GrafTech International Holdings Inc.
12900 Snow Road • Parma, Ohio 44130

Juanita M. Bursley
Senior Manager, Environmental Risk Management

(216) 676-2175
Facsimile (216) 676-2697
Juanita.bursley@graftech.com

December 28, 2011

Mr. Michael J. Hinton, P.E.
Environmental Engineer II
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Dear Mr. Hinton:

Subject: Site Management Plan for GrafTech International Holdings Inc. Closed Landfill Site, SWMF #32N03 (formerly UCAR Republic Site, Registry No. 932035)

Please find attached a Site Management Plan (SMP) for the GrafTech International Holdings Inc. ("GTIH") (formerly UCAR Carbon Company Inc.) closed landfill facility, SWMF #32N03, (formerly UCAR Republic Site, Registry No. 932035) ("Landfill Site"), which is being submitted to New York State Department of Environmental Conservation ("NYSDEC") for review and approval. An electronic copy of the SMP and this cover letter were also emailed to you and Mr. Sadowski, NYSDEC.

The SMP was prepared under the provisions of the Inactive Hazardous Waste Site Program, administered by the Division of Environmental Remediation (DER) of the NYSDEC. This SMP is intended to update, replace and enhance the Operation, Monitoring and Maintenance (OM&M) Manual, which was submitted to the NYSDEC on September 30, 2009, and subsequently approved by the state on November 4, 2009. This revised document has been prepared in accordance with applicable sections of the DEC Program Policy DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010. Please note that the attached SMP has no significant changes to the currently approved site management procedures under the approved OM&M Manual for this landfill property. However, the SMP updates the reporting procedures to consolidate the former redundant reporting requirements into one annual Periodic Review Report, plus a separate groundwater monitoring report each year, that conform to the state's new electronic reporting system. GTIH has also added a new procedure to the SMP to cover property transfers, which was outside the scope of the previous OM&M Manual.

Please contact the undersigned should you have any questions regarding the attached document. My contact information is provided above in the cover letter header.

Sincerely,

Juanita M. Bursley

Juanita M. Bursley
Corporate Senior Manager, Environmental Risk Management
GrafTech International Holdings Inc.

Attachment

Cc (Hard Copies Only - Cover Letter and Site Management Plan):

Mr. Steven Bates
New York State Department of Health
Flanigan Square
547 River Street
Troy, NY 12180

Mr. Robert Bucci
3344 Wildwood Dr.
Niagara Falls, NY 14304

Mr. Marty Doster
Hazardous Waste Remediation Engineer, Region 9
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Mr. Robert Knizek
Bureau Director
New York State Department of Environmental Conservation
Division of Environmental Remediation, 11th Floor
625 Broadway
Albany, NY 12233-7020

Mr. Brian Sadowski
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Greg Sutton
Hazardous Waste Remediation Engineer, Region 9
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

GRAFTECH INTERNATIONAL HOLDINGS INC.

(Formerly UCAR Carbon Company, Republic Site)

POST-CLOSURE LANDFILL SITE MANAGEMENT PLAN FOR SWMF #32N03 (Registry No. 932035)

December 2011

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 SITE MANAGEMENT PLAN INTRODUCTION

This document is the Site Management Plan (SMP) for the GrafTech International Holdings Inc. ("GTIH") (formerly UCAR Carbon Company Inc.) closed landfill facility, SWMF #32N03, (formerly Republic Site, Registry No. 932035) ("Landfill Site"), on Parcel # 130.20-1.1 in the Town of Niagara, Niagara County, State of New York. The Landfill Site is located off of Hyde Blvd. behind the former UCAR Carbon Republic Plant. This SMP meets the minimum requirements of the provisions of the Inactive Hazardous Waste Site Program, administered by the New York State Department of Environmental Conservation ("NYSDEC"), Division of Environmental Remediation (DER). This SMP was prepared in accordance with applicable sections of the DEC Program Policy DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010. This SMP is intended to update and replace the Operation, Monitoring and Maintenance (OM&M) Manual, which was previously submitted to the NYSDEC on September 30, 2009, and subsequently approved by the state on November 4, 2009.

The total size of the Landfill Site is 61.80 acres. In 1987, the site was closed and an engineered cap installed over solid waste management area, comprising 16.48 acres of the Landfill Site. The Landfill Site was reclassified by the NYSDEC from a Class 2a to a Class 4 Inactive Hazardous Waste Site in September 1997. **There is no required Remedial Program or remedial objectives for this Landfill Site.** Therefore, the scope of this SMP is limited to post-closure site management, including an Institutional Control and Engineering Control Plan, a Monitoring Plan, an Operation and Maintenance Plan, and the Periodic Review and Reporting requirements. GTIH will designate a current employee, contract employee, or third party contractor to be the responsible manager for the Landfill Site ("Designated Manager"). All official correspondence concerning the Landfill Site should be provided to this Designated Manager. As of December 2011, the GTIH Corporate Senior Manager, Environmental Risk Management is the Designated Manager responsible for managing the Landfill Site. This position is currently filled by Ms. Juanita M. Bursley, who meets the NYSDEC criteria as a Certified Environmental Professional Her contact information is provided below.

Juanita M. Bursley
GrafTech International Holdings Inc.
12900 Snow Rd.
Parma, OH 44130
216-676-2175
216-676-2697 fax

GTIH will also have a contracted employee or other qualified person on contract ("GTIH-Designated Representative"), who will function as the local point-of-contact for the Landfill Site and will be responsible for carrying out the routine activities described in this SMP, including conducting or scheduling the specified inspections and monitoring, making or scheduling needed repairs, responding to neighborhood requests, etc. The GTIH-Designated Representative will also be responsible for communicating any significant issue that could prevent full conformance with this SMP, or other important matters concerning the Landfill Site outside the scope of this Plan, to the above designated GTIH manager so that the necessary resources can be promptly allocated to implement the appropriate corrective actions that adequately and timely address the identified deficiency. As of December 2011, the following contract employee is the GTIH-Designated Representative, and is responsible for the day-to-day operations at the Landfill Site in accordance with this SMP.

Mr. Robert Bucci
344 Wildwood Dr.
Niagara Falls, NY 14304
(716) 628-8208

The NYSDEC, the Director Environmental Health, and the Town of Niagara will be notified should there be a significant change to the above contact information.

The SMP will be reviewed every five years; the first review will be completed no later than December 31, 2016. The review will ensure that the Plan is current with NYSDEC policies, regulations and recognized best management practices. Any changes deemed appropriate by GTIH at that time, or in the interim, will be timely communicated to the NYSDEC, and a revised SMP will be submitted for state approval.

2.0 INSTITUTIONAL CONTROL AND ENGINEERING CONTROL (IC/EC) PLAN

2.1 Remedy-Specific Plan for Landfill Engineered Cap

There is no required Remedial Program or remedial objectives for this Landfill Site. The engineering controls in place at the Landfill Site include a physical barrier, an engineered cap installed in 1987, which was employed to contain and eliminate potential exposure pathways to contaminants in the waste disposal area. Another EC employed at the Landfill Site is a security system consisting of an eight (8) foot high metal hurricane-style perimeter fence and two (2) gates, which are kept locked to restrict unauthorized access. In addition, a groundwater well network has been installed to monitor groundwater quality to evaluate the long-term effectiveness of this remedial program. Details of the monitoring program for groundwater are provided below in subsection 3.1, of section 3.0 Operation and Monitoring Plan.

Routine periodic inspections of the Landfill Site are conducted to assure these IC/EC remain in place and continue to be effective. These periodic inspections are performed at determined frequencies, detailed below. The results of these inspections are documented by the GTIH-Designated Representative on standard inspection forms (refer to copies of blank inspection forms in **Appendices A and B**). The GTIH-Designated Representative is also responsible for the routine maintenance, repairs or other actions needed to correct any deficiencies identified during these periodic inspections.

Required NYSDEC Annual Inspection

The inspector will record his/her name, the date and time of the inspection and the inspection results. (See **Appendix B**).

1) Inspect locks on the groundwater monitoring wells.

2) Inspect outer casing on the groundwater monitoring wells.

3) Inspect concrete seal on the groundwater monitoring wells.

4) Inspect the condition of the cap.

A copy of the completed inspection form for the most recent annual inspection will be included in the annual Periodic Review Report submitted to NYSDEC.

General Landfill Site Inspections - Weekly

The following areas are to be inspected once per week and the inspection results documented on the standard inspection form (See **Appendix A**).

1) Fence (general condition).

2) Gate (general condition and lock).

3) Cap (general condition, including signs of erosion and adequate vegetation).

4) Surrounding area.

5) Well inspection (check the lock, ID tag, and condition of the external casing).

The inspection record will identify any noted deficiency and document the corrective action completed. Any fence areas that are found to be damaged will also be duly noted on the inspection map. Completed weekly inspection forms will be made available to the NYSDEC for review during site inspections, or will be provided in electronic format within ten (10) business days upon written request.

Routine Maintenance and Repairs

1) Repairs will be scheduled as needed with outside contractor(s) to ensure that any deficiencies discovered during the routine inspections are timely corrected.

2) Lawn mowing and other general care will be scheduled, as needed. The perimeter of the Landfill Site will be typically mowed a minimum of three (3) times per year or more frequently, if needed, depending on the amount of rainfall and other factors affecting the growing season. The capped area will be cut a minimum of once per year after September 1st

3) General clean-ups of any debris along the fence line, etc. will be performed, as needed, to keep the Landfill Site clear of any objectionable or unsightly materials.

Recordkeeping

Inspection and maintenance records are stored off-site, as there are no adequate storage facilities at the Landfill Site. All inspection records will be retained for a minimum of three (3) years. Copies for the period of interest will be made available to the state within ten (10) business days upon written request from the NYSDEC.

2.2 Excavation Plan

GTIH has no immediate plans or anticipates any future plans to excavate and/or remove soils from the Landfill Site. Therefore, GTIH proposes to prepare and submit a written Soil Excavation Plan to the NYSDEC for approval, no later than thirty (30) days prior to commencing such activities, should this situation change at any time in the future. This plan would address the particulars of the planned project, including the scope of work, safety measures to be implemented, etc. In the event of an unlikely and unforeseen emergency event that disturbs the soils on-site, such as a weather-related or other natural disaster, or that requires GTIH to disturb the soils on-site, GTIH would follow all applicable OSHA regulations to protect the workers, would stage the removed soils as close to the excavation site, as safely possible, and would contact the NYSDEC within forty-eight (48) hours of this event.

2.3 Property Transfer Provisions

GTIH has no immediate plans or anticipates any future plans to either change the use of the Landfill Site or divest the Landfill Site, which might constitute a change in use of the site pursuant to state rules. However, should these circumstances change in the future, provisions will be made to timely transfer management responsibilities for the Landfill Site, including required notifications and reports to the NYSDEC. GTIH will provide site related documentation to the new owner, including a copy of the approved SMP, with any updates, previous Periodic Reviews Reports (PRR), and the IC/EC certification for the period of time between January 1st of the year of the transfer of ownership, and the property sale closing date. The new owner will be responsible for complying with all provisions of the SMP from the date of closing the sale transaction forward, including submittal of the next PRR by the next due date, and meeting the IC/EC certification requirements.

NYSDEC will be notified within five (5) business days of a transfer of ownership. Should the property transfer constitute a change in use of the Landfill Site pursuant to 6 NYCRR 375-1.11(d), NYSDEC will be notified at least sixty (60) days in advance of the change in ownership, including notification of GTIH's fulfillment of the requirements outlined in this section of the SMP. The date of the change of ownership, the date of document transfer to the new owner, and the change of use designation, if applicable, will

be reported by the new owner in the first PRR due to the NYSDEC, following the closure of the sale transaction for the Landfill Site.

3.0 OPERATION AND MONITORING PLAN

3.1 Monitoring Plan for Groundwater

The SWMF at the Landfill Site was closed and capped in 1987. The GTIH groundwater monitoring network at the Landfill Site consists of twelve (12) wells. Between 1987 and 2000, groundwater monitoring was conducted quarterly at all site wells.

In 2000, the post-closure groundwater monitoring program and the collected groundwater quality data from 1987 to 2000 were reviewed cooperatively by GTIH and the NYSDEC Division of Environmental Remediation (DER), represented by Mr. Michael Hinton, and the Division of Solid and Hazardous Materials, represented by Ms. Mary McIntosh. Based on that review, a modified groundwater monitoring program was designed to meet the requirements of 6 NYCRR Section 360 for solid waste landfill closures, and to continue to monitor the effectiveness of the established Landfill Site IC/EC in protecting groundwater quality. The modified post-closure groundwater monitoring program, which was implemented from April 2000 to November 2005, consisted of semi-annual sampling of the twelve (12) on-site monitoring wells (listed in **Appendix B)** for the selected parameters (listed in **Table 1) .** See the description in the letter from Mary E. McIntosh (NYSDEC) to Robert Bucci (GTIH Designated Representative), dated January 18, 2000 (see **Appendix C**).

In 2005, the post-closure groundwater monitoring program and historical data for the Landfill Site were once again reviewed by GTIH and the NYSDEC DER, represented by Mr. Michael Hinton, and the Division of Solid and Hazardous Materials, represented by Ms. Mary McIntosh. Based on that subsequent review, a modified groundwater monitoring program was designed to meet the requirements of 6 NYCRR Section 360 for solid waste landfill closure and to continue to monitor the effectiveness of the landfill closure and IC/EC in protecting groundwater quality. The new annual sampling program adopted in November 2005 is based on responses by NYSDEC, comments from Ms. Mary McIntosh dated September 20, 2005 (see **Appendix D**), and the response from Carol Barron (for James K. Jay) of Conestoga-Rovers & Associates (CRA), dated November 4, 2005, regarding the post-closure monitoring requirements (see **Appendix E)**.

As agreed by the above parties, the new groundwater monitoring program for the Landfill Site began in autumn of 2006 and consists of an annual sampling of a network of seven (7) selected on-site wells, including five (5) of the twelve (12) wells installed by the owner (BW-1, BW-2, BW-3, BW-4, and MW-3) and two (2) of the six (6) additional monitoring wells that were installed by the state at the Landfill Site in 1993 (GW-8B and GW-9B), The annual sampling event is conducted on a staggered schedule, rotating every year between spring and autumn. The annual sampling is completed in the spring every odd year, and in autumn every even year. One sampling event must occur in every calendar year. The above-described groundwater monitoring program continues to be implemented as of the date of this SMP, and will continue to be administered in

accordance with this schedule until such time as GTIH receives approval from the NYSDEC to modify the sampling frequency, parameters, methodologies, etc., or to stop the sampling program following their assessment of the collected data after thirty (30) years of post-closure groundwater monitoring.

The groundwater samples are analyzed for the following parameters every year using the referenced EPA test methods.

TABLE 1

PARAMETER	METHODOLOGY
Volatile Organic Compounds (VOCs)	SW-846 8260B (September 1986 with all subsequent revisions)
Total and Dissolved Iron, Potassium and Zinc	SW-846 8260B (September 1986 with all subsequent revisions)
Ammonia	USEPA 350.1 (March 1983 with all subsequent revisions)
Nitrite	USEPA 353.2 (March 1983 with all subsequent revisions)
Total Kjeldahl Nitrogen (TKN)	USEPA 351.2 (March 1983 with all subsequent revisions)
Turbidity	Field Measurement
Specific Conductance	Field Measurement
pH	Field Measurement
Temperature	Field Measurement

The groundwater elevation measurements will be recorded. Analytical results will be compared to the New York State Class GA water criteria and the results of the historical monitoring data for the Landfill Site.

If a discernible negative trend in groundwater quality is observed, the monitoring program will be reviewed again to ensure that it is still adequate. In particular, the level of redundancy will be reassessed. Any proposed amendments to the sampling program will be discussed and approved by NYSDEC Division of Environmental Remediation and the Division of Solid and Hazardous Materials before implementation. If the trend continues, the potential source(s) of the contaminant(s) will be evaluated and a plan of corrective actions developed and implemented, if appropriate. See **Appendix F** for the Landfill Site Plan and Groundwater Well Locations for the Post-Closure Monitoring Program.

As of December 2011, GTIH continues to contract with CRA for groundwater sampling services at the Landfill Site. CRA condition the active monitoring wells and collect representative samples and follow QA/QC procedures in accordance with current recognized industry standards (see **Appendices G and H**). The collected samples are then sent to Columbia Analytical to be analyzed for the selected parameters using the specified analytical procedures. However, GTIH reserves the right to enter into contracts with other qualified environmental consulting companies and laboratories for the above services.

3.2 Soil Vapor Monitoring

On August 21, 2006, GTIH received a written request from the NYSDEC to conduct a soil vapor intrusion evaluation at the Landfill site, based on the facts that some chlorinated aliphatic compounds had been detected during the 2005 groundwater sampling event in bedrock wells located along the northern property boundary, and that there are residential properties adjacent to the southern boundary of the site. Despite numerous low risk factors at the Landfill Site, GTIH agreed to voluntarily perform the requested study along the southern property boundary along Rhode Island Avenue to assess the potential for soil gas presence and migration in the direction of the bordering residential properties.

In October 2006, GTIH submitted a written Soil Gas Investigation Work Plan for agency approval. The Work Plan conformed to the applicable requirements of the “Guidance for Evaluating Soil Vapor Intrusion in the State of New York” prepared by the New York State Department of Health (February 2005 Public Comment Draft). NYSDEC reviewed that plan in December 2006 and recommended GTIH add a fourth soil gas probe at the west side near the access road to the Landfill Site. In January 2007, GTIH resubmitted a revised written Soil Gas Investigation Work Plan based on agency comments, for their approval. On February 8, 2007, NYSDEC approved the revised Work Plan inclusive of the following three (3) conditions: that the study be completed before March 31, 2007; that a Data Usability Summary Report following the agency guidelines be included; and that a community Fact Sheet was not required unless additional investigation, based on the results of the initial vapor intrusion study, required the performance of off-site work.

NYSDEC was advised of the schedule in advance, and on March 8, 2007, four (4) soil vapor implants were installed along the south fence line of the property in order to collect soil gas samples near the residences along Rhode Island Avenue. On March 26, 2007

these implants were purged for approximately twenty-five (25) minutes. On March 27, 2007, the four (4) soil vapor implants were sampled using one-(1) liter vacuum canisters. The vacuum canisters were allowed to collect soil gas from each implant for a minimum of two (2) hours, and a maximum of three (3) hours; none of the canisters drew in any (or enough) air for analysis. The purge pump was again connected to the implant tubing and the discharge from the pump checked for helium. Again the pump rates dropped to zero (0) cc/min, indicating no soil gas drawn from the implant, and no helium was noted in the discharge from the pump. After a minimum of two (2) hours, the volume of soil vapor drawn into each cylinder at the four (4) sampling locations was insufficient to analyze the contents in the laboratory. The inability to draw soil vapor from any of the implants suggests that the clay soils are too tight to allow migration of vapors. On May 5, 2007, GTIH submitted the results of the attempted soil vapor sampling event in March 2007 with the conclusion that no threat was posed to neighboring residential properties and recommended that no further action concerning vapor studies was warranted.

On December 29, 2008, the NYSDEC and the New York State Department of Health (NYS DOH) informed GTIH, in writing, that they had reviewed the submitted Soil Intrusion Evaluation report for the GTIH Republic Landfill Site report, dated May 2, 2007. Furthermore, both agencies determined that the potential for soil vapor intrusion into neighboring homes and businesses had been satisfactorily evaluated and concurred with GTIH's recommendation that no further action is needed at this Landfill Site regarding soil vapor intrusion (see **Appendix I**). Therefore, no vapor intrusion monitoring program is included with this SMP.

4.0 PERIODIC REVIEW AND REPORTING (PRR)

The Landfill Site management activities and documentation will be periodically reviewed and evaluated to confirm that they conform to the criteria outlined in this SMP, These evaluations will be documented in a PRR to be prepared and submitted annually by the established deadline to NYSDEC. The PRR will summarize the results of the annual site inspections and groundwater monitoring for the report period, including a list of analytes and standard test methods. Analytical results by sampling point will be provided in a separate annual groundwater monitoring report, as further described below in this section.

The PRR will include a written IC/EC certification, in a reporting format approved by the NYSDEC, that is signed by a Qualified Environmental Professional (QEP), attesting that the established IC/EC are in place, are performing properly and have remained effective during the certification period. In the event such certification cannot be provided due to a failure of the established IC/EC, GTIH will timely notify the NYSDEC and submit a work plan and a schedule to implement appropriate corrective measures.

The PRR will also provide related conclusions and any recommendations for modification(s) to the IC/EC, and report on any corrective measures taken during the reporting period. If applicable, the PRR will document a change of use and/or a property transfer, as set forth in chapter 6 of the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010 (or another applicable subsequent equivalent publication(s)).

If a property transfer and/or a change in use took place for the Landfill Site within the subject reporting year, the date of the change of ownership, the date(s) of document transfer to the new owner, and the change of use designation, if applicable, will be reported by the new owner in the first PRR submitted to the NYSDEC following the closure of the sale transaction.

The annual PRR will be submitted prior to forty five (45) days after the end of the certification period, i.e., the subject calendar year from January through December, or before any other reporting deadline stipulated by the NYSDEC by formal notification or via other written communication (including electronic forms). The PRR and required documentation, including a copy of the annual inspection form, will be provided in print and in an electronic format acceptable to NYSDEC, (currently a searchable PDF format).

In addition to the annual PRR, a separate groundwater monitoring report, including copies of laboratory data reports and chain-of-custody documentation, will be prepared and submitted to NYSDEC within ninety (90) days of the annual sampling event. All data will be submitted electronically in a standardized electronic data deliverable (EDD) format that meets NYSDEC's published guidelines. In addition, printed copies of the annual groundwater monitoring report will be mailed to the following agencies and offices.

A. New York State DEC

    a. Geologist II, Div. of Solid and Hazardous Materials (held by Ms. Mary F. McIntosh, Eng. as of the date of this SMP)

B. Niagara County

    a. Director Environmental Health (held by Mr. Jim Devald as of the date of this SMP)

C. Town of Niagara

    a. Town Clerk (held by Mrs. Sylvia Virtuoso as of the date of this SMP)

APPENDIX A

WEEKLY INSPECTION REPORT

LANDFILL FENCE, CAP AND SURROUNDING AREA

Date	Time	Inspector

AREA	OK	DAMAGED	DATE REPAIRED	REMARKS
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				

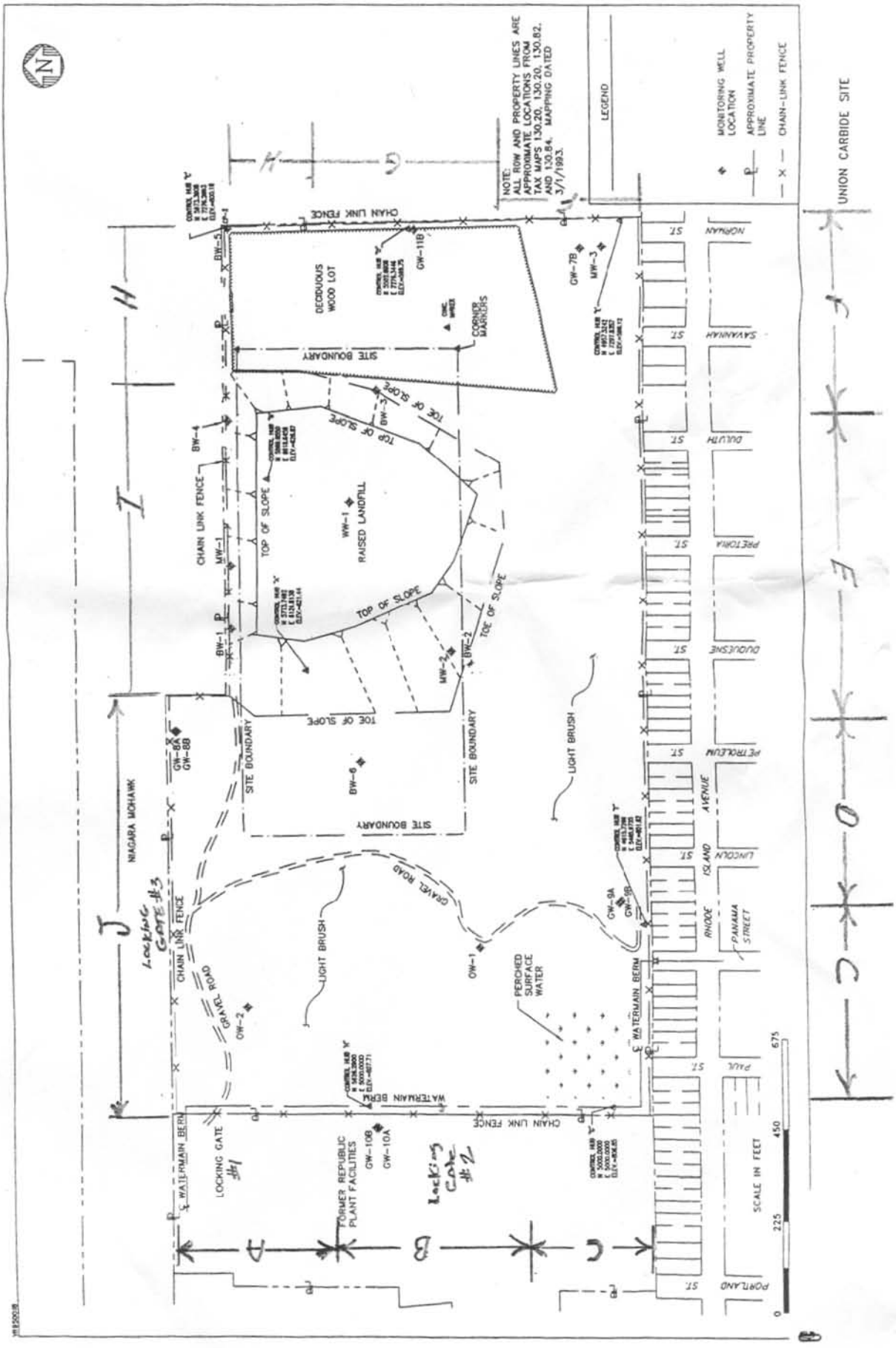
GATE	OK	DAMAGED	DATE REPAIRED	REMARKS
1				
2				
3				

COMMENTS:

CAP CONDITION COMMENTS: **(Checking for erosion and adequate vegetation)**

SURROUNDING AREA:

ENTIRE CAP MOWED:_____


N
LEGEND
MONITORING WELL LOCATION
APPROXIMATE PROPERTY LINE
CHAIN-LINK FENCE
NOTE:
ALL ROW AND PROPERTY LINES ARE APPROXIMATE. LOCATIONS FROM TAX MAPS 130.20, 130.20, 130.82, AND 130.84. MAPPING DATED 3/1/1993.
UNION CARBIDE SITE
DECIDUOUS WOOD LOT
CORNER MARKERS
SITE BOUNDARY
TOP OF SLOPE
TOE OF SLOPE
RAISED LANDFILL
CHAIN LINK FENCE
LIGHT BRUSH
GRAVEL ROAD
PERCHED SURFACE WATER
WATERMAIN BERM
LOCKING GATE #1
LOCKING GATE #2
LOCKING GATE #3
FORMER REPUBLIC PLANT FACILITIES
NIAGARA MOHAWK
NORMAN ST.
SAVANNAH ST.
DULUTH ST.
PRETORIA ST.
DUQUESNE ST.
PETROLEUM AVENUE
LINCOLN ISLAND
RHODE ISLAND
PANAMA STREET
PAUL ST.
PORTLAND ST.
SCALE IN FEET
0
225
450
675

APPENDIX B

ANNUAL GROUNDWATER WELL INSPECTION REPORT

WELL I.D. NUMBER	WELL I.D. TAG INTACT (YES/NO)	LOCK CONDITION	OUTER CASING CONDITION	CONCRETE SEAL CONDITION	COMMENTS
MW1-78					
MW2-78					
MW3-79					
BW1-86					
BW2-86					
BW3-86					
BW4-86					
BW5-86					
BW6-86					
WW1-86					
OW1-88					
OW2-88					

NYSDEC WELLS

(INSTALLED SEPT/OCT 93)

GW7B-93					
GW8A-93					
GW8B-93					
GW9A-93					
GW9B-93					
GW11B-93					

APPENDIX B

APPENDIX C

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2999
Phone: (716) 851-7220 • **FAX:** (716) 851-7226
Website: www.state.ny.us

John P. Cahill
Commissioner

January 18, 2000

Mr. Robert Bucci
Site Manager
UCAR Carbon Company Inc.
P.O. Box 887
Niagara Falls, New York 14302-0887

Dear Mr. Bucci:

UCAR Republic Solid Waste
Management Facility #32N03

Thank you for your letter of October 25, 1999 regarding the monitoring program at the UCAR closed Republic Landfill. As you are aware, both the Division of Solid Materials and the Division of Environmental Remediation have wells on the site and an interest in the post-closure monitoring program. Mr. Michael Hinton of the Division of Environmental Remediation and I met to discuss how the concerns of both programs can be met in a monitoring program that will be both efficient and comprehensive. We are requesting that the following program be implemented:

1. Sample all of the on-site wells once initially (wells GW-7B, GW-8A, GW-8B, GW-9A, GW-9B, GW-10A, GW-10B, GW-11B under the Environmental Remediation program, and wells BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, MW-1, MW-2, MW-3 under the Solid Materials Program for Part 360 baseline volatile organics using method 8260.

2. If volatile organics are not detected in the Environmental Remediation Program wells, eliminate all of them except well GW-9B from the monitoring program.

3. Perform semi-annual (twice yearly) sampling at wells BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, MW-1, MW-2, MW-3 and GW-9B, as indicated on the attached table.

This program will satisfy the monitoring concerns of both programs and represents a reduction from the quarterly program now being conducted at the site. If you have any questions, or wish to meet to discuss this proposal further, please contact me at 851-7220. Thank you.

Yours truly,

Mary E. McIntosh
Engineering Geologist II

MEM:lj

Attachment

cc: Mr. Mark Hans, Regional Solid Materials Engineer
Mr. Michael Hinton, Environmental Engineer II

a:bucci.mem

BE PART OF THE COUNT
SEA PARTE DE LA CUENTA

APPENDIX D

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2999
Phone: (716) 851-7220 • **FAX:** (716) 851-7226
Website: www.dec.state.ny.us

Denise M Sheehan
Commissioner

September 20, 2005

Mr. James K. Kay, P. Eng.
Conestoga-Rovers and Associates
23271 George Urban Blvd.
Depew, New York 14043

Dear Mr. Kay:

UCAR Carbon Landfill
#32NO3

This office has reviewed your submission of July 27, 2005 in support of a reduction in the monitoring program for the closed UCAR Carbon Landfill. You have requested, on behalf of the company, a reduction to annual sampling in four wells for volatile organics only. The following comments have been generated by myself as a representative of the Division of Solid and Hazardous Materials, and Mr. Michael Hinton of the Division of Environmental Remediation (please note that our respective divisions were reversed in the report):

1. The report does not contain the correct class GA standards for several parameters. In Table 3 the standard for iron is listed as 300 mg/l, but it is really 300 ug/l or .3 mg/l. The standard for zinc is listed as 300 mg/l but it is really 2000 ug/l or 2 mg/l. The standard for ammonia is listed as no standard, but the standard is 2000 ug/l or 2 mg/l. Because of the incorrect standards applied, several of the conclusions from the review of the monitoring data are erroneous. For example, the report states that in 6 of the 11 wells currently monitored, the concentrations of constituents of concern are currently lower than the water quality criteria cited. In reality, most of the wells exhibit elevated levels of one or more of the parameters. Many of the wells exhibit elevated levels of iron (MW-1, MW-3, GW-8B, GW-9B, BW-1, BW-2, BW-3, BW-4, BW-5, and BW-6). Ammonia is elevated in wells MW-1 and BW-4. Zinc is elevated in wells BW-1 and BW-4.

2. The Division of Environmental Remediation investigated the area north of UCAR for other sources of the contaminants detected in wells along the north property boundary, and no alternate source was found. The Division of Environmental Remediation sent a copy of this report to UCAR.

3. The report notes that vinyl chloride was detected in well BW-3 up to 26 ug/l, but this value is not shown in Table 3. What was the sampling date on which this level was recorded?

APPENDIX E

CONESTOGA-ROVERS
& ASSOCIATES

2371 George Urban Blvd., Depew, New York 14043
Telephone: 716-206-0202 Facsimile: 716-206-0201

November 4, 2005

Reference No. 5513

Ms. Mary E. McIntosh, C.P.G.
Engineering Geologist II
NYSDEC
270 Michigan Avenue
Buffalo, New York 14203-7226

Dear Ms. McIntosh:

Re: Responses to NYSDEC Comments Dated September 20, 2005
UCAR Republic SWMF No. 32N03

The enclosed responses to NYSDEC comments dated September 20, 2005, regarding the post-closure monitoring program review for the above-referenced site are being submitted by Conestoga Rovers & Associates on behalf of UCAR Carbon Corporation. Included with the responses is a groundwater analytical data table showing the corrected groundwater quality criteria as cited in the comment letter.

It is our understanding from the comment letter that the approved modified monitoring program consists of the following:

> Annual sampling of seven wells (BW-1, BW-2, BW-3, BW-4, MW-3, GW-8B, and GW-9B) with analysis of the samples for Part 360 volatiles, ammonia, iron (total and soluble), potassium (total and soluble), zinc (total and soluble), nitrite, TKN, turbidity, groundwater elevation, pH, specific conductance, and temperature. Monitoring will be rotated between the spring and fall seasons such that one year sampling will be conducted in the spring and the next year it will be conducted in the fall. Sampling will be conducted once in each calendar year and reporting will be submitted annually following receipt and review of the groundwater analytical data.

The next monitoring event will be conducted in the fall of 2006.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Carl Barron for

James K. Kay, P. Eng.

JKK/dl/13
Encl.

c.c.: M. Hans, NYSDEC
M. Hinton, NYSDEC
R. Bucci, UCAR
C. Barron, CRA

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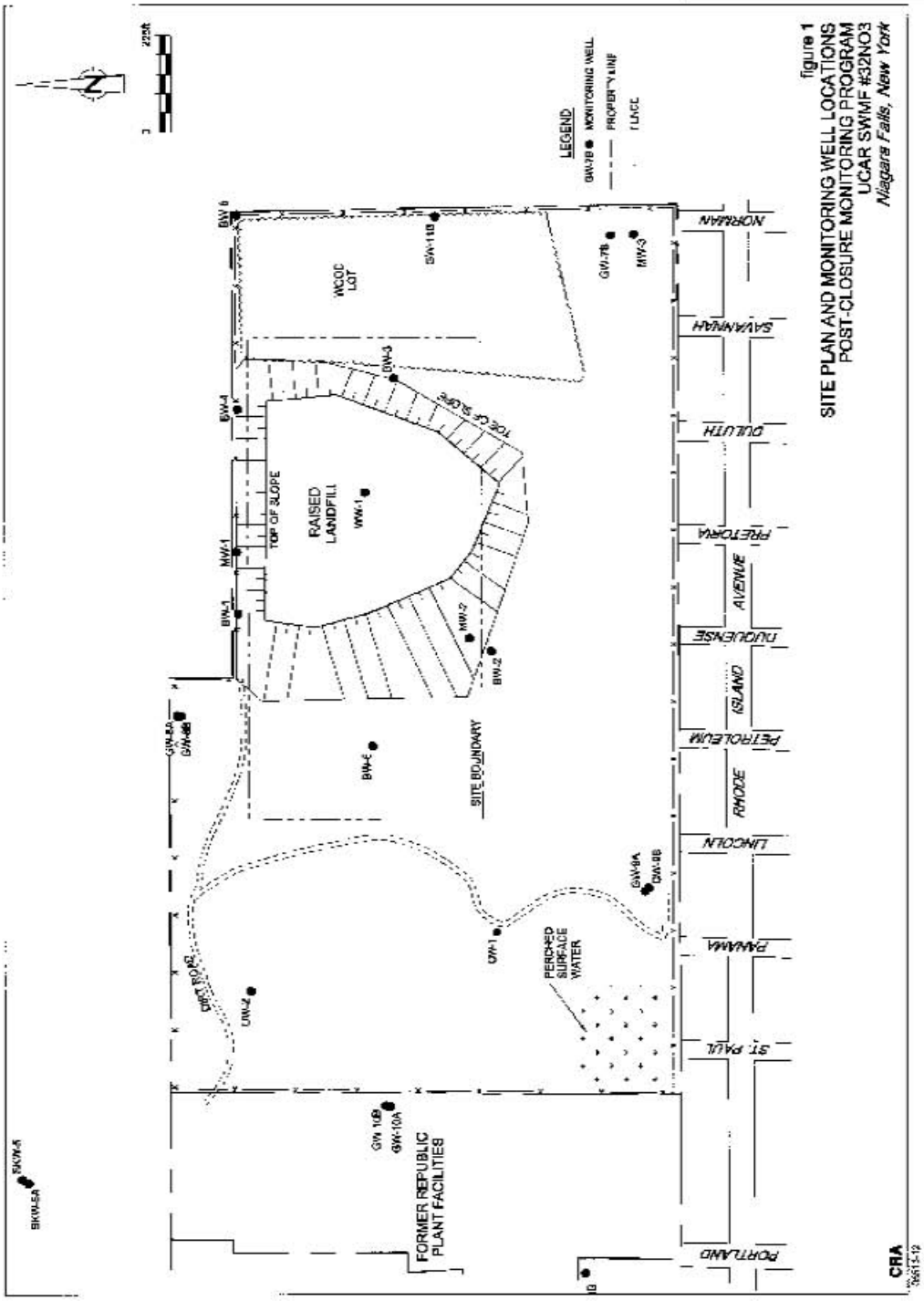
APPENDIX F


LEGEND
GW-7B MONITORING WELL
PROPERTY LINE
FENCE
SITE PLAN AND MONITORING WELL LOCATIONS
POST-CLOSURE MONITORING PROGRAM
UCAR SWMF #32N03
Niagara Falls, New York
figure 1
WOOD LOT
RAISED LANDFILL
TOP OF SLOPE
TOE OF SLOPE
SITE BOUNDARY
PERCHED SURFACE WATER
FORMER REPUBLIC PLANT FACILITIES
NORMAN
SAVANNAH
DULUTH
FRETORA
AVENUE
DUQUESNE
ISLAND
PETROLEUM
RHODE
LINCOLN
PANAMA
ST. PAUL
PORTLAND
CRA

APPENDIX G

CONESTOGA-ROVERS & ASSOCIATES

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Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

MEMORANDUM

Sent via email

TO:	Jim Kay	REF. NO.:	005513
FROM:	Dave Tyran/adh/7 DJT	DATE:	March 27, 2009
RE:	**Annual Groundwater Sampling**		

INTRODUCTION

In accordance with Conestoga-Rovers & Associates (CRA) Field Sampling Plan (FSP) Post-Closure Monitoring Program for UCAR Carbon's Solid Waste Management Unit (SWMU) No. 32N03, the Annual groundwater sampling event was performed on March 26, 2009. Activities associated with this sampling event are described in this memo.

HYDRAULIC MONITORING

Prior to sampling, a complete round of water level measurements and well soundings were taken. Table 1 presents the water level information in addition to comparing the sounded depths to the installed depths.

GROUNDWATER MONITORING

A total of seven monitoring wells were visited during this sampling round. Monitoring well MW-3 had minimal water and was purged dry; the remaining six wells had sufficient recharge to purge three to five well volumes. Monitoring well MW-3 recovered enough for a full sample to be collected.

Purging of wells was accomplished by the use of either a battery operated submersible pump or Teflon bailer. Samples were obtained with a dedicated bottom loading Teflon bailer. Table 2 provides the pertinent groundwater data.

WELL INSPECTIONS

Well inspections were performed at each of the monitoring wells. No problems were noted during this round.

FUTURE MONITORING

The next scheduled groundwater sampling round will be performed in September 2010.

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ISO 9001 ENGINEERING DESIGN

CONESTOGA-ROVERS & ASSOCIATES
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MEMORANDUM

TO: Jim Kay

REF. NO.: 005513

FROM: Deb Andrasko/bjw/1

DATE: May 15, 2009

E-Mail and Hard Copy If Requested

RE: **Analytical Results and QA/QC Review**
Annual Groundwater Monitoring Program
UCAR Carbon Company, Inc.
Niagara Falls, New York
March 2009

INTRODUCTION

Eight groundwater samples, including one field duplicate sample were collected during March 2009 in support of the annual monitoring program at the UCAR Carbon Site in Niagara Falls, New York (Site). The samples were submitted to Columbia Analytical Services (CAS), located in Rochester, New York, and analyzed for the following:

Parameter	*Methodology*
Volatile Organic Compounds (VOCs)	SW-846 8260B[1]
Total & Dissolved Iron, Potassium, and Zinc	SW-846 6010B[1]
Ammonia	USEPA 350.1[2]
Nitrite	USEPA 353.2[2]
Total Kjeldahl Nitrogen (TKN)	USEPA 351.2[2]

A sampling and analysis summary is presented in Table 1. The analytical results are summarized in Table 2. The quality assurance/quality control (QA/QC) criteria by which the data have been assessed are outlined in the respective methods and the following documents:

i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", October 1999, United States Environmental Protection Agency (USEPA) 540/R-99/008;

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", February 1994, USEPA 540/R-94/013.

1 "Test Methods for Solid Waste Physical/Chemical Methods", SW-846, 3rd Edition, September 1986 (with all subsequent revisions).

2 "Methods for Chemical Analysis of Water and Wastes", United States Environmental Protection Agency (USEPA) 600/4-79-220, March 1983 (with all subsequent revisions).

EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER
REGISTERED OFFICE FOR ISO 9001 ENGINEERED DESIGN

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. The data quality assessment and validation presented in the following subsections were performed based on the sample results, supporting QA/QC and raw data provided.

Holding Time Period And Sample Analysis

The holding time periods are presented in the analytical methods. All samples were properly preserved and cooled to 4°C (±2°C) after collection. All samples were prepared and analyzed within the method-required holding times.

Gas Chromatography/Mass Spectrometer (GC/MS) Mass Calibration

Prior to analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the volatile organic compound (VOC) method requires the analysis of the specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

Instrument tuning data were reviewed. The tuning compound was analyzed at the required frequency throughout the VOC analysis periods. All tuning criteria were met for the analyses, indicating proper optimization of the instrumentation.

Initial Calibration - GC/MS Analyses

To quantify compounds of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a minimum of a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range.

Calibration data were reviewed for all samples. Linearity of the calibration curve and instrument sensitivity were evaluated against the following criteria:

i) all relative response factors (RRFs) for the GC/MS must be greater than or equal to 0.05; and

ii) percent relative standard deviation (%RSD) values for the GC/MS must not exceed 30 percent, or if linear regression is used, the correlation coefficient (R^2) value must be at least 0.990.

Initial calibration standards were analyzed as required and the data showed acceptable sensitivity and linearity.

Initial Calibration - Metals Analyses

To calibrate the inductively coupled plasma (ICP), a calibration blank and at least one standard must be analyzed at each wavelength to establish the analytical curve. After calibration, an initial calibration verification (ICV) standard must be analyzed to verify the analytical accuracy of the calibration curves within a method-specific percent recovery of the accepted or true value. A Contract Required Detection Limit (CRDL) standard is analyzed before and after sample analyses to verify instrument sensitivity.

A review of the data showed that all metals calibration curves, ICVs and CRDI, were analyzed at the proper frequencies and were within the acceptance criteria.

Initial Calibration – General Chemistry Analyses

The general chemistry analyses of ammonia, nitrite, and TKN were calibrated in accordance with the methods and all calibration criteria were met.

Continuing Calibration – GC/MS

To ensure that instrument calibration is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

i) all RRF values for the GC/MS must be greater than or equal to 0.05; and

ii) percent difference (%D) values must not exceed 25 percent.

Continuing calibration standards were analyzed at the required frequency and the results met the above criteria for instrument sensitivity and linearity of response.

Continuing Calibration – Inorganics

Continuing calibration criteria for inorganic analyses were the same criteria as used for assessing the initial calibration data. All continuing calibration verification data were within the acceptance criteria.

Surrogate Compound Recoveries

Surrogates were added to all samples, blanks, and QC samples prior to analysis of VOCs. All recoveries met the method criteria, with the exception of a low surrogate recovery for one sample. All associated results were qualified as estimated based on the indicated low bias (see Table 3).

Method Blank Samples

Method blanks were analyzed for all parameters. All results were non-detect, indicating that contamination during analysis was not a concern.

Laboratory Control Sample (LCS) Analysis

The LCS serves as a measure of overall analytical performance. LCSs are prepared with all analytes of interest and analyzed with each sample batch.

LCSs were prepared and analyzed for all parameters at the proper frequency. The LCS recoveries were within the control limits for all analytes of interest, indicating acceptable analytical accuracy.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

The recoveries of MS analyses are used to assess the analytical accuracy achieved on individual sample matrices. MS/MSD analyses were performed on the sample submitted for analysis, as shown in Table 1. The MS/MSD recoveries were within laboratory control limits for all analytes of interest, indicating good analytical accuracy and precision.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

To verify that proper inter-element and background correction factors have been established by the laboratory, ICSs are analyzed. These samples contain high concentrations of aluminum, calcium, magnesium, and iron and are analyzed at the beginning and end of each sample analysis period.

ICS analysis results were evaluated for all samples. All ICS recoveries were within the established control limits of 80 to 120 percent.

Serial Dilution - Metals Analyses

The serial dilution determines whether significant physical or chemical interferences exist due to sample matrix. A minimum of one per 20 investigative samples is analyzed at a five-fold dilution. For samples with sufficient analyte concentrations, the serial dilution results must agree within 10 percent of the original results.

Serial dilution analysis was performed on the sample chosen for MS/MSD analyses and all results were within the method criteria.

Internal Standard (IS) Summaries

To correct for changes in GC/MS response and sensitivity, IS compounds are added to investigative samples and QC samples prior to VOC analyses. All results are calculated as a ratio of the IS response. The criteria by which the IS results are assessed are as follows:

i) IS area counts must not vary by more than a factor of two (-50 percent to −100 percent) from the associated calibration standard; and

ii) the retention time of the IS must not vary more than ±30 seconds from the associated calibration standard.

All sample IS results met the above criteria and were correctly used to calculate sample results.

Trip Blanks - VOCs

Trip blanks are transported, stored, and analyzed with the investigative samples to identify potential cross-contamination of VOCs. A trip blank was collected as shown on Table 1. All results were non-detect for the analytes of interest, indicating that contamination during transport and storage was not an issue.

Field Duplicates

Samples were collected in duplicate as summarized in Table 1 and submitted "blind" to the laboratory for analysis. All sample results outside of estimated ranges of detection showed acceptable sampling and analytical precision with the exception of the zinc result for the dissolved metals analysis. The associated result was qualified as estimated based on the indicated variability (see Table 4).

CONCLUSION

Based on the preceding assessment, the data were acceptable for use with the qualifications noted.

APPENDIX I

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2999
Phone: (716) 851-7220 • **FAX:** (716) 851-7226
Website: www.dec.state.ny.us

December 29, 2008

Mr. Robert Bucci
GrafTech
3344 Wildwood Drive
Niagara Falls, New York 14304

Dear Mr. Bucci:

Soil Vapor Intrusion Evaluation Report
UCAR Republic Site, Registry No. 932035
Town of Niagara, Niagara County

The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYS DOH) have reviewed the Soil Intrusion Evaluation at the UCAR Republic Site report dated May 2, 2007. We have determined that the potential for soil vapor intrusion into neighboring homes and business' has been satisfactorily evaluated and we concur with your recommendation that no further action is needed at this site regarding soil vapor intrusion.

We appreciate your patience while we were evaluating your report. If you have any questions please call me at 716-851-7220.

Sincerely yours,

Michael J. Hinton P.E.
Environmental Engineer II
Region 9, Buffalo Office

MJHi\dcg
hinton\bucci-dec1.ltr

cc: Mr. Gregory Sutton, NYSDEC, Region 9
Ms. Mary McIntosh, NYSDEC, Region 9
Mr. Thomas Festa, NYSDEC, Albany (Code 7013)
Mr. Matthew Forcucci, NYS DOH, Buffalo
Ms. Juanita Bursley, Senior Manager Corporate Environmental Protection, UCAR