DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY

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Sewer Investigation: Bloomingdale Neighborhood

Final

October 2006

Engineering Program Management Consultant-3A

Program Manager: GREELEY AND HANSEN

Delon Hampton & Associates

DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
Washington, D.C.

Sewer Investigation: Bloomingdale Neighborhood

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Executive Summary

Residents of the Bloomingdale neighborhood reported flooding of their basements during the severe storms that occurred from June 25 to June 26, 2006 from either sewer backups, overland flows or both. The purposes of this report were to determine the causes of surface flooding and sewer backups and to provide recommendations on mitigation measures

Bloomingdale community leaders collected information from residents on the nature of the flooding and written narratives were provided by some of the residents. Most of the reports of flooding were on U St, Thomas Street and Flagler Place. Most of the reports describe flooding due to basement backups from plumbing fixtures and/or water ponding in the street, cresting the curb and then entering basements.

Bloomingdale is located in the drainage area served by the Northeast Boundary Trunk (NEBT) Sewer. The NEBT Sewer is one of the oldest combined sewers in the District. It begins on the west side of McMillian Reservoir and flows to the southeast primarily along Florida Avenue toward the Anacostia River. The area served by the NEB Sewer has experienced sewer backup problems and surface water flooding for many years.

This assessment consisted of reviewing the hydraulic capacity of the existing system, inspecting the physical condition of the sewers, and identifying mitigation measures in public and private space.

The findings of this study are as follows:

- The storm of June 25-26, 2006 exceeded the 15-year return frequency design standard of the sewer system.

- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer do not have the capacity to convey the storm of June 25-26, 2006 or the 15-year design storm without flooding. This resulted in basement backups and flooding in streets and basements.

- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer were constructed prior to 1910. The flooding associated with the Northeast Boundary area has been recognized as a longstanding problem. Projects to relieve flooding have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.

- As part of the implementation of its Long Term Control Plan, WASA will construct a tunnel and appurtenances in the Northeast Boundary area to relieve the flooding. According to the

terms of a Consent Decree with EPA, WASA will place this tunnel in operation by 2025. The cost of construction, along with practical implementation factors such as the size of the project, prevents completion of the tunnel sooner.

- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Place trunk sewer do not have capacity to convey additional flows out of the area. However, some improvements to the local sewer system have the potential to reduce flooding severity during lower frequency storms and to reduce the magnitude and duration of ponding.

- Inspections of the local sewers in the Bloomingdale area were conducted and sewers were found to be in good condition with no significant blockages or obstructions.

- Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, interim flood protection measures implemented on private property appear to be the most practical approach for interim relief of flooding.

- Possible methods of interim flood protection include:

Measures To Prevent Basement Backups	Measures to Prevent Surface Flooding from Entering Basements
Install Backflow Preventor (BPF)	Construct barriers at basement entrances
Install pump-around system (ejector pump)	Waterproof basements
Install an elevated sewer system	Address roof downspouts
Install sump pump system	Improve lot grading
Install plumbers plugs	
Ensure sewer laterals are clean	

The following are recommendations associated with flood improvements to the local drainage system in the Bloomingdale Neighborhood:

- Construct additional inlets at the intersection of Flagler and U Street, NW
- Construct a relief sewer along Thomas Street between 1st and 2nd Street, NW
- Fix damaged catch basin inlets located at intersection of 2nd St and Florida Ave, NW.

Note that these improvements to the local storm drainage system will not alleviate flooding during large rain events when the NEBT Sewer and Flagler Place Trunk Sewer are surcharged. However, the improvements may reduce the magnitude of flooding during lower frequency storms and may reduce the extent and duration of ponding.

Based on the CCTV inspections, point repair or relining the following pipe sections is recommended:

- M-30566 to M-30568 – this combined sewer on Flagler Place between W and V Streets was found to have an approximately 6" hole in the crown, with dirt visible.
- M-30563 to M-30569 - this combined sewer on Flagler Place between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.

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1. INTRODUCTION

The District of Columbia Water and Sewer Authority (WASA) requested an assessment of the cause of sewer back-ups and basement flooding in the Bloomingdale Neighborhood (Bloomingdale) of Northwest Washington (see Fig.1-1). Residents reported flooding of their basements during the severe storms that occurred from June 25 to June 26, 2006 from either sewer backups, overland flows or both. Residents reported that overland flows entered basements through leaks in the walls and floors and over low door sills and sewage backflows occurred through toilets, tubs and sinks.

1.1 Purpose

The purposes of this investigation are to:

- Determine the causes of surface flooding and sewer backups
- Provide recommendations on mitigation measures

1.2 Approach

The approach followed by this study is described below:

- Review previous studies on flood problems related to Northeast Boundary Trunk Sewer
- Review the existing combined sewer system serving the area to determine how the system functions
- Collect complaints of residents affected by the floods to better understand the nature of the problem
- Conduct field investigation surveys to check if there are physical evidences of the causes of flooding in the areas where complaints have been reported
- Inspect the sewer system utilizing remote closed circuit television (CCTV) equipment
- Assess the capacity of selected sewers of the local drainage network for storm recurrence frequencies of 2, 5, 10 and 15-years
- Summarize the results of the investigations and identify measures to mitigate future flooding.

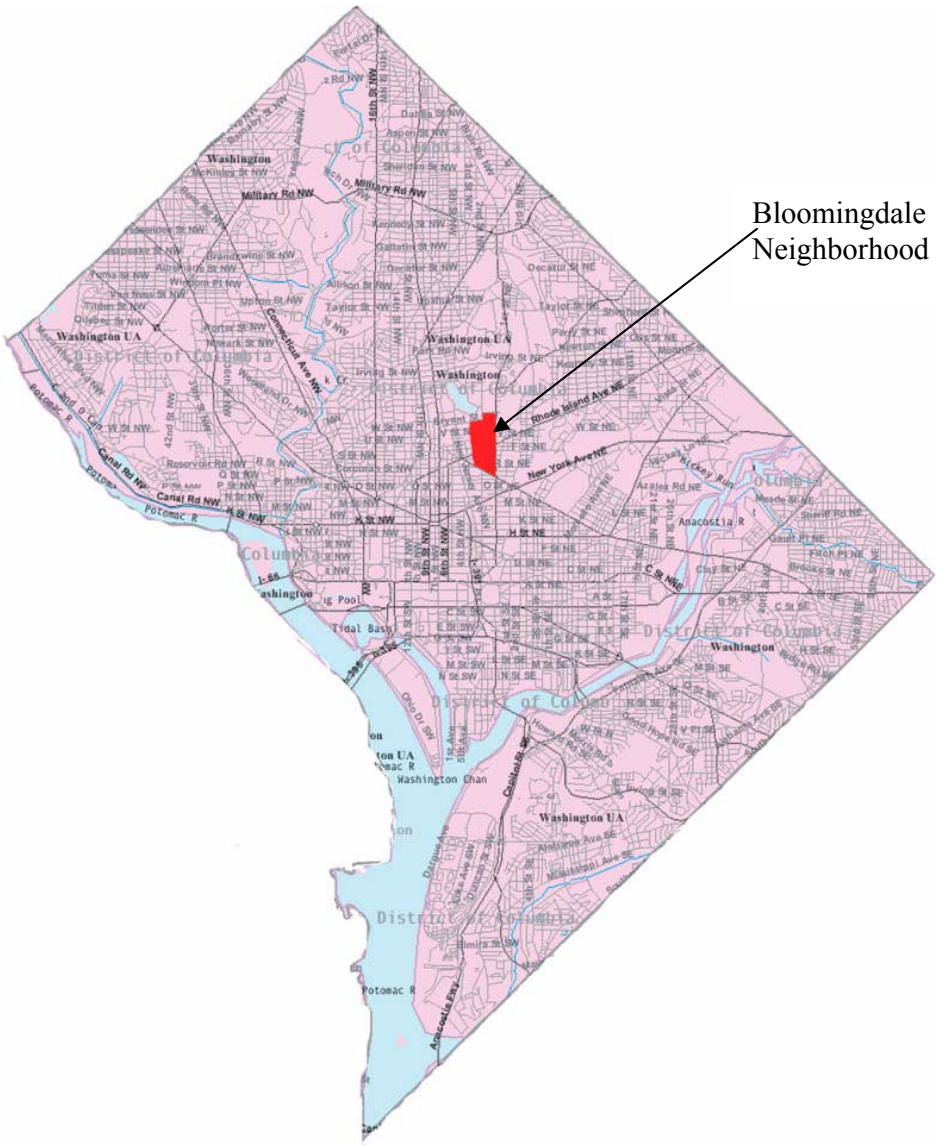

Fig. 1-1: Location Map of Bloomingdale Neighborhood
[source: http://upload.wikimedia.org/wikipedia/en/c/cc/Map_bloomingdale.jpg].

2. HISTORY OF NORTHEAST BOUNDARY DRAINAGE AREA

2.1 Type of Sewer System

Like many older cities in the United States, the sewer system in the District is comprised of both combined sewers and separate sanitary sewers. A combined sewer carries both sewage and runoff from storms. Modern practice is to build separate sewers for sewage and storm water, and no new combined sewers have been built in the District since the early 1900's. Approximately one-third of the District (12,478 acres) is served by combined sewers. The majority of the area served by combined sewers is in the older developed sections of the District.

In the combined sewer system, sewage from homes and businesses during dry weather conditions is conveyed to the District of Columbia Wastewater Treatment Plant at Blue Plains, which is located in the southwestern part of the District on the east bank of the Potomac River. There, the wastewater is treated to remove pollutants before being discharged to the Potomac River. When the capacity of a combined sewer is exceeded during storms, the excess flow, which is a mixture of sewage and storm water runoff, is discharged to the Anacostia and Potomac Rivers, Rock Creek and tributary waters. The excess flow is called Combined Sewer Overflow (CSO).

Bloomingdale is located in the drainage area served by the Northeast Boundary Trunk (NEBT) Sewer. The NEBT Sewer is one of the oldest combined sewers in the District. It begins on the west side of McMillian Reservoir and flows to the southeast primarily along Florida Avenue toward the Anacostia River. The sewer is approximately 23,000 feet long and varies in size and shape from about 4.5' x 3' in the upper reaches to over 22' x 18' in the lower reaches. The drainage area of the NEBT Sewer is approximately 4,242 acres and comprises highly developed areas in the District. Numerous branch sewers convey wastewater and storm water to the NEBT Sewer. Figure 2-1 shows the NEBT sewer drainage area and the Bloomingdale Neighborhood.

2.2 Historical Development of Sewer System

In 1879, construction of the NEBT Sewer was initiated to relieve the Tiber Creek Trunk Sewer. The majority of the NEBT Sewer system was constructed from 1880-1905. The major older sewers are of brick and plain portland cement construction. More recent additions to the system have been constructed of precast and cast-in-place pipe. A variety of shapes were used including egg, circular, and basket handle. The outlet portion of the NEBT Sewer is a three span reinforced concrete box culvert.

After construction of the NEBT Sewer and as the District continued to develop, connections to the trunk sewer were made, often at elevations significantly below the crown. As a result, these connections suffer from reduced capacity when the NEB is flowing full. In addition, a major revision

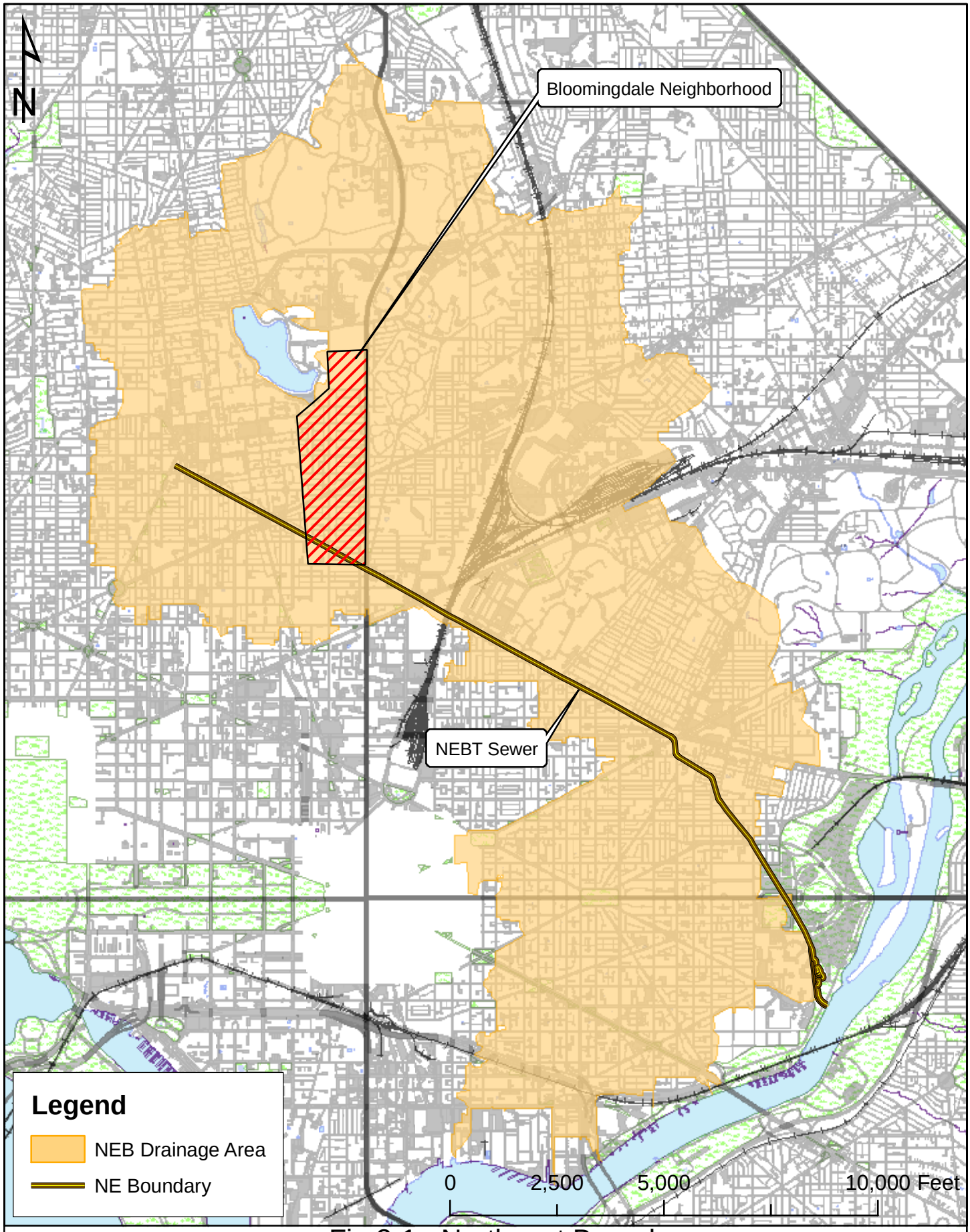

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Fig 2-1: Northeast Boundary Drainage Area

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to design criteria was adopted during the period of 1879 to 1886, which lead to the upper sections of the NEB Sewer being redesigned and constructed with less capacity than originally planned.

2.3 Historical Flooding in Northeast Boundary Area

Flooding along the NEBT Sewer and its branch sewers have been reported since the late 1800s. As a result, several engineering studies have been conducted over the years in an attempt to address these flooding complaints. These studies include, but are not limited to, the following:

- "Report to David V. Auld, Director of Sanitary Engineering Upon Investigation of Sewerage System,", Metcalf & Eddy, 1955
- "Improvements to Sewerage System", Board of Engineers, 1957
- "Report on Planning Studies NE Boundary Relief Sewer, Burns & McDonnell, 1968
- "Northeast Boundary Relief Sewer Alignment Study", Advanced Engineering, 1997
- "Combined Sewer System Long Term Control Plan", Greeley and Hansen, 2002

These studies have determined the following:

- The NEB Sewer and portions of its branch sewers have inadequate capacities to carry storm water flows generated by moderate rain storms
- Surcharge of the trunk and branch sewers can occur during intense storms sufficient to cause overflow from catch basins and basement backups in certain areas
- Certain collecting sewers that drain the area were of adequate capacity, but operated ineffectively due to backwater conditions in the NEBT Sewer
- Certain areas served by branch sewers were at a lower elevation than the crown of the NEBT Sewer at the point of connection

Various projects have been identified to provide relief for the NEB area. However, these projects have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.

2.4 Long Term Flooding Relief in Northeast Boundary Area

In 1998, WASA initiated a study to control combined sewer overflows to improve the quality of the receiving waters in the District. In 2002, a final plan for controlling CSOs (called a Long Term Control Plan or LTCP) was completed and was subsequently approved by the D.C. Department of Health and the U.S. Environmental Protection Agency. Among other performance features, flood relief of the NEB area was a principal component of the plan.

The LTCP was selected to provide a significant improvement in the quality of receiving waters of Anacostia River, Rock Creek, and the Potomac River. The recommended LTCP consists of a number of elements and program components. The principal activities of LTCP include rehabilitation of pumping stations, construction of storage tunnels, consolidating and closing of some of the Combined Sewer Overflows (CSOs).

One of the components of the LTCP is the construction of a tunnel in the Northeast Boundary area and along the Anacostia River waterfront. During moderate rainstorms, the tunnel will store combined sewage that would normally overflow to the receiving waters. During intense rain events, the tunnel will act like a pipeline and will convey storm water runoff and captured combined sewage out to the Anacostia River. The tunnel will be sized to convey the 15-year return frequency storm without causing flooding in NEB areas that have suffered longstanding flooding. In essence, the tunnel will act like a relief sewer to control flooding in the NEB area.

The schedule for implementation of the tunnel project is governed by a consent decree between the U.S. Environmental Protection Agency and WASA. The schedule calls for completion of the tunnel in phases with the complete tunnel in service by 2025. The schedule is dictated by the large cost of the project ($1.9 billion) and the need to mitigate the impact on sewer rates.

3. CAPACITY EVALUATION OF EXISTING SEWERS

3.1 Reports of Flooding

Bloomingdale community leaders collected information from residents on the nature of the flooding. Written narratives were provided by the residents and these are included in Appendix A. Figure 3-1 plots the locations of flooding complaints on a map of the sewer system. Most of the reports of flooding were on U St, Thomas Street and Flagler Place. Most of the reports describe flooding due to basement backups from plumbing fixtures and/or water ponding in the street, cresting the curb and then entering basements.

3.2 Configuration of Existing Sewer System

The combined sewers in Bloomingdale flow mainly eastward into a trunk sewer that runs north-south along Flagler Place then onto V St and finally along 1st Street towards the NEB trunk sewer in Florida Avenue. The branch sewers (collectors from laterals) are mainly aligned in the north-south direction. The combined sewers serving the area vary in size from 10-inch to 39-inch and most of them were built from about 1895 to 1910.

Manholes were typically installed every 100 to 400 feet to allow WASA to access the pipelines for maintenance. The manholes were originally made of brick. Catch basins are built mainly at street intersections.

3.3 Topography

The grades in the area slope toward Flagler Place, which forms a valley that then slopes southward toward a low point at Florida Avenue. Flagler Place does not extend all the way to Florida Avenue. Instead, it is interrupted by U Street and Thomas Street. The topography shows that runoff which cannot enter sewers along the Flagler Place "valley" will run downhill to a flat spot near U Street and Thomas Street. Overland flow would then be forced to go around U Street and Thomas Street to reach Florida Avenue.

Review of maps from the 1860's shows an old stream used to run north-south along the Flagler Place area toward Florida Avenue. This is consistent with the construction of the trunk sewer along Flagler Place and the construction of the Northeast Boundary Trunk Sewer along Florida Avenue.

LEGEND

- SEWER BACKUP
- SURFACE FLOODING
- TRUNK SEWER
- COMBINED SEWER
- MANHOLE
- CATCH BASIN
- Reported Flooding
- TOPOGRAPHIC CONTOUR

FLAGLER PL. TRUNK SEWER

FLAGLER PL. TRUNK SEWER

NORTH EAST BOUNDARY SEWER

1ST

2ND

3RD

4TH

FLAGLER

ELM

ANNA J COOPER

THOMAS

RHODE ISLAND

FLORIDA

SEATON

RANDOLPH

R

S

T

U

V

W

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FIG. 3-1

Plan Layout of the Existing Sewer System in the Bloomingdale Neighborhood
Scale 1" = 200 ft.

200 100 0 200 Feet

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3.4 Evaluation of Existing Sewers

For storm water collection and conveyance, WASA has established the 15-year storm as the design standard for the system. Most of the pipes in the Bloomingdale and Northeast Boundary areas were constructed before 1910, well before the 15-year storm was established as the design standard for the system. As described in Section 2, the existing NEBT sewer and many of its trunk sewers do not have the capacity to convey storms with return frequencies between 2 and 15 years without flooding.

As an example, Figures 3-2 and 3-3 show predicted hydraulic profiles of the existing NEBT sewer and the trunk sewer on Flagler during 15-year storms. The profiles show the NEBT sewer and the Flagler Place trunk sewer do not have the capacity to convey the 15-year design storm without flooding. Similar conditions, to a less severe extent, are predicted to occur for storms with 2, 5 and 10-year return frequencies. Note that the June 25 to 26, 2006 storm was a very rare event and was reported as a 200-year storm by the National Weather Service. This greatly exceeded the design capacity of the system.

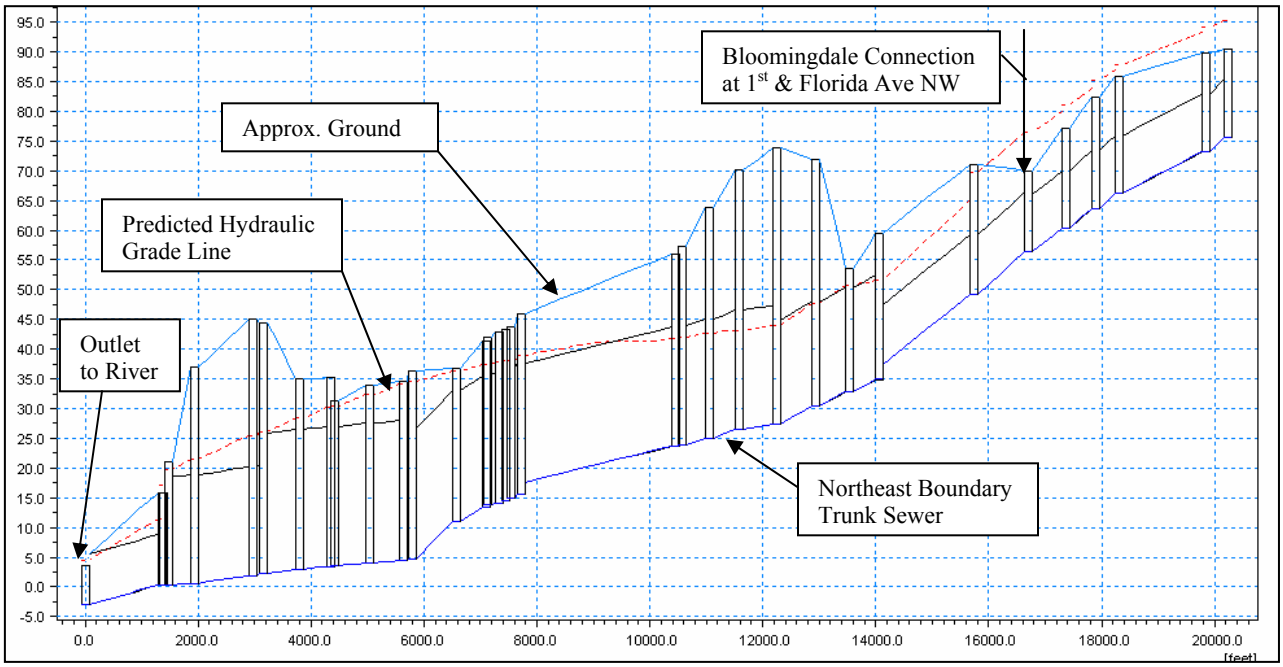

Figure 3-2: Predicted Northeast Boundary Sewer Hydraulic Profile - 15-Year Design Storm

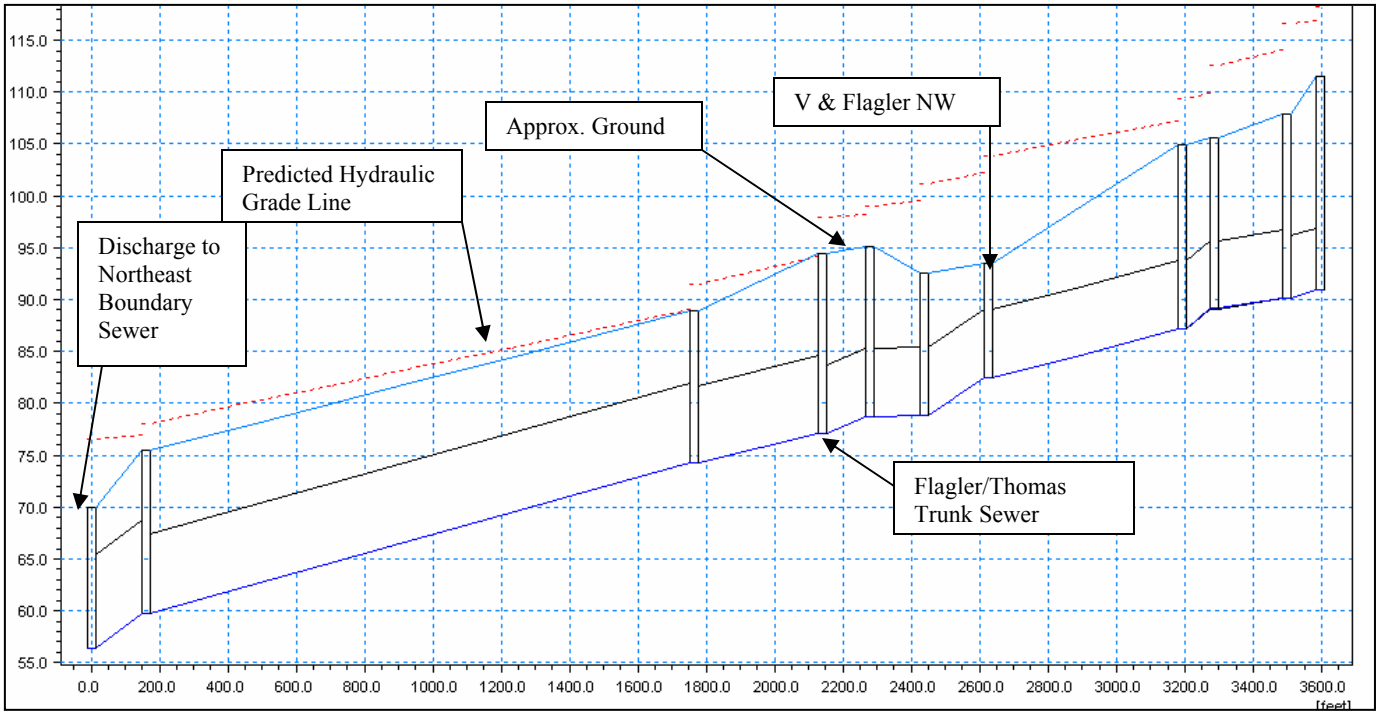

Figure 3-3: Predicted Flagler/Thomas Trunk Sewer Hydraulic Profile - 15-Year Design Storm

Because the NEBT Sewer and the trunk sewer on Flagler do not have adequate capacities to convey large storms, improvements to the local storm drainage system will not alleviate flooding during large rain events because there is no "outlet" for the storm water. Even if the local storm drainage pipes were made larger to carry more storm water, that storm water would have no place to go because the existing outlet sewers are filled to capacity.

As a result of this, the capacity of the local sewers was evaluated to determine if any improvements could be made that might reduce flooding during lower intensity storms or that might reduce the extent or duration of ponding. These assessments are described below.

3.4.1 Data Collection

A number of laterals, main sewers and trunk sewers run through the Bloomingdale Neighborhood. The first step in our assessment was selecting sewers expected to have contributed in the sewer backup and surface flooding of the area. Based on the topography of the area, the vicinity of Flagler, U and Thomas Streets is a low point or "sag" in the area. The capacity of sewers and inlets in these areas were evaluated on the rationale that overland flow and backups from other areas would collect in the low spots causing flooding. Figure 3-4 provides the sewer layout plan of the area with locations of reported flooded basements and the selected sewers.

The second step was collecting data on these sewers, such as diameter and type of sewer, ground levels of manholes, invert levels of sewers at manholes, year of installation, manhole IDs and sewer plan layout. Sources of these data were Sewer Contour Maps, EMAP, and the GIS Map of DC Sewerage Network. Brief descriptions of the selected sewers are given in Table 3-1.

3.4.2 Conveyance Capacity of Existing Sewers

The capacities of combined sewers in the Bloomingdale Neighborhood were evaluated for full pipe flow conditions. Though the sewer system in this Neighborhood is built to convey both dry weather flow (DWF) and storm flow, the effect of DWF during storms is negligible, hence not considered in the analyses.

3.4.3 Computations of Storm Floods

Beginning at the upper end of the selected combined sewer, the storm-generated flow expected to be conveyed by each segment of sewer between manholes was computed. And added to that computed for the next downstream segment. These estimated storm flows were compared with the calculated carrying capacity of each segment of existing sewers.

The basic data collected, the procedures followed and the results obtained are provided in detail in Appendix B. Summary of the adequacy of the selected sewers to convey storm flows of various frequencies are shown in Fig. 3-4.

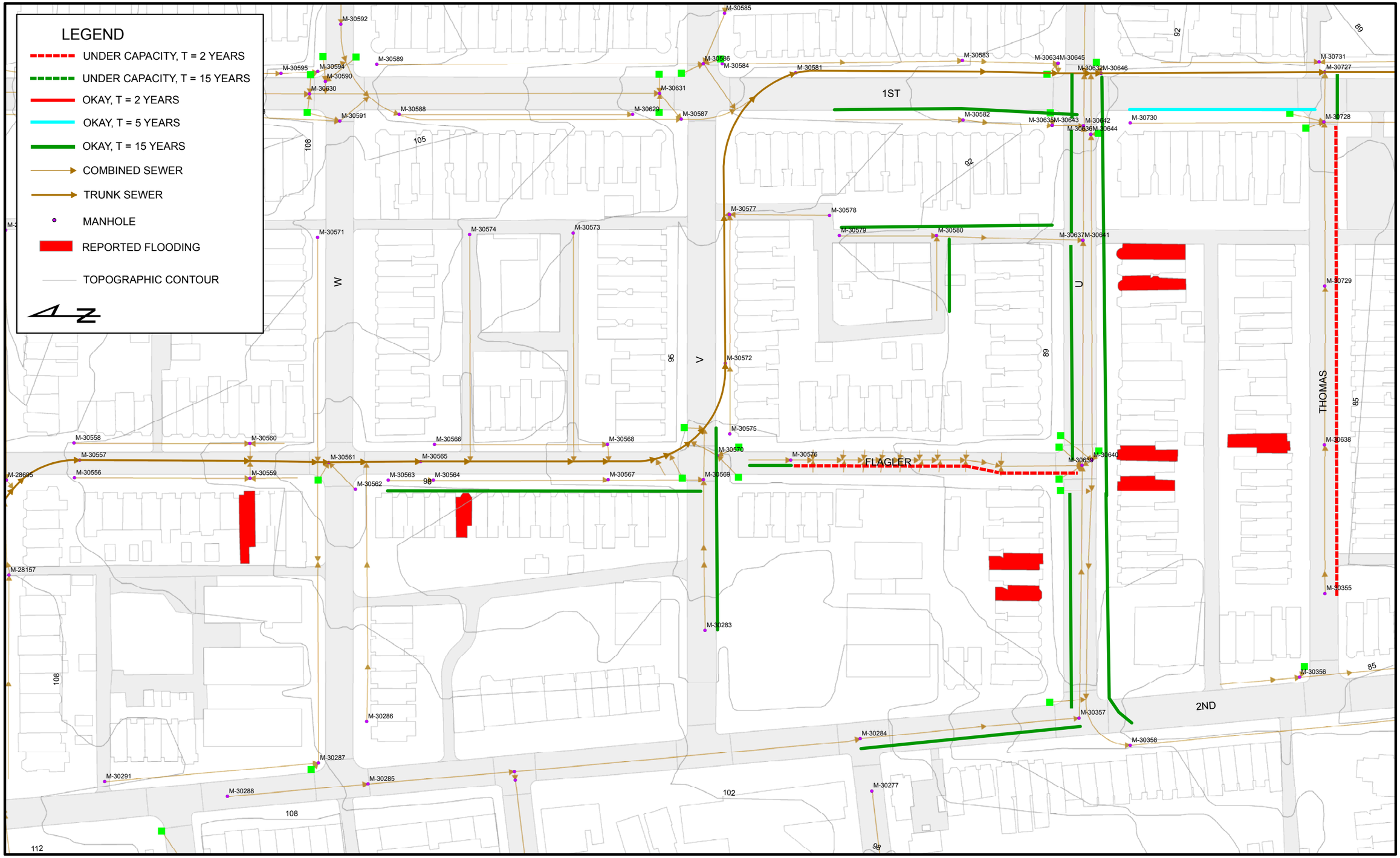

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FIG. 3-4

Adequacy/Inadequacy of the Selected Sewers for Various Frequency Floods
Scale 1" = 100 ft.

100 50 0 100 Feet

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Table 3-1: Salient Features of Selected Sewers

Sewer Name	Location	Size	Material	Year of installation	Total Length	Remark
Thomas St Sewer	On Thomas St between 2nd St, NW and 1st St, NW	12 in to 24 in	Vitrified Clay	1900	565 ft	
Thomas-1	West of 1st St and North of Thomas St, NW	10 in	Vitrified Clay	1899	210 ft	branch sewer to Thomas St Sewer
U St Sewer	On U St between 1st and 2nd Sts, NW, on the left side it extends along the 2nd St towards W St, NW	10 in to 18 in	Vitrified Clay	1893 - 1924	1500 ft	
U-1	Between 1st St and Flagler Pl, NW	12 in	Vitrified Clay	1904	258 ft	branch sewer to U St
U-2	West of 1st St, NW	10 in to 15 in	Vitrified Clay	1899 and 1930	256 ft	branch sewer to U St
U-3	On Flagler Pl between U and V Sts, NW	10 in to 12 in	Vitrified Clay	1905	355 ft	branch sewer to U St
U-4	Parallel to U-St Sewer between 1st and 2nd St, NW	21 in to 39 in	Vitrified Clay	1905 and 1908	413.6 ft	relief sewer, carries overflow sewage from U St
Flagler-1	Between V St and W St, NW	10 in to 18 in	Clay Tile	1900 - 1906	389.5 ft	
Flagler 1-1	On V St, NW	18 in	Vitrified Clay	1903	176 ft	branch sewer to Flagler-1

3.5 FINDINGS OF HYDRAULIC ASSESSMENT

Based on site visits, hydraulic calculations of local sewer and review of the hydraulic capacity of the NEBT Sewer and its appurtenances, the following are findings of the hydraulic assessment:

- The NEBT Sewer and the Flagler/Thomas trunk sewer do not have the capacity to convey the 15-year design storms
- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Pl trunk sewer do not have capacity to convey additional flows.
- Additional inlet capacity (catch basins) at the intersection of U Street and Flagler Place may help reduce the duration and extent of ponding during some rain storms. However, note that these improvements will not prevent flooding due to surcharge of the NEBT Sewer or the Flagler Trunk Sewer.
- The combined sewer on Thomas Street, between 1st and 2nd Streets was found to have a capacity to convey less than the two year design storm. Relief of this sewer may help relieve flooding for lower frequency storms. The proposed relief sewer on Thomas St will be laid parallel to existing combined sewer from M-30355 to M-30728 and will be 18-in diameter and 505 LF length. Again, this improvement will not prevent flooding due to surcharge of the NEBT Sewer or the Flagler Trunk Sewer.

4. SEWER CONDITION ASSESSMENT

4.1 Closed Circuit TV Inspection (CCTV)

More than 2,500 feet of combined sewers in the Bloomingdale Neighborhood were inspected using remote CCTV equipment. The inspections were performed to determine if conditions such as blockages, debris buildup, etc. restricted pipe capacity. REI/DRAYCO performed the CCTV inspection work from August 1 to August 9, 2006. The information was recorded onto videotape and the TV operator generated a log report of the pipeline defects. Figure 4-1 shows the pipes inspected and the inspection reports are attached in Appendix C.

4.2 Results of CCTV Inspections

Pipes were found to be in good to excellent condition. No conditions (such as pipe collapses, debris buildup, etc) were observed which would significantly reduce the capacity of the sewers in the street. Photos of typical pipe conditions are shown below:

Photo 4-1:
Typical Pipe Condition – Sewer on Thomas St

Photo 4-2:
Typical Pipe Condition – Sewer on U-St, NW

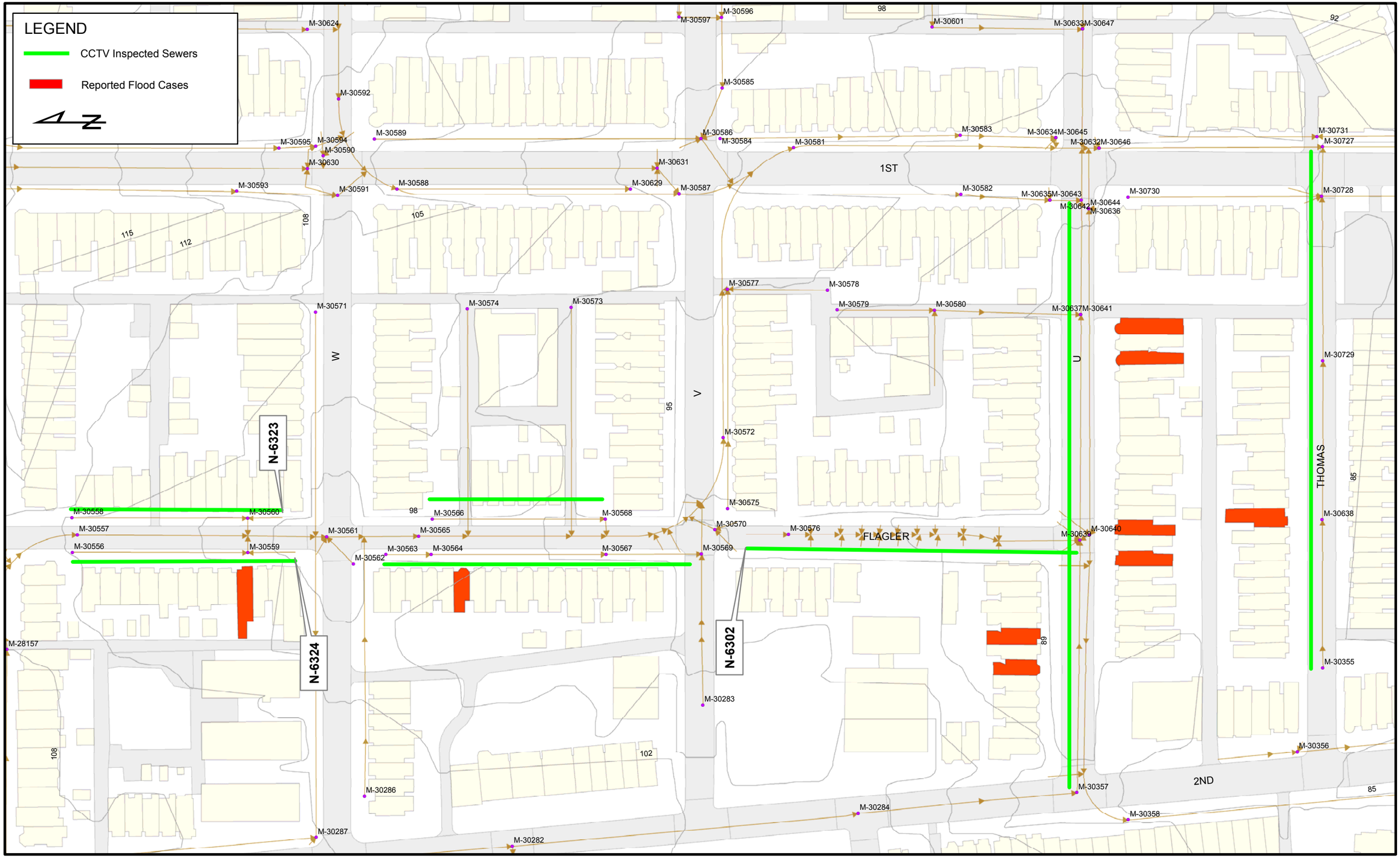

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FIG. 4.1: CCTV Inspected Sewers in Bloomingdale Neighborhood
Scale 1" = 100 ft. 100 50 0 100 Feet

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Two pipe segments warrant repair to preserve the structural integrity of the pipe:

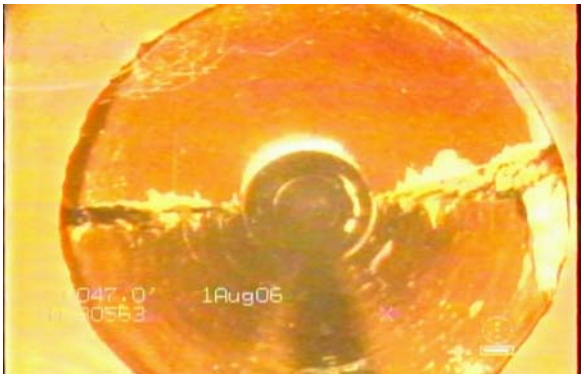
- M-30566 to M-30568 – this combined sewer on Flagler Pl between W and V Streets was found to have an approximately 6" hole in the crown, with dirt visible. Point repair or relining this section of pipe is recommended.
- M-30563 to M-30569 - this combined sewer on Flagler Pl between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints. Point repair or relining this section of pipe is recommended. In addition, roots and soils were observed covering about 15% of the flow area at about 154 ft from M-30563. These roots need to be cut.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.

The photos below show the cracks observed in the combined sewer on Flagler Pl between W and V Streets.

Photo 4-3:
Longitudinal crack on U St sewer. This crack is located about 215 ft from M-30357.

Photo 4-4:
Longitudinal fracture starting about 47 ft from M-30563



4.3 Status of Catch Basins

Most of the catch basin inlets are in good condition. Storm water flooding at the intersection of 2nd St and Florida Ave, however, is aggravated by damaged catch basin inlets located north of the intersection (refer photos 4-5 and 4-6). The catch basin covers and nearby curbs need to be repaired and readjusted to facilitate proper operation of the two catch basins.

Photo: 4-5:
Current status of catch basin located at the intersection of Florida Ave and 2nd St, NW

Photo: 4-6:
Current status of catch basin on Florida Ave west of the intersection with 2nd St, NW

5. FLOOD MITIGATION OPTIONS FOR PRIVATE PROPERTIES

5.1 Introduction

The Long Term Control Plan for combined sewer overflows recommended the construction of a 77-million gallon storage/conveyance tunnel parallel to Northeast Boundary Sewer. This tunnel will be designed to relieve flooding in the area up to the 15-year frequency design storm. Due to the magnitude and cost of the project, the complete tunnel will not be in service till 2025. Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, this section considers interim measures that could be implemented on private property to provide flood protection.

5.2 Interim Mitigation Measures

After considering the causes of the flooding and reviewing residents' reports, the following are property protection measures that may be applicable to provide interim flood protection at the household level:

- Measures to Prevent Basement Backups
  - ✓ Install Backflow Preventor (BFP)

    A BFP is a valve on the sewer line which is closed to prevent backups. Valves can be operated manually or automatically and some types include battery operated alarms to advise the resident when it is opened or closed. It is important to note that when the backwater valve closes, water from the inside of the house also cannot go out. Therefore, when surcharge occurs, the family should avoid using the toilet, sink, shower, dishwasher or any other appliance that releases water into the sanitary system. Different types of BPFs are summarized in Table 5-1.

Table 5-1: Backflow Preventor Summary

Type of BPF	Operation	Advantages	Disadvantages
Manually Operated Valve	Valve installed in the building sewer pipe that must be manually closed to prevent a backup.	✓ Simplicity	✓ A person must be at home and awake at the time of the rain event to close the valve, otherwise the system will not function ✓ The homeowner must remember to open the valve once the storm event has passed, so that wastewater may leave the residence through the sewer lateral.

Type of BPF	Operation	Advantages	Disadvantages
Flapper-type Check Valve	This is a valve installed in the sewer pipe. When the sewer begins to back up, the sewage/water moving backward in the pipe automatically closes the valve.	✓ Valve operation is automatic	✓ Valve has a tendency to clog, and may not provide protection. Regular cleaning may also be required. ✓ Plumbing fixtures cannot be used while the valve is closed
Automatic Gate-type Check Valve	This performs like a flapper type check valve except it is uses a gate to shut off the pipe. Some can be equipped with a battery-operated alarm and lights to indicate when it is open or closed. Some of these types of valves are also less prone to clogging.	✓ Valve operation is automatic ✓ Can include alarms and lights to indicate operation	✓ Higher cost ✓ Plumbing fixtures cannot be used while the valve is closed

✓ Pump-Around System (Ejector Pump)

The homeowner disconnects from the existing sewer lateral and installs a sewer system that collects and pumps the wastewater into the public sewer. The use of the pump prevents the wastewater from backing up through the lateral and into the residence. The system would not work during a power outage.

✓ Install an elevated sewer system

This system abandons the existing sewer line that serves the basement and other floors. It requires diversion of sewage from existing plumbing fixtures to a new sewer line that runs above the basement floor. The old sewer system in the basement is sealed and any drainage from the basement level is pumped up into the elevated sewer.

✓ Install sump pump system.

If there is only a floor drain but no toilet or shower in the basement, it is recommended to install a sump pump system only. This would involve capping the existing floor drain, installing a sump pump and installing a new floor drain connected to the sump pit. To ensure operation of the pump during severe flooding, provision of back-up power seems an important component.

✓ Install Plumbers Plugs

This is a plug that has a wing nut that allows the plug to be tightened against the opening in the fixture. This may be practical if there are few plumbing fixtures (like

a laundry sink) in the basement. The approach may not be practical for toilets or washing machines.

✓ Ensure Sewer Laterals are Clean

Flooding might be caused by a blocked connection between the house and the main sewer. Therefore, arrange for cleaning of the lateral regularly, avoid pouring grease into drains and avoid putting inappropriate objects into the plumbing system.

- Measures to Prevent Surface Flooding from Entering Basements

✓ Construct Barriers at Basement Entrances

Construct permanent or temporary barriers to stop floodwater from entering basements. An example is shown on Photo 5-1.

Photo 5-1:
Example of extending the stairs of the main house to the basement to act as permanent barriers against floods.

✓ Waterproof basements

Cracks in the walls or floor act as conduits for groundwater seepage. Waterproofing basements can be done by sealing cracks and fissures. A more effective way can e to construct a French drain inside the basement wall and direct the pipe discharge to a sump pump which pumps water outside the house.

✓ Address Roof Downspouts

Clean roof gutters and downspouts of leaves and other debris. Disconnect downspouts from the sewer system and extend and reroute them away from basement walls but not such that they would flood a neighbor's property.

✓ Improve Lot Grading

Improve lot grading so the ground slopes away from the house. Also, examine sidewalks, patios and driveways. These can settle over time and cause water to drain back towards the house.

The cost and practicality of many of these measures depend significantly on the configuration in buildings, the configuration of the basement, the location of other utilities in the building and other factors. Soliciting information from several licensed plumbers, after they have made a site visit, is probably the best way to obtain information on cost and practicality.

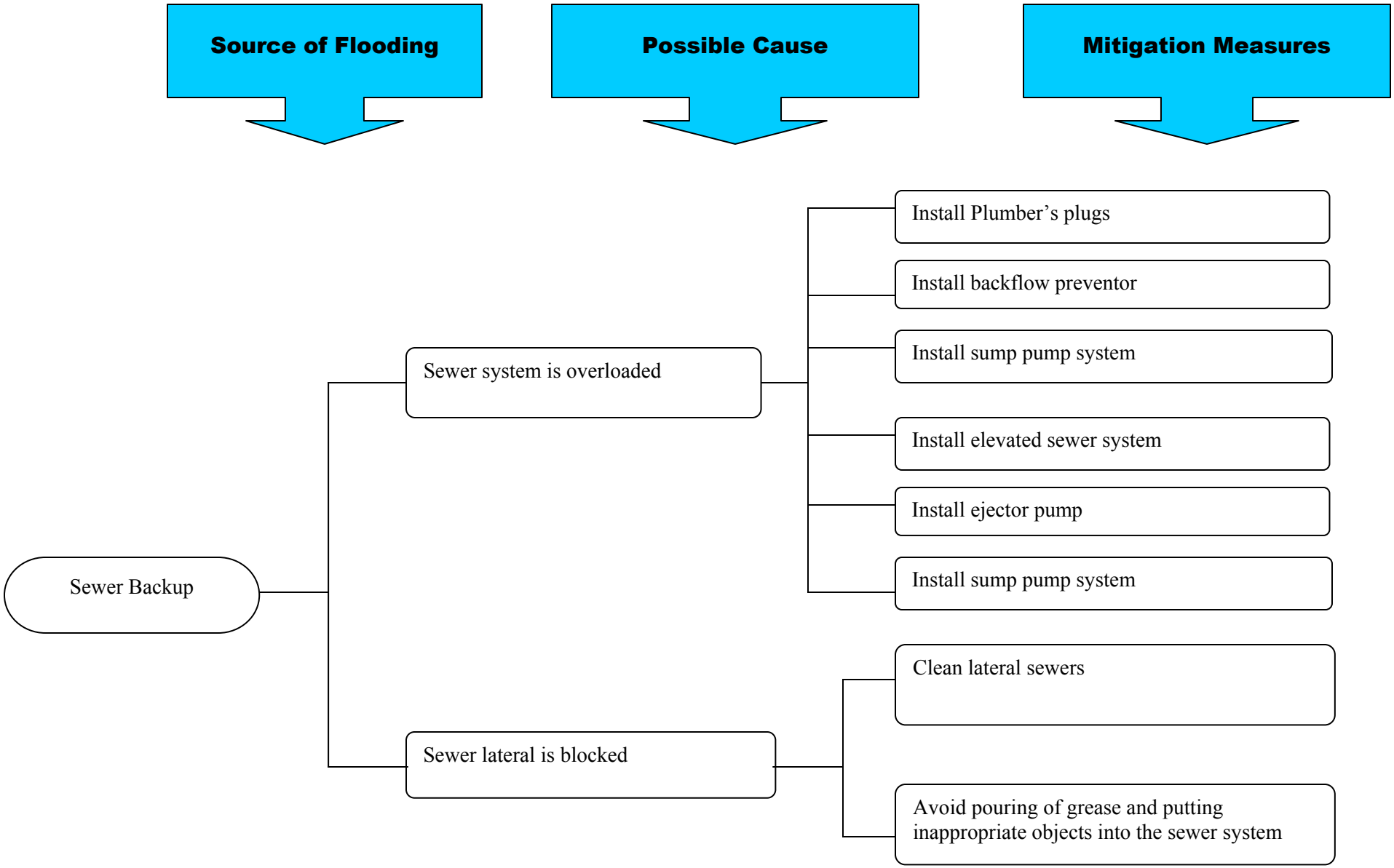


Figure 5-1: Summary Chart of Flood Source, Cause and Mitigation Measures

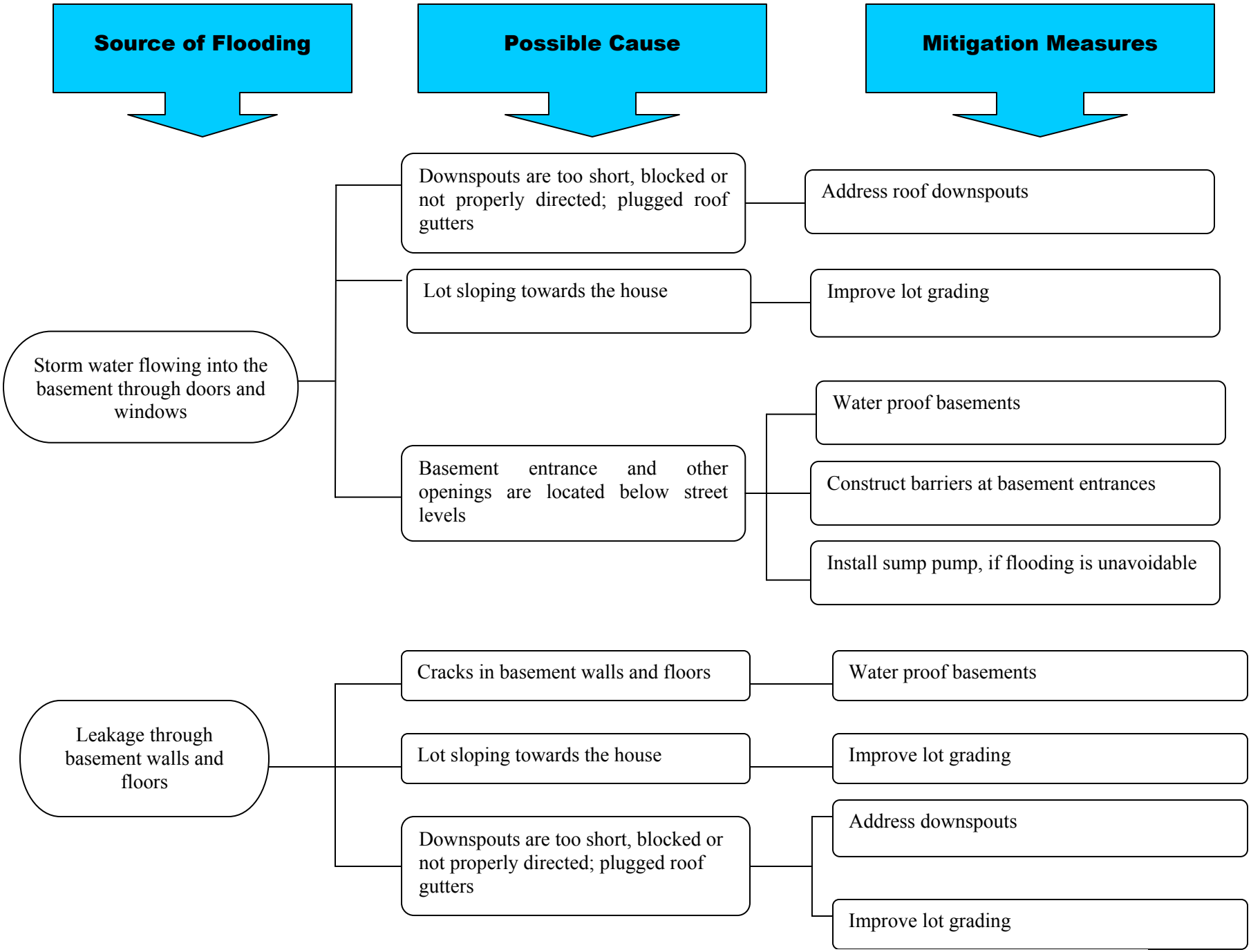


Figure 5-1: Summary Chart of Flood Source, Cause and Mitigation Measures (Continued)

6. FINDINGS AND RECOMMENDATIONS

The findings of this study are as follows:

- The storm of June 25-26, 2006 exceeded the 15-year return frequency design standard of the sewer system.

- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer do not have the capacity to convey the storm of June 25-26, 2006 or the 15-year design storm without flooding. This resulted in basement backups and flooding in streets and basements.

- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer were constructed prior to 1910. The flooding associated with the Northeast Boundary area has been recognized as a longstanding problem. Projects to relieve flooding have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.

- As part of the implementation of its Long Term Control Plan, WASA will construct a tunnel and appurtenances in the Northeast Boundary area to relieve the flooding. According to the terms of a Consent Decree with EPA, WASA will place this tunnel in operation by 2025. The cost of construction, along with practical implementation factors such as the size of the project, prevents completion of the tunnel sooner.

- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Pl trunk sewer do not have capacity to convey additional flows out of the area. However, improvements to the local sewer system have the potential to reduce flooding severity during lower frequency storms and to reduce the magnitude and duration of ponding.

- Inspections of the local sewers in the Bloomingdale area were conducted and sewers were found to be in good condition with no significant blockages or obstructions

- Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, interim flood protection measures implemented on private property appear to be the most practical approach for interim relief of flooding.

- Possible methods of interim flood protection include:

Measures To Prevent Basement Backups	Measures to Prevent Surface Flooding from Entering Basements
Install Backflow Preventor (BPF)	Construct barriers at basement entrances
Install pump-around system (ejector pump)	Waterproof basements
Install an elevated sewer system	Address roof downspouts
Install sump pump system	Improve lot grading
Install plumbers plugs	
Ensure sewer laterals are clean	

The following are recommendations associated with flood improvements to the local drainage system in the Bloomingdale Neighborhood:

- Construct additional inlets at the intersection of Flagler and U Street, NW
- Construct a relief sewer along Thomas Street between 1st and 2nd Street, NW
- Fix damaged catch basin inlets located at intersection of 2nd St and Florida Ave, NW.

Note that these improvements to the local storm drainage system will not alleviate flooding during large rain events when the NEBT Sewer and Flagler Place Trunk Sewer are surcharged. However, the improvements may reduce the magnitude of flooding during lower frequency storms and may reduce the extent and duration of ponding. These improvements should be implemented in the short-term, as their benefits would accrue immediately. Figure 6-1 shows the recommended improvements to the existing local drainage network.

Based on the CCTV inspections, point repair or relining the following pipe sections is recommended:

- M-30566 to M-30568 – this combined sewer on Flagler Pl between W and V Streets was found to have an approximately 6” hole in the crown, with dirt visible.
- M-30563 to M-30569 - this combined sewer on Flagler Pl between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.

LEGEND

REPORTED FLOOD CASES

COMBINED SEWER LINE

CATCH BASIN

TOPOGRAPHIC CONTOUR

PROPOSED RELIEF SEWER

POINT REPAIR AT 35.5 ft. FROM M-30566

POINT REPAIR AT VARIOUS LOCATIONS OR RELINE THE WHOLE SEWER PIPE

ADDITIONAL CATCH BASINS

Repair Catch Basin Inlets

1ST

2ND

3RD

4TH

FLAGLER

ELM

THOMAS

RHODE ISLAND

FLORIDA

SEATON

RANDOLPH

ANNA J COOPER

H:\11163\Design\2006-06-24 Rain\Bloomingdale Flood

EPMC-3A
GREELEY AND HANSEN

FIG. 6.1: Recommended Improvements
Scale 1" = 200 ft. 190 95 0 190 Feet

D.C. WATER AND SEWER AUTHORITY

Appendix A

Summary of Complaints Filed by Residents

Table A-1. Summary of June 25-26, 2006 Flood Complaints by Residents and Their Recommended Solutions

S.no	Address	Resident's Observations	Resident's Recommended Solutions
1	1800 block of 1st St NW	Back flow through shower drain flooded the basement	
		Surface flow (possibly including rainwater through down spout) has also flooded the basement	
		Water drained back fast when the rain slowed down	
2	2200 block of Flagler Pl NW	Back flow through shower drain flooded the basement	Keep drains clean and free of debris
3	2100 block of Flagler Pl NW	Down spout and surface runoff flooded the basement	Make sure each property is properly drained and the drains function properly
		The pipe that connects the downspout with the sewer was clogged	
		Water accumulated in the poorly drained neighbor eventually flooded this house	
4	200 block of Florida Ave NW	Water backs up at the intersection of 2nd St and Florida Ave, NW	Keep drains clean and free of debris and check this occasionally but this was not enough for severe
		The ground slope from the road curb is towards the house, which facilitated the flow of water from the street into the house	storm
		Sewage back flow through the drain of the bath flooded the basement	
		The basement was flooded partly from surface runoff through the front door	
5	Unit block of S Str NW	Sewage back flow through sewer lines flooded the basement	Install back flow prevention valves on the sewer lines
6	100 block of Thomas St NW	Sewage backflow through sewer lines (toilet and bathtub) flooded the basement	Install sumps and sewage pumps
		Surface runoff through the doors flooded the basement	
7	100 block of U Str NW	Backflow of storm water from the drain located outside the house flooded the basement	Clogging of the sewer downstream causes sewage backup, therefore, sewers should be cleaned
		The embankment provided to protect the house has protected their other house on the other side of the street	Provide embankment around the perimeter of the property
			Flow from McMillan reservoir might have aggravated the problem
8	100 block of U Str NW	Basement flooded by surface storm water	Cover drains inlets with mesh metal and drain holes with sheet metal to prevent debris and other clogging material from entering the system
9	100 block of U Str NW	Surface water flooded the basement	Keep drains clean and free of debris
		Reason for flooding include clogging of the street gutters and street inlets	
		Sewer downstream of the MH at the intersection of Flagler and U St is overstressed, causing flooding of the area	
10	100 blcok of U Str NW	Sewage back flow through the drain of the shower and the toilet flooded the basement	
		The basement was flooded partly from surface runoff through the front and back doors	
11	100 block of U Str NW	Basement flooded by surface storm water	Make sure each property is properly drained and the drains function properly
			Check effect of construction at the Gage school. They might have diverted the underground stream into the storm sewers
			Building renovation permission certificates should address flood requirements
			City (WASA) should provide engineering services to check private properties if they are susceptible to flooding and recommend the type of improvements needed for efficient drainage and for minimizing flood risks
12	100 block of U Str NW	Basement flooded by surface storm water	Keep drains clean and free of debris
13	Unit block of V Str NW	Basement flooded by surface storm water	Install sumps and sewage pumps

Note: Names and addresses have been redacted

Flooding Reports Provided by Residents
June 25–26, 2006 Flooding

Note: Names and addresses have been redacted.

200 block of Florida Ave NW

The drain across the street from my house backs up frequently when it rains heavily creating a HUGE puddle at the intersection of 2nd and Florida. The bricks on my street and the sidewalk curbing all slope toward the houses on Florida causing water to come towards houses when it rains.

My basement unit flooded with about a foot of water. Sewage also backed up from the bathtub. The water receeded pretty quickly and I didn't need to use anything to get it out but it left behind a lot of dirt. The water primarily came in through the front door of the basement. I have a drain immediately outside of it but assume the amount of water became too much for it. I keep it cleaned and free of debris and had specifically checked it that day because of the heavy rain.

I happen to know that every house on my block with a basement unit flooded.....several of the houses on my street have their front on R and their rear on Florida....of these I know 200 block of R street and 200 block of Florida flooded.

At our house at 100 block of U Street, NW, as in August of 2001, Memo and I had water come in from underneath and around the basement back door of our house, where the outside drain is located. Water was actually coming up through the outside drain, much like an artesian well. See the attached image that I think seems to reflect our combined sewer/septic system situation: http://www.bartleby.com/61/imagepages/A4artwel.html

Personally, I suspect that there is a bottleneck somewhere "downstream" from us, and as a result, during heavy downpours the water in our part of the city gets backed up.

Hopefully the McMillan reservoir isn't to blame, Last time this happened several of us thought they may have released water into the system. I think several neighbors found fish on the street, and in their basements. Bob and Mike of the 100 block of U Street may have been two neighbors who saw this. I'm not an engineer but it seems possible that they need to keep the reservoir below a certain level to protect machinery and to keep it from breeching it's levees.

Despite the 3+ feet of water in the street, our house on the other side of the street did not have any internal flooding. The soil we added to the perimeter seems to have kept the waters at bay this time.

100 block of U Street, NW

We live at 100 block of U Street NW, dead center of the rain waters that ran down Flagler PL NW, as well as in front of the 3 drains our street has at the same intersection.

Our 2004 Ford Exlorer was totaled (we are taking a loss on that, Thanks to WASA and DC Govt). Our basement got about 6 inches of rain that came in from our neighbors basement, 100 block of U Street NW.

I am a realtor, and when I was out showing condos downtown yesterday, I saw drains that had metal mash and metal sheets with holes on it protecting the sewer drains so no debris, bottles etc could enter. I t looks

like it was professionally done and approved by WASA or DC. Can we ask for this to be done ASAP while we wait for WASA/DC Govt to fix the lines?

2200 block of Flagler Pl., NW

My basement flooded with approximately 1 inch of water. The water came up through the shower stall drain, and under the rear and front doors. My basement is approximately 4 1/2 feet below the ground level, there is 1 drain in the backyard, and there are drains in front of each door at the entrance level. These drains were clear of trash before and after the flood.

100 block of U Street, NW

I was alerted to the fact that there was a problem on Sunday, June 25th 2006 when the power went out sometime between 11:30pm-12am. I look out my front window and saw a lake outside! The water in the street in front of my house was up to the bottom of the car doors. My automobile was parked in front of my house; water had gotten inside and the carpet was soaked on the floor.

I have French drains in the front and rear outside of my house; both were backed up and water was coming up from them.

I have 2 steps leading from the sidewalk to my walkway, which measures 11.5" high. The water was about 11" deep on the street, just ready to some pouring over the steps, over my walkway, and down my basement steps and into the basement. Lucky for me, the rain subsided just in time and the water began to drain back. I did not suffer major damage from the sewer backup.

I did get leaking in the rear of my house due to the neighbors gutters overflowing, leaking into cracks in the pavement, and streaming its way through the foundation into my basement.

The next night, Monday June 26th wasn't much better. Neighbors were literally outside in the rain for hours that
night, using brooms and rakes, sweeping away debris from the street drains to keep them clear. A sewer backup on 1st Street, NW caused a river of water to come pouring down 1st St then onto U St. Water was gushing out of a manhole on 1st St at V St. Water also poured down Flagler. The street drains at the corner of Flagler and U St did again back up that night and the intersection was a pond. Flagler is a big issue; much of the water from surrounding streets drains into Flagler and that flows downhill into U St. The drains at the intersection of Flagler and U St just cannot handle the amount of water coming in.

In Aug of 2001 I was not so lucky. The street sewer backup was so bad it filled the street to over 12" deep. Water poured up and over the front steps and down into the basement, filling it with 1-2" of water.

I'm on edge any time it rains!

V Street, NW

FYI, Bolling Air Force Base in the District places a wire mesh over their storm drains. I would imagine that WASA would be willing to do the same or allow citizens to install them ourselves...

V ST Resident who fortunately did not have flood damage...

100 block of U St NW

On Sunday, June 25, the storm drains on backed up and caused extensive flooding throughout my block due to the heavy rains during the night. I received a phone call at 2am (June 26) from my basement tenant, Annika Jordan, informing me that the basement was entirely flooded. Water was coming up from the shower, the toilet, and from the rear and front doors and covered the entire basement floor with 4 inches of dirty water. The worst source of the flooding was storm water that came through the front door. Storm water flooded in from the street and flowed into the front basement entrance and the water line reached above 1 ft high. Of course when the water was so high, it started to leak into the basement through the door and covered the entire floor with 3-4 inches of water.

There was nothing I could do until the next morning since the weather was so bad. Apparently, the electricity was gone for a few hours that night and the fire department was sent to my block. Fortunately, my tenant managed to sweep out most of the water by the next morning, however there was extensive water damage left behind.

1800 block of 1st St NW

I had water coming up from my shower drain, front and rear exterior drains. This happened 3 different times. Around 2:30am was the worst. At one point I had 6 inches of water in the basement. When the rain slowed down, the water all drained back into the sewer system. I did call WASA the next day and they said someone would come by to take a look. I was home all day and no one showed up.

Unit block of S Street, N.W.

I would like to suggest to WASA that they install back flow valves into each of our home sewer lines to prevent sewage from coming out of the drains and flooding our basements. It's our responsibility to keep our outside drains clean but it's theirs to keep sewage from flowing the wrong direction and poses more of a health risk too.

2100 block of Flagler

We had some minor flooding in our basement at 2100 block of Flagler Place. It was partially due to my downspout and drain not working as well as it should have because the trap in the downspout was clogged with about 100 years of sediment. We just dug it up and replaced it and it was unbelievable any water got through at all. A good bit of our problem was caused by the lot next to us, which was no drain installed near the back of the house and a concrete driveway which drops off 6-8 inches near the house and pools several inches of water against his foundation every time it rains, with no where to go but down along his foundation and into my yard.

Unit block of V Street NW

We flooded with about three inches of water. Our address is unit block of V Street NW. We have flooded before, but our problems had stopped since we installed a sump pump on the back of the house where flooding had become a big problem. Until that historic rain overnight on June 26, we had no problems since the sump pump was put in a year ago.

This time, the water came in on the other side of the back of our house, very close to the common wall with our uphill neighbor, who floods often and seems resigned to it. She has lived in the house for many years and I don't think she can afford to address her problem. Her roof also leaked in this series of storms.

John

I had three feet of water in my basement in 2001. It was a direct result of the overwhelmed water systems. I've made changes to drainage around my home, in the rear where the flood waters came in, so this problem wasn't an issue this time---yet I did have water damage to ceilings and walls in my home because of the volume of rain. This year, the damage came from the roofline down (water overflow from the roof to the walls on the rear of my flat roof. There was definitely areas where water was backed up in the neighborhood (e.g. First and R & Randolph and Florida and First (all NW)). These drains always overflow when there is a lot of rain and they take a long time to dissipate.

Unit block of Florida Ave NW

I was not affected, but want to report the problem on Florida Ave NW.

It appears that the water was flowing from the back alley (quincy pl NW and Florida Ave houses) and the street drain was not able to absorb it fully, creating a massive flooding at the intersection of Florida Ave NW and First St NW. The water was about foot deep, and even the sidewalks were covered. I am not aware of the cause of the problem. However, this problem occurs at every rainfall, even smaller ones.

I will be happy to provide more info if needed. I also reported this problem to WASA.

100 block of Thomas St NW

On Sunday, June 24, heavy rains fell and my basement was flooded repeatedly throughout the night in surges. My drains outside were clear and performing adequately to drain the rain water, but I witnessed the drains gushing water up from the system in a backflow for periods of time twice as I tried to cleanup before giving up.

Sewage and waste, including leaves and other clearly external debris, came up through my basement toilet and bathtub, overflowing both and flooding my basement. Additionally, water forced into the front and rear entry ways into my downstairs unit by the backflow from the city water system entered the unit under the doors. Debris marked a waterline on my back door of about 14 inches and on my front door of about 5 inches. I have a sump pump in the unit, so between surges, most of the water drained from the unit, leaving about 1/2 inch to one inch of water on the wood laminate flooring. The first of these surges occurred sometime before 9:00 pm Sunday night. We discovered the aftermath of it when we went to the basement on a routine nightly check of the property. While we were cleaning up the residual water from the first surge, we witnessed the second one at about 10:00 pm. When we witnessed that one, we realized that there was nothing that we could do to stop the flooding. I went to the basement one more time, at about 11:30, and it had just surged again, because I again witnessed a new round of water built up in front of both doors. I could not enter the unit that time, without allowing the water to rush in, I suspect that it was on that occasion that the water came up through the toilet and tub inside.

I have photos of the water that remained in the unit the next morning, The debris in the bathroom, and the waterlines for the front and back doors. I have technical problems with sending them electronically, but I can bring copies to the next meeting, if you need them.

I've only lived in this house since last July, so I don't have Additional information to offer regarding previous flooding.

100 block of U St. NW

We bought the house in 2004, so I don't know what sort of damage it took in 2001. Flooding was NOT listed on the information provided on the house, but neighbors tell us it did flood.

This time our French drains did not drain properly. We took about 3 inches of water in the basement. I view this as a maintenance problem - we sweep up small leaves and such regularly (and had actually done it about 2 weeks before the flood), but the run off from our yard carried too much detritus and clogged the drain cover. We plan a landscape engineering solution - as soon as we can figure out what one might be.

The alley behind our house does sit higher than most of the yards on our block, so water runs toward our houses when it rains.

We did not get water backed up thru the tub or toilet.

My car was totaled. It was parked near 100 block of U street and was in about 1 1/2 feet of water. This was enough to flood the engine. My car is an antique and cannot be insured for damage - unless I call it a show car and promise not to drive it!

From the government or other agency I'd like to see:
- an assesment showing that the new construction at the Gage school did not exacerbate the problem. I bet that it did. They dug an enormous hole right where the underground stream runs and they had major water problems last fall. Then the water disappeared. I assume they diverted the stream - how much did that have to do with our most recent problem?
- When people pull permits for renovation, water engineering should be reviewed. The damage to the condo at 150 (or 152, I forget the address), is largely due to stupid construction. The builder lowered the front steps on the lowest house on the block. And, surprise! surprise!, the water rushed in.
- The city (or WASA or whomever) should perform an assessment of water run off. Not the storm drains, but the homes and the land. We, as property owners, can do many things to help avoid problems, but we don't know how. A professional could determine things that we, as a neighborhood, can do to in the future. From making sure that our yards slope down from the houses, to making sure our front steps are tall enough, to making sure there is enough green space to absorb the water. I'm sure there are many other things we can do, but that is the extent of my knowledge base.

100 block of U St. N.W

We got minimal flooding inside the basement this time. The drains are kept free and clear of debris in both the front and rear drains. However, this time a plastic bag somehow made its way into the front drain area. When the waters that flooded the street and then poured down to the basement drain area, the bag then sort of acted as a seal or cover. The basement was not completely flooded it was actually negligible compared to others. The neighbors at 100 block of U did not get any flood, so I know it was the bag covering the drain. I live on the alley and the new construction resulting from the 2001 flooding properly diverted the flood waters to the nearby drains. There was no flooding in the alley that runs north to south, nor the rear that runs east to west.

The front street was a different story; it however, at 2:30 am Monday morning (6/26) looked like a river. I was told that the Gage school looked like a lake. Unfortunately, my car was flooded and still inoperable (7/19).

The tree boxes were completely flooded. That was about a foot and one half of water. Some front yards were flooded. Since my yard (and most others) are high up, that protected us from getting a rush or surge of flood water hurdling to the basement area. That would have been catastrophic.

Amazingly, in less than 2 minutes all of the water receded from the streets. That was about 2:35am to 2:45am. Most of the 100 block U street residents were out (the rain temporarily subsided) cleaning out their cars.

Appendix B
Computation Tables for Estimating Conveyance Capacity of Existing Sewers

Table B.1: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along Thomas Street, NW

Table B.1.1: Basic Data of the Main Sewer and Its Tributaries

MH ID		Ground Level		Invert Level		Pipe Size	Pipe Length	Watershed Area	Residential	CrAr	Pavement	CAp	Green	CAg	Weighted C
								A	Ar		Ap		Ag		
From	To	From MH	To MH	From MH	To MH	in	ft	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	
Sewer	Main Sewer														
M-30355	M-30638	86.2	86.45	80.43	79.34	12	160	83905.65	37440.51	33696.46	28596.24	25736.61	17868.90	5360.67	0.77
M-30638	M-30729	86.45	84.7	79.34	78.44	15	170	47328.98	25921.49	23329.34	6428.58	5785.72	14978.91	4493.67	0.71
M-30729	M-30728	84.7	85.15	78.44	76.71	18	174.5	17513.10	0.00	0.00	15036.34	13532.71	2476.76	743.03	0.82
M-30728	M-30727	85.15	88.21	76.71	74	24	60.5			0.00		0.00		0.00	
Sewer	Thomas-1														
M-30730	M-30728	91.6	85.15	80.08	77	10	210	32602.21	13304.07	11973.66	5680.56	5112.50	13617.58	4085.27	0.65

Table B.1.2: Determination of Time of Concentration and Intensity of Rainfall

MH ID		Flow Time Computation								Inlet Time	Time of Concentration	Intensity			
		D	A	P	R	S	n	V	Flow Time		tc	2	5	10	15
From	To	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
Sewer	Main Sewe														
M-30355	M-30638	1.00	0.7854	3.14159	0.25	0.00681	0.015	3.24495	0.82	10.00	10.82	4.33	5.17	5.92	6.14
M-30638	M-30729	1.25	1.22718	3.92699	0.3125	0.00529	0.015	3.31939	0.85	10.82	11.67	4.25	5.04	5.75	5.98
M-30729	M-30728	1.50	1.76715	4.71239	0.375	0.00991	0.015	5.12948	0.57	11.67	12.24	4.14	4.97	5.67	5.88
M-30728	M-30727	2.00	3.14159	6.28319	0.5	0.04479	0.015	13.2083	0.08	12.24	12.32	4.11	4.94	5.64	5.87
Sewer	Thomas-1														
M-30730	M-30728	0.83	0.54542	2.61799	0.20833	0.01467	0.015	4.21631	0.83	10	10.83	4.33	5.17	5.92	6.14

Table B.1.3: Computation of Conveyance Capacity of Exisitng Sewers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Section		From Branch	Existing Conditions													
			Elevation				Length	Slope of conduit	Pipe Dia	X-sectional area	Wetted Perimeter	Hydraulic Radius	Longitudinal Slope	Manning's roughness	Velocity	Drain Capacity
From MH	To MH	(if any)	GL		Invert L		L									
			Upper end	Lower end	Upper end	Lower end	ft	S	D	A	P	R	S	n	V	Q
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
M-30355	M-30638		86.20	86.45	80.43	79.34	160	6.81	12	0.79	3.14	0.25	0.01	0.015	3.24	2.55
M-30638	M-30729		86.45	84.70	79.34	78.44	170	5.29	15	1.23	3.93	0.31	0.01	0.015	3.32	4.07
M-30729	M-30728		84.70	85.15	78.44	76.71	174.5	9.91	18	1.77	4.71	0.38	0.01	0.015	5.13	9.06
M-30728	M-30727	M-30730	85.15	88.21	76.71	74.00	60.5	44.79	24	3.14	6.28	0.50	0.04	0.015	13.21	41.50
M-30730	M-30728		91.60	85.15	80.08	77.00	210.00	14.67	10	0.55	2.62	0.21	0.01	0.015	4.22	2.30

Table B.1.4: Evaluation of Existing Sewers Against Generated Floods of Various Frequencies

1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
Section		From Branch	Watershed Characterstics				2-Year Frequency			5-Year Frequency			10-Year Frequency			15-Year Frequency		
			Drainage Area	Wieghted C	CA	Cummu AC	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark
From MH	To MH	(if any)																
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
M-30355	M-30638		1.93	0.77	1.49	1.49	4.33	6.44	Under Capacity	5.17	7.69	Under Capacity	5.92	8.81	Under Capacity	6.14	9.13	Under Capacity
M-30638	M-30729		1.09	0.71	0.77	2.26	4.25	9.60	Under Capacity	5.04	11.39	Under Capacity	5.75	12.99	Under Capacity	5.98	13.51	Under Capacity
M-30729	M-30728		0.40	0.82	0.33	2.59	4.14	10.71	Under Capacity	4.97	12.86	Under Capacity	5.67	14.67	Under Capacity	5.88	15.21	Under Capacity
M-30728	M-30727	M-30730	0.00	0.00	0.00	3.07	4.11	12.63	OKAY	4.94	15.18	OKAY	5.64	17.33	OKAY	5.87	18.04	OKAY
M-30730	M-30728		0.75	0.65	0.49	0.49	4.33	2.10	OKAY	5.17	2.51	Under Capacity	5.92	2.88	Under Capacity	6.14	2.98	Under Capacity

Table B.1.5: Determination of Size of Relief Sewer on Thomas Street

From MH	To MH	Ground Level		Invert Level		Length	Slope	Manning's roughness	15-year Frequency Flow	Required Pipe Dia	Hydraulic Radius	Velocity	Computed Q	Remark	Exist Sewer Dia	Relief Sewer Dia
		Upper end	Lower end	Upper end	Lower end											
ID	ID	mASL	mASL	mASL	mASL	ft			ft3/sec	in	in	ft/sec	ft3/sec		in	in
M-30355	M-30638	86.2	86.45	80.43	79.34	160	0.007	0.015	9.13	21	0.44	4.71	11.33	OKAY	12	18
M-30638	M-30729	86.45	84.7	79.34	78.44	170	0.005	0.015	13.51	24	0.50	4.54	14.27	OKAY	15	18
M-30729	M-30728	84.7	85.15	78.44	76.71	174.5	0.010	0.015	15.21	24	0.50	6.21	19.52	OKAY	18	18
M-30728	M-30727	85.15	88.21	76.71	74	60.5	0.045	0.015	18.04	24	0.50	13.21	41.50	OKAY	24	-

Table B.2: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along U Street, NW

Table B.2.1: Basic Data of the Main Sewer and Its Tributaries

MH ID		Ground Level		Invert Level		Pipe Size	Pipe Length	Watershed Area	Residential	CrAr	Pavement	CAp	Green	CAg	Weighted C
								A	Ar		Ap		Ag		
From	To	From MH	To MH	From MH	To MH	in	ft	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	
M-30284	M-30357	98.70	90.5	88.46	80.17	15	135	67411.67	14702.86	13232.57	15987.00	14388.30	36721.81	11016.54	0.57
M-30357	M-30639	90.50	89.7	79.10	77.43	18	270	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M-30639	M-30641	89.70	88.9	77.43	76.73	30	240	17166.84	6012.81	5411.53	7508.72	6757.85	3645.31	1093.59	0.77
M-30641	M-30642	88.90	89.54	76.73	75.29	30	120	9323.61	2717.93	2446.14	3927.67	3534.90	2678.01	803.40	0.73
M-30642	C-04	89.54	90.50	75.29	75.00	30	56	4709.57	0.00	0.00	4709.57	4238.61	0.00	0.00	0.90
Sewer	Sewer-U-1 Connected to U-St sewer at MH-30637														
M-30579	M-30580	0.00	91.26	82.93	82.21	12	104	20637.35	8407.29	7566.56	5697.04	5127.34	6533.02	1959.91	0.71
M-30580	M-30641	91.26	88.90	82.21	76.73	12	154	9368.50	1892.58	1703.32	4164.44	3748.00	3311.48	993.44	0.69
Sewer	Sewer-U -1·Connected to the sewer-1 at MH-30580														
U-I-01	M-30580	91.06	91.26	84.09	82.21	8	77	12472.60	5748.18	5173.36	3321.33	2989.20	3403.09	1020.93	0.74
Sewer	Sewer -U-2 Connected to U St sewer at MH-30642														
U-I-02	M-30582	91.71	92.00	85.36	82.52	10	140	29785.21	15574.13	14016.72	0.00	0.00	14211.08	4263.32	0.61
M-30582	M-30635	92.00	90.04	82.52	80.77	12	83	8264.59	2539.84	2285.86	2757.93	2482.14	2966.82	890.05	0.68
M-30635	M-30642	90.04	89.31	77.03	76.33	15	33	7456.41	2539.84	2285.86	2273.84	2046.46	2642.73	792.82	0.69
Sewer	Sewer -U-3 Connected to the U st sewer at MH-30639														
N-6302	M-30576	91.71	91.03	82.12	80.16	10	45	15529.84	7521.27	6769.14	2695.46	2425.91	5313.11	1593.93	0.69
M-30576	M-30639	91.03	89.70	80.00	77.56	12	310	54049.68	19137.98	17224.18	0.00	0.00	34911.70	10473.51	0.51
Sewer	Relief Sewer from MH-30640 to MH-30358														
M-30640	M-30358	87.28	90.5	76.08	74.08	39	346	29583.63	10391.27	9352.14	6121.43	5509.29	13070.93	3921.28	0.63

Table B.2.2: Determination of Time of Concentration and Intensity of Rainfall

MH ID		Flow Time Computation								Inlet Time	Time of Concentration	Intensity			
		D	A	P	R	S	n	V	Flow Time		tc	2	5	10	15
From	To	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
M-30284	M-30357	1.25	1.22718	3.926990817	0.3125	0.06	0.015	11.305	0.20	13.81	14.01	3.98	4.74	5.38	5.59
M-30357	M-30639	1.50	1.76715	4.71238898	0.375	0.00619	0.015	4.05158	1.11	14.01	15.12	3.85	4.58	5.20	5.43
M-30639	M-30641	2.50	4.90874	7.853981634	0.625	0.00	0.015	3.91103	1.02	15.12	16.14	3.75	4.50	5.08	5.28
M-30641	M-30642	2.50	4.90874	7.853981634	0.625	0.012	0.015	7.93301	0.25	16.14	16.39	3.74	4.45	5.02	5.25
M-30642	C-04	2.50	4.90874	7.853981634	0.625	0.01	0.015	5.21138	0.18	16.39	16.57	3.71	4.40	5.00	5.23
Sewer	Sewer-U-1														
M-30579	M-30580	1.00	0.79	3.14	0.25	0.01	0.015	3.27	0.53	10.00	10.53	4.34	5.20	5.92	6.19
M-30580	M-30641	1.00	0.79	3.14	0.25	0.04	0.015	7.42	0.35	10.53	10.88	4.27	5.16	5.89	6.13
Sewer	Sewer-U -1														
U-I-01	M-30580	0.67	0.35	2.09	0.17	0.02	0.015	4.69	0.27	10.00	10.27	4.50	5.28	6.01	6.25
Sewer	Sewer -U-2														
U-I-02	M-30582	0.83	0.55	2.62	0.21	0.02	0.015	4.96	0.47	10.00	10.47	4.35	5.21	5.95	6.21
M-30582	M-30635	1.00	0.79	3.14	0.25	0.02	0.015	5.71	0.24	10.47	10.71	4.33	5.19	5.92	6.16
M-30635	M-30642	1.25	1.23	3.93	0.31	0.02	0.015	6.64	0.08	10.71	10.79	4.31	5.17	5.9	6.14
Sewer	Sewer -U-3														
N-6302	M-30576	0.83	0.55	2.62	0.21	0.04	0.015	7.27	0.10	10.00	10.10	4.43	5.29	6.04	6.28
M-30576	M-30639	1.00	0.79	3.14	0.25	0.01	0.015	3.49	1.48	10.10	11.58	4.25	5.04	5.75	6.00
Sewer	Relief Sewe														
M-30640	M-30358	3.25	8.30	10.21	0.81	0.01	0.015	6.56	0.88	10.00	10.88	4.27	5.16	5.89	6.13

Table B.2.3: Computation of Conveyance Capacity of Existing Sewers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Section		From Branch	Existing Conditions													
			Elevation				Length	Slope of conduit	Pipe Dia	X-sectional area	Wetted Perimeter	Hydraulics Radius	longitudinal Slope	Manning's roughness	Velocity	Drain Capacity
From MH	To MH	(if any)	GL		Invert L		L									
			Upper end	Lower end	Upper end	Lower end	ft	S	D	A	P	R	S	n	V	Q
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
Main Sewer and Tributaries																
M-30284	M-30357		98.70	90.50	88.46	80.17	135.00	61.41	15.00	1.23	3.93	0.31	0.06	0.015	11.31	13.87
M-30357	M-30639		90.50	89.70	79.10	77.43	270.00	6.19	18.00	1.77	4.71	0.38	0.01	0.015	4.05	7.16
M-30639	M-30641	N-6302	89.70	88.90	77.43	76.73	240.00	2.92	30.00	4.91	7.85	0.63	0.00	0.015	3.91	19.20
M-30641	M-30642	M-30579	88.90	89.54	76.73	75.29	120.00	12.00	30.00	4.91	7.85	0.63	0.01	0.015	7.93	38.94
M-30642	C-04	U-I-02	89.54	90.50	75.29	75.00	56.00	5.18	30.00	4.91	7.85	0.63	0.01	0.015	5.21	25.58
N-6302	M-30576		91.71	91.03	82.12	80.16	45.00	43.56	10.00	0.55	2.62	0.21	0.04	0.015	7.27	3.96
M-30576	M-30639		91.03	89.70	80.00	77.56	310.00	7.87	12.00	0.79	3.14	0.25	0.01	0.015	3.49	2.74
M-30579	M-30580		0.00	91.26	82.93	82.21	104.00	6.92	12.00	0.79	3.14	0.25	0.01	0.015	3.27	2.57
M-30580	M-30641	U-I-01	91.26	88.90	82.21	76.73	154.00	35.58	12.00	0.79	3.14	0.25	0.04	0.015	7.42	5.82
U-I-01	M-30580		91.06	91.26	84.09	82.21	77.00	24.42	8.00	0.35	2.09	0.17	0.02	0.015	4.69	1.64
U-I-02	M-30582		91.71	92.00	85.36	82.52	140.00	20.29	10.00	0.55	2.62	0.21	0.02	0.015	4.96	2.70
M-30582	M-30635		92.00	90.04	82.52	80.77	83.00	21.08	12.00	0.79	3.14	0.25	0.02	0.015	5.71	4.48
M-30635	M-30642		90.04	89.31	77.03	76.33	33.00	21.21	15.00	1.23	3.93	0.31	0.02	0.015	6.64	8.15
Relief Sewer																
M-30639	M-30640		89.70	87.28	77.56	76.08	12.00	123.33	21.00	2.41	5.50	0.44	0.12	0.015	20.05	48.23
M-30640	M-30358		87.28	90.50	76.08	74.08	334.00	5.99	39.00	8.30	10.21	0.81	0.01	0.015	6.68	55.37
0	0		87.28	89.45	77.21	75.10	413.60	5.10	24.00	3.14	6.28	0.50	0.01	0.015	4.46	14.00

Table B.2.4: Evaluation of Exisitng Sewers Against Generated Floods of Various Frequencies

1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
Section		From Branch	Watershed Characterstics				2-Year Frequency			5-Year Frequency			10-Year Frequency			15-Year Frequency		
From MH	To MH	(if any)	Drainage Area	Wieghted C	CA	Cummu CA	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
M-30284	M-30357		1.55	0.57	0.89	1.17	3.98	4.64	OKAY	4.74	5.52	OKAY	5.38	6.27	OKAY	5.59	6.52	OKAY
M-30357	M-30639		0.00	0.00	0.00	1.17	3.85	4.49	OKAY	4.58	5.34	OKAY	5.20	6.06	OKAY	5.43	6.33	OKAY
M-30639	M-30641	N-6302	0.39	0.77	0.30	0.98	3.75	1.47	OKAY	4.50	1.76	OKAY	5.08	1.99	OKAY	5.28	2.07	OKAY
M-30641	M-30642	M-30579	0.21	0.73	0.16	1.83	3.74	6.85	OKAY	4.45	8.16	OKAY	5.02	9.20	OKAY	5.25	9.62	OKAY
M-30642	C-04	U-I-02	0.11	0.90	0.10	2.60	3.71	9.64	OKAY	4.40	11.43	OKAY	5.00	12.99	OKAY	5.23	13.58	OKAY
N-6302	M-30576		0.36	0.69	0.25	0.25	4.43	1.10	OKAY	5.29	1.31	OKAY	6.04	1.50	OKAY	6.28	1.56	OKAY
M-30576	M-30639		1.24	0.51	0.64	0.88	4.25	3.76	Under Capacity	5.04	4.45	Under Capacity	5.75	5.08	Under Capacity	6.00	5.30	Under Capacity
M-30579	M-30580		0.47	0.71	0.34	0.34	4.34	1.46	OKAY	5.20	1.75	OKAY	5.92	1.99	OKAY	6.19	2.08	OKAY
M-30580	M-30641	U-I-01	0.22	0.69	0.15	0.70	4.27	2.97	OKAY	5.16	3.59	OKAY	5.89	4.09	OKAY	6.13	4.26	OKAY
U-I-01	M-30580		0.29	0.74	0.21	0.21	4.50	0.95	OKAY	5.28	1.11	OKAY	6.01	1.27	OKAY	6.25	1.32	OKAY
U-I-02	M-30582		0.68	0.61	0.42	0.42	4.35	1.83	OKAY	5.21	2.19	OKAY	5.95	2.50	OKAY	6.21	2.61	OKAY
M-30582	M-30635		0.19	0.68	0.13	0.55	4.33	2.38	OKAY	5.19	2.85	OKAY	5.92	3.25	OKAY	6.16	3.39	OKAY
M-30635	M-30642		0.17	0.69	0.12	0.67	4.31	2.88	OKAY	5.17	3.45	OKAY	5.90	3.94	OKAY	6.14	4.10	OKAY

Table B.3: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along Flagler Pl, NW [b/n V and W Sts]

Table B.3.1: Basic Data of the Main Sewer and Its Tributaries

MH ID		Ground Level		Invert Level		Pipe Size	Pipe Length	Watershed Area	Residential	CrAr	Pavement	CAp	Green	CAg	Weighted C
								A	Ar		Ap		Ag		
From	To	From MH	To MH	From MH	To MH	in	ft	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	ft^2	
Sewer	Main Sewer - Flagler-1														
M-30563	M-30564	96.84	96.10	88.88	88.39	10.00	49.00	6,779.53	2,095.71	1,886.14	389.04	350.14	4,294.78	1,288.43	0.52
M-30564	M-30567	96.10	93.80	88.39	86.52	10.00	187.00	14,064.54	5,651.03	5,085.93	973.50	876.15	7,440.01	2,232.00	0.58
M-30567	M-30569	93.80	93.17	86.27	84.20	12.00	103.50	14,586.48	7,046.47	6,341.82	1,133.05	1,019.75	6,406.96	1,922.09	0.64
M-30569	C-01	93.17	92.76	84.20	83.00	18.00	50.00	8,176.11	1,083.07	974.76	4,897.94	4,408.15	2,195.10	658.53	0.74
Sewer	Flagler-1-1														
M-30283	M-30569	97.01	93.17	86.96	83.5	18	176	40811.14	3333.26	2999.93	6817.45	6135.71	30660.43	9198.13	0.45

Table B.3.2: Determination of Time of Concentration and Intensity of Rainfall

MH ID		Flow Time Computation								Inlet Time	Time of Concentration	Intensity			
		D	A	P	R	S	n	V	Flow Time		tc	2	5	10	15
From	To	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
Sewer	Main Sewer														
M-30563	M-30564	0.83	0.55	2.62	0.21	0.01	0.013	4.017118	0.20	10.00	10.20	4.42	5.30	6.00	6.26
M-30564	M-30567	0.83	0.55	2.62	0.21	0.01	0.013	4.017118	0.78	10.20	10.98	4.30	5.13	5.85	6.11
M-30567	M-30569	1.00	0.79	3.14	0.25	0.02	0.013	6.415302	0.27	10.98	11.25	4.27	5.08	5.80	6.06
M-30569	C-01	1.50	1.77	4.71	0.38	0.024	0.013	9.208776	0.09	11.25	11.34	4.25	5.05	5.77	6.04
Sewer	Flagler-1-1														
M-30283	M-30569	1.50	1.767146	4.712389	0.375	0.019659	0.013	8.334471	0.35	10.00	10.35	4.40	5.27	5.97	6.23

Table B.3.3: Computation of Conveyance Capacity of Existing Sewers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Section		From Branch	Existing Conditions													
			Elevation				Length	Slope of conduit	pipe Dia	X-sectional area	Wetted Perimeter	Hydraulics Radius	longitudinal Slope	Manning's roughness	Velocity	Drain Capacity
From MH	To MH	(if any)	GL		Invert L		L									
			Upper end	Lower end	Upper end	Lower end	ft	S	D	A	P	R	S	n	V	Q
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
Sewer	Main Sewer - Flagler-1															
M-30563	M-30564		96.84	96.10	88.88	88.39	49.00	10.00	10.00	0.55	2.62	0.21	0.01	0.013	4.02	2.19
M-30564	M-30567		96.10	93.80	88.39	86.52	187.00	10.00	10.00	0.55	2.62	0.21	0.01	0.013	4.02	2.19
M-30567	M-30569		93.80	93.17	86.27	84.20	103.50	20.00	12.00	0.79	3.14	0.25	0.02	0.013	6.42	5.04
M-30569	C-01	M-30283	93.17	92.76	84.20	83.00	50.00	24.00	18.00	1.77	4.71	0.38	0.02	0.013	9.21	16.27
Sewer	Flagler-1-1															
M-30283	M-30569		97.01	93.17	86.96	83.50	176.00	19.66	18.00	1.77	4.71	0.38	0.02	0.013	8.33	14.73

Table B.3.4: Evaluation of Exisitng Sewers Against Generated Floods of Various Frequencies

1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
Section		From Branch					2-Year Frequency			5-Year Frequency			10-Year Frequency			15-Year Frequency		
			Drainage Area	Wieghted C	CA	Cummu CA	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark	Intensity of Rainfall, I	Flow Q = I*CA	Remark
From MH	To MH	(if any)																
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
Sewer	Main Sewer - Flagler-1																	
M-30563	M-30564		0.16	0.52	0.08	0.08	4.42	0.36	OKAY	5.30	0.43	OKAY	6.00	0.49	OKAY	6.26	0.51	OKAY
M-30564	M-30567		0.32	0.58	0.19	0.27	4.30	1.16	OKAY	5.13	1.38	OKAY	5.85	1.57	OKAY	6.11	1.64	OKAY
M-30567	M-30569		0.33	0.64	0.21	0.48	4.27	2.06	OKAY	5.08	2.45	OKAY	5.80	2.80	OKAY	6.06	2.92	OKAY
M-30569	C-01	M-30283	0.19	0.74	0.14	1.04	4.25	4.43	OKAY	5.05	5.26	OKAY	5.77	6.01	OKAY	6.04	6.29	OKAY
Sewer	Flagler-1-1																	
M-30283	M-30569		0.94	0.45	0.42	0.42	4.40	1.85	OKAY	5.27	2.22	OKAY	5.97	2.51	OKAY	6.23	2.62	OKAY

Appendix C

Sewer Inspection Results

Table C-1: Location, Size and Length of Sewers Inspected by CCTV

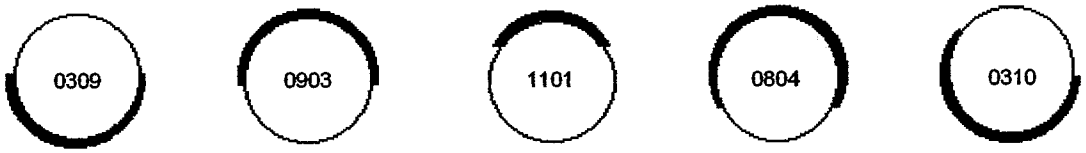
Street (from-to)	Size in	MH Nos.	Length ft
Thomas St. (1st-2nd)	12	M-30355	160
		M-30638	
	15	M-30638	170
		M-30729	
	18	M-30729	174
		M-30728	
	24	M-30728	55
		M-30727	
U St. (1st-2nd)	18	M-30357	635
		M-30639	
		M-30641	
		M-30642	
Flagler Pl. (U St-V St)	10	N-6302	42
		M-30576	
	12	M-30576	310
		M-30639	
Flagler Pl. (V St-W St)	10	M-30563	236
		M-30564	
		M-30567	
	10	M-30566	184
		M-30568	
	12	M-30567	101
		M-30569	
Flagler Pl. (W St-Adams St)	10	M-30556	234
		M-30559	
		N-6324	
	10	M-30558	231
		M-30560	
		N-6323	
TOTAL			2,532

Tabular Report of PSR M-30357 X for DCWASA

Setup 14	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA
Drainage N.W. D.C.	**Survey Customer** DCWASA		
P/O # ID 234	**Date** 08/08/2006	**Time** 9:25:00	**Street** U ST 1ST @ 2ND
Locality WASHINGTON,D.C.	**Further location details** ID-234		
Start M-30357	**Rim to invert**	**Grade to invert**	**Rim to grade** **Ft**
Finish M-30639	**Rim to invert**	**Grade to invert**	**Rim to grade** **Ft**
Use Combined	**Direction** Down	**Flow control**	**Tape/Media #** REI 016
Shape Circular	**Height** 18 **Width**	**ins Preclean** J	**Year Cleaned**
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 268.3 **Ft**	**Length Surveyed** 268.3
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry
Purpose		**Cat**	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30357
0.0	00000		MWL	Water Level			05					
31.6			H	Hole					03			HOLE IN PIPE
44.3			TBA	Tap Break-in Active	06				09			
61.8			TBA	Tap Break-in Active	06				09			
79.8			TBA	Tap Break-in Active	06				09			
86.4			TBA	Tap Break-in Active	06				03			
89.3			TBA	Tap Break-in Active	08				03			
95.4			TBD	Tap Break-in Defective	06	02			09			
112.8			TBA	Tap Break-in Active	06				09			
127.7			TBA	Tap Break-in Active	06				10			
130.0			TBD	Tap Break-in Defective	08	02			03			
148.0			TBA	Tap Break-in Active	06				02			
151.2			TBA	Tap Break-in Active	06				09			
162.6			CM	Crack Multiple				J	11	01		
163.5			TBA	Tap Break-in Active	06				03			
168.9			TBA	Tap Break-in Active	06				09			
178.8			TBA	Tap Break-in Active	06				03			
185.0			TBA	Tap Break-in Active	06				09			
196.5			TBA	Tap Break-in Active	06				03			
202.4			TBA	Tap Break-in Active	06				09			
211.9			TBA	Tap Break-in Active	06				03			
213.8		S01	CL	Crack Longitudinal				J	12			
218.3			TBA	Tap Break-in Active	06				09			
229.2			TBA	Tap Break-in Active	06				02			
244.0			TBA	Tap Break-in Active	06				03			

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30357 X **for DCWASA**

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 9:25:00	***Street*** U ST 1ST @ 2ND		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 18 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***		
Material Vitrified Clay Pipe	***Joint length***	***Ft*** ***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.3		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info			Structural	O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous	Hydraulic	

Count	Video		CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
259.9				TBA	Tap Break-in Active	06				03			
268.3			F01	CL	Crack Longitudinal				J	12			
268.3				AMH	Manhole								M-30639
268.3				FH	End of Survey								M-30639

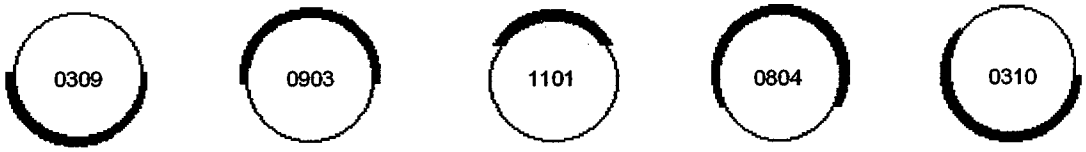
268.3 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 28	***Mean Defect*** 2.2	***Peak*** 3	***Mean Pipe*** 0.1
Service:	***Total*** 6	***Mean Defect*** 3	***Peak*** 3	***Mean Pipe*** 0

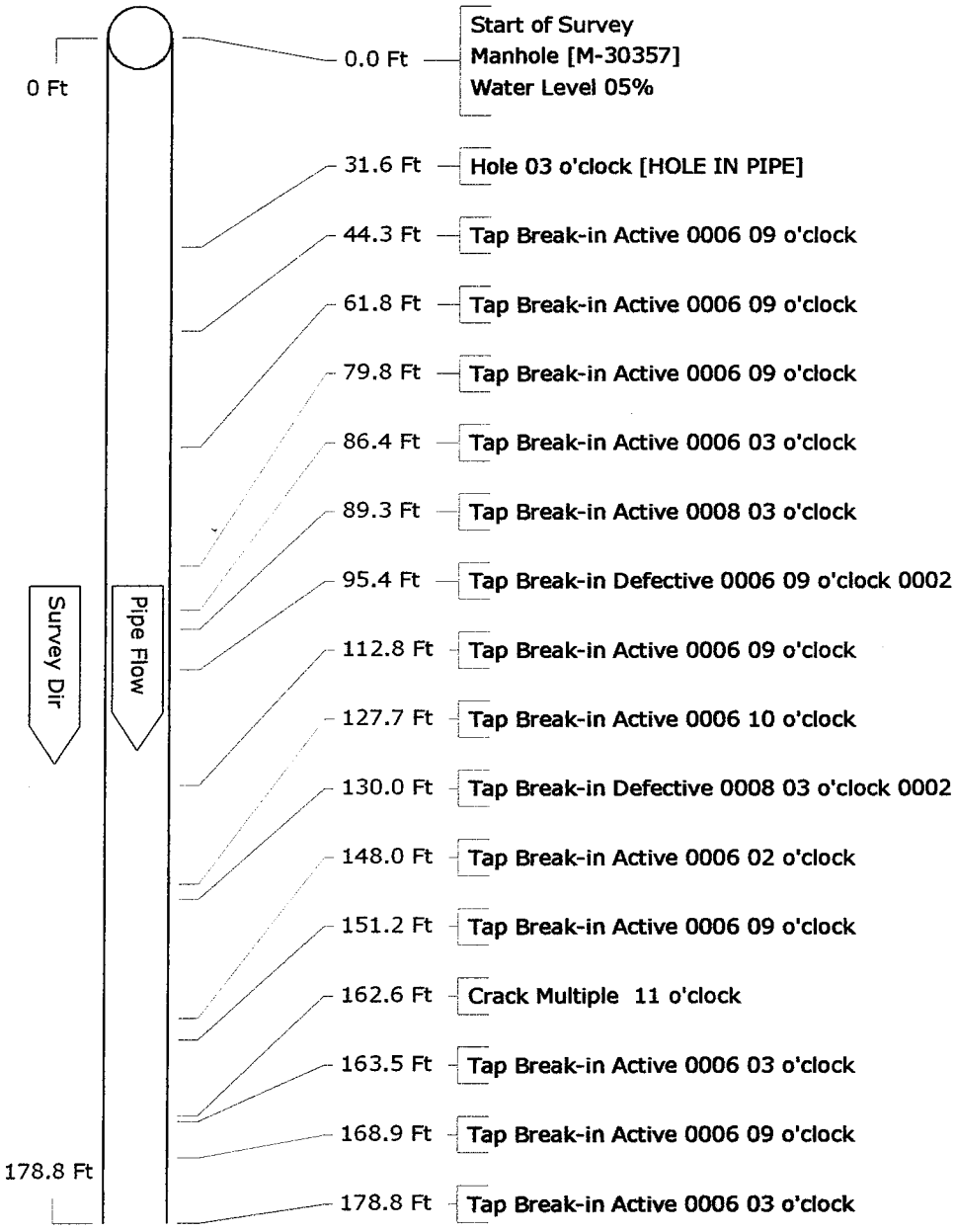
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



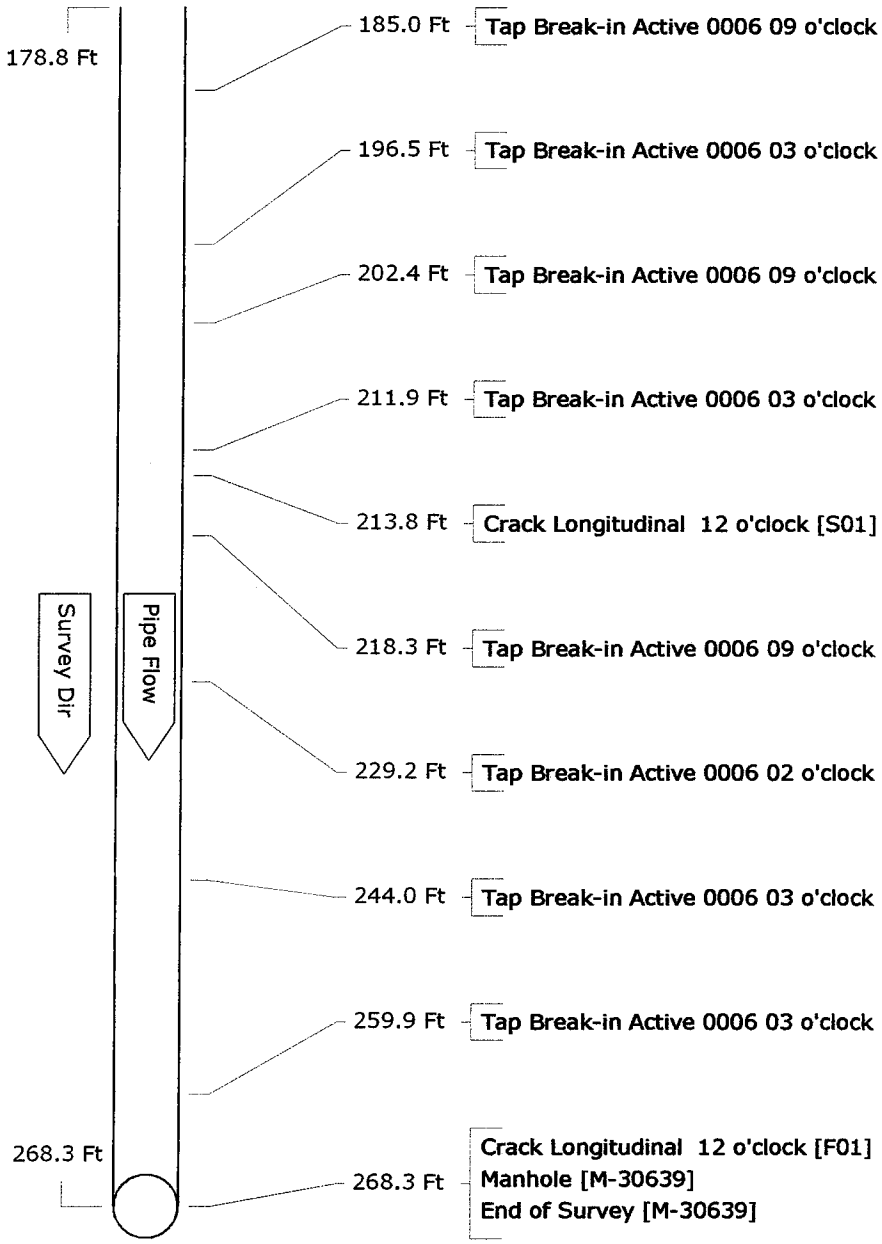
Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/08	***Time*** 09:25:00	***Street*** U ST 1ST @ 2ND	
Locality WASHINGTON,D.C.	***Further location details*** ID-234			
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control***	***Tape/Media #*** REI 016	
Shape Circular	***Height*** 18 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.30	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/08	***Time*** 09:25:00	***Street*** U ST 1ST @ 2ND	
Locality WASHINGTON,D.C.	***Further location details*** ID-234			
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control***	***Tape/Media #*** REI 016	
Shape Circular	***Height*** 18 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.30	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



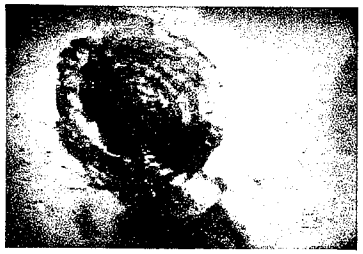
CCTV pictures of M-30357 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 14
Street Name	U ST 1ST @ 2ND	**City Name**	WASHINGTON,D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30357	**To Manhole**	M-30639

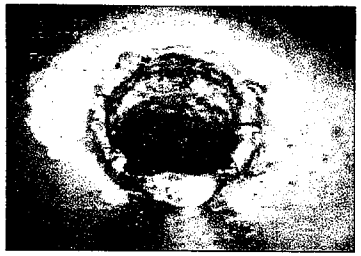
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 31.6 Ft
Obs: Hole

Date: 08/29/2006 **Dist:** 44.3 Ft
Obs: Tap Break-in Active



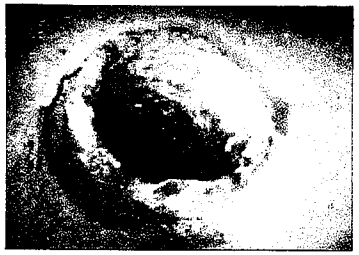
Date: 08/29/2006 **Dist:** 61.8 Ft
Obs: Tap Break-in Active



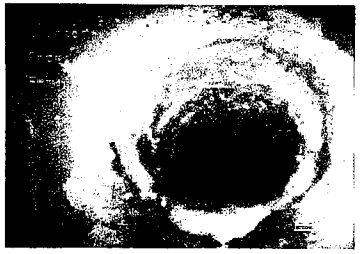
Date: 08/29/2006 **Dist:** 79.8 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 86.4 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 89.3 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 95.4 Ft
Obs: Tap Break-in Defective



Date: 08/29/2006 **Dist:** 112.8 Ft
Obs: Tap Break-in Active

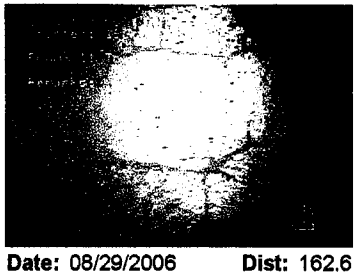
Date: 08/29/2006 **Dist:** 127.7 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 127.7 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 130.0 Ft
Obs: Tap Break-in Defective

Date: 08/29/2006 **Dist:** 148.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 151.2 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 162.6 Ft
Obs: Crack Multiple

Date: 08/29/2006 **Dist:** 163.5 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30357 X for **DCWASA**

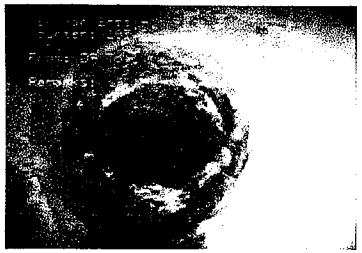
Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 14

Street Name U ST 1ST @ 2ND **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30357 **To Manhole** M-30639

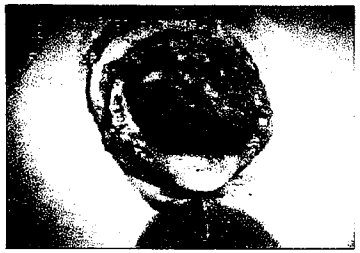
Date: 08/29/2006 **Dist:** 168.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 178.8 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 185.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 196.5 Ft
Obs: Tap Break-in Active

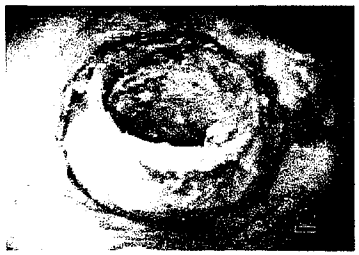


Date: 08/29/2006 **Dist:** 202.4 Ft
Obs: Tap Break-in Active

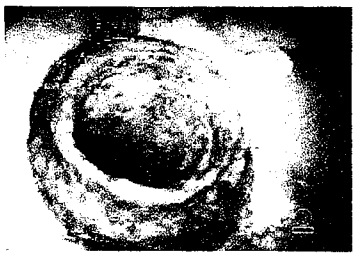
Date: 08/29/2006 **Dist:** 211.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 213.8 Ft
Obs: Crack Longitudinal

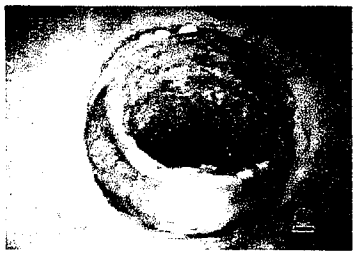
Date: 08/29/2006 **Dist:** 218.3 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 229.2 Ft
Obs: Tap Break-in Active

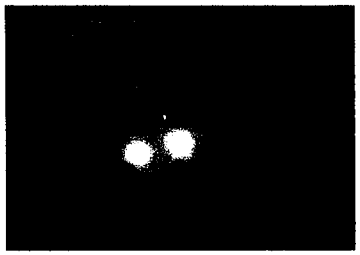


Date: 08/29/2006 **Dist:** 244.0 Ft
Obs: Tap Break-in Active

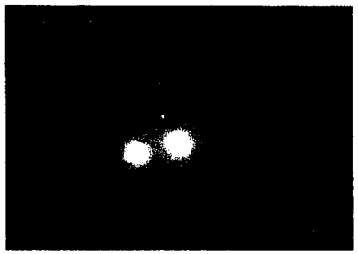


Date: 08/29/2006 **Dist:** 259.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: End of Survey

Tabular Report of PSR M-30639 X **for DCWASA**

Setup 15 ***Surveyor*** A.THOMPSON ***Certificate #*** U-106-2462 ***System Owner*** DCWASA
Drainage 1ST STREET ***Survey Customer*** DCWASA
P/O # ID 234 ***Date*** 08/08/2006 ***Time*** 11:09:00 ***Street*** 2030 FLAGLER PLACE
Locality WASHINGTON D.C. ***Further location details***

Start M-30639 ***Rim to invert*** 10.20 ***Grade to invert*** ***Rim to grade*** ***Ft***
Finish M-30641 ***Rim to invert*** ***Grade to invert*** ***Rim to grade*** ***Ft***

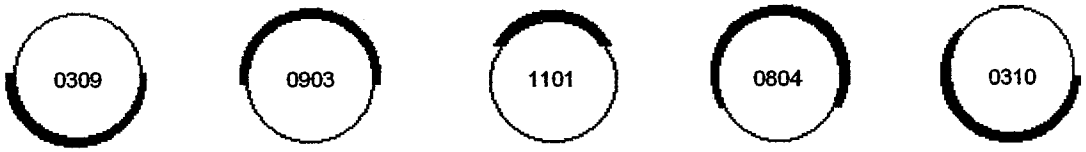
Use Sanitary ***Direction*** Down ***Flow control*** ***Tape/Media #*** REI 016
Shape Circular ***Height*** 12 ***Width*** ***ins*** ***Preclean*** J ***Year Cleaned*** 8/7/2006
Material Vitrified Clay Pipe ***Joint length*** 7.00 ***Ft*** ***Total length*** ***Ft*** ***Length Surveyed*** 243.5
Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry
Purpose ***Cat***

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	02746		ST	Start of Survey								
0.0	02746		AMH	Manhole								M-30639
0.0	02746		MWL	Water Level			5					
4.3			CL	Crack Longitudinal				J	04			
8.6			CL	Crack Longitudinal				J	08			
10.2			TBA	Tap Break-in Active	06				03			
14.5		S01	CM	Crack Multiple					07	05		DEFECT WANDERS
25.1			TBA	Tap Break-in Active	06				03			
38.0			TBA	Tap Break-in Active	06				09			
41.1			TBA	Tap Break-in Active	06				02			
55.6			TBA	Tap Break-in Active	06				09			
58.2			TBA	Tap Break-in Active	06				03			
72.1			TBA	Tap Break-in Active	06				09			
74.1			TBA	Tap Break-in Active	06				03			
88.0			TBA	Tap Break-in Active	06				09			
98.1			TBA	Tap Break-in Active	06				03			
106.0			TBA	Tap Break-in Active	06				09			
121.9			TBA	Tap Break-in Active	06				09			
140.0			TBA	Tap Break-in Active	06				09			
155.2			TBA	Tap Break-in Active	06				09			
155.3			H	Hole					03			
171.0		S02	DAGS	Deposits Attached Grease			10	J	07	05		LIGHT GREASE
173.1			TBA	Tap Break-in Active	06				09			
173.2			TBA	Tap Break-in Active	06				03			
187.9			TBA	Tap Break-in Active	06				09			
187.9			TBA	Tap Break-in Active	06				03			
204.3			TBA	Tap Break-in Active	06				09			

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30639 X **for DCWASA**

Setup 15	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 11:09:00	***Street*** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30641	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 12 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned*** 8/7/2006		
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length***	***Ft*** ***Length Surveyed*** 243.5		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info			Structural O&M Constructional		
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
207.5			TBA	Tap Break-in Active	06				03			
221.5			TBA	Tap Break-in Active	06				02			
222.2			TBA	Tap Break-in Active	06				09			
235.0		F01	CM	Crack Multiple					07	05		DEFECT WANDERS
235.0		F02	DAGS	Deposits Attached Grease			10	J	07	05		LIGHT GREASE
243.5			AMH	Manhole								M-30641
243.5			FH	End of Survey								M-30641

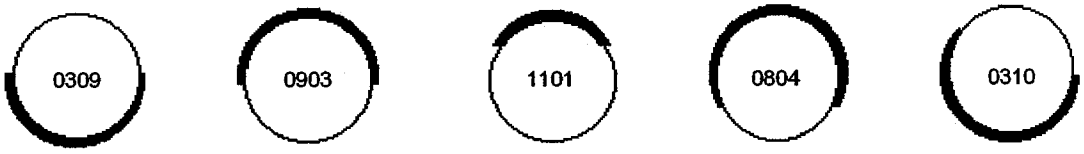
243.5 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 139	***Mean Defect*** 3	***Peak*** 6	***Mean Pipe*** 0.6
Service:	***Total*** 26	***Mean Defect*** 0	***Peak*** 2	***Mean Pipe*** 0.1

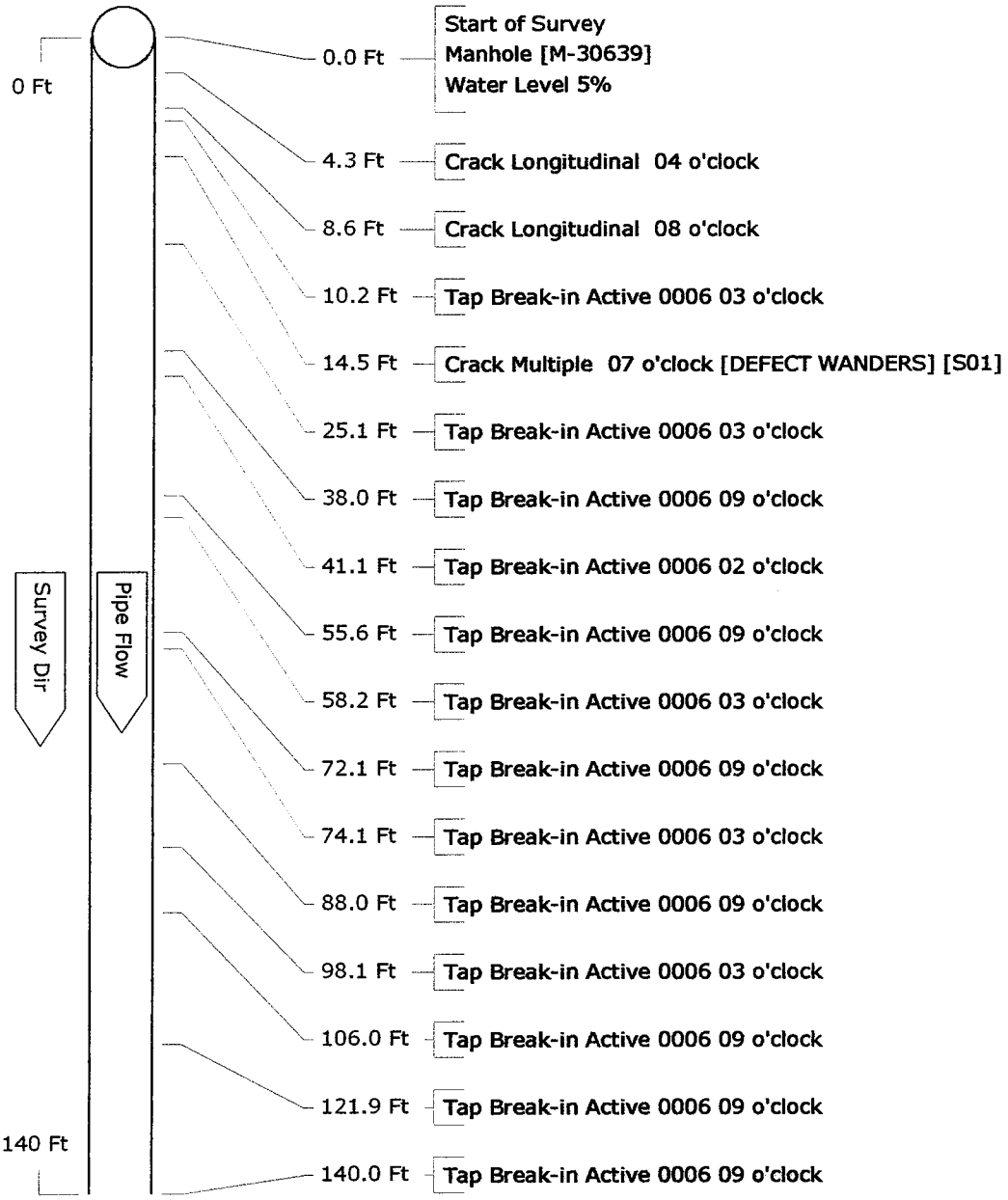
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



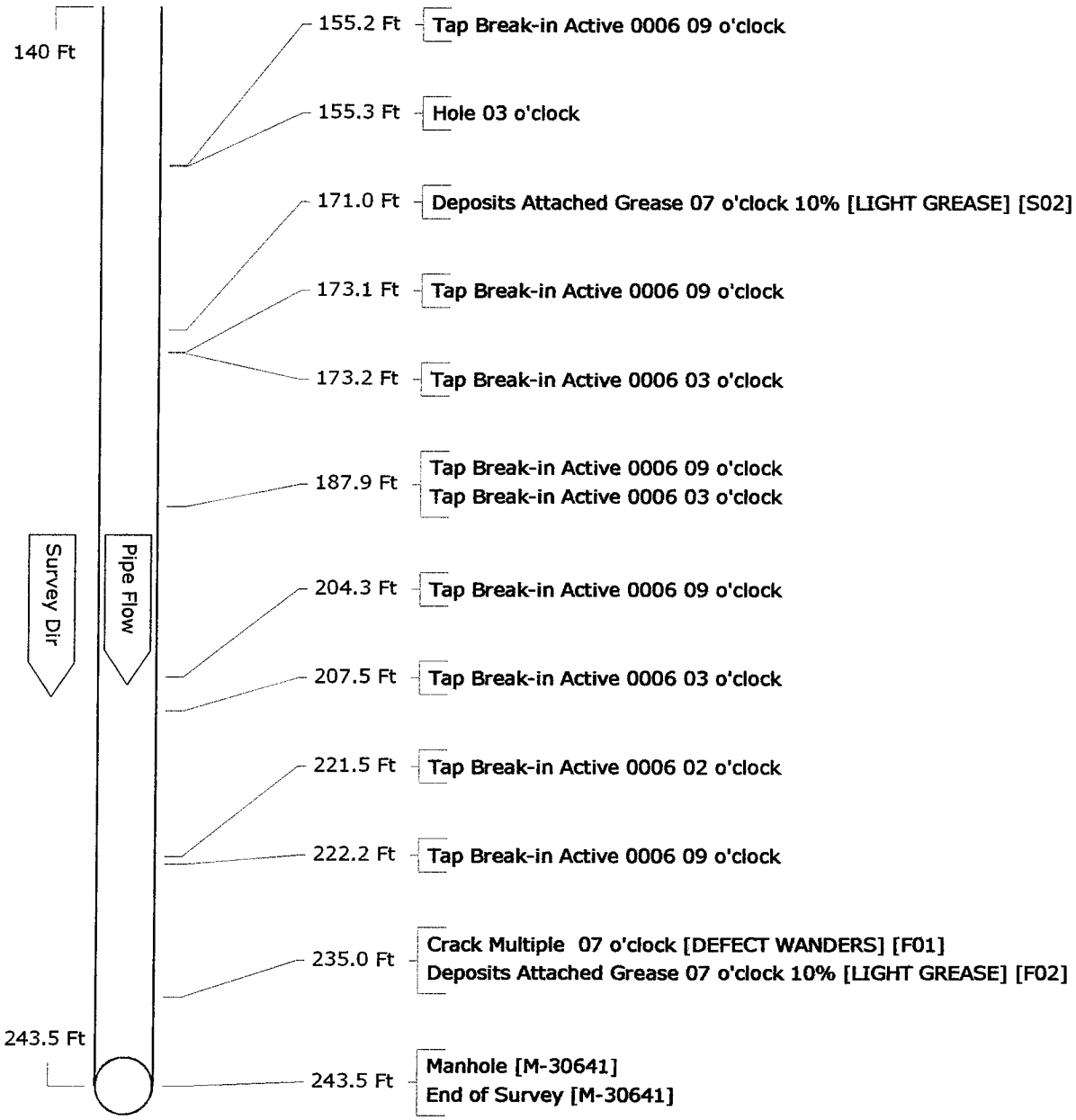
Pipe Graphic Report of PLR M-30639 X for DCWASA

Setup 15	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/08	**Time** 11:09:00	**Street** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30639	**Rim to invert** 10.20	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30641	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016		
Shape Circular	**Height** 12 **Width** **ins** **Preclean** J		**Year Cleaned** 8/7/2006		
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft** **Total length**		**Ft** **Length Surveyed** 243.50		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose		**Cat**			
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



Pipe Graphic Report of PLR M-30639 X for DCWASA

Setup 15	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage 1ST STREET	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/08	***Time*** 11:09:00	***Street*** 2030 FLAGLER PLACE	
Locality WASHINGTON D.C.	***Further location details***			
Start M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30641	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Sanitary	***Direction*** Downstream	***Flow control***	***Tape/Media #*** REI 016	
Shape Circular	***Height*** 12 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length***	***Ft*** ***Length Surveyed*** 243.50	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



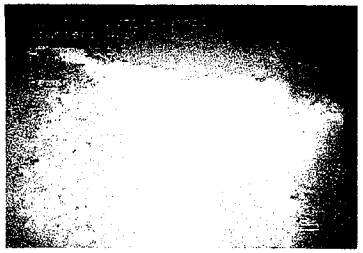
CCTV pictures of M-30639 X for **DCWASA**

Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 15

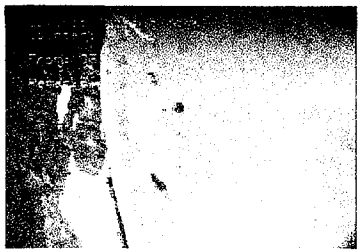
Street Name 2030 FLAGLER PLACE **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30639 **To Manhole** M-30641

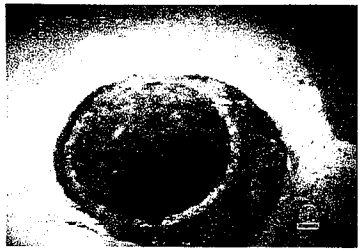
Date: 08/24/2006 **Dist:** 0.0 Ft
Obs: Manhole



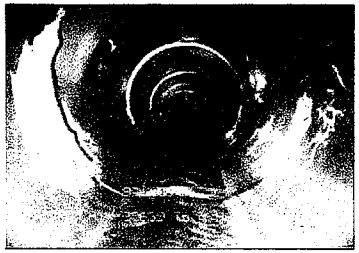
Date: 08/29/2006 **Dist:** 4.3 Ft
Obs: Crack Longitudinal



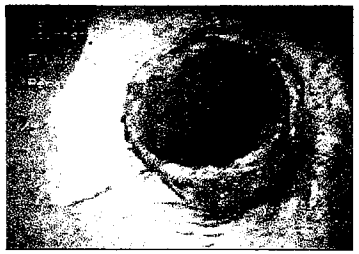
Date: 08/29/2006 **Dist:** 8.6 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 10.2 Ft
Obs: Tap Break-in Active



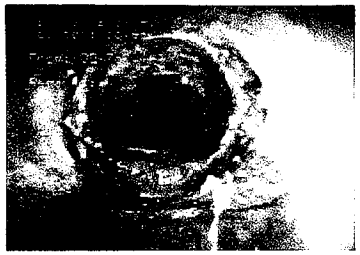
Date: 08/29/2006 **Dist:** 14.5 Ft
Obs: Crack Multiple



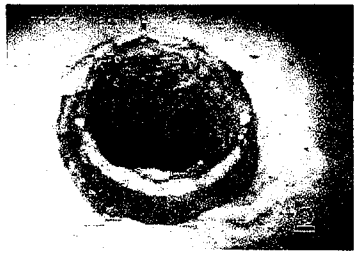
Date: 08/29/2006 **Dist:** 25.1 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 38.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 41.1 Ft
Obs: Tap Break-in Active

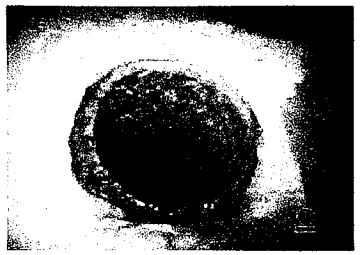


Date: 08/29/2006 **Dist:** 55.6 Ft
Obs: Tap Break-in Active

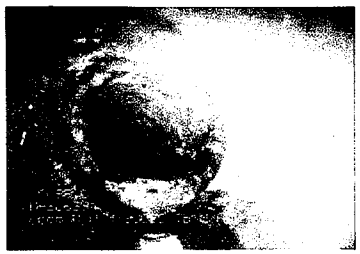


Date: 08/29/2006 **Dist:** 58.2 Ft
Obs: Tap Break-in Active

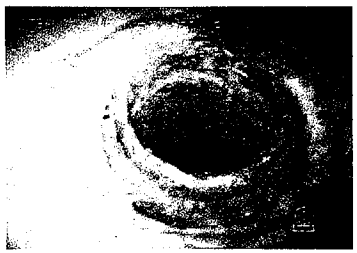
Date: 08/29/2006 **Dist:** 72.1 Ft
Obs: Tap Break-in Active



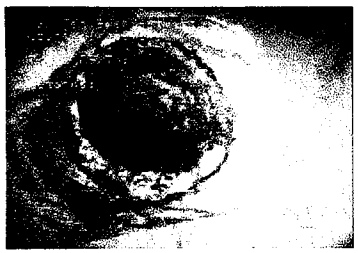
Date: 08/29/2006 **Dist:** 74.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 88.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 98.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 106.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 121.9 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30639 X **for** **DCWASA**

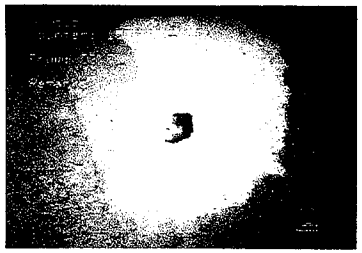
Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 15

Street Name 2030 FLAGLER PLACE **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30639 **To Manhole** M-30641

Date: 08/29/2006 **Dist:** 140.0 Ft
Obs: Tap Break-in Active

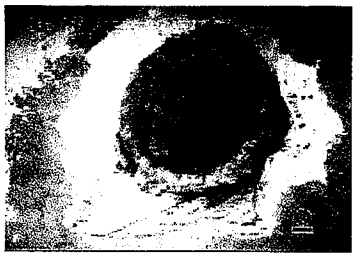
Date: 08/29/2006 **Dist:** 155.2 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 155.3 Ft
Obs: Hole

Date: 08/29/2006 **Dist:** 171.0 Ft
Obs: Deposits Attached Grease

Date: 08/29/2006 **Dist:** 173.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 173.2 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 187.9 Ft
Obs: Tap Break-in Active

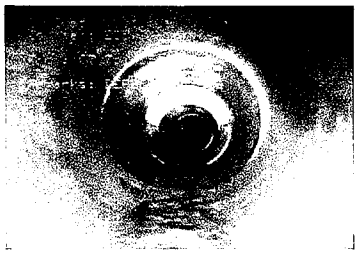
Date: 08/29/2006 **Dist:** 187.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 204.3 Ft
Obs: Tap Break-in Active

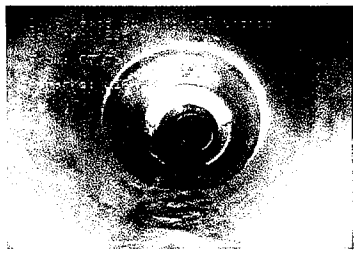
Date: 08/29/2006 **Dist:** 207.5 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 221.5 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 222.2 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 235.0 Ft
Obs: Crack Multiple



Date: 08/29/2006 **Dist:** 235.0 Ft
Obs: Deposits Attached Grease

Date: 08/29/2006 **Dist:** 243.5 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 243.5 Ft
Obs: End of Survey

Tabular Report of PSR M-30556 X **for DCWASA**

Setup 17 ***Surveyor*** A.THOMPSON ***Certificate #*** U-106-2462 ***System Owner*** DCWASA

Drainage N.W. D.C. ***Survey Customer*** DCWASA

P/O # ID 234 ***Date*** 08/08/2006 ***Time*** 12:48:00 ***Street*** FLAGLER PL W ST ADAMS ST

Locality WASHINGTON,D.C. ***Further location details*** ID-234

Start M-30556 ***Rim to invert*** 15.00 ***Grade to invert*** ***Rim to grade*** ***Ft***

Finish M-30559 ***Rim to invert*** ***Grade to invert*** ***Rim to grade*** ***Ft***

Use Combined ***Direction*** Down ***Flow control*** ***Tape/Media #*** REI 016

Shape Circular ***Height*** 10 ***Width*** ***ins*** ***Preclean*** J ***Year Cleaned***

Material Vitrified Clay Pipe ***Joint length*** ***Ft*** ***Total length*** 185.6 ***Ft*** ***Length Surveyed*** 185.6

Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry

Purpose ***Cat***

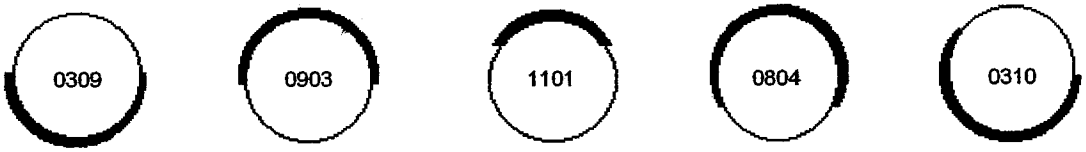
Additional info

Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30556
0.0	00000		MWL	Water Level			00					
1.0			DSF	Deposits Settled Fine			10		05	07		LIGHT DEBRIS
5.8			CM	Crack Multiple					07	05		
21.2			TBD	Tap Break-in Defective	04	01			03			
21.2			TBA	Tap Break-in Active	04				12			
30.5			TFC	Tap Factory Capped	04				02			
30.6			CM	Crack Multiple				J	03	05		
41.7			TBA	Tap Break-in Active	04				03			
41.7		S01	CM	Crack Multiple					07	05		DEFECT WANDERS
50.7			TFC	Tap Factory Capped	04				02			
62.1			TBD	Tap Break-in Defective	04	01			03			
70.9			TFC	Tap Factory Capped	04				02			
77.9			DAE	Deposits Attached Encrustation			05	J	03	04		
80.6			DAE	Deposits Attached Encrustation			10	J	02	05		
81.0		F01	CM	Crack Multiple					07	05		DEFECT WANDERS
82.8			TBD	Tap Break-in Defective	04	01			03			
91.4			TFC	Tap Factory Capped	04				02			
103.8			TBD	Tap Break-in Defective	04	01			02			
103.8			DAE	Deposits Attached Encrustation			05	J	07	05		
111.6			TFC	Tap Factory Capped	04				02			
116.7			CM	Crack Multiple				J	07	05		
125.5			TBA	Tap Break-in Active	04				03			
125.5			CM	Crack Multiple					07	05		DEFECT WANDERS
131.5			TFC	Tap Factory Capped	04				02			
143.2			DAE	Deposits Attached Encrustation			05	J	01	05		

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30556 X **for** DCWASA

Setup 17	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 12:48:00	***Street*** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30556	***Rim to invert*** 15.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30559	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 10	***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length***	***Ft***	***Total length*** 185.6 ***Ft***	***Length Surveyed*** 185.6	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info			Structural O&M Constructional		
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous Hydraulic		

Count	Video		CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
146.1				TBD	Tap Break-in Defective	04	02			03			
152.7				TFC	Tap Factory Capped	04				02			
158.4				CM	Crack Multiple					07	05		DEFECT WANDERS
159.1				DAE	Deposits Attached Encrustation			05	J	02	05		
162.3				DAE	Deposits Attached Encrustation			05	J	05			
169.2				TBA	Tap Break-in Active	04				01			
182.3				CL	Crack Longitudinal				J	08			
185.6				AMH	Manhole								M-30559
185.6				FH	End of Survey								M-30559

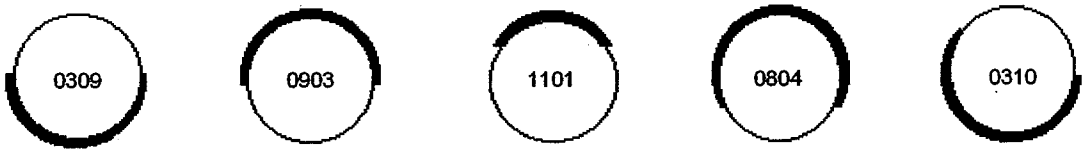
185.6 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 74	***Mean Defect*** 3	***Peak*** 3	***Mean Pipe*** 0.4
Service:	***Total*** 43	***Mean Defect*** 2.3	***Peak*** 5	***Mean Pipe*** 0.2

Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



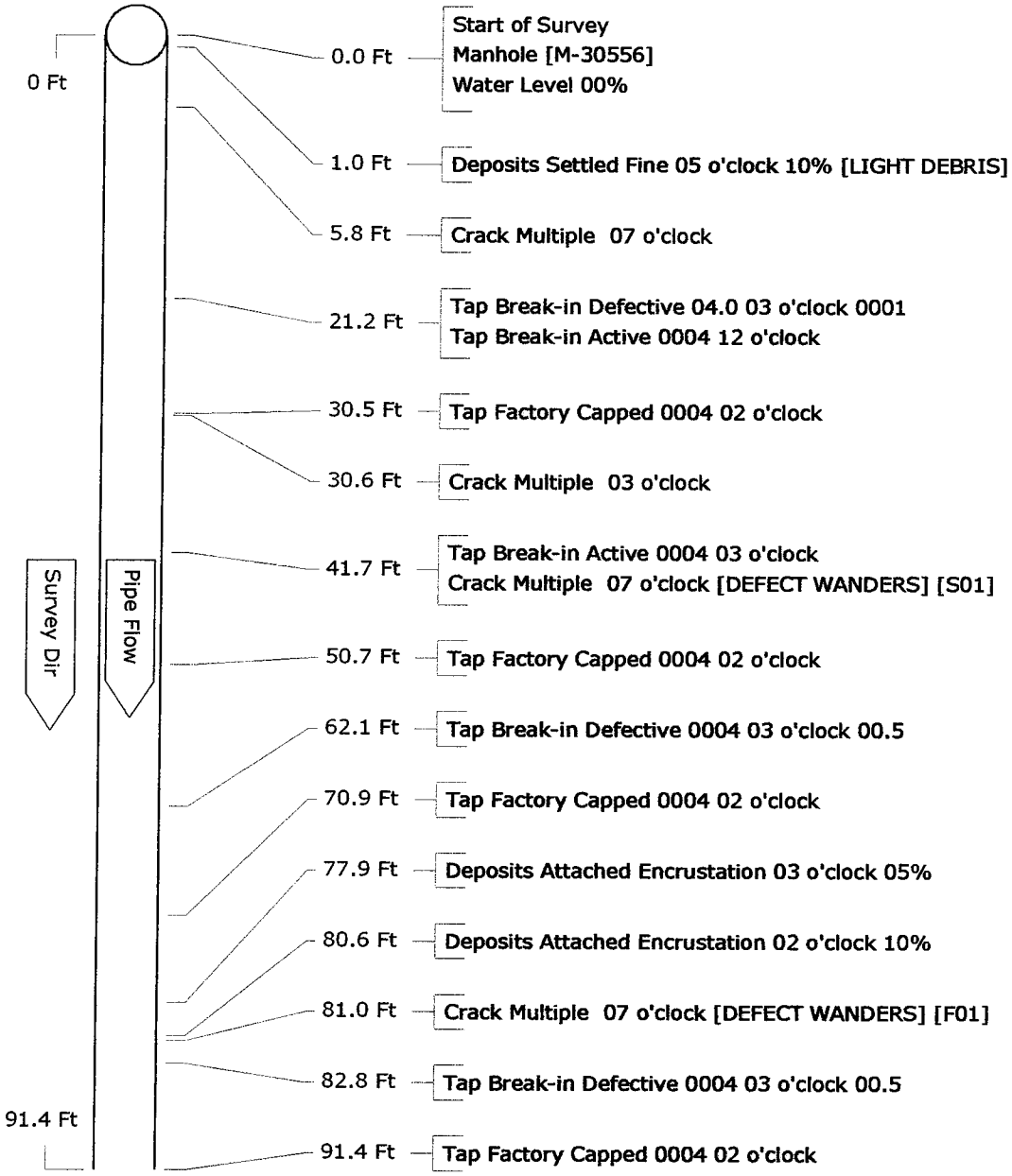
REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

Pipe Graphic Report of PLR M-30556 X for DCWASA

Setup 17	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA	
Drainage N.W. D.C.	**Survey Customer** DCWASA			
P/O # ID 234	**Date** 2006/08/08	**Time** 12:48:00	**Street** FLAGLER PL W ST ADAMS ST	
Locality WASHINGTON,D.C.	**Further location details** ID-234			
Start M-30556	**Rim to invert** 15.00	**Grade to invert**	**Rim to grade**	**Ft**
Finish M-30559	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Use Combined	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016	
Shape Circular	**Height** 10 **Width**	**ins Preclean** J	**Year Cleaned**	
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 185.6 **Ft**	**Length Surveyed** 185.60	
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry	
Purpose		**Cat**		

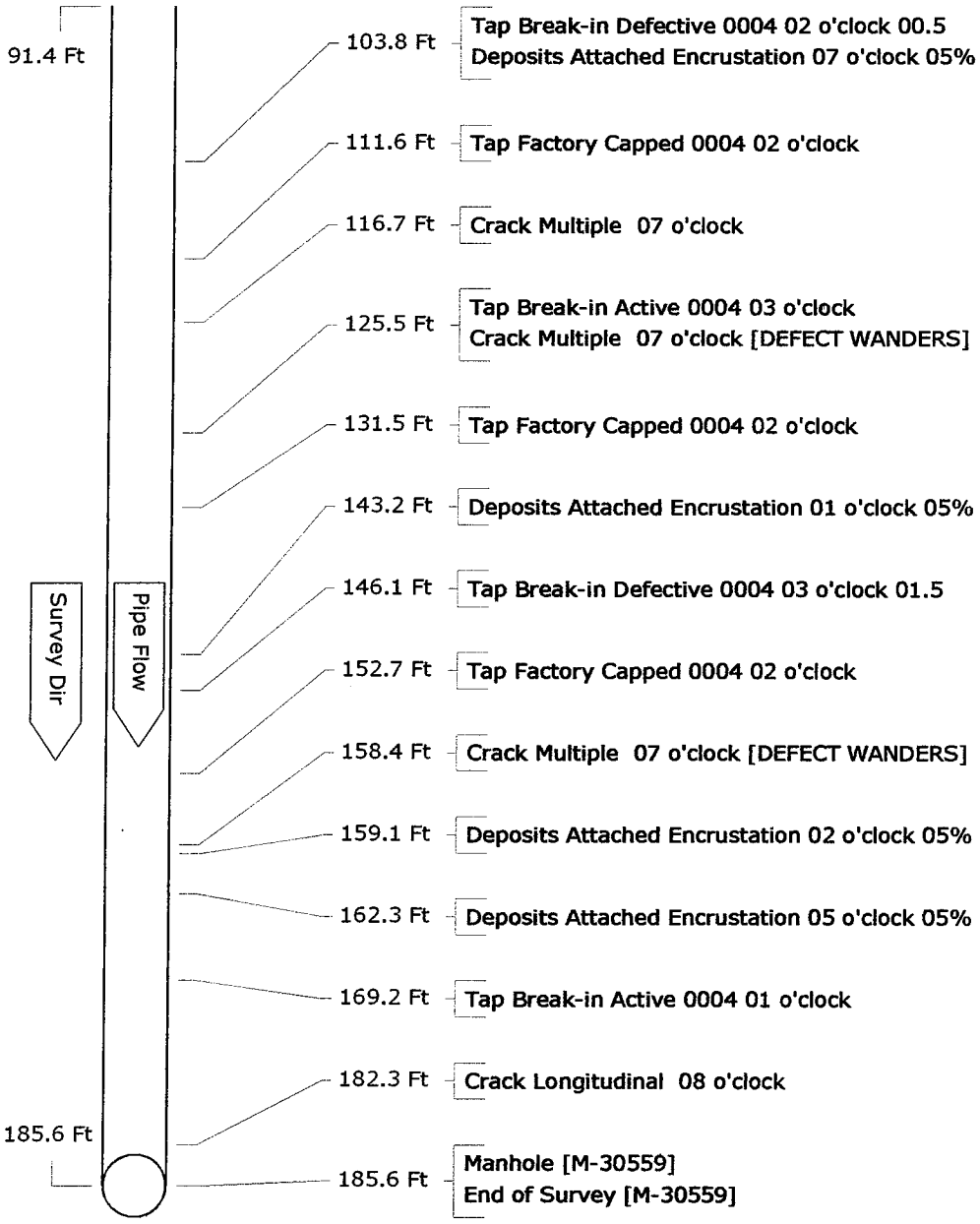
Additional info

Location Light Highway (rural, light traffic, town back st, estate st & parking



Pipe Graphic Report of PLR M-30556 X for DCWASA

Setup 17	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage N.W. D.C.	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/08	**Time** 12:48:00	**Street** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	**Further location details** ID-234				
Start M-30556	**Rim to invert** 15.00	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30559	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**	
Use Combined	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016		
Shape Circular	**Height** 10	**Width** **ins**	**Preclean** J	**Year Cleaned**	
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 185.6 **Ft**	**Length Surveyed** 185.60		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					

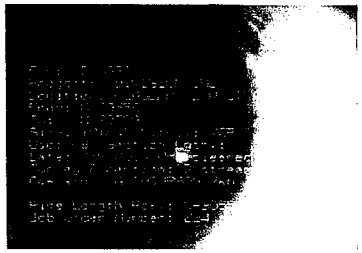


CCTV pictures of M-30556 X for **DCWASA**

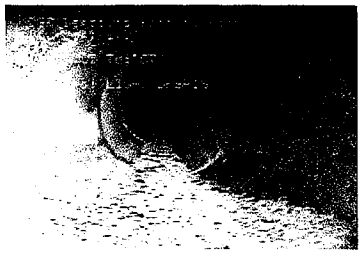
Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 17

Street Name FLAGLER PL W ST ADAMS ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

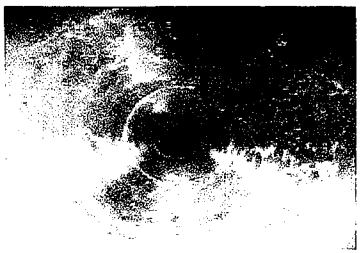
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30556 **To Manhole** M-30559



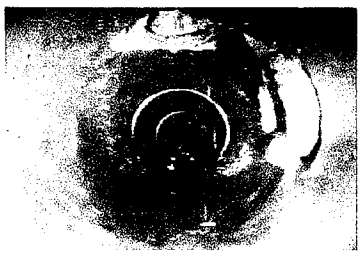
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole



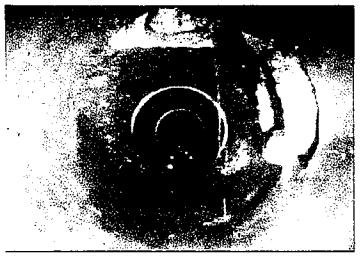
Date: 08/29/2006 **Dist:** 1.0 Ft
Obs: Deposits Settled Fine



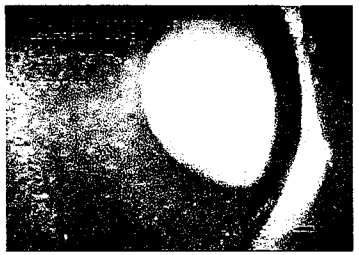
Date: 08/29/2006 **Dist:** 5.8 Ft
Obs: Crack Multiple



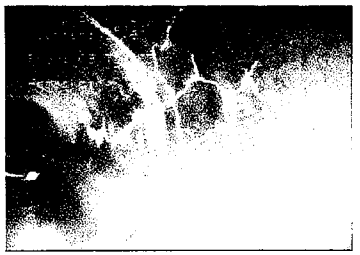
Date: 08/29/2006 **Dist:** 21.2 Ft
Obs: Tap Break-in Defective



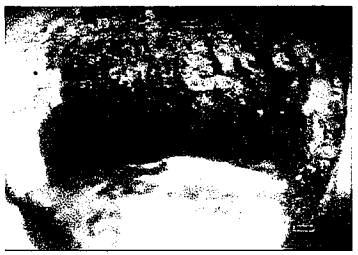
Date: 08/29/2006 **Dist:** 21.2 Ft
Obs: Tap Break-in Active



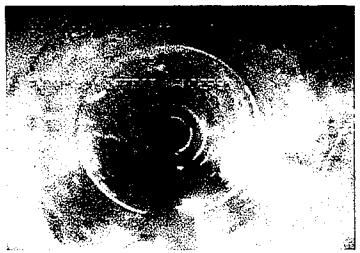
Date: 08/29/2006 **Dist:** 30.5 Ft
Obs: Tap Factory Capped



Date: 08/29/2006 **Dist:** 30.6 Ft
Obs: Crack Multiple

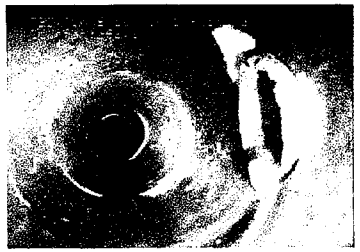


Date: 08/29/2006 **Dist:** 41.7 Ft
Obs: Tap Break-in Active

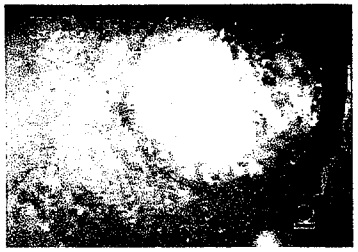


Date: 08/29/2006 **Dist:** 41.7 Ft
Obs: Crack Multiple

Date: 08/29/2006 **Dist:** 50.7 Ft
Obs: Tap Factory Capped

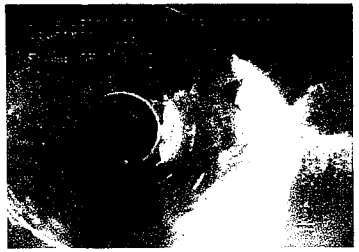


Date: 08/29/2006 **Dist:** 62.1 Ft
Obs: Tap Break-in Defective

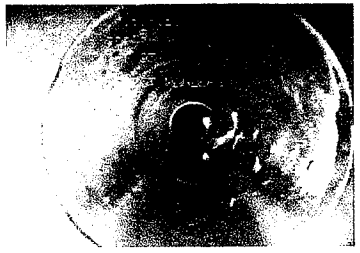


Date: 08/29/2006 **Dist:** 70.9 Ft
Obs: Tap Factory Capped

Date: 08/29/2006 **Dist:** 77.9 Ft
Obs: Deposits Attached Encrustation



Date: 08/29/2006 **Dist:** 80.6 Ft
Obs: Deposits Attached Encrustation



Date: 08/29/2006 **Dist:** 81.0 Ft
Obs: Crack Multiple

Date: 08/29/2006 **Dist:** 82.8 Ft
Obs: Tap Break-in Defective

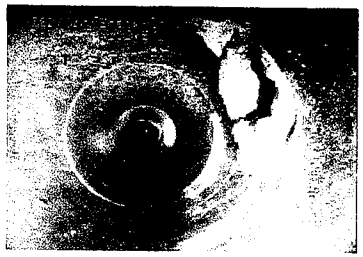
CCTV pictures of M-30556 X for **DCWASA**

Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 17

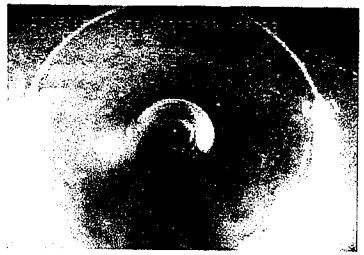
Street Name FLAGLER PL W ST ADAMS ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30556 **To Manhole** M-30559

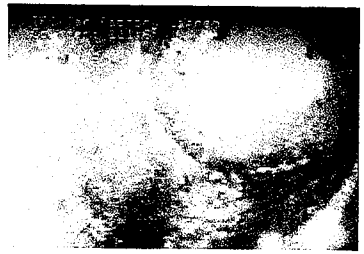
Date: 08/29/2006 **Dist:** 91.4 Ft
Obs: Tap Factory Capped



Date: 08/29/2006 **Dist:** 103.8 Ft
Obs: Tap Break-in Defective

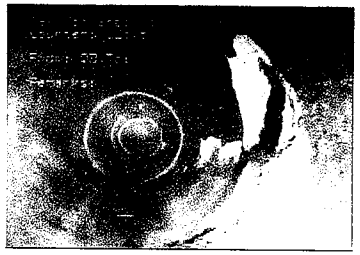


Date: 08/29/2006 **Dist:** 103.8 Ft
Obs: Deposits Attached Encrustation

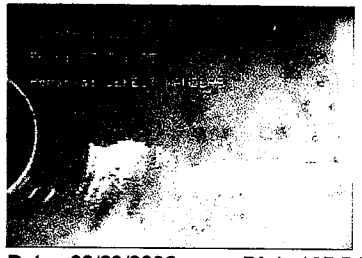


Date: 08/29/2006 **Dist:** 111.6 Ft
Obs: Tap Factory Capped

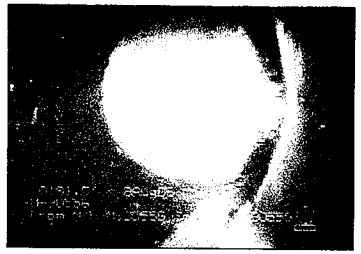
Date: 08/29/2006 **Dist:** 116.7 Ft
Obs: Crack Multiple



Date: 08/29/2006 **Dist:** 125.5 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 125.5 Ft
Obs: Crack Multiple

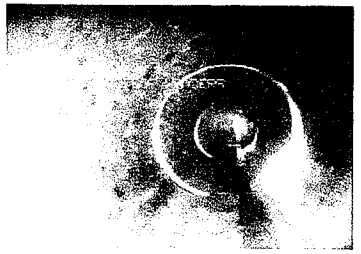


Date: 08/29/2006 **Dist:** 131.5 Ft
Obs: Tap Factory Capped

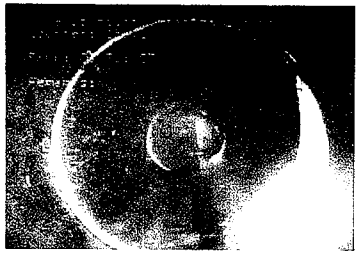
Date: 08/29/2006 **Dist:** 143.2 Ft
Obs: Deposits Attached Encrustation

Date: 08/29/2006 **Dist:** 146.1 Ft
Obs: Tap Break-in Defective

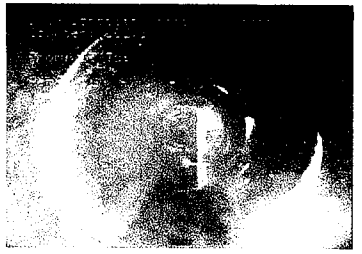
Date: 08/29/2006 **Dist:** 152.7 Ft
Obs: Tap Factory Capped



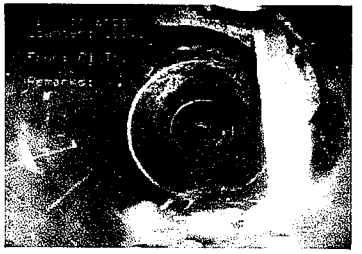
Date: 08/29/2006 **Dist:** 158.4 Ft
Obs: Crack Multiple



Date: 08/29/2006 **Dist:** 159.1 Ft
Obs: Deposits Attached Encrustation



Date: 08/29/2006 **Dist:** 162.3 Ft
Obs: Deposits Attached Encrustation



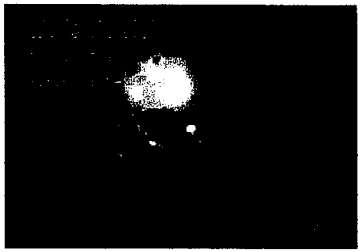
Date: 08/29/2006 **Dist:** 169.2 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 182.3 Ft
Obs: Crack Longitudinal

CCTV pictures of M-30556 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 17
Street Name	FLAGLER PL W ST ADAMS ST	**City Name**	WASHINGTON,D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30556	**To Manhole**	M-30559

Date: 08/29/2006 **Dist:** 185.6 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 185.6 Ft
Obs: End of Survey

Tabular Report of PSR N-6302 X for DCWASA

Setup 22	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA
Drainage N.W. D.C.	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/09/2006	***Time*** 14:32:00	***Street*** FLAGLER PL U ST V ST
Locality WASHINGTON,D.C.	***Further location details*** ID-234		
Start M-30576	***Rim to invert*** 14.00	***Grade to invert***	***Rim to grade*** ***Ft***
Finish N-6302	***Rim to invert***	***Grade to invert***	***Rim to grade*** ***Ft***
Use Sanitary	***Direction*** Up	***Flow control***	***Tape/Media #*** REI 017
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 41.3 ***Ft***	***Length Surveyed*** 41.3
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose		***Cat***	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	03841		ST	Start of Survey								
0.0	03841		AMH	Manhole								M-30576
0.0	03841		MWL	Water Level			5					
2.0			DAE	Deposits Attached Encrustation			05	J	01	09		LIGHT DEPOSITS
2.0			CM	Crack Multiple				J	07	09		
2.0		S01	DAGS	Deposits Attached Grease			05		07	05		LIGHT GREASE
4.0		S02	DAE	Deposits Attached Encrustation			10	J	01	05		LIGHT DEPOSITS
9.4			TBA	Tap Break-in Active	04				11			
11.1		F01	DAGS	Deposits Attached Grease			05		07	05		LIGHT GREASE
11.1		F02	DAE	Deposits Attached Encrustation			10	J	01	05		LIGHT DEPOSITS
15.4			DAE	Deposits Attached Encrustation			05	J	04	07		
21.2			TBA	Tap Break-in Active	04				11			
23.0		S03	DAE	Deposits Attached Encrustation			05		05	07		LIGHT DEPOSITS
30.9			DAE	Deposits Attached Encrustation			05	J	01	05		LIGHT DEPOSITS
33.0			DAE	Deposits Attached Encrustation			05	J	04	09		LIGHT EPOSITS
41.1			TBA	Tap Break-in Active	04				11			
41.3		F03	DAE	Deposits Attached Encrustation			05		05	07		LIGHT DEPOSITS
41.3			AEP	End of Pipe								N-6302
41.3			FH	End of Survey								N-6302

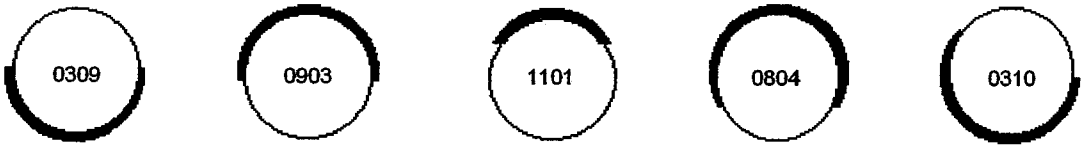
41.3 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 3		***Mean Defect*** 3	***Peak*** 3	***Mean Pipe*** 0.1
Service:	***Total*** 30		***Mean Defect*** 2.5	***Peak*** 4	***Mean Pipe*** 0.7

Notes

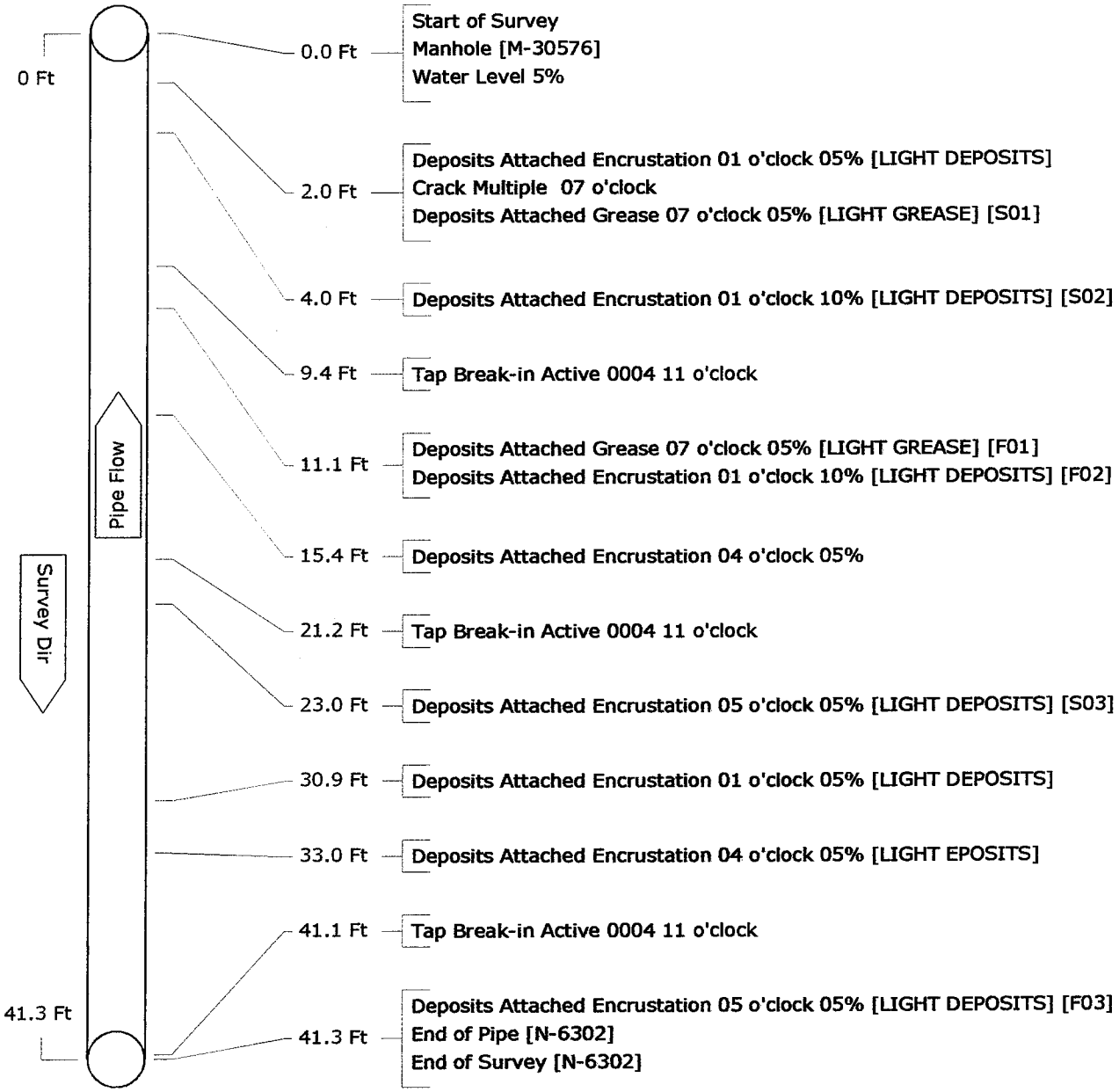
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

Pipe Graphic Report of PLR N-6302 X for DCWASA

Setup 22	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/09	***Time*** 14:32:00	***Street*** FLAGLER PL U ST V ST	
Locality WASHINGTON,D.C.	***Further location details*** ID-234			
Start M-30576	***Rim to invert*** 14.00	***Grade to invert***	***Rim to grade***	***Ft***
Finish N-6302	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Sanitary	***Direction*** Upstream	***Flow control***	***Tape/Media #*** REI 017	
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length***	***Ft*** ***Total length*** 41.3	***Ft*** ***Length Surveyed*** 41.30	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				

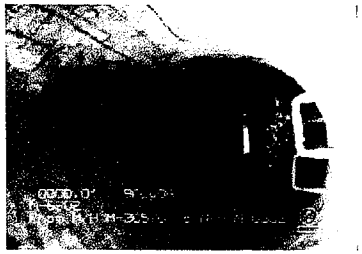


CCTV pictures of N-6302 X **for** **DCWASA**

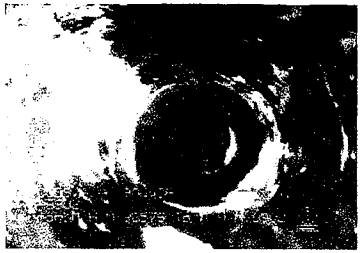
Work Order ID 234 **Video** REI 017 **Surveyed On** 08/09/2006 **Direction** Upstream **Setup** 22

Street Name FLAGLER PL U ST V ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30576 **To Manhole** N-6302



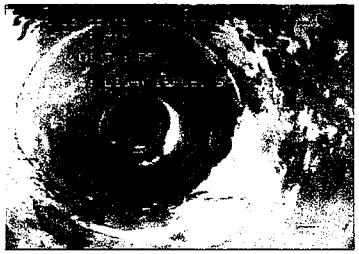
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 2.0 Ft
Obs: Deposits Attached Encrustation

Date: 08/29/2006 **Dist:** 2.0 Ft
Obs: Crack Multiple

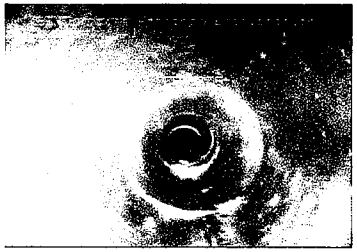
Date: 08/29/2006 **Dist:** 2.0 Ft
Obs: Deposits Attached Grease



Date: 08/29/2006 **Dist:** 4.0 Ft
Obs: Deposits Attached Encrustation

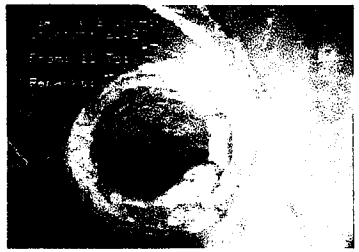
Date: 08/29/2006 **Dist:** 9.4 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 11.1 Ft
Obs: Deposits Attached Grease

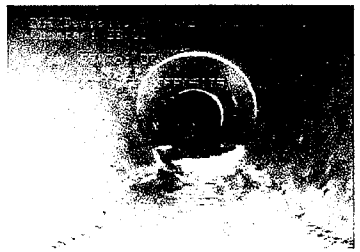


Date: 08/29/2006 **Dist:** 11.1 Ft
Obs: Deposits Attached Encrustation

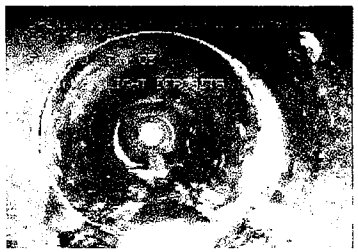
Date: 08/29/2006 **Dist:** 15.4 Ft
Obs: Deposits Attached Encrustation



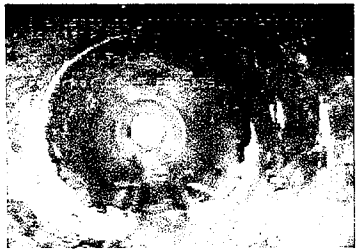
Date: 08/29/2006 **Dist:** 21.2 Ft
Obs: Tap Break-in Active



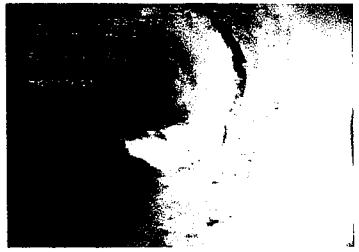
Date: 08/29/2006 **Dist:** 23.0 Ft
Obs: Deposits Attached Encrustation



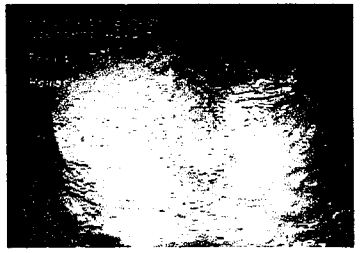
Date: 08/29/2006 **Dist:** 30.9 Ft
Obs: Deposits Attached Encrustation



Date: 08/29/2006 **Dist:** 33.0 Ft
Obs: Deposits Attached Encrustation



Date: 08/29/2006 **Dist:** 41.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 41.3 Ft
Obs: Deposits Attached Encrustation

Date: 08/29/2006 **Dist:** 41.3 Ft
Obs: End of Pipe

Tabular Report of PSR N-6324 X **for DCWASA**

Setup 18	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 13:34:00	***Street*** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30559	***Rim to invert*** 15.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish N-6324	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Up	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***		
Material Vitrified Clay Pipe	***Joint length***	***Ft*** ***Total length*** 47.8 ***Ft***	***Length Surveyed*** 47.8		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			

Additional info	Structural	O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking	Miscellaneous	Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30559
0.0	00000		MWL	Water Level			0					
2.5			TBA	Tap Break-in Active	04				02			
16.5			JOM	Joint Offset Medium								
18.7			TBA	Tap Break-in Active	04				02			
18.7			DSC	Deposits Settled Compacted			10	J	06			LIGHT DEBRIS
35.1			TBA	Tap Break-in Active	04				02			
38.0		S01	DSF	Deposits Settled Fine			10	J	06			
46.5			TBA	Tap Break-in Active	04				02			
47.8		F01	DSF	Deposits Settled Fine			10	J	06			
47.8			AEP	End of Pipe								N-6324
47.8			FH	End of Survey								N-6324

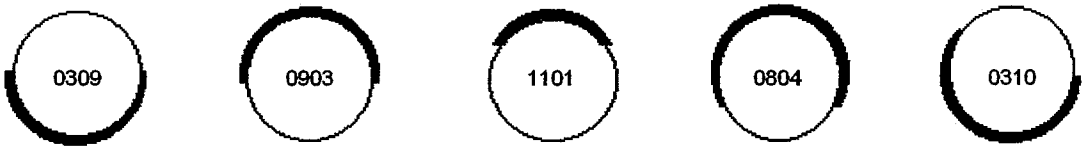
47.8 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 1	***Mean Defect*** 1	***Peak*** 1	***Mean Pipe*** 0
Service:	***Total*** 6	***Mean Defect*** 2	***Peak*** 2	***Mean Pipe*** 0.1

Notes

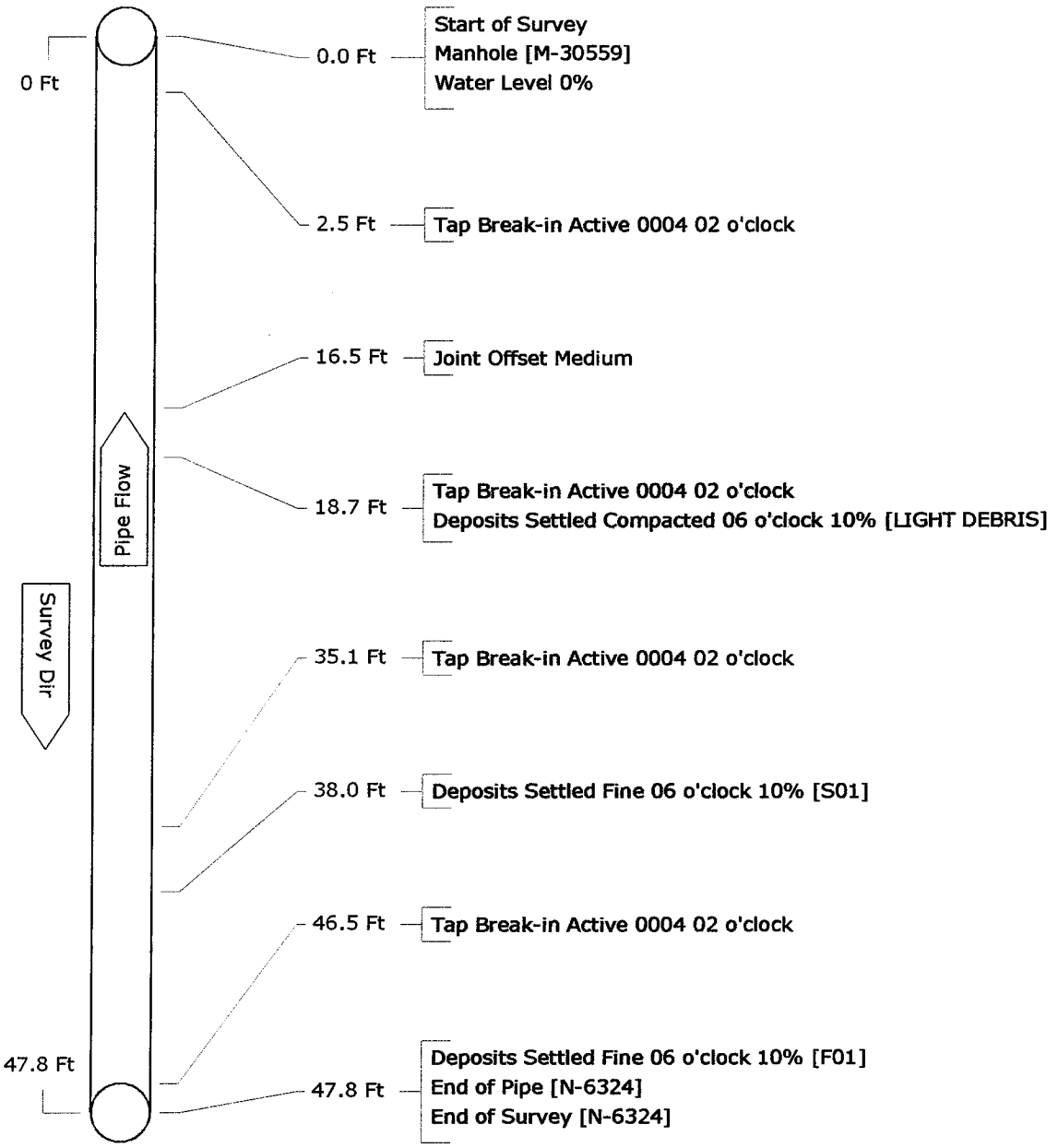
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

Pipe Graphic Report of PLR N-6324 X for DCWASA

Setup 18	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage N.W. D.C.	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/08	**Time** 13:34:00	**Street** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	**Further location details** ID-234				
Start M-30559	**Rim to invert** 15.00	**Grade to invert**	**Rim to grade**	**Ft**	
Finish N-6324	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**	
Use Combined	**Direction** Upstream	**Flow control**	**Tape/Media #** REI 016		
Shape Circular	**Height** 10 **Width**	**ins** **Preclean** J	**Year Cleaned**		
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 47.8 **Ft**	**Length Surveyed** 47.80		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					

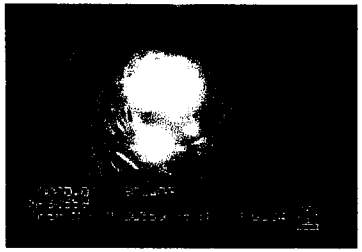


CCTV pictures of N-6324 X for **DCWASA**

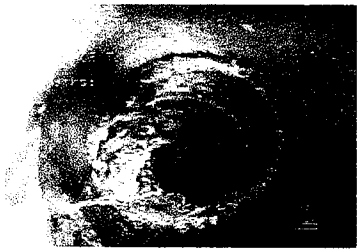
Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Upstream **Setup** 18

Street Name FLAGLER PL W ST ADAMS ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

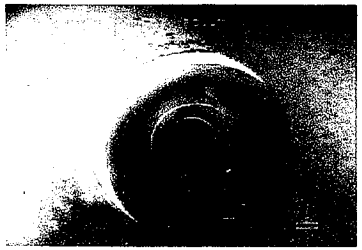
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30559 **To Manhole** N-6324



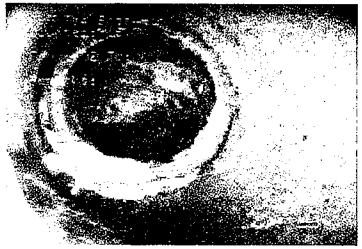
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 2.5 Ft
Obs: Tap Break-In Active



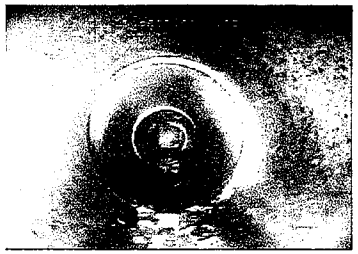
Date: 08/29/2006 **Dist:** 16.5 Ft
Obs: Joint Offset Medium



Date: 08/29/2006 **Dist:** 18.7 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 18.7 Ft
Obs: Deposits Settled Compacted

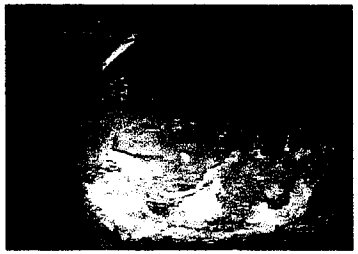
Date: 08/29/2006 **Dist:** 35.1 Ft
Obs: Tap Break-In Active



Date: 08/29/2006 **Dist:** 38.0 Ft
Obs: Deposits Settled Fine

Date: 08/29/2006 **Dist:** 46.5 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 47.8 Ft
Obs: Deposits Settled Fine



Date: 08/29/2006 **Dist:** 47.8 Ft
Obs: End of Pipe

Tabular Report of PSR N-6323 X **for DCWASA**

Setup 20	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/09/2006	***Time*** 14:02:00	***Street*** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30560	***Rim to invert*** 15.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish N-6323	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Up	***Flow control***	***Tape/Media #*** REI 017		
Shape Circular	***Height*** 10	***Width*** ***ins***	***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 45.0 ***Ft***	***Length Surveyed*** 45.0		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info			Structural O&M Constructional		
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	03237		ST	Start of Survey								
0.0	03237		AMH	Manhole								M-30560
0.0	03237		MWL	Water Level			5					
2.0			TBA	Tap Break-in Active	04				11			
16.5			TBA	Tap Break-in Active	04				11			
23.2			RFJ	Roots Fine Joint					03			
42.4			TBA	Tap Break-in Active	04				11			
45.0			AEP	End of Pipe								N-6323
45.0			FH	End of Survey								N-6323

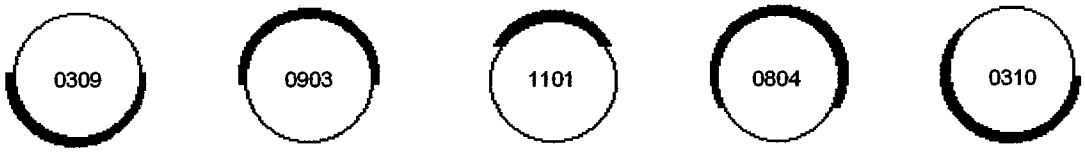
45.0 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 0	***Mean Defect*** 0	***Peak*** 0	***Mean Pipe*** 0
Service:	***Total*** 1	***Mean Defect*** 1	***Peak*** 1	***Mean Pipe*** 0

Notes

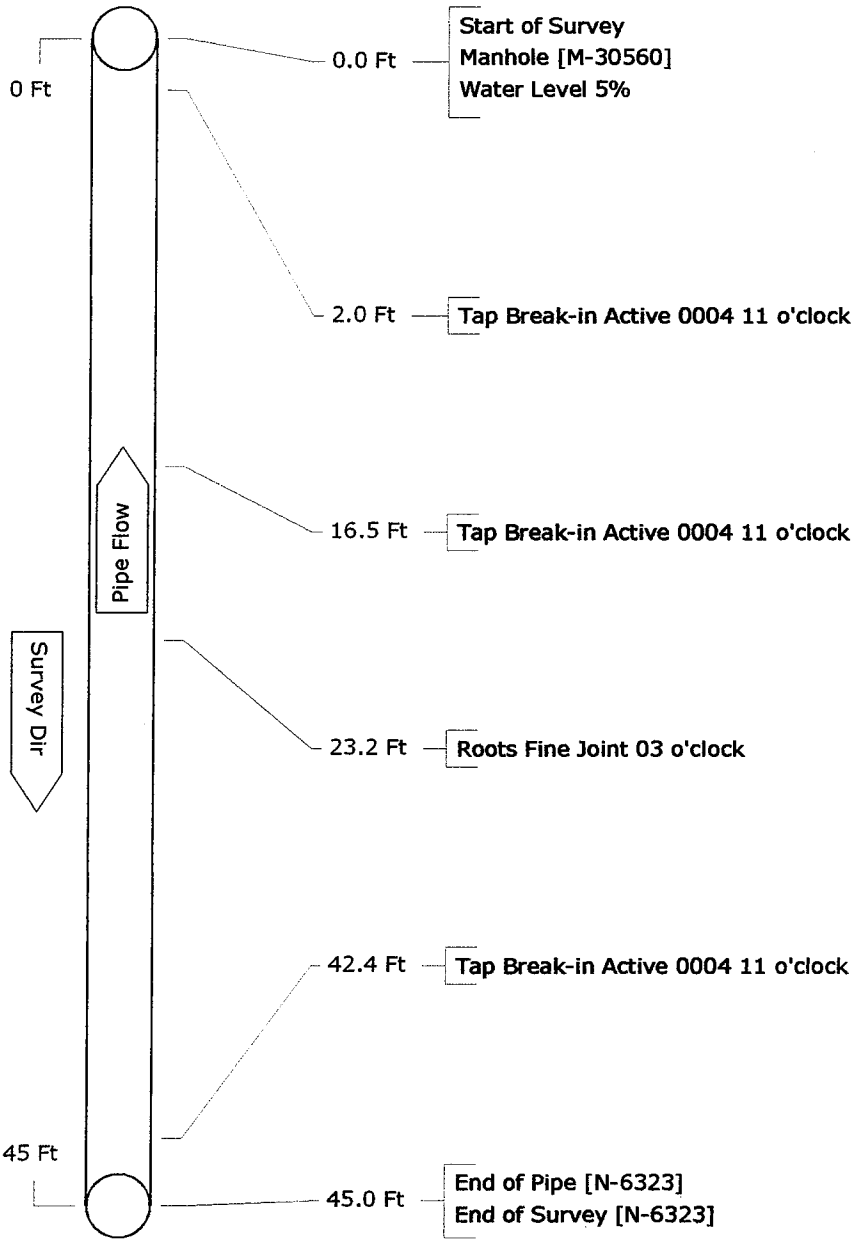
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

Pipe Graphic Report of PLR N-6323 X for DCWASA

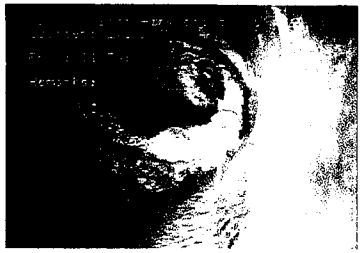
Setup 20	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/09	***Time*** 14:02:00	***Street*** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30560	***Rim to invert*** 15.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish N-6323	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Upstream	***Flow control***	***Tape/Media #*** REI 017		
Shape Circular	***Height*** 10	***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length***	***Ft***	***Total length*** 45.0	***Ft***	***Length Surveyed*** 45.00
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



CCTV pictures of N-6323 X **for** **DCWASA**

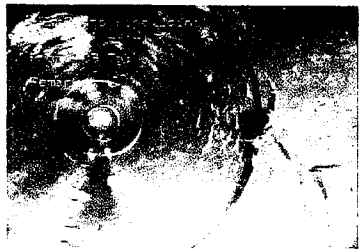
Work Order	ID 234	**Video**	REI 017	**Surveyed On**	08/09/2006	**Direction**	Upstream **Setup** 20
Street Name	FLAGLER PL W ST ADAMS ST	**City Name**	WASHINGTON,D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30560	**To Manhole**	N-6323

Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 2.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 16.5 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 23.2 Ft
Obs: Roots Fine Joint

Date: 08/29/2006 **Dist:** 42.4 Ft
Obs: Tap Break-in Active

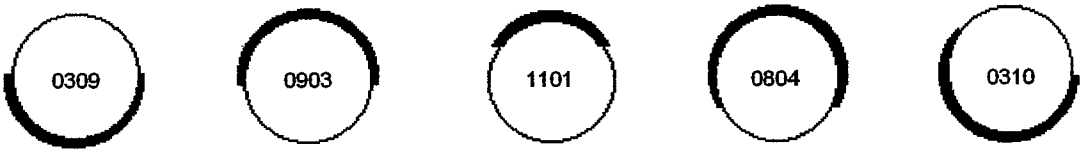
Date: 08/29/2006 **Dist:** 45.0 Ft
Obs: End of Pipe

Tabular Report of PSR M-30558 X **for DCWASA**

Setup 19	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA
Drainage N.W. D.C.	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/09/2006	***Time*** 9:28:00	***Street*** FLAGLER PL W ST ADAMS ST
Locality WASHINGTON,D.C.	***Further location details*** ID-234		
Start M-30558	***Rim to invert***	***Grade to invert***	***Rim to grade*** ***Ft***
Finish M-30560	***Rim to invert***	***Grade to invert***	***Rim to grade*** ***Ft***
Use Sanitary	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 017
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 185.8 ***Ft***	***Length Surveyed*** 185.8
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose		***Cat***	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30558
0.0	00000		MWL	Water Level			0					
12.2		S01	CL	Crack Longitudinal				J	12			
16.9			TBA	Tap Break-in Active	04				09			
17.5		F01	CL	Crack Longitudinal				J	12			
31.0			TFC	Tap Factory Capped	04				10			
35.5			CL	Crack Longitudinal				J	12			
36.4			TBA	Tap Break-in Active	04				09			
38.6		S02	CL	Crack Longitudinal				J	12			
41.2			CL	Crack Longitudinal				J	03			
47.1		S03	CL	Crack Longitudinal				J	03			
51.3			TFC	Tap Factory Capped	04				10			
56.3			TBD	Tap Break-in Defective	04	01			12			
56.8			TBA	Tap Break-in Active	04				09			
58.9		F03	CL	Crack Longitudinal				J	03			
65.0			CM	Crack Multiple				J	09	03		
71.7			TFC	Tap Factory Capped	04				10			
75.1			TBD	Tap Break-in Defective	04	01			09			
79.5			RFJ	Roots Fine Joint					09	03		
84.4		F02	CL	Crack Longitudinal				J	12			
91.8			TFC	Tap Factory Capped	04				10			
99.8			TBD	Tap Break-in Defective	04	01			09			
99.8			CL	Crack Longitudinal				J	09			
101.2			ID	Infil Dripper					11			
101.3			H	Hole					11			
112.3			TFC	Tap Factory Capped	04				10			

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30558 X **for DCWASA**

Setup 19	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/09/2006	***Time*** 9:28:00	***Street*** FLAGLER PL W ST ADAMS ST		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30558	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30560	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 017		
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***		
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 185.8 ***Ft***	***Length Surveyed*** 185.8		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info		Structural	O&M	Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous	Hydraulic		

Count	Video		CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
120.7				TBD	Tap Break-in Defective	04	01			09			
134.3				TFC	Tap Factory Capped	04				10			
135.1				TBD	Tap Break-in Defective	04	01			10			
156.0				TBD	Tap Break-in Defective	04	01			11			
169.9				TBD	Tap Break-in Defective	04	01			09			
185.8				AMH	Manhole								M-30560
185.8				FH	End of Survey								M-30560

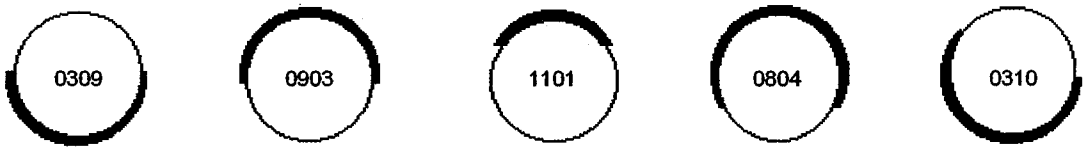
185.8 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 46	***Mean Defect*** 2.1	***Peak*** 5	***Mean Pipe*** 0.2
Service:	***Total*** 25	***Mean Defect*** 2.8	***Peak*** 3	***Mean Pipe*** 0.1

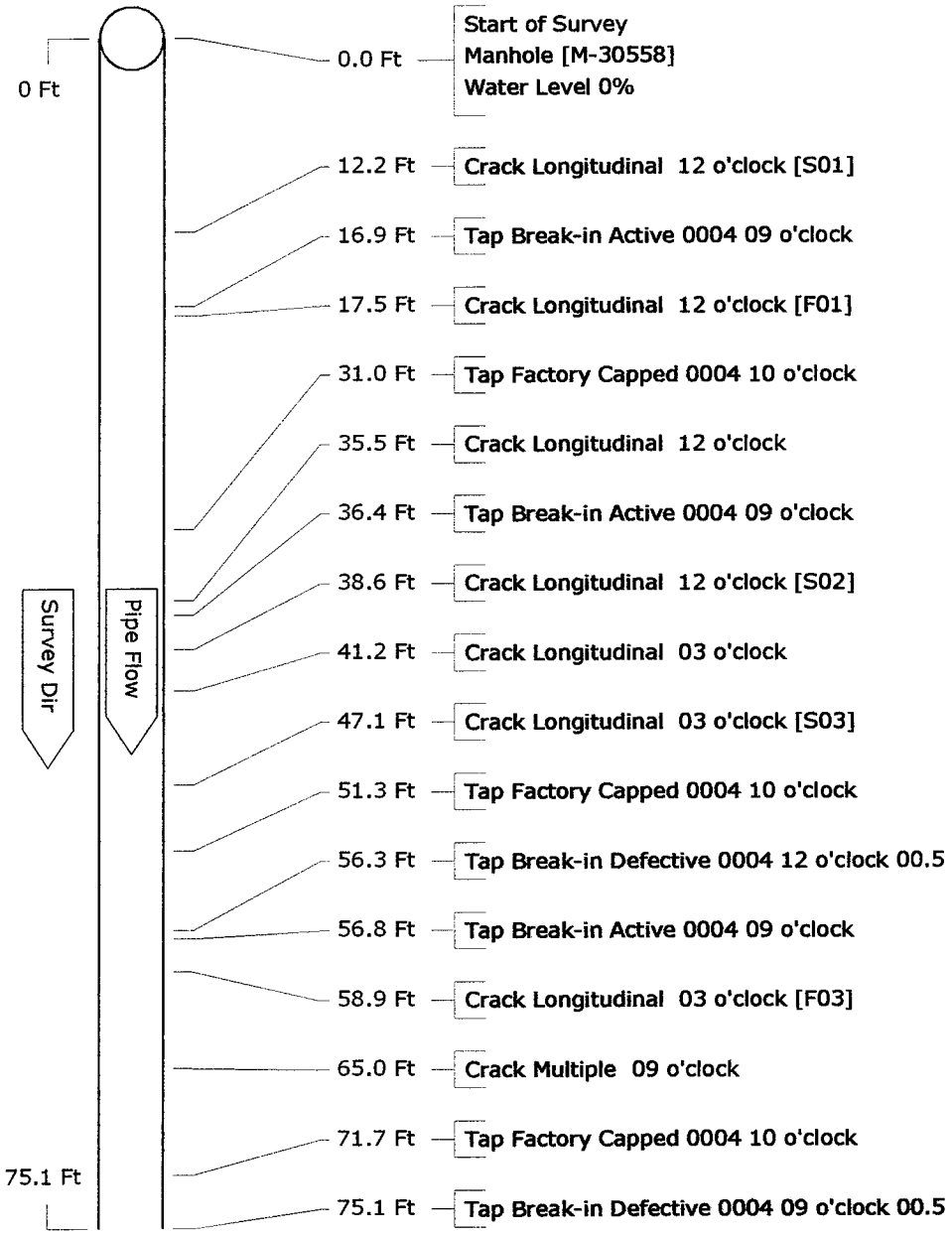
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



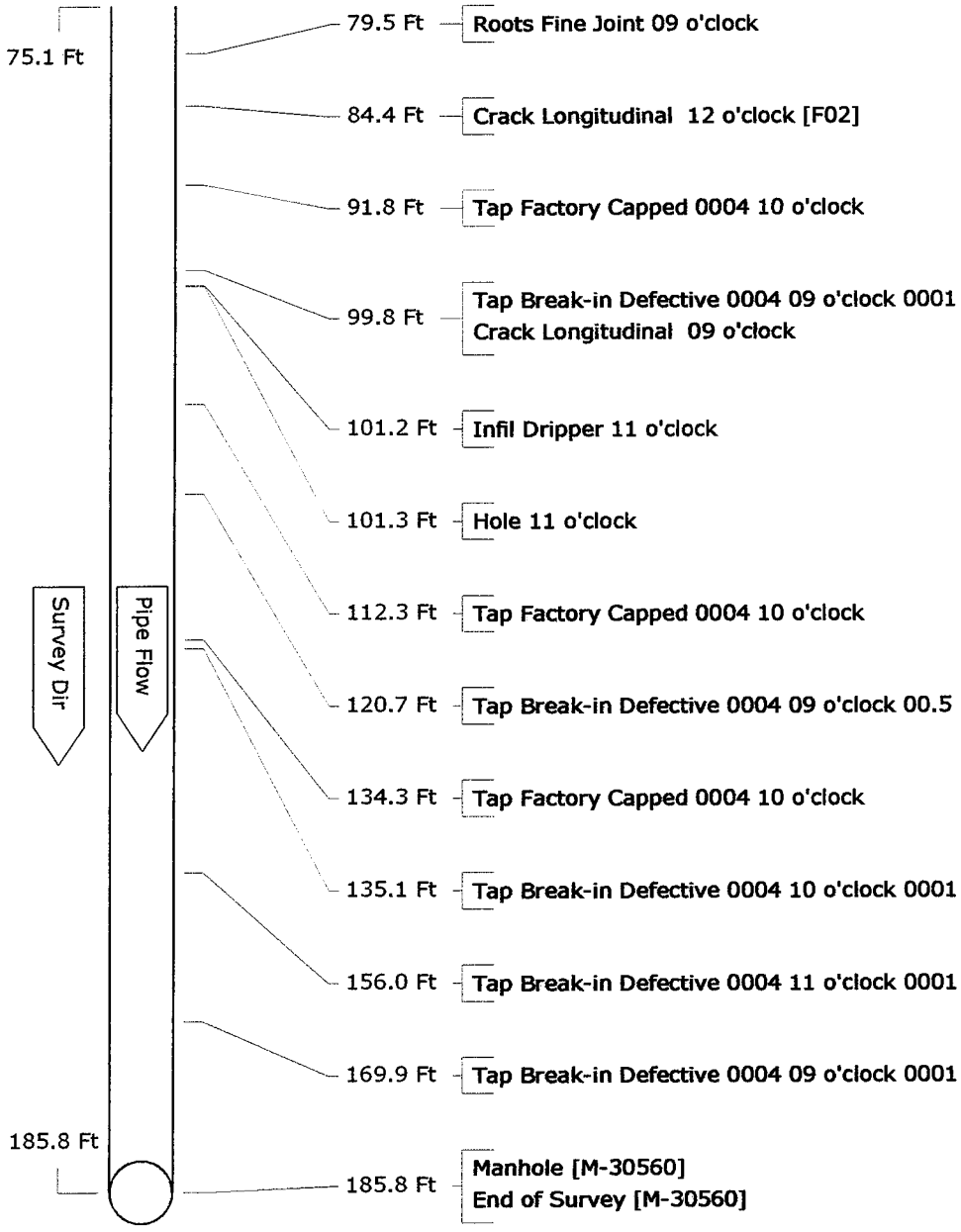
Pipe Graphic Report of PLR M-30558 X for DCWASA

Setup 19	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/09	***Time*** 09:28:00	***Street*** FLAGLER PL W ST ADAMS ST	
Locality WASHINGTON,D.C.	***Further location details*** ID-234			
Start M-30558	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30560	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Sanitary	***Direction*** Downstream	***Flow control***	***Tape/Media #*** REI 017	
Shape Circular	***Height*** 10 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length***	***Ft*** ***Total length*** 185.8 ***Ft***	***Length Surveyed*** 185.80	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



Pipe Graphic Report of PLR M-30558 X for DCWASA

Setup 19	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA	
Drainage N.W. D.C.	**Survey Customer** DCWASA			
P/O # ID 234	**Date** 2006/08/09	**Time** 09:28:00	**Street** FLAGLER PL W ST ADAMS ST	
Locality WASHINGTON,D.C.	**Further location details** ID-234			
Start M-30558	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Finish M-30560	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Use Sanitary	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 017	
Shape Circular	**Height** 10 **Width**	**ins** **Preclean** J	**Year Cleaned**	
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 185.8 **Ft**	**Length Surveyed** 185.80	
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry	
Purpose		**Cat**		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



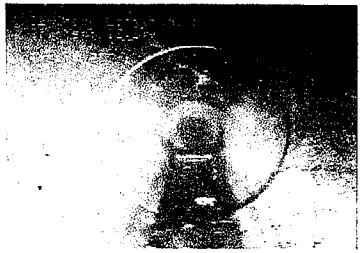
CCTV pictures of M-30558 X for **DCWASA**

Work Order ID 234 **Video** REI 017 **Surveyed On** 08/09/2006 **Direction** Downstream **Setup** 19

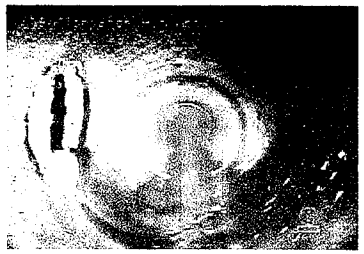
Street Name FLAGLER PL W ST ADAMS ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30558 **To Manhole** M-30560

Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

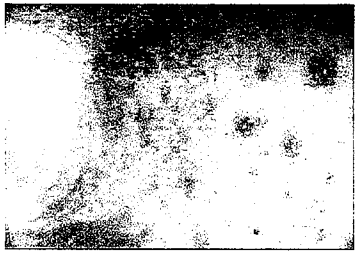


Date: 08/29/2006 **Dist:** 12.2 Ft
Obs: Crack Longitudinal

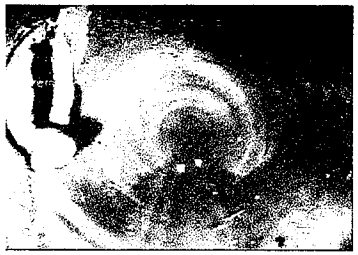


Date: 08/29/2006 **Dist:** 16.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 31.0 Ft
Obs: Tap Factory Capped



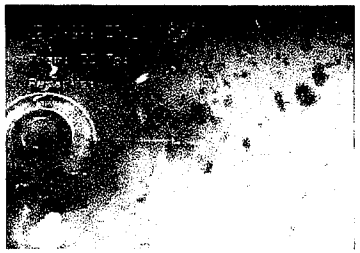
Date: 08/29/2006 **Dist:** 35.5 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 36.4 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 38.6 Ft
Obs: Crack Longitudinal

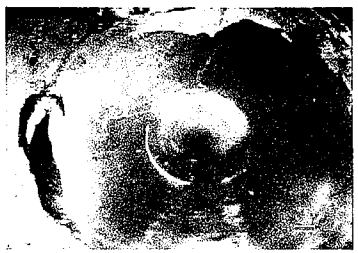
Date: 08/29/2006 **Dist:** 41.2 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 47.1 Ft
Obs: Crack Longitudinal

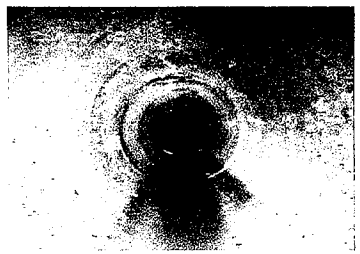
Date: 08/29/2006 **Dist:** 51.3 Ft
Obs: Tap Factory Capped

Date: 08/29/2006 **Dist:** 56.3 Ft
Obs: Tap Break-in Defective



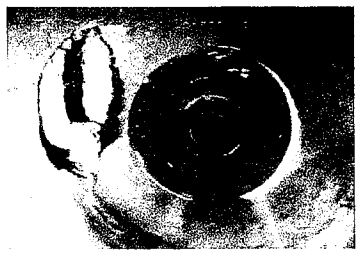
Date: 08/29/2006 **Dist:** 56.8 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 58.9 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 65.0 Ft
Obs: Crack Multiple

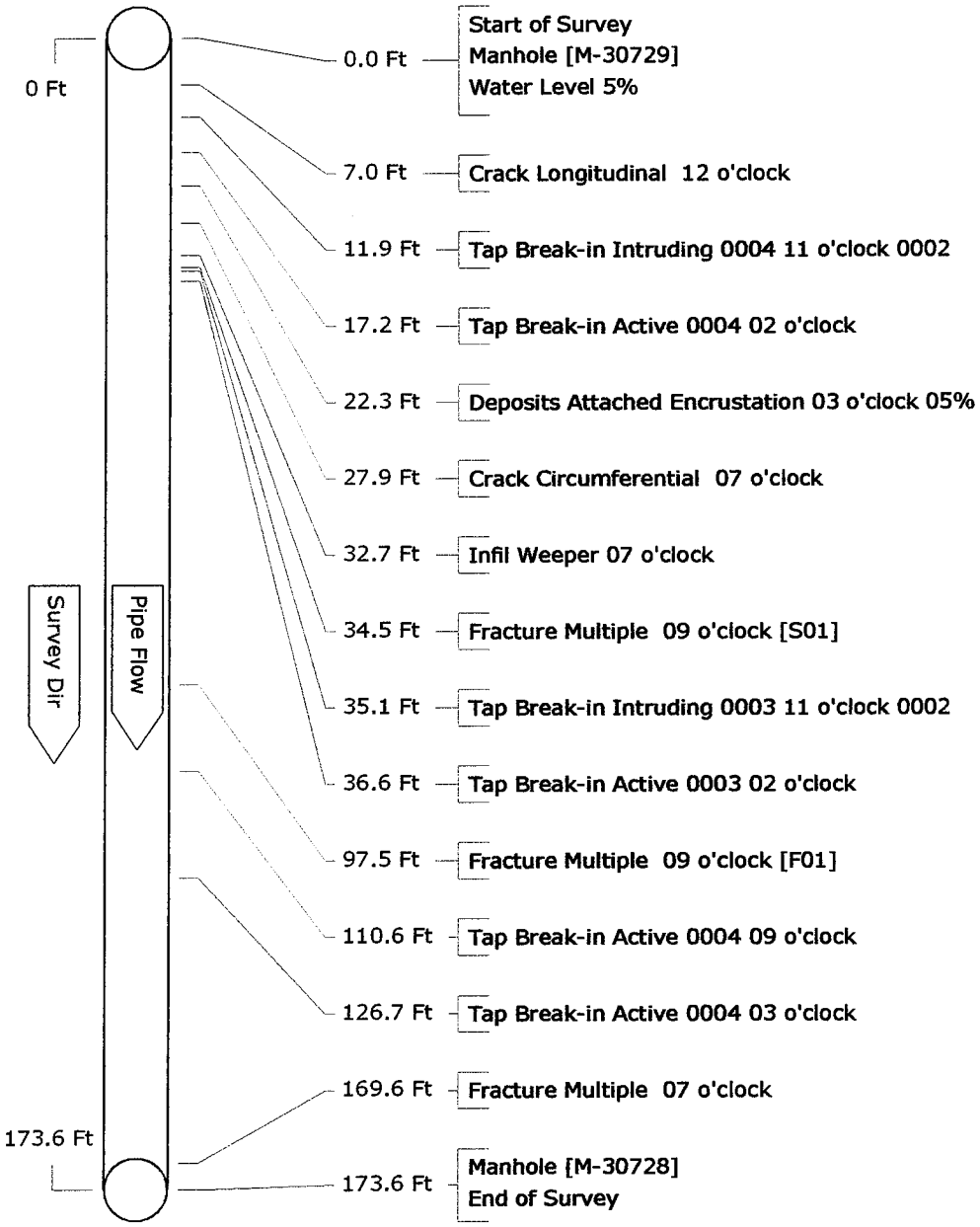
Date: 08/29/2006 **Dist:** 71.7 Ft
Obs: Tap Factory Capped



Date: 08/29/2006 **Dist:** 75.1 Ft
Obs: Tap Break-in Defective

Pipe Graphic Report of PLR M-30729 X for DCWASA

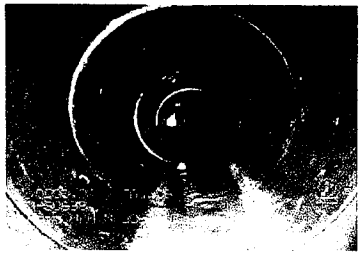
Setup 80	**Surveyor** A. OGUARA	**Certificate #** U-405-2141	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/07	**Time** 13:15:00	**Street** 115 THOMAS STREET,N.W		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30729	**Rim to invert** 8.30	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30728	**Rim to invert** 8.90	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 015		
Shape Circular	**Height** 18	**Width** **ins**	**Preclean** J	**Year Cleaned** 8/7/2006	
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length** 173.6 **Ft**	**Length Surveyed** 173.60		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



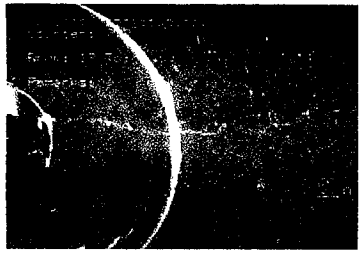
CCTV pictures of M-30729 X for **DCWASA**

Work Order	ID 234	**Video**	REI 015	**Surveyed On**	08/07/2006	**Direction**	Downstream **Setup** 80
Street Name	115 THOMAS STREET,N.W	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30729	**To Manhole**	M-30728

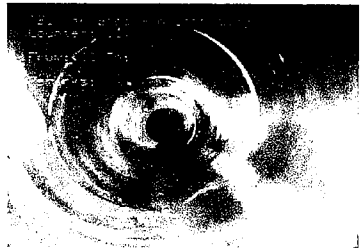
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Water Level

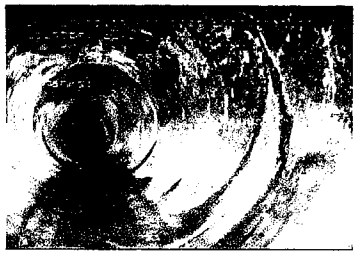


Date: 08/29/2006 **Dist:** 7.0 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 11.9 Ft
Obs: Tap Break-in Intruding

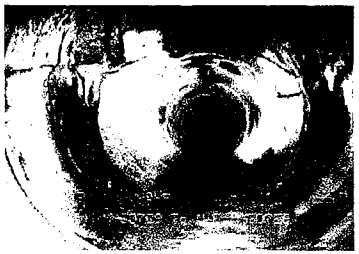
Date: 08/29/2006 **Dist:** 17.2 Ft
Obs: Tap Break-In Active



Date: 08/29/2006 **Dist:** 22.3 Ft
Obs: Deposits Attached Encrustation

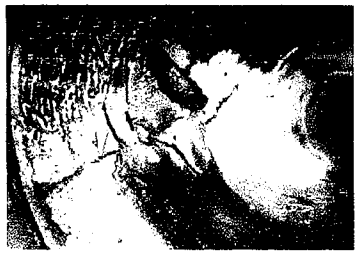
Date: 08/29/2006 **Dist:** 27.9 Ft
Obs: Crack Circumferential

Date: 08/29/2006 **Dist:** 32.7 Ft
Obs: Infil Weeper

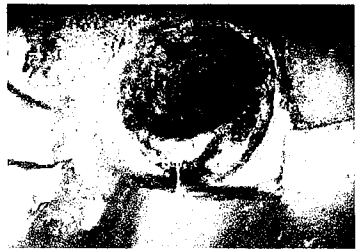


Date: 08/07/2006 **Dist:** 34.5 Ft
Obs: Fracture Multiple

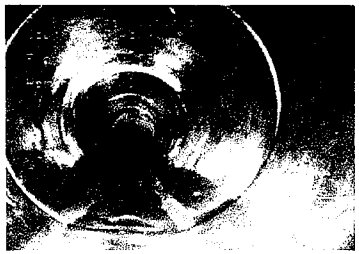
Date: 08/29/2006 **Dist:** 34.5 Ft
Obs: Fracture Multiple



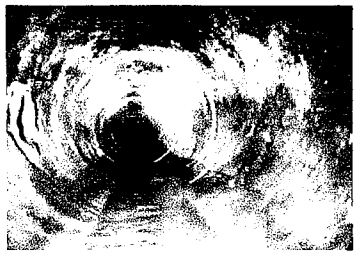
Date: 08/29/2006 **Dist:** 35.1 Ft
Obs: Tap Break-In Intruding



Date: 08/29/2006 **Dist:** 36.6 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 97.5 Ft
Obs: Fracture Multiple



Date: 08/29/2006 **Dist:** 110.6 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 126.7 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 169.6 Ft
Obs: Fracture Multiple

CCTV pictures of M-30729 X **for** **DCWASA**

Work Order	ID 234	**Video**	REI 015	**Surveyed On**	08/07/2006	**Direction**	Downstream **Setup** 80
Street Name	115 THOMAS STREET,N.W	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30729	**To Manhole**	M-30728

Date: 08/29/2006 **Dist:** 173.6 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 173.6 Ft
Obs: End of Survey

Tabular Report of PSR M-30638 X for DCWASA

Setup 81 ***Surveyor*** A. OGUARA ***Certificate #*** U-405-2141 ***System Owner*** DCWASA
Drainage 1ST STREET ***Survey Customer*** DCWASA
P/O # ID 234 ***Date*** 08/07/2006 ***Time*** 12:27:00 ***Street*** 151 THOMAS STREET,N.E
Locality WASHINGTON D.C. ***Further location details***

Start M-30638 ***Rim to invert*** 8.00 ***Grade to invert*** ***Rim to grade*** ***Ft***
Finish M-30729 ***Rim to invert*** 8.30 ***Grade to invert*** ***Rim to grade*** ***Ft***

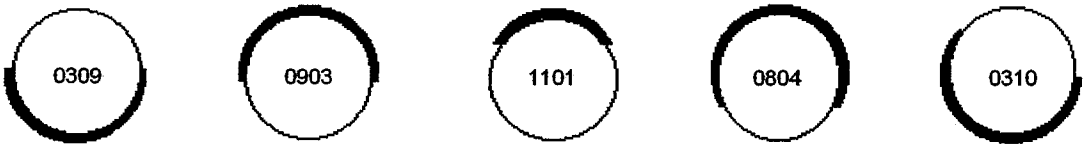
Use Sanitary ***Direction*** Down ***Flow control*** Not controlled ***Tape/Media #*** REI 015
Shape Circular ***Height*** 15 ***Width*** ***ins*** ***Preclean*** J ***Year Cleaned*** 8/7/2006
Material Vitrified Clay Pipe ***Joint length*** 7.00 ***Ft*** ***Total length*** 170.0 ***Ft*** ***Length Surveyed*** 170.0
Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry
Purpose Routine Assessment ***Cat***

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00:00:00		ST	Start of Survey								
0.0	00:00:00		AMH	Manhole								M-30638
0.0	00:00:00		MWL	Water Level			5					
2.8			TFA	Tap Factory Active	06				02			
15.1			TBI	Tap Break-in Intruding	06	01			10			
16.7			TBA	Tap Break-in Active	06				01			
20.1			TFA	Tap Factory Active	06				02			
34.3			TFA	Tap Factory Active	06				03			
36.2			TBA	Tap Break-in Active	04				10			
51.5			TFA	Tap Factory Active	06				03			
55.5			TBA	Tap Break-in Active	03				09			
57.8			TBA	Tap Break-in Active	04				10			
68.6			TFA	Tap Factory Active	06				02			
71.5			TBI	Tap Break-in Intruding	04	01			10			
77.7			TBI	Tap Break-in Intruding	06	01			11			
83.1			TBA	Tap Break-in Active	04				02			
92.6			SSSC	Surface Spalling Chemical					07	02		
97.1			TBA	Tap Break-in Active	04				11			
99.7			TFA	Tap Factory Active	06				02			
105.9		S01	SSSC	Surface Spalling Chemical					07	03		
113.6			TBA	Tap Break-in Active	04				09			
116.9			TFA	Tap Factory Active	06				03			
131.0			TBA	Tap Break-in Active	04				10			
134.2			TFA	Tap Factory Active	06				02			
148.7			TBI	Tap Break-in Intruding	04	01			09			CM AROUND CONN
150.7			TFA	Tap Factory Active	06				02			
158.9			DAGS	Deposits Attached Grease			05		05	07		

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30638 X for DCWASA

Setup 81	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/07/2006	***Time*** 12:27:00	***Street*** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30729	***Rim to invert*** 8.30	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 15 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned*** 8/7/2006		
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** 170.0 ***Ft***	***Length Surveyed*** 170.0		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info			Structural	O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous	Hydraulic	

Count	Video		CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
161.0				TBA	Tap Break-in Active	06				09			
164.6				TBI	Tap Break-in Intruding	06	01			02			
170.0			F01	SSSC	Surface Spalling Chemical					07	03		
170.0				AMH	Manhole								M-30729
170.0				FH	End of Survey								

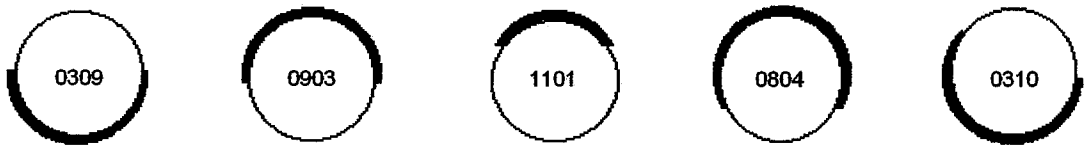
170.0 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 28	***Mean Defect*** 2	***Peak*** 2	***Mean Pipe*** 0.2
Service:	***Total*** 12	***Mean Defect*** 2	***Peak*** 2	***Mean Pipe*** 0.1

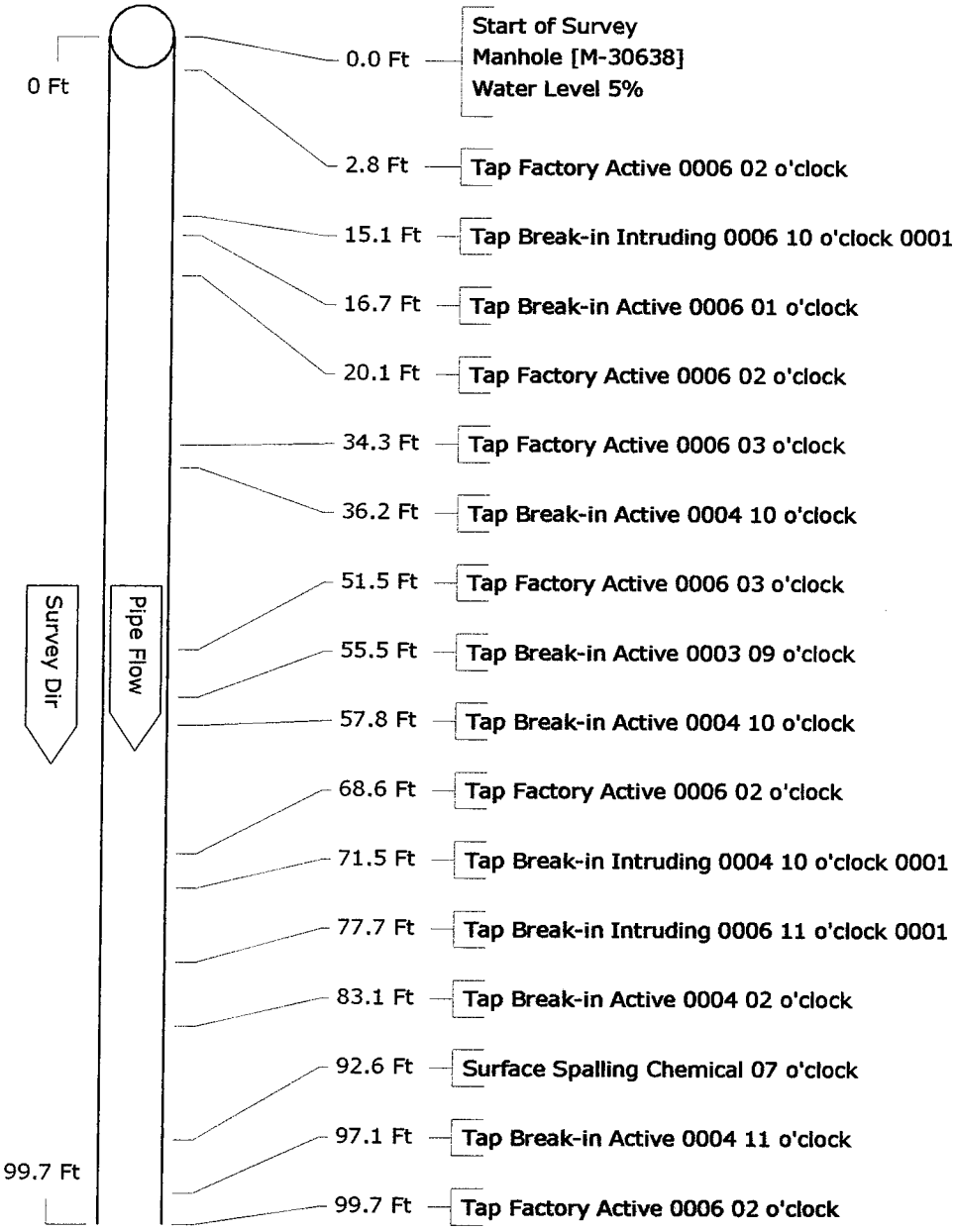
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



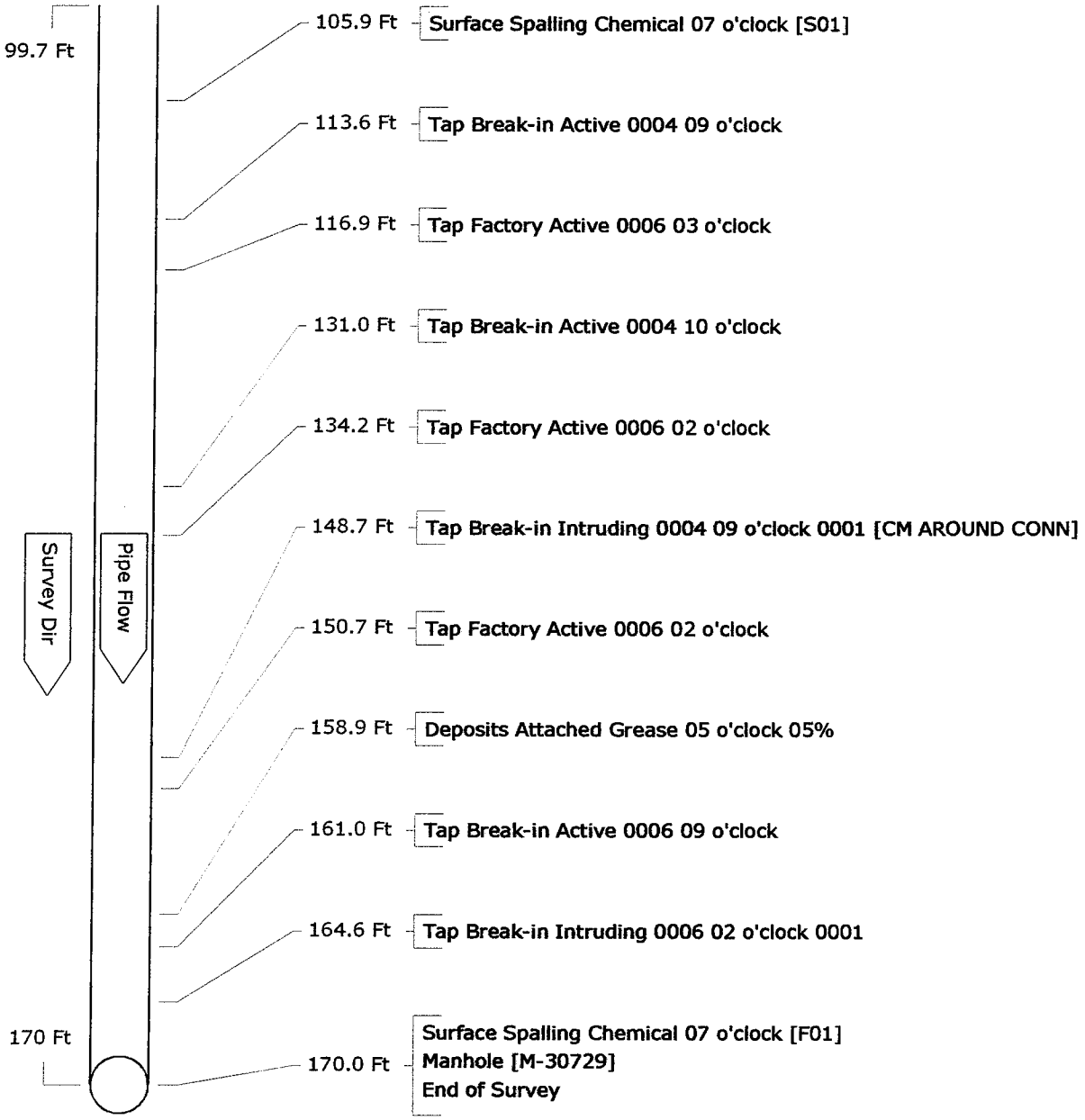
Pipe Graphic Report of PLR M-30638 X for DCWASA

Setup 81	**Surveyor** A. OGUARA	**Certificate #** U-405-2141	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/07	**Time** 12:27:00	**Street** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30638	**Rim to invert** 8.00	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30729	**Rim to invert** 8.30	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 015		
Shape Circular	**Height** 15	**Width** **ins**	**Preclean** J	**Year Cleaned** 8/7/2006	
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length** 170.0 **Ft**	**Length Surveyed** 170.00		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



Pipe Graphic Report of PLR M-30638 X for DCWASA

Setup 81	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/07	***Time*** 12:27:00	***Street*** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30729	***Rim to invert*** 8.30	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 15	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length*** 170.0 ***Ft***	***Length Surveyed*** 170.00		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



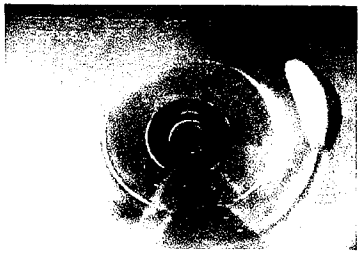
CCTV pictures of M-30638 X for **DCWASA**

Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 81

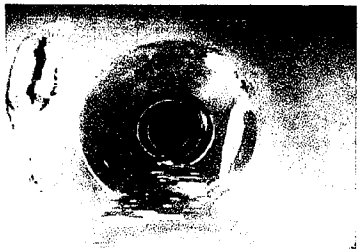
Street Name 151 THOMAS STREET,N.E **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30638 **To Manhole** M-30729

Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

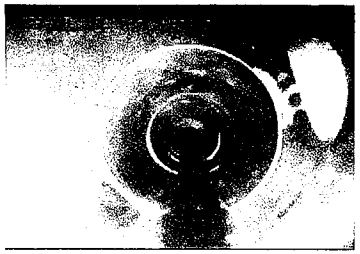


Date: 08/29/2006 **Dist:** 2.8 Ft
Obs: Tap Factory Active

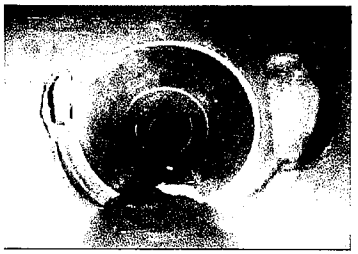


Date: 08/29/2006 **Dist:** 15.1 Ft
Obs: Tap Break-in Intruding

Date: 08/29/2006 **Dist:** 16.7 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 20.1 Ft
Obs: Tap Factory Active



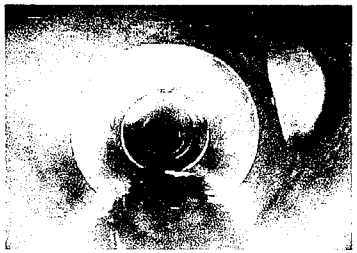
Date: 08/29/2006 **Dist:** 34.3 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 36.2 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 51.5 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 55.5 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 57.8 Ft
Obs: Tap Break-in Active

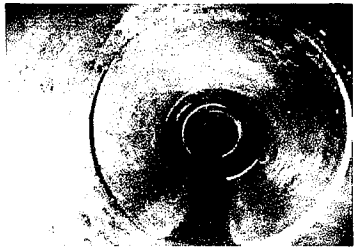


Date: 08/29/2006 **Dist:** 68.6 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 71.5 Ft
Obs: Tap Break-in Intruding

Date: 08/29/2006 **Dist:** 77.7 Ft
Obs: Tap Break-in Intruding

Date: 08/29/2006 **Dist:** 83.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 92.6 Ft
Obs: Surface Spalling Chemical

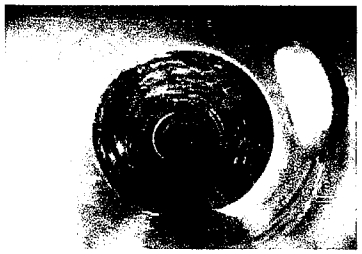
Date: 08/29/2006 **Dist:** 97.1 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30638 X for **DCWASA**

Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 81

Street Name 151 THOMAS STREET,N.E **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30638 **To Manhole** M-30729



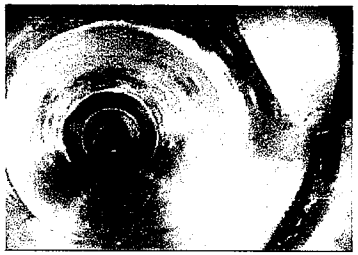
Date: 08/29/2006 **Dist:** 99.7 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 105.9 Ft
Obs: Surface Spalling Chemical

Date: 08/29/2006 **Dist:** 113.6 Ft
Obs: Tap Break-in Active

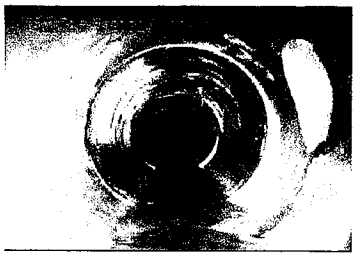
Date: 08/29/2006 **Dist:** 116.9 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 131.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 134.2 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 148.7 Ft
Obs: Tap Break-in Intruding

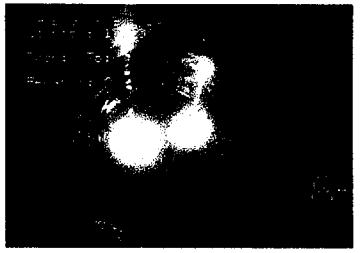


Date: 08/29/2006 **Dist:** 150.7 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 158.9 Ft
Obs: Deposits Attached Grease

Date: 08/29/2006 **Dist:** 161.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 164.6 Ft
Obs: Tap Break-in Intruding



Date: 08/29/2006 **Dist:** 170.0 Ft
Obs: Surface Spalling Chemical

Date: 08/29/2006 **Dist:** 170.0 Ft
Obs: Manhole

Tabular Report of PSR M-30567 X for DCWASA

Setup 169 ***Surveyor*** A.THOMPSON ***Certificate #*** U-106-2462 ***System Owner*** DCWASA
Drainage N.E.BOUNDARY ***Survey Customer*** DCWASA
P/O # ID 234 ***Date*** 08/01/2006 ***Time*** 14:08:00 ***Street*** FLAGLER PL V ST-W ST
Locality WASHINGTON D.C. ***Further location details*** N.W.

Start M-30567 ***Rim to invert*** ***Grade to invert*** ***Rim to grade*** ***Ft***
Finish M-30569 ***Rim to invert*** ***Grade to invert*** ***Rim to grade*** ***Ft***

Use Combined ***Direction*** Down ***Flow control*** Not controlled ***Tape/Media #*** REI 014
Shape Circular ***Height*** 12 ***Width*** 10 ***ins*** ***Preclean*** J ***Year Cleaned***
Material Clay Tile ***Joint length*** ***Ft*** ***Total length*** 101.2 ***Ft*** ***Length Surveyed*** 101.2
Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry
Purpose Routine Assessment ***Cat***

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	13814		ST	Start of Survey								
0.0	13814		AMH	Manhole								M-30567
0.0	13814		MWL	Water Level			0					
17.5			TFA	Tap Factory Active	04				02			
30.3			RFJ	Roots Fine Joint					05			LIGHT ROOTS
32.3			RFB	Roots Fine Barrel					12			LIGHT ROOTS
34.3			TFA	Tap Factory Active	04				02			
51.5			TFA	Tap Factory Active	04				02			
55.6			RFJ	Roots Fine Joint					07	08		LIGHT ROOTS
61.9			CM	Crack Multiple					12	01		
64.6			CL	Crack Longitudinal				J	09			
66.2			TB	Tap Break-in	04				09			
66.3			CM	Crack Multiple					06	09		
67.9			CL	Crack Longitudinal				J	02			
70.4		S01	CM	Crack Multiple				J	11	01		
73.4		F01	CM	Crack Multiple				J	11	01		
79.6			RFJ	Roots Fine Joint					03	04		
89.4		S02	DSZ	Deposits Settled Other			10		07			METAL ROD IN LINE
101.2		F02	DSZ	Deposits Settled Other			10		07			METAL ROD IN LINE
101.2			AMH	Manhole								M-30569
101.2			FH	End of Survey								M-30569

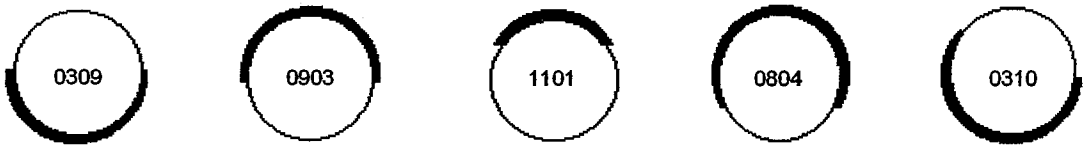
101.2 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 16	***Mean Defect*** 2.7	***Peak*** 3	***Mean Pipe*** 0.2
Service:	***Total*** 11	***Mean Defect*** 1.4	***Peak*** 2	***Mean Pipe*** 0.1

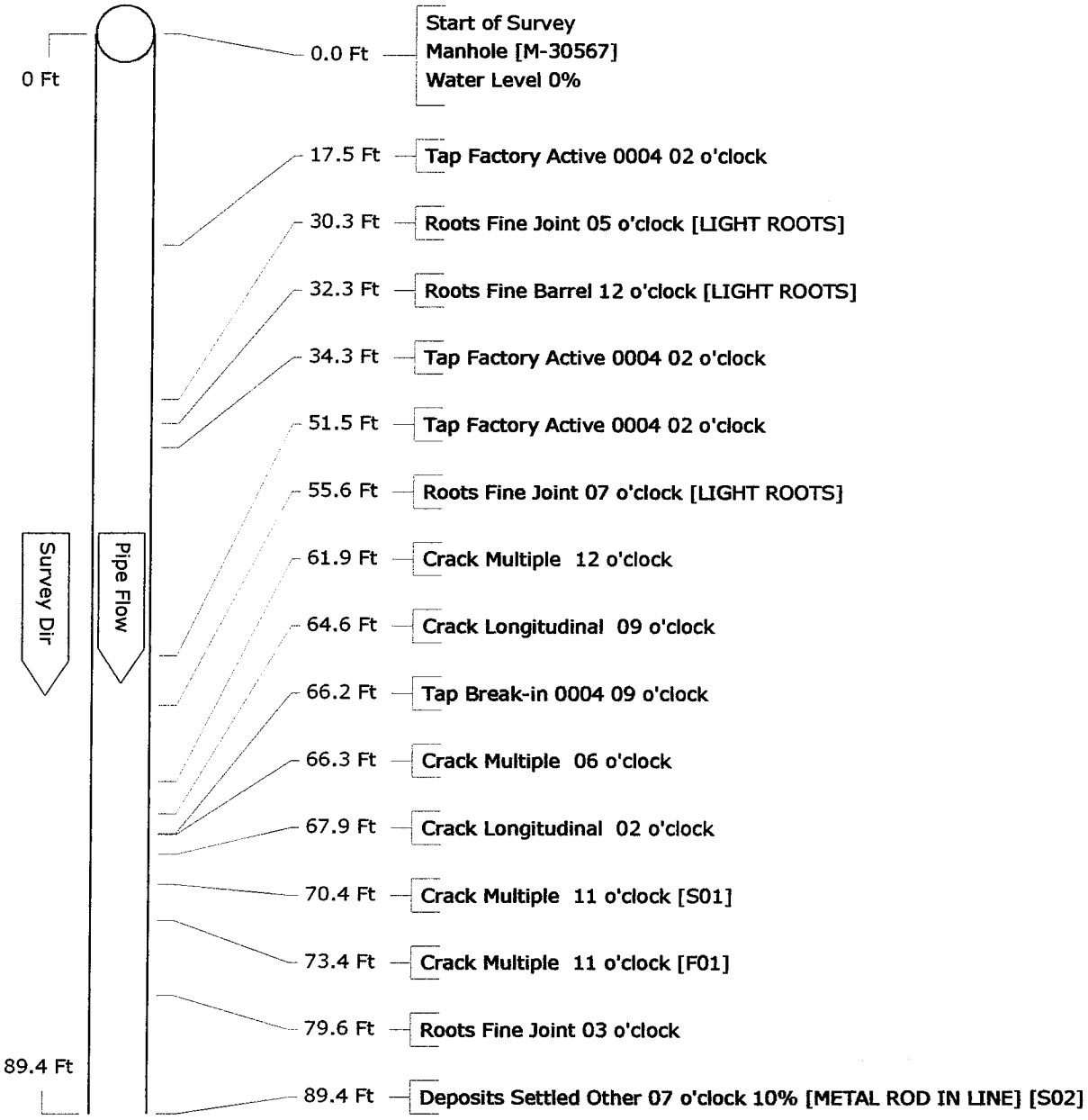
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



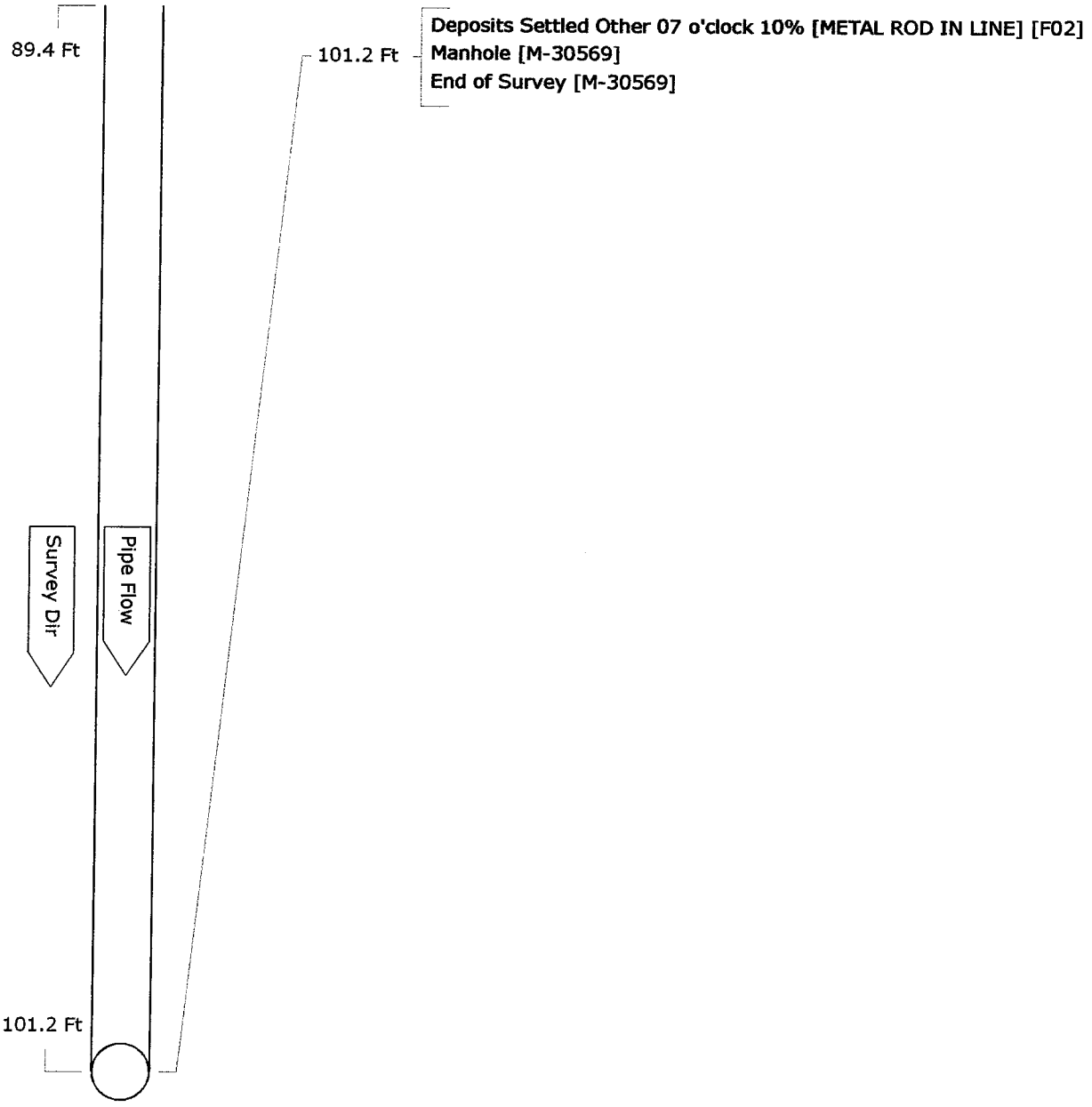
Pipe Graphic Report of PLR M-30567 X for DCWASA

Setup 169	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.E.BOUNDAR	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/01	***Time*** 14:08:00	***Street*** FLAGLER PL V ST-W ST	
Locality WASHINGTON D.C.	***Further location details*** N.W.			
Start M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30569	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 014	
Shape Circular	***Height*** 12 ***Width*** 10 ***ins*** ***Preclean*** J		***Year Cleaned***	
Material Clay Tile	***Joint length*** ***Ft*** ***Total length*** 101.2 ***Ft***		***Length Surveyed*** 101.20	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose Routine Assessment		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



Pipe Graphic Report of PLR M-30567 X for DCWASA

Setup 169	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.E.BOUNDARY	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/01	***Time*** 14:08:00	***Street*** FLAGLER PL V ST-W ST	
Locality WASHINGTON D.C.	***Further location details*** N.W.			
Start M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30569	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 014	
Shape Circular	***Height*** 12 ***Width*** 10 ***ins*** ***Preclean*** J		***Year Cleaned***	
Material Clay Tile	***Joint length*** ***Ft***	***Total length*** 101.2 ***Ft***	***Length Surveyed*** 101.20	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose Routine Assessment		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



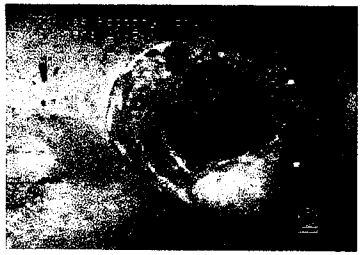
CCTV pictures of M-30567 X for **DCWASA**

Work Order ID 234 **Video** REI 014 **Surveyed On** 08/01/2006 **Direction** Downstream **Setup** 169

Street Name FLAGLER PL V ST-W ST **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30567 **To Manhole** M-30569

Date: 08/24/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/01/2006 **Dist:** 17.5 Ft
Obs: Tap Factory Active

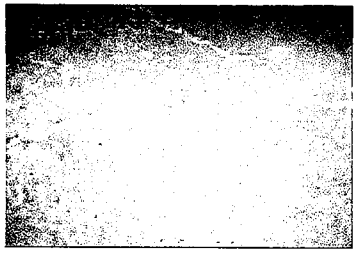
Date: 08/01/2006 **Dist:** 30.3 Ft
Obs: Roots Fine Joint

Date: 08/01/2006 **Dist:** 32.3 Ft
Obs: Roots Fine Barrel

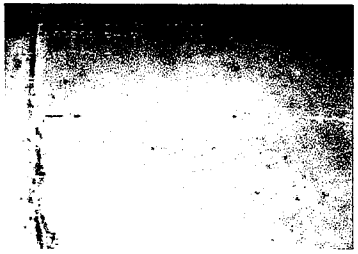
Date: 08/01/2006 **Dist:** 34.3 Ft
Obs: Tap Factory Active

Date: 08/01/2006 **Dist:** 51.5 Ft
Obs: Tap Factory Active

Date: 08/01/2006 **Dist:** 55.6 Ft
Obs: Roots Fine Joint

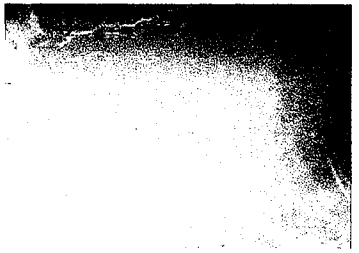


Date: 08/01/2006 **Dist:** 61.9 Ft
Obs: Crack Multiple

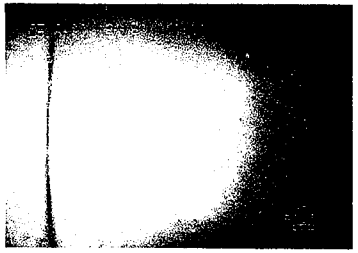


Date: 08/01/2006 **Dist:** 64.6 Ft
Obs: Crack Longitudinal

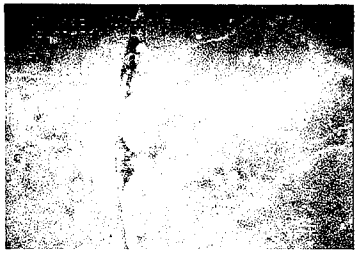
Date: 08/01/2006 **Dist:** 66.2 Ft
Obs: Tap Break-in



Date: 08/24/2006 **Dist:** 66.3 Ft
Obs: Crack Multiple

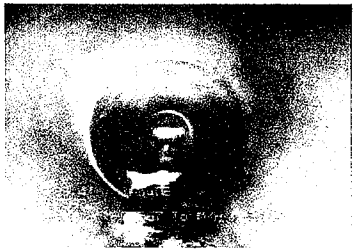


Date: 08/01/2006 **Dist:** 67.9 Ft
Obs: Crack Longitudinal



Date: 08/01/2006 **Dist:** 70.4 Ft
Obs: Crack Multiple

Date: 08/01/2006 **Dist:** 79.6 Ft
Obs: Roots Fine Joint



Date: 08/24/2006 **Dist:** 89.4 Ft
Obs: Deposits Settled Other

Date: 08/24/2006 **Dist:** 101.2 Ft
Obs: Manhole

CCTV pictures of M-30567 X **for** **DCWASA**

Work Order	ID 234	**Video**	REI 014	**Surveyed On**	08/01/2006	**Direction**	Downstream **Setup** 169
Street Name	FLAGLER PL V ST-W ST	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30567	**To Manhole**	M-30569

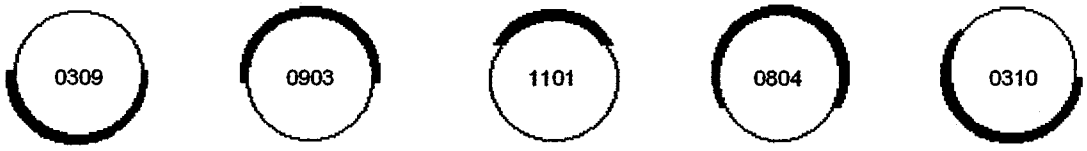
Date: 08/01/2006 **Dist:** 101.2 Ft
Obs: End of Survey

Tabular Report of PSR M-30357 X for DCWASA

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA
Drainage N.W. D.C.	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/08/2006	***Time*** 9:25:00	***Street*** U ST 1ST @ 2ND
Locality WASHINGTON,D.C.	***Further location details*** ID-234		
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade*** ***Ft***
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade*** ***Ft***
Use Combined	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016
Shape Circular	***Height*** 18 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.3
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose		***Cat***	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30357
0.0	00000		MWL	Water Level			05					
31.6			H	Hole					03			HOLE IN PIPE
44.3			TBA	Tap Break-in Active	06				09			
61.8			TBA	Tap Break-in Active	06				09			
79.8			TBA	Tap Break-in Active	06				09			
86.4			TBA	Tap Break-in Active	06				03			
89.3			TBA	Tap Break-in Active	08				03			
95.4			TBD	Tap Break-in Defective	06	02			09			
112.8			TBA	Tap Break-in Active	06				09			
127.7			TBA	Tap Break-in Active	06				10			
130.0			TBD	Tap Break-in Defective	08	02			03			
148.0			TBA	Tap Break-in Active	06				02			
151.2			TBA	Tap Break-in Active	06				09			
162.6			CM	Crack Multiple				J	11	01		
163.5			TBA	Tap Break-in Active	06				03			
168.9			TBA	Tap Break-in Active	06				09			
178.8			TBA	Tap Break-in Active	06				03			
185.0			TBA	Tap Break-in Active	06				09			
196.5			TBA	Tap Break-in Active	06				03			
202.4			TBA	Tap Break-in Active	06				09			
211.9			TBA	Tap Break-in Active	06				03			
213.8		S01	CL	Crack Longitudinal				J	12			
218.3			TBA	Tap Break-in Active	06				09			
229.2			TBA	Tap Break-in Active	06				02			
244.0			TBA	Tap Break-in Active	06				03			

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30357 X **for DCWASA**

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 9:25:00	***Street*** U ST 1ST @ 2ND		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 18	***Width*** ***ins***	***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.3		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose		***Cat***			
Additional info			Structural O&M Constructional		
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
259.9			TBA	Tap Break-in Active	06				03			
268.3		F01	CL	Crack Longitudinal				J	12			
268.3			AMH	Manhole								M-30639
268.3			FH	End of Survey								M-30639

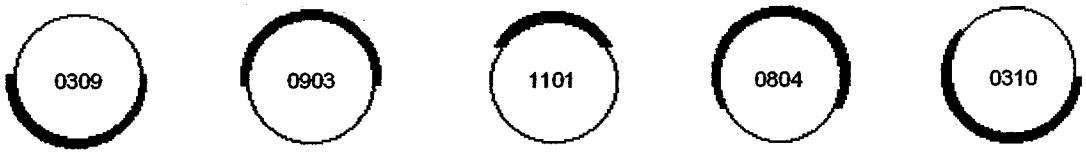
268.3 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 28	***Mean Defect*** 2.2	***Peak*** 3	***Mean Pipe*** 0.1
Service:	***Total*** 6	***Mean Defect*** 3	***Peak*** 3	***Mean Pipe*** 0

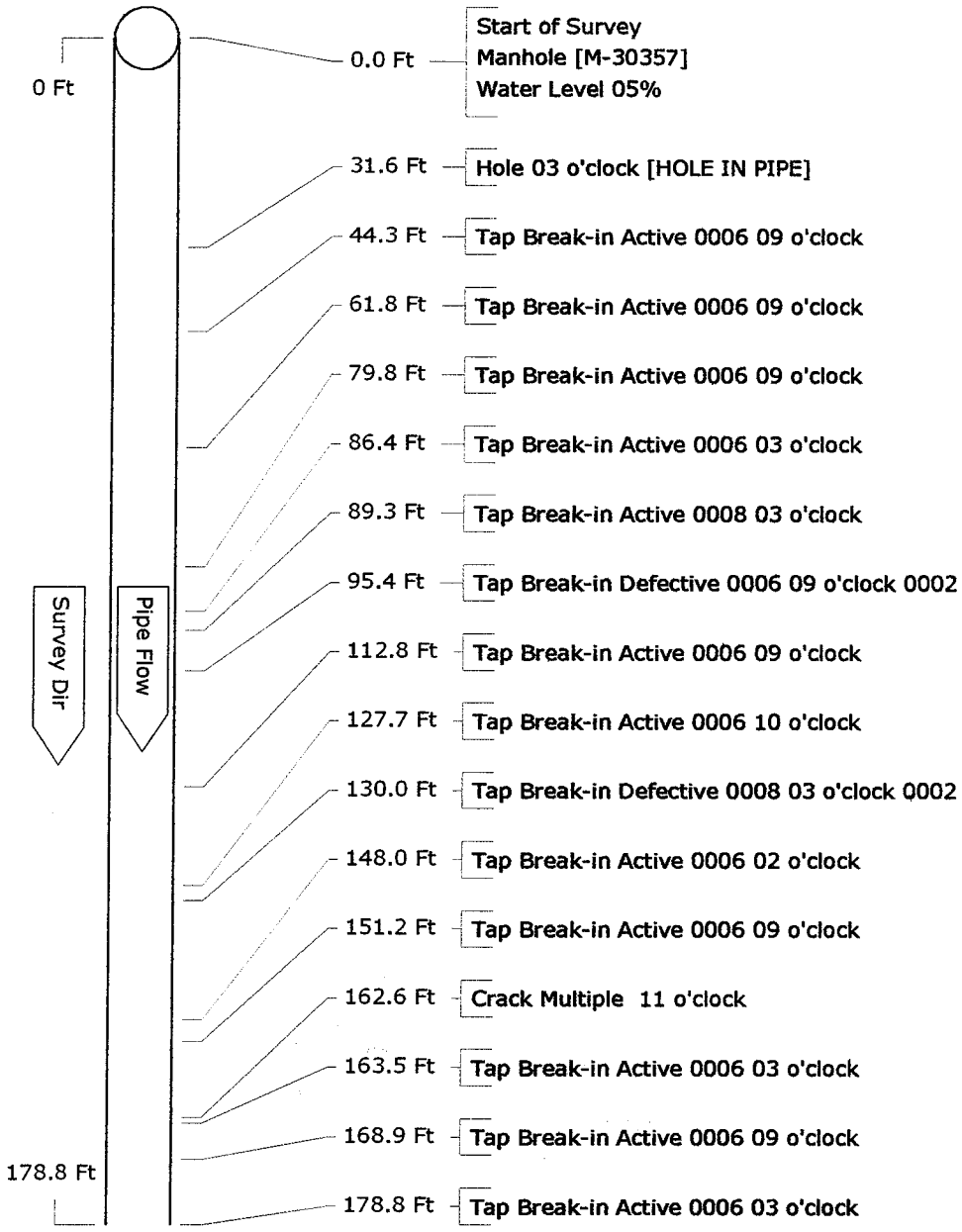
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



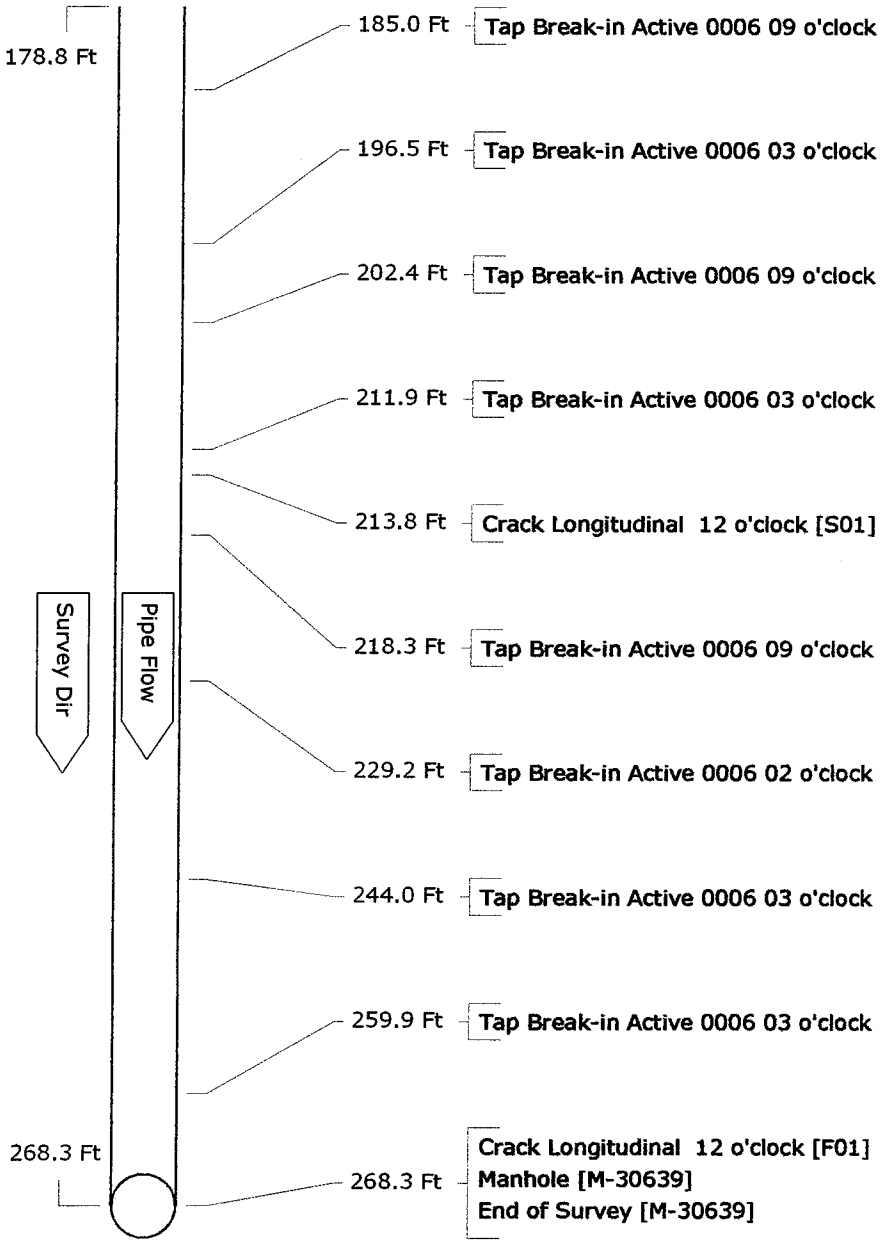
Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA	
Drainage N.W. D.C.	**Survey Customer** DCWASA			
P/O # ID 234	**Date** 2006/08/08	**Time** 09:25:00	**Street** U ST 1ST @ 2ND	
Locality WASHINGTON,D.C.	**Further location details** ID-234			
Start M-30357	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Finish M-30639	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Use Combined	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016	
Shape Circular	**Height** 18 **Width**	**ins** **Preclean** J	**Year Cleaned**	
Material Vitrified Clay Pipe	**Joint length** **Ft**	**Total length** 268.3 **Ft**	**Length Surveyed** 268.30	
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry	
Purpose		**Cat**		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA			
P/O # ID 234	***Date*** 2006/08/08	***Time*** 09:25:00	***Street*** U ST 1ST @ 2ND	
Locality WASHINGTON,D.C.	***Further location details*** ID-234			
Start M-30357	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Finish M-30639	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control***	***Tape/Media #*** REI 016	
Shape Circular	***Height*** 18 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 268.3 ***Ft***	***Length Surveyed*** 268.30	
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry	
Purpose		***Cat***		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				



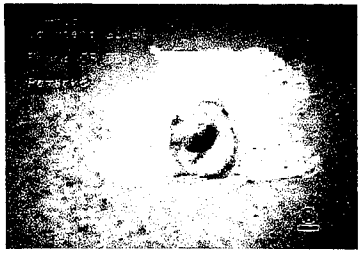
CCTV pictures of M-30357 X for **DCWASA**

Work Order ID 234 **Video** REI 016 **Surveyed On** 08/08/2006 **Direction** Downstream **Setup** 14

Street Name U ST 1ST @ 2ND **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

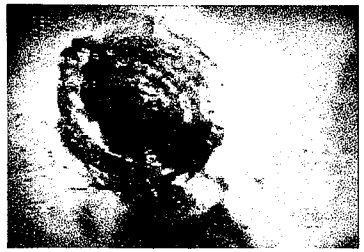
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30357 **To Manhole** M-30639

Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

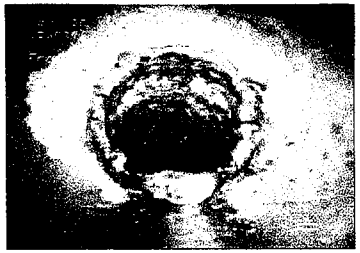


Date: 08/29/2006 **Dist:** 31.6 Ft
Obs: Hole

Date: 08/29/2006 **Dist:** 44.3 Ft
Obs: Tap Break-in Active

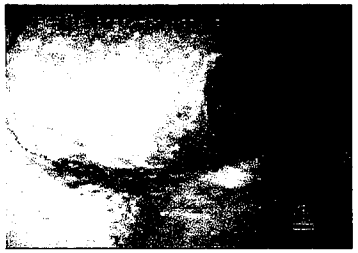


Date: 08/29/2006 **Dist:** 61.8 Ft
Obs: Tap Break-in Active

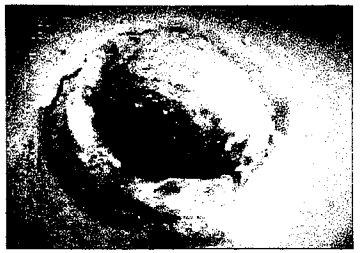


Date: 08/29/2006 **Dist:** 79.8 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 86.4 Ft
Obs: Tap Break-in Active



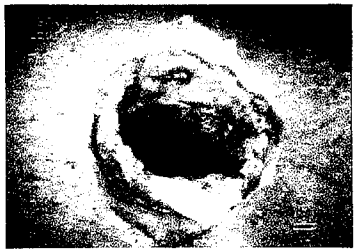
Date: 08/29/2006 **Dist:** 89.3 Ft
Obs: Tap Break-in Active



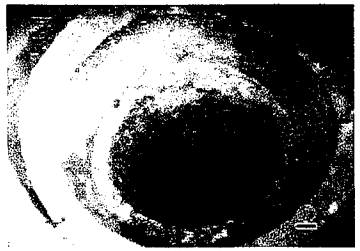
Date: 08/29/2006 **Dist:** 95.4 Ft
Obs: Tap Break-in Defective

Date: 08/29/2006 **Dist:** 112.8 Ft
Obs: Tap Break-in Active

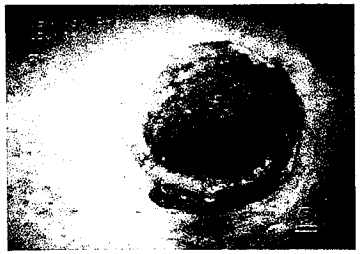
Date: 08/29/2006 **Dist:** 127.7 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 127.7 Ft
Obs: Tap Break-in Active

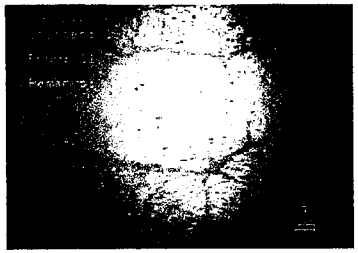


Date: 08/29/2006 **Dist:** 130.0 Ft
Obs: Tap Break-in Defective



Date: 08/29/2006 **Dist:** 148.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 151.2 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 162.6 Ft
Obs: Crack Multiple

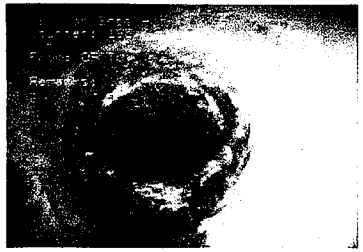
Date: 08/29/2006 **Dist:** 163.5 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30357 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 14
Street Name	U ST 1ST @ 2ND	**City Name**	WASHINGTON,D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30357	**To Manhole**	M-30639

Date: 08/29/2006 **Dist:** 168.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 178.8 Ft
Obs: Tap Break-in Active

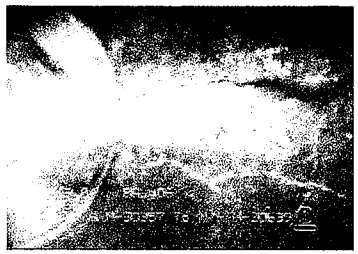


Date: 08/29/2006 **Dist:** 185.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 196.5 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 202.4 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 211.9 Ft
Obs: Tap Break-in Active

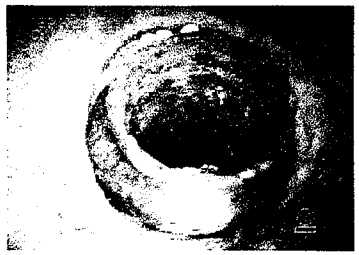


Date: 08/29/2006 **Dist:** 213.8 Ft
Obs: Crack Longitudinal

Date: 08/29/2006 **Dist:** 218.3 Ft
Obs: Tap Break-in Active

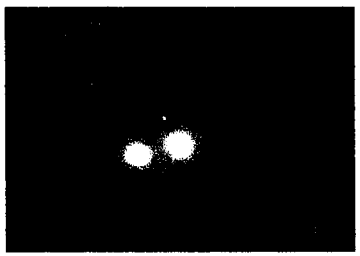
Date: 08/29/2006 **Dist:** 229.2 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 244.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 259.9 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 268.3 Ft
Obs: End of Survey

Tabular Report of PSR M-30639 X for DCWASA

Setup 15	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/08/2006	***Time*** 11:09:00	***Street*** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30641	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016		
Shape Circular	***Height*** 12	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** ***Ft***	***Length Surveyed*** 243.5		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose	***Cat***				
Additional info			Structural O&M Constructional		
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
207.5			TBA	Tap Break-in Active	06				03			
221.5			TBA	Tap Break-in Active	06				02			
222.2			TBA	Tap Break-in Active	06				09			
235.0		F01	CM	Crack Multiple					07	05		DEFECT WANDERS
235.0		F02	DAGS	Deposits Attached Grease			10	J	07	05		LIGHT GREASE
243.5			AMH	Manhole								M-30641
243.5			FH	End of Survey								M-30641

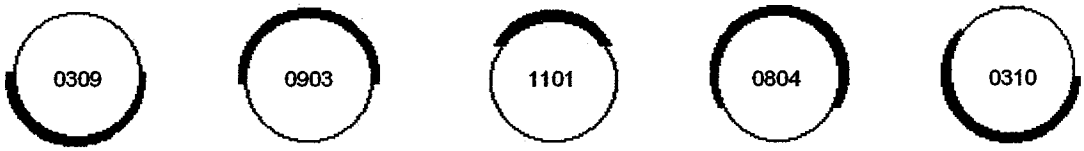
243.5 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 139	***Mean Defect*** 3	***Peak*** 6	***Mean Pipe*** 0.6
Service:	***Total*** 26	***Mean Defect*** 0	***Peak*** 2	***Mean Pipe*** 0.1

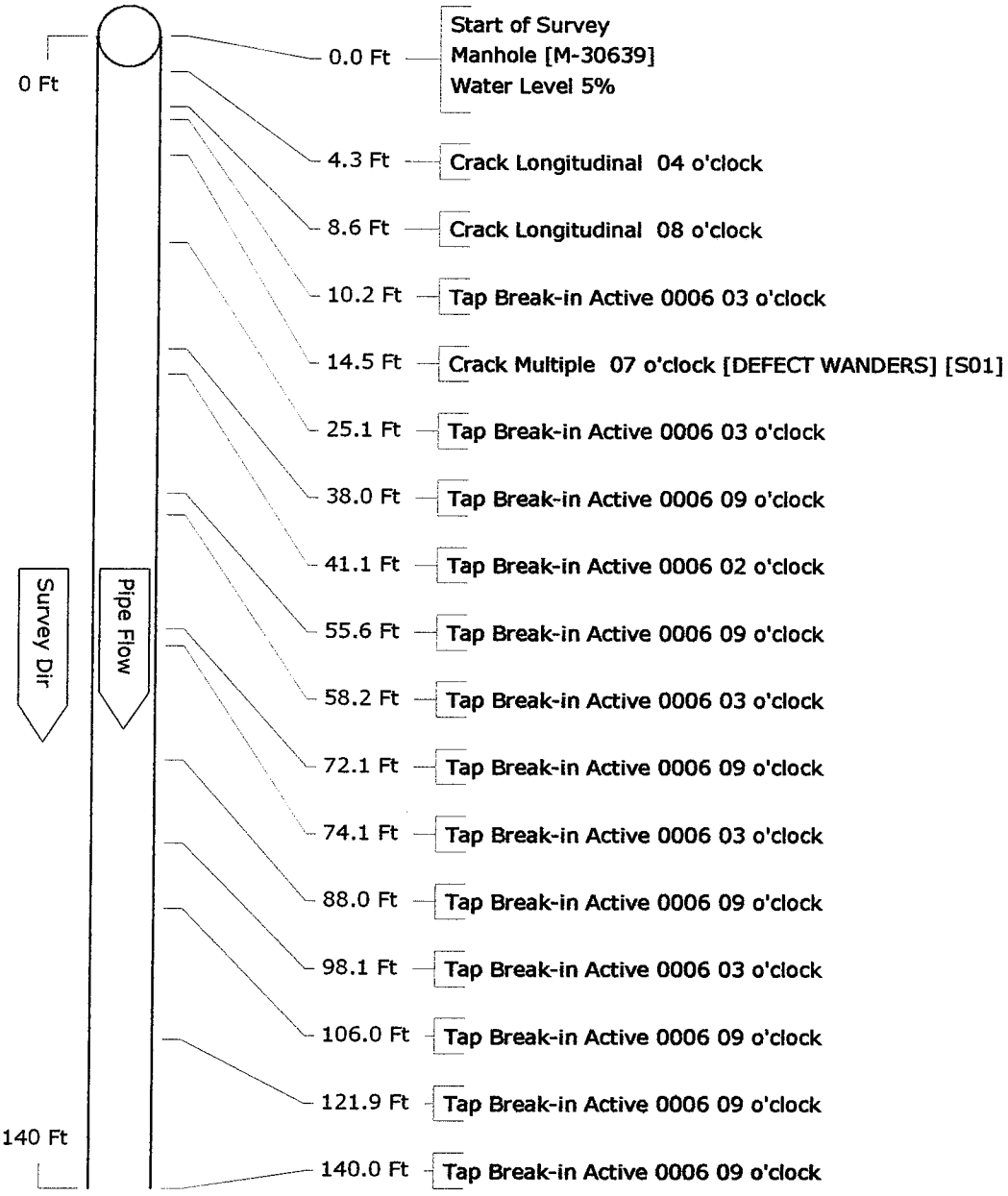
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Pipe Graphic Report of PLR M-30639 X for DCWASA

Setup 15	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/08	**Time** 11:09:00	**Street** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30639	**Rim to invert** 10.20	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30641	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016		
Shape Circular	**Height** 12 **Width**	**ins** **Preclean** J	**Year Cleaned** 8/7/2006		
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length**	**Ft** **Length Surveyed** 243.50		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					

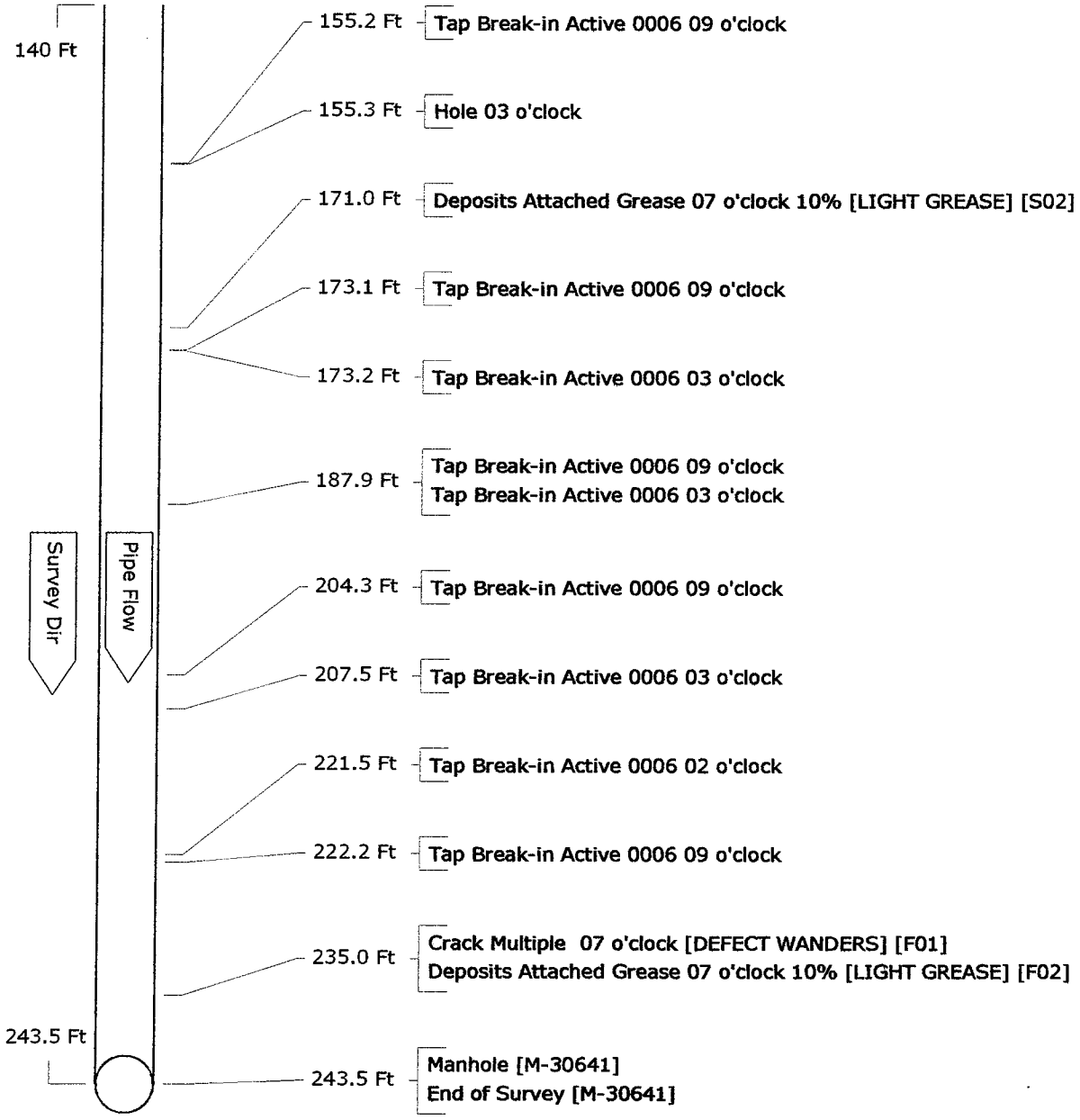


Pipe Graphic Report of PLR M-30639 X for DCWASA

Setup 15	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA	
Drainage 1ST STREET	**Survey Customer** DCWASA			
P/O # ID 234	**Date** 2006/08/08	**Time** 11:09:00	**Street** 2030 FLAGLER PLACE	
Locality WASHINGTON D.C.	**Further location details**			
Start M-30639	**Rim to invert** 10.20	**Grade to invert**	**Rim to grade**	**Ft**
Finish M-30641	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Use Sanitary	**Direction** Downstream	**Flow control**	**Tape/Media #** REI 016	
Shape Circular	**Height** 12 **Width**	**ins Preclean** J	**Year Cleaned** 8/7/2006	
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length**	**Ft Length Surveyed** 243.50	
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry	
Purpose		**Cat**		

Additional info

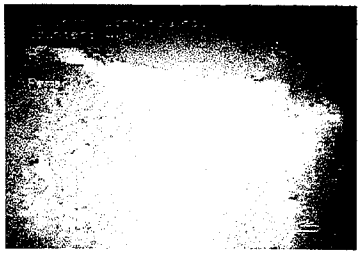
Location Light Highway (rural, light traffic, town back st, estate st & parking



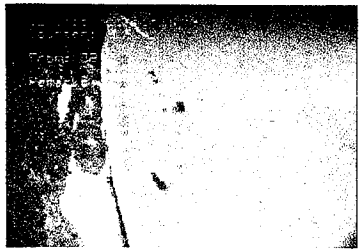
CCTV pictures of M-30639 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 15
Street Name	2030 FLAGLER PLACE	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30639	**To Manhole**	M-30641

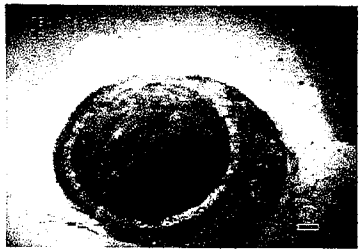
Date: 08/24/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/29/2006 **Dist:** 4.3 Ft
Obs: Crack Longitudinal

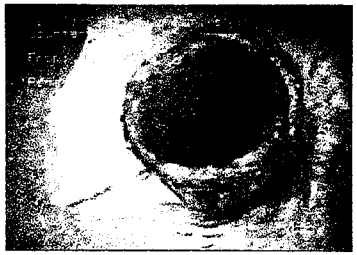


Date: 08/29/2006 **Dist:** 8.6 Ft
Obs: Crack Longitudinal

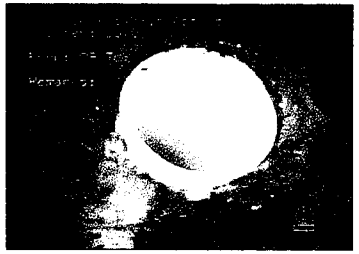


Date: 08/29/2006 **Dist:** 10.2 Ft
Obs: Tap Break-in Active

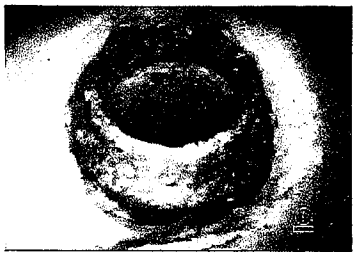
Date: 08/29/2006 **Dist:** 14.5 Ft
Obs: Crack Multiple



Date: 08/29/2006 **Dist:** 25.1 Ft
Obs: Tap Break-in Active

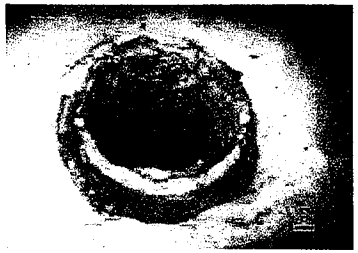


Date: 08/29/2006 **Dist:** 38.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 41.1 Ft
Obs: Tap Break-in Active

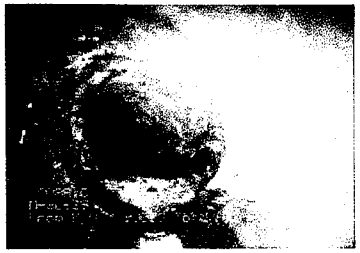
Date: 08/29/2006 **Dist:** 55.6 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 58.2 Ft
Obs: Tap Break-in Active

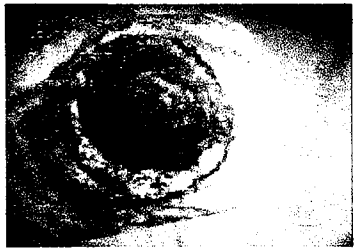
Date: 08/29/2006 **Dist:** 72.1 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 74.1 Ft
Obs: Tap Break-in Active

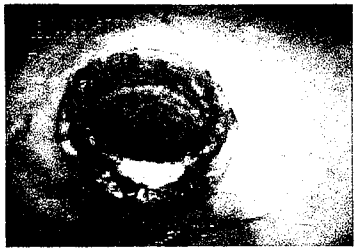


Date: 08/29/2006 **Dist:** 88.0 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 98.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 106.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 121.9 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30639 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 15
Street Name	2030 FLAGLER PLACE	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30639	**To Manhole**	M-30641


Date: 08/29/2006 **Dist:** 140.0 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 155.2 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 155.3 Ft
Obs: Hole


Date: 08/29/2006 **Dist:** 171.0 Ft
Obs: Deposits Attached Grease


Date: 08/29/2006 **Dist:** 173.1 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 173.2 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 187.9 Ft
Obs: Tap Break-in Active

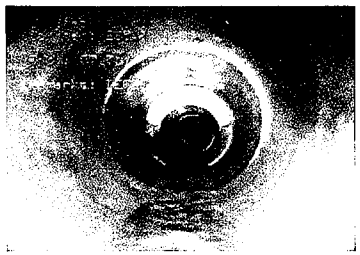

Date: 08/29/2006 **Dist:** 187.9 Ft
Obs: Tap Break-in Active

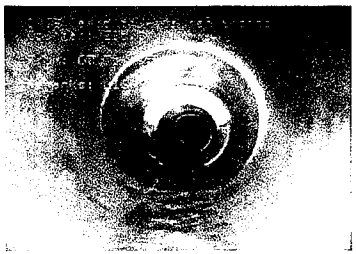

Date: 08/29/2006 **Dist:** 204.3 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 207.5 Ft
Obs: Tap Break-in Active

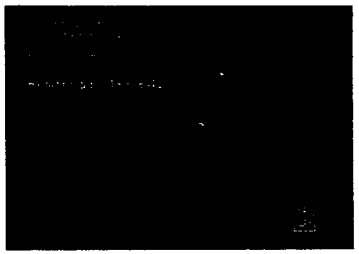

Date: 08/29/2006 **Dist:** 221.5 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 222.2 Ft
Obs: Tap Break-in Active


Date: 08/29/2006 **Dist:** 235.0 Ft
Obs: Crack Multiple


Date: 08/29/2006 **Dist:** 235.0 Ft
Obs: Deposits Attached Grease


Date: 08/29/2006 **Dist:** 243.5 Ft
Obs: Manhole

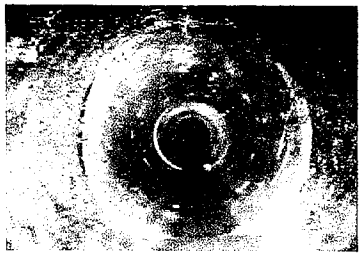

Date: 08/29/2006 **Dist:** 243.5 Ft
Obs: End of Survey

CCTV pictures of M-30558 X **for** **DCWASA**

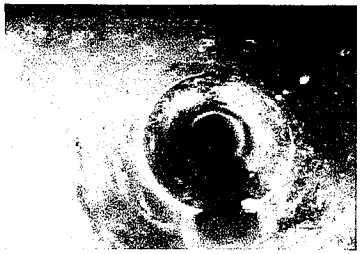
Work Order ID 234 **Video** REI 017 **Surveyed On** 08/09/2006 **Direction** Downstream **Setup** 19

Street Name FLAGLER PL W ST ADAMS ST **City Name** WASHINGTON,D.C. **ZIP Code** **Weather** Dry

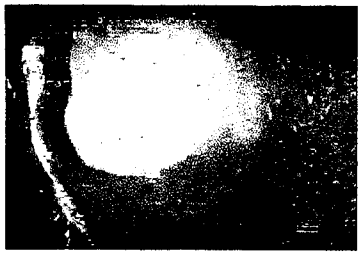
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30558 **To Manhole** M-30560



Date: 08/29/2006 **Dist:** 79.5 Ft
Obs: Roots Fine Joint



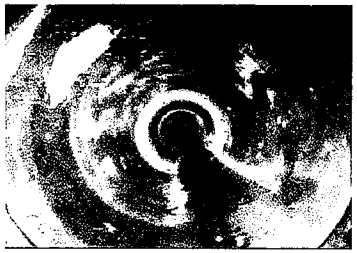
Date: 08/29/2006 **Dist:** 84.4 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 91.8 Ft
Obs: Tap Factory Capped

Date: 08/29/2006 **Dist:** 99.8 Ft
Obs: Tap Break-in Defective

Date: 08/29/2006 **Dist:** 99.8 Ft
Obs: Crack Longitudinal



Date: 08/29/2006 **Dist:** 101.2 Ft
Obs: Infil Dripper

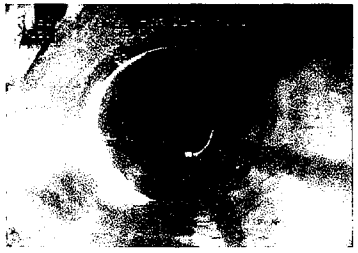
Date: 08/29/2006 **Dist:** 101.3 Ft
Obs: Hole

Date: 08/29/2006 **Dist:** 112.3 Ft
Obs: Tap Factory Capped

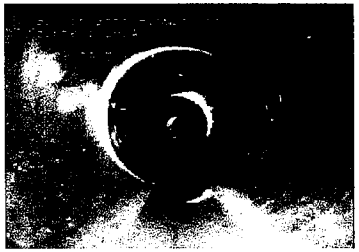
Date: 08/29/2006 **Dist:** 120.7 Ft
Obs: Tap Break-in Defective

Date: 08/29/2006 **Dist:** 134.3 Ft
Obs: Tap Factory Capped

Date: 08/29/2006 **Dist:** 135.1 Ft
Obs: Tap Break-in Defective



Date: 08/29/2006 **Dist:** 156.0 Ft
Obs: Tap Break-in Defective



Date: 08/29/2006 **Dist:** 169.9 Ft
Obs: Tap Break-in Defective

Date: 08/29/2006 **Dist:** 185.8 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 185.8 Ft
Obs: End of Survey

Tabular Report of PSR M-30563 X for DCWASA

Setup 170 **Surveyor** A.THOMPSON **Certificate #** U-106-2462 **System Owner** DCWASA
Drainage N.E.BOUNDAR **Survey Customer** DCWASA
P/O # ID 234 **Date** 08/01/2006 **Time** 12:12:00 **Street** FLAGLER PL V ST-W ST
Locality WASHINGTON D.C. **Further location details** N.W.

Start M-30563 **Rim to invert** 12.00 **Grade to invert** **Rim to grade** **Ft**
Finish M-30567 **Rim to invert** **Grade to invert** **Rim to grade** **Ft**

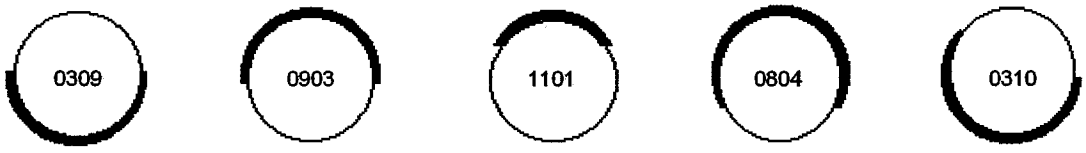
Use Combined **Direction** Down **Flow control** Not controlled **Tape/Media #** REI 014
Shape Circular **Height** 10 **Width** 10 **ins** **Preclean** J **Year Cleaned**
Material Clay Tile **Joint length** **Ft** **Total length** 235.8 **Ft** **Length Surveyed** 235.8
Lining **Year laid** **Year rehabilitated** **Weather** Dry
Purpose Routine Assessment **Cat**

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	03627		ST	Start of Survey								
0.0	03627		AMH	Manhole								M-30563
0.0	03627		MWL	Water Level			0					
3.4			TBA	Tap Break-in Active	04				02			
9.8		S01	DSF	Deposits Settled Fine			10		06			LIGHT DEBRIS 1IN
14.2			DSF	Deposits Settled Fine			15		05	07		1IN-1 1/2IN
20.7			TBA	Tap Break-in Active	04				02			
20.8			DAE	Deposits Attached Encrustation			05	J	05			
20.8		F01	DSF	Deposits Settled Fine			10		06			LIGHT DEBRIS 1IN
27.4		S02	DSF	Deposits Settled Fine			05		05	07		LIGHT DEBRIS
36.1			DSZ	Deposits Settled Other			05		06			METAL ROD IN LINE
37.6			TBA	Tap Break-in Active	04				02			
37.6			DAE	Deposits Attached Encrustation			05	J	01	06		
44.0			DSF	Deposits Settled Fine			05	J	06			
47.6		S03	FL	Fracture Longitudinal				J	03			
47.6		S04	FL	Fracture Longitudinal				J	09			
48.0			BSV	Broken Soil Visible					03			
51.1		F03	FL	Fracture Longitudinal				J	03			
51.1		F04	FL	Fracture Longitudinal				J	09			
52.9			TBA	Tap Break-in Active	04				03			
54.5		F02	DSF	Deposits Settled Fine			05		05	07		LIGHT DEBRIS
69.0			TBD	Tap Break-in Defective	04	02			03			
82.7			TFC	Tap Factory Capped	04				02			
85.6			TBD	Tap Break-in Defective	04	01			02			
104.0			TBD	Tap Break-in Defective	04	01			03			
104.0			DAE	Deposits Attached Encrustation			05	J	03	06		
106.8			DAE	Deposits Attached Encrustation			05	J	03	06		

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



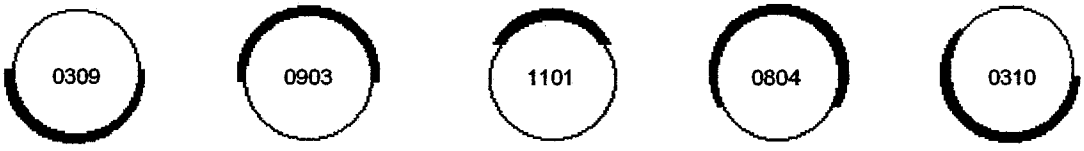
Tabular Report of PSR M-30563 X for DCWASA

Setup 170	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.E.BOUNDAR	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/01/2006	***Time*** 12:12:00	***Street*** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	***Further location details*** N.W.				
Start M-30563	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 014		
Shape Circular	***Height*** 10	***Width*** 10 ***ins***	***Preclean*** J	***Year Cleaned***	
Material Clay Tile	***Joint length*** ***Ft***	***Total length*** 235.8 ***Ft***	***Length Surveyed*** 235.8		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info		Structural	O&M	Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous	Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
109.0			TFC	Tap Factory Capped	04				02			
118.7			CL	Crack Longitudinal				J	12			
120.0			CC	Crack Circumferential					06	12		
120.2			TBD	Tap Break-in Defective	04	01			03			
121.5		S05	DAGS	Deposits Attached Grease			05		12			LIGHT GREASE
121.5			CL	Crack Longitudinal				J	12			
124.8			DAE	Deposits Attached Encrustation			05	J	03	05		
129.2			TFC	Tap Factory Capped	04				02			
129.2		F05	DAGS	Deposits Attached Grease			05		12			LIGHT GREASE
136.0			DAE	Deposits Attached Encrustation			05	J	02	05		
137.4			TBD	Tap Break-in Defective	04	01			03			
139.2		S06	DAE	Deposits Attached Encrustation			05	J	07	05		
149.5			TFC	Tap Factory Capped	04				02			
153.8			RTC	Roots Tap Connection			15		03	06		
154.4			TBA	Tap Break-in Active	04				03			
169.4			TFA	Tap Factory Active	04				02			
175.0			CL	Crack Longitudinal					12			
182.2			OBI	Obstacle Intruding Thru Wall			10		03	06		METAL ROD IN JOINT/LINE
189.8			TFA	Tap Factory Active	04				02			
198.6			TBA	Tap Break-in Active	04				03			
213.3			TFC	Tap Factory Capped	04				02			
216.4			TBA	Tap Break-in Active	04				02			
232.6			TBA	Tap Break-in Active	04				03			
235.8		F06	DAE	Deposits Attached Encrustation			05	J	07	05		
235.8			AMH	Manhole								M-30567
235.8			FH	End of Survey								M-30567

235.8 ***Ft*** ***Total Length Surveyed***

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30563 X **for DCWASA**

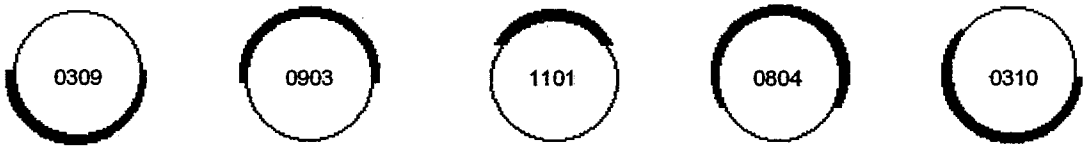
Setup 170	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.E.BOUNDAR	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/01/2006	***Time*** 12:12:00	***Street*** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	***Further location details*** N.W.				
Start M-30563	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 014		
Shape Circular	***Height*** 10	***Width*** 10 ***ins***	***Preclean*** J	***Year Cleaned***	
Material Clay Tile	***Joint length***	***Ft*** ***Total length*** 235.8 ***Ft***	***Length Surveyed*** 235.8		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info		Structural	O&M	Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous	Hydraulic		

Scores

Structural:	***Total*** 19	***Mean Defect*** 2.4	***Peak*** 6	***Mean Pipe*** 0.1
Service:	***Total*** 114	***Mean Defect*** 2.4	***Peak*** 5	***Mean Pipe*** 0.5

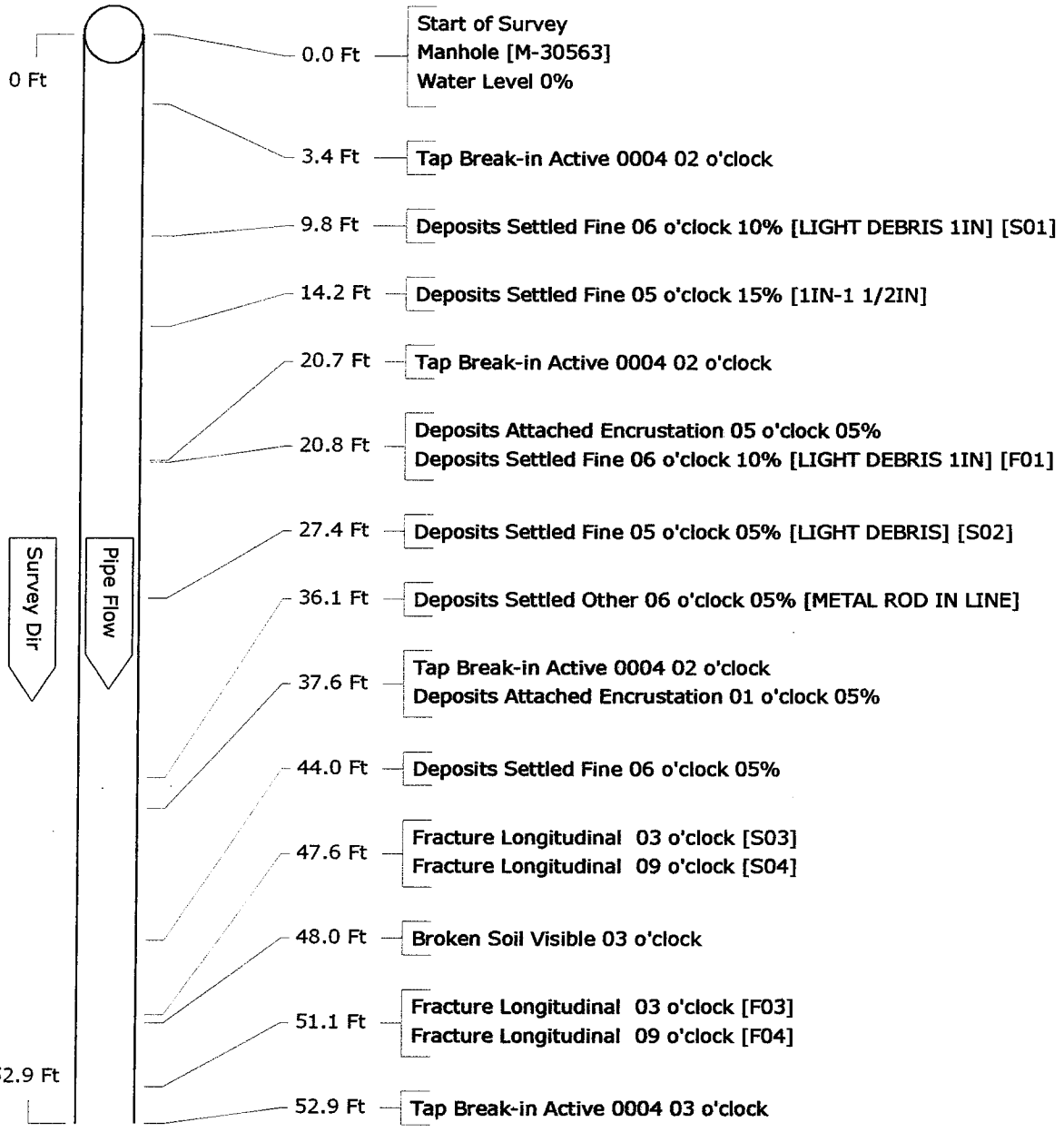
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



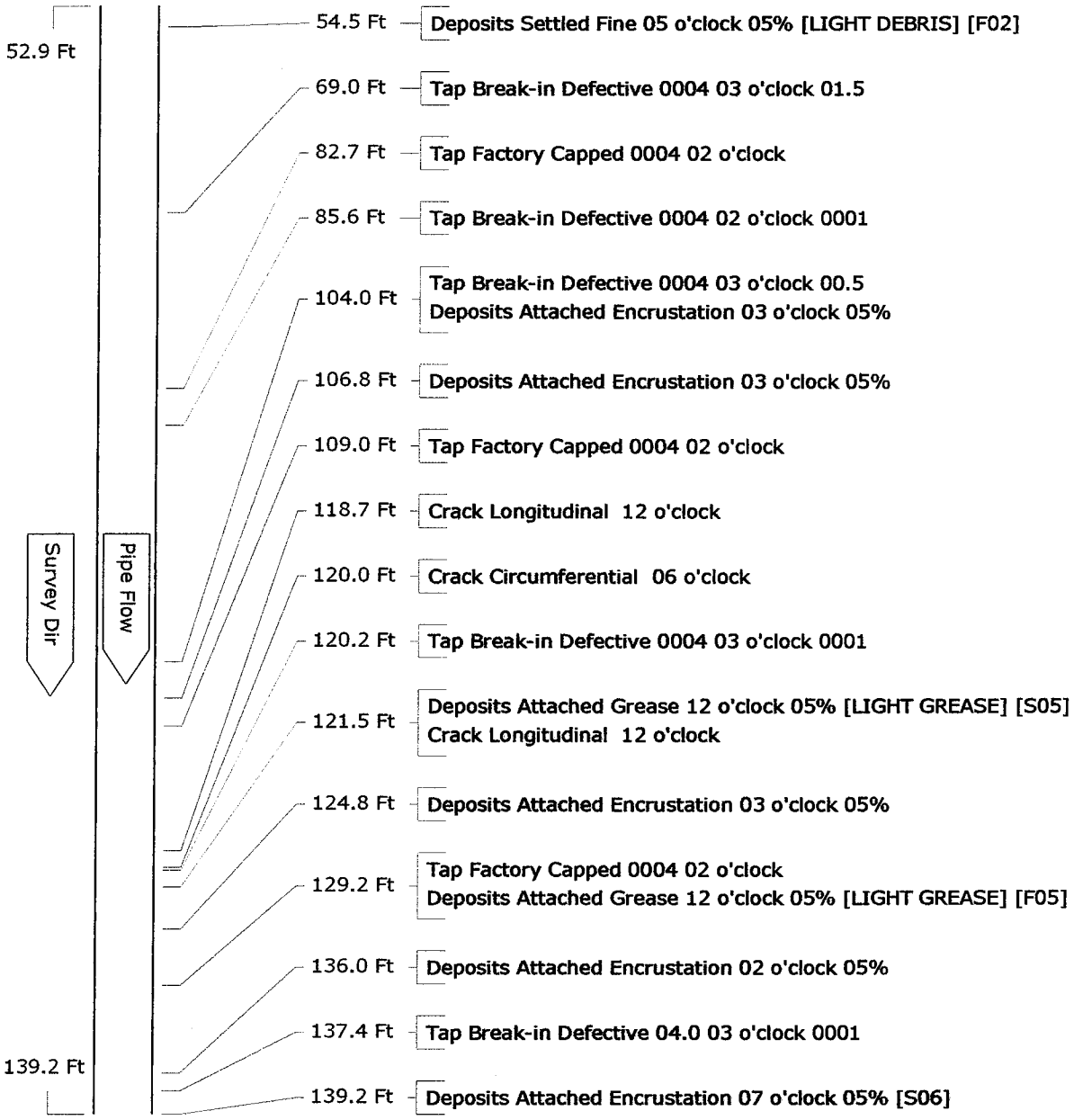
Pipe Graphic Report of PLR M-30563 X for DCWASA

Setup 170	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462		***System Owner*** DCWASA	
Drainage N.E.BOUNDARY	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/01	***Time*** 12:12:00	***Street*** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	***Further location details*** N.W.				
Start M-30563	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 014		
Shape Circular	***Height*** 10 ***Width*** 10 ***ins*** ***Preclean*** J		***Year Cleaned***		
Material Clay Tile	***Joint length*** ***Ft*** ***Total length*** 235.8 ***Ft***		***Length Surveyed*** 235.80		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



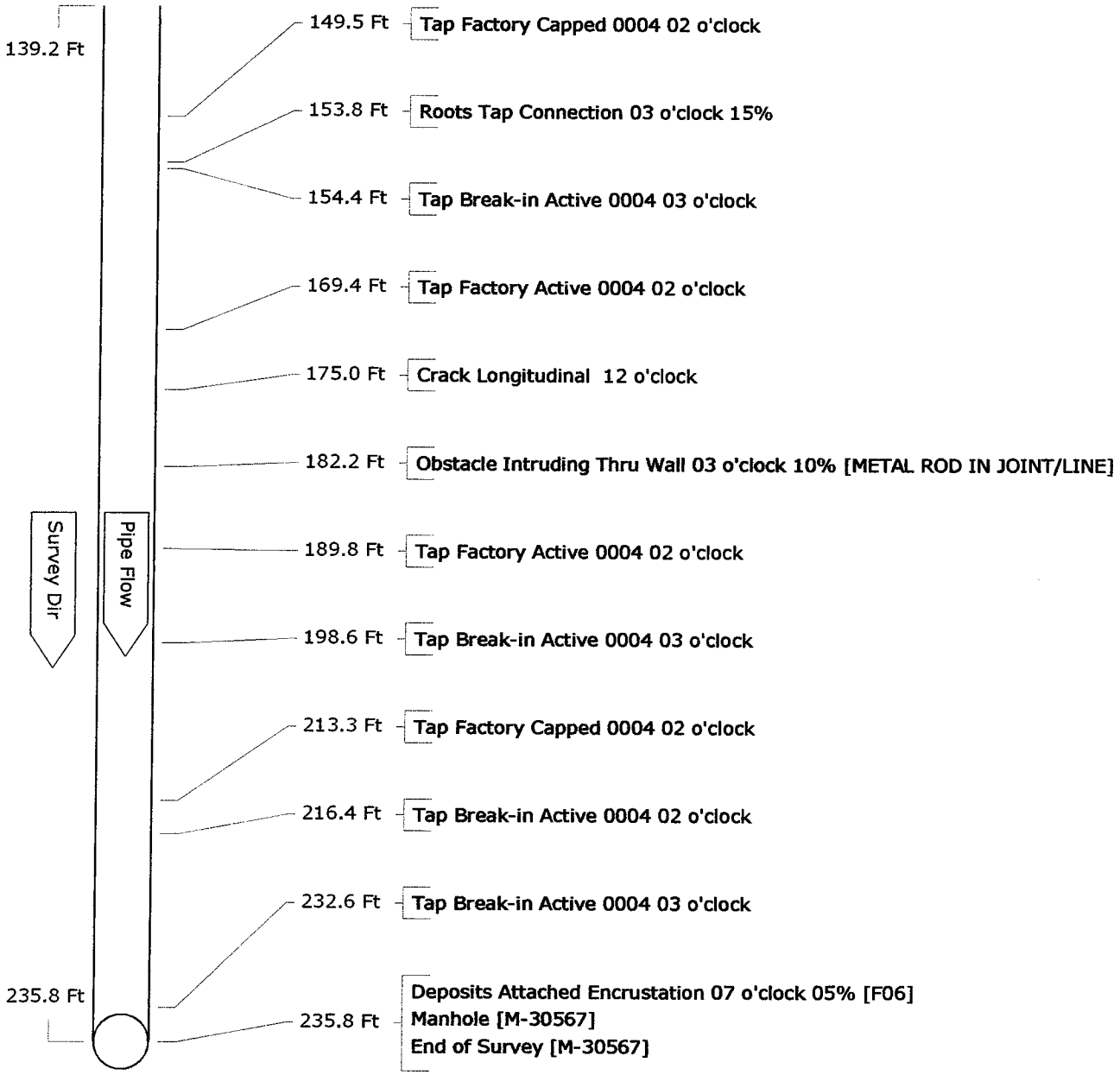
Pipe Graphic Report of PLR M-30563 X for DCWASA

Setup 170	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.E.BOUNDAR	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/01	***Time*** 12:12:00	***Street*** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	***Further location details*** N.W.				
Start M-30563	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30567	***Rim to invert***	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 014		
Shape Circular	***Height*** 10 ***Width*** 10 ***ins***	***Preclean*** J	***Year Cleaned***		
Material Clay Tile	***Joint length*** ***Ft***	***Total length*** 235.8 ***Ft***	***Length Surveyed*** 235.80		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



Pipe Graphic Report of PLR M-30563 X for DCWASA

Setup 170	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA	
Drainage N.E.BOUNDAR	**Survey Customer** DCWASA			
P/O # ID 234	**Date** 2006/08/01	**Time** 12:12:00	**Street** FLAGLER PL V ST-W ST	
Locality WASHINGTON D.C.	**Further location details** N.W.			
Start M-30563	**Rim to invert** 12.00	**Grade to invert**	**Rim to grade**	**Ft**
Finish M-30567	**Rim to invert**	**Grade to invert**	**Rim to grade**	**Ft**
Use Combined	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 014	
Shape Circular	**Height** 10 **Width** 10 **ins**	**Preclean** J	**Year Cleaned**	
Material Clay Tile	**Joint length** **Ft**	**Total length** 235.8 **Ft**	**Length Surveyed** 235.80	
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry	
Purpose Routine Assessment		**Cat**		
Additional info				
Location Light Highway (rural, light traffic, town back st, estate st & parking				

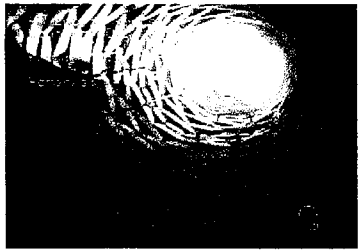


CCTV pictures of M-30563 X for **DCWASA**

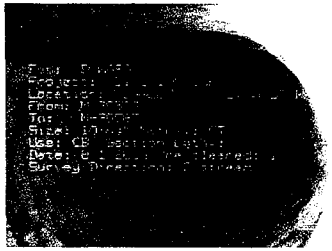
Work Order ID 234 **Video** REI 014 **Surveyed On** 08/01/2006 **Direction** Downstream **Setup** 170

Street Name FLAGLER PL V ST-W ST **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

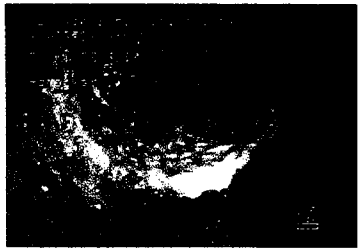
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30563 **To Manhole** M-30567



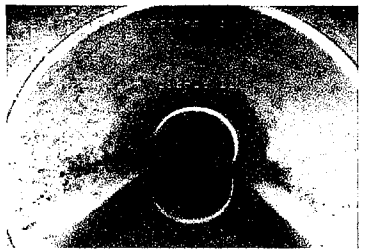
Date: 08/01/2006 **Dist:** 0.0 Ft
Obs: Start of Survey



Date: 08/24/2006 **Dist:** 0.0 Ft
Obs: Manhole



Date: 08/01/2006 **Dist:** 3.4 Ft
Obs: Tap Break-in Active

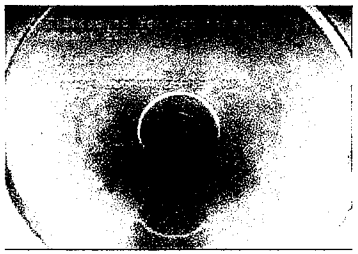


Date: 08/01/2006 **Dist:** 9.8 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 14.2 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 20.7 Ft
Obs: Tap Break-in Active

Date: 08/01/2006 **Dist:** 20.8 Ft
Obs: Deposits Attached Encrustation



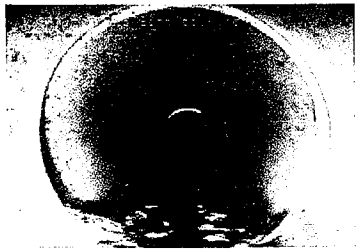
Date: 09/11/2006 **Dist:** 20.8 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 27.4 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 36.1 Ft
Obs: Deposits Settled Other

Date: 08/01/2006 **Dist:** 37.6 Ft
Obs: Tap Break-in Active

Date: 08/01/2006 **Dist:** 37.6 Ft
Obs: Deposits Attached Encrustation



Date: 08/01/2006 **Dist:** 44.0 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 47.6 Ft
Obs: Fracture Longitudinal

Date: 08/01/2006 **Dist:** 47.6 Ft
Obs: Fracture Longitudinal

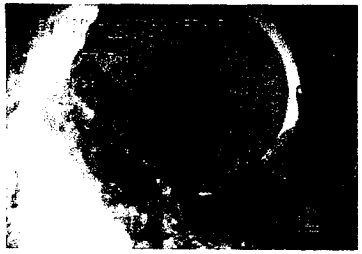
Date: 09/11/2006 **Dist:** 51.1 Ft
Obs: Fracture Longitudinal

CCTV pictures of M-30563 X for **DCWASA**

Work Order ID 234 **Video** REI 014 **Surveyed On** 08/01/2006 **Direction** Downstream **Setup** 170

Street Name FLAGLER PL V ST-W ST **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

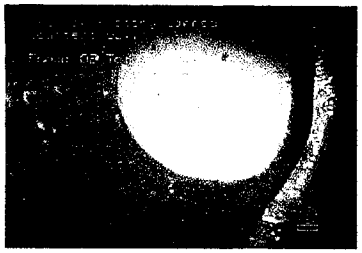
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30563 **To Manhole** M-30567



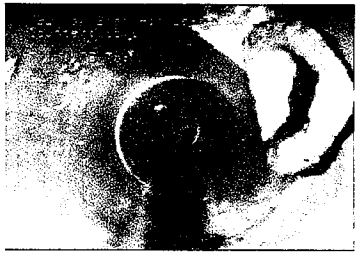
Date: 08/01/2006 **Dist:** 52.9 Ft
Obs: Tap Break-in Active

Date: 09/11/2006 **Dist:** 54.5 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 69.0 Ft
Obs: Tap Break-in Defective



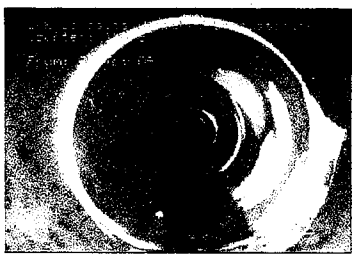
Date: 08/01/2006 **Dist:** 82.7 Ft
Obs: Tap Factory Capped



Date: 08/01/2006 **Dist:** 85.6 Ft
Obs: Tap Break-in Defective

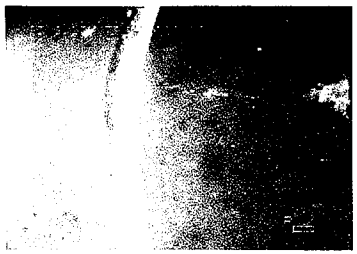
Date: 08/01/2006 **Dist:** 104.0 Ft
Obs: Tap Break-in Defective

Date: 08/01/2006 **Dist:** 104.0 Ft
Obs: Deposits Attached Encrustation

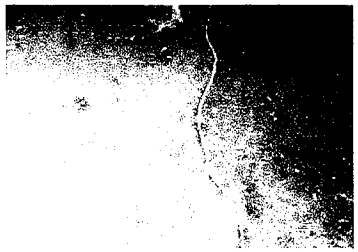


Date: 08/01/2006 **Dist:** 106.8 Ft
Obs: Deposits Attached Encrustation

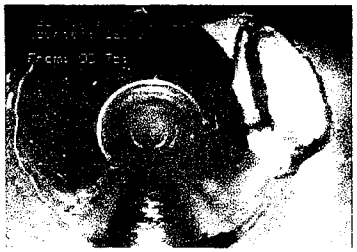
Date: 08/01/2006 **Dist:** 109.0 Ft
Obs: Tap Factory Capped



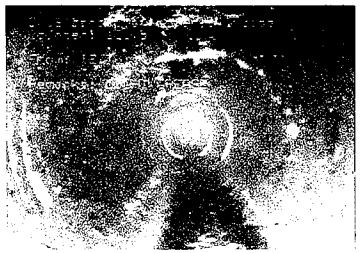
Date: 08/01/2006 **Dist:** 118.7 Ft
Obs: Crack Longitudinal



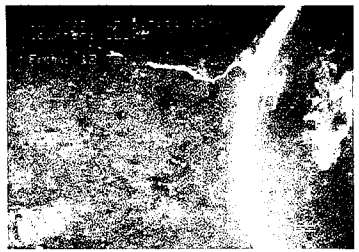
Date: 08/01/2006 **Dist:** 120.0 Ft
Obs: Crack Circumferential



Date: 08/01/2006 **Dist:** 120.2 Ft
Obs: Tap Break-in Defective

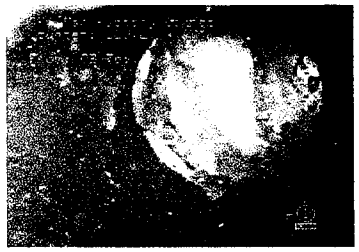


Date: 08/01/2006 **Dist:** 121.5 Ft
Obs: Deposits Attached Grease



Date: 08/01/2006 **Dist:** 121.5 Ft
Obs: Crack Longitudinal

Date: 08/01/2006 **Dist:** 124.8 Ft
Obs: Deposits Attached Encrustation



Date: 08/01/2006 **Dist:** 129.2 Ft
Obs: Tap Factory Capped

CCTV pictures of M-30563 X **for** **DCWASA**

Work Order ID 234 **Video** REI 014 **Surveyed On** 08/01/2006 **Direction** Downstream **Setup** 170

Street Name FLAGLER PL V ST-W ST **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

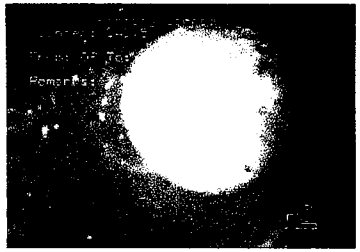
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30563 **To Manhole** M-30567

Date: 09/11/2006 **Dist:** 129.2 Ft
Obs: Deposits Attached Grease

Date: 08/01/2006 **Dist:** 136.0 Ft
Obs: Deposits Attached Encrustation

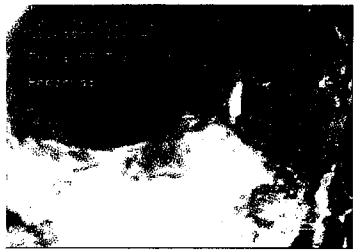
Date: 08/01/2006 **Dist:** 137.4 Ft
Obs: Tap Break-in Defective

Date: 08/01/2006 **Dist:** 139.2 Ft
Obs: Deposits Attached Encrustation



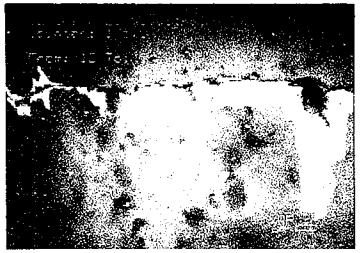
Date: 08/01/2006 **Dist:** 149.5 Ft
Obs: Tap Factory Capped

Date: 08/01/2006 **Dist:** 153.8 Ft
Obs: Roots Tap Connection

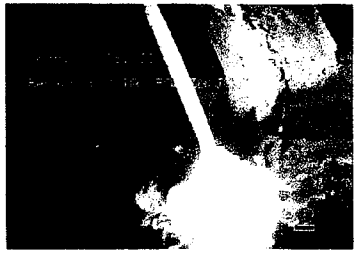


Date: 08/01/2006 **Dist:** 154.4 Ft
Obs: Tap Break-in Active

Date: 08/01/2006 **Dist:** 169.4 Ft
Obs: Tap Factory Active



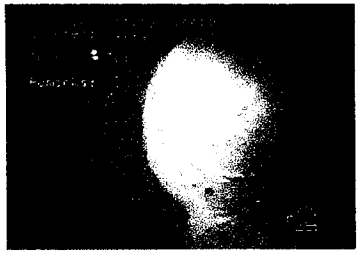
Date: 08/01/2006 **Dist:** 175.0 Ft
Obs: Crack Longitudinal



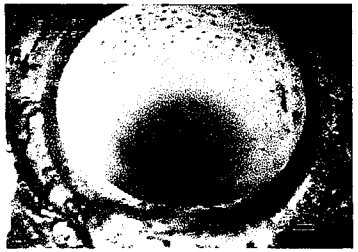
Date: 08/01/2006 **Dist:** 182.2 Ft
Obs: Obstacle Intruding Thru Wall

Date: 08/01/2006 **Dist:** 189.8 Ft
Obs: Tap Factory Active

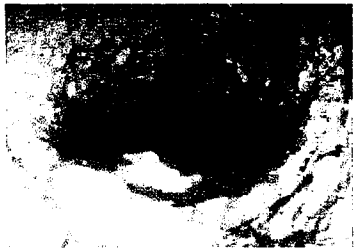
Date: 08/01/2006 **Dist:** 198.6 Ft
Obs: Tap Break-in Active



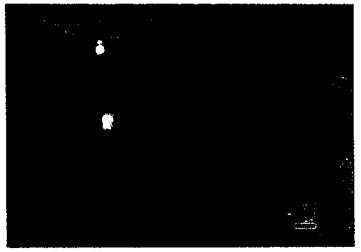
Date: 08/01/2006 **Dist:** 213.3 Ft
Obs: Tap Factory Capped



Date: 08/01/2006 **Dist:** 216.4 Ft
Obs: Tap Break-in Active



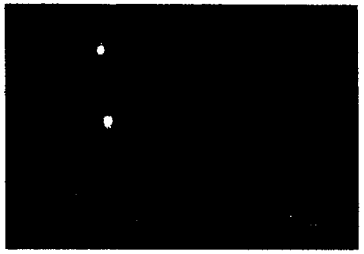
Date: 08/01/2006 **Dist:** 232.6 Ft
Obs: Tap Break-in Active



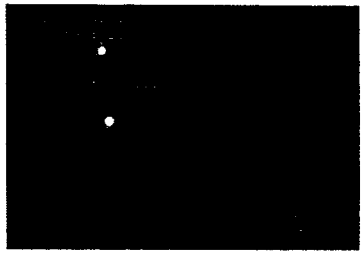
Date: 09/11/2006 **Dist:** 235.8 Ft
Obs: Deposits Attached Encrustation

CCTV pictures of M-30563 X for **DCWASA**

Work Order	ID 234	**Video**	REI 014	**Surveyed On**	08/01/2006	**Direction**	Downstream **Setup** 170
Street Name	FLAGLER PL V ST-W ST	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30563	**To Manhole**	M-30567



Date: 08/24/2006 **Dist:** 235.8 Ft
Obs: Manhole



Date: 08/01/2006 **Dist:** 235.8 Ft
Obs: End of Survey

Tabular Report of PSR M-30566 X for DCWASA

Setup 171	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA
Drainage N.E.BOUNDAR	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/01/2006	***Time*** 9:35:00	***Street*** FLAGLER PL V ST-W ST
Locality WASHINGTON D.C.	***Further location details*** N.W.		
Start M-30566	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade*** ***Ft***
Finish M-30568	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade*** ***Ft***
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 014
Shape Circular	***Height*** 10 ***Width*** 10 ***ins***	***Preclean*** J	***Year Cleaned***
Material Clay Tile	***Joint length*** ***Ft***	***Total length*** 184.0 ***Ft***	***Length Surveyed*** 184.0
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose Routine Assessment		***Cat***	
Additional info		Structural O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00000		ST	Start of Survey								
0.0	00000		AMH	Manhole								M-30566
0.0	00000		MWL	Water Level			00					
13.5			CM	Crack Multiple				J	09	04		
27.3			TFC	Tap Factory Capped	06				10			
35.3			HSV	Hole Soil Visible					06			
35.5		S01	DSF	Deposits Settled Fine			05	J	06			LESS 1/2 IN
41.8			DSZ	Deposits Settled Other			10		06			METAL ROD IN LINE
42.7		F01	DSF	Deposits Settled Fine			05	J	06			LESS 1/2 IN
45.6			TBD	Tap Break-in Defective	04	01			09			
49.1			DSF	Deposits Settled Fine			05		06			1/2 IN
53.6			TFC	Tap Factory Capped	04				10			
63.1			TBD	Tap Break-in Defective	04	02			09			
74.0			TFC	Tap Factory Capped	04				10			
79.5			TBD	Tap Break-in Defective	04	02			10			
94.0			TFC	Tap Factory Capped	04				10			
96.4			TBD	Tap Break-in Defective	04	01			11			
114.2			TBA	Tap Break-in Active	04				10			
129.2			TBD	Tap Break-in Defective	04	01			10			
137.7			TFD	Tap Factory Defective	04				10			
160.9			TFD	Tap Factory Defective	04				10			
181.1			DSZ	Deposits Settled Other			05		06			METAL ROD IN LINE
184.0			AMH	Manhole								M-30568
184.0			FH	End of Survey								M-30568

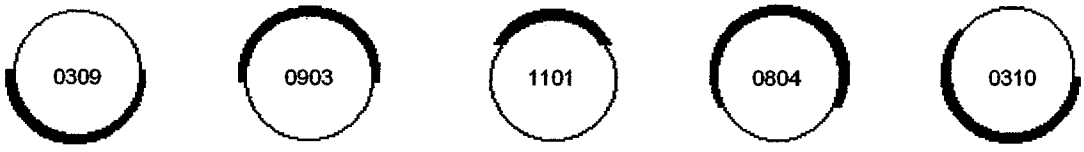
184.0 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 8	***Mean Defect*** 4	***Peak*** 5	***Mean Pipe*** 0
Service:	***Total*** 31	***Mean Defect*** 2.6	***Peak*** 4	***Mean Pipe*** 0.2

Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

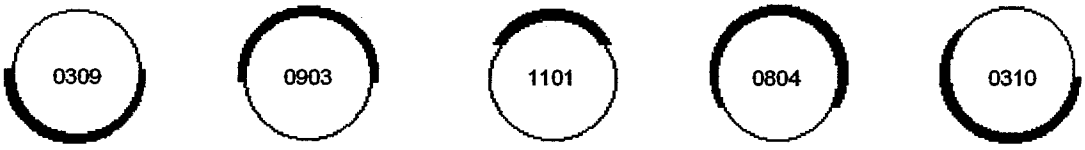


Tabular Report of PSR M-30566 X **for DCWASA**

Setup 171	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA		
Drainage N.E.BOUNDARY	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/01/2006	***Time*** 9:35:00	***Street*** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	***Further location details*** N.W.				
Start M-30566	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30568	***Rim to invert*** 12.00	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 014		
Shape Circular	***Height*** 10	***Width*** 10 ***ins***	***Preclean*** J	***Year Cleaned***	
Material Clay Tile	***Joint length*** ***Ft***	***Total length*** 184.0 ***Ft***	***Length Surveyed*** 184.0		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			

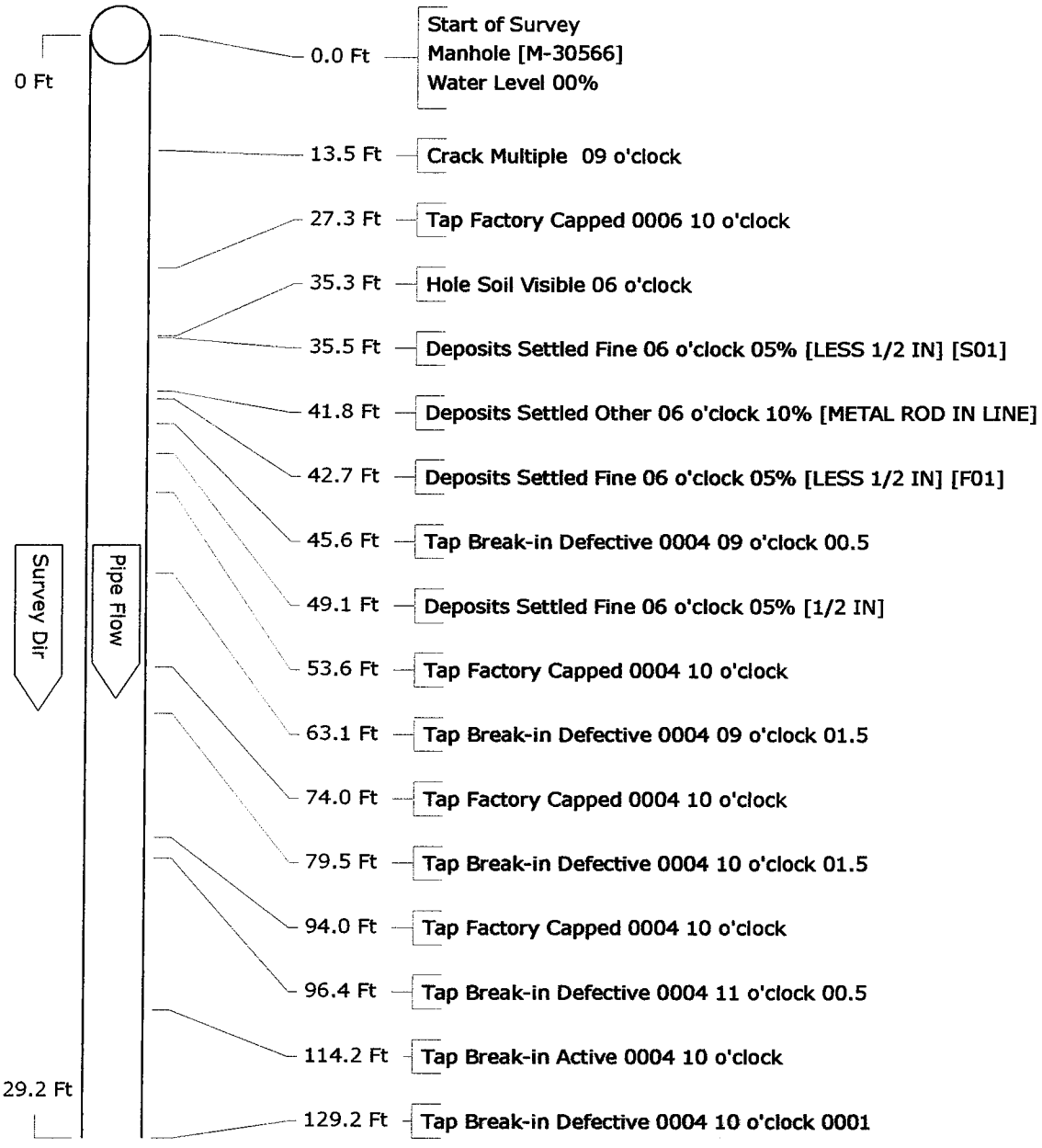
Additional info	Structural	O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking	Miscellaneous	Hydraulic	

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Pipe Graphic Report of PLR M-30566 X for DCWASA

Setup 171	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage N.E.BOUNDAR	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/01	**Time** 09:35:00	**Street** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	**Further location details** N.W.				
Start M-30566	**Rim to invert** 12.00	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30568	**Rim to invert** 12.00	**Grade to invert**	**Rim to grade**	**Ft**	
Use Combined	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 014		
Shape Circular	**Height** 10	**Width** 10 **ins**	**Preclean** J	**Year Cleaned**	
Material Clay Tile	**Joint length** **Ft**	**Total length** 184.0 **Ft**	**Length Surveyed** 184.00		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					

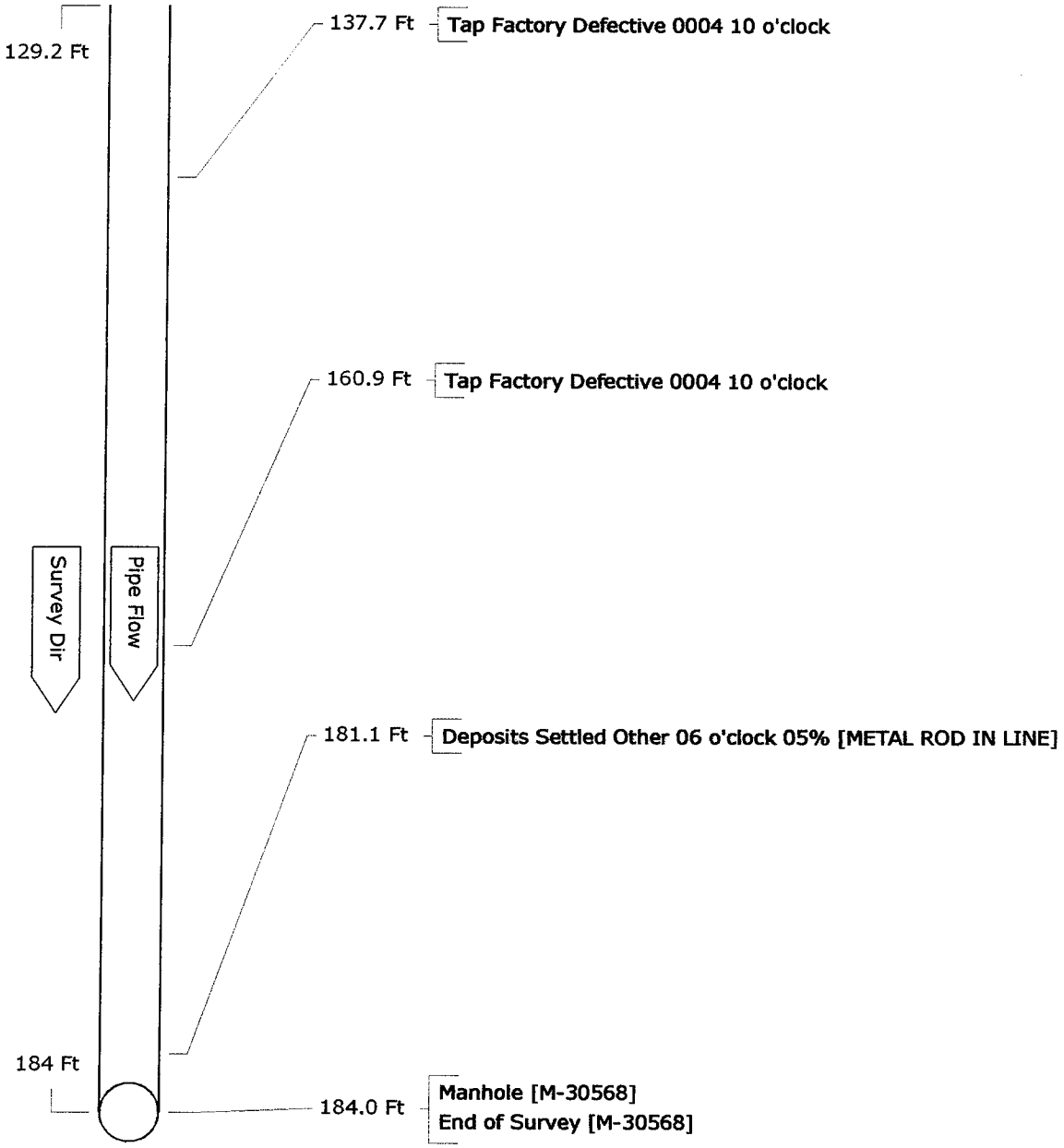


Pipe Graphic Report of PLR M-30566 X for DCWASA

Setup 171	**Surveyor** A.THOMPSON	**Certificate #** U-106-2462	**System Owner** DCWASA		
Drainage N.E.BOUNDAR	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/01	**Time** 09:35:00	**Street** FLAGLER PL V ST-W ST		
Locality WASHINGTON D.C.	**Further location details** N.W.				
Start M-30566	**Rim to invert** 12.00	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30568	**Rim to invert** 12.00	**Grade to invert**	**Rim to grade**	**Ft**	
Use Combined	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 014		
Shape Circular	**Height** 10	**Width** 10 **ins**	**Preclean** J	**Year Cleaned**	
Material Clay Tile	**Joint length** **Ft**	**Total length** 184.0 **Ft**	**Length Surveyed** 184.00		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				

Additional info

Location Light Highway (rural, light traffic, town back st, estate st & parking

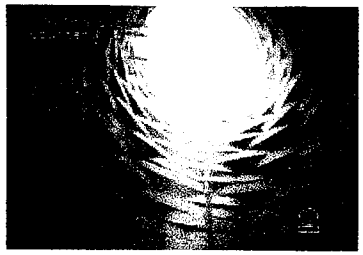


CCTV pictures of M-30566 X for **DCWASA**

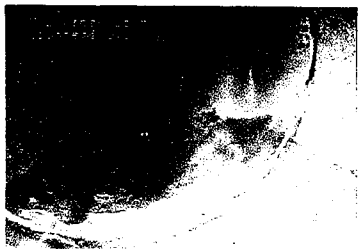
Work Order ID 234 **Video** REI 014 **Surveyed On** 08/01/2006 **Direction** Downstream **Setup** 171

Street Name FLAGLER PL V ST-W ST **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

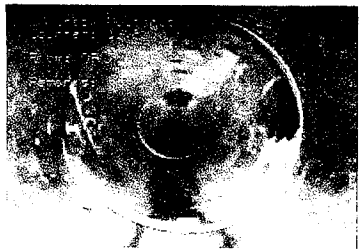
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30566 **To Manhole** M-30568



Date: 08/01/2006 **Dist:** 0.0 Ft
Obs: Manhole

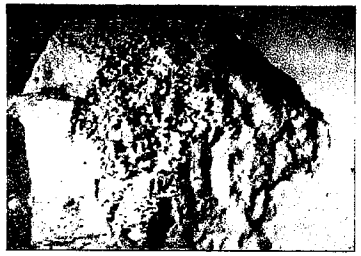


Date: 08/01/2006 **Dist:** 0.0 Ft
Obs: Water Level

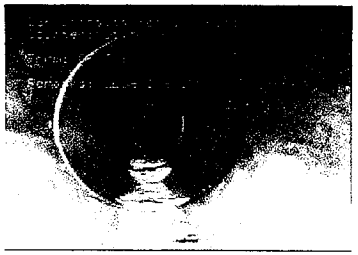


Date: 08/01/2006 **Dist:** 13.5 Ft
Obs: Crack Multiple

Date: 08/01/2006 **Dist:** 27.3 Ft
Obs: Tap Factory Capped



Date: 08/01/2006 **Dist:** 35.3 Ft
Obs: Hole Soil Visible



Date: 08/01/2006 **Dist:** 35.5 Ft
Obs: Deposits Settled Fine

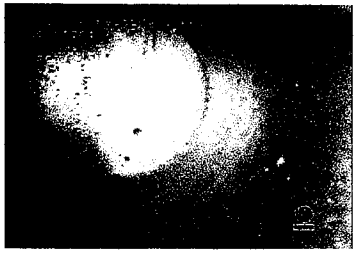
Date: 08/01/2006 **Dist:** 41.8 Ft
Obs: Deposits Settled Other

Date: 08/01/2006 **Dist:** 45.6 Ft
Obs: Tap Break-in Defective

Date: 08/01/2006 **Dist:** 49.1 Ft
Obs: Deposits Settled Fine

Date: 08/01/2006 **Dist:** 53.6 Ft
Obs: Tap Factory Capped

Date: 08/01/2006 **Dist:** 63.1 Ft
Obs: Tap Break-in Defective

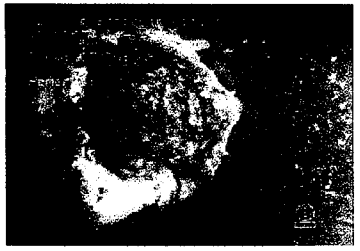


Date: 08/01/2006 **Dist:** 74.0 Ft
Obs: Tap Factory Capped

Date: 08/01/2006 **Dist:** 79.5 Ft
Obs: Tap Break-in Defective

Date: 08/01/2006 **Dist:** 94.0 Ft
Obs: Tap Factory Capped

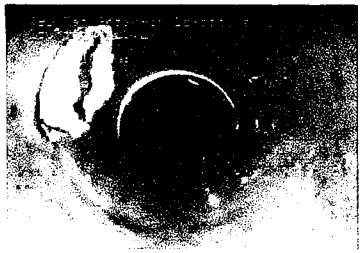
Date: 08/01/2006 **Dist:** 96.4 Ft
Obs: Tap Break-in Defective



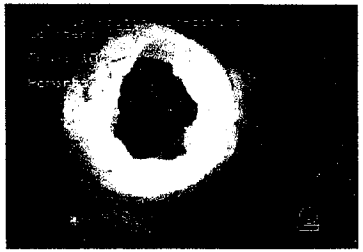
Date: 08/01/2006 **Dist:** 114.2 Ft
Obs: Tap Break-in Active

CCTV pictures of M-30566 X for **DCWASA**

Work Order	ID 234	**Video**	REI 014	**Surveyed On**	08/01/2006	**Direction**	Downstream **Setup** 171
Street Name	FLAGLER PL V ST-W ST	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30566	**To Manhole**	M-30568

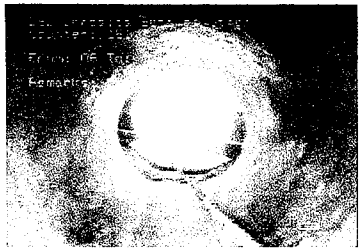


Date: 08/01/2006 **Dist:** 129.2 Ft
Obs: Tap Break-in Defective

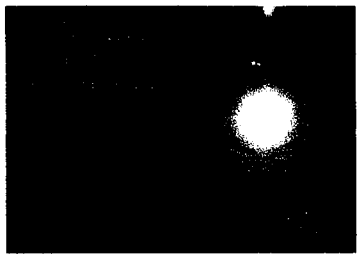


Date: 08/01/2006 **Dist:** 137.7 Ft
Obs: Tap Factory Defective

Date: 08/01/2006 **Dist:** 160.9 Ft
Obs: Tap Factory Defective



Date: 08/01/2006 **Dist:** 181.1 Ft
Obs: Deposits Settled Other



Date: 08/01/2006 **Dist:** 184.0 Ft
Obs: End of Survey

Tabular Report of PSR M-30641 X **for DCWASA**

Setup 214	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462	***System Owner*** DCWASA
Drainage N.W. D.C.	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/08/2006	***Time*** 11:56:00	***Street*** U ST 1ST @ 2ND
Locality WASHINGTON,D.C.	***Further location details*** ID-234		
Start M-30641	***Rim to invert*** 11.00	***Grade to invert***	***Rim to grade*** ***Ft***
Finish M-30642	***Rim to invert*** 13.00	***Grade to invert***	***Rim to grade*** ***Ft***
Use Combined	***Direction*** Down	***Flow control***	***Tape/Media #*** REI 016
Shape Circular	***Height*** 18 ***Width*** ***ins*** ***Preclean*** J		***Year Cleaned***
Material Vitrified Clay Pipe	***Joint length*** ***Ft***	***Total length*** 123.2 ***Ft***	***Length Surveyed*** 123.2
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose		***Cat***	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	05714		ST	Start of Survey								
0.0	05714		AMH	Manhole								M-30641
0.0	05714		MWL	Water Level			5					
64.2			TBA	Tap Break-in Active	06				09			
65.4			CL	Crack Longitudinal				J	03			
123.2			AMH	Manhole								M-30642
123.2			FH	End of Survey								M-30642

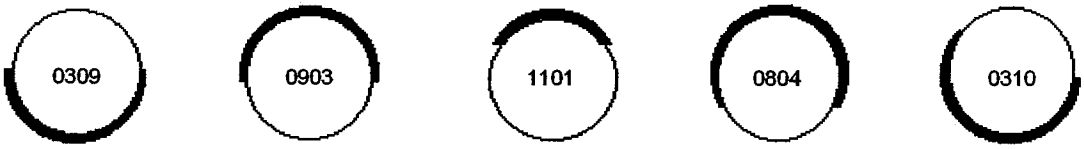
123.2 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 2	***Mean Defect*** 2	***Peak*** 2	***Mean Pipe*** 0
Service:	***Total*** 0	***Mean Defect*** 0	***Peak*** 0	***Mean Pipe*** 0

Notes

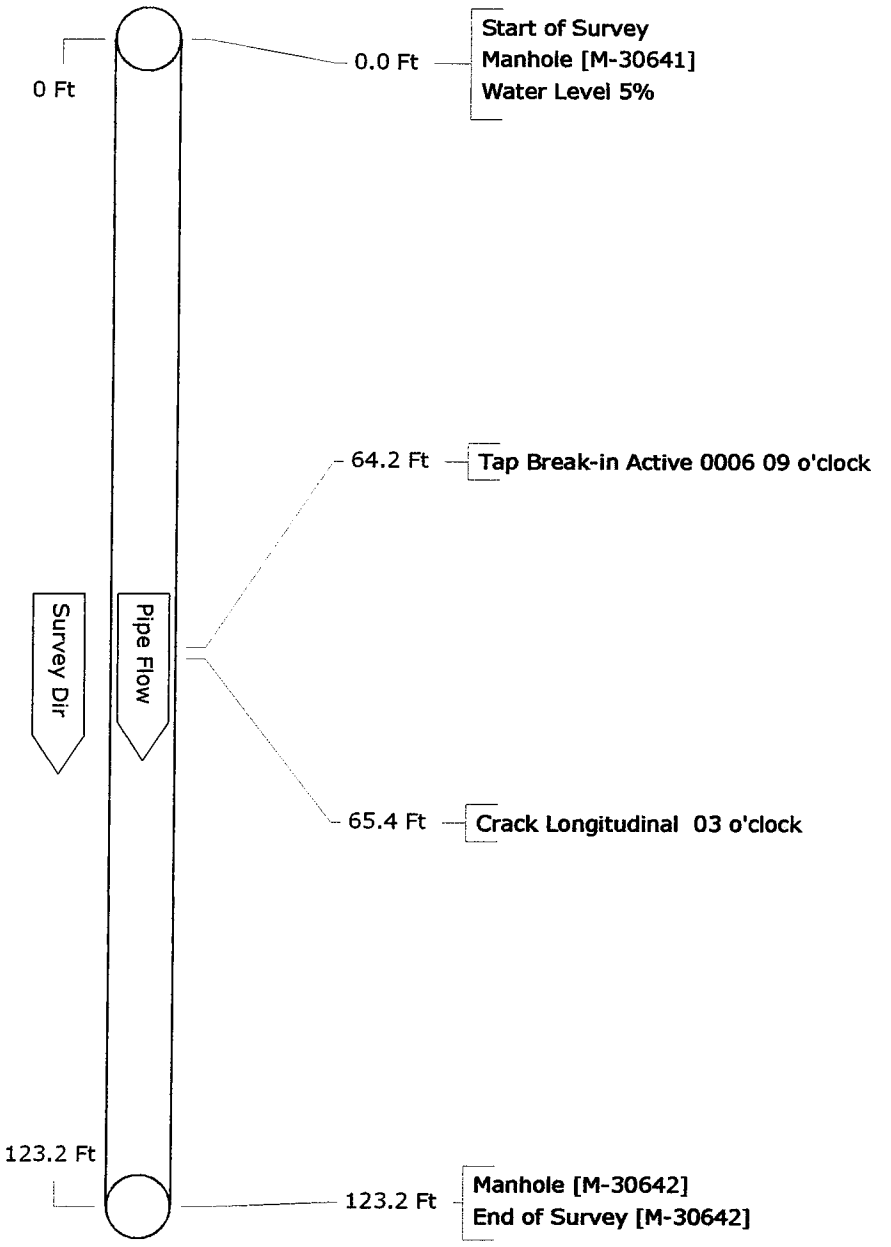
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

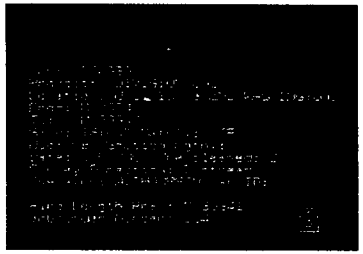
Pipe Graphic Report of PLR M-30641 X for DCWASA

Setup 214	***Surveyor*** A.THOMPSON	***Certificate #*** U-106-2462		***System Owner*** DCWASA	
Drainage N.W. D.C.	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/08	***Time*** 11:56:00	***Street*** U ST 1ST @ 2ND		
Locality WASHINGTON,D.C.	***Further location details*** ID-234				
Start M-30641	***Rim to invert*** 11.00	***Grade to invert***		***Rim to grade***	***Ft***
Finish M-30642	***Rim to invert*** 13.00	***Grade to invert***		***Rim to grade***	***Ft***
Use Combined	***Direction*** Downstream	***Flow control***		***Tape/Media #*** REI 016	
Shape Circular	***Height*** 18	***Width***	***ins*** ***Preclean*** J	***Year Cleaned***	
Material Vitrified Clay Pipe	***Joint length***	***Ft***	***Total length*** 123.2 ***Ft***	***Length Surveyed*** 123.20	
Lining	***Year laid***	***Year rehabilitated***		***Weather*** Dry	
Purpose		***Cat***			
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



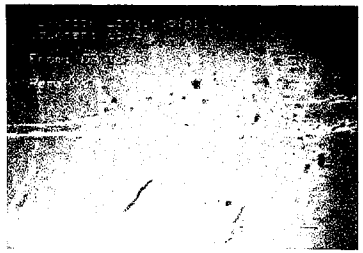
CCTV pictures of M-30641 X for **DCWASA**

Work Order	ID 234	**Video**	REI 016	**Surveyed On**	08/08/2006	**Direction**	Downstream **Setup** 214
Street Name	U ST 1ST @ 2ND	**City Name**	WASHINGTON,D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30641	**To Manhole**	M-30642



Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

Date: 08/29/2006 **Dist:** 64.2 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 65.4 Ft
Obs: Crack Longitudinal

Date: 08/29/2006 **Dist:** 123.2 Ft
Obs: Manhole

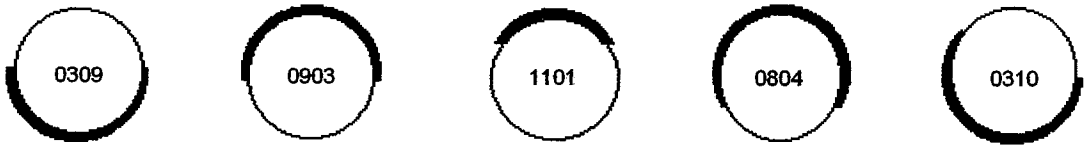
Tabular Report of PSR M-30355 X for DCWASA

Setup 215	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA
Drainage 1ST STREET	***Survey Customer*** DCWASA		
P/O # ID 234	***Date*** 08/07/2006	***Time*** 10:54:00	***Street*** 151 THOMAS STREET,N.E
Locality WASHINGTON D.C.	***Further location details***		
Start M-30355	***Rim to invert*** 6.00	***Grade to invert***	***Rim to grade*** ***Ft***
Finish M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade*** ***Ft***
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 015
Shape Circular	***Height*** 12 ***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** 160.3 ***Ft***	***Length Surveyed*** 160.3
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry
Purpose Routine Assessment		***Cat***	
Additional info		Structural O&M Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00:00:00		ST	Start of Survey								
0.0	00:00:00		AMH	Manhole								M-30355
0.0	00:00:00		MWL	Water Level			5					
3.0			TFC	Tap Factory Capped	06				02			
20.1			TBA	Tap Break-in Active	04				09			
30.4			TBI	Tap Break-in Intruding	04	01			10			
38.8			TBA	Tap Break-in Active	04				09			
50.1			TFA	Tap Factory Active	06				03			
54.5			TBA	Tap Break-in Active	04				09			
68.5			TFA	Tap Factory Active	06				03			
73.2			TBA	Tap Break-in Active	04				09			
82.6			TFA	Tap Factory Active	06				03			
91.2			TBA	Tap Break-in Active	06				09			
92.9			CM	Crack Multiple					10	03		
99.4			TFA	Tap Factory Active	06				03			
109.8			TBA	Tap Break-in Active	04				09			
114.7			TFA	Tap Factory Active	06				03			
119.1			CM	Crack Multiple					10	03		
119.1			TBA	Tap Break-in Active	04				03			
126.6			TBA	Tap Break-in Active	06				09			
131.5			TFA	Tap Factory Active	06				03			
142.8			TBA	Tap Break-in Active	06				09			
147.8			TFA	Tap Factory Active	06				02			
156.1			TBI	Tap Break-in Intruding	04	01			09			
160.3			AMH	Manhole								M-30638
160.3			FH	End of Survey								

160.3 ***Ft*** ***Total Length Surveyed***

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30355 X for DCWASA

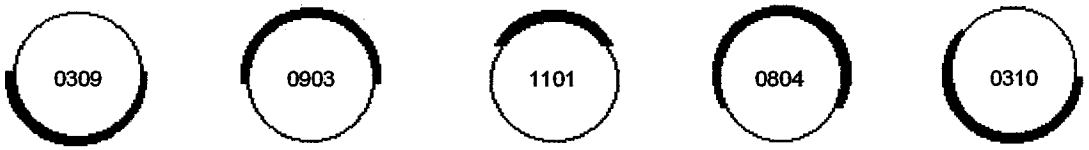
Setup 215	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/07/2006	***Time*** 10:54:00	***Street*** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30355	***Rim to invert*** 6.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned*** 8/7/2006		
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** 160.3 ***Ft***	***Length Surveyed*** 160.3		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info		Structural	O&M	Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous	Hydraulic		

Scores

Structural:	***Total*** 18	***Mean Defect*** 0	***Peak*** 3	***Mean Pipe*** 0.1
Service:	***Total*** 4	***Mean Defect*** 2	***Peak*** 2	***Mean Pipe*** 0

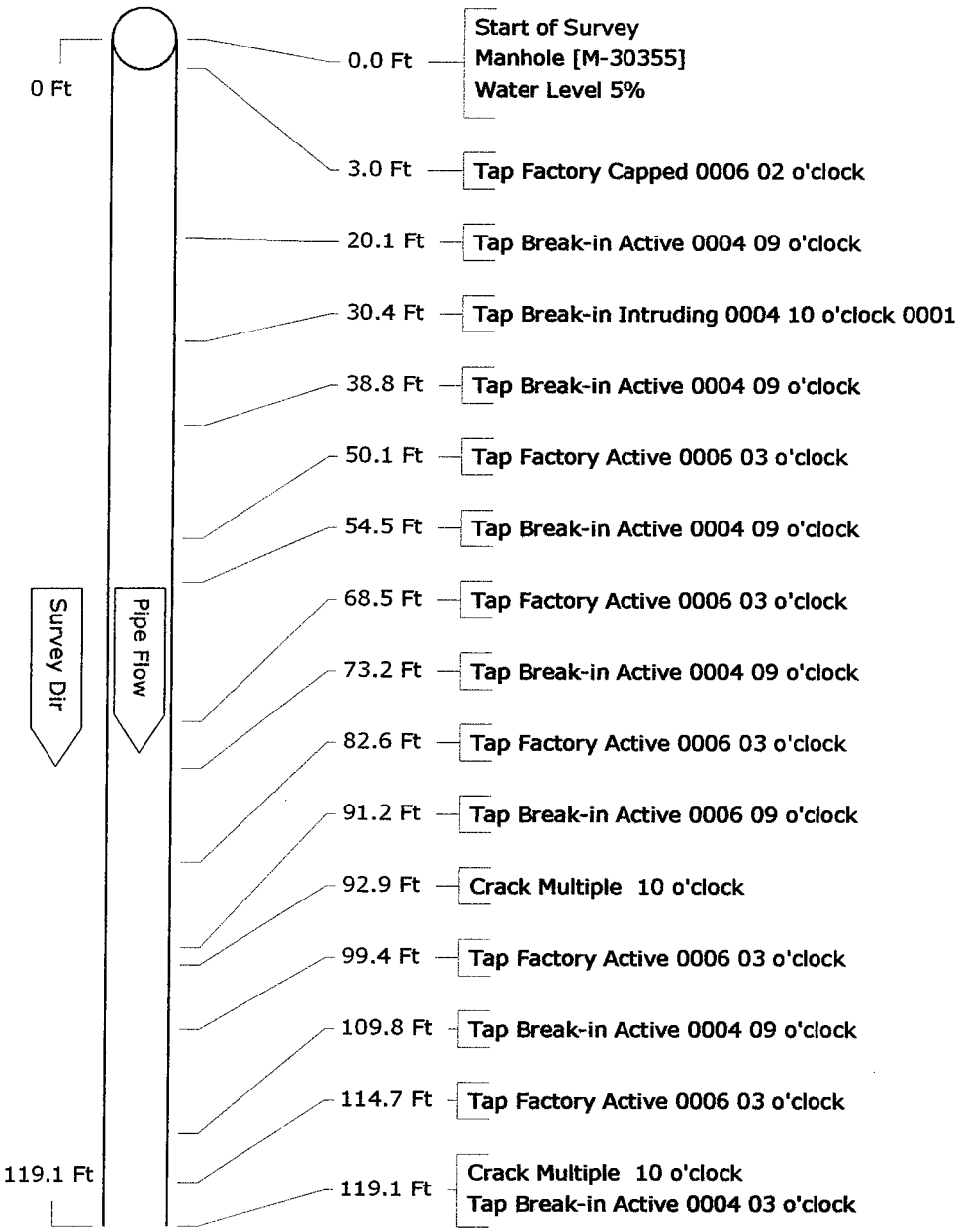
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



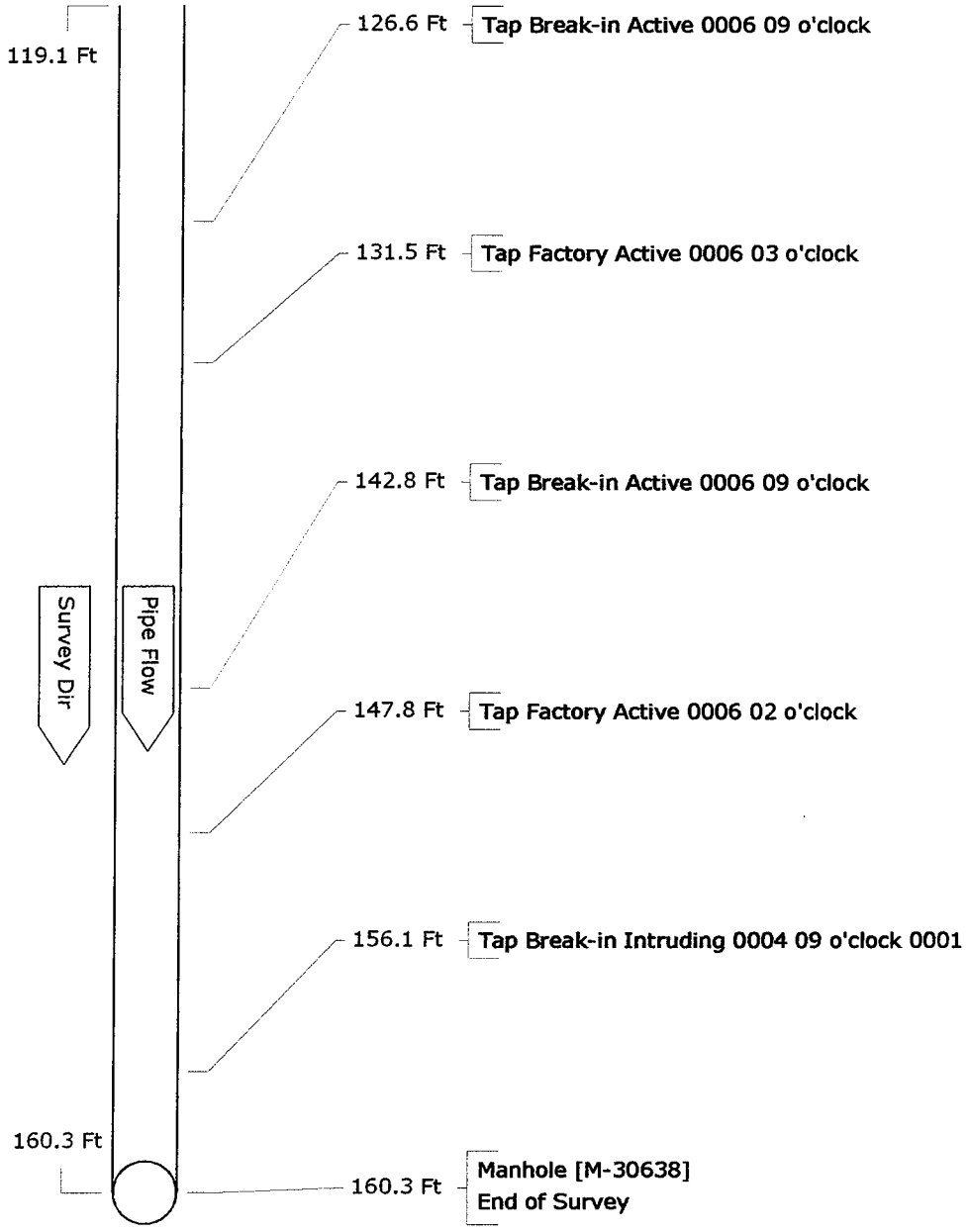
Pipe Graphic Report of PLR M-30355 X for DCWASA

Setup 215	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/07	***Time*** 10:54:00	***Street*** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30355	***Rim to invert*** 6.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length*** 160.3 ***Ft***	***Length Surveyed*** 160.30		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



Pipe Graphic Report of PLR M-30355 X for DCWASA

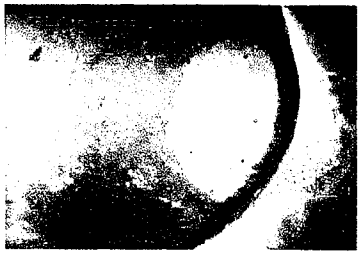
Setup 215	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/07	***Time*** 10:54:00	***Street*** 151 THOMAS STREET,N.E		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30355	***Rim to invert*** 6.00	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30638	***Rim to invert*** 8.00	***Grade to invert***	***Rim to grade***	***Ft***	
Use Combined	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length*** 160.3 ***Ft***	***Length Surveyed*** 160.30		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



CCTV pictures of M-30355 X for **DCWASA**

Work Order ID 234		**Video** REI 015	**Surveyed On** 08/07/2006	**Direction** Downstream	**Setup** 215		
Street Name 151 THOMAS STREET,N.E	**City Name** WASHINGTON D.C.	**ZIP Code**	**Weather** Dry				
Location Light Highway (rural, light traffic, town back st, estate st & parking		**From Manhole** M-30355	**To Manhole** M-30638				

Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

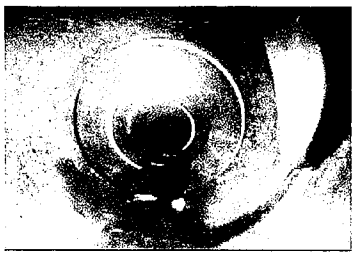


Date: 08/29/2006 **Dist:** 3.0 Ft
Obs: Tap Factory Capped

Date: 08/29/2006 **Dist:** 20.1 Ft
Obs: Tap Break-in Active

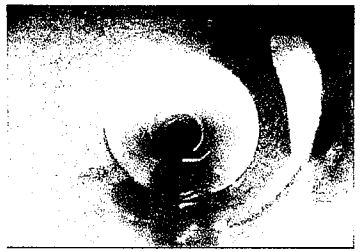
Date: 08/29/2006 **Dist:** 30.4 Ft
Obs: Tap Break-in Intruding

Date: 08/29/2006 **Dist:** 38.8 Ft
Obs: Tap Break-in Active



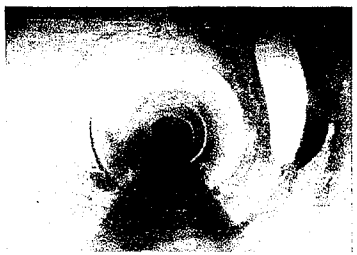
Date: 08/29/2006 **Dist:** 50.1 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 54.5 Ft
Obs: Tap Break-in Active

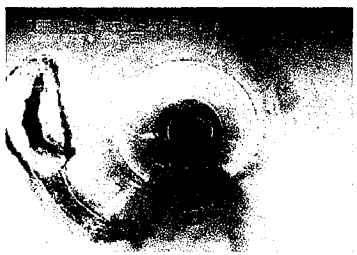


Date: 08/29/2006 **Dist:** 68.5 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 73.2 Ft
Obs: Tap Break-in Active

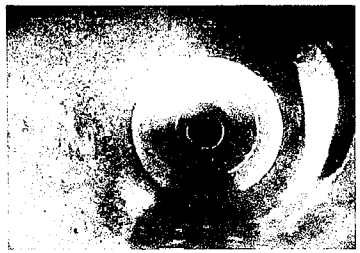


Date: 08/29/2006 **Dist:** 82.6 Ft
Obs: Tap Factory Active



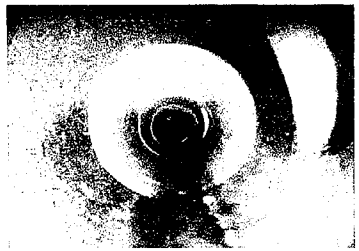
Date: 08/29/2006 **Dist:** 91.2 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 92.9 Ft
Obs: Crack Multiple

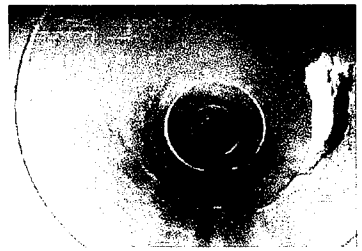


Date: 08/29/2006 **Dist:** 99.4 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 109.8 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 114.7 Ft
Obs: Tap Factory Active



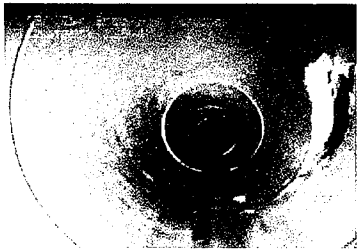
Date: 08/29/2006 **Dist:** 119.1 Ft
Obs: Crack Multiple

CCTV pictures of M-30355 X for **DCWASA**

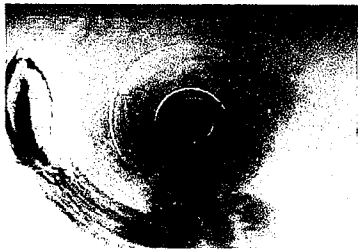
Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 215

Street Name 151 THOMAS STREET,N.E **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

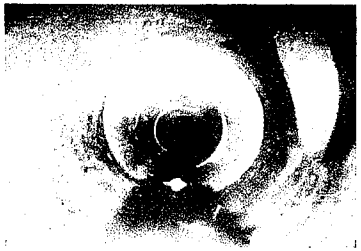
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30355 **To Manhole** M-30638



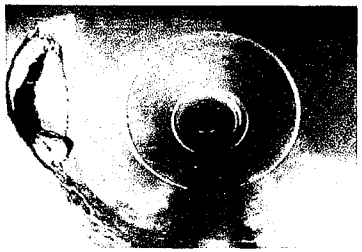
Date: 08/29/2006 **Dist:** 119.1 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 126.6 Ft
Obs: Tap Break-in Active

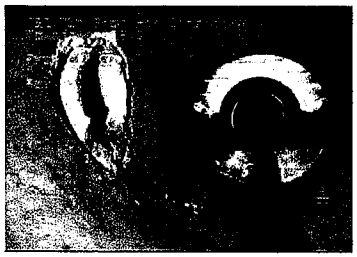


Date: 08/29/2006 **Dist:** 131.5 Ft
Obs: Tap Factory Active

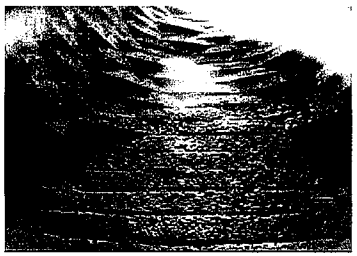


Date: 08/29/2006 **Dist:** 142.8 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 147.8 Ft
Obs: Tap Factory Active



Date: 08/29/2006 **Dist:** 156.1 Ft
Obs: Tap Break-in Intruding



Date: 08/29/2006 **Dist:** 160.3 Ft
Obs: Manhole

Tabular Report of PSR M-30576 X **for DCWASA**

Setup 78 ***Surveyor*** A. OGUARA ***Certificate #*** U-405-2141 ***System Owner*** DCWASA
Drainage 1ST STREET ***Survey Customer*** DCWASA
P/O # ID 234 ***Date*** 08/07/2006 ***Time*** 14:35:00 ***Street*** 2030 FLAGLER PLACE
Locality WASHINGTON D.C. ***Further location details***

Start M-30576 ***Rim to invert*** 11.50 ***Grade to invert*** ***Rim to grade*** ***Ft***
Finish M-30639 ***Rim to invert*** 10.20 ***Grade to invert*** ***Rim to grade*** ***Ft***

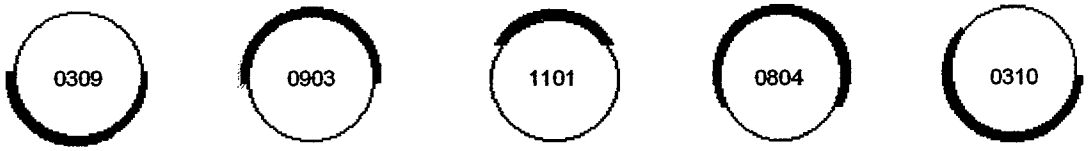
Use Sanitary ***Direction*** Down ***Flow control*** Not controlled ***Tape/Media #*** REI 015
Shape Circular ***Height*** 12 ***Width*** ***ins*** ***Preclean*** J ***Year Cleaned*** 8/7/2006
Material Vitrified Clay Pipe ***Joint length*** 7.00 ***Ft*** ***Total length*** 310.3 ***Ft*** ***Length Surveyed*** 310.3
Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry
Purpose Routine Assessment ***Cat***

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00:00:00		ST	Start of Survey								
0.0	00:00:00		AMH	Manhole								M-30576
0.0	00:00:00		MWL	Water Level			5					
9.9			TBA	Tap Break-in Active	04				02			
12.5			DAE	Deposits Attached Encrustation			05		03	05		
15.6			DAGS	Deposits Attached Grease			95		09			
16.6			TBA	Tap Break-in Active	04				09			
21.9			TBI	Tap Break-in Intruding	04	01			10			
24.7			TBI	Tap Break-in Intruding	04	01			02			
31.0			TBA	Tap Break-in Active	04				10			
37.0			TBA	Tap Break-in Active	04				02			
51.6		S01	DAE	Deposits Attached Encrustation			05		03	05		
54.5			TFA	Tap Factory Active	06				11			
56.8			TFA	Tap Factory Active	06				03			
66.3			TBA	Tap Break-in Active	06				03			
67.8			TBA	Tap Break-in Active	04				09			
77.1			TFA	Tap Factory Active	06				09			
79.1			TFA	Tap Factory Active	06				02			
89.7		S02	DAGS	Deposits Attached Grease			05		03	09		
96.0			TBA	Tap Break-in Active	06				03			
97.8			TBA	Tap Break-in Active	06				09			
98.5			TFA	Tap Factory Active	06				09			
115.3			TFA	Tap Factory Active	06				10			
117.7			TFA	Tap Factory Active	06				02			
137.7			TFA	Tap Factory Active	06				10			
140.0			TFA	Tap Factory Active	06				02			
147.1			TBA	Tap Break-in Active	06				03			

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-30576 X **for** DCWASA

Setup 78	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/07/2006	***Time*** 14:35:00	***Street*** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30576	***Rim to invert*** 11.50	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12 ***Width***	***ins*** ***Preclean*** J	***Year Cleaned*** 8/7/2006		
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** 310.3 ***Ft***	***Length Surveyed*** 310.3		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info		Structural	O&M	Constructional	
Location Light Highway (rural, light traffic, town back st, estate st & parking		Miscellaneous	Hydraulic		

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
157.2			TFA	Tap Factory Active	06				10			
159.2			TFA	Tap Factory Active	06				02			
168.8			TBA	Tap Break-in Active	04				09			
172.1			JOM	Joint Offset Medium								
175.1			TBA	Tap Break-in Active	04				02			
183.5			TBI	Tap Break-in Intruding	04	01			10			
186.7			TBA	Tap Break-in Active	04				03			
215.6			CM	Crack Multiple					07	05		
217.3			TBI	Tap Break-in Intruding	06	01			10			
220.7			TBI	Tap Break-in Intruding	06	01			03			
231.5			CM	Crack Multiple					07	05		
254.0			FC	Fracture Circumferential					09	11		
300.8			VR	Vermin Rat	01							
300.8			TBB	Tap Break-in Abandoned	03				10			
310.3		F01	DAE	Deposits Attached Encrustation			05		03	05		
310.3		F02	DAGS	Deposits Attached Grease			05		03	09		
310.3			AMH	Manhole								M-30639
310.3			FH	End of Survey								

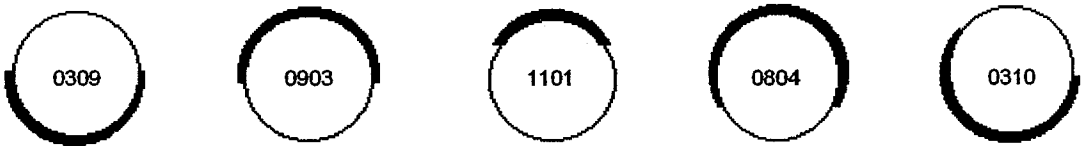
310.3 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 9	***Mean Defect*** 2.3	***Peak*** 3	***Mean Pipe*** 0
Service:	***Total*** 231	***Mean Defect*** 2.2	***Peak*** 6	***Mean Pipe*** 0.7

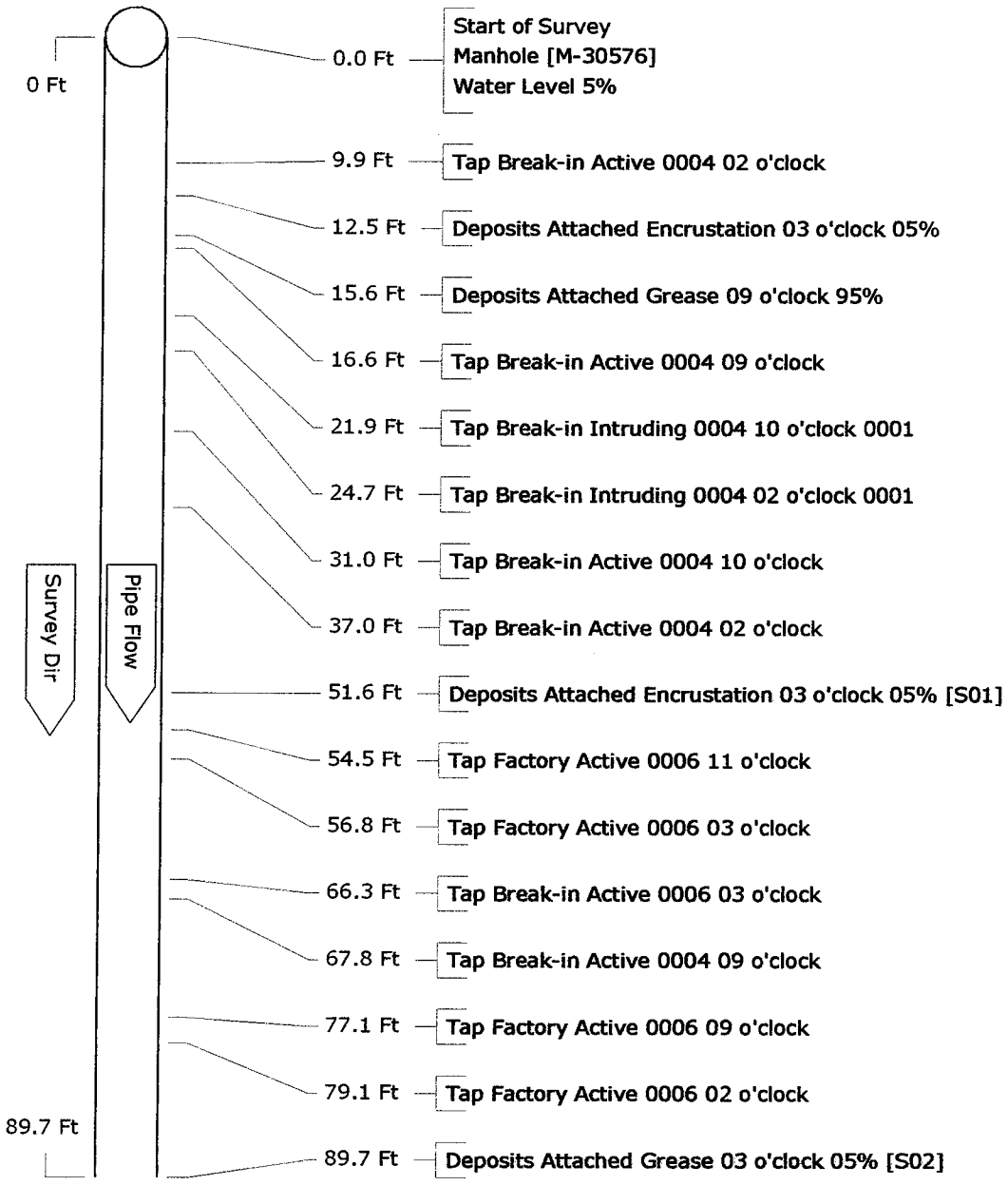
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



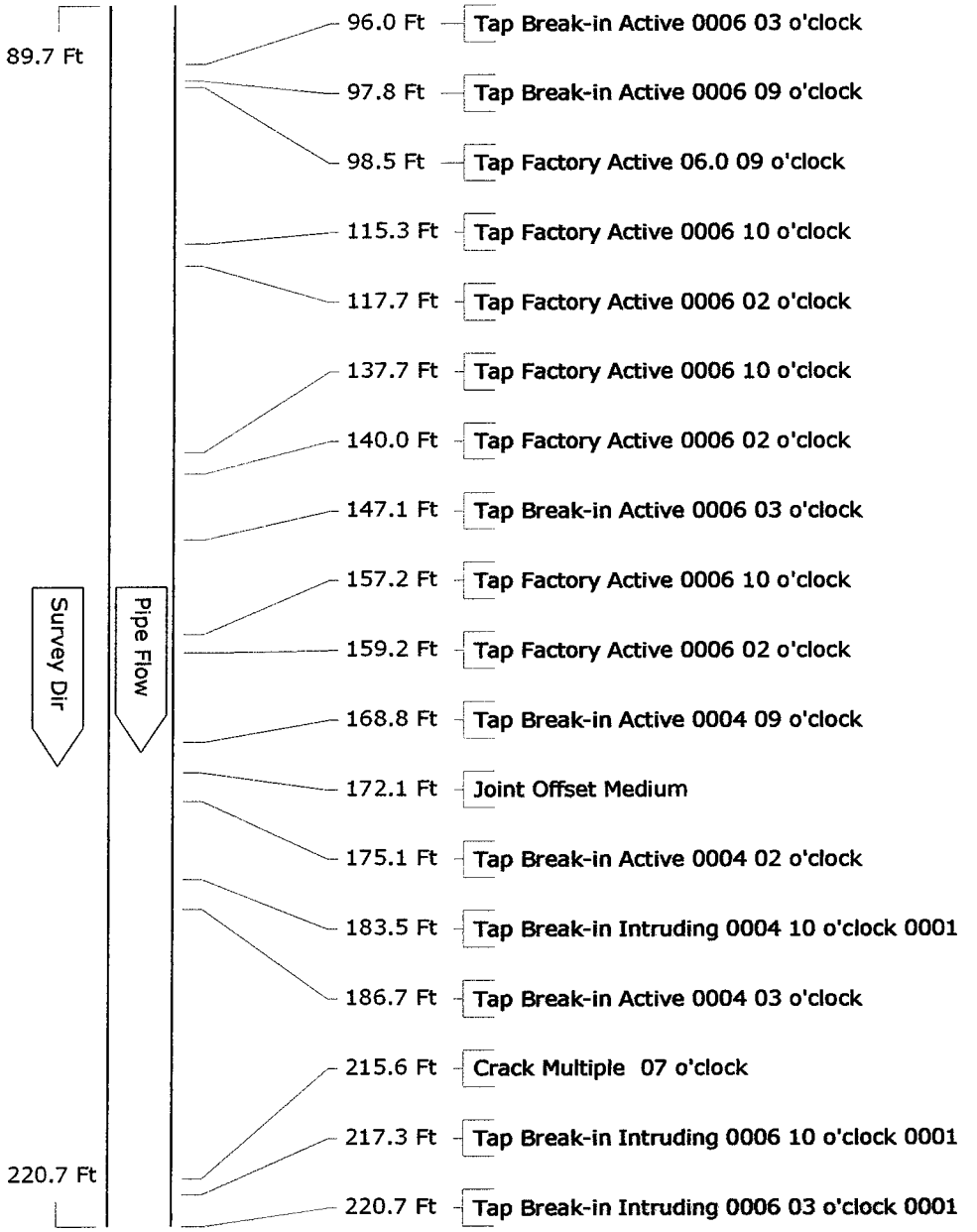
Pipe Graphic Report of PLR M-30576 X for DCWASA

Setup 78	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/07	***Time*** 14:35:00	***Street*** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30576	***Rim to invert*** 11.50	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length*** 310.3 ***Ft***	***Length Surveyed*** 310.30		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



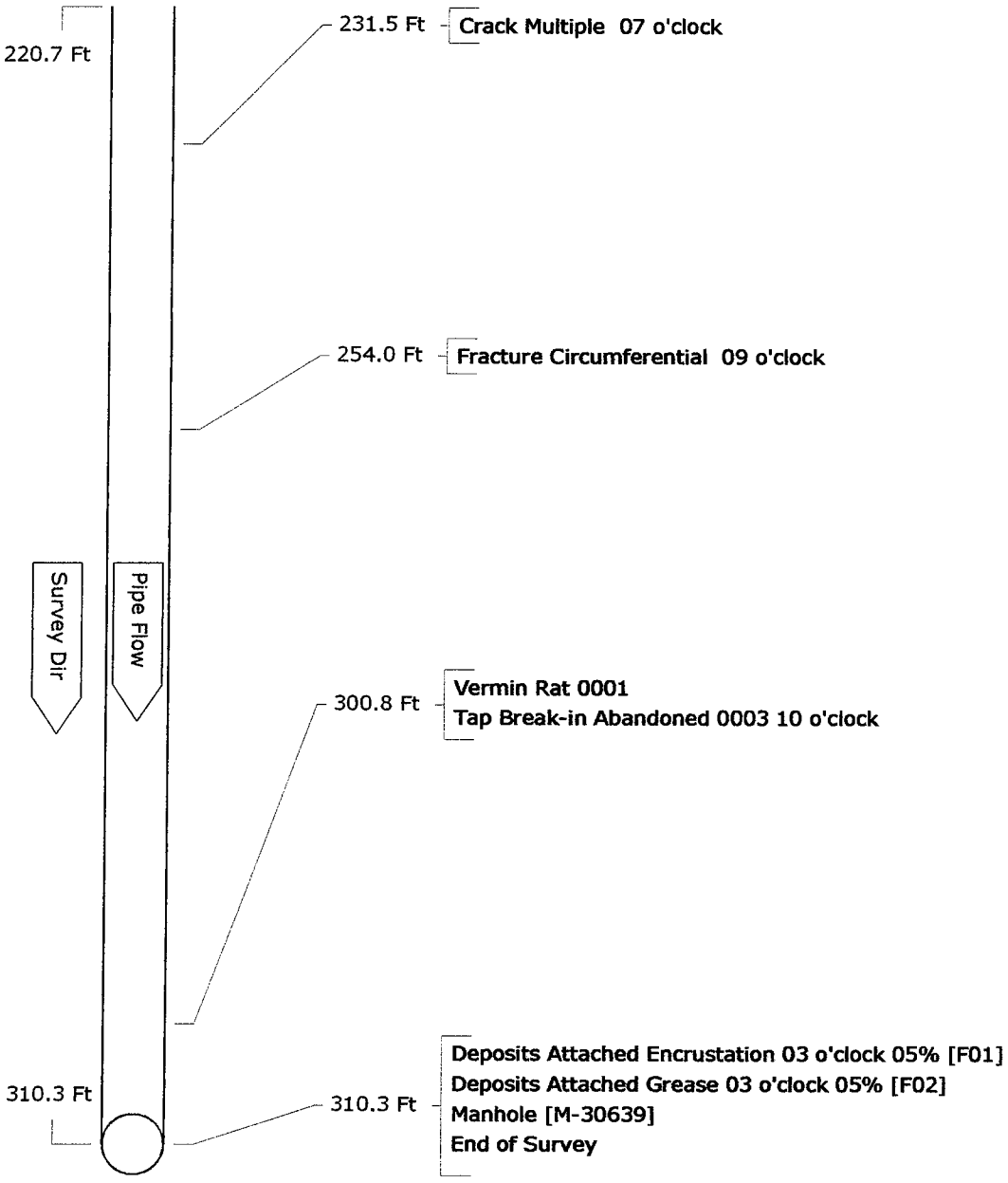
Pipe Graphic Report of PLR M-30576 X for DCWASA

Setup 78	**Surveyor** A. OGUARA	**Certificate #** U-405-2141	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/07	**Time** 14:35:00	**Street** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30576	**Rim to invert** 11.50	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30639	**Rim to invert** 10.20	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 015		
Shape Circular	**Height** 12	**Width** **ins**	**Preclean** J	**Year Cleaned** 8/7/2006	
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length** 310.3 **Ft**	**Length Surveyed** 310.30		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



Pipe Graphic Report of PLR M-30576 X for DCWASA

Setup 78	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 2006/08/07	***Time*** 14:35:00	***Street*** 2030 FLAGLER PLACE		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30576	***Rim to invert*** 11.50	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30639	***Rim to invert*** 10.20	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Downstream	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 12	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.0 ***Ft***	***Total length*** 310.3 ***Ft***	***Length Surveyed*** 310.30		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment	***Cat***				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					

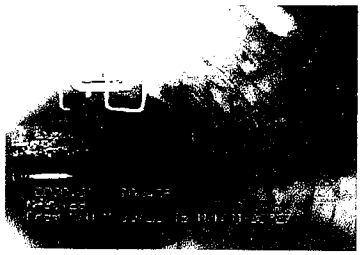


CCTV pictures of M-30576 X for **DCWASA**

Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 78

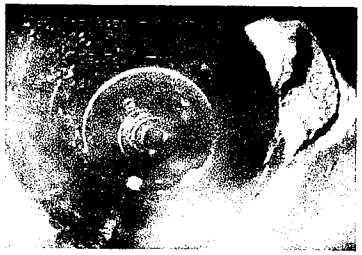
Street Name 2030 FLAGLER PLACE **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30576 **To Manhole** M-30639

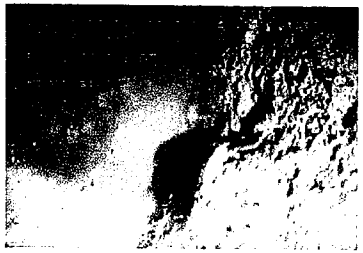


Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Manhole

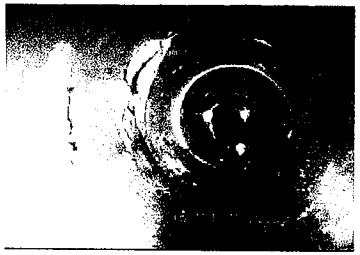
Date: 08/29/2006 **Dist:** 0.0 Ft
Obs: Water Level



Date: 08/29/2006 **Dist:** 9.9 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 12.5 Ft
Obs: Deposits Attached Encrustation



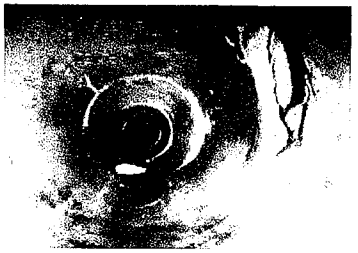
Date: 08/29/2006 **Dist:** 15.6 Ft
Obs: Deposits Attached Grease

Date: 08/29/2006 **Dist:** 16.6 Ft
Obs: Tap Break-in Active

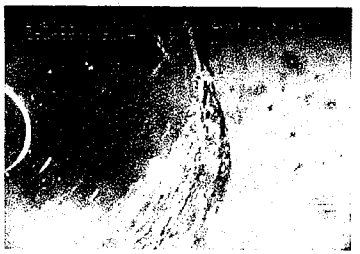
Date: 08/29/2006 **Dist:** 21.9 Ft
Obs: Tap Break-in Intruding

Date: 08/29/2006 **Dist:** 24.7 Ft
Obs: Tap Break-in Intruding

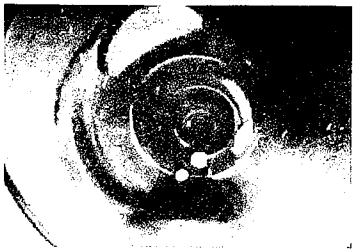
Date: 08/29/2006 **Dist:** 31.0 Ft
Obs: Tap Break-in Active



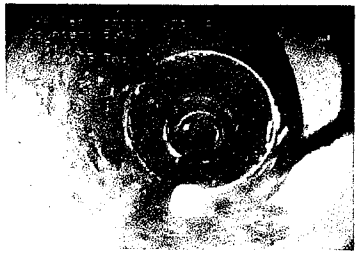
Date: 08/29/2006 **Dist:** 37.0 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 51.6 Ft
Obs: Deposits Attached Encrustation

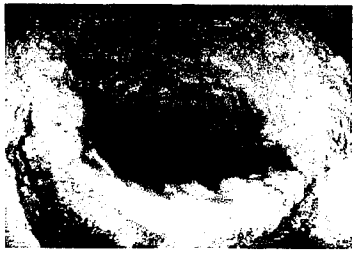


Date: 08/29/2006 **Dist:** 54.5 Ft
Obs: Tap Factory Active



Date: 08/29/2006 **Dist:** 56.8 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 66.3 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 67.8 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 77.1 Ft
Obs: Tap Factory Active

CCTV pictures of M-30576 X for **DCWASA**

Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 78

Street Name 2030 FLAGLER PLACE **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

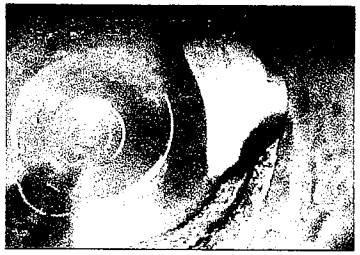
Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30576 **To Manhole** M-30639

Date: 08/29/2006 **Dist:** 79.1 Ft
Obs: Tap Factory Active

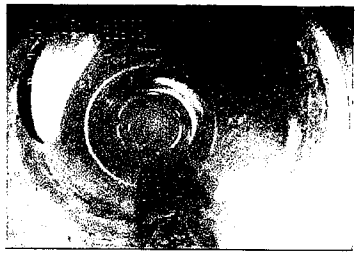
Date: 08/29/2006 **Dist:** 89.7 Ft
Obs: Deposits Attached Grease

Date: 08/29/2006 **Dist:** 96.0 Ft
Obs: Tap Break-in Active

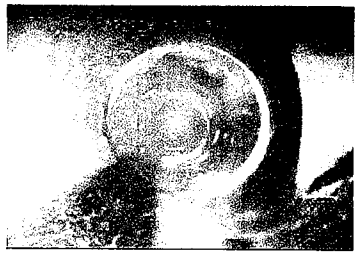
Date: 08/29/2006 **Dist:** 97.8 Ft
Obs: Tap Break-in Active



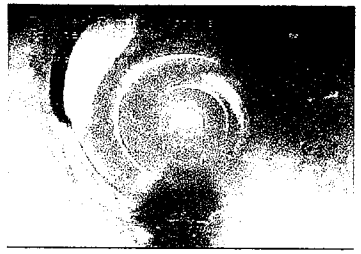
Date: 08/29/2006 **Dist:** 98.5 Ft
Obs: Tap Factory Active



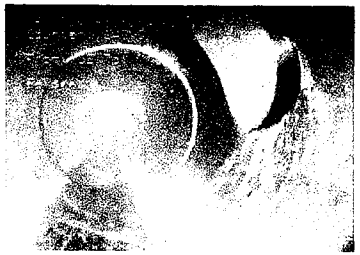
Date: 08/29/2006 **Dist:** 115.3 Ft
Obs: Tap Factory Active



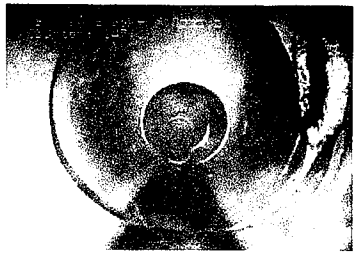
Date: 08/29/2006 **Dist:** 117.7 Ft
Obs: Tap Factory Active



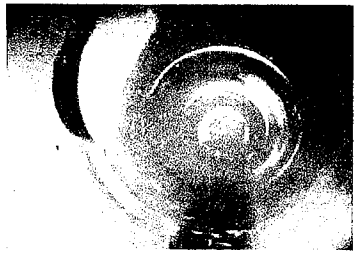
Date: 08/29/2006 **Dist:** 137.7 Ft
Obs: Tap Factory Active



Date: 08/29/2006 **Dist:** 140.0 Ft
Obs: Tap Factory Active



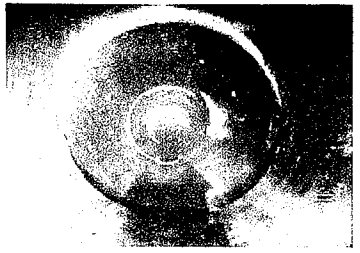
Date: 08/29/2006 **Dist:** 147.1 Ft
Obs: Tap Break-in Active



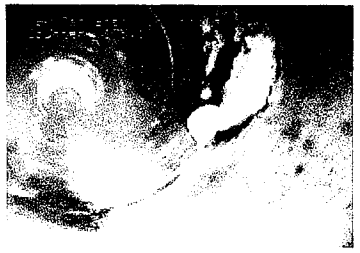
Date: 08/29/2006 **Dist:** 157.2 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 159.2 Ft
Obs: Tap Factory Active

Date: 08/29/2006 **Dist:** 168.8 Ft
Obs: Tap Break-in Active



Date: 08/29/2006 **Dist:** 172.1 Ft
Obs: Joint Offset Medium



Date: 08/29/2006 **Dist:** 175.1 Ft
Obs: Tap Break-in Active

Date: 08/29/2006 **Dist:** 183.5 Ft
Obs: Tap Break-in Intruding

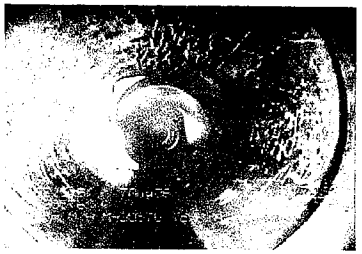
CCTV pictures of M-30576 X for **DCWASA**

Work Order ID 234 **Video** REI 015 **Surveyed On** 08/07/2006 **Direction** Downstream **Setup** 78

Street Name 2030 FLAGLER PLACE **City Name** WASHINGTON D.C. **ZIP Code** **Weather** Dry

Location Light Highway (rural, light traffic, town back st, estate st & parking **From Manhole** M-30576 **To Manhole** M-30639

Date: 08/29/2006 **Dist:** 186.7 Ft
Obs: Tap Break-in Active

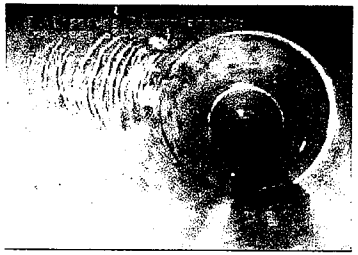


Date: 08/29/2006 **Dist:** 215.6 Ft
Obs: Crack Multiple

Date: 08/30/2006 **Dist:** 217.3 Ft
Obs: Tap Break-in Intruding

Date: 08/30/2006 **Dist:** 220.7 Ft
Obs: Tap Break-in Intruding

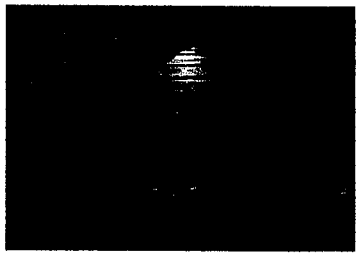
Date: 08/30/2006 **Dist:** 231.5 Ft
Obs: Crack Multiple



Date: 08/30/2006 **Dist:** 254.0 Ft
Obs: Fracture Circumferential

Date: 08/30/2006 **Dist:** 300.8 Ft
Obs: Vermin Rat

Date: 08/30/2006 **Dist:** 300.8 Ft
Obs: Tap Break-in Abandoned



Date: 08/30/2006 **Dist:** 310.3 Ft
Obs: Manhole

Tabular Report of PSR M-30728 X for DCWASA

Setup 79	***Surveyor*** A. OGUARA	***Certificate #*** U-405-2141	***System Owner*** DCWASA		
Drainage 1ST STREET	***Survey Customer*** DCWASA				
P/O # ID 234	***Date*** 08/07/2006	***Time*** 13:53:00	***Street*** 115 THOMAS STREET,N.W		
Locality WASHINGTON D.C.	***Further location details***				
Start M-30728	***Rim to invert*** 8.90	***Grade to invert***	***Rim to grade***	***Ft***	
Finish M-30727	***Rim to invert*** 15.50	***Grade to invert***	***Rim to grade***	***Ft***	
Use Sanitary	***Direction*** Down	***Flow control*** Not controlled	***Tape/Media #*** REI 015		
Shape Circular	***Height*** 24	***Width*** ***ins***	***Preclean*** J	***Year Cleaned*** 8/7/2006	
Material Vitrified Clay Pipe	***Joint length*** 7.00 ***Ft***	***Total length*** 54.4 ***Ft***	***Length Surveyed*** 54.4		
Lining	***Year laid***	***Year rehabilitated***	***Weather*** Dry		
Purpose Routine Assessment		***Cat***			
Additional info			Structural	O&M	Constructional
Location Light Highway (rural, light traffic, town back st, estate st & parking			Miscellaneous	Hydraulic	

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00:00:00		ST	Start of Survey								
0.0	00:00:00		AMH	Manhole								M-30728
0.0	00:00:00		MWL	Water Level			5					
6.0			CM	Crack Multiple					07	05		
54.4			CM	Crack Multiple					07	05		
54.4			AMH	Manhole								M-30727
54.4			FH	End of Survey								

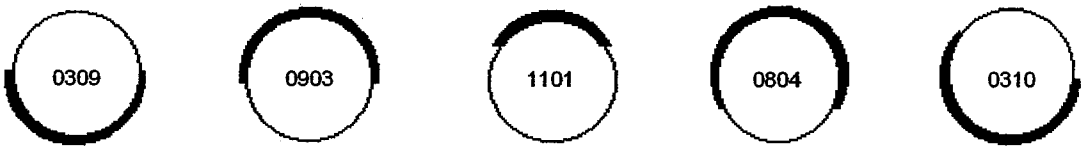
54.4 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 30		***Mean Defect*** 0		***Peak*** 3		***Mean Pipe*** 0.6	
Service:	***Total*** 0		***Mean Defect*** 0		***Peak*** 0		***Mean Pipe*** 0	

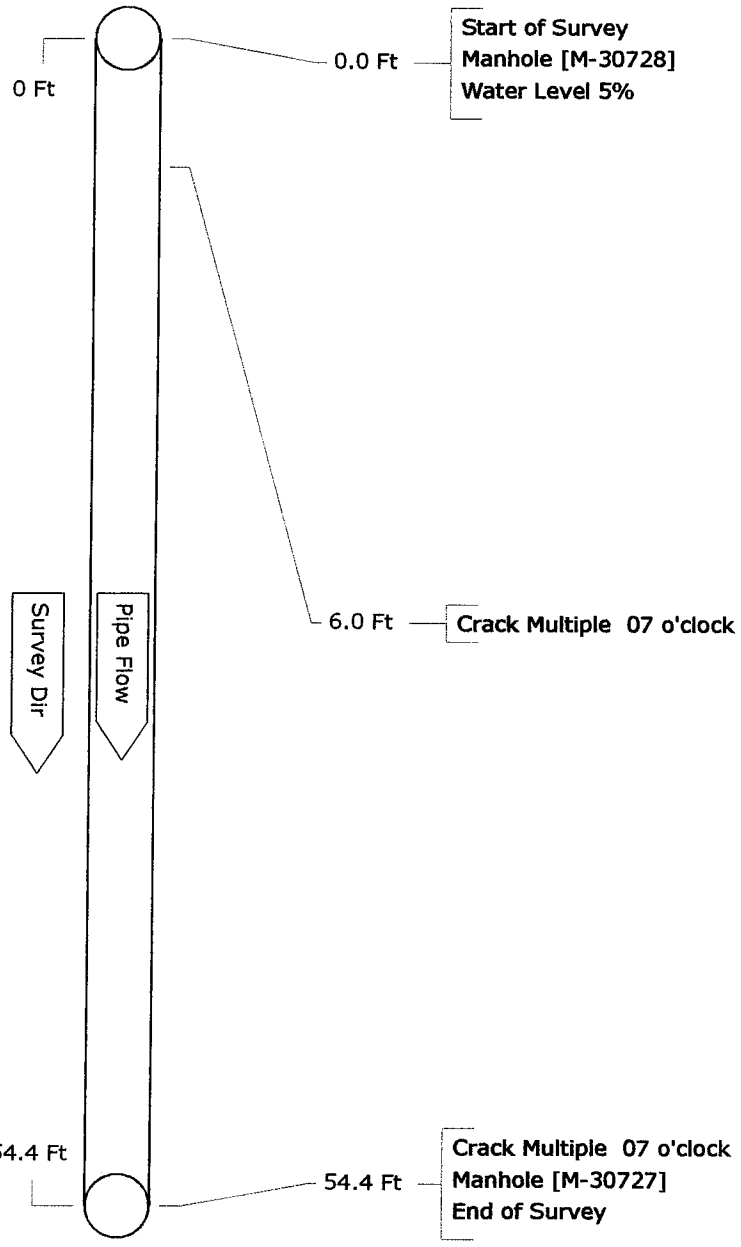
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Pipe Graphic Report of PLR M-30728 X for DCWASA

Setup 79	**Surveyor** A. OGUARA	**Certificate #** U-405-2141	**System Owner** DCWASA		
Drainage 1ST STREET	**Survey Customer** DCWASA				
P/O # ID 234	**Date** 2006/08/07	**Time** 13:53:00	**Street** 115 THOMAS STREET,N.W		
Locality WASHINGTON D.C.	**Further location details**				
Start M-30728	**Rim to invert** 8.90	**Grade to invert**	**Rim to grade**	**Ft**	
Finish M-30727	**Rim to invert** 15.50	**Grade to invert**	**Rim to grade**	**Ft**	
Use Sanitary	**Direction** Downstream	**Flow control** Not controlled	**Tape/Media #** REI 015		
Shape Circular	**Height** 24	**Width** **ins**	**Preclean** J	**Year Cleaned** 8/7/2006	
Material Vitrified Clay Pipe	**Joint length** 7.0 **Ft**	**Total length** 54.4 **Ft**	**Length Surveyed** 54.40		
Lining	**Year laid**	**Year rehabilitated**	**Weather** Dry		
Purpose Routine Assessment	**Cat**				
Additional info					
Location Light Highway (rural, light traffic, town back st, estate st & parking					



CCTV pictures of M-30728 X for **DCWASA**

Work Order	ID 234	**Video**	REI 015	**Surveyed On**	08/07/2006	**Direction**	Downstream **Setup** 79
Street Name	115 THOMAS STREET,N.W	**City Name**	WASHINGTON D.C.	**ZIP Code**		**Weather**	Dry
Location	Light Highway (rural, light traffic, town back st, estate st & parking			**From Manhole**	M-30728	**To Manhole**	M-30727

Date: 09/11/2006 **Dist:** 0.0 Ft
Obs: Water Level

Date: 09/11/2006 **Dist:** 6.0 Ft
Obs: Crack Multiple

Date: 09/11/2006 **Dist:** 54.4 Ft
Obs: Crack Multiple

Date: 09/11/2006 **Dist:** 54.4 Ft
Obs: Manhole

Tabular Report of PSR M-30729 X for DCWASA

Setup 80 ***Surveyor*** A. OGUARA ***Certificate #*** U-405-2141 ***System Owner*** DCWASA
Drainage 1ST STREET ***Survey Customer*** DCWASA
P/O # ID 234 ***Date*** 08/07/2006 ***Time*** 13:15:00 ***Street*** 115 THOMAS STREET,N.W
Locality WASHINGTON D.C. ***Further location details***

Start M-30729 ***Rim to invert*** 8.30 ***Grade to invert*** ***Rim to grade*** ***Ft***
Finish M-30728 ***Rim to invert*** 8.90 ***Grade to invert*** ***Rim to grade*** ***Ft***

Use Sanitary ***Direction*** Down ***Flow control*** Not controlled ***Tape/Media #*** REI 015
Shape Circular ***Height*** 18 ***Width*** ***ins*** ***Preclean*** J ***Year Cleaned*** 8/7/2006
Material Vitrified Clay Pipe ***Joint length*** 7.00 ***Ft*** ***Total length*** 173.6 ***Ft*** ***Length Surveyed*** 173.6
Lining ***Year laid*** ***Year rehabilitated*** ***Weather*** Dry
Purpose Routine Assessment ***Cat***

Additional info
Location Light Highway (rural, light traffic, town back st, estate st & parking

Structural O&M Constructional
Miscellaneous Hydraulic

Count	Video	CD	Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
0.0	00:00:00		ST	Start of Survey								
0.0	00:00:00		AMH	Manhole								M-30729
0.0	00:00:00		MWL	Water Level			5					
7.0			CL	Crack Longitudinal				J	12			
11.9			TBI	Tap Break-in Intruding	04	02			11			
17.2			TBA	Tap Break-in Active	04				02			
22.3			DAE	Deposits Attached Encrustation			05		03	05		
27.9			CC	Crack Circumferential					07	09		
32.7			IW	Infil Weeper				J	07	08		
34.5		S01	FM	Fracture Multiple				J	09	03		
35.1			TBI	Tap Break-in Intruding	03	02			11			
36.6			TBA	Tap Break-in Active	03				02			
97.5		F01	FM	Fracture Multiple				J	09	03		
110.6			TBA	Tap Break-in Active	04				09			
126.7			TBA	Tap Break-in Active	04				03			
169.6			FM	Fracture Multiple					07	05		
173.6			AMH	Manhole								M-30728
173.6			FH	End of Survey								

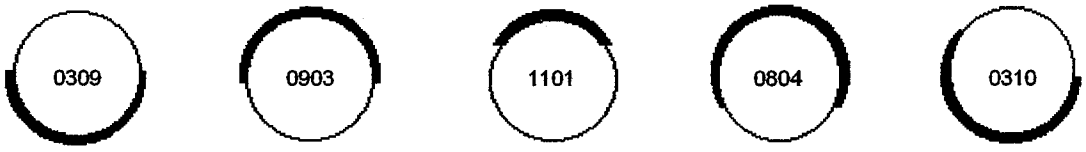
173.6 ***Ft*** ***Total Length Surveyed***

Scores

Structural:	***Total*** 59		***Mean Defect*** 3.7		***Peak*** 4		***Mean Pipe*** 0.3		
Service:	***Total*** 10		***Mean Defect*** 2.5		***Peak*** 3		***Mean Pipe*** 0.1		

Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317