

Appendix B

Review of Past Video Inspection
November 1999

TO: Pete Clark, Tony Hayes - Town of Falmouth **DATE:** September 26, 2007

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SUBJECT: Falmouth on the Green
Review of Television Inspection of Sanitary Sewer Lines

Introduction

As requested we have reviewed past video tapes of the Falmouth on the Green (FOG) collection system and the associated logs and this memo serves as a summary of our findings. The television inspection of the system was performed by Eastern Pipe Services, Inc. in 1999 and in 2003 at the request of Dirigo Management Company. The following is a summary of our findings listed by street and video number. Abbreviations used in this memo follow those outlined in the November 1999 log. Bold text indicates that an item was not included in the original logs.

Findings

- In general, the logs accurately showed the location of most house service laterals, although there were a few that were not identified in the report (i.e. see Muirfield Road between SMH 2.17 and SMH 2.18).
- The following portions of the television inspection did not have a corresponding Television Inspection Log form:
 - Hazeltine Drive, SMH 3.3 to SMH 3.4;
 - All sections from April 2000, Tape 6 (includes portions of Hazeltine Dr., Muirfield Rd. and Inverness Rd.);
 - Baltusrol Circle, SMH 1.15 to SMH 1.16; and
 - Inverness Road, SMH 7 to SMH 6.

The above-mentioned areas were fairly typical to the system with the exception of one area. The section of pipe in Inverness Road from SMH 7 to SMH 6 revealed three severely offset and broken joints within a five foot length of pipe.

- In general, the original logs did not reflect that *there are* a number of joints that are separated, offset or at least questionable (i.e. portion of Inverness Road between Medinah and Baltusrol Circles). These defects represent a potentially significant source of groundwater infiltration during periods when the groundwater table is above the pipeline.

- In general, there was more sludge and debris in the collection system than was reported in the logs. There were a number of locations, especially on Baltusrol and Medinah Circles where there were large rocks and pieces of brick in the line.
- In general, precipitation records indicate that amount of precipitation in the month leading up to and also during the television inspection was either fairly close to average or below average. This may be an indication of a low groundwater table, and therefore, it is possible that there are more defective or leaking service laterals that were not noted during inspection.

Recommendations

- Perform manhole inspections of all manholes in the collection system.
- Perform instantaneous flow monitoring during a rainstorm in the spring to assess the relative quantities of flow coming from each area of the collection system.
- Perform spot cleaning and television inspection of the mainline sewer as well as several service laterals based on the information gathered from the previous television inspection logs, the manhole inspections and the flow monitoring efforts.

Light cleaning and television inspection is currently estimated at \$1.25 per linear foot of 8-inch PVC sewer with an additional \$300 for mobilization and demobilization. Service laterals are estimated at about \$300 each. An estimated 1,000 linear feet of mainline sewer could be inspected per day.

HAZELTINE DRIVE

Tape 4, Nov. 1999

SMH 3.3 to SMH 3.4 *Clean line, clean water*

15'	J	<i>Separated</i>
28'	J	<i>Questionable</i>
41'	J	
54'	J	<i>Questionable, sediment</i>
67'	J	<i>Separated</i>
80'	J	
93'	J	
106'	J	
119'	J	

SMH 3.4 to SMH 3.5

15'	J	
28'	J	
41'	J	
54'	J	
67'	J	
80'	J	
92'	S/C	tap in, seal seems fine, constant flow, 1gpm,
93'	J	
107'	J	
120'	J	

Tape 5, November 1999

SMH 3.7 to SMH 3.6

19'	J	
21'	J	
34'	J	
47'	J	
60'	J	
73'	J	
86'	J	
100'	S/C	
Drop connection, drop completely backed up		

SMH 3.7 to SMH 3.8

15'	J	
28'	J	
41'	J	
54'	J	
67'	J	Separated
81'	J	
93'	J	
106'	J	
117'	S/C	Small amount of water flowing
130'	J	
143'	J	
156'	J	Separated
169'	J	
182'	J	Separated
195'	J	Separated
208'	J	Separated
221'	J	
234'	J	

Tape 6, April 2000

SMH 3.1 to SMH 3.2 **Minimal flow, sludge buildup in bottom of line**

15'	J	
28'	J	Separated
41'	J	
54'	J	
67'	J	Separated
80'	J	
93'	J	Separated
106'	J	
118'	J	Separated
132'	J	
140'	S/C	dirty line
143'	S/C	dirty line
156'	J	
169'	J	
182'	J	Separated
194'	J	Questionable
208'	J	
220'	J	
234'	J	
247'	J	

261' J
 274' J
 285' End of line

SMH 3.2 to SMH 3.3 Same condition

*** 9' S/C Whitish buildup in the bottom, steady flow
 23' J
 37' J
 49' J
 62' J
 76' J Separated
 90' J
 102' J
 115' J
 128' J
 142' J
 155' J
 167' J
 180' J
 194' J Questionable, separated
 207' S/C Whitish buildup in bottom
 212' End of line, lots of sludge, camera had trouble getting through

SMH 3.1 to SMH 3.6 Lots of sediment buildup all around line, some sludge buildup

16' J
 29' J
 42' J
 56' J
 68' Had to stop because of sludge in line

MERION WAY

Tape 5, Nov. 1999

SMH 3.7 to SMH3.9 Two fist sized rocks dragged from manhole, sludge in line off and on, minimal flow
Questionable

16' J
 29' J
 42' J Separated
 55' J Separated
 68' J Separated
 81' J Separated
 94' J
 108' J

SMH 3.9 to SMH 3.10 Clean line, minimal flow, some sludge

SMH-9' Dip in line
 28' J
 41' J
 54' J
 67' J Separated
 72' S/C
 85' J Separated
 98' J
 114'-126' Dip in line, ½" water to 2" water
 111' J
 124' J
 126' S/C
 138' J
 153' J
 166' J
 179' J
 192' J
 205' J
 218' J
 231' J
 244' J
 257' J Separated
 270' J
 284' S/C

BIRKDALE ROAD

Tape 1, Nov. 1999

SMH 2.1 to SMH 2.2 Walls very dirty, debris in line, line noted as flat

15'	J	
29'	J	Questionable, separated, camera had trouble
42'	J	Camera had trouble
43'-58'		Dip in pipe, water over camera
55'	J	
58'-70'		Water still high enough to partially block camera
68'	J	
81'	J	
94'	J	
107'	J	
120'	J	
133'	J	
147'	J	Camera had trouble
159'	J	
171'	J	
184'	J	
198'	J	
211'	J	
223'	J	
237'	S/C	
251'	J	
263'	J	
276'	J	
289'	J	
303'	S/C	

Tape 2, Nov. 1999

SMH 2.3 to SMH 2.2

2'	J
21'	J
34'	J
47'	J
60'	J
73'	J
86'	S/C

100'	J	Questionable, separated?
113'	J	
126'	J	
139'	J	
153'	S/C	
167'	J	
180'	J	
192'	J	
205'	J	
220'	J	
232'	J	
245'	J	Leaking
		Had to stop and flush line to get a rock out
260'	J	
274'	J	
288'	J	

SMH 2.3 to SMH 2.4

16'	J	
29'	J	
42'	J	
55'	J	
68'	J	
81'	J	
94'	J	
107'	J	
120'	J	
133'	J	
146'	J	
158'	J	Separated
172'	J	
186'	J	Questionable, separated?
199'	J	
211'	J	
223'	S/C	
226'	S/C	

SMH 2.4 to SMH 2.5

15'	J	
28'	J	
41'	J	
54'	J	Questionable, leak
67'	J	
80'	J	
93'	J	

107'	J	Separated
120'	J	
133'	J	
146'	J	
159'	J	
172'	J	
185'	J	
198'	J	
199'	S/C	
201'	S/C	
213'	J	
226'	J	
239'	J	

SMH 2.6 to SMH 2.5

6'	J	Questionable
18'	J	
29'	S/C	
32'	J	
45'	J	
58'	J	
71'	J	
85'	J	
98'	J	
110'	J	

SMH 2.7 to SMH 2.6 **Recently cleaned**

2'	J
17'	J
30'	J
43'	J
56'	J
70'	J
82'	LJ

SMH 2.7 to SMH 2.8

15'	J
28'	J
41'	J
55'	J
67'	J
80'	J
93'	J
107'	J
120'	J

133'	J
139'	S/C
153'	J
166'	J
179'	J
192'	J
205'	S/C
219'	J
232'	J
245'	J
258'	J
271'	J
285'	J
298'	J
310'	J

SMH 2.9 to SMH 2.8

8'	J	Questionable Dip in line?
18-20'		
22'	J	
35'	J	
48'	J	
62'	J	
75'	J	
88'	J	
101'	J	
111'	J	
125'	S/C	
134'	S/C	
155'	J	
168'	J	
181'	J	
194'	J	
207'	J	
220'	J	
233'	J	
246'	J	

Tape 4, Nov. 1999

SMH 2.27 to SMH 2.1

14'	J	Questionable
28'	J	Questionable
41'	J	Questionable
54'	J	
67'	J	
80'	J	Separated
91'	Drop connection into manhole	
*Length of line wrong in report		

SMH 2.28 to SMH 2.27

?	J
20'	J
33'	J
46'	J
59'	J
72'	J
85'	J
98'	J
108'	S/C
11'	S/C

SMH 2.33 to SMH 2.32

20'	J
33'	J
41'	Begin sludge on and off
46'	J
59'	J
72'	J
80'	Begin dip
84'	J
87'	End dip
88'	Broken pieces of brick

SMH 2.32 to SMH 2.28

Some sludge

11'	J
24'	J
37'	J
50'	J
63'	J
76'	J
89'	J
102'	J
Mortar visible at end of line	

SMH 2.33 to SMH 2.34

Some sludge and broken bricks

6'	Piece of pipe in line	
12'	J	
25'	J	Questionable, separated?
39'	J	Questionable, separated?
52'	J	
64'	J	
78'	J	
91'	J	Separated
104'	J	
117'	J	
130'	S/C	
143'	J	
156'	J	
169'	J	
183'	J	Questionable, separated?
189		Some rocks and broken brick
196'	J	

SMH 2.34 to SMH 2.35

15'	J	Separated
28'	J	Questionable, separated?
41'	J	
54'	J	
67'	J	Broken piece of something in line
80	J	Separated
83'	S/C	Dirty line
85'	S/C	Dirty line

SMH 2.35 to SMH 3.36

15'	J	Separated
28'	J	Questionable
41'	J	Separated
54'	J	
67'	J	
80'	J	Questionable
93'	J	Separated
97'	S/C	

PRESTWICK CIRCLE

Tape 4, Nov. 1999

SMH 2.33 to SMH 2.37

15'	J	Questionable
28'	J	
41'	J	
54'	J	Separated
80'	LJ	
93'	J	Separated
106'	J	Questionable
120'	J	Separated
133'	J	
146'	J	
159'	J	
172'	J	Very Separated

SMH 2.37 to SMH 2.38

Sludge in line

15'	J	
28'	J	Questionable
41'	J	
54'	J	
67'	J	Questionable
80'	J	
87'	S/C	
94'	J	
107'	J	
120'	J	
133'	J	
146'	J	Separated
159'	J	
SMH	S/C	Empties into the manhole

HOYLAKE CIRCLE

Tape 4, Nov. 1999

SMH 2.28 to SMH 2.29

13'	J	Questionable
28'	J	
41'	J	
54'	J	
67'	J	
80'	J	
93'	J	
106'	J	
119'	J	
132'	J	

SMH 2.29 to SMH 2.30**Clear water**

15'	J	
28'	J	
41'	J	
54'	J	
67'	J	Questionable
69'	S/C	
71'	S/C	Running clear water with soap (washer running)

SMH 2.30 to SMH 2.31**Voice over noted that both manholes are leaking**

15'	J	
28'	J	Questionable
41'	J	
54'	J	Questionable
67'	J	
80'	J	
93'	J	
106'	J	
119'	J	
132'	J	
145'	J	
158'	J	
171'	J	
173'	S/C	Separated joint

MUIRFIELD ROAD

Tape 2, Nov. 1999

SMH 2.9 to SMH 2.10

17'	J	
30'	J	
43'	J	
57'	J	
69'	J	
83'	J	
95'	J	
109'	J	
122'	J	
136'	J	
145'	S/C	Whitish buildup in service line
159'	J	
172'	J	
185'	J	
211'	J	
224'	J	
237'	J	
250'	J	
264'	J	
269'-273'		Questionable, gap in tape, dip in flow
277'	J	

SMH 2.10 to SMH 2.11

16'	J	
41'	J	
54'	J	
67'	J	
78'	S/C	
86'	S/C	Whitish buildup in service line

SMH 2.11 to SMH 2.12

14'	J	
27'	J	Questionable
40'	J	
53'	J	
67'	J	
80'	J	
93'	J	
106'	J	
119'	J	

SMH 2.13 to SMH 2.12

12'	J
25'	J
38'	J
51'	J
64'	J
77'	J
90'	J
103'	J
116'	J
129'	J
142'	J
156'	J
169'	J
182'	J
195'	J

SMH 2.14 to SMH 2.13

6'	S/C	
19'	J	Questionable, offset?
32'	J	
46'	J	
59'	J	
72'	S/C	Whitish buildup in service line
78'	S/C	
82'	J	
95'	J	
109'	J	

SMH 2.15 to SMH 2.14

10'	J	
22'	J	
35'	J	
48'	J	
61'	J	Questionable
74'	J	
87'	J	

Tape 3, Nov. 1999

SMH 2.16 to SMH 2.15

		Joints have a lot of sediment around them
7'	S/C	Below spring line of pipe
10'	S/C	
17'	J	Questionable
31'	J	Questionable
44'	J	Questionable
57'	J	Questionable
70'	J	Questionable
83'	J	Questionable
96'	J	Questionable
109'	J	Questionable
122'	J	Questionable

SMH 2.17 to SMH 2.16

<10'	J	
20'	J	
32'	J	
45'	S/C	Marked as an 8" line
59'	J	Questionable, sediment
72'	J	
85'	J	
98'	J	
111'	J	
124'	J	
137'	J	
150'	J	

SMH 2.17 to SMH 2.18

15'	J	Questionable
28'	J	
41'	J	
54'	J	
67'	J	
79'	S/C	
92'	J	
118'	J	
131'	J	
144'	J	
154'	S/C	

SMH 2.18 to SMH 2.19

9'	J	
29'	J	Separated, caught camera
42'	J	
55'	J	
68'	J	Questionable
81'	J	
94'	J	
107'	J	Questionable
120'	J	
133'	J	Separated, leaking?
146'	J	
159'	J	

SMH 2.19 to SMH 2.20

15'	J	
28'	J	
41'	J	
54'	J	
67'	J	
80'	J	Questionable, separated?
93'	J	Questionable, separated?
98'	S/C	Whitish buildup in service
107'	J	
120'	J	Questionable, separated?
133'	J	
146'	J	
159'	J	

SMH 2.21 to SMH 2.20

		Very dark looking wastewater
7'	S/C	Stab in, questionable condition
10'	S/C	Tee?
12'	J	
26'	J	Questionable
28'	J	Separated, mineral deposits
52'	J	
65'	J	
78'	J	Questionable
91'	J	
104'	S/C	
109'	J	
122'	J	
135'	J	
149'	J	
156'		Considerable amount of sludge from here to manhole including brick pieces

SMH 2.22 to SMH 2.21

		Considerable amount of dark residue on bottom of pipe, different than other sections, joints have residue around the whole perimeter, get's cleaner around 70' from SMH 2.22
12'	J	
25'	J	
38'	J	
51'	J	
64'	J	
77'	J	
90'	J	
103'	J	
117'	J	
130'	J	Questionable
143'	J	

SMH 2.23 to SMH 2.22

9'	J	
35'	J	
48'	J	
61'	J	Questionable
74'	J	
87'	J	
100'	J	
113'	J	
120'	S/C	looks like an 8x8 tee, some mortar showing at top of joint, service itself looks very clean
140'	S/C	looks like a tee
151'	J	
163'	J	
177'	J	

Concrete in invert of SMH 2.22

SMH 2.24 to SMH 2.23

Line appears to be very
clean and in good
condition

18'	J	
31'	J	
44'	J	
57'	J	
70'	J	
83'	J	
95'	S/C	questionable joint
97'	J	
110'	J	
123'	J	
136'	J	
149'	J	
162'	J	

SMH 2.24 to SMH 2.25

14'	J
27'	J
40'	J
53'	J
66'	J
29'	J
32'	J
103'	S/C

SMH 2.25 to SMH 2.26

14'	J
27'	J
40'	J
53'	J
66'	J
79'	J
92'	J
105'	J
118'	J
132'	J
144'	J
157'	J
171'	J
184'	J
197'	J
206'	S/C

Tape 6, April 2000

SMH 2.18 to SMH 2.17

Lots of buildup

6'	S/C	
17'	J	
30'	J	
43'	J	Separated
55'	J	Questionable
69'	J	
82'	S/C	Dirty service
94'	J	
107'	J	
120'	J	
132'	J	
148'-SMH		Sag in line
158'		End of line

SMH 2.17 to SMH 2.16

Same line condition,
flow moving swiftly

19'	J	
32'	J	
43'	S/C	Dirty
59'	J	Questionable
71'	J	
85'	J	
98'	J	
111'	J	
124'	J	
136'	J	
149'	J	
162'	End of line	

SMH 2.16 to SMH 2.15

Less flow

5'	S/C	Dirty
7'	S/C	Dirty
15'	J	
28'	J	Questionable
41'	J	Questionable
53'	J	Questionable
66'	J	
79'	J	
91'	J	
104'	J	Flow increased again
117'	J	
130'	End of line	

Tape 1, May 2003

SMH 2.14 to SMH 2.13

Just upstream of the RR

76'	S/C	Constant flow from service, House 22
70'	S/C	Could leak, House 15
57'	J	
42'	J	
35'	J	
30'		
16'		
5'	S/C	Some leakage

BALTUSROL CIRCLE

Tape 3, Nov. 1999

SMH 1.13 to SMH 1.12

Lots of sludge and
broken bits of brick
and rocks throughout

19'	J	
32'	J	
45'	J	
58'	J	
71'	J	
84'	J	
97'	J	
110'	J	Questionable separated
123'		Fist sized rock
124'	J	Separated
137'	J	
150'		Drop inlet into manhole

SMH 1.14 to SMH 1.13

6'	S/C	8"x8" tee, clean water running steady
Not very much sludge after the service, all clear water		
13'	J	
27'	J	
40'	J	
53'	J	
66'	J	
79'	J	
92'	J	
101'		Questionable
105'	J	
118'	J	
132'	LJ	
145'	J	
158'	J	
168'		Broken brick
172'	S/C	8"x8" tee, clean line
172'	OSJ	

SMH 1.14 to SMH 1.15 **Minimal flow**

14'	J	Questionable
27'	J	Separated
40'	J	Questionable
53'	J	
67'	J	Questionable
80'	J	Questionable
84'-147'		Lots of sludge'
92'	J	
106'	J	
119'	J	
132'	J	
145'	J	Fist sized rock

SMH 1.15 to SMH 1.16 **Two 4" lines are piped into SMH 1.16.**

15'	J	Separated
28'	J	Separated
54'	J	Questionable
67'	J	Separated
80'	J	Separated
93'	J	Separated
106'	J	Separated
119	J	Questionable
133'	J	Questionable
145'	J	

4" Service Lateral from Tank to Line, No. 2 Baltusrol Circle

Black sediment in bottom of line, joints don't look like push-on joints

12'	J	
25'	J	
38'	J	
62'		Stack/cleanout
78'	J	
89'	J	
103'	J	
115'	J	
130'	J	
144'	J	
156'	LJ	Offset joint or pinched seal?, 3 gpm estimate

MEDINAH CIRCLE

Tape 1, Nov. 1999

SMH 1.1 to SMH 1.2

10'?	J	Offset joint
23'	J	
26'	J	
49'	J	
62'	J	Questionable
75'	S/C	
77'	J	
91'	J	
93		increasing water
98		debris in line and more water
104'	J	questionable, possible source of water and debris, no debris after joint, camera had trouble getting by joint higher water continues
130	J	
		Water increases to a few inches

SMH 1.2 to SMH 1.3 **clean walls, lots of debris in bottom, higher water continues**

6'	S/C	water from line is backing into service
12'	S/C	water from line is backing into service, camera had trouble getting through service due to debris

Reversed set up

SMH 1.3 to SMH 1.2 clean walls, debris in bottom, higher water continues but less than before

6' S/C

18' J

31' J

45' J Questionable, camera had trouble getting over joint

57' J

71' J Questionable, offset?

Operator noted that the pump station has been down after mentioning the amount of sludge

84' J Questionable, silt all around joint, camera had trouble

94' S/C

107' J Questionable, silt all around joint camera had trouble

112' S/C

Couldn't finish due to the amount of sludge in the line

Tape 3, Nov. 1999

Still having difficulty with pump station

SMH 1.3 to SMH 1.2 Lots of fist sized rocks in line, lots of separated joints

4' S/C water backing up into pipe

6'-16' No tape

31' J

44' J Separated

50' Questionable, leaking?

57' J

70' J

84' J Separated

92' S/C

106' J Questionable

110' S/C

124' J

138' J Separated

151' J Separated

164' J Questionable

165' Fist size granite rock in line

177' J

190 J Questionable

203' J

200' Several fist sized objects of debris (rocks or concrete)

316' J Questionable

220' Camera blocked by sludge dug up from rock

229' J

232'-302' Camera completely blocked by sludge

SMH 1.4 to SMH 1.3 Lots of dark debris, appears to have settled out to the bottom, surrounding water is clear

14' J

27' J

40' J

53' J

66' J

80' J

93' J Separated

106' J Separated

119' J Separated

132' J

145' J Separated

150' Camera starts dragging sludge, camera mostly blocked

158' J

SMH 1.5 to SMH 1.4 Lots of dark debris

15' J Questionable

18' Piece of broken pipe in the line

28' J

41' J

51' Questionable, possible leak at top of pipe

54' J

67' J

81' J Questionable

94' J

107' J Separated

120' J Questionable

133' J

146' J
159' J
172' J
185' J Separated
188' S/C
194' S/C

Tape 4, Nov. 1999

SMH 1.3 to SMH 1.2 Re-TV (not noted),
Underwater for first 30',
pump station backing up

? S/C
56' J
69' J
82' J
92' S/C
105' J Separated
110' S/C Small amount of clean
water running
123' J Questionable
136' J Separated
149' J Separated
162' J Questionable
175' J Questionable
188' J Separated
202' J
215' J
228' J Separated
241' J Separated
254' J Separated
267' J Questionable
280' J Separated
293' S/C Small amount of clear
water running
298' S/C

INVERNESS ROAD

Tape 1, Nov. 1999

SMH 3 to SMH 2 Fairly clean line
15' J
41' CJ
55' CJ Two cracks
68.5 J Separated
85' S/C There is a lot of dark debris
in the service
95' J Questionable
~10' Missed a section of the line
due to technical issues with
the video

SMH 2 to SMH 1 Heavy, dark sediment in the
bottom of the line
54' J Questionable
80' J Separated

SMH 3 to SMH 4 Evidence of dark buildup on
the sides of the line (appears
to be soil), clear water in
SMH 3
41' J
53' CJ
55' J
65' OSJ Slight
67' J Separated and leaking
68' CJ Sheer break at joint (per
voice over)

SMH 4 to SMH 5 Evidence of dark buildup on
the sides of the line (appears
to be soil)
13' S/C
32' J
45' J
58' J
71' J

SMH 5 to SMH 6 Evidence of dark buildup on the sides of the line (appears to be soil), debris in SMH 5

13'	S/C	
20'	S/C	Service connection below the spring line of the pipe
27'	J	
39'	J	
52'	J	
57'	CPC	Questionable
65'	J	
78'	J	

SMH 8 to SMH 7 Same condition, more flow

15'	J	
20'		From this point on, the video is considerably blocked by a leave
28'	J	
41'	J	
54'	J	
67'	J	
81'	J	
93'	J	
107'	J	Separated
119'	S/C	
134'	J	
147'	J	Questionable
160'	J	
173'	J	
186'	J	
199'	J	
212'	J	
225'	J	Separated

SMH 7 to SMH 6 Same condition, less flow again, no record of this section included in the report

16'	J	
28'	J	
42'	J	
51'	CPC	Completely broken and offset, voice over called it an offset joint
52'	S/C	
54'	J	Bad offset, 1 ½"
54.5'	J	Offset
68'	J	
81'	J	

Line is 85' long

SMH 8 TO SMH 9 Same condition

13'	J	
27'	J	
40'	J	
45'	CPC	Questionable
52'	J	

SMH 9 to SMH 10 Same condition

5'	S/C	Service below the spring line of the pipe
7'	S/C	
21'	J	
33'	CJ	Questionable upper right, sediment buildup in the bottom of the joint

Lots of sediment buildup at SMH 10

SMH 10 to SMH 11 Same condition

11'	J	
23'	S/C	
28'	J	Offset
42'	J	
55'	J	
68'	J	
81'	J	

SMH 12 to SMH 11 Same condition

15'	J	
28'	J	
41'	J	
55'	J	
68'	J	
81'	J	
94'	J	
107'	J	
120'	J	
133'	J	
146'	J	
159'	J	
172'	J	
185'	J	
198'	J	
211'	J	
225'	J	
237'	J	
251'	J	
260	S/C	Tap-in, protruding 1/2", seal seems ok, main line looks ok Where does this go?

SMH 13 to SMH 12 Very dirty all around pipe

15'	J	
28'	J	
42'	J	
55'	J	
68'	J	
80'	J	
94'	J	
107'	J	
120'	J	
133'	J	
146'	J	
158'	J	Questionable
173'	J	
186'	J	
199'	J	
212'	J	
225'	J	
238'	J	
251'	J	
264'	J	

277'	J	
290'	J	
292'	S/C	Some standing water in service

SMH 14 to SMH 13 More flow, lots of debris at end of line in manhole, line is varies between very clean and lots of dark debris

15'	J	
11' to 20'		Dark silty/mulchy debris in line, Potential sag in line or backup from PS
28'	J	
41'	J	
39' to 60'		Dark silty/mulchy debris in line, Potential sag in line or back up from PS
54'	J	
67'	J	Amount of water in pipe decreases considerably
80'	J	Mineral deposits around joint,
78 to 85		Dark silty/mulchy debris in line
93'	J	
Lots of debris in SMH 13		

Tape 3, Nov. 1999

SMH 1.5 to SMH 1.6 Same type of settled debris as in Medinah with clear water

18'		Broken pieces of brick? in line
32'	J	Separated
Considerably		less water
44'		Brick in line
45'	J	Separated
58'	J	Questionable
71'	J	
84'	J	
97'	J	
110'	J	
Voice over - conversation about finding a blockage, haven't found one yet, could be		

why there is so much less water here than in the Medinah line

123' J
 123' Sudden increase to sludge depth
 131' Sludge going back down
 136' J Separated
 143' Sludge slows and picks up again

SMH 1.6 to SMH 1.7 Little flow

27' J Separated
 41' J Separated
 54' J Questionable
 64' J? Questionable
 67' J Separated
 80' J Questionable
 93' J Separated
 97' Asphalt and brick in line
 106' J
 119' J
 132' J Separated

SMH 1.7 to SMH 1.8

13' J
 26' J Separated
 40' J Separated
 53' J Very Separated
 66' J Separated
 29' J Separated
 92' J Separated
 105' J Separated
 118' J Separated
 131' J Separated
 144' J
 157' J
 170' J Separated
 183' J Separated
 196' J Separated
 209' J Questionable
 222' J Separated
 236' J Separated
 249' J
 245'-255' Increase in sludge
 248' J
 261' J Separated
 275' J Separated

Tape 4, November 1999

SMH 1.8 to SMH 1.9 Per voiceover, they did heavy cleaning in these three line sections, removed about 3-4 yds. sand and gravel. Still noted a considerable amount of sludge and rocks/bricks

10' J
 23' J
 36' J
 49' J
 62' J
 75' J
 83' Piece of plastic pipe
 88' J
 99' Two smaller pieces of plastic pipe
 101' J
 115' J
 128' J
 141' J
 150' S/C Running clean water ~1 gpm?
 154' S/C

SMH 1.9 to SMH 1.10

10' J
 23' J
 35' J
 40' Two fist sized rocks
 54' Sludge, rock and brick buildup, blocked line for a bit
 61' J
 88' J
 105' Rock
 109' Rock or concrete
 127' J
 139' J
 145' Sludge tapers off, mostly clean line
 153' J

SMH 1.10 to SMH 1.12

21' J
32' Fist Sized Rock
39' Camera completely blocked by
sludge

Tape 6, April 2000

SMH 1.6 to SMH 1.7 Sludge buildup

14' J
27' J
42' J
55' J Separated
68' J Separated
81' J Separated
95' J Separated
106' J
120' J Separated
132' J Separated
146' End of Line

Tape 4, Nov. 1999

SMH 1.8 to SMH 1.9 Re-TV'd after cleaning

11' J
24' J
37' J
50' J
63' J Questionable, leaking just
before?
76' J
89' J
102' J
115' J
128' J
141' J
151' S/C
154' S/C

SMH 1.9 to SMH 1.10

10' J
23' J
36' J
49' J
62' J
75' J
88' J
101' J
114' J
128' J
141' J
154' J

SMH 1.10 to SMH 1.12

SMH 1.10	S/C?
9'	J
22'	J
35'	J
49'	J
61'	J
74'	J
88'	J
101'	J
114'	J
127'	J
140'	J