8976 Wellington Road
Manassas, VA 20109

September 26, 2011

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 Work Plan: Surficial Soils, dated Sep 26, 2011

Dear Mr. Heitzman:

The purpose of this letter is to transmit the referenced Site Characterization Work Plan pursuant to Exhibit C of the Order on Consent, Index # D3-10023-6-11, Paragraphs III.A.1. and III.B.1. Revisions to the work plan were made in response to NYSDEC's comments and IBM is requesting approval of the work plan.

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)

Wayne Mizerak NYSDEC - Albany (1 hardcopy and 1 electronic copy)

Former IBM Kingston Facility (TechCity)
Site Number: 356002
Order on Consent Index: D3-10023-6-11
Supplemental Site Characterization Work Plan: Surficial Soils

Prepared for:

IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

September 26, 2011

Prepared by:

Groundwater Sciences Corporation

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1.0 INTRODUCTION

Groundwater Sciences Corporation (GSC) has prepared this Supplemental Site Characterization Work Plan (SC Work Plan) on behalf of International Business Machines Corporation (IBM) for the characterization of surficial soils at six Operable Units (OUs) at the former IBM Kingston Facility located at 300 Enterprise Drive, Kingston, Ulster County, New York (see Figure 1).

This SC Work Plan describes the objectives and methods proposed to further assess surficial soil conditions. The approach includes the collection and analysis of surficial soil samples and comparing these results with the current or anticipated zoned-use standards as detailed in Exhibit C of the Order on Consent (Order), Index # D3-10023-6-11, for Site 356002.

1.1 Site Background

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 2). The approximately 258-acre property was first developed by IBM from farmland during the 1950s. The primary activities included the manufacturing of electric typewriters and the development, manufacture and testing of computer systems and related components and technologies. IBM ceased operations during the early-1990s and the property was subsequently subdivided into multiple parcels. In 1998, IBM sold the site to AG Properties of Kingston, LLC and Ulster Business Complex, LLC. The site is currently managed by TechCity Properties, Inc. (TechCity).

The portion of the site located east of Enterprise Drive is referred to as the East Campus and includes the majority of the buildings at the site, many of which are vacant. The portion located west of Enterprise Drive is referred to as the West Campus and includes Buildings 201 (B201), Building 202 (B202) and Building 203 (B203) (currently referred to as the Bank of America facility); a large parking area south and west of the Bank of America facility; and generally undeveloped land further to the southwest and north of the Bank of America facility. The Former Industrial Waste Sludge Lagoon (Former IWSL), a closed surface impoundment, also on the West Campus, is located to the west of Building 036 (B036).

The site is 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) was signed with New York State Department of Environmental Conservation (NYSDEC) by IBM and TechCity on July 8, 2011.

The Order, which supersedes and replaces the former RCRA Permit, divides the site into ten Operable Units (OUs). The locations of the OUs are depicted in Figure 2. Table 1-1 presents a list of the OUs, including the proposed OU use and which OUs will remain listed as a Class 4 Inactive Hazardous Waste Disposal Site. Reference is made to Exhibit C of the Order for additional information.

Prior to the execution of the Order, IBM completed extensive RCRA Facility Investigations (RFIs) beginning in the 1990s through 2002 to delineate the occurrence and extent of volatile organic compounds (VOCs) in groundwater beneath the site. Corrective Measures implemented by IBM include the operation and maintenance of a perimeter control system that intercepts the groundwater plume. The perimeter control system consists of two stormwater sewer systems, an unsaturated portion of the surficial sand unit that underlies the site, a utility trench barrier wall and a groundwater collection system (see Figure 2). IBM currently performs groundwater quality monitoring to evaluate the effectiveness of the Corrective Measures. Semi-annual and annual monitoring reports are submitted to NYSDEC.

Table 1-1 Listing of Operable Units, Proposed Use and Status		
Operable Unit	**Proposed Use**	**Status**
OU1	Commercial	
OU 2	Commercial	
OU 3	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU 3a	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU 4	Restricted Residential	
OU4a	Commercial	
OU5	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU6	Commercial	
OU7	Commercial	
OU8	Commercial	

1.2 Purpose

With the approval of the Order and based on current environmental conditions and available data, additional activities are required to characterize the surficial soils at the site. This Supplemental Site Characterization Work Plan (SC Work Plan) is designed to verify that applicable zoned-use standards are met in areas not currently covered by buildings or pavement (impervious materials). This SC Work Plan has been prepared in accordance with the Order requirement that all site activities that comprise any element of a Class 4 Inactive Hazardous Waste Site Remedial Program be conducted pursuant to a NYSDEC-approved work plan. As such, IBM will undertake this supplemental site characterization of surficial soils to verify that applicable zoned-use standards are met in areas not covered by buildings or pavement (impervious materials). No subsurface soil samples are anticipated under the SC Work Plan.

This Supplemental Site Characterization Work Plan outlines a proposed scope of work to meet the following objectives as detailed in Exhibit C of the Order:

- **Operable Unit 2**: Characterize the top foot of soil at 8 locations for VOCs to verify that commercial use standards are met in areas not covered by buildings or pavement.
- **Operable Unit 3**: Characterize the top foot of soil at 4 locations for VOCs to verify that commercial use standards are met in areas not covered by buildings or pavement.
- **Operable Unit 3a**: Characterize the top foot of soil at 5 locations for VOCs to verify that commercial use standards are met in areas not covered by buildings or pavement.
- **Operable Unit 4**: Characterize the top two feet of soil at 9 locations for VOCs to verify that restricted residential standards are met in areas not covered by buildings or pavement.
- **Operable Unit 6**: Characterize the top foot of soil at 5 locations for VOCs to verify that commercial use standards are met in areas not covered by buildings or pavement.
- **Operable Unit 7:** Characterize the top foot of soil at 3 locations for VOCs to verify that commercial use standards are met in areas not covered by buildings or pavement.

Section 2.0 of this SC Work Plan provides a description of the site geology and hydrogeology and a summary of the nature and extent of site-wide groundwater impacts, in addition to known surficial soil conditions including those in the immediate vicinity SWMUs associated with the Operable Units listed above. Section 3.0 outlines the proposed supplemental characterization activities, including field investigation and sampling techniques and procedures. Section 4.0 describes the proposed schedule and reporting activities.

As previously developed pursuant to the RCRA Permit and continued by the Order, the following Management Plans have been prepared (Golder, 2009):

- **Project Management Plan** – includes a description of the project management approach, the Project Team Organization Chart, and the proposed project schedule.
- **Data Management Plan** – includes a description of the processes by which the investigation data will be documented, tracked, and presented.

- **Quality Assurance Project Plan (QAPP)** – includes a description of the data quality objectives; sampling and field measurement standard operating procedures (SOPs); and sample analysis procedures.
- **Health and Safety Plan (HASP)** – includes the procedures that will be followed for the protection of the field investigative team members implementing the SC Work Plan, and the general public that may be exposed to potential site hazards.
- **Citizen Participation Plan** – includes a description of how the information collected during the performance of the SC Work Plan will be disseminated to involved stakeholders.

These Management Plans were previously provided as separate documents, which accompanied the 2009 RCRA Facility Investigation Work Plans. In accordance with the Order, Paragraph III B.1. (a), applicable portions of these Management Plans are referenced in this SC Work Plan.

2.0 CURRENT CONDITIONS

This section presents the current Conceptual Site Model (CSM) for the entire site. The following description of geology and hydrogeology was originally based on information collected by GSC, on behalf of IBM, and has been refined by data collected at the site by Golder since 2009. The nature and extent of the VOC groundwater plume is based upon the findings of work completed by GSC, on behalf of IBM. The primary documents used to develop this CSM include:

- RCRA Facility Assessments, Four Recently Identified Solid Waste Management Units, January 16, 1995.
- RCRA Facility Assessments, Newly Identified Solid Waste Management Units, March 14, 1997.
- RCRA Facility Investigation, Groundwater Plumes and Sources, March 14, 1997.
- Triangle Plume Area Investigation Report, September, 2009.
- 2010 Annual Groundwater Monitoring Report, March 30, 2011.
- SWMU G Investigation Report, March, 2011.

A complete listing of documents reviewed in the preparation of this SC Work Plan is provided in Section 5.0.

2.1 Generalized Geology

The site is located within the Hudson-Mohawk Lowland Physiographic Province. The bedrock underlying the western portion of the site consists of siltstone and shale of the Middle Devonian Age Lower Hamilton Group. The eastern portion of the site is underlain by both the Lower Hamilton Group and the Lower Devonian Age Onondaga Limestone. The exact location and nature of the contact between these units is not known. The Lower Hamilton Group forms a north-northwest trending bedrock high approximately coincident with Enterprise Drive, and is described as a calcareous shale in boring logs completed during previous site investigations.

Literature on regional geologic conditions indicate that a glacially-derived sand and gravel unit directly overlies the bedrock west of Enterprise Drive and a glacial till unit overlies the bedrock east of Enterprise Drive. These unconsolidated units are overlain by a varved silt and clay unit that is interpreted to be of lacustrine origin, with a thickness of zero feet in an area where it is absent proximate to the bedrock high, to over 180-feet in the central portion of East Campus as determined by previous site borings. The clay portion of the varved silt and clay unit serves as an aquitard throughout most the site, except in the localized area in the vicinity of the bedrock high where it is absent.

A well sorted, fine to coarse-grained sand of lacustrine origin, with intermittent, thin, silty-clay zones, overlies the varved silt and clay (or bedrock where the varved silt and clay is absent in the vicinity of the bedrock high). This surficial sand unit ranges in thickness across the site from approximately 6-feet in the area of the bedrock ridge to greater than 30-feet in the central portion of the East Campus. A discontinuous transition zone of relatively fine-grained materials is present at the base of the surficial sand unit in some areas of the site (GSC, 1997).

Generalized descriptions of the near-surface lithologic units encountered at the site are as follows:

- **Surficial SAND Unit:** Consists of a light brown, fine to medium grained sand containing variable amounts of finer-grained silt and clay. This unit is typically saturated below a depth of approximately 6 to 7-feet below ground surface (ft bgs).
- **SILTY-SAND and CLAY Transition Unit:** Consists of variable amounts of reddish-brown to gray silt, sand, and clay. Typical appearance in a soil core is a silty-sand matrix containing thin lenses of silt and sandy clay. This unit, if present, is generally encountered between 15 to 20-ft bgs in the vicinity of Building 001 (B001).
- **Varved CLAY Unit:** Consists of red-brown and gray, plastic, cohesive, wet clay with intermittent silt zones. Typical appearance in a soil core is clay with laminae of silt and sometimes very fine-grained sand. This unit is typically encountered at approximately 20 to 25-ft bgs in the B001 area, with greater or lesser depths of first occurrence in localized areas.

The thickness of the sand unit increases and the thickness of the transition unit decreases coinciding with a shallowing of the depth to top-of-clay along the western edge of a clay unit "valley" identified in the *RCRA Facility Investigation on Groundwater Plumes* report (GSC, 1997b). This valley is deepest below B001 and Building 003 (B003) (i.e., approximately 30 ft bgs to the top of the clay unit) and extends southward to the east of Building 025 (B025) and then west towards Boices Lane.

2.2 Generalized Hydrogeology

The varved clay unit serves as an aquitard throughout most the site. Therefore groundwater in the bedrock and in the deep sand and gravel and glacial till units that underlie the varved silt and clay is under confined conditions. Groundwater within the surficial sand unit that overlies the varved silt and clay unit is unconfined. The surficial sand unit is typically unsaturated in the area of the bedrock high along Enterprise Drive.

The estimated horizontal hydraulic conductivity of the surficial sand unit ranges from approximately 65 feet per day (ft/day) to 270 ft/day (i.e., 2.3×10^{-2} centimeters per second [cm/sec] to 9.5×10^{-2} cm/sec), with an average hydraulic conductivity of approximately 100 ft/day [2.3×10^{-2} cm/sec]. The horizontal hydraulic conductivity of the varved silt and clay unit has been estimated at approximately one (1) foot per day [3.5×10^{-4} cm/sec]. The vertical hydraulic conductivity of this unit is likely significantly lower than its horizontal hydraulic conductivity due to the horizontal bedding structure. The low vertical hydraulic conductivity and thickness of the unit support the designation of the varved silt and clay as an aquitard.

An east-west trending groundwater divide has been identified at the site underlying B001, Building 002 (B002), B003, Building 004 (B004) and Building 005 (B005) (see Figure 3). Groundwater to the north of the divide flows west and northwest. Groundwater to the south of the divide flows west and southwest. The water table gradient in the eastern portion of the site and in the vicinity of the Groundwater Collection System (GWCS) is reportedly higher than the water table gradient in the south and central portion of the site, and estimated horizontal groundwater flow velocities range from approximately 0.8 ft/day to 2 ft/day (GSC, 1997b).

Groundwater flow is influenced by the presence of the perimeter control system (see Figure 3), which is composed of:

- A 42-inch diameter storm sewer pipe that extends from east to west along a line south of B001 through B005, and then passes under Enterprise Drive to the south of Building 201 (B201).
- An unsaturated portion of the surficial sand unit that intersects the 42-inch storm sewer south of B201, and extends east-northeast back across Enterprise Drive, and then continues toward the north portion of the site.
- The GWCS, extends along the western and northern perimeter of the North Parking Lot Area. The GWCS is comprised of a set of groundwater cut-off trenches. Water collected in the trenches is treated via air stripping.
- A 60-inch diameter storm sewer pipe that intersects the GWCS and extends along the western portion of the North Parking Lot Area.
- A utility trench barrier wall, consisting of an approximately 250-foot long trench backfilled with clay with the base keyed into the Varved Clay Unit and the top of the barrier wall completed a minimum of two feet above the recorded high water table. This barrier wall was installed to mitigate the potential for groundwater migration along the underground utility pipes which ultimately terminate at the former IWTF.

The groundwater VOC plume is contained within the site by this system.

2.3 Nature and Extent of Site Groundwater Contamination

IBM has been collecting groundwater quality samples at the site since the late 1970s. The existing site monitoring well network is shown on Figure 3. Identified compounds of concern in the surficial sand aquifer include the following chlorinated VOCs: 1,1,1-trichloroethance [TCA], trichloroethene [TCE] and tetrachloroethene [PCE], and related degradation products (i.e., 1,1-dichloroethene [1,1-DCE], 1,1-dichloroethane [1,1-DCA], 1,2-cis-dichloroethene [1,2-DCE] and 1,2-dichloroethane [1,2-DCA]). Other VOCs have been detected in groundwater, including carbon

tetrachloride, Freon® and petroleum hydrocarbons; however, concentrations of these VOCs are generally lower and less extensive than the chlorinated compounds.

Four groundwater plumes have been identified at the site, including:

- The North Parking Lot Area (NPLA) Plume (located to the north of B001 and B003) is primarily composed of TCE and TCA, and to a lesser degree PCE. Based on historic groundwater quality sampling and soil vapor screening investigations, the source areas for this plume are likely associated with historic manufacturing activities in B001, B002, B003, B004 and Building 005S (B005S). The primary source area appears to be the industrial waste sewer lines located beneath these buildings (as noted below) and north of B001 and B003. Concentrations of PCE, TCE and TCA in the NPLA Plume appear to originate in the central and western portions of the site.
- The B005 Plume Area, located beneath B001, B002, B003, B004 and B005, is primarily composed of TCE and TCA. Based on historic groundwater quality sampling and soil vapor screening investigations, this plume is believed to have originated from activities in B001, B003, B004 and B005S.
- An isolated PCE plume, extending from the southern portion of B005 to the 42-inch sewer and originating from a release(s) at a PCE tank located in the southeastern corner of B005.
- The Industrial Waste Treatment Facility (IWTF) Plume, located in the vicinity of the former IWTF, near B036. The plume in this area is not likely to have originated from the IWTF, but is believed to have migrated from the eastern campus plume along the underground utility pipes prior to the installation of the utility trench barrier wall.

Figure 3 presents a generalized depiction of areas where groundwater is impacted by VOCs.

2.4 Surficial Soil Conditions

IBM has been collecting soils quality data at the site since the late 1970s. Soil samples have been collected, for the most part under the requirements of the Permit as part of RCRA Facility Assessments (RFAs) and RCRA Facility Investigations (RFIs). As noted previously, IBM

completed extensive RFAs and RFIs beginning in the 1990s through 2002 to delineate the occurrence and extent of contaminants at the site associated with identified SWMUs.

Table 2-1 presents a summary of documents for the SWMUs associated with each of the OUs that are the subject to this SC Work Plan. With the exception of a few locations, most of the soil sampling was conducted on samples from depths of two (2) feet below ground surface and greater.

Table 2-1

Operable Units Requiring Surficial Soils Characterization and associated RCRA Solid Waste Management Units

Operable Unit	*SWMU*	*Investigation and Permit Reporting Status*
OU 2	SWMU O: Salt Barn Parking Lot Sand Landfill	RCRA Facility Assessment, Four Recently Identified Solid Waste Management Units (GSC, January 16, 1995)
	SWMU AF: Inactive West Demolition Debris Area	RFA Letter Report to NYSDEC (IBM, February 9, 1998) RFI Letter Report to NYSDEC (IBM, August 8, 2000)
OU 3	SWMU D: Former Waste Acetone Storage Tank	Assessment completed. No investigation required.
	SWMU E: Former Waste IPA Storage Tank	Assessment completed. No investigation required.
	SWMU F: Former East Side Waste Tanks (East side of B005S)	Assessment completed. No investigation required.
	SWMU G: Former Waste PCE Storage Tank	RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997) Deep Bedrock RCRA Facility Investigation (GSC, February 26, 2002) Formerly inaccessible. Additional investigation conducted, report pending.
	SWMU H: Former East SRP Tank	Assessment completed. No investigation required.
	SWMU I: Former West SRP Tank	Assessment completed. No investigation required.

Table 2-1

Operable Units Requiring Surficial Soils Characterization and associated RCRA Solid Waste Management Units

Operable Unit	*SWMU*	*Investigation and Permit Reporting Status*
OU 3	SWMU M: Industrial Waste Sewer Lines	RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996) Portions inaccessible
	SWMU P: Former B035 Drywell	Assessment completed RCRA Facility Assessment: Four Recently Identified SWMUs (GSC, January 16, 1995)
	SWMU R: Former B005S Waste TCA Tank	RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997)
	SWMU S: Former B001 Waste TCA Tank	RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997)
	SWMU T: Former Waste Oil Tank	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997)
	SWMU U: North Parking Lot Area Plume	RCRA Facility Investigation: Soil Gas Surveys and Sewer System Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997)
	SWMU V: B005 Plume	RCRA Facility Investigation: Soil Gas Surveys and Sewer System Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997)
	SWMU W: Former B004 Separator Tank	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997)

Table 2-1

Operable Units Requiring Surficial Soils Characterization and associated RCRA Solid Waste Management Units

Operable Unit	*SWMU*	*Investigation and Permit Reporting Status*
	SWMU Y: Former Fluoride Wastewater Ejector Tank	RCRA Facility Assessments – Newly Identified Solid waste Management Units (GSC, March 14, 1997)
	SWMU AA: Inactive Building 031 Septic System	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997)
	SWMU AB: Former Waste TCA Recovery Unit	Portion beneath building slab inaccessible. RFI initiated
	SWMU AC: Former B005S Solvent Recovery Process Unit	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997)
OU 3a	SWMU U: North Parking Lot Area Plume	RCRA Facility Investigation: Soil Gas Surveys and Sewer System Sampling (GSC, April 16, 1996) RCRA Facility Investigation: Groundwater Plumes & Sources (GSC, March 14, 1997)
OU 4	SWMU Z: Inactive B033 Septic System	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997) Portions inaccessible
	SWMU C: Former B058 Area (Beneath B051)	Assessment completed
	SWMU Q: Former B031 Lagoon	RCRA Facility Assessment, Four Recently Identified Solid Waste Management Units (GSC, January 16, 1995)

Table 2-1

Operable Units Requiring Surficial Soils Characterization and associated RCRA Solid Waste Management Units

Operable Unit	*SWMU*	*Investigation and Permit Reporting Status*
	SWMU X: B031 Separator	RCRA Facility Assessments – Newly Identified Solid Waste Management Units (GSC, March 14, 1997)
OU 6	SWMU B: B036 Container Storage Area	RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996)
	SWMU J: Wastewater Treatment Tanks (inside B036)	Assessment completed.
	SWMU K: Emergency Wastewater Holding Tanks (North of B036)	Assessment completed.
	SWMU N: Inactive B036 construction and Debris Landfill (Northwest of B036)	RCRA Facility Assessment, Four Recently Identified Solid Waste Management Units (GSC, January 16, 1995)
	SWMU AD: Fire Training Area (West of B036)	RCRA Facility Assessments – Newly Identified Solid waste Management Units (GSC, March 14, 1997) RCRA Facility Investigation: Soil Gas Surveys and Sewer Systems Sampling (GSC, April 16, 1996)

3.0 INVESTIGATION SCOPE OF WORK

The main objectives of this SC Work Plan are to:

- Evaluate whether surficial soil conditions meet zoned use standards as detailed in Exhibit C of the Order in areas not covered by buildings or pavement.
- Better define the nature and extent of VOC-impacted surficial soils outside of the limits of the Class 4 Site.
- Update the Interim Site Management Plan, as necessary, to implement restriction(s) or controls within OUs.

To meet these objectives, IBM has developed an investigation approach that includes the collection and analysis of surficial soil samples from the areas shown on Figure 4. The investigation scope of work includes the following tasks:

- Selection of the sample locations based on historical monitoring data and knowledge of site activities, current site conditions (areas not currently covered by buildings or pavement) and accessibility (utility or other surface impediments).
- A supplemental characterization of current site conditions consisting of the collection of surficial soil samples at prescribed depths.
- Comparison of validated laboratory results with prescribed site use standards detailed in 6NYCRR 375-6.8.

The following sections describe the scope of work for each of these tasks.

3.1 Selection of Sample Locations

A preliminary site visit has been conducted to ascertain physical access to each of the proposed sampling locations. Should access to any of the proposed sampling locations become restricted due to physical obstructions or safety hazards, an off-set location will be proposed and verbal confirmation from NYSDEC will be obtained prior to sample collection. Multiple, discrete-depth samples will be collected at each boring location as detailed in Table 3-1 and at depths consistent

with DER-10, Section 3.5.1 subdivision (b). As per DER-10, Section 3.2 subdivision (d), samples submitted for laboratory analysis shall not be composited under this SC Work Plan.

Using information collected during historical investigations, historical site activities and current site conditions, IBM has identified locations for collection and analysis of soil samples. The selection of soil locations is based on professional judgment, area history and, as applicable, drainage patterns.

Soil sample locations have been targeted in areas downgradient of or otherwise biased to areas of greatest potential contamination from previously identified waste disposal units. Proposed surficial soil sampling locations are shown on Figure 4. The final locations of all surface soil samples will be confirmed in the field before samples are collected.

3.2 Sample Collection

Borings for the collection of soil samples will be advanced using a hand auger. The core will be field-screened and logged as per SOP-6 of the QAPP. Samples will be collected from the soil core using an Encore® sampler (or equivalent) and submitted to the laboratory under appropriate chain-of-custody for analysis of Target Compound List VOCs using EPA Method 8260B as described in Table 1 of the QAPP. Table 3-1 presents a summary of the proposed soil samples and analyses to be performed by OU.

Given the nature of the proposed sampling, it is anticipated that the boreholes will collapse upon removal of the sampling equipment. In the event the resultant boreholes remain open, the borehole will be filled with clean soil following completion in accordance with the SOP provided in the QAPP. NYSDEC will be informed of the source of the clean soil prior to commencement of field work. Upon completion of sampling activities, hand-held GPS coordinates will be taken at each location.

Decontamination of the sampling tools will be in accordance with the SOP-5 provided the QAPP. Investigation-derived waste (IDW) will be managed in accordance with the SOP-8 provided in the QAPP.

Table 3-1 Summary of Sample Data Collection and Evaluation Criteria

Operable Unit	Media	Number of Locations	Anticipated Sample Depths	Soil Cleanup Objectives
OU 2	Surficial Soils (0 to 1 foot)	Eight (8) locations	~ 0.5 ft bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU 3	Surficial Soils (0 to 1 foot)	Four (4) locations	~ 0.5 ft bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU 3a	Surficial Soils (0 to 1 foot)	Five (5) locations	~ 0.5 ft bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU 4	Surficial Soils (0 to 2 feet)	Nine (9) locations	~ 0.5 ft bgs 1 ft bgs 2 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Restricted Residential
OU 6	Surficial Soils (0 to 1 foot)	Five (5) locations	~ 0.5 ft bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial
OU 7	Surficial Soils (0 to 1 foot)	Three (3) locations	~ 0.5 ft bgs 1 ft bgs	6 NYCRR Part 375-6.8(b), Table 6.8(b). Commercial

bgs = Below Ground Surface

3.3 Data Evaluations

Field data will be recorded on field data sampling sheets. The field data will be summarized and reported, as appropriate, in the SC Report. The laboratory will provide data following NYSDEC Analytical Services Protocol (ASP) Category B data deliverables requirements. The laboratory data will be evaluated as per the Data Evaluation Procedures detailed in the QAPP and these evaluations will culminate in a Data Usability Summary Report (DUSR).

Upon receipt of validated laboratory data, the concentrations of contaminants in surficial soils will be compared to applicable Standards, Criteria and Guidance (SCGs) as described in 6NYCRR Part 375-6.8 and detailed in Table 3-1.

4.0 SCHEDULE AND REPORTING

The schedule for the performance of this SC Work Plan is outlined in the Order.

IBM will implement the scope of work outlined in this SC Work Plan within 30 days of NYSDEC approval of this SC Work Plan. This proposed schedule provides for general access to all of the proposed sampling locations and also accounts for anticipated brush clearing for the proposed sampling locations associated with OU2 and potentially OU6. IBM anticipates that field activities can be completed within approximately ten (10) to twelve (12) days, including mobilization time. Analysis and validation of all samples is anticipated to be completed within six weeks following collection of the last sample.

Within 60 days of receipt of validated analytical data, IBM will submit a SC Report to NYSDEC. The SC Report will present the results of the characterizations, including a description of implemented field activities and procedures, presentation of the data results, comparison of the results to 6NYCRR Part 375-6.8 limits for each OU, suggested modifications to the Interim Site Management Plan including recommendations for additional restrictions or controls if needed.

5.0 REFERENCES

Golder Associates, 2009, "RCRA Facility Investigation Management Plans" 26 May, 2009.

Golder Associates, 2011, "SWMU G Investigation Report" March, 2011.

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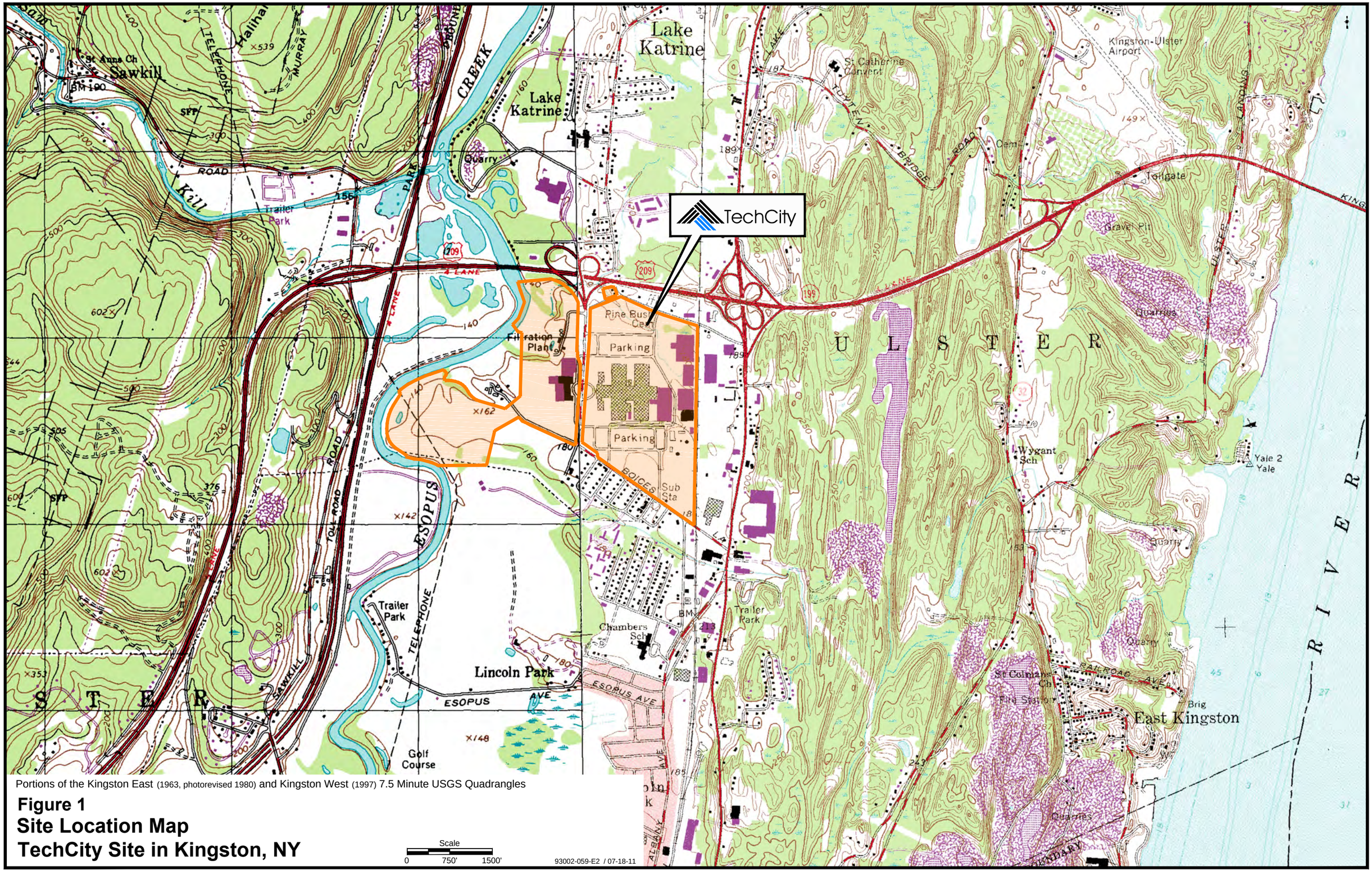


Portions of the Kingston East (1963, photorevised 1980) and Kingston West (1997) 7.5 Minute USGS Quadrangles

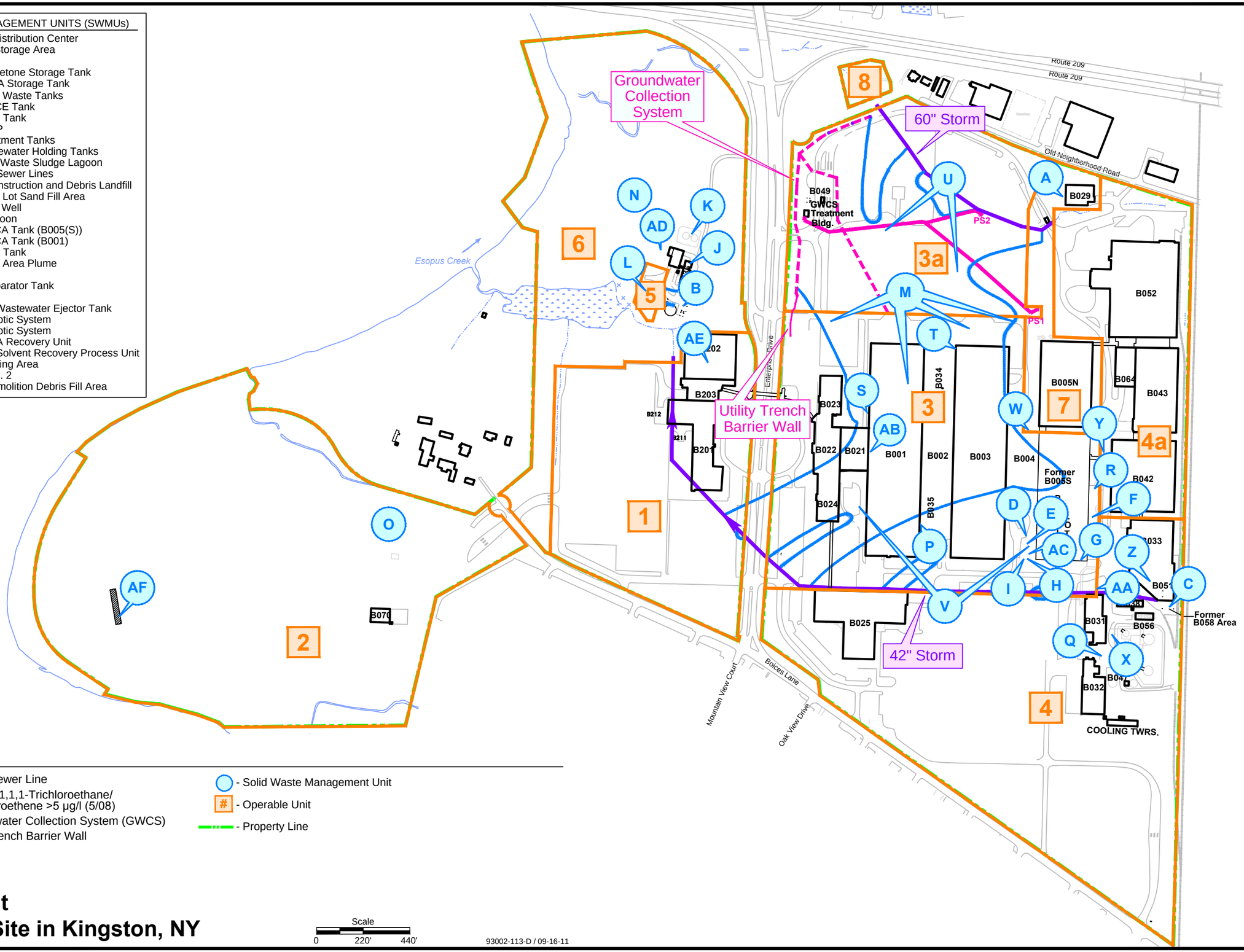
Figure 1
Site Location Map
TechCity Site in Kingston, NY

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



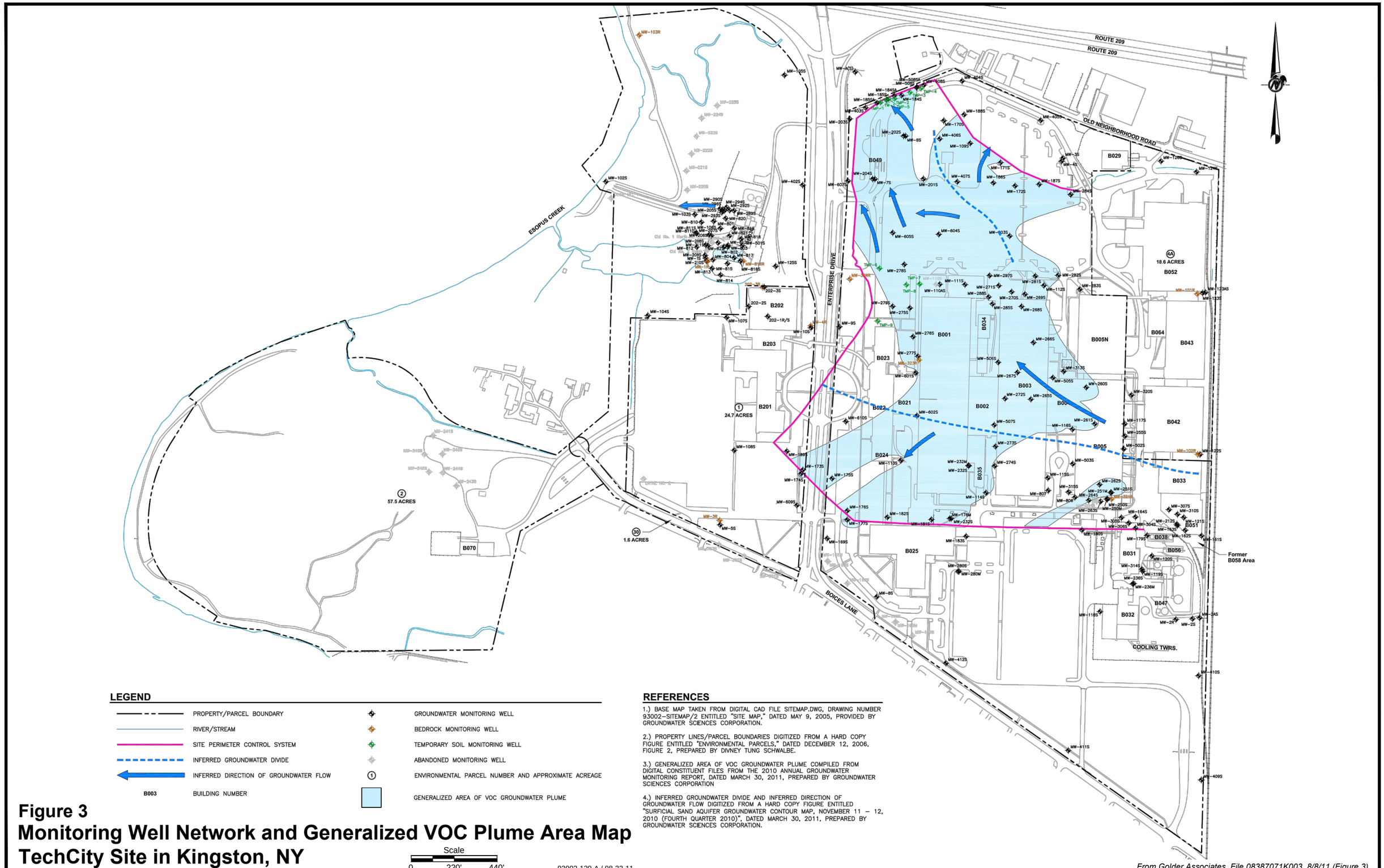
LEGEND

- 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



LEGEND

- PROPERTY/PARCEL BOUNDARY
- RIVER/STREAM
- SITE PERIMETER CONTROL SYSTEM
- INFERRED GROUNDWATER DIVIDE
- INFERRED DIRECTION OF GROUNDWATER FLOW
- B003 BUILDING NUMBER
- GROUNDWATER MONITORING WELL
- BEDROCK MONITORING WELL
- TEMPORARY SOIL MONITORING WELL
- ABANDONED MONITORING WELL
- (1) ENVIRONMENTAL PARCEL NUMBER AND APPROXIMATE ACREAGE
- GENERALIZED AREA OF VOC GROUNDWATER PLUME

REFERENCES

1.) BASE MAP TAKEN FROM DIGITAL CAD FILE SITEMAP.DWG, DRAWING NUMBER 93002–SITEMAP/2 ENTITLED "SITE MAP," DATED MAY 9, 2005, PROVIDED BY GROUNDWATER SCIENCES CORPORATION.

2.) PROPERTY LINES/PARCEL BOUNDARIES DIGITIZED FROM A HARD COPY FIGURE ENTITLED "ENVIRONMENTAL PARCELS," DATED DECEMBER 12, 2006, FIGURE 2, PREPARED BY DIVNEY TUNG SCHWALBE.

3.) GENERALIZED AREA OF VOC GROUNDWATER PLUME COMPILED FROM DIGITAL CONSTITUENT FILES FROM THE 2010 ANNUAL GROUNDWATER MONITORING REPORT, DATED MARCH 30, 2011, PREPARED BY GROUNDWATER SCIENCES CORPORATION

4.) INFERRED GROUNDWATER DIVIDE AND INFERRED DIRECTION OF GROUNDWATER FLOW DIGITIZED FROM A HARD COPY FIGURE ENTITLED "SURFICIAL SAND AQUIFER GROUNDWATER CONTOUR MAP, NOVEMBER 11 – 12, 2010 (FOURTH QUARTER 2010)", DATED MARCH 30, 2011, PREPARED BY GROUNDWATER SCIENCES CORPORATION.

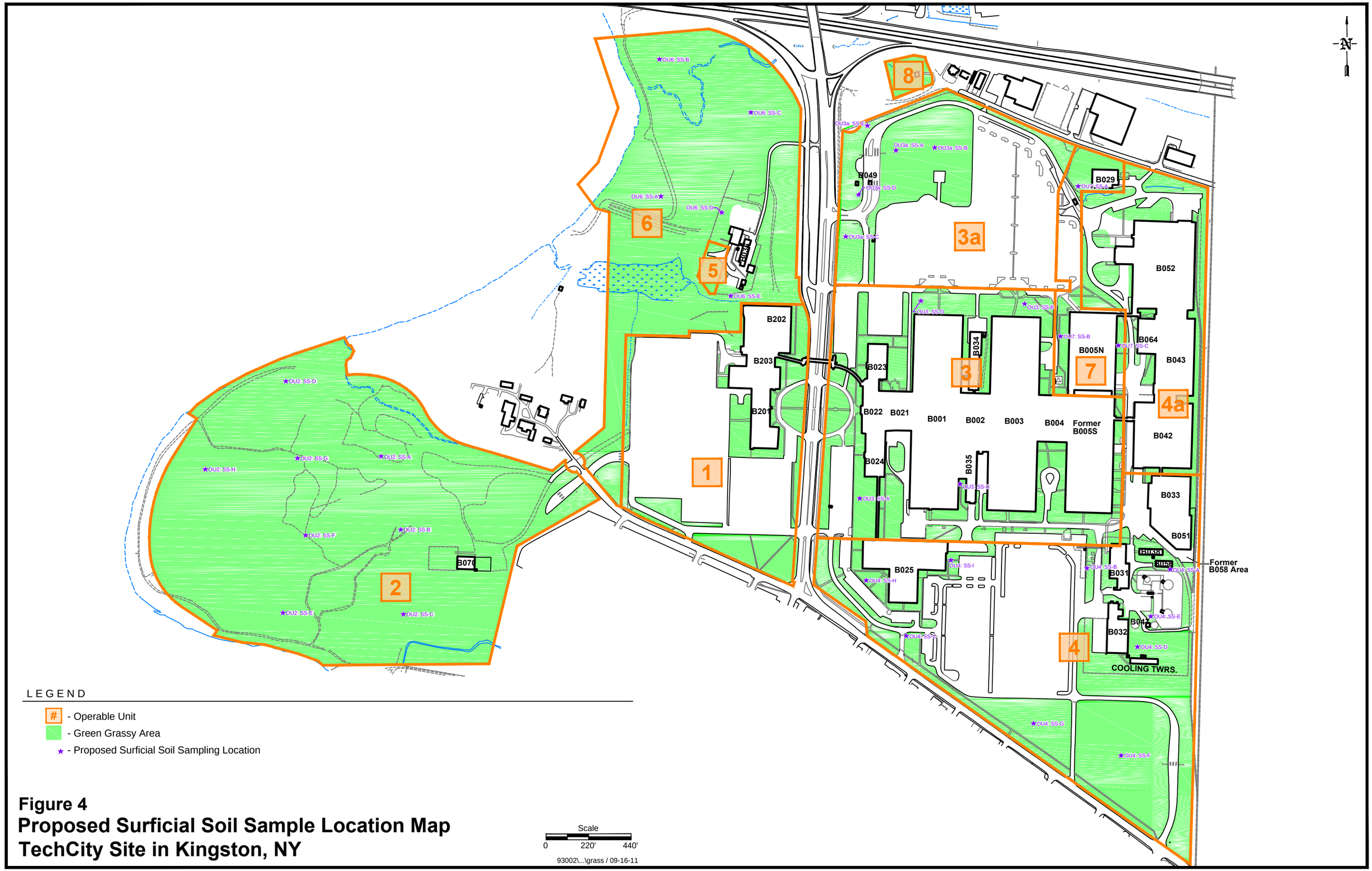
Figure 3

Monitoring Well Network and Generalized VOC Plume Area Map
TechCity Site in Kingston, NY

Scale
0 220' 440'

93002-120-A / 08-22-11

From Golder Associates, File 08387071K003, 8/8/11 (Figure 3).



LEGEND

- # - Operable Unit
- Green Grassy Area
- ★ - Proposed Surficial Soil Sampling Location

Figure 4
Proposed Surficial Soil Sample Location Map
TechCity Site in Kingston, NY

Scale
0 220' 440'

93002\...\grass / 09-16-11