8976 Wellington Road
Manassas, VA 20109

September 19, 2019

Mr. Daniel Lanners, P.E.
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 9th Floor
Albany, New York 12233-7250

RE: SUPPLEMENTAL INVESTIGATION WORK PLAN – SOLID WASTE MANAGEMENT UNIT M
FORMER IBM KINGSTON FACILITY (TECHCITY)
NYSDEC SITE #356002
ORDER ON CONSENT INDEX NO. D3-10023-6-11

Dear Mr. Lanners:

International Business Machines Corporation (IBM) is submitting this Supplemental Investigation Work Plan – Solid Waste Management Unit M (Work Plan) for the former IBM Kingston Facility (site)located at 300 Enterprise Drive in Kingston, New York. This supplemental investigation field program is proposed to obtain additional information to support an evaluation of potential remedial alternatives for portions of Solid Waste Management Unit (SWMU) M, located in the northern portion of former Building 003 and the former Building 004 courtyard at the site. The Work Plan was developed based upon previous investigation findings presented in the June 2018 *Supplemental Remedial Investigation Report: Solid Waste Management Unit M: Portions of the Industrial Waste Sewer Lines* (SWMU M SRIR), previously submitted to the New York State Department of Environmental Conservation (NYSDEC).

We anticipate starting the investigation at the end of October contingent on NYSDEC's approval. If you have any questions or comments regarding this Work Plan, please contact me at (703) 257-2583.

Sincerely yours,

Dean W Chartrand

Dean W. Chartrand
Program Manager
IBM Corporate Environmental Affairs

Enclosure

cc: w/enclosure

K Kulow NYSDOH
A. Ginsberg TechCity y

Supplemental Investigation Work Plan Solid Waste Management Unit M

Former IBM Kingston Facility, NYSDEC Site #356002 Order on Consent Index No. D3-10023-6-11

Submitted to:

IBM Corporation
Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

Submitted by:

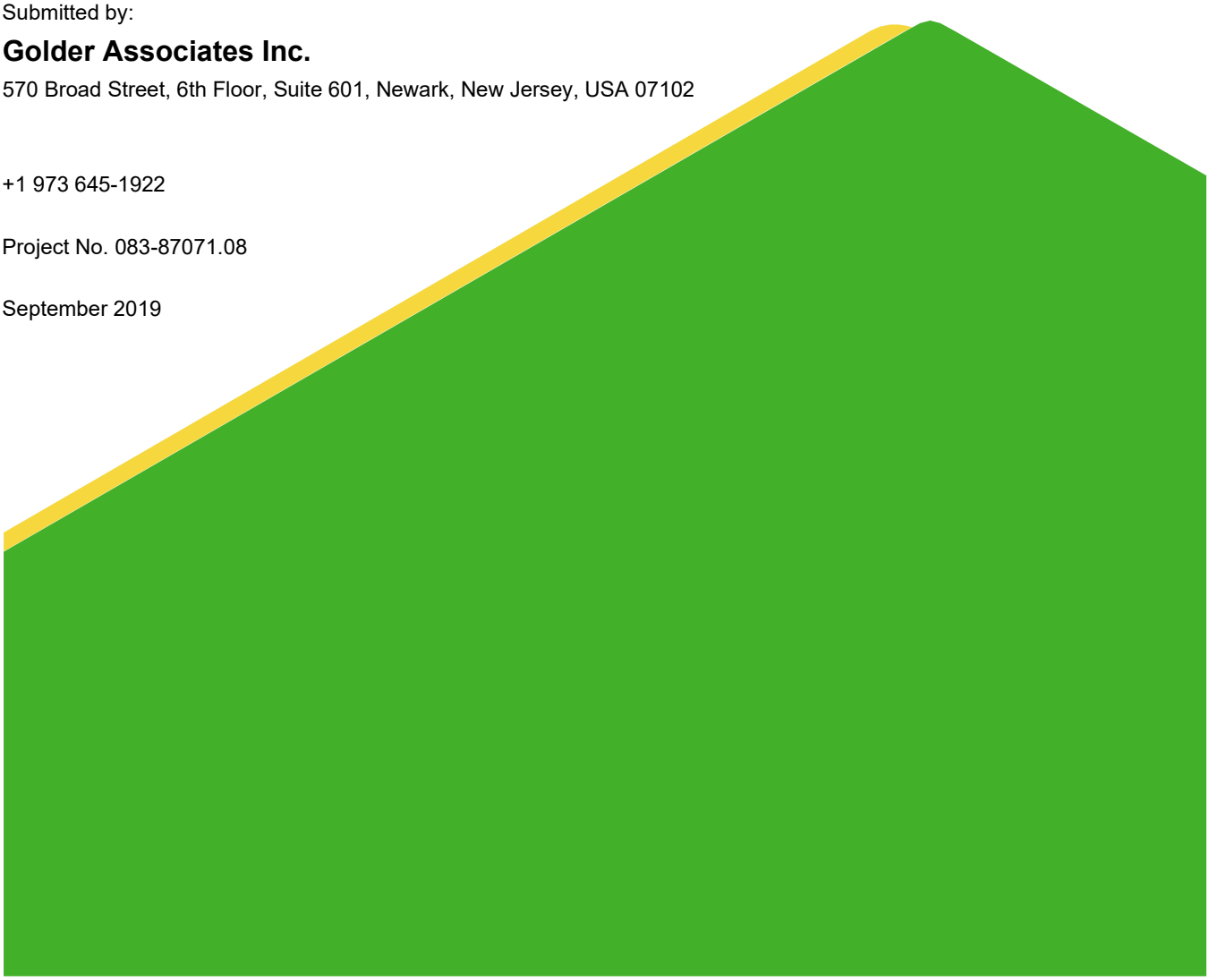
Golder Associates Inc.

570 Broad Street, 6th Floor, Suite 601, Newark, New Jersey, USA 07102

+1 973 645-1922

Project No. 083-87071.08

September 2019



Distribution List

1-copy Golder Associates

Table of Contents

1.0 INTRODUCTION AND BACKGROUND 1

2.0 SUPPLEMENTAL INVESTIGATION 2

3.0 CLOSING 3

4.0 REFERENCES 3

FIGURES

Figure 1 B003 / B004 Proposed Boring Location Map

1.0 INTRODUCTION AND BACKGROUND

Golder Associates Inc. (Golder), on behalf of International Business Machines (IBM), prepared this Supplemental Investigation Work Plan for Solid Waste Management Unit (SWMU) M - Portions of the Industrial Waste Sewer Lines at the former IBM Kingston Facility (site) located at 300 Enterprise Drive in Kingston, New York. This supplemental investigation field program is proposed to obtain additional information to support an evaluation of potential remedial alternatives for portions of SMWU M located in the northern portion of former Building 003 (B003) and the former Building 004 (B004) courtyard at the site, based upon the previous investigation findings presented in the June 2018 *Supplemental Remedial Investigation Report: Solid Waste Management Unit M: Portions of the Industrial Waste Sewer Lines* (SWMU M SRIR), currently under review by the New York State Department of Environmental Conservation (NYSDEC).

SWMU M is located on the portion of the site referred to as the East Campus and consists primarily of the former industrial waste (IW) sewer pipelines (IW lines) located beneath former Buildings 001 (B001), B003, and B004, and the area north of B001 and B003. The IW lines were constructed in the mid-1950s of vitreous clay piping installed below grade and were used to convey organic solvents and other manufacturing-related liquids to various parts of the facility. An evaluation of the exterior, below-ground IW lines in 1979 indicated that portions of the piping was broken or disjointed, with areas of sand and/or groundwater infiltration (particularly north of B003). As a result, several IW lines were slip-lined, and then ultimately replaced with pipe-in-pipe systems. Interior below-slab drains were replaced with overhead pipes. The majority of the IW lines were inactive in the 1980's, and IBM discontinued the use of the IW sewer lines completely in 1994.

IBM conducted investigations of the IW lines in the mid-1990s, (GSC, 1996), including soil gas surveys, groundwater monitoring well installation, and sampling at locations of former process areas that utilized organic solvents. The most elevated soil gas results were associated with the eastern bank of IW lines in B003, located west-northwest of the B004 process area. Further investigation was not possible at the time due to the existing buildings and limited accessibility in this area.

IBM conducted additional SWMU M investigations as the IW lines became accessible in B001 and parts of B003 beginning in 2011. Following demolition of B003 and B004 in 2017, the remaining portions of SWMU M beneath the eastern portion of B003 and B004 became accessible. IBM completed a supplemental remedial investigation in this area of SWMU M in late 2017 which included membrane interface probe (MIP) screening of soils throughout the area of interest and collection of soil and groundwater samples from temporary wells based on the results of the MIP screening. In addition, groundwater samples were collected from five existing monitoring wells in the vicinity of B003 and B004. The results of this investigation, along with results from previous supplemental investigations conducted on the north and west sides of B003 (Golder, 2012), were summarized in the SWMU M SRIR (Golder 2018).

Three areas of elevated levels of residual volatile organic compounds (VOCs) in soil and groundwater were identified during the historical SWMU M investigations:

- **Northern B003** – Elevated concentrations of mixed chlorinated VOCs co-mingled with total benzene-toluene-ethylbenzene-xylene (BTEX) and total petroleum hydrocarbon (TPH) compounds at shallow depths (<15 feet [ft] below ground surface [bgs]) in the Surficial Sand unit.
- **Central B003/MW-267S Area** – Shallow, mixed chlorinated VOC impacts in groundwater (<15 feet bgs) in the Surficial Sand unit in the vicinity of the eastern and western banks of IW sewer lines.

- **B004 Courtyard Area** – Relatively deep, isolated groundwater impacts (15 – 30 feet bgs) primarily consisting of TCE with minor components of breakdown products.

These areas are generally defined by total concentrations of chlorinated VOCs above 1,000 micrograms per liter (µg/L) as illustrated on Figure 1. Consistent with the site Order on Consent (Index No. D3-10023-6-11), which requires Respondents (IBM and current site owner TechCity) to "delineate and evaluate source removal" in the SMWU M area, IBM intends to evaluate potential remedial alternatives to address these areas of residual contamination. As contemplated in the SWMU M SRIR, additional data collection is proposed to address remaining uncertainties prior to finalizing the evaluation of remedial alternative(s).

2.0 SUPPLEMENTAL INVESTIGATION

The objectives of this supplemental investigation are as follows:

- Further evaluate shallow subsurface conditions (*i.e.,* to approximately 15 ft bgs) beneath the northern portion of B003 to better define the horizontal and vertical limits of the remaining areas of residual VOCs in soil and groundwater.
- Additional delineation of the relatively elevated VOC impacts to the north and east within the B004 courtyard area (*i.e.,* immediately north of B004 and east of B003).
- Collect additional geochemical data including biogeochemical parameters and soil oxidant demand to further evaluate potential remedial alternatives (*e.g.,* enhanced *in situ* bioremediation, *in situ* chemical reduction, and/or *in situ* chemical oxidation), as appropriate.

To meet these objectives, the following scope of work will be implemented:

- Advancement of fifteen (15) to twenty (20) additional soil borings in the northern portion of B003 and the B004 Courtyard at the approximate locations shown on Figure 1. Soil lithology will be characterized at each location and soils will be screened for VOCs using a photo-ionization detector (PID). Select locations will include both a shallow and deep boring, as described below.
  - Up to thirteen (13) shallow direct-push borings will be advanced through the northern B003 footprint and immediate surrounding area. Shallow borings will target depths at or immediately below the discontinuous lenses of silty sand and clay materials previously observed in the northern portion of B003 (approximately 15 ft bgs).
  - Up to five (5) deep direct-push borings will be advanced in the B004 courtyard area and/or the east side of B003. Deep borings will target depths of approximately 30 ft bgs and may be co-located with shallow borings on the east side of B003.
  - Additional borings may be advanced based upon initial field screening results
- Collection of up to five (5) soil samples for analysis of VOCs and total organic carbon (TOC) at discrete depths, to be determined based on the results of PID field screening. Additionally, up to three composite samples (collected from multiple adjacent borings identified as having similar lithologies) will be submitted for analysis of soil oxidant demand (SOD).
- Collection of up to eighteen (18) "grab" groundwater samples using direct-push technology (*i.e.,* using a Hydropunch/SP-22 sampling system). Target sample zones will be selected based on the results of field

screening during boring advancement. Groundwater samples will be screened in the field for pH, temperature, specific conductivity, dissolved oxygen, oxidation-reduction potential, and ferrous iron and will be submitted for laboratory analysis of VOCs. Additionally, up to five (5) samples will also be submitted for analysis of the following geochemical parameters:

- Dissolved metals (iron and manganese)
- Anions (chloride, phosphate, sulfate, sulfide, and nitrate)
- Alkalinity
- Dissolved gases (methane, ethene, and ethane)
- TOC

Investigation and sampling methodologies will be implemented consistent with the standard operating procedures (SOPs) developed for the site during previous investigations as presented in the site quality assurance project plan (QAPP) approved by NYSDEC. The scope of investigation described herein is preliminary and subject to modification based upon evaluation of real-time field data during performance of the investigation. Data generated during the investigation will be included as part of a future Remedial Alternatives Assessment Report.

3.0 CLOSING

Subject to NYSDEC's approval, IBM anticipates implementing the above scope of work during October/November 2019. If you have any questions or require additional information, please contact the undersigned at (973) 645-1922.

4.0 REFERENCES

Groundwater Sciences Corporation, 1996, "IBM Kingston RCRA Facility Investigations Soil Gas Surveys and Sewer Systems Sampling", 12 April 1996.

Golder, 2012, "Supplemental Remedial Investigation Report, Solid Waste Management Unit T: Former B003 Waste Oil Tank" April 2012.

Golder, 2018. "Supplemental Remedial Investigation Report, Solid Waste Management Unit M: Portions of the Industrial Waste Sewer Lines." June 2018.

Signature Page

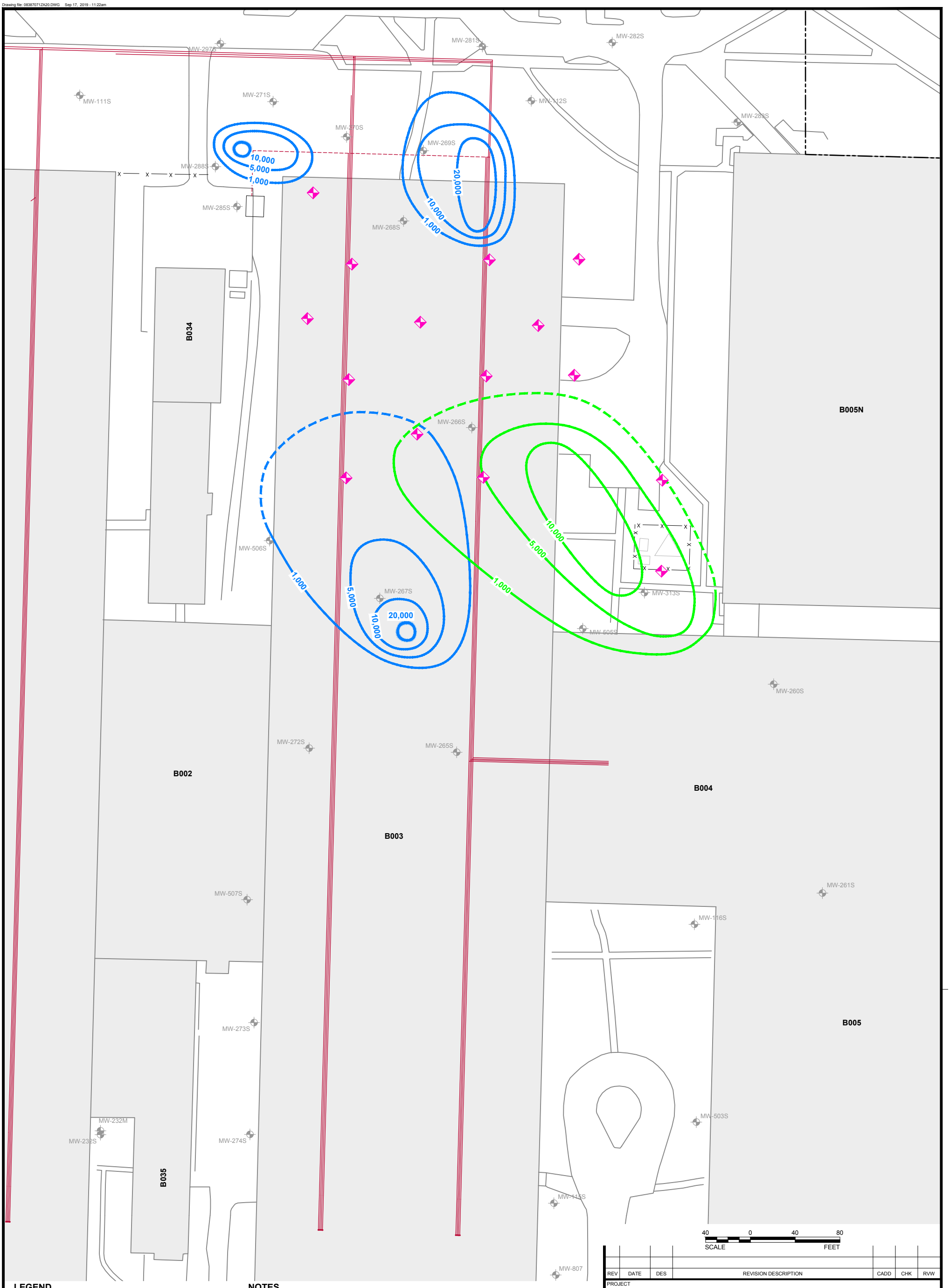
Golder Associates Inc.

Hanna Elkinton
Project Geologist

Christopher D. Hemingway
Senior Consultant, Associate

HE/CDH/zg

Drawing file: 08387071ZA20.DWG Sep 17, 2019 - 11:22am



LEGEND

B003	BUILDING NUMBER
	ACTIVE/INACTIVE SUBSURFACE INDUSTRIAL WASTE LINES
	6-INCH VITREOUS CLAY FOURTH OR "SPARE" IW LINE
	EXISTING MONITORING WELL
500	TOTAL VOCs SHALLOW GROUNDWATER
500	TOTAL VOCs DEEP GROUNDWATER
	PROPOSED SOIL BORING AND TEMPORARY WELL

NOTES

1.) CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (ug/L).

REFERENCES

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

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

3.) INACTIVE SUBSURFACE INDUSTRIAL WASTE LINES AND 6-INCH VITREOUS CLAY FOURTH OR "SPARE" IW LINE TAKEN FROM DIGITAL FILE 3002-108-I3.DWG, ENTITLED "LOCATION MAP," DATED MARCH 5, 2009, PREPARED BY GROUNDWATER SCIENCES CORPORATION.

4.) FORMER 2,000 GALLON WASTE OIL UST DIGITIZED FROM A HARDCOPY FILE ENTITLED "FORMER WASTE OIL UST SWMU," DATED FEBRUARY 26, 1997, PREPARED BY GROUNDWATER SCIENCES CORPORATION.

5.) SWMU M SOIL BORINGS, MIP LOCATIONS AND TEMPORARY WELLS SURVEYED BY BRINNIER LARIOS, P.C. ON OCTOBER 2, 2017.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FORMER IBM FACILITY
KINGSTON, NEW YORK

TITLE

B003 / B004
PROPOSED BORING LOCATION MAP

NJ Authorization #24GA28029100

GOLDER

PROJECT No.		083-87071	FILE No.		08387071ZA20
DESIGN	CDH	09/17/19	SCALE	AS SHOWN	REV. 0
CADD	RG	09/17/19			
CHECK					
REVIEW					

FIGURE 1

golder.com