



REMEDIAL ACTION

FINAL ENGINEERING REPORT

BASF SOUTH 40

**BASF Corporation
36 Riverside Avenue
City of Rensselaer, Rensselaer County, New York**

September 2007

Prepared For:
Besicorp-Empire Power Company, LLC

Prepared By:
Earth Tech Northeast, Inc.
40 British American Boulevard
Latham, NY 12110

Earth Tech Project No.92003

TABLE OF CONTENTS

Chapter	Page
EXECUTIVE SUMMARY	III
CONSTRUCTION CERTIFICATION.....	IV
1.0 INTRODUCTION	1
1.1 GENERAL.....	1
1.2 PROPERTY DESCRIPTION AND BACKGROUND	1
1.3 HISTORICAL INVESTIGATIONS.....	2
1.3.1 Administrative Record.....	2
1.3.2 Summary of Historical Investigations	3
1.3.2.1 Phase II Investigation (URS, 1988).....	3
1.3.2.2 Supplemental Site Investigations (Dunn, 1990, 1992)	3
1.3.2.3 Site Investigation (Roux, 2001).....	4
1.3.2.4 Supplemental Investigation Report (Earth Tech, 2003)	4
2.0 DESCRIPTION OF ANOMALY REMEDIAL ACTION	6
3.0 DESCRIPTION OF SOIL CAP REMEDIAL ACTION	7
3.1 PREPARATION OF SUBMITTALS.....	7
3.2 MOBILIZATION	7
3.3 CLEARING AND GRUBBING.....	7
3.4 SITE PREPARATION	8
3.5 SITE SURVEYS.....	8
3.6 SOIL GRADING	8
3.7 DEMARCATION LAYER.....	9
3.8 STRUCTURAL FILL PLACEMENT.....	9
3.9 DECONTAMINATION	9
3.10 DEMOBILIZATION.....	10
4.0 COMMUNITY AIR MONITORING PROGRAM	11
4.1 REAL-TIME AIR MONITORING – VOLATILE ORGANIC COMPOUNDS	11
4.2 REAL TIME MONITORING – TOTAL SUSPENDED PARTICULATES	11
4.3 WORK ZONE AIR MONITORING PROGRAM	12
5.0 CONCLUSIONS AND RECOMMENDATIONS	13

FIGURES

Figure 1-1	Site Location Map
Figure 1-2	BASF Property Areas
Figure 2-1	Pre-Soil Cover Survey
Figure 2-2	Top of Soil Cover Survey
Figure 5-1	Soil Cover and off Soil Cover Historical Samples (Appropriate Name/ location?)

APPENDICES

Appendix A	Metes and Bounds Survey Map
Appendix B	Copies of Backfill Analytical
Appendix C	Copies of Tree Shred Analytical
Appendix D	Copies of Weight Tickets for Tree Shred Removal

Appendix E	Site Management Plan
Appendix F	Environmental Easement
Appendix G	Financial Assurance
Appendix H	Citizens Participation Program Fact Sheet

EXECUTIVE SUMMARY

As requested by BEPCO, Earth Tech Northeast, Inc. (Earth Tech) prepared the Work Plan for Construction of Soil Cover at the BASF South 40 Parcel, Rensselaer Site, located in the City of Rensselaer, New York, dated June 11, 2007. The soil cover system is based on a modification of Figure 6-1 of the Remedial Action Work Plan (RAWP) dated July 8, 2003 for the South 40 remediation, which RAWP was prepared in accordance with a Voluntary Cleanup Agreement between the New York State Department of Environmental Conservation (NYSDEC) and BASF dated November 27, 2001. After the RAWP was approved by NYSDEC on January 22, 2004, the site was deemed eligible for the New York State Brownfield Cleanup Program and a new agreement was entered into for the Site: Brownfield Site Cleanup Agreement among NYSDEC, BASF and Besicorp-Empire Power Company, LLC (BEPCO) dated June 24, 2004 (Index # A4-0507-0604; Site # C-241047). Remediation activities were conducted in two phases in accordance with the RAWP. The first phase of work was conducted between July 2004 and December of 2004.

Remedial activities conducted by Earth Tech on the South 40 for the removal of anomaly areas and arsenic-contaminated soil began in July 2004 and were completed in December 2004 as detailed in Section 1.1 and Section 2.0 of this report.

The Final Report dated May 2005 (Certification Report) for the first phase of work was approved by the NYSDEC on June 6, 2005 in a letter from Mr. Dan Lightsey (NYSDEC) to Mr. Doug Reid-Green (BASF Corporation). An electronic copy of this report with all appendices is provided on the CD attached to this report.

During the second phase of activity implemented under the RAWP, a soil cap was required to be placed over the area of the property where arsenic concentrations exceeded 7.5 ppm total arsenic. This cap was constructed in August and September 2007.

As part of the installation of the soil cover system, all trees less than 12 inches in diameter were cut and chipped, site rough graded to level small stockpiles, a demarcation layer was placed over the cap area and one foot of structural fill was placed on top of the demarcation layer.

During intrusive activities, a Community Air Monitoring Program (CAMP) was implemented. Real-time air monitoring for volatile organic compounds and total suspended particulates was conducted at upwind and downwind monitoring stations. In addition, a Work Zone Monitoring Program was implemented and real-time air monitoring for volatile organic compounds was conducted.

The current report is a supplemental Final Engineering Report (FER) that provides the certification of the final work component, the soil cover system, that was identified in the RAWP. Except in summary fashion, this FER does not duplicate the information included in the Certification Report and is limited to the specific tasks required to construct the soil cover system. This FER incorporates the requirements of the Brownfield Site Cleanup Agreement, institutional and engineering controls, and the Site Management Plan requirements, and was prepared in accordance with the NYSDEC FER Checklist dated October 2006.

CONSTRUCTION CERTIFICATION

I _____ certify that I am currently a registered professional engineer, and I certify that the Remedial Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Work Plan.

The data submitted to the Department demonstrates that the remediation requirements set forth in the remedial work plan and any other relevant provisions of ECL 27-1419 have been or will be achieved in accordance with the time frames, if any, established in the work plan.

Any use restrictions, institutional controls, engineering controls and/or any operation and maintenance requirements applicable to the site are contained in an environmental easement created and recorded pursuant to ECL 71-3605 and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. **[NOTE TO DRAFT: ENVIRONMENTAL EASEMENT MUST BE RECORDED AND LOCAL GOVERNMENT NOTIFICATIONS MADE PRIOR TO FINAL SUBMITTAL OF THIS FER.]**

A Site Management Plan has been submitted by the applicant for the continual and proper operation, maintenance, and monitoring of any engineering controls employed at the site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by the Department.

Any financial assurance mechanisms required by the Department pursuant to ECL 27-1419 have been executed. **[NOTE TO DRAFT: FINANCIAL ASSURANCES MUST BE IN PLACE PRIOR TO FINAL SUBMITTAL OF THIS FER.]**

Respectfully submitted,
EARTH TECH NORTHEAST, INC.

Carsten H. Floess
Registered Professional Engineer
New York License No. 061261

Date

1.0 INTRODUCTION

1.1 GENERAL

As required by the New York State Department of Environmental Conservation (NYSDEC), Earth Tech was requested by BEPCO to prepare this Final Engineering Report (FER) for the remedial construction activities that were performed at the BASF South 40 Site in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP) dated July 2003. The remedial construction activities were started in July of 2004, initial activities completed in December 2004 and final soil cover completed in September 2007. The remedial action conducted at the South 40 Site consisted of the following tasks. Italicized items were completed as part of the most recent soil cover construction activities:

- Mobilization of equipment, personnel, and materials to the Site;
- Clearing and grubbing activities;
- Installation of a temporary 6' high chain link fence around the northern portion of site and new chain link fence/gate;
- Delineation of work zones (i.e. exclusion zone, contaminant reduction zone, and safety zone);
- Preparation of material stockpile management areas;
- Preparation of contaminant reduction area;
- Placement of erosion control measures and temporary access and haul road;
- Magnetic Survey;
- Survey of excavation locations and elevations;
- Excavation of approximately 7,073.9 tons of RCRA non-hazardous impacted soil;
- Air-quality monitoring;
- Sampling of excavations*;
- Stockpiling and gravity dewatering of excavated material that was below groundwater table;
- Removal of approximately 185 drum carcasses from anomaly areas;
- Transportation and offsite disposal of 7,073.9 tons of impacted material;
- Transportation and offsite disposal of 16,305 gallons of water;
- Placement of a notification layer in each excavation area*;
- Backfill of excavation areas with sand;
- Decontamination and demobilization of equipment, personnel, and materials from the Site;
- *Clearing of 8 acres of site of all trees less than 12 inches in diameter;*
- *Grading of site;*
- *Placement of demarcation layer; and*
- *Placement of one (1) foot of structural fill.*

The asterisk (*) denotes tasks that included deviations from the RAWP. These items were addressed in the Certification Report submitted to the NYSDEC in May 2005 which was approved by letter dated June 6, 2005.

1.2 PROPERTY DESCRIPTION AND BACKGROUND

The Site is located in an industrial area of the City of Rensselaer, New York (Figure 1-1). The Site is located to the south of the former BASF Main Plant manufacturing facility property (Main Plant site) and the Closed Capped Landfill (Figure 1-2). According to various sources, properties along Riverside Avenue in Rensselaer have been characterized by chemical industrial activity for over 100 years. The effect of regional industrial operations on soil and groundwater quality is well documented by regulatory agencies.

The South 40 parcel consists of approximately 34 acres. The parcel was bisected into two areas by the construction of the Irwin Stewart Port Access Highway in 1992. The northern portion of the parcel is approximately 26.19 acres in size and lies to the north of the Port Access Highway. The 8.8-acre portion of the parcel located to the south of the Port Access Highway is isolated from the remainder of the parcel and has not been historically impacted by disposal activities. As such, this portion of the parcel was not subject to remediation. Boundaries, metes and bounds are provided in Appendix A.

A CSX Transportation (CSX) rail spur physically separates the Site from the former Main Plant and Capped Landfill properties. The Site is bounded on the west by Riverside Avenue and across the street by the Port of Rensselaer property, which includes the Rensselaer Cogeneration Facility, a metal scrap recycling facility, and the Hudson River beyond. Located east of the Site are the Irwin Stewart Port Access Highway and CSX railroad tracks, with residential and commercial properties beyond. Undeveloped land and several tank farms are located to the south. The site is serviced by the City of Rensselaer for water and Rensselaer County for sewer.

The Site is located in an area that has been heavily industrialized by chemical and other manufacturing facilities since the 1870's. The Main Plant site has been used since the 1880's for the manufacturing of dyestuffs. BASF acquired the Site when it purchased the entire manufacturing facility from GAF Corporation (GAF) on April 1, 1978. Following the acquisition of the facility by BASF, the NYSDEC alleged that GAF disposed of an unknown quantity of industrial wastes/solvents on the Site. It is also alleged that dredge spoil from the Hudson River had been deposited here, although no records have been located to confirm this allegation. The historic use of the Hudson River could result in metals and natural organic contents in the historic fills above the background levels of natural in-situ soils (Supplemental Investigation Report South 40 Parcel, Roux Associates, 2001 (Roux, 2001)).

A 1950s-era photograph of the Site shows that a staging area and site entry road were being used at the time. No filling is known to have occurred in recent years. BASF contacted GAF for information about the alleged waste disposal at the Site; however, GAF could not confirm or deny the allegation. Based upon this lack of information, the NYSDEC requested that BASF perform a Phase II Site Investigation under Order on Consent Index Number 04-0326-85-07, which was completed in 1992 (Roux, 2001).

1.3 HISTORICAL INVESTIGATIONS

1.3.1 Administrative Record

There have been four previous subsurface investigations conducted at the Site, as described in the following reports:

- Phase II Investigation Report, URS Consultants (URS), 1988;
- Supplemental Site Investigation Report, Dunn Geoscience, Inc. (Dunn), 1990;
- Supplemental Site Investigation Report, Dunn, 1992;
- Site Investigation Report, Roux Associates, Inc. (Roux), 2001 and
- Supplemental Investigation Report, Earth Tech, Inc., 2003

The Phase II Investigation Report (URS, 1988) and the Supplemental Site Investigation Reports (Dunn, 1990; Dunn, 1992) were provided as appendices to the Voluntary Cleanup Program (VCP) Application (BASF, 2001). The Site Investigation Report (Roux, 2001) and Supplemental Investigation Report (Earth Tech, 2003) was provided to the NYSDEC under separate cover in May 2001 and August 2002

1.3.2 Summary of Historical Investigations

Description of previous investigations conducted at the Site and the investigation conclusions are provided below.

1.3.2.1 URS, 1988

In December 1986, URS performed a Phase II Site Investigation of the Site. The investigation was designed to determine the nature and extent of any potential hazardous substances and develop an understanding of the Site's geologic, hydrogeologic, and topographic features. The investigation included site reconnaissance, a historical records review, a geophysical survey, surface-water sampling, the installation of 15 piezometers and six monitoring wells, and completion of three soil borings. A summary of the key findings is presented below.

- Significant magnetic anomalies were observed in the central and southwest portion of the parcel, where drums or construction debris were exposed at the surface.
- Arsenic and other metals were detected in soil samples. The maximum observed concentration of arsenic detected was 7.8 parts per million (ppm). URS concluded that the metals concentrations were within the range expected for eastern United States background.
- Dissolved metals detected in surface water from ponded areas were at concentrations below NYS standards for surface drinking water supplies.
- Mercury was the only metal detected in sediment samples collected from two ponded areas located onsite that exceeded the range for eastern United States background.
- 1,2-Dichloroethane was detected in groundwater at concentrations up to 170 micrograms per liter (ug/L).
- Phenols were detected in groundwater and surface water at concentrations above NYS standards.

1.3.2.2 Dunn, 1990, 1992

In 1990, Dunn performed a Supplemental Site Investigation of the Site. The scope of work included a magnetometer survey, a soil gas survey, groundwater sampling, surface-water sampling, sediment sampling, and excavation of test pits and trenches in areas exhibiting magnetic anomalies. A summary of the key findings is presented below.

- Based on the magnetometer survey, Dunn estimated that 100 to 200 drums were buried onsite. Drums visible at the surface or partially buried appeared empty and deteriorated.
- A review of the soil gas survey results indicated trace levels of volatile organic compounds (VOCs), specifically toluene and total xylenes, in four of 23 samples.
- 1,2-Dichloroethane was detected in groundwater from one monitoring well (BW-6) at a concentration of 120 ug/L. Arsenic and mercury were detected in one monitoring well (BW-4) at concentrations that exceeded the NYSDEC water quality standards. Phenols were also detected in groundwater at concentrations above NYSDEC water quality standards.
- A thin layer of blue and purple-stained soils was observed near the surface in test pits from a central area of the parcel that exhibited a high magnetic anomaly. Arsenic was detected in the stained soil at a concentration up to 13,200 ppm. Zinc was detected in the stained soil at concentrations up to 3,330 ppm.
- Of the magnetic anomalies investigated by URS and Dunn, drums were only found in the main anomaly at the center of the Site.
- In 1991, Dunn performed additional Supplemental Site Investigation activities for the Site. The scope of work included additional soil sampling in the central portion of the Site. The results of this investigation were combined with the results of the 1990 Supplemental Site Investigation. A summary of the key findings is presented below.

- Dunn revised its estimate of the number of buried drums to between 50 and 100, based on a re-analysis of the magnetometer survey data, prompted by additional soil sampling.
- Along the northern Site property line, groundwater flow is influenced by permeable bedding material associated with buried utilities. Contamination migrating from the capped landfill to the north is not expected to migrate beyond the small area that has historically been impacted by the landfill (BW-6 area).
- Arsenic was detected in an additional 20 soil sample locations in the central portion of the Site at concentrations that exceeded NYSDEC soil quality standards. Soil sample results indicated that the arsenic-impacted soil was confined to the upper four feet of soil within the central portion of the parcel.

1.3.2.3 Roux, 2001

In 2000, Roux performed an additional Site Investigation of the Site. The investigation was designed to determine background concentrations of metals in site soils, further characterize soil quality on the Site, and further characterize groundwater quality in the saturated fill beneath the Site. The investigation included completion of 25 soil borings and collection of 30 groundwater samples. A summary of the key findings is presented below.

- Fifteen of 24 Target Analyte List (TAL) metals were detected in soil beneath the Site at concentrations above either background or NYSDEC RSCOs. Of these, only arsenic, chromium, lead, and zinc were considered Constituents of Potential Concern (COPCs). Arsenic is considered the primary metal of concern in soil based on the frequency of detection and concentrations relative to background.
- Four semivolatile organic compounds (SVOCs) were detected in soil at concentrations above NYSDEC RSCOs, including benzo(a)anthracene, benzo(a)pyrene, chrysene, and dibenzo(a,h)anthracene.
- No VOCs, pesticides, or polychlorinated biphenyls (PCBs) were detected in soils at concentrations above NYSDEC RSCOs.
- Arsenic is considered the primary constituent of concern in groundwater. However, all of the groundwater samples with elevated arsenic concentrations were from screening samples obtained using a Geoprobe™, not from permanent monitoring wells, and were very turbid. Arsenic was not detected above NYSDEC Ambient Water Quality Standards (AWQS) in any of the monitoring wells located along the perimeter of the Site.
- Two VOCs, benzene and chlorobenzene, were detected in groundwater from S40-P-12 at concentrations above NYS AWQS.
- No SVOCs, pesticides, or PCBs were detected in groundwater at concentrations above NYSDEC AWQS.

1.3.2.4 Earth Tech, 2003

In 2002, Earth Tech performed a Supplemental Investigation Report to provide additional data to support the Brownfield Cleanup. The supplemental investigation was implemented to define the extent of arsenic concentrations across the site vertically and horizontally, sample discreet areas identified as potentially contaminated material(s), and the sampling of groundwater wells. A summary of the key elements are identified below.

- A total of 205 samples were collected and analyzed for total arsenic. The average concentration of these samples was 75.5 mg/kg. The concentrations of arsenic in the samples collected in the mounded area ranged from ND to 736 mg/kg.

- Ash like material within the mounded area were sampled by ENSR in March 26, 2002. In all three ash samples and the Duplicate (0326), methylene chloride, acetone and semi-volatiles were detected at concentrations below the NYSDEC RSCO values. Ash-03 contained 99 ppb of benzo(a)pyrene, which is above the NYSDEC RSCO of 61 ppb. No PCBs were detected in Ash-01, Ash-02, Ash-03 and Dup-0326. Arsenic was detected above the maximum background of 9.6 mg/kg in each sample. The results ranged from 13.4 mg/kg to 90 mg/kg/
- A sample of stained soil was taken from a test pit during test pitting operations. The sample exceeded NYSDEC RSCO for arsenic and chloronaphthalene.
- Three surface soil/sediment samples were collected within the southern 8.8-acre parcel, south of the Port of Rensselaer Access Highway. The samples were analyzed for TCL VOCs, TCL SVOCs, TCL PCBs, and TAL inorganics (including cyanide). No VOCs, SVOCS or PCBs were detected above NYSDEC RSCO values. Seven (7) metals were detected above NYSDEC RSCO values, but arsenic was detected below the NYSDEC RSCO value.
- Three groundwater samples were collected. No VOCs, PCBs, Pesticides, SVOCs or arsenic was detected in these samples. Inorganics were detected in the samples. Iron, Magnesium, Manganese, and Sodium were detected in the samples above NYSDEC AWQS.

2.0 DESCRIPTION OF ANOMALY AREA REMEDIAL ACTION

Remedial activities conducted by Earth Tech on the South 40 for the removal of anomaly areas and arsenic-contaminated soil began in July 2004 and were completed in December 2004. The initial activities consisted of mobilization to the site, clearing and grubbing of work areas, and delineation of work zones. Earth Tech subcontracted Hager-Richter Geoscience to update the magnetic survey prior to excavation in the anomaly areas. C.T. Male was hired to perform all the survey work for locating the excavation areas and laying out the elevations of pre- and post- excavation.

The excavation areas were the same as outlined in the RAWP, except for the anomaly areas. Based on the updated magnetic survey, there were twenty-four (24) locations that needed to be excavated to determine if drum carcasses were present. Dewatering was conducted within the excavation areas to remove all water and as required to assist with excavation activities. Since some of the excavations were deeper than groundwater, those excavations were dewatered during excavation and then allowed to recharge. Excavation of the arsenic-impacted soil and anomaly areas was completed to the depths as outlined in the RAWP. In cases where there was visible staining, additional soil was removed prior to sampling. In a number of instances additional excavation was needed in order to meet the cleanup objectives. The final excavation depths and boundaries are provided in the Certification Report.

During excavation activities, a Community Air Monitoring Program (CAMP) was implemented. Real-time air monitoring for volatile organic compounds and total suspended particulates was conducted at upwind and downwind monitoring stations. In addition, a Work Zone Monitoring Program was implemented and real-time air monitoring for volatile organic compounds was conducted.

Upon completing excavation activities, the excavation areas were lined with a geotextile and orange safety fence to represent the notification layer. In the outlying excavations, this notification layer was placed at the base of the excavations. In Area 1, the large excavation area encompassing the anomaly areas, the area was backfilled to 2 feet below grade and then the notification layer was placed. The remaining two feet of soil was backfilled on top of the notification layer. This was done due to the number of deep excavations in the anomaly area. The areas were backfilled with certified clean sand from a local sand quarry.

All soil excavated from the site was disposed of as RCRA non-hazardous soil. There were 7,073.9 tons of soil was generated from remediation activities, transported, and disposed of off-site. Manifesting and transportation of all non-hazardous regulated soil generated from excavation activities was conducted in accordance with applicable New York State Department of Transportation regulations. All impacted soil was transported to either the Town of Colonie or City of Albany landfills under a standard non-hazardous waste manifest.

Upon completion of remedial actions, equipment was decontaminated and demobilized from the Site. The excavation areas were re-graded to match the original grades; this work was performed when the notification layer was being installed. The temporary access road repairs were made and the road was left in tact for future use to allow easy access around the site for inspections.

The final report for the remedial action described above, "Remedial Action Final Report for Removal of Anomaly Areas and Arsenic Contaminated Soil from the BASF South 40" was submitted in May 2005. The report was approved by the NYSDEC and NYSDOH on June 6, 2005.

3.0 DESCRIPTION OF SOIL CAP REMEDIAL ACTION

The soil cap remedial action was completed in compliance with the RAWP and the Work Plan for Construction of Soil Cover at BASF South 40 Parcel (Soil Cover Work Plan). The remedial construction was performed for BEPCO by Earth Tech. The soil cover system installation was based on a modification of Figure 6-1 of the RAWP. The construction activities included, beginning at the bottom of cover:

1. Preparation of Submittals;
2. Mobilization;
3. Clearing and Grubbing;
4. Site Preparation;
5. Site Survey;
6. Grading of small piles and depressions;
7. Placement of Demarcation Layer (Orange Geotextile Fabric);
8. Placement of one (1) foot structural fill layer;
9. Decontamination; and
10. Demobilization.

3.1 PREPARATION OF SUBMITTALS

Upon official notice to proceed, Earth Tech prepared a Site-specific Health and Safety Plan (HASP) in conformance with 29 CFR 1910. Attached to the HASP were the required training certificates for the field personnel assigned to this project. The HASP also provided air-monitoring criteria for worker exposure and a hazard analysis for the work being performed.

Earth Tech also identified a structural fill source in East Greenbush, NY. Samples of the backfill were collected for pre-qualification analysis. Results were provided to NYSDEC for approval. Analytical results of the fill source are provided in Appendix B along with NYSDEC concurrence on pre-qualification sample results.

3.2 MOBILIZATION

Prior to mobilization, the Underground Facilities Protective Organization (UFPO) marked the locations of aboveground and underground utilities. There were no active utilities in the excavation locations. There is a gas main that runs north and south near the main gate leading to the South 40. Earth Tech arranged for temporary services (including electric, water, and sanitary) through the use of generator(s), potable water storage tank and a port-a-john. The equipment and materials needed to perform the work were mobilized, and all environmental and health and safety controls were put in place prior to commencing work. Earth Tech mobilized an office trailer/storage trailer for on-site use.

3.3 CLEARING AND GRUBBING

Earth Tech, as part of the site preparation, performed clearing and grubbing activities. Earth Tech removed trees 12 inches or smaller in diameter and utilized a brush cutter to mow the cover area. Only trees that were necessary to provide access for cover installation were removed. Trees were staged in the center of the cap area and a horizontal tree grinder was mobilized to shred the trees. In some instances stumps were removed, stumps were ground, spread and left on-site due to potential for concentrations of arsenic above 7.5 ppm. This material was spread on the eastern portion of the property on the edge of the slopes and top of the mounded area.

A sample of the clean tree shreds was sent out for arsenic analysis. Sample results indicated that the arsenic level was non-detect. Sample results are provided in Appendix C of this report.

Shredded trees were shipped off-site to be used as mulch at SM Gallivan (Troy, New York). Weight tickets are provided in Appendix D. Approximately 500 tons of shredded trees were shipped off-site.

3.4 SITE PREPARATION

Earth Tech also installed a perimeter silt fence around the outer limits of the cover system. The silt fence was installed using an ASV with a trench attachment. The ASV is a low ground pressure tracked machine. The trenching machine creates the trench for the silt fence, then the silt fence was placed in the trench and backfilled. The silt fence was placed around the perimeter of the mounded area. In the southeast portion of the site the silt fence is in the first few feet of the wetlands, however the low ground pressure equipment does not disturb the soil and the wetland vegetation quickly re-established growth.

A 6' high chain link fence with barbed wire surrounds the South 40 Site so no additional security fencing was necessary.

Equipment that was mobilized to the site included excavator, ASV with brush hog and trencher, dozer, vibratory roller, garbage container, miscellaneous portable equipment, air monitoring equipment, and miscellaneous hand tools. All equipment was mobilized to the site by using a temporary access road constructed by Earth Tech.

A temporary access road was constructed to provide a stabilized driving surface into the site near the site trailer. This area also helps to clean tires from the trucks delivering the clean fill to the site.

3.5 SITE SURVEYS / AS BUILT DRAWINGS

During mobilization activities and as the Site was cleared of trees, brush and high grass, Earth Tech subcontracted C.T. Male to perform the site survey. As part of the initial site survey, C.T. Male staked out the limits of the soil cover system. After initial review of the surveyed limits, it was determined that the limits to the east, south and west needed to be modified to follow either the toe of the slope of the mounded area or the 7.5 ppm arsenic sample results identified in the Supplemental Investigation Results. A field walk was conducted between the NYSDEC, BEPCO and Earth Tech to visually field verify that the staked limits appear reasonable and correspond approximately with the intended limits of the cover soil and existing mounded area.

Upon completion of the clearing/grubbing and rough grading, C.T. Male performed survey to layout the grading plan. This survey provided the base elevation for the soil cover system prior to the installation of the demarcation layer. Figure 2-1 provides the starting topographical elevations for the cover system, which is also the elevation of the demarcation layer.

Upon completion of backfilling activities the final topographical survey was performed. Figure 2-2 provides the final grading elevations of the cover system.

3.6 SOIL GRADING

As identified in the RAWP, there were debris piles comprised of broken asphalt, demolition debris, bricks, cinders and soil piles on the site. The debris piles were spread to fill low areas and create a relatively smooth, level surface, suitable for cover placement. Larger debris was buried in low spots to not impede placement of demarcation layer. During soil grading activities, Earth Tech mobilized a water

truck to control dust generation. Water was obtained from a water hydrant on the BASF property and applied using the spray nozzles of the water truck. The water truck was also used to assist in decontamination of equipment.

Once the debris piles were graded the site was rolled with a 5-ton roller to create a smooth surface for placement of geotextile demarcation fabric.

The geotextile fabric provides a pervious layer and does not impact existing drainage patterns and runoff. No major changes to the existing topography or drainage features were made during the grading of the site except for the southeast corner where the slopes of the mounded area needed to be cut back to create a 3V:1H slope. This was performed by cutting the top of the slope back and re-grading the slide slopes. The material generated from this re-grading was spread on top of the cap in the vicinity of the slope cutting activities.

3.7 DEMARCATION LAYER

Once the site was graded and compacted the demarcation layer was installed. The demarcation layer consists of a high visibility orange geotextile fabric layer. The demarcation layer is rolled directly onto the graded rolled surface using a 6" overlap of fabric. The fabric was fastened to the ground surface using geotextile fabric staples to anchor the fabric to the underlying soils. The demarcation layer was placed in advance of the backfilling activities starting at the center of the site and working west to east.

3.8 STRUCTURAL FILL PLACEMENT

As described in Section 3.1, a pre-qualification sample was analyzed and the analysis provided to NYSDEC prior to the start of the project. Upon approval of the pre-qualification sample, Earth Tech collected additional source samples for analysis. Earth Tech collected samples one composite sample for the first 250 cubic yards, one composite for 500 to 1500 cubic yards, one composite for 1,500 to 2,500 cubic yards, one composite for 2,500 to 4,000 cubic yards, and one composite for each additional 2,000 cubic yards of material. In total Earth Tech sampled the backfill material a total of nine (9) times for chemical analysis.

The backfill material was placed and compacted in two 6" lifts for the one foot of cover required. Earth Tech imported approximately 12,000 cubic yards of material for covering the mounded area.

As noted above, the analytical results for the certified clean backfill are provided in Appendix B.

3.9 DECONTAMINATION

The tires, tracks, undercarriages, and excavation buckets of all construction equipment (excavator, ASV, roller and dozer) and tools that entered the remediation area were decontaminated within the contaminated soil area. Decontamination procedures include the physical/mechanical removal of soil, etc., including washing with water from the on-site water truck.

Trucks transporting wood shreds off site were always on the stone road that was installed around the site. The excavator loaded directly into the trucks. Trucks transporting clean fill onto the site remained on the clean soil cover and did not come into contact with contaminated soils. The roadway was cleaned on a daily basis to remove clean soils that may have been tracked onto the road surface.

3.10 DEMOBILIZATION

At the completion of the soil cover installation activities, all equipment was removed from the site. All construction equipment that contacted the impacted soils was decontaminated prior to leaving the site. Decontamination was performed on the contaminated soils and walked out onto the clean soil once all contaminated soil activities were completed.

4.0 COMMUNITY AIR MONITORING PROGRAM

4.1 REAL-TIME AIR MONITORING – VOLATILE ORGANIC COMPOUNDS

Real-time air quality data for volatile organic compounds (VOCs) was collected during excavation activities from one upwind and two downwind perimeter monitoring stations established by Earth Tech. Each station was located near the perimeter of the work site. The monitoring stations were positioned based on the predominant wind conditions. If wind conditions changed during the day, the monitors were relocated. Real-time monitoring began at the start of each workday when intrusive activities commenced. Real-time monitoring was accomplished using a total volatile organic analyzer equipped with a photo ionization detector (PID) and a 10.6-eV lamp, which was calibrated daily with a 100-ppm isobutylene air standard. Monitoring instruments were set up by pointing the intake tube of the PID toward the likely emission source, generally at the height of the breathing zone (4 to 5 feet). The instruments were monitored during the course of the day and data downloaded at the end of the work shift. Monitoring location, wind direction, weather conditions and site activities were also recorded.

Based on data published by OSHA (Occupational Safety and Health Administration), ACGIH (American Congress of Government Industrial Hygienists), and NIOSH (National Institute for Occupational Safety and Health), short-term air quality action levels were established for air emissions control at the site perimeter. An action level for VOCs at the site perimeter was established at 5.0 ppm above background. Background for VOCs was established prior to any remedial activities conducted on site.

No detectable concentrations of VOCs were recorded for the upwind perimeter monitoring location or the downwind perimeter monitoring locations during the course of the project. VOC levels did not exceed the short-term air quality action level of 5.0 ppm above background at either the upwind or downwind perimeter monitoring locations. Because the short-term action level was not exceeded, no actions were taken as part of the Vapor Emissions Response Plan. Air monitoring results are provided in electronic format.

4.2 REAL TIME MONITORING – TOTAL SUSPENDED PARTICULATES

In conjunction with the real-time volatile emission monitoring, real-time air quality data for total suspended particulate was collected during excavation activities from one upwind and two downwind perimeter monitoring stations established by Earth Tech. Real-time monitoring began at the start of each workday when intrusive activities commenced. The instrument used for this sampling was an MIE DataRam PDR-1000, which is a passive instrument that operates on the principle of light scattering. The DataRam PDR-1000 responds to particles in the size range of 0.1 to 10 micrometers and in the concentration range of 0.01 to 400 mg/m³. Real-time particulate measurements were based on a 15-minute, time-weighted average. The DataRam was calibrated daily with a zero bag. Monitoring instruments were set up near the perimeter of the site toward the likely emission source, generally at the height of the breathing zone (4 to 5 feet). The instruments were monitored during the course of the day and data downloaded at the end of the work shift.

A New York State action level of 150 µg/m³ per 15-minutes for particulate matter above background was used to determine whether modifications to given processes were required. Background for total suspended particulate was established prior to the start of each workday when intrusive activities were to occur. Air monitoring results are provided in electronic format.

4.3 WORK ZONE AIR MONITORING PROGRAM

On days when intrusive activities occurred, Earth Tech conducted work zone air monitoring for VOCs. Based on data published by OSHA (Occupational Safety and Health Administration), ACGIH (American Congress of Government Industrial Hygienists), and NIOSH (National Institute for Occupational Safety and Health), a short-term air quality action level for VOCs at the work area was established at 5.0 ppm above background. Site background for VOCs was established to be zero (discussed in the previous section); therefore, the site-specific action level for the work zone was 5.0 ppm. No concentration of VOCs recorded for work zone monitoring exceeded the site-specific action level. Because the short-term action level was not exceeded, no actions were required to be taken as part of the site Health and Safety Plan.

5.0 CONCLUSIONS AND RECOMMENDATIONS

In compliance with the RAWP and the Brownfield Agreement, remediation activities at the Site have been completed. These activities included the removal of 7,073.9 tons of contaminated soils and approximately 185 drum carcasses in the anomaly areas in 2004 and the construction of the soil cover system in 2007. As a result, the goals of the remedial action have been satisfied. The removal of the anomaly areas and the contaminated soil around the anomaly locations vastly improved the site conditions, along with the cover system provide protection from the residual contamination that remains in the mounded area. Based on the fact that arsenic does not leach in the present chemical form and that the volatile organic contaminant concentrations are low, it does not appear that groundwater will be impacted in the future. The Site will continue to be protected by a Site Management Plan (Appendix E) that that incorporates Institutional and Engineering controls (including an Environmental Easement, Appendix F) that will be in place and will dictate procedures during any intrusive activities performed beneath the cover system.

An Operation and Maintenance Plan has been developed to monitor the site conditions and insure that the Institutional and Engineering Controls are maintained at the Site. Maintenance of the engineering controls will provide protection to human health and the environment at the Site.

Figure 5-1 shows the area of the soil cap and the location of the historical samples analyzed for arsenic off the soil cap. All of the samples not otherwise covered by the soil cap are below the NYSDEC RSCO for arsenic.