8976 Wellington Road
Manassas, VA 20109

June 29, 2012

George Heitzman, P.E.
Division of Environmental Remediation
New York State Dept. of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7014

Re: TechCity Site (Former IBM Kingston)
Site Number: 356002
Supplemental Site Characterization Report: Former Fluoride Ejector Tank (SWMU Y)

Dear Mr. Heitzman:

The purpose of this letter is to transmit the referenced Site Characterization Report pursuant to Exhibit C of the Order on Consent, Index # D3-10023-6-11, Paragraph III.D.1.

After reviewing the information provided in this transmittal, should you have any questions please call Dean Chartrand at (703) 257-2583.

Sincerely yours,

M. E. Meyers

Mitchell E. Meyers
Manager, Environmental Remediation
Corporate Environmental Affairs

cc: w/ enclosure (1 hardcopy and 1 electronic copy)

Benjamin Conlon, Esq.	NYSDEC - Office of General Counsel (1 hardcopy and 1 electronic copy)
Kristin Kulow	NYSDOH - Oneonta (1 hardcopy and 1 electronic copy)
Wayne Mizerak	NYSDEC - Albany (1 hardcopy and 1 electronic copy)
Charlotte Bethoney	NYSDOH - Troy (electronic copy only)
Daniel Wieneke	TechCity Properties, Inc. (1 hardcopy and 1 electronic copy)
Mitchell Khosrova, Esq.	TechCity Properties, Inc. (electronic copy only)
Michael Teetsel	Environmental Resources Management (electronic copy only)

Former IBM Kingston Facility (TechCity)
Site Number: 356002
Order on Consent Index: D3-10023-6-11
Supplemental Site Characterization Report:
Former Fluoride Wastewater Ejector Tank (SWMU Y)

Prepared for:

IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

June 29, 2012

Prepared by:

Groundwater Sciences Corporation

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TechCity Site (Former IBM Kingston Facility
Site Number: 356002
Supplemental Site Characterization:
SWMU Y - Former Fluoride Wastewater Ejector Tank

INTRODUCTION

The TechCity Site (Former IBM Kingston Facility) (the Site), is located north of the City of Kingston in the Town of Ulster, Ulster County, New York and is bounded by John M. Clarke Drive and Route 9W to the east, Old Neighborhood Road and Route 209 to the north, Esopus Creek to the west, and Boices Lane to the south (see Figure 1).

The Site has historically been listed as a Class 4 Site (Site # 356002) in the Registry of Inactive Hazardous Waste Disposal Sites in New York State and was managed in compliance with the October 4, 1996 Hazardous Waste Management Permit #3-5154-00067/00090 (6 NYCRR Part 373) (RCRA Permit) until the Order on Consent (Order), Index # D3-10023-6-11,betweenIBM Corporation (IBM) and TechCity Properties, Inc (TechCity), and New York State Department of Environmental Conservation (NYSDEC was signed on July 8, 2011. The Order divides the Site into ten Operable Units (OUs). The locations of the OUs are depicted in Figure 2.

Prior to the execution of the Order, IBM completed extensive RCRA Facility Assessments (RFAs) and RCRA Facility Investigations (RFIs) of Solid Waste Management Units (SWMUs) beginning in the early 1990s to delineate the occurrence and extent of contaminants in groundwater and soils beneath the Site.

The purpose of this report is to provide information relating to SWMU Y, the Former Fluoride Wastewater Ejector Tank, in response to NYSDEC's request for further evaluation of SWMU Y as described in Exhibit C of the Order for OU3. This Supplemental Site Characterization report summarizes the previous RFI results, information gathered during recent drawing and records review, and field observations made during a site visit with the NYSDEC on October 5, 2011.

BACKGROUND AND REGULATORY HISTORY

IBM first identified this SWMU on April 24, 1995 during a review of the underground storage tanks at the Site. The identification of this SWMU was also briefly discussed in a meeting held with NYSDEC on May 2, 1995. Formal notice was provided in a letter report to the NYSDEC on May 9, 1995[1]. The unit was designated as SWMU Y, Former Fluoride Wastewater Ejector Tank, under the former RCRA Permit.

The Former Fluoride Wastewater Ejector Tank was an underground wastewater holding tank located in an unpaved area between Building 042 (B042) and Building 005S (B005S) which received industrial wastewater from B042 via gravity flow. Wastewater accumulated in the tank and was periodically pumped into the industrial waste sewer system in B005S using an in-tank pump and automatic controls. The tank discharge line transitioned from a buried line to an above ground line immediately inside the B005S east wall. The line ultimately tied into the industrial wastewater line

[1] Letter from Ms. Bonnie MacBrien (IBM) to Mr. Steve Kaminski (NYSDEC) *Recently Identified Solid Waste Management Unit*, May 9, 1995.

but the exact location of the connection is unknown. Note that B005S was demolished in 2010 and only the building floor slab and a few steel columns remain.

The tank was constructed of fiberglass with an approximate diameter of 10 feet and an approximate length of 12 feet. It was attached to a concrete slab with straps and the top of this tank was located a few feet below the ground surface. This was a direct burial UST.

This tank was installed around 1979 and was used to support the integrated chip facility located in B042. This integrated chip facility process was removed from B042 around 1981. The tank was presumably inactive after that period. In July 1994, this tank was closed in place by filling the tank with gravel.

As shown on Figure 3, the center line of this north-south oriented tank was located approximately 45 feet to the east of the former B005S with the northern end even with Building Column AM-13B and approximately 100 feet southeast of the northeast corner of former B005S.

PREVIOUS INVESTIGATIONS

In IBM's May 9, 1995 notification letter to NYSDEC, IBM proposed to conduct a RCRA RFA of the unit with regard to groundwater quality downgradient of the Former Fluoride Wastewater Ejector Tank. This investigation was conducted under the site's RCRA Permit. The results of these assessments were reported to the NYSDEC in the report entitled *RCRA Facility Assessments, Newly Identified Solid Waste Management Units*[2], dated March 14, 1997.

One boring, MW-320S, completed as a fully penetrating monitoring well, was drilled to assess this location. Drilling of this well began and construction of the monitoring well was completed on July 18, 1996. A copy of the boring log and construction details is attached. The location of this well was selected in a downgradient position.

As shown on Figure 4, an excerpt of the Shallow Sand Aquifer, Groundwater Elevation Contour Map from October 4, 1996 concurrent with the original investigation of this unit, groundwater beneath this unit flows in a northwesterly direction.

As noted in the attached boring log nearly ten feet of fill was encountered, indicating the well was drilled adjacent to the backfilled location of the closed-in-place tank. Below ten feet, the shallow sand unit was present with a few thin silt and clay layers. MW-320S has a total depth of 13 feet, which coincides with the top of the varved silt and clay unit. The screened interval at MW-320S is 3 feet to 13 feet below ground surface.

On October 4, 1996 the depth to water in well MW-320S was approximately 5.5 feet below ground surface resulting in a groundwater surface elevation of 173.76 feet amsl and a saturated thickness of the shallow sand unit of 7.8 feet in the area of the Former Fluoride Wastewater Ejector Tank.

[2] Groundwater Sciences Corporation, *IBM Kingston, RCRA Facility Assessments, Newly Identified Solid Waste Management Units*, March 14, 1997.

In accordance with the approved Scope of Work for this unit, no soil samples were collected at this location for laboratory analysis. Soil screening of split-spoon samples and jar headspace measurements did not indicate elevated responses at any depth interval in this boring. Following development, three rounds of groundwater samples, plus one replicate sample were collected for fluoride analysis. The initial sample was also analyzed for Method 8010 volatile organic compounds (VOC), Freon®113 and Freon®123a to support the concurrent RCRA RFI on groundwater plumes and sources[3].

Fluoride was not detected in any of the samples at concentrations above the detection limit of 0.2 mg/L. Table 1 is a summary of sampling results from the monitoring well, MW-320S collected under the RFI and RFA.

Table 1. Summary of RFA and RFI Sampling Results
SWMU Y, Former Fluoride Wastewater Ejector Tank (Monitoring Well MW-320S)

	Date Sampled	Lab Number	8010 VOCs	Fluoride
MW-320S	07/23/1996	163423-03	All ND@1 ug/L	ND@0.2 mg/L
	08/08/1996	164123-06	Not Sampled	ND@0.2 mg/L
	08/27/1996	164770-19	Not Sampled	ND@0.2 mg/L
	08/27/1996, replicate	164770-20	Not Sampled	ND@0.2 mg/L

In the RFA report, IBM recommended that no further assessment or investigation be conducted.

DRAWING AND RECORD REVIEW

As part of the supplemental site characterization, available facility drawings and records were reviewed again to confirm previous information regarding the tank and determine if other information may be available. As a result of the document review, a facilities drawing, dated 1979[4], showed the location, dimensions, and construction material of the tank and associated pump and piping. Pertinent information from the drawing has been incorporated in Figure 3. As noted on Figure 3, wastewaters were conveyed from Building 042 by gravity via a 6-inch Ricwil PVC line into the tank. Wastewater was pumped from the tank into the industrial waste system via a 3-inch Ricwil PVC line. The tank vent pipe was a 4-inch galvanized pipe that extended to 6 feet above the B005S roof line.

RECENT FIELD OBSERVATIONS AND SUPPLEMENTAL CHARACTERIZATION SAMPLING RESULTS

The area of the tank was inspected during a field visit with NYSDEC on October 5, 2011. During that field visit, two pipes, protruding from the ground, were observed near column AM-13B of the former B005S. One pipe was a 3-inch PVC pipe encased in a protective metal sleeve that daylighted immediately inside the former B005S east wall. The second pipe was a 4-inch galvanized pipe that daylighted just outside the former B005S east wall. The locations and photograph of these pipes are shown on Figure 3. These two pipe types and placement are consistent with historical site drawings of the installation of this tank.

[3] Groundwater Sciences Corporation, *IBM Kingston, RCRA Facility Investigation Report on Groundwater Plumes and Sources*, March 14, 1997.
[4] International Business Machines Corp., Kingston, N.Y. Plant Engineering, Drawing Number 042-01-M8 Revision A (Issue), dated May 8, 1979.

On May 3, 2012, one round of groundwater samples, plus one replicate sample was collected for fluoride analysis at the MW-260S, which as shown on Figure 4 lies downgradient from this unit. The boring log and construction details for MW-260S is attached.

Fluoride was not detected in either of the samples concentrations above the detection limit of 0.2 mg/L. Table 2 is a summary of these recent sampling results from the monitoring well, MW-260S collected as part of this Supplemental Site Characterization of SWMU Y.

Table 2. Summary of Supplemental Site Characterization Sampling Results
SWMU Y, Former Fluoride Wastewater Ejector Tank (Monitoring Well MW-260S)

	Date Sampled	Lab Number	Fluoride
MW-260S	05/03/2012	420-54588-01	ND@0.2 mg/L
	05/3/2012, replicate	420-54588-02	ND@0.2 mg/L

SUMMARY

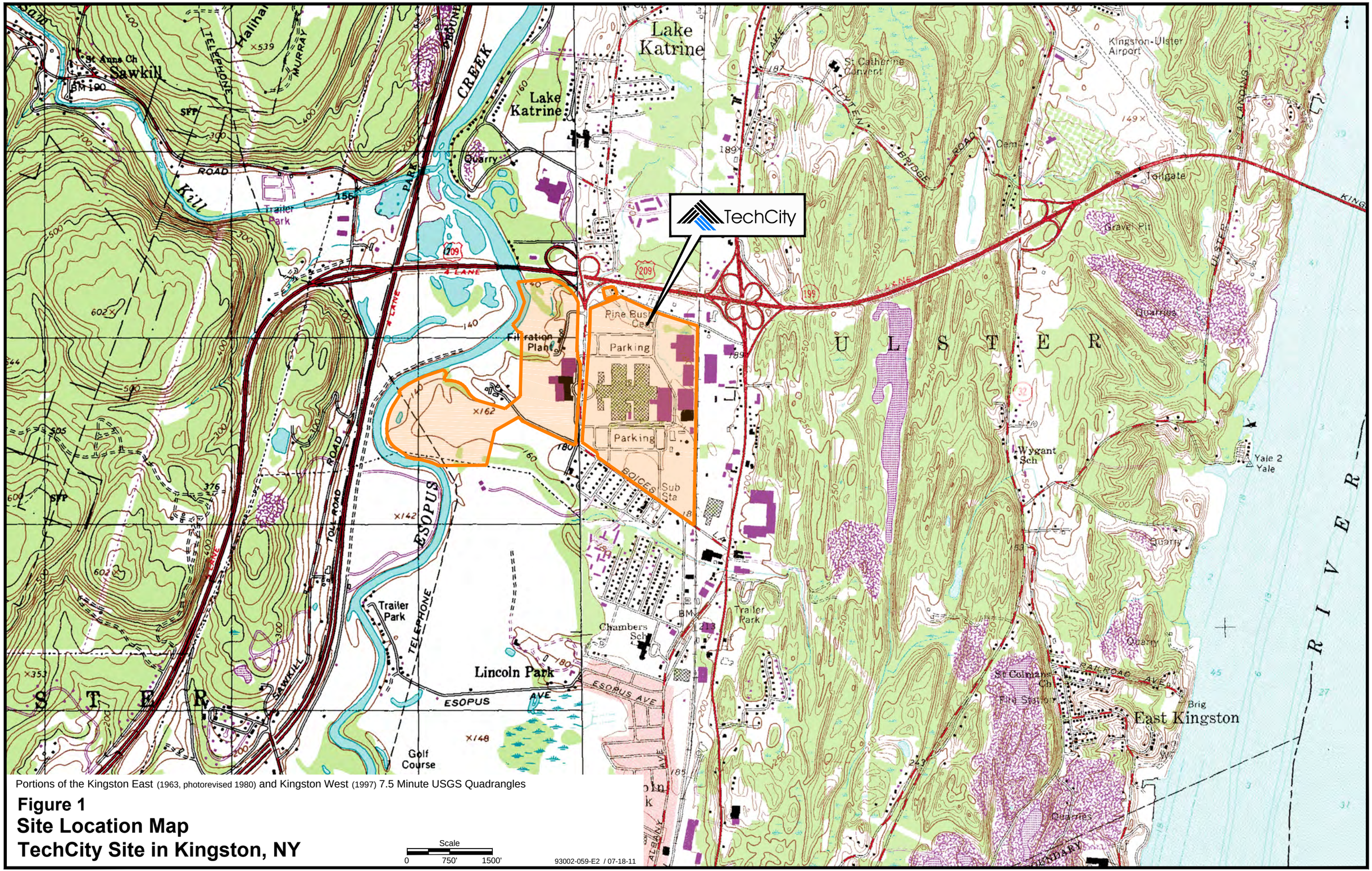
The Former Fluoride Wastewater Ejector Tank was in operation for a period of approximately 2 years, from the time of installation (1979) until the facility process that it supported was removed from B042 (1981).

The materials of construction were compatible with the wastewater that was conveyed to and from the tank. Based on available facility records, there were no releases from the tank and conveyance system. Visual inspection of the area of the tank during a recent field visit revealed two pipe types and placement consistent with historical site drawings of the installation of this tank.

As noted in the RFA report and as reported above, groundwater samples from MW-320S, which lies immediately downgradient of this unit did not indicate the presence of VOCs or fluoride in groundwater. In addition, recent sampling of the another downgradient monitoring well MW-260S also did not indicate the presence of fluoride in groundwater.

Based on these observations and supporting analytical data, no further action is recommended for this unit.

Figures



Portions of the Kingston East (1963, photorevised 1980) and Kingston West (1997) 7.5 Minute USGS Quadrangles

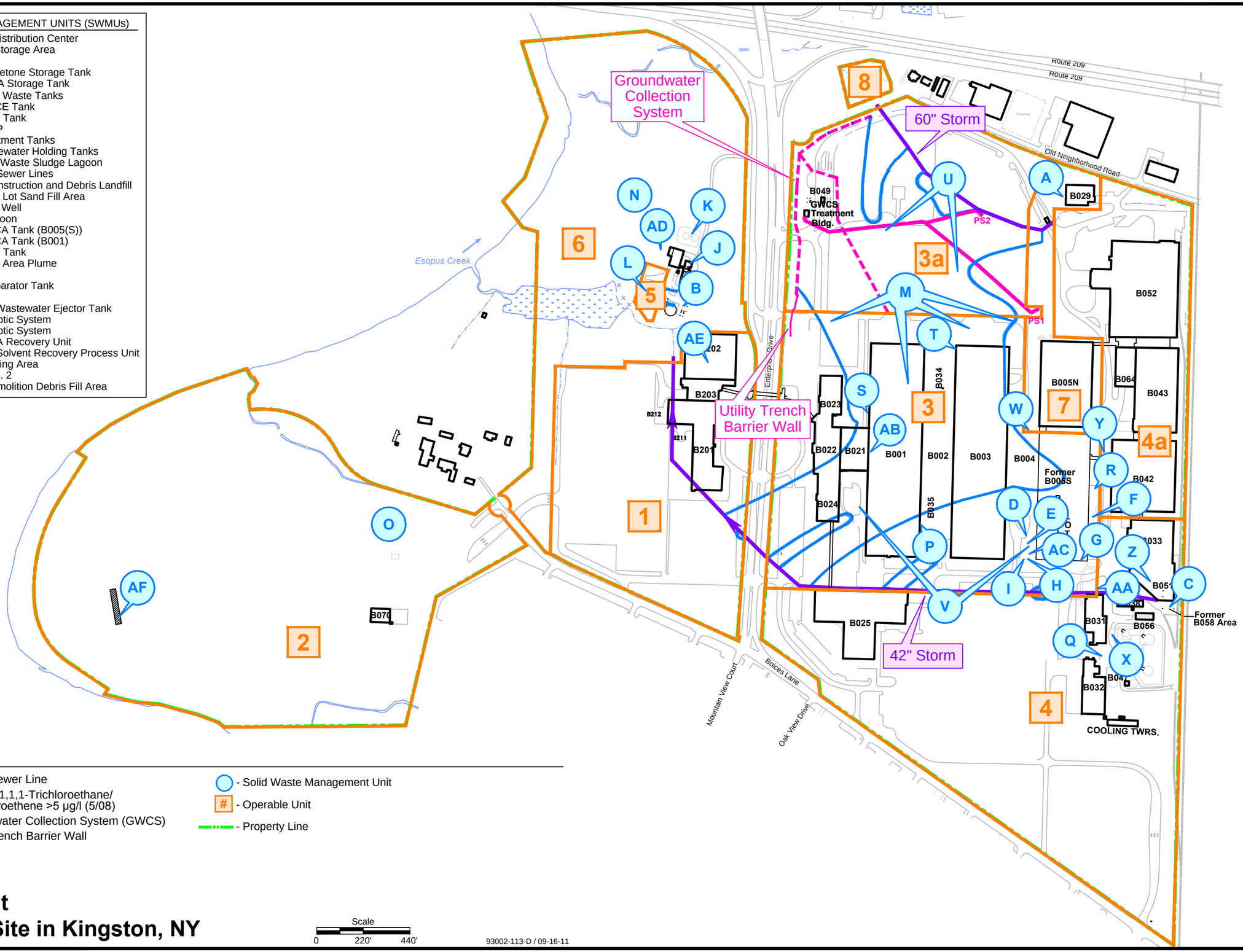
Figure 1
Site Location Map
TechCity Site in Kingston, NY

Scale
0 750' 1500'

93002-059-E2 / 07-18-11

SOLID WASTE MANAGEMENT UNITS (SWMUs)

A: B029 Chemical Distribution Center
B: B036 Container Storage Area
C: Former B058
D: Former Waste Acetone Storage Tank
E: Former Waste IPA Storage Tank
F: Former East Side Waste Tanks
G: Former Waste PCE Tank
H: Former East SRP Tank
I: Former West SRP
J: Wastewater Treatment Tanks
K: Emergency Wastewater Holding Tanks
L: Former Industrial Waste Sludge Lagoon
M: Industrial Waste Sewer Lines
N: Inactive B036 Construction and Debris Landfill
O: Salt Barn Parking Lot Sand Fill Area
P: Former B035 Dry Well
Q: Former B031 Lagoon
R: Former Waste TCA Tank (B005(S))
S: Former Waste TCA Tank (B001)
T: Former Waste Oil Tank
U: North Parking Lot Area Plume
V: B005 Plume
W: Former B004 Separator Tank
X: B031 Separator
Y: Former Fluoride Wastewater Ejector Tank
Z: Inactive B033 Septic System
AA: Inactive B031 Septic System
AB: Former B001 TCA Recovery Unit
AC: Former B005(S) Solvent Recovery Process Unit
AD: Former Fire Training Area
AE: B202 Elevator No. 2
AF: Inactive West Demolition Debris Fill Area



LEGEND

- Storm Sewer Line
- Area of 1,1,1-Trichloroethane/ Tricholoroethene >5 µg/l (5/08)
- Groundwater Collection System (GWCS)
- Utility Trench Barrier Wall
- Solid Waste Management Unit
- # - Operable Unit
- Property Line

Figure 2
Site Layout
TechCity Site in Kingston, NY

Scale
0 220' 440'

93002-113-D / 09-16-11

B005N

B043

B042

Former B005S

Former B005S

172.65

12" IN 18" PE

CS146
172.81

18" storm

(abandoned)

172.84

4" PVC Force Line (sanitary)

174.60

172.58

10"

CS201

4" Vent galvanized

3" PVC Ricwil Fluoride

Bldg. Column
AM-13B

CS101

Former General Solvent Supply Tank (never used)

6" Ricwil galvanized solvent line

IW PIPE PIT

Sump Pump in steam pit

6" CLAY TILE

18"

MW-320S▲

4" Vent galvanized
Extent 6" above roof line

1" City Water Supply to Pump
Tie into existing 4" CW main

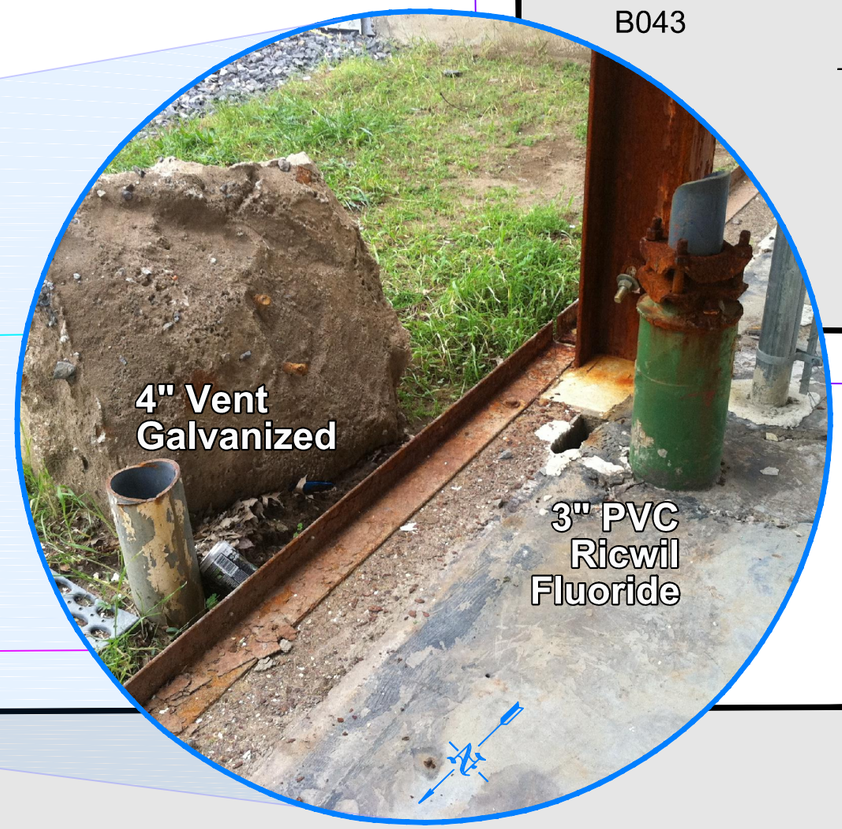
3" PVC Ricwil Fluoride

6" PVC Ricwil Fluoride Line
to Ejector Tank

Former Fluoride Wastewater Ejector Tank

CS116

CS116A



LEGEND

- ▲ - Shallow Monitoring Well
- Industrial Waste
- Industrial Waste (inside buildings)
- Sanitary Sewer
- Sanitary Sewer (inside buildings)
- Storm Sewer
- Storm Sewer (inside buildings)

Sources:
-IBM Kingston, NY Plant Engineering Drawing: Industrial Piping, Fluoride Ejector & Solvent Tank IBM Kingston, NY (dwg. no. 042-01-M8, 5/8/79).
-Various historical Dames & Moore and Brinnier & Larios drawings.

Scale
0 10' 20'

Figure 3

TechCity Site

SWMU Y, Fluoride Wastewater Ejector Tank

DRAWN BY: MHM	DATE: 4/27/12	DRAWING NO. 93002-034-H1
CHECKED & APPROVED BY: DAB		

GROUNDWATER SCIENCES CORPORATION

MW-110AS
169.32

MW-111S
169.39

MW-271S
169.76

169.93
MW-288S

169.85
MW-270S

MW-269S
169.90

169.61
MW-112S

170.35
MW-283S

173.94
MW-123AS

MW-285S
170.00

MW-268S
170.09

B034

B005N

B064

B043

MW-266S
170.59

170.5

171

172

173

174

175

176

177

178

MW-506S
170.57

171.36
MW-313S

MW-267S
170.84

171.29
MW-505S

172.20
MW-260S

173.76
MW-320S

170.96
MW-272S

171.21
MW-265S

Former Fluoride Wastewater
Ejector Tank and
Associated Piping

B001

B002

B003

B004

172.93
MW-261S

172.34
MW-116S

MW-117S
173.77

MW-255S

B042

179

B035

MW-273S
170.95

170.86
MW-232M
MW-232S
170.86

MW-274S
170.99

172.55
MW-503S

171.70
MW-115S

LEGEND

- ▲ – Soil Groundwater Monitoring Well
- ▲ – Newly Installed Soil Groundwater Monitoring Well
- – Property Line
- 172.55 – Groundwater Elevation (10/4/96)
- – Groundwater Flow Direction
- – Groundwater Divide
- 170 – Groundwater Elevation Contour
- – Supplemental Contour
- – Storm Sewer Line
- – Inactive Industrial Waste Sewer Line

Scale
0 50' 100'

N

Figure 4

TechCity Site

Shallow Sand Aquifer
Groundwater Elevation Contour Map
October 4, 1996

DRAWN BY: MHM	DATE: 3/5/97	DRAWING NO. 93002-007-T2
CHECKED & APPROVED BY: SMF/LFR		

GROUNDWATER SCIENCES CORPORATION

Attachment A

Monitoring Well Log and Construction Details:

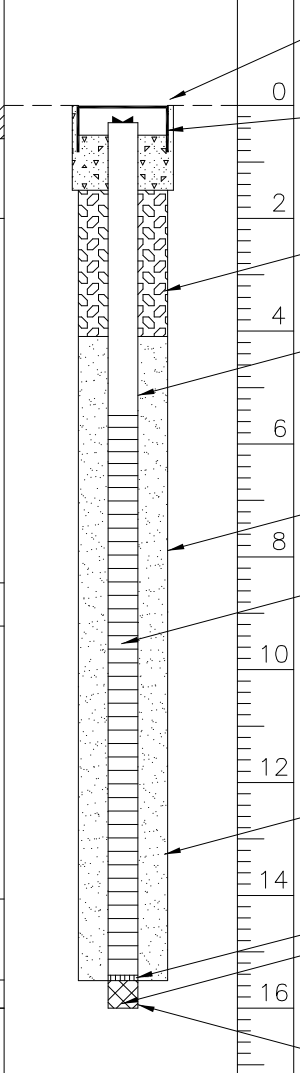
MW-260S
MW-320S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 96011.01

Boring No. MW-260S
Location Inside B005, ~40'S N side/~45'E W side

TOC Elev. 178.85'
GS Elev. 179.20'

Depth Feet	Blow Counts	FID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	HAND AUGERED				Cement to 0.7'. GRAVEL/COBBLES: in sand matrix to 2.1'. SAND: brown at top to brownish gray at base, m w/some c and cobbles, dry at top, moist near base.	FILL
4						
6						SP
8	3-3-5-4	0 / 0.1	1	14"	SAND: grayish brown, mostly m w/some fines, iron-stained zone at 4", loose, saturated.	
10	5-5-5-8	0 / 0.1	2	20"	SAND: top 6", grayish brown, m at top to f at base, finely laminated, saturated. SILTY CLAY: 6-13", brownish gray, m stiff, laminated. SAND: 13-20", iron-stained at top, grayish brown at base, m, loose, saturated, tr organics.	ML/CL
12	3-3-3-3	0 / 0.2	3	8"	SAND: grayish brown, m, loose, occ clay clast, saturated.	SP
14	3-3-4-5	0 / 0.1	4	14"	SAND: as above w/faint oxidized zone at 2".	
16	WOH-3-3-7	0 / 0	5	13"	SAND: grayish brown, m, loose, silt lens (1/4" thick) at 6", iron-stained zone above and below silty lens, saturated.	SP/SM
					SILTY CLAY: grayish brown, lam, m stiff, saturated.	ML/CL
18					Total Depth: 16.0'.	
20						



Driller: Northstar Drilling, Inc.
Logged by: D. Muriceak, GSC
Drilling Started: 8-13-96
Drilling Completed: 8-13-96
Well Construction: 8-13-96
Well Developed: 8-20-96
Well Coords.: N717974.382
E592062.747

Notes:

*Top no. is volatile scan of split spoon; bottom no. is jar headspace scan measurement.

WOH = Weight of Hammer

Length of well material: 15.24'.

SWL 7.1' (8/13/96; from TOC).

GROUNDWATER SCIENCES CORPORATION

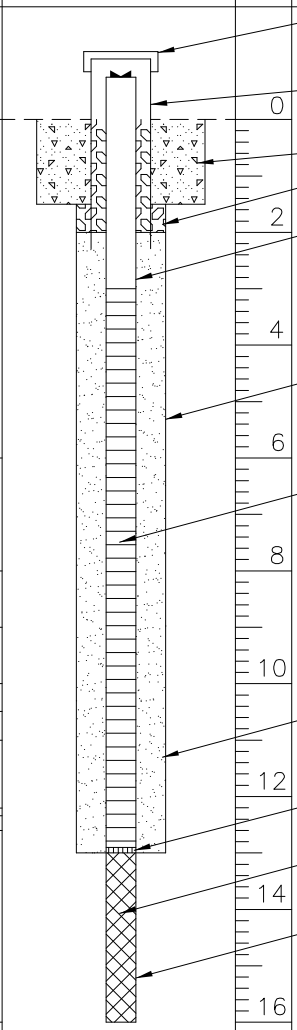
Well Log: MW-260S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 96011.01

Boring No. MW-320S
Location ~68'W of SW corner of B005N

TOC Elev. 181.62'
GS Elev. 179.16'

Depth Feet	Blow Counts	FID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	HAND AUGERED				SAND: dark brown, m-c, SR-SA w/some A gravel and cobbles.	FILL
4						
6						
8	WOH/.5'-1/1.5'	0/0	1	5"	SAND: brown, m-c, SR-SA, loosely packed, saturated.	SP
10	WOH/1'-1/1'	0/0	2	22"	SAND: top 12", brown, m-c, SR-SA, some vc, some organics, occ rip-up clasts, asphalt cobble at base. SILTY CLAY: 12-22", mostly gray throughout w/iron-stained (orange brown) zone at top, laminated, stiff, saturated.	SW ML/CL
12	2-2-4-3	0/0	3	18"	SAND: top 5", brownish gray to gray, m-c w/ some vc and thin silty clay lams (~1/4" to 1/2" thick) top 5". SILTY CLAY: 5-12", iron-stained (orange brown) layer at top to gray silt at base, stiff. SAND: 12-18", brown, f-m, loose, saturated.	SP/SM ML/CL SP
14	3-5-5-5	0/0	4	13"	SAND: as above, top 1". SILTY CLAY: 1-2", brown gray, soft, saturated. SAND: 2-5", brown, f-m, loose, saturated. SILTY CLAY: 5-13", grayish brown, lam, med stiff, saturated.	ML/CL SP ML/CL
16	5-4-4-4	0/0.8	5	14"	SILTY CLAY: grayish brown, pink laminations, stiff, saturated.	ML/CL
18					Total Depth: 16.0'	
20						



Well Construction Details

Driller: Northstar Drilling, Inc.
Logged by: D. Muriceak, GSC
Drilling Started: 7-18-96
Drilling Completed: 7-18-96
Well Construction: 7-18-96
Well Developed: 7-23-96
Well Coords.: N717935.078
E592293.710

Notes:

*Top no. is volatile scan of split spoon; bottom no. is jar headspace scan measurement.

WOH = Weight of Hammer

Length of well material: 15.4'.

SWL 7.55' (7/23/96; from TOC).

GROUNDWATER SCIENCES CORPORATION

Well Log: MW-320S