

October 20, 2023

Karen A. Cahill
Environmental Engineer
New York State Department of Environmental Conservation, Region 7
5786 Widewaters Parkway
Syracuse, NY 13214-1867

**Subject: Bristol-Myers Squibb Restoration Area, Site ID No. #C734138
Village of East Syracuse, Town of DeWitt, Onondaga County
Addendum #2 to the Supplemental Groundwater Monitoring Workplan –
November 2023**

Dear Ms. Cahill:

On behalf of Bristol-Myers Squibb (BMS), B&B Engineers & Geologists of New York, P.C., an affiliate of Geosyntec Consultants Inc. (Geosyntec), has prepared this Workplan Addendum to perform supplemental groundwater monitoring at the Syracuse North Campus Restoration Area or Brownfield Development Area (BDA) (“Site”). The proposed fieldwork detailed herein supplements a *Workplan for Supplemental Groundwater Monitoring* (Workplan) approved by the New York State Department of Environmental Conservation (NYSDEC) on November 5, 2021, and subsequent addendum to the Workplan dated October 11, 2022, which was approved by NYSDEC on October 14, 2022.

Prior fieldwork conducted pursuant to this Workplan, and subsequent addendum involved the collection of groundwater samples for a comprehensive suite of analytical parameters from thirty-three (33) monitoring wells within the Site BDA. These wells were selected to help define key well groupings (e.g., Building 4/5/8 area, Building 48 area, CHAPA area, and upgradient BDA area) and to determine groundwater quality conditions in those areas.

The objectives of Addendum #2 to the Workplan addendum are as follows:

- Collect groundwater from twenty-two (22) wells within and downgradient (i.e., perimeter) of the BDA for a full suite of field parameters, and for analysis of volatile and semi-volatile organics (VOC and SVOC) plus tentatively identified compounds (TICs), aldehydes, alcohols, glycols, and monitored natural attenuation (MNA) parameters. As none of these wells have been sampled since 2018-19, the purpose is to ascertain current groundwater quality in these locations.
- Collect Next-Generation Sequencing (NGS) groundwater samples from six (6) of the above referenced wells situated in the Building 4/5/8, CHAPA, Building 52/55, and perimeter (i.e., downgradient of BDA) well groupings. Building on the initial set of four (4) samples

from 2022, the goal is to determine the prevailing microbial consortia, metabolic capabilities, and MNA potential in an expanded area of the site.

Collectively, the supplemental groundwater monitoring activities proposed herein will address certain data gaps in advance of preparing the Alternatives Analysis Report (AAR).

1. SUPPLEMENTAL GROUNDWATER CHARACTERIZATION IN BDA AND DOWNGRADIENT WELLS

Groundwater samples will be collected using low flow methods in accordance with the Site’s Field Sampling and Analysis Plan (FSAP) prepared by O’Brien & Gere in 2013, with an addendum prepared by Arcadis on behalf of BMS as part of the *Groundwater Remedy Pre-Design Investigation and Supplemental Sampling Work Plan* in August 2018 and approved by the NYSDEC in September 2018, and in accordance with the *Technical Guidance for Site Investigation and Remediation* as codified in Division of Environmental Remediation Policy No. 10 (DER-10). New disposable nitrile gloves will be donned by field personnel for each groundwater sampling location. Samples will be analyzed in accordance with the 2013 QAPP and the 2018 addendum. The specific suite of proposed analytical parameters is shown in Table 1 below with quality assurance/quality control (QA/QC) samples, as appropriate.

Table 1. Groundwater Parameters Included in Supplemental Sampling Program

Type	Parameters
Field	pH, oxidation-reduction potential (ORP), conductivity, temperature, and dissolved oxygen (DO)
Fixed Lab COPC	VOC plus TICs, SVOC plus TICs, aldehydes, glycols, and alcohols
Fixed Lab MNA	Nitrate, nitrite, sulfate, sulfide, total iron, ortho-phosphate, ammonia-nitrogen, total Kjeldahl nitrogen (TKN), and NGS
QA/QC	Duplicates (1 per 10 samples), matrix spikes, matrix spike duplicates, field blanks, and equipment blanks (all at a rate of 1 per 20 samples ¹)
Note: 1 – As per Section 7.3.4 of the 2013 QAPP, equipment blanks should be collected at a frequency of 1 per 20 samples should any equipment be decontaminated in the field for reuse during groundwater sampling. It is not planned that equipment will be reused during the proposed sampling. As such, equipment blanks are not planned. Should equipment decontamination be required as part of sampling activities, then an equipment blank will be collected at the prescribe frequency.	

The wells slated for additional groundwater monitoring have no current (post-2017) results for constituents of concern (COC) or MNA parameters. Table 2 displays the sampling and analysis plan of the BDA wells proposed for supplemental monitoring.

As has been the case historically, laboratory analyses will be performed by Eurofins Lancaster Laboratories. However, split sampling will be conducted for aldehydes only as an additional measure to evaluate data integrity and representativeness of EPA Method 8315A. To the extent feasible, a laboratory certified under the National Environmental Laboratory Accreditation Program (NELAP) will be selected to run the split aldehydes samples.

As noted previously, the suite of parameters listed in Table 1 will update groundwater quality conditions throughout much of the remainder of the BDA and in perimeter monitoring well locations. It will also facilitate a more robust evaluation of COC trends and plume stability over time. The historic groundwater dataset collected during the remedial investigation (RI), the results of the 2022 supplemental groundwater monitoring, and the data obtained from this proposed workplan will help select and implement the most appropriate and efficient remedial alternatives at the Site.

2. SCHEDULE

Geosyntec proposes to conduct the anticipated fieldwork campaign within one month after concurrence by NYSDEC of the Workplan (including modifications). This will include the required 7-day advance notification of field activity.

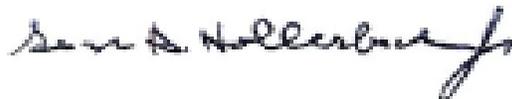
Receipt of the laboratory reports and completion of data validation would then be expected within six weeks of fieldwork completion. We propose to present the findings to NYSDEC and NYSDOH as part of the upcoming AAR.

Please feel free to contact Richard Mator, Director Global Remediation and Environment Projects, at (609) 252-4273 or Richard.Mator@BMS.com should you have questions or require further clarifications regarding the fieldwork described in this Workplan.

Sincerely,



Daniel W. Elliott, Ph.D., BCEEM
Senior Consultant
Geosyntec Consultants, Inc.



George H. Hollerbach, P.E., CSP, BCEE
Senior Consultant
B&B Engineers & Geologists of New York, P.C.

ec: Ron Arcuri, P.G. – Geosyntec Consultants, Inc.
Sara Bogardus – NYSDOH
Richard Mator – BMS
Scarlett McLaughlin – NYSDOH
Gary Priscott – NYSDEC
William Pufko, Esq. – BMS

Table 2: Groundwater Sampling and Analysis Plan
 Supplemental Groundwater Monitoring
 Site #C734138, Former BMS Syracuse North Campus Restoration Area
 East Syracuse, New York

Well ID	Screened Interval (ft bgs)	Hydrostratigraphic Zone	Well Area	Analytical							Analytical (MNA)					
				VOCs + 20 Interpretive TICs	SVOCs + 25 Interpretive TICs	Formaldehyde & Acetaldehyde	Ethylene & Propylene Glycol	Alcohols	Nitrate & Nitrite	NGS	Sulfate	Sulfide	Total Iron	Phosphate	Ammonia-Nitrogen	Nitrogen, Total Kjeldahl
BDA-1WR	56.93-81.53	Weathered Bedrock	Bldg 4/5/8 Downgradient	X	X	X	X	X	X							
BDA-3UT	17.7-27.3	Till	Bldg 4/5/8 Source area	X	X	X	X	X	X	X						
BDA-3RX	64.15-73.75	Bedrock	Bldg 4/5/8 Source area	X	X	X	X	X	X							
BDA-6RX	79.16-88.76	Bedrock	Bldg 48	X	X	X	X	X	X		X	X	X	X	X	X
BDA-7WR	56.51-86.11	Weathered Bedrock	CHAPA Downgradient	X	X	X	X	X	X		X	X	X	X	X	X
BDA-8WR	58.65-68.25	Weathered Bedrock	CHAPA Downgradient	X	X	X	X	X	X		X	X	X	X	X	X
BDA-9WT	4.07-13.67	Above Till	CHAPA Crossgradient	X	X	X	X	X	X							
BDA-9T	19.77-29.37	Till	CHAPA Crossgradient	X	X	X	X	X	X							
BDA-9WR	70.6-80.2	Weathered Bedrock	CHAPA Crossgradient	X	X	X	X	X	X							
BDA-10RX	73.71-83.31	Bedrock	CHAPA Crossgradient	X	X	X	X	X	X	X	X	X	X	X	X	X
BLD-6-1T	32.25-44.85	Till	Perimeter	X	X	X	X	X	X	X	X	X	X	X	X	X
BLD-6-1WT	3.41-18.01	Above Till	Perimeter	X	X	X	X	X	X	X						
PW-2T	19.0-29.0	Till	Perimeter	X	X	X	X	X	X							
PW-3MS	7.5-17.5	Above Till	Perimeter	X	X	X	X	X	X	X						
PW-3MD	15.5-25.5	Above Till	Perimeter	X	X	X	X	X	X							
PW-3T	33.0-43.0	Till	Perimeter	X	X	X	X	X	X							
PW-4F	3.0-5.5	Above Till	Perimeter	X	X	X	X	X	X							
PW-4LD	17.5-21.0	Above Till	Perimeter	X	X	X	X	X	X							
PW-4LS	9.0-14.0	Above Till	Perimeter	X	X	X	X	X	X							
PW-4T	29.0-39.0	Till	Perimeter	X	X	X	X	X	X		X	X	X	X	X	X
PW-6F	2.5-6.5	Above Till	Perimeter	X	X	X	X	X	X		X	X	X	X	X	X
PW-6T	34.0-40.0	Till	Perimeter	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

Field monitoring at all wells: depth to water, temperature, pH, specific conductivity, ORP, DO, turbidity, purge flowrate/volume

QA/QC Samples--Duplicate (1 per 10), matrix spike (MS), matrix spike duplicate (MSD), blanks (1 per 20)

*No equipment blank collected as field equipment was not reused during groundwater sampling (i.e., no decontamination was required)

New disposable nitrile gloves to be donned by field personnel for each groundwater sampling location

DO: dissolved oxygen

SVOCs: semivolatile organic compounds

ft bgs: feet below ground surface

TICs: Tentatively Identified Compounds

MNA: monitored natural attenuation

VOCs: volatile organic compounds

ORP: oxidation reduction potential

NGS: Next Generation Sequencing