February 5, 2010

Project No.: 083-87071-01
VIA EMAIL AND FEDEX

Mr. Michael J. Kominek
IBM
8976 Wellington Road
Manassas, Virginia 20109

RE: SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
FORMER IBM KINGSTON FACILITY
KINGSTON, ULSTER COUNTY, NEW YORK

Dear Mr. Kominek:

Golder Associates Inc. (Golder) has prepared this letter report on behalf of International Business Machines Corporation (IBM), to present the findings of the additional subsurface investigation performed at a portion of the former IBM Kingston Facility (Site), located at 300 Enterprise Drive, Kingston, Ulster County, New York (see Figure 1), referred to as the "Triangle Plume Area" (TPA). IBM, agreed to perform additional subsurface investigation activities in the vicinity of the TPA at the request of the New York State Department of Environmental Conservation (NYSDEC) during a meeting on October 14, 2009.

1.0 INTRODUCTION AND 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. The portion located west of Enterprise Drive includes the Bank of America (BOA) facility (former IBM Facility Buildings B201, B202 and B203); a large parking area south and west of the BOA facility (Parcel 1); and generally undeveloped land further to the southwest (Parcel 2) and north (Parcel 3) of the BOA facility. The TPA is located south of the BOA facility on Parcel 1 (see Figure 2).

The Site is listed as a New York State Inactive Hazardous Waste Disposal Site (6 NYCRR Part 375) and a Resource Conservation and Recovery Act (RCRA) Hazardous Waste Site and is currently managed in compliance with the October 4, 1996 Hazardous Waste Management Permit #3-5154-00067/00090 (6 NYCRR Part 373) referenced herein as the RCRA Permit. 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. IBM currently performs groundwater quality monitoring to evaluate the effectiveness of the Corrective Measures and submits semi-annual monitoring reports to NYSDEC.

The current Site owner, TechCity Properties Inc. (TechCity) is in the process of redeveloping the property. As part of its redevelopment plans, TechCity intends to demolish either complete or select portions of buildings and historic infrastructure and modify the RCRA Permit by removing select parcels of land, including Parcel 1. In accordance with the RCRA Permit requirements, IBM retained Golder to prepare RFI Work Plans to perform subsurface investigations at four previously inaccessible SWMUs, including SWMU AB, SWMU G, SWMU M, and SWMU V.

In addition to the required RFIs at inaccessible SWMUs, IBM elected to perform investigative work to better define the nature and extent of groundwater containing VOCs in and upgradient of the TPA. The Work Plans for each of these five areas were approved by NYSDEC on April 28, 2009. The inaccessible

SWMU investigations outlined in each Work Plan are scheduled to be performed once each SWMU area becomes accessible during the course of the Site redevelopment.

Due to delays associated with redevelopment activities, only the Triangle Plume Area Investigation has been completed to date. The results of this work were described in the *Triangle Plume Area Investigation Report* (TPAIR), submitted to NYSDEC by IBM on September 16, 2009. The TPAIR concluded that the downgradient extent of VOC impacts in the surficial sand is limited by the area where the surface of the varved clay unit rises rapidly and that the combined effect of the varved clay and the groundwater capture provided by the 42-inch stormwater sewer line, effectively controls the downgradient migration of dissolved-phase VOCs in the TPA.

Based on a review historic site boring logs; TechCity's RCRA Permit modification application; TechCity's *Draft Parcels 1 and 4A Investigation Report (ERM, 2009)*; historic TechCity reports; and preliminary review of the TPAIR, NYSDEC identified the potential for migration of groundwater containing VOCs from the TPA to the area north and west of the BOA facility. This area was not addressed during TechCity's most recent investigation and was not part of the scope of work outlined in IBM's Triangle Plume Area Investigation Work Plan.

During a meeting with NYSDEC on October 14, 2009, IBM agreed to perform additional investigation work to evaluate subsurface conditions north and west of the TPA on Parcel 1. A summary of the field activities and procedures and the results of the supplemental TPA investigation are presented in the following sections.

2.0 INVESTIGATION ACTIVITIES AND PROCEDURES

On behalf of IBM, Golder performed the following additional investigation work during November 2009 to further evaluate subsurface conditions in the vicinity of the TPA as shown on Figure 3.

- Advancement of seven Membrane Interface Probes (MIP) northwest of the TPA.
- Advancement of thirteen direct-push soil borings for geologic logging at locations positioned adjacent to MIP locations to confirm the MIP results or at selected locations to provide additional lithologic characterization data.
- Installation of one temporary monitoring well.
- Installation of two new sentinel monitoring wells downgradient of existing monitoring well MW-174S as recommended in the TPAIR.
- Collection of groundwater samples for VOC analysis from the temporary monitoring well and new sentinel monitoring wells.

Golder performed these tasks as part of a larger field investigation initiated on October 26, 2009[1]. Environmental Probing Inc. (EPI) was retained to provide direct-push services and Peak Investigations, LLC (Peak) was retained to provide MIP services. Surveying services were provided by Brinnier and Larios, P.C., a New York licensed surveyor. Lancaster Laboratories, Inc. (Lancaster), a New York State Department of Health (NYSDOH) certified laboratory, performed analytical services.

2.1 Membrane Interface Probe and Soil Boring Investigation

A MIP was used to further refine the understanding of the lithology and distribution of VOCs in the vicinity of the TPA. The MIP is a direct-sensing tool that is advanced into the subsurface using direct-push

[1] The work described herein was completed during a three-week field program that also included subsurface investigations in accessible portions of SWMU G and SWMU M and additional evaluation of the perimeter control system in the southeast portion of the Site. IBM will present the results of this work in future investigation reports upon obtaining access and completing the planned investigations within each of the currently inaccessible SWMU areas as per the previously approved RFI Work Plans.

equipment (e.g., GeoProbe®). Golder used information from the soil borings and groundwater analytical data collected from the temporary monitoring well to corroborate MIP results.

The MIP used during this investigation includes an electron capture detector (ECD) element and an electric conductivity (EC) element. The ECD detects the presence of total chlorinated VOCs in the vapor, sorbed, and dissolved phases. The EC measures soil conductivity with depth as the probe is driven into the ground and is used to identify changes in lithology and/or other subsurface conditions, including soil moisture, that change subsurface conductivity.

EPI advanced a total of seven MIPs and thirteen soil borings at the locations shown on Figure 3. Before positioning the direct-push equipment for subsurface advancement, EPI hand augured each location to approximately 5-feet below ground surface (ft bgs) as an additional precaution to reduce the potential for drilling into subsurface obstructions or features (i.e., utilities).

EPI used a direct-push rig and a dual-tube continuous sampler for the collection of soil cores. Golder logged the cores for lithology and screened the soil using a photo-ionization detector (PID). Attachment A contains soil boring logs for each location.

Peak conducted the MIP investigation in general accordance with American Society for Testing and Materials (ASTM) *Standard Practice for Direct Push Technology for Volatile Contaminant Logging with the Membrane Interface Probe* (MIP)–D7532-07 (ASTM, 2007), Standard Operating Procedure (SOP-9), provided in the Quality Assurance Project Plan (QAPP)[2], and as described in the TPAIR. MIP field forms and data plots are included in Attachment B.

The boreholes typically collapsed upon removal of the probe to a depth of approximately 6 to 8-ft bgs. EPI grouted portions of the boreholes that did not collapse with cement-bentonite slurry in accordance with QAPP SOP-10. Borings advanced through asphalt parking lot areas were patched with asphalt upon completion.

2.2 Monitoring Well Installation and Groundwater Sampling

Temporary monitoring well BOA-TW-01 was installed at the location shown on Figure 3 in accordance with QAPP SOP-2. Golder selected the screened interval and depth based on the results of the MIP and soil borings advanced in the immediate vicinity of this location. Temporary monitoring well construction information is included in Attachment A. The temporary well was removed following sample collection and the borehole was abandoned in accordance with QAPP SOP-10.

EPI installed two permanent groundwater sentinel monitoring wells (TSW-01 and TSW-02) consistent with NYSDEC protocols at the locations shown on Figure 3. The monitoring wells were constructed of 2-inch diameter, Schedule 40 PVC riser pipe and five feet of 2-inch diameter, Schedule 40 PVC 0.010-inch slot sized well screen. The wells were installed inside hollow stem augers to approximately 15-ft bgs to intersect the interface between the surficial sand and the varved clay units observed at the time of drilling[3].

Following installation of the riser and screen, EPI installed a #1-sized silica sand pack was installed in the borehole annulus from the bottom of the borehole (approximately one foot below the screen) to approximately two feet above the top of the screen. The remainder of the borehole annulus was backfilled with cement-bentonite grout and capped with concrete to provide a surface seal. A flush-mount manhole cover and concrete pad were installed to complete the well at the surface. The wells were secured with locking caps. Monitoring well installation logs are included in Attachment A.

[2] The QAPP and associated SOPs are included as part of the *RCRA Facility Investigation Management Plans*.
[3] Per NYSDEC's request, the screened interval for TSW-01 was targeted to intersect the interface between the surficial sand and the silty sand and clay transition units. However the results from borings TA SB-01A, TA-SB-01B, and TA-SB-01C confirmed previous interpretations that the silty sand and clay unit pinches out and is absent immediately downgradient (i.e., within five feet) of MW-174S.

Well development was performed via continuous cycles of pumping and surging using a submersible pump and bailer until water quality indicator parameters stabilized. Well development field forms are included in Attachment C.

IBM managed investigation-derived waste (IDW) in accordance with QAPP SOP-8.

Golder collected groundwater samples from BOA-TW-01, TSW-01, and TSW-02 in accordance with the general procedure described in QAPP SOP-2 and submitted the samples to Lancaster under chain-of-custody procedures for VOC analysis. Groundwater sampling information is included in Attachment C. Groundwater sampling analytical results are presented in Section 3.2.

3.0 INVESTIGATION RESULTS

The following sections present the refined interpretation of the TPA geologic and hydrogeologic conditions and additional delineation of the nature and extent of VOC-impacted groundwater north and west of the TPA based on the information obtained during this supplemental investigation.

3.1 Triangle Plume Area Geology and Hydrogeology

Information regarding regional and Site-wide near-surface geologic conditions is contained in previous reports prepared by Groundwater Sciences Corporation and summarized in the TPAIR.

Information obtained during this investigation and from work completed by others (i.e., TechCity's *Draft Parcels 1 and 4A Investigation Report (ERM, 2009)* and historic TechCity reports) on the west side of Enterprise Drive was used to update the interpretation of the geologic and hydrogeologic conditions in the TPA. The new information resulted in minor modifications to the interpretation presented in the TPAIR. The characteristics of the near-surface lithologic units encountered during this investigation are in general agreement to that described in the TPAIR and are summarized as follows:

- **Surficial SAND Unit:** Consists of a light brown, very fine to medium-grained sand containing variable amounts of silt. This unit was typically saturated below a depth of approximately 7.5 to 8.5-ft bgs during the November 2009 investigation, which is about one foot greater than the depth of the water table surface encountered during the TPA Investigation conducted in April 2009. In certain borings (i.e., BOA-SB-03 and BOA-SB-05), the surficial sand unit was observed to contain more silt and fine-grained sand and appeared "soupy" compared to observations from other borings and resulted in limited sample recovery.

- **SILTY-SAND and CLAY Transition Unit:** Consists of variable amounts of brown and gray silt, sand, and clay. Typical appearance in a soil core is a silty-sand matrix containing thin lenses of silt and sandy clay. Golder definitively identified this transition zone between the surficial sand and varved clay units in only one boring advanced during this investigation: TSW-SB-01C, located approximately four feet southwest of monitoring well MW-174S.

- **Varved CLAY Unit:** Consists of red-brown and gray, plastic, cohesive, wet clay. Typical appearance in a soil core is clay with laminae of fine-grained sand and silt.

Figure 4 illustrates the updated interpreted bottom of surficial sand contours (i.e., top of varved clay unit) in the vicinity of the TPA. Geologic cross-sections are presented in Figure 5. Of note is the following:

- During advancement of the TSW-SB-02 series borings southwest of the TPA (see cross-section C-C' on Figure 5) the saturated surficial sand unit was encountered below the first substantial occurrence of the varved clay unit, indicating fingering of these two units in this area.

- During advancement of boring BOA-SB-03, located upgradient of the perimeter control system (see cross-section B-B' on Figure 5), the silty sand and clay transition unit was encountered below the first substantial occurrence of the varved clay unit similar to observations made during advancement of borings on the east side of Enterprise Drive (i.e., TA-SB-05, TA-SB-06, and TA-SB -12) during April 2009 as reported in the TPAIR.

- The elevation of the base of the surficial sand unit and the top of varved clay unit rises to the west of the Site perimeter control system and monitoring wells MW-173S and MW-174S in the TPA where it forms a ridge at an elevation between 164 and 168-feet above mean sea level (ft msl). Based on the new information obtained during this investigation and a review of historic boring log information reported by others, the peak of the ridge occurs west of the BOA facility along a north-south trending line between approximately BOA-SB-01 and MW-7 and extends southeast in the vicinity of monitoring well MW-609S (see Figure 4 and cross-section B-B' on Figure 5).

- The saturated thickness of the surficial sand unit increases on the west side of the varved clay ridge. Based on historic boring logs, the saturated thickness of the surficial sand unit is greatest in the vicinity of monitoring well MW-13 and forms a north-south trending depression that extends from approximately MW-13, through BOA-SB-05/BOA-TW-01 (Golder observed approximately five feet of saturated surficial sand in boring BOA-SB-05) and north toward the location of monitoring well MW-174. This area of increased saturated surficial sand thickness is bounded by the aforementioned varved clay ridge to the east, limited saturated thickness of the surficial sand to the west in BOA-SB-06 (Golder observed approximately one foot of saturated surficial sand in boring BOA-SB-06) and the absence of saturated surficial sand reported in historic boring logs for monitoring wells MW-14 and MW-15 (see cross-section B-B' on Figure 5).

- The surficial sand unit extends to a depth of approximately 17-ft bgs in boring BOA-SB-02. As shown on Figure 5 (cross-section A-A'), the surficial sand unit in this area forms an apparent abrupt contact with the varved clay unit observed in borings BOA-SB-01 (located approximately ten feet southwest of boring BOA-SB-02) and boring BOA-SB-04 (located less than fifty feet west of boring BOA-SB-02).

- The 42-inch storm sewer line appears to be capturing groundwater from the surficial sand unit in the vicinity of boring BOA-SB-02 based on the relative depth of saturation (approximately 13.5 ft bgs) observed in boring BOA-SB-02 during drilling compared to boring BOA-SB-01 (saturated at approximately 7.5 ft bgs) and the measured depth to the bottom of the storm sewer line (approximately 13.6 ft bgs at a nearby catch basin).

3.2 MIP ECD and Analytical Sampling Results

The MIP ECD data and groundwater sample analytical results provided additional information on the distribution of VOCs in the vicinity of the TPA. Groundwater sample analytical results were compared to 6-NYCRR Part 703 New York State Groundwater Quality Standards (NYSGWQS).

Golder validated laboratory analytical data following NYSDEC Analytical Services Protocol (ASP) Category B deliverables requirements and the *Draft NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, Appendix B Guidance for the Development of Data Usability Summary Reports* (December, 2002), to identify data quality issues which could affect the use of the data for decision making purposes. Analytical procedures were performed in accordance with methods summarized in QAPP. Three primary samples were analyzed for VOCs following USEPA SW-846 Method 8260B. The laboratory provided NYSDEC Analytical Services Protocol (ASP) Category B data packages that contained the information needed for validation of the data.

[4] Golder could not locate monitoring well MW-17 during this investigation.

Data were evaluated for sample preservation and holding times, method, field and trip blanks, surrogate spikes, matrix spike/matrix spike duplicates, and laboratory control samples. Golder deemed the analytical data to be acceptable for their intended use with no exceptions. Laboratory Data Sheets are included as Attachment D.

3.2.1 MIP ECD Results

As described in Section 2.1, EPI advanced a total of seven MIP probes at the locations shown on Figure 3. Golder subtracted out background levels as observed in the upper few feet of each probe location from the actual measured instrument response. Background levels measured during this investigation were typically on the order of $1x10^5$ microvolts (µV). MIP ECD results were at or near background levels (i.e., no greater than 3×10^4 µV above background) at all seven locations. The lack of instrument response above background levels suggests an absence of dissolved-phase VOCs in the surficial sand unit.

3.2.2 Groundwater Sampling Results

As described in Section 2.3, Golder collected groundwater samples from one temporary well (BOA-TW-01) and from each of the two new sentinel monitoring wells (TSW-01 and TSW-02). Groundwater analytical sample results are presented in Table 1 and on Figure 6.

No VOCs were detected above NYSGWQS. VOCs detected at concentrations below NYSGWQS include 1,1,1-trichloroethane (TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE) in TSW-01 and chloroform in TSW-02. No detections of VOCs were reported in the groundwater sample collected at temporary well BOA-TW-01.

4.0 CONCLUSIONS

The additional data collected during this investigation provided refined lateral and vertical definition of the near-surface lithology and supplemental information on the nature and extent of VOC impacts in the vicinity of the TPA. The results of this investigation support the interpretations and conclusions presented in the TPAIR and the interpretation presented previously by IBM. Key findings include the following:

- The information obtained during this investigation confirms the previously interpreted rapid decrease in thickness of the silty-sand and clay transition unit immediately downgradient of MW-174S and the TPA. With the exception of TSW-SB-01C, located within approximately five feet of MW-174S, the silty sand and clay unit was absent in borings advanced during this investigation west of the TPA and was not identified in historic boring logs.
- The varved clay ridge serves as a barrier to groundwater flow between the saturated surficial sand in the TPA and the limited area of saturated surficial sand northwest and west of the TPA.
- The presence of dissolved-phase VOCs was not indicated by the results of MIP ECD probes advanced north and west of the TPA. This was corroborated by the analytical results of a sample collected from temporary monitoring well BOA-TW-01, which indicated no detections of VOCs.
- VOCs were not detected above NYSGWQS in the analytical results from the groundwater samples collected from the two new sentinel monitoring wells (TWA-01 and TWA-02).

In summary, the migration of dissolved-phased VOCs in the surficial sand unit downgradient of the TPA is effectively limited by a combination of the following subsurface features:

- The absence of the silty sand and clay transition unit.
- The decrease in saturated surficial sand thickness.

- The presence of a varved clay ridge.
- The groundwater capture provided by the 42-inch stormwater sewer line.

Golder believes that no additional evaluation of the TPA is warranted at this time. The new sentinel monitoring wells should be sampled on a semi-annual basis as part of IBM's RCRA Permit groundwater monitoring program to monitor and verify the conclusion of the TPA investigation.

Golder appreciates this opportunity to be of continued assistance to IBM on this project. If you have any questions or require additional information, please do not hesitate to contact either of the undersigned at (973)-645-1922.

Sincerely

GOLDER ASSOCIATES INC.

Christopher D. Hemingway, P.G.
Senior Hydrogeologist

Anthony Savino
Senior Consultant

CDH/AS/ab

cc: Mitch Meyers, IBM
Alistair Macdonald, Golder Associates
Dan Wieneke, TechCity Properties
Gary Casper, NYSDEC
Ed Hinchey, ERM Inc.
Doreen Simmons, Hancock & Estabrook

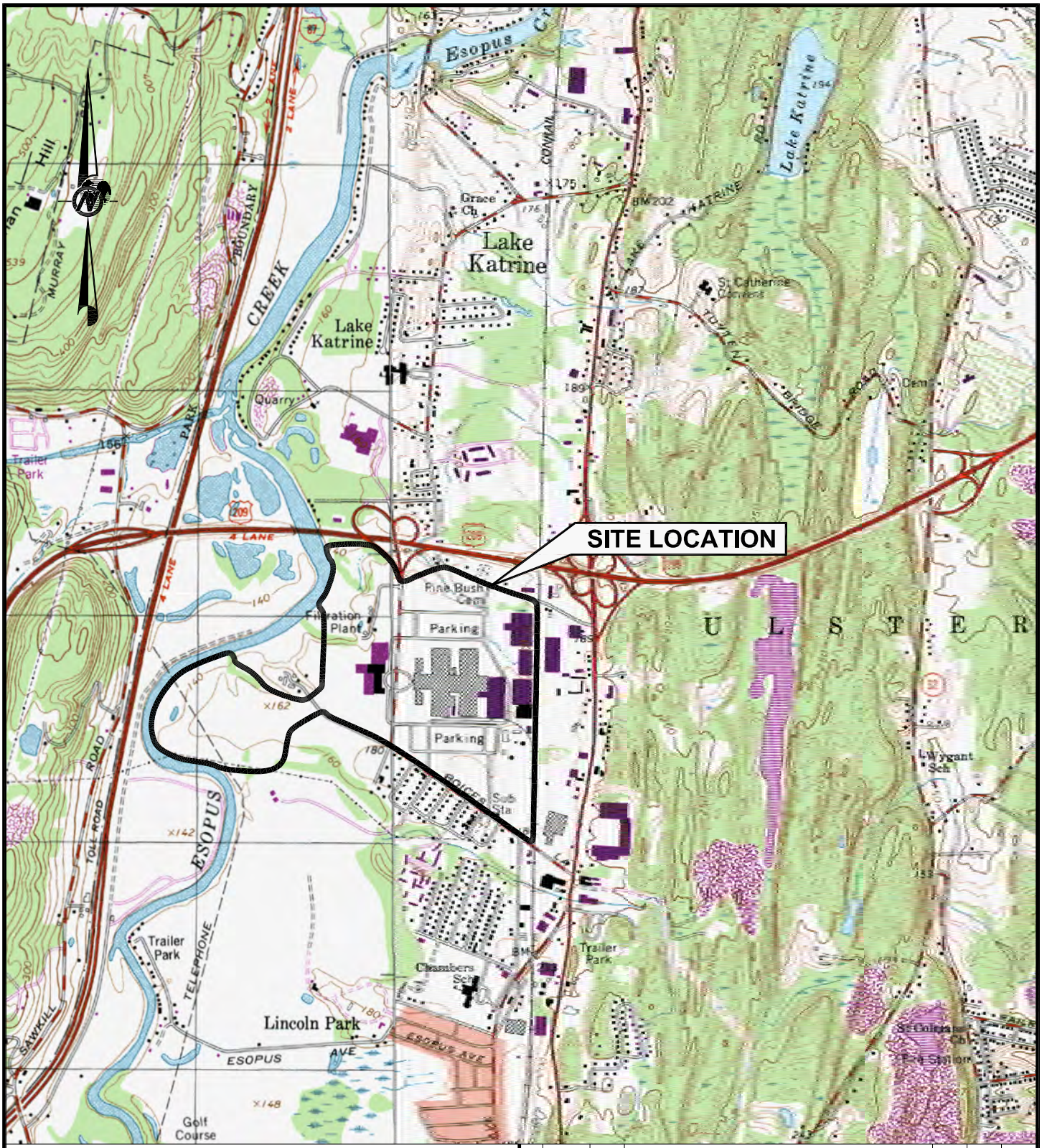
Attachments:

Figure 1 - Site Location Map
Figure 2 - Site Layout
Figure 3 - Membrane Interface Probe, Soil Boring and Monitoring Well Locations
Figure 4 - Interpreted Base of Surficial Sand Contour Map – Triangle Plume Area
Figure 5 - Interpreted Geologic Cross Sections A-A', B-B' C-C'
Figure 6 - Groundwater Results Summary Map

Table 1 - Groundwater Sampling Results

Attachment A - Soil Boring and Well Construction Logs
Attachment B - Membrane Interface Probe Information
Attachment C - Groundwater Sampling Information
Attachment D - Laboratory Data Sheets

FIGURES



2000 0 2000

SCALE FEET

REFERENCE

1.) BASE MAP TAKEN FROM USGS 7.5 MINUTE SERIES QUADRANGLES OF KINGSTON EAST, NY, DATED 1963, PHOTOREVISED 1980, AND KINGSTON WEST, NY, DATED 1997.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE

SITE LOCATION MAP

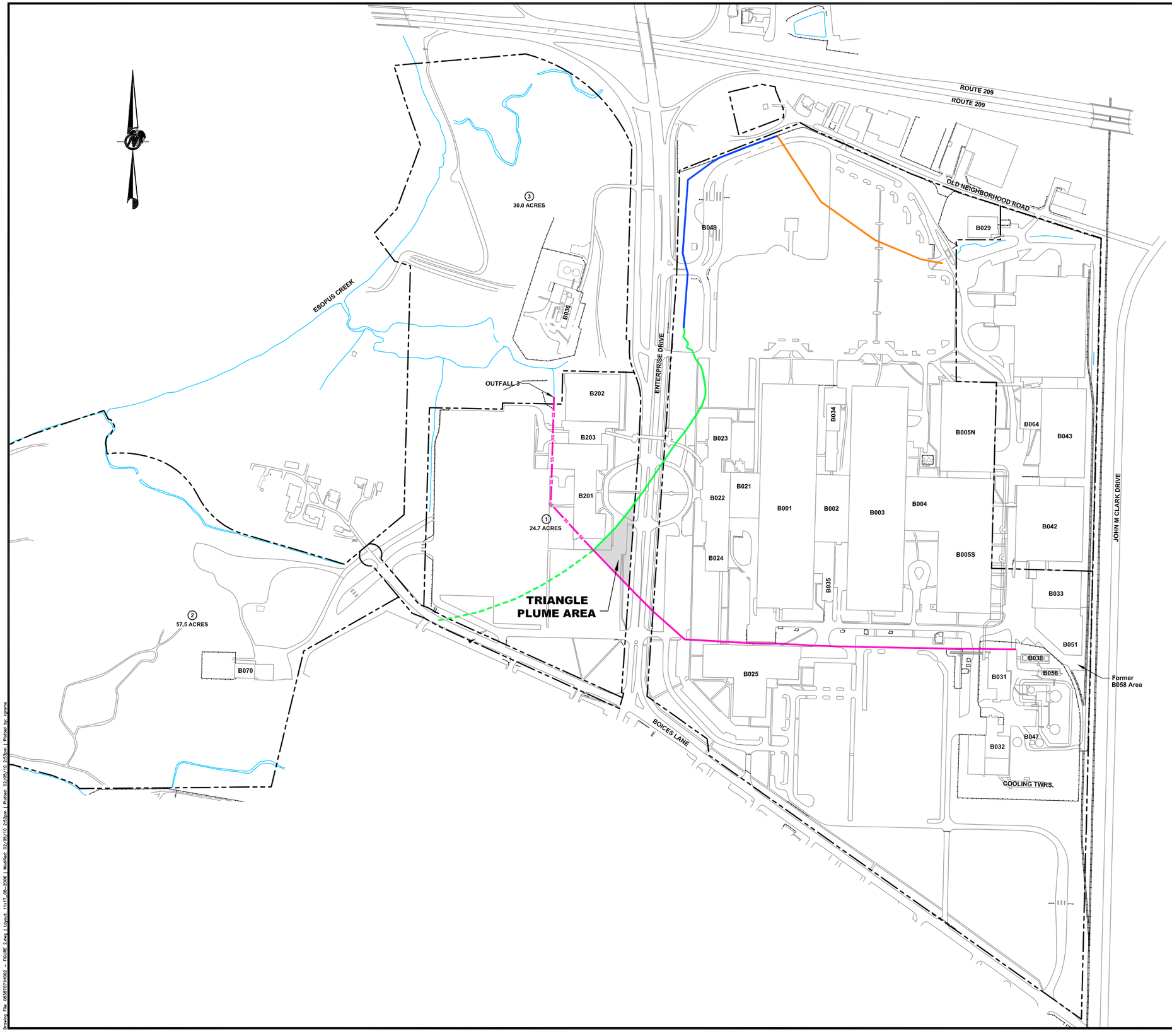
NJ Authorization #24GA28029100

Golder Associates
Newark, New Jersey

PROJECT No.	083-87071		FILE No.	08387071H001	
DESIGN	CDH	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	RG	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 1

Drawing file: 08387071H001 - FIGURE 1.dwg Feb 05, 2010 - 2:51pm



LEGEND

- PROPERTY/PARCEL BOUNDARY
- RIVER/STREAM
- 42-INCH DIAMETER SEWER SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- UNSATURATED SURFICIAL SAND UNIT (SITE PERIMETER CONTROL SYSTEM)
- GROUNDWATER COLLECTION SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- 60-INCH DIAMETER SEWER SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- SS SS SS STORM SEWER LINE
- INTERPRETED PORTION OF UNSATURATED SAND UNIT
- B003 BUILDING NUMBER
- (1) PARCEL NUMBER AND APPROXIMATE ACREAGE
- TRIANGLE PLUME AREA ON PARCEL 1

NOTE

1.) THE INTERPRETED EXTENT OF THE UNSATURATED SURFICIAL SAND IS BASED ON WORK/INFORMATION PRIOR TO THE TRIANGLE PLUME INVESTIGATION.

2.) THE PORTION OF THE SITE EAST OF ENTERPRISE DRIVE IS REFERRED TO AS THE "EAST CAMPUS". THE PORTION OF THE SITE WEST OF ENTERPRISE DRIVE IS REFERRED TO AS THE "WEST CAMPUS".

REFERENCES

1.) BASE MAP 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.) STORM SEWER LINE AND INTERPRETED PORTION OF UNSATURATED SURFICIAL SAND UNIT TAKEN FROM DIGITAL FILE 93002-109-T2_GWE2008-12.dxf, ENTITLED "SURFICIAL SAND AQUIFER GROUNDWATER ELEVATION CONTOUR MAP, DECEMBER 2, 2008 (FOURTH QUARTER 2008), PROVIDED BY GROUNDWATER SCIENCES CORPORATION.

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SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE
SITE LAYOUT

NJ Authorization #24GA28029100
Golder Associates
Newark, New Jersey

PROJECT No.	083-87071		FILE No.	08387071H002	
DESIGN	CDH	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	RG	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 2

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MW-104S
MW-17
MW-107S
202-1R/S
MW-1R
MW-10S
MW-9S
MW-16
B203
MW-15
BOA-MIP-82
BOA-SB-06
B201
(13.60)
BOA-MIP-81
BOA-SB-05
BOA-TW-01
BOA-SB-04
BOA-MIP-80
BOA-MIP-61
BOA-SB-02
BOA-SB-01
BOA-MIP-60
TRIANGLE PLUME AREA
MW-610S
MW-14
MW-13
MW-12
MW-11
BOA-MIP-62
BOA-SB-03
BOA-MIP-63
CS423
(13.30)
MW-189S
MW-10
MW-9
MW-108S
TA-SB-15
TA-SB-06
TA-SB-07
TA-SB-09
TA-SB-02
TA-SB-14
TA-SB-17
TA-SB-01
TA-SB-04
TA-SB-11
TA-SB-03
TA-SB-13
BOA-SB-07
MW-18
MW-8
CS444
(13.10)
MW-173S
MW-174S
TSW-SB-01B
TSW-SB-01A
TSW-SB-01C
TSW-01
MW-175S
TA-SB-08
MW-7
MW-6
TA-SB-10
MW-19
ENTERPRISE DRIVE
MW-5
TSW-SB-02C
TSW-02
TSW-SB-02B
TSW-SB-02A
MW-609S
TA-SB-12
TA-SB-05
TA-SB-16
MW-176S
MW-3
MW-4
MW-177S
CS419
MW-22
MW-2
MW-1
MW-21

LEGEND

- PROPERTY/PARCEL BOUNDARY
- 42-INCH DIAMETER SEWER SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- UNSATURATED SURFICIAL SAND UNIT (SITE PERIMETER CONTROL SYSTEM)
- SS — SS — STORM SEWER LINE
- INTERPRETED PORTION OF UNSATURATED SAND UNIT (GSC 2008)
- CATCH BASIN
- (13.60) DEPTH TO BOTTOM OF CATCH BASIN (FT. BGS)
- B003 BUILDING NUMBER
- EXISTING IBM MONITORING WELL
- EXISTING TECHCITY MONITORING WELL
- PREVIOUS SOIL BORING LOCATION (APRIL 2009 INVESTIGATION)
- MIP/SOIL BORING LOCATION (NOVEMBER 2009 INVESTIGATION)
- TEMPORARY MONITORING WELL LOCATION (NOVEMBER 2009)
- TRIANGLE PLUME AREA SENTINEL WELL (TSW) LOCATION

REFERENCES

1.) BASE MAP 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.) SURVEY INFORMATION FOR EXISTING MONITORING WELLS MW-1 THROUGH MW-17 TAKEN FROM "SUMMARY OF MONITORING WELL COMPLETION DATA," TABLE 4, PREPARED BY TECHCITY. MONITORING WELLS MW-18 THROUGH MW-22 DIGITIZED FROM A HARDCOPY FILE ENTITLED "CROSS SECTION OVERVIEW MAP," FIGURE 6, DATED APRIL 2009, PREPARED BY ERM.

50 0 50 100
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

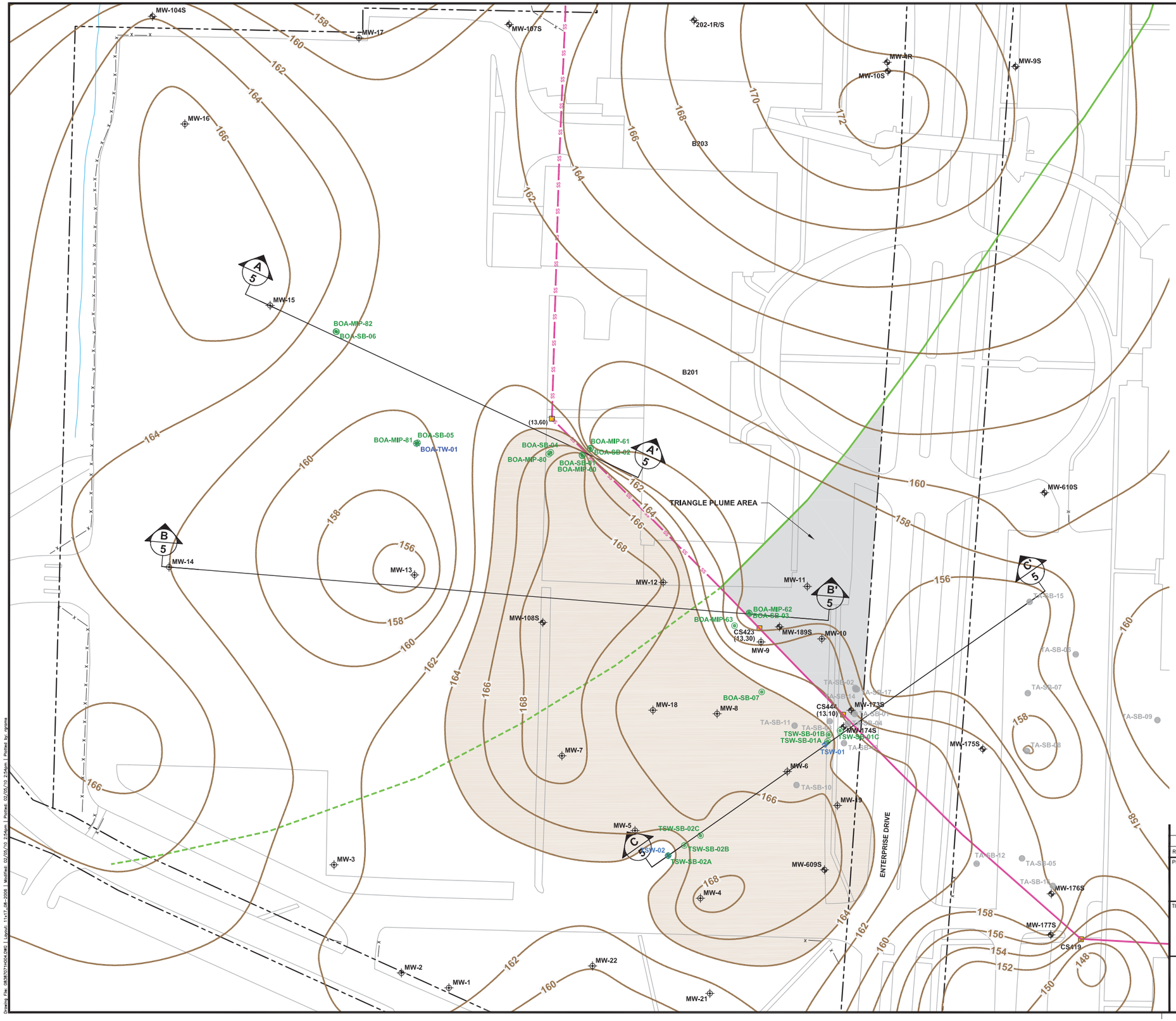
PROJECT
FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE
MEMBRANE INTERFACE PROBE, SOIL BORING AND MONITORING WELL LOCATIONS

NJ Authorization #24GA28029100
Golder Associates
Newark, New Jersey

PROJECT No.	083-87071		FILE No.	08387071H003	
DESIGN	RG	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	CDH	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 3



LEGEND

- CROSS SECTION DESIGNATION
- FIGURE No. WHERE CROSS SECTION IS PRESENTED
- PROPERTY/PARCEL BOUNDARY
- 42-INCH DIAMETER SEWER SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- UNSATURATED SURFICIAL SAND UNIT (SITE PERIMETER CONTROL SYSTEM)
- STORM SEWER LINE
- INTERPRETED PORTION OF UNSATURATED SAND UNIT (GSC 2008)
- 160 — INTERPRETED BOTTOM OF SURFICIAL SAND ELEVATION CONTOUR (FT. MSL)
- AREA OF LIMITED SATURATED SURFICIAL SAND THICKNESS IMMEDIATELY DOWNGRADIENT OF THE TRIANGLE PLUME AREA
- CATCH BASIN
- (13.60) — DEPTH TO BOTTOM OF CATCH BASIN (FT. BGS)
- B003 — BUILDING NUMBER
- EXISTING IBM MONITORING WELL
- EXISTING TECHCITY MONITORING WELL
- PREVIOUS SOIL BORING LOCATION (APRIL 2009 INVESTIGATION)
- MIP/SOIL BORING LOCATION (NOVEMBER 2009 INVESTIGATION)
- TEMPORARY MONITORING WELL LOCATION
- TRIANGLE PLUME AREA SENTINEL WELL (TSW) LOCATION

NOTE

1.) BOTTOM OF SURFICIAL SAND ELEVATION CONTOURS WERE GENERATED BY EVS/MVS VERSION 9.22 RELEASED BY C TECH CORPORATION (2009) AND INTERPRETED BY GOLDER. CONTOURS ARE PRESENTED FOR THE PURPOSE OF INDICATING TRENDS BETWEEN BORINGS. ACTUAL BOTTOM OF SURFICIAL SAND ELEVATIONS WILL DIFFER FROM THE ELEVATIONS INDICATED BY THE CONTOURS.

REFERENCES

1.) BASE MAP 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.) SURVEY INFORMATION FOR EXISTING MONITORING WELLS MW-1 THROUGH MW-17 TAKEN FROM "SUMMARY OF MONITORING WELL COMPLETION DATA," TABLE 4, PREPARED BY TECHCITY. MONITORING WELLS MW-18 THROUGH MW-22 DIGITIZED FROM A HARDCOPY FILE ENTITLED "CROSS SECTION OVERVIEW MAP," FIGURE 6, DATED APRIL 2009, PREPARED BY ERM.

50 0 50 100
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE

INTERPRETED BASE OF SURFICIAL SAND CONTOUR MAP TRIANGLE PLUME AREA

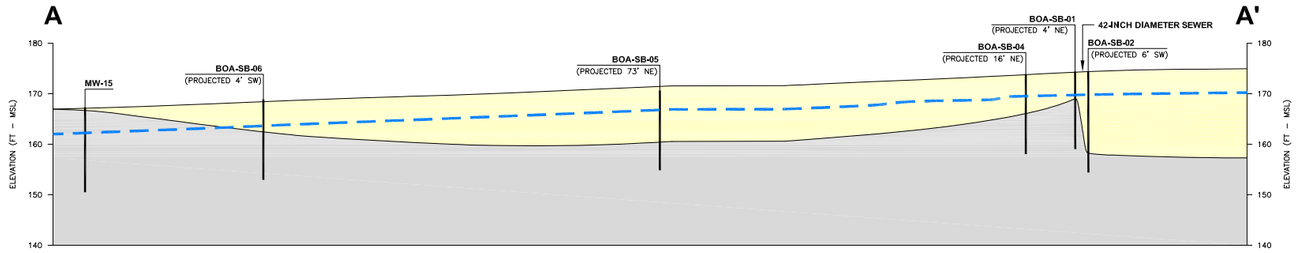
NJ Authorization #24GA28029100

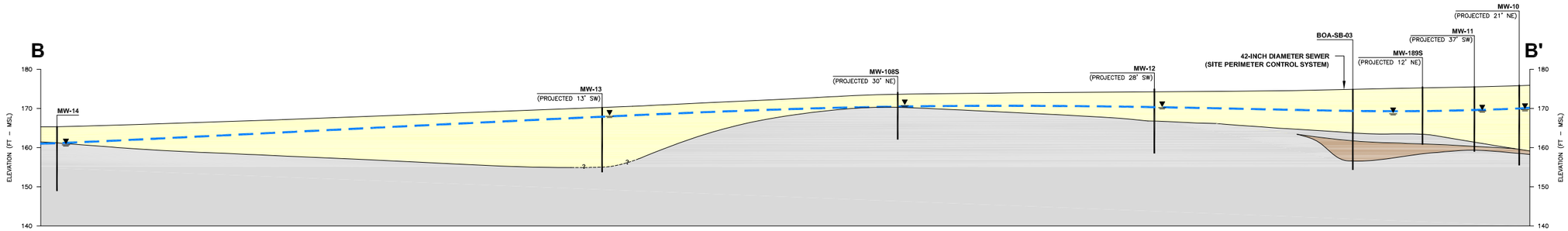
Golder Associates
Newark, New Jersey

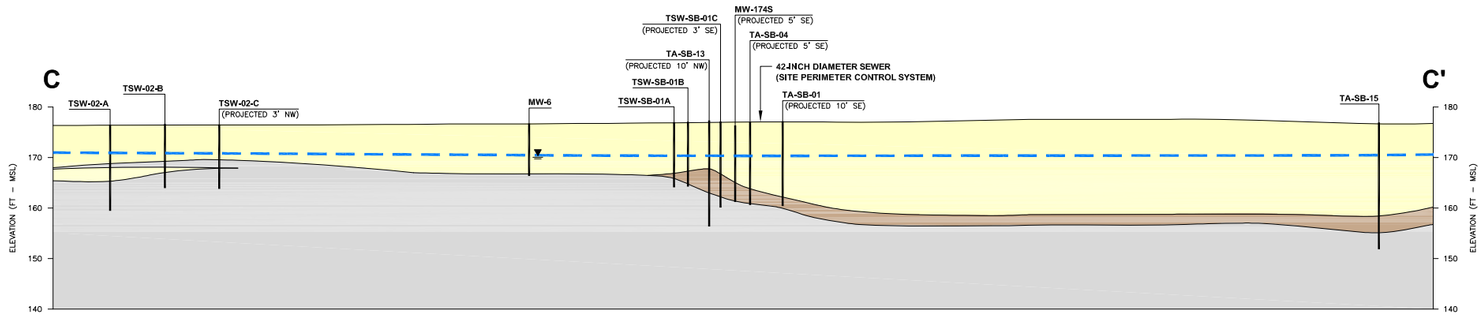
PROJECT No.	083-87071		FILE No.	08387071H004	
DESIGN	RG	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	CDH	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 4

Drawing File: 08387071H004.dwg | Layout: 11x17_08-2006 | Modified: 02/05/10 2:34pm | Plotted: 02/05/10 2:34pm | Plotted By: rgreene







LEGEND

- GROUNDWATER ELEVATION (SEE NOTE 2)
- SURFICIAL SAND UNIT
- SILTY SAND AND CLAY TRANSITION UNIT
- VARVED CLAY UNIT

NOTES

1.) CROSS SECTION AND MIP BORING PROFILES GENERATED BY EVS/MVS VERSION 9.3 RELEASED BY C TECH CORPORATION (2009) AND INTERPRETED BY GOLDER.

2.) GROUNDWATER ELEVATIONS PRESENTED ON CROSS SECTIONS ARE BASED ON MARCH 2009 DATA FOR PARCEL 1 WELLS AND APRIL 2009 TEMPERATURE DATA FOR TRIANGLE PLUME AREA MIP PROBES, AS GENERATED BY EVS/MVS VERSION 9.3 RELEASED BY CTECH CORPORATION (2009) AND INTERPRETED BY GOLDER.

3.) SOME MIP PROBE AND SOIL BORING LOCATIONS ARE PROJECTED OFF-SECTION.

4.) THE SIZE OF BORINGS AND WELLS SHOWN ARE EXAGGERATED.

30 0 30 60
HORIZONTAL SCALE FEET

15 0 15 30
VERTICAL SCALE FEET

VERTICAL EXAGGERATION X2

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE

INTERPRETED GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C'

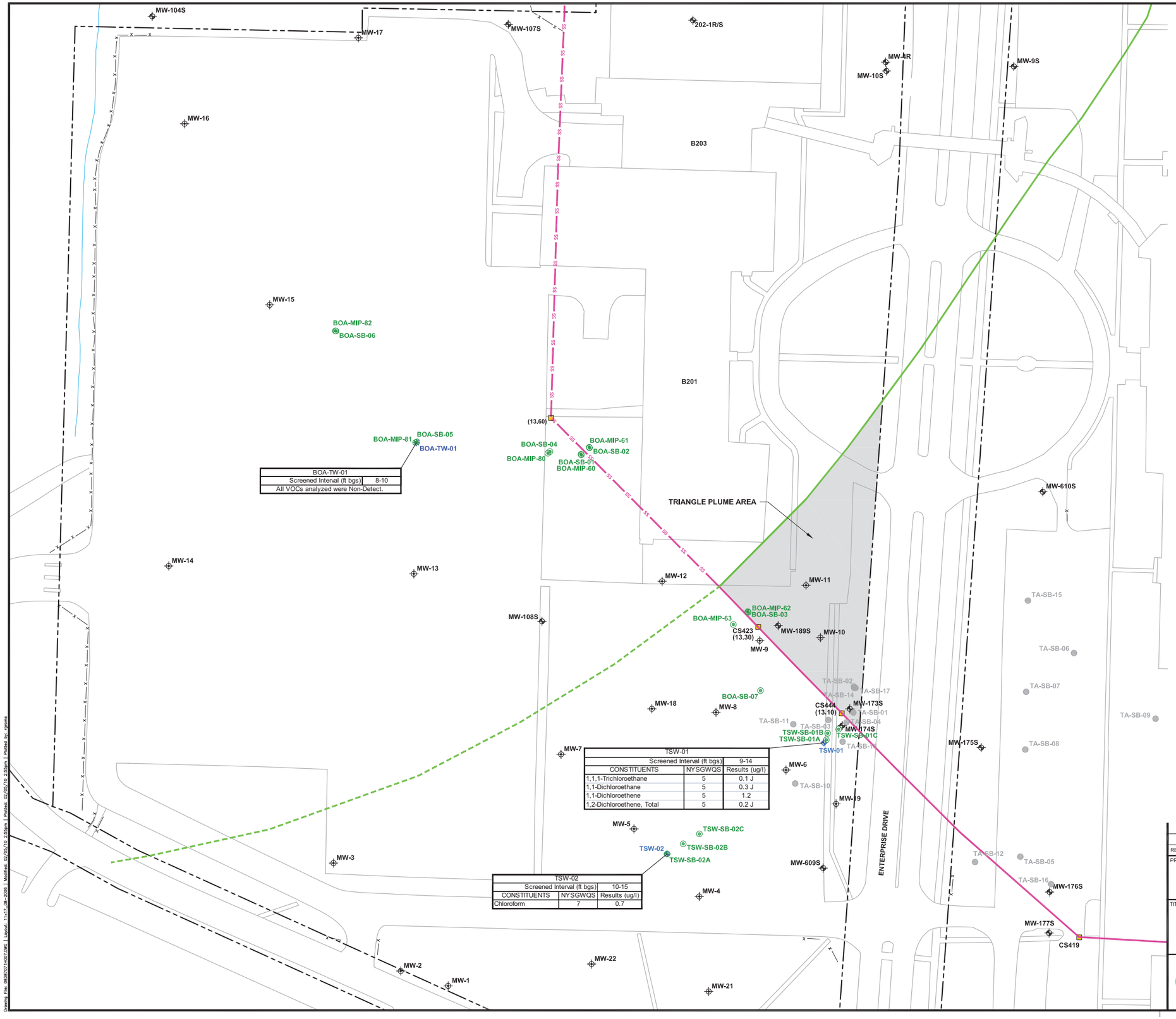
NJ Authorization #24GA28029100

Golder Associates
Newark, New Jersey

PROJECT No.		083-87071	FILE No.		08387071H005
DESIGN	CDH	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	RG	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 5

Drawing File: 08387071H005.dwg Feb. 05, 2010 - 2:45pm



BOA-TW-01	
Screened Interval (ft bgs)	8-10
All VOCs analyzed were Non-Detect.	

TSW-01		
Screened Interval (ft bgs)		9-14
CONSTITUENTS	NYSGWQS	Results (ug/l)
1,1,1-Trichloroethane	5	0.1 J
1,1-Dichloroethane	5	0.3 J
1,1-Dichloroethene	5	1.2
1,2-Dichloroethene, Total	5	0.2 J

TSW-02		
Screened Interval (ft bgs)		10-15
CONSTITUENTS	NYSGWQS	Results (ug/l)
Chloroform	7	0.7

LEGEND

- PROPERTY/PARCEL BOUNDARY
- 42-INCH DIAMETER SEWER SYSTEM (SITE PERIMETER CONTROL SYSTEM)
- UNSATURATED SURFICIAL SAND UNIT (SITE PERIMETER CONTROL SYSTEM)
- SS — SS — STORM SEWER LINE
- INTERPRETED PORTION OF UNSATURATED SAND UNIT (GSC 2008)
- CATCH BASIN
- (13.60) DEPTH TO BOTTOM OF CATCH BASIN (FT. BGS)
- B003 BUILDING NUMBER
- EXISTING IBM MONITORING WELL
- EXISTING TECHCITY MONITORING WELL
- PREVIOUS SOIL BORING LOCATION (APRIL 2009 INVESTIGATION)
- MIP/SOIL BORING LOCATION (NOVEMBER 2009 INVESTIGATION)
- TEMPORARY MONITORING WELL LOCATION
- TRIANGLE PLUME AREA SENTINEL WELL (TSW) LOCATION

NOTE

1.) ALL RESULTS IN MICROGRAMS PER LITER (ug/L).

REFERENCES

1.) BASE MAP 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.) SURVEY INFORMATION FOR EXISTING MONITORING WELLS MW-1 THROUGH MW-17 TAKEN FROM "SUMMARY OF MONITORING WELL COMPLETION DATA," TABLE 4, PREPARED BY TECHCITY. MONITORING WELLS MW-18 THROUGH MW-22 DIGITIZED FROM A HARDCOPY FILE ENTITLED "CROSS SECTION OVERVIEW MAP," FIGURE 6, DATED APRIL 2009, PREPARED BY ERM.

50 0 50 100
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FORMER IBM FACILITY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
KINGSTON, NEW YORK

TITLE

GROUNDWATER RESULTS SUMMARY MAP TRIANGLE PLUME AREA

NJ Authorization #24GA28029100
Golder Associates
Newark, New Jersey

PROJECT No.	083-87071		FILE No.	08387071H007	
DESIGN	RG	02/05/10	SCALE	AS SHOWN	REV. 0
CADD	CDH	02/05/10			
CHECK	CDH	02/05/10			
REVIEW	AS	02/05/10			

FIGURE 6

Drafter: Pat | 08387071H007.DWG | Layout: 11x17_08-2006 | Modified: 02/05/10 2:53pm | Plotted: 02/05/10 2:53pm | Plotted by: agoins

TABLES

TABLE 1
GROUNDWATER SAMPLING RESULTS
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
FORMER IBM KINGSTON FACILITY
KINGSTON, NEW YORK

				Sample ID:								
				Sample Name:	BOA-TW-01-09 BOA-TW-01			TSW-01 TSW-01			TSW-02 TSW-02	
				Sample Date:	11/12/2009			11/4/2009			11/4/2009	
Parameter	CAS	Unit	GWQS	Result	L.Qual	Rept Limit	Result	L.Qual	Rept Limit	Result	L.Qual	Rept Limit
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,1,1-Trichloroethane	71-55-6	ug/l	5	0.1	U	0.1	0.1	J	0.1	0.1	U	0.1
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,1,2-Trichloroethane	79-00-5	ug/l	1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,1-Dichloroethane	75-34-3	ug/l	5	0.1	U	0.1	0.3	J	0.1	0.1	U	0.1
1,1-Dichloroethene	75-35-4	ug/l	5	0.1	U	0.1	1.2		0.1	0.1	U	0.1
1,2,3-Trichloropropane	96-18-4	ug/l	0.04	0.3	U	0.3	0.3	U	0.3	0.3	U	0.3
1,2-Dichloro-1,1,2-trifluoroethane	354-23-4	ug/l	5	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2
1,2-Dichlorobenzene	95-50-1	ug/l	3	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,2-Dichloroethane	107-06-2	ug/l	0.6	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,2-Dichloroethene, Total	540-59-0	ug/l	5	0.1	U	0.1	0.2	J	0.1	0.1	U	0.1
1,2-Dichloropropane	78-87-5	ug/l	1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,3-Dichlorobenzene	541-73-1	ug/l	3	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
1,4-Dichlorobenzene	106-46-7	ug/l	3	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
2-Chlorotoluene	95-49-8	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
4-Chlorotoluene	106-43-4	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Benzene	71-43-2	ug/l	1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Benzyl Chloride	100-44-7	ug/l	NS	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Bromobenzene	108-86-1	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Bromodichloromethane	75-27-4	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Bromoform	75-25-2	ug/l	NS	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Bromomethane	74-83-9	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Carbon Tetrachloride	56-23-5	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Chlorobenzene	108-90-7	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Chloroethane	75-00-3	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Chloroform	67-66-3	ug/l	7	0.1	U	0.1	0.1	U	0.1	0.7		0.1
Chloromethane	74-87-3	ug/l	NS	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.4	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Dibromochloromethane	124-48-1	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Dibromomethane	74-95-3	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Dichlorodifluoromethane	75-71-8	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Ethylbenzene	100-41-4	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Freon 113	76-13-1	ug/l	5	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2
Methylene Chloride	75-09-2	ug/l	5	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2
Tetrachloroethene	127-18-4	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Toluene	108-88-3	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.4	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Trichloroethene	79-01-6	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Trichlorofluoromethane	75-69-4	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Vinyl Chloride	75-01-4	ug/l	2	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Xylenes, Total	1330-20-7	ug/l	5	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1

Notes:

GWQS - NYS Part 703 Groundwater Quality Standard

NS - No Standard Available

ug/l - micrograms per liter

U - Result was not detected above the method detection limit

J - Result was detected between the method detection limit and the reporting limit.

Bold/Italic - Result is greater than the listed standard.

L. Qual - Laboratory Qualifier - data hae not been validated.

Rept Limit - Reporting Limit

Golder Associates

ATTACHMENT A

SOIL BORING AND WELL CONSTRUCTION LOGS

RECORD OF BOREHOLE TSW-01-A

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Triangle Area, near MW-174S

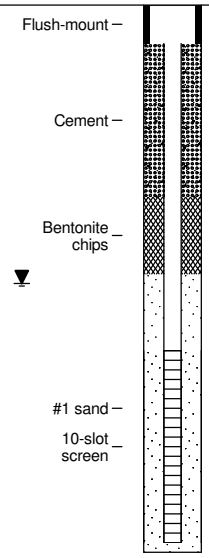
DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/29/09
DATE COMPLETED: 10/29/09
WEATHER: Clear

DATUM: New York State Plane
COORDS: N: 717,517.3 E: 590,587.2
GS ELEVATION: 177.1 ft
TOC ELEVATION: 176.5 ft
TEMPERATURE: 56 F

INCLINATION: -90
DEPTH W.L.: 7.3 ft
ELEVATION W.L.: 169.3 ft
DATE W.L.: 11/4/09
TIME W.L.: 10:54 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT
0		0.0 - 0.3 Dark brown, SILTY fine SAND, grass and root material, damp, no odor (SM) (TOPSOIL)	SM		0.3				
	175	0.3 - 4.0 Red-brown, very fine to fine SAND, mostly fine, dry, no odor (SP)	SP		173.1	0.0	1	MACRO CORE	5.0 / 5.0
		4.0 - 4.8 Light gray-brown, very fine SAND, little to some Silt, dense, dry, no odor (SP)	SP		172.3				
5		4.8 - 5.0 Orange-brown, fine SAND, oxidized, dry, no odor (SP)	SP		5.0				
	170	5.0 - 7.5 Light gray-brown, fine to medium SAND, mostly fine, damp at 7.0 ft bgs, no odor (SP)	SP		169.6	0.0	2	MACRO CORE	5.0 / 5.0
		7.5 - 10.0 Brown and gray, fine to medium SAND, oxidization in horizons, wet at 8.0 ft bgs, no odor (SP)	SP		7.5 167.1				
10		10.0 - 12.0 Brown, fine to medium SAND, little Silt, wet, no odor (SP)	SP		10.0 165.1				
	165	12.0 - 13.0 Light orange-brown, CLAY, little Silt and very fine Sand, soft, plastic, wet, no odor (CL)	CL		12.0 164.1	0.0	3	MACRO CORE	5.0 / 5.0
		13.0 - 15.0 Gray, CLAY, little to some very fine Sand, soft to stiff, plastic, wet, no odor (CL)	CL		13.0 162.1				
15		Boring completed at 15.0 ft							
	160								
20									
	155								
25									
	150								
30									
	145								
35									
	140								
40									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

TSW-01
Borehole Diameter: 6-inch
WELL CASING
Interval: 0 - 9 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded
WELL SCREEN
Interval: 9 - 14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010
End Cap: Flush
FILTER PACK
Interval: 7 - 14 ft
Type: #1 silica sand
Quantity: 7 ft
FILTER PACK SEAL
Interval: 5 - 7 ft
Type: Bentonite
Quantity: 2 ft
ANNULUS SEAL
Interval: 1 - 5 ft
Type: Cement-bentonite grout
Quantity: 4 ft

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA BOREHOLE RECORD IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE TSW-01-B

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Triangle Area, near MW-174S

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/29/09
DATE COMPLETED: 10/29/09
WEATHER: Cloudy

DATUM: New York State Plane
COORDS: N: 717,524.8 E: 590,588.6
GS ELEVATION: 177.4 ft
TOC ELEVATION: N/A
TEMPERATURE: 54 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	175	0.0 - 0.5 Dark brown, SILTY fine SAND, grass and root material, damp, no odor (SM) (TOPSOIL)	SM		176.9 0.5					
		0.5 - 4.0 Red-brown, very fine to fine SAND, mostly fine, dry, no odor (SP)	SP		173.4	1	MACRO CORE	0.0	5.0 / 5.0	
5	170	4.0 - 4.8 Light gray-brown, very fine SAND, little Silt, dense, dry, no odor (SP)	SP SP		172.6 5.0					
		4.8 - 5.0 Orange-brown, fine SAND, oxidized, dry, no odor (SP)	SP		170.4					
		5.0 - 7.0 Light gray-brown, fine to medium SAND, damp at 7.0 ft bgs, no odor (SP)			7.0	2	MACRO CORE	0.0	5.0 / 5.0	
10	165	7.0 - 10.0 Brown and gray, fine to medium SAND, oxidization in horizons, wet at 8.25 ft bgs, no odor (SP)	SP		167.4					
		10.0 - 12.0 Dark brown, fine to medium SAND, mostly medium, wet, no odor (SP)	SP		10.0 165.4					
		12.0 - 15.0 Gray and light brown, CLAY, little to some fine Sand, soft, plastic, wet, no odor (CL)	CL		12.0 162.4	3	MACRO CORE	0.0	5.0 / 5.0	
15	160	Boring completed at 15.0 ft								
20	155									
25	150									
30	145									
35	140									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE TSW-01-C

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 20.0 ft
AZIMUTH: N/A
LOCATION: Triangle Area, near MW-174S

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/29/09
DATE COMPLETED: 10/29/09
WEATHER: Overcast

DATUM: New York State Plane
COORDS: N: 717,579.4 E: 590,601.3
GS ELEVATION: 177.2 ft
TOC ELEVATION: N/A
TEMPERATURE: 53 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0		0.0 - 0.5 Dark brown, SILTY fine SAND, grass and root material, damp, no odor (SM) (TOPSOIL)	SM		176.7 0.5					
	175	0.5 - 4.0 Red-brown, very fine to fine SAND, dry, no odor (SP)	SP		173.2	1	MACRO CORE	0.0	4.0 / 5.0	
		4.0 - 5.0 NO RECOVERY			4.0 172.2					
5		5.0 - 9.0 Red-brown to brown, very fine to fine SAND, mostly fine, little Silt, wet at 8.5 ft bgs, 1/4-inch light gray brown SILTY CLAY at 7.75 ft bgs, no odor (SP)	SP		5.0 168.2	2	MACRO CORE	0.0	5.0 / 5.0	
	170	9.0 - 10.0 Dark brown, SILTY very fine SAND and very fine SANDY SILT, wet,	ML		9.0 167.2					
10		3-inches light gray to yellow gray SILTY CLAY with little fine Sand at 9.25 ft bgs, no odor (ML)			10.0					
		10.0 - 12.5 Brown, SILTY fine SAND, wet, no odor (SM)	SM		164.7	3	MACRO CORE	0.0	5.0 / 5.0	
	165	12.5 - 13.0 Dark brown to black, fine SAND, wet, no odor (SP)	SP		164.2					
		13.0 - 14.0 Light brown, SILT, little to some Clay, trace very fine Sand, soft, wet, no odor (ML)	ML		13.0 163.2					
15		14.0 - 15.0 Gray, CLAY, trace to little very fine Sand, soft, plastic, wet, no odor (CL)	CL		14.0 162.2					
		15.0 - 16.0 Dark brown, fine SAND, trace Silt, wet, no odor (SP)	SP		15.0 161.2					
	160	16.0 - 16.5 Light brown, CLAYEY SILT, little fine Sand, wet, no odor (CL-ML)	CL-ML		160.7	4	MACRO CORE	0.0	5.0 / 5.0	
		16.5 - 16.8 Dark brown, fine SAND, wet, no odor (SP)	SP							
		16.8 - 17.0 Light gray, fine SANDY CLAY, soft, plastic, wet, no odor (CL)	CL							
20		17.0 - 17.3 Brown, fine SAND, trace to little Silt, wet, no odor (SP)	SP		17.3					
		17.3 - 20.0 Gray, CLAY, trace to little Silt, soft, plastic, wet, no odor (CL)	CL		157.2					
	155	Boring completed at 20.0 ft								
25										
	150									
30										
	145									
35										
	140									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE TSW-02-A

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 20.0 ft
AZIMUTH: N/A
LOCATION: Bank of America Parking Lot

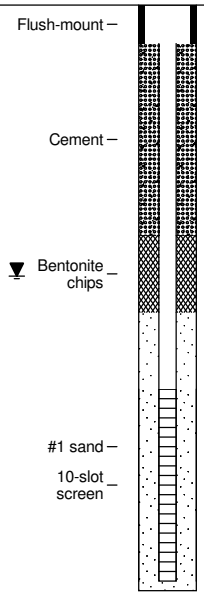
DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/30/09
DATE COMPLETED: 10/30/09
WEATHER: Overcast

DATUM: New York State Plane
COORDS: N: 717,387.1 E: 590,405.8
GS ELEVATION: 176.6 ft
TOC ELEVATION: 176.3 ft
TEMPERATURE: 53 F

INCLINATION: -90
DEPTH W.L.: 7.1 ft
ELEVATION W.L.: 169.3 ft
DATE W.L.: 11/4/09
TIME W.L.: 12:04 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT
0	176.6	0.0 - 0.3 ASPHALT			0.3				
	175	0.3 - 4.0 Dark brown and orange-brown, SILTY fine SAND, dry, no odor (SM)	SM		172.6	0.0	1	MACRO CORE	5.0/5.0
		4.0 - 4.5 Light brown, CLAYEY fine SAND, dense, dry, no odor (SC)	SC / SP		172.1 / 171.6				
5		4.5 - 5.0 Light gray-brown with orange oxidization mottling, very fine to fine SAND, dry, no odor (SP)	SP		5.0 / 170.6				
	170	5.0 - 6.0 Light gray-brown with orange oxidization mottling, fine SAND, dry, no odor (SP)	SP		6.0 / 168.6	0.0	2	MACRO CORE	5.0/5.0
		6.0 - 8.0 Light gray, fine to medium SAND, mostly fine, wet at 7.75 ft bgs, no odor (SP)	SP / ML / CL		8.0 / 167.6 / 166.6				
10		8.0 - 9.0 Dark brown, fine SAND, wet, no odor (SP)							
		9.0 - 9.3 Light brown, SILT, soft, wet, no odor (ML)			10.0 / 165.1				
	165	9.3 - 10.0 Gray, CLAY, trace to little very fine Sand, soft, plastic, wet, no odor (CL)	SP		11.5	0.0	3	MACRO CORE	3.5/5.0
		10.0 - 11.5 SLOUGH							
		11.5 - 14.3 Brown, very fine to fine SAND, little Silt, wet, no odor (SP)	CL		162.3 / 161.6				
15		14.3 - 15.0 Light gray, fine SANDY CLAY, soft, plastic, wet, no odor (CL)			15.0				
	160	15.0 - 20.0 Gray, CLAY, trace fine Sand, very soft to soft, plastic, wet, no odor (CL)	CL			0.0	4	MACRO CORE	5.0/5.0
20	156.6	Boring completed at 20.0 ft							
	155								
25									
	150								
30									
	145								
35									
	140								
40									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

TSW-02
Borehole Diameter: 6-inch
WELL CASING
Interval: 0 -10 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded
WELL SCREEN
Interval: 10 - 15 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Flush
FILTER PACK
Interval: 8 - 10 ft
Type: #1 silica sand
Quantity: 7 ft
FILTER PACK SEAL
Interval: 6 - 8 ft
Type: Bentonite
Quantity: 2 ft
ANNULUS SEAL
Interval: 1 - 6 ft
Type: Cement-bentonite grout
Quantity: 5 ft

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA BOREHOLE RECORD IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE TSW-02-B

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Bank of America Parking Lot

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/30/09
DATE COMPLETED: 10/30/09
WEATHER: Overcast

DATUM: New York State Plane
COORDS: N: 717,398.8 E: 590,424.1
GS ELEVATION: 176.6 ft
TOC ELEVATION: N/A
TEMPERATURE: 53 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	175	0.0 - 0.3 ASPHALT			0.3					
		0.3 - 4.0 Brown to dark brown, very fine to fine SAND, trace to little Silt, dense, dry, no odor (SP)	SP		172.6	1	MACRO CORE	0.0	5.0 / 5.0	
5	170	4.0 - 5.0 Dark gray, SILTY very fine SAND, dense, dry, no odor (SM)	SM		4.0 171.6					
		5.0 - 9.0 Orange-brown, fine to medium SAND, mottled black from 8.75 - 9.0 ft bgs, dry to 7.5 ft and wet at 8.0 ft bgs, no odor (SP)	SP		5.0 167.6	2	MACRO CORE	0.0	5.0 / 5.0	
10	165	9.0 - 9.3 Orange and light brown, interlayered, SILT, trace very fine Sand, stiff, wet, no odor (ML)	ML CL-ML		166.6					
		9.3 - 10.0 Light gray, SILT and CLAY, stiff, plastic, wet, no odor (CL-ML)	SP		10.0 165.1					
		10.0 - 11.5 Brown, fine SAND, trace to little Silt, wet, no odor (SP)			11.5	3	MACRO CORE	0.0	5.0 / 5.0	
15	160	11.5 - 15.0 Gray, CLAY, trace very fine Sand, very soft to soft, plastic, wet, no odor (CL)	CL		161.6					
		Boring completed at 15.0 ft								
20	155									
25	150									
30	145									
35	140									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE TSW-02-C

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Bank of America Parking Lot

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 10/30/09
DATE COMPLETED: 10/30/09
WEATHER: Overcast

DATUM: New York State Plane
COORDS: N: 717,410.1 E: 590,442.5
GS ELEVATION: 176.6 ft
TOC ELEVATION: N/A
TEMPERATURE: 53 F

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	176	0.0 - 0.3 ASPHALT	GP		175.6					
		0.3 - 1.0 Brown, fine to medium GRAVEL and fine to medium SAND, dense, dry, no odor (GP) (SUB-BASE)	SP		1.0 174.1	1	MACRO CORE	0.0	5.0 / 5.0	
		1.0 - 2.5 Orange-brown, very fine to fine SAND, dry, no odor (SP)	SP		2.5					
5	171	2.5 - 5.0 Light brown, fine SAND, dry, no odor (SP)			171.6					
		5.0 - 7.5 Brown, fine SAND, damp at 7.5 ft bgs, no odor (SP)	SP		5.0 169.1	2	MACRO CORE	0.0	5.0 / 5.0	
		7.5 - 8.0 Gray-brown, fine SAND, with orange and red oxidized fine SANDY SILT 1/4-inch thick at 8.0 ft bgs, wet at 8.0 ft bgs, no odor (SP)	SP CL-ML		168.6 8.0 167.6					
10	166	8.0 - 9.0 Gray and brown, SILTY CLAY, trace very fine Sand, very soft, plastic, no odor (CL-ML)	CL SP		9.0 166.6 166.1					
		9.0 - 10.0 Light gray, CLAY, soft, plastic, wet, no odor (CL)			10.5					
		10.0 - 10.5 Light brown, very fine to fine SAND, little Silt, wet, no odor (SP)				3	MACRO CORE	0.0	5.0 / 5.0	
15	161	10.5 - 15.0 Gray, CLAY, very soft to soft, plastic, wet, no odor (CL)	CL		161.6					
		Boring completed at 15.0 ft								
20	156									
25	151									
30	146									
35	141									
40	136									

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-01

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: West side, B.O.A. bldg

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/5/09
DATE COMPLETED: 11/5/09
WEATHER: Cloudy

DATUM: New York State Plane
COORDS: N: 717,842.7 E: 590,307.7
GS ELEVATION: 174.4 ft
TOC ELEVATION: N/A
TEMPERATURE: 38 F

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	174	0.0 - 3.0 Brown, SILTY very fine to fine SAND, grass and root material, dry, no odor (SM) (TOPSOIL)	SM		171.4	1	MACRO CORE	0.0	5.0 / 5.0	
		3.0 - 4.0 Brown mottled orange, SILT, trace very fine Sand, dry, no odor (ML)	ML		3.0 170.4					
	170	4.0 - 5.0 Brown and light gray, SILTY CLAY, soft, plastic, dry, no odor (CL-ML)	CL-ML		4.0 169.4					
5		5.0 - 7.0 Light gray and orange-brown, CLAYEY SILT and SILTY CLAY, stiff, friable, plastic, dry, no odor (CL-ML)	CL-ML		5.0 167.4	2	MACRO CORE	0.0	5.0 / 5.0	
		7.0 - 7.5 Red-brown, CLAY, very soft, plastic, wet at 7.5 ft bgs, no odor (CL)	CL		166.9 7.5					
	165	7.5 - 10.0 Gray, CLAY, soft, plastic, wet, no odor (CL)	CL		164.4					
10		10.0 - 11.0 Gray, very fine SANDY SILT and CLAY, loose, plastic, wet, no odor (CL-ML) (Possible SLOUGH)	CL-ML		10.0 163.4	3	MACRO CORE	0.0	5.0 / 5.0	
		11.0 - 15.0 Gray, interlayered, CLAY, very fine Sand lenses less than 1/2-inch in thickness, soft, plastic, wet, no odor (CL)	CL		11.0 159.4					
	160	Boring completed at 15.0 ft								
15										
	155									
20										
	150									
25										
	145									
30										
	140									
35										
	135									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-02

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 20.0 ft
AZIMUTH: N/A
LOCATION: West side, B.O.A. bldg

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/5/09
DATE COMPLETED: 11/5/09
WEATHER: Cloudy

DATUM: New York State Plane
COORDS: N: 717,850.0 E: 590,317.4
GS ELEVATION: 174.7 ft
TOC ELEVATION: N/A
TEMPERATURE: 41 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0		0.0 - 2.0 Light brown, SILTY very fine to fine SAND, grass and root material, dry, no odor (SM) (TOPSOIL)	SM		172.7					
		2.0 - 4.5 Light gray and brown, very fine SANDY SILT, stiff, dry, no odor (ML)	ML		2.0 170.2	1	MACRO CORE	0.0	5.0 / 5.0	
5	170	4.5 - 4.8 Light brown mottled orange, very fine SANDY CLAY, stiff, plastic, dry, no odor (CL)	CL							
		4.8 - 5.0 Brown, very fine SAND and SILT, damp, 1-inch of fine gravel fragments at 4.75 ft bgs, no odor (ML)	ML		5.0 167.7					
		5.0 - 7.0 Brown, very fine SANDY SILT, stiff, damp, no odor (ML)	ML			2	MACRO CORE	0.0	5.0 / 5.0	
		7.0 - 10.0 Brown, fine to medium SAND, mostly medium, damp, 2-inches gray-brown soft plastic CLAY at 8.75 ft, no odor (SP)	SP		7.0 164.7					
10	165	10.0 - 12.0 NO RECOVERY			10.0 162.7					
		12.0 - 13.5 Brown, fine to medium SAND, damp, no odor (SP)	SP		12.0 161.2	3	MACRO CORE	0.0	3.0 / 5.0	
		13.5 - 15.0 Brown, fine to medium SAND, mostly medium, some very fine Gravel, little Silt, wet at 13.75 ft bgs, no odor (SP)	SP		13.5 159.7					
15	160	15.0 - 17.0 Brown, fine to medium SAND, mostly medium, little Silt, little very fine Gravel, wet, no odor (SP)	SP		15.0 157.7					
		17.0 - 18.0 Brown, fine to medium SAND, little to some Silt, wet, no odor (SP-SM)	SP-SM		17.0 156.7	4	MACRO CORE	0.0	5.0 / 5.0	
		18.0 - 20.0 Gray and red-brown, varved, CLAY and very fine SANDY SILT, soft, plastic, wet, no odor (CL)	CL		18.0 154.7					
20	155	Boring completed at 20.0 ft								
25	150									
30	145									
35	140									
40	135									

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-03

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: B.O.A Parking Lot, near CS-444

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/5/09
DATE COMPLETED: 11/5/09
WEATHER: Cloudy

DATUM: New York State Plane
COORDS: N: 717,662.6 E: 590,498.1
GS ELEVATION: 175.2 ft
TOC ELEVATION: N/A
TEMPERATURE: 40 F

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	175	0.0 - 0.5 ASPHALT			174.7					
		0.5 - 5.0 Brown, very fine to fine SAND, mostly very fine, little Silt, dry, no odor (SP)	SP		0.5 170.2	1	MACRO CORE	0.0	4.5 / 5.0	
5	170	5.0 - 8.0 Brown, very fine to fine SAND, mostly very fine, some to and Silt, damp at 7.5 ft bgs, no odor (SP-SM)	SP-SM		5.0 167.2	2	MACRO CORE	0.0	5.0 / 5.0	
		8.0 - 8.3 Brown, very fine SAND and SILT, soft, wet, no odor (SM)	SM ML		166.2					
		8.3 - 9.0 Light brown, SILT, little to some Sand, stiff, wet, no odor (ML)	CL		165.5					
10	165	9.0 - 9.8 Light gray and brown, CLAY, trace to little very fine Sand, stiff, plastic, wet, no odor (CL)	SP CL SC		10.3 164.0					
		9.8 - 10.0 Dark brown, fine to medium SAND, mostly fine, trace Silt, wet, no odor (SP)	CL		11.3	3	MACRO CORE	0.0	5.0 / 5.0	
		10.0 - 10.3 Gray, CLAY, soft, plastic, wet, no odor (CL)			161.7					
		10.3 - 11.3 Brown, CLAYEY very fine SAND, very soft, with 1/2 - 1-inch CLAY nodules, wet, no odor (SC)	SC-SM		13.5 160.2					
15	160	11.3 - 13.5 Gray and light brown, CLAY, trace to little very fine Sand, soft, plastic, wet, no odor (CL)			159.7 CL 15.8					
		13.5 - 15.0 Brown, CLAYEY and SILTY very fine SAND, with fine to medium Gravel from 14.75 - 15.0 ft bgs, and 2-inches brown soft plastic CLAY at 14.15 ft and 1.5-inches brown soft plastic CLAY at 14.75 ft bgs, wet, no odor (SC-SM)	SM SP		157.2 18.0	4	MACRO CORE	0.0	4.5 / 5.0	
		15.0 - 15.5 NO RECOVERY	CL		155.7 155.2					
20	155	15.5 - 15.8 Brown, very fine SANDY CLAY, soft, plastic, wet, no odor (CL)			20.0					
		15.8 - 18.0 Brown, SILTY very fine to fine SAND, mostly fine, wet, no odor (SM)				5	MACRO CORE		0.5 / 5.0	
		18.0 - 19.5 Brown, very fine to fine SAND, with fine Gravel, little to some Silt, wet, no odor (SP)								
		19.5 - 20.0 Gray, CLAY, trace to little very fine Sand, soft, plastic, wet, no odor (CL)			150.2					
25	150	20.0 - 25.0 NO RECOVERY: 0.5-feet of very soft Silty fine Sand with a fragment of large gravel in the shoe of the sampler			25.0					
		25.0 - 30.0 NO RECOVERY				6	MACRO CORE		0.0 / 5.0	
30	145	Boring completed at 30.0 ft			145.2					
35	140									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-04

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: West side, B.O.A. bldg

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/11/09
DATE COMPLETED: 11/11/09
WEATHER: Windy

DATUM: New York State Plane
COORDS: N: 717,845.8 E: 590,272.3
GS ELEVATION: 173.6 ft
TOC ELEVATION: N/A
TEMPERATURE: 48 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0		0.0 - 0.5 Dark brown, SILTY fine SAND, grass and root material, dry, no odor (SM) (TOPSOIL)	SM		173.1					
		0.5 - 0.8 Gray, fine to medium GRAVEL and fine to medium SAND, dry, no odor (GP) (SUB-BASE)	GP		0.8 171.1	1	MACRO CORE	0.0	5.0 / 5.0	
	170	0.8 - 2.5 Brown to red-brown, very fine SANDY SILT, stiff, dry, no odor (ML)	ML		2.5					
5		2.5 - 5.0 Light brown to brown, SILT, little very fine Sand, firm, damp, no odor (ML)	ML		168.6 5.0					
		5.0 - 6.5 Light brown to brown, SILT, trace very fine Sand, stiff, damp, no odor (ML)	ML		167.1 6.5	2	MACRO CORE	0.0	5.0 / 5.0	
	165	6.5 - 9.8 Brown, CLAY, stiff from 6.5 to 8.0 ft bgs, soft from 8.0 to 9.75 ft bgs, plastic, wet at 8.0 ft bgs, no odor (CL)	CL		163.8					
10		9.8 - 10.0 Gray, CLAY, trace to little very fine Sand, soft, plastic, wet, no odor (CL)	CL		10.0 162.1					
		10.0 - 11.5 Brown, CLAY, little to some very fine Sand, very soft, plastic, wet, no odor (CL)	CL		11.5 161.1	3	MACRO CORE	0.0	5.0 / 5.0	
	160	11.5 - 12.5 Brown, very fine SAND and CLAY, very soft, plastic, wet, no odor (CL)	CL		12.5					
15		12.5 - 15.0 Brown to gray, CLAY, soft, plastic, with 1/2-inch thick very fine SAND in lenses between 14.0 - 15.0 ft bgs, wet, no odor (CL)			158.6					
		Boring completed at 15.0 ft								
	155									
20										
	150									
25										
	145									
30										
	140									
35										
	135									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-05

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Western B.O.A. parking lot

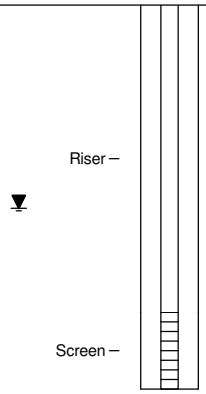
DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/11/09
DATE COMPLETED: 11/11/09
WEATHER: Windy

DATUM: New York State Plane
COORDS: N: 717,856.8 E: 590,120.7
GS ELEVATION: 170.4 ft
TOC ELEVATION: N/A
TEMPERATURE: 48 F

INCLINATION: -90
DEPTH W.L.: 5.3 ft
ELEVATION W.L.: 0.0 ft
DATE W.L.: 11/12/09
TIME W.L.: 10:19 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT
0	170	0.0 - 0.3 ASPHALT	GP						
			SM		169.4				
		0.3 - 0.5 Gray, fine to medium GRAVEL and fine to medium SAND, dry, no odor (GP) (SUB-BASE)	ML		1.0 168.4				
		0.5 - 1.0 Brown, SILTY very fine to fine SAND, dry, no odor (SM)	ML		2.0 167.4	0.0	1	MACRO CORE	5.0/5.0
			SP		166.9				
		1.0 - 2.0 Brown, very fine SANDY SILT, stiff, dry, no odor (ML)	SP		3.5				
5	165	2.0 - 3.0 Gray, very fine SANDY SILT, stiff, dry , no odor (ML)			165.4				
		3.0 - 3.5 Light gray, fine SAND, damp, no odor (SP)	SP		5.0				
		3.5 - 5.0 Dark gray, fine SAND, damp, no odor (SP)				0.0	2	MACRO CORE	5.0/5.0
		5.0 - 9.8 Brown and gray, fine to medium SAND, 1-inch of brown CLAY with very fine Gravel at 6.0 ft bgs, wet at 5.0 ft bgs, no odor (SP)			160.7				
10	160	9.8 - 10.0 Gray, CLAY, very soft, plastic, wet, no odor (CL)	CL		10.0				
		10.0 - 11.3 Gray, fine to medium SAND, some Clay, wet, no odor (SP-SC)	SP-SC		159.2 11.3				
		11.3 - 15.0 Red-brown and gray, CLAY, soft, plastic, wet, no odor (CL)	CL			0.0	3	MACRO CORE	5.0/5.0
15	155	Boring completed at 15.0 ft			155.4				
20	150								
25	145								
30	140								
35	135								
40									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

BOA-TW-01
Borehole Diameter: 2-inch
WELL CASING
Interval: 0 - 8 ft
Material: PVC
Diameter: 1-inch
Joint Type: Threaded
WELL SCREEN
Interval: 8 - 10 ft
Material: PVC
Diameter: 1-inch
Slot Size: 0.010
End Cap: Flush
FILTER PACK
Interval: N/A
Type: N/A
Quantity:
FILTER PACK SEAL
Interval: N/A
Type: N/A
Quantity:
ANNULUS SEAL
Interval: N/A
Type: N/A
Quantity:

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA BOREHOLE RECORD IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-06

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Western B.O.A. parking lot

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/11/99
DATE COMPLETED: 11/11/09
WEATHER: Windy

DATUM: New York State Plane
COORDS: N: 717,983.1 E: 590,028.6
GS ELEVATION: 168.6 ft
TOC ELEVATION: N/A
TEMPERATURE: 48 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0		0.0 - 0.5 ASPHALT			168.1					
			GP		167.6					
		0.5 - 1.0 Gray, fine to medium GRAVEL and fine to medium SAND, dry, no odor (GP) (SUB-BASE)	SP CL		1.5	1	MACRO CORE	0.0	5.0 / 5.0	
		1.0 - 1.3 Brown, very fine SAND, damp, no odor (SP)	SP							
	165	1.3 - 1.5 Light brown, CLAY, soft, plastic, damp, no odor (CL)			163.9					
5		1.5 - 4.8 Brown, fine to medium SAND, trace to little Silt from 1.5 - 3.0 ft bgs, damp, no odor (SP)	CL SP		5.0					
		4.8 - 5.0 Brown, CLAY, trace very fine Sand, soft, plastic, damp, no odor (CL)			162.4 6.3					
		5.0 - 6.3 Light brown, very fine to fine SAND, little Silt, wet, no odor (SP)	CL			2	MACRO CORE	0.0	5.0 / 5.0	
	160	6.3 - 10.0 Brown to gray, distinctive color change at 7.5 ft bgs, CLAY, soft, plastic, with very fine SAND laminations, wet, no odor (CL)			158.6					
10		10.0 - 10.5 Gray, CLAY, soft, plastic, wet, no odor (CL)	CL		158.1					
		10.5 - 13.5 Light gray, CLAY, trace to little fine Sand, very soft, plastic, wet, no odor (CL)	CL		10.5 155.1	3	MACRO CORE	0.0	5.0 / 5.0	
	155	13.5 - 15.0 Gray, CLAY, soft, plastic, with very fine SAND laminations, wet, no odor (CL)	CL		13.5 153.6					
15		Boring completed at 15.0 ft								
	150									
20										
	145									
25										
	140									
30										
	135									
35										
	130									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

RECORD OF BOREHOLE BOA-SB-07

SHEET 1 of 1

PROJECT: Former IBM - Kingston
PROJECT NUMBER: 083-87071.01
DRILLED DEPTH: 15.0 ft
AZIMUTH: N/A
LOCATION: Northwest of TA-MIP-11

DRILL METHOD: Direct Push
DRILL RIG: 6600
DATE STARTED: 11/12/09
DATE COMPLETED: 11/12/09
WEATHER: Windy

DATUM: New York State Plane
COORDS: N: 717,573.4 E: 590,512.2
GS ELEVATION: 175.9 ft
TOC ELEVATION: N/A
TEMPERATURE: 38 F

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	PID (ppm)	REC / ATT	COMMENTS
0	175	0.0 - 0.5 ASPHALT			175.4					
		0.5 - 1.5 Brown and yellow brown, fine SAND,little to some Silt, dry, no odor (SP-SM)	SP-SM		0.5 174.4 1.5	1	MACRO CORE	0.0	5.0 / 5.0	
		1.5 - 5.0 Brown and yellow brown, fine SAND, mottled black from 3.75 - 4.0 ft bgs, dry, no odor (SP)	SP		170.9					
5	170	5.0 - 8.5 Brown, fine to medium SAND, mostly medium, damp at 6.0 ft bgs, no odor (SP)	SP		5.0 167.4	2	MACRO CORE	0.0	5.0 / 5.0	
		8.5 - 8.8 Brown, SILT, soft, wet, no odor (ML)	ML		166.6					
		8.8 - 9.3 Brown, fine to medium SAND, wet, no odor (SP)	SP		165.9					
10	165	9.3 - 10.0 Light brown, SILTY CLAY, sof, plastic, wet, no odor (CL-ML)	CL-ML		10.0 164.9 11.0	3	MACRO CORE	0.0	4.0 / 5.0	
		10.0 - 11.0 SLOUGH								
		11.0 - 15.0 Gray and red-brown, CLAY, with very fine SAND laminations, soft, plastic, wet, no odor (CL)	CL		160.9					
15	160	Boring completed at 15.0 ft								
20	155									
25	150									
30	145									
35	140									
40										

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Env. Probing Inc
DRILLER: W. Atkinson

GA INSPECTOR: D.Gorman
CHECKED BY: CDH
DATE: 12/28/09

Golder Associates

AA GEOTECH LOG IBM-KINGSTON SWMU G-SWMU M.GPJ GOLDER NJ-PA 05-24-06.GDT 2/5/10

ATTACHMENT B
MEMBRANE INTERFACE PROBE INFORMATION

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 40°F

Wind: LIGHT

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BOA-MIP-60

Date: 11/05/09 Start Time: 1053

Date: 11/05/09 End Time: 1117

MIP Contractor: PEAK INV

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: EC/ECD/PID

Probe Type: MP4510 (MP6510)

Probe S/N: P700-135

LOGGING INFORMATION

MIP File Name: MIP-0028

Pre-Log Response Test File Name: MPT-0027

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 44

Final Depth of Penetration: 21.5 FT

Post Log Response Test File Name: MPT-0030

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 44 sec

OBSERVATIONS

BASE: 106,000 MAP: 433,000

DPG

Adopted from ASTM D 7352-07

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 41 DF

Wind: NONE

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BOA-MIP-61

Date: 11/05/09 Start Time: 1153

Date: 11/05/09 End Time: 1213

MIP Contractor: PEAK INV

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: EC/ECD/PID

Probe Type: MP4510 (MP6510)

Probe S/N: P708-135

LOGGING INFORMATION

MIP File Name: MIP-0031

Pre-Log Response Test File Name: MPT-0030

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 44sec

Final Depth of Penetration: 21.5 FT

Post Log Response Test File Name: MPT-0032

Response Test Compound: TCE Concentration: 2ppm

Trip Time (seconds): 42sec

OBSERVATIONS

BASE: 99,000 MAX: 356,000

DTG

Adopted from ASTM D 7352-07

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 39°F

Wind: LIGHT

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BOA-MIP-62

Date: 11/05/09 Start Time: 1506

Date: 11/05/09 End Time: 1935

MIP Contractor: PEAK INV

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: EC/ECD/PID

Probe Type: MP4510 (MP6510)

Probe S/N: P780-135

LOGGING INFORMATION

MIP File Name: MIP-0033

Pre-Log Response Test File Name: MPT-0032

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 42sec

Final Depth of Penetration: 29.5 FT

Post Log Response Test File Name: MPT-0034

Response Test Compound: TCE Concentration: 2 PPM

Trip Time (seconds): 45sec

OBSERVATIONS

BASE 104,000 MAP 362,002

DPG

Adopted from ASTM D 7352-07

MIP FIELD INFORMATION
FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 38°F

Wind: LIGHT

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BDA-MIP-63

Date: 11/05/09 Start Time: 1503

Date: 11/05/09 End Time: 1525

MIP Contractor: PEAK INV

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: Ee/ECD/PID

Probe Type: MP4510 (MP6520)

Probe S/N: P700-135

LOGGING INFORMATION

MIP File Name: MIP-0035

Pre-Log Response Test File Name: MPT-0034

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 45sec

Final Depth of Penetration: 21.5FT

Post Log Response Test File Name: MPT-0036

Response Test Compound: TCE Concentration: 2PPM

Trip Time (seconds): 46sec

OBSERVATIONS

BASE: 88,000 MAX 380,000

DPG

Adopted from ASTM D 7352-07

Peak - 2/14-12/18 [illegible]

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 48°F

Wind: 15-20 mpH

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BoA-MIP-80

Date: 11/11/09 Start Time: 0815

Date: 11/11/09 End Time: 0841

MIP Contractor: PEAK INV

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: EC/ECD/PID

Probe Type: MP4510 (MP6520)

Probe S/N: P700-135

LOGGING INFORMATION

MIP File Name: MIP-0072

Pre-Log Response Test File Name: MPT-0071

Response Test Compound: TCE Concentration: 1 PPM

Trip Time (seconds): 41 sec

Final Depth of Penetration: 25.5 FT

Post Log Response Test File Name: MPT-0073

Response Test Compound: TCE Concentration: 1 PPM

Trip Time (seconds): 44 sec

OBSERVATIONS

BASE: 12,000 MAX: 372,000

MPT-0070 scrap DPO

Adopted from ASTM D 7352-07

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 41°F

Wind: 15-20 MPH

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BoA-MIP-81

Date: 11/11/09 Start Time: 0910

Date: 11/11/09 End Time: 0935

MIP Contractor: PENK INN

MIP Operator: T. ARMSTRONG

INSTRUMENT INFORMATION

Detectors Used: ECD/PID

Probe Type: MP4510 (MP6510)

Probe S/N: P700-135

LOGGING INFORMATION

MIP File Name: MIP-0074

Pre-Log Response Test File Name: MPT-0073

Response Test Compound: TCE Concentration: 1PPM

Trip Time (seconds): 44sec

Final Depth of Penetration: 25.5 FT

Post Log Response Test File Name: MPT-0075

Response Test Compound: TCE Concentration: 1PPM

Trip Time (seconds): 43sec

OBSERVATIONS

BASE: 103,000 MAP: 435,000

DPG

Adopted from ASTM D 7352-07

MIP FIELD INFORMATION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston

Project Number: 083-87071

Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 41°F

Wind: 15-20 mph

Precipitation: NONE

BORING DESCRIPTION

MIP Boring ID: BOA-MIP-32

Date: 11/11/09 Start Time: 1009

Date: 11/11/09 End Time: 1035

MIP Contractor: GEAK INV

MIP Operator: T. ALMS TRON G

INSTRUMENT INFORMATION

Detectors Used: EC/ECD/PID

Probe Type: MP4510 (MP6510)

Probe S/N: P700-135

LOGGING INFORMATION

MIP File Name: MIP-0076

Pre-Log Response Test File Name: MPT-0075

Response Test Compound: TCE Concentration: 1 PPM

Trip Time (seconds): 435sec

Final Depth of Penetration: 25.5 FT

Post Log Response Test File Name: MPT-0077

Response Test Compound: TCE Concentration: 1 PPM

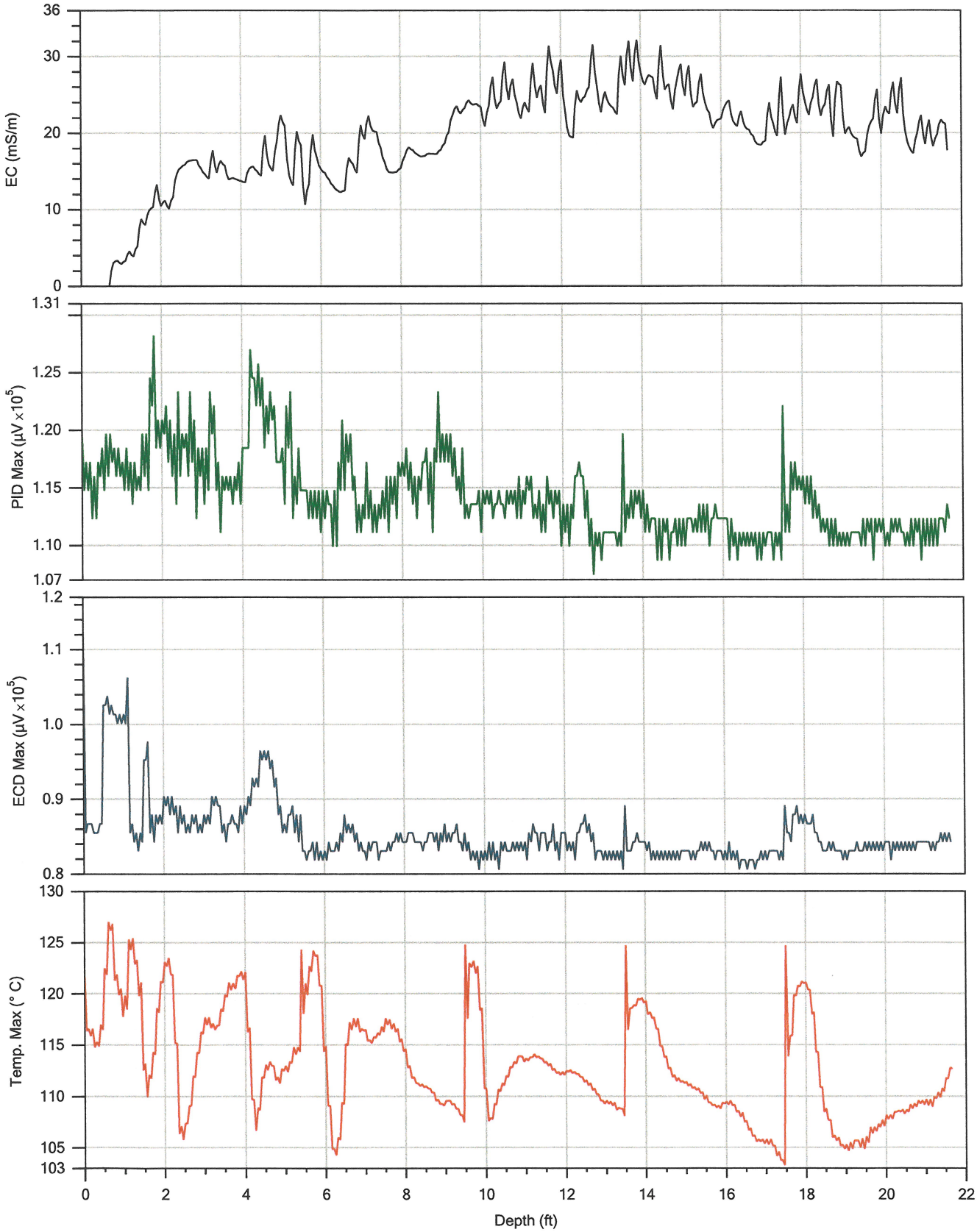
Trip Time (seconds): 44sec

OBSERVATIONS

BASE: 111,000 MAX: 395,000

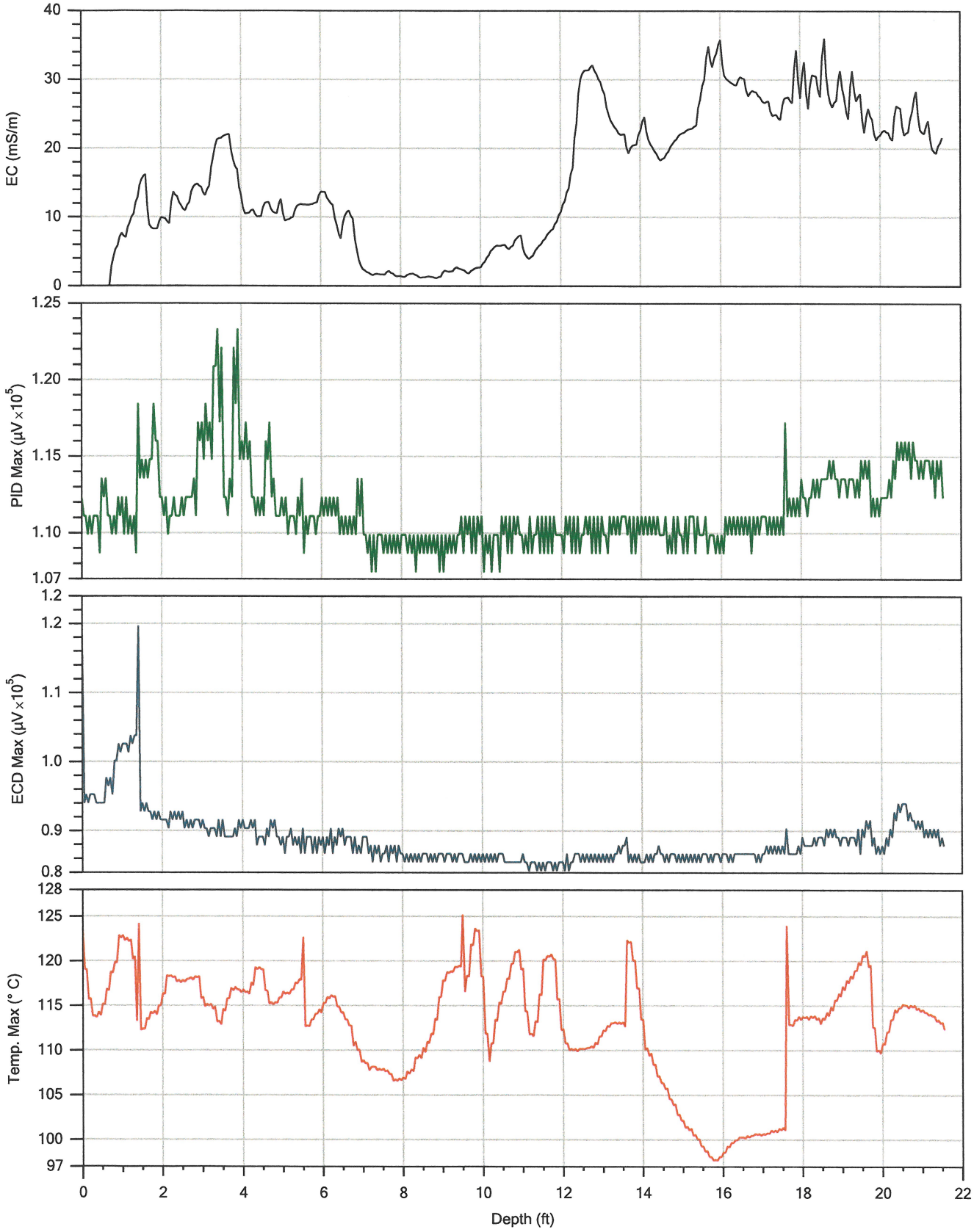
DPG

Adopted from ASTM D 7352-07



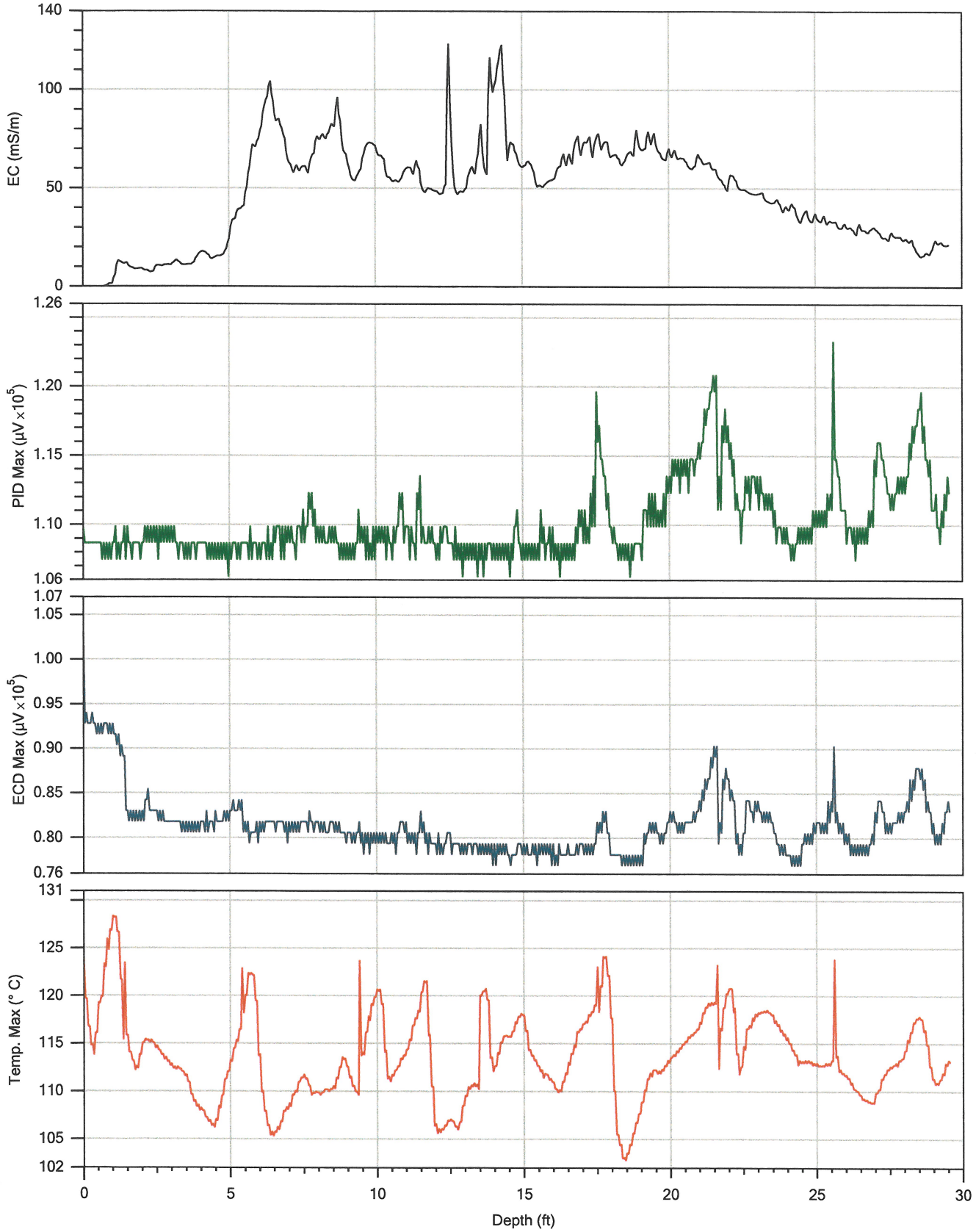
Golder Associates

			File: EC0028.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/5/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MIP-60



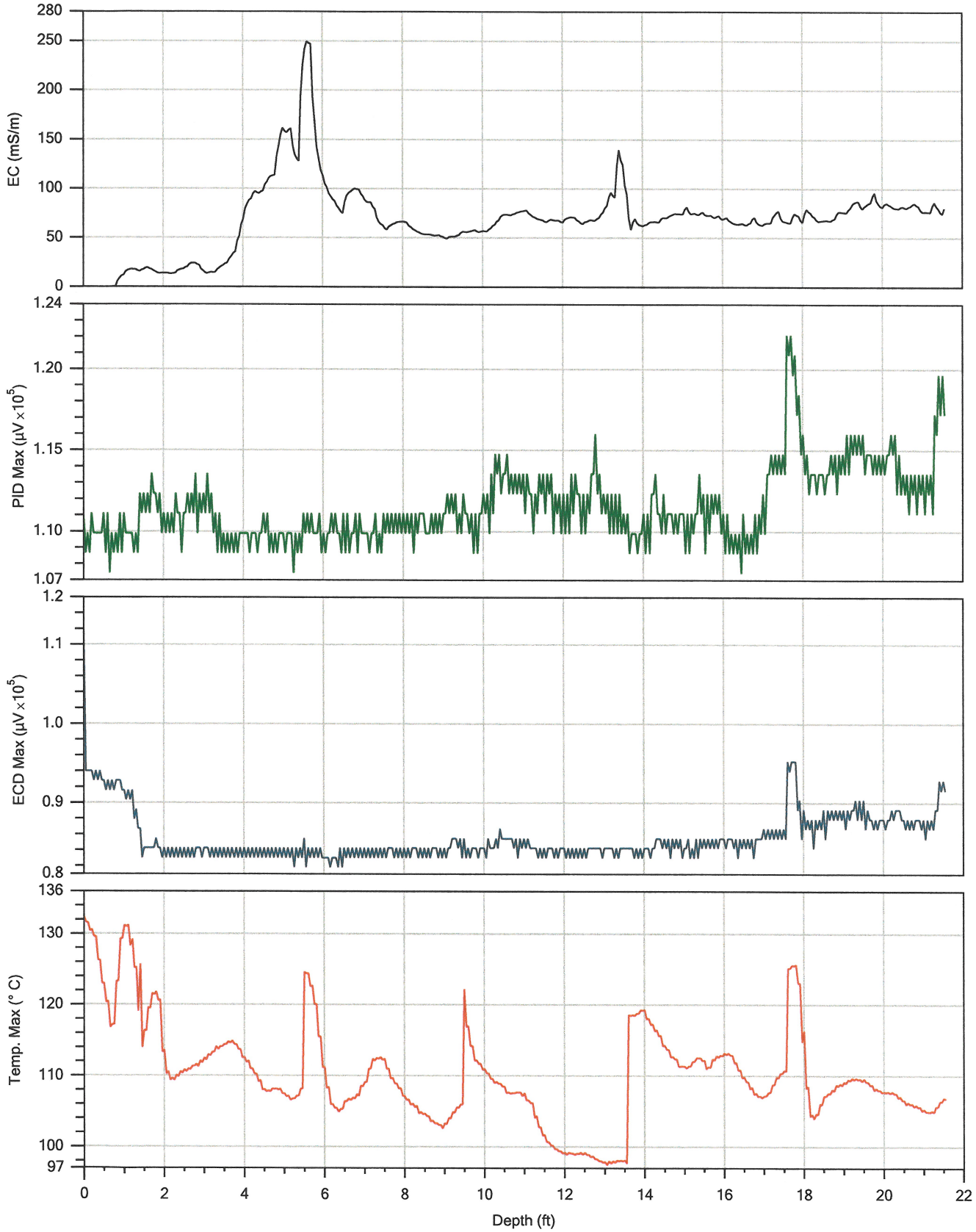
Golder Associates

			File: EC0031.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/5/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MIP-61



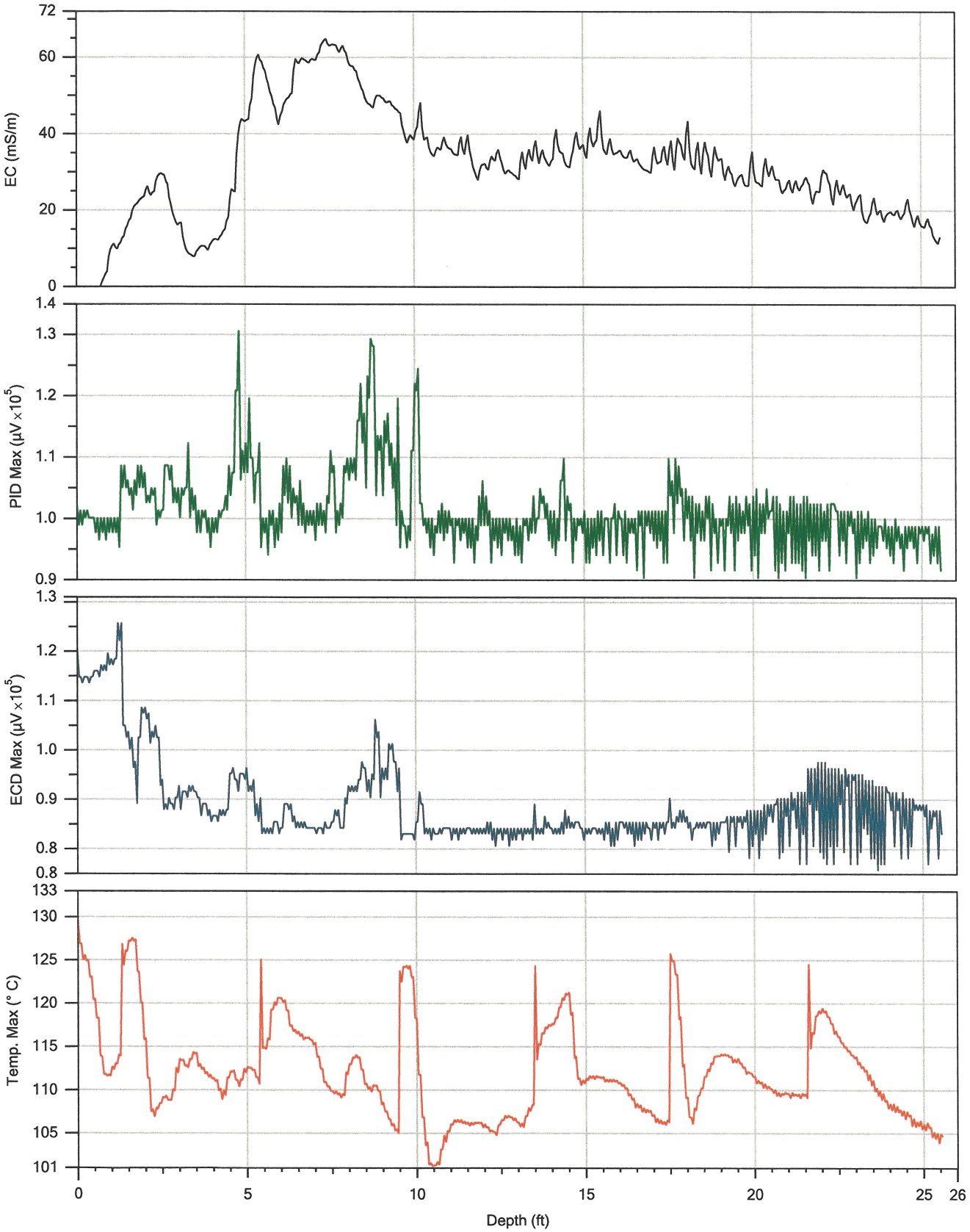
Golder Associates

			File: EC0033.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/5/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MIP-62



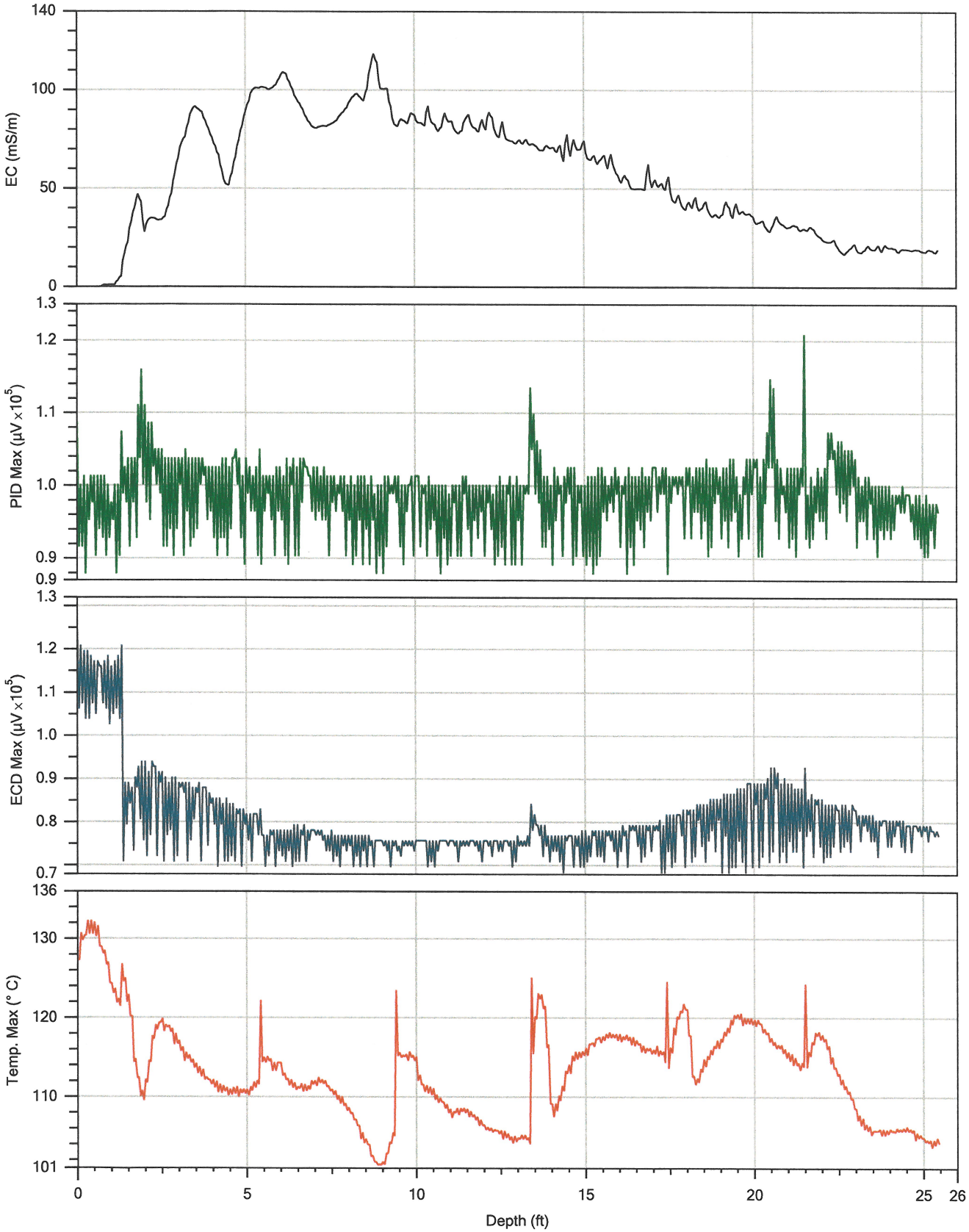
Golder Associates

			File: EC0035.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/5/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MP-63



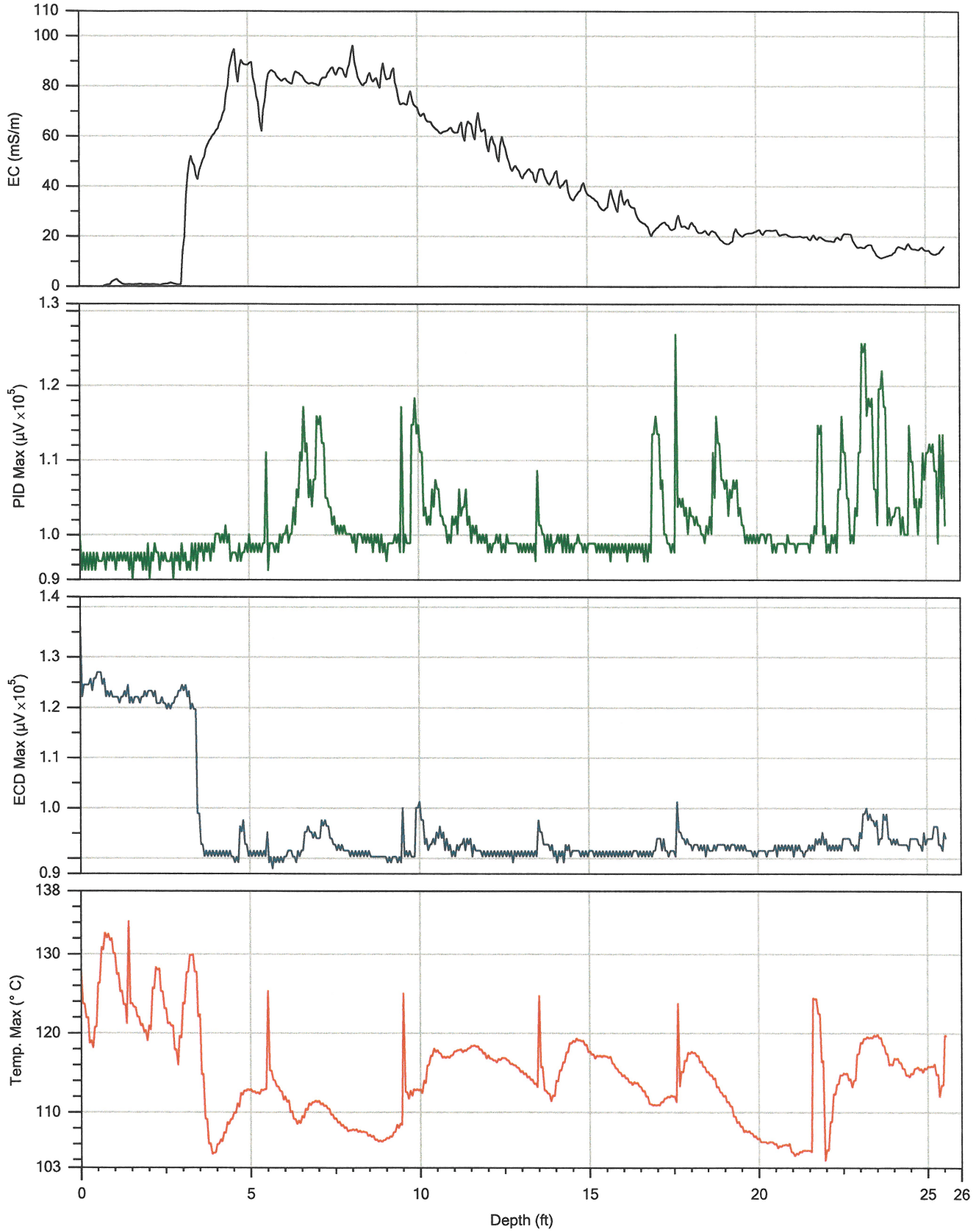
Golder Associates

			File: EC0072.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/11/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MIP-80



Golder Associates

			File: EC0074.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/11/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA-MW-81



Golder Associates

			File: EC0076.DAT
Company: Golder Associates		Operator: T. Armstrong, Peak Inv.	Date: 11/11/2009
Project ID: 083-87071.01		Client: IBM	Location: BOA - MIP - 82

ATTACHMENT C
GROUNDWATER SAMPLING INFORMATION

WELL DEVELOPMENT FIELD RECORD

JOB NAME: IBM - KINGSTON
DEVELOPED BY: TGB
STARTED DEVEL.: 11/03/09 (DATE) / 1340 (TIME)
W.L. BEFORE DEVEL.: NM (DEPTH) / (DATE) / (TIME)
WELL DEPTH: BEFORE DEVEL.: 13.50
STANDING WATER COLUMN (FT.):
SCREEN LENGTH: 5 FT.

JOB NO.: 083-87071 WELL NO.: TSW-01
DATE OF INSTALL.: 10/30/09 SHEET: 1 of 1
COMPLETED DEVEL.: 11/03/09 (DATE) / 1435 (TIME)
W.L. AFTER DEVEL.: 7.25 (DEPTH) / 11/04/09 (DATE) / 1045 (TIME)
AFTER DEVEL.: WELL DIA. (In): 2
STANDING WELL VOLUME: gal.
DRILLING WATER LOSS: N/A gal.

DATE/TIME		VOLUME REMOVED (GALS)	FIELD PARAMETERS SPEC COND. (ms/cm)	TEMP. (C)	pH (s.u.)	TURBIDITY (NTU)	REMARKS (DTW, Pumping Rate, etc.)
11/03/09	1345	~5	4.921	16.75	6.94	>2000	
	1350	~10	2.007	16.96	6.72	>2000	
	1352						dry
—	—	—	—	—	—	—	—
	1407	~15@	1.972	16.79	6.70	>2000	
	1412	~20	1.729	16.87	6.70	>2000	
	1412		—	—	—	—	dry
	1427	~25	1.727	16.79	6.70	189	
	1429		—	—	—	—	dry
			~25	= TOTAL VOLUME REMOVED (gal.)			

DEVELOPMENT METHOD: purged volume with whale pump & teflon lined tubing

NOTES: Well pumped dry after 10 gallons, ~~waiting~~@ waited ~15 minutes, purged dry after ~7 gallons, waited 15 minutes purged dry after ~7 gallons.

WELL DEVELOPMENT FIELD RECORD

JOB NAME: IBM - KINGSTON
DEVELOPED BY: TGS
STARTED DEVEL.: 11/03/09 (DATE) / 1479 (TIME)
W.L. BEFORE DEVEL.: NM (DEPTH) / / (DATE / TIME)
WELL DEPTH: BEFORE DEVEL.: 14.75
STANDING WATER COLUMN (FT.):
SCREEN LENGTH: 5 FT.

JOB NO.: 083-87071 WELL NO.: TSW-02
DATE OF INSTALL.: 10/30/09 SHEET: 1 of 1
COMPLETED DEVEL.: 11/03/09 (DATE) / 1530. (TIME)
W.L. AFTER DEVEL.: 7.06 (DEPTH) / 11/04/09 (DATE) 1155 (TIME)
AFTER DEVEL.: WELL DIA. (In): 2
STANDING WELL VOLUME: gal.
DRILLING WATER LOSS: NA gal.

DATE/TIME		VOLUME REMOVED (GALS)	FIELD PARAMETERS: SPEC COND. (ms/cm)	TEMP. (C)	pH (s.u.)	TURBIDITY (NTU)	REMARKS (DTW, Pumping Rate, etc.)
11/03/09	1453	~5	7.27	18.72	6.98	>2000	
	1458	~10	7.09	19.09	6.71	>2000	
	1500 1458	—	—	—	—	—	dry.
	1503	~15	6.21	19.09	6.66	1000	
	1509	~20	5.78	19.21	6.59	NM	
	1509	—	—	—	—	—	dry
	1520	~22	4.32	19.24	6.48	NM	
	1525	~28	4.09	19.31	6.41	25	
	1529	—	—	—	—	—	dry
			~30.	= TOTAL VOLUME REMOVED (gal.)			

DEVELOPMENT METHOD: purged volume with whale pump + teflon lined tubing

NOTES: Well pumped dry after ~10 gallons, waited then purged ~10 gallons to dry, then ~~purged~~ waited, then purged ~10 gallons to dry.

GROUNDWATER SAMPLE COLLECTION FORM

SITE DESCRIPTION
Project Name: IBM/Kingston
Project Number: 083-87071
Location: Kingston, NY

WEATHER CONDITIONS
Temperature: 40's
Wind: —
Precipitation: —

SAMPLE DESCRIPTION
Sample ID: TSW-01
Date: 11/04/09
Time at Well Site: —
Time of Sample Collection: 1148
Sampled by: TGS/DPG/CDH
Sampling Method: Teflon Bailer
Type of Sampling Equipment: Teflon Bailer

FIELD BLANK NOTES
Field Blank Name: —
Field Blank /Rinse Water type: —
Lot Number: —
Analyses: —

VOLUME OF WATER TO BE PURGED
Casing Inside Diameter: 2 inches
Casing Volume: 0.163 gal/ft
Column of Water in Well: 6.25 feet
Volume of Water in Well: 1.019 gallons (3.85L)
Well Volumes to Purge: 5
Min. Volume to be Purged: 5.09 gallons (19.25L)
Method of Purging: PERISTALTIC PUMP
Well Purged Dry?: Yes No

COLUMN OF WATER IN WELL BEFORE PURGE
Total Depth of Well: 13.90 ft ~~TOC~~ TIC
Depth to Water: 7.25 ft ~~TOC~~ TIC
Column of Water in Well: 6.25 ft
Depth to Water after Purge: _____ ft TOC

Appearance of Sample: clear, no odor

WELL PURGE CONTROL

	Purge 1	Purge 2	Purge 3	Purge 4	Purge 5	Purge 6
Time:	1057	1104	1110	1115	1122	1130
Volume Removed (liters):	~4	~8	~12	~16	~20	~24
pH:	6.63	6.60	6.58	6.60	6.60	6.61
Specific Conductance (uS/cm):	1.649	1.695	1.670	1.609	1.571	1.572
Temperature (Degrees C):	16.74	16.79	16.85	16.85	16.91	16.90
Turbidity (NTU):	1.33	1.01	0.86	0.77	0.53	0.51
Eh (millivolts):	257.0	255.3	254.4	253.6	253.1	252.8
DO (mg/l) :	7.30	7.11	7.08	6.83	6.45	6.43

Starting Purge Time: 1047
Ending Purge Time: 1131
Average Purge Rate: _____ ml/min
Total Volume Purged: _____ liters

SAMPLE CONTAINERS REQUIRED

Analysis	Container Number, Type and Size	Filter	Preservative and Source
Volatiles (8260B)	3 ~~(2)~~ 40 ml vials	NA	HCL

Chain of Custody #: 221614 - 221615
Shuttle ID: —
Trip Blank ID: TBGW-110409
Lab Name: LANCASTER
Air Bill #: 816887359886

REMARKS: Moderate vehicle traffic noted during sampling

SAMPLER
Field Team Leader: TANYA E. SHARP

GROUNDWATER SAMPLE COLLECTION FORM

SITE DESCRIPTION
Project Name: IBM/Kingston
Project Number: 083-87071
Location: Kingston, NY

WEATHER CONDITIONS
Temperature: 40's
Wind: —
Precipitation: —

SAMPLE DESCRIPTION
Sample ID: TSW-02
Date: 11/04/09
Time at Well Site: —
Time of Sample Collection: 1395
Sampled by: TGS/DPG/CDH
Sampling Method: Teflon Bailer
Type of Sampling Equipment: Teflon Bailer

FIELD BLANK NOTES
Field Blank Name: —
Field Blank /Rinse Water type: —
Lot Number: —
Analyses: —

VOLUME OF WATER TO BE PURGED
Casing Inside Diameter: 2 inches
Casing Volume: 0.163 gal/ft
Column of Water in Well: 7.70 feet
Volume of Water in Well: 1.255 gallons (4.74L)
Well Volumes to Purge: ~5
Min. Volume to be Purged: 6.276 gallons (23.7L)
Method of Purging: Peristaltic Pump
Well Purged Dry?: Yes (No)

COLUMN OF WATER IN WELL BEFORE PURGE
Total Depth of Well: 14.76 ft TOC
Depth to Water: 7.06 ft TOC
Column of Water in Well: 7.70 ft
Depth to Water after Purge: _____ ft TOC

Appearance of Sample: cloudy, clear to brown tinted in color.

WELL PURGE CONTROL

	Purge 1	Purge 2	Purge 3 * empty flow cell	Purge 4	Purge 5	Purge 6
Time:	1204	1213	1223	1234	1245	1300
Volume Removed (liters):	~5	~10	~15	~20	~25	~30
pH:	6.38	6.36	6.34	6.57	6.57	6.57
Specific Conductance (µS/cm):	3.080	3.136	3.173	3.097	3.009	2.928
Temperature (Degrees C):	19.47	19.56	19.54	19.62	19.76	19.69
Turbidity (NTU):	4.28	2.70	1.30	0.99	0.89	0.83
Eh (millivolts):	238.1	237.4	238.8	182.9	185.6	195.9
DO (mg/l) :	6.79	6.51	6.15	5.98	5.63	5.72

Starting Purge Time: 1156
Ending Purge Time: 1301
Average Purge Rate: _____ ml/min
Total Volume Purged: _____ liters

SAMPLE CONTAINERS REQUIRED

Analysis	Container Number, Type and Size	Filter	Preservative and Source
Volatiles (8260B)	3 ~~(2)~~ 40 ml vials	NA	HCL

Chain of Custody #: ~~221614~~ 221615
Shuttle ID: —
Trip Blank ID: TBSW-110409
Lab Name: LANCASTER
Air Bill #: 868873598866

REMARKS:

Field ~~Team~~ Leader: TANYA G. SHACKO.
SAMPLER

GROUNDWATER SAMPLE COLLECTION FORM

Golder Associates

SITE DESCRIPTION

Project Name: IBM/Kingston
Project Number: 083-87071
Location: Kingston, NY

WEATHER CONDITIONS

Temperature: 40's
Wind:
Precipitation: —

SAMPLE DESCRIPTION

Sample ID: BOA-TW-01-09
Date: 11/12/09
Time at Well Site:
Time of Sample Collection: 1050
Sampled by: T. SHARLO
Sampling Method: ~~Peristaltic Pump~~ (B) Teflon Bailer + Nylon Rope
Type of Sampling Equipment: ~~Poly & Silicon tubing~~

FIELD BLANK NOTES

Field Blank Name: —
Field Blank /Rinse Water type: —
Lot Number: —
Analyses: —

VOLUME OF WATER TO BE PURGED

Casing Inside Diameter: 1 inches
Casing Volume: 0.0408 gal/ft
Column of Water in Well: feet
Volume of Water in Well: 0.184 gallons (3)(0.1696L)
Well Volumes to Purge: ~5
Min Volume to be Purged: 0.1696 gallons (3.48L)
Method of Purging: Peristaltic Pump
Well Purged Dry? Yes No

COLUMN OF WATER IN WELL BEFORE PURGE

Total Depth of Well: 9.80 ft TOC
Depth to Water: 5.29 ft TOC
Column of Water in Well: 4.51 ft
Depth to Water after Purge: ft TOC

Appearance of Sample: Clear, no odor

WELL PURGE CONTROL

	Purge 1	Purge 2	Purge 3	Purge 4	Purge 5	Purge 6
Time	1019	1025	1030	1035	1040	1045
Volume Removed (liters)	~1	~2	~3	~4	~5	~6
pH	6.77	6.76	6.76	6.75	6.75	6.74
Specific Conductance (uS/cm) mS/cm (2)	5.088	5.156	5.183	5.210	5.218	5.214
Temperature (Degrees C)	17.84	18.00	17.99	18.06	17.97	17.97
Turbidity (NTU)	352	177	192	118	98.3	92.6
Eh (millivolts)	117.4	117.3	115.8	115.0	113.9	112.6
DO (mg/l)	2.46	2.03	1.57	1.39	0.98	0.85

Starting Purge Time: 1015
Ending Purge Time: 1046
Average Purge Rate: ~200 ml/min
Total Volume Purged: ~6 liters

SAMPLE CONTAINERS REQUIRED

Analysis	Container Number, Type and Size	Filter	Preservative and Source
Volatiles (8260B)	3 @ (2) 40 ml vials	NA	HCL

Chain of Custody #:
Shuttle ID: —
Trip Blank ID: TBGW-111209
Lab Name: LANCASTER
Air Bill #:

REMARKS: 6" stickup

Field ~~Team Leader~~ SAMPLER (B): TANYA SHARLO

TABLE 1 - ATTACHMENT C
FIELD PARAMETERS SUMMARY
SUPPLEMENTAL TRIANGLE PLUME AREA INVESTIGATION
FORMER IBM KINGSTON FACILITY
KINGSTON, NEW YORK

	Sample ID Sample Date	BOA-TW-01-09 11/12/2009	TSW-01 11/4/2009	TSW-02 11/4/2009
Parameter	Unit of Measure			
Temperature	°C	17.97	16.9	19.69
pH	S.U.	6.74	6.61	6.57
Specific Conductivity	mS/cm	5.214	1.572	2.928
Turbidity	NTU	92.6	0.51	0.83
Dissolved Oxygen	mg/L	0.85	6.43	5.72
Oxidation Reduction Potential	mV	112.6	252.8	195.9
Depth to Water	ft-bmp	5.3	7.25	7.06

Notes:

Values are the final reading after five well volumes had been removed, after well was purged dry, or after stabilization except for depth to water which was collected prior to purging.
ORP - Oxidation Reduction Potential
°C - Degrees Celsius
mS/cm - milliSiemens per centimeter
BTU - Nephelometric Turbidity Units
mg/L - milligrams per liter
S.U. - Standard Units
ft-bmp - feet below measuring point
mV - millivolts

ATTACHMENT D

LABORATORY DATA SHEETS

Analysis Report

Lancaster Laboratories

Sample Description: TSW-01 Grab Water
Former Kingston Site

LLI Sample # WW 5827049
LLI Group # 1169612
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/04/2009 11:40 by TGS

Account Number: 12694

Submitted: 11/05/2009 09:00
Reported: 11/11/2009 at 13:52
Discard: 12/12/2009

IBM
8976 Wellington Road
Manassas VA 20109

KTSW1 SDG#: IBK07-23

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l		ug/l	ug/l	
02898	Benzene	71-43-2	N.D.		0.1	0.5	1
02898	Benzyl Chloride	100-44-7	N.D.		0.1	0.5	1
02898	Bromobenzene	108-86-1	N.D.		0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.		0.1	0.5	1
02898	Bromoform	75-25-2	N.D.		0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.		0.1	0.5	1
02898	Carbon Tetrachloride	56-23-5	N.D.		0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.		0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.		0.1	0.5	1
02898	Chloroform	67-66-3	N.D.		0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.		0.2	0.5	1
02898	2-Chlorotoluene	95-49-8	N.D.		0.1	0.5	1
02898	4-Chlorotoluene	106-43-4	N.D.		0.1	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.		0.1	0.5	1
02898	Dibromomethane	74-95-3	N.D.		0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.		0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.		0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.		0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.		0.1	0.5	1
02898	**1,1-Dichloroethane**	75-34-3	**0.3**	**J**	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.		0.1	0.5	1
02898	**1,1-Dichloroethene**	75-35-4	**1.2**		0.1	0.5	1
02898	**1,2-Dichloroethene (Total)**	540-59-0	**0.2**	**J**	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.		0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.		0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.		0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.		0.1	0.5	1
02898	Freon 113	76-13-1	N.D.		0.2	0.5	1
02898	Freon 123a	354-23-4	N.D.		0.2	0.5	1
02898	Methylene Chloride	75-09-2	N.D.		0.2	0.5	1
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.		0.1	0.5	1
02898	Toluene	108-88-3	N.D.		0.1	0.5	1
02898	**1,1,1-Trichloroethane**	71-55-6	**0.1**	**J**	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.		0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.		0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.		0.1	0.5	1
02898	1,2,3-Trichloropropane	96-18-4	N.D.		0.3	1.0	1
02898	Vinyl Chloride	75-01-4	N.D.		0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.		0.1	0.5	1

IBK07 0085

Lancaster Laboratories, Inc.
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717-656-2300 Fax: 717-656-2681

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

Sample Description: TSW-01 Grab Water
Former Kingston Site

LLI Sample # WW 5827049
LLI Group # 1169612
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/04/2009 11:40 by TGS

Account Number: 12694

Submitted: 11/05/2009 09:00
Reported: 11/11/2009 at 13:52
Discard: 12/12/2009

IBM
8976 Wellington Road
Manassas VA 20109

KTSW1 SDG#: IBK07-23

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C093131AA	11/09/2009 08:45	Holly Berry	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C093131AA	11/09/2009 08:45	Holly Berry	1

IBK07 0086

Lancaster Laboratories, Inc.
2425 New Holland Pike
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Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

*=This limit was used in the evaluation of the final result

Analysis Report

Lancaster Laboratories

Sample Description: TSW-02 Grab Water
Former Kingston Site

LLI Sample # WW 5827050
LLI Group # 1169612
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/04/2009 13:05 by TGS

Account Number: 12694

Submitted: 11/05/2009 09:00
Reported: 11/11/2009 at 13:52
Discard: 12/12/2009

IBM
8976 Wellington Road
Manassas VA 20109

KTSW2 SDG#: IBK07-24*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	
02898	Benzene	71-43-2	N.D.	0.1	0.5	1
02898	Benzyl Chloride	100-44-7	N.D.	0.1	0.5	1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5	1
02898	Bromoform	75-25-2	N.D.	0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5	1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5	1
02898	Chloroform	67-66-3	0.7	0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5	1
02898	2-Chlorotoluene	95-49-8	N.D.	0.1	0.5	1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5	1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.	0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5	1
02898	1,2-Dichloroethene (Total)	540-59-0	N.D.	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5	1
02898	Freon 113	76-13-1	N.D.	0.2	0.5	1
02898	Freon 123a	354-23-4	N.D.	0.2	0.5	1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5	1
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5	1
02898	Toluene	108-88-3	N.D.	0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5	1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0	1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1

IBK07 0867

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*=This limit was used in the evaluation of the final result

Lancaster Laboratories

Sample Description: TSW-02 Grab Water
Former Kingston Site

LLI Sample # WW 5827050
LLI Group # 1169612
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/04/2009 13:05 by TGS

Account Number: 12694

Submitted: 11/05/2009 09:00
Reported: 11/11/2009 at 13:52
Discard: 12/12/2009

IBM
8976 Wellington Road
Manassas VA 20109

KTSW2 SDG#: IBK07-24*

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C093131AA	11/09/2009 09:07	Holly Berry	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C093131AA	11/09/2009 09:07	Holly Berry	1

IBK07 0088

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

*=This limit was used in the evaluation of the final result

Analysis Report

Lancaster Laboratories

Sample Description: BOA-TW-01-09 Grab Water

LLI Sample # WW 5836342
LLI Group # 1170930
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/12/2009 10:50 by TS

Account Number: 12694

Submitted: 11/13/2009 09:10
Reported: 11/17/2009 at 15:04
Discard: 12/18/2009

IBM
8976 Wellington Road
Manassas VA 20109

B0109 SDG#: IBK08-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	
02898	Benzene	71-43-2	N.D.	0.1	0.5	1
02898	Benzyl Chloride	100-44-7	N.D.	0.1	0.5	1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5	1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5	1
02898	Bromoform	75-25-2	N.D.	0.1	0.5	1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5	1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5	1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5	1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5	1
02898	Chloroform	67-66-3	N.D.	0.1	0.5	1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5	1
02898	2-Chlorotoluene	95-49-8	N.D.	0.1	0.5	1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5	1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5	1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5	1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5	1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5	1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5	1
02898	Dichlorodifluoromethane	75-71-8	N.D.	0.1	0.5	1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5	1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5	1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5	1
02898	1,2-Dichloroethene (Total)	540-59-0	N.D.	0.1	0.5	1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5	1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5	1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5	1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5	1
02898	Freon 113	76-13-1	N.D.	0.2	0.5	1
02898	Freon 123a	354-23-4	N.D.	0.2	0.5	1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5	1
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5	1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5	1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5	1
02898	Toluene	108-88-3	N.D.	0.1	0.5	1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5	1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5	1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5	1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5	1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0	1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5	1

IBK08 6824

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*=This limit was used in the evaluation of the final result

Analysis Report

Lancaster Laboratories

Sample Description: BOA-TW-01-09 Grab Water

LLI Sample # WW 5836342
LLI Group # 1170930
NY

Project Name: IBM Kingston: Additional Subsurface Investigation

Collected: 11/12/2009 10:50 by TS

Account Number: 12694

Submitted: 11/13/2009 09:10
Reported: 11/17/2009 at 15:04
Discard: 12/18/2009

IBM
8976 Wellington Road
Manassas VA 20109

B0109 SDG#: IBK08-06

General Sample Comments

State of New York Certification No. 10670
The temperature of the sample bottle(s) upon receipt at the lab was 6.8-7.6 C using an IR thermometer.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C093201AA	11/16/2009 19:22	Kerri E Koch	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C093201AA	11/16/2009 19:22	Kerri E Koch	1

IBK08 0025

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