

Weston & Sampson, PE, LS, LA, PC 1 Winners Circle, Suite 130, Albany, NY 12205 tel: 518-463-4400

#### MEMORANDUM

**TO:** Mayor David McFadden

FROM: Joseph M. Zongol, PE, NICET III

**DATE:** January 6, 2022

**SUBJECT:** Wee Wah Lake, Tuxedo Lake, and Pond 3 Trunk Sewer Investigation

#### **INTRODUCTION**

The Village of Tuxedo Park owns and operates a Wastewater Treatment Plant (WWTP) and collection system that serves the residents within the Village. The collection system includes gravity trunk sewers that run along and within close proximity to the Village's three lakes: Tuxedo Lake, Upper Wee-Wah Lake (Pond 3), and Lower Wee-Wah Lake. Based on available information, the trunk sewers are constructed with different materials throughout the Village. These materials include cast iron, polyvinyl chloride (PVC), and vitrified clay (VCP). Over the years, upgrades to the trunk sewers surrounding the lakes have been implemented which include installation of Cured-in-Place Pipe (CIPP) lining and traditional dig and replacement of sewer pipes. The cast iron and PVC pipes are constructed with gasketed fittings for water tightness and, if installed correctly, CIPP lined pipes should be watertight as well. The VCP, which may be as much as 120 years old, typically has joints every 2 to 3 feet and were often installed as dry laid joints that are not watertight.

The Village periodically uses a consultant to analyze the water within its lakes. It has been reported that the samples recently obtained contained high levels of nutrients, in particular within Pond 3. The dry laid joints of the older VCP pipe have the potential to be a source of nutrients migrating to the lakes and or groundwater entering the sewer. In addition, the Village has excessive Infiltration and Inflow (I&I) into their sewer system and is required to reduce flow as a condition of their New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permit. As such, the Village has asked that Weston & Sampson provide services for I&I quantification and remote visual inspection of the interior of the gravity trunk sewers constructed with VCP using flow isolation and Closed-Circuit Television (CCTV) inspection techniques. This was done in an effort to assess their condition and potential for inflow and/or infiltration. This approach consisted of a phased study that included the following within the target areas:

- Desktop Groundwater Evaluation
- Manhole Inspections
- Flow Isolation
- CCTV Inspection
- Pipe Cleaning and root cutting within the pipes.
- Summary report of the final results.

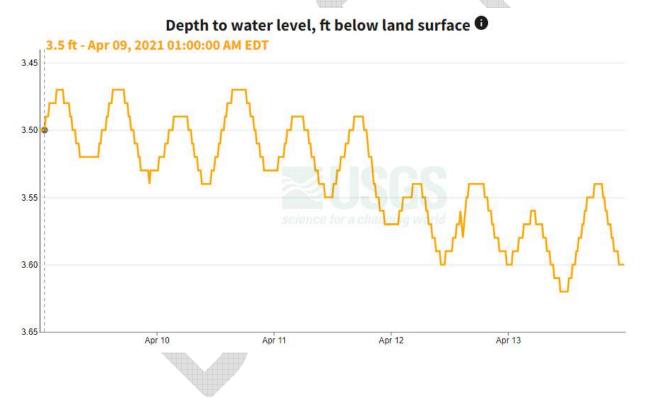
The Village of Tuxedo Park authorized Weston & Sampson on January 13, 2021 to conduct the desktop groundwater evaluation, manhole inspections, flow isolation, and summary report. It was decided that based on the results of the flow isolation, the Village may elect to conduct the CCTV inspection and pipe cleaning and root cutting at a later time.

#### **DESKTOP GROUNDWATER EVALUATION**

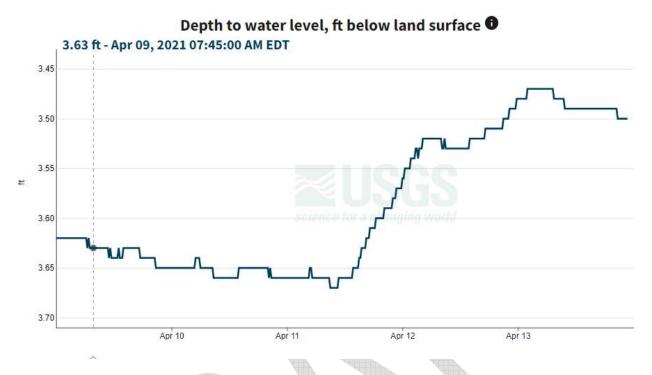
Using USGS seasonal groundwater maps, Weston & Sampson performed an evaluation of the historical seasonal groundwater conditions within the vicinity of the target sewers. This evaluation is intended to help understand, what, if any, seasonal groundwater has on the impact to infiltration into the trunk sewers, resulting in excessive flows to the WWTP. This evaluation also looked at the groundwater conditions during the evaluations to help understand water influent it may have on I/I during the testing. The results are as follows:

Based on USGS data from two monitoring wells in the area of Tuxedo Park ground water was found to be between 3.65 and 3.45 feet below the surface at the time of flow isolation.

Monitoring location 413428074085701 is associated with a WELL in ORANGE COUNTY, NEW YORK



#### Monitoring location 410207074270001 is associated with a WELL in MORRIS COUNTY, NEW JERSEY



The sanitary sewers are typically below 3.5 feet within the Village so they could likely have been under the influence of groundwater at the time of the flow isolation.

#### FLOW ISOLATION & MANHOLE INSPECTIONS

Prior to Flow Isolation, a preliminary reconnaissance was conducted to locate the manholes within the collection system target area. We conducted topside visual sanitary sewer manhole inspections on the target manholes that lie within target area during this preliminary reconnaissance. Manhole inspections were be documented using our iDataCollect technology with a custom-made manhole inspection form created specifically for this project. Information was logged on a field iPad and individual inspection reports were be created for each manhole. Our inspector also recorded the location of each manhole with the Village GPS data logger when possible if satellite connectivity could be obtained. Detailed Manhole Inspection reports are included as Appendix A of this memorandum.

Weston & Sampson utilized a sub-contractor to flow isolate the sewer lines to determine the contribution of Infiltration for each segment. This was accomplished by installing a pre-calibrated weir in the downstream manhole of each sewer segment while plugging the upstream manhole to determine the flow in the section. This process was used for 6-inch diameter and larger pipe. If a manhole was inaccessible, the nearest downstream manhole was used, allowing the entire upstream sewer segment to be measured. If the flows are deemed significant, over 4,000 gpd/in-mile, per EPA standards, we recommend that the sewer segment will be closed circuit televised (CCTV) as described in the next section. Flow isolation was be conducted between the hours of 11pm and 6am when domestic sewer use is typically minimal.

One round of Flow Isolation was performed, under the observation of Weston & Sampson staff. The ideal time for this work is in the spring when groundwater is typically at its highest. The during April of 2021, the manhole inspection and flow isolation work was conducted. Our crew, with the assistance of Village DPW staff, was able to

locate a number of manholes within the target sections, however many were not able to be found. The manholes were suspected to have been paved over, buried, or in differing locations than shown on the maps. In addition, many manholes contained metal surge plates to prevent sewer overflows. The Village DPW assisted in removing the rusted bolts and replacing them with new stainless-steel hardware for a number of these manholes so the flow isolation crew to gain access to conduct their work.

Working with the available located and un-plated manholes, flow isolation was conducted between the hours of 11pm and 6am when domestic sewer use is typically minimal.

Wee Wah Lake: Flow isolation for the Wee Wah Lake Trunk sewer which runs along Continental Road was conducted the night of April 9, 2021. The results of the flow isolation showed that the VCP within the Wee-Wah Lake Section on Continental Road had relatively low I&I (below the 4,000 GPD/In-Mi threshold, which is considered excessive). The results are summarized below.

				VIII III III	Name of the last o		
	Wee-Wah Lake Trunk Sewer						
Upstream Manhole	Downstream Manhole	Pipe Dia. (In.)	Pipe Material	Length (ft.)	Multi- Segment	Average Weir Reading (gpd)	GDP/IN-MI
East-0070	East-0060	10	VCP	253	NO	690.5	1,441
East-0060	East-0050	10	VCP	290	NO	899.5	1,638
East-0050	East-0040	10	VCP	304	NO	1,261.5	2,191
East-0040	East-0030	10	VCP	217	NO	1,261.5	3,069
East-0030	Esat-0030A	12	PVC	20	NO	86	1,892
East-0030A	East-0010	12	PVC	345	NO	6,387	8,146

The only section of pipe that was above the 4,000 gpd/in-mi threshold was the recently replaced PVC pipe within the Wee Wah Dam. We recommend the Village consider addressing this segment of pipe in future sewer rehabilitation projects. The complete flow isolation logs and location maps are included within Appendix B of this memorandum.

**Pond 3:** Flow isolation for the Pond 3 Trunk sewer which runs along West Lake Stable Road was conducted the night of April 13, 2021. We had limited access to manholes within the Pond 3 section but we able to locate the most upstream and downstream manholes. The results of the flow isolation showed that the VCP within the Pond 3 Section on Continental Road had relatively high I&I (above the 4,000 GPD/In-Mi threshold, which is considered excessive). The results are summarized below.

	Pond 3 Trunk Sewer						
Upstream Manhole	Downstream Manhole	Pipe Dia. (In.)	Pipe Material	Length (ft.)	Multi- Segment	Average Weir Reading (gpd)	GDP/IN-MI
West-0260	West-0200	8	VCP	858	YES	52,385	40,296
West-0200	West-0190	8	VCP	112	NO	2,736	16,123
West-0190	West-0180	8	VCP	206	NO	6,387	20,463

The crew was unable to fully plug the upstream most manhole and a tributary manhole which skewed the flow isolation results, however there was significant enough flow measured to warrant further investigation. The complete flow isolation logs and location maps are included within Appendix B of this memorandum.



Tuxedo Lake: Flow isolation for the Tuxedo Lake Trunk sewer which runs along East Lake Road was conducted the night of April 13, 2021. The Tuxedo Lake section had some existing surcharge plates in place during the inspection. Most had bolts loosened but lids were difficult to pry off to gain access. Upon prying up the surcharge plates on two upstream manholes, water began filling the manhole, spraying through the gap in the plate and bench. The crew immediately pressed the plates back down and bolted them to prevent surcharge of the manhole. Crew worked its way downstream finding similar issues and realizing it impossible/improbable to be able to remove remaining surge plates. The crew then went to the most downstream manhole that was found within this section. The crew successfully opened the surcharge plate and pipe was approximately 90% full of flow with almost no capacity remaining at 4:00 am. The crew attempted to take a weir reading at this manhole, but the flow was going over the top of the weir. The results are summarized below.

	Tuxedo Lake Trunk Sewer						
Upstream Manhole	Downstream Manhole	Pipe Dia. (In.)	Pipe Material	Length (ft.)	Multi- Segment	Average Weir Reading (gpd)	GDP/IN-MI
EAST-0860	EAST-0330	8	VCP	4410	YES	121,900	18,244

The crew was unable to fully plug the upstream and tributary manholes along this entire run of sewer which skewed the flow isolation results, however there was significant enough flow measured to warrant further investigation. The complete flow isolation logs and location maps are included within Appendix B of this memorandum.

While we were not able to isolate each manhole-to-manhole section for all three target areas, based on our inspectors' observations and information provided by the flow isolation subconsultant, Weston & Sampson recommended that Pond 3 and the Tuxedo Lake sections should be further investigated by use of CCTV inspection. Pond 3 was recommended for further investigation as recent occurrence of overflows have been suspected, roots have been seen within the accessible manholes and piping, and the manholes which were not able to be located are recommended to be found in the event future maintenance is necessary. Similarly, we recommended that the Tuxedo Lake section be further investigated to locate the missing manholes and try to identify the cause for the high flows seen within this section of pipe and so it can be further evaluated for blockages or other defects. Based on the flow isolation information and the relatively low I/I readings, it was our opinion that the investment of funds for further investigation at this stage of the process for the Wee-Wah Lake section is not necessary and no CCTV inspection was conducted.

#### **CCTV INVESTIGATION**

Weston & Sampson utilized a subcontractor to conduct a video survey investigation of the trunk sewers along the east side of Tuxedo Lake and west side of Pond 3. Investigation of the Tuxedo Lake sections were conducted on October 15<sup>th</sup>, 2021 and Pond 3 on November 2<sup>nd</sup> and 3<sup>rd</sup>, 2021. Target areas were identified during the prior flow isolation. The purpose of this investigation was to confirm/determine the size and type of pipe utilized in the construction of these sewers, identify sources of I/I, locate previously missing manholes, clean the pipes and remove roots and debris, as well as document any defects discovered.

**Tuxedo Lake:** The investigation along the east side of Tuxedo Lake targeted runs of pipe from MH East-0860 downstream to MH East-0330. CCTV survey of these lines concluded that pipe was 8" Cast Iron Pipe (CIP) and that it was in good structural condition, did not have any visible infiltration, no tree roots, and had minor tuberculation. The condition of this pipe was consistent with other areas of the system containing CIP. We were able to CCTV sections of the Tuxedo Lake trunk sewer. Access was limited due to a limited number of available manholes to access and the piping configuration which had bends within the lines that the camera could not pass. Based on our observations, the trunk sewer within all sections



we were able to access showed the pipe was constructed with cast iron pipe (contrary to the record mapping which showed clay tile pipe) which is typically gasketed and relatively free of I/I. While the bends we found, the tuberculation within the pipe (material buildup on the wall of the pipe), and unlocated manholes (paved or buried) are not desirable, since the purpose of this study was to identify infiltration and inflow, we concluded our investigation.

**Pond 3:** The target area of the west side of Pond 3 included pipe runs from MH West-0260 downstream to MH West-0180. CCTV survey showed a mix a Vitrified Clay Pipe (VCP) and Cast-Iron Pipe from MH West-0180 to MH West-0180 to MH West-0190 was 8" vitrified clay pipe. There were roots in this pipe that were thick and were in almost every joint on the run. A few manhole bricks and other debris were found and removed from the sewer. There was no sign of active infiltration at the time of inspection however the presence of roots within the joints typically indicate that infiltration is likely. There is a hole in the pipe 67LF downstream of MH WEST-0190 where the pipe had failed but roots have held back the soils and there was no obstruction of flow other than roots at the time of inspection. Although there wasn't any clear evidence of major contribution of I/I from these separated joints, holes, and cracks, they should still be repaired in order to prevent future potential I/I and for structural support of the pipe. Also, significant flow was observed coming from Sub-Basin 17 via a blind connection within the trunk sewer. The blind connection should be modified, and Sub-Basin 17 should be evaluated. Detailed CCTV inspection reports are included as Appendix C of this memorandum.

#### **SUMMARY AND RECOMMDENDATIONS:**

Based on the investigations conducted for this study Weston & Sampson offers the following summary and recommendations:

Wee Wah Lake: The results of the flow isolation showed that the VCP within the Wee Wah Lake Section on Continental Road had relatively low I&I (below the 4,000 GPD/In-Mi threshold, which is considered excessive). The PVC pipe that runs through the Wee Wah Dam should be evaluated during future sewer pipe remediation projects and is proposed to be remediated, if warranted. No further action is recommended for the VCP section at this time, however the sewer should be monitored and inspected on a regular basis in accordance with the EPA compliant Operation & Maintenance plan developed for the Village's sanitary sewer collection system developed in November 2021.

**Tuxedo Lake:** Based on the sections of sanitary sewer along the trunk line we were able to access, it appears this sewer is constructed with cast iron pipe which is typically gasketed and mostly free of I/I. The sewer contains blind bends and connections (junctions and bends not within manholes). This is not a recommended practice as it may lead to blockages and makes it difficult to maintain. These should be addressed over time. We also recommend that the Village DPW over time jet these lines and locate missing structures as part of regular O&M practices as this would be more cost effective than continuing that work under this contract.

**Pond 3:** CCTV survey showed a mix a Vitrified Clay Pipe (VCP) and Cast-Iron Pipe from MH West-0180 to MH West-0190 was 8" vitrified clay pipe. There were roots in this pipe that were thick and were in almost every joint on the run. We recommend that all sections of VCP be remediated through Cured-in-Place Pipe lining approaches to prevent future root growth. We also recommend that the manholes be rehabilitated with cementitious mortar and have sealed, gasketed frames and grates installed to prevent sanitary sewer overflows. Finally, the first two sections of Sub-Basin 17 should be CIPP lined, their manholes rehabilitated, and a manhole should be installed at the trunk sewer to eliminate the blind connection to allow for DPW access for maintenance purposes.



#### Recommended Next Steps:

The remaining funds from the SSES Phase 3, Sub-Basins 2 & 10 Construction contract may be able to be used to remediate the recommended sanitary sewer segments identified within this memorandum. To use these funds, Weston & Sampson will have to update the Engineering Report previously submitted to the New York State Environmental Facilities Corporation (NYSEFC) for the SSES project to gain approval to use funds for this project. We will provide an estimate for this report update effort. Out of the remaining \$156,627.00 within the SSES Construction Contract with Arold Construction, using their bid prices and quotes obtained from Arold for work not included within their original bid, we anticipate the proposed remediation work to cost approximately \$144,500.

	Trunk Sewer Rehabili	tation Co	st Estimate		
Item No.	Description	Units	Unit Price	Est. Quantity	Total Amount
1	6-Inch CIPP Liner	LF(	\$65.00	102	\$6,630.00
2	8-Inch CIPP Liner	LF	\$50.00	922	\$46,100.00
3	Cementitious Manhole Lining	EA	\$2,500.00	12	\$30,000.00
4	Precast Manholes, Frames and Covers	EA	\$12,500.00	1	\$12,500.00
5	Additional Crushed Stone	CY	\$100.00	0	-
6	8" PVC Sewer Pipe	LF	\$133.00	0	-
7	Cut, Grout, & Cap Existing Sewer Main	CY	\$1,500.00	0	-
8	Grout Lateral Connection	EA	\$2,725.00	1	\$2,725.00
9	Demolition of Existing Sanitary Sewer Manholes	EA	\$3,000.00	0	-
10	Demolition of Existing Sanitary Sewer Pipe	LF	\$50.00	0	-
11	Mobilization	LS	\$21,502.00	6,114	\$6,884.00
12	Replace Manhole Frame & Grate	EA	\$3,000.00	0	-
13	Change Order No. 3 - Additional Labor	LS	\$7,888.00	0	-
14	Change Order No. 4 – Bypass Pumping	LS	\$3,500	1	\$3,500.00
15	Change Order No. 4 - 12" CIPP	LF	\$105.00	345	\$36,225.00
					\$144,564.00

Appendix D includes maps of the proposed remediation areas.



#### APPENDIX A

#### Manhole Inspection Reports



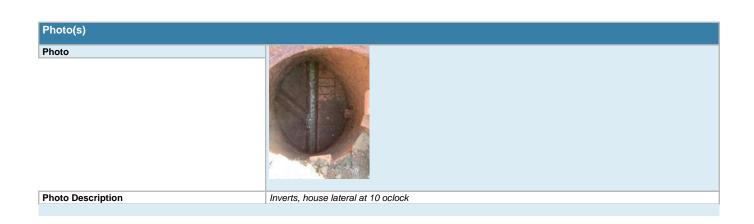
Record: 25	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	04-0010MMH
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Yard up from road approx. 75'
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Needs Repair
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Needs Repair
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to	Latitude: 41.200460,
obtain)	Longitude:-74.201818,
,	Altitude:178.572979,
	Speed:0.025725,
	Horizontal Accuracy:3.736518,
	Vertical Accuracy:7.478966,
	Time:03/23/2021 10:54:07 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	3' 6"
Pipe Size Pipe Material	6"
Pipe Material	VCP

Invert Details	
Clock Position	6:00
Rim To Invert	3' 7"
Pipe Size Pipe Material	6"
Pipe Material	VCP
'	

Invert Details	
Clock Position	10:00
Rim To Invert	3' 4"
Pipe Size	Other
Other Pipe Size	Lateral 4"
Pipe Material	VCP

Photo	
Photo Description	Cover and frame



Record: 49	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	17-0020MMH
Location	W Lake Stable Road
Street or Easement	Other
Other Manhole Location	Off road next to wall
Surface Type	Other
Other Surface Type	Dirt mound
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Other
Other Cover Type	Standard small
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	Above Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Used before for meterimg
Location Coordinates (click white space below to obtain)	Latitude:41.211793, Longitude:-74.201117, Altitude:164.237681, Speed:0.022814, Horizontal Accuracy:5.229168, Vertical Accuracy:12.675818,
	Vertical Accuracy:12.6/3818, Time:03/23/2021 14:03:46 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	5'5"
Pipe Size Pipe Material	4"
Pipe Material	VCP
i ipe materiai	Voi

Invert Details	
Clock Position	6:00
Rim To Invert	5'6"
Pipe Size Pipe Material	6"
Pipe Material	VCP
	·

Photo(s)		
Photo		
Photo Description	Cover and frame	



Record: 19	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0010
Location	Wee Wah Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	YES
Steps Condition	Satisfactory
Chimney Material	Precast
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Precast
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Precast
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Concrete
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	Minimal
Additional Comments	Flow is high in bench, seems to flow over entire base
Location Coordinates (click white space below to obtain)	Latitude:41.219662, Longitude:-74.191674, Altitude:153.580240, Speed:0.004530, Horizontal Accuracy:3.582748, Vertical Accuracy:9.254294, Time:03/23/2021 09:49:02 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	7' 5"
Pipe Size	12"
Pipe Material	PVC
Pipe Size Pipe Material	

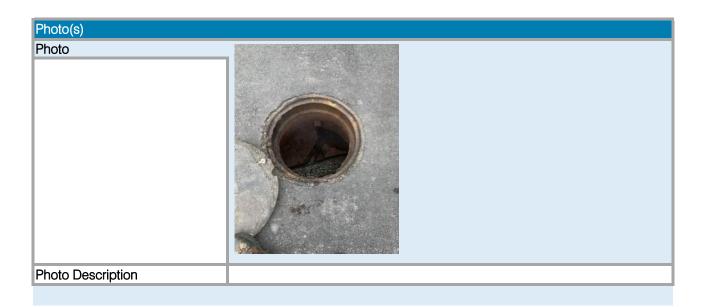
Invert Details	
Clock Position	6:00
Rim To Invert	7' 6"
Pipe Size Pipe Material	12"
Pipe Material	PVC
•	

Photo(s)	
Photo	
Photo Description	Cover and frame



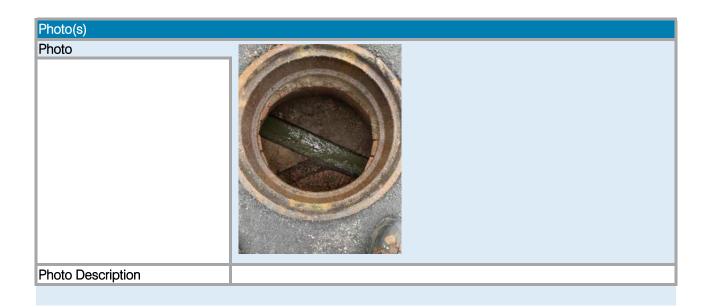
Record: 62	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	EAST-0030
Location	Continental Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	4
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	Minimal
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	Minimal
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to obtain)	

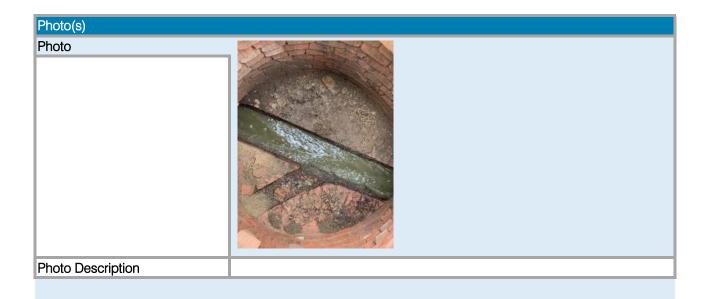
Record: 68	
	Will of Total Data No. 1
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	EAST-0040
Location	Continental Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	3
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Needs Repair
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to	
obtain)	



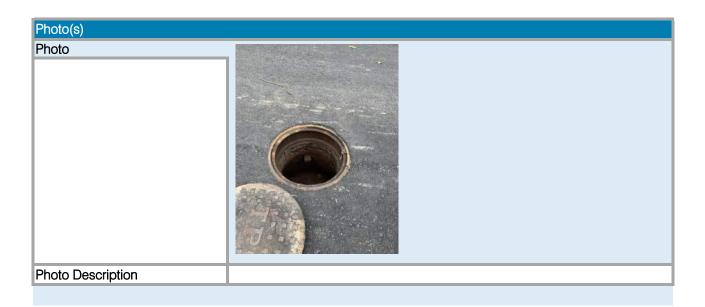


Record: 71	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	EAST-0050
Location	Continental Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	3
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Lateral invert blocked with soil. No flow, appears abandoned
Location Coordinates (click white space below to obtain)	





Record: 74	
Necolu. 74	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	EAST-0070
Location	Continental Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Needs Repair
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Needs Repair
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Needs Repair
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Needs Repair
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Brick showing signs of aging.
Location Coordinates (click white space below to	
obtain)	





Record: 16	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0100
Location	Wee Wah Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	4
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to obtain)	Latitude:41.219695, Longitude:-74.191704, Altitude:152.146018, Speed:0.006775, Horizontal Accuracy:4.018524,
	Vertical Accuracy:10.102773, Time:03/23/2021 09:37:34 EDT

Invert Details	
Clock Position	2:00
Rim To Invert	7' 6"
Pipe Size Pipe Material	4"
Pipe Material	VCP

Invert Details	
Clock Position	12:00
Rim To Invert	7' 10"
Pipe Size Pipe Material	8"
Pipe Material	VCP
-	

Invert Details	
Clock Position	9:00
Rim To Invert	8'
Pipe Size	10"
Pipe Size Pipe Material	VCP
poa.oa.	1.0

Invert Details		
Clock Position	6:00	
Rim To Invert	8'2"	
Pipe Size Pipe Material	10"	
Pipe Material	VCP	
•	•	





Record: 22	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0430
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Inside fence on property 20' from lake
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	Minimal
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Surcharge plate, can't see bench or inverts
Location Coordinates (click white space below to	
obtain)	Langitude:-74.202174,  Altitude:176.038877,  Speed:0.003404,
	Horizontal Accuracy:4.320988,  Vertical Accuracy:9.439337,  Time:03/23/2021 10:44:29 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	6'
Pipe Size	8"
Pipe Size Pipe Material	VCP

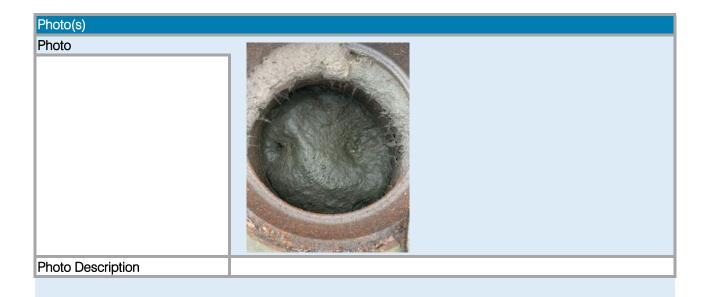
6:00
6'
8"
VCP



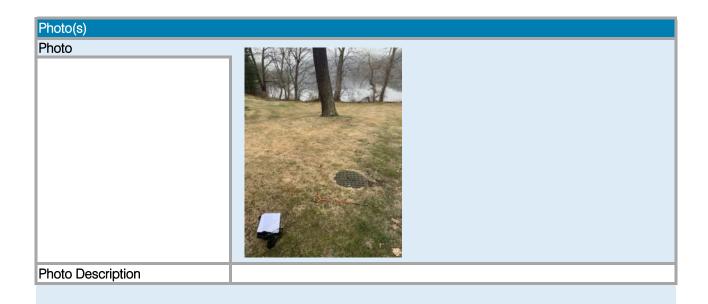


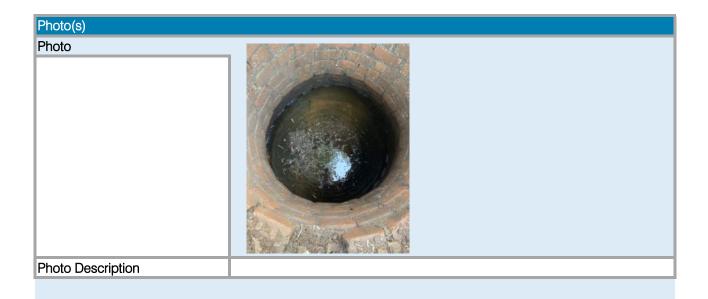
Record: 7	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0440
Location	E Lake Road
Street or Easement	Easement
Surface Type	Other
Other Surface Type	Slate Path
MH Inspection Status	Inspected
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
MH cleaning Required	YES
Additional Comments	Manhole filled almost to top with silty mud/muck. Could not see enough for thorough inspection.
Location Coordinates (click white space below to obtain)	





Record: 10	
	Will of Total Dalah Will
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0450
Location	E Lake Road
Street or Easement	Easement
Surface Type	Grass
MH Inspection Status	Inspected
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	Minimal
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	Minimal
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	Minimal
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	Minimal
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Filled with 2' of water.
Location Coordinates (click white space below to	
obtain)	





Client Project Title	Village of Tuxedo Park, New York
•	VIII (T. I.D. IT. I.O. I. III
	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0460
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Dequestashia property 15' off lake
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
	At Grade
	Minimal
MH cleaning Required	YES
<u> </u>	NO
Roots	YES
	NO NO
	Needs Repair
<u> </u>	Brick
Chimney Condition	Satisfactory
	None
· · · · · · · · · · · · · · · · · · ·	Brick
Cone Condition	Satisfactory
	None
	Brick
Wall Condition	Satisfactory
	None
	Brick
Bench and Invert Condition	Satisfactory
	None
	None
Additional Comments	Surcharge plate, can't see bench and invert
	Latitude:41.198479.
obtain)	Landue:-11.196479, Longitude:-74.202272,
	Altitude:173.346052,
	Speed:0.055341.
	Horizontal Accuracy:3.873283,
	Vertical Accuracy:8.198738,
	Time:03/23/2021 11:30:38 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	3' 7"
Pipe Size Pipe Material	10"
Pipe Material	VCP
-	

Invert Details		
Clock Position	6:00	
Rim To Invert	3'8"	
Pipe Size Pipe Material	10"	
Pipe Material	VCP	

Photo(s)	
Photo	
Photo Description	Cover and frame



Record: 31	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0470
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Burke backyard in brush 30' from lake
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	Minimal
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Surcharge plate can't see inverts
Location Coordinates (click white space below to	Latitude:41.197912,
obtain)	Longitude:-74.202650,
,	Altitude:175.604614,
	Speed:0.012688,
	Horizontal Accuracy:4.875705,
	Vertical Accuracy:11.101611,
	Time:03/23/2021 11:46:13 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	3' 8"
Pipe Size Pipe Material	10"
Pipe Material	VCP
	·

Invert Details	
Clock Position	12:00
Rim To Invert	3' 9"
Pipe Size	10"
Pipe Size Pipe Material	VCP
Pipe Material	VCP

Photo(s)		
Photo		
Photo Description	Cover and frame	



Record: 34	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0480
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Burke backyard open yard 25' from lake
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK .
MH Cover Elevation At Grade	At Grade
Cover Inflow	Minimal
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Needs Repair
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Needs Repair
Cone Infiltration	None None
Wall Material	None Brick
	·
Wall Condition	Needs Repair
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Surcharge plate, can't see inverts
Location Coordinates (click white space below to obtain)	Latitude:41.197450, Longitude:-74.203203, Altitude:173.144448, Speed:0.022388.
	Horizontal Accuracy:3.864647,  Vertical Accuracy:9.966428,  Time:03/23/2021 11:52:29 EDT

Invert Details	
Clock Position	12:00
Rim To Invert	4' 6"
Pipe Size Pipe Material	10"
Pipe Material	VCP

Invert Details	
Clock Position	6:00
Rim To Invert	4' 7"
Pipe Size Pipe Material	10"
Pipe Material	VCP
	·

Photo	
- A	
Photo Description Cove	



Record: 37	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-500
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Between burke and brick house, in woods
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	3
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Surcharge plate, can't see inverts
Location Coordinates (click white space below to obtain)	Latitude:41.196621, Longitude:-74.203644,
,	Altitude:174.405518,
	Speed:0.006142.
	Horizontal Accuracy:4.738896,
	Vertical Accuracy:11.637528,
	Time:03/23/2021 12:08:51 EDT

Invert Details	
Clock Position	11:00
Rim To Invert	5'
Pipe Size Pipe Material	6"
Pipe Material	VCP
	·

Invert Details		
Clock Position	2:00	
Rim To Invert	5'	
Pipe Size Pipe Material	10"	
Pipe Material	VCP	
	·	

Invert Details		
Clock Position	6:00	
Rim To Invert	5' 1"	
Pipe Size Pipe Material	10"	
Pipe Material	VCP	
•	•	





D 1.55	
Record: 55	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-0560
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Next to driveway bridge
Surface Type	Grass
MH Inspection Status	Could not open
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	Above Grade
Cover Inflow	None
Location Coordinates (click white space below to	Latitude:41.195103,
obtain)	Longitude:-74.204000,
	Altitude:172.762012,
	Speed:0.035716,
	Horizontal Accuracy: 4.789531,
	Vertical Accuracy:11.096655,
	Time:03/23/2021 15:16:53 EDT

Photo(s)	
Photo	
Photo Description	Cover

Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	East-1160
Location	E Lake Road
Street or Easement	Other
Other Manhole Location	Cindy booth house
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	4
Signs of Surcharge	NO
Surge Plate	NO NO
Cover Type	Standard
Cover Naterial	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO NO
Roots	YES
Steps	NO
Steps Condition	Needs Repair
	Brick
Chimney Material	
Chimney Condition	Needs Repair None
Chimney Infiltration Cone Material	Brick
Cone Condition	
Cone Condition  Cone Infiltration	Needs Repair
	None
Wall Material	Brick
Wall Infiltration	Needs Repair
Wall Infiltration	None
Bench and Invert Material Bench and Invert Condition	Brick Setiologies
	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to obtain)	Latitude:41.203997, Longitude:74.201384, Altitude:185.169987, Speed:0.009490, Horizontal Accuracy:4.900740,
	Vertical Accuracy: 4.900740,  Vertical Accuracy: 12.775071,  Time: 03/23/2021 15:02:21 EDT

Invert Details	
Clock Position	10:00
Rim To Invert	4'3"
Pipe Size Pipe Material	4"
Pipe Material	PVC

Invert Details	
Clock Position	12:00
Rim To Invert	4'3"
Pipe Size Pipe Material	4"
Pipe Material	VCP

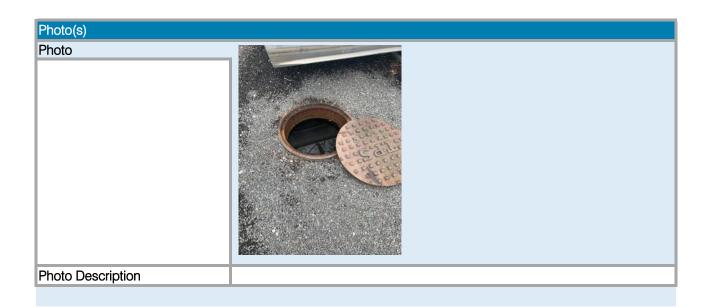
Invert Details	
Clock Position	2:00
Rim To Invert	4'3"
Pipe Size	8"
Pipe Size Pipe Material	VCP
Pipe Material	VCP

Invert Details	
Clock Position	6:00
Rim To Invert	4'6"
Pipe Size Pipe Material	8"
Pipe Material	VCP

Photo(s)	
Photo	
Photo Description	Cover and frame

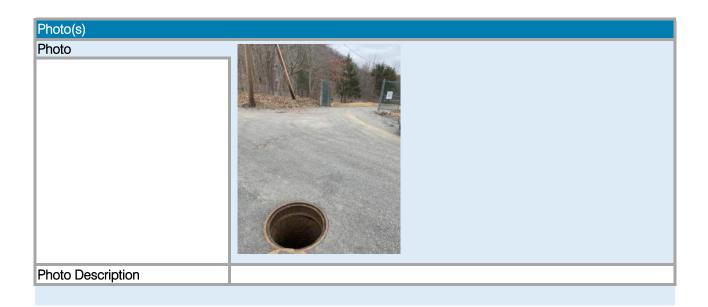


Record: 77	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	EAST-0340
Location	E Lake Road
Street or Easement	Easement
Surface Type	Other
Other Surface Type	Loose small stone, parking lot
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	Below Grade
Cover Inflow	None
MH cleaning Required	YES
Chimney Material	Brick
Cone Material	Brick
Cone Condition	Needs Repair
Cone Infiltration	Heavy
Wall Material	Brick
Bench and Invert Material	Brick
Additional Comments	Unable to complete survey of manhole due to being full of water. Surge plate working and stopping inflow
	from reaching sewer main. There is a hole in the cone just below the frame on the east side allowing stone and water freely into the structure.
Location Coordinates (click white space below to obtain)	





Record: 65	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	VIL-0100
Location	Wee Wah Road
Street or Easement	Street
Surface Type	Asphalt
MH Inspection Status	Inspected
Number of Inverts	4
Signs of Surcharge	NO
Surge Plate	NO
Cover Type	Standard
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to	
obtain)	





Record: 40	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	West-0180
Location	W Lake Stable Road
Street or Easement	Other
Other Manhole Location	Brick house corner near chimney
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	NO
Cover Material	Cast Iron
Cover Condition	Other
Other Cover Condition	Small
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	Below Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Steps Condition	Needs Repair
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	8' invert
Location Coordinates (click white space below to obtain)	Latitude:41.212488, Longitude:-74.199158, Altitude:160.767673.
	Speed: 0.009911, Horizontal Accuracy: 4.568089, Vertical Accuracy: 10.028342, Time: 03/23/2021 08:27:23 EDT

Invert Details	
Clock Position	10:00
Rim To Invert	6' 10"
Pipe Size Pipe Material	8"
Pipe Material	VCP
•	·

Invert Details	
Clock Position	6:00
Rim To Invert	7'
Pipe Size Pipe Material	8"
Pipe Material	VCP

Photo Description  Cover and frame	Photo(s)	
Photo Description Cover and frame	Photo	
	Photo Description	Cover and frame



Becaute 42	
Record: 13	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	West-0190
Location	W Lake Stable Road
Street or Easement	Easement
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	YES
Surge Plate	NO
Cover Type	Other
Other Cover Type	Small 17"
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	1
MH Cover Elevation At Grade	Above Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	Minimal
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	Minimal
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	Minimal
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	Minimal
Pipe Connection Infiltration	None
Location Coordinates (click white space below to	
obtain)	

6:00
4.35
8"
VCP

Invert Details		
Clock Position	11:00	
Rim To Invert	4.3	
Pipe Size Pipe Material	8"	
Pipe Material	VCP	





	VIII (T. I.D.I.N. V.I.
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	West-0200
Location	W Lake Stable Road
Street or Easement	Easement
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	YES
Surge Plate	NO
Cover Type	Standard
Other Cover Type	Small 17"
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	Above Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	YES
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	Minimal
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	Minimal
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	Minimal
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Inflow likely dependent on lake water level.
Location Coordinates (click white space below obtain)	

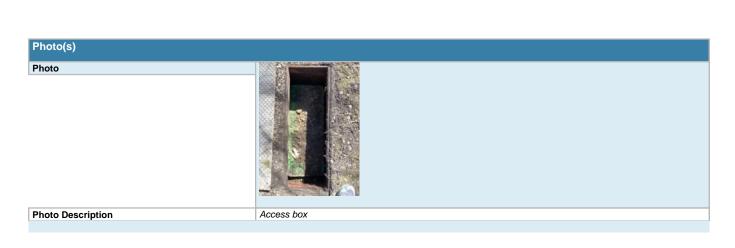
Record: 59	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-17
Inspector	Anton Patton
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	West-0220
Location	W Lake Stable Road
Street or Easement	Easement
Surface Type	Grass
MH Inspection Status	Inspected
Number of Inverts	2
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Standard
Other Cover Type	Small 17"
Cover Material	Cast Iron
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
Riser Rings	Other
Other Number of Riser Rings	0
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	YES
MH Grease Visible	NO
Roots	NO
Steps	NO
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	None
Bench and Invert Material	Brick
Bench and Invert Condition	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Location Coordinates (click white space below to obtain)	





Record: 46	
Client	Village of Tuxedo Park, New York
Project Title	Village of Tuxedo Park Trunk Sewer Inspection
Inspection Date	2021-03-23
Inspector	James Salaway
Sewer	Village of Tuxedo Park Trunk Sewer
Manhole	West-0270
Location	W Lake Stable Road
Street or Easement	Other
Other Manhole Location	Behind brown white house, trampolie, access box
Surface Type	Grass
MH Inspection Status	Inspected
Signs of Surcharge	NO
Surge Plate	YES
Cover Type	Other
Other Cover Type	Access box to line
Cover Material	Other
Other Cover Material	Iron rectangle
Cover Condition	OK
Frame Material	Cast Iron
Frame Condition	OK
MH Cover Elevation At Grade	At Grade
Cover Inflow	None
MH cleaning Required	NO
MH Grease Visible	NO
Roots	NO NO
Steps	NO
Steps Condition	Satisfactory
Chimney Material	Brick
Chimney Condition	Satisfactory
Chimney Infiltration	None
Cone Material	Brick
Cone Condition	Satisfactory
Cone Infiltration	None
Wall Material	Brick
Wall Condition	Satisfactory
Wall Infiltration	·
Bench and Invert Material	None Brick
Bench and Invert Condition	· ·
	Satisfactory
Bench and Invert Infiltration	None
Pipe Connection Infiltration	None
Additional Comments	Access box, not an actual manhole Latitude:41.209778,
Location Coordinates (click white space below to obtain)	Lautide:41.209776,  Longitude:74.201945,  Altitude:156.794871,  Speed:0.006158,  Horizontal Accuracy:4.233974,
	Vertical Accuracy: 12.353905, Time:03/23/2021 13:37:12 EDT

# Photo Photo Cover and frame

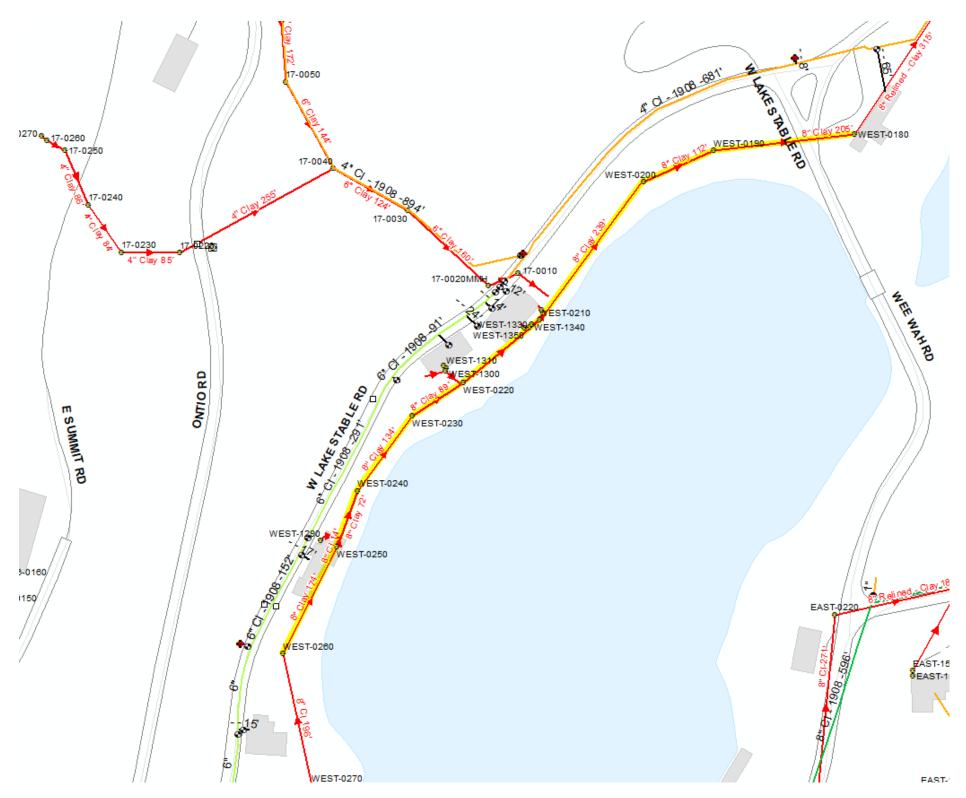


# APPENDIX B

Flow Isolation Results



# **Pond 3 Sewer Target Areas**

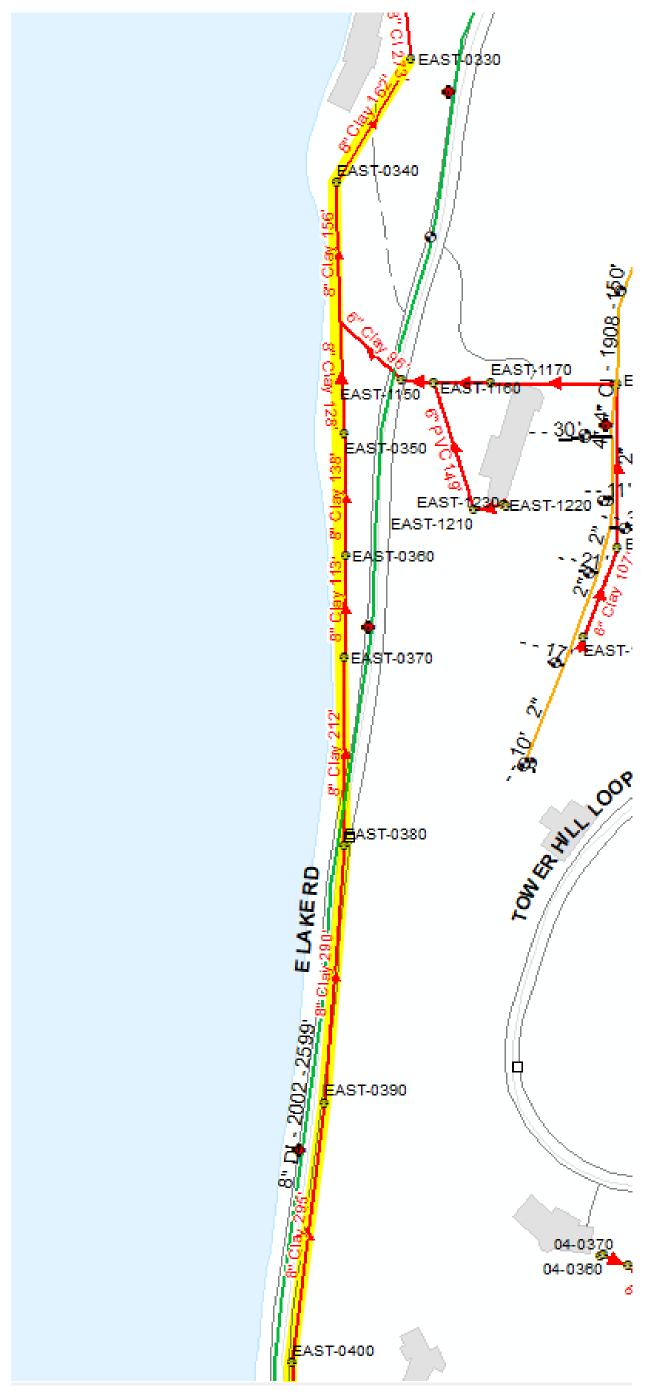


<sup>\*</sup>Investigated Sections Highlighted in Yellow

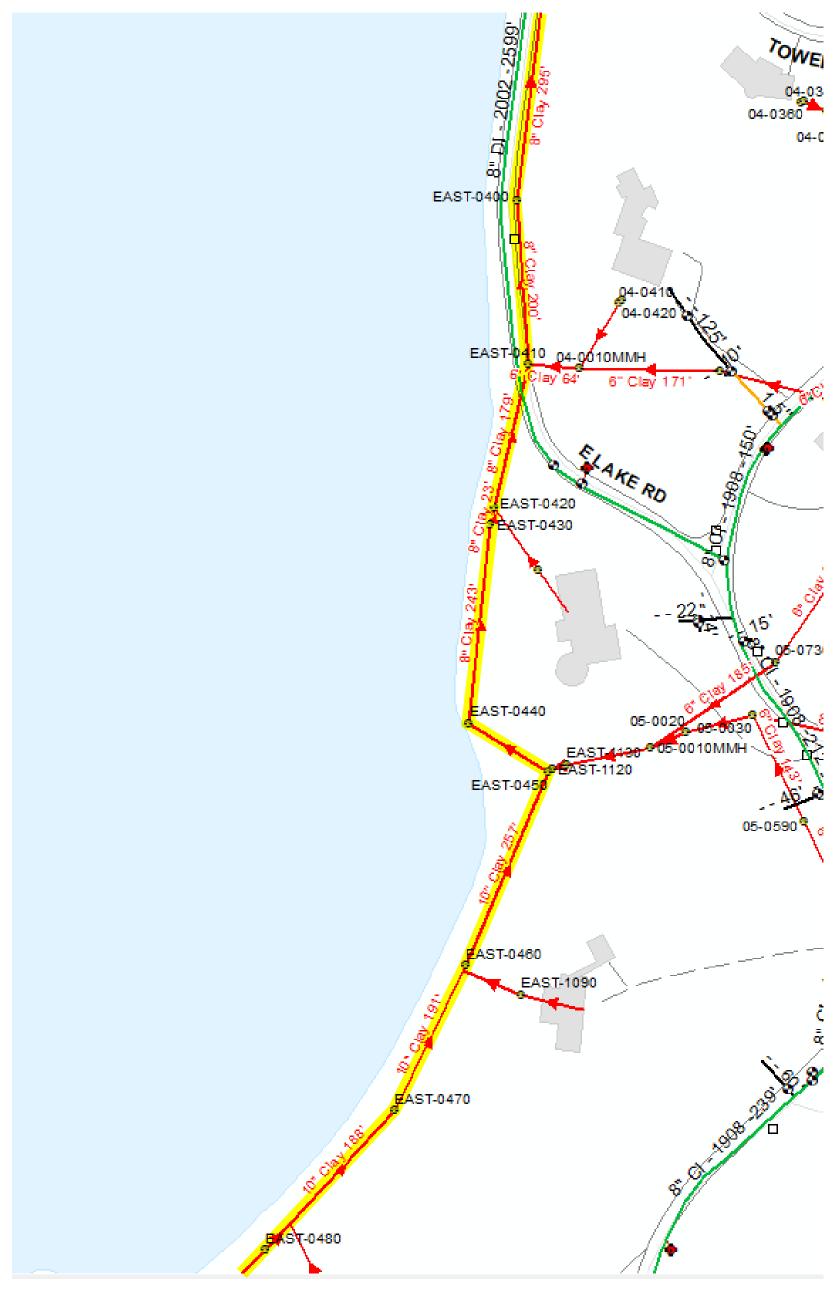
# **Wee-Wah Lake Target Areas** WEST-0060 LAGE-0090 WEST-0040 ₩EST-0030 WEST-0010 WEST-0070 8" Reli ned - Clay 242" 01-0010MMH ST-0080 ST-0040 WEST-1440 **É**AST-0070

<sup>\*</sup>Investigated Sections Highlighted in Yellow

# Tuxedo Lake Target Areas (1 of 3)



# Tuxedo Lake Target Areas (2 of 3)



<sup>\*</sup>Investigated Sections Highlighted in Yellow

# Tuxedo Lake Target Areas (3 of 3)



<sup>\*</sup>Investigated Sections Highlighted in Yellow

### **New England Pipe Cleaning Company Division Heitkamp, Inc.** Flow Isolation Summary & GPDIM **Engineer** Weston & Sampson Date: 4/9/2021 Village TUXEDO PARK, NY Reason: Flow Isolation Inspector Anton Patton, NICET II NEPCCO REP Joe Assard Wee Wah Lake Trunk Sewer Weir Pipe Weir Lenath Inspection Pipe Multi-Average Sub-Area Location (Street) МН МН Dia. Reading Reading **GPDIM** Date **Material** Reading (l.f.) Section (inch) Hiah Low Wee-Wah CONTINENTAL RD 4/9/2021 East-0070 East-0060 VCP 253 NO 735 690.5 1441 646 CONTINENTAL RD East-0060 East-0050 VCP 290 NO 1064 735 899.5 1638 Wee-Wah 4/9/2021 10 Wee-Wah CONTINENTAL RD 4/9/2021 East-0050 East-0040 10 VCP 304 NO 1459 1064 1261.5 2191 Wee-Wah CONTINENTAL RD 4/9/2021 East-0040 East-0030 10 VCP 217 NO 1459 1064 1261.5 3069 CONTINENTAL RD 4/9/2021 East-0030 Esat-0030A 12 PVC NO 115 1892 Wee-Wah 20 57 86 Wee-Wah CONTINENTAL RD 4/9/2021 East-0030A East-0010 12 PVC 345 NO 7301 5473 6387 8146 **Tuxedo Lake Trunk Sewer** Weir Weir **Pipe** Multi-Inspection Pipe Length Average Sub-Area Location (Street) МН МН Dia. Reading Reading **GPDIM** Date (l.f.) Section Reading **Material** (inch) High Low TUXEDO LAKE EAST LAKE ROAD 4/13/2021 EAST-0860 EAST-0330 VCP 4410 YES 124190 119610 121900 18244 **Pond 3 Trunk Sewer** Pipe Weir Weir Inspection Pipe Length Multi-Average **GPDIM** Sub-Area Location (Street) МН MH Dia. Reading Reading **Date** Material Section Reading (l.f.) (inch) High Low POND 3 WEST LAKE STABLE RD 4/13/2021 West-0260 West-0200 VCP 858 YES 54180 50590 52385 40296 POND 3 WEST LAKE STABLE RD 8 VCP 4/13/2021 West-0200 West-0190 112 NO 3032 2440 2736 16123 POND 3 WEST LAKE STABLE RD West-0190 West-0180 VCP 206 7301 5473 6387 20463 4/13/2022 NO

# APPENDIX C

# **CCTV** Inspection Reports





# **Section Profile**

Project
TUXEDO PARK CCTV INSPECTION MASTER 11-3-21

10/12/2021

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
5	04-0010MMH	EAST-0410	10/14/2021	E. LAKE RD. ESMT	DISC 1	Vitrified Clay Pipe	73.48	73.48

### 1 x Circular 6 = 73.48 Total Length (73.48 Length Surveyed)

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
1	EAST-0530	EAST-0520	10/12/2021	EAST LAKE ROAD	DISC 1	Cast Iron	49.22	49.22
2	EAST-0540	EAST-0530	10/12/2021	EAST LAKE ROAD	DISC 1	Cast Iron	7.10	7.10
3	EAST-0510	EAST-0500	10/12/2021	EAST LAKE ROAD ESMT	DISC 1	Cast Iron	105.76	105.76
4	EAST-0500	EAST-0490	10/12/2021	EAST LAKE ROAD ESMT	DISC 1	Cast Iron	6.00	6.00
6	EAST-0440	EAST-0330	11/3/2021	E. LAKE RD. ESMT	DISC 1	Cast Iron	8.04	8.04
7	EAST-0440	EAST-0430	11/3/2021	E. LAKE RD. ESMT	DISC 1	Cast Iron	57.93	57.93
8	EAST-0430	EAST-0420	10/14/2021	E. LAKE RD. ESMT	DISC 1	Cast Iron	143.51	143.51
9	EAST-0340	EAST-0330	10/14/2021	E. LAKE RD. ESMT	DISC 1	Cast Iron	81.92	81.92
10	WEST-0250	WEST-0240	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Cast Iron	18.45	18.45
11	WEST-0240	WEST-0230	11/2/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Cast Iron	127.67	127.67
12	WEST-0230	WEST-0220	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Cast Iron	90.87	90.87
13	WEST-0220	WEST-0210	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Cast Iron	145.57	145.57
14	WEST-0210	WEST-0200	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Vitrified Clay Pipe	257.00	257.00
15	WEST-0200	WEST-0190	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Vitrified Clay Pipe	113.67	113.67
16	WEST-0190	WEST-0180	11/3/2021	W. LAKE STABLE ROAD ESMT	DISC 1	Vitrified Clay Pipe	203.30	203.30

15 x Circular 8 = 1416.01 Total Length (1416.01 Length Surveyed)

Total: 16 = 1489.49 Total Length ( 1489.48 Length Surveyed )



# Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	1
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		49.2 '	49.2 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0530
Street:	EAST LAKE ROAD	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0520
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

Additional Info:									
1:372	Distance	Code	Observation	1		(	Counter	Photo	Grade
EAST-0530	0.00	АМН	Manhole, EA	AST-0530 / EAS <sup>-</sup>	Г-0530	(	00:00:08		
	0.00	MWL	Water Level	, 15% of the vert	ical dimension	(	00:00:15		
	49.22	MSA	Survey Abar PAST	ndoned, CAN NO	OT GET PAST / C	CAN NOT GET (	00:05:14		
									OPRI



Inspection report	Ins	pection	report
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	2
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		7.1 '	7.1 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0540
Street:	EAST LAKE ROAD	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0530
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

ining Method:			Owner:	TUXEDO P	AKK				
dditional Info:									
1:54	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-053	0.00	АМН	Manhole, FA	\ST-0530 / EAS	-0530		00:00:06		
				.0. 0000,			00.00.00		
	0.00	MWL	Water Level,	, 15% of the vert	ical dimension		00:00:14		
	7.10	MSA	Survey Abar GET PAST 9	ndoned, CAN NC 90	T GET PAST 90	) / CAN NOT	00:02:57		



Inspection report	Ins	pection	report
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	3
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		105.8 '	105.8 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0510
Street:	EAST LAKE ROAD ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0500
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

Additional Info:									
1:799	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0510	0.00	АМН	Manhole, EA	\ST-0510 / EAS <sup>-</sup>	Г-0510		00:00:08		
	0.00	MWL	Water Level	, 10% of the vert	tical dimension		00:00:17		
*									
	105.76	AMH	Manhole, EA	AST-0500 / EAS <sup>-</sup>	Т-0500	(	00:17:35		
EAST-0500									



# Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	4
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		6.0 '	6.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0500
Street:	EAST LAKE ROAD ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0490
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:50	Distance	Code	Observation	Counter	Photo	Grade
EAST-0500	0.00	АМН	Manhole, EAST-0500 / EAST-0500	00:00:06		
	0.00	MWL	Water Level, 10% of the vertical dimension	00:00:16		
	6.00	MSA	Survey Abandoned, CAN NOT GET PAST 90 / CAN GET PAST 90	NOT 00:01:44		



Inspection repo	rt
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	5
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		73.5 '	73.5 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	04-0010MMH
Street:	E. LAKE RD. ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0410
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	6 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TOWN OF TUXEDO PARK		

Additional Info:

1:555	Distance	Code	Observation	1			Counter	Photo	Grade
04-0010MMH	1								
	0.00	AMH	Manhole / 04	1-0010MMH			00:00:09		
	0.00	MWL	Water Level,	0% of the vertice	cal dimension		00:00:17		
	49.27	HSV	Hole Soil Vis	sible, from 4 o'clo	ock to 8 o'clock		00:02:50		
	52.49	RFJ	Roots Fine J	oint, from 9 o'clo	ock to 3 o'clock		00:03:10		
	55.69	Н	Hole, from 1	2 o'clock to 4 o'c	clock		00:03:31		
	59.26	RMJ	Roots Mediu	Roots Medium Joint, from 9 o'clock to 3 o'clock, 5% lost					
	61.33	HSV	Hole Soil Visible, at 12 o'clock				00:04:07		
	71.95	MMC	Material Cha	inge, Cast iron /	CAST IRON PIP	E	00:05:09		
		MSA	Survev Abar	ndoned / CAN No	OT GET PAST		00:06:01		
	73.48	WIOA							



Inspection	report
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	6
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		8.0 '	8.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0440
Street:	E. LAKE RD. ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0330
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TOWN OF TUXEDO PARK		

Additional Info:									
1:61	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0330	0.00	АМН	Manhole / E.	AST-0330			00:00:00		
	0.00	MWL	Water Level	, 95% of the vert	ical dimension		00:00:15		
<b>†</b>	8.04	АМН	Manhole / E	AST-0440			00:03:46		
EAST-0440									
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0		0.0



# Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	7
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		57.9 '	57.9 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0440
Street:	E. LAKE RD. ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0430
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TOWN OF TUXEDO PARK		

ning ivietnoa:			Owner:	TOWN OF	UXEDO PARK				
dditional Info:									
1:438	Distance	Code	Observation	1		(	Counter	Photo	Grade
EAST-0430	0.00	АМН	Manhole / E	AST-0430		(	00:00:00		
	0.00	MWL	Water Level,	, 95% of the vert	ical dimension		00:00:12		
	57.93	MSA	Survey Abar	ndoned / CAN No	DT GET PAST D	IRT (	00:08:36		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI



# Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	8
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		143.5 '	143.5 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0430
Street:	E. LAKE RD. ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0420
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TOWN OF TUXEDO PARK		

1:1084	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0430	0.00	АМН	Manhole / E	AST-0430			00:00:00		
	0.00	MWL	Water Level,	85% of the vert	ical dimension		00:00:16		
	143.51	MSA	Survey Abar	doned / CAN No	OT GET PAST D	IRT	00:20:12		



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	Ward Order	NA/d	0	O antificante Nicordana	B: 0 ( B-(
Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	9
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		81.9 '	81.9 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0340
Street:	E. LAKE RD. ESMT	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0330
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	TOWN OF TUXEDO PARK		

ning Method:			Owner:	TOWN OF	TUXEDO PARK			
ditional Info:								
1:619	Distance	Code	Observation	1		Counter	Photo	Grade
EAST-0330	0.00	ANALI	Manhala / F	A CT 0240		00.00.00		
	0.00	AMH	Manhole / E	451-0340		00:00:00		
	0.00	MWL	Water Level	50% of the vert	ical dimension	00:00:27		
	81.92	MSA	Survey Abar	ndoned / CAN No	OT GET PAST	00:10:26		



inspection report	n report	Inspection
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	10
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	Upstream		18.5 '	18.5 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0250
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0240
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

Additional Info:									
1:140	Distance	Code	Observation	1			Counter	Photo	Grade
WEST-0240									
	0.00	AMH	Manhole / W	EST-0240			00:00:00		
	0.00	MWL	Water Level,	15% of the vert	ical dimension		00:00:14		
<b>†</b>									
	18.45	MSA	Survey Abar	doned / CAN No	OT GET PAST D	DIRT	00:01:54		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI



Date:	Work Order:	Work Order: Weather:		Certificate Number:	Pipe Segment Ref.:
11/2/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	11
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	Upstream		127.7 '	127.7 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0240
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0230
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:964	Distance	Code	Observation	1			Counter	Photo	Grade
WEST-0230	0.00	АМН	Manhole / W	/EST-0230			00:00:07		
	0.00	MWL	Water Level	, 15% of the vert	tical dimension		00:00:15		
	5.06	TFA	Tap Factory	Made Active, at	3 o'clock , 4 inch	dim	00:00:50		
	127.67	AMH	Manhole / W	/EST-0240			00:12:44		
WEST-0240									



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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	12
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	Upstream		90.9 '	90.9 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0230
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0220
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:686	Distance	Code	Observation	n			Counter	Photo	Grade
WEST-02									
	0.00	AMH	Manhole / W	/EST-0220			00:00:00		
	0.00	MWL	Water Level	, 20% of the ver	ical dimension		00:00:22		
	3.87	TFA	Tap Factory	Made Active, at	3 o'clock , 4 inch	n dim	00:00:41		
	18.54	MMC	Material Cha	ange, Vitrified cla	y pipe / VCP		00:02:02		
	21.80	RMJ	Roots Mediu	ım Joint, at 12 o	clock , 20% lost		00:02:15		
	29.82	RMJ	Roots Mediu	ım Joint, at 12 o	clock , 45% lost		00:02:41		
	38.07	RMJ	Roots Mediu	ım Joint, at 12 o	clock , 20% lost		00:03:48		
<b>f</b>									
	53.54	RMJ	Roots Mediu	um Joint, at 12 o	clock , 50% lost		00:04:25		
	62.14	RMJ	Roots Mediu	um Joint, at 12 o	clock , 20% lost		00:04:52		
	90.53	ММС	Material Cha	ange, Cast iron /	CIP		00:06:17		
WEST-02	90.87	AMH	Manhole / W	/EST-0230			00:06:32		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	·I	OPRI



## Inspection report

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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	13
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	Upstream		145.6 '	145.6 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0220
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0210
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:1099	Distance	Code	Observation		•	Counter	Photo	Grade
WEST-0210	0.00	АМН	Manhole / WEST-0210		(	00:00:00		
	0.00	MWL	Water Level, 20% of the vo	ertical dimension	(	00:00:17		
	5.50	TFA	Tap Factory Made Active,	at 12 o'clock , 4 inc	th dim (	00:00:33		
	7.43	MMC	Material Change, Vitrified	clay pipe / VCP	(	00:01:04		
	120.52	MMC	Material Change, Cast iror	n / CIP	(	00:03:50		
WEST-0220	120.52	MMC	Material Change, Cast iron Manhole / WEST-0220	n / CIP		00:03:50 00:04:58		



Inspection	report
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		1 11			
Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	14
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	Upstream		257.0 '	257.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0210
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0200
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:1940	) Distance	Code	Observation	n			Counter	Photo	Grade
WEST-020		A.M.I.	Marakala (M	/FOT 2000			00.00.00		
$\left( \rightarrow \right)$	0.00	AMH	Manhole / W	/EST-0200			00:00:00		
	0.00	MWL	Water Level	, 60% of the vert	ical dimension		00:00:19		
	67.07	RFJ	Roots Fine C	Joint, at 12 o'cloc	k		00:02:21		
	78.11	RMJ	Roots Mediu	um Joint, at 12 o'	clock , 15% lost		00:02:40		
	116.09	ММС	Material Cha	ange, Cast iron /	CIP		00:03:40		
	165.47	TFC	Tap Factory	Made Capped, a	at 2 o'clock , 3 in	ch dim	00:06:11		
	219.62	TFA	Tap Factory	Made Active, at	2 o'clock , 3 inch	n dim	00:10:54		
	228.50	TFC	Tap Factory	Made Capped, a	at 2 o'clock , 3 in	ch dim	00:12:00		
	230.48	MMC	Material Cha	ange, Vitrified cla	y pipe / VCP		00:12:38		
	256.04	MMC	Material Cha	ange, Cast iron /	CIP		00:13:27		
WEST-021	257.00	АМН	Manhole / W	/EST-0210			00:14:33		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI
				<u> </u>					



Inspection	report
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	15
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	Downstream		113.7 '	113.7 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0200
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0190
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:858	Distance	Code	Observation	Counter	Photo	Grade
WEST-0200						
	0.00	AMH	Manhole / WEST-0200	00:00:00		
	0.00	MWL	Water Level, 20% of the vertical dimension	00:00:24		
	47.99	RMJ	Roots Medium Joint, at 12 o'clock , 20% lost	00:02:50		
	80.97	В	Broken, at 12 o'clock	00:04:03		
	90.29	RFJ	Roots Fine Joint, at 10 o'clock	00:04:28		
WEST-0190	113.67	АМН	Manhole / WEST-0190	00:07:02		



## Inspection report

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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
11/3/2021		Dry	CHRIS OLIVER	U-0621-7040-2095	16
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	Downstream		203.3 '	203.3 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0190
Street:	W. LAKE STABLE ROAD ES	Media Label:	DISC 1	Up Rim to Invert:	0.0
Location Code:	Easement/Right of way	Flow Control:	Not Controlled	Downstream MH:	WEST-0180
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Routine Assessment	Joints failed:	0
Lining Method:		Owner:	TUXEDO PARK		

1:1535	Distance	Code	Observation	Observation				Photo	Grade
WEST-019									
	0.00	AMH	Manhole / W	/EST-0190			00:00:00		
5.43	MWL	Water Level	, 20% of the vert	ical dimension		00:00:11			
	MMC	Material Cha	ange, Polyvinyl c	hloride / PVC		00:01:04			
10.28		MMC	Material Cha	ange, Vitrified cla	y pipe / VCP		00:01:35		
	16.85	RMJ	Roots Mediu	ım Joint, at 1 o'c	lock , 20% lost		00:01:56		
	29.87	RMJ	Roots Mediu	ım Joint, at 12 o	clock , 45% lost		00:02:26		
	57.29 F	RFJ	Roots Fine Joint, at 1 o'clock			00:03:09			
<b>↓</b>    \	63.66	В	Broken, from 10 o'clock to 1 o'clock			00:03:23			
	67.15	HSV	Hole Soil Visible, from 9 o'clock to 2 o'clock				00:03:41		
	90.28	BSV	Broken Soil	Visible, at 12 o'c	lock		00:04:22		
	111.18	СС	Crack Circui	mferential, from	9 o'clock to 2 o'c	lock	00:04:52		
	167.43	RFJ	Roots Fine	Joint, at 1 o'clock	ζ.		00:06:09		
WEST-018	203.30	АМН	Manhole / WEST-0180				00:07:59		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI



## **Section Profile**

Project TUXEDO PARK - SANITARY SEWER CCTV INSPECTION

10/12/2021

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
6	04-0010MMH	EAST-0410	10/14/2021	E. LAKE RD. ESMT		Vitrified Clay Pipe	73.48	73.48

## 1 x Circular 6 = 73.48 Total Length (73.48 Length Surveyed)

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
1	WEST-0210	WEST-0200	10/12/2021	W. LAKE STABLE RD. ESMT		Vitrified Clay Pipe	66.78	66.78
2	WEST-0200	WEST-0190	10/12/2021	W. LAKE STABLE RD. ESMT		Vitrified Clay Pipe	67.25	67.25
2	WEST-0200	WEST-0190	10/12/2021	W. LAKE STABLE RD. ESMT		Vitrified Clay Pipe	67.25	19.77
3	EAST-0440	EAST-0430	10/14/2021	E. LAKE RD. ESMT		Cast Iron	57.93	57.93
4	EAST-0440	EAST-0330	10/14/2021	E. LAKE RD. ESMT		Cast Iron	8.04	8.04
5	EAST-0430	EAST-0420	10/14/2021	E. LAKE RD. ESMT		Cast Iron	143.51	143.51
7	EAST-0540	EAST-0530	10/12/2021	EAST LAKE ROAD		Cast Iron	7.10	7.10
8	EAST-0530	EAST-0520	10/12/2021	EAST LAKE ROAD		Cast Iron	49.22	49.22
9	EAST-0510	EAST-0500	10/12/2021	EAST LAKE ROAD ESMT		Cast Iron	4.00	4.00
9	EAST-0510	EAST-0500	10/12/2021	EAST LAKE ROAD ESMT		Cast Iron	4.00	105.76
10	EAST-0500	EAST-0490	10/12/2021	EAST LAKE ROAD ESMT		Cast Iron	6.00	6.00
11	EAST-0340	EAST-0330	10/14/2021	E. LAKE RD. ESMT		Cast Iron	81.92	81.92

## 12 x Circular 8 = 491.74 Total Length ( 491.74 Length Surveyed )

Total: 13 = 565.22 Total Length (565.22 Length Surveyed)



Inspection re	eport
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	1 1
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		66.8 '	66.8 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0210
Street:	W. LAKE STABLE RD. ESM	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	WEST-0200
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAR		

1:505	Distance	Code	Observation	Counter	Photo	Grade
WEST-0200	)					
	0.00	AMH	Manhole, WEST-0200 / WEST-0200	00:00:11		
	0.00	MWL	Water Level, 10% of the vertical dimension	00:00:19		
	34.41	RFJ	Roots Fine Joint, at 9 o'clock	00:01:11		
	37.79	RFJ	Roots Fine Joint, from 9 o'clock to 3 o'clock	00:01:20		
	41.63	RMJ	Roots Medium Joint, at 12 o'clock , 5% lost	00:01:28		
	66.19	RBJ	Roots Ball Joint, from 12 o'clock to 12 o'clock, 95%	lost 00:02:05		
	66.78	MSA	Survey Abandoned, CAN NOT GET PAST ROOTS NOT GET PAST ROOTS	/ CAN 00:02:15		



		-	-		
Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	2
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		67.2 '	67.2 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0200
Street:	W. LAKE STABLE RD. ESM	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	WEST-0190
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAR		

1:508	Distance	Code	Observation	1			Counter	Photo	Grade
WEST-0190	0.00	АМН	Manhole, W	EST-0190 / WES	ST-0190		00:00:11		
	0.00	MWL	Water Level	, 10% of the vert	ical dimension		00:00:26		
•	23.56	RFJ	Roots Fine J	oint, at 12 o'cloc	k		00:01:12		
, T	39.64	RBJ	Roots Ball J	oint, from 9 o'clo	ck to 3 o'clock, 5	5% lost	00:02:11		
	44.51	RFJ	Roots Fine J	loint, from 9 o'clo	ock to 3 o'clock		00:02:25		
	50.00	251					22.22.54		
	58.33	RFJ	Roots Fine J	loint, at 12 o'cloc	:K		00:02:51		
	62.79	RBJ	Roots Ball J	oint, from 12 o'cl	ock to 12 o'clock	, 95% lost	00:03:03		
	67.25	MSA	Survey Abar NOT GET P	ndoned, CAN NC AST ROOTS	OT GET PAST RO	OOTS / CAN	00:03:24		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	RI	OPRI



# Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	2
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		67.2 '	19.8 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	WEST-0200
Street:	W. LAKE STABLE RD. ESM	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	WEST-0190
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAR		

1:508	Distance	Code	Observation	1			Counter	Photo	Grade
WEST-0200									
	0.00	AMH	Manhole, W	EST-0200 / WE	ST-0200		00:00:07		
	0.00	MWL	Water Level	10% of the veri	ical dimension		00:00:14		
	19.77	MSA	Survey Abar NOT GET P	ndoned, CAN NO AST ROCK	OT GET PAST RO	OCK / CAN	00:04:24		
	67.25		End of pipe						
WEST-0190									



Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-70402095	3
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		57.9 '	57.9 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0440
Street:	E. LAKE RD. ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0430
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PA	F	

dditional Info:									
1:438	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0430	0.00	АМН	Manhole / E	AST-0430			00:00:06		
	0.00	MWL	Water Level	95% of the vert	ical dimension		00:00:12		
<b>↑</b>	57.93	MSA	Survey Abar	ndoned / CAN No	OT GET PAST D	NRT	00:08:36		



Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-70402095	4
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		8.0 '	8.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0440
Street:	E. LAKE RD. ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0330
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

1:61	Distance	Code	Observation	Counter	Photo	Grade
EAST-0330		A. A. A. I. I.	Market (5407.0400	00.00.00		
	0.00	AMH	Manhole / EAST-0430	80:00:08		
	0.00	MWL	Water Level, 95% of the vertical dimension	00:00:15		
EAST-0440	8.04	АМН	Manhole / EAST-0430	00:03:46		



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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-70402095	5
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		143.5 '	143.5 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0430
Street:	E. LAKE RD. ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0420
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

dditional Info:									
1:1084	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0430	0.00	АМН	Manhole / E	AST-0430			00:00:08		
							00.00.00		
	0.00	MWL	Water Level,	85% of the vert	ical dimension		00:00:16		
	143.51	MSA	Survey Abar	doned / CAN No	OT GET PAST D	DIRT	00:20:12		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPR	1	OPRI



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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-70402095	6
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		73.5 '	73.5 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	04-0010MMH
Street:	E. LAKE RD. ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0410
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	6 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Vitrified Clay Pipe	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

1:555	Distance	Code	Observation	1			Counter	Photo	Grade
04-0010MMH	1								
	0.00	AMH	Manhole / 04	1-0010MMH			00:00:09		
	0.00	MWL	Water Level,	0% of the vertice	cal dimension		00:00:17		
	49.27	HSV	Hole Soil Vis	sible, from 4 o'clo	ock to 8 o'clock		00:02:50		
	52.49	RFJ	Roots Fine J	oint, from 9 o'clo	ock to 3 o'clock		00:03:10		
	55.69	Н	Hole, from 1	2 o'clock to 4 o'c	clock		00:03:31		
	59.26	RMJ	Roots Mediu	m Joint, from 9	o'clock to 3 o'clo	ck, 5% lost	00:03:50		
	61.33	HSV	Hole Soil Vis	sible, at 12 o'cloo	:k		00:04:07		
	71.95	MMC	Material Cha	inge, Cast iron /	CAST IRON PIP	E	00:05:09		
		MSA	Survev Abar	ndoned / CAN No	OT GET PAST		00:06:01		
	73.48	WIOA							



Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	7
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		7.1 '	7.1 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0540
Street:	EAST LAKE ROAD	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0530
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

ditional Info:							
1:54	Distance	Code	Observation		Соц	unter Photo	Grade
EAST-0530							
	0.00	AMH	Manhole, EAST-0530	/ EAST-0530	00:0	00:06	
	0.00	MWL	Water Level, 15% of t	he vertical dimension	00:0	00:14	
	7.10	MSA	Survey Abandoned, C GET PAST 90	AN NOT GET PAST 90	) / CAN NOT 00:0	02:57	



		_	<del>-</del>		
Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	8
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		49.2 '	49.2 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0530
Street:	EAST LAKE ROAD	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0520
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

dditional Info:							
1:372	Distance	Code	Observation		Counter	Photo	Grade
EAST-0530	0.00	АМН	Manhole, EAST-0530 / EAST-0	530	00:00:08		
		MWL	Water Level, 15% of the vertica		00:00:15		
	0.00						
	49.22	MSA	Survey Abandoned, CAN NOT ( PAST	GET PAST / CAN	NOT GET 00:05:14		



Inspection report	Ins	pection	report
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Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	9
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		4.0 '	4.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0510
Street:	EAST LAKE ROAD ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0500
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PA	F	

Additional Info:

QSR

QMR

	1:50	Distance	Code	Observation	Counter	Photo	Grade
E	AST-0500						
		0.00	AMH	Manhole, EAST-0500 / EAST-0500	00:00:07		
		0.00	MWL	Water Level, 10% of the vertical dimension	00:00:14		
<b>†</b>		4.00	MSA	Survey Abandoned, CAN NOT GET AROUND 90 DEGREE	00:02:47		
		4.00	MSA	Survey Abandoned, CAN NOT GET AROUND 90 DEGREE BEND / CAN NOT GET AROUND 90 DEGREE BEND	00:02:47		



QSR

QMR

QOR

SPR

MPRI

SPRI

OPRI

Kenyon Pipeline Inspection LLC 68 Park Rd, Queensbury, NY 12804 Tel. 518-832-4070 Tony@kpisewer.com

Inspection report	Ins	pection	report
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		-	-		
Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		Dry	CHRIS OLIVER	U-0621-70402095	9
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Downstream		4.0 '	105.8 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0510
Street:	EAST LAKE ROAD ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0500
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

ining Method:	Odst II OII		Owner: VILLAGE OF TUXEDO PAR	railed.		
			Owner. VILLAGE OF TOXEDO PAR			
dditional Info:						
1:50	Distance	Code	Observation	Counter	Photo	Grade
EAST-0510	0.00		M	22.22.22		
	0.00	AMH	Manhole, EAST-0510 / EAST-0510	00:00:08		
EAST-0500	0.00	MWL	Water Level, 10% of the vertical dimension	00:00:17		

MPR

OPR



Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/12/2021		<b>Dry</b>	CHRIS OLIVER	U-0621-70402095	10
Year laid:	Pre-cleaning: No Pre-Cleaning	Direction:  Downstream	Pipe Joint Length:	Total Length: 6.0 '	Length Surveyed: 6.0 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0500
Street:	EAST LAKE ROAD ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:	Woods	Flow Control:	Not Controlled	Downstream MH:	EAST-0490
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAR		

ing Method: ditional Info:			Owner:	VILLAGE C	F TUXEDO PAI				
annonai mio:									
1:50	Distance	Code	Observation	1			Counter	Photo	Grade
EAST-0500				OT 0500 / 54 O	- 0-00				
	0.00	AMH	Manhole, EA	ST-0500 / EAS	I-0500		00:00:06		
	0.00	MWL	Water Level,	10% of the vert	ical dimension		00:00:16		
	6.00	MSA	Survey Abar GET PAST S	ndoned, CAN NO	OT GET PAST 90	) / CAN NOT	00:01:44		



Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
10/14/2021		Dry	CHRIS OLIVER	U-0621-70402095	11
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	Upstream		81.9 '	81.9 '

City:	TUXEDO PARK NY	Drainage Area:		Upstream MH:	EAST-0340
Street:	E. LAKE RD. ESMT	Media Label:		Up Rim to Invert:	0.0
Location Code:		Flow Control:	Not Controlled	Downstream MH:	EAST-0330
Location Details:		Sheet Number:		Down Rim to Invert:	0.0
Pipe shape:	Circular	Sewer Use:	Sanitary	Total gallons used:	0.0
Pipe size:	8 "	Sewer Category:	SEC	Joints passed:	0
Pipe material:	Cast Iron	Purpose:	Maintenance Related	Joints failed:	0
Lining Method:		Owner:	VILLAGE OF TUXEDO PAI		

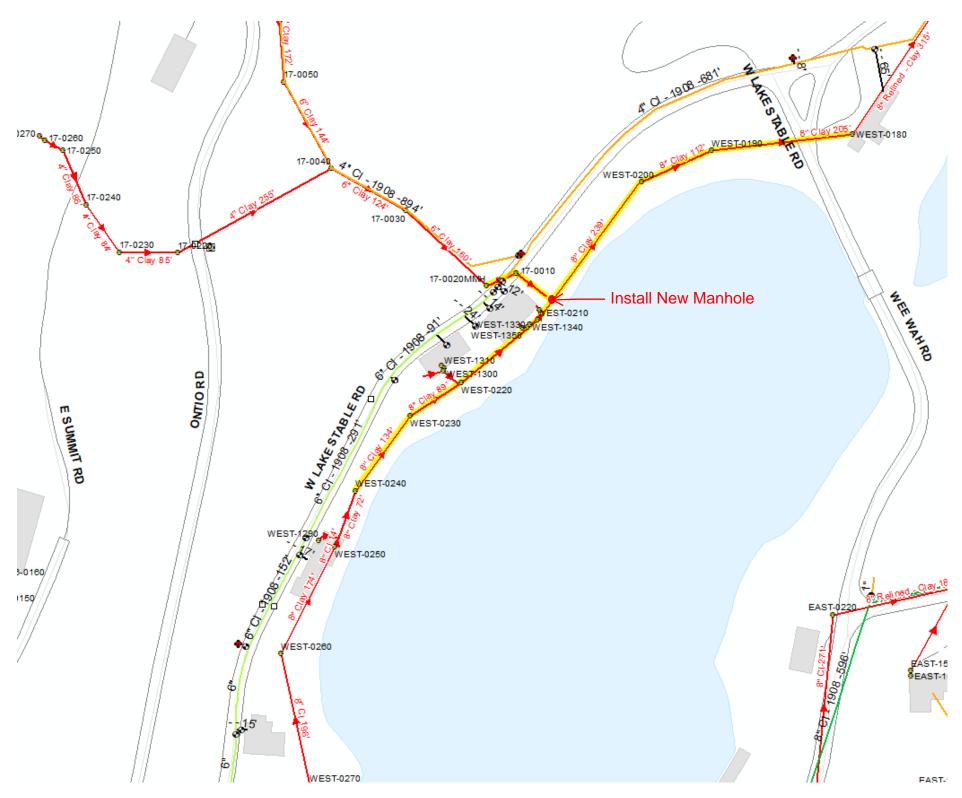
ditional Info:								
1:619	Distance	Code	Observation			Counter	Photo	Grade
EAST-0330	0.00	АМН	Manhole / EAST-0340			00:00:12		
		Aivii i	Marifiole / EAST-0340			00.00.12		
	81.92	MSA	Survey Abandoned / CA	N NOT GET PAST		00:10:26		
QSR	QMR	QOR	SPR MPR	OPR	SPRI	MPR		OPRI

## APPENDIX D

## Proposed Remediation Areas



## **Pond 3 Sewer Target Areas**



<sup>\*</sup> Sections Proposed to be CIPP Lined Highlighted in Yellow

# **Wee-Wah Lake Target Areas** WEST-0060 AGE-0090 WEST-0040 WEST-0030 WEST-0010 8" Reli ned - Clay 242" WEST-0070 01-0010MMH AST-0040 ST-0080 WEST-1440 EAST-0070

 $<sup>\</sup>ensuremath{^{*}}$  Sections Proposed to be CIPP Lined Highlighted in Yellow