.089	0
10/23/14	2380.840	3.100	9.375	9916.421	11.631	19.667	0
10/24/14	2064.858	2.887	8.509	9401.581	11.232	19.059	0
10/25/14	1933.406	2.731	8.370	9251.297	11.693	18.664	0
10/26/14	1793.092	2.444	7.816	8940.210	10.992	18.068	0
10/27/14	1715.555	2.268	7.657	8893.974	11.215	17.294	0
10/28/14	1731.914	2.645	8.311	9004.178	12.128	18.627	0.1
10/29/14	1640.790	2.214	7.519	9003.400	10.935	17.220	0
10/30/14	1522.911	2.151	7.288	8645.175	10.885	16.714	0
10/31/14	1570.347	2.197	7.432	8769.182	11.636	17.360	0.1
11/01/14	1869.962	2.465	8.210	9905.480	12.320	18.961	0.07
11/02/14	1650.583	2.311	7.620	9327.934	11.526	17.556	0
11/03/14	1481.579	2.153	7.330	8779.735	10.897	16.748	0
11/04/14	1643.617	5.739	13.069	8872.967	22.154	26.810	0.27
11/05/14	2519.637	6.638	14.217	12782.760	32.626	33.392	0
11/06/14	874.855	2.203	7.608	9093.837	11.131	17.176	0.02
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Note: Rain data from: http://www.nws.noaa.gov/climate/index.php?wfo=buf

Sanitary Sewer Flow Capacity Study

SECTION III. Field Sheets

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr.	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	11/6/14	**TIME**	12:55 pm	**CREW**	KK PG

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	16.546	**INCHES**		**INCHES**		**INCHES**
FLOW	9.97	**MGD**				**MGD**
TOTAL	251	**GAL X1000**				**GAL X1000**
VEL	3.46	**FT/sec.**		**FT/sec.**		**FT/sec.**
SIGNAL	38	**%**				**%**
BATTERY	5.4	**VDC**				**VDC**

WORK COMPLETED:

Downloaded data, checked level, Removed meter

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/17/14	**TIME**	9:56 am	**CREW**	KK RS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	49.861	**INCHES**		**INCHES**	48.406	**INCHES**
FLOW	19.14	**MGD**			19.31	**MGD**
TOTAL	-1609394807	**GAL X1000**			0	**GAL X1000**
VEL	4.16	**FT/sec.**		**FT/sec.**	4.46	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.2	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level, totalizer was reading negative, so was reset

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/22/14	**TIME**	2:16 pm	**CREW**	KK RS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	8.809	**INCHES**		**INCHES**	8.993	**INCHES**
FLOW	2.80	**MGD**			2.70	**MGD**
TOTAL	20941	**GAL X1000**			20950	**GAL X1000**
VEL	3.20	**FT/sec.**		**FT/sec.**	3.23	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.2	**VDC**			5.2	**VDC**

WORK COMPLETED:

Downloaded data, checked level

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	10/22/14	**TIME**	1:25 pm	**CREW**	KK RS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	20.103	**INCHES**		**INCHES**	19.954	**INCHES**
FLOW	11.57	**MGD**			11.72	**MGD**
TOTAL	169	**GAL X1000**			169	**GAL X1000**
VEL	3.16	**FT/sec.**		**FT/sec.**	3.10	**FT/sec.**
SIGNAL	35	**%**			35	**%**
BATTERY	5.4	**VDC**			5.4	**VDC**

WORK COMPLETED:

Downloaded data, checked level,

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/31/14	**TIME**	11:39 am	**CREW**	KK

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	6.966	**INCHES**	7.25	**INCHES**	7.208	**INCHES**
FLOW	1.79	**MGD**			1.84	**MGD**
TOTAL	37503	**GAL X1000**			37503	**GAL X1000**
VEL	2.97	**FT/sec.**		**FT/sec.**	2.95	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.3	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	10/31/14	**TIME**	11:52 am	**CREW**	KK PG

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	16.546	**INCHES**	16.25	**INCHES**	16.448	**INCHES**
FLOW	9.97	**MGD**			9.93	**MGD**
TOTAL	251	**GAL X1000**			251	**GAL X1000**
VEL	3.46	**FT/sec.**		**FT/sec.**	3.47	**FT/sec.**
SIGNAL	38	**%**			39	**%**
BATTERY	5.4	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level,

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Installation / Calibration

SITE DATA

SITE	4180 Sheridan Dr.	**I.D.**	001	**JOB NO.**	CIM001
METER MODEL	910	**METER S/N**	UAH	**PROBE(S) S/N**	TEC 11
DATE	10/9/14	**TIME**	3:17 am	**CREW**	PG KK
RIM TO INV	>20	**PIPE SIZE**	36 Inches	**PROBE LOC.**	Upstream

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	9.284	**INCHES**	9.25	**INCHES**	9.211	**INCHES**
FLOW	3.14	**MGD**			3.13	**MGD**
TOTAL	11	**GAL X 1000**			11	**GAL X 1000**
VEL	3.41	**FT/sec.**		**FT/sec.**	3.30	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.3	**VDC**			5.1	**VDC**

BUCKET CALIBRATION

ACTUAL	0.00	**METER**	0.00

WORK COMPLETED:

Installed 910 with sub AV in 36 inch upstream pipe

NOTES:

FLOW METER RECORD
Installation / Calibration

SITE DATA

SITE	Chestnut Ridge	**I.D.**	002	**JOB NO.**	CIM001
METER MODEL	910	**METER S/N**	PIZ	**PROBE(S) S/N**	43
DATE	10/9/14	**TIME**	2:22 pm	**CREW**	PG KK
RIM TO INV	>20	**PIPE SIZE**	60 Inches	**PROBE LOC.**	Downstream

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	20.304	**INCHES**	20.375	**INCHES**	20.318	**INCHES**
FLOW	11.55	**MGD**			11.87	**MGD**
TOTAL	0	**GAL X 1000000**			0	**GAL X 1000000**
VEL	3.13	**FT/sec.**		**FT/sec.**	3.07	**FT/sec.**
SIGNAL	36	**%**			34	**%**
BATTERY	5.4	**VDC**			5.4	**VDC**

BUCKET CALIBRATION

ACTUAL	0.00	**METER**	0.00

WORK COMPLETED:

Installed 910 with sub AV in 60 inch downstream pipe

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	11/28/14	**TIME**	9:33 am	**CREW**	KK JS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	18.717	**INCHES**	16.25	**INCHES**		**INCHES**
FLOW	11.39	**MGD**				**MGD**
TOTAL	566	**GAL X1000**				**GAL X1000**
VEL	3.31	**FT/sec.**		**FT/sec.**		**FT/sec.**
SIGNAL	31	**%**				**%**
BATTERY	5.2	**VDC**				**VDC**

WORK COMPLETED:

Downloaded data, checked level, removed from manhole

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES: