



DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Proposed Apartments
1130 Orchard Park Road
Town of West Seneca, Erie, NY

Prepared for

Hanley Development

3266 Seneca Street
West Seneca, NY 14224

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

September 2022



Project Description

This project is a development of a 4.90 acre +/- site located on the east side of Orchard Park Road in the Town of West Seneca. The property will be developed to accommodate for 40 2-bedroom apartment units.

The proposed sewer service for this development will connect to an existing 10" Town of West Seneca sewer main that runs along the east side of Orchard Park Road.

Node 1 - 1001 Orchard Park Rd (12"):

Existing Peak Flow measured (wet weather event)	= 2.844 cfs (1.838 mgd)*
Proposed Apartments Peak Flow	= 0.041 cfs**
Proposed Total Peak Flow	= 2.885 cfs

Theoretical capacity of existing 12" pipe @ 0.36% = 2.314 cfs

Conclusion: Monitored flows the day following the 0.72" rainfall event exceeded the capacity of the existing pipe 12" sewer. One time during the monitoring period the flow depth exceeded the pipe diameter at Node 1, 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. The 12" sewer receives surcharges from a 27" sewer and 36" sewer downstream during high rainfall events. Outside of these events, the 12" sewer has ample capacity to handle the additional proposed total peak flow. I/I mitigation shall be required for the contribution proposed for this project.

Node 2 - Orchard Park Rd (15"):

Existing Peak Flow measured (wet weather event)	= 2.917 cfs (1.885 mgd)*
Proposed Apartments Peak Flow	= 0.041 cfs**
Proposed Total Peak Flow	= 2.958 cfs

Theoretical capacity of existing 15" pipe @ 0.34% = 4.077 cfs

Conclusion: The proposed total peak flow is less than the capacity of the 15" pipe, therefore there is sufficient capacity. One time during the monitoring period the flow depth exceeded the pipe diameter at Node 2, 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. The 15" sewer receives surcharges from a 27" sewer and 36" sewer downstream during high rainfall events. Outside of these events, the 15" sewer has ample capacity to handle the additional proposed total peak flow. I/I mitigation shall be required for the contribution proposed for this project.

Node 3 - Orchard Park Rd & Fairfax (48"):

Existing Peak Flow measured (wet weather event)	= 14.470 cfs (9.352 mgd)*
Proposed Apartments Peak Flow	= 0.041 cfs**
Proposed Total Peak Flow	= 14.511 cfs
Existing Peak Flow measured (overall)	= 16.150 cfs (10.438 mgd)*
Proposed Apartments Peak Flow	= 0.041 cfs**
Proposed Total Peak Flow	= 16.191 cfs

Theoretical capacity of existing 48" pipe @ 0.15% = 60.218 cfs

Conclusion: The proposed total peak flow is less than the capacity of the 48" pipe, therefore there is sufficient capacity. At no time during the monitoring period did flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Foot Notes:

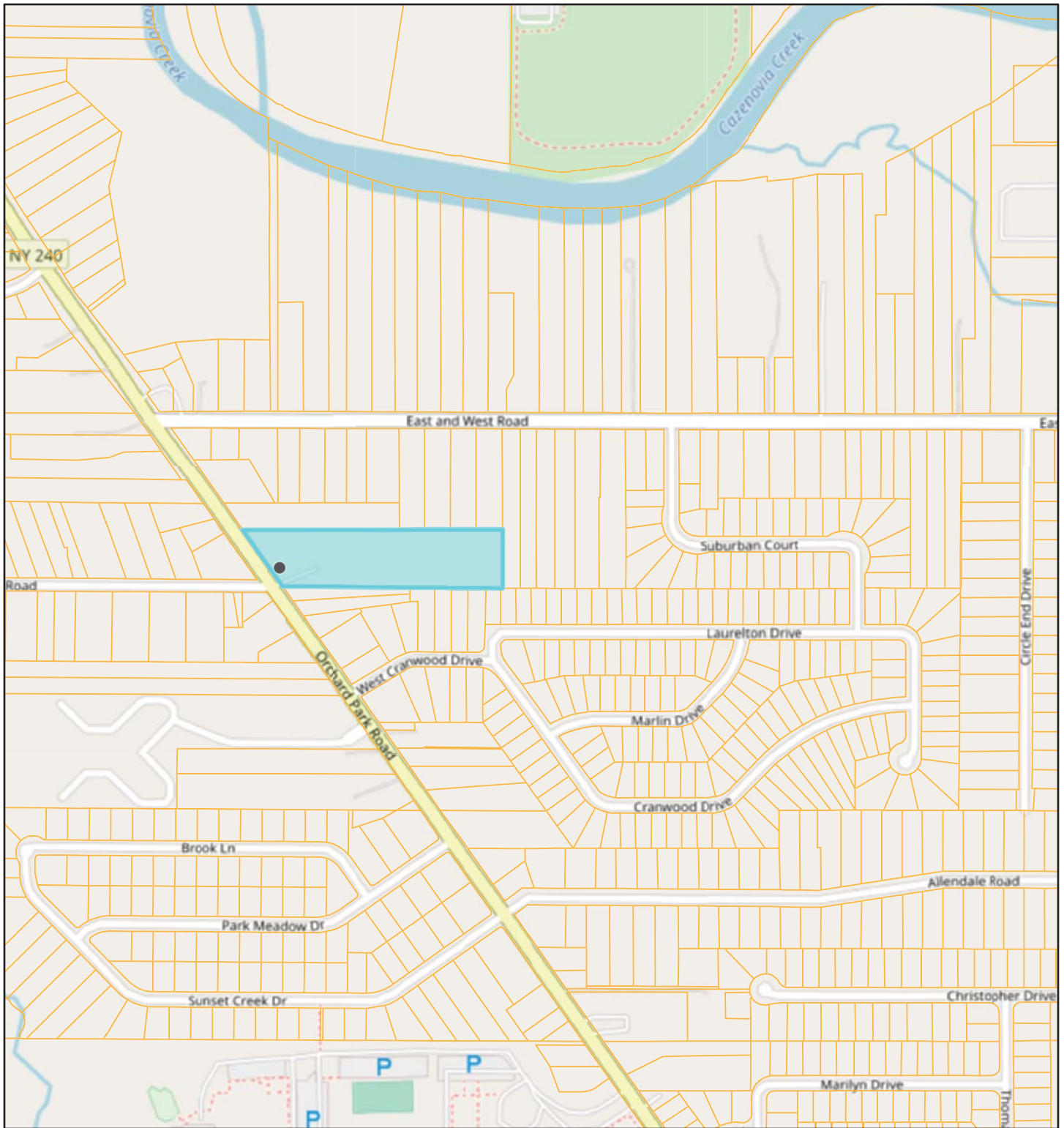
Downstream capacity node information provided by Town of West Seneca

*Converted from measurements in TECSmith report dated 9/15/22 & 4/19/22

** See Sanitary Sewage Demand Calculations

Location Map

ArcGIS Web Map

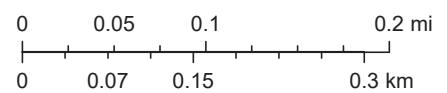


5/9/2022, 1:38:09 PM

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 Parcels

 Municipal Boundaries



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Sanitary Demand Calculations

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.128 Date: 5/9/2022
Project Name: Residential Apartments
Project Address: 1130 Orchard Park Road West Seneca, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Proposed Townhouses

220 gal/d/unit x 28 units = 6,160 gpd *use 220 gallons per unit per day (2-bdrm)

Total Site Sanitary Demand: = 6,160 gpd

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 6,160 gpd / 100 gpcd = 62 per capita

Population (P) = 62 people

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

Peaking Factor = 4.30

Peak Sanitary Demand = 6,160 x 4.30 = 26,460 gpd
= 0.026 MGD
= 0.041 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 26,460 gpd = 18.38 gpm

4:1 offset flow per NYSDEC requirements = 18.38 x 4 = 73.50 gpm req'd

Mitigation Credit = 30 gpm / lateral

Laterals to be replaced* = 2.5 laterals

= 3 laterals *(or other mitigation as identified by the Town)

TECSmith Monitoring Report

Date	Node 1			Node 2			Rain: (inches)	Date	Node 3			Rain: (inches)	Snow (inches)
	1001 Orchard Park Rd (12")			Orchard Park Rd 15" (15")					Orchard Park Rd & Fairfax (48")				
	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 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)		
8/16/2022	89.257	0.440	5.964	168.586	0.721	4.437	0.23	3/17/2022	3196.614	6.783	13.938	0	0
8/17/2022	215.037	0.376	4.744	438.779	0.622	3.770	0	3/18/2022	5684.090	6.485	13.639	0	0
8/18/2022	189.150	0.370	4.686	427.549	0.628	3.826	0	3/19/2022	6314.024	7.874	17.857	0.27	0
8/19/2022	185.188	0.342	4.512	414.203	0.666	4.069	0	3/20/2022	7506.892	9.168	20.985	0.08	0
8/20/2022	202.299	0.331	4.923	396.354	0.689	4.133	0	3/21/2022	6601.632	8.220	19.365	0	0
8/21/2022	242.472	0.443	5.850	452.414	0.758	4.278	0.11	3/22/2022	5911.885	6.708	14.066	0	0
8/22/2022	211.005	0.478	4.897	492.229	0.645	3.891	0.14	3/23/2022	6366.253	9.352	21.857	0.51	0
8/23/2022	205.428	0.447	4.517	162.364	0.422	3.395	0.05	3/24/2022	8410.107	10.438	23.577	0	0
8/24/2022	203.451	0.394	4.725	253.953	0.604	4.307	0.45	3/25/2022	7059.230	8.020	19.386	0	0
8/25/2022	181.878	0.416	4.675	439.324	0.669	4.150	0	3/26/2022	7112.401	8.489	19.148	0.09	0.1
8/26/2022	190.142	0.419	4.851	414.269	0.625	3.883	0	3/27/2022	7001.414	8.461	18.753	0.06	2.3
8/27/2022	177.502	0.405	4.759	424.759	0.670	4.011	0	3/28/2022	6396.917	7.538	17.111	0.01	0.4
8/28/2022	149.262	0.306	4.729	402.881	0.700	4.187	0	3/29/2022	5909.058	6.957	14.053	0	0
8/29/2022	131.545	0.272	4.563	409.867	0.776	4.384	0	3/30/2022	5521.696	6.653	13.811	0.01	0
8/30/2022	277.592	0.705	7.523	530.810	1.126	5.440	0.97	3/31/2022	5943.213	7.661	16.548	0.09	0
8/31/2022	207.872	0.351	5.185	507.470	0.687	4.085	0	4/1/2022	5419.635	6.277	14.053	0.06	0.1
9/1/2022	185.028	0.361	5.419	434.561	0.610	3.756	0	4/2/2022	5147.186	6.140	13.371	0	0
9/2/2022	157.770	0.346	4.843	411.119	0.619	3.892	0	4/3/2022	5083.174	6.186	13.093	0.01	0
9/3/2022	147.788	0.355	5.089	391.309	0.645	4.003	0	4/4/2022	4946.766	6.325	12.723	0	0
9/4/2022	166.764	0.303	4.897	378.377	0.635	3.860	0.04	4/5/2022	4901.882	5.708	12.382	0	0
9/5/2022	464.216	1.838	32.342	716.100	1.885	64.943	0.72	4/6/2022	4842.495	5.943	12.848	0.21	0
9/6/2022	241.691	0.307	5.076	505.569	0.654	4.013	0	4/7/2022	7751.294	9.369	21.493	0.25	0
9/7/2022	190.037	0.354	5.440	449.703	0.749	4.317	0.01	4/8/2022	7000.725	8.355	18.804	0	0
9/8/2022	182.211	0.372	4.852	443.591	0.642	3.912	0	4/9/2022	6041.826	7.017	13.864	0	0
9/9/2022	180.567	0.332	5.309	426.468	0.702	4.143	0	4/10/2022	5473.970	6.521	13.216	0	0
9/10/2022	169.443	0.373	5.192	428.528	0.686	4.058	0	4/11/2022	5257.193	7.976	15.138	0.13	0
9/11/2022	98.925	0.532	6.704	397.027	0.919	4.930	0.03	4/12/2022	7299.038	9.109	16.993	0.14	0
9/12/2022	336.528	0.958	8.256	552.252	1.290	5.735	0.28	4/13/2022	6134.522	7.267	14.479	0.05	0
9/13/2022	356.909	0.736	6.372	589.969	0.876	4.687	0.14	4/14/2022	3692.282	6.917	14.240	0	0
9/14/2022	112.265	0.350	5.193	258.683	0.696	4.002	0	---	---	---	---	---	---
---	---	---	---	---	---	---	3.17	---	---	---	---	1.97	2.9

	MGD	CFS		MGD	CFS
Wet	1.838	2.844	Wet	1.885	2.917
Dry	0.958	1.482	Dry	1.290	1.996

	MGD	CFS
Wet	9.352	14.470
Dry	10.438	16.150

Date: September 15, 2022

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 1130 Orchard Park Road Capacity Analysis

R. Christopher Wood, PE Partner
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: 1130 Orchard Park Road Capacity Analysis

Flow Monitoring Period: August 16, 2022 to September 14, 2022

Rain Events (> 0.5-inches) Monitored: August 30 (0.97"), and September 5 (0.72")

Number of Monitoring Nodes: Two (2) downstream manholes

Node Locations and Descriptions:

- Node 1 1001 Orchard Park Rd (12")
- Node 2 Orchard Park Rd 15" (15")

Summary Conclusion:

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

- One time the flow depth exceeds pipe diameter at all nodes of the downstream monitoring points during the wet weather events monitored.

Date: April 19, 2022

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 1130 Orchard Park Road Capacity Analysis

R. Christopher Wood, PE Partner
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: 1130 Orchard Park Road Capacity Analysis

Flow Monitoring Period: March 17, 22 to April 14, 2022

Rain Events (> 0.5-inches) Monitored: March 23, (0.51")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 3 Orchard Park Rd & Fairfax (48")

Summary Conclusion:

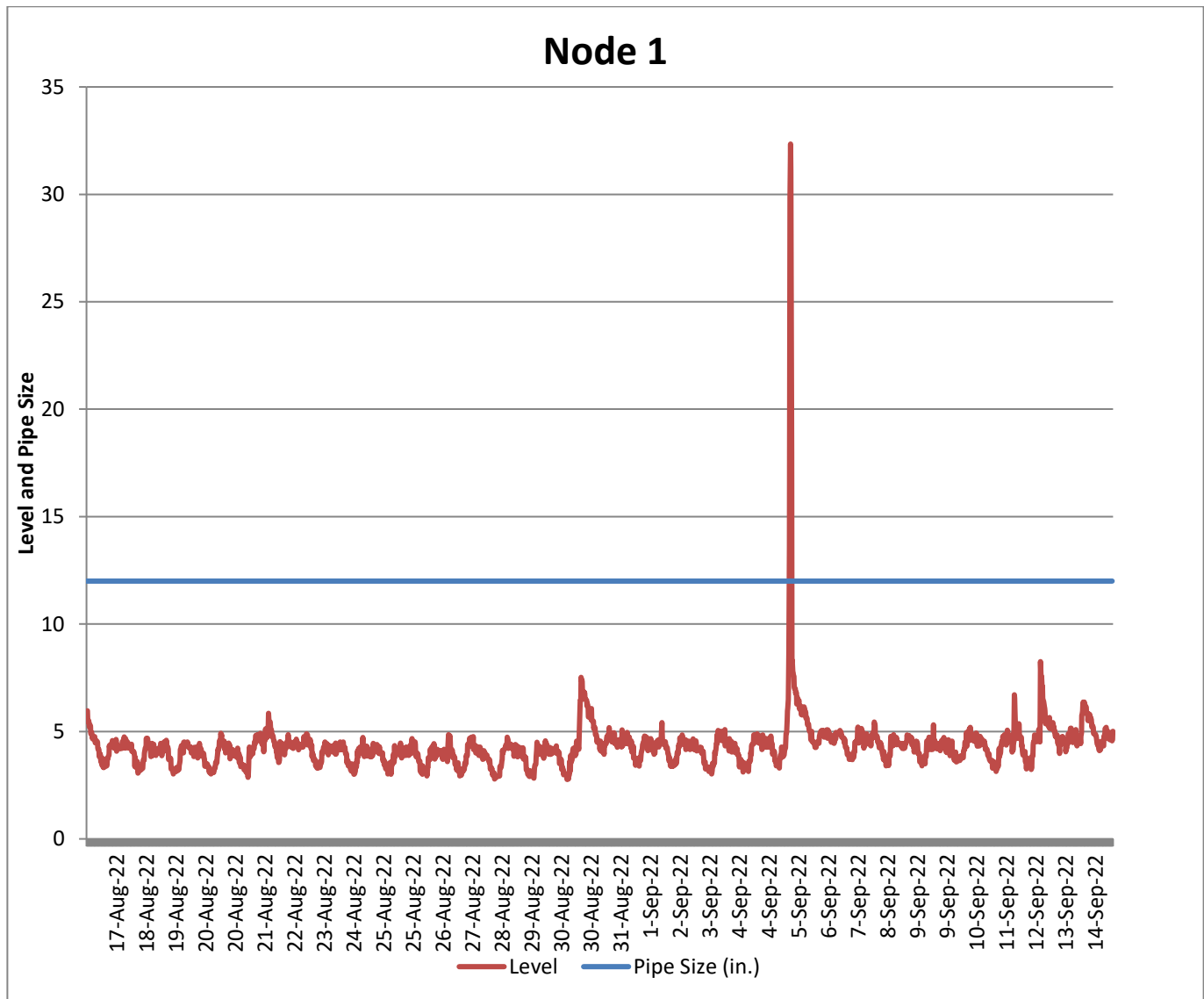
Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time the flow depth exceeds pipe diameter at Node 3 of the downstream monitoring points during the wet weather events monitored.

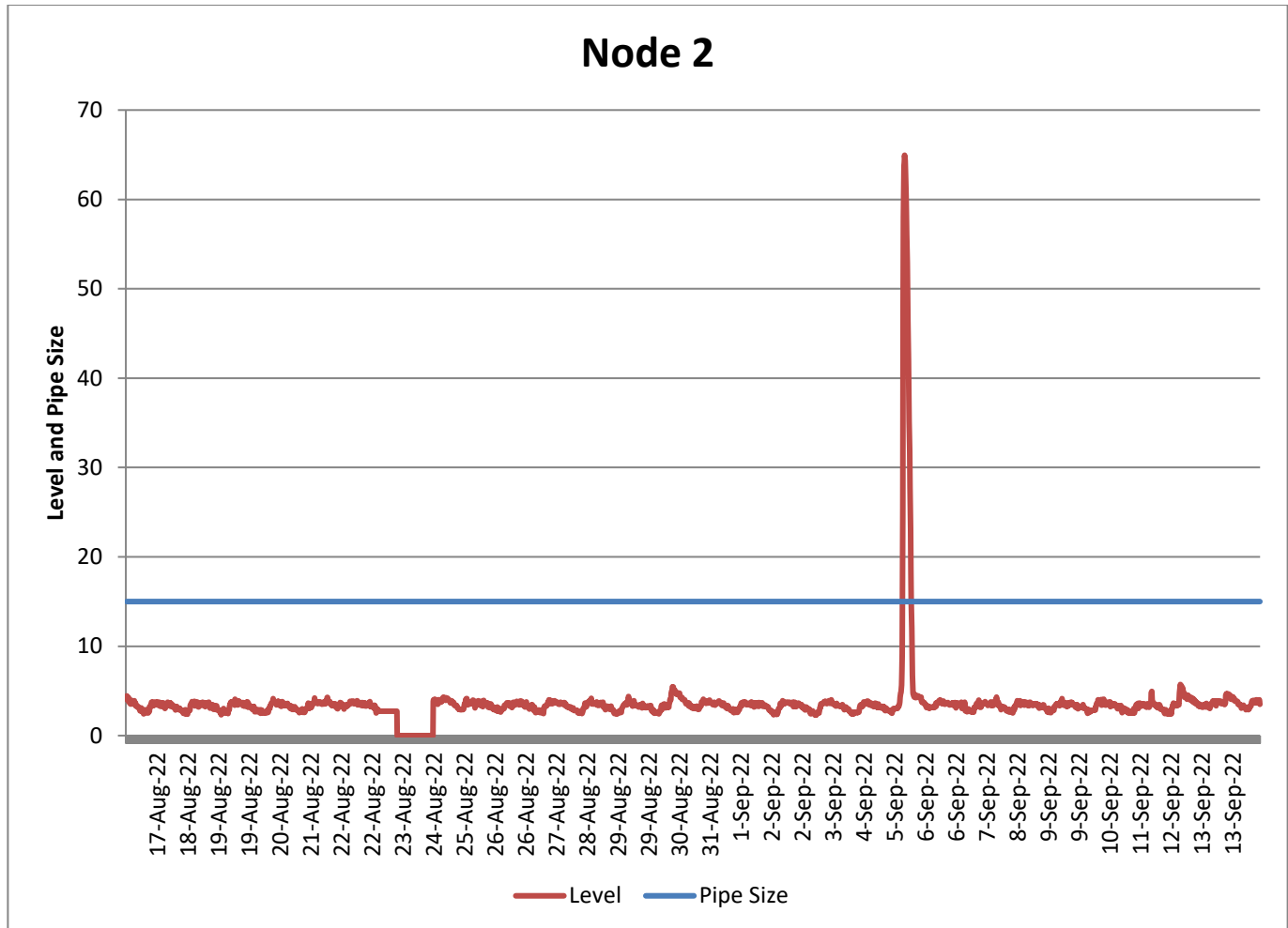
Depth of Flow Capacity Summary:

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

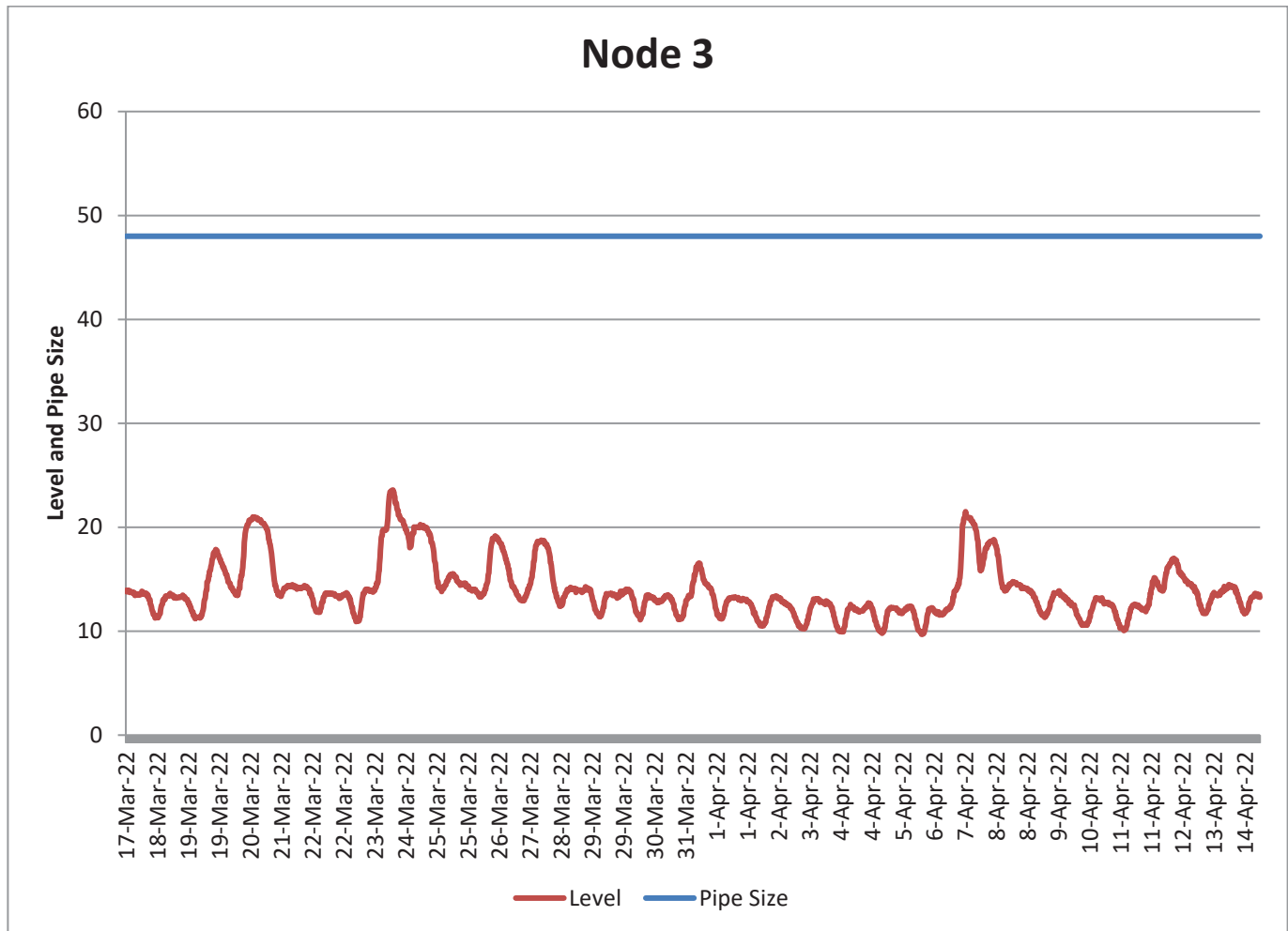
- One time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



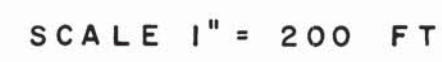
- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



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

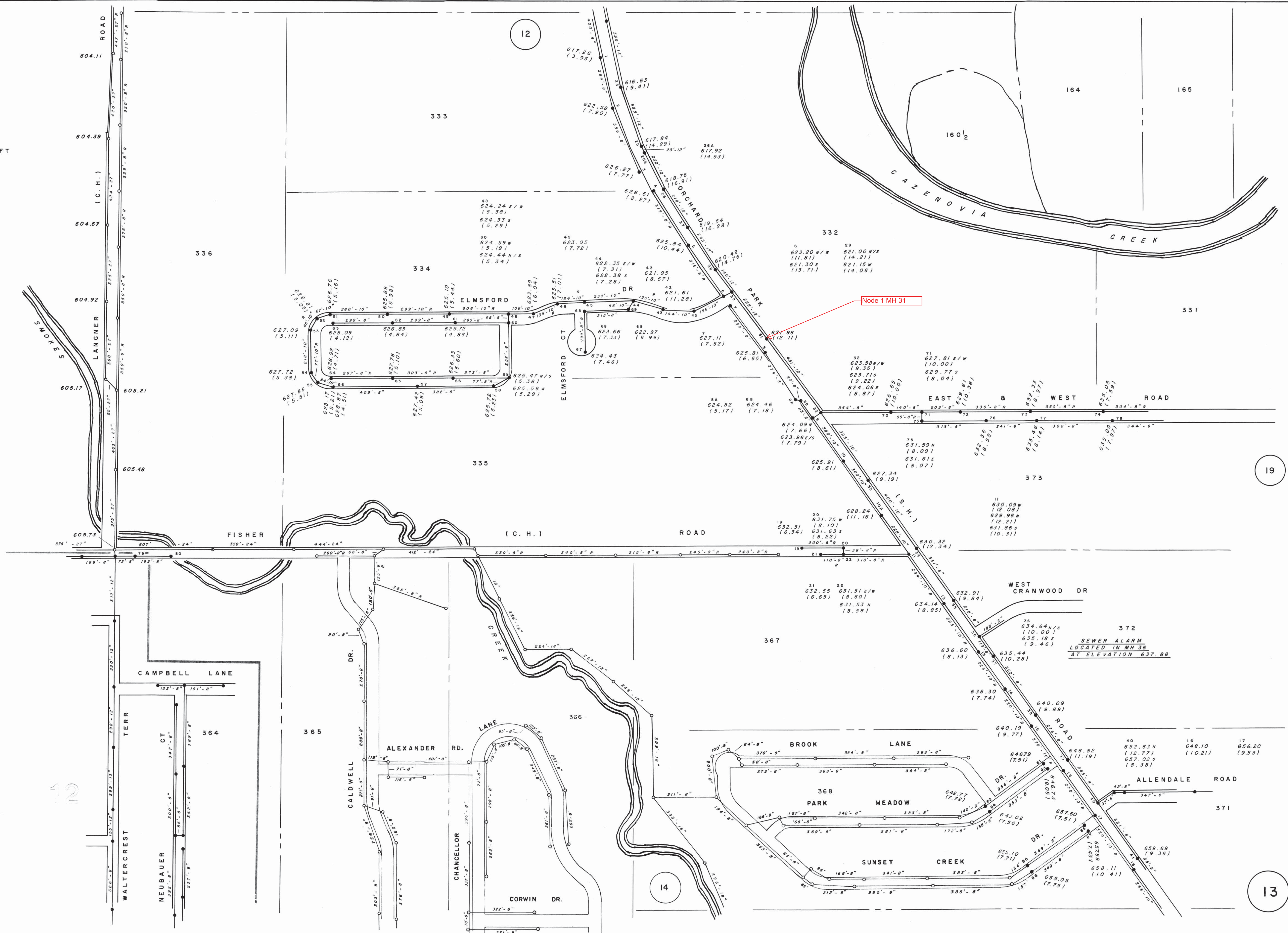


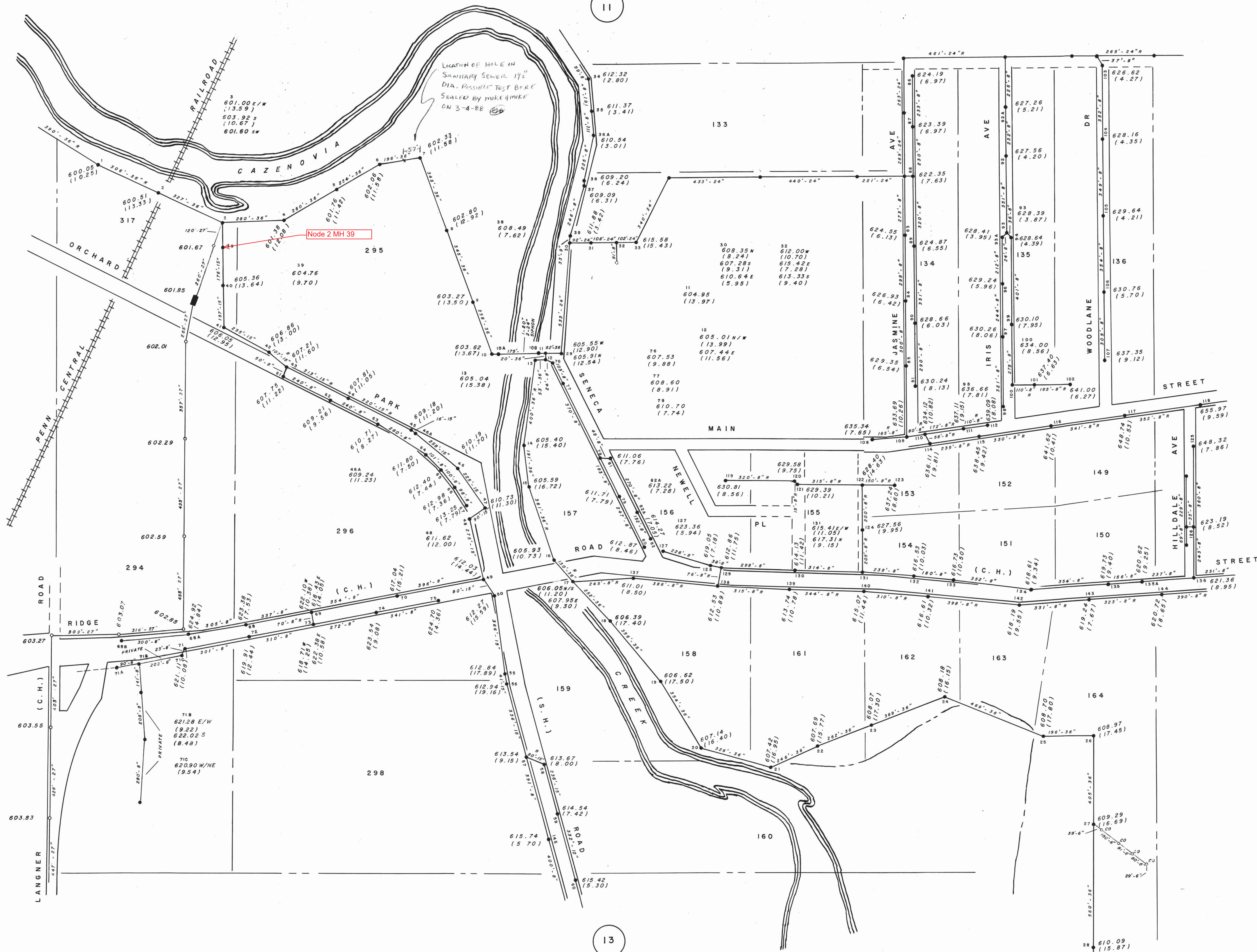
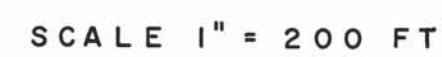
Sewer Node Maps



9)

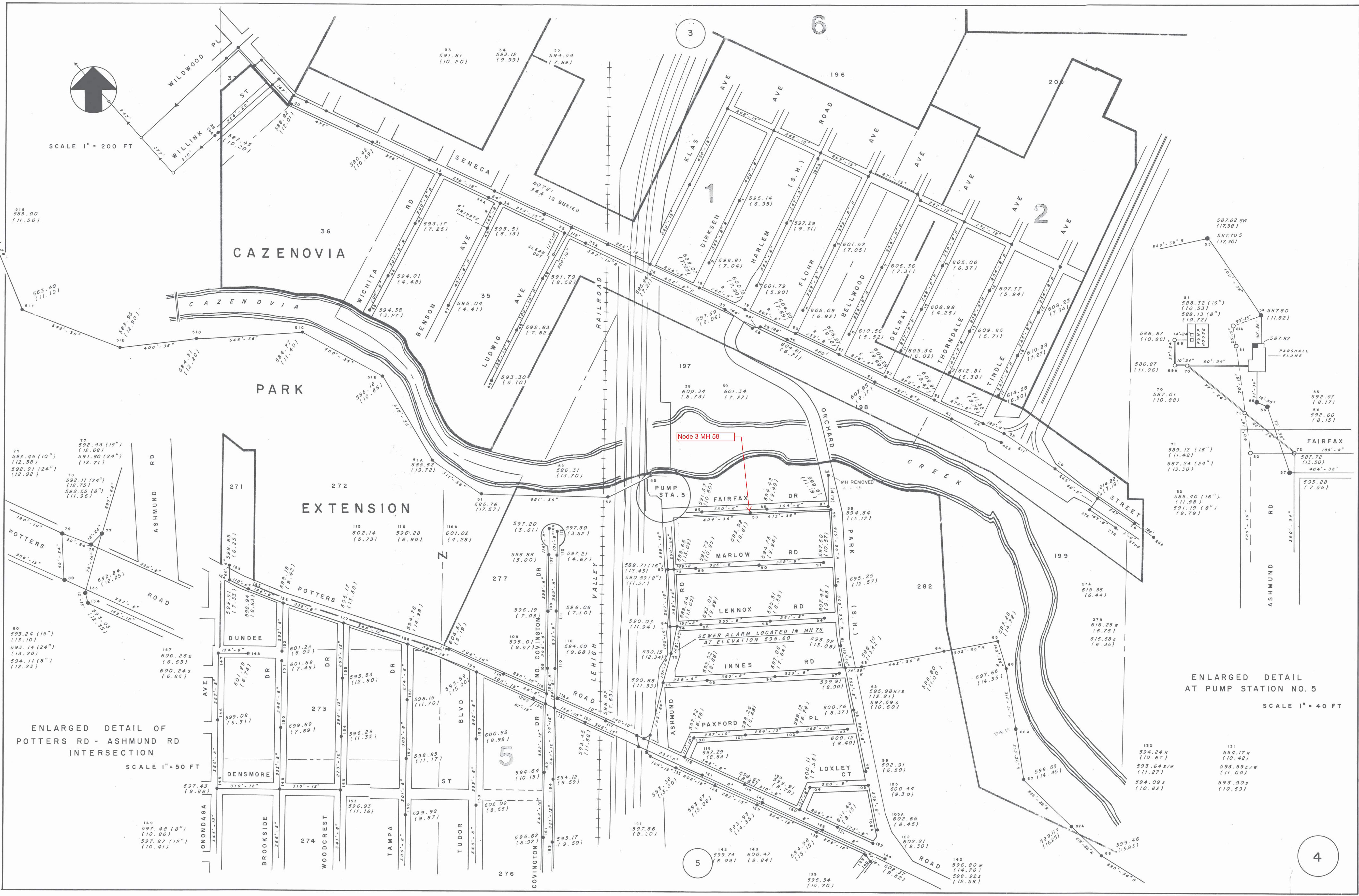
3)





(13)

1.



SCALE 1" = 200 FT

CAZENOVIA

PARK

EXTENSION

ENLARGED DETAIL OF
POTTERS RD - ASHMUND RD
INTERSECTION

SCALE 1" = 50 FT

Node 3 MH 58

PUMP STA. 5

ENLARGED DETAIL
AT PUMP STATION NO. 5

SCALE 1" = 40 FT