

Appendix A

Oil and Hazardous Materials Findings and Soil Management Recommendations

DATE: October 20, 2009
TO: Michael Cunningham, P.E., S E A
FROM: Richard K. Quateman, LSP, CHMM, S E A
CC: File
SUBJECT: Oil and Hazardous Materials Findings and Soil Management
Recommendations – CAM 400 Sewer Separation Project
S E A No.: 2008288.01-A

INTRODUCTION

This memorandum presents the results of S E A's preliminary assessment of environmental conditions in the CAM 400 area of Cambridge, Massachusetts. The area is bounded to the south by Whittemore Avenue, to the west and north by Alewife Brook Parkway (Massachusetts Route 3A), and to the east by Magoun Street.

This preliminary assessment included a review of the Massachusetts Department of Environmental Protection (MassDEP) searchable Site database; an environmental records search utilizing the services of Environmental Data Resources, Inc. (EDR); a site reconnaissance; and, a subsurface soil sampling and analysis program. This memorandum also provides guidance on state and federal requirements for soil management, based on the results of the laboratory chemical analyses.

FINDINGS

State Database Review

A state database search was conducted utilizing MassDEP searchable Site database and EDR. A review of the MassDEP Site database indicated the following properties in immediate proximity to the subject property:

- ◆ Release Tracking Number (RTN) 3-00277, W.R. Grace & Company, is associated with a number of contaminants, the principal of which in relation to the CAM 400 project is asbestos. A Response Action Outcome (RAO) Statement and Activity and Use Limitation (AUL) restricting property uses and activities was recorded by W.R. Grace in 2006. The presence of asbestos in soil on the Grace properties is not anticipated to impact the majority of project work as it will be located off W.R. Grace property. As of the writing of this memorandum, however, utility installations may be conducted on the W.R. Grace property; any construction activities on the W.R. Grace property will require submittal of a Utility-related Abatement Measure (URAM) Plan and compliance with the City of Cambridge Asbestos Ordinance.
- ◆ RTN 3-26100, 62 Whittemore Ave., was the location of a Utility-related Abatement Measure (URAM) Plan conducted on W.R. Grace property to address management of asbestos-contaminated soils.

- ◆ RTN 3-0708, 2578 Massachusetts Ave., was the location of a 1991 release of oil at a former Amoco gasoline station. A Class A-2 RAO Statement was submitted in 2000 indicating that contaminant had been addressed, but that residual contamination remains. Based on the location of this release, residual groundwater contamination could be encountered during construction.
- ◆ RTN 3-15879 and 3-1591, 2615 Massachusetts Ave., was the location of a pre-1990 and a 1997 gasoline release(s) at a Mobil gasoline station. The MassDEP file indicates that an RAO was submitted in 2001. Based on the location of this release, residual groundwater contamination could be encountered during construction.
- ◆ Additional releases at distances greater than 500 feet from the subject property are also indicated on the MassDEP database. Based on their locations and Massachusetts Contingency Plan (MCP) status, as indicated on the database impact to the subject property from these releases are not anticipated.

For the purpose of this investigation, however, all releases are considered to be posing a potential risk of a release of oil or hazardous material (OHM) to the environment or which could impact construction operations in the area.

Site Reconnaissance

S E A completed a reconnaissance of the project area using aerial photographs and conducting a walkover of the subject and surrounding properties. The project area is predominantly residential with several parking lots located on the north side of Whittemore Avenue. The W.R. Grace property is located on the southern side of Whittemore Avenue.

A review of historic aerial photographs indicates extensive industrial activities on the south side of Whittemore Ave and a greenhouse complex at the area of a current parking lot between Kimball and Harrison Streets. A storage building was located on the west side of Kimball at Whittemore. Construction activities in adjacent streets are not anticipated to be impacted by these historic and current activities.

SUBSURFACE INVESTIGATION

A total of eight (8) test borings, designated B-1 through B-8 were drilled in October 2009 by Carr-Dee Corp. of Medford, MA. Seven of the borings were drilled at the roadway surface along or near the pipeline route at an approximate spacing of 300 to 500 feet on-center. The remaining boring was drilled on DCR property adjacent to Alewife Brook. Each boring was drilled to a depth of 22 feet below existing grades. A groundwater monitoring well was installed in borings B-3, B-7 and B-8 upon completion. The borings were advanced using either 3-inch diameter NW casing and standard drive and wash techniques 3 1/4-inch hollow stem augers without water. A standard split-spoon sampler, 24 inches long, was used to obtain soil samples beginning at the ground surface at 5-foot intervals thereafter to the bottom of the boring for visual classification.

SUBSURFACE SOIL AND GROUNDWATER CONDITIONS

This memorandum provides a brief summary of observed conditions; for greater detail, please refer to the October 19, 2009 geotechnical memorandum prepared by Brierley Associates.

Soil

Fill, characterized as a brown, widely graded coarse sand, was observed from surface to a maximum depth of approximately eight feet bgs. Odors identified in the field as potentially associated with petroleum were detected in boring B-4 and, to a lesser extent, in B-7. No significantly elevated photoionization detector (PID) readings indicating the presence of volatile organic compounds (VOCs) were recorded, except in boring B-7 in which a maximum PID reading of 14.1 parts per million was recorded.

Groundwater

Groundwater was encountered at all boring locations at depths ranging from 5' to 10' below ground surface. Evidence of OHM such as a sheen or odor was not observed.

LABORATORY ANALYTICAL PROGRAM

Representative composite samples and grab samples were collected from the fill layers encountered in borings B-4, B-7, and B-8. Each sample was submitted to Alpha Woods Hole Labs (Alpha) of Westborough, Massachusetts for laboratory chemical analysis for Resource Conservation and Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver); polychlorinated biphenyls (PCBs); volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); petroleum hydrocarbons by GC/FID; and, corrosivity, ignitability, and reactivity.

The results of the analysis were compared with Massachusetts Contingency Plan (MCP) notification requirements and contaminant concentration limits, which are predominantly based upon the proximity of residences and residential/public use of properties. RCS-1 Reportable Concentration (RC) limits apply to locations at or within 500 feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area or park; or within the geographic boundaries of a groundwater resource area categorized as RCGW-1 in 310 CMR 40.0362(1)(a). RCS-2 limits apply to all soil samples that are not obtained from category RCS-1 areas. Based on observed property uses and a review of Town zoning, RCS-1 Reportable Concentrations are believed to apply to the project area. A summary of the chemical analyses is attached as Table 1-Soil Sample Summary.

Metals

Arsenic, barium, cadmium, chromium, lead and mercury were detected above laboratory reporting limits but below the RCS-1 limits of 20 µg/g, 1,000 µg/g, 2 µg/g, 30 µg/g, 300 µg/g, and 20 µg/g, respectively.

VOCs

Naphthalene was detected in boring B-4 at 1.0 µg/g as compared to the RCS-1 limit of 4 µg/g. No other VOCs were detected above laboratory reporting limits.

SVOCs

SVOCs were reported in all samples at concentrations above laboratory reporting limits. Of these, acenaphthylene was reported above the RCS-1 limit in boring B-4; benzo(a)pyrene was reported above the RCS-1 limit (2.0 µg/g) in borings B-4, B-7 and B-8 (4.4, 2.7, and 3.5 µg/g, respectively).

Total Petroleum Hydrocarbons

Petroleum hydrocarbons were detected in all three borings but below the RCS-1 limit of 1000 µg/g.

Polychlorinated Biphenyls (PCBs)

No PCBs were detected above laboratory reporting limits.

Groundwater

No visual or olfactory evidence of OHM, such as sheen or odors, were observed in the groundwater. Groundwater samples have not been collected for laboratory chemical analysis to-date.

CONCLUSIONS AND RECOMMENDATIONS

- ◆ The results of the laboratory analysis indicated the presence of metals, SVOCs and petroleum hydrocarbons, of which SVOCs were present above RCS-1 limits. Based on these results, a Utility-related Abatement Measure (URAM) Plan will be required for management of soils during construction and for off-site disposal of surplus soils. A URAM Plan must be submitted to MassDEP prior to the start of excavation.
- ◆ If final design requires excavation within the areas of the W.R. Grace property in which an AUL has been recorded to address potential exposure to asbestos, a separate URAM specifically addressing this area, and referencing RTN 3-00277 and its associated AUL requirements and the requirements of the City of Cambridge Asbestos Ordinance, should be prepared and submitted to MassDEP.
- ◆ If visual, olfactory or laboratory data evidence of oil or hazardous materials not previously identified is encountered in the course of construction, S E A recommends that an S E A Licensed Site Professional (LSP) or his/her designee assess soil conditions to determine if amendments to the URAM and/or separate notification to MassDEP will be required.

- ◆ Based on the results of the analyses conducted on samples collected, surplus soils are likely to be appropriate for either on-site reuse in the area of excavation (subject to geotechnical requirements) or for re-use at an unlined landfill as daily cover. All surplus soils must be analyzed prior to off-site transportation and disposal to ensure compliance with applicable state and Federal regulations, including the MCP and the MassDEP anti-degradation policies. Final determinations of off-site disposal locations should be based on the results of post-excavation sampling and analysis.
- ◆ Soils exhibiting odors or other indications of potential contamination should be segregated during stockpiling and analyzed separately from soils not exhibiting evidence of OHM.

LIMITATIONS

The purpose of the work conducted by S E A was to assess the physical characteristics of the subject area with respect to the presence of OHM, as defined in Massachusetts General Laws Chapter 21E. In conducting this assessment, SEA gathered information from observations made during site reconnaissance and a preliminary environmental assessment of the site conditions which included observing soil borings and reviewing the results of laboratory analysis of soil samples collected by others. Due to the potential for errors, omissions, or inaccuracies, there is some risk associated with reliance on such information. Although there may be some corroboration provided by multiple sources, SEA cannot be responsible for the accuracy or completeness of the information reviewed or received during the course of this assessment.

The conclusions drawn by SEA are based solely on information gathered to date. Information that may be gathered in the future may modify the conclusions and opinions reported herein. If variations or other latent conditions become evident, it will be necessary to re-evaluate the conclusions stated in this report. This report has been prepared in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

ATTACHMENTS

Table 1 – Soil Sample Summary
Laboratory Analytical Results
Boring Logs

Appendix B

Summary of Analytical Data and Boring Logs

FIELD TEST BORING LOG

SHEET 1 of 1

S E A CONSULTANTS, INC.
 Science / Engineering / Architecture
 215 First Street
 Cambridge, MA 02142

PROJECT: Cambridge CAM-400
LOCATION: MWRA Property - Rt. 16
CLIENT: City of Cambridge
WEATHER: Cloudy, 55°

BORING NO: B-1
PROJECT NO: 2006144.02-A

Ground Elevation:
 Date Started: 10/09/09
 Date Finished: 10/09/09
 Driller: Carrdee (Joe D./Ralph)
 Soil Engineer/Geologist: Matt Zirolli

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION TIME
10/9/09	5.7'	--	15 minutes

Depth ft.	PID (ppm)	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	Pen/Rec (in/in)	Depth ft.	Blows/6 inches		
0	0.0	S-1	24/24	0 - 2	8-10-12-10	FILL (Topsoil - Loamy Sand) 5.0'	S-1: SAND: Fine to medium loamy sand, little nonplastic organic fines, trace organic fibers, medium dense, damp, dark brown. (SP)
5	0.0	S-2	24/17	5 - 7	6-6-4-6	PEAT 8.0'	S-2: PEAT: Slightly plastic organic fines, trace fine sand, stiff, damp, dark brown to black, peat odor. (Pt)
10	0.0	S-3	24/13	10 - 12	14-10-10-13	Fine SAND 14.0'	S-3: SAND: Fine sand, some medium sand, little nonplastic fines, medium dense, wet, gray. (SP)
15	0.0	S-4	24/12	15 - 17	2-4-4-4	CLAY	S-4: CLAY: Silty Clay, moderately plastic fines, medium stiff, wet, greenish-gray. (CL) Torvane: 0.15; 0.21; 0.20 ton / ft ² Penetrometer: 0.75; 1.0; 0.5 ton / ft ²
20	0.0	S-5	24/24	20 - 22	1-1-1-1		S-5: CLAY: Silty Clay, moderately plastic fines, soft, wet, greenish-gray. (CL) Torvane: 0.12; 0.15; 0.17 ton / ft ² Penetrometer: 0.75; 0.75; 0.5 ton / ft ²
						22.0'	Bottom of Boring @ 22.0' bgs.

Notes:

ABBREVIATIONS USED	PROPORTIONS	GRANULAR SOILS		COHESIVE SOILS		EQUIPMENT USED	CASING	SAMPLER	CORE
		BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY				
D=Dry C=Cored W=Washed									
HSA=Hollow Stem Auger	Trace 0 to 10 %	0-4	V. LOOSE	<2	V. SOFT	TYPE ID SIZE (IN) HAMMER WT (LB) HAMMER FALL (IN)	FJ 3" 300 24"	SS 1-3/8" 140 30"	N/A -- -- --
SS=Split Spoon V=Vane	Little 10 to 20%	4-10	LOOSE	2-4	SOFT				
BGS=Below Ground Surface	Some 20 to 35%	10-30	M. DENSE	4-8	M. STIFF				
FJ=Flush Joint V=Vane	And 35 to 50%	30-50	DENSE	8-15	STIFF				
WOR=Weight of Rod		>50	V. DENSE	15-30	V. STIFF				
RQD=Rock Quality Designation				>30	HARD				

FIELD TEST BORING LOG

SHEET 1 of 1

S E A CONSULTANTS, INC.
 Science / Engineering / Architecture
 215 First Street
 Cambridge, MA 02142

PROJECT: Cambridge CAM-400
LOCATION: 24-26 Columbus Ave.
CLIENT: City of Cambridge
WEATHER: Passing Showers, 60°

BORING NO: B-2
PROJECT NO: 2006144.02-A

Ground Elevation:
 Date Started: 10/07/09
 Date Finished: 10/07/09
 Driller: Carrdec (Joe D./Steve D.)
 Soil Engineer/Geologist: Matt Zirolli

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION TIME
10/7/09	5.0'	--	--

Depth ft.	PID (ppm)	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	Pen/Rec (in/in)	Depth ft.	Blows/6 inches		
0.5	0.0	S-1	24/4	0.5 - 2.5	11-16-20-24	Asphalt 0'3"	3" Asphalt Overlay S-1: SAND: Fine to medium sand and angular gravel, some slightly plastic fines, dense, damp, black w/ asphalt odor. (SP-SM)
5	0.0	S-2	24/0	5 - 7	6-3-2-2	FILL (Sand & Gravel) 5.0'	
7	0.0	S-3	24/0	7 - 9	5-23-31-26	PEAT 7.0'	S-2: NO RECOVERY! (Auger sample taken from ± 5' to 7') S-3: NO RECOVERY!
9	0.0	S-4	24/19	9 - 11	8-9-9-8	SAND	S-4: SAND: Fine to medium poorly graded sand, trace nonplastic fines, medium dense, wet, light grayish-brown. (SP)
15	0.0	S-5	24/11	15 - 17	2-4-5-5		S-5: SAND: Fine to medium poorly graded sand, trace nonplastic fines, loose, wet, light orange-brown. (SP)
20	0.0	S-6	24/24	20 - 22	2-2-2-2	17.0'	S-6: CLAY: Moderately plastic fines, soft, wet, greenish-gray. (CL)
						CLAY	Torvane: 0.15; 0.15; 0.10 ton / ft ² Penetrometer: 0.5; 0.5; 0.25 ton / ft ²
						22.0'	Bottom of Boring @ 22.0' bgs.

Notes: Very hard drilling from 1'-5' (cobbles and gravel) - moved hole 2' laterally south.
 Organics detected from 5'-7' in auger cuttings, peat possible at this depth.
 Switched from HSA to 3" FJ Casing at 15.0' bgs.

ABBREVIATIONS USED	PROPORTIONS	GRANULAR SOILS		COHESIVE SOILS		EQUIPMENT USED	CASING	SAMPLER	CORE
		BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY				
D=Dry C=Cored W=Washed									
HSA=Hollow Stem Auger	Trace 0 to 10 %	0-4	V. LOOSE	<2	V. SOFT	TYPE ID SIZE (IN) HAMMER WT (LB) HAMMER FALL (IN)	FJ 3" 300 24"	SS 1-3/8" 140 30"	N/A -- -- --
SS=Split Spoon V=Vane	Little 10 to 20%	4-10	LOOSE	2-4	SOFT				
BGS=Below Ground Surface	Some 20 to 35%	10-30	M. DENSE	4-8	M. STIFF				
FJ=Flush Joint V=Vane	And 35 to 50%	30-50	DENSE	8-15	STIFF				
WOR=Weight of Rod		>50	V. DENSE	15-30	V. STIFF				
RQD=Rock Quality Designation				>30	HARD				

FIELD TEST BORING LOG

SHEET 1 of 1

SEA CONSULTANTS, INC.
 Science / Engineering / Architecture
 215 First Street
 Cambridge, MA 02142

PROJECT: Cambridge CAM-400
LOCATION: 15-17 Kendall Street
CLIENT: City of Cambridge
WEATHER: Sunny, 60°

BORING NO: B-3 (MW)
PROJECT NO:
 2006144.02-A

Ground Elevation:
 Date Started: 10/08/09
 Date Finished: 10/08/09
 Driller: Carrdee (Joe D./Joey D.)
 Soil Engineer/Geologist: Matt Zirolli

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION TIME
10/8/09	8.2'	20'	15 minutes

Depth ft.	PID (ppm)	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	Pen/Rec (in/in)	Depth ft.	Blows/6 inches		
0.5	0.4	S-1	24/20	0.5 - 2.5	10-7-10-10	Asphalt 0'3"	3" Asphalt Overlay
5	1.6	S-2	12/6	5 - 6	7-9	FILL (Sand & Clay) 6.0'	S-1: SAND: Fine to medium sand and moderately plastic fines, trace gravel, medium dense, damp, brown. (SP-SM)
	0.0	S-2A	12/7	6 - 7	11-13		S-2: SAND: Fine to medium poorly graded sand, little slightly plastic fines, trace coarse sand, trace fine gravel, medium dense, damp, brown. (SP)
10	0.0	S-3	24/14	10 - 12	6-7-9-8	Well Graded SAND 22.0'	S-2A: SAND: Fine to medium poorly graded sand, trace nonplastic fines, medium dense, damp, light brown. (SP)
15	0.0	S-4	24/15	15 - 17	8-7-9-10		S-3: SAND: Fine to coarse well graded sand, trace nonplastic fines, medium dense, damp, light brown. (SW)
20	0.0	S-5	24/15	20 - 22	6-6-8-9		S-4: SAND: Fine to medium sand, some coarse sand, trace nonplastic fines, wet, medium dense, light brown. (SW)
							S-5: SAND: Fine to coarse well graded sand, trace nonplastic fines, wet, medium dense, light grayish-brown. (SW)
							Bottom of Boring @ 22.0' bgs.

Notes: Monitoring well set @ 15' bgs - 10' screen, 5' riser.

ABBREVIATIONS USED	PROPORTIONS	GRANULAR SOILS		COHESIVE SOILS		EQUIPMENT USED	CASING	SAMPLER	CORE
		BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY				
D=Dry C=Cored W=Washed									
HSA=Hollow Stem Auger	Trace 0 to 10 %	0-4	V. LOOSE	<2	V. SOFT	TYPE	FJ	SS	N/A
SS=Split Spoon V=Vane	Little 10 to 20%	4-10	LOOSE	2-4	SOFT	ID SIZE (IN)	3"	1-3/8"	--
BGS=Below Ground Surface	Some 20 to 35%	10-30	M. DENSE	4-8	M. STIFF	HAMMER WT (LB)	300	140	--
FJ=Flush Joint V=Vane	And 35 to 50%	30-50	DENSE	8-15	STIFF	HAMMER FALL (IN)	24"	30"	--
WOR=Weight of Rod		>50	V. DENSE	15-30	V. STIFF				
RQD=Rock Quality Designation				>30	HARD				

FIELD TEST BORING LOG

SHEET 1 of 1

S E A CONSULTANTS, INC.
 Science / Engineering / Architecture
 215 First Street
 Cambridge, MA 02142

PROJECT: Cambridge CAM-400
LOCATION: 32 Seagrave Rd. & Whittemore Ave.
CLIENT: Cambridge CAM-400
WEATHER: Clear & Breezy, 58°

BORING NO: B-7 (MW)
PROJECT NO:
 2006144.02-A

Ground Elevation:
 Date Started: 10/08/09
 Date Finished: 10/08/09
 Driller: Carrdee (Joe D./Joey D.)
 Soil Engineer/Geologist: Matt Zirolli

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION TIME
10/8/09	7.0'	20'	20 minutes

Depth ft.	PID (ppm)	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	Pen/Rec (in/in)	Depth ft.	Blows/6 inches		
0.5	14.1	S-1	24/9	0.5 - 2.5	9-5-4-8	Asphalt 0'4" FILL (Sand & Gravel) 4.0'	4" Asphalt Overlay S-1: SAND: Fine to coarse well graded sand, rock in spoon, little nonplastic fines, slight odor, loose, wet, grayish brown. (SW)
5	3.8	S-2	24/10	5 - 7	16-23-23-23	Fine to Medium SAND	S-2: SAND: Fine to medium sand, trace nonplastic fines, dense, damp, light brown. (SP)
10	5.2	S-3	24/14	10 - 12	12-13-16-13		S-3: SAND: Fine to medium sand, mostly fine, some nonplastic fines, medium dense, wet, light brown to gray. (SM)
15	1.7	S-4	24/13	15 - 17	6-8-11-11		S-4: SAND: Fine to medium poorly graded sand, trace nonplastic fines, medium dense, wet, light gray. (SP)
20	7.9	S-5	24/8	20 - 22	6-6-9-12		S-5: SAND: Fine to medium poorly graded sand, trace nonplastic fines, medium dense, wet, light gray. (SP)
							22.0'

Notes: SMA IV Sample taken @ S-1 & S-2; VOA @ 2.5' bgs, composite @ 0'-7' bgs. installed @ 15' bgs: 10' screen, 5' riser. Monitoring well

ABBREVIATIONS USED	PROPORTIONS	GRANULAR SOILS		COHESIVE SOILS		EQUIPMENT USED	CASING	SAMPLER	CORE
D=Dry C=Cored W=Washed		BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY				
HSA=Hollow Stem Auger	Trace 0 to 10 %	0-4	V. LOOSE	<2	V. SOFT	TYPE ID SIZE (IN) HAMMER WT (LB) HAMMER FALL (IN)	FJ 3"	SS 1-3/8"	N/A -- -- --
SS=Split Spoon V=Vane	Little 10 to 20%	4-10	LOOSE	2-4	SOFT				
BGS=Below Ground Surface	Some 20 to 35%	10-30	M. DENSE	4-8	M. STIFF				
FJ=Flush Joint V=Vane	And 35 to 50%	30-50	DENSE	8-15	STIFF				
WOR=Weight of Rod		>50	V. DENSE	15-30	V. STIFF				
RQD=Rock Quality Designation				>30	HARD		24"	30"	--

FIELD TEST BORING LOG

SHEET 1 of 1

SEA CONSULTANTS, INC.
 Science / Engineering / Architecture
 215 First Street
 Cambridge, MA 02142

PROJECT: Cambridge CAM-400
LOCATION: Columbus Ave. & Madison St.
CLIENT: Cambridge CAM-400
WEATHER: Rainy, 57°

BORING NO: B-8 (MW)
PROJECT NO: 2006144.02-A

Ground Elevation:
 Date Started: 10/07/09
 Date Finished: 10/07/09
 Driller: Carrdee (Joe D./Steve D.)
 Soil Engineer/Geologist: Matt Zirolli

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION TIME
10/7/09	10.0'	10'	--
10/8/09	9.4'	--	24 hours

Depth ft.	PID (ppm)	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	Pen/Rec (in/in)	Depth ft.	Blows/6 inches		
0.5	0.0	S-1	24/18	0.5 - 2.5	25-17-13-11	Asphalt 0'5"	5" Asphalt Overlay
						FILL (Loamy Sand) 4.0'	
5	0.0	S-2	24/13	5 - 7	19-8-9-9	Fine to Medium SAND 9.0'	S-2: SAND: Fine to medium poorly graded sand, medium dense, damp, light brown. (SP)
						Sandy CLAY 11.0'	S-3: SANDY CLAY: Moderately plastic fines, some fine sand, medium stiff, wet, light brown. (CL)
10	0.0	S-3	12/10	10 - 11	1-4	CLAY	S-3A: CLAY: Moderately plastic fines, medium stiff, wet, light gray. (CL)
	0.0	S-3A	12/9	11 - 12	3-2		S-4: CLAY: Moderately plastic fines, soft, wet, light gray (CL)
15	0.0	S-4	24/20	15 - 17	3-2-2-2	CLAY	S-4: CLAY: Moderately plastic fines, soft, wet, light gray (CL)
							Torvane: 0.10; 0.12; 0.15 ton / ft ² Penetrometer: 0.25; 0.5; 0.5 ton / ft ²
20	0.0	S-5	24/24	20 - 22	1/12"-1-2	CLAY	S-5: CLAY: Moderately plastic fines, soft, wet, light gray. (CL)
							Torvane: 0.10; 0.06; 0.06 ton / ft ² Penetrometer: 0.5; 0.75; 0.25 ton / ft ²
							Bottom of Boring @ 22.0' bgs.

Notes: SMA IV Sample taken @ S-2: VOA @ 5.0' bgs, composite @ 0'-7' bgs (8:30AM).
 Monitoring well installed @ 15' bgs: 10' screen, 5' riser.

ABBREVIATIONS USED	PROPORTIONS	GRANULAR SOILS		COHESIVE SOILS		EQUIPMENT USED	CASING	SAMPLER	CORE
		BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY				
D=Dry C=Cored W=Washed									
HSA=Hollow Stem Auger	Trace 0 to 10 %	0-4	V. LOOSE	<2	V. SOFT	TYPE ID SIZE (IN) HAMMER WT (LB) HAMMER FALL (IN)	HAS	SS	N/A
SS=Split Spoon V=Vane	Little 10 to 20%	4-10	LOOSE	2-4	SOFT		3-3/4"	1-3/8"	--
BGS=Below Ground Surface	Some 20 to 35%	10-30	M. DENSE	4-8	M. STIFF		--	140	--
FJ=Flush Joint V=Vane	And 35 to 50%	30-50	DENSE	8-15	STIFF		--	30"	--
WOR=Weight of Rod		>50	V. DENSE	15-30	V. STIFF				
RQD=Rock Quality Designation				>30	HARD				

CAM 400
Summary of Analytical Data

LOCATION			2006144/B-4		2006144/B-7		2006144/B-8	
SAMPLING DATE			08-OCT-09		07-OCT-09		07-OCT-09	
LAB SAMPLE ID			L0914348-01		L0914348-02		L0914348-03	
	RCS-1-08	Units		Qual		Qual		Qual
General Chemistry								
Specific Conductance		umhos/cm	85		240		370	
Solids, Total		%	86		85		94	
pH		SU	8.5		8.7		7.6	
Cyanide, Reactive		mg/kg	10	U	10	U	10	U
Sulfide, Reactive		mg/kg	10	U	10	U	10	U
Ignitability		-	NI		NI		NI	
Total Metals								
Arsenic, Total	20	mg/kg	2.9		2.7		5.2	
Barium, Total	1000	mg/kg	20		48		23	
Cadmium, Total	2	mg/kg	0.77		0.57		0.85	
Chromium, Total	30	mg/kg	8.6		7.6		14	
Lead, Total	300	mg/kg	150		250		220	
Mercury, Total	20	mg/kg	0.22		0.34		0.08	U
Selenium, Total	400	mg/kg	2.3	U	2.3	U	2	U
Silver, Total	100	mg/kg	0.46	U	0.46	U	0.41	U
TCLP Lead		mg/L	3.9		3.0		0.5	U
Volatile Organic Compounds								
Naphthalene	4	mg/kg	1.0		0.43	U	0.28	U
Remaining VOC Analytes								
MCP Semivolatile Organics								
Acenaphthene	4	mg/kg	0.37	U	0.38	U	0.39	
Acenaphthylene	1	mg/kg	1.4		0.38	U	0.52	
Anthracene	1000	mg/kg	1.9		1.3		1.8	
Benzo(a)anthracene	7	mg/kg	4.9		3.7		3.5	
Benzo(a)pyrene	2	mg/kg	4.4		2.7		3.5	
Benzo(b)fluoranthene	7	mg/kg	5.6		3.8		4.4	
Benzo(ghi)perylene	1000	mg/kg	2.5		1.6		2.4	
Benzo(k)fluoranthene	70	mg/kg	1.9		1.4		1.6	
Chrysene	70	mg/kg	4.6		3.6		3.4	
Dibenzo(a,h)anthracene	0.7	mg/kg	0.64		0.42		0.53	
Fluoranthene	1000	mg/kg	7.8		7.2		7.0	
Fluorene	1000	mg/kg	0.66		0.38	U	0.57	
Indeno(1,2,3-cd)Pyrene	7	mg/kg	2.3		1.4		2	
Phenanthrene	10	mg/kg	4.4		3.6		4.1	
Pyrene	1000	mg/kg	7.1		6.0		5.7	
Remaining SVOC Analytes			ND		ND		ND	
Polychlorinated Biphenyls								
All Analyzed Aroclors	2	mg/kg	0.0368	U	0.038	U	0.0341	U
Petroleum Hydrocarbon Quantitation								
TPH	1000	mg/kg	151		350		447	

Notes

U: Not detected above laboratory reporting limits - reporting limit indicated in column to left.

Bold: Analyte detected above Reporting Limit.

Bold/Shaded: Analyte detected above an MCP RCS-1 Reportable Concentration

Appendix C

Tree Assessment Report

SUMMARY OF PROPOSED TREE LOCATIONS
 CAM 400 Area Sewer Separation and Surface Improvements Project
 2008288.03-A
 September 29, 2009

Location	Station	Proposed Conditions			Design Requirements for Construction	
		# of Trees	Species	Access (FT)*	Method	Comments
42 Columbus Ave. (b/t gas gate and sign)		1	Ornamental	5.7		
36 Columbus Ave. (b/t gas gate and CB)		1	Ornamental	5.8		
34 Columbus Ave. (north of path)		2	Ornamental	5.5		
28/30 Columbus Ave. (b/t pole and sign, 20' from intersection w/ Harrison)		0 -wanted 2	Ornamental	<5.5		
24/26 Columbus Ave. (pole to pole, 20' from intersection w/ Harrison)		2 -wanted 4	Ornamental	ranges 5.4-5.6		
20/22 Columbus Ave. (b/t pole and DW apron)		1 -wanted 3	Ornamental	ranges 5.4-5.6		
8/10 Columbus Ave.		1	Ornamental	6.4		
8/10 Madison Ave. (north of driveway)	7005+18, 15' LT	1	Ornamental	5.8		Existing Tree Pit, No Tree - Install Tree
24 Madison Ave.		1	Ornamental	6.3		
34 Madison Ave.		0	Ornamental	<5.5		
42 Madison Ave.		1	Ornamental	5.7		
46 Madison Ave.		1	Ornamental	5.7		
50 Madison Ave.		0	Ornamental	<5.5		
58/60 Madison Ave.		1	Ornamental	6.3		
19/21 Madison Ave.		0	Ornamental	<5.5		
25 Madison Ave.		1	Ornamental	6.1		
35 Madison Ave.		1	Ornamental	<5.5		
41 Madison Ave.		1	Ornamental	5.7		
47/49 Madison Ave.		1	Ornamental	5.6		
2592 Mass. Ave. (on Magoun St. near driveway)		1	Ornamental	5.6		
3 Magoun St.		0	Ornamental	<5.5		
15 Magoun St.		1	Ornamental	6.4		
19 Magoun St.		1	Ornamental	6.4		
23/25 Magoun St.		1	Ornamental	6.5		
27 Magoun St.		1	Ornamental	6.4		
41/43 Magoun St.		1	Ornamental	5.6		
45 Magoun St.		0	Ornamental	<5.5		
47/49 Magoun St.		0	Ornamental	<5.5		
53 Magoun St.		1	Ornamental	5.5		
57 Magoun St.		1	Ornamental	5.6		
56 Magoun St.	8001+53, 15' RT	1	Ornamental	6.2		Existing Tree Pit, No Tree - Install Tree
52 Magoun St.		1	Ornamental	6.2		
48 Magoun St.		1	Ornamental	6.2		
44/46 Magoun St.		0	Ornamental	<5.5		
40 Magoun St.		1	Ornamental	5.8		
18 Magoun St. (around garage DW)		2	Ornamental	6.2		
Total		31				

*Access - Distance between the Back of the Sidewalk (BOS) and the Back of Curb (BOC), measured by hand with a tape measure and checked on survey (must be min. 5.5')

Appendix D
CCTV Inspection Logs

CCTV Inspection Log Table

Log No.	Street	Year	Log No.	Street	Year
S1	Whittemore Ave	2009	D1	Seagrave Rd	2009, 2008
S2	Whittemore Ave	2009	D2	Seagrave Rd	2009, 2008
S3	Whittemore Ave	2009	D3	Seagrave Rd	2009, 2008
S4	Kassul Park	2009	D4	Seagrave Rd	2009, 2008
S5	Whittemore Ave	2009	D5	Kassul Park	05/2009, 04/2009
S6	Whittemore Ave	2009	D6	Kimball St	2009
S7	Whittemore Ave	2009	D7	Grace	2009
S8	Whittemore Ave	2009	D8	Grace	05/2009, 04/2009
S9	Columbus Ave	2009	D9	Harrison Ave	2008
S10	Columbus Ave	2009	D10	Harrison Ave	2008
S11	Harrison Ave	2009	D11	Magoun St	2009
S12	Columbus Ave	2009	D12	Magoun St	2009, 2004
S13	Harrison Ave	2009	D13	Magoun St	2009, 2004
S14	Seagrave Rd	2009	D14	Whittemore Ave	2009
S15	Seagrave Rd	2009	D15	Whittemore Ave	2009
S16	Not used	N/A	D16	Whittemore Ave	2009
S17	Not used	N/A	D17	Madison Ave	2009
S18	Not used	N/A	D18	Madison Ave	2009
S19	Kimball St	2009	D19	Whittemore Ave	2009
S20	Kimball St	2009	D20	Whittemore Ave	2009
S21	Seagrave Rd	2009	D21	Whittemore Ave	2009
S22	Seagrave Rd	2009	D22	Whittemore Ave	2009
S23	Not used	N/A	D23	Kimball St	2009
S24	Not used	N/A	D24 *	Columbus Ave	Video only, No TV Log available
S25	Not used	N/A			
S26	Not used	N/A	D25 **	Columbus Ave	Video only, No TV Log available
S27	Madison Ave	2008			
S28	Madison Ave	2008	D26 ***	Columbus Ave	Video only, No TV Log available
S29	Not used	N/A			
S30	Not used	N/A	D27	Grace	2009
S31	Columbus Ave	2008	D28	Grace	2009
S32	Not used	N/A			
S33	Not used	N/A			
S34	Grace	08/2009, 06/2009			
S35	Not used	N/A			
S36	Grace	2009			
S37	Whittemore Ave	2009			
S38	Magoun St	2004			
S39	Magoun St	2004			
S40	Grace	2009			
S41	Grace	2009			
S42	Grace	2009			
S43	Grace	2009			

Notes:

Original TV Log Video Labeling:	
*	S75COM1502 TO WEIR WALL
**	S75COM1501 TO S75COM1502
***	S75COM1500 TO S75COM1501



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
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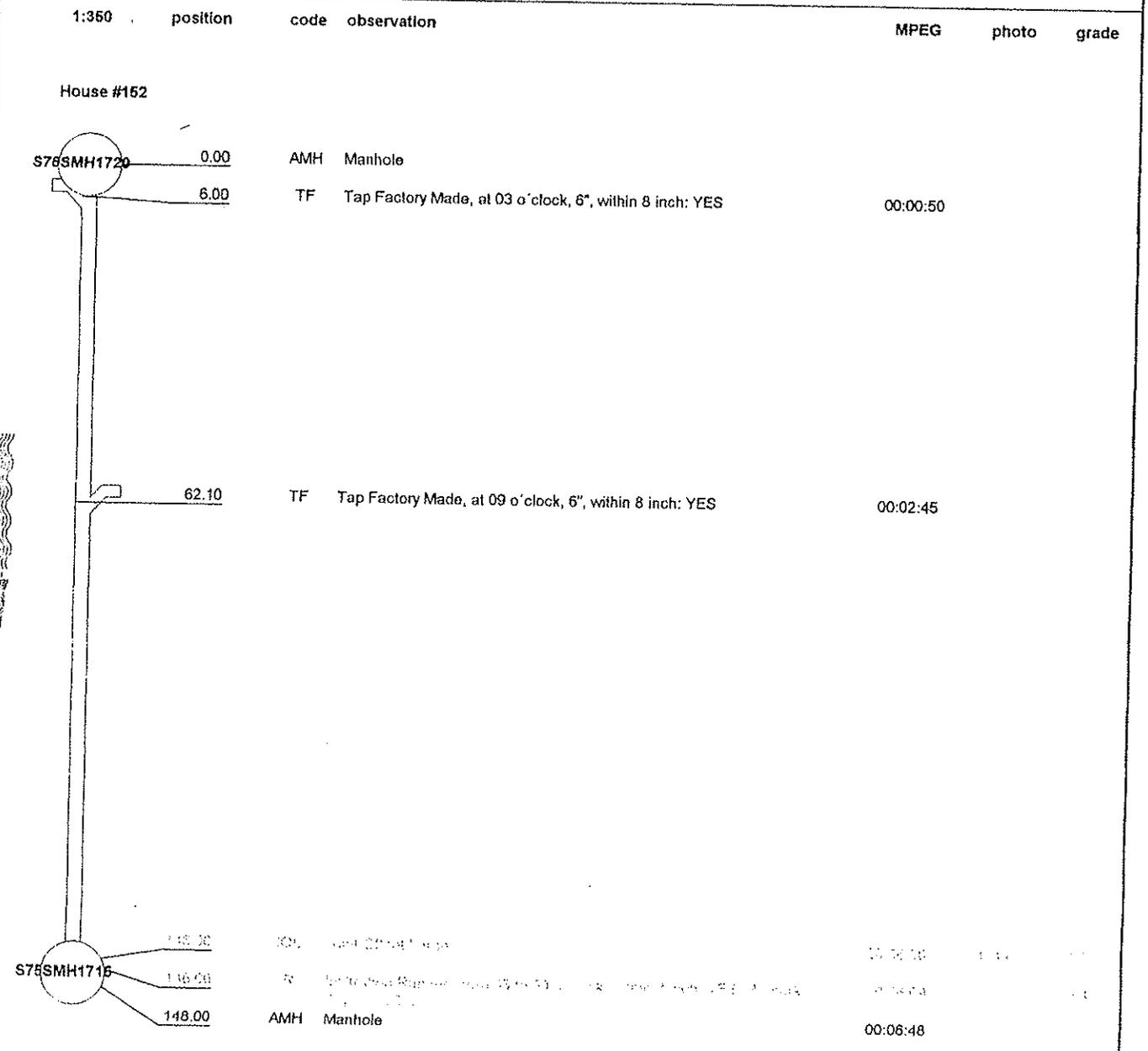
Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75SMH1720
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1716
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 148 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
 Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2100	1100	2	4	6	2	4	3



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Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 1	PSR:
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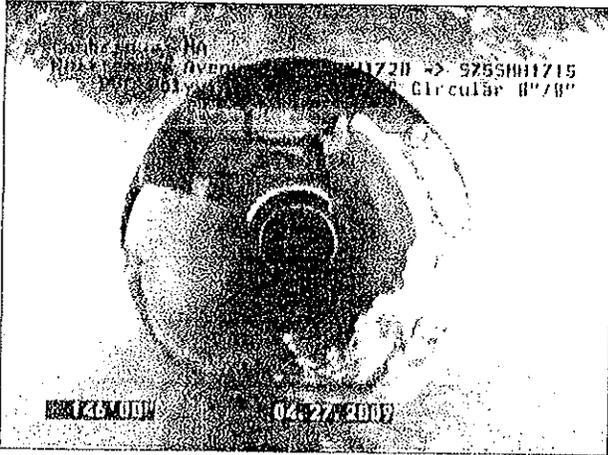


Photo: 4_4a, Tape/Media No.: T152-042709-1, 00:06:00
146FT, Joint Offset Large



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Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S76SMH1715
City: Cambridge, MA	Year Renewed:	End MH: S75COM1713
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 176 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
 Location details:

1:400	position	code	observation	MPEG	photo	grade
House #131						
	0.00	AMH	Manhole			
	0.60	IR	Infiltration Runner, at 09 o'clock, within 8 inch. YES. Remark: From road in MH Approx. 2Gpm	00:00:36	3_2a	M4
	11.00	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:01:29		
	42.30	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:02:37		
	43.00	JSM	Joint Separated Medium	00:03:57	11_5a	0.1
	83.00	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:04:15		
	112.30	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES, Remark: With Grease inside	00:05:21		
	174.00	B	Broken, from 03 to 09 o'clock, within 8 inch. YES. Remark: In road at MH	00:10:11		0.5
	174.00	IR	Infiltration Runner, from 01 to 09 o'clock, within 8 inch. YES. Remark:	00:10:13	13_10a	0.1
	176.00	AMH	Manhole	00:10:59		
Beside Parking lot						

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5111	4231	8	11	17	3	3.67	3.4



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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 2	PSR:
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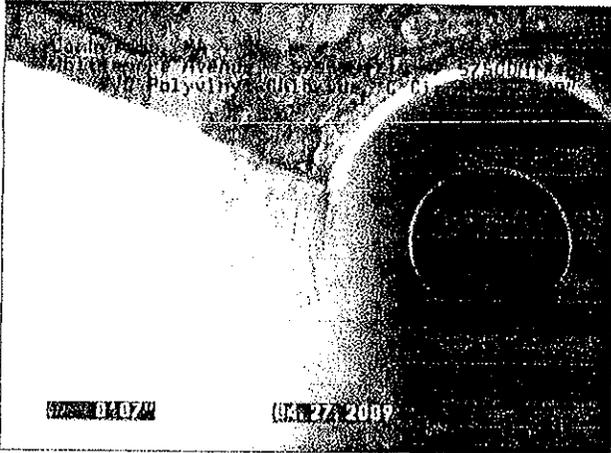


Photo: 8_2a, Tape/Media No.: T152-042709-1, 00:00:36
0.6FT, Infiltration Runner, at 09 o'clock, within 8 inch: YES,
Remark: From Invert in MH Approx. 2Gpm

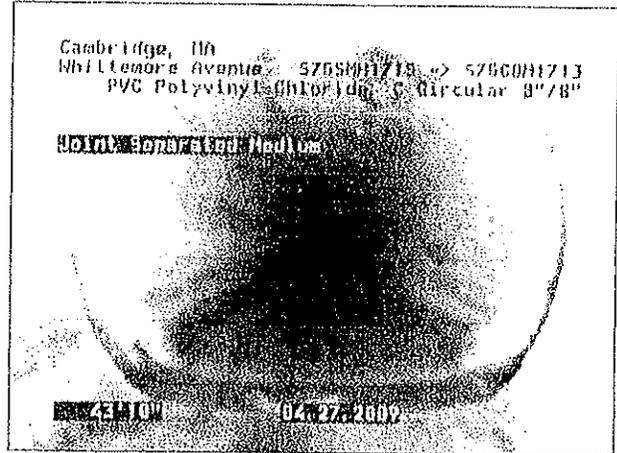


Photo: 11_5a, Tape/Media No.: T152-042709-1, 00:02:57
43.8FT, Joint Separated Medium

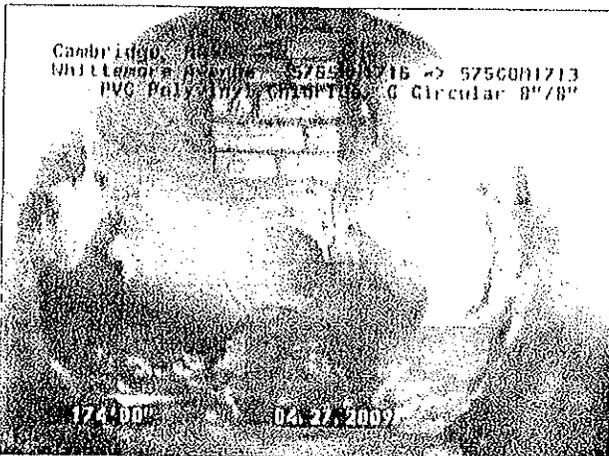


Photo: 16_10a, Tape/Media No.: T152-042709-1, 00:10:33
174FT, Infiltration Runner, from 03 to 09 o'clock, within 8 inch:
YES, Remark: Approx. 2Gpm



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Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gilderleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1713
City: Cambridge, MA	Year Renewed:	End MH: S75COM1710
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 112 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
 Location details:

1:260	position	code	observation	MPEG	photo	grade
Beside Parking lot						
	0.00	AMH	Manhole			
	8.50	MMC	Material Change, VCP Vitrified Clay Pipe	00:00:43		
	27.60	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:01:29		
	29.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:01:44		
	37.00	FM	Fracture Multiple, from 06 to 12 o'clock, within 8 inch: YES	00:02:17		S 4
	40.10	OAGS	Openings Attached Grease, 25 % of cross sectional area, from 09 to 03 o'clock, within 8 inch: YES	00:02:41		S 4
	56.00	TFC	Tap Factory Made Defective, at 10 o'clock, 6" within 8 inch: YES Remark Heavy Grease	00:03:21		S 4
	58.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:39		
	69.00	FM	Fracture Multiple, from 10 to 03 o'clock, within 8 inch: YES	00:04:53		S 4
	81.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:06:40		
	83.10	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:06:53		
	103.20	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:08:17		
	112.00	AMH	Manhole	00:09:17		
Corner of Kassul Park						

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4200	4131	8	9	17	4	3	3.4



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54

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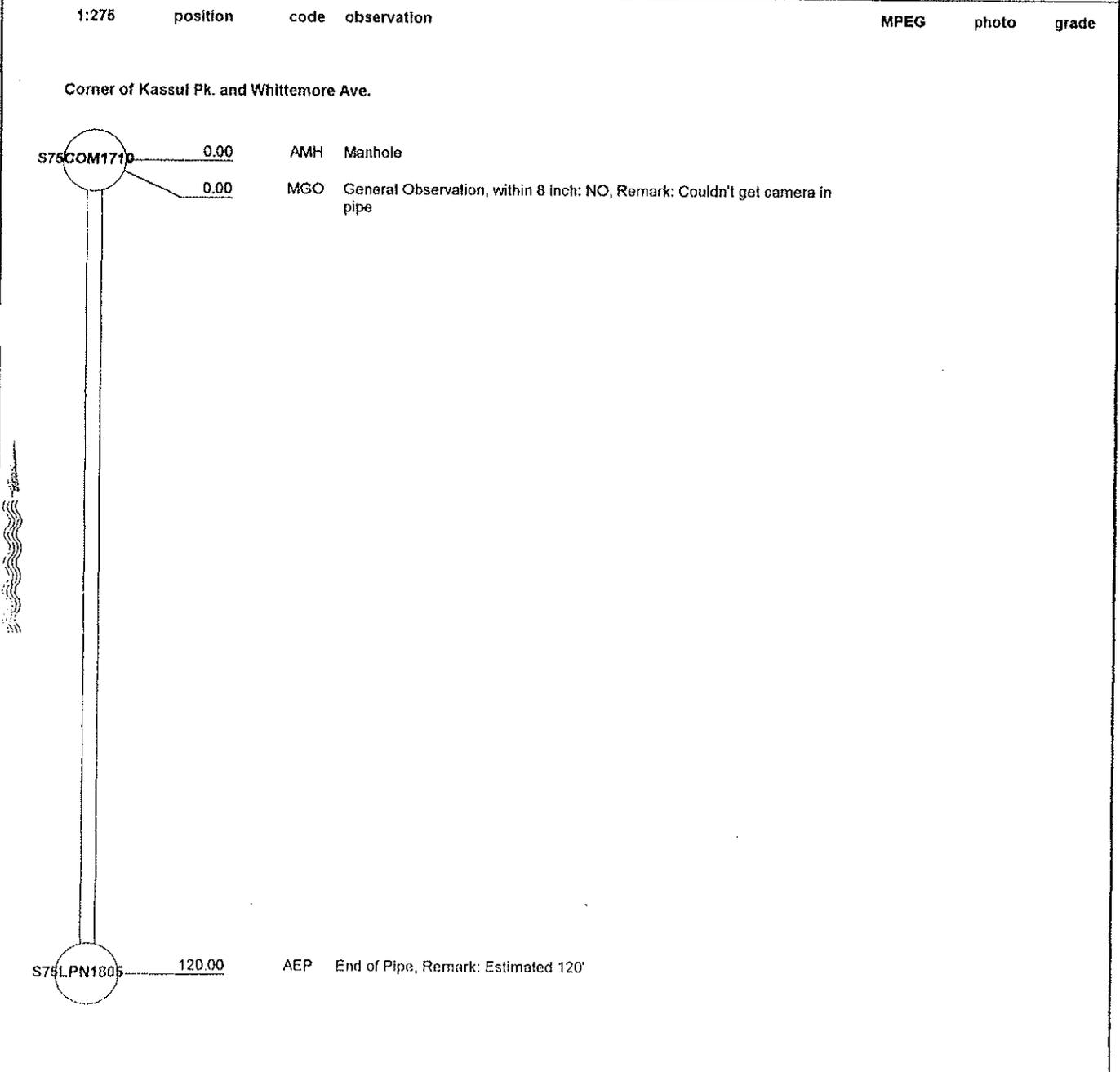
Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Kassul Park	Flow Control:	Start MH: S75COM1710
City: Cambridge, MA	Year Renewed:	End MH: S76LPN1805
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 120 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1710
City: Cambridge, MA	Year Renewed:	End MH: S75COM1610
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 209 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8" 10" (see sew-07-45)
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:279 position code observation MPEG photo grade

Corner of Kassul Pk. and Whittemore Ave.

S75COM1710	0.00	AMH	Manhole			
	4.00	BVV	Broken Void Visible, from 08 to 08 o'clock, within 8 inch: YES	00:00:57	S_2a, b	S 5
	4.00	MMC	Material Change, AC Asbestos Cement	00:02:46		
	10.50	JSM	Joint Separated Medium	00:03:10	S_3a	S 1
	15.60	B	Broken, from 12 to 12 o'clock, within 8 inch: NO	00:03:52	S_5a	S 5
	26.50	MMC	Material Change, VCP Vitrified Clay Pipe	00:04:32		
	26.50	MSC	Shape or Size Change, 10", 10"	00:14:41		
	31.00	B	Broken, from 12 to 12 o'clock, within 8 inch: YES, Remark: Pipe ovaling	00:05:02	S_9a	S 5
	47.60	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:49		
	49.60	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:06:02		
<i>Forced man from Grace</i>						
	75.70	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:07:41		
	75.70	CBU	Chaboles in Joint 5" of pipes total area, from 05 to 07 o'clock, Remark: Concrete	00:08:45	S_11a	S 5
	77.70	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:08:03		
	89.60	S2 RPP	Repair Patch, from 10 to 02 o'clock, within 8 inch: YES, start, Remark: Concrete over hole in pipe	00:10:24	S_16a	
	94.50	F2 RPP	Repair Patch, from 10 to 02 o'clock, within 8 inch: YES, end, Remark: Concrete over hole	00:11:02		
	104.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:11:43		
	106.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:11:58		
	113.30	CBU	Chaboles in Joint 5" of pipes total area, from 02 to 04 o'clock, Remark: Concrete	00:12:43	S_17a	S 5
	122.10	CBU	Chaboles in Joint 5" of pipes total area, from 04 to 06 o'clock, Remark: Concrete	00:13:13	S_18a	S 5



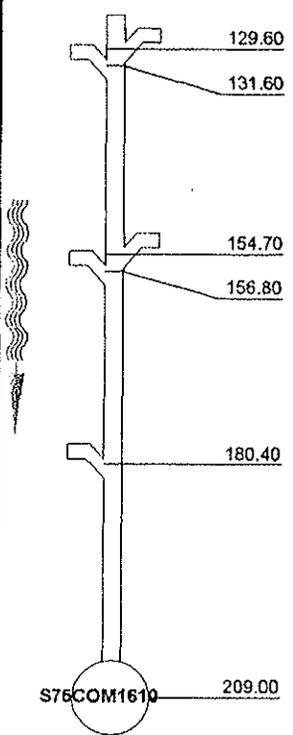
The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
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Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersteeve	section number: 5	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

1:279	position	code	observation	MPEG	photo	grade
	129.60	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:13:47		
	131.60	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:14:01		
	154.70	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:16:40		
	156.80	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:16:51		
	180.40	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:17:33		
	209.00	AMH	Manhole	00:20:22		



Corner of Kimball st. and Whittemore Ave.

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
533B	3123	81	9	70	3.21	2.26	3.04



The Environmental Protection Specialists

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25 Marshall Street
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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 5	PSR:
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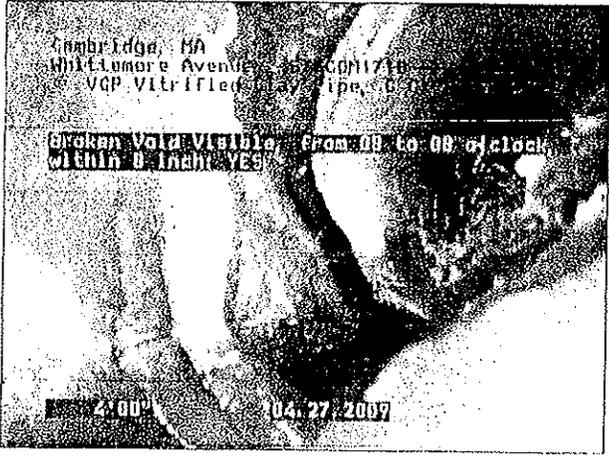


Photo: 5_2a, Tape/Media No.: T152-042709-1, 00:00:57
4FT, Broken Void Visible, from 08 to 08 o'clock, within 8 inch: YES

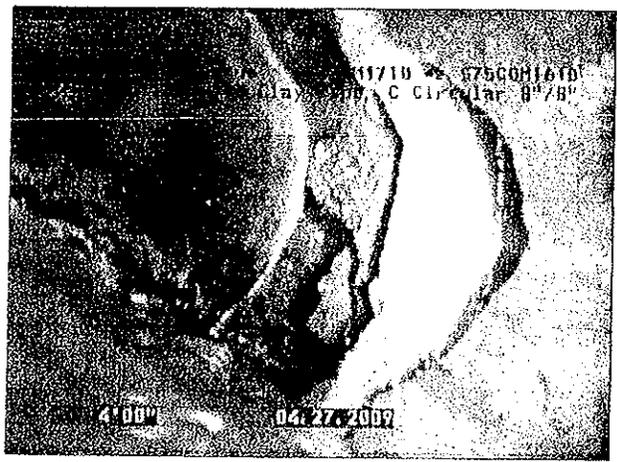


Photo: 5_2b, Tape/Media No.: T152-042709-1, 00:00:57
4FT, Broken Void Visible, from 08 to 08 o'clock, within 8 inch: YES

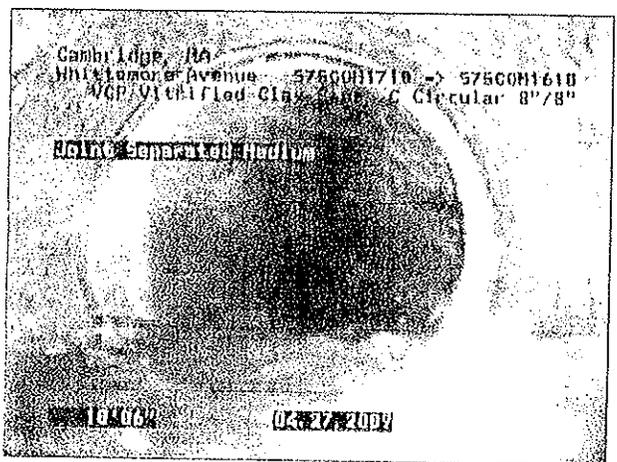


Photo: 5_4a, Tape/Media No.: T152-042709-1, 00:03:18
10.5FT, Joint Separated Medium

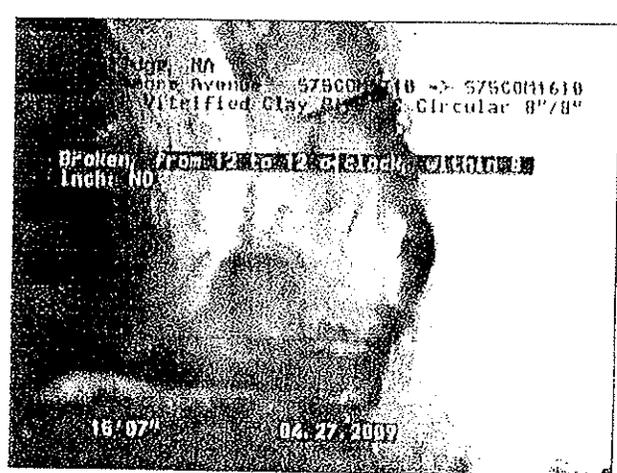


Photo: 5_5a, Tape/Media No.: T152-042709-1, 00:03:52
15.6FT, Broken, from 12 to 12 o'clock, within 8 inch: NO



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25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 5	PSR:
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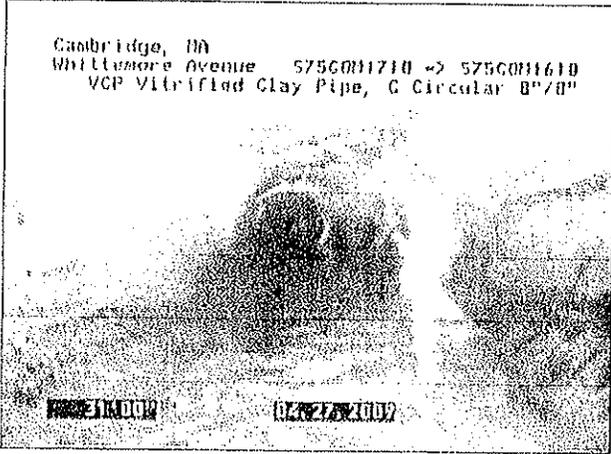


Photo: 5_9a, Tape/Media No.: T152-042709-1, 00:05:02
31FT, Broken, from 12 to 12 o'clock, within 8 inch: YES,
Remark: Pipe ovaling

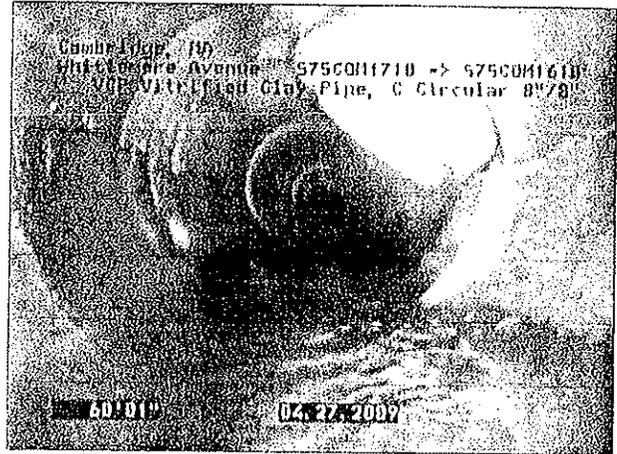


Photo: 5_12a, Tape/Media No.: T152-042709-1, 00:06:50
60.1FT, Tap Break-In Intruding, at 02 o'clock, 6", 2", 20 %,
within 8 inch: YES

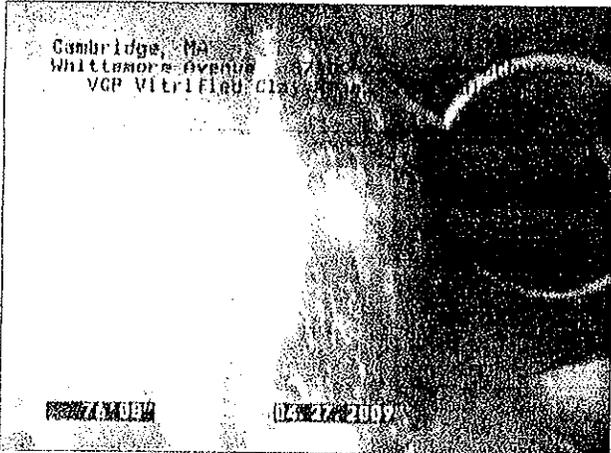


Photo: 5_14a, Tape/Media No.: T152-042709-1, 00:09:15
76.7FT, Obstacles In Joint, 5 % of cross sectional area, from
05 to 07 o'clock, Remark: Concrete

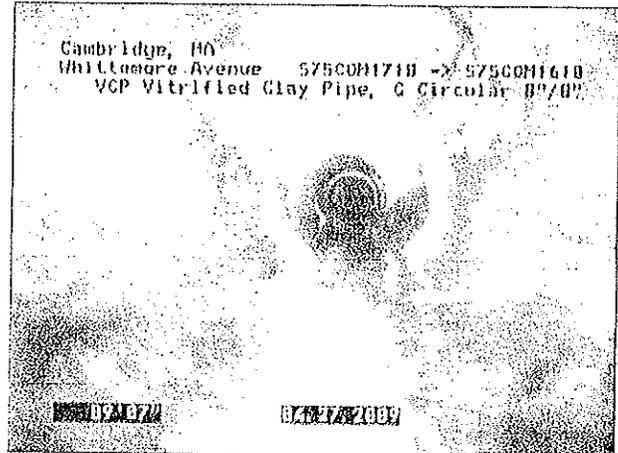


Photo: 5_16a, Tape/Media No.: T152-042709-1, 00:10:24
89.6FT, Repair Patch, from 10 to 02 o'clock, within 8 inch:
YES, start, Remark: Concrete over hole in pipe



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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 5	PSR:
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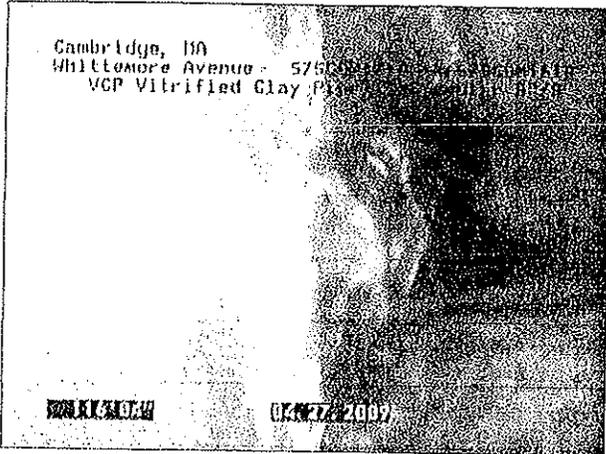


Photo: 5_21a, Tape/Media No.: T152-042709-1, 00:12:43
116.3FT, Obstacles In Joint, 5 % of cross sectional area, from
05 to 07 o'clock

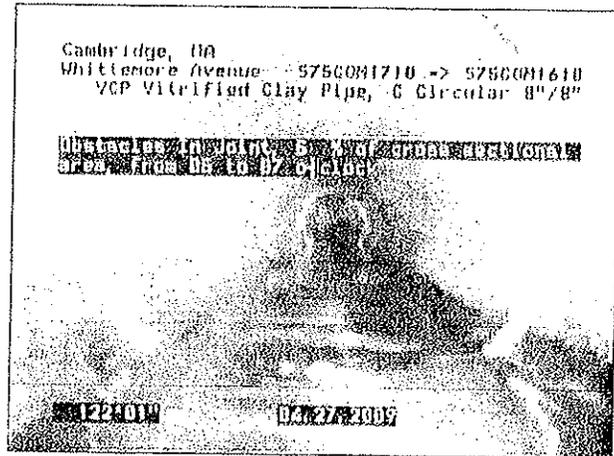


Photo: 5_22a, Tape/Media No.: T152-042709-1, 00:13:26
122.1FT, Obstacles In Joint, 5 % of cross sectional area, from
05 to 07 o'clock



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56

Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed:	End MH: S71SMH2410
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 260 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft
	Lining:
	Category:

Comment:
Location details:

1:600	position	code	observation	MPEG	photo	grade
Corner of Kimball st. and Whittemore Ave.						
	0.00	AMH	Manhole			
	37.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:01:25		
	38.80	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:41		
	68.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:02:32		
	70.10	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:45		
	102.60	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:46		
	104.60	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:04:00		
	124.00	FM	Fracture Multiple, from 01 to 03 o'clock, within 8 inch: YES	00:04:57		3.4
	134.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:33		
	136.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:48		
	160.50	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES	00:06:42		
	163.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:58		
	192.20	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:07:53		
	194.40	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:08:08		
	216.60	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:09:04		
	218.60	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:09:17		
	233.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:10:01		3.2
	239.70	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:10:26		
	254.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:10:56		
	254.50	FM	Fracture Multiple, from 10 to 12 o'clock, within 8 inch: YES	00:10:59		3.2
	260.00	AMH	Manhole	00:12:07		

Corner of Harrison and Whittemore in front of Grace. The hole closest to Front door of Grace

OSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4231	2100	11	2	13	3.67	2	3.25



The Environmental Protection Specialists

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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 6	PSR:
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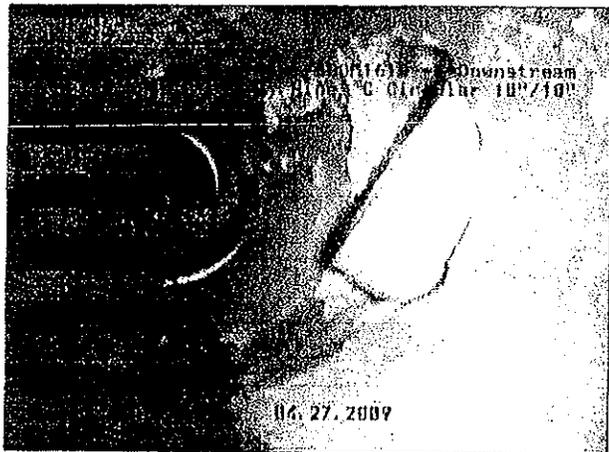


Photo: 83_18a, Tape/Media No.: T152-042709-1, 00:10:01
236.8FT, Tap Break-In Intruding, at 02 o'clock, 6", 1", 10 %, within 8 inch: YES

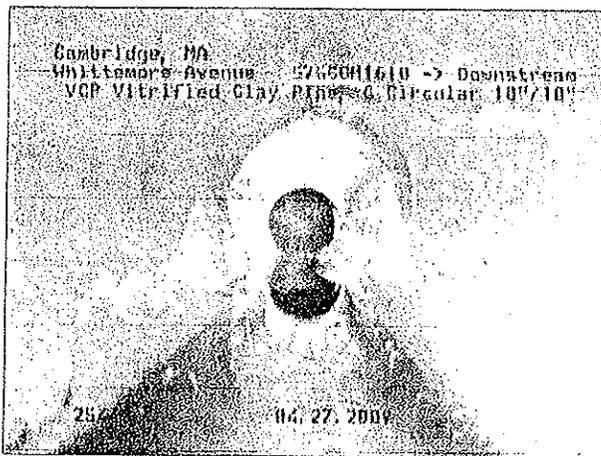


Photo: 86_21a, Tape/Media No.: T152-042709-1, 00:11:08
254.5FT, Fracture Multiple, from 12 to 12 o'clock, within 8 inch: YES



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Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gldersleeve	section number: 7	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S71SMH2410
City: Cambridge, MA	Year Renewed:	End MH: S71SMH2405
Location Code: C Light Highway	Tape/Media #: T152-042709-1	Total length surveyed: 260 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft
	Lining: Category:

Comment:
Location details:

1:403	position	code	observation	MPEG	photo	grade
Corner of Harrison and Whittemore in front of Grace. The hole closest to Front door of Grace						
S71SMH2410	0.00	AMH	Manhole			
	7.10	FM	Fracture Multiple, from 03 to 06 o'clock, within 3 inch: YES	00:01:19		S 4
	23.90	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:10		
	26.70	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:02:59		
	52.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:04:04		
	54.60	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: YES	00:04:20		M 2
	78.20	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:21		
	80.40	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:42		
	93.00	RBJ	Roots Ball Joint, from 10 to 03 o'clock, 50 %, within 3 inch: YES	00:06:30	06 9.1	M 4
	104.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:07:19		
	106.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:07:51		
	129.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:09:01		
	131.40	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:09:20		
	146.00	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:10:00		
	169.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:10:47		
	171.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:11:02		



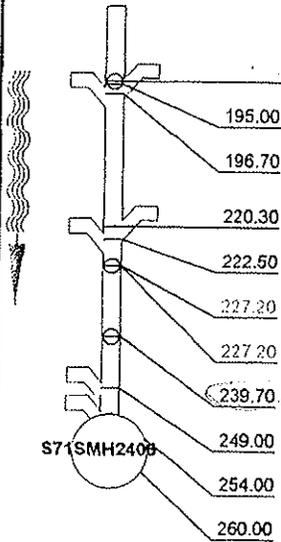
The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 04/27/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 7	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

1:403 position code observation MPEG photo grade



195.00	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:12:41		
196.70	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:12:59		
220.30	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:13:58		
222.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:14:12		
227.20	TBC	Tap Break-In Capped, at 12 o'clock, 6", within 8 inch: YES	00:14:37		M 2
227.20	FM	Fracture Multiple, from 08 to 04 o'clock, within 8 inch: YES	00:14:54	110_23a	S 4
239.70	TF	Tap Factory Made, at 12 o'clock, 6", within 8 inch: YES	00:15:29		
249.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:18:53		
254.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:19:11		
260.00	AMH	Manhole	00:19:35		

Corner of Madison Ave. and Whittemore Ave.

QSR 4200	QMR 4131	SPR 8	MPR 11	OPR 19	SPRI 4	MPRI 2.75	OPRI 3.17
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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/27/2009	section number: 7	PSR:
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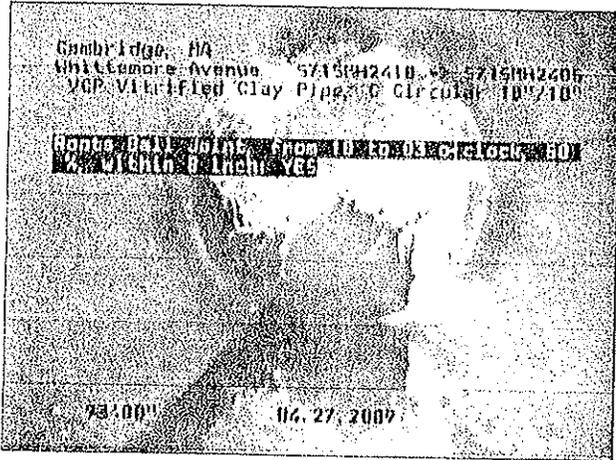


Photo: 96_9a, Tape/Media No.: T152-042709-1, 00:06:30
93FT, Roots Ball Joint, from 10 to 03 o'clock, 50 %, within 8 inch: YES

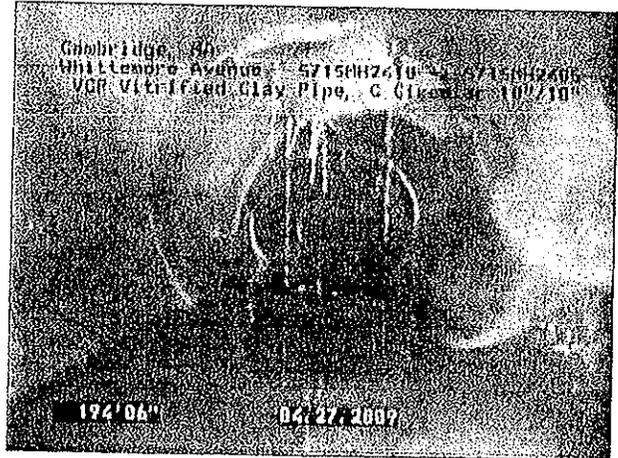


Photo: 104_17a, Tape/Media No.: T152-042709-1, 00:12:03
194.5FT, Tap Break-In Intruding, at 12 o'clock, 6", 2", 20 %, within 8 inch: YES

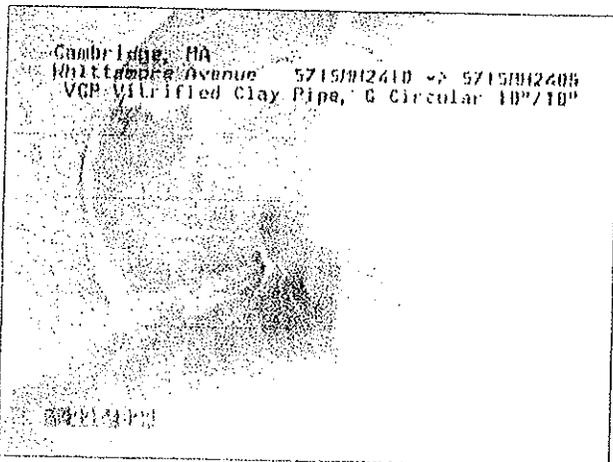


Photo: 110_23a, Tape/Media No.: T152-042709-1, 00:14:54
227.2FT, Fracture Multiple, from 08 to 04 o'clock, within 8 inch: YES



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Inspection report

Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S71SMH2405
City: Cambridge, MA	Year Renewed:	End MH: S71SMH2415
Location Code: C Light Highway	Tape/Media #: T152-042809-1	Total length surveyed: 238.4 ft
Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"	Material: VCP Vitrified Clay Pipe
Use: SS Sanitary	Category:	Pipe Joint length: 3ft
Drain. Area:		

Comment:
Location details:

1:550	position	code	observation	MPEG	photo	grade
Corner of Madison Ave. and Whittemore Ave.						
	0.00	AMH	Manhole			
	6.00	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:01:00		
	30.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:53		
	32.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:02:12		
	55.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:55		
	57.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:07		
	80.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:03:55		
	82.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:04:08		
	105.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:03		
	107.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:13		
	130.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:08		
	132.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:06:18		
	156.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:07:40		
	158.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:07:56		
	176.50	BSV	Broken Soil Visible, from 03 to 01 o'clock, within 8 inch: YES	00:08:56	15_15a_b	0.5
	181.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:09:29		
	183.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:09:44		
	206.20	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:10:33		
	208.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:10:47		
	224.00	DOM	Joint Offset Manhole	00:11:25		0.1
	231.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:12:00		
	238.40	AEP	End of Pipe	00:13:52	22_22a	
Corner of Magoun St. and Whittemore Ave.						

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
8111	0000	6	0	8	3	0	3



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Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 04/28/2009	section number: 1	PSR:
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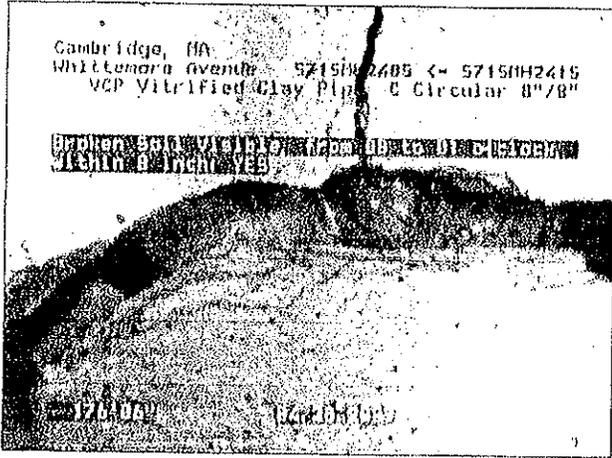


Photo: 15_15a, Tape/Media No.: T152-042809-1, 00:08:56
176.5FT, Broken Soil Visible, from 08 to 01 o'clock, within 8 inch: YES

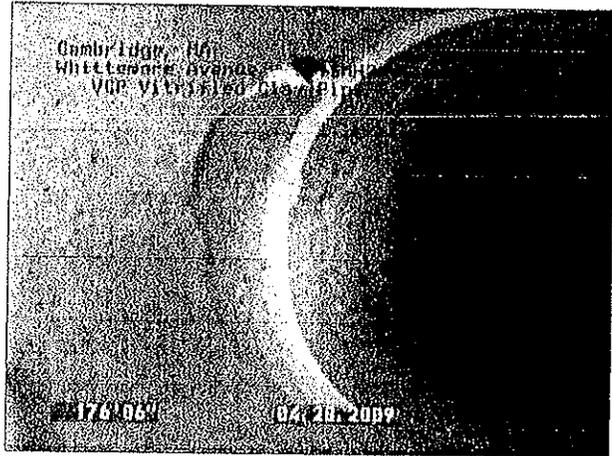


Photo: 15_15b, Tape/Media No.: T152-042809-1, 00:08:56
176.5FT, Broken Soil Visible, from 08 to 01 o'clock, within 8 inch: YES

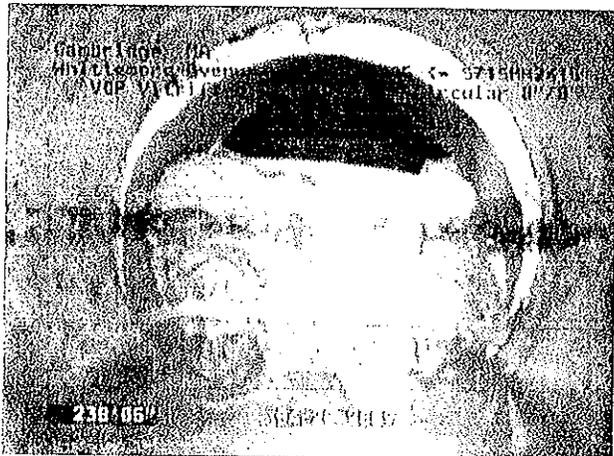


Photo: 22_22a, Tape/Media No.: T152-042809-1, 00:13:52
238.4FT, End of Pipe



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Inspection report

Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Columbus Avenue	Flow Control:	Start MH: S75SMH1422
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1106
Location Code: C Light Highway	Tape/Media #: T152-042809-1	Total length surveyed: 264 ft

Purpose: A Maintenance Related	Dia/Height: C Circular (2"12")
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
 Location details:

1:600	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	26.50	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES ✓	00:00:52		
	79.70	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:02:39		
	153.50	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:08:14		
	264.00	AMH	Manhole	00:14:24		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2



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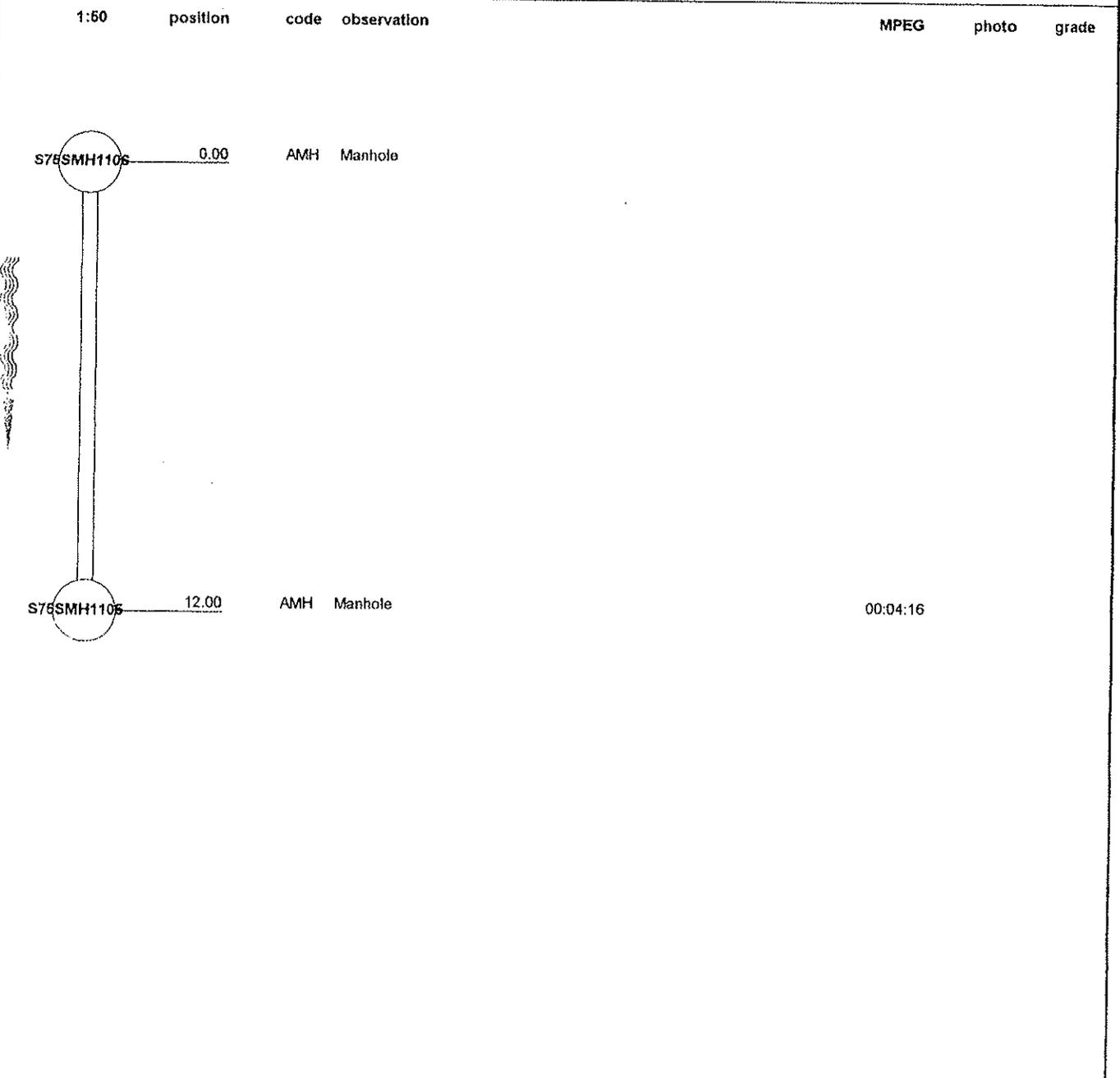
Inspection report

Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Columbus Avenue	Flow Control:	Start MH: S75SMH1106
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1106
Location Code: C Light Highway	Tape/Media #: T152-042809-1	Total length surveyed: 12 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining: Category:

Comment:
 Location details:



OSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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Inspection report

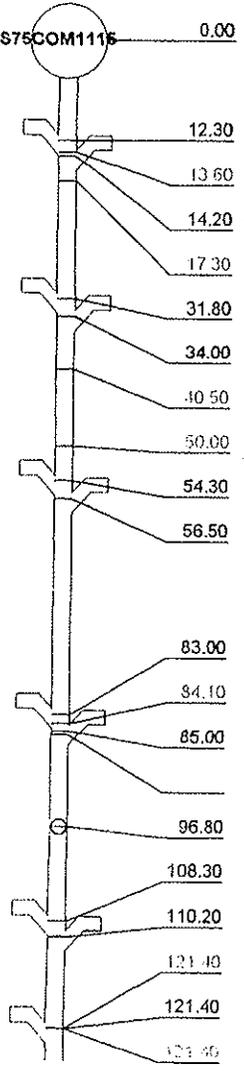
Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Harrison Avenue	Flow Control:	Start MH: S75COM1115
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1105
Location Code: C Light Highway	Tape/Media #: T152-042809-1	Total length surveyed: 230 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain Area:	Lining:
	Category:

Comment:
Location details:

1:279	position	code	observation	MPEG	photo	grade
	S75COM1115 0.00	AMH	Manhole			
	12.30	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: Broken inside	00:00:44		
	13.60	FM	Fracture Multiple, from 03 to 04 o'clock, within 8 inch: YES	00:01:03	4 3a	S 4
	14.20	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:01:26		
	17.30	B	Broken, from 09 to 03 o'clock, within 8 inch: YES	00:01:54		S 5
	31.80	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:36		
	34.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:53		
	40.50	B	Broken, from 11 to 02 o'clock, within 8 inch: YES	00:03:19	4 3a	S 4
	50.00	B	Broken, from 02 to 04 o'clock, within 8 inch: YES	00:03:53		S 4
	54.30	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:04:12		
	56.50	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:04:23		
	83.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:31		
	84.10	B	Broken, from 09 to 03 o'clock, within 8 inch: YES	00:05:54	4 3a	S 5
	85.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:19		
	96.80	TB	Tap Break-In, at 01 o'clock, 6", within 8 inch: YES	00:12:55		
	108.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:13:21		
	110.20	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:13:48		
	121.40	HVV	Hole Void Visible, from 10 to 03 o'clock, within 8 inch: YES	00:14:01		
	121.40	IG	Infiltration Gusher, from 10 to 02 o'clock, within 8 inch: YES, Remark: Approx. 5 Gpm	00:14:42		
	123.60					



Rebuild

H.S.# 19/21

H.S.# 18/20

H.S.# 15/17

H.S.# 14/16

H.S.# 11/13

Spot repair

50, 20a, b + replace seal M6

Seal in r - fr

at 10" from

H.S.# 5/19



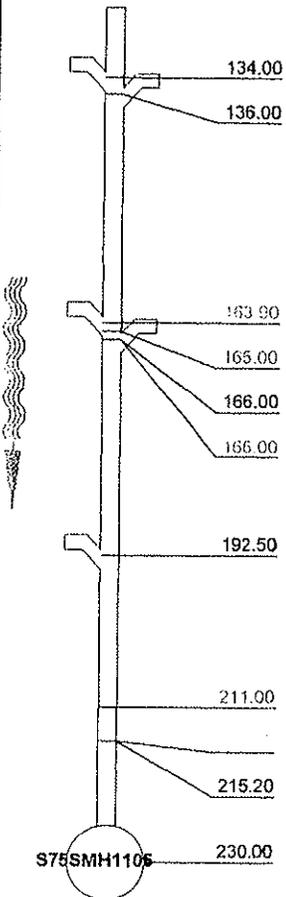
The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Glidersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

1:279	position	code	observation	MPEG	photo	grade
	134.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:17:20		
	136.00	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:17:32		
	163.90	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: YES. Remark: Hole inside	00:19:31	54_24a	M 2
	165.00	HVV	Hole Void Visible, from 11 to 01 o'clock, within 8 inch: YES	00:19:53	55_25a	S 5
	166.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:20:11		
	166.00	XP	Collapse Pipe Sewer, 20 %	00:20:32	57_27a	S 5
	192.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:21:43		
	211.00	B	Broken, from 12 to 12 o'clock, within 8 inch: YES	00:22:20		S 5
	215.20	MMC	Material Change, PVC Polyvinyl Chloride	00:22:38		
	230.00	AMH	Manhole	00:23:39		



*HS # 28 / # 20
Columbus*

*HS
3 / # 5*

QSR	QMR	SPR	IMPR	OPR	SPRI	IMPRI	OPRI
6043	5122	120	9	120	3.43	3	3.39



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Inspection photos

City: Cambridge, MA	Street: Harrison Avenue	Date: 04/28/2009	section number: 4	PSR:
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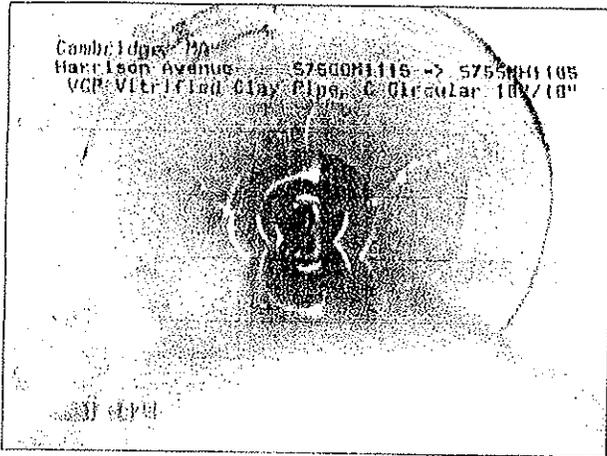


Photo: 4_3a, Tape/Media No.: T152-042809-1, 00:01:03
13.6FT; Fracture Multiple, from 08 to 04 o'clock, within 8 inch: YES

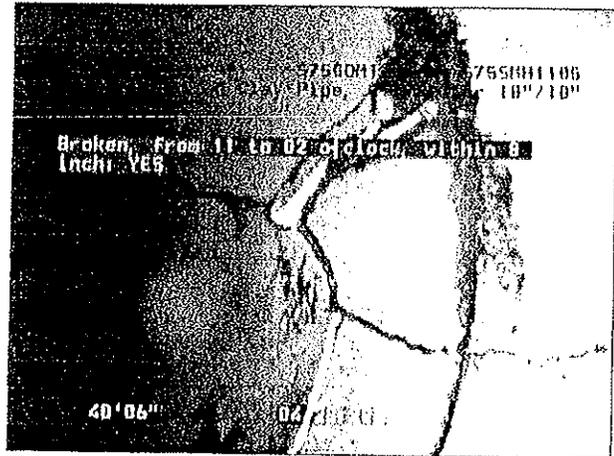


Photo: 4_8a, Tape/Media No.: T152-042809-1, 00:03:19
40.5FT, Broken, from 11 to 02 o'clock, within 8 inch: YES

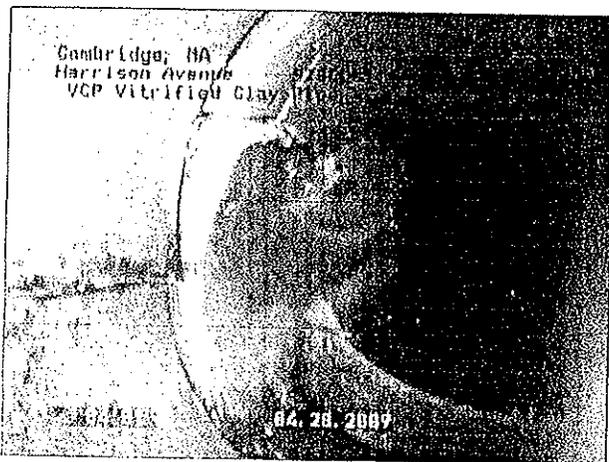


Photo: 4_13a, Tape/Media No.: T152-042809-1, 00:05:54
84.1FT, Broken, from 09 to 03 o'clock, within 8 inch: YES

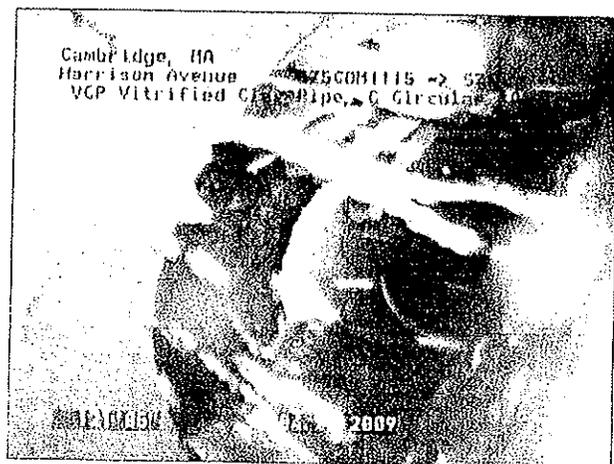


Photo: 50_20a, Tape/Media No.: T152-042809-1, 00:14:42
121.4FT, Infiltration Gusher, from 10 to 02 o'clock, within 8 inch: YES, Remark: Approx. 5+Gpm



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Inspection photos

City: Cambridge, MA	Street: Harrison Avenue	Date: 04/28/2009	section number: 4	PSR:
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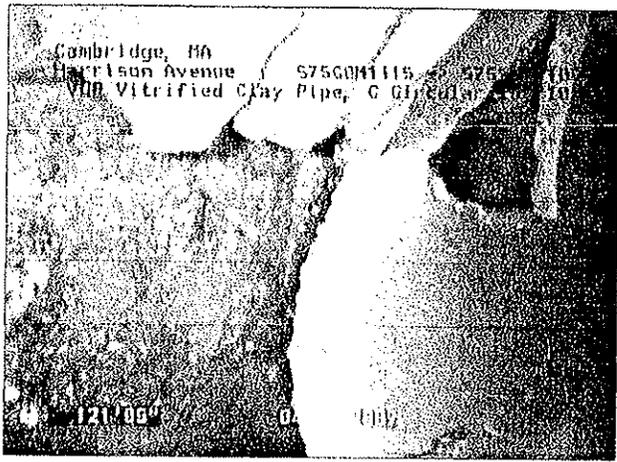


Photo: 50_20b, Tape/Media No.: T152-042809-1, 00:14:42
121.4FT, Infiltration Gusher, from 10 to 02 o'clock, within 8 inch: YES, Remark: Approx. 5+Gpm

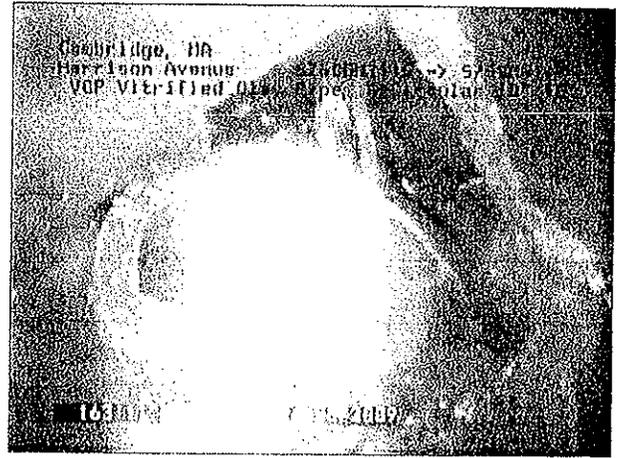


Photo: 54_24a, Tape/Media No.: T152-042809-1, 00:19:31
163.9FT, Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: YES, Remark: Hole inside

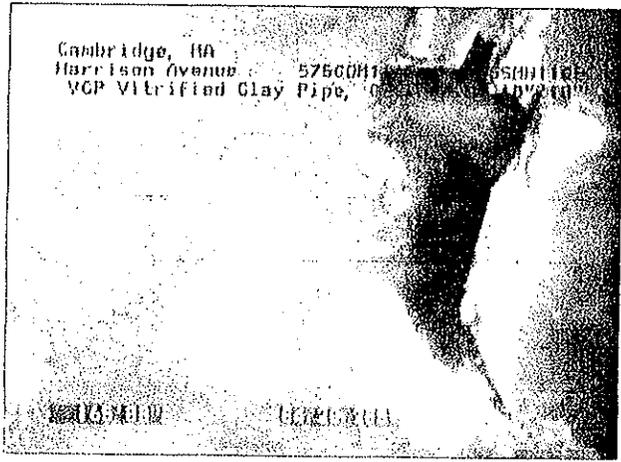


Photo: 55_25a, Tape/Media No.: T152-042809-1, 00:19:53
165FT, Hole Void Visible, from 11 to 01 o'clock, within 8 inch: YES

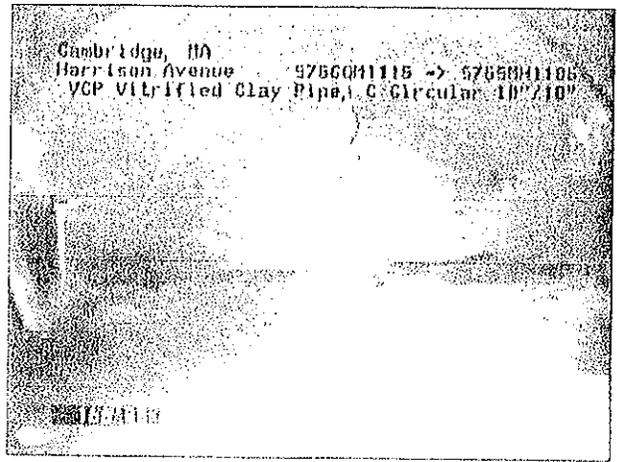


Photo: 57_27a, Tape/Media No.: T152-042809-1, 00:20:32
166FT, Collapse Pipe Sewer, 20 %



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Inspection report

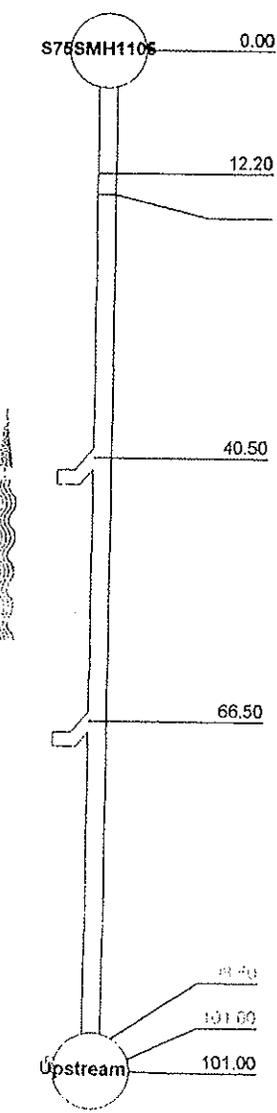
Date: 04/28/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 5	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Columbus Avenue	Flow Control:	Start MH: S75SMH1105 ✓
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: C Light Highway	Tape/Media #: T152-042809-1	Total length surveyed: 101 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:225	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	12.20	MMC	Material Change, VCP Vitrified Clay Pipe ✓ <i>Break/Consol 6' dia. 12'-15' (STABIL)</i>	00:00:44		
	40.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES <i>Minor Cr Crack @ 49'</i>	00:01:46		
	66.50	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: YES	00:02:35		
	101.00	AEP	End of Pipe <i>Service is structurally ok just has grass build up Need new SMH</i>	00:04:03		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5131	2100	8	2	10	4	2	3.33



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Inspection photos

City: Cambridge, MA	Street: Columbus Avenue	Date: 04/28/2009	section number: 5	PSR:
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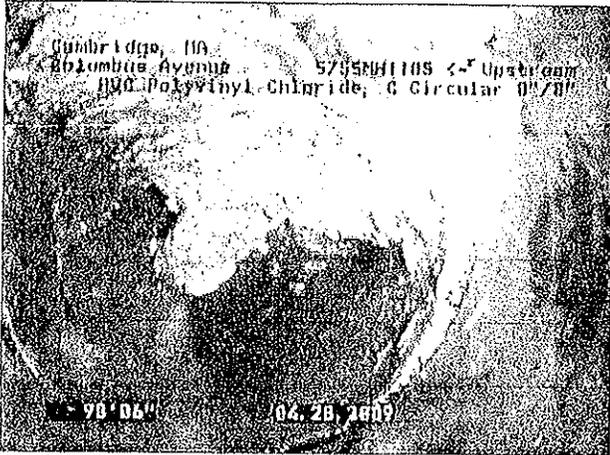


Photo: 68_6a, Tape/Media No.: T152-042809-1, 00:03:30
98.5FT, Tap Factory Made Defective, at 02 o'clock, 6", within
8 inch: YES, Remark: Heavy Grease

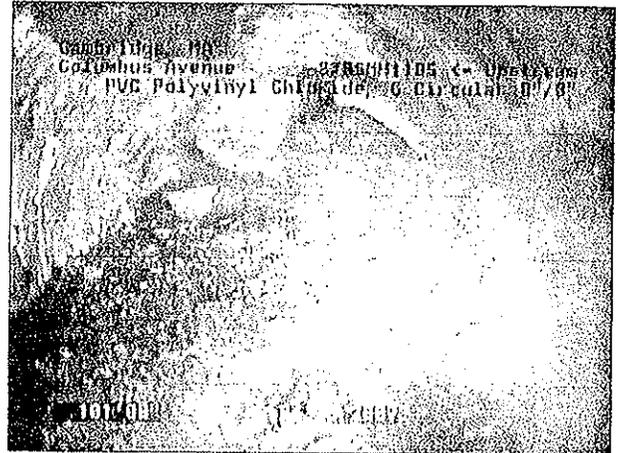


Photo: 70_7b, Tape/Media No.: T152-042809-1
101FT, Collapse Pipe Sewer, 100 %

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Harrison Avenue	Flow Control:	Start MH: S75COM4000
City: Cambridge, MA	Year Renewed:	End MH: S75COM1115
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 232 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"18"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining:
	Category:

Comment:
 Location details:

1:341	position	code	observation	MPEG	photo	grade
Also D40COM4000						
	S75COM4000 0.00	AMH	Manhole			
	27.20	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:01:30		
	29.30	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:01:43		
	31.10					
	34.10					
	55.80	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:03:17		
	57.80	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:03:31		
	81.10	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:04:15		
	83.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:04:53		
	106.20	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:05:41		
	108.20	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:06:01		
			112. Long area starts coming			
			121. Long Crack			
	132.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:07:23		
	134.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:07:37		



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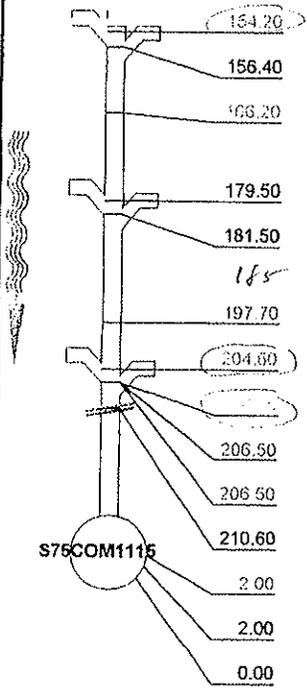
National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
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§ 13

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

1:341	position	code	observation	MPEG	photo	grade
	154.20	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch. YES, Remark: Broken inside.	00:03:29		M 2
	156.40	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:08:47		
	166.20	FM	Fracture Multiple, from 12 to 06 o'clock, within 8 inch: YES	00:09:17		S 4
	179.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:09:51		
	181.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:10:02		
	185		<i>CIRC CRACK</i>			
	197.70	B	Broken, from 12 to 12 o'clock, within 8 inch: YES	00:10:36	195	S 5
	204.50	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: YES, Remark: Debris inside.	00:11:13	200	M 2
	206.50	HVV	Hole Void Visible, from 07 to 12 o'clock, within 8 inch: YES	00:12:04	23_23a, b	S 5
	206.50	XP	Collapse Pipe Sewer, 45 %	00:12:25		S 5
	210.60	MSA	Survey Abandoned, Remark: Collapsed	00:15:22		
	2.00	XP	↑ Collapse Pipe Sewer, 100 %	00:19:13	27_26a, b	S 5
	2.00	MSA	↑ Survey Abandoned, Remark: Collapsed	00:19:26	28_27a	
	0.00	AMH	↑ Manhole	00:20:05		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	CPRI
5442	3122	33	7	40	4.13	2.33	3.04



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Inspection photos

City: Cambridge, MA	Street: Harrison Avenue	Date: 06/01/2009	section number: 1	PSR:
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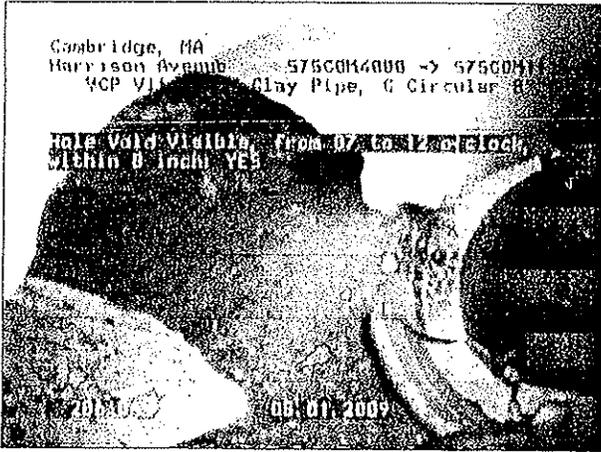


Photo: 23_23a, Tape/Media No.: T152-050109-1, 00:12:04
206.5FT, Hole Void Visible, from 07 to 12 o'clock, within 8 inch: YES

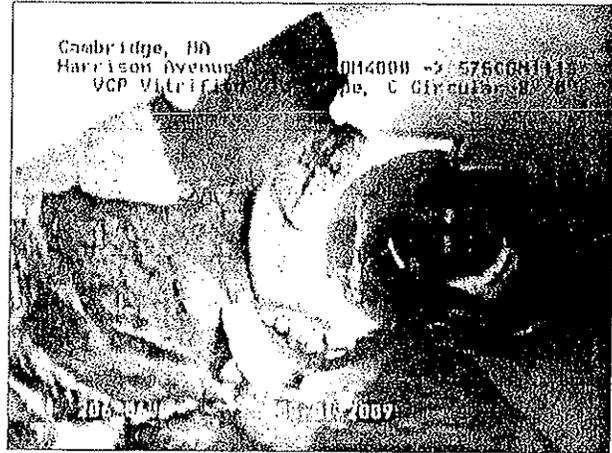


Photo: 23_23b, Tape/Media No.: T152-050109-1, 00:12:04
206.5FT, Hole Void Visible, from 07 to 12 o'clock, within 8 inch: YES

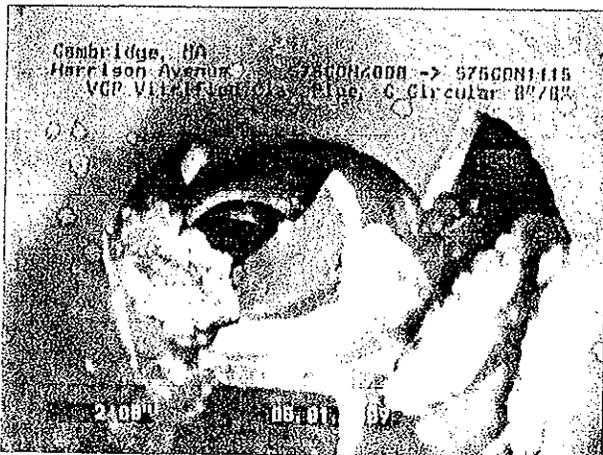


Photo: 27_26a, Tape/Media No.: T152-050109-1, 00:19:18
230FT, Collapse Pipe Sewer, 100 %

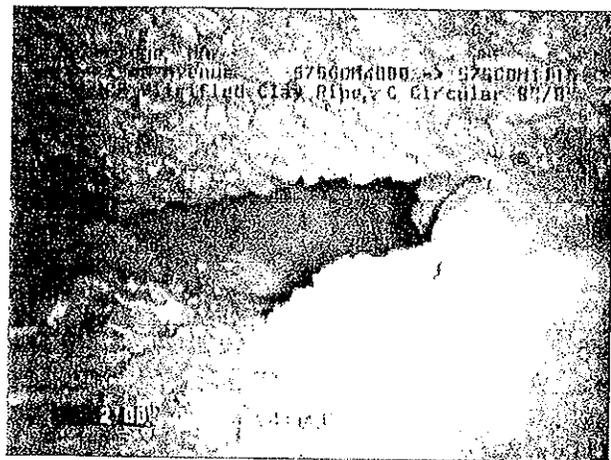


Photo: 27_26b, Tape/Media No.: T152-050109-1, 00:19:18
230FT, Collapse Pipe Sewer, 100 %



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Inspection photos

City: Cambridge, MA	Street: Harrison Avenue	Date: 05/01/2009	section number: 1	PSR:
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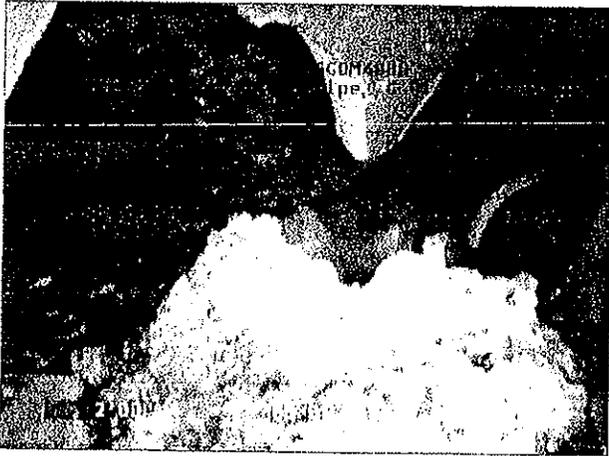


Photo: 28_27a, Tape/Media No.: T152-050109-1, 00:19:26
230FT, Survey Abandoned, Remark: Collapsed

514



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Inspection report

Date: 04/29/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1515
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: C Light Highway	Tape/Media #: T152-042909-1	Total length surveyed: 166 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining: Category:

Comment:
 Location details:

1:375	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	7.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES, Remark: <u>With Infiltration running</u>	00:00:43		
	30.30 L	FBI	<u>Tap Break to Infiltration</u> at 10 o'clock, 6", within 3 inch: YES	00:01:28		M 2
	33.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:01:41		
	58.1		<i>Connection near CB?</i>			
	78.20		<i>Fracture longitudinal at 10 o'clock</i>			
	80.00 L	FBI	<u>Tap Break to Infiltration</u> at 11 o'clock, 6", within 3 inch: YES	00:03:31		M 1
	31.30	HSV	<u>Hole Soil Visible</u> , from 08 to 11 o'clock, within 3 inch: YES	00:03:49	1_7a, b	S 5
	32.00	HSV	<u>Hole Soil Visible</u> , from 09 to 11 o'clock, within 3 inch: YES	00:04:21	1_3a, b	S 5
	86.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:04:48		
	92.60		<i>Fracture longitudinal</i>			
	112.30	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:06:02		
	121.30		<i>Fracture longitudinal at 11 o'clock</i>			
	128.20 L	FBI	<u>Tap Break to Infiltration</u> at 11 o'clock, 6", within 3 inch: YES	00:07:15		
	138.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:07:50		
	162.00	TF	<u>Tap Factory Made</u> , at 09 o'clock, 6", within 8 inch: YES	00:08:40		
	166.00	ACOM	Cleanout Mainline, Remark: <u>Lamp hole</u>	00:09:30		

S75LPH1500

CSR	CMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5232	4122	18	8	28	3.6	2.67	3.25



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Inspection photos

City: Cambridge, MA	Street: Seagrave Road	Date: 04/29/2009	section number: 1	PSR:
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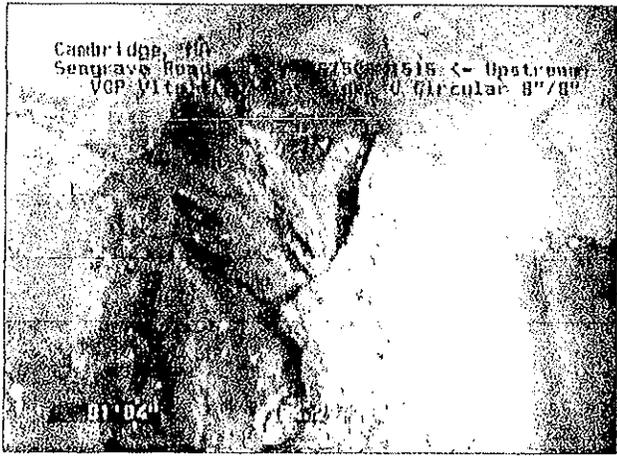


Photo: 1_7a, Tape/Media No.: T152-042909-1, 00:03:49
81.3FT, Hole Soil Visible, from 08 to 11 o'clock, within 8 inch:
YES

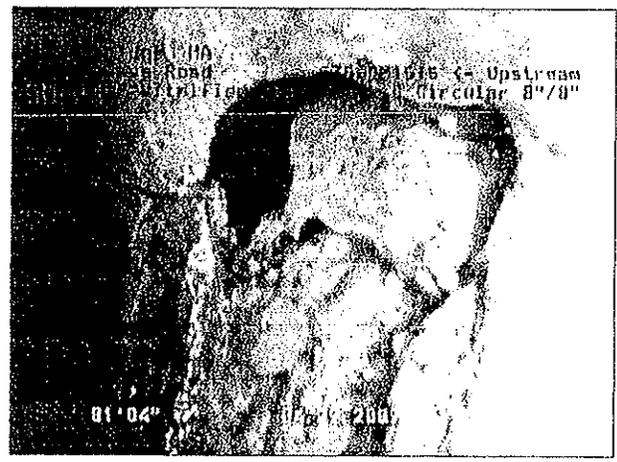


Photo: 1_7b, Tape/Media No.: T152-042909-1, 00:03:49
81.3FT, Hole Soil Visible, from 08 to 11 o'clock, within 8 inch:
YES

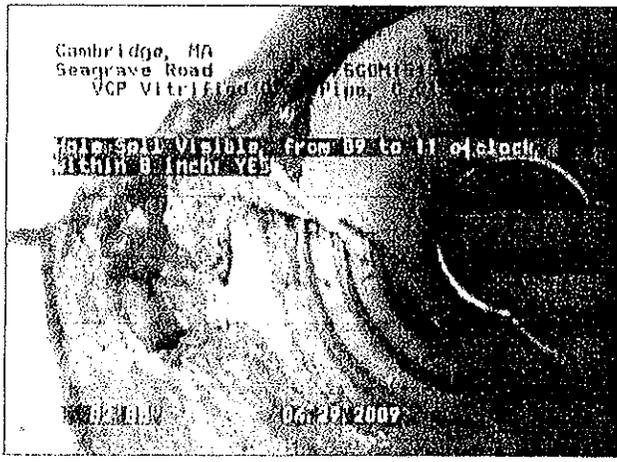


Photo: 1_8a, Tape/Media No.: T152-042909-1, 00:04:21
82FT, Hole Soil Visible, from 09 to 11 o'clock, within 8 inch:
YES

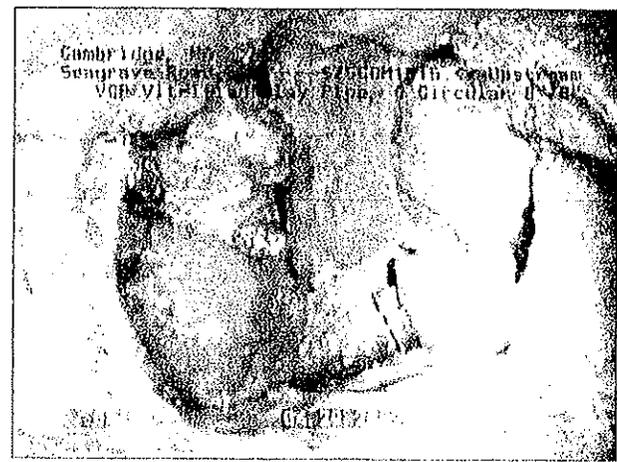


Photo: 1_8b, Tape/Media No.: T152-042909-1, 00:04:21
82FT, Hole Soil Visible, from 09 to 11 o'clock, within 8 inch:
YES



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515

Inspection report

Date: 04/29/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1515
City: Cambridge, MA	Year Renewed:	End MH: S75COM1510
Location Code: C Light Highway	Tape/Media #: T162-042909-1	Total length surveyed: 257.2 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:403	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	4.00	RFJ	Roots Pipe Joint, from 08 to 02 o'clock, within 8 inch: YES	00:00:08	2_03	M 1
	12.00	TBI	Tap Break-In Intruding at 02 o'clock, 6", 1", 10 %, within 8 inch: YES	00:01:20		M 2
	23.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:15		
	49.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:03:09		
	60.00	B	Broken, from 12 to 12 o'clock, within 8 inch: YES	00:03:55		S 5
	60.70		Tap Break-In Intruding			
	75.70	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:05:31		
	102.30	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:06:24		
	105.50	TBI	Tap Break-In Intruding, at 12 o'clock, 6", 4", 50 %, within 8 inch: YES, from 12 to 02 o'clock	00:06:56		M 5
	105.50	MSA	Survey Abandoned, Remark: Intruding Tap			
	151.60	TBI	Tap Break-In Intruding, at 10 o'clock, 6", 4", 50 %, within 8 inch: YES, from 10 to 12 o'clock			M 5
	129.10	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES			
	105.35	TBI	Tap Break-In Intruding at 10 o'clock, 6", 2", 25 %, within 8 inch: YES			
	103.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES			
	79.20					
	79.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES			



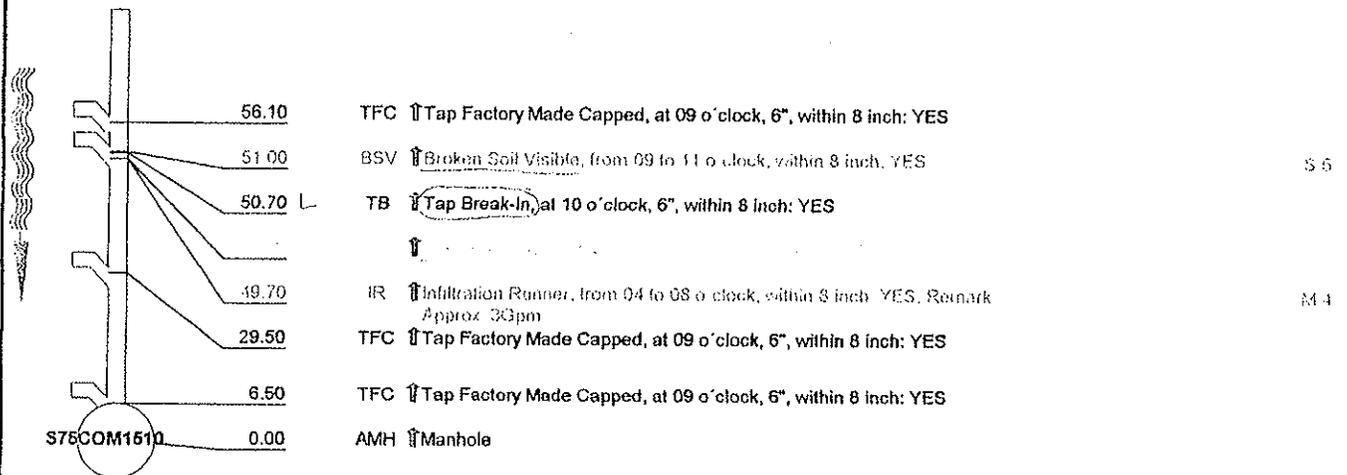
The Environmental Protection Specialists

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 25 Marshall Street
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 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 04/29/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gilderleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

1:403 position code observation MPEG photo grade



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5231	5241	13	28	41	4.33	3.11	3.42



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Seagrave Road	Date: 04/29/2009	section number: 2	PSR:
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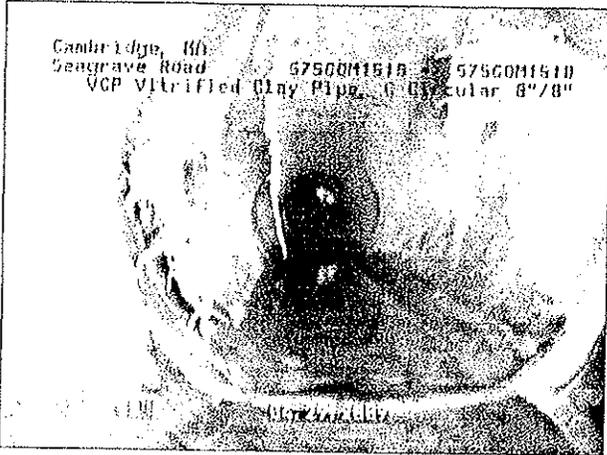


Photo: 2_2a, Tape/Media No.: T152-042909-1, 00:00:38
4FT, Roots Fine Joint, from 08 to 02 o'clock, within 8 inch: YES



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

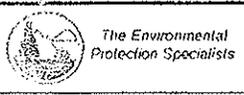
Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Kimball Street	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed:	End MH: S75COM1425
Location Code: C Light Highway	Tape/Media #: T152-043009-1	Total length surveyed: 249 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining: Category:

Comment:
Location details:

1:372	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	25.00	JOM	Joint Offset Medium	00:01:13	1_2a	3.1
	35.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:02:00		
	37.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:13		
	57.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:03:03		
	59.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:03:23		
	79.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:05:51		
	81.30	LFD	Tap Factory Made Defective, at 10 o'clock, 6", within 8 inch: YES, Remark: Broken pipe	00:06:09		3.2
	88.50	B	Broken, from 08 to 04 o'clock, within 8 inch: YES	00:06:29		3.3
	95.80	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:48		
	98.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES, Remark: Infiltration running in	00:07:03		
	121.10	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES, Remark: Infiltration running in	00:07:51		
	123.20	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES, Remark: Infiltration running in	00:08:06		
	149.40	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:09:18		
	151.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:09:31		

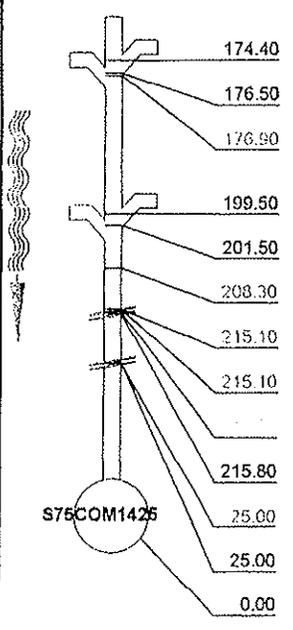


National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

1:372	position	code	observation	MPEG	photo	grade
	174.40	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:13:32		
	176.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:13:42		
	176.90	B	Broken, from 12 to 12 o'clock, within 8 inch: YES	00:13:51		S 5
	199.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:14:54		
	201.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:15:08		
	208.30	B	Broken, from 06 to 04 o'clock, within 8 inch: YES	00:17:04		S 5
	215.10	XP	Collapse Pipe Sewer, 65 %	00:17:53	2_24a, b	S 5
	215.10	HVV	Hole Void Visible, from 09 to 03 o'clock, within 8 inch: YES	00:17:56	2_25a, b	S 5
	215.80	MSA	Survey Abandoned, Remark: Collapsed Pipe	00:18:58		
	25.00	XP	↑ Collapse Pipe Sewer, 65 %	00:01:35		S 5
	25.00	MSA	↑ Survey Abandoned, Remark: Collapsed Pipe	00:01:40		
	0.00	AMH	↑ Manhole	00:01:42		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
563D	2100	118	2	120	3.28	2	3.24



Inspection photos

City: Cambridge, MA	Street: Kimball Street	Date: 04/30/2009	section number: 2	PSR:
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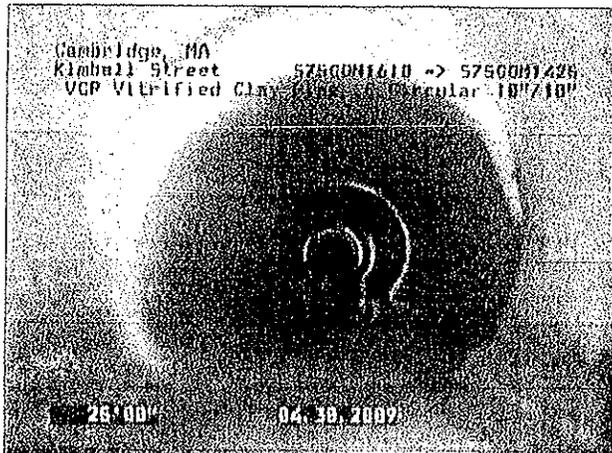


Photo: 7_2a, Tape/Media No.: T152-043009-1, 00:01:18
25FT, Joint Offset Medium

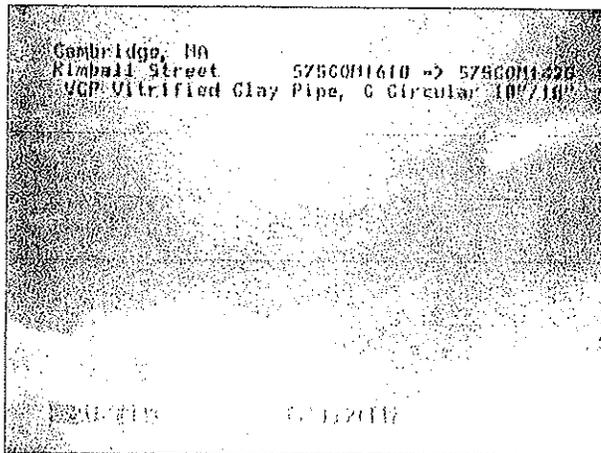


Photo: 2_24a, Tape/Media No.: T152-043009-1, 00:17:53
215.1FT, Collapse Pipe Sewer, 65 %

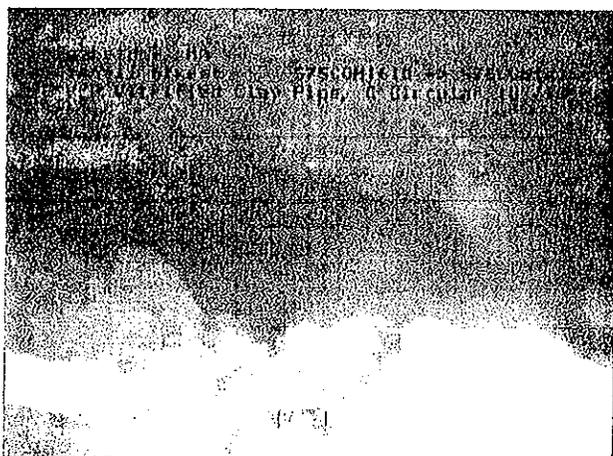


Photo: 2_24b, Tape/Media No.: T152-043009-1, 00:17:53
215.1FT, Collapse Pipe Sewer, 65 %

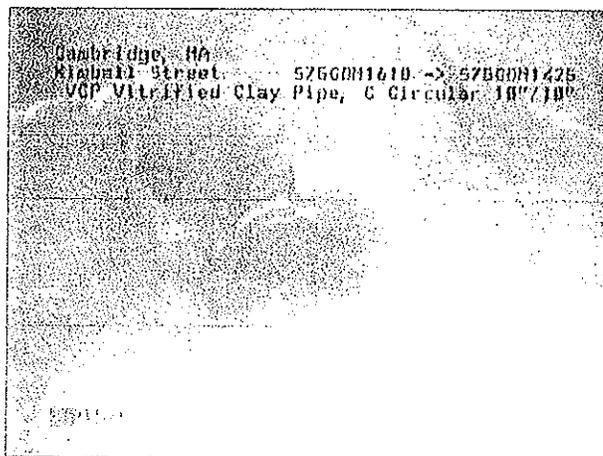


Photo: 2_25a, Tape/Media No.: T152-043009-1, 00:17:56
215.1FT, Hole Void Visible, from 09 to 03 o'clock, within 8 inch: YES

519



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Kimball Street	Date: 04/30/2009	section number: 2	PSR:
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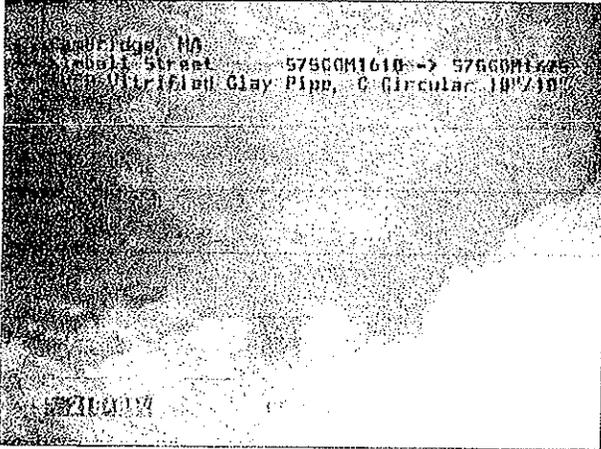


Photo: 2_25b, Tape/Media No.: T152-043009-1, 00:17:56
 215.1FT, Hole Void Visible, from 09 to 03 o'clock, within 8
 inch: YES



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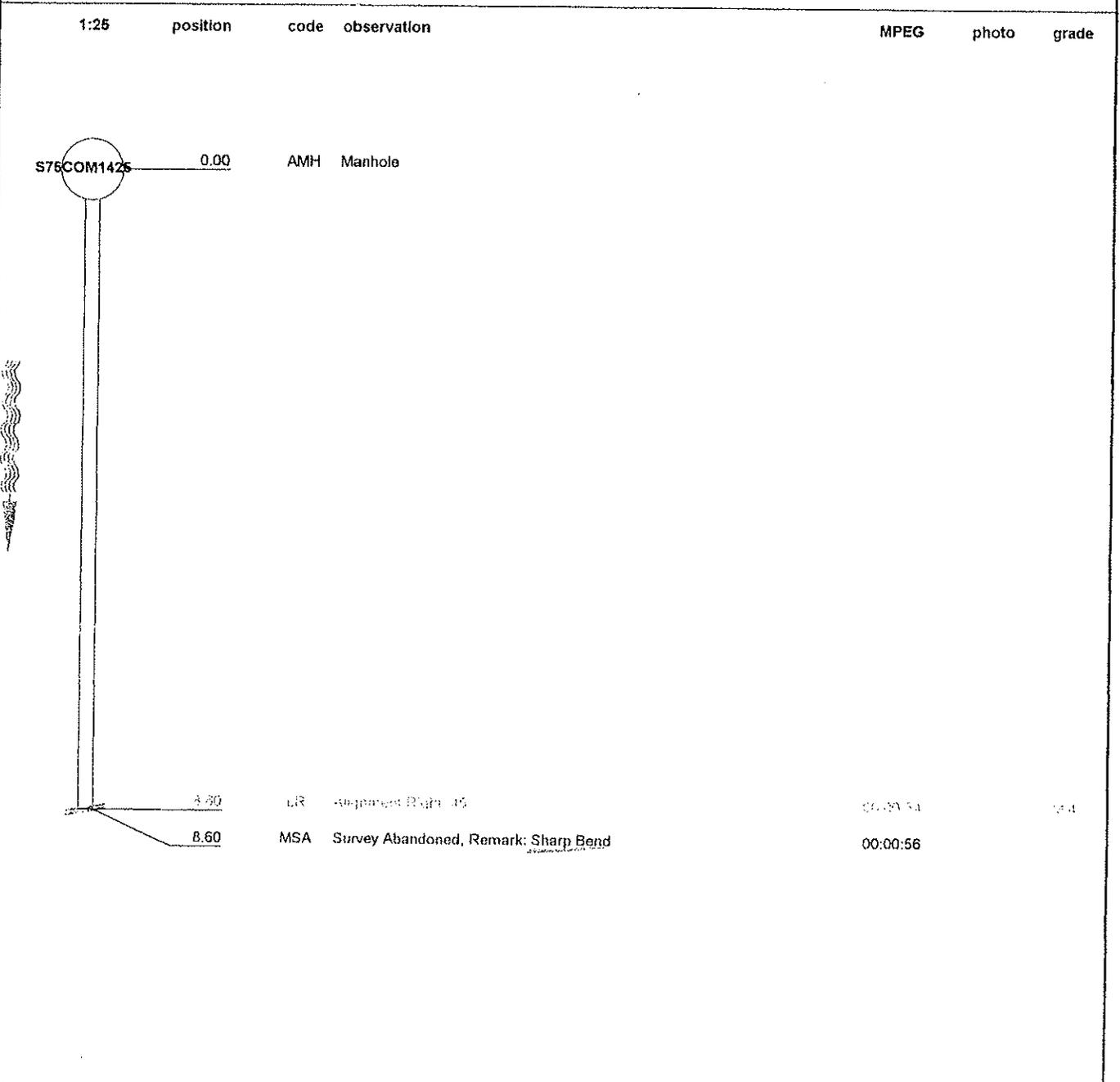
Inspection report

Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gldersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Kimball Street	Flow Control:	Start MH: S75COM1425
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1425
Location Code: C Light Highway	Tape/Media #: T152-043009-1	Total length surveyed: 8.6 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining: Category:

Comment:
Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	0	4	4	0	4	4

521



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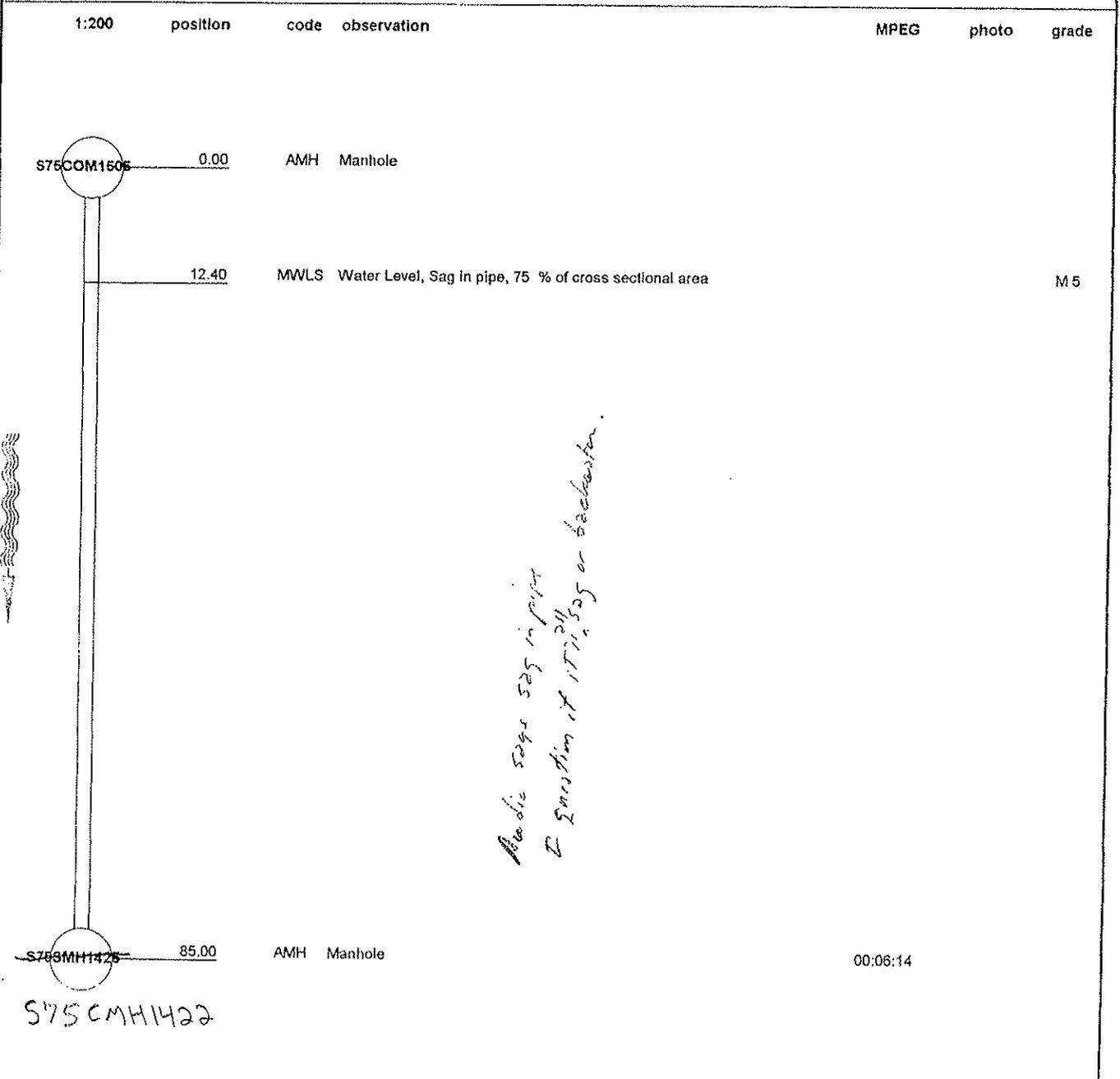
Inspection report

Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gldersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1505
City: Cambridge, MA	Year Renewed:	End MH: S75SMH1425
Location Code: C Light Highway	Tape/Media #: T152-043009-1	Total length surveyed: 85 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SS Sanitary	Material: PVC Polyvinyl Chloride
Drain. Area:	Pipe Joint length: 13ft
	Lining:
	Category:

Comment:
Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	5100	0	5	5	0	5	5

S22



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 5	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1606
City: Cambridge, MA	Year Renewed:	End MH: S75COM1610
Location Code: C Light Highway	Tape/Media #: T152-043009-1	Total length surveyed: 186 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining: Category:

Comment:
 Location details:

1:425	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	7.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES <i>But 1 dft</i>	00:01:12		
	32.80 L	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:01:58		
	59.60 L	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES <i>flow</i>	00:02:43		
	77.40	B	Broken, from 07 to 02 o'clock, within 8 inch: YES <i>73-77</i>	00:03:27	47_5a	S 5
	85.80 L	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES <i>Looks black.</i>	00:04:01		
	112.30 L	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:04:45		
	138.70 L	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:05:29		
	144		<i>Cir Crack</i>			
	164.80	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:06:13		
	186.00	AMH	Manhole	00:06:58		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
6100	0000	5	0	5	5	0	5

522



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Seagrave Road	Date: 04/30/2009	section number: 5	PSR:
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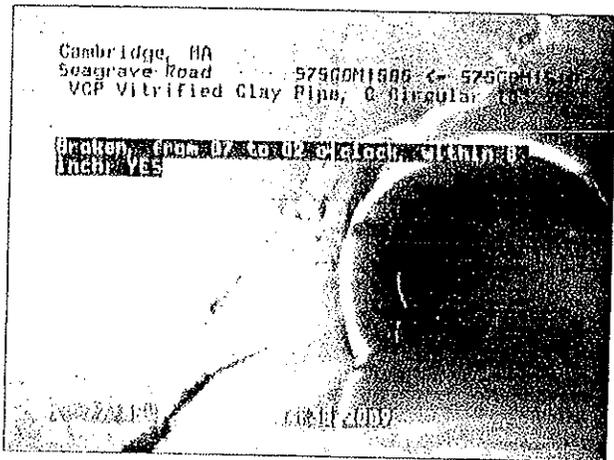


Photo: 47_5a, Tape/Media No.: T152-043009-1, 00:03:27
77.4FT, Broken, from 07 to 02 o'clock, within 8 inch: YES



The Environmental Protection Specialists

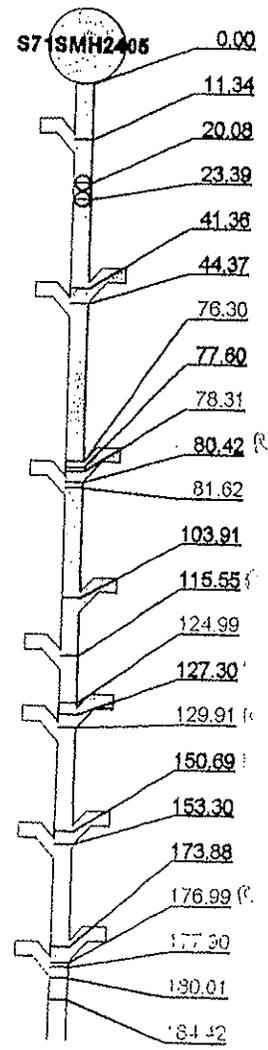
National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection report

Date: 09/17/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 2	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date:	Pre-Cleaned: J Jetting	rate:

Street: MADISON AVENUE	Flow Control: N Not Controlled	Start MH: S71SMH2405
City: CAMBRIDGE, MA	Year Renewed:	End MH: S71SMH2205
Location Code: C Light Highway	Tap/Media #: 41-091708-1	pipe length: 334 ft
purpose of Survey: B Infiltration/inflow Investigation	Dia/Height: B Barrel 15"/15"	Material: VCP Vitrified Clay Pipe
Use of Sewer: SS Sanitary	Lining Method:	Joint length: 3ft
Basin:	Job Name:	
Remark::		

1:462	position	code	observation	counter	photo	l/i
	S71SMH2405 0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:09:22		
	11.34	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:10:14		
	20.08	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:10:35		
	23.39	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:10:48		
	41.36	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:11:19		
	44.37	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:11:29		
	76.30	FC	Fracture Circumferential, from 04 to 08 o'clock, within 8 inch: YES	00:12:24		
	77.60	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:12:31		
	78.31	CC	Crack Circumferential, from 02 to 04 o'clock, within 8 inch: YES	00:12:39		
	80.42	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:12:45		
	81.62	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES	00:12:52		
	103.91	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:13:47		
	115.55	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: NO	00:14:15		
	124.99	CC	Crack Circumferential, from 09 to 11 o'clock, within 8 inch: YES	00:14:45		
	127.30	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: NO	00:14:53		
	129.91	TFD	Tap Factory Made Defective, at 03 o'clock, 6", within 8 inch: NO	00:15:05		
	150.69	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:15:51		
	153.30	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:16:00		
	173.88	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:16:50		
	176.99	TFD	Tap Factory Made Defective, at 03 o'clock, 6", within 8 inch: NO	00:17:06	24a	
	177.30	CC	Crack Circumferential from 08 to 10 o'clock, within 8 inch: YES	00:17:33		
	180.01	CC	Crack Circumferential from 02 to 05 o'clock, within 8 inch: YES	00:17:44		
	184.42	CC	Crack Circumferential from 07 to 08 o'clock, within 8 inch: YES	00:17:55		





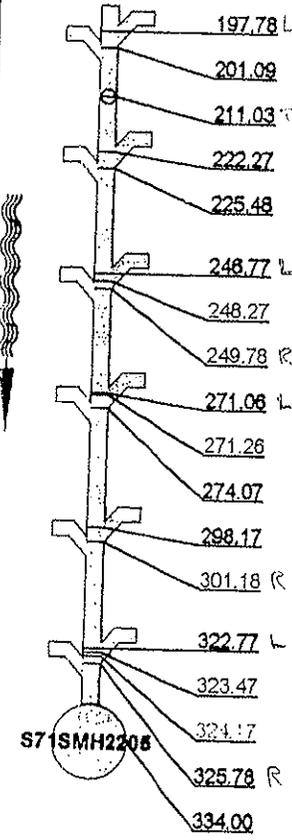
The Environmental
Protection Specialists

National Water Main Cleaning Co
8 B St
Hyda Park, MA
Tel: 617 361 5533, Fax: 617 361 8501

Inspection report

Date: 09/17/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 2	PSR:
Total Pipe Length:	Survey Customer: CITY OF CAMBRIDGE	System Owner: CAMBR-17	Clean Date:	Pre-Cleaned: J Jetting	rate:

1:462	position	code	observation	counter	photo	///
	197.78 L	TFA	Tap Factory Made Active, at 09 o'clock, 6", within 8 inch: NO	00:18:28		
	201.09	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:18:39		
	211.03 Tap	TBA	Tap Break-In Active, at 12 o'clock, 6", within 8 inch: NO	00:19:03		
	222.27	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:19:24		
	225.48	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:19:35		
	248.77 L	TFA	Tap Factory Made Active, at 10 o'clock, 6", within 8 inch: NO	00:20:39		
	248.27	H	Hole, at 02 o'clock, within 8 inch: NO	00:20:49		
	249.78 R	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: NO	00:21:02		
	271.06 L	TFA	Tap Factory Made Active, at 09 o'clock, 6", within 8 inch: NO	00:21:58		
	271.26	H	Hole, at 12 o'clock, within 8 inch: NO	00:22:06		
	274.07	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:22:28		
	298.17	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:23:20		
	301.18 R	TFD	Tap Factory Made Defective, at 03 o'clock, 6", within 8 inch: NO	00:23:33	40a	
	322.77 L	TFA	Tap Factory Made Active, at 10 o'clock, 6", within 8 inch: NO	00:24:28		
	323.47	B	Broken, from 10 to 12 o'clock, within 8 inch: YES	00:24:37		
	324.17	CM	Crack Multiple, from 12 to 12 o'clock, within 8 inch: YES	00:24:43		
	325.78 R	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: NO	00:24:57		
	334.00	AMH	Manhole, Remark: End of survey downstream Manhole	00:25:21		



QSR	CMR	SPR	WPR	OPR	SPRI	MPRI	OPRI
5142	3400	26	0	33	1.27	2	2.2



The Environmental Protection Specialists

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection photos

City: CAMBRIDGE, MA	Street: MADISON AVENUE	Date: 09/17/2008	section number: 2	PSR:
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Photo: 24a, Tape/Media No.: 41-091708-1, 00:17:06
176.99FT, Tap Factory Made Defective, at 03 o'clock, 6", within 8
Inch: NO

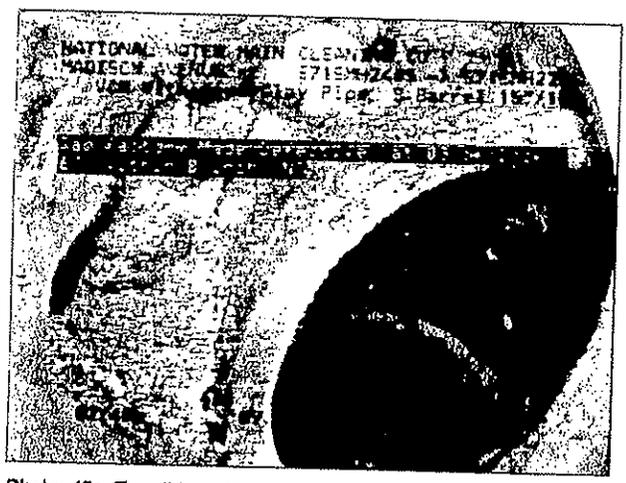


Photo: 40a, Tape/Media No.: 41-091708-1, 00:23:33
301.18FT, Tap Factory Made Defective, at 03 o'clock, 6", within 8
Inch: NO



The Environmental
Protection Specialists

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5333, Fax: 617 381 5501

528

Inspection report

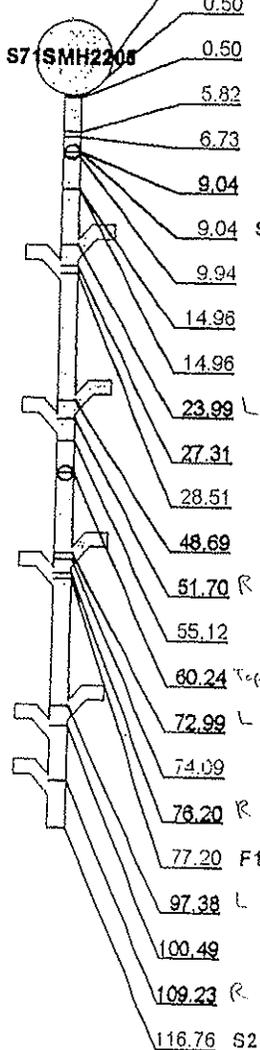
Date: 09/18/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 1	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/18/2008	Pre-Cleaned: J Jetting	rate:

Street: MADISON AVENUE	Flow Control: N Not Controlled	Start MH: S71SMH2208
City: CAMBRIDGE, MA	Year Renewed:	End MH: -S71SMH2200- S71SMH2105
Location Code: C Light Highway	Tape/Media #: 41-091808-1	pipe length: 330 ft

purpose of Survey: B Infiltration/inflow Investigation	Dia/Height: B Barrel 18"/18"
Use of Sewer: SS Sanitary	Material: VCP Vitrified Clay Pipe
Basin:	Joint length: 3ft
	Lining Method:
	Job Name:

Remark::

1:363	position	code	observation	counter	photo	l/l
	0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:00:00		
	0.50	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES	00:00:42		
	0.50	CL	Crack Longitudinal, at 03 o'clock, within 8 inch: YES	00:00:44		
	5.82	CC	Crack Circumferential, from 07 to 08 o'clock, within 8 inch: YES	00:01:02		
	6.73	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES	00:01:09		
	9.04	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:01:21		
	9.04 S1	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES, start	00:01:27		
	9.94	CC	Crack Circumferential, from 02 to 03 o'clock, within 8 inch: YES	00:01:32		
	14.96	CL	Crack Longitudinal, at 03 o'clock, within 8 inch: YES	00:01:52		
	14.96	CL	Crack Longitudinal, at 09 o'clock, within 8 inch: YES	00:01:53		
	23.99 L	TFA	Tap Factory Made Active, at 10 o'clock, 6", within 8 inch: NO	00:02:08		
	27.31	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:02:20		
	28.51	CL	Crack Longitudinal, at 03 o'clock, within 8 inch: YES	00:02:28		
	48.69	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:03:05		
	51.70 R	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:03:17		
	55.12	B	Broken, from 09 to 03 o'clock, within 8 inch: YES	00:03:35		
	60.24 Tap	TB	Tap Break-In, at 12 o'clock, 6", within 8 inch: NO	00:04:09		
	72.99 L	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:04:36		
	74.09	CC	Crack Circumferential, from 08 to 10 o'clock, within 8 inch: YES	00:04:44		
	76.20 R	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:04:52		
	77.20 F1	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES, end	00:04:59		
	97.38 L	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:05:33		
	100.49	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:05:45		
	109.23 R	TB	Tap Break-In, at 02 o'clock, 6", within 8 inch: YES	00:06:02		
	116.76 S2	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES, start	00:06:26		



#24
MAD. S.O.



525

Inspection report

Date: 09/18/2008	P.O.# / WO#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 1	PSR:
Total Pipe Length:	Survey Customer: CITY OF CAMBRIDGE	System Owner: CAMBR-17	Clean Date: 09/18/2008	Pre-Cleaned: J Jetting	rate:

1:363	position	code	observation	counter	photo	l/i
	116.76	S2 CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES, start	00:06:26		
	121.98	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:06:38		
	124.99	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:06:49		
	127.20	F2 CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES, end	00:06:57		
	146.37	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:07:27		
	148.88	L TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inch: YES	00:07:38		
	149.39	R TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:07:49		
	170.77	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:08:37		
	173.88	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:08:45		
	194.96	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:09:40		
	198.08	R TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:09:52		
	219.36	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:10:39		
	222.57	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:10:48		
	243.66	L TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:11:32		
	246.77	R TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:11:43		
	259.92	RBJ	Roots Ball Joint, from 12 to 12 o'clock, 80 %, within 8 inch: YES	00:12:15	40a	
	289.21	RNL	Roots Medium Lateral at 10 o'clock 80 % within 8 inch: YES	00:13:02		
	292.45	R TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:13:41		
	313.23	CL	Crack Longitudinal, at 12 o'clock, within 8 inch: YES	00:14:24		
	313.23	CL	Crack Longitudinal, at 06 o'clock, within 8 inch: YES	00:14:28		
	330.00	AMH	Manhole, Remark: End of survey downstream Manhole	00:15:11		

~S71SMH2200~
S71SMH2105

QSR	QMR	SPR	MPR	CPR	SPRI	MPRI	OPRI
512D	3100	56	3	58	2	3	2.03



The Environmental Protection Specialists

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 361 5533, Fax: 617 361 5501

Inspection photos

City: CAMBRIDGE, MA	Street: MADISON AVENUE	Date: 09/18/2008	section number: 1	PSR:
-------------------------------	----------------------------------	----------------------------	-----------------------------	------

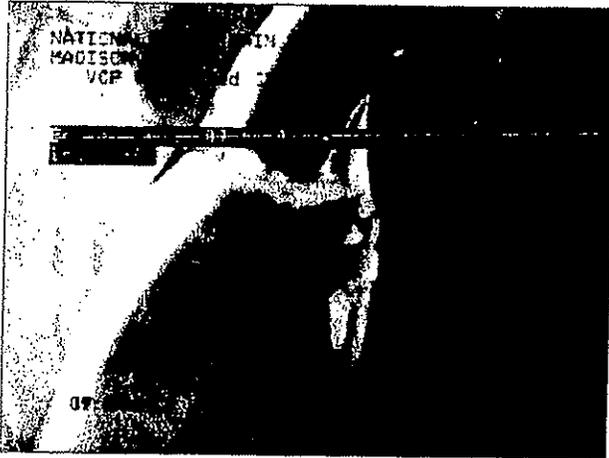


Photo: 16a, Tape/Media No.: 41-091808-1, 00:03:35
55.12FT, Broken, from 09 to 03 o'clock, within 8 Inch: YES

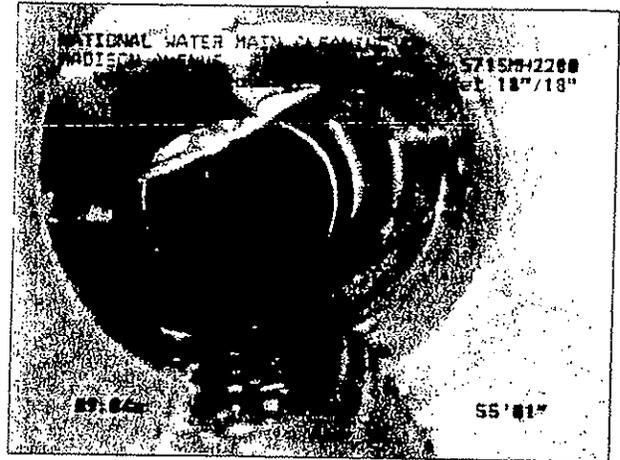


Photo: 16b, Tape/Media No.: 41-091808-1, 00:03:35
55.12FT, Broken, from 09 to 03 o'clock, within 8 Inch: YES

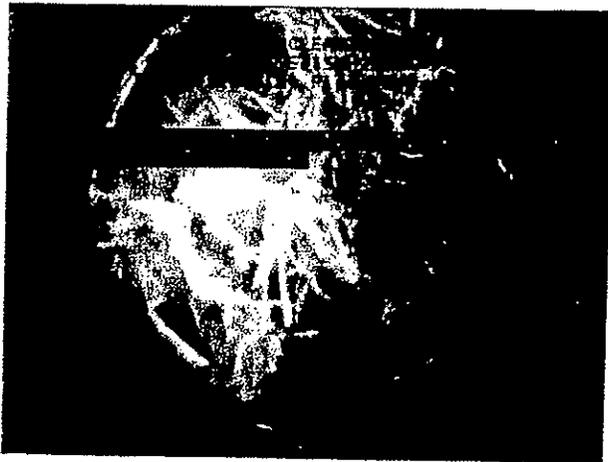


Photo: 40a, Tape/Media No.: 41-091808-1, 00:12:15
259.92FT, Roots Ball Joint, from 12 to 12 o'clock, 80 %, within 8 Inch: YES



The Environmental
Protection Specialists

(S31)

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection report

Date: 09/17/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 1	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date:	Pre-Cleaned: J Jetting	rate:

Street: COLUMBUS AVENUE	Flow Control: N Not Controlled	Start MH: REGULATOR MH
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75COM1105
Location Code: C Light Highway	Tapa/Media #: 41-091708-1	pipe length: 91 ft

purpose of Survey: B Infiltration/Inflow Investigation	Dia/Height: B Barrel 10"/10"
Use of Sewer: SS Sanitary	Material: VCP Vitrified Clay Pipe Joint length: 3ft
Basin:	Lining Method:
	Job Name:

Remark::

1:225	position	code	observation	counter	photo	I/I
	REGULATOR MH					
	0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:00:00		
	53.55	CM	Crack Multiple, from 12 to 12 o'clock, within 8 inch: YES	00:04:25		
	90.05	B	Broken, from 12 to 12 o'clock, within 8 inch: YES	00:07:59		
	91.00	MSA	Survey Abandoned, Remark: BROKEN PIPE	00:09:07		

QSR	QMR	SPR	MPR	CPR	SPRI	MPRI	OPRI
4131	0000	7	0	7	3.5	0	3.5



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

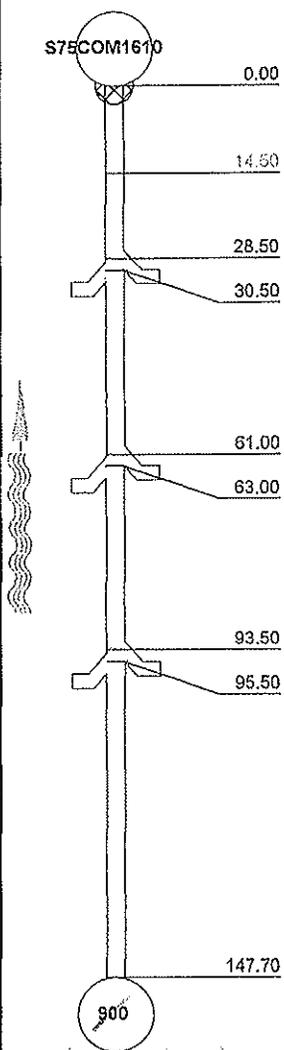
Inspection report

Date: 08-05-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: H Heavy Cleaning	rate:

Street: Grace Easement	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed:	End MH: 900 S75COM1900
Location Code: D Easement/Right of Way	Tape/Media #: T152-080509-1	Total length surveyed: 147.7 ft
purpose of Survey: A Maintenance Related	Dia/Height: C Circular 8"/8"	
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe	Joint length: 2ft
Basin:	Lining:	Job Name:

Comment:
Location details:

1:376	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:11:53		
	14.50	FC	Fracture Circumferential, from 12 to 12 o'clock, within 8 inch NO	00:13:52		S 2
	28.50	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES, Remark: 75% full of debris	00:16:38		
	30.50	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: 65% full of debris	00:17:16		
	61.00	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES, Remark: 50% full of debris	00:19:00		
	63.00	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: 40% full of debris	00:19:32		
	93.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:21:24		
	95.50	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: 75% full of debris	00:22:02		
	147.70	AEP	End of Pipe, Remark: Plugged with brick and cement	00:25:05		16a



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2100	0000	2	0	2	2	0	2



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0853, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 08-05-2009	section number: 2	PSR:
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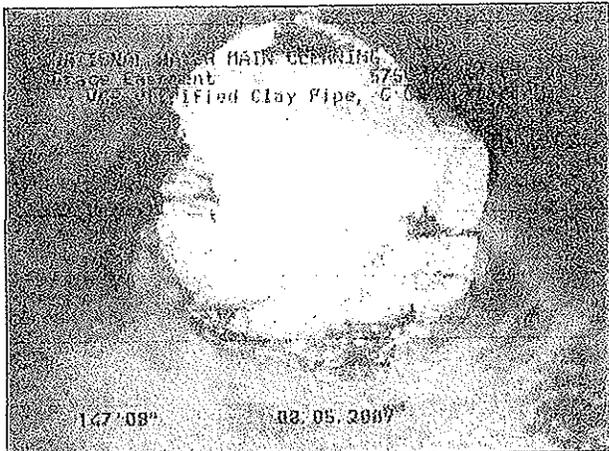


Photo: 16a, Tape/Media No.: T152-080509-1, 00:25:05
147.7FT, End of Pipe, Remark: Plugged with brick and cement

(537-06-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 06/11/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: N No Pre-Cleaning	Map Grid #:

Street: Grace Easement	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed	End MH: S75COM1900
Location Code: D Easement/Right of Way	Tape/Media #: T152-061109-1	Total length surveyed: 5 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Pipe Joint length: 2ft
Drain. Area:	Lining: Category:

Comment:
Location details:

1:25	position	code	observation	MPEG	photo	grade
	S75COM1610	0.00	AMH Manhole			
		5.00	OBZ Obstacles Other, 60 % of cross sectional area, from 02 to 09 o'clock, Remark: Debris	00:00:45	13_2a	M 5
		5.00	MSA Survey Abandoned, Remark: Debris	00:00:54		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	6100	0	5	5	0	6	5

(534-06-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0963, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 06/11/2009	section number: 3	PSR:
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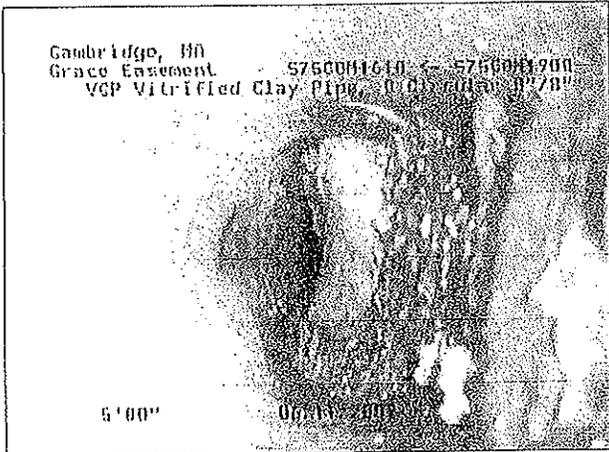


Photo: 13_2a, Tape/Media No.: T152-061109-1, 00:00:45
5FT, Obstacles Other, 60 % of cross sectional area, from 02
to 09 o'clock, Remark: Debris



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

536

Inspection report

Date: 06/11/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: N No Pre-Cleaning	Map Grid #:

Street: Grace Easement	Flow Control:	Start MH: S75COM1900
City: Cambridge, MA	Year Renewed	End MH: Bldg #29
Location Code: D Easement/Right of Way	Tape/Media #: T162-061109-1	Total length surveyed: 53.2 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SS Sanitary	Material: RCP Reinforced Concrete Pipe
Drain. Area:	Category:
	Pipe Joint length: 3ft

Comment:
Location details:

1:125	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	27.00	RPP	Repair Patch, at 12 o'clock, within 8 inch: NO	00:01:31	19_2a	
	31.70	B	Broken, from 12 to 03 o'clock, within 8 inch: YES	00:02:12	20_3a	S 4
	36.00					
	49.00	TFI	Tap Factory Made Intruding, at 01 o'clock, 6", 1", 10 %, within 8 inch: YES	00:03:29	22_5a	M 2
	53.20	MSA	Survey Abandoned, Remark: Heavy Debris	00:05:43	23_6a	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4181	2100	7	2	9	3.5	2	3



Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 06/11/2009	section number: 4	PSR:
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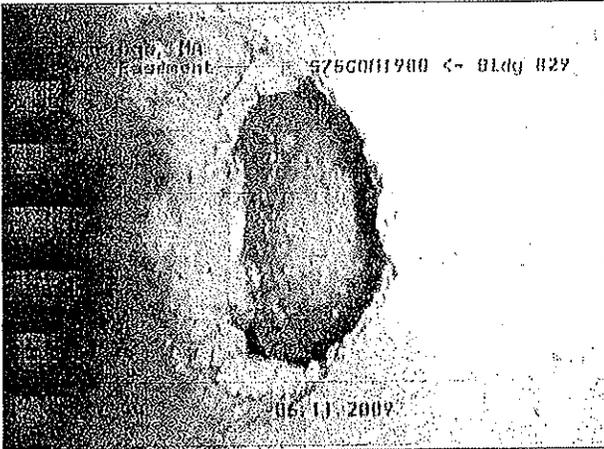


Photo: 19_2a, Tape/Media No.: T152-061109-1, 00:01:31
27FT, Repair Patch, at 12 o'clock, within 8 inch: NO

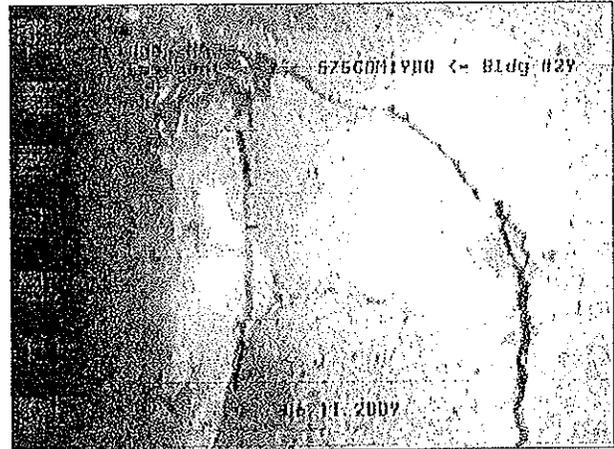


Photo: 20_3a, Tape/Media No.: T152-061109-1, 00:02:12
31.7FT, Broken, from 12 to 03 o'clock, within 8 Inch: YES

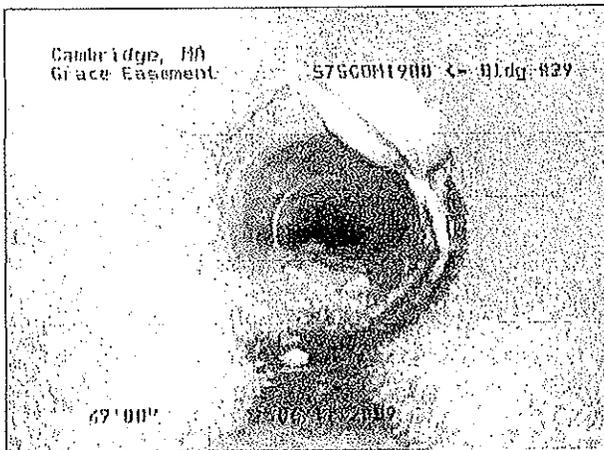


Photo: 22_5a, Tape/Media No.: T152-061109-1, 00:03:29
49FT, Tap Factory Made Intruding, at 01 o'clock, 6", 1", 10 %, within 8 inch: YES

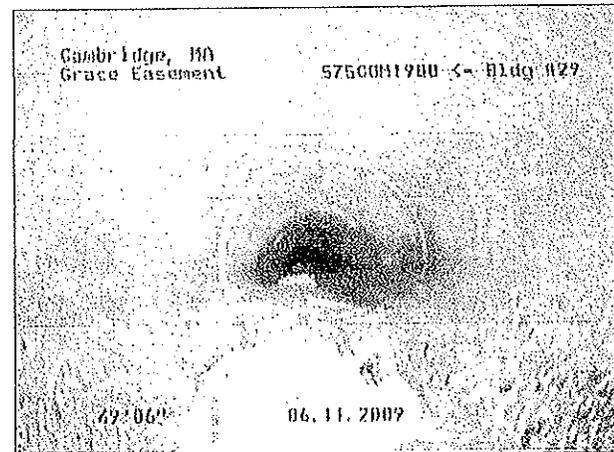


Photo: 23_6a, Tape/Media No.: T152-061109-1, 00:05:43
53.2FT, Survey Abandoned, Remark: Heavy Debris



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

(537)

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S71SMH2415
City: Cambridge, MA	Year Renewed:	End MH: S71COM2420
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 87.6 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 8"18"	Pipe Joint length: 3ft
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe	
Drain. Area:	Lining: Category:	

Comment:
Location details:

1:200	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	22.60	FM	Fracture Multiple, from 12 to 12 o'clock, within 8 inch: YES	00:00:54		S-J
	26.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:01:14		
	28.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:01:26		
	51.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:10		
	53.80	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:02:21		
	68.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:50		
	70.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:02:59		
	84.30	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:03:31		
	86.20	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES	00:03:46		
	87.60	AEP	End of Pipe, Remark: Lamphole	00:08:42		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4100	0000	4	0	4	4	0	4

Tabular Report of PSR 7539700130 X for CITY OF CAMBRIDGE

Sheet 4 Surveyor BULLARD Certificate # 1234 System Owner
 Drainage Survey Customer
 P/O # 07-01111 Date 08/19/2004 Time 10:14:00 Street MAGOUN ST
 Locality CAMBRIDGE Further location details
 Start 7539700115 S715NH2305 Rim to Invert Grade to Invert Rim to grade Ft
 Finish 7539700130 S715NH2415 Rim to Invert Grade to Invert Rim to grade Ft
 Use Sanitary Direction Up Flow control Tape/Media # 2004040
 Shape Circular Height 24 Width Ins Preclean H Year Cleaned 8/19/2004
 Material Vitrified Clay Pipe Joint length Ft Total length 365.0 Ft Length Surveyed 365.0
 Lining Year laid Year rehabilitated Weather Dry
 Purpose Resurvey for any reason Cat

Additional Info
 Location Structural O&M Constructional
 Miscellaneous Hydraulic

39 → 243
 sigil vidinat
 ...
 51 → 2258
 sigil vidinat
 ...

Count	Video	CD Code		In1	In2	%	Jnt	Fr	To	ImRef	Remarks
232.5			TFC Tap Factory Capped	04				10			
235.3	R		TFA Tap Factory Active	04				03			
245.8	Top		TFA Tap Factory Active	04				12			
258.7			TFC Tap Factory Capped	04				10			
261.0			TFC Tap Factory Capped	04				03			
281.3			TFC Tap Factory Capped	04				10			
284.3			TFC Tap Factory Capped	04				03			
307.1			TFC Tap Factory Capped	04				10			
309.7			TFC Tap Factory Capped	04				03			
330.1			TFC Tap Factory Capped	04				10			
332.8			TFC Tap Factory Capped	04				03			
341.0			TFC Tap Factory Capped	04				10			
342.6			TFC Tap Factory Capped	04				03			
365.0			AMH Manhole								7539700130
365.0			FH End of Survey								

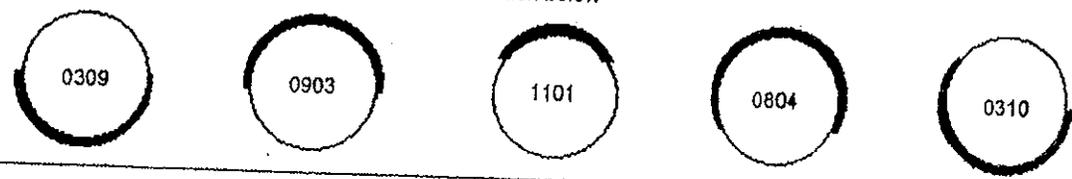
365.0 Ft Total Length Surveyed

Notes

Scores

Structure Defect 3	Structure Peak 9	Structure Mean 0
Service Defect 0.1	Service Peak 4	Service Mean 0

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



(4.mpg)

539

Tabular Report of PSR 7539700130 X for CITY OF CAMBRIDGE

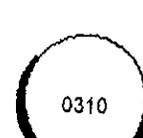
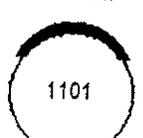
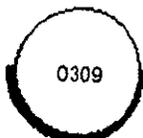
Sheet 4 Surveyor BULLARD Certificate # 1234 System Owner
 Drainage Survey Customer
 P/O # 07-01111 Date 08/19/2004 Time 10:14:00 Street MAGOUN ST
 Locality CAMBRIDGE Further location details
 Start 7539700115 STISH#2205 Rim to invert Grade to invert Rim to grade Ft
 Finish 7539700130 STISH#2415 Rim to invert Grade to invert Rim to grade Ft
 Use Sanitary Direction Up Flow control Tape/Media # 2004040
 Shape Circular Height 24 Width Ins Preclean H Year Cleaned 8/19/2004
 Material Vitrified Clay Pipe Joint length Ft Total length 365.0 Ft Length Surveyed 365.0
 Lining Year laid Year rehabilitated Weather Dry
 Purpose Resurvey for any reason Cat

Additional Info
 Location 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
0.0	00:00:00	MWL			0					Water Level
0.0		FL					12			Fracture Longitudinal
8.5		FL					12			Fracture Longitudinal
8.5		FL					04			Fracture Longitudinal
8.5		FL					07			Fracture Longitudinal
27.7		TFC	04				11			Tap Factory Capped
30.0		TFC	04				03			Tap Factory Capped
50.2		TFC	04				11			Tap Factory Capped
51.0	R	TFA	04				12			Tap Factory Active
53.2	R	TFA	04				03			Tap Factory Active
58.5	L	TFA	04				12			Tap Factory Active
73.3	L	TFA	04				10			Tap Factory Active
76.3		TFC	04				03			Tap Factory Capped
96.5	L	TFA	04				11			Tap Factory Active
99.2		TFC	04				03			Tap Factory Capped
106.3	R	TFA	04				02			Tap Factory Active
119.8		TFC	04				11			Tap Factory Capped
122.4		TFC	04				03			Tap Factory Capped
128.3		IR					08			Infil Runner
153.6	R	TFA	04				03			Tap Factory Active
181.2	L	TFA	04				10			Tap Factory Active
183.9		TFC	04				03			Tap Factory Capped
197.0	Top	TBA	04				12			Tap Break-in Active
207.1	L	TFA	04				10			Tap Factory Active
209.5	R	TFA	04				03			Tap Factory Active

0 Fracture
 5.9
 -read
 12.6
 TFA?
 -right
 50.3
 TFA
 -left

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





National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

Date: 08-04-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: M Medium Cleaning	rate:

Street: Grace	Flow Control:	Start MH: 900	End MH: 905
City: Cambridge, MA	Year Renewed:	Total length surveyed: 162 ft	
Location Code: D Easement/Right of Way	Tape/Media #: T152-080409-1		

purpose of Survey: A Maintenance Related	Dia/Height: C Circular 8" / 8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Joint length: 2ft
Basin:	Lining:
	Job Name:

Comment:
Location details:

1:400	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00	7a	
	50.20	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:00:00		
	58.40	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:00:00		
	153.70	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: 75% full of debris	00:00:00		
	155.50	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES, Remark: 90% full of debris	00:00:00		
	162.00	AMH	Upstream Manhole, Survey Ends, Pit	00:00:00		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-04-2009	section number: 3	PSR:
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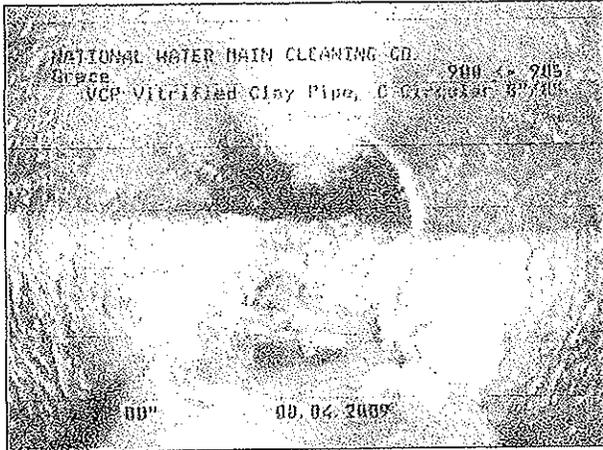


Photo: 7a, Tape/Media No.: T152-080409-1, 00:00:00
0FT, Downstream Manhole, Survey Begins



National Water Main Cleaning Co.
 25 Marshall Street
 Canton, MA
 Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

Date: 08-03-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: H Heavy Cleaning	rate:

Street: Grace	Flow Control:	Start MH: Pit1
City: Cambridge, MA	Year Renewed:	End MH: CMH1
Location Code: C Light Highway	Tape/Media #: T152-080309-1	Total length surveyed: 60 ft

purpose of Survey: A Maintenance Related	Dia/Height: C Circular 6"/8"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe Joint length:
Basin:	Lining:
	Job Name:

Comment:
 Location details:

1:150	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00		
	11.50					
	60.00	AMH	Upstream Manhole, Survey Ends	00:00:00		

QSR	QMR	SPR	MPR	OPR	SFRI	MPRI	OPRI
5141	2100	9	2	11	4.5	2	3.67



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-03-2009	section number: 3	PSR:
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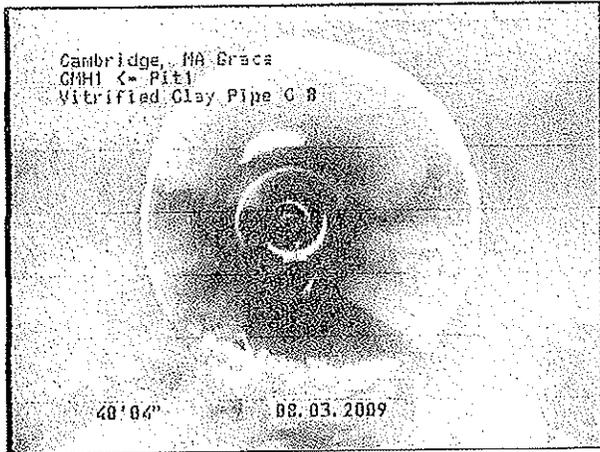


Photo: 3_2a, Tape/Media No.: T152-080309-1, 00:00:00
40.3FT, Obstacles In Joint, 10 % of cross sectional area, from
04 to 08 o'clock, Remark: Asphalt

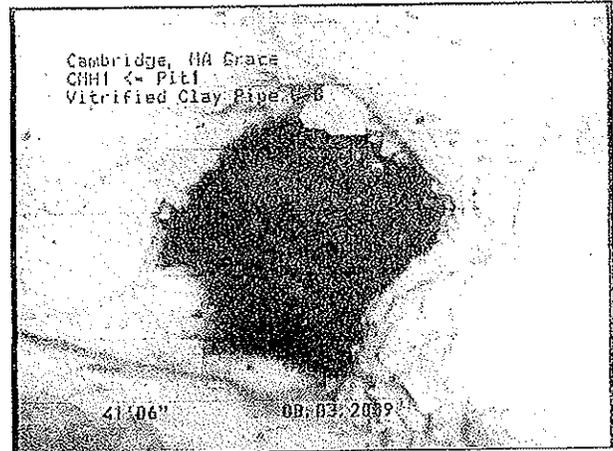


Photo: 3_3a, Tape/Media No.: T152-080309-1, 00:00:00
41.5FT, Hole Void Visible, at 12 o'clock, within 8 inch: YES



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

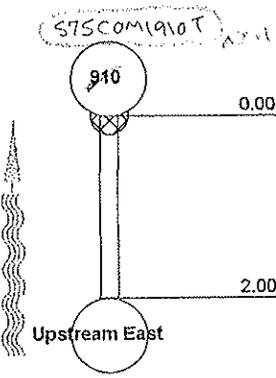
Date: 08-04-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: M Medium Cleaning	rate:

Street: Grace	Flow Control:	Start MH: 910 (S75 COM 1910 T)
City: Cambridge, MA	Year Renewed:	End MH: Upstream East (S75)
Location Code: G Parking Lot	Tape/Media #: T152-080409-1	Total length surveyed: 2 ft
purpose of Survey: A Maintenance Related	Dia/Height: C Circular 8"/8"	
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Joint length: 2ft	
Basin:	Lining:	Job Name:

Comment:

Location details:

1:25	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00		
	2.00	AEP	End of Pipe, Remark: Capped	00:00:00	6a	



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-04-2009	section number: 2	PSR:
------------------------	------------------	---------------------	----------------------	------

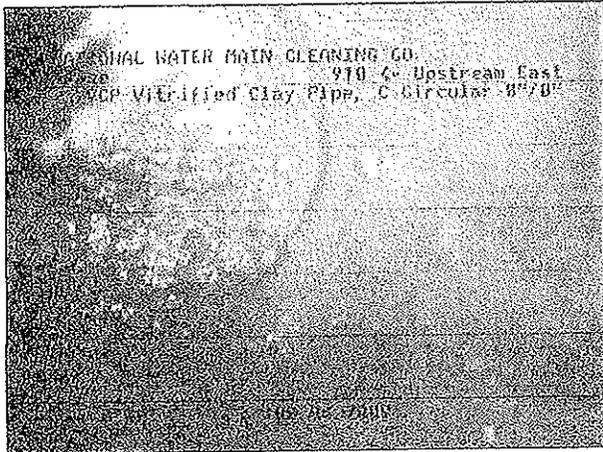


Photo: 6a, Tape/Media No.: T152-080409-1, 00:00:00
2FT, End of Pipe, Remark: Capped



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

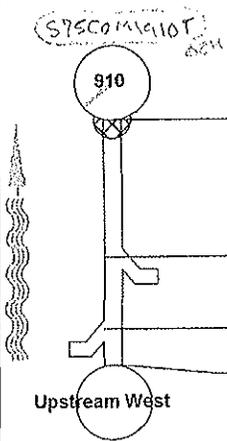
Date: 08-04-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: M Medium Cleaning	rate:

Street: Grace	Flow Control:	Start MH: 910 (SP5COM1910'S)
City: Cambridge, MA	Year Renewed:	End MH: Upstream West
Location Code: G Parking Lot	Tape/Media #: T152-080409-1	Total length surveyed: 2.7 ft

purpose of Survey: A Maintenance Related	Dia/Height: C Circular 8"/8"
Use: SS Sanitary	Material: VCP Vitrified Clay Pipe Joint length: 2ft
Basin:	Lining:
	Job Name:

Comment:
Location details:

1:25	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00		
	1.50	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:00:00		
	2.30	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: YES, Remark: Heavy Infiltration Running	00:00:00		
	2.70	AEP	End of Pipe, Remark: Blocked either plug or debris	00:00:00	4a	



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-04-2009	section number: 1	PSR:
------------------------	------------------	---------------------	----------------------	------

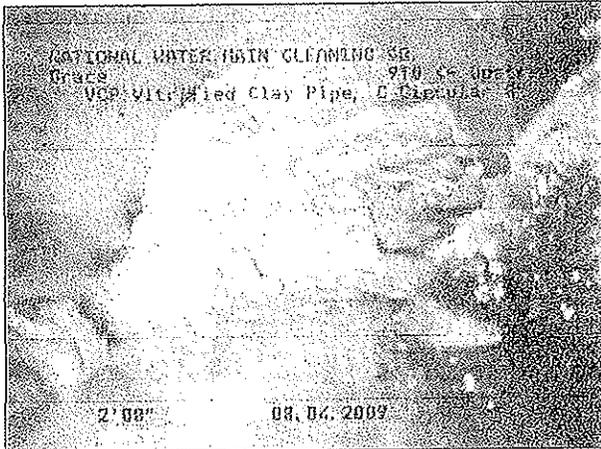


Photo: 4a, Tape/Media No.: T152-080409-1, 00:00:00
2.7FT, End of Pipe, Remark: Blocked either plug or debris

(01-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

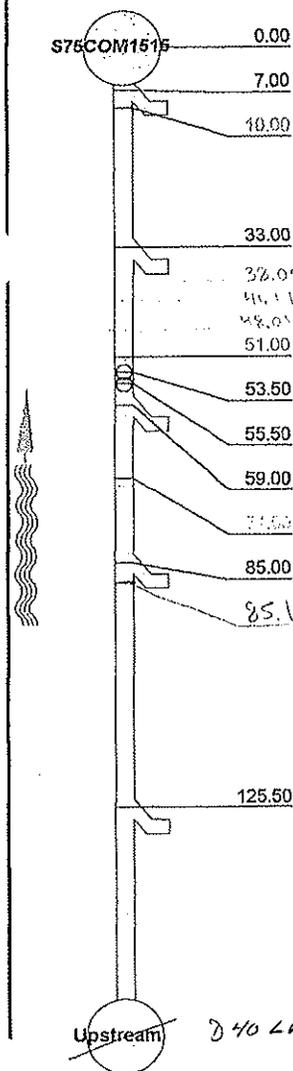
Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S76COM1515
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: C Light Highway	Tap/Media #: T152-050509-1	Total length surveyed: 163.5 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft
	Lining: Category:

Comment:
Location details:

1:375	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	7.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:00:29		
	10.00	RFB	Roots Fine Joint, from 05 to 04 o'clock, within 8 inch: YES	00:00:45		M 1
	33.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:34		
	38.00	RFB	Roots Fine joint from 01 to 04 o'clock			
	41.00	RFB	"			
	48.00	RFB	"			
	51.00	RBJ	Roots Ball Joint, from 08 to 04 o'clock, 15 %, within 8 inch: YES	00:02:16	27_5a	M 1
	53.50	TB	Tap Break-In, at 01 o'clock, 6", within 8 inch: YES	00:02:41		
	55.50	TB	Tap Break-In, at 12 o'clock, 6", within 8 inch: YES	00:03:03		
	59.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:03:19		
	71.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:03:41		M 1
	85.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:04:00		
	85.1		Hole in pipe at 10 o'clock			
	125.50	TB	Tap Break-In, at 09 o'clock, 4", within 8 inch: YES defective (4" cast iron)	00:05:24		



Lamphole

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4131	0	8	8	0	2.67	2.67



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City:
Cambridge, MA

Street:
Seagrave Road

Date:
05/05/2009

section number:
3

PSR:



Photo: 27_5a, Tape/Media No.: T152-050509-1, 00:02:16
51FT, Roots Ball Joint, from 08 to 04 o'clock, 15 %, within 8
inch: YES



The Environmental Protection Specialists

(D1-2008) D1-2

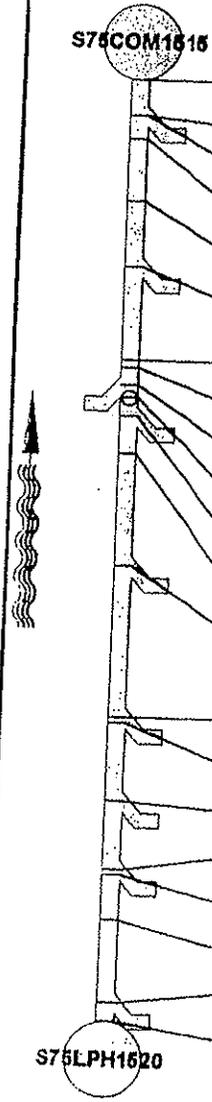
National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection report

Date: 09/10/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 3	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/10/2008	Pre-Cleaned: J Jetting	rate:

Street: SEAGRAVE ROAD	Flow Control: N Not Controlled	Start MH: S75COM1515
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75LPH1520
Location Code: C Light Highway	Tape/Media #: 41-091008-1	pipe length: 164 ft
purpose of Survey: B Infiltrators/Inflow Investigation	Dia/Height: B Barrel 10"/10"	Material: VCP Vitrified Clay Pipe Joint length: 3ft
Use of Sewer: SW Stormwater	Lining Method:	Job Name:
Basin:		
Remark:		

1:400	position	code	observation	counter	photo	l/i
	0.00	AMH	Manhole, Remark: Start of Survey downstream Manhole	00:24:13		
	6.22	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:24:55		
	8.22	RFJ	Roots Fine Joint, from 09 to 03 o'clock, within 8 inch: YES	00:25:01		
	10.38	S1 RFJ	Roots Fine Joint, from 08 to 04 o'clock, within 8 inch: YES, start	00:26:10		
	21.18	JOM	Joint Offset Medium	00:25:28		
	32.63	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:25:51		
	48.00	F1 RFJ	Roots Fine Joint, from 09 to 04 o'clock, within 8 inch: YES, end	00:26:50		
	50.30	RBJ	Roots Ball Joint, from 09 to 04 o'clock, 20 %, within 8 inch: YES	00:26:33		
	53.31	TB	Tap Break-In, at 02 o'clock, 6", within 8 inch: NO	00:26:40		
	55.52	TB	Tap Break-In, at 12 o'clock, 6", within 8 inch: NO	00:26:49		
	58.63	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:27:10		
	65.26	JOM	Joint Offset Medium	00:27:23		
	84.93	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:27:56		
	111.24	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:28:43		
	112.24	JOM	Joint Offset Medium	00:28:45		
	125.79	TBI	Tap Break-In Intruding, at 09 o'clock, 6", 1", 10 %, within 8 inch: NO	00:29:17		
	137.84	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:29:43		
	138.64	JOM	Joint Offset Medium	00:29:14		
	145.47	JOM	Joint Offset Medium	00:30:05		
	160.73	TBI	Tap Break-In Intruding, at 09 o'clock, 6", 2", 10 %, within 8 inch: NO	00:30:30		
	164.00	AMH	Manhole, Remark: End of Survey upstream Lamphole Manhole	00:31:08		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
1300	2200	5	4	9	1	2	1.29

(Da-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1515
City: Cambridge, MA	Year Renewed:	End MH: S75COM1510
Location Code: C Light Highway	Tap/Media #: T152-050509-1	Total length surveyed: 256 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 15"/15"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft
	Lining: Category:

Comment:
Location details:

1:575	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	4.00	RFS	Rock Fine Joint			
	9.00	RFS	"			
	16.00	RFS	"			
	24.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:00:56		
	50.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:01:39		
	76.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:02:21		
	103.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:14		
	129.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:04:19		
	156.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:10		
	177.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:52		
	201.00	TBC	Tap Break-In Capped, at 02 o'clock, 6", within 8 inch: YES	00:06:36		M 2
	222.20	TB	Tap Break-In, at 11 o'clock, 6", within 8 inch: YES	00:07:18		
	226.20	TBC	Tap Break-In Disactive, at 01 o'clock, 6", within 8 inch: YES, Remark: (circled)	00:07:50		M 2
	228.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:08:05		
	251.80	TFA	Tap Factory Made Active, at 02 o'clock, 6", within 8 inch: YES, Remark: Cross Connection (circled)	00:09:07		
	256.00	AMH	Manhole	00:09:40		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	3121	0	5	5	0	2.5	2.5



The Environmental
Protection Specialists

(02-2008) D22

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 817 381 5533, Fax: 817 381 5501

Inspection report

Date: 09/10/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 4	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/10/2008	Pre-Cleaned: J Jetting	rate:

Street: SEAGRAVE ROAD	Flow Control: N Not Controlled	Start MH: S75COM1515
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75COM1510
Location Code: C Light Highway	Tape/Media #: 41-091008-1	pipe length: 257 ft
purpose of Survey: B Infiltration/Inflow Investigation	Dia/Height: B Barrel 15"/15"	Material: VCP Vitrified Clay Pipe Joint length: 3ft
Use of Sewer: SW Stormwater	Lining Method:	Job Name:
Basin:		

Remark::

1:850	position	code	observation	counter	photo	l/i
	S75COM1515					
	0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:31:11		
	7.43	RFJ	Roots Fine Joint, at 07 o'clock, within 8 inch: YES	00:32:42		
	23.38	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:33:28		
	48.89	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:34:10		
	75.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:34:59		
	102.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:35:51		
	129.21	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:36:52		
	156.41	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:37:39		
	177.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:38:17		
	201.19	TBC	Tap Break-in Capped, at 02 o'clock, 6". within 8 inch: NO	00:39:02		
	222.87	TB	Tap Break-in, at 11 o'clock, 8", within 8 inch: NO	00:39:41		
	226.19	TB	Tap Break-in, at 01 o'clock, 8", within 8 inch: NO	00:39:54		
	228.19	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: NO	00:40:01		
	251.89	TF	Tap Factory Made, at 02 o'clock, 6", within 8 inch: NO	00:40:49		
	S75COM1510					

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

03-2009

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 7	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1505
City: Cambridge, MA	Year Renewed:	End MH: S75COM1510
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 184 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 18"/18"	Pipe Joint length: 3ft
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe	Lining: Category:
Drain. Area:	Comment:	

Location details:

1:425	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	4.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:00:30		
	33.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:23		
	58.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:09		
	84.40	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:03:23		
	110.60	TBI	Tap Break-In Intruding, at 10 o'clock, 6", 2", 5 %, within 8 inch: YES. Remark: Cross Connection	00:04:24		M 2
	131		Crack longitudinal			
	137		Crack longitudinal			
	138.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:21		
	164.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:14		
	184.00	AMH	Manhole	00:07:18		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2

(DH-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Seagrave Road	Flow Control:	Start MH: S75COM1505
City: Cambridge, MA	Year Renewed:	End MH: S75CMH1500
Location Code: C Light Highway	Tap/Media #: T152-050509-1	Total length surveyed: 84 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 18"/18" ✓
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft

Comment:
Location details:

1:200	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	18.00		<i>cracking begins</i>			
	19.00	FL	Fracture Longitudinal, at 03 o'clock, within 8 inch: YES	00:00:40		S 5
	23.60	TB	Tap Break-in, at 10 o'clock, 8", within 8 inch: YES	00:00:58		
	23.60	HSV	Hole Soil Visible, at 09 o'clock, within 8 inch: YES	00:01:07	4_4a	S 5
	26.30	B	Broken, from 12 to 06 o'clock, within 8 inch: YES	00:01:29		S 5
	44.10	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:01:53		
	77.00		<i>Cracking begins</i>			
	80.30	B	Broken, from 08 to 03 o'clock, within 8 inch: YES	00:03:09		S 5
	84.00	AMH	Manhole	00:03:43		

S75COM1420

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
6331	0000	18	0	18	4.5	0	4.5



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Seagrave Road	Date: 06/06/2009	section number: 1	PSR:
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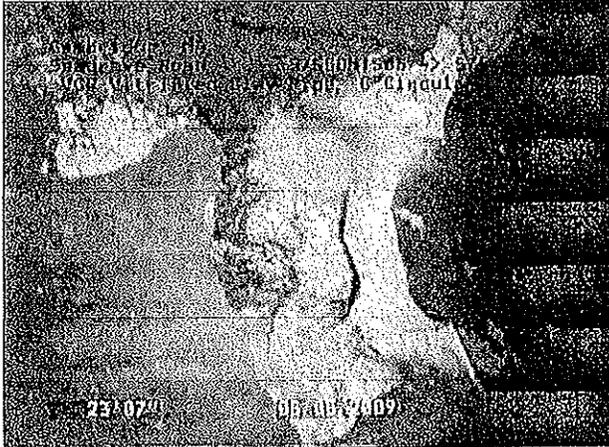


Photo: 4_4a, Tape/Media No.: T152-050509-1, 00:01:07
 23.6FT, Hole Soil Visible, at 09 o'clock, within 8 inch: YES



The Environmental
Protection Specialists

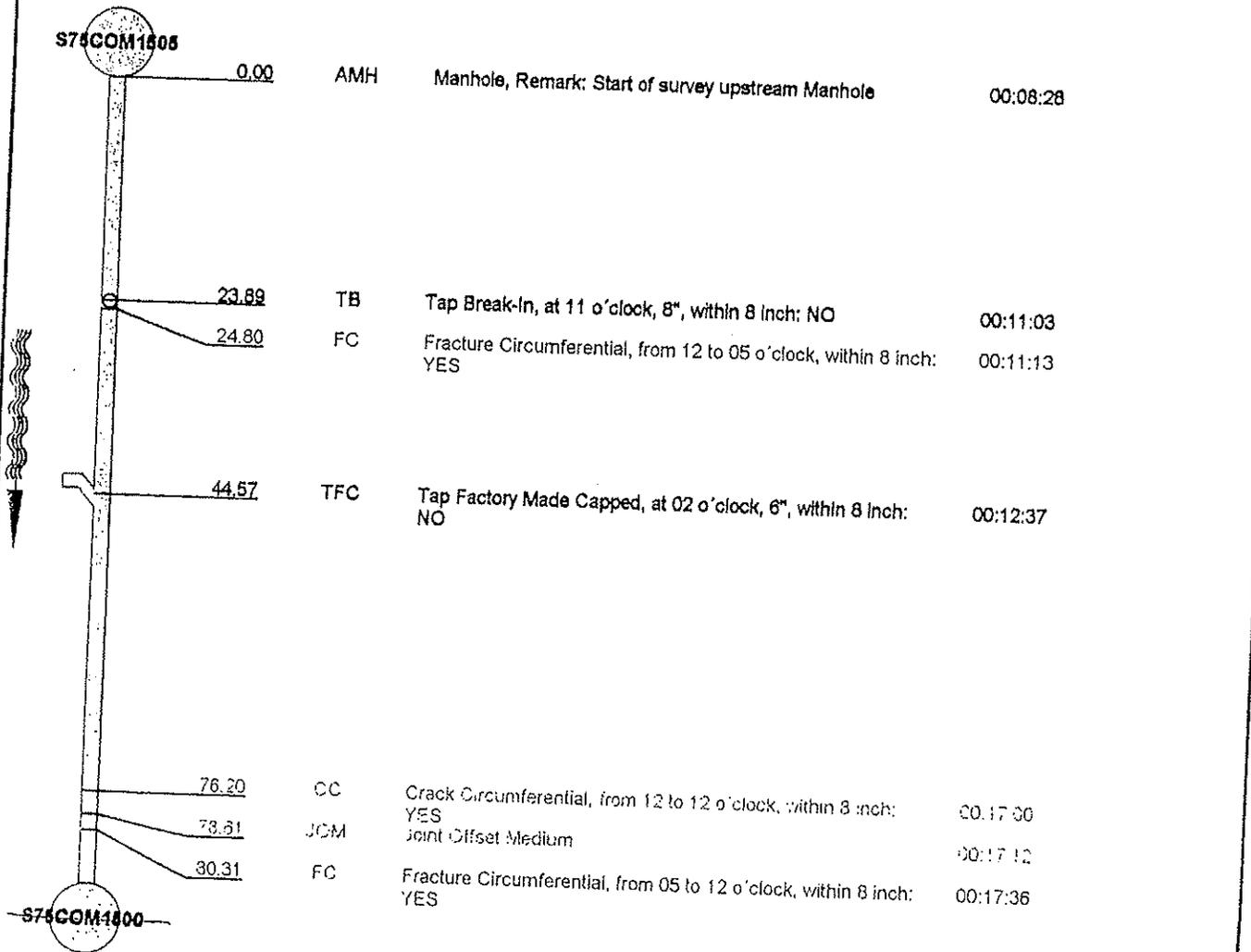
(19-2008) D4-2
National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection report

Date: 09/11/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 2	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/11/2008	Pre-Cleaned: J Jetting	rate:

Street: SEAGRAVE ROAD	Flow Control:	Start MH: S75COM1505
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75COM1500 S75COM1420
Location Code: C Light Highway	Tape/Media #: 41-091108-1	pipe length: 88 ft
purpose of Survey: B Infiltration/Inflow Investigation	Dia/Height: 8 Barrel 18"/18"	Material: VCP Vitrified Clay Pipe Joint length: 3ft
Use of Sewer: SW Stormwater	Lining Method:	Job Name:
Basin:	Remark::	

1:225 position code observation counter photo I/I



S75COM1420

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2212	0000	0	0	0	1.5	0	1.5

(05-05-2009)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Kassul Park	Flow Control:	Start MH: S75COM1710
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: C Light Highway	Tappe/Media #: T152-050109-1	Total length surveyed: 105.9 ft
Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"	
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe	Pipe Joint length:
Drain. Area:	Lining:	Category:

Comment:
Location details:

1:250	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	31.40	TFD	Tap Factory Made Defective, at 02 o'clock, 6", within 8 inch: YES	00:01:19		M 2
	33.40	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:29		
	48.08		Roots			
	49.70	MMLS	Water Level, Sag in pipe, 70 % of cross sectional area	00:01:55		M 4
	52.04		longitudinal crack at 12 o'clock			
	54.50	MMC	Material Change, PVC Polyvinyl Chloride	00:03:35		
	58.50	TF	Tap Factory Made, at 01 o'clock, 6", within 8 inch: YES	00:03:35		
	61.50	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:03:36		
	68.80	MMC	Material Change, VCP Vitrified Clay Pipe	00:03:11		
	82.20	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:04:15		
	84.10	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:04:26		
	100.10	RBJ	Roots Ball Joint, from 03 to 09 o'clock, 75 %, within 8 inch: YES	00:05:10		M 3
	104.30	RBJ	Roots Ball Joint, from 02 to 10 o'clock, 75 %, within 8 inch: YES	00:05:46		M 4
	105.80	JOL	Joint Offset Large	00:07:27		S 2
	105.90	MSA	Survey Abandoned, Remark: Offset and Heavy roots	00:07:17		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2100	4231	2	13	15	2	3.25	3



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

D5-04-2004 516
D5-

Inspection report

Date: 04/29/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Kassul Park	Flow Control:	Start MH: 575COM1710
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: C Light Highway	Tape/Media #: T152-042909-1	Total length surveyed: 66 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 10"/10"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain Area:	Lining: Category:

Comment:
Location details:

1:150	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	31.80	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:00:58		
	33.60	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:09		
	47.00	LD	Alignment Offset 22"	00:01:03		
	49.00	RFI	Tap Factory Made, from 04 to 09 o'clock, within 8 inch: YES	00:01:46	01_51	
	54.50	MMC	Material Change, PVC Polyvinyl Chloride	00:02:03		
	58.50 (R)	TF	Tap Factory Made, at 01 o'clock, 6", within 8 inch: YES	00:02:32		
	61.50 (L)	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: YES	00:02:46		
	66.00	MSA	Survey Abandoned, Remark: Heavy Debris	00:03:11		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4111	0	5	5	0	2.5	2.5



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Kassul Park	Date: 04/29/2009	section number: 3	PSR:
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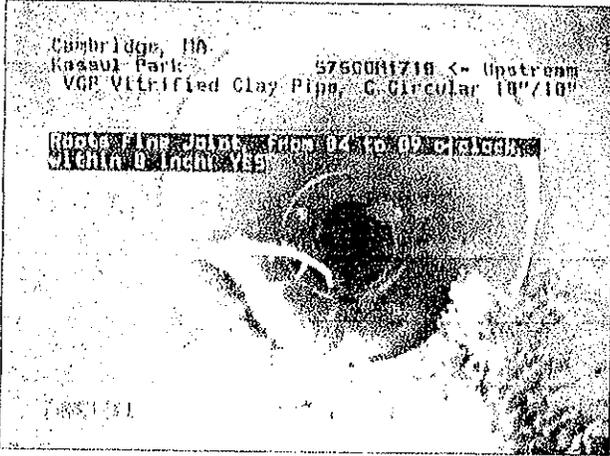


Photo: 80_5a, Tape/Media No.: T152-042909-1, 00:01:45
 49FT, Roots Fine Joint, from 04 to 09 o'clock, within 8 inch:
 YES



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

ST
DG

Inspection report

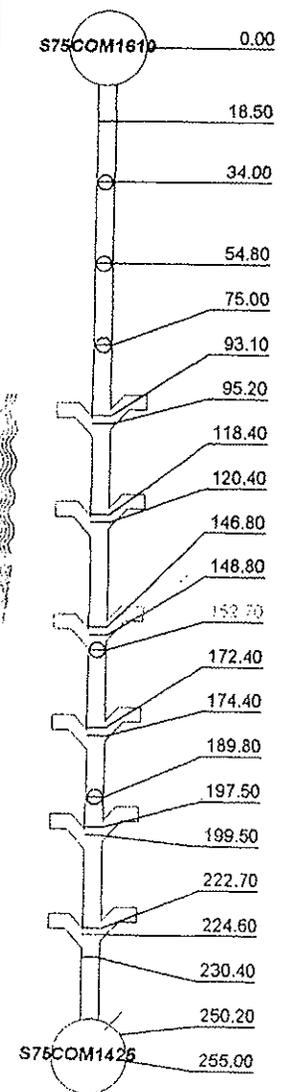
Date: 04/29/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Kimball Street	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed:	End MH: S75COM1425
Location Code: C Light Highway	Tape/Media #: T162-042909-1	Total length surveyed: 265 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 26"/24"
Use: SW Stormwater	Material: RCP Reinforced Concrete Pipe
Drain. Area:	Pipe Joint length:
	Lining:
	Category:

Comment:
Location details:

1:575	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	18.50	MGO	General Observation, within 8 inch: NO, Remark: Old Manhole Covered	00:01:02		
	34.00	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:01:31		
	54.80	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:02:16		
	75.00	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:03:03		
	93.10	TF	Tap Factory Made, at 08 o'clock, 6", within 8 inch: NO	00:04:32		
	95.20	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: NO	00:04:49		
	118.40	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:05:41		
	120.40	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:05:51		
	146.80	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:06:47		
	148.80	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:07:03		
	152.70	TF	Tap Break-In Intruding, at 01 o'clock, 3" 21.5" within 8 inch: NO	00:07:32		
	172.40	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:08:19		
	174.40	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:08:31		
	189.80	TB	Tap Break-In, at 01 o'clock, 6", within 8 inch: NO	00:09:10		
	197.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:09:29		
	199.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:09:51		
	222.70	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:10:57		
	224.60	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: NO	00:11:06		
	230.40	MVC	Material Change, PVC Polyvinyl Chloride	00:11:27		
	250.20	TF	Tap Factory Made, at 01 o'clock, 8", within 8 inch: YES	00:12:08		
	255.00	AMH	Manhole	00:13:03		



OSR 0000	OMR 2100	SPR 0	MPR 2	OPR 2	SPRI 0	MPRI 2	OPRI 2
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The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

D7

Inspection report

Date: 06/11/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gilderleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: N No Pre-Cleaning	Map Grid #:

Street: Grace Easement	Flow Control:	Start MH: S75COM1610
City: Cambridge, MA	Year Renewed:	End MH: S75COM1900
Location Code: D Easement/Right of Way	Tape/Media #: T152-081109-1	Total length surveyed: 145 ft.

Purpose: A Maintenance Related	Dia/Height: O Oval 26"/18"
Use: SW Stormwater	Material: CP Concrete Pipe (non-reinforced) Pipe Joint length:
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:325	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	27.00	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:01:08		
	29.00	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:01:28		
	60.00	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:02:48		
	62.00	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:03:12		
	93.00	TFC	Tap Factory Made Capped, at 11 o'clock, 6", within 8 inch: NO	00:04:22		
	95.00	TFC	Tap Factory Made Capped, at 01 o'clock, 6", within 8 inch: NO	00:04:41		
	145.00	AMH	Manhole	00:06:44		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



National Water Main Cleaning Co.
25 Marshall Street
Canlon, MA
Tel: 781-828-0863, Fax: 781-828-2473

08-05-2009

Inspection report

Date: 08-05-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gilderleeve	section number: 1	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: H Heavy Cleaning	rate:

Street: Grace Easement	Flow Control:	Start MH: 900 <i>545001-000</i>
City: Cambridge, MA	Year Renewed:	End MH: 905 <i>545001-001</i>
Location Code: D Easement/Right of Way	Tape/Media #: T152-080509-1	Total length surveyed: 164 ft

purpose of Survey: A Maintenance Related	Dia/Height: O Oval 26"/24"
Use: SW Stormwater	Material: CSU Concrete Segments (unbolted) Joint length: 5ft
Basin:	Lining:
	Job Name:

Comment:
Location details:

1:400	position	code	observation	counter	photo	grade
			<i>545001-000</i>			
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00		
	52.30	TF	Tap Factory Made, at 11 o'clock, 6", within 8 inch: NO	00:02:39		
	55.30	TF	Tap Factory Made, at 11 o'clock, 6", within 8 inch: NO	00:03:52		
	65.00	TFC	Tap Factory Made Capped, at 12 o'clock, 6", within 8 inch: NO	00:04:36		
	158.00	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:08:20		
	164.00	AMH	Upstream Manhole, Survey Ends	00:11:44		
			<i>545001-001</i>			
			Pit			

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2

08-02-2009



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 08-05-2009	section number: 1	PSR:
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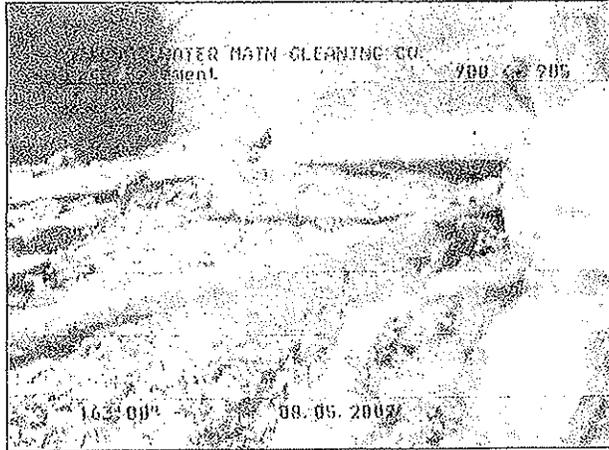


Photo: 6a, Tape/Media No.: T152-080509-1, 00:10:49
 163FT, Obstacles External Pipe or Cable, 5 % of cross
 sectional
 area, from 04 to 08 o'clock, Remark: At pit outlet



National Water Main Cleaning Co.
 25 Marshall Street
 Canton, MA
 Tel: 781-828-0863, Fax: 781-828-2473

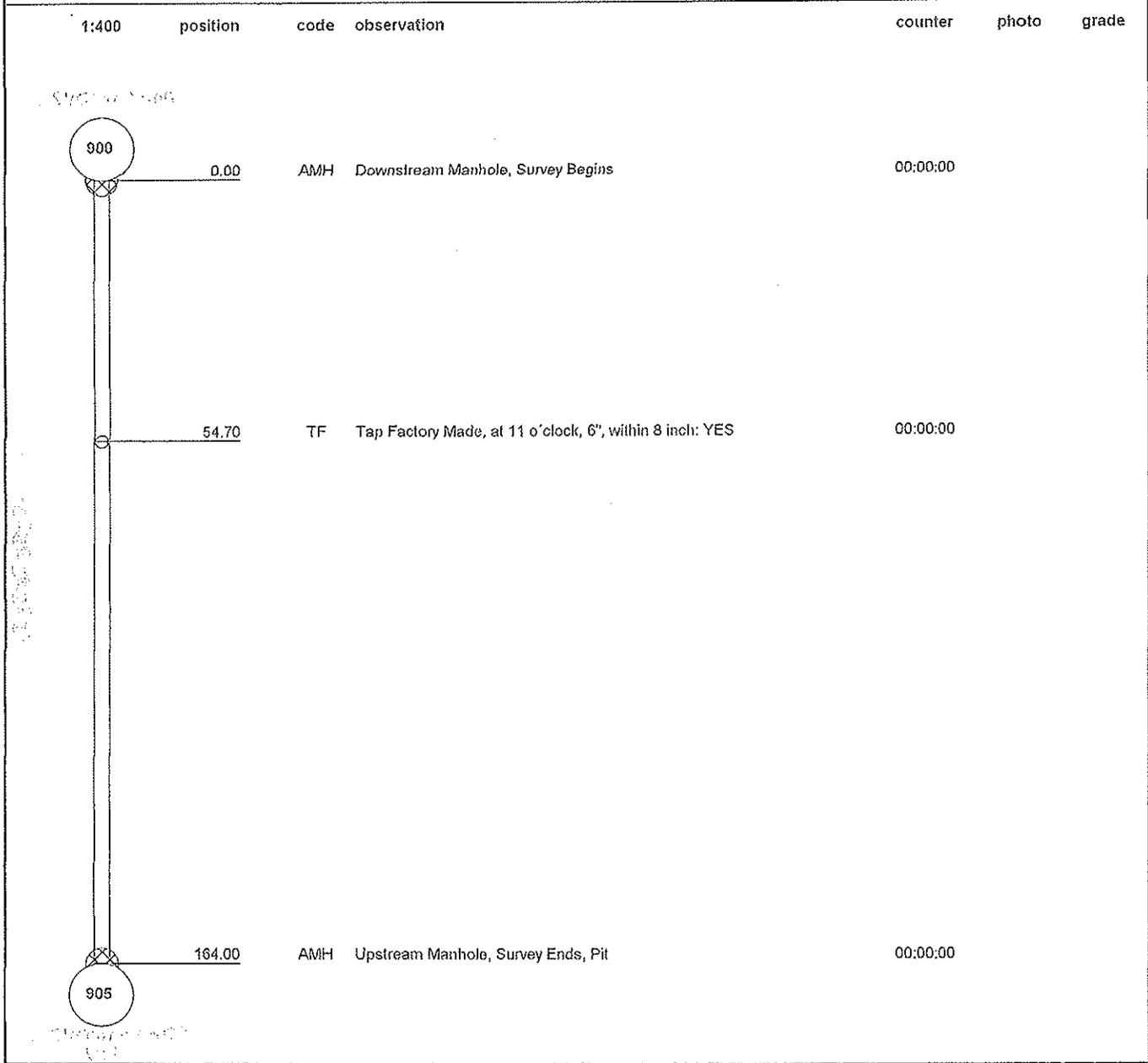
Inspection report

Date: 08-04-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: H Heavy Cleaning	rate:

Street: Grace	Flow Control:	Start MH: 900
City: Cambridge, MA	Year Renewed:	End MH: 905
Location Code: D Easement/Right of Way	Tape/Media #: T152-080409-1	Total length surveyed: 164 ft

purpose of Survey: A Maintenance Related	Dia/Height: O Oval 26"/24"
Use: SW Stormwater	Material: CSU Concrete Segments (unbolted) Joint length:
Basin:	Lining:
	Job Name:

Comment:
 Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0

(18-06-0000) DB



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax 781-828-4397

Inspection report

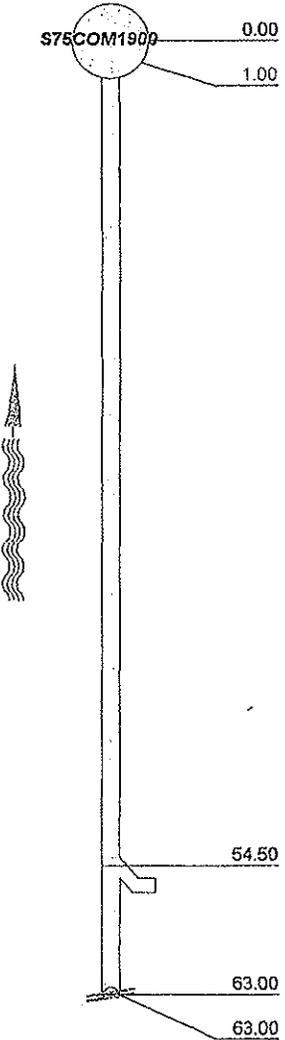
Date: 06/11/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: N No Pre-Cleaning	Map Grid #:

Street: Grace Easement	Flow Control:	Start MH: S75COM1900
City: Cambridge, MA	Year Renewed:	End MH: Grace 1
Location Code: D Easement/Right of Way	Tapo/Media #: T162-061109-1	Total length surveyed: 63 ft

Purpose: A Maintenance Related	Dia/Height: O Oval 26"/18"
Use: SW Stormwater	Material: CP Concrete Pipe (non-reinforced) Pipe Joint length:
Drain. Area:	Lining: Category:

Comment:
 Location details:

1:150	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	1.00	H	Hole, from 04 to 08 o'clock, within 8 inch: NO	00:01:05		S 5
	54.50	TF	Tap Factory Made, at 10 o'clock, 6", within 8 inch: NO	00:06:40		
	63.00	TFC	Tap Factory Made Capped, at 12 o'clock, 4", within 8 inch: NO	00:08:56		
	63.00	MSA	Survey Abandoned, Remark: Heavy Debris	00:10:14		17_5a



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0853, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 06/11/2009	section number: 2	PSR:
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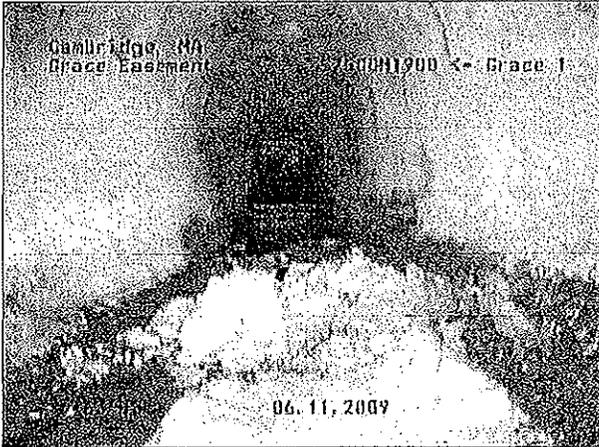


Photo: 17_5a, Tape/Media No.: T152-061109-1, 00:10:14
63FT, Survey Abandoned, Remark: Heavy Debris



The Environmental Protection Specialists

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 361 5533, Fax 617 361 5501

109

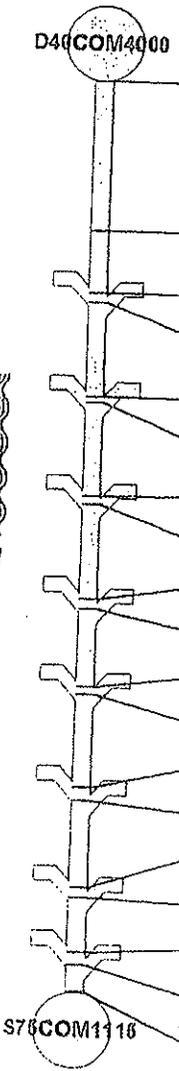
Inspection report

Date: 09/16/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 1	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/16/2008	Pre-Cleaned: J Jetting	rate:

Street: HARRISON AVENUE	Flow Control: N Not Controlled	Start MH: D40COM4000
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75COM1116
Location Code: C Light Highway	Tap/Media #: 41-091508-1	pipe length: 228 ft

purpose of Survey: B Infiltration/Inflow Investigation	Use of Sewer: SW Stormwater	Basin:	Dia/Height: H Horseshoe 26" / 24"	Material: BR Brick/CONCRETE TOP	Joint length:
Remarks:			Lining Method:	Job Name:	

1:675	position	code	observation	counter	photo	I/I
	0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:00:00		
	36.00		<i>Re-inspect ...</i>			
	37.55	MMC	Material Change, Remark: CONCRETE	00:01:59		
	53.11	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:02:31		
	55.62	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:02:44		
	79.31	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:03:14		
	80.72	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:03:24		
	104.21	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:03:48		
	108.12	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:03:55		
	130.01	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:04:23		
	132.72	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:04:31		
	152.10	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:04:55		
	153.90	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:05:05		
	177.19	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:05:48		
	180.61	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:05:59		
	201.99	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch:	00:06:30		
	204.60	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch:	00:06:40		
	218.28	TF	Tap Factory Made, at 03 o'clock, 6", within 8 inch: NO	00:07:08		
	221.57	TFA	Tap Factory Made Active, at 09 o'clock, 6", within 8 inch: NO	00:07:27		
	228.00	AMH	Manhole, Remark: End of survey downstream Manhole	00:07:54		



QSR	QMR	SPR	MPR	OPR	SPRI	WPRI	OPRI
0000	0000	0	0	0	0	0	0



The Environmental Protection Specialists

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 381 5533, Fax: 617 381 5501

Inspection report

Date: 09/16/2008	P.O.# / WO.#:	Weather: 1 Sunny	Surveyed By: P.FERREIRA	section number: 2	PSR:
Total Length of Section:	Survey Customer: CITY OF CAMBRIDGE	Job #: CAMBR-17	Clean Date: 09/16/2008	Pre-Cleaned: J Jetting	rate:

Street: HARRISON AVENUE	Flow Control: N Not Controlled	Start MH: S75COM1116
City: CAMBRIDGE, MA	Year Renewed:	End MH: S75COM1108
Location Code: C Light Highway	Tape/Media #: 41-091608-1	pipe length: 233 ft

purpose of Survey: B Infiltration/Inflow Investigation	Dia/Height: H Horseshoe 26"/24"
Use of Sewer: SW Stormwater	Material: CP Concrete Pipe Joint length:
Basin:	Lining Method:
	Job Name:

Remark:: *Approx location of D40 Down*

1:578 position code observation counter photo III

S75COM1116	0.00	AMH	Manhole, Remark: Start of survey upstream Manhole	00:08:10		
	10.64	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 Inch: NO	00:09:08		
	12.95	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 Inch: NO	00:09:19		
	31.22	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:10:04		
	31.93	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:10:12		
	52.31	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:10:40		
	54.71	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:10:49		
	81.22	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:11:27		
	83.53	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:11:34		
	107.32	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:12:05		
	109.83	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:12:20		
	132.02	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:12:48		
	134.13	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:13:02		
	162.54	TF	Tap Factory Made, at 03 o'clock, 6", within 8 Inch: NO	00:14:19		
	165.15	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:14:29		<i>Disturbed sandstone concretion found Bids 11/15/11/2 person</i>
	191.85	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 Inch: NO	00:15:09		
	219.06	BSV	Broken Soil Visible, from 10 to 02 o'clock, within 8 inch: YES	00:16:13	36a:	

Common Manhole S75 COM1108 was replaced by D40 DMH 1422 as part of emergency repairs by DPW in late 2008.

Fixed by 2008 Emergency Repair

CSR	CMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	4	0	6	5	0	9



The Environmental
Protection Specialists

010

National Water Main Cleaning Co
8 B St
Hyde Park, MA
Tel: 617 361 5533, Fax: 617 361 5501

Inspection photos

City: CAMBRIDGE, MA	Street: HARRISON AVENUE	Date: 09/18/2008	section number: 2	PSR:
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Photo: 38a, Tape/Media No.: 41-091508-1, 00:16:13
219.08FT, Broken Soil Visible, from 10 to 02 o'clock, within 8
Inch: YES

(D11)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 4	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Magoun Street	Flow Control:	Start MH: D40COM4210
City: Cambridge, MA	Year Renewed:	End MH: D40COM4205
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 151 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SW Stormwater	Material: RCP Reinforced Concrete Pipe
Drain. Area:	Category:

Comment:
Location details:

1:350	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	84.40	CC	Crack Circumferential, from 12 to 12 o'clock, within 8 inch: NO	00:02:28		S 1
	116.10	FC	Fracture Circumferential, from 12 to 12 o'clock, within 8 inch: YES	00:04:26		S 2
	120.50	FC	Fracture Circumferential, from 12 to 12 o'clock, within 8 inch: NO	00:04:42		S 2
	151.00	AMH	Manhole	00:05:53		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2211	0000	6	0	6	1.67	0	1.67



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

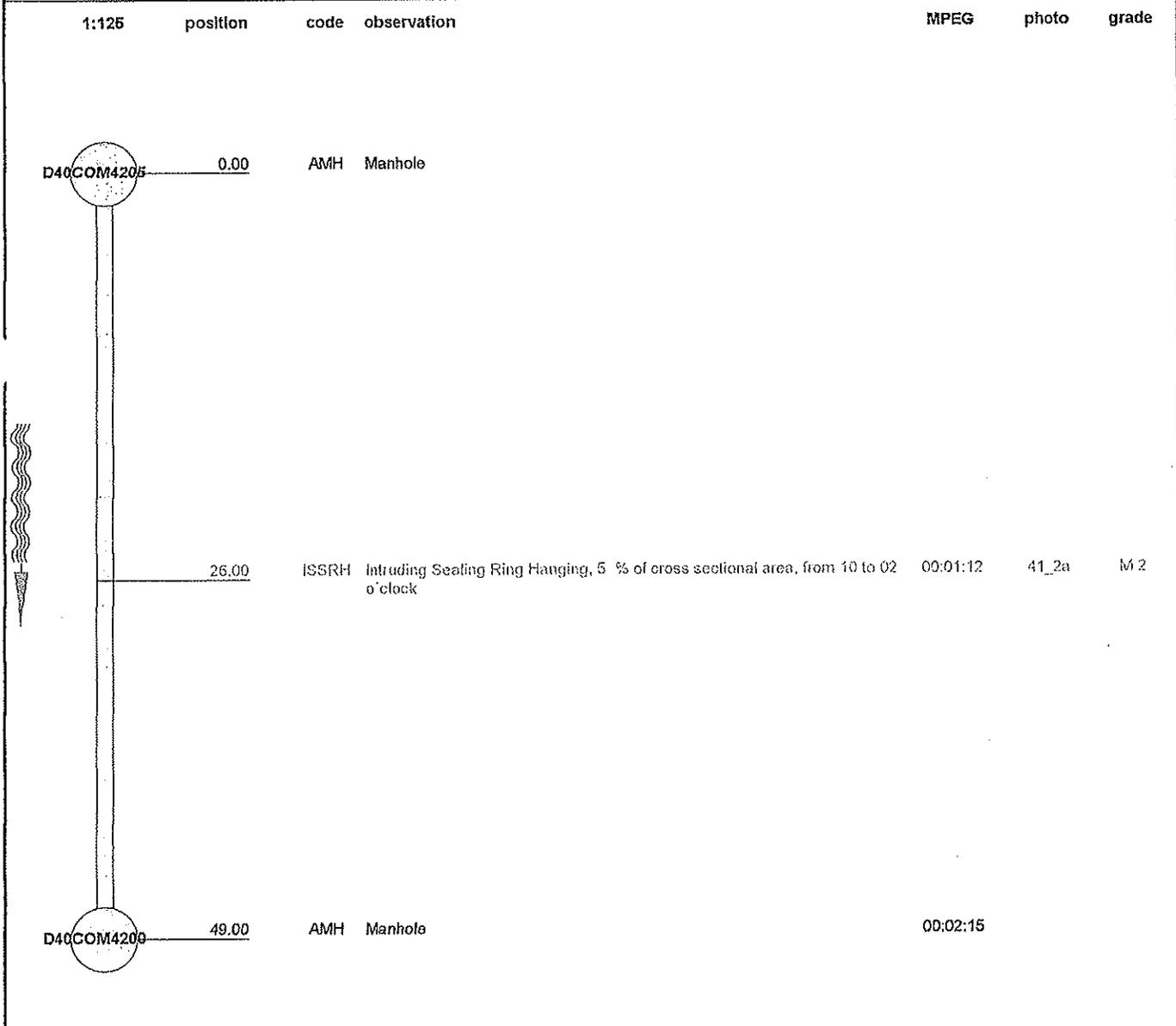
Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 5	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Magoun Street	Flow Control:	Start MH: D40COM4205
City: Cambridge, MA	Year Renewed:	End MH: D40COM4200
Location Code: C Light Highway	Tape/Media #: T162-050509-1	Total length surveyed: 49 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SW Stormwater	Material: RCP Reinforced Concrete Pipe
Drain. Area:	Pipe Joint length: 8ft
	Lining:
	Category:

Comment:
 Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	0	2	2	0	2	2



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Magoun Street	Date: 05/06/2009	section number: 5	PSR:
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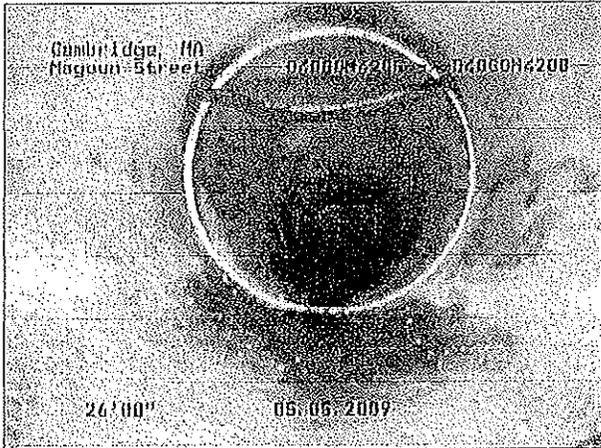


Photo: 41_2a, Tape/Media No.: T152-050509-1, 00:01:12
 26FT, Intruding Sealing Ring Hanging, 5 % of cross sectional
 area, from 10 to 02 o'clock

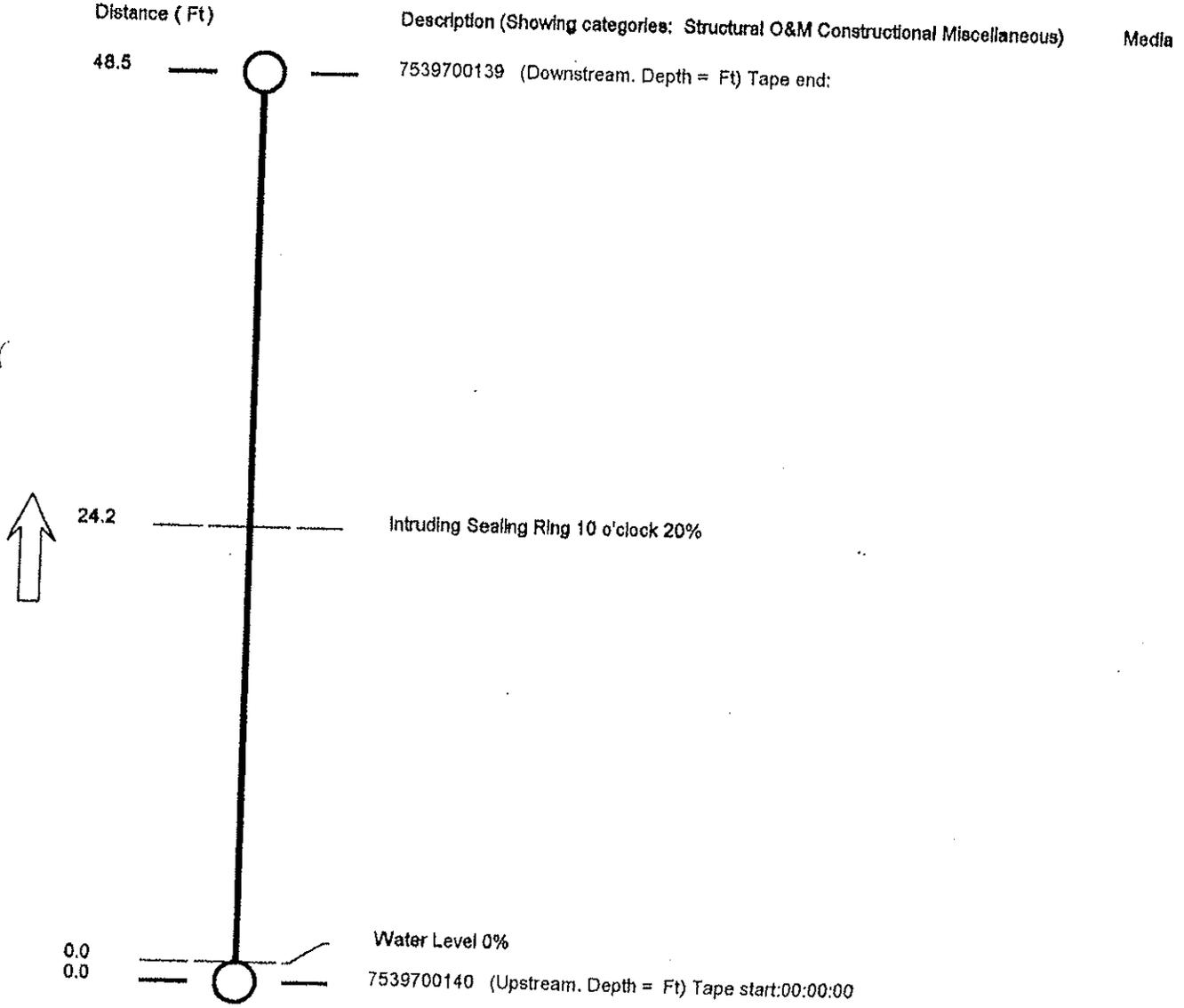
Pipe Graphic Report of PSR 7539700140

X

for CITY OF CAMBRIDGE

(Dia. 2004)

Sheet 1	Surveyor BULLARD	Certificate # 1234	System Owner		
Drainage	Survey Customer				
YO # 07-01111	Date 2004/08/18	Time 10:36:00	Street: MAGOUN ST		
Locality CAMBRIDGE	Further location details				
Start 7539700140	D4060M4805	Rim to Invert	Grade to Invert	Rim to grade	Ft
Finish 7539700139	D4060M4800	Rim to Invert	Grade to Invert	Rim to grade	Ft
Use Storm Water	Direction Downstream	Flow control		Tape/Media # 2004040	
Shape Circular	Height 12	Width	Ins Preclean N	Year Cleaned	
Material Reinforced Concrete Pipe	Joint length	Ft	Total length 48.5	Ft	Length Surveyed 48.50
Lining	Year laid	Year rehabilitated	Weather Dry		
Purpose Resurvey for any reason	Cat				
Additional Info LOCATE SINK HOLE					
Location			Structural	O&M	Constructional
			Miscellaneous	Hydraulic	





The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

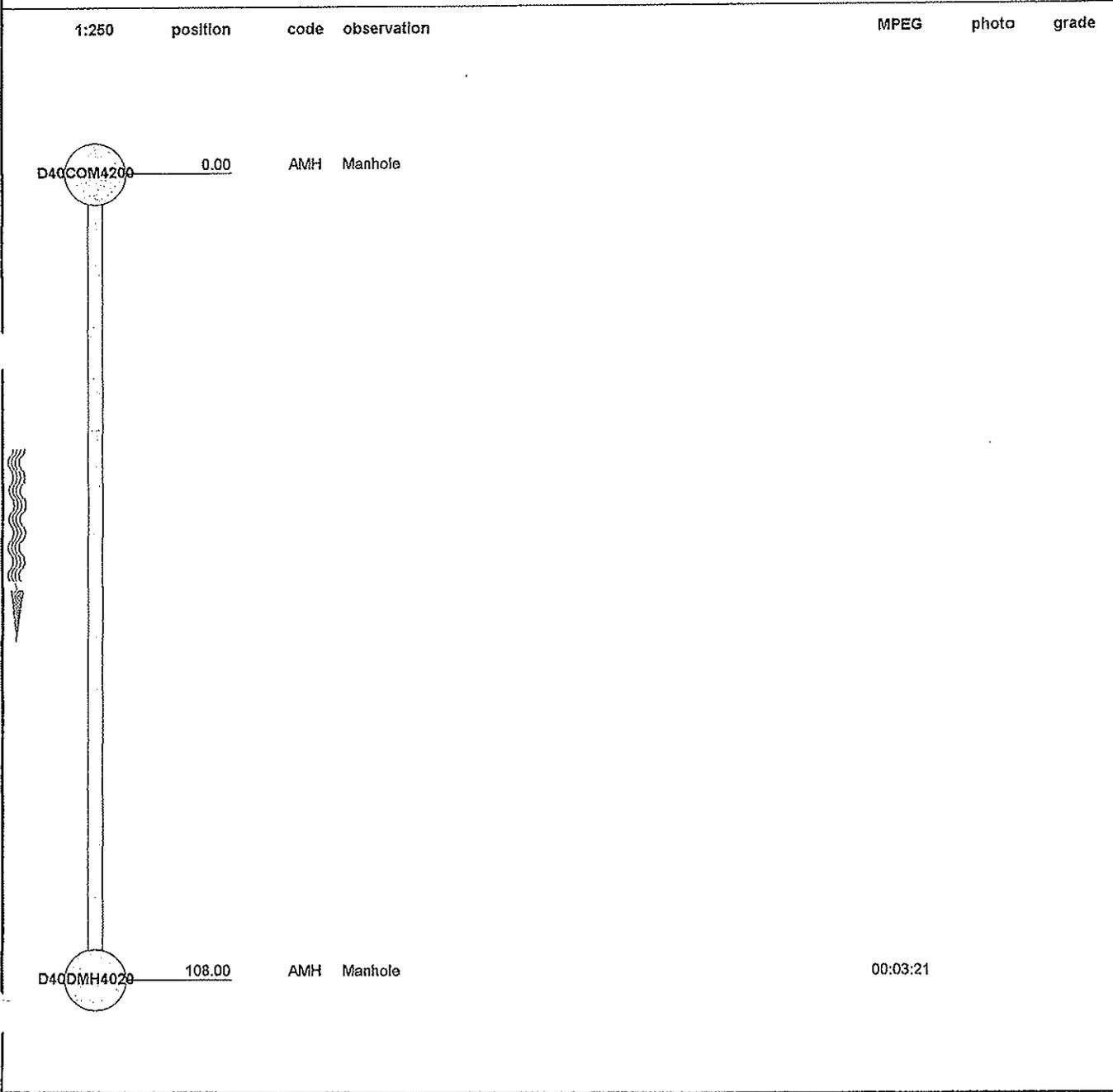
Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Magoun Street	Flow Control:	Start MH: D40COM4200
City: Cambridge, MA	Year Renewed:	End MH: D40DMH4020
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 108 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"	Material: RCP Reinforced Concrete Pipe	Pipe Joint length: 8ft
Use: SW Stormwater	Lining:	Category:	

Comment:
Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0

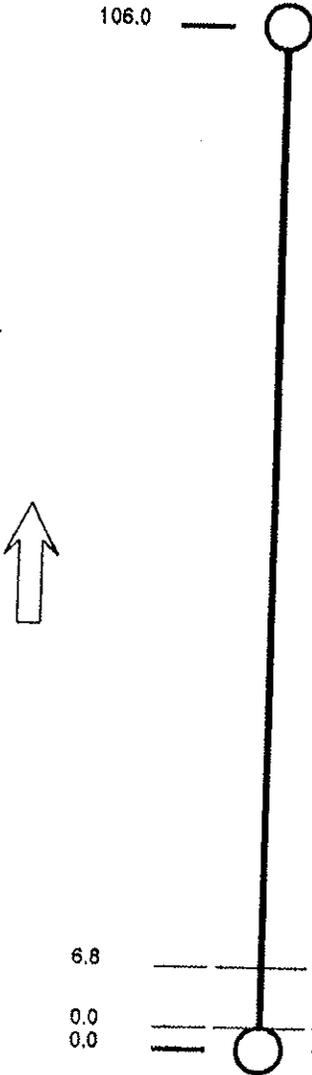
D13_2004

Pipe Graphic Report of PSR 7539700139 X for CITY OF CAMBRIDGE

Sheet 2	Surveyor BULLARD	Certificate # 1234	System Owner	
Drainage	Survey Customer			
P/O # 07-01111	Date 2004/08/18	Time 10:58:00	Street MAGOUN ST	
Locality CAMBRIDGE	Further location details			
Start 7539700139	D40CAM4200	Rim to invert	Grade to invert	Rim to grade Ft
Finish 7539700116	D40DMH4000	Rim to invert	Grade to invert	Rim to grade Ft
Use Storm Water	Direction Downstream	Flow control		Tape/Media # 2004040
Shape Circular	Height 12	Width	Ins Preclean N	Year Cleaned
Material Reinforced Concrete Pipe	Joint length	Ft Total length 106.0	Ft Length Surveyed 106.00	
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose Resurvey for any reason	Cat			
Additional info LOCATE SINK HOLE	Structural		O&M	Constructional
Location	Miscellaneous		Hydraulic	

Distance (Ft) Description (Showing categories: Structural O&M Constructional Miscellaneous) Media

106.0 ——— ○ ——— 7539700116 (Downstream, Depth = Ft) Tape end:



6.8 ——— ——— Fracture Longitudinal 12 o'clock

0.0 ——— ——— Water Level 0%

0.0 ——— ——— 7539700139 (Upstream, Depth = Ft) Tape start:00:00:00



The Environmental
Protection Specialists

(114)

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 7	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L. Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: D40DMH4020
City: Cambridge, MA	Year Renewed:	End MH: D40DMH4015
Location Code: C Light Highway	Tapø/Media #: T152-050509-1	Total length surveyed: 12 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SW Stormwater	Material: RCP Reinforced Concrete Pipe Pipe Joint length: 8ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:50	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	12.00	AMH	Manhole			00:00:57

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0

(015)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 8	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: D40DMH4015
City: Cambridge, MA	Year Renewed:	End MH: D40DMH4005
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 231 ft

Purpose: A Maintenance Related	Diø/Height: C Circular 18"/18"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining: Category:

Comment:
Location details:

1:525	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	6.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:00:25		
	23.80	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:06		
	25.80	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:01:19		
	48.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:00		
	50.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:02:14		
	74.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:03:04		
	76.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:17		
	99.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:04:02		
	101.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:04:19		
	125.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:05:42		
	127.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:05:55		
	149.70	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:06:40		
	152.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:06:57		
	174.00	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:07:43		
	176.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:07:56		
	200.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:08:52		
	202.50	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:09:05		
	211.00	CM	Crack Multiple, from 12 to 10 o'clock, within 8 inch: YES	00:09:08		5.3
	222.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:10:05		
	231.00	AMH	Manhole	00:10:43		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3100	0000	3	0	3	3	0	3



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 9	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: D40DMH4005
City: Cambridge, MA	Year Renewed:	End MH: D40COM4000
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 269 ft

Purpose: A Maintenance Related	Dia/Height: O Oval 24"/20"
Use: SW Stormwater	Material: CSU Concrete Segments (unbolted) Pipe Joint length:
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:372	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	13.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:00:43		
	21.80	TFC	Tap Factory Made Capped, at 12 o'clock, 6", within 8 inch: NO	00:01:21		
	32.50	TBA	Tap Break-In Active, at 11 o'clock, 10", within 8 inch: NO, Remark: Cross Connection	00:03:05		
	34.50	TBC	Tap Break-In Capped, at 03 o'clock, 6", within 8 inch: NO	00:02:17		M 2
	37.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:02:29		
	63.70	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: NO	00:03:35		
	63.70	OBP	Obstacles External Pipe or Cable, 5 % of cross sectional area, from 11 to 01 o'clock	00:03:46	75_8a	M 2
	66.60	RBC	Roots Ball Connection, from 03 to 07 o'clock, 10 %, within 8 inch: NO	00:04:31	77_9a	M 4
	66.60	TBC	Tap Break-In Capped, at 03 o'clock, 6", within 8 inch: NO	00:04:21		M 2
	91.20	TBC	Tap Break-In Capped, at 03 o'clock, 6", within 8 inch: NO	00:05:37		M 2
	94.10	TBC	Tap Break-In Capped, at 09 o'clock, 6", within 8 inch: NO	00:05:52		M 2
	112.10	TBC	Tap Break-In Capped, at 03 o'clock, 6", within 8 inch: NO	00:06:34		M 2
	114.80	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:06:53		
	130.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:07:28		
	133.20	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:07:47		
	151.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:08:27		
	154.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:08:40		
	166.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:09:40		



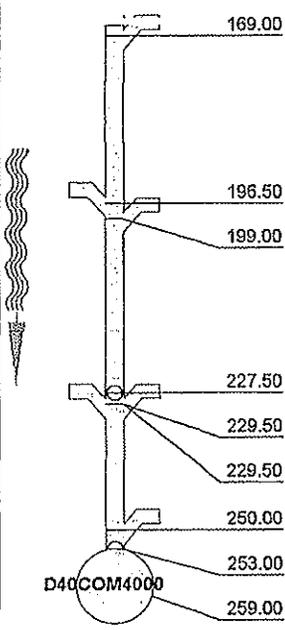
The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0853, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 9	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

1:372	position	code	observation	MPEG	photo	grade
	169.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:10:21		
	196.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:11:36		
	199.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:11:56		
	227.50	TB	Tap Break-In, at 11 o'clock, 6", within 8 inch: NO	00:13:03		
	229.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:13:20		
	229.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:13:27		
	250.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:14:11		
	253.00	TB	Tap Break-In, at 11 o'clock, 6", within 8 inch: NO	00:14:26		
	259.00	AMH	Manhole	00:15:01		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4126	0	16	16	0	2.29	2.29



Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 05/05/2009	section number: 9	PSR:
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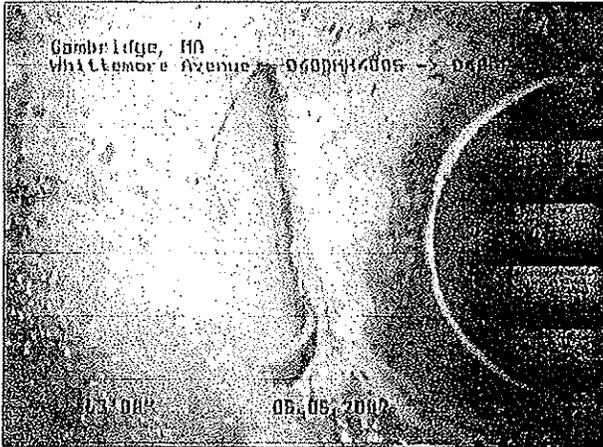


Photo: 75_8a, Tape/Media No.: T152-050509-1, 00:03:46
63.7FT, Obstacles External Pipe or Cable, 5 % of cross sectional area, from 11 to 01 o'clock

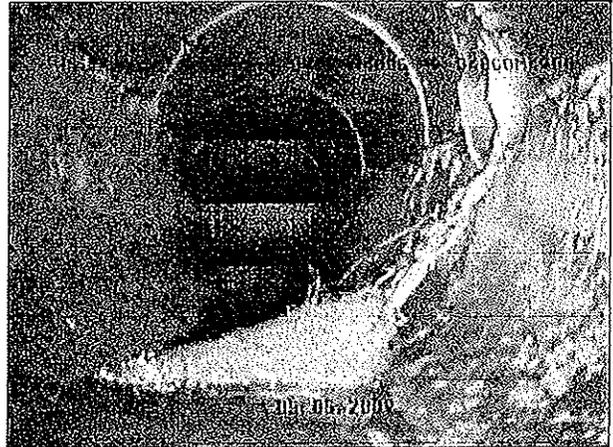


Photo: 77_9a, Tape/Media No.: T152-050509-1, 00:04:31
66.6FT, Roots Ball Connection, from 03 to 07 o'clock, 10 %, within 8 inch: NO



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

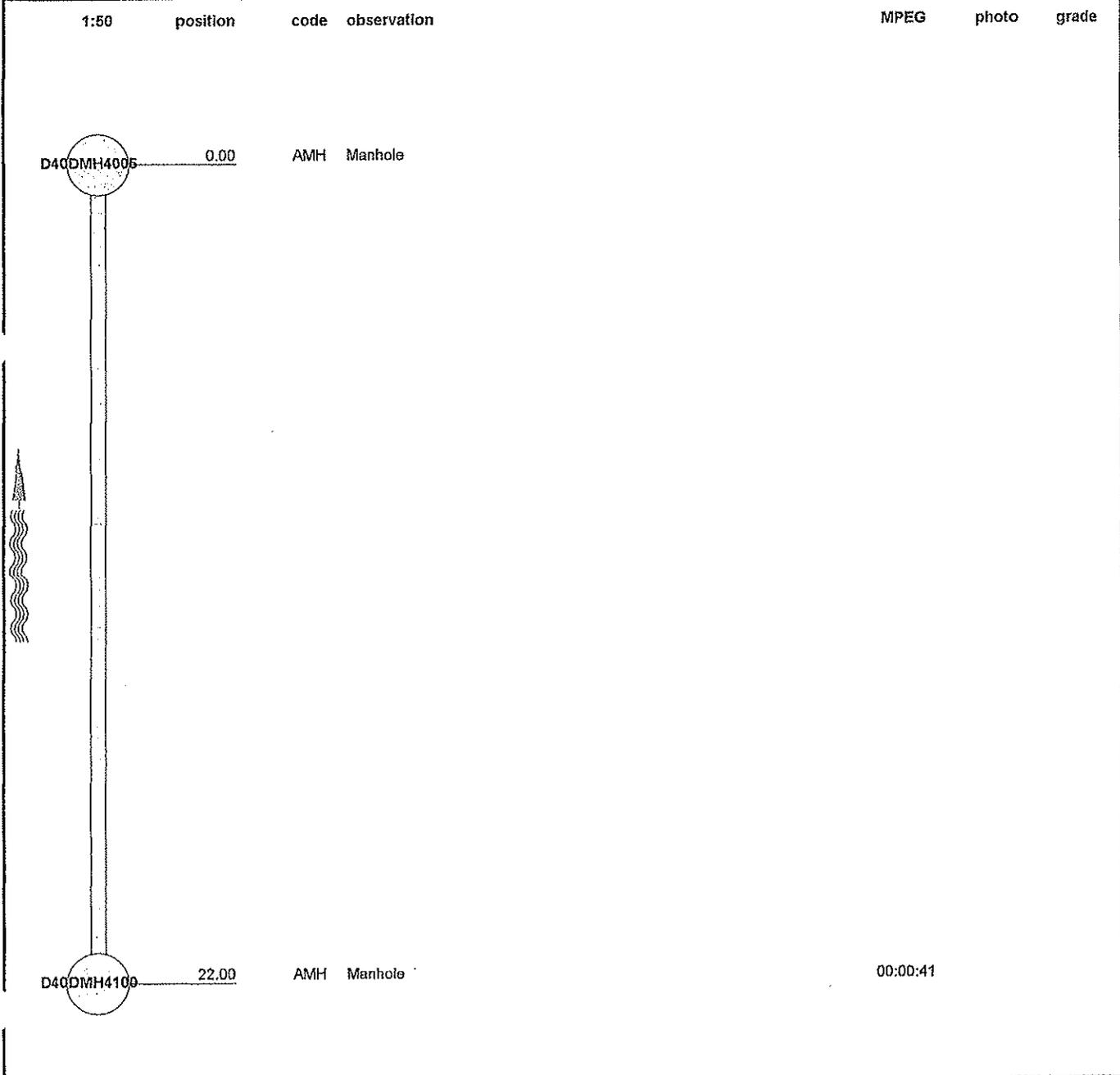
Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 10	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Madison Avenue	Flow Control:	Start MH: D40DMH4005
City: Cambridge, MA	Year Renewed:	End MH: D40DMH4100
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 22 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe Pipe Joint length: 3ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0

(118)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 11	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Madison Avenue	Flow Control:	Start MH: D40DMH4100
City: Cambridge, MA	Year Renewed:	End MH: D40COM4105
Location Code: C Light Highway	Tape/Media #: T152-050509-1	Total length surveyed: 100 ft
Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"	Material: VCP Vitrified Clay Pipe
Use: SW Stormwater	Lining:	Pipe Joint length: 3ft
Drain. Area:	Category:	

Comment:
Location details:

1:225	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	72.00	MWLS	Water Level, Sag in pipe, 60 % of cross sectional area	00:01:57		M 4
	100.00	AMH	Manhole	00:02:59		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	0	4	4	0	4	4



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/01/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gilderleeve	section number: 2	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1713
City: Cambridge, MA	Year Renewed:	End MH: D40DMH1717
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 161.3 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: SW Stormwater	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining: Category:

Comment:
Location details:

1:375	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	72.20	TF	Tap Factory Made, at 09 o'clock, 6", within 8 inch: YES	00:02:04		
	161.20	TBI	Tap Break-In Intruding, at 02 o'clock, 8", 5", 50 %, within 8 inch: NO	00:04:04	31_3a	M 5
	161.30	MSA	Survey Abandoned, Remark: Intruding service	00:04:57		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	5100	0	6	6	0	6	6



The Environmental
Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 05/01/2009	section number: 2	PSR:
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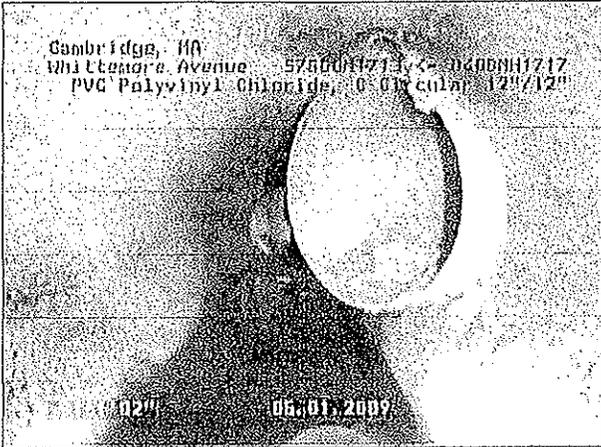


Photo: 31_3a, Tape/Media No.: T152-050109-1, 00:04:04
 161.2FT, Tap Break-In Intruding, at 02 o'clock, 8", 5", 50 %, within 8 inch: NO



The Environmental Protection Specialists

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Canton, MA 02021
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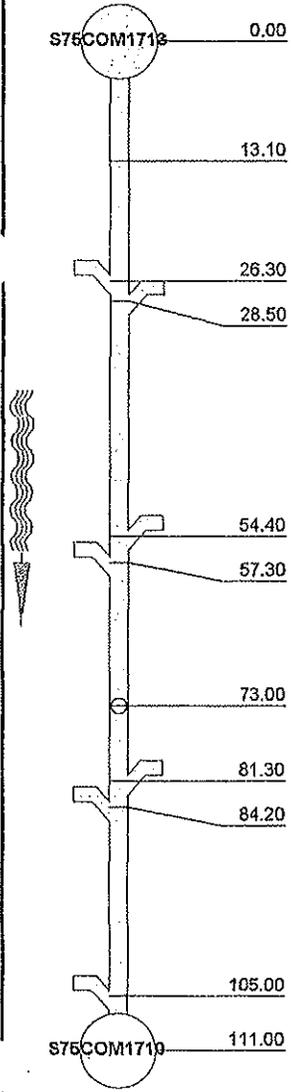
Inspection report

Date: 05/01/2009	P.O.#:	Weather: 3 Light rain	Surveyed By: Marc Gildersleeve	section number: 3	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1713
City: Cambridge, MA	Year Renewed:	End MH: S75COM1710
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 111 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 15"/15"
Use: SW Stormwater	Material: PVC Polyvinyl Chloride Pipe Joint length: 13ft
Drain. Area:	Lining:
	Category:

Comment:
Location details:

1:250	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	13.10	MMC	Material Change, VCP Vitrified Clay Pipe	00:00:29		
	26.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:01:24		
	28.50	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:01:39		
	54.40	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:02:31		
	57.30	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:02:48		
	73.00	TB	Tap Break-In, at 11 o'clock, 8", within 8 inch: YES	00:03:18		
	81.30	TFC	Tap Factory Made Capped, at 10 o'clock, 6", within 8 inch: YES	00:03:41		
	84.20	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:03:56		
	105.00	TFC	Tap Factory Made Capped, at 02 o'clock, 6", within 8 inch: YES	00:04:35		
	111.00	AMH	Manhole	00:05:32		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0

(D21)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 06/01/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: S75COM1710
City: Cambridge, MA	Year Renewed:	End MH: S75COM1705
Location Code: C Light Highway	Tape/Media #: T152-050109-1	Total length surveyed: 203 ft

Purpose: A Maintenance Related	Dia/Height: O Oval 22"/20"
Use: SW Stormwater	Material: BR Brick Pipe Joint length:
Drain. Area:	Lining: Category:

Comment:
Location details:

1:475	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	0.00	MMC	Material Change, RCP Reinforced Concrete Pipe	00:00:30		
	0.00	MSC	Shape or Size Change, 15", 15"	00:02:21		
	18.50	MWLS	Water Level, Sag in pipe, 20 % of cross sectional area	00:00:55		M 2
	27.50	OBJ	Obstacles In Joint, 5 % of cross sectional area, from 04 to 08 o'clock	00:01:30		M 2
	27.80	MMC	Material Change, VCP Vitrified Clay Pipe	00:01:53		
	30.00	MSC	Shape or Size Change, 20", 22"	00:02:26		
	30.00	MMC	Material Change, BR Brick with Concrete Bottom	00:02:28		
	33.50	TB	Tap Break-In, at 10 o'clock, 6", within 8 inch: NO	00:02:47		
	45.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:03:42		
	47.70	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:04:29		
	55.10	TB	Tap Break-In, at 03 o'clock, 4", within 8 inch: NO, Remark: Possible Cross Connection	00:05:00		
	65.50	MMC	Material Change, CSU Concrete Segments	00:06:27		
	73.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:06:51		
	75.70	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:07:05		
	76.70	RPZ	Repair Other, from 11 to 03 o'clock, within 8 inch: YES	00:07:21		
	88.20	MGO	General Observation, within 8 inch: YES, Remark: Old Manhole Covered	00:07:57	75_17a	
	102.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:08:31		
	106.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:08:45		
	128.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:09:27		
	130.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:09:38		
	153.60	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: NO	00:10:22		
	156.20	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:10:34		
	179.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: NO	00:11:46		
	203.00	AMH	Manhole	00:12:56		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2200	0	4	4	0	2	2



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 05/01/2009	section number: 5	PSR:
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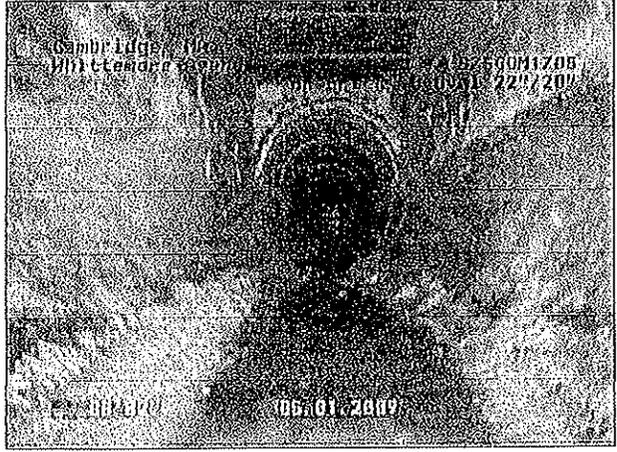


Photo: 75_17a, Tape/Media No.: T152-050109-1, 00:07:57
 88.2FT, General Observation, within 8 inch: YES, Remark: Old
 Manhole Covered

(D22)



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 05/05/2009	P.O.#:	Weather: 2 Heavy rain	Surveyed By: Marc Gildersleeve	section number: 12	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: H Heavy Cleaning	Map Grid #:

Street: Whittemore Avenue	Flow Control:	Start MH: D40DMH4025
City: Cambridge, MA	Year Renewed:	End MH: Upstream
Location Code: G Parking Lot	Tape/Media #: T152-050509-1	Total length surveyed: 77 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 15"/15"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe
Drain. Area:	Pipe Joint length: 3ft
	Lining:
	Category:

Comment:
Location details:

1:175	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	14.00	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:00:36		
	16.00	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:00:51		
	40.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:01:29		
	42.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:01:39		
	56.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:02:12		
	58.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:02:24		
	72.50	TFC	Tap Factory Made Capped, at 09 o'clock, 6", within 8 inch: YES	00:02:54		
	74.50	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inch: YES	00:03:05		
	77.00	AMH	Lamphole	00:03:55	110_10a	

Lamphole

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0883, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Whittemore Avenue	Date: 05/05/2009	section number: 12	PSR:
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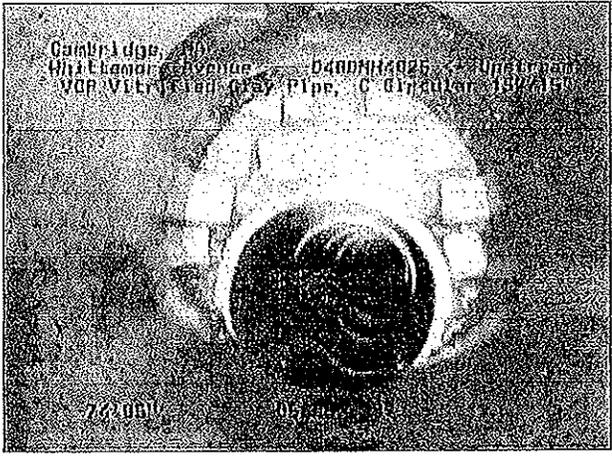


Photo: 110_10a, Tape/Media No.: T152-050509-1, 00:03:55
77FT, Lamphole



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

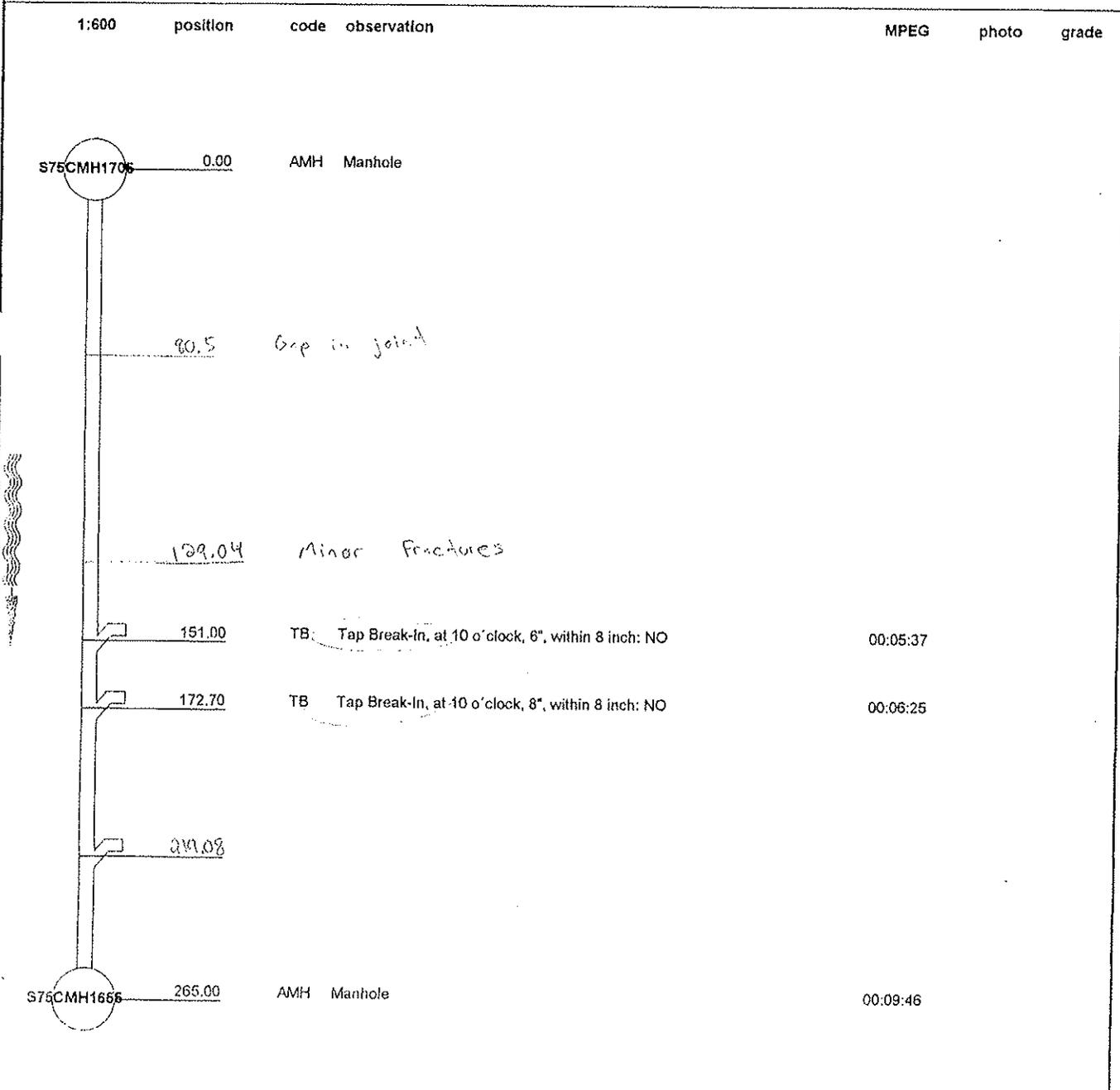
Inspection report

Date: 04/30/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 1	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: L Light	Map Grid #:

Street: Kimball Street	Flow Control:	Start MH: S75CMH1706
City: Cambridge, MA	Year Renewed	End MH: S75CMH1656
Location Code: C Light Highway	Tape/Media #: T152-043009-1	Total length surveyed: 265 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 18"/18"
Use: CB Combined	Material: CP Concrete Pipe (non-reinforced) Pipe Joint length: 4ft
Drain Area:	Lining:
	Category:

Comment:
 Location details:



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	3100	0	3	3	0	3	3



The Environmental Protection Specialists

National Water Main Cleaning Co
 25 Marshall Street
 Canton, MA 02021
 Tel: 781-828-0863, Fax: 781-828-4397

Inspection report

Date: 06/11/2009	P.O.#:	Weather: 1 Dry	Surveyed By: Marc Gldersleeve	section number: 6	PSR:
Total Pipe Length:	Survey Customer: SEA	System Owner:	Clean Date:	Pre-Cleaned: N No Pre-Cleaning	Map Grid #:

Street: Grace Easement	Flow Control:	Start MH: S75COM1900
City: Cambridge, MA	Year Renewed:	End MH: Parking
Location Code: D Easement/Right of Way	Tap/Media #: T152-061109-1	Total length surveyed: 153.5 ft

Purpose: A Maintenance Related	Dia/Height: C Circular 12"/12"
Use: ZZ Other	Material: DIP Ductile Iron Pipe Pipe Joint length: 10ft
Drain. Area:	Lining: Category:

Comment:
 Location details:

1:350	position	code	observation	MPEG	photo	grade
	0.00	AMH	Manhole			
	9.50	LR	Alignment Right, 45 °	00:00:41		M 4
	151.50	TFA	Tap Factory Made Active, at 03 o'clock, 12", within 8 inch: YES	00:09:59		
	153.50	ACOM	Cleanout	00:10:36	27_4a	

Toward West parking lot behind Bldg. #29

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	0	4	4	0	4	4



The Environmental Protection Specialists

National Water Main Cleaning Co
25 Marshall Street
Canton, MA 02021
Tel: 781-828-0863, Fax: 781-828-4397

Inspection photos

City: Cambridge, MA	Street: Grace Easement	Date: 06/11/2009	section number: 5	PSR:
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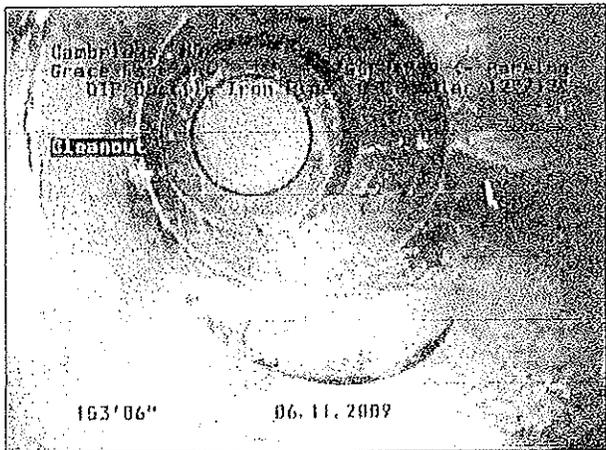


Photo: 27_4a, Tape/Media No.: T152-061109-1, 00:10:36
153.5FT, Cleanout

D28-South



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

Date: 08-03-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gildersleeve	section number: 2	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: H Heavy Cleaning	rate:

Street: Grace	Flow Control:	Start MH: Pit1
City: Cambridge, MA	Year Renewed:	End MH: GMH1 (S75COM1910T)
Location Code: C Light Highway	Tapel/Media #: T152-080309-1	Total length surveyed: 33.6 ft

purpose of Survey: A Maintenance Related	Diø/Height: C Circular 18"/18"
Use: SW Stormwater	Material: VCP Vitrified Clay Pipe Joint length:
Basin:	Lining: Job Name:

Comment:
Location details:

1:100	position	code	observation	counter	photo	grade
	0.00	AMH	Downstream Manhole, Survey Begins	00:00:00		
	33.50	XP	Collapse Pipe Sewer, 100 %	00:00:00	2_2a, b	S 5
	33.50	MSA	Survey Abandoned, Remark: Collapsed	00:00:00		

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
6100	0000	6	0	5	5	0	6

D28_South



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-03-2009	section number: 2	PSR:
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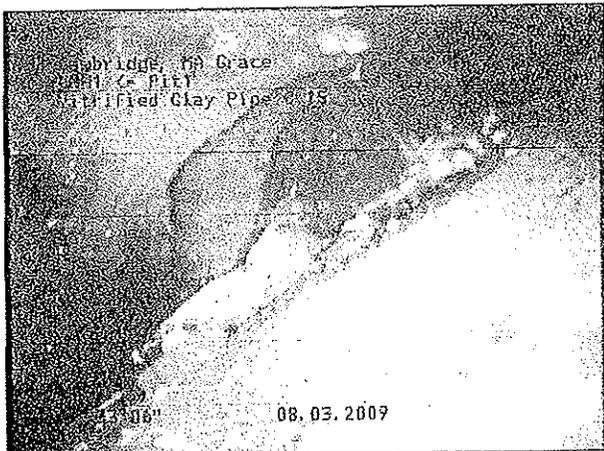


Photo: 2_2a, Tape/Media No.: T152-080309-1, 00:00:00
33.5FT, Collapse Pipe Sewer, 100 %

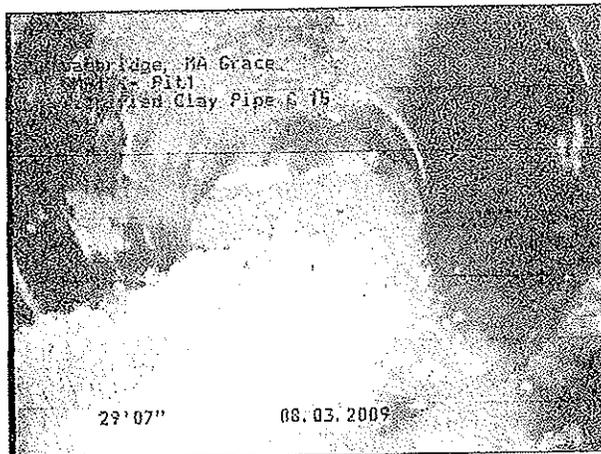


Photo: 2_2b, Tape/Media No.: T152-080309-1, 00:00:00
33.5FT, Collapse Pipe Sewer, 100 %



National Water Main Cleaning Co.
 25 Marshall Street
 Canton, MA
 Tel: 781-828-0863, Fax: 781-828-2473

Inspection report

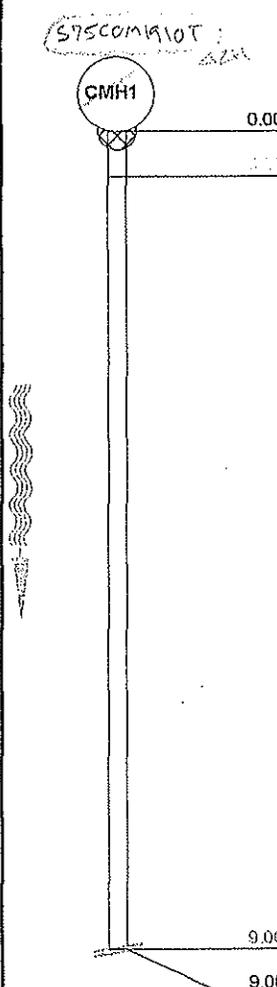
Date: 08-03-2009	P.O.# / WO.#:	Weather: 1 Dry	Surveyed By: Marc Gldersleeve	section number: 1	PSR:
Total Length of Section:	Survey Customer: SEA	Job #: SEA001-22	Clean Date:	Pre-Cleaned: M Medium Cleaning	rate:

Street: Grace	Flow Control:	Start MH: CMH1 (S75COM1910T)
City: Cambridge, MA	Year Renewed:	End MH: Pit1
Location Code: C Light Highway	Tapes/Media #: T152-080309-1	Total length surveyed: 9 ft

purpose of Survey: A Maintenance Related	Dia/Height: C Circular 18"/18"
Use: SW Stormwater	Material: BR Brick Joint length:
Basin:	Lining:
	Job Name:

Comment:
 Location details:

1:25	position	code	observation	counter	photo	grade
	0.00	AMH	Upstream Manhole, Survey Begins	00:00:00		
	9.00	XP	Collapse Pipe Sewer, 100 %	00:00:00	f_3a	9.5
	9.00	MSA	Survey Abandoned, Remark: Collapsed	00:00:00		



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	3100	6	3	8	6	3	4

D28 - North



National Water Main Cleaning Co.
25 Marshall Street
Canton, MA
Tel: 781-828-0863, Fax: 781-828-2473

Inspection photos

City: Cambridge, MA	Street: Grace	Date: 08-03-2009	section number: 1	PSR:
------------------------	------------------	---------------------	----------------------	------

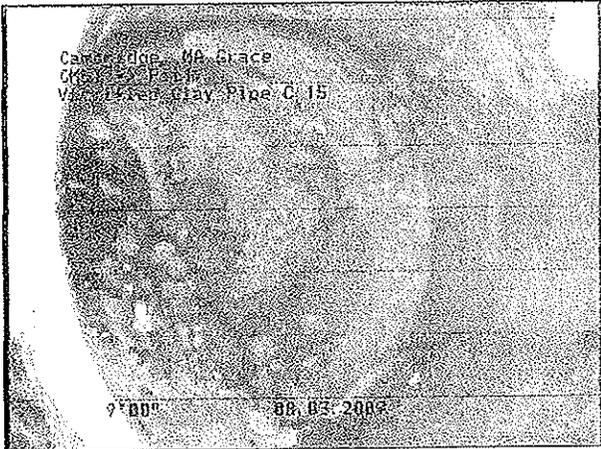


Photo: 1_3a, Tape/Media No.: T152-080309-1, 00:00:00
9FT, Collapse Pipe Sewer, 100 %

Appendix E

Buildings Investigation Data

TO: Owen O'Riordan, Cambridge DPW
Catherine Daly Woodbury, Cambridge DPW

DATE: October 28, 2009

FROM: Dennis Carr, William Pisano
Martha Fernandes

CC:

SUBJECT: CAM 400 Drain Lateral Provision-Home Inspection Results

During the course of the CAM400 building inspections, 8 houses were identified in which the sump pump or storm drains are hard-piped to the sanitary sewer. Three of these homes are located along stretches of Madison and Magoun Streets which are not currently served by drain lines. The remaining 5 houses might be candidates for the provision of drain laterals for residents to separate their storm water from sanitary sewers in the future (13 Harrison Avenue, 16 Kimball Street, 24 and 58 Madison Avenue, and 35 Magoun Street). One house was also identified which has a temporary connection between a sump pump and the property's sanitary service (15 Kassul Park). The following provides a description of each of these six properties. As noted below, internal photos could not be located for three of the properties, however in the event the City would like internal photos for community presentations or other purposes they will be provided.

13 Harrison Avenue



The property at 13 Harrison Avenue had a sump pump which is hard-piped to the sanitary service discharge below the basement slab. This property owner also reported seasonal flooding. Additional observations would be necessary to determine how the sump pump could be removed from the sanitary stack and redirected either to the surface outside the building or to a drain lateral in Harrison Avenue provided by the City. There is an area of grass in the backyard of the property to which the sump pump drain might be redirected.

16 Kimball Street



The building at 16 Kimball Street has two sump pumps which are hard piped to the buildings sanitary service. No photo is currently available, however during the inspection it was noted that the two sump pumps are connected via PVC pipe above the basement slab into the sanitary stack. It appeared as though they could be easily removed from the sanitary stack and redirected either to the surface outside the building (to an adjacent garden area north or east of the building) or to a drain lateral in Kimball Street provided by the City.

24 Madison Avenue



The property at 24 Madison Avenue has a sump pump hard piped to the buildings sanitary sewer stack (see Figure 1. below). The homeowner at 24 Madison Avenue reported regular seasonal flooding during which use of their sump pump is necessary. This sump pump could be easily removed from the sanitary stack and redirected either to the surface outside the building or to a drain lateral in Madison Avenue provided by the City. There is an area of grass south of the building to which the sump pump drain could be redirected.



Sump pump at 24 Madison Avenue hard piped to sanitary service, easily removed and redirected to surface or drain lateral

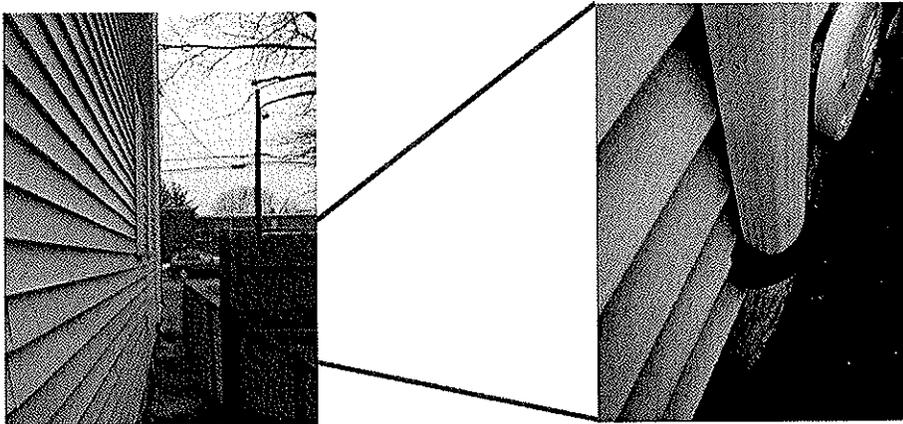
Figure 1.24 Madison Avenue

58 Madison Avenue



The property at 58 Madison Avenue has a roof drain that is connected externally to the sanitary stack at the rear of the building (see Figure 2. below). The property also has garden areas on either side of the building. It

therefore appears that this house would be a good candidate for removing the roof drain from the sanitary stack and hard-piping a roof drain line to either of the side garden areas or to a drain lateral provided by the City in Madison Street.



Roof drain gutter, at 58 Madison Avenue currently hard piped to sanitary service, easily redirected to surface or drain lateral

Figure 2.58 Madison Avenue

37-39 Magoun Street



The building at 39 Magoun Street has a flat roof with an internal drain roof drain pipe hard-piped into the buildings sanitary service. The roof drain connection to the sanitary service could not be seen in the course of the inspection and therefore no photograph of this connection is available. It was determined that the connection is either outside of the foundation under a back porch or in an inaccessible area of the basement. The exact layout of this connection would have to be observed before determining if and how the roof drain could be separated from the sanitary service and redirected to either the surface outside the home or to a drain lateral in Magoun Street provided by the City. There is a garden area at the back of the home to which the drain line could be redirected.

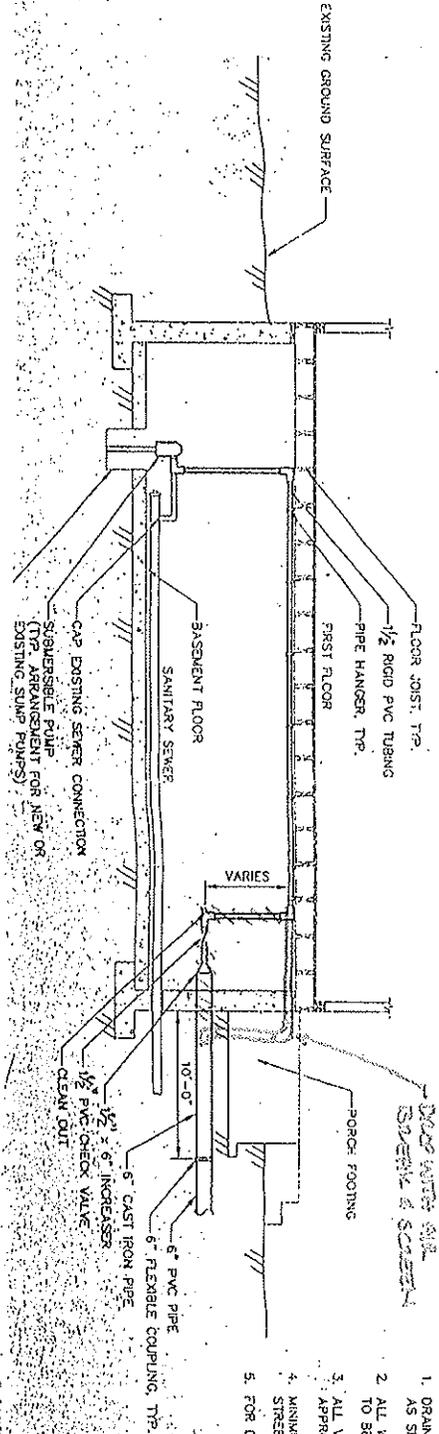
In addition to these five properties with potential for separation, one inspection identified a property owner who manually directs sump pump discharge to the buildings sanitary service during extreme storm events.

15 Kassul Park

The homeowner at 15 Kassul Park reported that during heavy rains, when pumping gets severe, he will manually discharge the sump pump to the sanitary sewer cleanout. The homeowner should be encouraged to redirect their sump pump into the garden areas surrounding the house or to harp-pipe the sump pump into the storm drain (with the City providing a lateral from the proposed drain line in Kassul Park).

With regard to the work required on private property in order to connect the sump pump and roof drain sources into the City's storm drain system, the internal piping from the sump pump or roof drain would vary from property to property, however we would recommend a connection to the drain lateral similar to the marked-up detail provided below in Figure 3. The potential for backup into the property is reduced by running the drain lateral out of the basement at the top of the sill of the building and providing an air break with a screen. The details of all of these connections can be worked out for each property when a decision has been made regarding what the City will provide in each of these cases.

PROPOSED SUMP PUMP CONNECTION TO
DRAIN SERVICE LATERAL



- NOTES:
1. DRAIN TO EXIT THROUGH FOUNDATION WALL AS SHOWN OR AS DIRECTED BY THE ENGINEER.
 2. ALL WALL PENETRATIONS, PIPE FITTINGS AND JOINTS TO BE SEALED WATERTIGHT.
 3. ALL VALVES AND SPECIAL FITTINGS SHALL BE AS APPROVED BY THE ENGINEER.
 4. MINIMUM SLOPE ON GRAVITY SERVICE FROM HOUSE TO STREET SHALL BE 1/4".
 5. FOR DETAIL OF NEW SUMP PUMPS SEE SHEET 36.

Figure 3. Sump Pump Connection to Drain Lateral

BUILDING INSPECTION SURVEY

FILE NO. _____

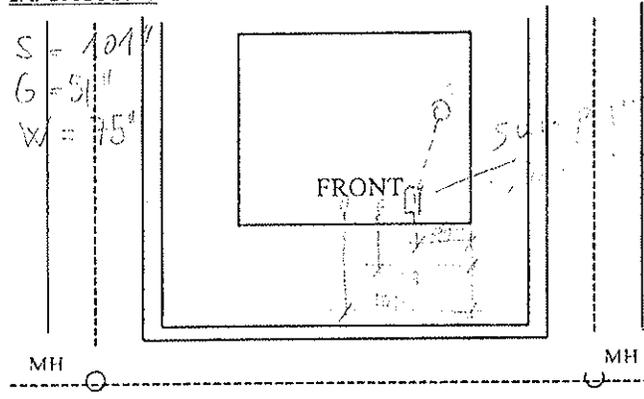
INITIAL TESTS _____
 ADDITION TESTS _____
 LOOKING IN MANHOLE # 575 SMH 1105

STREET: Harrison Ave
 BUILDING #: 1113
 DATE: 05/04/2009

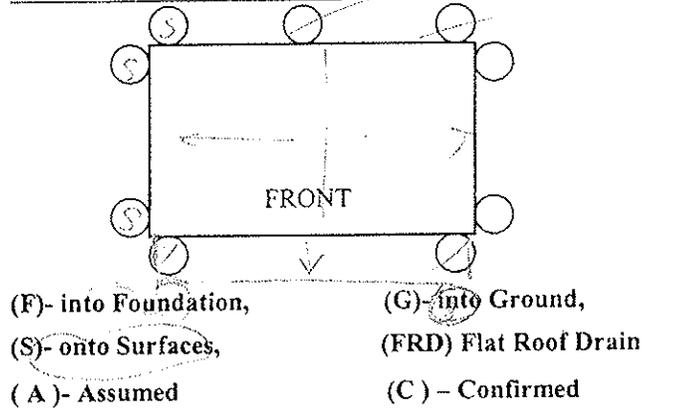
PROBLEM CODE: NOT HOME - ENTRY REFUSED - DEFERED				CONTACT NAME: <u>Mrs. Murphy</u>			
TALKED TO:		<input checked="" type="checkbox"/> OWNER		<input type="checkbox"/> RENTER			
BUILDING USE:	<input type="checkbox"/> RESIDENTIAL	<input type="checkbox"/> COMMERCIAL		<input type="checkbox"/> INDUSTRIAL		<input type="checkbox"/> LAUNDRY MAT	
	<input type="checkbox"/> GAS STATION	<input type="checkbox"/> RESTAURANT		<input type="checkbox"/> SCHOOL			
PUMP USED:	<input checked="" type="checkbox"/> STORM	QUANTITY		HP	<u>0.5</u>	PIPE SIZE	
	<input checked="" type="checkbox"/> SANITARY	QUANTITY		HP		PIPE SIZE	
IS PUMP HARD PIPED TO DISCHARGE?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	(SUMP FREQUENCY) DAILY - WEEKLY - MONTHLY - SEASONAL			
DISTANCE FROM TOP OF FOUNDATION TO SANITARY SERVICE. (CLEAN OUT CAP) <u>101"</u>							(ft)

DYE TESTS	CONFIRMED DYE LOCATION						
SANITARY SERVICE DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	-----	-----	UNK
GUTTER / DOWNSPOUT DYE TEST DISCHARGES TO:	<input type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	D/WELL	<input checked="" type="checkbox"/> SURF.	UNK
FLAT ROOF DRAIN TO:	<input type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	D/WELL	-----	UNK
STORM PUMP DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	D/WELL	SURF.	UNK
SANITARY PUMP DYE TEST DISCHARGES TO:	<input type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	-----	-----	UNK
DRIVEWAY DRAIN DYE TEST DISCHARGES TO:	<input type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	D/WELL	-----	UNK
AREA DRAIN DYE TEST DISCHARGES TO:	<input type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	D/WELL	-----	UNK

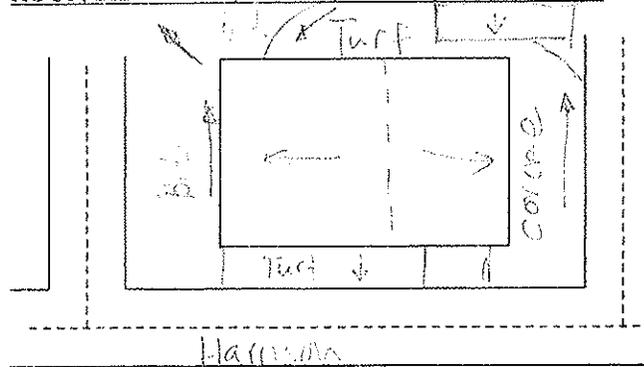
SANITARY PIPE, WATER, AREA DRAINS & PUMP LOCATIONS



DOWNSPOUT LOCATIONS:



ROOF, SIDEWALK, GRASS, DRIVEWAY SLOPES



DOWNSPOUT CONDITION (ACCEPTABLE) _____ (POOR) _____

COMMENTS:
 NOT HOME DATE _____ TIME _____
 NOT HOME DATE _____ TIME _____
 NOT HOME DATE _____ TIME _____
 DEFERRED TO: DATE _____ TIME _____
 Notes: - Flooding in heavy rain, 2008
 - Drinking water dirty and smelly not Friday when National was held
 - 8 Water dirty like sewer
 Flooding? (none/SS/GW/street) comments on back

DEPRESSED DRIVEWAY: YES NO IF YES SKETCH ON ATTACHED SHEET AND CLEARLY SHOW DIMENSION AND ELEVATIONS FROM ROAD AND HOUSE.

DOES RUNOFF DRAIN TOWARD NEIGHBOR'S PROPERTY YES NO

WEATHER: Cloudy, 65 INSPECTORS: DB, JWC
 PHOTOS: _____

BUILDING INSPECTION SURVEY

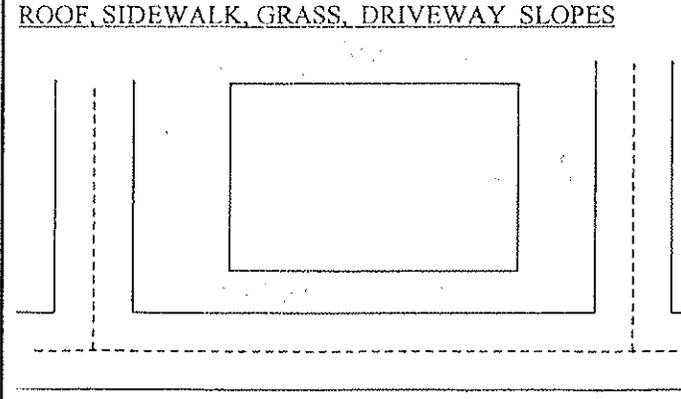
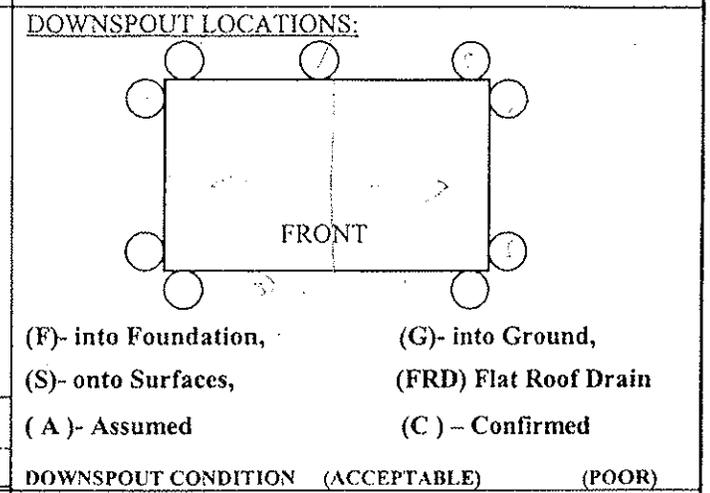
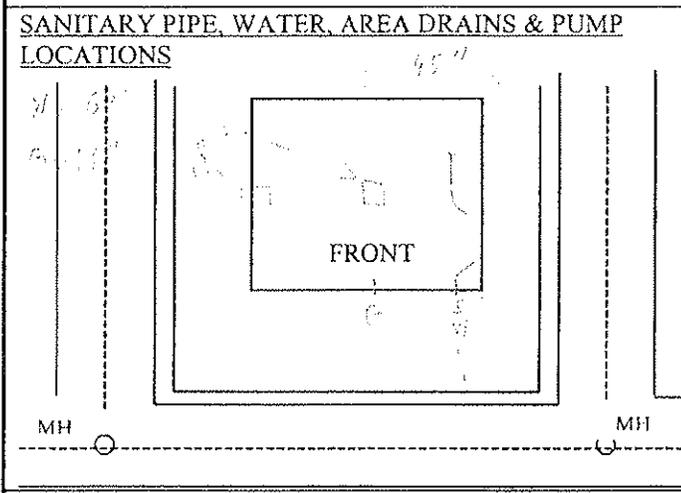
FILE NO. _____

INITIAL TESTS Final Over Joint
 ADDITION TESTS _____
 LOOKING IN MANHOLE # S755H-1025

STREET: KIMBALL ST
 BUILDING #: 16-18
 DATE: 04/21/09

PROBLEM CODE: NOT HOME - ENTRY REFUSED - DEFERED				CONTACT NAME: _____				
TALKED TO:		<input checked="" type="checkbox"/> OWNER		<input type="checkbox"/> RENTER				
BUILDING USE:	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		LAUNDRY MAT	
	GAS STATION		RESTAURANT		SCHOOL			
PUMP USED:	STORM	QUANTITY		HP	PIPE SIZE		GPM	VOLTS
	SANITARY	QUANTITY		HP	PIPE SIZE		GPM	VOLTS
IS PUMP HARD PIPED TO DISCHARGE?		YES	NO	(SUMP FREQUENCY) DAILY - WEEKLY - MONTHLY - SEASONAL				
DISTANCE FROM TOP OF FOUNDATION TO SANITARY SERVICE. (CLEAN OUT CAP) <u>23"</u>								(ft)

DYE TESTS	CONFIRMED DYE LOCATION						
SANITARY SERVICE DISCHARGES TO:	SS	CS	SD	NONE	---	---	UNK
GUTTER / DOWNSPOUT DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	SURF.	UNK
FLAT ROOF DRAIN TO:	SS	CS	SD	NONE	D/WELL	---	UNK
STORM PUMP DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	SURF.	UNK
SANITARY PUMP DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	---	---	UNK
DRIVEWAY DRAIN DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	---	UNK
AREA DRAIN DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	---	UNK



DOWNSPOUT CONDITION (ACCEPTABLE) (POOR)

COMMENTS:
 NOT HOME DATE _____, TIME _____
 NOT HOME DATE _____, TIME _____
 NOT HOME DATE _____, TIME _____
 DEFERED TO: DATE _____, TIME _____
 Notes:

Flooding? (none/SS/GW/street) comments on back

DEPRESSED DRIVEWAY: YES NO IF YES SKETCH ON ATTACHED SHEET AND CLEARLY SHOW DIMENSION AND ELEVATIONS FROM ROAD AND HOUSE.

DOES RUNOFF DRAIN TOWARD NEIGHBOR'S PROPERTY YES NO

WEATHER: _____ INSPECTORS _____
 PHOTOS _____

BUILDING INSPECTION SURVEY

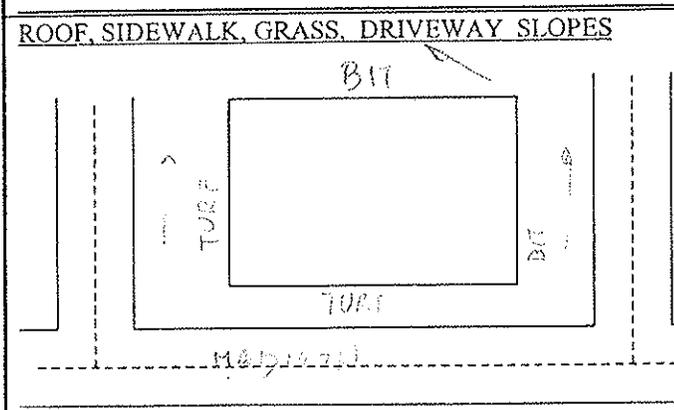
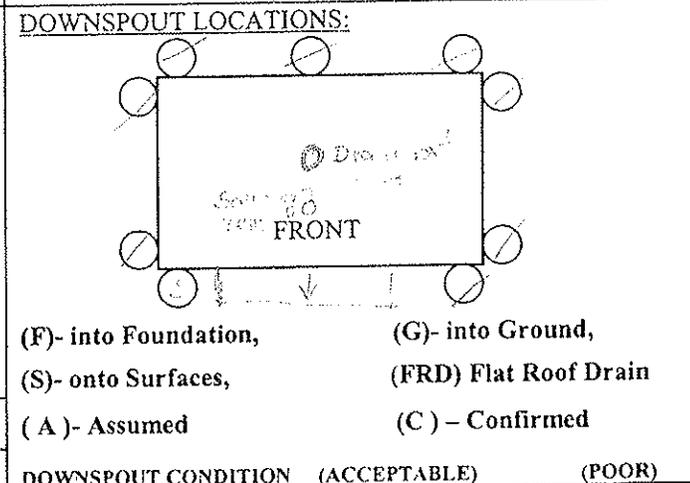
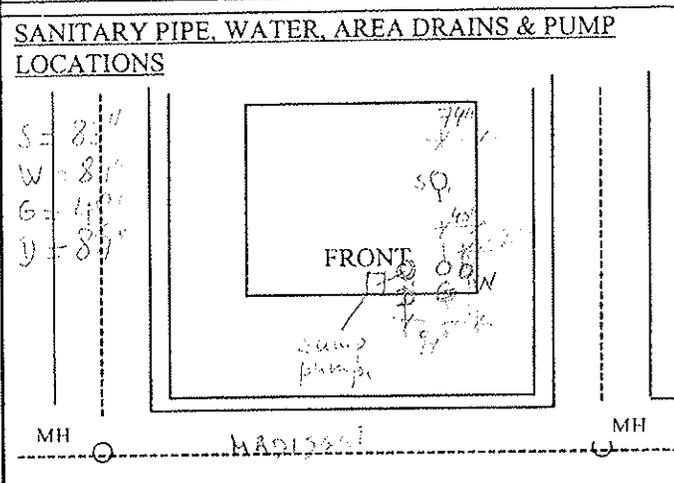
FILE NO. 1

INITIAL TESTS _____
 ADDITION TESTS _____
 LOOKING IN MANHOLE # S74 SMH 2105

STREET: 1000 S. 10th
 BUILDING #: 24
 DATE: 09/13/01

PROBLEM CODE: NOT HOME - ENTRY REFUSED - DEFERED				CONTACT NAME: <u>Susan HECHE</u>			
TALKED TO:		<input checked="" type="checkbox"/> OWNER		<input type="checkbox"/> RENTER		<u>Conrad W. W.</u>	
BUILDING USE:		<input checked="" type="checkbox"/> RESIDENTIAL		<input type="checkbox"/> COMMERCIAL		<input type="checkbox"/> INDUSTRIAL	
		<input type="checkbox"/> GAS STATION		<input type="checkbox"/> RESTAURANT		<input type="checkbox"/> LAUNDRY MAT X	
PUMP USED:		<input checked="" type="checkbox"/> STORM		<input type="checkbox"/> QUANTITY		<input type="checkbox"/> HP	
		<input type="checkbox"/> SANITARY		<input type="checkbox"/> QUANTITY		<input type="checkbox"/> HP	
IS PUMP HARD PIPED TO DISCHARGE?		<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO		(SUMP FREQUENCY) DAILY - WEEKLY - MONTHLY - SEASONAL	
DISTANCE FROM TOP OF FOUNDATION TO SANITARY SERVICE. (CLEAN OUT CAP) <u>33"</u> (ft)							

DYE TESTS	CONFIRMED DYE LOCATION						
SANITARY SERVICE DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK
GUTTER / DOWNSPOUT DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input checked="" type="checkbox"/> D/WELL	<input checked="" type="checkbox"/> SURF.	<input type="checkbox"/> UNK
FLAT ROOF DRAIN TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input checked="" type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK
STORM PUMP DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK
SANITARY PUMP DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input checked="" type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK
DRIVEWAY DRAIN DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input checked="" type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK
AREA DRAIN DYE TEST DISCHARGES TO:	<input checked="" type="checkbox"/> SS	<input type="checkbox"/> CS	<input type="checkbox"/> SD	<input type="checkbox"/> NONE	<input checked="" type="checkbox"/> D/WELL	<input type="checkbox"/> SURF.	<input type="checkbox"/> UNK



COMMENTS:

NOT HOME DATE _____ TIME _____
 NOT HOME DATE _____ TIME _____
 NOT HOME DATE _____ TIME _____
 DEFERED TO: DATE _____ TIME _____

Notes:
 - Easy access to roof
 - Tub and toilet in June 2001
 in normal dry state
 - Building surrounded in grass
 - Neighbor says if pouring in SE in front
 of house - on the lot

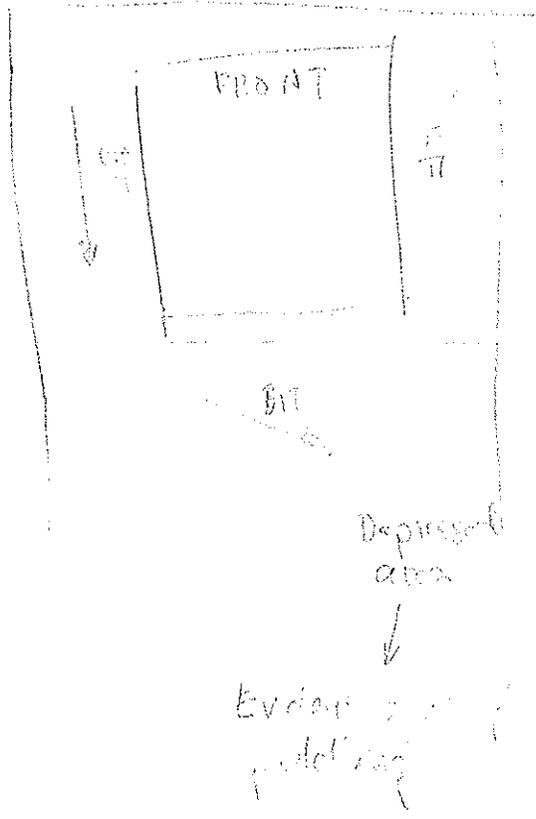
Flooding? (none/SS/GW/street) comments on back

DEPRESSED DRIVEWAY: YES NO IF YES SKETCH ON ATTACHED SHEET AND CLEARLY SHOW DIMENSION AND ELEVATIONS FROM ROAD AND HOUSE.

DOES RUNOFF DRAIN TOWARD NEIGHBOR'S PROPERTY YES NO

WEATHER: SUN INSPECTORS: DE, CO, KMF
 PHOTOS: Pump

MADISON AVE



24 MADISON AVE

BUILDING INSPECTION SURVEY

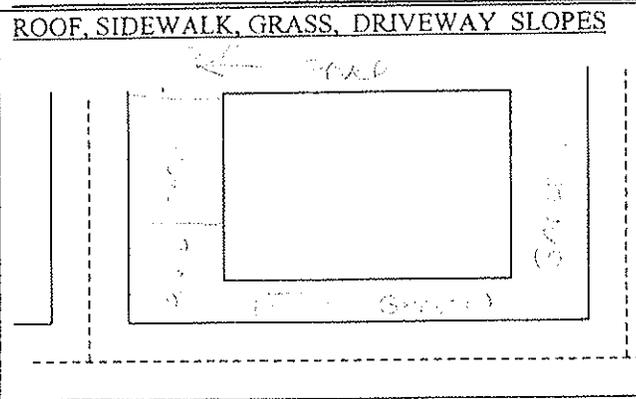
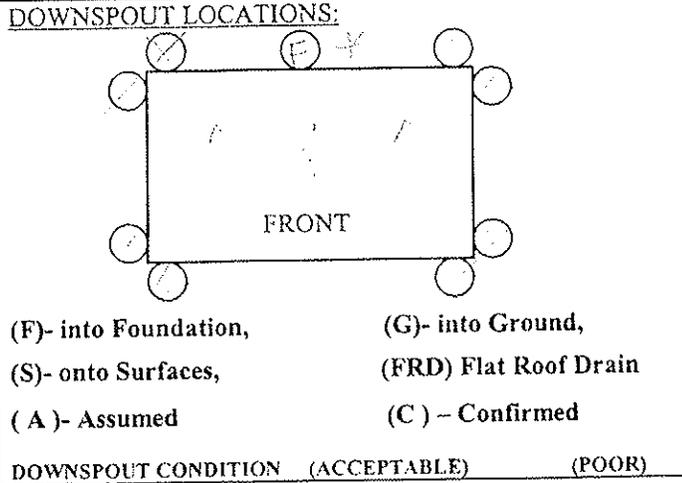
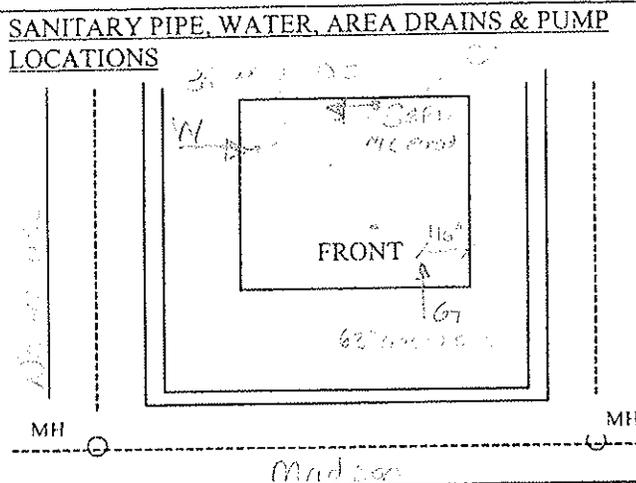
FILE NO. _____

INITIAL TESTS Yes
 ADDITION TESTS _____
 LOOKING IN MANHOLE # S1133-245

STREET: Madison
 BUILDING #: 5814
 DATE: 4/21/09

PROBLEM CODE: NOT HOME - ENTRY REFUSED - DEFERED				CONTACT NAME: <u>Arundel</u>			
TALKED TO: (OWNER) RENTER							
BUILDING USE:		RESIDENTIAL		COMMERCIAL		INDUSTRIAL	
		GAS STATION		RESTAURANT		SCHOOL	
PUMP USED:	STORM	QUANTITY	HP	PIPE SIZE	GPM	VOLTS	
	SANITARY	QUANTITY	HP	PIPE SIZE	GPM	VOLTS	
IS PUMP HARD PIPED TO DISCHARGE?		YES	NO	(SUMP FREQUENCY) DAILY - WEEKLY - MONTHLY - SEASONAL			
DISTANCE FROM TOP OF FOUNDATION TO SANITARY SERVICE. (CLEAN OUT CAP) <u>85"</u>							(ft)

DYE TESTS	CONFIRMED DYE LOCATION						
SANITARY SERVICE DISCHARGES TO:	(SS)	CS	SD	NONE	---	---	UNK
GUTTER / DOWNSPOUT DYE TEST DISCHARGES TO:	(SS)	CS	SD	NONE	D/WELL	SURF.	UNK
FLAT ROOF DRAIN TO:	(SS)	CS	SD	NONE	D/WELL	---	UNK
STORM PUMP DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	SURF.	UNK
SANITARY PUMP DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	---	---	UNK
DRIVEWAY DRAIN DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	---	UNK
AREA DRAIN DYE TEST DISCHARGES TO:	SS	CS	SD	NONE	D/WELL	---	UNK



DOWNSPOUT CONDITION (ACCEPTABLE) (POOR)

COMMENTS:

NOT HOME DATE _____, TIME _____
 NOT HOME DATE _____, TIME _____
 NOT HOME DATE _____, TIME _____
 DEFERRED TO: DATE _____, TIME _____

Notes:
Need address for...
...

Flooding? (none/SS/GW/street) comments on back

DEPRESSED DRIVEWAY: YES NO IF YES SKETCH ON ATTACHED SHEET AND CLEARLY SHOW DIMENSION AND ELEVATIONS FROM ROAD AND HOUSE.

DOES RUNOFF DRAIN TOWARD NEIGHBOR'S PROPERTY YES NO

WEATHER: Cloudy, 50° INSPECTORS: DELOK, H...
 PHOTOS: _____

Appendix F

Order of Conditions



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act).
Check all that apply:

- a. Public Water Supply
- b. Land Containing Shellfish
- c. Prevention of Pollution
- d. Private Water Supply
- e. Fisheries
- f. Protection of Wildlife Habitat
- g. Groundwater Supply
- h. Storm Damage Prevention
- i. Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

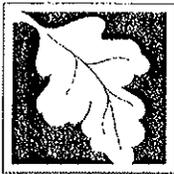
- a. the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

- b. the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

3. <input type="checkbox"/> Buffer Zone Impacts: Shortest distance between limit of project disturbance and Bank or Bordering Vegetated Wetland boundary (if available)				
				a. linear feet
Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		



WPA Form 5 – Order of Conditions

B. Findings (cont.)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
7. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding	4145	4145	17512	17512
Cubic Feet Flood Storage	a. square feet	b. square feet	c. square feet	d. square feet
	1710	1710	1838	1838
	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding				
Cubic Feet Flood Storage	a. square feet	b. square feet		
	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	500	500		
Sq ft within 100 ft	a. total sq. feet	b. total sq. feet	120	120
	120	120	e. square feet	f. square feet
Sq ft between 100-200 ft	c. square feet	d. square feet	0	0
	0	0	g. square feet	h. square feet
			i. square feet	j. square feet

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

10. Designated Port Areas Indicate size under Land Under the Ocean, below
11. Land Under the Ocean
- | | |
|----------------|----------------|
| a. square feet | b. square feet |
| c. c/y dredged | d. c/y dredged |
12. Barrier Beaches Indicate size under Coastal Beaches and/or Coastal Dunes below
13. Coastal Beaches
- | | | | |
|----------------|----------------|-------------------|-------------------|
| a. square feet | b. square feet | c. c/y nourishmt. | d. c/y nourishmt. |
|----------------|----------------|-------------------|-------------------|
14. Coastal Dunes
- | | | | |
|----------------|----------------|-------------------|-------------------|
| a. square feet | b. square feet | c. c/y nourishmt. | d. c/y nourishmt. |
|----------------|----------------|-------------------|-------------------|
15. Coastal Banks
- | | |
|----------------|----------------|
| a. linear feet | b. linear feet |
|----------------|----------------|
16. Rocky Intertidal Shores
- | | |
|----------------|----------------|
| a. square feet | b. square feet |
|----------------|----------------|
17. Salt Marshes
- | | | | |
|----------------|----------------|----------------|----------------|
| a. square feet | b. square feet | c. square feet | d. square feet |
|----------------|----------------|----------------|----------------|
18. Land Under Salt Ponds
- | | |
|----------------|----------------|
| a. square feet | b. square feet |
| c. c/y dredged | d. c/y dredged |
19. Land Containing Shellfish
- | | | | |
|----------------|----------------|----------------|----------------|
| a. square feet | b. square feet | c. square feet | d. square feet |
|----------------|----------------|----------------|----------------|
20. Fish Runs Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above
- | | |
|----------------|----------------|
| a. c/y dredged | b. c/y dredged |
|----------------|----------------|
21. Land Subject to Coastal Storm Flowage
- | | |
|----------------|----------------|
| a. square feet | b. square feet |
|----------------|----------------|



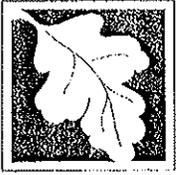
C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
7. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
8. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
9. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]

"File Number 123-225"



C. General Conditions Under Massachusetts Wetlands Protection Act

10. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
11. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
12. The work shall conform to the plans and special conditions referenced in this order.
13. Any change to the plans identified in Condition #12 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
14. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
15. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
16. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
17. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

18. **The work associated with this Order (the "Project") is (1) is not (2) subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.



C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
 - iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
 - v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

123-225

MassDEP File Number

Document Transaction Number

Cambridge

City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

See Attachment

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No
2. The _____ hereby finds (check one that applies):
 - a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw

2. Citation

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.



WPA Form 5 – Order of Conditions

D. Findings Under Municipal Wetlands Bylaw or Ordinance (cont.)

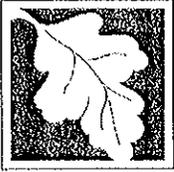
- b. that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

1. Municipal Ordinance or Bylaw

2. Citation

- 3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

123-225
MassDEP File Number

Document Transaction Number
Cambridge
City/Town

E. Signatures and Notary Acknowledgement

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

11/19/09
1. Date of Issuance
6
2. Number of Signers

Signatures:

Albe Simenas
Felix Martin
William Wood
Derek H. Altman

John A. [Signature]
JJA, Director

Notary Acknowledgement

Commonwealth of Massachusetts County of

Middlesex

On this 19th Day of

November 2009
Month Year

Before me, the undersigned Notary Public, personally appeared

Jennifer Kwight JJA
Name of Document Signer

proved to me through satisfactory evidence of identification, which was/were

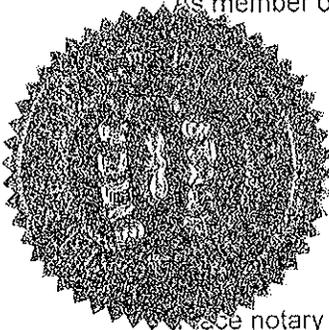
City ID
Description of evidence of identification

to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

As member of

Cambridge
City/Town

Conservation Commission



Elizabeth M. Padon
Signature of Notary Public
ELIZABETH M. PADON

Printed Name of Notary Public
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires November 5, 2015

Place notary seal and/or any stamp above.

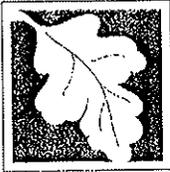
This Order is issued to the applicant as follows:

by hand delivery on

by certified mail, return receipt requested, on

Date

Date



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

123-225

MassDEP File Number

Document Transaction Number

Cambridge

City/Town

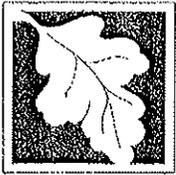
F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Section G, Recording Information, is available on the following page.



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

123-225
MassDEP File Number

Document Transaction Number
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G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Cambridge
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Cambridge
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Whittemore Ave/Columbus Ave/Mass Ave 123-225
Project Location MassDEP File Number

Has been recorded at the Registry of Deeds of:

County Book Page

for:

Property Owner

and has been noted in the chain of title of the affected property in:

Book Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

ATTACHMENT

Order of Conditions, DEP File No. 123-225

City of Cambridge – Department of Public Works

Longfellow Bridge

Documents and Plans:

Notice of Intent see submittals on file in the Conservation Commission Office dated November 5, 2009.

Special Conditions from the Cambridge Conservation Commission:

- 1 The applicant is hereby instructed to review such conditions with all contractors and workers involved in on site operations prior to the commencement of construction on this project. Any contractors and workers arriving after construction commences shall also be apprised of these conditions.
- 2 The applicant shall attach a copy of this Final Order of Conditions (“the Order”) to the contract documents associated with this project.
- 3 If at any time during the implementation of the project a significant water quality problem occurs in the vicinity of the project, all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures employed to the satisfaction of the Cambridge Conservation Commission (“the Commission”).
- 4 Where relevant, all facilities and equipment will be continually operated and maintained so as to comply with the conditions and the Massachusetts Wetlands Protection Act (“the Act”). The applicant, owner, successor or assigns shall be responsible for maintaining all on-site drainage structures and outfalls, assuring the lasting integrity of the surface cover on the site and site activities so as to prevent erosion, siltation, sedimentation, chemical contamination or other detrimental impact to the on-site and/or off-site resources areas. This condition shall be a maintenance condition, and shall not expire upon the issuance of a Certificate of Compliance.
- 5 A copy of the Order, including all referenced documents and plans, and all other subsequent approvals and directives issued by the Commission, shall be available for inspection at the work area.
- 6 The Commission reserves the right to impose additional conditions or require the submittal of additional information as necessary to protect the interests of the Act.

- 7 There shall be no discharge or spillage of fuel, oil, or any other pollutant from this project into adjacent wetlands resource areas or the 100-foot Buffer Zone ("buffer zone") associated with those resource areas. Any equipment used in the resource area or buffer zone that uses fuel, oil or hydraulic fluid shall be inspected daily for leakage. Any equipment that requires repair shall be repaired outside of the resource area and the buffer zone. Any equipment that uses fuel, oil and/or hydraulic fluid shall be staffed at all times while operational within the resource area or buffer zone.
- 8 The applicant and/or their contractor shall develop a spill management plan for any hazardous materials that may be employed during work in the buffer zone or over the water. Specifically, the applicant should prepare to effectively deal with spillage of fuel or hydraulic fluids from equipment. A quick-absorbent material, such as "Speedy Dry" or equivalent, will be stored in a dry readily available at the work site, and on any project related vessels, for use in the event petroleum-based fluids are spilled or leaked. The spent material is then to be containerized and disposed of properly. An emergency fuel boom or absorbent pads shall be readily available in case any such spill threatens the water resources.
- 9 In advance of construction start-up on any section of this project, the applicant shall notify the Commission and, at the request of the Commission, shall arrange an on-site conference of representatives of the Commission, the contractor, the project engineer and the applicant to ensure that all the conditions of this Order are understood. The Commission shall be notified at least 48 hours in advance of the date upon which construction activities on the site are to proceed. All appropriate construction impact mitigation measures must be in place prior to initiation of work on the project site.
- 10 The applicant shall provide to the Commission written notification of the name, title, address and telephone numbers of the person or persons designated by the project proponent to be in compliance with the Order on site. An emergency telephone number shall be provided in the event that action is required during non-working hours.
- 11 The project supervisor overseeing daily operations at the site shall read this Order and sign a copy of each page, indicating that each condition has been read and understood. These signed pages shall be submitted to Commission staff.
- 12 The applicant and/or their contractor shall clean the work area at the end of each workday to prevent wind deposition of fugitive dust and accumulation of debris in the buffer zone or in the water. All stored excavate or fill shall be covered when not in use. Special attention shall be given by the contractor to securing covers on stored excavate or fill over the weekend or during down time.
- 13 All project-related materials shall be contained from migration into wetland resource areas and all practical precautions shall be used during any water-based

construction work. The applicant and/or their contractor shall be responsible for the removal of any project-related debris on the land under the waters of the Alewife Brook. Should any item or material be lost, dropped, dumped, thrown overboard, sunk, misplaced, or left behind, regardless of whether it is within or outside of the project limits, the proponent must seek Commission approval of any remedial action requiring substantial impact to resources.

- 14 All land-side, unconsolidated, project-related materials shall be contained to prevent erosion into resource areas by implementing all practical precautions, including but not limited to placement of hay bales or mulch soaks (where appropriate) and a silt fence (only in conjunction with hay bales).
- 15 Disposal of all construction materials and demolition debris shall be done in accordance with applicable federal, state, and local laws. Proof of proper disposal shall be provided in the form of copies of bills of lading, disposal receipts or manifests to Commission staff upon request.
- 16 All project related materials shall be contained from migration into the resource area and all practical precautions shall be used during any waterside construction work, including, but not limited to, a floating boom with an attached silt curtain in specific work areas which shall contain the work area on where it meets or is in the water to minimize turbidity and other water quality impacts. The silt curtain shall be maintained in good operating condition, shall rest on the mudline at all times, and shall have adequate shore-line anchors, tie-downs or other mechanisms to ensure proper position and performance. Any visible plume of turbid water caused by project activity outside the area contained by the silt curtain shall constitute inadequate performance and require immediate adjustment and/or repositioning of the curtain. Deployment of the curtain shall occur in such a way that it will not interfere with water traffic. The boom may be removed when work directly requiring the use of a boom has been completed.
- 17 All practical precautions to limit impact to resources shall be undertaken, including but not limited to, a staffed boat operating daily that collects and removes debris within the immediate vicinity of the project and any materials which have escaped from the immediate vicinity but are the result of this project's activities. The contractor shall contain and collect all floating debris that results from the project and collect it along with solid waste including trash. The collected debris and solid trash shall be placed into containers and shall be periodically removed for proper disposal. The boat should also be used to check the boom.
- 18 On-site discharge of untreated, decanted water from construction dewatering to resource areas is prohibited. If on-site discharge becomes necessary, the applicant must submit a plan indicating dewatering methodology and staging location of dewatering equipment for Commission staff for review and approval. Any

approved dewatering must treat decanted water according to additional conditions deemed necessary by Commission staff.

- 19 If applicable, the Applicant shall submit the Water Quality Certificate relative to the U.S. Army Corps of Engineers Section 10/404 permit to the Conservation Commission for final approval. The terms of the Water Quality Certificate shall be made part of this Order of Conditions. In no case shall they exempt the proponent from any other condition of this Order. If a conflict arises between requirements of this Order and the requirements of the Water Quality Certificate the applicant shall request an amendment of this Order of Conditions to review the condition causing the conflict.
- 20 The Commission has jurisdiction and shall maintain jurisdiction over all construction period erosion and sedimentation control practices provided that discharges, including stormwater, authorized by an NPDES permit, if applicable, shall be subject to the terms of the NPDES permit which is incorporated herein by reference pursuant to 310 CMR 10.03 (4). The Applicant shall submit the NPDES permit, if applicable, which shall become part of this Order of Conditions. If a conflict arises between requirements of this Order and the requirements of the NPDES permit, the applicant shall submit a written review of the conflict to Commission staff, who will determine if a formal amendment of this Order of Conditions is warranted to resolve the conflict.
- 21 There shall be no overnight stockpiling or storage of construction material including unconsolidated material, piles, debris, petroleum products or hydraulic fluids within the buffer zone or 100-year flood plain. No equipment with petroleum products or hydraulic fluids shall be stored overnight within the buffer zone. At the request of the applicant, Commission staff may authorize construction lay-down areas within the buffer zone for storage of equipment *during the construction period only*.
- 22 The Commission requires that a log be kept by the applicant's site supervisor with a minimum of one entry per day for each day of site operation, noting the time, date, weather conditions, and evaluations of the various measures employed to reduce turbidity and other impacts to the water or wetlands resources. Performance of maintenance activities on all drainage, erosion control and sedimentation structures shall be noted in the log.
- 23 All disturbed land-side areas shall be stabilized as soon as possible upon completion of work.
- 24 All equipment and unconsolidated materials must be removed from the 100-year floodplain in advance of significant rainfall that will exceed the volume of a 2-year storm event.

- 25 Landside work zones and staging areas shall not inhibit public passage to the maximum extent practicable.
- 26 There shall be no parking of contractor or laborer vehicles in any resource area or associated buffer zone.
- 27 All project related correspondence and submittals to the Cambridge Conservation Commission regarding this Final Order shall indicate the DEP File number: 123-225.
- 28 All infrastructure used for dewatering will be cleaned out and the material will be properly disposed.
- 29 The Commission has approved this project with the expectation that to the maximum extent possible the new stormwater infrastructure shall include deep sump catchbasins with hoods, infiltrating catchbasins, etc. The Commission requires a status report of the project including best management practices every 6 months.