CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Muir Woods Site

Sweet Home & Dodge Road
Amherst, Erie County, New York

Prepared for

Sawyer's Landing, LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, New York 14086

Prepared by

Carmina Wood Design

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REVISED
November 2024

Project Description

This new site development project will consist of the construction of apartment buildings, townhomes, office, restaurant, and retail space as well as self-storage. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst and is zoned NCD-SA.

The proposed sewer for this project will leave the site via a privately owned sanitary service and cross Dodge Road to connect to a proposed 8" publicly owned sewer extension. The public line will then tie in to the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16. The proposed public extension from the tie in to the existing 60" RCP line will be owned and maintained by the Town of Amherst.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.305 cfs **
Proposed Peak Flow	=	40.907 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.305 cfs **
Proposed Peak Flow	=	99.829 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but 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. In addition, Sanitary Sewer Overflow (SSO) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.305cfs **
Proposed Peak Flow	=	69.363 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Foot Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Muir Woods Site - Sweet Home and Dodge Rd

8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

Web AppBuilder for ArcGIS

USGS TNM – National Hydrography Dataset. Data Refreshed July, 2020. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.Maintenance@its.ny.gov

Sanitary Demand Calculations

CARMINA WOOD MORRIS, D.P.C.
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Project No.: 24-4034 Date: 11/19/2024
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings								
0.1	gal/d/sf	x	11,906	sf	=	1,191	gpd	*use 0.1 gallons per day per square foot (Retail
35.0	gal/d/seat	x	100	seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
0.1	gal/d/sf	x	10,798	sf	=	1,080	gpd	*use 0.1 gallons per day per square foot (Office
15	gal/d/employee	x	5	employees		75	gpd	*use 15 gallons per employee (Self-Storage)
West - Apartments								
220	gal/d/unit	x	112	units	=	24,640	gpd	*use 220 gallons per day per 2-bedroom unit
North - Townhomes Buildings								
220	gal/d/unit	x	63	units	=	13,860	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x	24	units	=	5,280	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand:	=	49,625	gpd
	=	0.050	MGD
Find Peak Sanitary Demand:	=	0.077	cfs

Peaking Factor based on Population:

Total demand: 49,625 gpd / 100 gpcd = 496 per capita

Population (P) = 496 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.98

Peak Sanitary Demand	=	49,625 x 3.98	=	197,306	gpd		
			=	0.197	MGD		
			=	0.305	cfs		

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	197,306	gpd	=	137.02	gpm	
4:1 offset flow per NYSDEC requirements	=	137.0	x	4	=	548.07	gpm req'd
Mitigation Credit	=	$250	/ gpm				
Mitigation Agreement Amount	**=**	**$137,017.93**					

TECSmith Monitoring Report

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21”), July 16 (0.86”), and August (0.90”)

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

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

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 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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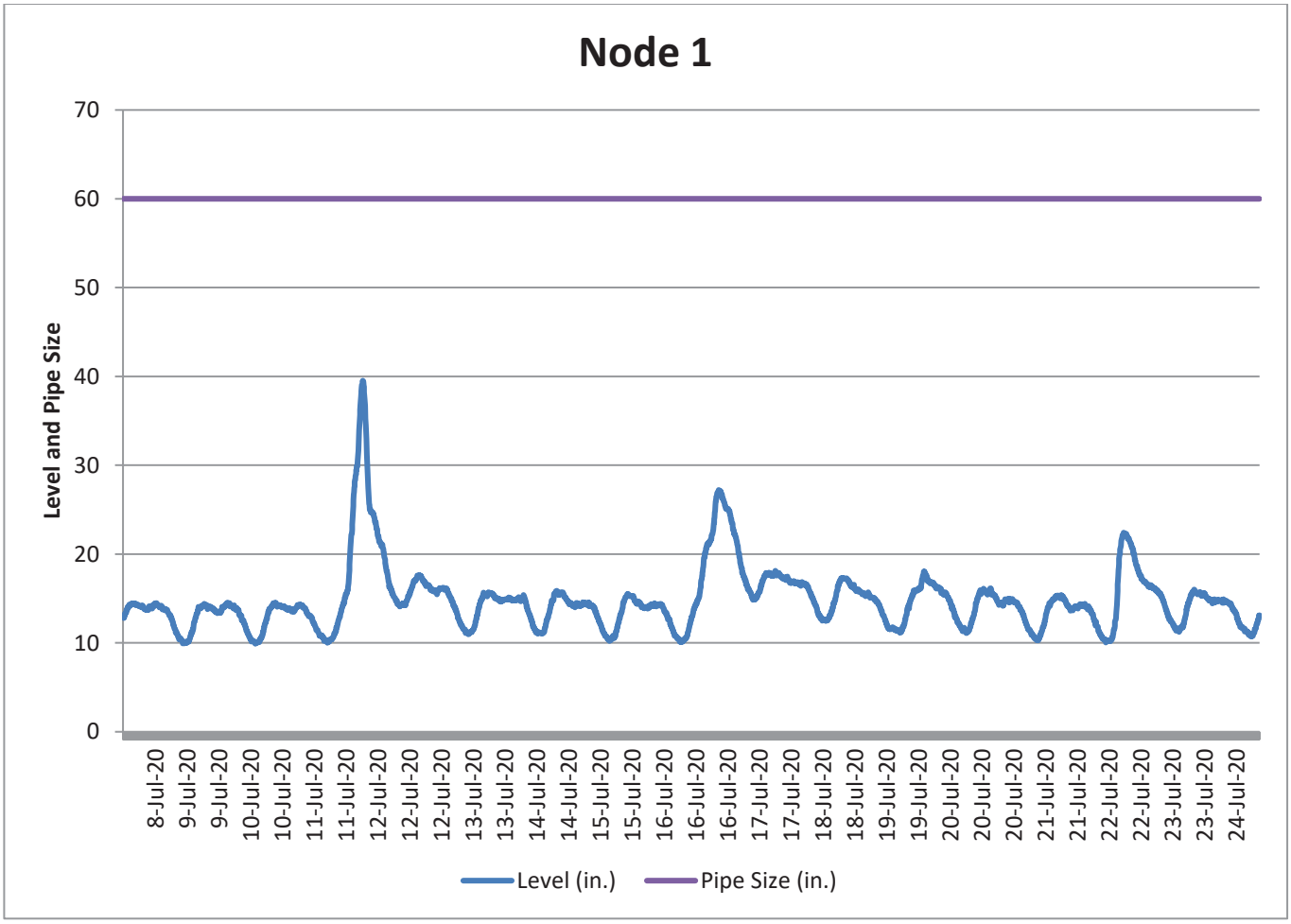
Depth of Flow Capacity Summary:

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

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



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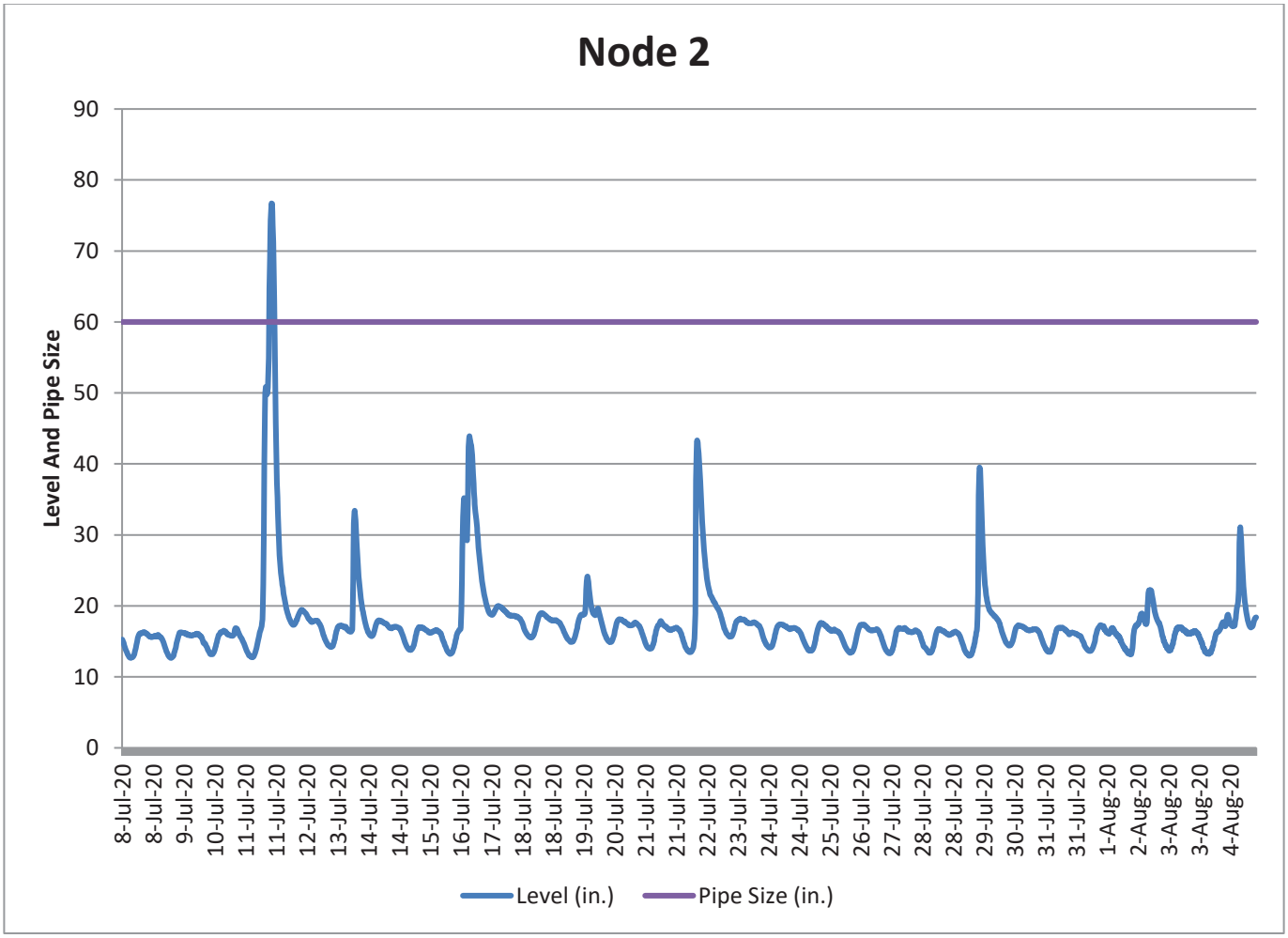
- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



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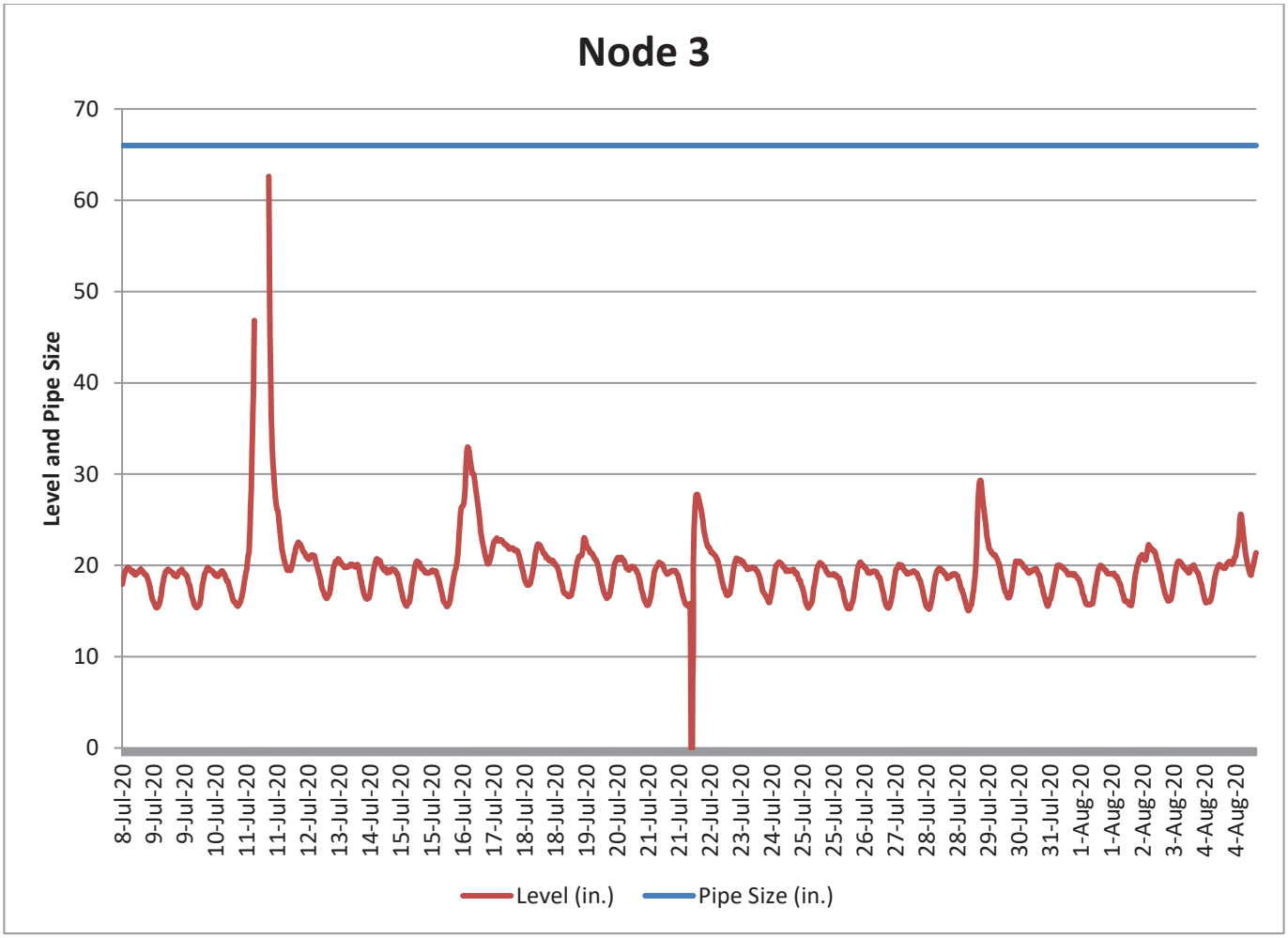
- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Date	Node 1			Node 2			Node 3			Rain₂
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	***0***
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	***0***
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	***0***
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	***1.21***
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	***0***
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	***0.47***
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	***0***
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	***0***
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	***0.86***
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	***0.03***
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	***0***
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	***0.21***
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	***0***
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	***0***
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	***0.42***
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	***0***
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	***0***
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	***0***
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	***0***
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	***0.03***
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	***0.01***
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	***0.18***
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	***0***
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	***0***
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	***0***
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	***0.29***
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	***0***
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	***0.9***
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	***0***
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	MGD	CFS		MGD	CFS		MGD	CFS
Wet	21.851	33.808	Wet	53.561	82.871	Wet	39.601	61.271
Overall	16.639	25.744	Overall	42.105	65.146	Overall	29.736	46.008

(T) Amherst Engineering Department Sewer Maintenance Division
Downstream Routing Map

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

Project Location

Sanitary Routing

May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19

84-Inch West Side Interceptor
Capacity: 104.10 mgd
21.1 mgd Avg. Daily Flow
26.85 mgd Daily Peak Flow
92.00 mgd 2 yr.-6 hr. Flow

66-Inch Peanut Line
Capacity: 57.4 mgd
8.37 mgd Avg. Daily Flow
11.55 mgd Daily Peak Flow
36.50 mgd 2 yr.-6 hr. Flow

54-Inch Peanut Line
Capacity: 36.0 mgd
3.55 mgd Avg. Daily Flow
5.06 mgd Daily Peak Flow
19.15 mgd 2 yr.-6 hr. Flow

48-Inch Peanut Line
Capacity: 24.6 mgd
1.90 mgd Avg. Daily Flow
2.82 mgd Daily Peak Flow
5.98 mgd 2 yr.-6 hr. Flow

18-Inch Peanut Line
Capacity: 2.84 mgd
0.62 mgd Avg. Daily Flow
0.95 mgd Daily Peak Flow
1.55 mgd 2 yr.-6 hr. Flow

Project Location
460 Dodge Rd.

60-Inch Peanut Line
Capacity: 44.6 mgd
6.71 mgd Avg. Daily Flow
9.10 mgd Daily Peak Flow
26.45 mgd 2 yr.-6 hr. Flow

60-Inch West Side Interceptor
Capacity: 49.1 mgd
12.64 mgd Avg. Daily Flow
15.33 mgd Daily Peak Flow
54.10 mgd 2 yr.-6 hr. Flow
Chestnut Ridge B.P. 5.0 mgd

54-Inch Peanut Line
Capacity: 36.0 mgd
3.01 mgd Avg. Daily Flow
4.35 mgd Daily Peak Flow
18.50 mgd 2 yr.-6 hr. Flow

30-Inch Peanut Line
Capacity: 8.71 mgd
1.25 mgd Avg. Daily Flow
1.83 mgd Daily Peak Flow
3.72 mgd 2 yr.-6 hr. Flow

30-Inch Stahl Road Trunk
Capacity: 7.35 mgd
3.65 mgd Avg. Daily Flow
4.55 mgd Daily Peak Flow
7.30 mgd 2 yr.-6 hr. Flow

18-Inch Youngs Road
Capacity: 2.92 mgd
0.55 mgd Avg. Daily Flow
0.90 mgd Daily Peak Flow
2.20 mgd 2 yr.-6 hr. Flow

54-Inch West Side Interceptor
Capacity: 38.5 mgd
11.27 mgd Avg. Daily Flow
13.88 mgd Daily Peak Flow
56.65 mgd 2 yr.-6 hr. Flow

48-Inch West Side Interceptor
Capacity: 24.6 mgd
3.10 mgd Avg. Daily Flow
4.15 mgd Daily Peak Flow
19.75 mgd 2 yr.-6 hr. Flow

54-Inch West Side Interceptor
Capacity: 36.5 mgd
8.05 mgd Avg. Daily Flow
9.55 mgd Daily Peak Flow
36.50 mgd 2 yr.-6 hr. Flow

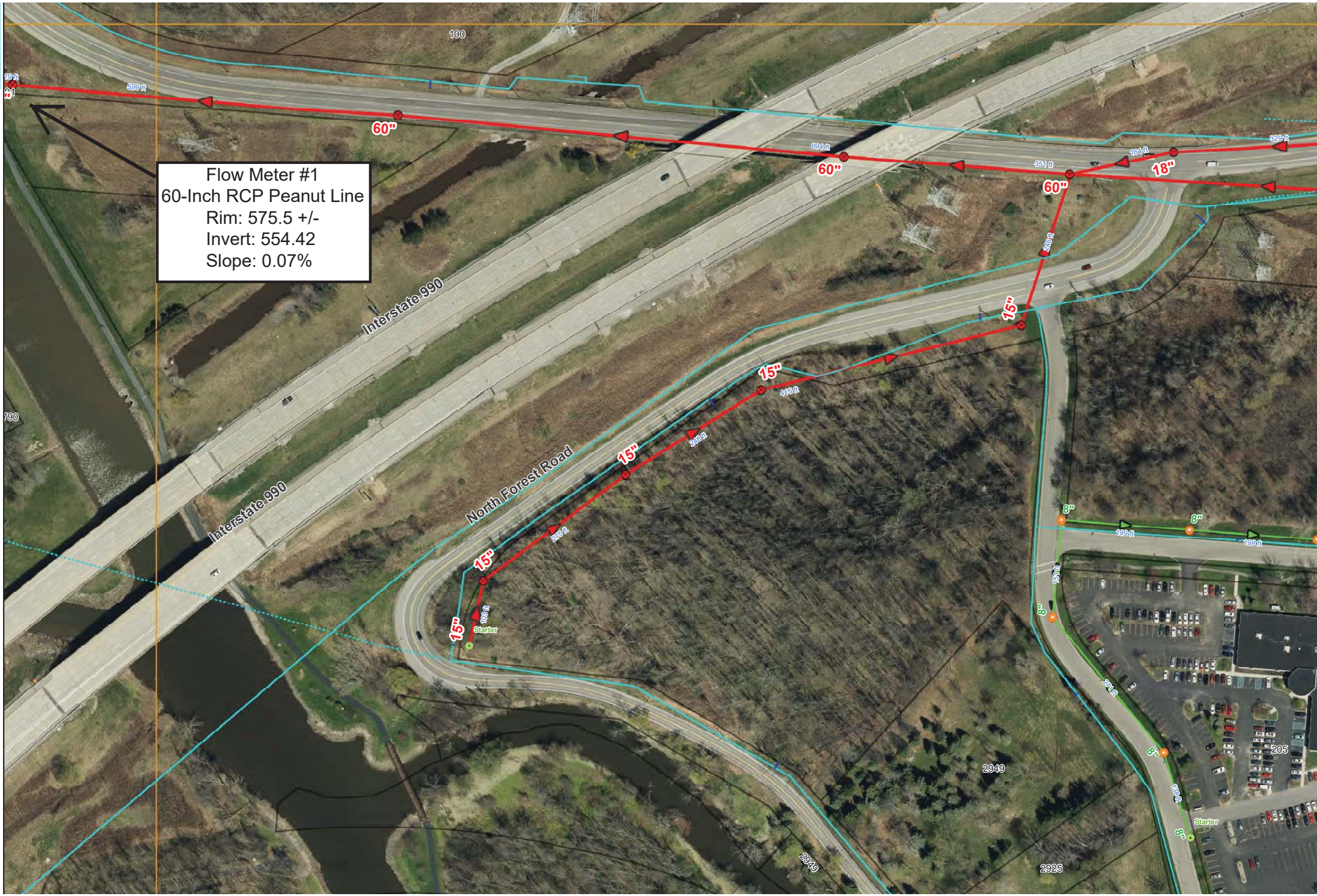
30-Inch Reist Street Trunk
Capacity: 7.55 mgd
1.55 mgd Avg. Daily Flow
2.05 mgd Daily Peak Flow
6.50 mgd 2 yr.-6 hr. Flow
6.95 mgd 5 yr.-6 hr. Flow

State University of New York at Buffalo

Village of Williamsville

Engineering Department
Highway Department - Plant 1

1 0 1 Miles


Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
8"
8"
8"
8"
Starter
Starter
100
790
2949
2949
2925
205


348 N Ellicott Creek Rd
Buffalo, New York
Google
Street View
Flow Meter #2
Google

Flow Meter #3


Sweet Home Rd
Reznicki & Company, LLP
Timothy M Brown CPA PLLC
Buffalo Vet Center
Dr. Ronald A. Cooke, MD
Ashley's Garden