

Evaluation of Sanitary Sewers and Manholes

**City of Panorama Park
Scott County, Iowa
February 2020**

Prepared by:

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Evaluation of Sanitary Sewers and Manholes City of Panorama Park

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EXECUTIVE SUMMARY

Basis for Sanitary Sewer System Evaluation:

This study was initiated by the request of the City of Panorama Park. The request was made for the purpose of evaluating the condition of their sanitary sewer system. For the purposes of prioritizing the findings and preparing the recommendations, MSA referred to the March 13, 2019 Administrative Consent Order from the Iowa Department of Natural Resources (IDNR) to the Davenport Waste Water Treatment Plant. As a 28E participant in the performance of the Davenport Waste Water Treatment Plant, the City of Panorama Park is held accountable to reduce inflow and infiltration. Based on this, possible projects are prioritized to first reduce inflow and infiltration and then to address issues that could likely degrade into significant issues within the next five years.

The aforementioned 28E intergovernmental agreement, dated January 5, 1974, provides for the construction and joint use of sanitary sewers and sewage disposal facilities. This agreement is the basis for operating, maintaining, and financing the common plant and system assets. Furthermore, this intergovernmental agreement establishes Davenport, Bettendorf, Riverdale, and Panorama Park as Joint Use Cities.

The construction permit for the Davenport Water Pollution Control Plant was issued on March 15, 1974. This plant was designed to receive 40 million gallons per day (MGD) of flow during wet weather. The plant historically receives wet weather flows in volumes that far exceed this design capacity. These excessive flows result in the discharge of untreated wastewater from the collection system.

The Administrative Consent Order, between the Joint Use Cities and the IDNR, established a schedule for necessary upgrades to the wastewater collection systems. The intent of the Administrative Consent Order is to eliminate the discharge of untreated wastewater from the collection system.

The Administrative Consent Order established July 1, 2018, as the date when all Joint Use Cities shall undertake the study and actions to remove inflow and infiltration sources from the Interceptor Sewers.

Evaluation Methods:

On July 25, 2019, the City of Panorama Park entered into an agreement with MSA Professional Services, Inc. (MSA) to evaluate all their sanitary sewer system within the City limits.

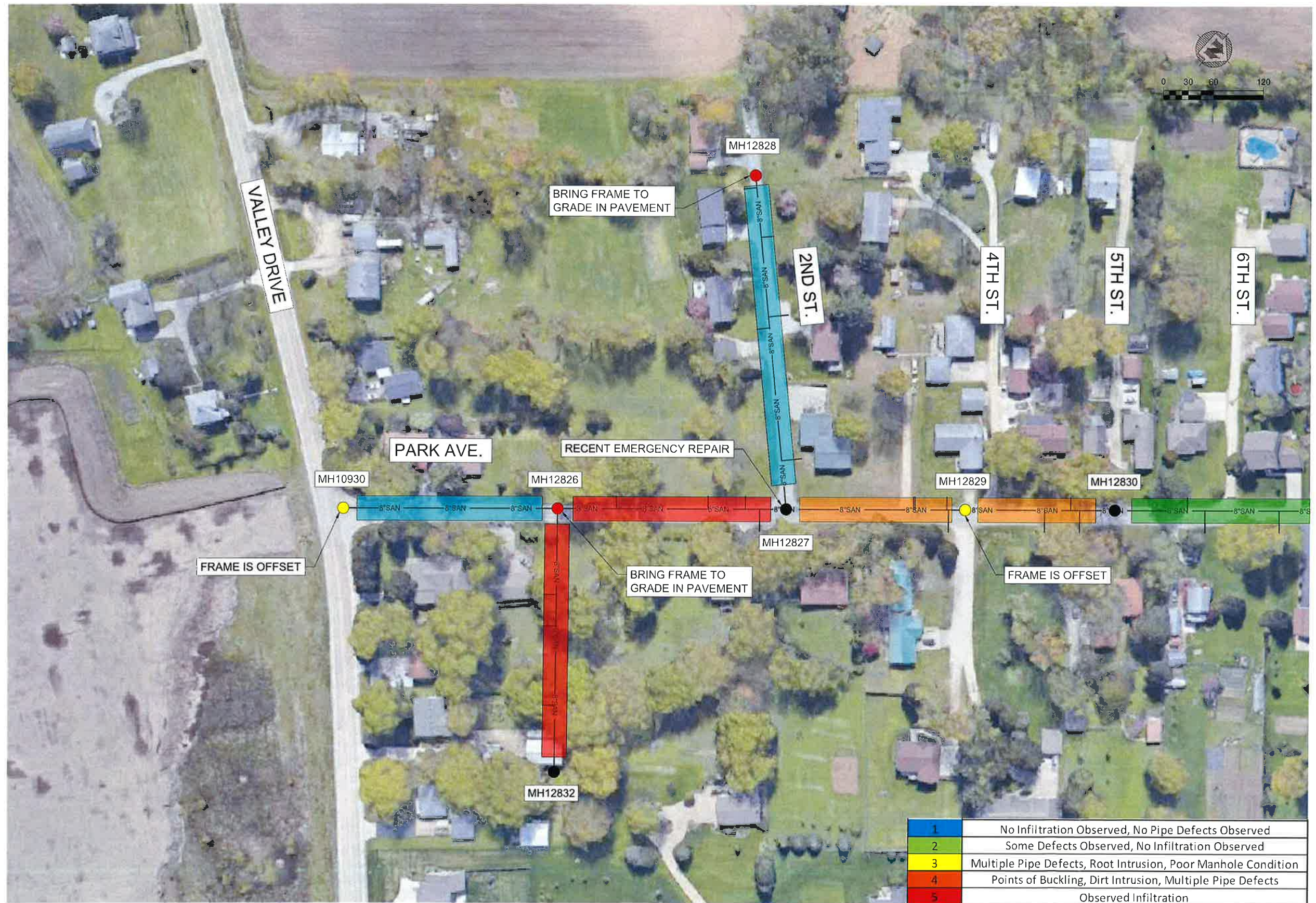
As part of this agreement, televising was arranged for certain sanitary sewers. This televising was performed by the City of Bettendorf.

The results of these investigations (reviewing televising video and visual inspections by MSA) indicate that the City's sanitary sewer system has many defects.

As previously indicated, MSA's recommendations are prioritized to first eliminate known areas of inflow and infiltration. The secondary objective is to repair any issue that, if left unmitigated, could

lead to serious issues within the next five years. Such secondary issues include breaks or failures in the pipe structure, significant root intrusion and root growth, and bringing manholes frames to grade so that they are not lost and thus, fail to provide ready access to the sanitary sewer system.

The result of MSA's investigation, evaluation, and rating is summarized in the following Sanitary Sewer Priority Rating Map. These maps establish a readily visible method for the City of Panorama Park to prioritize sanitary sewer system concerns.

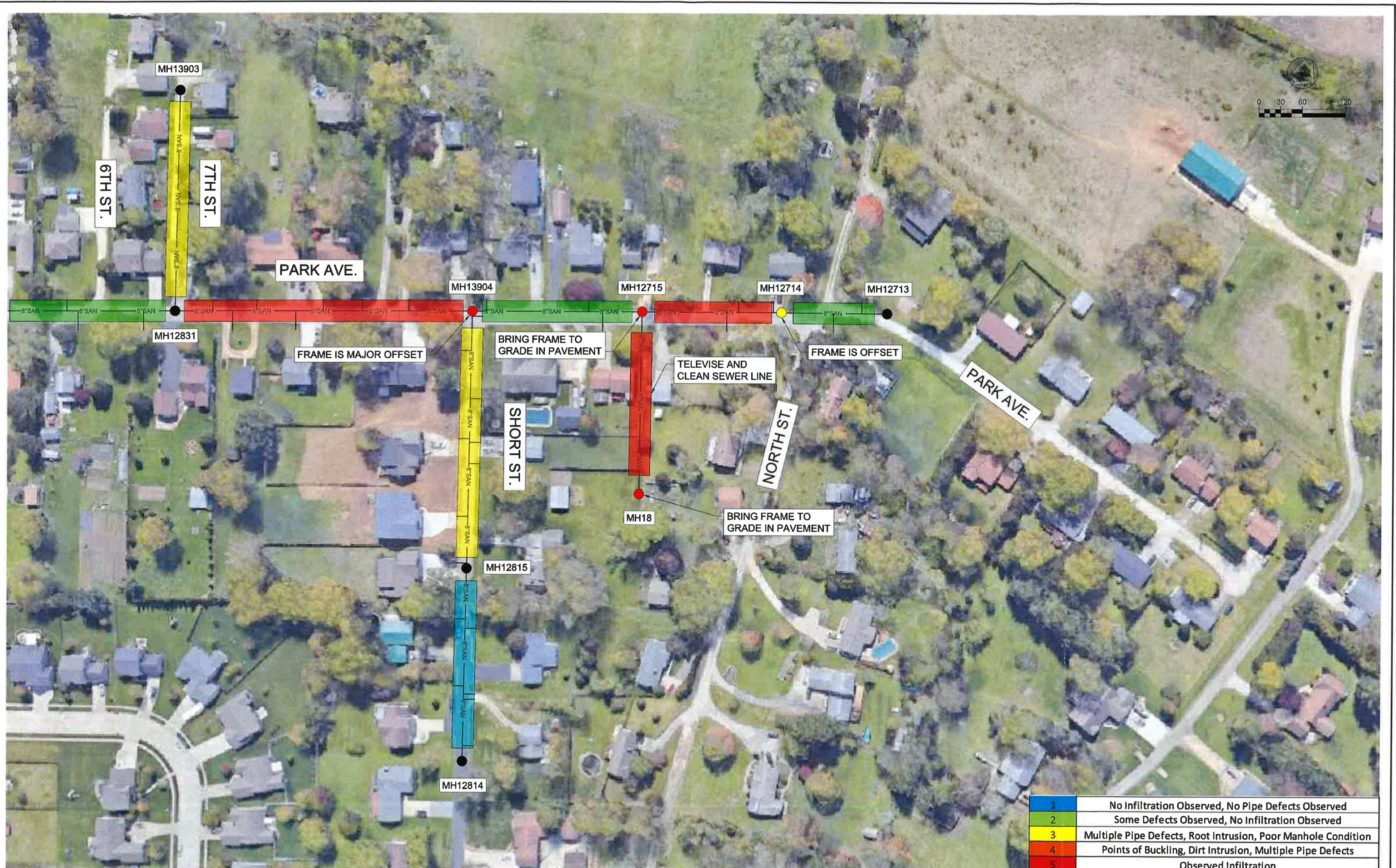


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	CRC				

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SANITARY SEWER REPAIR
 CITY OF PANORAMA PARK
 SCOTT COUNTY, IOWA

FIGURE ES-1. SANITARY SEWER PRIORITY RATING MAP



1	No Infiltration Observed, No Pipe Defects Observed
2	Some Defects Observed, No Infiltration Observed
3	Multiple Pipe Defects, Root Intrusion, Poor Manhole Condition
4	Points of Buckling, Dirt Intrusion, Multiple Pipe Defects
5	Observed Infiltration

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SANITARY SEWER REPAIR
 CITY OF PANORAMA PARK
 SCOTT COUNTY, IOWA

FIGURE ES-2. SANITARY SEWER PRIORITY RATING MAP

CHAPTER 1 - INTRODUCTION

1.1 STUDY LOCATION

Panorama Park is located in Scott County, Iowa, centrally in eastern Iowa. It is located on the Iowa side of the Quad Cities area (Rock Island, IL; Moline, IL; Bettendorf, IA; and Davenport, IA). The population of Panorama Park, based on the most recent census data (2010), is about 150 people.

The City of Panorama Park owns the sanitary sewers that serve their own residents. In addition, sewage from City of Bettendorf residents is conveyed through the City of Panorama Park's sanitary sewers.

The City of Panorama Park requested all their sanitary sewers be evaluated. The City of Bettendorf televised almost all such sanitary sewers within the City, plus some of the immediately adjacent sanitary sewers. The sanitary sewer located along Valley Drive was not evaluated as part of this project.

1.2 PURPOSE AND SCOPE

This study was initiated by the request of the City of Panorama Park. Their request was made for the purpose of evaluating the condition of their sanitary sewer system. For the purposes of prioritizing the findings and preparing the recommendations, MSA referred to the March 13, 2019 Administrative Consent Order from the Iowa Department of Natural Resources to the Davenport Waste Water Treatment Plant. This document is in Appendix A. As a 28E participant in the performance of the Davenport Waste Water Treatment Plant, the City of Panorama Park is held accountable to reduce inflow and infiltration. Based on this, possible projects are prioritized to first reduce inflow and infiltration and then to address issues that could likely degrade into significant issues within the next five years.

On January 5, 1974, the cities of Davenport, IA; Bettendorf, IA; Riverdale, IA; and Panorama Park, IA entered into an intergovernmental agreement providing for the joint use of sanitary sewers and sewage disposal facilities. The Davenport, IA wastewater plant has historically received sewage flow rates and volumes far exceeding the plant's design capacity.

MSA proceeded with this sanitary sewer evaluation effort to identify sources of inflow and infiltration as well as determine deficiencies within the City's sanitary sewer collection and conveyance system. This is accomplished by televising the sanitary sewers and visual inspection of all the manholes. As a result of these investigations, noted inflow and infiltration sources as well as other sewer deficiencies were located. Recommendations to reduce the inflow and infiltration and correct other issues are included as part of this report.

The effort to complete this report included the following tasks performed by MSA:

- Remove the lid from every manhole to evaluate the condition of the manhole and the nature of the flow through the manhole.
- Review the City of Bettendorf televising report of all the sanitary sewer.
- Prepare a list of observed sources of inflow and infiltration, as well as other sanitary sewer deficiencies, and prioritize this list.
- Provide opinions of probable construction cost to the City of Panorama Park to mitigate these deficiencies.

1.3 PIPE MATERIAL PROPERTIES AND HISTORICAL PERFORMANCE

The material used to construct most of the sanitary sewer in the areas of this study is vitrified clay pipe. The observed pipe segments tend to be very short. Thus, there are many pipe-to-pipe joints.

Vitrified clay pipe is an excellent material for sanitary sewage. For the most part, it is inert and will not react with chemicals and waste conveyed by the pipe. In addition, it is not affected by corrosive or polluted soils. Vitrified clay pipe is a strong material and can be readily molded into many shapes. The interior of the pipe itself is low in friction. However, the pipe is susceptible to impact forces, and it will readily crack when subjected to impact and tensile forces. It has very poor resiliency characteristics. If deformed, it will break and generally not return to shape. When dropped or struck, there is a good potential the pipe material will crack. Long segments of vitrified clay pipe are generally not feasible because the installation of the pipe will introduce tensile forces during the pick-up and placing of the pipe. Subsequently, the pipe could crack due to uneven support of the pipe during placement. Finally, the pipe is a relatively heavy material. For an 8-inch diameter pipe section, the pipe will weigh about 17 pounds per foot. Comparatively, PVC pipe material weighs 5 or 6 pounds per foot.

It took a long time for the development of an effective pipe joint for vitrified clay pipe. This is because, in the past, sanitary sewers discharged directly to a water body without treatment. Thus, inflow at the joints was encouraged to assist in keeping the pipe clean. Just prior to World War II, the development of a good pipe-to-pipe joint became a concern. The first joint material was oakum. Oakum is a fibrous material, usually made from hemp, which is coated with bituminous material. Installation is done by packing the oakum into pipe joints. Unfortunately, while an excellent craftsman could make an excellent joint, many sanitary sewers were not constructed by a craftsman. Furthermore, oakum joints did not allow for pipe movement. Thus, the concern was to find a better jointing system. The next step in the evolution of pipe joints was poured mastic joints. Poured joints are effective at preventing initial inflow. However, with age and pipe movement during backfilling and long-term settling, the joint will likely fail. The next evolution of joints was a tubular joint seal. This was made by a hollow rubber tube that is pumped with grout under pressure to seal the pipe-to-pipe joint. Based on readily visible evidence in the report summary of the videos, this appears to be the type of joint that is utilized in most of the Panorama Park sanitary sewers. It was not until the establishment of an ASTM test (C425) in 1958 that an elastomeric gasket for clay pipe was developed.

A failed pipe joint allows for the inflow of ground water, the intrusion of plant roots, the slow but inevitable loss of soil surrounding the pipe, poor flow characteristics at the pipe section transition, and the creation of catching points for debris that is flowing within the sewage.

Some of the other pipe material noted in the Panorama Park sanitary sewers that were evaluated included PVC (i.e. plastic), PVC Truss Pipe, and ductile iron pipe (DIP).

Ductile iron pipe is a very strong pipe. It can be constructed in relatively long sections and has good interior flow properties, offers some resiliency due to loading, and has good to excellent impact resistance. In general, DIP is an excellent pipe material.

However, both concrete and ductile iron pipe are relatively heavy compared to PVC pipe. An 8-inch diameter ductile iron pipe will likely weigh about 22 pounds per foot, while an 8-inch diameter concrete pipe will likely weigh about 27 pounds per foot. These days both pipes are easily installed utilizing modern day construction equipment. Both materials are very susceptible to the corrosion caused by sanitary sewage. The formation of hydrogen sulfide gas in a sanitary sewer environment will lead to the development of a weak sulfuric acid that forms with the condensation in pipes. This sulfuric acid will rapidly corrode the concrete and ductile iron pipe. Generally, special coatings are required to prevent or halt the corrosion of sanitary sewers constructed of these materials.

CHAPTER 2 - SANITARY SEWER INSPECTION

An investigation of the sanitary sewer collection system was performed by MSA with the assistance of the City of Bettendorf.

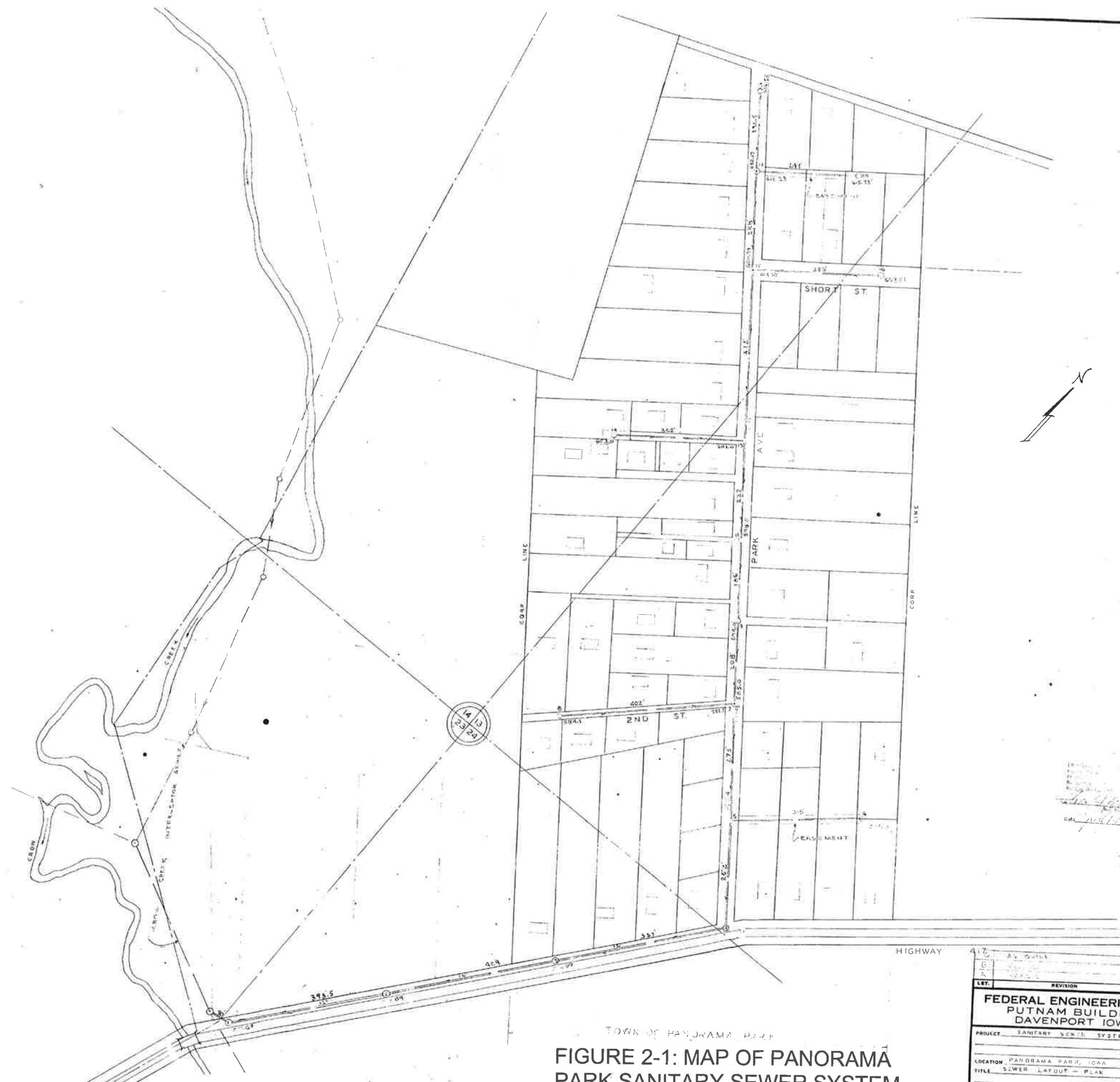
2.1 SANITARY MANHOLE OBSERVATIONS AND EVALUATIONS

Observations of all the City's sanitary manholes were made on October 16 and October 18 of 2019. Observations included looking for buried/covered structures, offset frames and lids, leaking barrel joints, obstructed inverts, and degraded interior concrete. Photographs of the manhole interiors and frames and lids were taken and cataloged as part of the sanitary sewer system assessment. The forms for these inspection records are located in Appendix B.

Dye testing and smoke testing were tasks not included as part of the sanitary sewer system assessment. These tests require properly functioning manholes in order to be utilized. For this project, these evaluation mechanisms were not initially utilized. However, if the results require further review, these tests may be recommended.

Smoke testing consists of placing a blower (i.e. fan) on top of a manhole, thus forcing smoke through the sanitary sewer pipes. Observations of smoke emissions in the test areas can indicate illegal connections to the sanitary sewer system as well as manhole chimneys that are severely degraded.

Dye testing can also confirm whether or not there are connections from a home waste/vent piping system to the sanitary sewer system.



TOWN OF PANORAMA PARK
**FIGURE 2-1: MAP OF PANORAMA
 PARK SANITARY SEWER SYSTEM**

REV.	REVISION	DATE	BY
1	AS SHOWN	1-80	JWC
2		2-79	JWC
3		2-78	JWC

FEDERAL ENGINEERING CO.
PUTNAM BUILDING
DAVENPORT IOWA

PROJECT: SANITARY SEWER SYSTEM

LOCATION: PANORAMA PARK, IOWA

TITLE: SEWER LAYOUT - PLAN

DRAWN: G.C.D. TRACED: _____ CHECKED: _____

APPROVED: JWC

DATE: MARCH 1975

SCALE: 1" = 100'

DR 2382-1

2.2 SANITARY SEWER TELEVISIONING

Televising was conducted by the City of Bettendorf, IA, Public Works Department on multiple days from September 20 to October 1, 2019. The entire system, in addition to some sewer pipe runs located immediately upstream of the Panorama Park sanitary system, were televised.

The televising videos revealed many defects in the sanitary sewers. The deficiencies include instances of faulting at joints, fractures and cracks, broken pipe joint gaskets, and root masses. If joints are not properly sealed or if cracks exist, these deficiencies in the pipe can become subject to intrusion by roots and ground water inflow. Several root intrusions and root masses were observed within the sanitary sewer system. If untreated, the intrusion of roots will grow to root masses. Root masses will eventually reduce or block flow of sewage through the pipe.

Many of the sanitary sewer pipe runs between manholes were noted to not be at a consistent grade. Where settling occurred, such that the grade of the pipe to the downstream manhole became positive (flow is uphill), sewage will pond within the pipe. These sags in the pipe runs are often referred to as “a pipe that has a belly.” The presence of a belly in a pipe allows for debris, grit, and sediment to settle out of the flow. This reduces the flow capacity of the pipe, thus hindering the pipe’s ability to convey sewage. Generally, unless the sewer is dug up and re-constructed with a consistent negative slope, it is not possible to solve the problems created by bellies. Consistent and regular pipe cleaning is called for. In addition, if the belly is caused by pipe settling due to soil washing in with infiltration, then the pipe joint should be sealed to prevent further soil loss.

All lateral connections that are not labeled as capped are “active” and constant flow was observed in the videos. Through dye testing, it is possible to differentiate appropriate sanitary laterals that convey sewage from a house to laterals that may be illegally or inappropriately sealed. Dye testing is beyond the scope of this study. MSA notes that, anecdotally, there are several wyes within the sanitary sewer along Park Avenue that do not readily appear to connect to adjacent homes. If the City has an understanding of which homes are and are not connected, this inability to readily connect laterals to homes may be moot. However, if this is a concern for the City, MSA recommends dye testing homes or smoke testing the sanitary sewer system to establish connectivity. However, even dye testing or smoke testing will not confirm which laterals are active and which ones are not. MSA suspects that instances of illegal or inappropriate connections probably do not exist. The many additional laterals most likely were installed with intent to connect and were never connected, or have been abandoned.

Table 2-1. Televising Summary indicates the number of occurrences of each deficiency found in the sanitary sewer collection system during televising. In addition, a typical recommended action to resolve the deficiency is included in the table. A detailed summary report of all televising findings, including the location of each deficiency, is located in Appendix C.

Table 2-1. Televising Summary

Type of Deficiency	No. of Occurrences	Possible Corrective Action
Faulting (Offset / Gap) at Pipe Joint	1	Point Repair / Defective Pipe Replacement, CIPP Lining
Fractures / Cracks	2	CIPP Lining
Broken Joint Gasket / Sealing Ring (i.e. Broken or Unattached)	0	Point repairs, joint grouting, CIPP Lining
Root Intrusion	29	Clean / Cut out large blockages, chemical attack on roots, CIPP Lining
Root Mass / Blockage	14	Clean / Cut out large blockages, chemical attack on roots, CIPP Lining
Other (i.e. Encrustation, Sludge/Debris Buildup, Grit, & Rocks)	7	Ream Deposits. Regular pipe cleaning
Manhole Casting Not Sealed	7	Replace manhole casting
Casting Displacement?	4	Replace or reset manhole frame and lid
Casting Buried	4	Replace or reset manhole frame and lid
Pipe Collapse	1	Excavate and replace
Major Manhole Infiltration	0	Line manhole (cementitious)

For this study, a pipe run is defined as the sanitary sewer from an upstream manhole to the nearest downstream manhole. A total of 15 pipe runs were evaluated by televising. In order to effectively evaluate the condition and priority of each pipe run in regards to sanitary sewer deficiencies, a ranking system was developed. This ranking system evaluates each pipe run on a scale of 1-5. Table 2-2. Sewer Evaluation Key shows the basis for scoring sewer deficiencies. A summary of this scoring for each run of sewer pipe is shown in Table 2-3. Pipe and Appurtenance Rating Summary.

Table 2-2. Sewer Evaluation Key

Ranking No.	Summary of Infiltration Observations	Recommended Remedial Action
1	No infiltration observed, no pipe defects observed	None required, monitor in future
2	No infiltration observed, some defects observed	Lining of sewer might be considered when associated roadway is reconstructed or budget allows
3	No infiltration observed, multiple pipe defects, root intrusion, poor manhole condition	Sanitary remedial repairs to be scheduled in the not-to-distant future
4	No infiltration observed, points of buckling, dirt intrusion, and multiple pipe defects	Sanitary remedial repairs to be budgeted and planned for in near future
5	Observed infiltration	Sanitary remedial repairs to be an immediate priority in budgeting and planning

Table 2-3. Pipe and Appurtenance Rating Summary

Rating No.	Amount
1	3
2	3
3	2
4	2
5	5

The pipe runs that have been rated a “5” are of the highest priority when recommending remedial action to the noted sanitary sewer deficiencies.

CHAPTER 3 - RECOMMENDATIONS & OPINIONS OF PROBABLE COSTS

3.1 RECOMMENDATIONS

After identifying sewer main and manhole deficiencies, the following possible remedial actions are presented as efforts to improve the performance of the sanitary sewer system, prolong the life of the sanitary sewer, and, most importantly, decrease the amount of inflow and infiltration into the sanitary sewer system.

3.1.1 REHABILITATION BY CIPP (CURED-IN-PLACE PIPE) LINING

In cases of infiltration occurring at many pipe joints and significant intrusion of roots, lining the existing sanitary sewer pipe will eliminate infiltration and prolong the life of that run of sanitary sewer. There are sources of observed infiltration occurring. Of these instances of observed infiltration, six (6) will benefit immediately from the construction of a cured-in-place pipe lining. This lining totals about 1,605 LF of 8-inch sanitary sewer pipe (Pipe runs with a rating of 4 or 5). Along with the lining of the sanitary sewer pipe, all sanitary laterals located on lined pipe runs will need to be reinstated, connection grout sealed, and tested.

The sanitary sewer runs that are recommended to have a constructed cured-in-place pipe lining are as follows:

- MH 12832 to MH 12826
- MH 12826 to MH 12827
- MH 12827 to MH 12829
- MH 12829 to MH 12830
- MH 12831 to MH 13904
- MH 12715 to MH 12714

3.1.2 REPLACE MANHOLE CASTING AND SEALED LID

Manholes that are buried or significantly offset should be readjusted to align with the manhole entry and be located at or slightly above grade. Because the manhole frame, lid, and adjustment rings have to be removed and re-established, MSA recommends replacing the frame and lid and sealing the exterior of the manhole chimney at the same time. MSA identified five (5) such manholes, and this work should be completed as soon as possible. Furthermore, MSA identified three (3) manholes that could be candidates for this work, but the need is not immediate.

3.1.3 EXCAVATE TO REPAIR/REPLACE PIPE

MSA noted in reviewing the televising report one instance where the pipe has collapsed. This location has already been repaired by the City of Panorama Park.

3.1.4 REMOVAL OF ROOT BALL FROM SANITARY SEWER

In reviewing the videos, MSA noted a significant root intrusion that will most likely cause a severe flow blockage if not addressed in the very near future. Roots that are removed will grow back and

usually grow back stronger. Options include treating the area on the outside of the pipe to kill the root, constructing a grout seal for the joint, or lining the pipe. Grout sealing or killing the root are not effective at permanently preventing the root from growing back. In time, the root will find its way back. External excavation of the pipe can guarantee that the root will not return. However, this is extremely disruptive and expensive. Constructing a cured in place pipe lining provides the least disruption and best assurance that the root will not grow back.

3.1.5 REPAIR OF MANHOLE INTERIOR (CEMENTITIOUS)

None of the manhole interiors that were observed required a cementitious repair on the inside of the manhole.

3.1.6 SANITARY SEWER PIPE POINT REPAIR, 8”

In pipe runs where cracked pipe, faulting of pipe sections, or failure of pipe joint gaskets was observed, it is possible to construct a single repair at that point for a significantly less cost than constructing a cured-in-place pipe lining. However, unless the source of infiltration is a single crack or a lateral joint(s), there is a long-term benefit derived from constructing a cured-in-place pipe lining. This is because of the type of pipe joint gasket that appears to be utilized and because of the number of joints that occur in a sanitary sewer constructed of vitrified clay pipe. MSA evaluated high priority sewers and do recommend CIPP where indicated.

3.2 OPINION OF PROBABLE COST

MSA assumes that the City of Panorama Park will develop a multi-year program to address the rehabilitation of their sanitary sewer system. Therefore, MSA prepared opinions of probable construction cost to address those pipe runs and manholes that were rated a "5" and those that were rated a "4."

The primary intent of recommended remedial actions, for which MSA has prepared their opinion of the probable construction cost, is to first remove inflow and infiltration per the Administrative Consent Order. Though many other pipe defects were observed, MSA recommends at this time, for cost reasons, to delay the construction of remedial measures where infiltration or surface water inflow were not observed.

A summary of probable construction and engineering costs by each pipe rating, where pipe lining is recommended, is as follows:

- Pipe Rating 5 – \$102,000
- Pipe Rating 4 – \$31,000

These probable construction costs include MSA's estimate of design fees to prepare projects for bidding, MSA's estimate of administrating the projects during the construction phase, a contingency factor, and an attempt to account for inflation (2.5%) for a period of one year. Please note the MSA's engineering numbers are for budget use based on past experience. MSA did not prepare a project plan with a specific custom scope of work for the City of Panorama Park. MSA would take on that effort if asked to present a proposed Professional Services Agreement. The cost summary and breakdown of the noted remedial measures is included in Appendix D.

APPENDIX A

IDNR Administrative Consent Order

**IOWA DEPARTMENT OF NATURAL RESOURCES
ADMINISTRATIVE CONSENT ORDER**

IN THE MATTER OF:

**JOINT USE OF SANITARY SEWERS
AND SEWAGE DISPOSAL
FACILITIES: City of Davenport, Iowa,
City of Bettendorf, Iowa,
City of Riverdale, Iowa,
City of Panorama Park, Iowa**

**NPDES Permit #8222003
Scott County, Iowa**

**ADMINISTRATIVE CONSENT
ORDER**

NO. 2013-WW-

TO: William E. Gluba, Mayor
City of Davenport
226 W 4th Street
Davenport IA 52801

John J. Franklin, Mayor
City of Riverdale
110 Manor Drive
Riverdale, IA 52722

Robert S. Gallagher, Mayor
City of Bettendorf
1609 State Street
Bettendorf IA 52722

David White, Mayor
City of Panorama Park
P.O. Box 533
112 Short Street
Panorama Park, IA 52767

I. SUMMARY

This administrative consent order (Order) is entered into between the Cities of Davenport, Bettendorf, Riverdale, and Panorama Park and the Iowa Department of Natural Resources (DNR) for the purpose of establishing a schedule for necessary upgrades to the Davenport Water Pollution Control Plant and the wastewater collection systems of Davenport and Bettendorf to achieve compliance with applicable requirements and to eliminate the discharge of untreated wastewater from the collection systems.

Any questions regarding this Order should be directed to:

Relating to technical requirements:

Paul Brandt, Environmental Specialist Sr.
DNR Field Office #6
1023 W. Madison
Washington, Iowa 52353-1623
Phone: 319-653-2135

Relating to legal requirements:

Jon Tack, Attorney for the DNR
Iowa Department of Natural Resources
502 E. 9th Street
Des Moines, Iowa 50319
Phone: 515-281-8889

IOWA DEPARTMENT OF NATURAL RESOURCES
ADMINISTRATIVE CONSENT ORDER
JOINT USE CITIES

II. JURISDICTION

This Order is issued pursuant to the provisions of Iowa Code section 455B.175(1), which authorizes the Director to issue any order necessary to secure compliance with or prevent a violation of Iowa Code Chapter 455B, Division III, Part 1 (wastewater) and the rules adopted or permits issued pursuant to that part, and Iowa Code section 455B.109 and 567 Iowa Administrative Code (IAC) Chapter 10, which authorize the Director to assess administrative penalties.

III. STATEMENT OF FACTS

The DNR and the Cities of Davenport, Bettendorf, Riverdale, and Panorama Park hereafter referred to as "Joint Use Cities" agree to the following facts:

1. An intergovernmental agreement providing for construction and joint use of sanitary sewers and sewage disposal facilities was signed by the City of Davenport, Iowa, the City of Bettendorf, Iowa, the City of Riverdale, Iowa and the City of Panorama Park, Iowa on January 5, 1974. This agreement which has been amended continues to be the basis for operating, maintaining, and financing the common plant and system assets.

2. The Joint Use Cities own and operate the Joint Sewerage Committee Water Pollution Control Plant, a mechanical wastewater plant serving approximately 29,590 residential connections, 7,032 commercial connections, and 20 industrial connections in the city of Davenport. The plant also serves approximately 12,749 residential connections, 776 commercial connections and 3 industrial connections in Bettendorf. Approximately 200 residential connections and 10 commercial connections are served in Riverdale. The plant serves approximately 55 residential connections in Panorama Park. The wastewater plant is designed to handle an average dry weather flow of 26.0 million gallons per day (mgd) and an average wet weather flow of 40.0 mgd. A construction permit was issued by the DNR on March 15, 1974 for the construction of the Davenport Water Pollution Control Plant in accordance with current NPDES.

3. The Davenport wastewater plant has historically received wet weather flows in volumes far exceeding the plant's design capacity. These excessive flows result in the discharge of untreated wastewater from the collection system and partially treated wastewater from the plant, blended with treated wastewater.

4. Pursuant to 567 IAC 60.2, a bypass is the diversion of waste streams from any portion of a treatment facility or collection system. A bypass does not include internal operational waste stream diversions that are part of the design of the treatment facility, maintenance diversions where redundancy is provided, diversions of wastewater from one point in a collection system to another point in a collection system, or wastewater backups into buildings that are caused in the building lateral or private sewer line.

IOWA DEPARTMENT OF NATURAL RESOURCES
ADMINISTRATIVE CONSENT ORDER
JOINT USE CITIES

5. In 2010, the Joint Use Cities discharged 547.7 million gallons of partially treated wastewater to the Mississippi River at the wastewater treatment plant over a total of 74 separate days of discharge. In addition to these discharges, Davenport reported the discharge of untreated wastewater from the wastewater collection system on three occasions in 2010.

6. In 2009, the Joint Use Cities discharged 723.8 million gallons of partially treated wastewater to the Mississippi River at the wastewater treatment plant over a total of 90 separate days of discharge. In addition to these discharges, Davenport reported the discharge of untreated wastewater from the wastewater collection system on 18 occasions in 2009.

7. The Davenport Water Pollution Control Plant also serves Bettendorf, Riverdale and Panorama Park. Each city owns and maintains the wastewater collection system within each respective city limits and proportionately shares in the ownership, cost of operation and maintenance of the Davenport Water Pollution Control Plant. Proportionate ownership is allocated based on a community's use expressed as a percentage. Percentages for fiscal year 2012 are: Davenport, 79.66%; Bettendorf, 19.81%; Riverdale, 0.46%; and Panorama Park, 0.07%.

8. When influent flow to the wastewater plant exceeds the plant's design capacity, influent flow is restricted and backs up in the Bettendorf collection system. In 2010, the City of Bettendorf reported discharging over 33.2 million gallons of untreated wastewater to the Mississippi River over the course of 7 separate incidents lasting 11 days.

9. The Department and the Joint Use Cities have been working together for several years to develop a strategy to eliminate or minimize the bypassing of partially treated wastewater at the Davenport Water Pollution Control Plant and within the wastewater collection systems of the Joint Use Cities.

10. The Joint Use Cities have committed to a 20-year Capital Improvement Plan that contains at least 20 sewer-related projects at a cost of over \$160 million dollars.

11. This Order is intended to establish a schedule for the completion of wastewater collection, handling and treatment improvements necessary for the Joint Use Cities to achieve compliance with applicable regulations. In the event a signatory fails to abide by the schedules contained herein, each or any of the other signatories may enforce this Order against the breaching party.

IV. CONCLUSIONS OF LAW

The DNR and the Joint Use Cities agree that the following conclusions of law are applicable in this case:

1. Pursuant to Iowa Code section 455B.186(1), a pollutant shall not be disposed of by dumping, depositing, or discharging such pollutant into any water of the state, except that

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this section shall not be construed to prohibit the discharge of adequately treated sewage, industrial waste, or other waste pursuant to a permit issued by the director.

2. Pursuant to 567 IAC 63.6, bypasses from any portion of a treatment facility or from a sanitary sewer collection system designed to carry only sewage are prohibited. Pursuant to 567 IAC 60.2, a bypass is the diversion of waste streams from any portion of a treatment facility or collection system. A bypass does not include internal operational waste stream diversions that are part of the design of the treatment facility, maintenance diversions where redundancy is provided, diversions of wastewater from one point in a collection system to another point in a collection system, or wastewater backups into buildings that are caused in the building lateral or private sewer line. The DNR has documented violations related to untreated discharges by the Joint Use Cities, as documented in the Statement of Facts above.

3. Pursuant to 567 IAC 64.2(10)“b”, a sanitary sewer construction permit may be denied if bypassing has occurred at the treatment facility, except when any of the following conditions are being met:

- (1) The bypassing is due to a combined sewer system, and the facility is in compliance with a long-term CSO control plan approved by the department.
- (2) The bypassing occurs as a result of a storm with an intensity or duration greater than that of a storm with a return period of five years.
- (3) The department determines that timely actions are being taken to eliminate bypassing.

4. Pursuant to 567 IAC 64.2(10) “c”, a sanitary sewer construction permit may be denied if an existing downstream sewer is or will be overloaded or surcharged, resulting in bypassing, flooded basements, or overflowing manholes, unless:

- (1) The bypassing or flooding is the result of a precipitation event with an intensity or duration greater than that of a storm with a return period of two years.
- (2) The system is under full-scale facility planning (I/I and SSES) and the applicant provides a schedule that is approved by the department for rehabilitating the system to the extent necessary to handle the additional loadings.

V. ORDER

By the execution of this Order, the DNR orders and the Joint Use Cities agree to undertake the wastewater collection, handling, and treatment projects set forth in the Joint Sewer Use Communities Capital Improvement Plan (CIP) submitted to the DNR by the Joint Use Cities, dated March 30, 2012, as amended on May 31, 2012. The Joint Use Cities specifically agree to the following deadlines:

1. Beginning upon the execution of this Order and continuing until the sooner of the completion of all related projects set forth in the CIP or July 1, 2018, the Joint Use Cities shall undertake the cleaning and televising of interceptor sewers within the sanitary sewer collection systems of the respective cities including but not limited to the Old Riverfront

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Interceptor (1930's), the 1970's Riverfront Interceptor and the Eastern Interceptor sewer in order to identify blockages, any cross connections with storm sewers or other clear-water connections, needed repairs or other potentially necessary improvements in the interceptor sewers as shown in Figures AO-1 and AO-2.

2. By July 1, 2013, the Joint Use Cities shall install and maintain such permanent sanitary sewer metering devices as are necessary to evaluate flow conditions within the sanitary sewer system and determine the wastewater storage and treatment capacity needs of the cities.

3. Continuing until the sooner of the completion of all related projects set forth in the CIP or July 1, 2018, the Joint Use Cities shall undertake the study and actions to remove inflow and infiltration sources from the Interceptor Sewers shown in Figures AO-1 and AO-2 beginning upon the execution of this Order. To the extent that the tasks as identified in paragraph #6 below required to complete this project require the cooperation of, and performance of work by, the United States Army Corps of Engineers; the DNR and the Joint Use Cities agree to work cooperatively to obtain such cooperation and assistance of the Corps as identified in facility plan CIP.

4. By January 1, 2015, Davenport shall submit all construction permit applications necessary for the wastewater treatment plant optimization project.

5. By July 1, 2017, the Joint Use Cities shall substantially complete construction for the wastewater treatment plant optimization project. The goal of the plant optimization Phase I project shall be, in part, to increase the secondary capacity from 45 mgd to approximately 52 mgd. Phase II will complete the plant optimization project following the identification of cost effective inflow/infiltration projects.

6. By December 2018, the Joint Use Cities shall contact the DNR Wastewater Engineering Section to request the scheduling of a meeting to review and discuss the anticipated construction projects necessary to address the conclusions and findings derived from the evaluations of the sanitary sewer collection systems conducted pursuant to paragraph #1, #2 and #3, above.

7. It is the intent of the parties that by December 31, 2018, the DNR and the Joint Use Cities will execute a written agreement or exchange correspondence that identifies, based on the meeting required by paragraph #6, above, all repairs and improvements to the sanitary sewer collection system which are necessary and appropriate and which will be undertaken by the Joint Use Cities.

8. By July 1, 2019, the Joint Use Cities shall submit all construction permit applications necessary to undertake repairs and improvements to the sanitary sewer collection system as identified during the inspection and televising process described in paragraph #1, above.

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9. By December 31, 2019, the Joint Use Cities shall submit all construction permit applications, if any, necessary to undertake repairs and improvements to the sanitary sewer collection system as identified during the inspection and televising process described in paragraph #3, above.

10. By January 1, 2019, Davenport shall submit an application for a construction permit for the construction of a wastewater disinfection system at the Davenport Water Pollution Control Plant.

11. By July 1, 2021, Davenport shall complete substantial construction of a wastewater disinfection system at the Davenport Water Pollution Control Plant.

12. By December 31, 2021 the Joint Use Cities shall complete sanitary sewer trunk system repairs or improvements identified as necessary and appropriate pursuant to paragraph #7, above.

13. By October 1, 2021, Davenport shall comply with applicable effluent limitations for bacteria in its discharges from the Davenport Water Pollution Control Plant. Such effluent limitations are not yet established at the time of execution of this Order. Nothing in this Order shall be construed to restrict the rights of the parties to establish, contest, or appeal such bacterial effluent limitations.

14. By July 1, 2023(need time to measure flows after completion of #12 and #9), Davenport shall submit an application for a construction permit for an equalization basin or such other modifications or improvements to the Davenport Water Pollution Control Plant as are necessary to comply with 567 IAC 63.6.

15. By July 1, 2025, Davenport shall complete construction of an equalization basin or such other modifications or improvements to the Davenport Water Pollution Control Plant as are necessary to comply with 567 IAC 63.6.

16. Beginning April 1, 2013 and continuing through January 31, 2026, the Joint Use Cities shall submit yearly progress reports to the DNR, due by April 1 (approval of CIP), of each year, detailing progress toward compliance with this Order and setting forth a timeline of work to be performed in furtherance of this Order for the following 12-month period.

17. By July 1, 2026, the Joint Use Cities shall achieve and maintain compliance with 567 IAC 63.6, NPDES Permit No. 8222993, and all other applicable requirements of state and federal law related to the operation and maintenance of a publicly owned treatment works which are required by the Joint Use Cities NPDES permit.

18. The Joint Use Cities agree and acknowledge that nothing in this Order is intended to modify the standard construction permitting procedures of the DNR or the requirements thereof. The Joint Use Cities shall take full consideration of such procedures in the timing of required submissions in order to comply with the deadlines set forth herein.

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19. Nothing in this Order is intended to dictate or establish the apportionment of costs or funding obligations between the Joint Use Cities for any joint projects required by this Order or for any projects for which existing municipal agreement establish the funding liabilities of the Joint Use Cities. It is the responsibility of the Joint Use Cities to determine and assess such costs as determined to be appropriate by the parties. Pursuant to the agreement of the Joint Use Cities, the costs of any joint projects required by this Order shall be allocated in proportion with and expressly limited to each constituent community's percentage share of ownership of the Davenport Water Pollution Control Plant.

20. If the remediation steps called for in this consent order result in a cessation of violation for an extended period of time, Joint Sewer Use Committee (JSUC) may request that the IDNR review the status of this order. The parties agree that the goal of this order is compliance with statutes and regulations in order to provide protection of human health and the environment, and not to unduly burden the sewer rate payers with infrastructure that is not needed.

VI. PENALTY

1. Iowa Code section 455B.191 authorizes the assessment of civil penalties of up to \$5,000.00 per day of violation for the violations involved in this matter.

2. Iowa Code section 455B.109 authorizes the Commission to establish by rule a schedule of civil penalties up to \$10,000 that may be assessed administratively. The Commission has adopted this schedule with procedures and criteria for assessment of penalties at IAC Chapter 567 - 10. Pursuant to this chapter, the Department is authorized to issue an administrative order with penalties for noncompliance with this Order or to refer such noncompliance to the Iowa Attorney General for the initiation of a District Court action seeking such penalties and injunctive relief.

VII. WAIVER OF APPEAL RIGHTS

This Order is entered into knowingly by and with the consent of the Joint Use Cities. For that reason, the Joint Use Cities individually waive the right to appeal this Order or any part thereof.

VIII. NONCOMPLIANCE

Failure to comply with this Order may result in referral to the Attorney General to obtain injunctive relief pursuant to Iowa Code section 455B.191. Compliance with section V. of this Order constitutes full satisfaction of all requirements pertaining to the violations described in section "IV. Conclusions of Law" of this Order.

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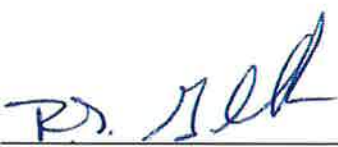
CHUCK GIPP, DIRECTOR
Iowa Department of Natural Resources

Dated this 14th day of
March, 2013



WILLIAM E. GLUBA, MAYOR
City of Davenport

Dated this 19th day of
Feb, 2013



ROBERT S. GALLAGHER, MAYOR
City of Bettendorf

Dated this 23rd day of
Feb, 2013



JOHN J. FRANKLIN, MAYOR
City of Riverdale

Dated this 25 day of
Feb, 2013



DAVID WHITE, MAYOR
City of Panorama Park

Dated this 20 day of
Feb, 2013

NPDES #8222003; Field Office #6; Jon Tack; EPA; Water Quality Bureau; I.C.1

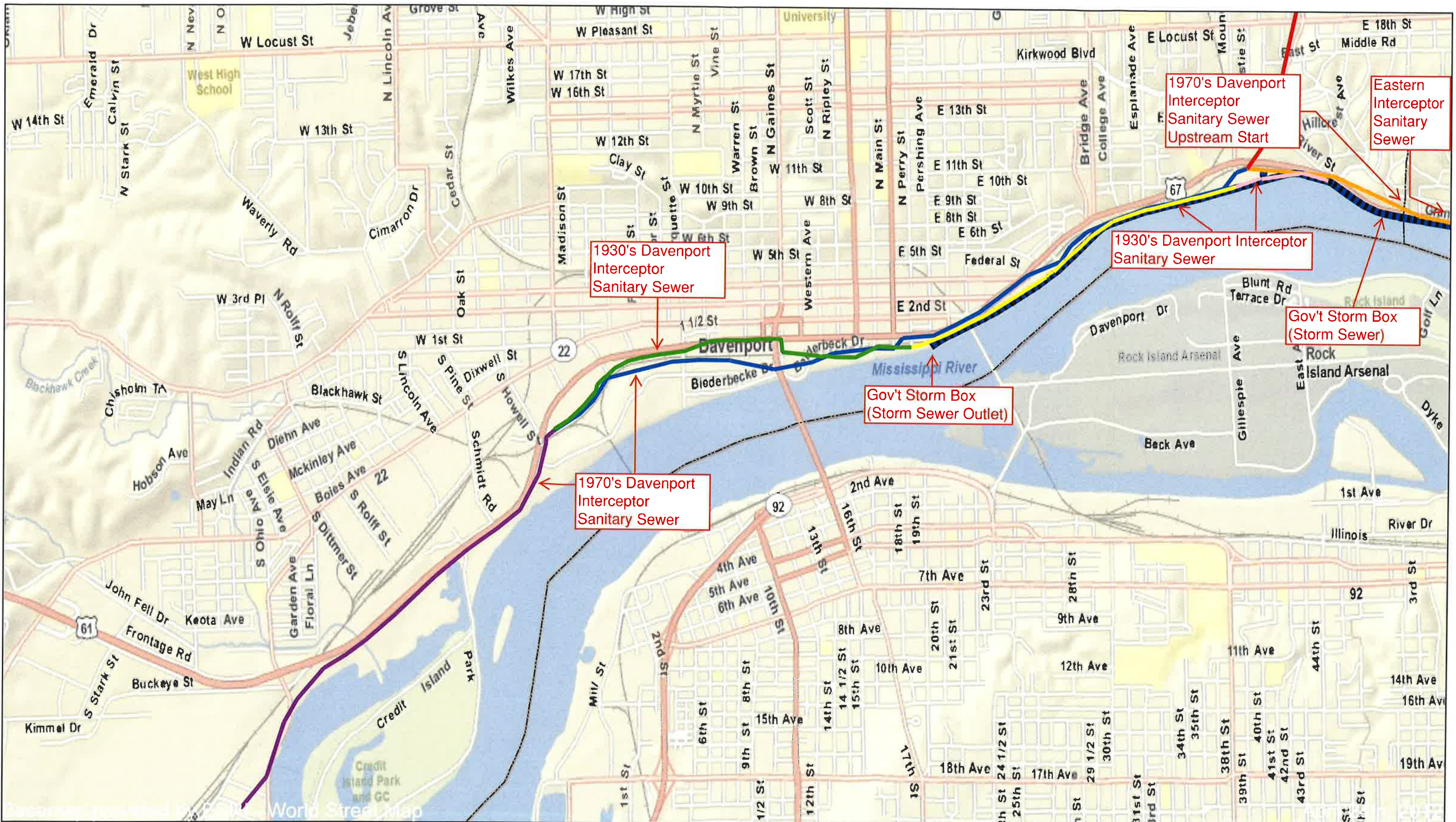
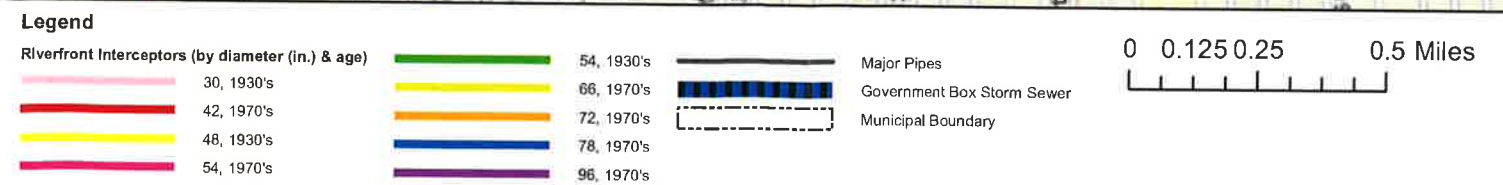


Figure A O-1 - Plan View of Interceptors (Davenport)
 Riverfront Interceptors (by diameter (in.) & age)



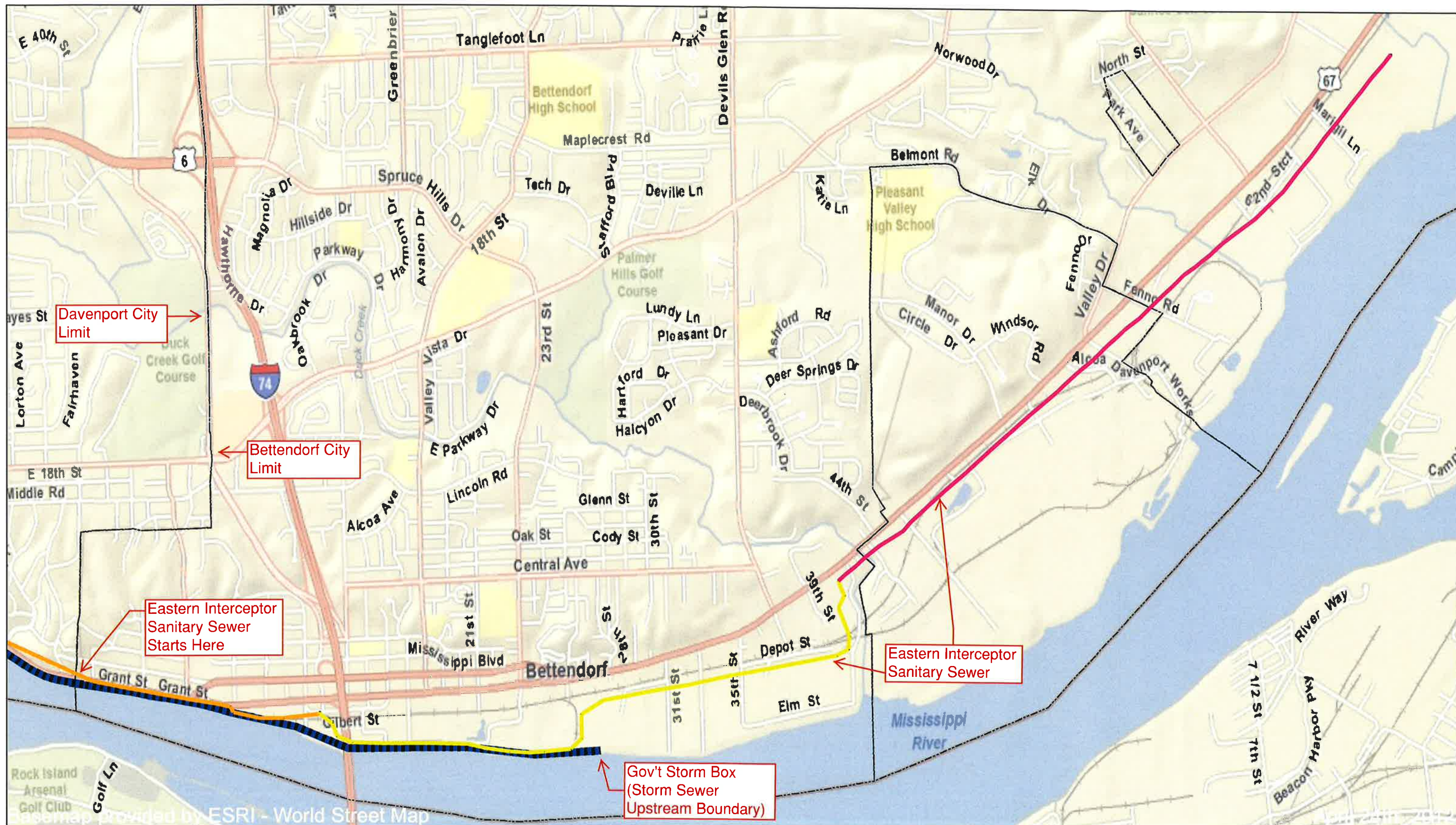
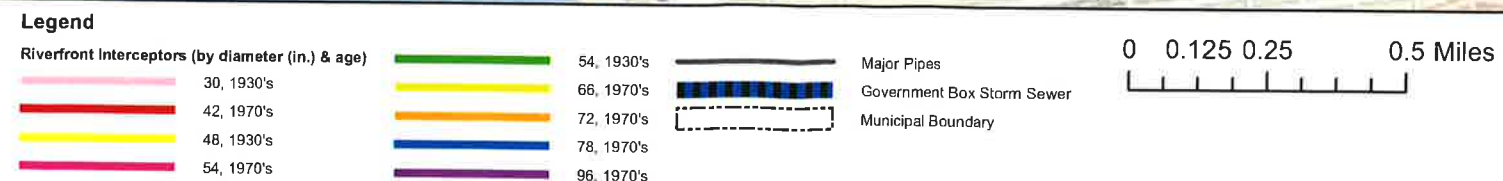


Figure A O-2 - Plan View of Interceptors (Bettendorf)
 Riverfront Interceptors (by diameter (in.) & age)



APPENDIX B

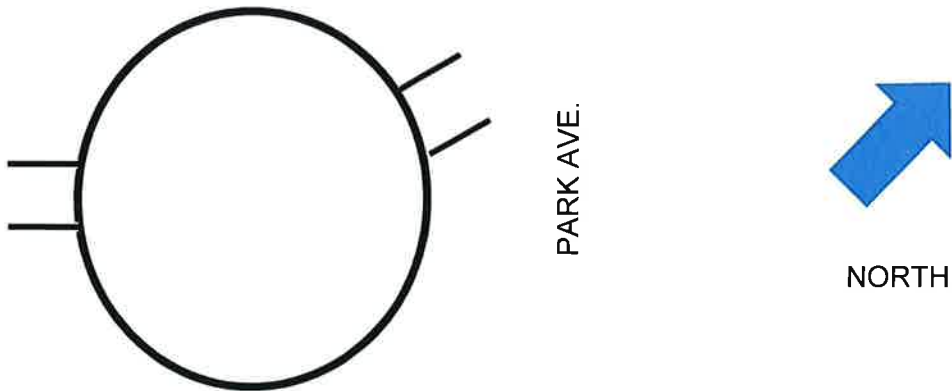
MSA Manhole Inspections

MH18 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 4.8 FT

NOTE: 0.5 FT BELOW GRADE

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____22 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____2 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



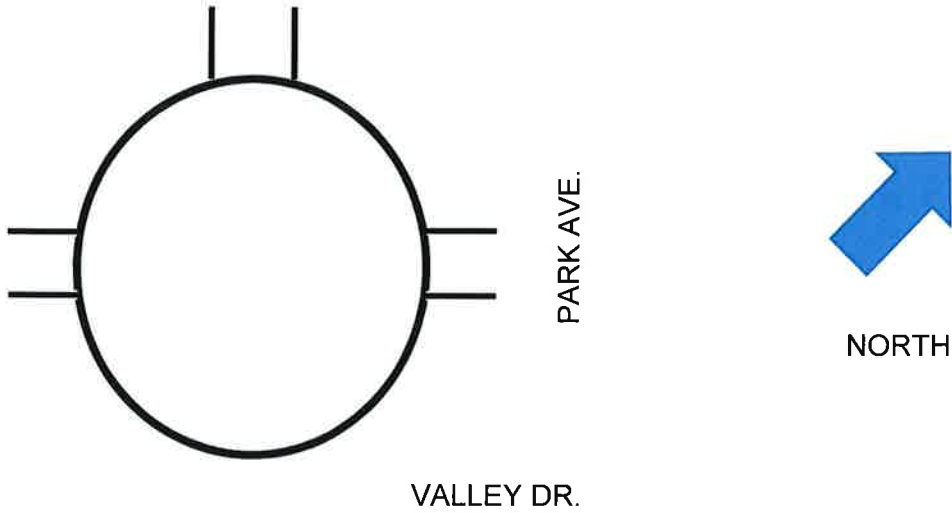
Picture Number 3

MH10930 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



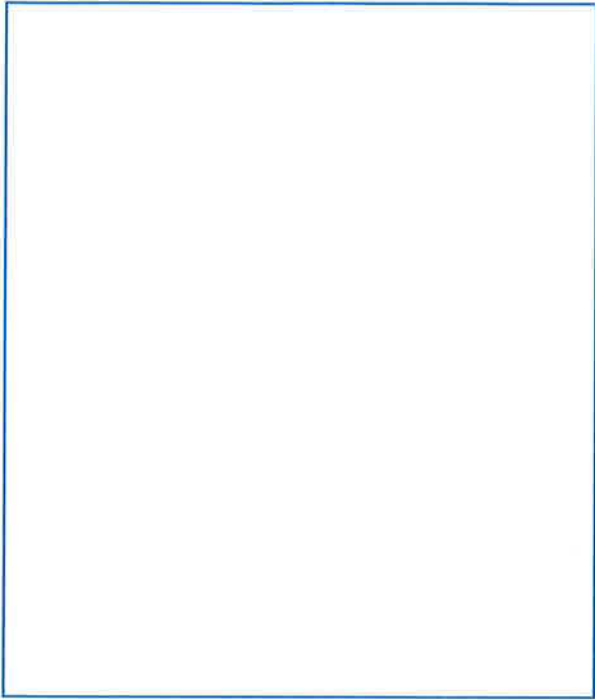
Picture(s) of Manhole Interior:



Measured Manhole Depth: 11.8 FT

OFFSET CHIMNEY

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ___25 in. ___

Depth of frame: ___11 in. ___

Number of Adjustment Rings: ___3 rings ___

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



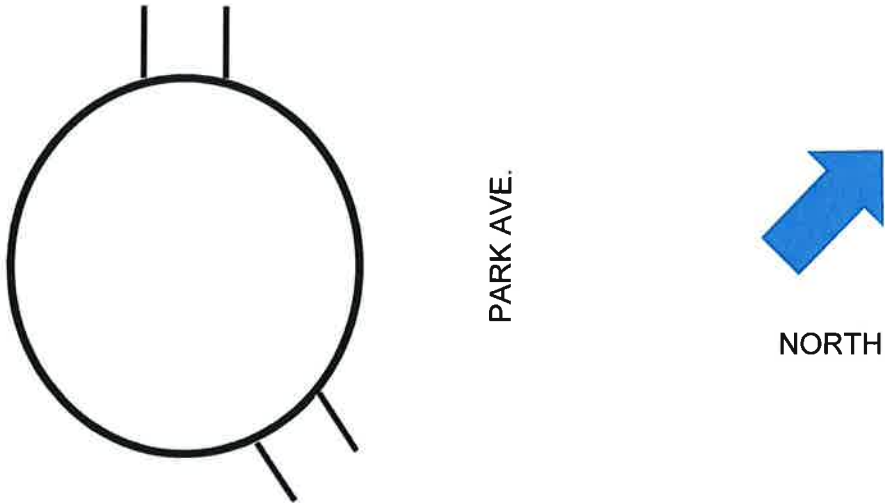
Picture Number 3

MH12713 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 10.4 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____ 13 in. ____

Depth of frame: ____ 8 in. ____

Number of Adjustment Rings: ____ 1 ring ____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



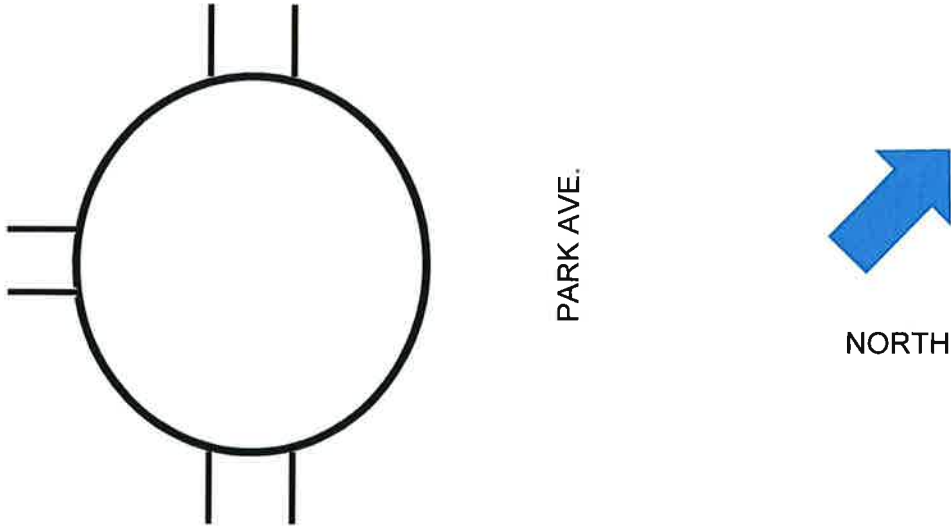
Picture Number 3

MH12714 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



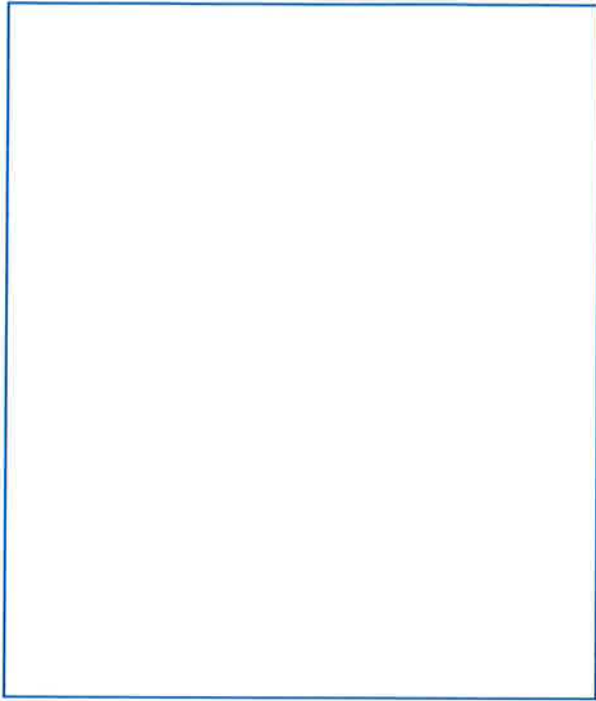
Picture(s) of Manhole Interior:



Measured Manhole Depth: 12.3 FT

OFFSET CHIMNEY

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____28 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____3 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



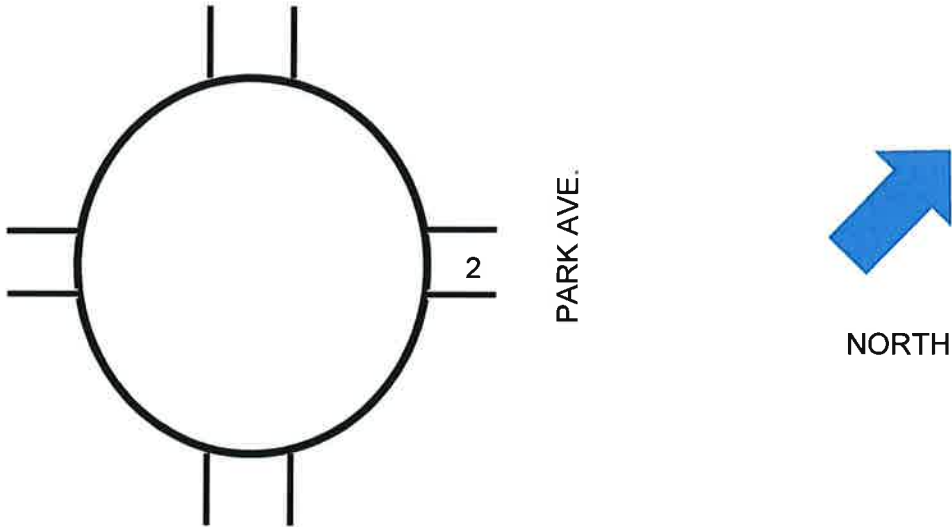
Picture Number 3

MH12715 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 10.2 FT

DROP MANHOLE

OFFSET CHIMNEY

NOTE: BRING TO GRADE

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____16 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____1 ring____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



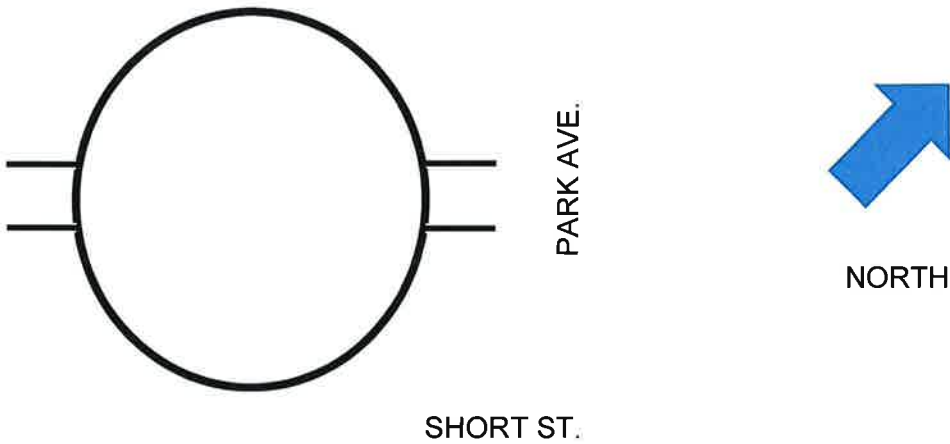
Picture Number 3

MH12814 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 10.1 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____31 in.____

Depth of frame: ____8 in.____

Number of Adjustment Rings: ____5 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



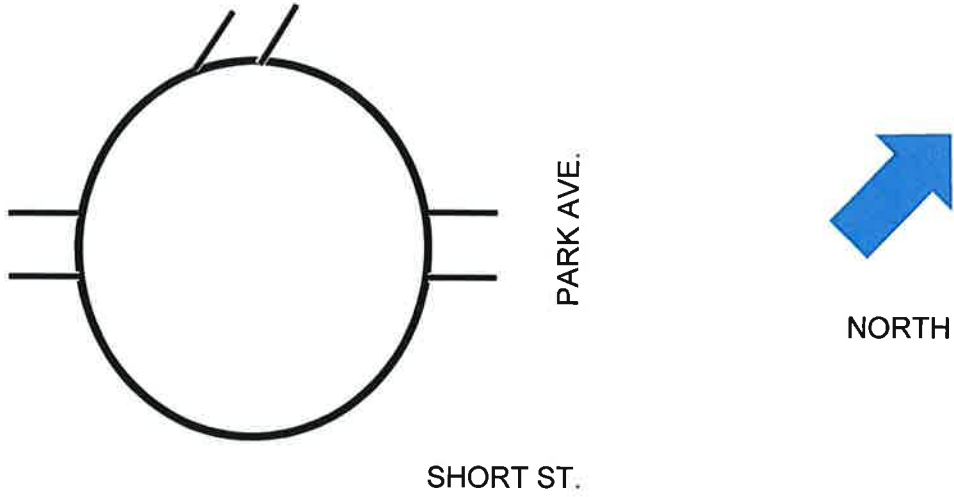
Picture Number 3

MH12815 INSPECTION

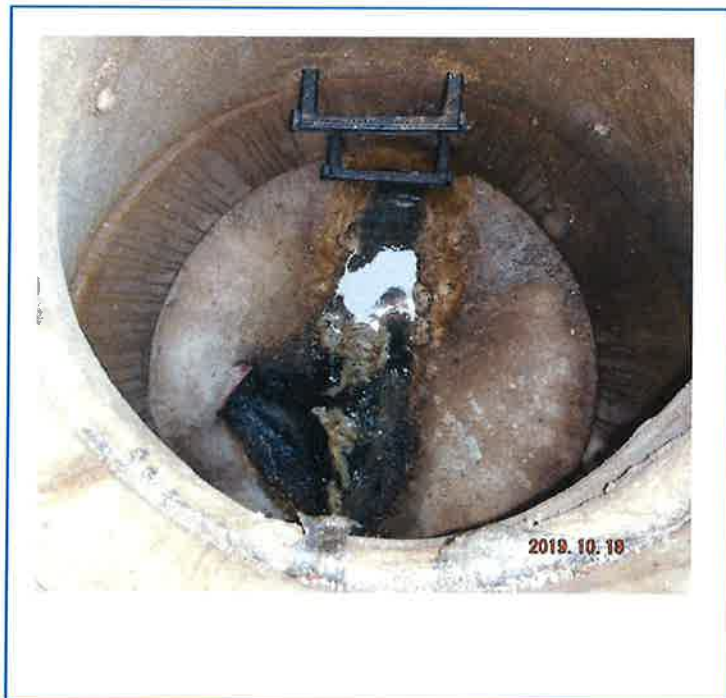
Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:

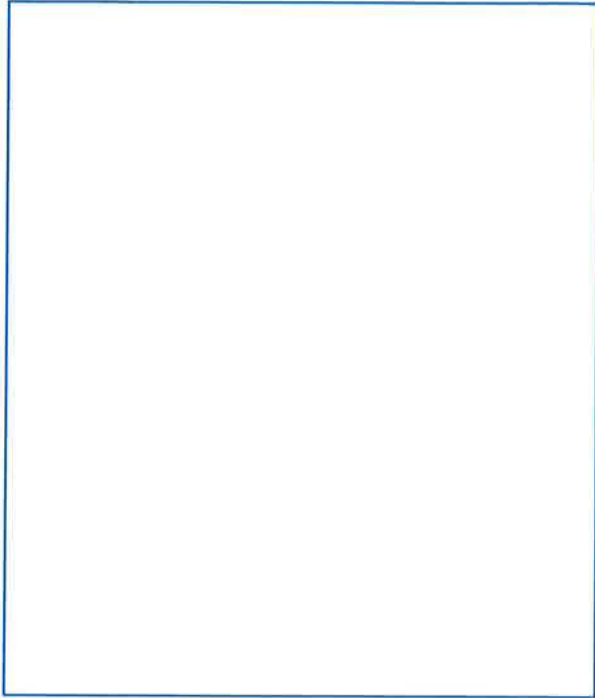


Picture(s) of Manhole Interior:



Measured Manhole Depth: 5.8 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____ 17 in. ____

Depth of frame: ____ 10 in. ____

Number of Adjustment Rings: ____ 1 ring ____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



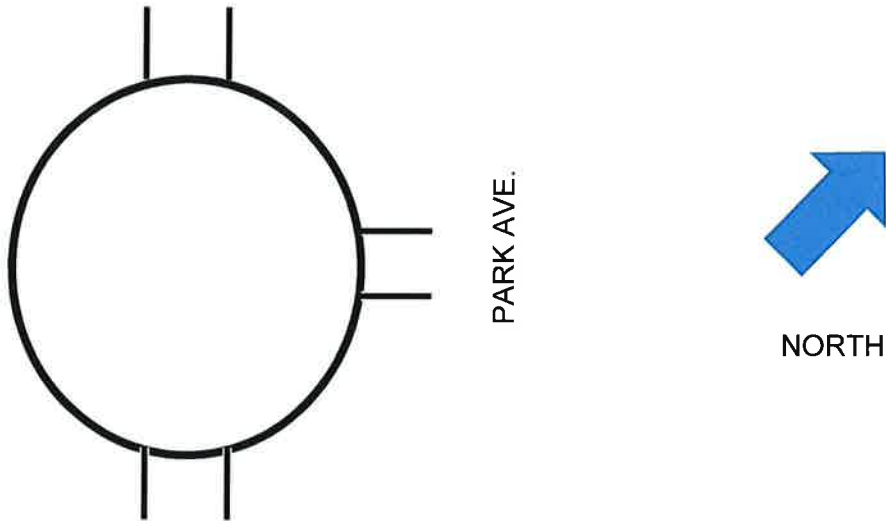
Picture Number 3

MH12826 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 7.3 FT

NOTE: BRING TO GRADE

Picture Number 1



Picture Number 2

Manhole Chimney Information:

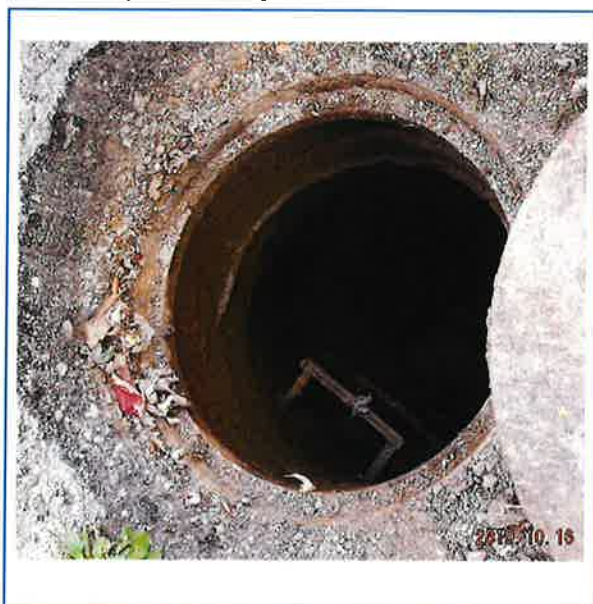
Total Depth: ____14 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____1 ring____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



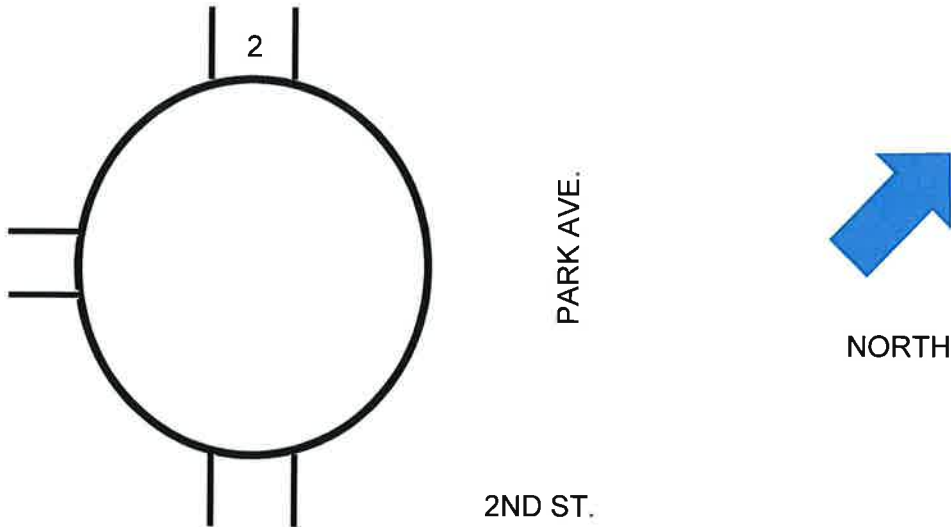
Picture Number 3

MH12827 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 13.2 FT

DROP MANHOLE

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____ 19 in. ____

Depth of frame: ____ 10 in. ____

Number of Adjustment Rings: ____ 2 rings ____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



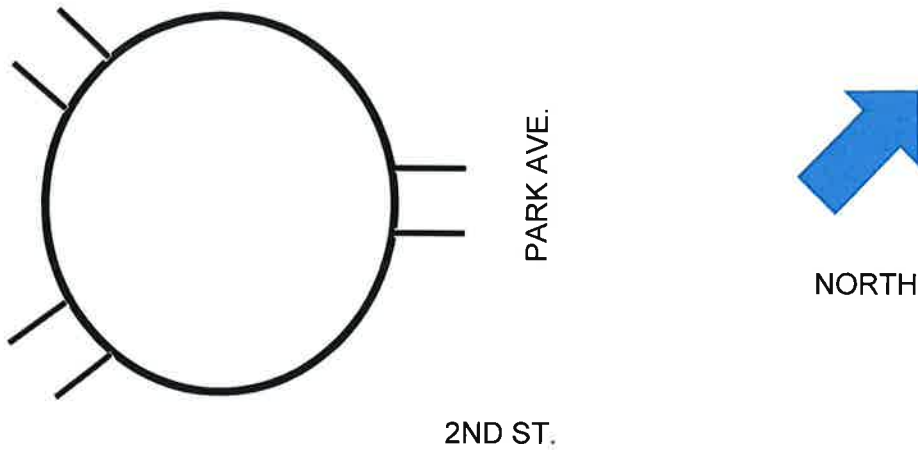
Picture Number 3

MH12828 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 6.4 FT

NOTE: BRING TO GRADE

Picture Number 1



Picture Number 2

Manhole Chimney Information:

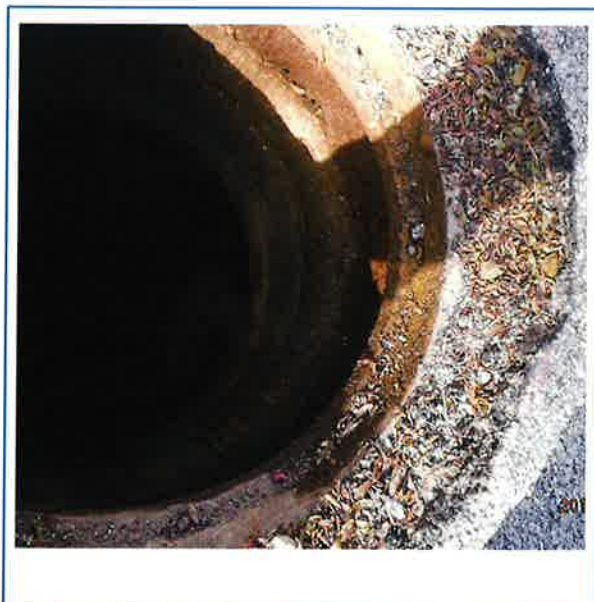
Total Depth: ____23 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____2 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



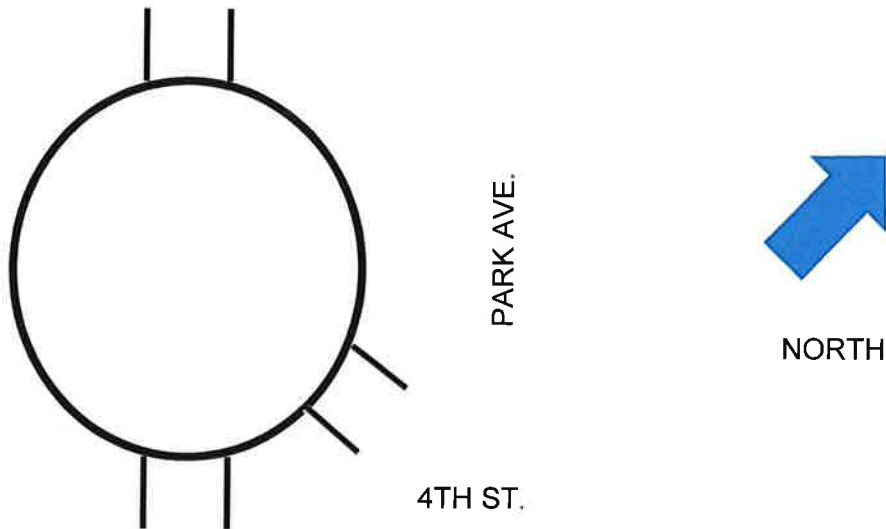
Picture Number 3

MH12829 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



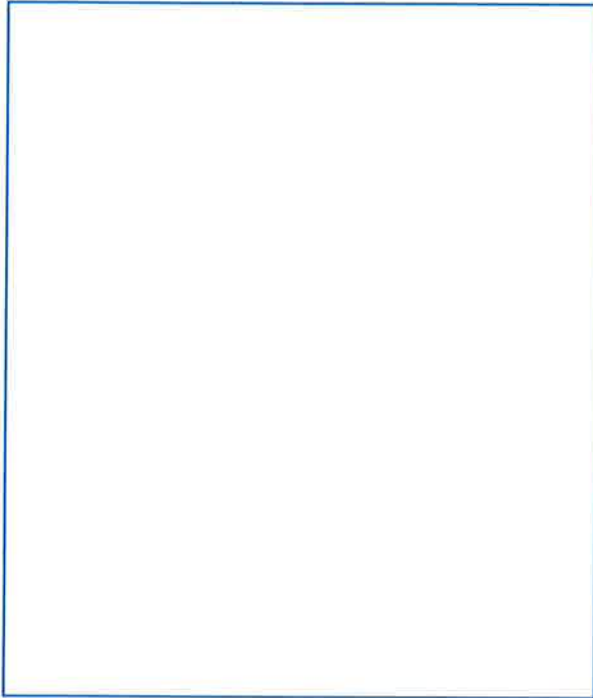
Picture(s) of Manhole Interior:



Measured Manhole Depth: 14.2 FT

OFFSET CHIMNEY

Picture Number 1



Picture Number 2

Manhole Chimney Information:

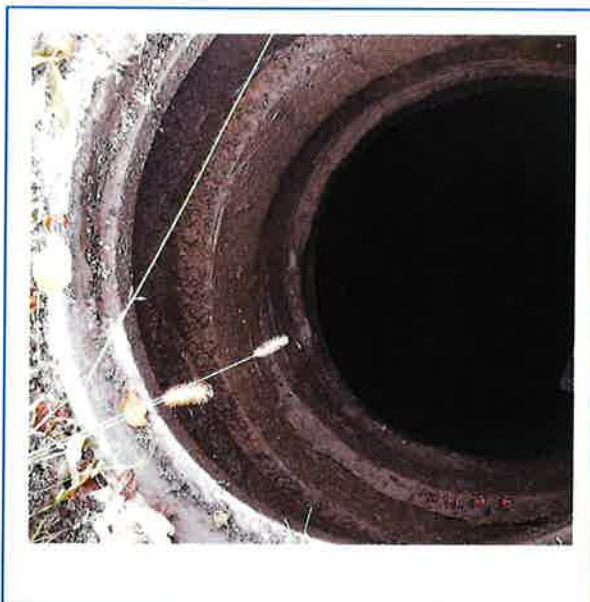
Total Depth: ____22 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____2 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



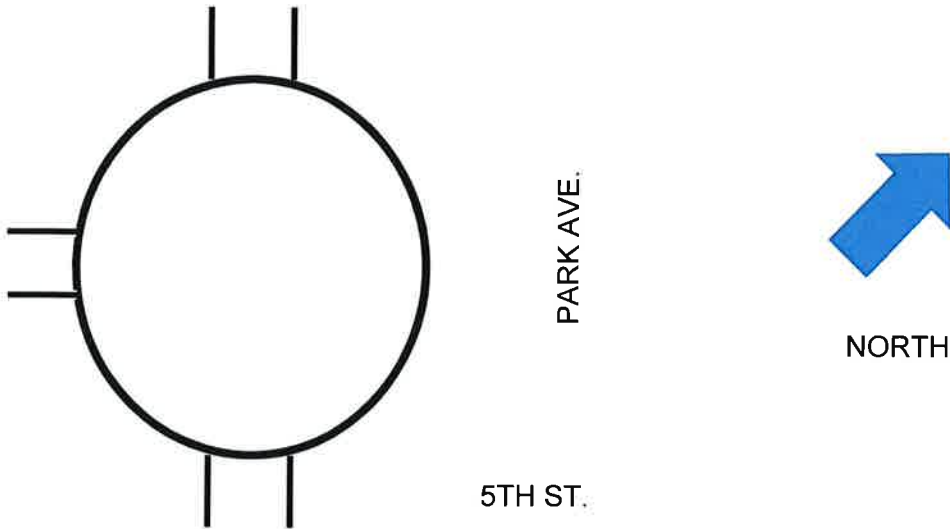
Picture Number 3

MH12830 INSPECTION

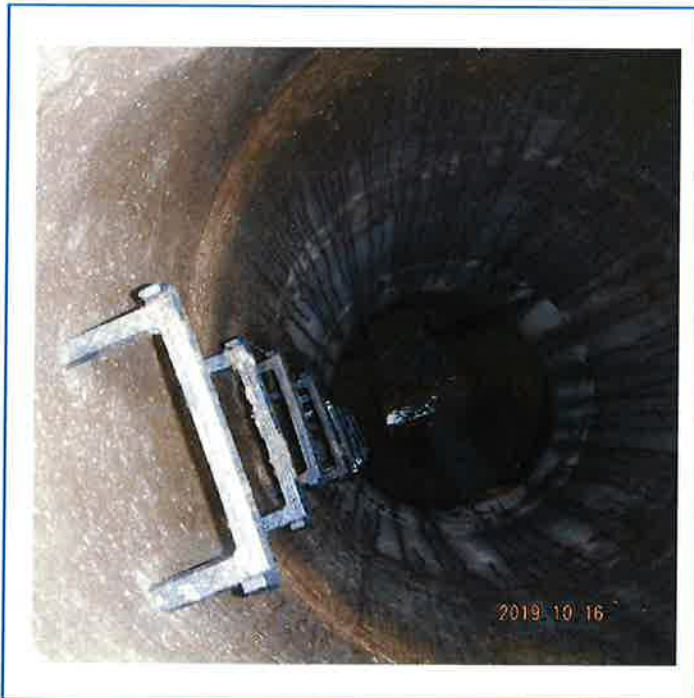
Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:

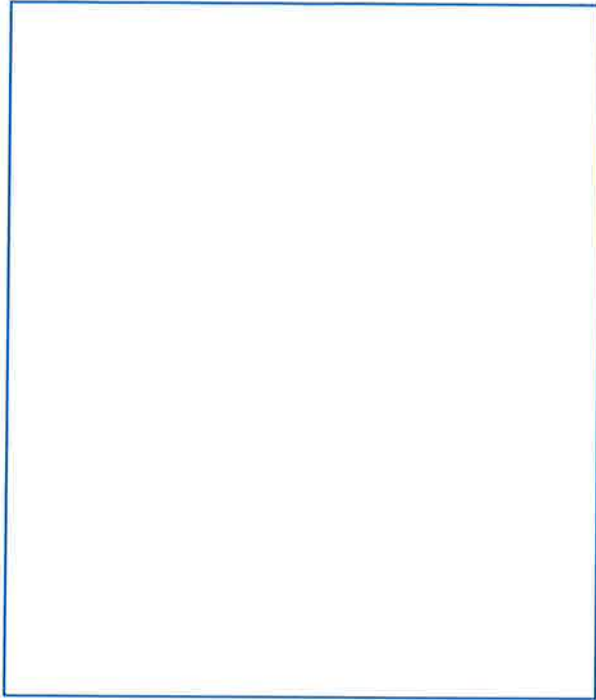


Picture(s) of Manhole Interior:



Measured Manhole Depth: 14.9 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____ 14.5 in. ____

Depth of frame: ____ 10 in. ____

Number of Adjustment Rings: ____ 1 ring ____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



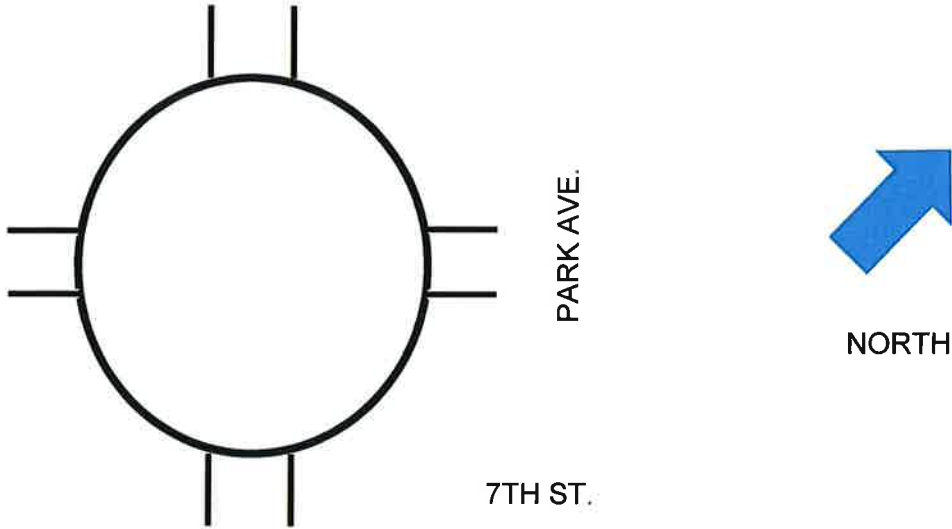
Picture Number 3

MH12831 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:

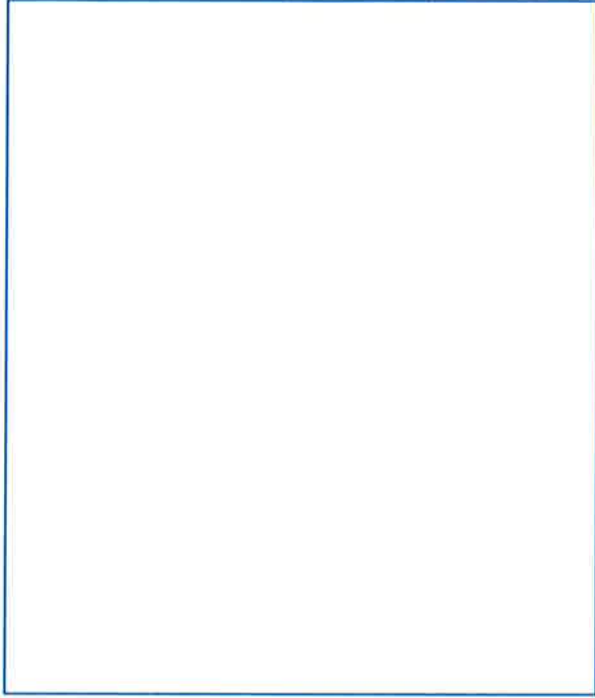


Picture(s) of Manhole Interior:



Measured Manhole Depth: 14.1 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

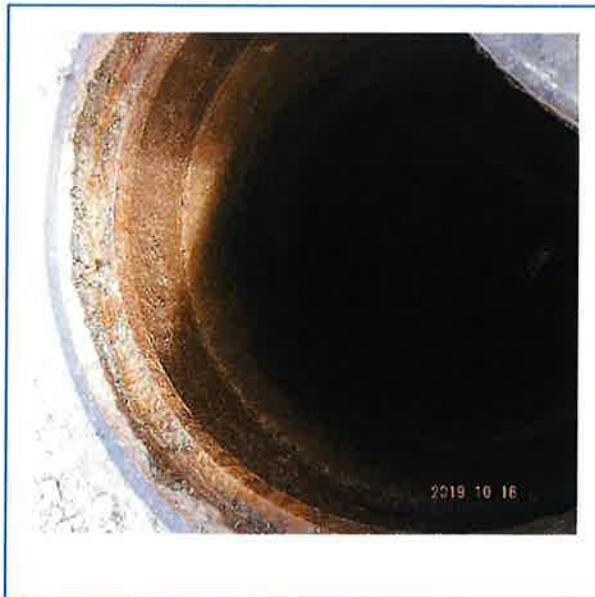
Total Depth: ____24 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____3 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



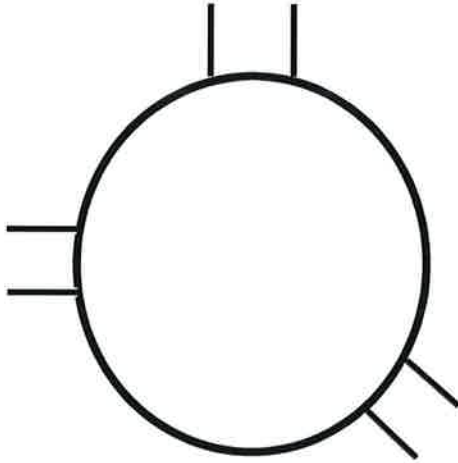
Picture Number 3

MH12832 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:



PARK AVE.



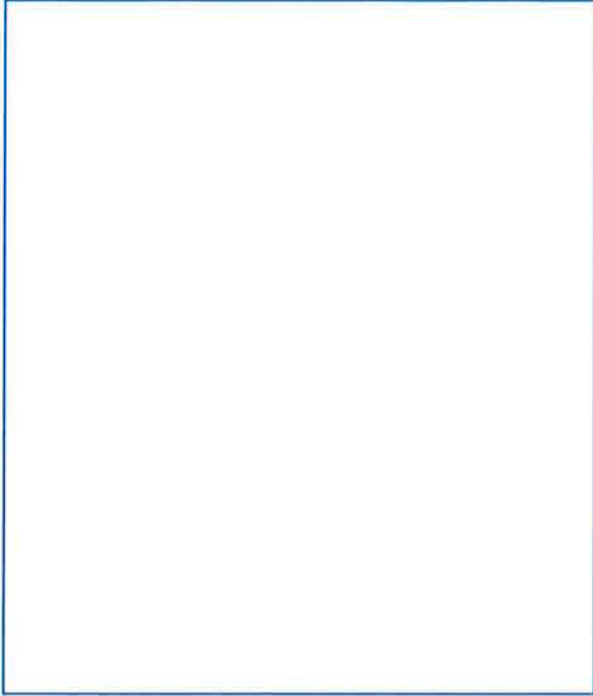
NORTH

Picture(s) of Manhole Interior:



Measured Manhole Depth: 7.0 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

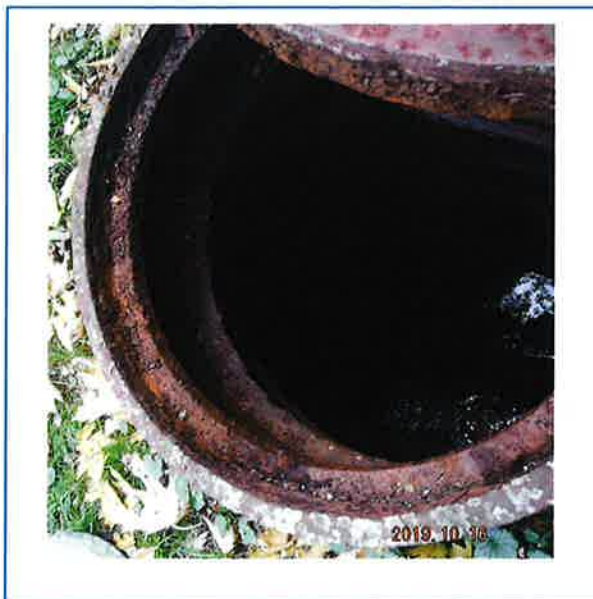
Total Depth: ____ 10 in. ____

Depth of frame: ____ 10 in. ____

Number of Adjustment Rings: ____ 0 rings ____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



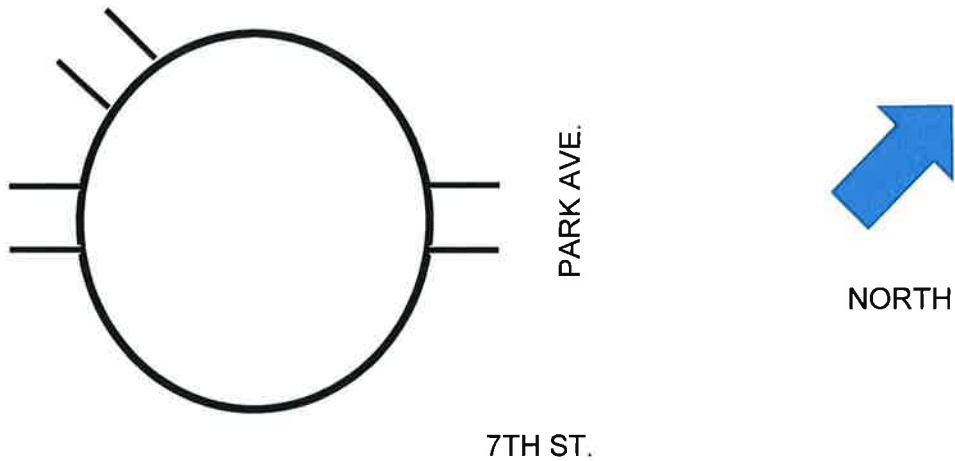
Picture Number 3

MH13903 INSPECTION

Municipality: Panorama Park

Date of Inspection: October 16, 2019

Pipe Alignment Diagram:

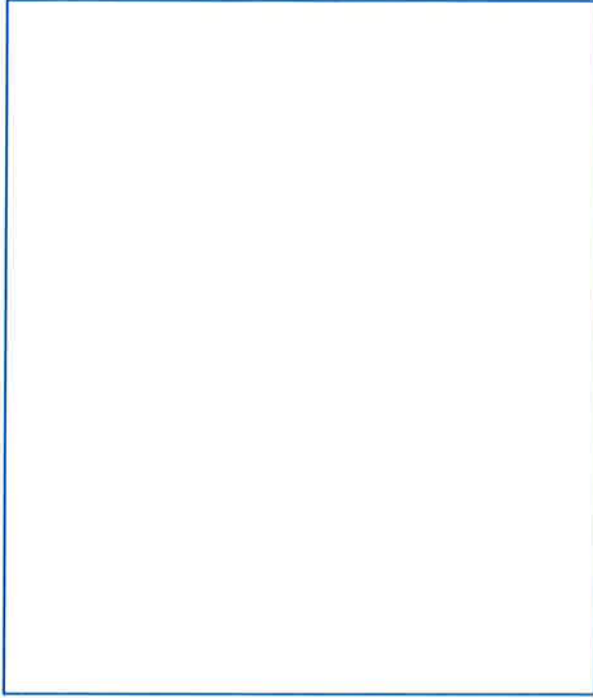


Picture(s) of Manhole Interior:



Measured Manhole Depth: 8.9 FT

Picture Number 1



Picture Number 2

Manhole Chimney Information:

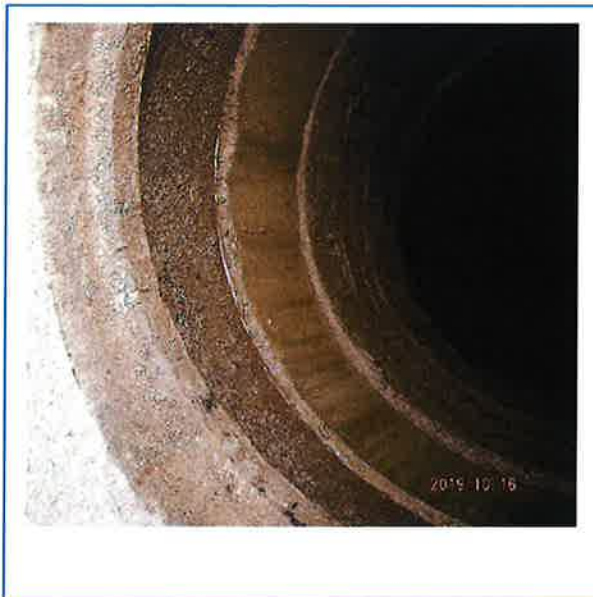
Total Depth: ____29 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____4 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



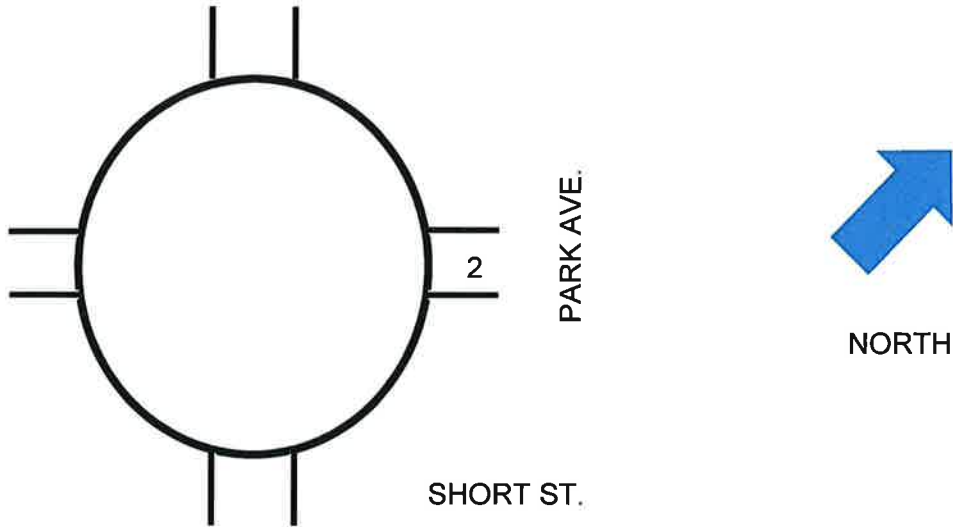
Picture Number 3

MH13904 INSPECTION

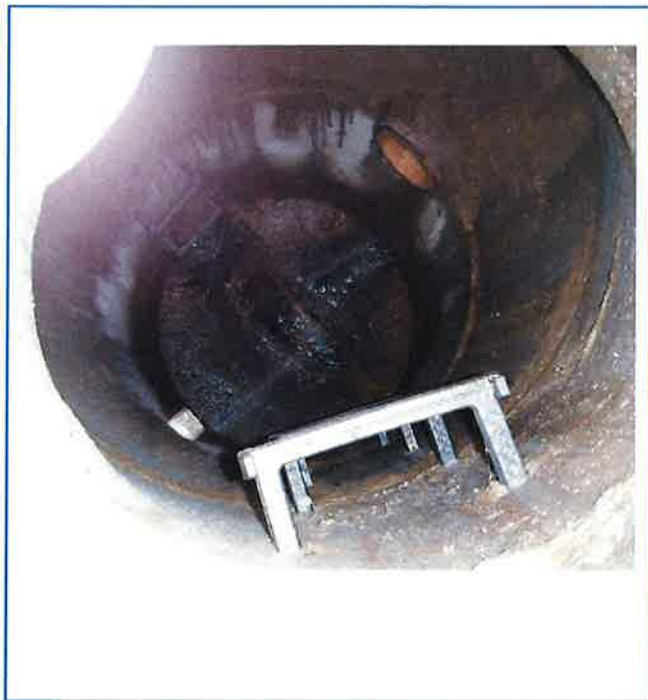
Municipality: Panorama Park

Date of Inspection: October 18, 2019

Pipe Alignment Diagram:



Picture(s) of Manhole Interior:



Measured Manhole Depth: 10.4 FT

DROP MANHOLE

OFFSET CHIMNEY

Picture Number 1



Picture Number 2

Manhole Chimney Information:

Total Depth: ____33 in.____

Depth of frame: ____10 in.____

Number of Adjustment Rings: ____2 rings____

Standard Manhole Frame and Lid: Yes No

Picture of Chimney Assembly:



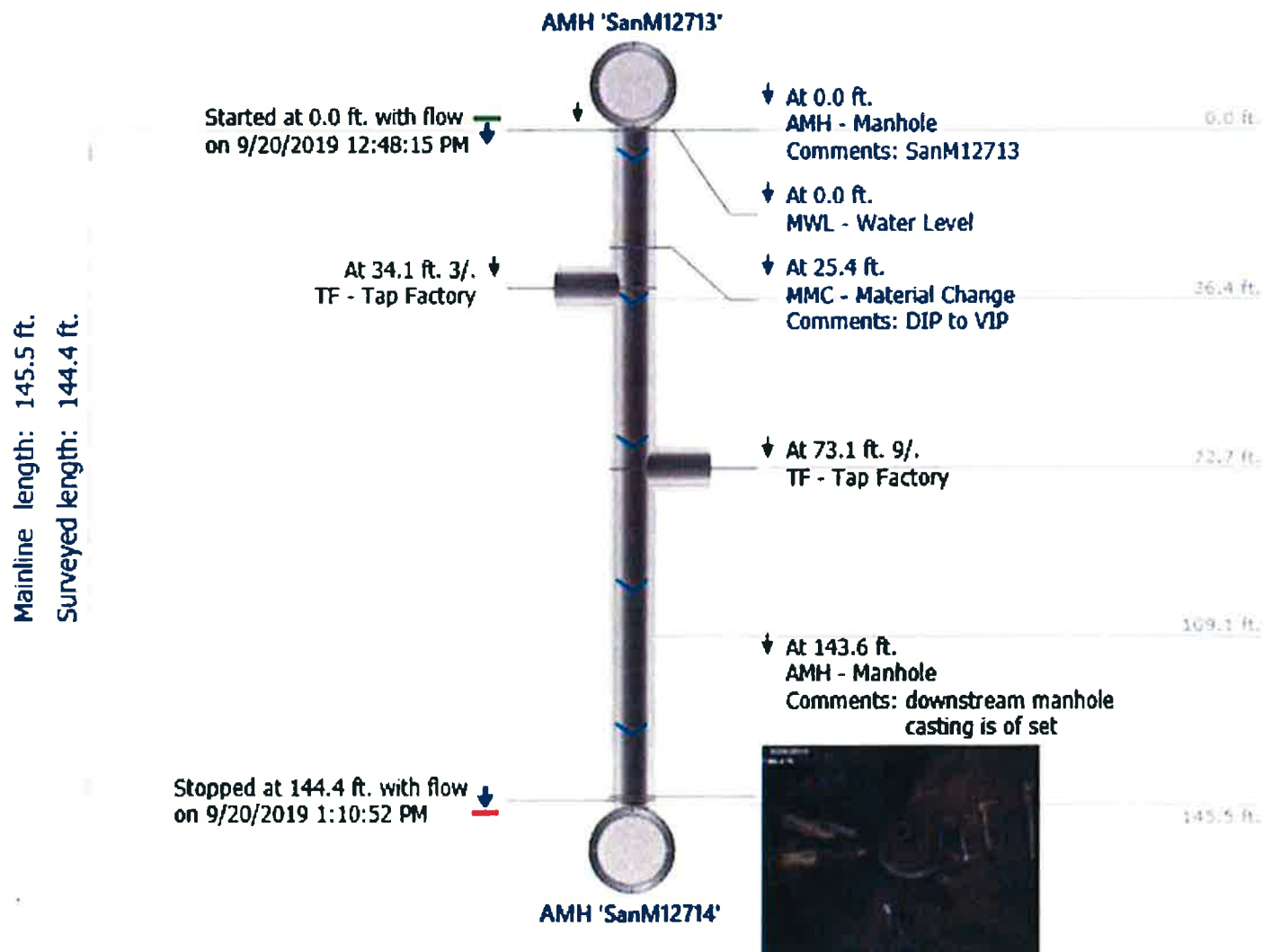
Picture Number 3

APPENDIX C

City of Bettendorf Televising Summary Report

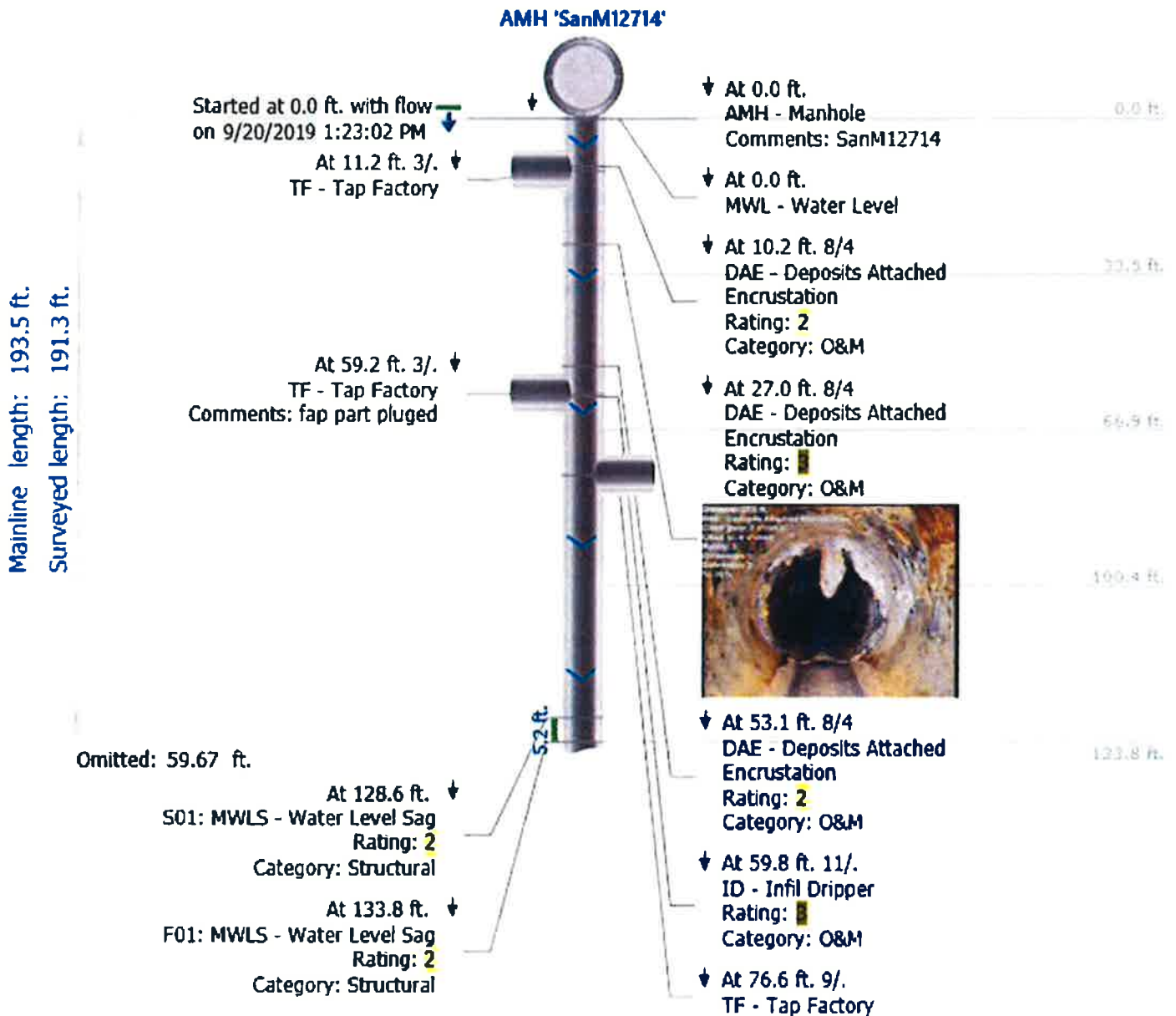
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3884	Panorama Park	Park Ave.
Start date/time:	Direction:	Weather:	Location code:
9/20/2019 12:48 PM	D	1	Y
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3883	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/20/2019 1:23 PM	D	1	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	



Project name:
Panorama Park

Mainline ID:
San3883

Start date/time:
9/20/2019 1:23 PM

Direction:
D

Weather:

1

Mainline length: **193.5 ft.**
Surveyed length: **191.3 ft.**

Omitted: 191.3 ft.

Stopped at 191.3 ft. with flow
on 9/20/2019 1:42:19 PM



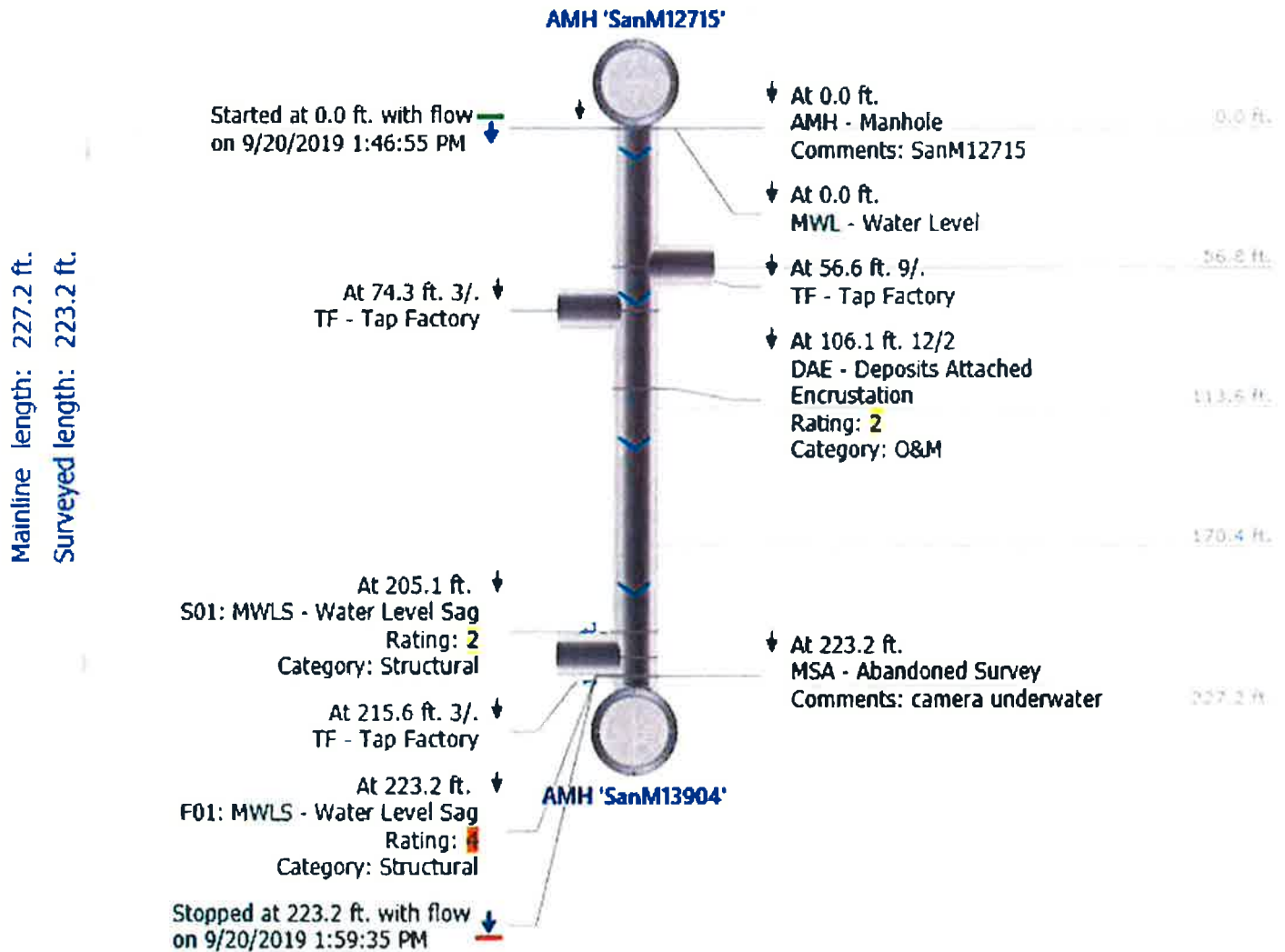
AMH 'SanMT2715'

↓ **At 191.3 ft.**
AMH - Manhole
Comments: pipe in good conditon

191.3 ft.

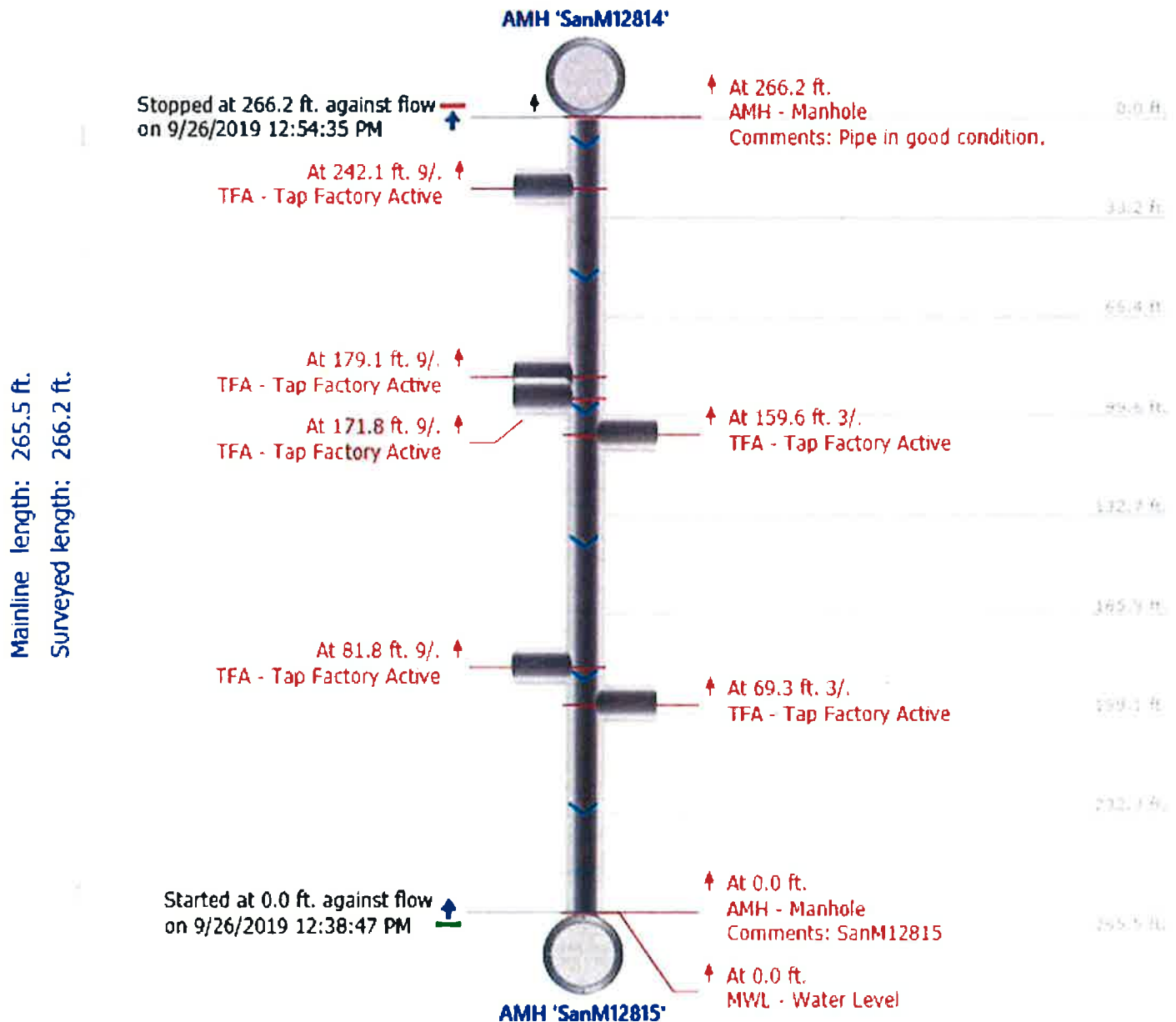
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3881	Panorama Park	Park Ave.
Start date/time:	Direction:	Weather:	Location code:
9/20/2019 1:46 PM	D	1	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	



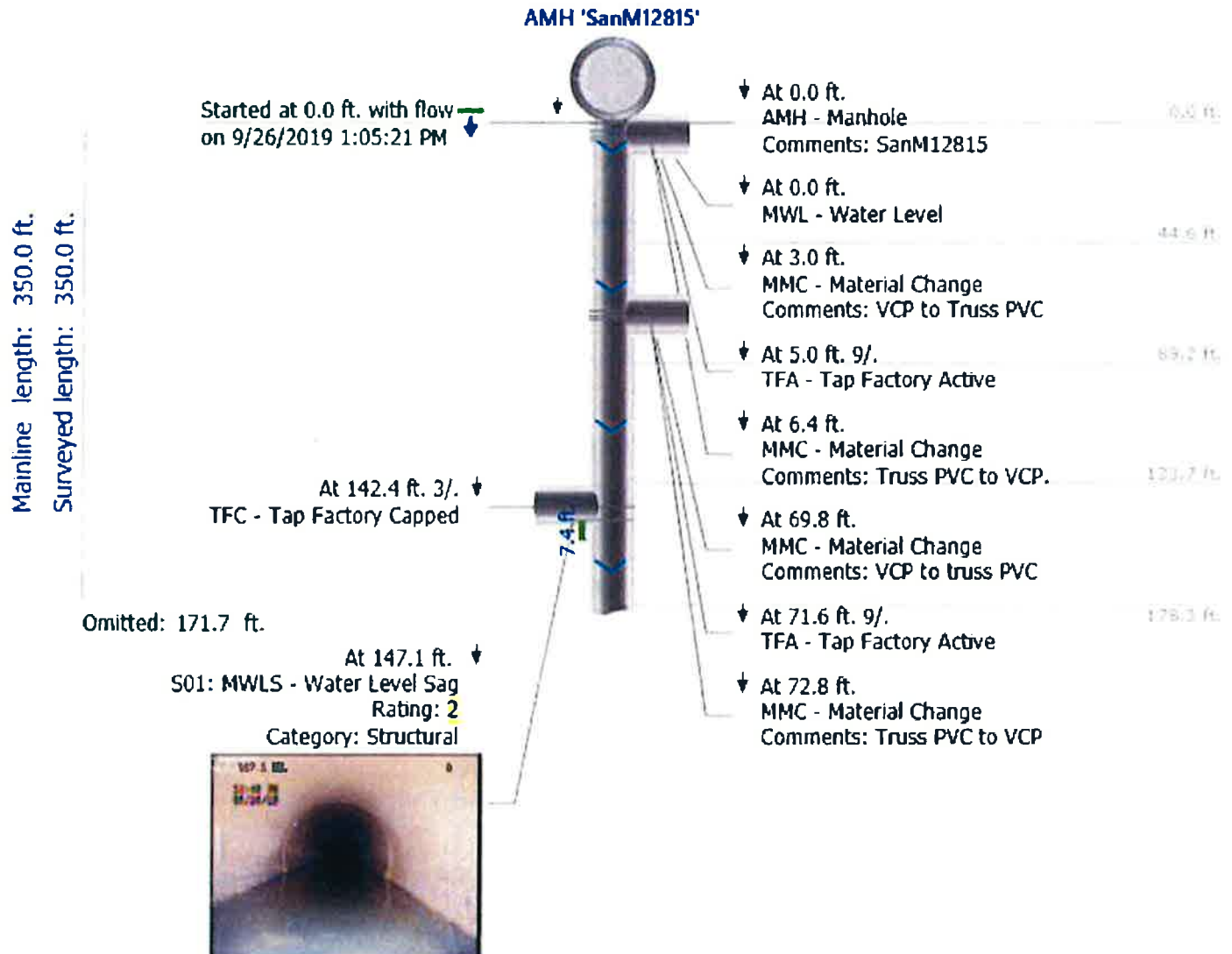
Main Inspections Pipe Run with Images

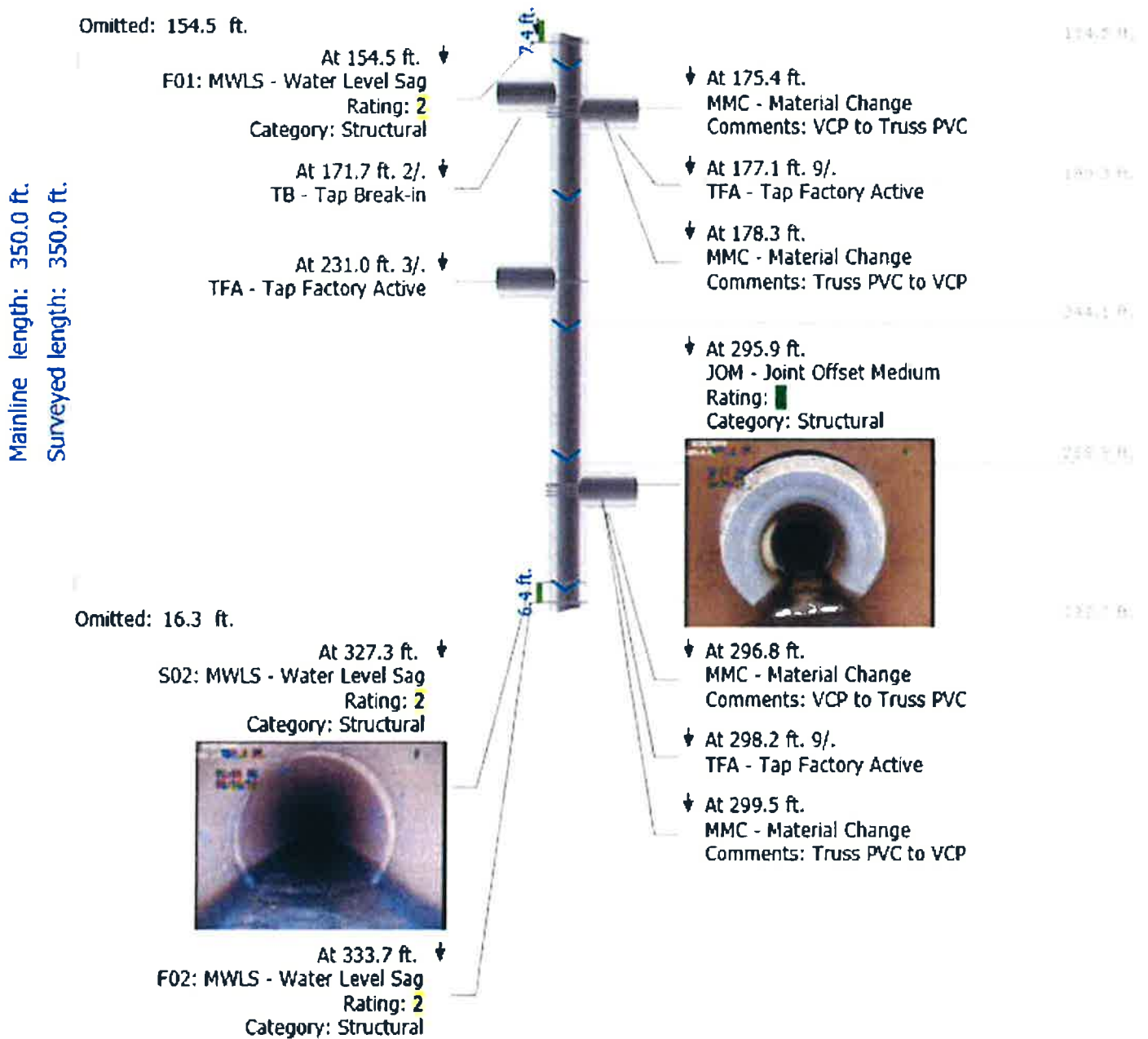
Project name:	Mainline ID:	City:	Street:
Panorama Park	San3913	Panarama Park	Short St.
Start date/time:	Direction:	Weather:	Location code:
9/26/2019 12:38 PM	U	1	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3880	Panorama Park	Short St.
Start date/time:	Direction:	Weather:	Location code:
9/26/2019 1:05 PM	D	1	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.





Weather:

1

Mainline length: 350.0 ft.
Surveyed length: 350.0 ft.

Omitted: 338.7 ft.

At 344.5 ft. 6/. ↓
TFA - Tap Factory Active
Comments: External drop.
Stopped at 344.5 ft. with flow
on 9/26/2019 1:32:26 PM ↓



↓ At 338.7 ft. 12/2
FM - Fracture Multiple
Rating: 4
Category: Structural
Comments: At the joint.



↓ At 350.0 ft.
AMH - Manhole
Comments: Pipe in good condition.
Needs spot repair at 338.7 feet.

338.7 ft.
350.0 ft.

Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3878	Panorama Park	7th Street
Start date/time:	Direction:	Weather:	Location code:
9/26/2019 1:42 PM	D	1	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.

Mainline length: 302.0 ft.
Surveyed length: 305.4 ft.

Omitted: 292.2 ft.

Started at 0.0 ft. with flow
on 9/26/2019 1:42:12 PM

AMH 'SanM13903'



At 0.0 ft.
AMH - Manhole
Comments: SanM13903

At 0.0 ft.
MWL - Water Level

At 5.0 ft. 1/3
RFJ - Roots Fine Joint
Rating: █
Category: O&M



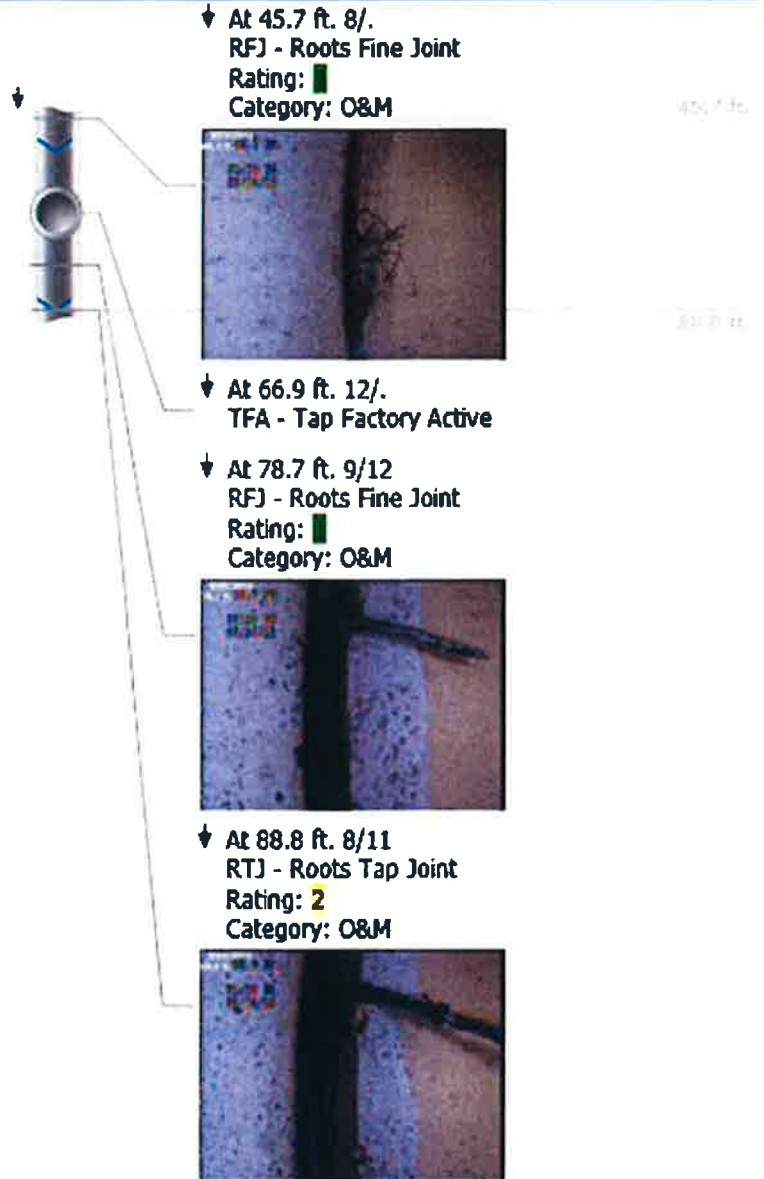
At 9.8 ft. 9/
RFJ - Roots Fine Joint
Rating: █
Category: O&M



Weather:

1

Mainline length: 302.0 ft.
Omitted: 45.7 ft.
Surveyed length: 305.4 ft.
Omitted: 213.2 ft.



Weather:

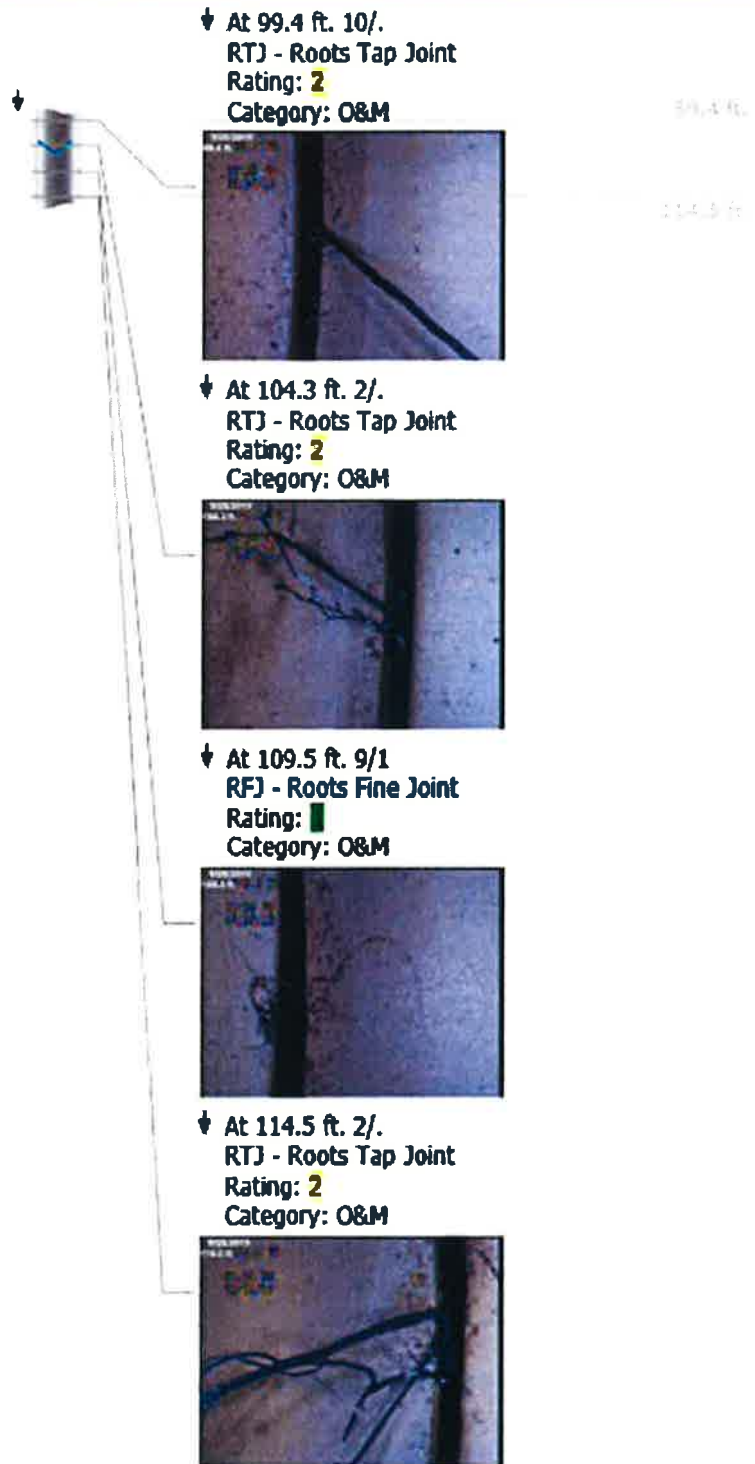
1

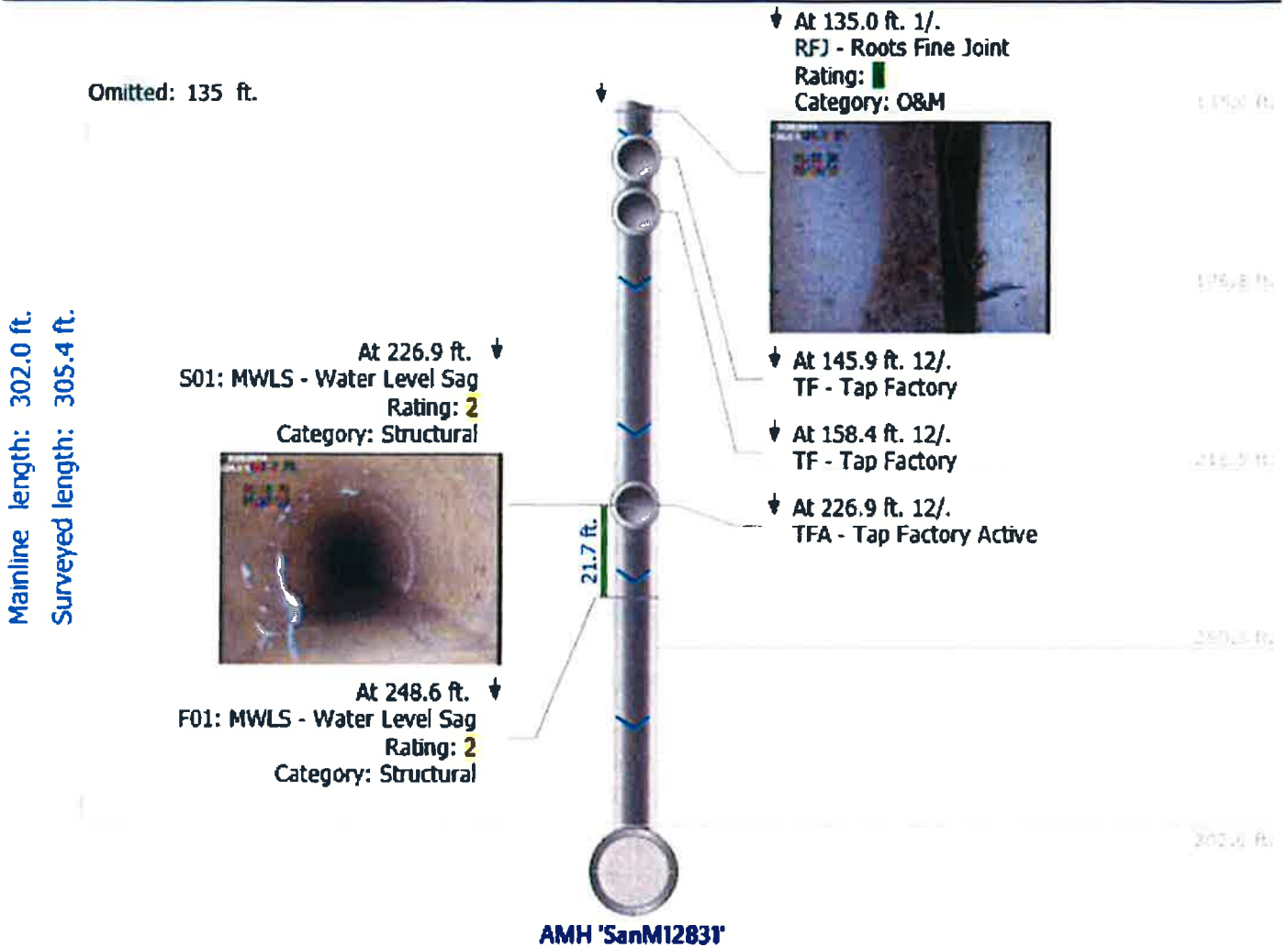
Mainline length: 302.0 ft.

Surveyed length: 305.4 ft.

Omitted: 99.4 ft.

Omitted: 187.5 ft.





Some observations have distance greater than the pipe length

Project name:
Panorama Park

Mainline ID:
San3878

Start date/time:
9/26/2019 1:42 PM

Direction:
D

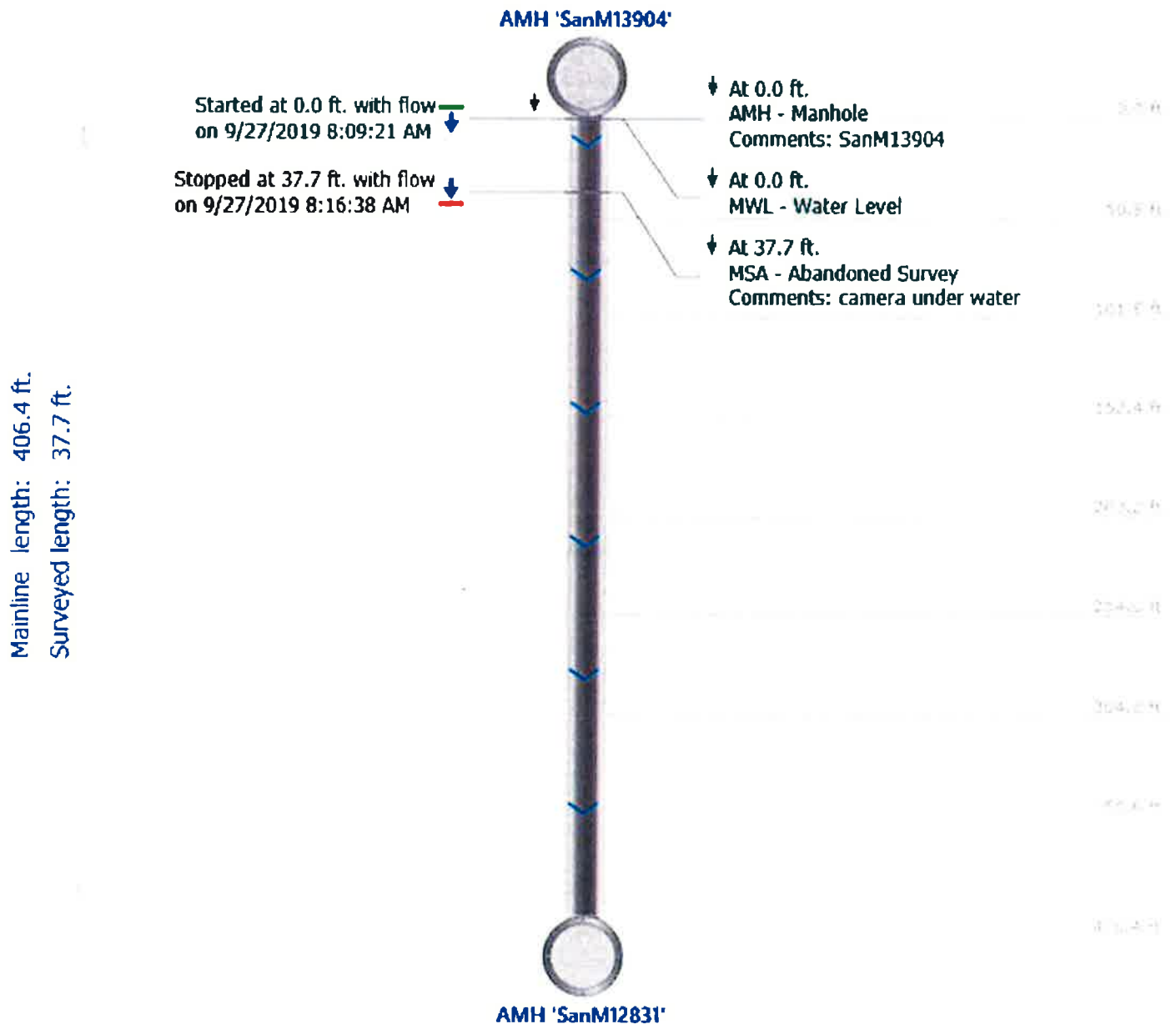
Weather:
1

Stopped at 305.4 ft. with flow ↓
on 9/26/2019 2:11:41 PM

↓ At 305.4 ft.
AMH - Manhole
Comments: Pipe in good condition.
Has a few spots of roots
to watch.

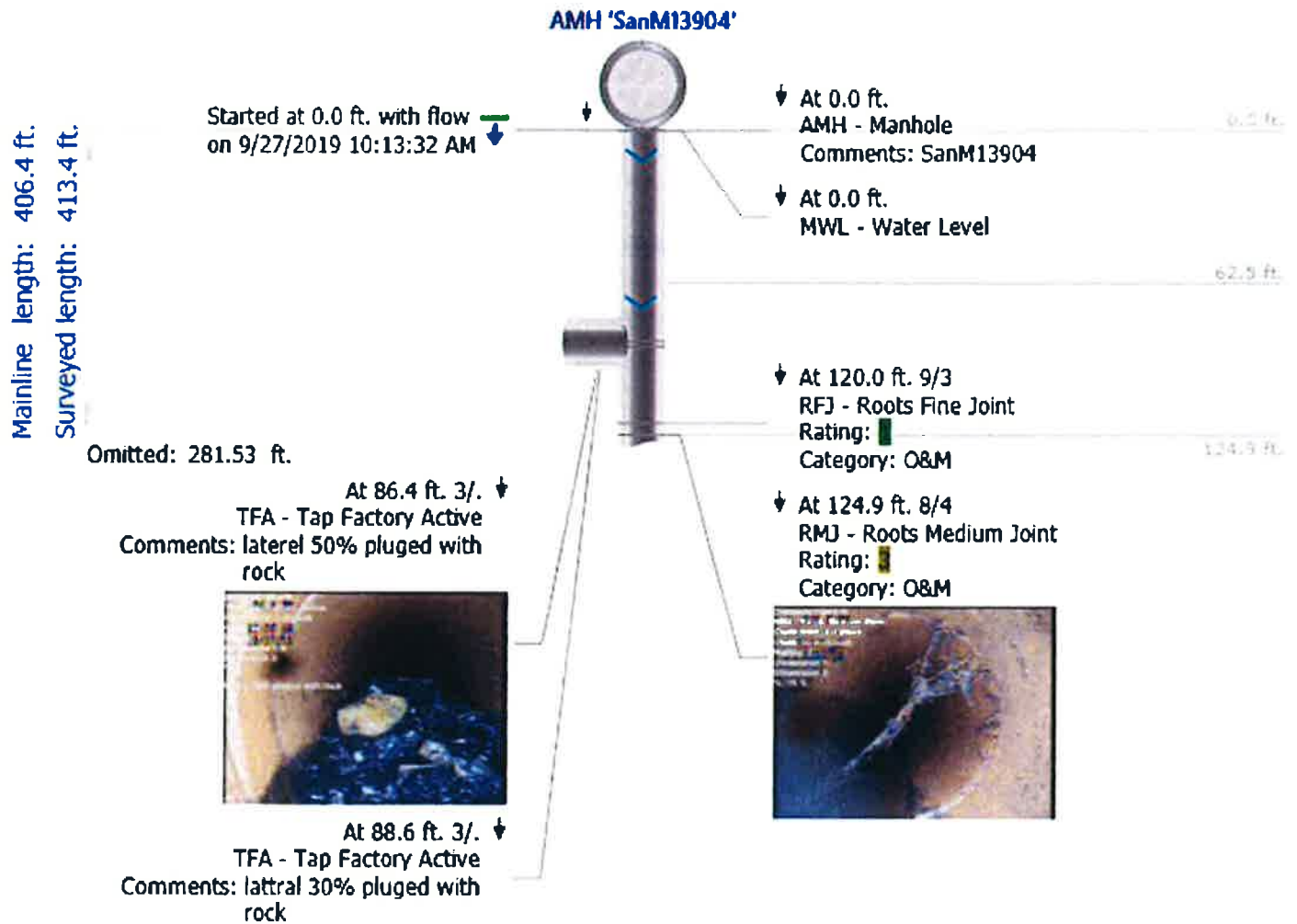
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3879	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 8:09 AM	D	3	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3879	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 10:13 AM	D	3	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Weather:

3

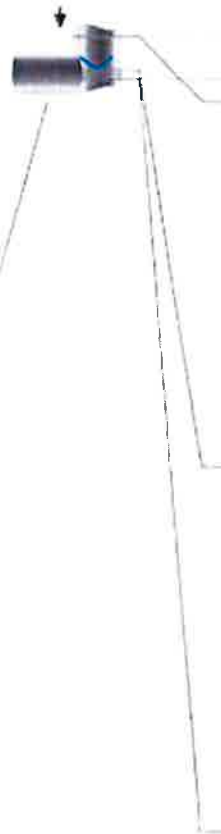
Mainline length: 406.4 ft.
Surveyed length: 413.4 ft.


Omitted: 140.1 ft.

Omitted: 253.13 ft.

At 151.9 ft. 3/ ↓

TFA - Tap Factory Active
Comments: lateral 95% plugged with roots




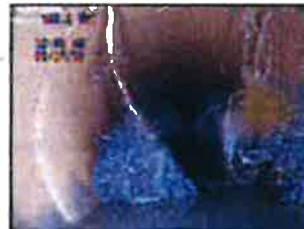
At 140.1 ft. 12/10
RBJ - Roots Ball Joint
Rating: 
Category: O&M


140.1 ft.



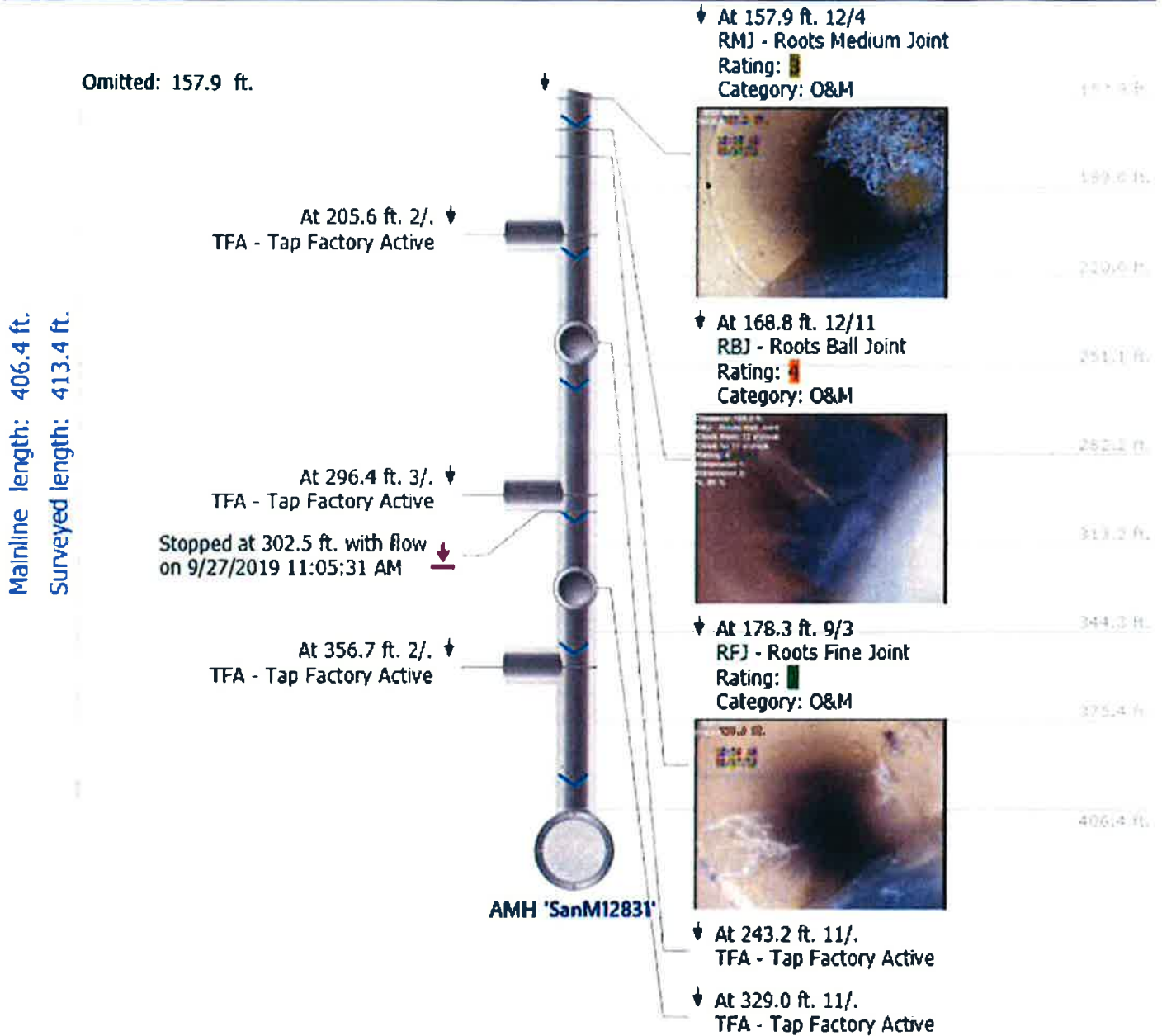
153.3 ft.

At 150.5 ft. 3/8
RBJ - Roots Ball Joint
Rating: 
Category: O&M



At 153.3 ft. 8/4
RBJ - Roots Ball Joint
Rating: 
Category: O&M





Some observations have distance greater than the pipe length

Project name:
Panorama Park

Mainline ID:
San3879

Start date/time:
9/27/2019 10:13 AM

Direction:
D

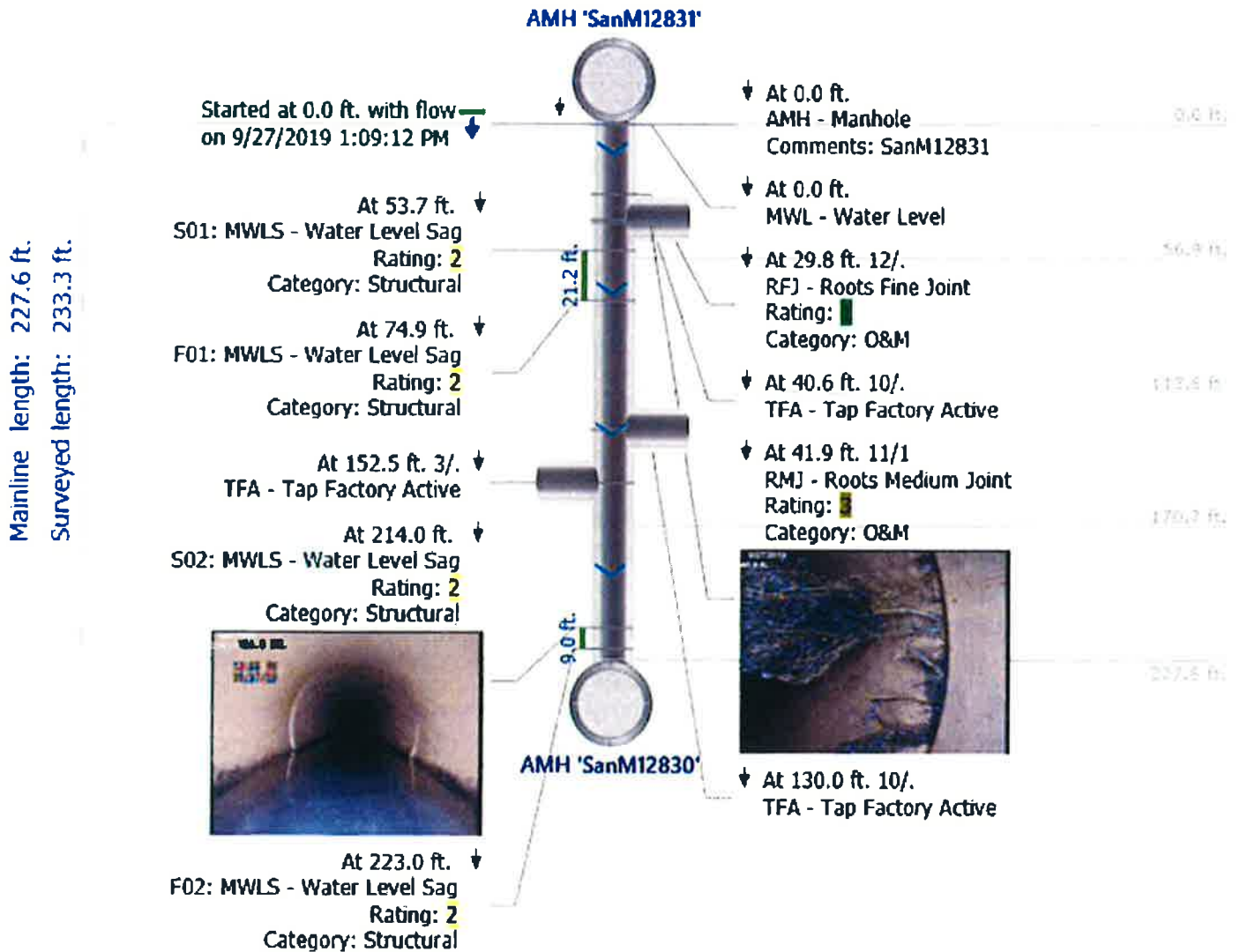
Weather:

3

↓ At 413.4 ft.
AMH - Manhole
Comments: pipe in good condition.
Root balls need to be cut.

Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3877	Bettendorf	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 1:09 PM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Project name:
Panorama Park

Mainline ID:
San3877

Start date/time:
9/27/2019 1:09 PM

Direction:
D

Weather:

6

Stopped at 233.3 ft. with flow
on 9/27/2019 1:25:01 PM



↓ At 233.3 ft.
AMH - Manhole
Comments: Pipe in good condition.
Had on root ball at 41
feet.

Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3876	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 1:28 PM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.

Mainline length: 186.0 ft.
Surveyed length: 183.4 ft.

Omitted: 178.4 ft.

Started at 0.0 ft. with flow
on 9/27/2019 1:28:31 PM

AMH 'SanM12830'




↓ At 0.0 ft.
AMH - Manhole
Comments: SanM12830

0.0 ft.

↓ At 0.0 ft.
MWL - Water Level

0.0 ft.

↓ At 2.9 ft. 2/4
CM - Crack Multiple
Rating: 
Category: Structural



↓ At 7.6 ft. 7/12
RMJ - Roots Medium Joint
Rating: 
Category: O&M



Weather:

6

Mainline length: 186.0 ft.
Surveyed length: 183.4 ft.
Omitted: 13.1 ft.
Omitted: 141.6 ft.



↓ At 13.1 ft. 1/5
RFJ - Roots Fine Joint
Rating: ■
Category: O&M



13.1 ft.

28.8 ft.

↓ At 33.4 ft. 9/3
RMJ - Roots Medium Joint
Rating: ■
Category: O&M

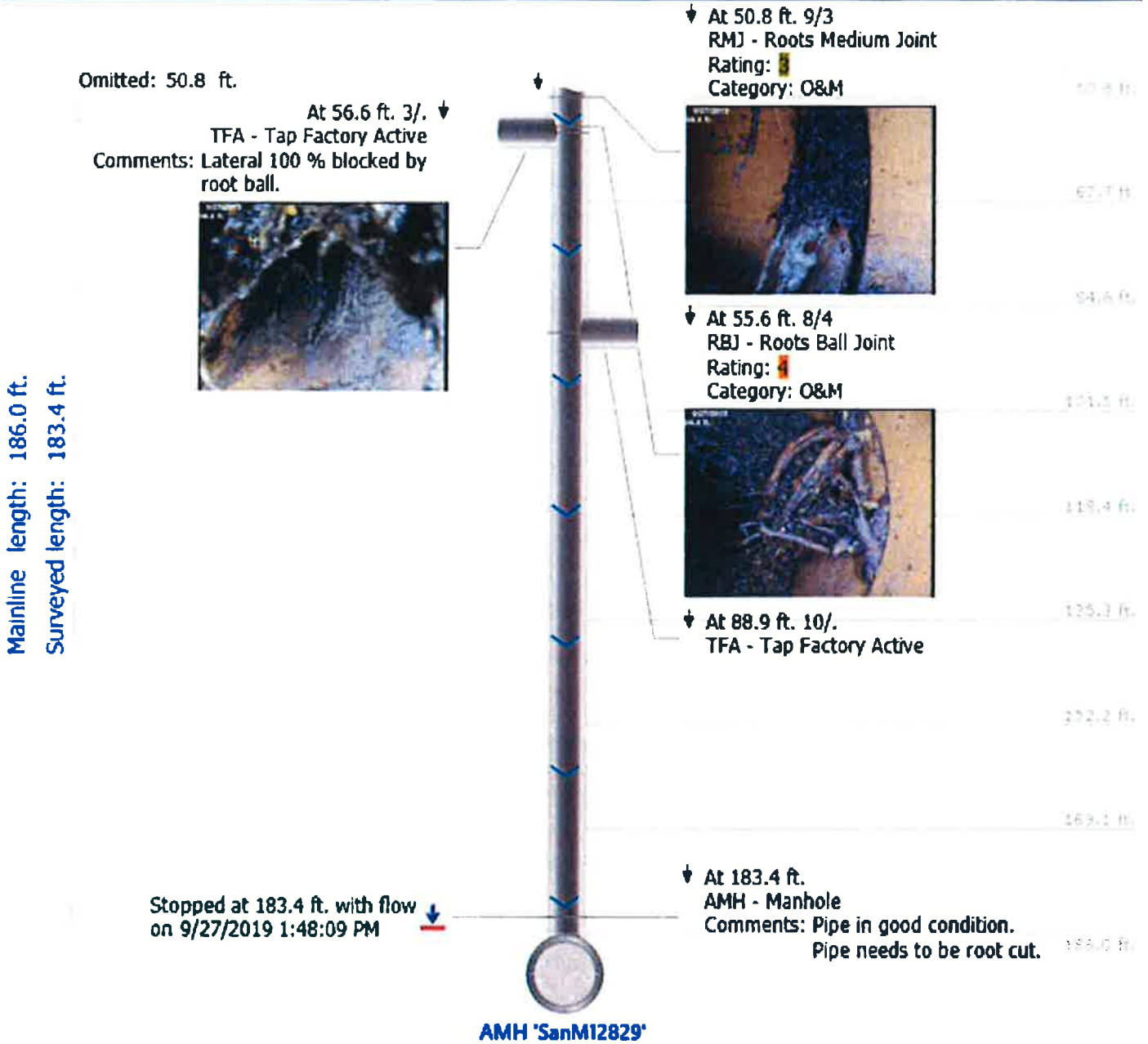


44.4 ft.

↓ At 38.7 ft. 6/9
RMJ - Roots Medium Joint
Rating: ■
Category: O&M

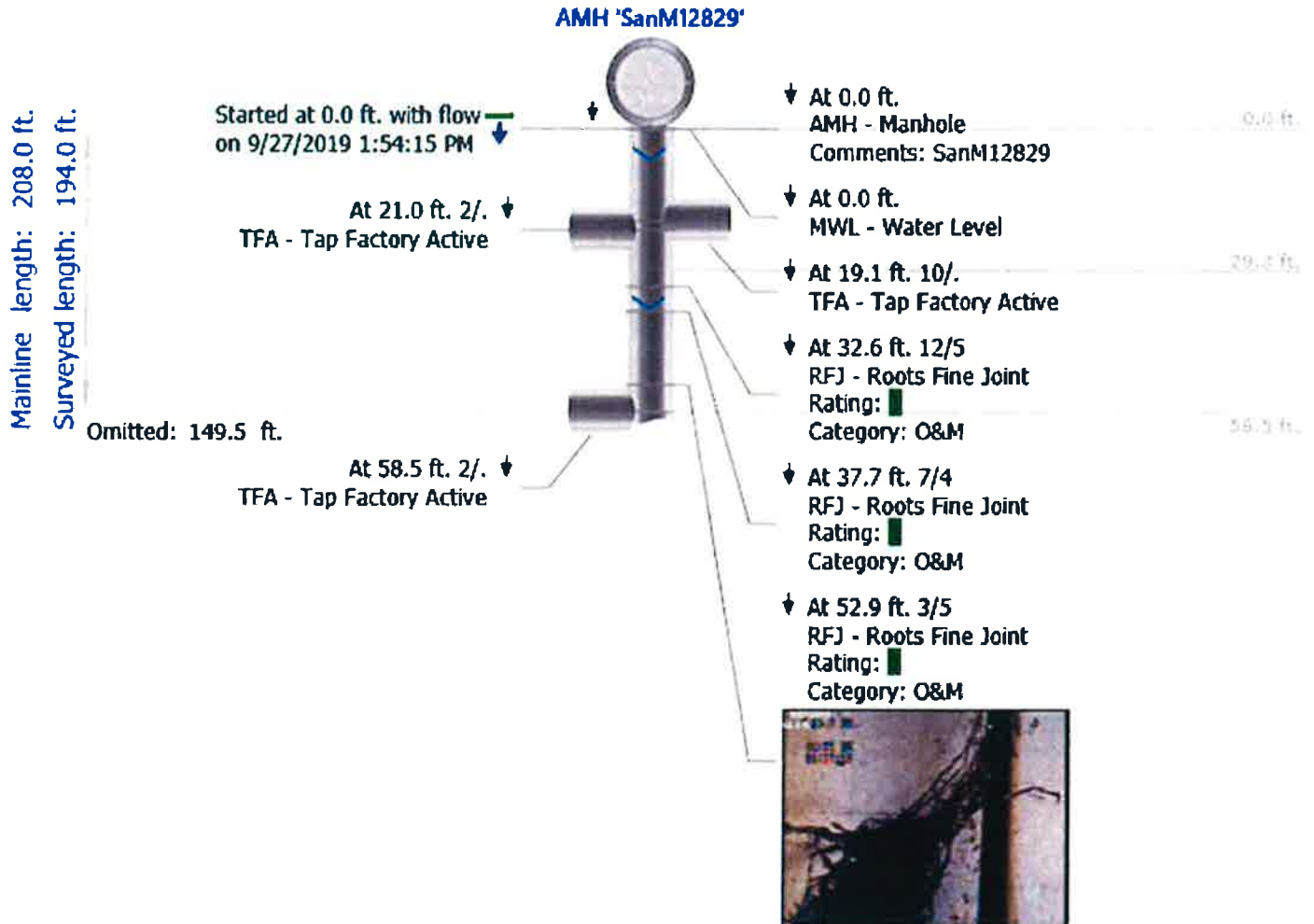


↓ At 44.4 ft. 9/
TFA - Tap Factory Active



Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3875	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 1:54 PM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Weather:

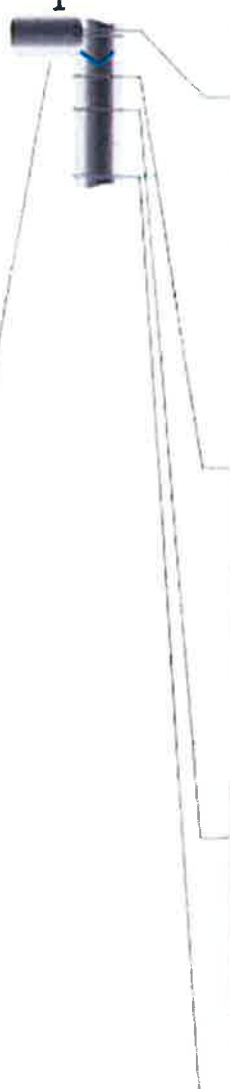
6

Mainline length: 208.0 ft.
Surveyed length: 194.0 ft.

Omitted: 60 ft.

Omitted: 125.4 ft.

At 60.8 ft. 2/.
TFA - Tap Factory Active
Comments: Roots in lateral connection.



At 60.0 ft. 8/11
RFJ - Roots Fine Joint
Rating: █
Category: O&M



At 67.1 ft. 8/9
RTJ - Roots Tap Joint
Rating: 2
Category: O&M



At 72.3 ft. 10/3
RTJ - Roots Tap Joint
Rating: 2
Category: O&M



At 82.6 ft. 8/4
RFJ - Roots Fine Joint
Rating: █
Category: O&M

Weather:


6

Mainline length: 208.0 ft.
Surveyed length: 194.0 ft.

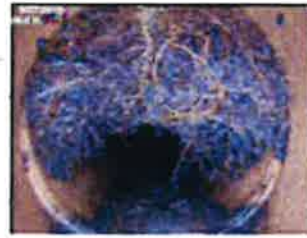
Omitted: 86.6 ft.

Omitted: 64.8 ft.




↓ At 86.6 ft. 8/4
RBJ - Roots Ball Joint
Rating: 
Category: O&M

86.6 ft.




100.8 ft.

114.9 ft.

↓ At 97.8 ft. 4/
RFJ - Roots Fine Joint
Rating: 
Category: O&M


129.1 ft.

↓ At 118.0 ft. 3/
RFJ - Roots Fine Joint
Rating: 
Category: O&M

143.2 ft.

↓ At 128.1 ft. 10/2
RTJ - Roots Tap Joint
Rating: 2
Category: O&M



↓ At 143.2 ft. 11/4
RFJ - Roots Fine Joint
Rating: 
Category: O&M




Weather:

6


Mainline length: 208.0 ft.
Surveyed length: 194.0 ft.
Omitted: 163.6 ft.

Stopped at 194.0 ft. with flow
on 9/27/2019 2:22:42 PM

AMH 'SanM12827'

At 163.6 ft. 8/5
RMJ - Roots Medium Joint
Rating: 
Category: O&M



At 169.0 ft. 4/
RFJ - Roots Fine Joint
Rating: 
Category: O&M

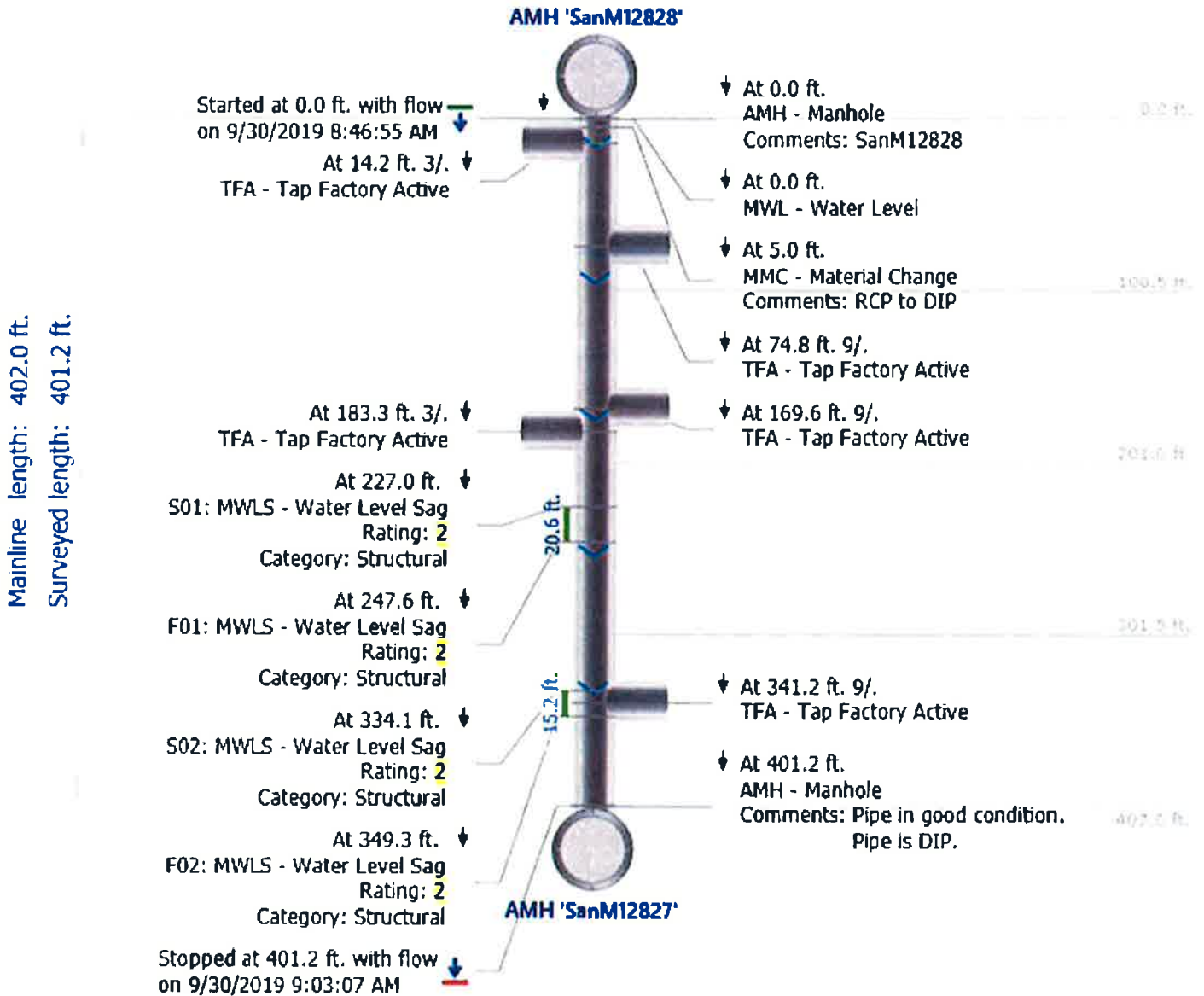
At 192.8 ft.
XP - Collapse Pipe Sewer
Rating: 
Category: Structural



At 193.9 ft.
AMH - Manhole
Comments: Ppe in good condition.
Pipe needs root cut. Pipe
is collapsed at 193 feet
from up stream manhole
12829. Needs to be
repaired!!!

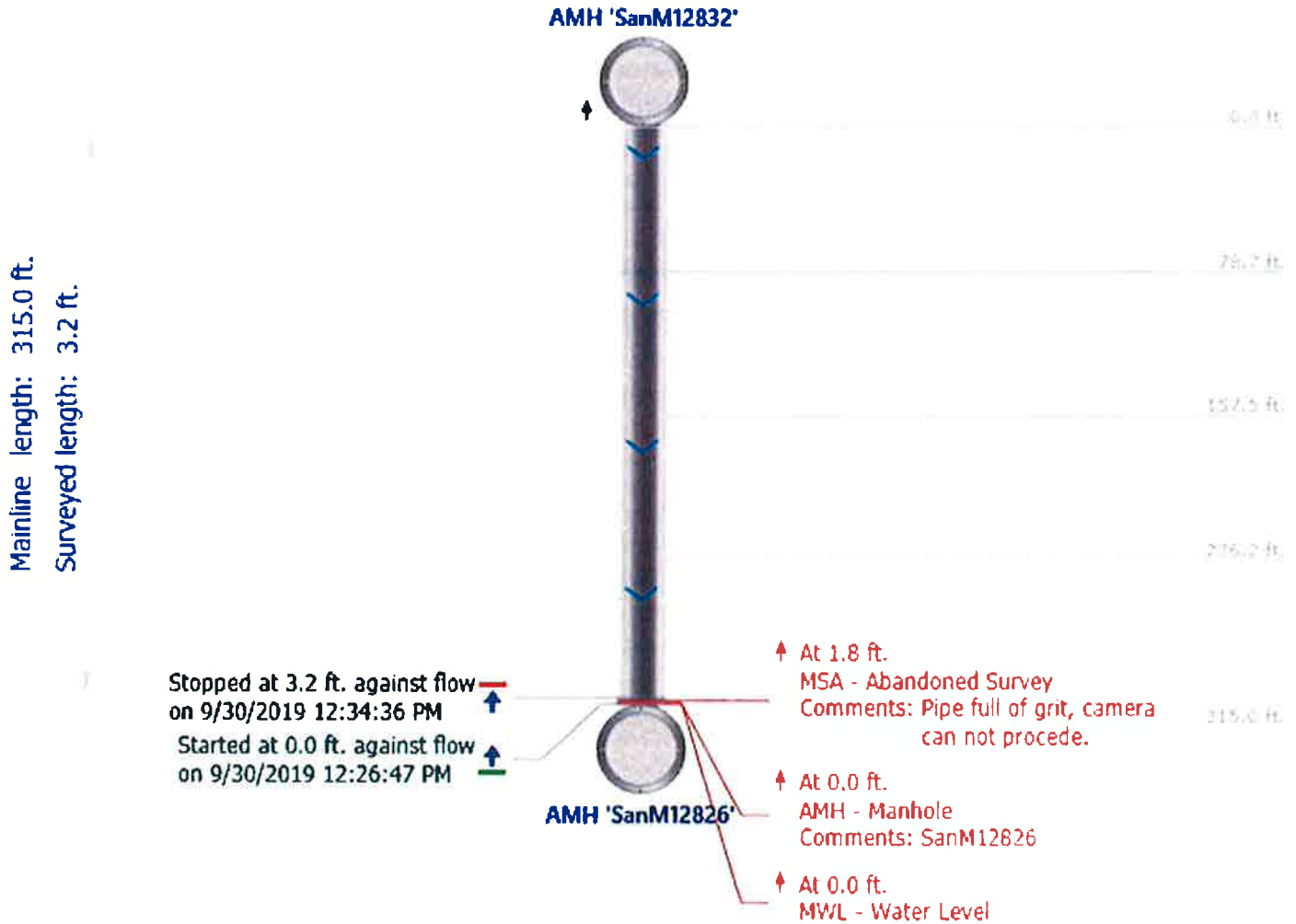
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3874	Panorama Park	2nd St
Start date/time:	Direction:	Weather:	Location code:
9/30/2019 8:46 AM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



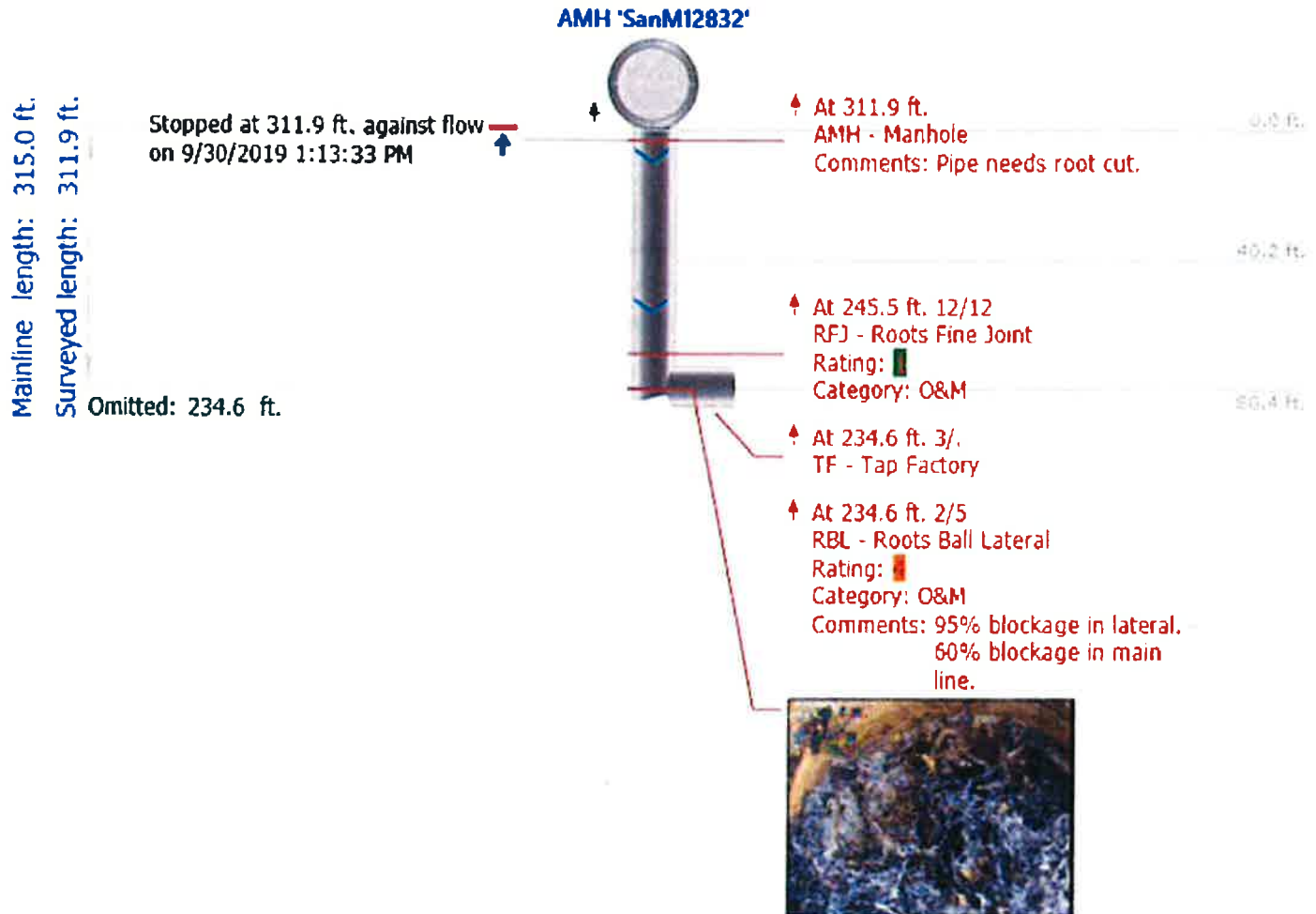
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3872	Panorama Park	Park Ave.
Start date/time:	Direction:	Weather:	Location code:
9/30/2019 12:26 PM	U	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Main Inspections Pipe Run with Images

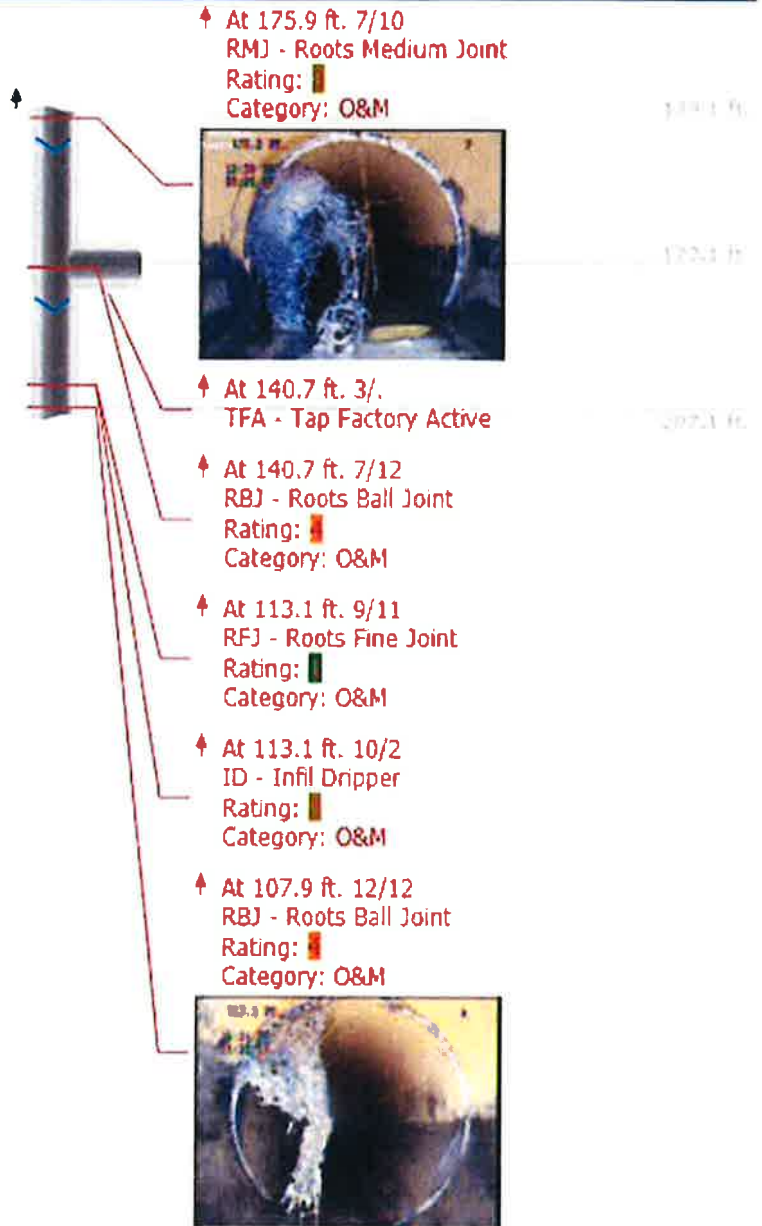
Project name:	Mainline ID:	City:	Street:
Panorama Park	San3872	Panorama Park	Park Ave.
Start date/time:	Direction:	Weather:	Location code:
9/30/2019 12:51 PM	U	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Weather:

6

Mainline length: 315.0 ft.
Surveyed length: 311.9 ft. Omitted: 139.1 ft.
Omitted: 107.9 ft.



Weather:

6

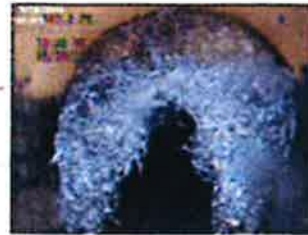
Omitted: 211.7 ft.

Mainline length: 315.0 ft.
Surveyed length: 311.9 ft.

Started at 0.0 ft. against flow
on 9/30/2019 12:51:55 PM

AMH 'SanM12826'

↑ At 103.3 ft. 3/
TFA - Tap Factory Active



211.7 ft.

217.9 ft.

↑ At 100.4 ft. 12/12
RBJ - Roots Ball Joint
Rating:
Category: O&M

261.3 ft.

↑ At 95.0 ft. 12/12
RBJ - Roots Ball Joint
Rating:
Category: O&M

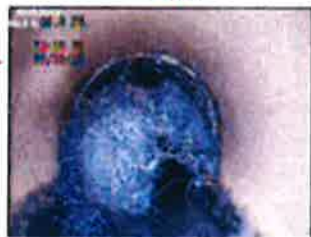
289.2 ft.



315.0 ft.

↑ At 91.1 ft. 12/
IR - Infil Runner
Rating:
Category: O&M

↑ At 91.1 ft. 12/12
RMJ - Roots Medium Joint
Rating:
Category: O&M

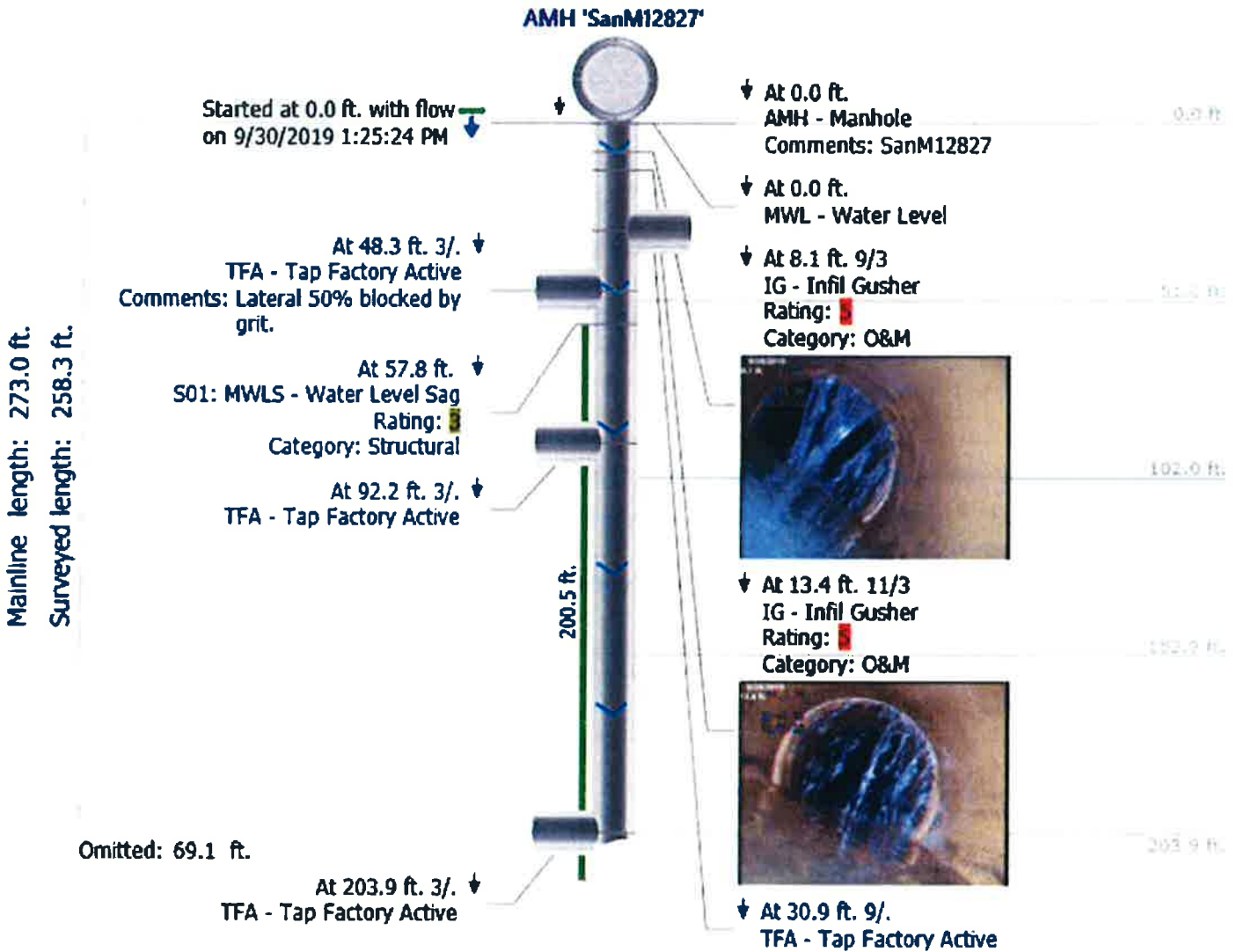


↑ At 0.0 ft.
AMH - Manhole
Comments: SanM12826

↑ At 0.0 ft.
MWL - Water Level

Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3873	Panorama Park	Park Ave.
Start date/time:	Direction:	Weather:	Location code:
9/30/2019 1:25 PM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Weather:

6

Mainline length: 273.0 ft.
Surveyed length: 258.3 ft.

Omitted: 258.3 ft.

At 258.3 ft. ↓
F01: MWLS - Water Level Sag
Rating: 2
Category: Structural

Stopped at 258.3 ft. with flow
on 9/30/2019 2:29:28 PM ↓



AMH 'SanM12826'

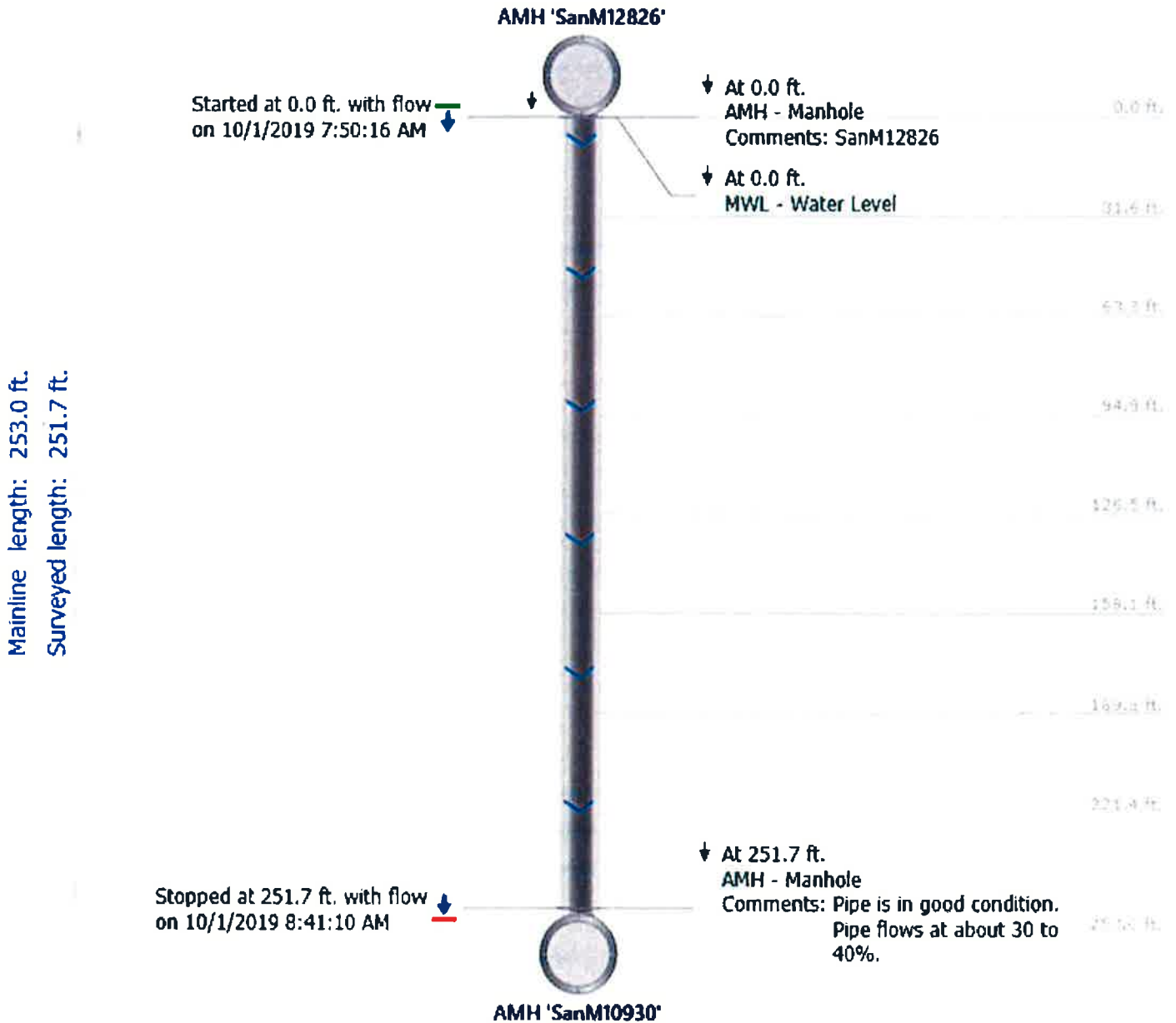
↓ At 258.3 ft.
MSA - Abandoned Survey
Comments: Camera under water, too
much flow.

258.3 ft.

273.0 ft.

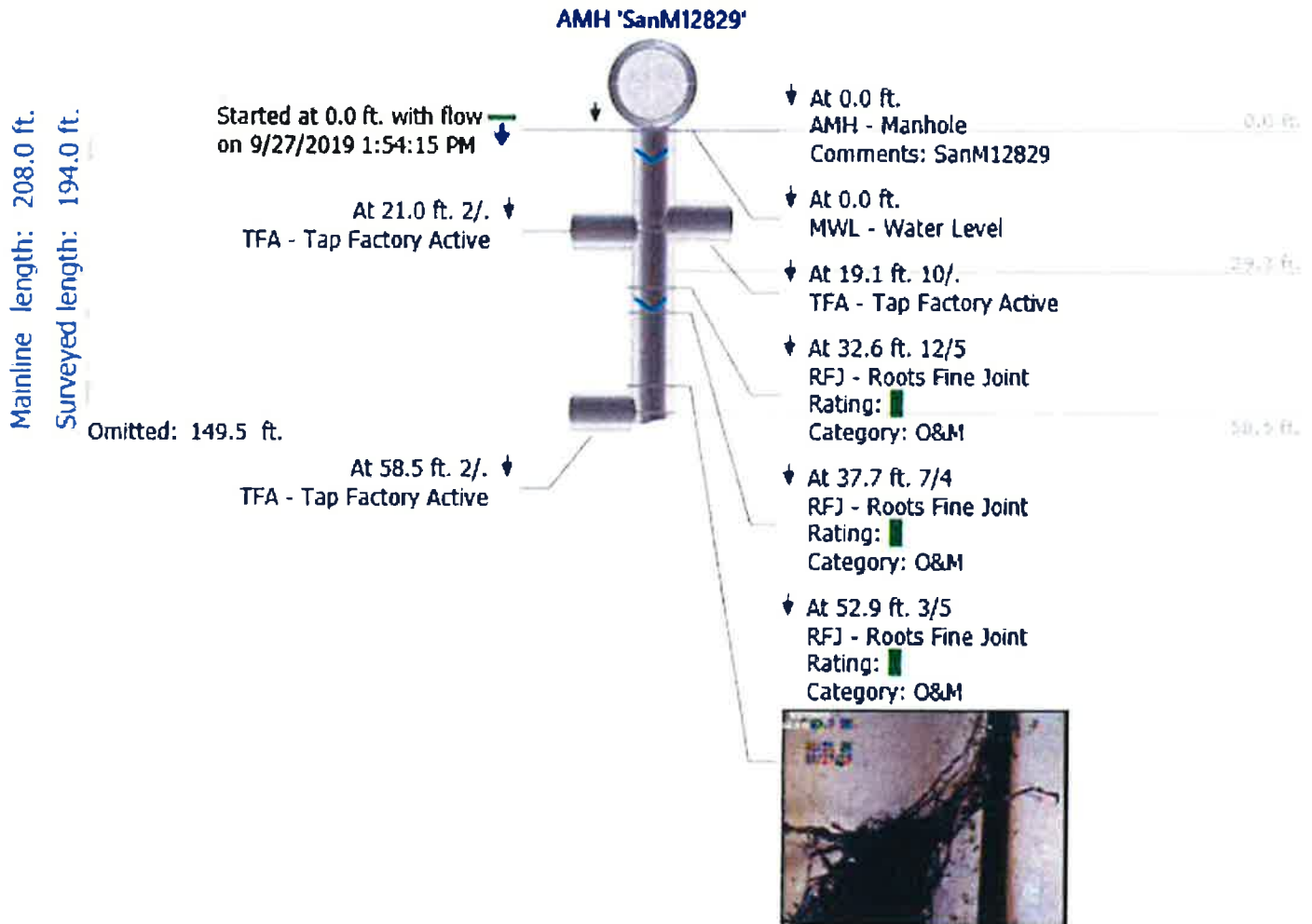
Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3871	Panoramam Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
10/1/2019 7:50 AM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Street:
Panorama Park	San3875	Panorama Park	Park Ave
Start date/time:	Direction:	Weather:	Location code:
9/27/2019 1:54 PM	D	6	C
Shape:	Material:	Height:	Width:
C	VCP	8 in.	8 in.



Weather:

6

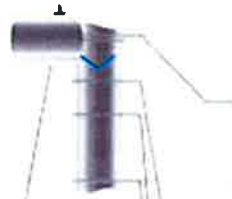
Mainline length: 208.0 ft.

Surveyed length: 194.0 ft.

Omitted: 60 ft.

Omitted: 125.4 ft.

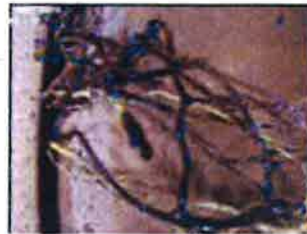
At 60.8 ft. 2/.
TFA - Tap Factory Active
Comments: Roots in lateral connection.



At 60.0 ft. 8/11
RFJ - Roots Fine Joint
Rating: **1**
Category: O&M



At 67.1 ft. 8/9
RTJ - Roots Tap Joint
Rating: **2**
Category: O&M



At 72.3 ft. 10/3
RTJ - Roots Tap Joint
Rating: **2**
Category: O&M



At 82.6 ft. 8/4
RFJ - Roots Fine Joint
Rating: **1**
Category: O&M



Weather:

6

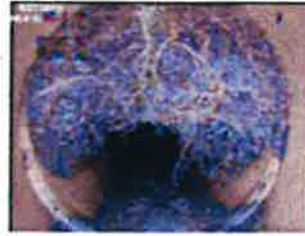
Mainline length: 208.0 ft.
Surveyed length: 194.0 ft.

Omitted: 86.6 ft.

Omitted: 64.8 ft.



At 86.6 ft. 8/4
RBJ - Roots Ball Joint
Rating: **1**
Category: O&M



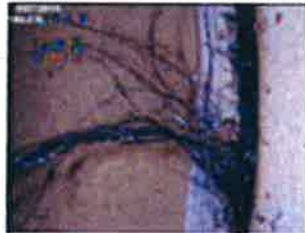
At 97.8 ft. 4/
RFJ - Roots Fine Joint
Rating: **1**
Category: O&M

At 118.0 ft. 3/
RFJ - Roots Fine Joint
Rating: **1**
Category: O&M

At 128.1 ft. 10/2
RTJ - Roots Tap Joint
Rating: **2**
Category: O&M



At 143.2 ft. 11/4
RFJ - Roots Fine Joint
Rating: **1**
Category: O&M



86.6 ft.
208.0 ft.
124.3 ft.
128.2 ft.
143.2 ft.


Weather:

6


Mainline length: 208.0 ft.
Surveyed length: 194.0 ft.
Omitted: 163.6 ft.


Stopped at 194.0 ft. with flow
on 9/27/2019 2:22:42 PM

AMH 'SanM12827'

At 163.6 ft. 8/5
RMJ - Roots Medium Joint
Rating: 
Category: O&M



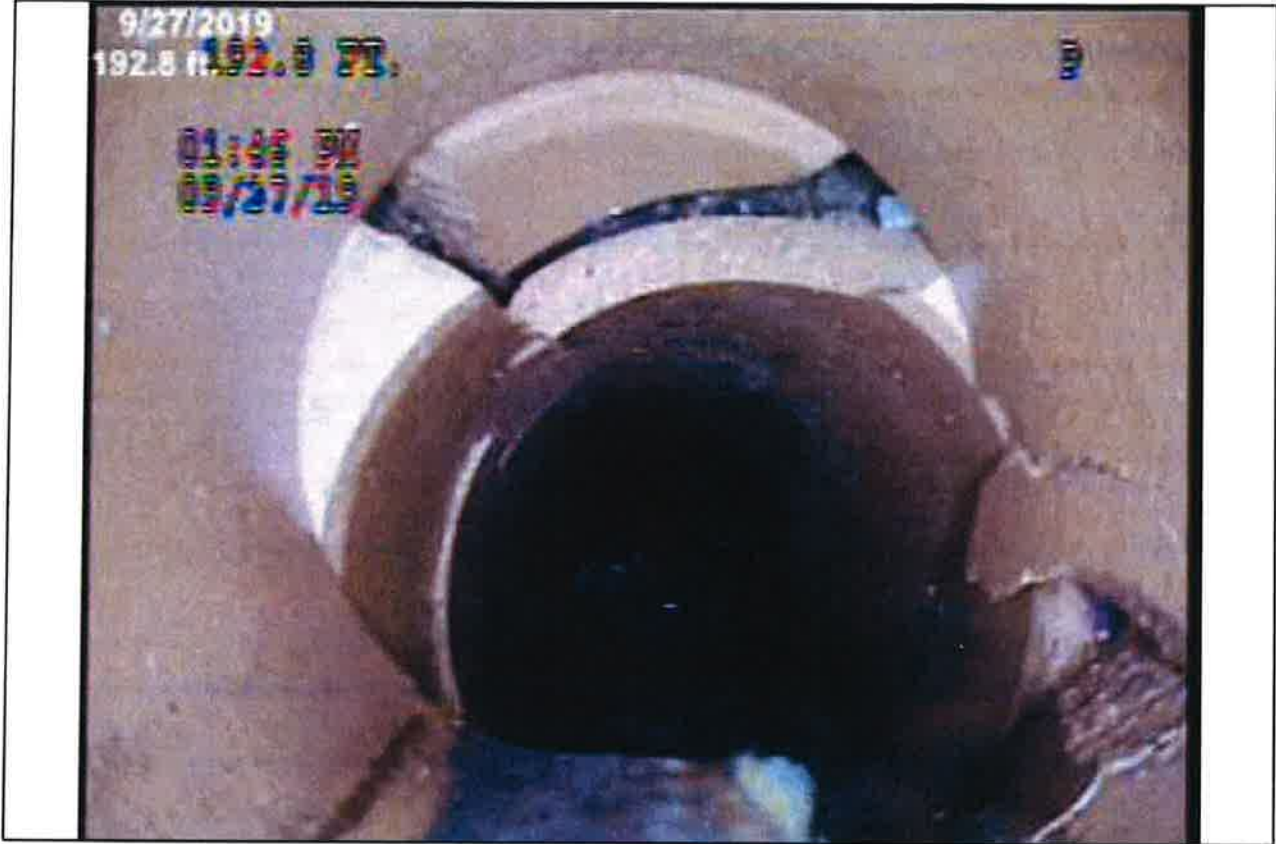
At 169.0 ft. 4/.
RFJ - Roots Fine Joint
Rating: 
Category: O&M

At 192.8 ft.
XP - Collapse Pipe Sewer
Rating: 
Category: Structural



At 193.9 ft.
AMH - Manhole
Comments: Ppe in good condition.
Pipe needs root cut. Pipe
is collapsed at 193 feet
from up stream manhole
12829. Needs to be
repaired!!!

Still Image Report



\\fileserver2\GraniteNet_Data\Media\Photos\Panorama Park-AMH 'SanM12829'-AMH 'SanM12827'-XP at
9/30/2019

APPENDIX D

Engineer's Opinion of Probable Construction and Engineering Costs For Rehabilitation Projects

SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5
City of Panorama Park
MH 12826 to MH 12832 (Rear Yards Along Valley)

ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$800	\$800
2	TRAFFIC CONTROL	1	LS	\$500	\$500
	Project Specifics				
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	320	LF	\$28	\$8,960
6	Reinstate Lateral Connections	3	EA	\$100	\$300
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	320	LF	\$4	\$1,280
CONSTRUCTION SUBTOTAL					\$13,801
Inflation 2.5% per year					\$345
CONSTRUCTION SUBTOTAL (2020)					\$14,146
Contingency					\$2,200
TOTAL COST:					\$16,400

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5

**City of Panorama Park
MH 12826 to MH 12827 (Park Avenue)**

ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$750	\$750
2	TRAFFIC CONTROL	1	LS	\$300	\$300
Project Specifics					
3	Exterior Chimney Seal	0	EA	\$855	\$0
4	Furnish Sanitary Manhole Castings, SW-601	0	EA	\$850	\$0
5	Cured in Place Pipe Lining, 8"	275	LF	\$28	\$7,700
6	Reinstate Lateral Connections	4	EA	\$100	\$400
7	Pavement Removal	0	SY	\$26	\$0
8	Sanitary Sewer Chemical Grouting	2	EA	\$2,000	\$4,000
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	0	SY	\$10	\$0
11	Cleaning and Televising Sanitary Sewer	275	LF	\$4	\$1,100
CONSTRUCTION SUBTOTAL					\$14,250
Inflation 2.5% per year					\$356
CONSTRUCTION SUBTOTAL (2020)					\$14,606
Contingency					\$2,200
TOTAL COST:					\$16,900

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5
City of Panorama Park
MH 12831 to MH 13904 (Park Avenue)

ESTIMATE YEAR: **2019**
 CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$900	\$900
2	TRAFFIC CONTROL	1	LS	\$500	\$500
Project Specifics					
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	410	LF	\$28	\$11,480
6	Reinstate Lateral Connections	8	EA	\$100	\$800
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	410	LF	\$4	\$1,640
					\$0
					\$0
CONSTRUCTION SUBTOTAL					\$17,281
Inflation 2.5% per year					\$432
CONSTRUCTION SUBTOTAL (2020)					\$17,713
Contingency					\$2,700
TOTAL COST:					\$20,500

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5

City of Panorama Park
MH 12714 to MH 12715 (Park Avenue)

ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$900	\$900
2	TRAFFIC CONTROL	1	LS	\$500	\$500
	Project Specifics				
3	Exterior Chimney Seal	2	EA	\$855	\$1,710
4	Furnish Sanitary Manhole Castings, SW-601	2	EA	\$850	\$1,700
5	Cured in Place Pipe Lining, 8"	200	LF	\$28	\$5,600
6	Reinstate Lateral Connections	3	EA	\$100	\$300
7	Pavement Removal	12	SY	\$26	\$312
8	Sanitary Sewer Chemical Grouting	1	EA	\$2,000	\$2,000
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	20	SY	\$10	\$200
11	Cleaning and Televising Sanitary Sewer	200	LF	\$4	\$800
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$14,022
				Inflation 2.5% per year	\$351
				CONSTRUCTION SUBTOTAL (2020)	\$14,373
				Contingency	\$2,200
				TOTAL COST:	\$16,600

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5
City of Panorama Park
MH 12715 to MH 18 (Perpendicular to Park Avenue)

ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$400	\$400
2	TRAFFIC CONTROL	1	LS	\$300	\$300
	Project Specifics				
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	0	LF	\$28	\$0
6	Reinstate Lateral Connections	0	EA	\$100	\$0
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	250	LF	\$4	\$1,000
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$3,661
	Inflation 2.5% per year				\$92
	CONSTRUCTION SUBTOTAL (2020)				\$3,753
	Contingency				\$5,700
	TOTAL COST:				\$9,500

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5
City of Panorama Park
MH 12828

ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$200	\$200
2	TRAFFIC CONTROL	1	LS	\$200	\$200
	Project Specifics				
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	0	LF	\$28	\$0
6	Reinstate Lateral Connections	0	EA	\$100	\$0
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	0	LF	\$4	\$0
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$2,361
	Inflation 2.5% per year				\$59
	CONSTRUCTION SUBTOTAL (2020)				\$2,420
	Contingency				\$1,300
	TOTAL COST:				\$3,800

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 5**City of Panorama Park
All Sewers Currently Rated 5**ESTIMATE YEAR: **2019**
CONSTRUCTION YEAR: **2020**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS		\$3,750
2	TRAFFIC CONTROL	1	LS		\$2,100
	Project Specifics				
3	Exterior Chimney Seal	6	EA	\$855	\$5,130
4	Furnish Sanitary Manhole Castings, SW-601	6	EA	\$850	\$5,100
5	Cured in Place Pipe Lining, 8"	1,205	LF	\$28	\$33,740
6	Reinstate Lateral Connections	18	EA	\$100	\$1,800
7	Pavement Removal	36	SY	\$26	\$936
8	Sanitary Sewer Chemical Grouting	3	EA	\$2,000	\$6,000
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	60	SY	\$10	\$600
11	Cleaning and Televising Sanitary Sewer	1,455	LF	\$4	\$5,820
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$64,976
	Inflation 2.5% per year				\$1,624
	CONSTRUCTION SUBTOTAL (2020)				\$66,600
	Contingency				\$16,300
	Design Engineering & Bidding				\$12,700
	Construction Engineering				\$6,000
	TOTAL COST:				\$101,700

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 4
City of Panorama Park
MH 12827 to MH 12829 (Park Avenue)

ESTIMATE YEAR: **2019**
 CONSTRUCTION YEAR: **2021**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$750	\$750
2	TRAFFIC CONTROL	1	LS	\$500	\$500
Project Specifics					
3	Exterior Chimney Seal	0	EA	\$855	\$0
4	Furnish Sanitary Manhole Castings, SW-601	0	EA	\$850	\$0
5	Cured in Place Pipe Lining, 8"	215	LF	\$28	\$6,020
6	Reinstate Lateral Connections	4	EA	\$100	\$400
7	Pavement Removal	0	SY	\$26	\$0
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	0	SY	\$10	\$0
11	Cleaning and Televising Sanitary Sewer	215	LF	\$4	\$860
					\$0
					\$0
CONSTRUCTION SUBTOTAL					\$8,530
Inflation 2.5% per year					\$432
CONSTRUCTION SUBTOTAL (2021)					\$8,962
Contingency					\$1,400
TOTAL COST:					\$10,400

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 4

City of Panorama Park
MH 12829 to MH 12830 (Park Avenue)

ESTIMATE YEAR: **2019**CONSTRUCTION YEAR: **2021**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
	General				
1	MOBILIZATION, BONDS AND INSURANCE	1	LS	\$750	\$750
2	TRAFFIC CONTROL	1	LS	\$500	\$500
	Project Specifics				
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	185	LF	\$28	\$5,180
6	Reinstate Lateral Connections	3	EA	\$100	\$300
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	185	LF	\$4	\$740
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$9,431
		Inflation	2.5%	per year	\$477
	CONSTRUCTION SUBTOTAL (2021)				\$9,908
		Contingency			\$1,500
	TOTAL COST:				\$11,500

*estimate does not include grant administrative costs



SANITARY SEWER REHABILITATION FOR SEWERS WITH A RATING OF 4
City of Panorama Park
A Summary of All Pipe Rated 4

ESTIMATE YEAR: **2019**
 CONSTRUCTION YEAR: **2021**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	MOBILIZATION, BONDS AND INSURANCE	1	LS		\$1,500
2	TRAFFIC CONTROL	1	LS		\$1,000
Project Specifics					
3	Exterior Chimney Seal	1	EA	\$855	\$855
4	Furnish Sanitary Manhole Castings, SW-601	1	EA	\$850	\$850
5	Cured in Place Pipe Lining, 8"	400	LF	\$28	\$11,200
6	Reinstate Lateral Connections	7	EA	\$100	\$700
7	Pavement Removal	6	SY	\$26	\$156
8	Sanitary Sewer Chemical Grouting	0	EA	\$2,000	\$0
9	Ream Protruding Lateral Tap	0	EA	\$1,200	\$0
10	Stripping Salvaging, and Spreading Topsoil	10	SY	\$10	\$100
11	Cleaning and Televising Sanitary Sewer	400	LF	\$4	\$1,600
					\$0
					\$0
	CONSTRUCTION SUBTOTAL				\$17,961
	Inflation 2.5% per year				\$909
	CONSTRUCTION SUBTOTAL (2021)				\$18,870
	Contingency				\$2,900
	Design Engineering & Bidding				\$6,100
	Construction Engineering				\$2,900
	TOTAL COST:				\$30,800

*estimate does not include grant administrative costs

