Former Spaulding Composites SSF Site

Operable Units 1, 3, and 4

CITY OF TONAWANDA

COUNTY OF ERIE, NEW YORK

Final Engineering Report

Remedial Action Contract D006971

NYSDEC Superfund Standby Contract D004442

NYSDEC Site Number: 9-15-050

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation

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DECEMBER 2010

CERTIFICATIONS

Ecology and Environment Engineering, P.C, certifies that this project was completed in substantial conformance with the Contract Documents prepared for the Spaulding Composites State Superfund Project (NYSDEC Contract Number D006971) by the New York State Department of Environmental Conservation Division of Environmental Remediation dated June 4, 2009. Changes to the scope of work, including changes in quantities, were approved by Ecology and Environment Engineering, P.C., and the NYSDEC.

Signature: _____

Gerald A. Strobel, P.E.

Program Director

Date: _____

TABLE OF CONTENTS

LIST OF ACRONYMS

Acronym	Definition
AHERA	Asbestos Hazard Emergency Response Act
AOC	area of concern
BGS	below ground surface
CAMP	community air monitoring program
CAP	contractor's application for payment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Contaminants of Concern
DR	Daily Observation Report
DPR	Daily Progress Report
DUSR	Data Usability Summary Report
ECDEP	Erie County Department of Environmental Protection
ECIDA	Erie County Industrial Development Agency
EEEPC	Ecology and Environment Engineering, P.C.
ELAP	Environmental Laboratory Accreditation Program
Empire	Empire Geo Services, Inc.
ERP	Environmental Restoration Program
ESD	Explanation of Significant Differences
FER	Final Engineering Report
GC/MS	gas chromatography/mass spectroscopy
gal	gallons (US)
gpm	gallons per minute
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IRM	Interim Remedial Measure
ISCO	In situ chemical oxidation
KW	kilowatt
LF	linear feet
mg/kg	milligrams/kilogram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MS/MSD	matrix spike/matrix spike duplicate
NIOSH	National Institute for Occupational Safety and Health
NTP	Notice to Proceed
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health

Acronym	Definition
NYSDOL	New York State Department of Labor
NYSDOT	New York State Department of Transportation
NYSERP	New York State Environmental Restoration Program
NYSOSC	New York State Office of State Comptroller
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCO	proposed change order
PDI	Pre Design Investigation
pH	power of hydrogen
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
ppt	parts per trillion
psi	pounds per square inch
QA/QC	quality assurance/quality control
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RFA	RCRA Facility Assessment
RCRA	Resource Conservation and Recovery Act
RFI	Request for Further Information
RI	remedial investigation
RI/RFI	Remedial Investigation/RCRA Facility Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SCO	Soil Cleanup Objective
SGC	Standards, criteria and guidance
Schutt	Wm. Schutt and Associates, LLS
SSF	New York State Superfund Program
SSO	Site Safety Officer
SVOC	semi-volatile organic compound
SWMF	solid waste management facility
SWMU	solid waste management unit
T&M	Time and Material
TAL	Target Analyte List
TAGM	Technical and Administrative Guidance Memorandum
TAT	Turnaround time

Acronym	Definition
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	treatment, storage, and disposal facility
TSCA	Toxic Substances Control Act
ULSD	Ultra-Low-Sulfur Diesel
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
VOC	volatile organic compound

FINAL ENGINEERING REPORT

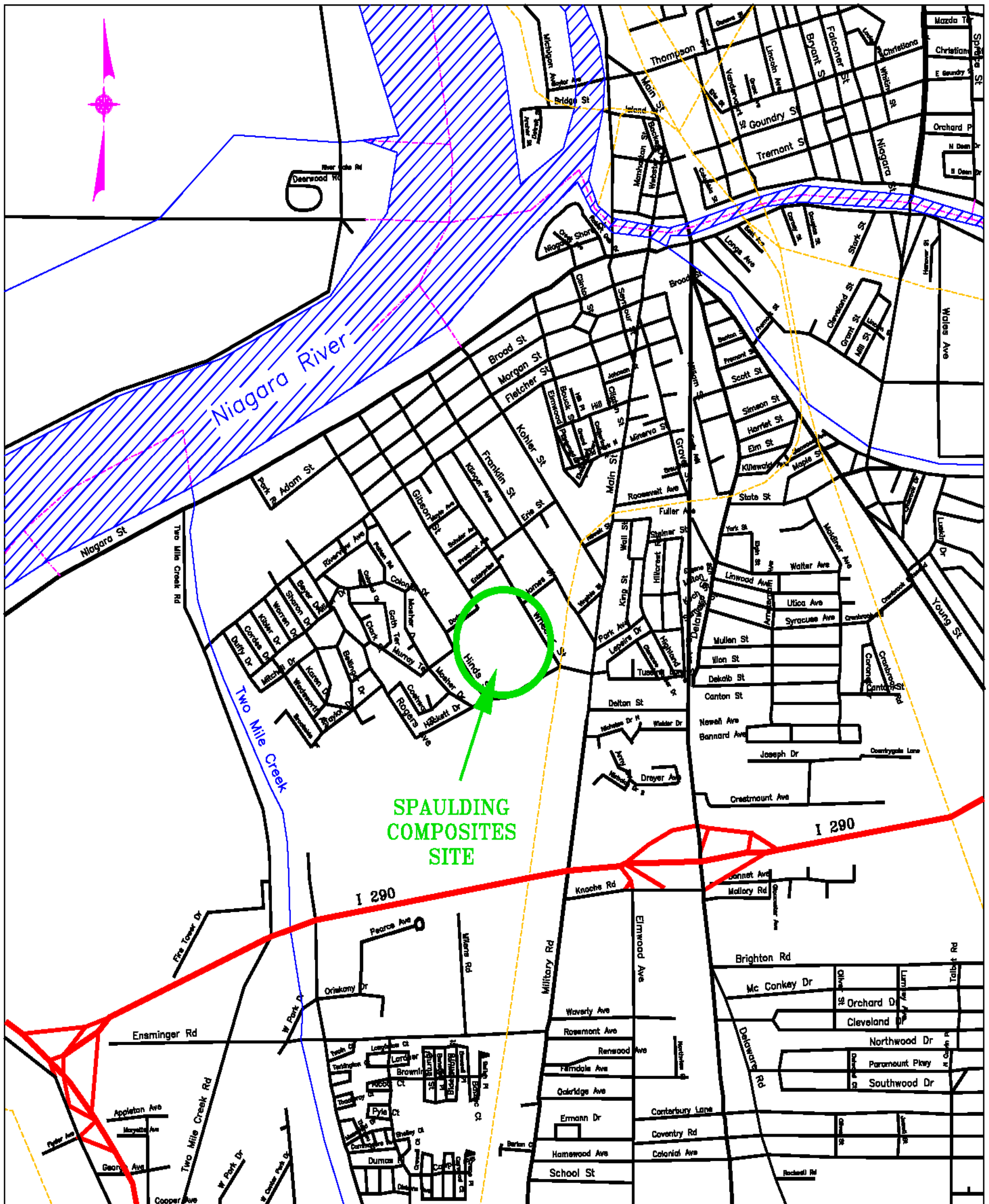
1.0 BACKGROUND AND SITE DESCRIPTION

The 46-acre Spaulding Composites SSF Site is located at 310 Wheeler Street in the City of Tonawanda, Erie County, New York. The site is bordered by Dodge and Enterprise Avenues and residential property to the north, Wheeler Street and a mix of commercial and residential properties to the east, Hackett Drive and commercial properties to the south, and Hinds Street and a mix of commercial and residential properties to the west (see Figure 1-1). The topography of the site and the surrounding area is relatively flat, and most surface water runoff flows toward on-site drainage ditches and storm sewers. The Niagara River is located approximately 1 mile to the north, and Two Mile Creek is located approximately 1 mile to the west.

To facilitate site investigation and cleanup, the property was previously divided into seven Operable Units (OUs), each consisting of multiple Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) (see Figure 1-2). An OU is a term that defines a portion of the site that, for technical or administrative reasons, can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from site contamination. An SWMU is a Resource Conservation and Recovery Act (RCRA) term that defines a discernible unit where solid or hazardous waste has been placed at any time, or any area where solid wastes have been routinely and systematically released. An AOC is also a RCRA term and defines an area not known to be a SWMU, where hazardous waste and/or hazardous constituents are present, or are suspected to be present, as a result of a release from the facility.

This Final Engineering Report (FER) addresses only OUs -1, -3, and -4. These OUs were remediated under the State Superfund (SSF), New York's program for cleaning up inactive hazardous waste disposal sites (see Figure 1-3). Cleanup of OU-2 was addressed separately by the New York State Department of Environmental Conservation (NYSDEC) in a previous cleanup action. Cleanup of OUs -5, -6, and -7 was completed under the Environmental Restoration Program (ERP), a program that provides financial assistance to municipalities for the cleanup of brownfield sites.

Prior to the start of the Spaulding Composites SSF Project, the former plant buildings were demolished and removed by Erie County and the City of Tonawanda under a separate contract. Excavation and off-site disposal of the remaining building foundations, along with the contaminated soils below those foundations, was completed in September 2010.



Tonawanda East & West Quadrangles; Buffalo East & West Quadrangles

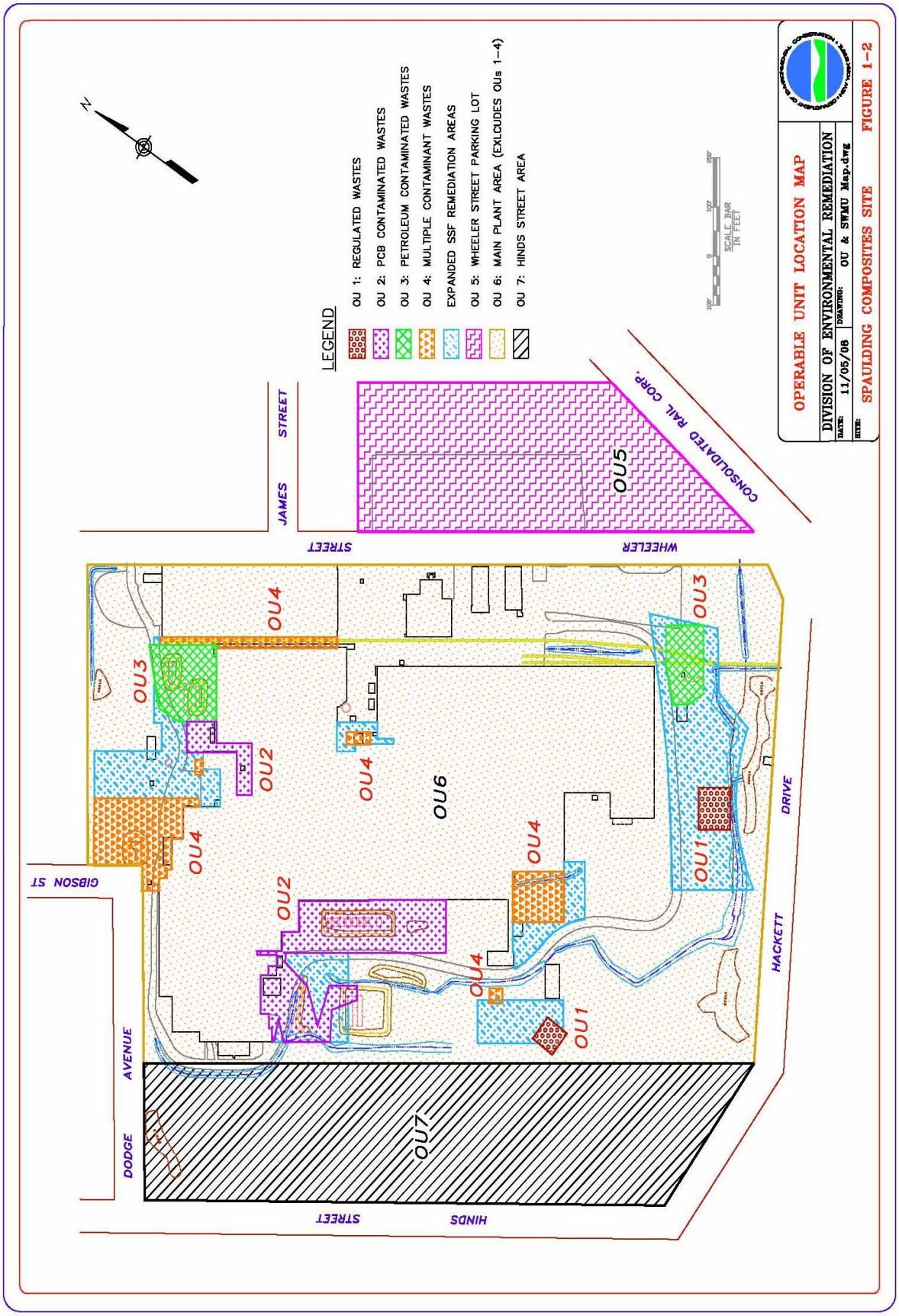
Scale Depends on Final Plotted Size

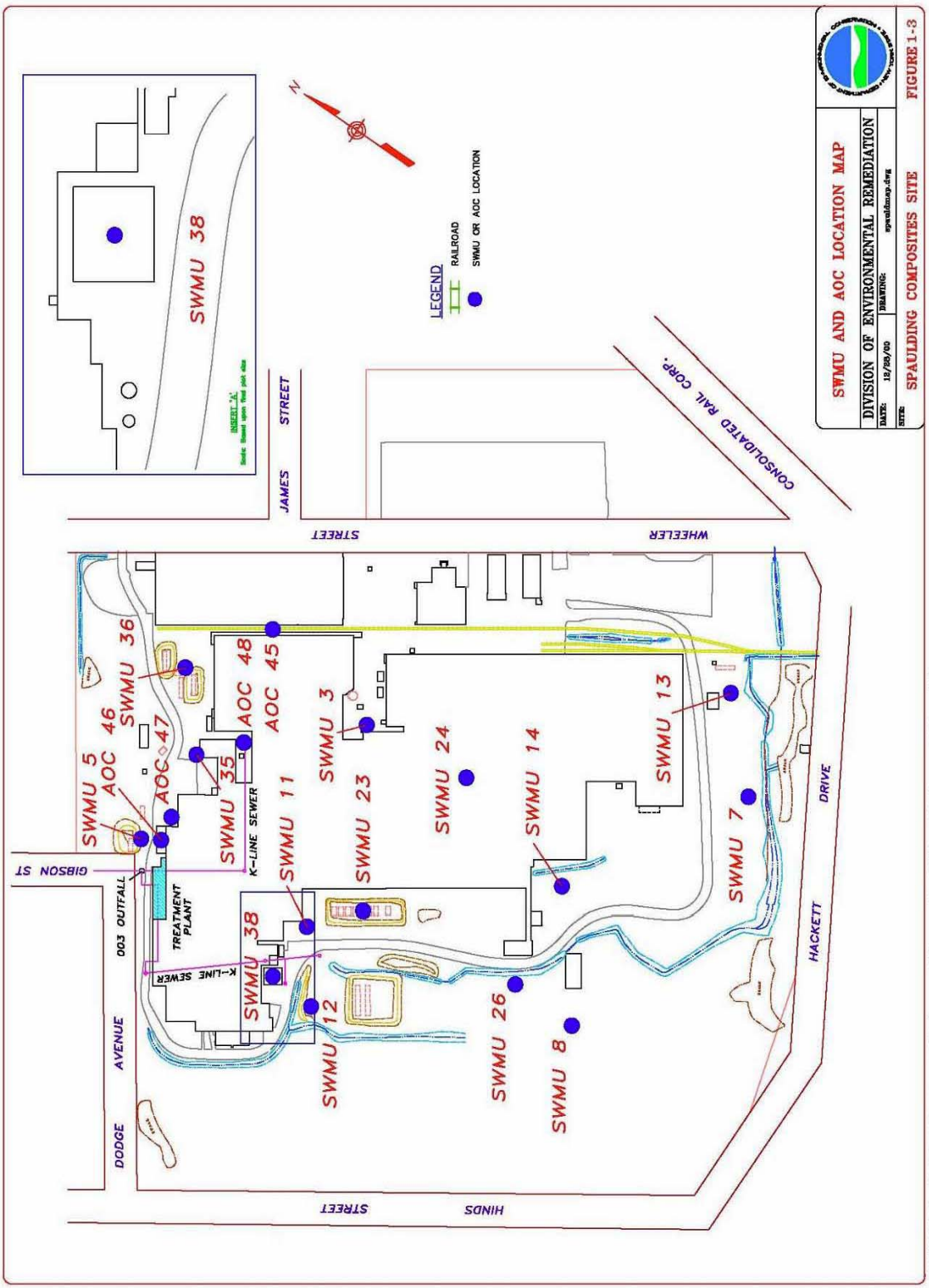
SITE LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/25/01 DRAWING: Site Location Map.dwg

SITE: SPAULDING COMPOSITES SITE FIGURE 1-1


OPERABLE UNIT LOCATION MAP
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 11/05/08
DRAWING: OU & SWMU Map.dwg
SITE: SPAULDING COMPOSITES SITE
FIGURE 1-2
LEGEND
OU 1: REGULATED WASTES
OU 2: PCB CONTAMINATED WASTES
OU 3: PETROLEUM CONTAMINATED WASTES
OU 4: MULTIPLE CONTAMINANT WASTES
EXPANDED SSF REMEDIATION AREAS
OU 5: WHEELER STREET PARKING LOT
OU 6: MAIN PLANT AREA (EXLCUDES OUs 1-4)
OU 7: HINDS STREET AREA
SCALE BAR IN FEET
N
JAMES STREET
WHEELER STREET
CONSOLIDATED RAIL CORP.
GIBSON ST
DODGE AVENUE
HINDS STREET
HACKETT DRIVE
OU1
OU2
OU3
OU4
OU5
OU6
OU7



SOURCE: New York State Department of Environmental Conservation, Division of Environmental Remediation

1.1 REMEDIAL HISTORY

The Spaulding Composites SSF Site was an industrial manufacturing facility that made vulcanized fiber using a process in which high-rag-content paper was treated with a zinc chloride solution. During the 1940s to early 1950s, the plant produced composite laminates by impregnating natural fibers with phenolic resins. Spaulding utilized asbestos and phenols in the production of Spauldite® sheet, which it supplied it to the electronics industry, primarily for the manufacture of circuit boards.

During the 1950s and 1960s, it was common environmental practice to dispose of both hazardous and non-hazardous industrial wastes in shallow on-site landfills and containment lagoons. As environmental disposal regulations became increasingly stringent, Spaulding completed a number of remedial activities over the years to address contamination at the site. In the late 1970s, four Settling Lagoons (formerly NYSDEC Site Number 915050A; Class 5) were allegedly excavated and backfilled with clean fill. These lagoons were utilized from 1930 to 1972 to collect and settle out wet grinding wastes. The Paper Sludge Land Application Area (SWMU 26) was a 5,000-square-yard area where paper sludge was spread on the ground to dry prior to disposal. In 1987 this area was closed and the remaining paper sludge was removed.

After many decades of production and on-site disposal of production wastes, Spaulding ceased manufacturing operations at their City of Tonawanda NY site and began decommissioning the plant in the fall of 1992. Most decommissioning activities were completed from September 1992 to February 1993, with the remaining decommissioning activities completed by mid-1995. As manufacturing operations at the Spaulding plant came to an end, several detailed investigations were performed to identify and document residual contamination remaining at the site.

In the late 1980s, Camp Dresser & McKee, under contract with the United States Environmental Protection Agency (USEPA), conducted a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at the Spaulding Composites SSF Site. The assessment identified 36 Solid Waste Management Units (SWMUs) and several potential Areas of Concern (AOCs). Several of these SWMUs were included in the New York State Superfund (SSF) Registry of Inactive Hazardous Waste Disposal Sites (Registry). The RFA report included a summary of the analytical data for site surface water, soil, and groundwater that were obtained by NUS Corporation in April 1987 during a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Site Investigation. During the same time frame, a Feasibility Study/Corrective Measures Study (FS/CMS) was completed at the site. This was a joint project between the New York State CERCLA and RCRA programs; overall

management and coordination was provided by NYSDEC, and on-site construction oversight was provided by CERCLA staff. To satisfy both programs, Spaulding decided to conduct a single investigation of the site. The investigation was conducted in four phases beginning in April 1995. After a supplemental RFI/RI was performed by Leader Environmental, Inc., in May 1999, the four-phase investigation was completed in August 1999.

1.2 REMEDIAL DESIGN AND CONSTRUCTION

The Spaulding Composites SSF Site came under the control of New York State's Inactive Hazardous Waste Disposal Site Remedial Program when the findings of several site investigations clearly showed that contamination within the abandoned buildings and in the site soil and groundwater could, if disturbed, pose a threat to public health. These investigations documented the presence of polychlorinated biphenyl (PCB) contamination at levels exceeding New York Codes Rules and Regulations (NYCRR) standards in several process areas, with the highest level occurring in the north-central section of the site. Other contaminants identified in the studies included metals (e.g., lead, iron, mercury, and zinc); polycyclic aromatic hydrocarbons (PAHs); and volatile organic compounds (VOCs) (e.g., toluene, ethyl benzene, and xylenes).

After the Spaulding Composites Site was identified as a potential hazardous waste site, the Remedial Program dictated a path of investigation, remedy selection, design, construction, and monitoring for the site. After public comments on the proposed remedial plans for the Spaulding Composites SSF Site were considered, a final remedial action plan (RAP) was selected and documented in the Record of Decision (ROD), issued in March of 2003. The remedial design for the SSF Project subsequently developed by NYSDEC in March 2009 detailed the size, scope, and character of the site remediation, and it combined information from the ROD, the Remedial Investigation/Feasibility Study (RI/FS), and additional data gathered during design preparation into a set of construction documents suitable for the competitive bidding process.

2.0 SUMMARY OF THE SITE REMEDY

2.1 DESCRIPTION OF THE SELECTED REMEDY

Based on the results of the Remedial Investigation/RCRA Facility Investigation (RI/RFI) and the Feasibility Study/Corrective Measures Study (FS/CMS) for the Spaulding Composites SSF Site and the criteria identified for evaluation of alternatives, NYSDEC selected Excavation and Disposal of OUs -1, -2, and -4, and In situ Bioremediation for OU-3. The components of the remedies are as follows:

OU-1:

- Excavation of wastes and contaminated soils associated with the Resin Drum Landfill (SWMU 7) and Laminant Dust Landfills (SWMU 8), with disposal in an appropriate off-site facility.
- Excavation of contaminated sediments in the ditch adjacent to the Resin Drum Landfill. These sediments will be disposed of with the wastes and contaminated soils.
- Excavation will be to contaminant levels consistent with Technical and Administrative Guidance Memorandum (TAGM) 4046 cleanup objectives.
- All excavated areas will be backfilled with clean soils and restored to grade.

OU-2:

- Excavation of PCB-contaminated soils associated with three Sludge Settling Ponds (SWMUs 13 and 14), a former Tank Farm (SWMU 36), the Therminol Building (SWMU 38), and a former Transmission Explosion Area, with disposal in an appropriate facility.
- Excavation will be to contaminant levels consistent with TAGM 4046 cleanup objectives.
- All excavated areas will be backfilled with clean soils and restored to grade.
- Sampling and analysis of sediment in the K-Line storm sewer to evaluate how much contamination, if any, is present in the sewer. If contaminated, these sediments will be removed and disposed of with the contaminated soil from this OU.
- Continued operation of the on-site water treatment system following the remediation of OU 2 until PCBs are no longer detected in K-Line storm sewer

waters. Treated water will continue to be sampled and analyzed during this time for compliance with the 65 parts per trillion (ppt) discharge limit for PCBs.

OU-3:

- In-situ bioremediation of VOC- and petroleum-contaminated soils associated with a former Tank Farm (SWMU 36) and a former Grinding Oil Tank (SWMU 13).
- During design, a field test will be completed to evaluate the effectiveness of this alternative in remediating contaminated low-permeability soils.
- During remediation, sampling and analysis of soil and groundwater will be conducted to evaluate the progress of the In Situ Bioremediation Program.

OU-4:

- Excavation of contaminated soils associated with the Lab Waste Storage Area (SWMU 35), a Rail Spur (AOC 45), two Drum Storage Areas (SWMUs 3 and 7), one Sludge Settling Pond (SWMU 14) and the Paper Sludge Application Area (SWMU 26), with disposal in an appropriate off-site facility.
- Excavation will be to contaminant levels consistent with TAGM 4046 cleanup objectives.
- All excavated areas will be backfilled with clean soils and restored to grade.
- Sampling and analysis of groundwater at AOC 45 (Rail Spur) following remediation to evaluate the effectiveness of soil removal activities on groundwater contamination at this area of the site.

2.2 EXPLANATION OF SIGNIFICANT DIFFERENCES

As the construction documents and specifications for the Spaulding Composites SSF Site were developed, recommendations presented in the ROD required NYSDEC to investigate and evaluate alternative remedial methods for several of the SWMUs. In order to assist in this process, NYSDEC contracted the engineering services of Ecology and Environment Engineering, PC (EEEPC) to prepare a Pre-Design Investigation (PDI) report, as well as design drawings for the SSF portion of remedial activities at the site. The PDI report was completed and submitted to NYSDEC in January of 2008.

In May 2009, NYSDEC issued an Explanation of Significant Differences (ESD) to document modifications to the original remedy specified in the ROD. This revision was considered significant, but it did not constitute a fundamental change to the remedy. The significant differences included:

- Combining excavation and off-site disposal of contaminated soils at OU-3 with in-situ chemical oxidation (ISCO) of any remaining contamination. (In situ treatment refers to cleanup measures that may be applied to contaminated soils in place without excavation.)

The original remedy included only in-situ bioremediation. In-situ bioremediation systems are designed to degrade subsurface pollution in place without the need to capture and deliver contaminants to an aboveground treatment system. However, NYSDEC determined that this would be ineffective because the permeability of the soil was too low, and the injected treatment chemicals would not be able to adequately move through soils and react with contaminants to break them down.

- Adjusting the soil cleanup objectives (SCOs) so that a wider range of contaminants were reduced to concentrations deemed appropriate for "restricted residential" redevelopment. The original remedy established no cleanup objectives for PAHs, chemicals formed from the incomplete burning of organic compounds; the adjusted remedy included measures to ensure PAHs met restricted-residential objectives. A "restricted-residential" designation means that townhouses or multi-dwelling housing complexes, but not single-family homes, could be developed on the site.

The adjusted SCOs reflect NYSDEC standards adopted in December 2006 and are consistent with remedial objectives established for the ERP portions of the Spaulding Composites SSF Site.

2.3 SUMMARY OF THE REMEDY AS MODIFIED BY THE MAY 2009 ESD

The remedy detailed in the March 2003 ROD and modified by the ESD includes:

- Excavating soil that exceeds SCOs and disposing it off site, followed by backfilling with clean soil;
- Applying in situ-treatments at the bottom of excavations of petroleum-impacted soils to address residual contamination. This will be performed at certain areas of OU-3 prior to backfilling the excavation with clean soil;
- Imposing deed restrictions/environmental easements to prevent exposure to residual soil and groundwater contamination; and
- Monitoring groundwater after the remediation.

At the request of NYSDEC, EEEPC provided additional technical support related to the plans and specifications for the ISCO soil treatments. A complete set of contract documents, including specifications prepared by NYSDEC, was issued for bids in June 2009.

3.0 SUMMARY OF PRE-REMEDIAL ACTIVITIES

3.1 PRE-DESIGN INVESTIGATION REPORT

EEEPC was tasked to perform a PDI for remediation of the Spaulding Composites SSF Site. On March 28, 2006, EEEPC submitted a work plan to NYSDEC that summarized the tasks and project-specific considerations and details of the Work Assignment (WA) scope. On November 29, 2005, a scoping session was held at the project site to discuss the activities to be conducted for the remediation of soils at the Spaulding Composites SSF Site and to conduct a site walkover. Discussions focused on the WA prepared by NYSDEC and the subsequent work plan developed by EEEPC, as well as comments submitted by NYSDEC on the work plan.

Following approval of the work plan, EEEPC completed a PDI for OUs -1, -3, and -4. The PDI was intended to identify the extent of contamination at various areas that were initially identified as either AOCs or SWMUs. These areas were selected for remediation based on the RI/FS previously performed by Leader Environmental, Inc. The AOCs and SWMUs were grouped based on contamination characteristics into one of four OUs.

Field tasks associated with OUs -1, -3, and -4 consisted of collecting samples, observing soil conditions, and identifying fill material through test pits and soil probes. Soil samples were submitted for analysis, and the results were used to determine whether contaminants of concern (COCs) identified in the ROD were present and to develop excavation recommendations. In addition to COCs, the samples were screened for non-COC compounds that could pose a threat to human health. Remediation of OU-2 was completed under a separate IRM completed by NYSDEC; however, an area associated with OU-2 and located adjacent to SWMU 13 was added as part of OU-3.

Although previous studies conducted at the Spaulding Composites SSF Site suggested existing contamination of a varied nature, the data from these investigations was incomplete and did not sufficiently depict the horizontal and vertical extents required to develop specific recommendations for soil removal and/or treatment. In an effort to resolve this issue, EEEPC began test pit excavation and sampling at the site on April 24, 2006. Excavations varied from localized pits to trenches up to nearly 400 feet long, while depths were limited to 10 feet below ground surface (BGS). Pits and trenches were excavated using a rubber-tired backhoe. If contamination was suspected based on visual inspection, samples were collected to define the type and level of concern. Excavations continued until May 10, 2006.

Soil samples were collected at various predetermined depths, frequencies, and locations based on review of analytical results from the test pits and the previous investigations. On May 30, 2006, Geoprobe® soil explorations were initiated at depths ranging from shallow to below the capabilities of the backhoe to augment the collection of soil samples. The main objective of the Geoprobe® sampling effort was to identify the depth and horizontal extent of contamination near the perimeters of the SWMUs and AOCs. Geoprobe® sampling was concluded on June 14, 2006.

The analytical results from the first round of field sampling were reviewed by the NYSDEC Project Manager (PM) and EEEPC PM in order to delineate the horizontal and vertical extents of contamination. The results of the sampling effort identified contamination at the boundaries of some of the SWMUs and AOCs. Because the SSF efforts were not responsible for areas outside the SWMUs or AOCs, the initial findings were used to identify excavation that would be required up to these boundaries. However, Wm. Schutt & Associates, P.C., developed a figure in March 2006 for the City of Tonawanda for use in defining the Environmental Restoration Program (ERP) cleanup to be performed under the Erie County Industrial Development Agency. The figure was submitted to EEEPC by NYSDEC in September 2006, and it was noted that the Superfund areas presented in the figure differed from those originally identified in the WA. NYSDEC directed EEEPC to review the revised boundaries and determine whether they were of adequate volumes appropriate for remediation purposes. NYSDEC and EEEPC subsequently developed an additional field sampling effort to determine the presence and extent of contamination within the revised boundaries of the Superfund areas. These additional sampling activities began on November 27, 2006, and concluded on November 29, 2006.

Each phase of the investigations performed by EEEPC was developed based on the remedial actions stipulated by the ROD. Test pits were intended to visually document site conditions related to fill, debris, and waste, followed by sampling at selected locations. The Geoprobe® investigation was intended to further characterize the site at depths deeper than could be achieved by test pitting and to access areas that could not be reached by the backhoe. Bioremediation pilot studies within SWMUs 13 and 36 were also originally planned as part of the PDI. However, based on site conditions and observations, the ROD's selected remedy of bioremediation was modified for SWMUs 13 and 36. The contamination identified within these SWMUs was eventually addressed through excavation.

Accordingly, excavation of contaminated soil was proposed for each of the OUs based on the data obtained during the PDI. Confirmation samples collected along the bottom and sidewalls of the excavations confirmed that contamination had been removed

to level in compliance with the SCOs and that no additional work was required to meet the remedial objectives.

3.2 USEPA PCB NOTIFICATION

The Toxic Substances Control Act (TSCA) of 1976 authorized the USEPA to secure information on all new and existing chemical substances and to control substances that were determined to present an unreasonable risk to public health or the environment. PCB regulations related to enforcement of this Act are presented in the Code of Federal Regulations (CFR) at 40 CFR 761. In addition, the Resource Conservation and Recovery Act (RCRA), which was also passed into law by Congress in 1976, regulates the generation, storage, transportation, treatment, and disposal of hazardous substances. Because the remedial plan for the Spaulding Composites SSF Site involved excavation, transport, and disposal of documented PCB contamination, NYSDEC prepared and submitted a RCRA Subtitle C USEPA Notification of Regulated Waste Activity Site Identification Form 8700-12 to the USEPA on July 30, 2009. The Spaulding Composites SSF Site is identified as USEPA ID Number NYD002104404.

Upon initial review of background data presented with the Site Identification Form, the USEPA determined that additional information was required to satisfy federal requirements outlined under Part 761.61 of 40 CFR. Therefore, EEEPC prepared a packet of support documentation related to PCB contamination scheduled for remediation. The data and accompanying figures within the packet summarized the documentation, sampling, location, and extent of the PCB contamination present at the Spaulding Composites SSF Site and presented details of the cleanup plan and specifications developed by NYSDEC. After this submittal, a second round of data was requested by the USEPA in August 2009. In response to this request, EEEPC prepared additional supporting documentation, including a brief site history, details of the PDI and sampling procedures, and location maps. EEEPC also submitted details of the proposed project schedule, disposal technology, soil cleanup goals under NYCRR Chapter IV, the scope of work, Environmental Laboratory Accreditation Program (ELAP) certification, and contingency plans, as well as sample collection and analysis dates.

The USEPA reviewed the combined submittals and then generated a response letter, which was issued by the Chief of Pesticides and Toxic Substances Branch to NYSDEC and EEEPC on September 10, 2009. This letter acknowledged receipt and review of previously submitted documentation but requested additional specific clarifications with regard to the previous submittals under 40 CFR 761.61. EEEPC prepared detailed responses to the items listed in the USEPA letter related to PCB sample

locations, SCOs, sampling frequency, options and contingencies, and the intended future classification and utilization of the site, and presented this material in written form to the USEPA on September 11, 2009.

The USEPA formally notified NYSDEC and EEEPC of its approval of the application on December 9, 2009, noting that the proposed removal of the PCB remediation waste "meets the self-implementing cleanup and disposal requirements under 40 CFR § 761.61(a)". Documentation related to the PCB Notification process is presented in Appendix D.

3.3 ACM SAMPLING AT SWMU 8

Prior to the excavation of contaminated soils at SWMU 8, NYSDEC commissioned a survey of the area to better determine the extent of asbestos-contaminated soil in the area, which had been identified by EEEPC in the PDI report of January 2008. The survey was completed by Empire Geo Services, Inc., (Empire).

The survey was conducted on March 26, 2009, by Empire personnel at predetermined locations based on a 20-foot by 20-foot grid issued by EEEPC. Empire personnel visually inspected the target area and then used a 5-foot-long hand auger to collect 25 soil samples for ACM and other COC analysis. Composite bulk samples were collected at each grid point to a depth of 2.5 feet BGS, because no positive indication of ACM was noted below that depth in the PDI report. All work was performed under Level C personal protective equipment (PPE) with full face respirators under dry conditions.

Upon completion of the survey, Empire reported that it had visually identified a bag of suspected ACM along the southern edge of the SWMU 8 area. No positive readings for airborne asbestos contamination were observed on the hand-held photo-ionization detector (PID) carried by the crew supervisor.

All bulk soil samples collected during the survey were delivered to Paradigm Environmental Services, Inc., of Rochester, New York. The samples were analyzed for asbestos fibers using USEPA Method 600/R-93/116 and in compliance with both Asbestos Hazard Emergency Response Act (AHERA) and New York State Department of Health (NYSDOH) polarized light microscopy (PLM) analytical techniques. During the ACM sample collection process, workers carried personal air sampling monitors/data recorders. The personal air samples were shipped to Galston Laboratories in East Syracuse, New York, and analyzed for asbestos using phase-contrast microscopy (PCM). Data from the recorders was also sent to Galston for analysis.

Asbestos was not detected in any of the 25 soil samples, and the laboratory results for the personal air samples indicated the asbestos exposure to the workers was below the Occupational Safety and Health Administration's (OSHA's) permissible exposure limit (PEL). PID readings taken during sampling activities were less than 5.0 parts per million (ppm) above the background level. Details of the survey and the sample analytical results are presented in Appendix E.

3.4 ISCO DESIGN FOR SWMU 35 AND SWMU 36

The PDI investigated the applicability of the remedial strategies selected by the ROD for the multiple contaminant wastes present at the Former Lab Waste Storage Area (SWMU 35) and the bioremediation of VOC- and petroleum-contaminated soils associated with the Former Tank Farm (SWMU 36). Based on the findings presented in the PDI report, the ESD modified the ROD's selected remedy to address the following conditions at the site.

3.4.1 SWMU 35

Based on the amount of contamination present, as well as the conditions observed in areas adjacent to SWMU 35, the PDI concluded that the excavation and removal of soil to 12 feet BGS would limit the potential for contact during any future construction, particularly residential-style construction. The report also noted that excavation and removal alone might not address concerns associated with the migration of contaminants via groundwater. Based on these observations, the PDI recommended that, following excavation, an ISCO product capable of degrading PAHs and/or other identified contaminants be considered for application to the bottom of the excavation prior to backfilling to assist with natural attenuation and potentially mitigate contaminant migration via groundwater, provided the hot spot(s) or source area(s) were removed.

3.4.2 SWMU 36

The PDI presented observations and analytical data regarding the levels of contamination detected during preliminary and supplemental field investigations at the site. Although the ROD prescribed the use of in-situ bioremediation at SWMU 36, the PDI concluded that low soil hydraulic conductivities and groundwater levels observed in the field could significantly reduce the effectiveness of an ISCO bioremedial strategy. In addition, the presence of abandoned concrete foundations and slabs, metal, and other debris would impede the injection of bioremedial materials.

Based on the conclusions presented in the PDI report, NYSDEC elected to remediate the soil contamination at SWMU 35 and SWMU 36 via excavation and off-site

disposal. As an additional remedial measure, NYSDEC directed a controlled application of an ISCO and long-term oxygen donor to the excavation bottoms prior to backfilling the areas with clean soil. These applications would provide additional remediation of any low levels of BETX soil contamination (primarily benzene and toluene) remaining below the excavation limit following bulk soil removals.

3.5 PROJECT BIDDING INFORMATION AND AWARD

A mandatory pre-bid meeting was held by NYSDEC and EEEPC at the project site at 11:00 a.m. on May 13, 2009, for potential bidders to view existing conditions and to discuss the requirements for bidding the project, the technical requirements of the SSF contract documents, and the administrative protocol to be used during the performance of the work. Potential bidders were required to sign an attendance sheet to document their presence at the mandatory meeting. A walk-through of the site and a question-and-answer period were held with the contractors and suppliers in attendance.

Two addendums to the SSF Contract documents were issued during the public bidding phase. Addendum 1, issued on May 19, 2009, added the City of Tonawanda, New York, as an additional insured and provided detailed supplemental specifications, prevailing wage rates, pre-bid minutes, pre-bid questions and answers, a site walk attendance list, a M/WBE handbook of procedures, and the plan holders list. Addendum 2, issued on May 27, 2009, included a revised bid form, detailed supplemental specifications, revised measurement of payment, revisions to the SSF Contract drawings, and the limited site data document.

Eleven bids were received by NYSDEC on May 28, 2009. Appendix A provides a summary of all bids received. The apparent low bidder for the project was OpTech Environmental Services, Inc. (OpTech) of Syracuse, New York.

3.6 SCOPE OF WORK

NYSDEC prepared the Scope of Work for the Spaulding Composites SSF Project (OUs -1, -3 and -4). The project generally consisted of the following major work elements:

- Mobilization of personnel, equipment, and materials to the site;
- Pre-construction waste characterization sampling;
- A site survey, including SWMU/AOC stakeout;
- Site access improvements;

- Construction of an on-site water treatment system;
- Clearing and minor grubbing at the exclusion zones;
- Decommissioning and removal of selected existing monitoring wells;
- Excavation, handling, and disposal of contaminated soils;
- A post-excavation survey;
- Application of ISCO to address residual Benzene contamination in SWMU 35 and 36;
- Backfilling and compaction at excavated areas;
- A post-backfill survey; and
- Site restoration and demobilization.

3.7 SOIL CLEANUP OBJECTIVES (SCOS) AND REMEDIAL PERFORMANCE CRITERIA

In accordance with the ROD and the ESD, the analytical results from throughout the site were evaluated against the restricted residential SCOs of Table 375-6.8(b), which are contained in the December 2006 NYSDEC publication entitled "*6NYCRR Part 375: Environmental Remediation Programs.*" For contaminants not included in 6NYCRR Part 375, NYSDEC remedial guidance document *Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046)* was used to define the SCO.

A list of SCOs covering the COCs for this SSF project is provided in Table 3-1. The SCOs initially specified reflected "residential" SCOs, but these were amended to reflect "restricted residential" contamination limits consistent with the ESD and the most recent NYSDEC Division of Environmental Remediation (DER) guidance for PCB contamination in soil. As a result, PCB contamination present at each SWMU and AOC was removed to levels below 1 ppm.

Remedial performance criteria governing removals of ACM-contaminated soils were based on New York State Department of Labor (NYSDOL) requirements. Complete removal of ACM was certified based on visual inspection by a third-party asbestos monitor and included air monitoring before and during ACM removals. All third-party verifications for the Spaulding SSF project were conducted by Empire. Empire also performed asbestos monitoring services under an existing NYSDEC Standby Remedial Contract (100908). Copies of Empire's monitoring reports documenting remediation of ACM-contaminated soil for the SSF project are presented in Appendix E.

Table 3-1 Spaulding Composites SSF Site Soil Cleanup Objectives

Contaminant	Soil Cleanup Objectives (mg/kg)	
	Original	Updated
BENZENE	2.9	4.8
DICHLOROBENZENE (1,4-DICHLOROBENZENE)	9.8	13
ETHYLBENZENE	30	41
TOLUENE	100	100
TRICHLOROETHENE	10	21
TOTAL XYLENES	100	100
ANILINE	0.1 (from TAGM 4046)	0.1 (from TAGM 4046)
2-METHYLPHENOL (O-CRESOL)	100	100
BENZO(A)ANTHRACENE	1	1
BENZO(A)PYRENE	1	1
BENZO(B)FLUORANTHENE	1	1
BENZO(K)FLUORANTHENE	1	3.9
CHRYSENE	1	3.9
DIBENZO(A,H)ANTHRACENE	0.33	0.33
DI-N-BUTYLPHTHALATE	8.1 (from TAGM 4046)	8.1 (from TAGM 4046)
FLUORANTHENE	100	100
INDENO(1,2,3-CD)PYRENE	0.5	0.5
PHENANTHRENE	100	100
PHENOL	100	100
PYRENE	100	100
PCBs (Surface/Subsurface > 2' BGS)	1 /10	<1
ARSENIC	16	16
BARIUM	350	400
CADMIUM	2.5	4.3
CHROMIUM (hexavalent/trivalent)	22/36	110/180
COPPER	270	270
LEAD	400	400
MERCURY	0.81	0.81
ZINC	2,200	10,000

3.8 QUALITY ASSURANCE/QUALITY CONTROL PLAN

Supplementary Project Specification Section XI, Division 1, Section 01400, outlined specific requirements of the Quality Assurance/Quality Control Plan (QA/QC) for the project. Included in this section are requirements for QA/QC of installations, references and standards, tolerances, field sampling, inspection and testing services, testing by the Contractor, and manufacturers' field services and reports.

A QA/QC Plan for project control and analytical work was developed by the Contractor and submitted to EEEPC on August 20, 2009. This submittal was part of OpTech's Work Plan, which was included with their five-day submittal package; however, it was submitted and reviewed by the Engineer prior to the issuance of a Notice to Proceed (NTP) by NYSDEC on October 5, 2009. This submittal briefly described the QA protocols for each separate task and is included in this report as Appendix C.

3.9 DATA USABILITY REQUIREMENTS

Project Specification Section 01425 included NYSDEC Data Usability Summary Report (DUSR) requirements for environmental samples collected by the Contractor. This process was a part of the QC procedures established by NYSDEC to verify the accuracy of laboratory analysis of samples provided by the Contractor.

OpTech submitted details for compliance with the DUSR requirements to EEEPC as part of the Sampling and QA/QC Plan. At the time of the initial submittal, OpTech had not selected an independent agency to complete the DUSR. OpTech eventually selected Vali-Data of WNY, LLC of West Falls, New York, to provide the DUSR for the Spaulding Composites SSF Project. Analytical DUSR reviews are presented as Appendix F.

4.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS, AND REMEDIAL CONTRACTS

4.1 REMEDIAL MEASURES NOT INCLUDED IN THE SSF CONTRACT

Interim Remedial Measures at the Spaulding Composites SSF Site were conducted by NYSDEC Region 9 and are addressed separately from this report. A Production Well Monitoring document prepared by NYSDEC for Site Number 9-15-050 in July 2010 addresses groundwater monitoring activities and results. A Final Engineering Report completed for Site Number 9-15-050 in June 2010 addresses remediation of OU-2 (Spauldite Sheet Basement and K-Line Storm Sewer), which was deleted from the SSF contract after bids were received in 2009.

5.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

5.1 GOVERNING DOCUMENTS

Specifications and contract drawings were prepared and issued for bids by NYSDEC in May 2009 with assistance from EEEPC. These documents were based on the ROD issued in March 2003.

5.2 SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP)

Project Specification Section 00003 includes Minimum Requirements for Health and Safety based on the OSHA Standards and Regulations contained in Title 29, CFR Parts 1910 and 1926 as well as applicable sections of the New York State Labor Law, the USEPA Office of Emergency and Remedial Response, and the National Institute for Occupation Safety and Health (NIOSH) regarding procedures to ensure safe operations at abandoned hazardous waste disposal sites.

In response to these requirements, OpTech issued a HASP as a part of their 5/14 day submittal package. EEEPC's review of the HASP verified that the Contractor had a site-specific plan and that it was in effect; however, the engineer did not review the plan for adequacy. All personnel entering the exclusion zones were required to provide documentation that OSHA medical surveillance and 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certification requirements had been met. OpTech provided EEEPC with copies of medical examinations and 40-hour HAZWOPER training certifications for all OpTech personnel working near or within exclusion zones, and NYSDEC and EEEPC provided copies of annual health and HAZWOPER certifications for their respective personnel to OpTech for record purposes. A copy of the Contractor's HASP is presented in Appendix C.

5.3 DECONTAMINATION OF EQUIPMENT AND PERSONNEL

OpTech's HASP outlined detailed decontamination procedures for all personnel and equipment, including construction equipment, entering and exiting the exclusion zones. The HASP detailed the use of portable boot-wash stations, provided guidelines for the disposal of all used PPE, contained descriptions of the equipment required and the proposed location of the decontamination station, and identified the requirements covering the movement of equipment between contaminated and non-contaminated work zones. During the construction phase, OpTech personnel manually scrubbed all

equipment to remove any contaminated materials adhering to the machine surfaces and rinsed them using a pressure washer prior to moving them from one exclusion zone to another. When excavators were moved between exclusion zones, the buckets were wrapped in poly sheeting to prevent the contamination of clean soil areas. EEEPC's site representatives visually inspected vehicles and other construction equipment exiting the exclusion zones, as well as vehicles that were required to pass through the on-site decontamination station. All wash water used in the on-site decontamination process was subsequently collected, treated by the on-site water treatment system, and then tested for compliance with Section 02140 of the project specifications. It was then discharged to the city storm sewer located along Wheeler Street.

5.4 CONTINGENCY MEASURES

OpTech's Emergency Response and Contingency Plan was submitted as a part of their HASP. The plan included chain-of-command, communication, and evacuation procedures to be followed in the event of an emergency at the site; the locations of first aid equipment; standard operating procedures; and specific procedures to be followed in the event of an accident. A pre-designated route to a nearby medical facility was established, and a road map documenting the route was posted in the Contractor's site operations office at the site. A Health and Safety meeting was held at the start of each workday during the construction phase of the project. OpTech's Site Safety Officer (SSO) was responsible for the day-to-day assessment of potential work hazards and was required to advise OpTech and EEEPC personnel of any known or potential health and safety issues.

OpTech compiled a comprehensive list of emergency contact information, including the names and telephone numbers of all responsible personnel. The list was distributed to the City of Tonawanda Police, Fire, and Engineering offices; NYSDEC; EEEPC; the Erie County Department of Environmental planning (DEP); Decommissioning & Environmental Management Company (DEMCO); and the State Assemblyman's offices. This list was periodically reviewed for accuracy during regularly scheduled progress meetings at the site and was redistributed to all responsible personnel whenever a revision was made.

5.5 COMMUNITY AIR MONITORING

OpTech's HASP included provisions for an air monitoring program to comply with the requirements set forth in Section 00003 of the project specifications. The Contractor's HASP provided up to four real-time dust monitors located outside the

exclusion zones for control of dust emissions during intrusive work. Each monitor was equipped with data logging capabilities, and the data were downloaded and reviewed by the Engineer on a daily basis. The EEEPC site representatives also spot-checked each monitor during the course of each workday. During all excavation and sampling work, a hand-held PID was carried by the SSO to monitor VOC/SVOC levels in the work area. Fugitive dust emissions that could have an impact on areas outside the site, such as those caused by the movement of trucks and equipment, were visually monitored at all times. Whenever dry conditions caused dust to emanate from the ring road, water was applied to the roadway surfaces to alleviate the problem. Copies of daily air monitoring results are presented in Appendix E.

5.6 ON-SITE AIR MONITORING PROGRAM

OpTech's SSO documented the air sampling and real-time air monitoring upwind and downwind of intrusive activities and for "at-risk" personnel working in the exclusion zones. Real-time air monitoring for dust was performed using DustTrak dust meters. Action levels for airborne contaminants were established, and applicable regulatory guidelines were used in the SSF Contract documents to minimize the threat to workers and the surrounding community.

Two complaints were reported to NYSDEC from residents living adjacent to the Spaulding Composites SSF Site. The first complaint was in regard to dusty conditions on Wheeler Street, which was promptly remedied by the contractors by increasing the frequency of dust collections and applications of water spray. The second complaint was in regard to an inquiry by a resident who was concerned about soil contamination extending from the project site into her vegetable garden. This complaint was addressed by NYSDEC Region 9 personnel.

Real-time data recorded by the meteorological station in the Engineer's trailer was reported by EEEPC in each Daily Report. OpTech personnel monitored real-time readouts on the DustTrak meters on a consistent basis and provided the EEEPC site representative with printouts of the air monitoring data at the end of each day. EEEPC maintained a log of all downloaded data for each day that intrusive operations were performed on the project site. OpTech downloaded and submitted air monitoring results from DustTrak meters to the Engineer as part of their Substantial Completion submittal process. Air monitoring was suspended during precipitation events.

Before the beginning of intrusive activities, OpTech's SSO conducted baseline air sampling for fugitive dust emissions, both upwind and downwind of the exclusion zones,

to determine ambient air quality. The SSO also conducted daily real-time air sampling for total dust at the air sampling locations upwind and downwind of exclusion zones throughout the duration of intrusive activities. The results of air samples collected during remedial operations at the Spaulding Composites SSF Site indicated that emissions guidelines established in the Project Specifications were maintained. The daily air monitoring data logs are presented in Appendix E.

6.0 REMEDIAL PROGRAM ELEMENTS

6.1 CONTRACTORS AND CONSULTANTS

The successful low bid for the Spaulding SSF project was submitted by Op-Tech Environmental Services, Inc., located in East Syracuse, New York. The scope of work under the SSF contract was completed by Op-Tech's Amherst, New York, office.

The company responsible for engineering services during remedial construction was Ecology and Environment Engineering, P.C. of Lancaster, New York.

6.2 REMEDIATION INSPECTION AND MONITORING SERVICES PROVIDED BY EEEPC

EEEPC prepared and submitted daily and monthly reports to the NYSDEC PM, which documented construction progress at the site and the budgetary status throughout the construction period. All daily reports (DR), which included multiple photos covering major portions of the work, were submitted on the same day as the work was performed in the field to provide current information to the NYSDEC PM. Direct telephone communications with NYSDEC were generally maintained on an as-needed basis, but at no time were these communications performed on a less than weekly basis. EEEPC conducted Progress Meetings at the site every other week and provided complete minutes of each meeting to NYSDEC for record purposes. Copies of all daily and monthly reports, including construction photos, are provided in electronic format (.pdf) in Appendix G.

6.3 SUBMITTAL REVIEWS

Specification Section 01011 provided requirements for the preparation and submittal of all materials, equipment, and methods related to the SSF Contract. OpTech prepared and submitted plans and drawings in general compliance with these requirements, and revised and resubmitted in a timely manner those which were found to be deficient. Submittals were reviewed for general conformance with the SSF Contract plans and specifications. OpTech submitted 31 individual shop drawings for EEEPC review and approval. EEEPC's site representative and PM determined whether to reject the shop drawings or to approve them, with or without conditions. Copies of all submittals and a Submittal Log were maintained by EEEPC throughout the course of the project and are presented in Appendix C.

6.4 REQUESTS FOR FURTHER INFORMATION (RFI)

Formal Requests for Further Information (RFIs) for clarification or interpretation of the SSF Contract Documents were prepared by the Contractor and submitted to the EEEPC Project Engineer for review. A total of 15 individual RFIs were submitted to EEEPC and are listed in Table 6-1. Copies of all RFIs and an RFI Log were maintained by EEEPC throughout the course of the project and are presented in Appendix H.

Table 6-1 Spaulding Composites SSF Site RFI List

RFI Number	Date Received	Description
1	10/5/09	Attachment A - Addendum No. 2 Bid Form
2	10/5/09	SWMU 38 - TSCA Contaminated Soil
3	10/5/09	Measurement of Payment
4	10/7/09	Pre-construction sampling of decontamination and dewatering areas
5	10/7/09	Permits for discharge to the storm sewer
6	10/28/09	PCB testing in some SWMUs
7	11/2/09	Compaction rate for backfilled areas
8	11/11/09	Excavation in SWMU 13
9	11/19/09	Clarification of ACM soil removal tonnage
10	11/20/09	Excavation of ACM areas in SWMUs 17 and 26
11	12/1/09	Pricing for hexavalent chromium analyses
12	12/9/09	Clearance to backfill SWMUs 14, 13, 3, and 35
13	12/18/09	Approval to stockpile backfill on site
14	1/14/10	Post-excavation surveying in SWMUs 8 and 26 and the ACM landfill
15	1/14/10	Sampling of standing water in SWMUs 13 and 26

6.5 PROPOSED CHANGE ORDERS (PCOS)

Each PCO was developed by OpTech or EEEPC based on changes in conditions at the site, and it was then reviewed by the Project Engineer after discussions with both NYSDEC and the Contractor's PM. PCOs were either rejected, approved by the Project Engineer and implemented by the Contractor, or tabled for future consideration in accordance with the General Conditions of the SSF Contract Documents. A total of 18 PCOs were issued for the Spaulding SSF project and are listed in Table 6-2. All PCOs were held by the Project Engineer until after Substantial Completion was achieved and were then combined under Change Order (CO) No. 1, which provides a detailed description of each change and the final cost or credit to the approved contract amount. A copy of CO No. 1 and copies of all PCOs and a PCO Log maintained by EEEPC throughout the course of the project are presented in Appendix H.

Table 6-2 Spaulding Composites SSF Site PCO List

PCO Number	Initiated By:	Date Received	Topic
001	OpTech	11/5/09	Ring road repair near SWMU 38
002	OpTech	11/17/09	Field office toilet
003	EEEPC	11/25/09	ACM roll-off
004	OpTech	11/25/09	ACM landfill test pits
005	OpTech	12/7/09	TSCA/ACM soil at SWMUs 8 and 26
006	OpTech	1/4/10	ACM soil disposal
007	OpTech	12/7/09	Hex chrome sample analysis (5 day TAT)
007A	OpTech	12/7/09	Hex chrome sample analysis (1 day TAT)
008	OpTech	12/17/09	UST disposal in SWMU 26
009	OpTech	1/4/10	Extension of SSF contract time for the ACM landfill
010	OpTech	1/13/2010	T&M for additional post-confirm survey of SWMUs
011	EEEPC	2/10/2010	Backfill compaction credit
012	OpTech	1/20/2010	Sample credit for < 24-hour TAT
013	OpTech	1/20/2010	Sampling beyond SSF contract limit w/48-hour TAT
014	OpTech	2/15/2010	AOC 45 Pit T&M
015	OpTech	3/5/2010	SWMU 38 credit
016	OpTech	4/13/2010	Topsoil/seed stockpile credit
017	OpTech	3/17/10	SWMU 7 ACM soil
018	OpTech	5/7/2010	Backfill movement and survey update at SWMU 13

6.6 FIELD ORDERS

Project Field Orders were issued by the EEEPC PM in response to changes in field conditions that required direction or to document the review of end-points such as confirmatory sample results and approve subsequent work. Field Orders were issued for no-cost items only. A total of 34 Field Orders were issued for the Spaulding SSF project and are listed in Table 6-3. Copies of all Field Orders were maintained by EEEPC throughout the course of the project and are presented in Appendix H.

Table 6-3 Spaulding Composites SSF Site Field Order List

Project Field Order Number	Issue Date	Description
1	11/13/09	Removal of incidental amounts of soil containing possible ACM materials at SWMU 26
2	11/17/09	Excavate as closely as possible to the fence line without damaging the fence or its foundations
3	11/20/09	Post-excavation survey at SWMU 13
3a	11/20/09	Supersedes Field Order 3. Review and analysis of additional confirmatory sample data
4	11/20/09	Additional excavation and post-excavation survey at SWMU 14
4a	12/14/09	Removal of additional material at SWMU 14

Table 6-3 Spaulding Composites SSF Site Field Order List

Project Field Order Number	Issue Date	Description
4b	12/22/09	Partial backfilling at SWMU 14
5	11/20/09	Collect soil samples at SWMU 26
6	11/20/09	Removal of additional ACM soil from SWMU 8
6a	11/20/09	Temporary suspension of work at SWMU 8
7	11/25/09	Revision of Soil Cleanup Objectives
8	11/25/09	Additional sample collection at SWMU 26
9	12/2/09	Removal of additional material at SWMU 13
10	12/2/09	Removal of soil within the SWMU 36 boundary areas
11	12/2/09	Removal of additional overburden at AOC 45
12	12/2/09	Remove remaining material at SWMU 26
13	12/7/09	Removal of additional soil at SWMU 3
13b	12/23/09	Removal of additional soil at SWMU 3
14	12/7/09	Removal of additional soil at SWMU 35
14b	12/22/09	Approval of backfilling at some sections of SWMU 35
14R	12/7/09	Removal of additional soil at SWMU 35
15	12/7/09	Additional exploratory test pits at the ACM Landfill between SWMU 8 and SWMU 26
16	12/15/09	Removal of additional soil at SWMU 36
16a	12/28/09	Removal of additional soil at SWMU 36
17	12/15/09	Removal of additional soil at AOC 45
18	12/15/09	Removal of additional soil at SWMU 5
18b	12/23/09	Removal of additional soil at SWMU 5
19	12/17/09	Change in PCB confirmatory sampling protocol
20	12/17/09	Additional confirmatory samples at SWMU 13
20a	12/28/09	Removal of additional soil at SWMU 13
21	12/23/09	Removal of ACM material at SWMUs 7, 8, and 26
22	1/8/10	Change in Soil Cleanup Objectives for aniline and di-n-butylpythlate
23	2/5/10	Summary of work at SWMUs
24	2/5/10	Approval of final excavation survey and backfill at SWMU 13
25	2/26/10	Approval to perform final topo surveys at SWMU 3 and SWMU 14
26	3/11/10	Approval to perform final topo surveys at SWMU 5, SWMU 8, the ACM Landfill, and SWMU 26.
27	3/11/10	Additional activities at AOC 45
28	3/11/10	Removal of additional soil at SWMU 7
29	3/12/10	Approval to perform final topo surveys at SWMU 35
30	3/19/10	Removal of D018 soil from Former Tank/Trench area at SWMU 36
31	3/29/10	Approval to perform final topo surveys at SWMU 36 and AOC 45
32	3/30/10	Removal of additional soil at SWMU 7
33	3/31/10	Removal of additional soil at SWMU 7
34	4/7/10	Removal of additional soil at SWMU 7

6.7 PROGRESS MEETINGS

Progress meetings were held at the project site on a bi-weekly schedule; however, the dates were adjusted for the convenience of primary stakeholders as required. Attendees included representatives of NYSDEC, OpTech, EEEPC, and other parties to the project as required. The meetings were held at the NYSDEC Field Office during the construction period. The Project Engineer prepared and distributed an agenda for each meeting and provided a sign-in sheet for documentation purposes. EEEPC recorded the minutes of each meeting and distributed draft copies to all attendees. Comments were received and the minutes were amended accordingly. Final copies were then distributed to all attendees. In addition, copies of all minutes were distributed to the NYSDEC Region 9 Spills Coordinator, the Erie County Department of Environmental Protection (ECDEP), the City of Tonawanda Mayoral and Engineering Departments, and the State Assemblyman's office.

A total of 12 progress meetings were held during the course of the Spaulding SSF project. EEEPC maintained copies of all progress meeting minutes, which are presented in chronological order in Appendix B.

7.0 CONTAMINATED MATERIALS REMOVAL

7.1 EXCAVATION OF SOILS – SWMU 3

SWMU 3 encompassed the former Zinc Chloride Sludge Container Storage Area and was the eighth area excavated by OpTech under the Spaulding SSF project (see Figure 7-1). Soil removals began on December 10, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 3 consisted primarily of PAHs and metals, with minor amounts of non-TSCA PCBs. OpTech excavated to the proposed limits of excavation for SWMU 3 in accordance with the SSF Contract Documents (see Appendix I). After initial confirmatory sample results failed to meet the SCOs, OpTech was requested to remove additional soil from the areas listed in Field Orders 13 and 13b, dated December 7, 2009, and December 23, 2009, respectively. Upon completion of additional soil removals, confirmatory soil samples were collected and analyzed. The test results indicated that the SCOs had been achieved.

SWMU 3 was approved for final survey on February 5, 2010 (per Field Order 23), and for backfilling on February 26, 2010 (per Field Order 25). The post-excavation survey was performed on February 11, 2010. Backfill placement was completed on February 17, 2010. A post-backfill survey was completed on March 2, 2010.

7.1.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 3 was disposed of as non-hazardous solid waste at the Modern Landfill in Model City, New York. Approximately 302 tons of non-hazardous soil was removed from SWMU 3, transported, and disposed of off-site (Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the Contractor's applications for payment (CAPs).

Insert Figure 7-1 (11 x 17) page 1of 2

Figure 7-1 page 2 of 2

7.1.2 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the volume of contamination present in SWMU 3 was approximately 62% greater than that originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward and additional contaminated soil was removed. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 186 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 302 tons.

7.1.3 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 3 was determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.2 EXCAVATION OF SOILS – SWMU 5

SWMU 5 encompassed the former Empty Drum Storage Dock area and was the tenth area excavated by OpTech under the Spaulding SSF project. Soil removals began on December 10, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 5 consisted primarily of PAHs and metals, with minor amounts of non-TSCA PCBs. Because SWMU 5 was situated adjacent to homes along Enterprise Street and Dodge Avenue, a flyer addressing the work to be performed in the SWMU was developed and distributed to the residences along those streets prior to excavation and removal of soil. The initial perimeter staked out for SWMU 5 extended to the existing chain-link fence line along Gibson Street. When it was determined that excavation to the staked line would cause damage to the fence, the Contractor was directed by EEEPC to excavate as closely as possible to the fence without damaging the fence or its foundations, in accordance with Field Order 2.

OpTech excavated and removed soil to the proposed limits of excavation for SWMU 5 in accordance with the SSF Contract Documents. When visibly stained soil in immediate proximity to the Former Phenol Building foundation was observed below the prescribed excavation depth, the Contractor was requested to remove the additional soil until an underlying clean clay layer was encountered. Upon completion of planned excavation in SWMU 5, initial confirmatory sample results along the eastern boundary failed to meet the SCOs. The Contractor was requested to remove additional soil from

the area, as described in Field Orders 18 and 18b, dated December 15, 2009, and December 23, 2009, respectively. OpTech also removed an additional area along the east wall per Field Order 23, dated February 5, 2010. Upon completion of additional soil removals, confirmatory soil samples were collected and analyzed. The test results indicated that the SCOs had been achieved. SWMU 5 was approved for backfilling on March 11, 2010, in accordance with Field Order 26. Dewatering of the SWMU prior to placement of backfill was achieved by pumping water to SWMU 36, from which it was pumped directly to the on-site treatment system. The post-backfill survey was completed by Wm. Schutt on March 15, 2010. Final grading was completed along with other items on the punch list developed at the Substantial Completion inspection.

7.2.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 5 was disposed of as non-hazardous waste at the Modern Landfill in Model City, New York. Approximately 5,509 tons of non-hazardous soil was removed from SWMU 5, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.2.2 Closure of Existing K-Line Sewer Manhole

As excavation and soil removals continued in a northerly direction on December 11, 2009, OpTech unearthed the top of an access manhole belonging to the former K-Line sewer (see DR 033, dated December 11, 2009). After the cover was removed and inspected by the Contractor, the manhole was filled with clean backfill and then covered with a 1-foot-thick by 4-foot-square section of concrete slab previously removed from SWMU 36. This concrete slab, which was non-hazardous material slated for disposal, was installed below finish grade to prevent any possible access to the manhole during the period between completion of the SSF Contract and the ERP project, since this portion of the K-Line sewer was slated for demolition during foundation removals under the ERP Contract. The manhole was in good condition structurally, and no material was removed

from the interior of the manhole. The location of the concrete slab and former manhole is indicated on the project record drawings presented in Appendix I.

7.2.3 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the actual extent of contamination present in SWMU 5 was approximately 7% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward and additional contaminated soil was removed. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 5,110 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 5,510 tons.

7.2.4 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 5 was determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.3 EXCAVATION OF SOILS – SWMU 7

SWMU 7 encompassed the former Resin Drum Landfill and was the third area excavated by OpTech under the Spaulding SSF project. Soil removal began with the removal of soil from the ditch adjacent to the SWMU on November 9, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 7 consisted primarily of lead and other metals, with some PAHs. Approximately 46 tons of TSCA PCB soils, hazardous and non-hazardous drums, and ACM-contaminated soils were also encountered in SWMU 7.

OpTech abated ACM soils in the western half of the SWMU under third-party ELAP monitoring conditions and continued soil removals to the proposed limits of excavation for SWMU 7 in accordance with the SSF Contract Documents. ACM-contaminated soil samples varied from tan to burnt orange to light gray/green in color. As soil excavation progressed, large quantities of discolored and saturated materials were observed within the exclusion zone, immediately adjacent to the ring road. Several crushed 55-gallon waste drums were observed in a test excavation made to determine the depth of perched groundwater within the SWMU. OpTech continuously dewatered the excavation as removal work progressed by pumping the water to a 4,000-gallon Baker

Tank. The water was then transferred to the on-site water treatment system. An auxiliary carbon treatment system was also utilized to pump and treat groundwater accumulations in the SWMU to the ditch adjacent to the exclusion zone. Intact drums removed from the exclusion zone were segregated, tagged, logged, and over-packed for content analysis; crushed drums were also segregated, counted, and stockpiled for removal. OpTech was instructed to carefully extricate the drums as they were encountered; however, it was apparent that many drums had been damaged by Spaulding personnel at the time of burial. The contents of drum carcasses were generally saturated grinding materials or resins, with colors ranging from dark brown to white. The analytical test results for intact drums, including PID readings, are presented in Appendix E.

During drum excavation work, EEEPC observers noted significant odors emanating from the SWMU 7 excavation, and they discussed this concern with OpTech's site superintendant and SSO. At EEEPC's request, OpTech upgraded worker protection to Level C, including High-Efficiency Particulate Air (HEPA) organic vapor 3-stage filters on facial masks, in compliance with OpTech's submitted HASP. The OpTech exclusion zone supervisor also posted a PID device within the work area and continuously monitored the exclusion zone for VOCs and airborne dust, both upwind and downwind of the exclusion zone at the time of EEEPC's observations. Fugitive odors were thought to be from suspected phenolic resins within the excavation area. The odors dissipated considerably as soil removal progressed.

OpTech began soil and drum removals on November 16, 2009, after remediation of contaminated sediment from the ditch adjacent to the SWMU, which had been added to the project by Addendum 2, was completed. However, the discovery of potentially ACM-contaminated soil on the afternoon of the same day postponed full-scale drum remedial work until March 8, 2010, when suitable arrangements for containment, disposal, and observation were finalized. After OpTech completed excavations to the contract limits, confirmatory soil sampling indicated the presence of additional contaminated soil at the southern perimeter of the exclusion zone. OpTech removed additional soil from the areas listed in Field Orders 28 (dated March 11, 2010), 32 (dated March 30, 2010), and 33 (dated March 31, 2010).

The results for confirmatory soil samples collected at three areas identified in Field Order 33 showed residual PCB contamination above the SCOs for the project. As a result, EEEPC issued Field Order 34 on March 31, 2010. OpTech removed all additional excavated soil as requested and stockpiled it on poly sheeting within the exclusion zone. The results for composite samples collected from the stockpiled materials indicated that contamination was below the SCOs. SWMU 7 was approved for final survey and backfilling on April 7, 2010. Final dewatering of SWMU 7 prior to placement of backfill

was achieved by pumping water to an auxiliary carbon treatment system, with subsequent discharge of the water into the ditch west of the excavation area. Sample data for the discharge was not submitted by the Contractor. Backfill placement at SWMU 7 was completed on April 9, 2010. Schutt completed an updated post-excavation survey on April 16, 2010.

Approximately 6,209 tons of non-hazardous soil, 1,922 tons of ACM-contaminated soil, 52 tons of TSCA soil without TCLP metals, 25 tons of ACM-contaminated soil (per PCO 006), four over-packed hazardous 55-gallon waste drums, and 1,040 non-hazardous 55-gallon waste drums were removed and disposed of off-site. The four over-packed 55-gallon drums were shipped off site to CycleChem, Inc., in Lewisberry, Pennsylvania, on April 2, 2010. Bags of ACM-contaminated soil removed from SWMU 7 contained off-white materials. Final grading, removal of empty salvage drums, and corrections to the final line and grade of the adjacent ditch were included in the punch list items at Substantial Completion and were complete by April 21, 2010.

7.3.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from the SWMU, including crushed or mangled drums and solidified resin, was disposed of as non-hazardous waste at the Modern Landfill in Model City, New York. Approximately 6,209 tons of non-hazardous soil was removed, transported, and disposed of off-site (see to Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.3.2 Hazardous Drum Disposal

Each drum was tagged and sampled upon being removed from the exclusion zone. The drums were then placed in a sealed over-pack to prevent leakage and stored on-site in a lined roll-off container. After all drums had been removed from the SWMU, the roll-off container was transported to an appropriate processing facility (CycleChem, Inc., located in Pennsylvania).

Manifests for hazardous drum waste were imprinted with weight information at the landfill, and copies were returned to OpTech. After the Contractor logged truck weight data for payment purposes, the signed bills were transferred to EEEPC for review and weight tabulation utilized for comparison of the official manifest weights recorded at the disposal facility with the total weights on the CAPs. A total of four of hazardous drums were removed from SWMU 7 and transported and disposed of off-site (see Table 8-1).

7.3.3 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the actual extent of contamination present in SWMU 7 was approximately 4% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward and additional contaminated soil was removed. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 5,980 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 6,210 tons. This amount is includes material removed from the section of ditch immediately adjacent to SWMU 7, which was added to the project scope by Addendum 2.

7.3.4 ACM ELAP Monitoring

Independent third-party ACM air monitoring at SWMU 7 was provided by Empire under an existing standby contract with NYSDEC Region 9. Empire personnel maintained a continuous air sampling log for each day that asbestos removals were in progress. In addition to reviewing air quality during ACM removals with EEEPC site representatives, Empire prepared and submitted a monitoring report at the conclusion of ACM work at SWMU 7. The ACM air sampling logs were provided as part of the monitoring report and are presented in Appendix E.

OpTech erected a decontamination station at SWMU 7 (separate from the unit required by bid at SWMU 8) for personnel working in the exclusion zone in order to comply with NYSDOL requirements. A NYSDOL representative visited the Spaulding site during ACM removals and determined that the procedures in effect at the time were in compliance with current regulations under 12 NYCRR Part 56.

7.3.5 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 7 were determined to be within acceptable QA limits by Vali-Data. A DUSR memorandum was prepared regarding the acceptability of the data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.4 EXCAVATION OF SOILS – SWMU 8

SWMU 8 encompassed the former Laminant Dust Landfill and was the fourth area excavated by OpTech under the SSF project. Soil removals began on November 11, 2009. Based on recommendations presented in the PDI report, NYSDEC commissioned Empire to perform a separate soil survey for suspected ACM based on a grid pattern developed by EEEPC. The soil survey was performed in March 2009. The soil collection depths were limited to the top 2 feet of overburden in the SWMU, and the results did not reveal any significant amount of ACM. The results of the ACM survey at SWMU 8 are presented in Appendix E. Because the results of the survey did not reveal conclusive evidence of ACM at the landfill area, the tonnage scheduled for removal from the site on the bid tab was considered adequate.

Based on the analytical data presented in the PDI report, contamination targeted in SWMU 8 consisted primarily of PAHs and TSCA-level (>50ppm) PCB-contaminated soils. However, soil removals at the northwestern limit of the exclusion zone eventually exposed several areas where ACM had been landfilled in large quantities by Spaulding. This condition posed an unanticipated situation, since the ACM bid quantity for the entire site was 100 tons, and OpTech removed over 130 tons at SWMU 8 on the first day of ACM remedial operations at the site. In addition, the presence of ACM/TSCA-contaminated soil resulted in OpTech having to develop, submit, and secure approvals for a unit cost and a separate waste stream not originally a part of the project specifications. EEEPC evaluated cost information presented in PCO 005 and recommended approval to the NYSDEC PM. After NYSDEC accepted EEEPC's recommendation, bulk ACM/ TSCA-contaminated soil removals began on November 21, 2010.

Previous ACM-contaminated soil shipments were originally accepted by the landfill at the regular TSCA cost, but only up to an initial 137.49 tons. After approval of PCO 006, all ACM-contaminated soil from SWMU 8 was shipped to Minerva Enterprises, Inc., in Ohio at the unit cost of $116.85 per ton. OpTech proceeded to remove soil to the proposed limits of excavation for SWMU 8 in accordance with the SSF Contract Documents. After initial confirmatory sample results failed to meet the SCOs, the Contractor was requested to remove additional ACM/TSCA-contaminated soil

beyond the contract limits as directed by the Engineer. When confirmatory soil samples again indicated PCB contamination in excess of the SCOs, the Contractor temporarily suspended additional removals pending test pit and exploratory work in and adjacent to SWMU 8 in an attempt to quantify the amount of ACM-contaminated soil present in the area between SWMU 8 and SWMU 26. Test pit investigations are discussed in more detail in Section 7.11 of this report, and the test pit results are presented in Appendix E.

After test pits were performed, the Contractor was requested to remove additional soil per Field Order 23, dated February 5, 2010. All soil was temporarily stockpiled within the inside perimeter of the excavation on poly sheeting to protect previously remediated areas. Upon completion of soil removals, a single composite sample representative of the combined soil removed from SWMU 8 and SWMU 26 was collected and submitted for PCB analysis only. After sampling results showed residual contamination in the soil to be well below the SCOs, the stockpiled material was removed from the site as non-hazardous material. A post-excavation survey was performed on February 17, 2010, and was approved by EEEPC. On January 22, 2010, OpTech received written third-party ELAP monitor confirmation that the ACM had been removed to the required extent, and SWMU 8 was approved for backfilling by EEEPC on March 11, 2010.

Dewatering of SWMU 8 prior to placement of backfill was achieved by pumping water to an auxiliary carbon treatment system and subsequently discharging it to the existing ditch adjacent to the haul road. Refer to Appendix E for results of discharge water sampling for the SWMU 8 area.

Approximately 467 tons of non-hazardous soil, 100 tons of ACM-contaminated soil, 137 tons of ACM/TSCA-contaminated soil (per PCO 005), and an additional 434 tons of ACM-contaminated soil (per PCO 006) were removed and disposed of off-site. ACM-contaminated soils removed from SWMU 8 varied in color from bright orange to yellow to yellowish-green. An illustration of the ACM-contaminated soil removals is shown in Daily Report 020 (dated November 20, 2009), which is provided in Appendix G. Final grading and removal of orange construction fencing/ACM tape were included in the punch list of items developed at the Substantial Completion inspection. The orange construction fencing/ACM tape were subsequently removed by the Contractor.

7.4.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from the SWMU was disposed of as non-hazardous waste at the Modern Landfill in Model City, New York. Approximately 467 tons of non-hazardous soil from SWMU 8 was removed, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.4.2 ACM-Contaminated Soil Disposal

As previously noted, ACM-contaminated soils were encountered in the northwestern corner of SWMU 8. Additional excavation also revealed large amounts of ACM-contaminated soil in the ACM Landfill area between SWMU 8 and SWMU 26 (see Section 7.11 for additional details). ACM-contaminated soils in SWMU 8 were excavated, segregated from other contaminated soil from the Spaulding Composites SSF Site, transported, and disposed of either as non-hazardous soil contaminated with friable asbestos at the Modern landfill in Model City, New York, or as TSCA PCB/ACM-contaminated soil at either the Minerva, Inc., landfill in Ohio or the Modern landfill in Model City, New York (after Waste Management rescinded its initial refusal to accept the material). Trucks transporting ACM material were lined with protective poly sheeting. A personnel decontamination unit was constructed by OpTech for use at SWMUs 8 and 26 and the ACM Landfill areas in compliance with current regulations under 12 NYCRR Part 56. Approximately 100 tons of ACM-contaminated soil (per PCO 006) and 137 tons of TSCA/ACM-contaminated soil (per PCO 005) was removed, transported, and disposed of off-site (see Table 8-1) from SWMU 8.

7.4.3 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the actual extent of contamination present in SWMU 8 was approximately 42% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward and additional contaminated soils were removed. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 350 tons (including ACM-contaminated soil), whereas the final volume of contaminated soil removed from this SWMU was approximately 604 tons. This amount does not include the ACM-contaminated soil removed from SWMU 26 and the ACM Landfill areas.

7.4.4 ACM ELAP Monitoring

Independent third-party ACM air monitoring at SWMU 8 was provided by Empire under an existing standby contract with NYSDEC Region 9. Empire personnel maintained a continuous air sampling log for each day that asbestos removals took place. In addition to reviewing air quality during ACM removals with EEEPC site representatives, Empire prepared and submitted a monitoring report at the conclusion of ACM work at SWMU 8. The ACM air sampling logs were provided as a part of the monitoring report and are presented in Appendix E.

As required by the Contract Documents, OpTech erected a decontamination station at SWMU 8 for personnel working in the exclusion zone. A NYSDOL representative visited the Spaulding Composites SSF Site during ACM removals and found the procedures in effect to be in compliance with current regulations under 12 NYCRR Part 56. This decontamination station was maintained by the Contractor for use by personnel working at the ACM-contaminated soil removals at SWMU 26 and the ACM Landfill areas.

7.4.5 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 8 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.5 EXCAVATION OF SOILS – SWMU 13

SWMU 13 encompassed the former Grinding Oil Tank and Sludge Settling Pond and was the second area excavated by OpTech under the SSF project. Soil removals began on November 5, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 13 consisted primarily of PAHs, with some metals and limited areas contaminated with TSCA-level PCBs. OpTech excavated to the required limits for SWMU 13 in accordance with the SSF Contract Documents, including remediation of ditch sediments, which were added to the Contract by Addenda 2. Earthen dams and straw bales were placed in the ditch upstream of and adjacent to SWMU 13, as shown on the contract drawings, to control sediment transport after contaminated sediments had been removed. To prevent contamination of water in the ditch with water in the excavations, water levels behind the upstream dam were controlled by pumping water around the earthen dam, as required, using a 2-inch trash pump with bag filters to prevent the transport of sediment off-site.

Most of the soil removed from SWMU 13 was excavated over a 4-week period, with excavation proceeding in an east-to-west manner. As excavation limits were verified, confirmatory samples were collected and submitted to the laboratory for analysis. As excavations progressed, reviews of the analytical data showed that the SCOs were being met. After the Contractor completed soil removals in accordance with the Contract Documents, SWMU 13 was scheduled for an initial post-excavation survey on November 20, 2009, in compliance with Field Order 3. However, several sample results from the final excavated areas were received outside the required 24-hour TAT window, which prompted the EEEPC PM to rescind approval on November 20, 2009, in Field Order 3a. OpTech placed the survey on hold until all sample results could be reviewed. EEEPC issued Deficiency Notice 1 to the Contractor with regard to the late analytical results on November 25, 2009. The results eventually reported showed that residual contamination above the SCOs was still present in soils at the westernmost perimeter of SWMU 13, closest to SWMU 7.

Based on review of the late analytical results, OpTech was requested to remove additional soil in the areas listed in Field Order 9, dated December 2, 2009. Additional PCB confirmatory samples were to be collected per Field Order 19 at the locations listed in Field Order 20; however, a significant rainfall event began on December 2, 2009, resulting in extensive flooding of previously excavated areas. The steady rainfall became a snowfall event by the afternoon of December 4, 2009 (see DR 028 in Appendix G). The Contractor removed the earthen dams from the ditch to the west of the SWMU after reinforcing an existing earthen berm between the SWMU and previously remediated ditch areas to alleviate the accumulation of surface runoff from other areas of the site. Wwater that accumulated in the SWMU 13 excavation was not permitted to drain to the ditch. Straw bales previously placed just upstream of the ditch culvert crossing below Hackett Drive remained in place during the entire period and were reinforced by OpTech as required. Surface water within the excavated area of SWMU 13 forced the Contractor to extract the soil samples required under Field Order 19 with a backhoe, which was decontaminated between individual sampling events. During this time, the Contractor began soil removals in the AOC 45 and SWMU 36 areas to maintain the schedule.

OpTech subsequently requested permission to drain water from SWMU 13 directly to the ditch, as the volume was in excess of 15,000 gallons and sample results showed that the SCOs for the area were being met. EEEPC required the Contractor to prove that water in the excavated area met the discharge standards in the project specification prior to considering this request. On February 20, 2010, the EEEPC PM also advised the Contractor that areas with soil to be removed under Field Order 20a were to be isolated from the remainder of the SWMU 13 excavation with a soil berm. OpTech

removed additional soil in the bermed areas listed in Field Order 020a on February 3, 2010.

The issue of dewatering SWMU 13 was discussed in Progress Meeting 7, which was held on February 3, 2010. At that time, OpTech stated that they would look to discharge water currently in the SWMUs "without treatment, provided it meets discharge standards for the project." In response, NYSDEC and EEEPC maintained that the control of water accumulations in the various SWMUs was the responsibility of the Contractor, and that a PCO to compensate OpTech for the removal and treatment of accumulated groundwater would not be entertained. Ultimately, OpTech resolved the issue using a combination of transferring of water to the on-site treatment system and a temporary carbon treatment system installed adjacent to SWMU 13 on March 17, 2010. The Contractor collected samples from the discharge and had them analyzed to determine whether the groundwater discharge standards were being met. The analytical results were received by EEEPC on February 18, 2010, and are included in Appendix E. Water remaining in the excavation but outside the berms inside the SWMU was subsequently pumped through the auxiliary treatment system to the ditch.

Although test results showed that the SCOs for the SWMU had been achieved, conditions were so wet that attempts to backfill the area resulted in earthmoving equipment becoming stuck on several occasions. As a result, EEEPC again enforced the requirements in Specification Section 02140 with regard to dewatering of excavations prior to placement of additional backfill. OpTech temporarily suspended operations at SWMU 13 until saturated soil conditions improved. SWMU 13 was approved for final survey and backfilling on February 5, 2010, per Field Order 24, but OpTech did not begin placing clean fill at SWMU 13 until March 15, 2010. A secondary post-excavation survey was performed on February 10, 2010, and updated by Schutt on April 23, 2010, to incorporate additional soil removals requested by NYSDEC (Field Order 20a). Backfilling was completed on April 28, 2010, and an initial post-backfill survey was completed on April 29, 2010. The post-backfill survey was updated by Schutt after the completion of finish grading required by the Substantial Completion checklist.

7.5.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 13 was disposed of as non-hazardous waste at the Modern landfill facility in Model City, New York. Approximately 3,586

tons of non-hazardous soil from SWMU 13 was removed, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.5.2 Hazardous Soil Disposal

These materials were excavated, segregated from other contaminated soil from the Spaulding Composites SSF Site, transported, and disposed of at the Waste Management landfill facility in Model City, New York. OpTech both directly loaded trucks and temporarily stockpiled excavated soil and loaded out trucks from each area as the availability of approved haulers permitted. Temporary stockpiles remaining at the end of daily operations were covered with tarps and weights to protect them from wind and/or rainfall. SWMU 13 TSCA PCB soil was segregated from non-hazardous soil for shipment. Approximately 409 tons of TSCA PCB-contaminated soil was removed and disposed of off-site (see to Table 8-1).

Manifests for hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights on the CAPs.

7.5.3 Protection of the Existing Ditch

As previously noted, remediation of contaminated sediments in the existing drainage ditch adjacent to and just west of SWMUs 7 and 13 (refer to Contract Drawings Sheet 4 of 7 in Appendix I) were added to the scope of work to be performed under the SSF contract by Addendum 2, dated May 27, 2009. Attachment C to the Addenda included SK-6, which detailed ditch sediment controls to be deployed and maintained by the Contractor during the course of soil removals at the Spaulding Composites SSF Site. These controls were in addition to the provisions of the Contractor's site-specific SWPPP, which was prepared by LiRo Engineers and submitted to NYSDEC for record purposes.

OpTech installed the sediment controls in compliance with the Addenda and maintained the controls during all phases of the remedial effort. The ditch was dewatered during remediation and restoration by installing a 2-inch trash pump with attached bag filters to temporarily bypass the ditch channel and prevent the transport of sediment off-site. Sediments were removed from the ditch to the prescribed depths, and confirmatory

samples were collected to determine whether soil removals were sufficient. After the analytical data showed that the SCOs were being met, the channel invert was restored to original line and grade with clean, backfill-quality soil. Sediment controls in the restored sections were reinstalled, and the bypass pump was removed. All soils removed from the ditch were temporarily stockpiled in the SWMU closest to the immediate work area and held for disposal along with non-hazardous soil as the availability of approved haulers permitted. The total weight of sediments removed from the affected ditch areas are included with the totals presented in Table 8-1.

7.5.4 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the actual extent of contamination present in SWMU 13 was 24% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended. This process was repeated until confirmatory sample results met the SCOs. The original (bid) volume of contaminated soil was estimated to be 2,480 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 3,277 tons. This amount includes the portion of ditch sediments removed immediately adjacent to the SWMU (added by Addendum 2) and the expanded area to the north of the original SWMU perimeter, between SWMU 7 and SWMU 13.

7.5.5 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 13 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.6 EXCAVATION OF SOILS – SWMU 14

SWMU 14 encompassed the former Sludge Settling Pond and was the first area excavated by OpTech under the SSF project. Soil removals began on November 4, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 14 consisted primarily of PAHs and metals. These findings were confirmed after examination of all analytical results for the SWMU. In addition, trace amounts of VOC and PCB contamination were also detected in the samples analyzed during the course of soil removals at this SWMU.

Most of the soil to be removed from SWMU 14 was excavated over a 4-week period, with excavation proceeding in an east-to-west manner. OpTech excavated to the proposed limits in accordance with the SSF Contract Documents. As excavation depths were verified, confirmatory samples were collected and submitted to the laboratory for analysis. A review of the initial analytical data indicated that the SCOs were met in all but two (004S and 008S) of the 12 sample collection locations.

Based on a review of the analytical results, OpTech was requested to remove additional soil in the areas listed in Field Order 4, dated November 20, 2009, including a 4-foot-wide area along the southern perimeter of the SWMU, adjacent to the ERP project limit. Field Order 4a was issued on December 14, 2009, to address the removal of an additional 5-foot by 35-foot area of soil in proximity to sample location 004SR, and Field Order 4b was issued on December 22, 2009, to remove an additional 10-foot by 30-foot area to the west of sample location 013B. Portions of an existing pit wall in the area were broken up and removed (including the contents) when the EEEPC Resident Engineer detected an oily fluid leaking into the SWMU from the pit.

On December 17, 2009, EEEPC, at the direction of NYSDEC, issued Field Order 19 with regard to the PCB sampling protocol. All future PCB sidewall samples were to be collected separately—the first from 0 to 2 feet BGS and the second from 2 feet BGS to the excavation limit depth. The sampling protocol modification was applied to each remedial area under the SSF project (including those areas that had been previously sampled) to maintain compliance with the revised SCO recommendations approved by the NYSDEC Commissioner. All samples previously collected were reviewed for residual PCB levels and were recollected and analyzed whenever the results of the first samples were not in compliance with the new SCOs.

SWMU 14 was approved for final survey and backfilling on February 5, 2010, under Field Order 23, and a post-excavation survey was performed by Schutt on March 10, 2010. Final backfilling was completed on February 19, 2010, and an initial post-backfill survey was completed on March 2, 2010. Due to wet soil conditions at the site, final grading of SWMU 14 was not approved by EEEPC until April 21, 2010, as a part of the Substantial Completion punch list.

7.6.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 14 was disposed of as non-hazardous waste at the Modern landfill facility in Model City, New York. Approximately 1,349 tons of non-hazardous soil was removed from SWMU 14, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.6.2 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the extent of contamination present in SWMU 14 was 27% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward. This process was repeated until the confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 984 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 1,349 tons.

7.6.3 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 14 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.7 EXCAVATION OF SOILS – SWMU 26

SWMU 26 encompassed the former Paper Sludge Land Application Area and was the fourth area excavated by OpTech under the SSF project. Soil removals began on November 11, 2009. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 26 consisted primarily of TSCA- and non-TSCA-level PCB contamination. These findings were confirmed after examination of all analytical results for the SWMU. In addition, significant amounts of ACM-contaminated TSCA PCB soil and trace amounts of sVOCs and metals contamination were also detected in the samples analyzed during the course of soil removals at this SWMU.

Most of the soil removed from SWMU 26 was excavated over a 2-month period, and excavation was completed in a north-to-south manner. OpTech initially attempted to

excavate to the proposed limits in accordance with the SSF Contract Documents and, as excavation depths were verified, collect confirmatory samples and submit them to the laboratory for analysis. However, the Contractor encountered an underground storage tank (UST) during removals of previously identified TSCA-level soils on November 11, 2009. (For additional details, see Section 7.7.2.) After the UST was removed, OpTech completed the removal of TSCA-level soils and excavated to the proposed limits of excavation for SWMU 26 in accordance with the SSF Contract documents. In doing so, soil containing incidental amounts of potential ACMs were encountered at the southwestern perimeter of the SWMU (see DR 048, dated January 7, 2010) that were not specifically identified in the project specifications. OpTech isolated the potential ACM-contaminated soils and collected post-excavation soil samples to support characterization sample results, including 10 samples per Field Order 5 (dated November 20, 2009) and six samples per Field Order 8 (dated November 25, 2009). These 16 samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP sVOCs, TCLP metals, and PCBs. Although the analytical data confirmed that the SCOs had been achieved, the presence of ACM-contaminated soil was confirmed in the samples removed from previously isolated areas.

All ACM-contaminated soils in SWMU 26 were excavated, temporarily stockpiled, transported, and disposed of either as non-hazardous soil contaminated with friable asbestos at the Modern landfill facility in Model City, New York, or as TSCA PCB/ACM soil at the Minerva, Inc., landfill in Ohio or the Waste Management landfill facility in Model City, New York. All ACM-contaminated soil was abated in compliance with current regulations under 12 NYCRR Part 56.

OpTech received notice of completed ACM-contaminated soil removals in SWMU 26 from the third-party ELAP monitor (Empire) on January 22, 2010. An initial post-excavation survey was performed on February 17, 2010; however, extensive dewatering of SWMU 26 was required prior to placement of backfill. OpTech requested permission to drain water from SWMU 26 directly to the ditch adjacent to the SWMU, as the volume was in excess of 16,000 gallons and sample results showed that the SCOs for the area were being met. EEEPC required the Contractor to prove that the water in the excavated area met the discharge standards in the project specifications prior to considering this request. OpTech installed an auxiliary carbon treatment system adjacent to SWMU 26 on March 4, 2010. The Contractor sampled the discharge to determine whether the groundwater discharge standards were being met. The analytical results for water discharge samples from within SWMU 26 were received by EEEPC on March 4, 2010, and are included in Appendix E. Water remaining in the excavation was pumped through the auxiliary treatment system to the ditch. SWMU 26 was subsequently

approved for final survey and backfilling by EEEPC on March 11, 2010, per Field Order 26. A post-backfill survey was completed on March 15, 2010. Final grading of the SWMU, final grading of the adjacent ditch, and removal of orange fencing/ACM tape were included in the punch list items at Substantial Completion.

7.7.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 26 as non-hazardous material was disposed of at the Modern landfill facility in Model City, New York. Approximately 635 tons of non-hazardous soil was removed, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.7.2 Hazardous Soil Disposal

These materials were excavated, segregated, transported, and disposed of at the Waste Management landfill facility in Model City, New York, separately from other contaminated soil from the Spaulding Composites SSF Site. OpTech both directly loaded trucks and temporarily stockpiled excavated soil and loaded out trucks from each area as the availability of approved haulers permitted. Temporary stockpiles remaining at the end of daily operations were covered with poly sheets. Approximately 662 tons of TSCA PCB/ACM-contaminated soil (per PCO 005) was removed and disposed of off-site. The results table compiled for SWMU 26 in Appendix E includes 16 RSX samples collected to evaluate the possibility of reclassification of TSCA soil present within the SWMU. It was subsequently determined that a reclassification of TSCA soil under current NYS guidelines was not possible. As a result, no RSX sample data was used to determine compliance with if SCO's. These data are included in this report for reference purposes only.

Manifests for hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of the official manifest weights recorded at the disposal facility with the total weights on the CAPs.

7.7.3 ACM-Contaminated Soil Disposal

ACM-contaminated soils were encountered in the southern corner of SWMU 26, as previously noted (see Section 7.4.2). As removal of ACM-contaminated soils progressed, a large amount of ACM-contaminated soil was found to extend into the area between SWMU 8 and SWMU 26. For payment purposes, this area was termed the ACM Landfill (see Section 7.11) by EEEPC to differentiate it from SWMU 8 and SWMU 26. ACM-contaminated soils in SWMU 26 were excavated, segregated, transported, and disposed of as non-hazardous soil contaminated with friable asbestos at the Modern landfill facility in Model City, New York, or as TSCA PCB/ACM-contaminated soil at either the Minerva, Inc., Landfill in Ohio or the Waste Management landfill facility in Model City, New York, separately from other contaminated soil from the Spaulding Composites SSF Site. Trucks transporting ACM material were lined with protective poly sheeting. A personnel decontamination unit constructed by OpTech for use at SWMUs 8 and 26 and the ACM Landfill areas was provided for workers in compliance with current regulations under 12 NYCRR Part 56. Approximately 159 tons of ACM-contaminated soil (per PCO 006) and 662 tons of TSCA/ACM-contaminated soil (per PCO 005) were removed, transported, and disposed of off-site (see Table 8-1).

7.7.4 UST Removal and Disposal

As previously noted, OpTech encountered an undocumented UST buried in SWMU 26 that contained suspected PCB oil. This tank was apparently a part of a system that had been either intentionally landfilled or abandoned in place by Spaulding, as it contained tubing (refer to DR 060, dated January 25, 2010) and the aforementioned suspected PCB oil. The steel tank was in poor condition and presented a concern to due to the potential for spreading PCB contamination to other parts of the SWMU during the removal process. EEEPC requested the Contractor to collect a representative sample of the tank contents, and analysis of the sample subsequently confirmed the presence of non-TSCA -level (33 ppb) PCBs in the tank. OpTech excavated a small area of soil around the tank to contain the contents and installed absorbent booms around the tank. An absorbent boom was also placed at the erosion control device previously installed at the ditch adjacent to the SWMU to prevent the migration of the tank's contents from the exclusion zone, as requested in Field Order 12 issued on December 2, 2009. Field Order 12 instructed the Contractor to pump the PCB-contaminated oil layer from the surface of the ruptured UST, properly containerize the contents, and ship them off-site with TSCA soil. All remaining water in the tank was collected in a vacuum truck and transferred to the on-site water treatment system for processing. The tank and all absorbent booms were removed in sections and disposed of with TSCA soil.

The analytical results for confirmatory soil samples collected from existing soil below the UST indicated that PCBs were present above the SCOs. Therefore, the EEEPC site representative requested the Contractor to remove the layer of visibly discolored soil (approximately 2 tons) and resample for PCBs in compliance with Field Order 23, issued on February 5, 2010. The analytical results from this sampling event confirmed that PCB levels were below the SCOs. These analytical results are included in Appendix E. OpTech issued a UST closure report in compliance with federal law, which is also included in Appendix E.

7.7.5 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the extent of contamination present in SWMU 26 was 78% greater than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded SCOs, the limits of the excavation were extended outward. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 750 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 3,479 tons.

7.7.6 Protection of the Existing Ditch

Although remediation of the existing drainage ditch adjacent to and just east of SWMU 26 (refer to Contract Drawings, Sheet 4 of 7, in Appendix I) was not identified as a specific requirement by the Contract Documents as part of the scope of work to be performed under the SSF contract, this area was impacted by the removal work in SWMU 26 and, in fact, became a part of the exclusion zone as the extent of contaminated soil was expanded. Attachment C to Addenda 2 included SK-6, which detailed ditch sediment controls to be deployed and maintained by the Contractor during the course of soil removals at the Spaulding Composites SSF Site. These controls were in addition to the provisions of OpTech's site-specific SWPPP prepared by LiRo Engineers and submitted to NYSDEC for record purposes.

OpTech initially installed the sediment controls as shown in the Addendum and maintained them during all phases of the remedial effort. However, when the Contractor encountered the UST in SWMU 26, additional precautions to protect the ditch were implemented. Additional straw bales were placed in the ditch where it met the perimeter of the SWMU, and an oil-absorbent boom was placed across the upstream side of the bales in addition to oil-absorbent pads deployed directly adjacent to the ruptured tank. During the course of soil removals, the ditch invert was scraped clean in several locations

and then backfilled along with the rest of the SWMU after post-excavation soil sampling had confirmed that the SCOs had been met. The channel invert was restored to original line and grade with clean, backfill-quality soil. All soils removed from the ditch were temporarily stockpiled in the SWMU closest to the immediate work area and held for disposal with non-hazardous soil as the availability of approved haulers permitted. The total weight of sediments removed from the affected ditch areas is included with the totals presented in Table 8-1.

7.7.7 ACM ELAP Air Monitoring

Independent third-party ACM air monitoring at SWMU 26 was provided by Empire under an existing standby contract with NYSDEC Region 9. Empire personnel maintained a continuous air sampling log for each day that asbestos removals took place. In addition to reviewing air quality during ACM removals with EEEPC site representatives, Empire prepared and submitted a monitoring report at the conclusion of ACM work at SWMU 26. The ACM air sampling logs were provided as a part of the Monitoring Report and are presented in Appendix E.

As required by the Contract Documents, OpTech erected a decontamination station at SWMU 8 for use by personnel working in the exclusion zone. A NYSDOL representative visited the Spaulding site during ACM removals and found the procedures in effect to be in compliance with current regulations under 12 NYCRR Part 56. This decontamination station was maintained by the Contractor for use by personnel working at the ACM-contaminated soil removals at SWMU 26 and the ACM Landfill areas.

7.7.8 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 26 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.8 EXCAVATION OF SOILS – SWMU 35

SWMU 35 encompassed the former Lab Waste Storage Area and was the sixth area excavated by OpTech under the SSF project. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 35 consisted primarily of toluene, sVOCs, PAHs, and metals. OpTech began to remove soil to the proposed limits of excavation for SWMU 35 from grade in accordance with the SSF Contract Documents on November 23, 2009. As soil removals progressed to the prescribed depths, the Contractor encountered a foundation wall footing on the south side of the excavation, as

well as a portion of the former K-Line sewer. The foundation posed little difficulty as the footing depth extended beyond the 12-foot excavation depth limit and did not require alteration in any way to successfully accomplish soil removals. However, the sewer line extended in a transverse (south to north) direction, away from the existing foundation wall and toward Dodge Avenue at an invert depth of approximately 12 feet BGS. OpTech removed as much soil as possible from around the 24-inch-diameter reinforced concrete pipe, but it was not possible to complete soil removals below the former K-Line sewer without removing the exposed section of pipe extending across the exclusion zone. The Contractor removed a small section of the pipe, plugged the drain at the foundation wall, and removed the balance of the pipe with the soil below it to the prescribed excavation depth. On November 25, 2009, a post-excavation survey was performed after soil removals were completed to the proposed limits in accordance with the SSF Contract Documents. This survey was requested by the EEEPC PM for documentation and payment purposes.

Wall and floor soil samples were collected and shipped to the laboratory for analysis to determine compliance with the SCOs. The analytical results indicated the presence of soil contamination beyond the original SWMU limit along the north and east walls of the excavation. As a result, OpTech was requested to remove additional soil from the areas listed in Field Orders 14 and 14R, both dated December 7, 2009, and to again collect post-excavation soil samples. The analytical results for these samples indicated that the SCOs had been met, and that no additional soil removals were required.

Prior to backfilling the excavated area, OpTech requested and was granted permission to allow groundwater that had backed up outside the AOC 45 exclusion zone to drain through the excavated area to the storm sewer at Dodge Avenue. SWMU 35 was initially approved for final post-excavation survey and backfilling on February 5, 2010; however, EEEPC issued Deficiency Notice No. 2 on February 24, 2010, due to inadequate dewatering of the excavation prior to backfilling. EEEPC also notified OpTech of the conditions verbally, and the Contractor subsequently dewatered the SWMU before continuing to place fill to approximate final grade. SWMU 35 was approved for post-backfill survey on March 12, 2010, in compliance with Field Order 29, and a final post-backfill survey was completed by Shutt on April 19, 2010. Final grading of the area was approved as a part of the Substantial Completion checklist on April 21, 2010.

7.8.1 Non-Hazardous Soil Disposal

OpTech directly loaded transport trucks with excavated soil and debris from within the exclusion zone as the availability of approved haulers permitted. Small

temporary stockpiles remaining at the end of daily operations were secured with tarps and weights and promptly removed the following business day.

All soil and debris removed from SWMU 35 was disposed of as non-hazardous waste at the Modern landfill facility in Model City, New York. A total of 828 tons of non-hazardous soil was removed from SWMU 35 and transported and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of official manifest weights recorded at the disposal facility with total weights submitted on the CAPs.

7.8.2 ISCO Applications

SWMU 35 was one of two areas (the other was SWMU 36) in the ROD slated for consideration as a candidate for ISCO treatment of residual PAH contamination known to be present below grade. Examination of the post-excavation analytical results showed that there was insufficient residual contamination at the walls and floor of the exclusion zone to warrant application of the oxidant; therefore, NYSDEC elected to waive the requirement and simply backfill the area with clean soil. The ISCO requirement for SWMU 35 was waived in Field Order 23, dated February 5, 2010. OpTech's bid included sufficient oxidant to treat the prescribed areas in the original scope of work; the cost savings was credited to the project under Change Order No. 1.

7.8.3 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the extent of contamination present in SWMU 35 was 83% smaller than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results did not exceeded the SCOs, the limits of the excavation were not extended outward. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 4,890 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 828 tons.

7.8.4 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 35 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.9 EXCAVATION OF SOILS – SWMU 36

SWMU 36 encompassed the former Tank Farm Area and was the ninth area excavated by OpTech under the SSF project. Based on the analytical data presented in the PDI report, contamination targeted in SWMU 36 consisted of methylphenol, arsenic, barium, copper, zinc, benzene, and toluene, and contamination at levels above the SCOs appeared to occur relatively deep, with D018 benzene-contaminated soils present from 5 to 31 feet BGS. OpTech began to remove soil to the proposed limits of excavation for SWMU 36 from grade in accordance with the SSF Contract Documents and Field Order 10 on December 2, 2009. Initial D018 soil removals at SWMU 36 proceeded on a visual basis and were evaluated as confirmatory sample results became available. Excavation depths were limited to 8 feet BGS pending receipt of analytical results. Removal of the top 2 feet of discolored soil on the west side of the exclusion zone revealed a seam of brown clay soils with very little discoloration, whereas soil removals at the eastern SWMU boundary with AOC 45 revealed consistently dark, discolored, oily grey soils indicative of fuel contamination. OpTech removed the top 8 feet of soil across the exclusion zone, working toward the haul road and separating large sections of concrete from the soil as excavations progressed.

Upon completion of the initial soil removals, the Contractor collected soil samples from the sidewalls and floor of the excavated area. The analytical data from these samples were reviewed by NYSDEC and EEEPC in order to provide the Contractor with further direction as to soil removal depths. After initial confirmatory sample results failed to meet the SCOs, approximately 180 tons of additional visibly stained soil, located at the southeastern side of SWMU 36 adjacent to AOC 45, was removed at the request of NYSDEC per Field Order 16, dated December 15, 2009. In addition, approximately 72 tons of soil was removed at sample location 008B per Field Order 16a, dated December 28, 2009. During this period, weather conditions continued to deteriorate, causing a large volume of water to accumulate in the excavation (see DR 028, dated December 7, 2009). Due to the contaminated soils encountered within the exclusion zone, all water in the SWMU was pumped directly to the on-site water treatment system. As the Contractor advanced the exclusion zone in a northerly direction toward the ring road, OpTech elected to temporarily suspend operations at SWMU 36 to avoid removing sections of the roadway, which would cut off the SWMU 5 area. It was at this time that ACM-contaminated soil removals at SWMUs 5 and 26 were in progress, and the Contractor elected to begin excavation work at SWMU 3.

After analytical results showed that contamination in the western half of the SWMU had been removed, soil excavations in that area were temporarily halted at 8 feet

BGS. On December 18, 2009, OpTech removed two truckloads of D018 soil from a former pipe trench in the southeast corner of the SWMU leading into the excavation. This visibly stained soil was limited to the immediate trench area. By December 22, 2009, a change in the coloration of soil removed from the northern perimeter of the exclusion zone indicated a change in the extent of contamination there. The depth of excavation in this area had reached 10 feet BGS, and the Contractor collected soil samples for evaluation.

Very little excavation work was performed at SWMU 36 during January 2010. By the end of the month, the only operations being conducted there were the pumping and treatment of groundwater.

On February 5, 2010, the EEEPC PM issued Field Order 23, which made provisions for NYSDEC to review sample analytical results for benzene at the present depth and locations in SWMU 36 before soil removals continued. An initial post-excavation survey was completed on February 11, 2010, for documentation and payment purposes. During this period, backfill from the approved borrow location became available after February 15, 2010, and the Contractor concentrated efforts on completing fill placements at SWMU 5.

Based on the results of a pretreatment sample received on March 3, 2010 (see Appendix E for analytical results), OpTech was given permission to begin discharging water that had accumulated in SWMU 36 directly to the city storm sewer. The Contractor also completed initial backfill placements at SWMU 5 on this date, which resulted soon thereafter in a renewed effort to complete remedial efforts at SWMU 36. On March 18, 2010, additional bottom samples were collected to determine the precise placement of ISCO. The sample results required the Contractor to follow the steps listed in Field Order 30, dated March 19, 2010, including removal of D018 soil at the former pipe trench, collection of documentation sampling, ISCO application, updating the current post-excavation survey, and backfilling. Stained soil (D018) was removed, and the area was re-surveyed prior to the application of ISCO at sample location 008B on March 23, 2010. A documentation sample was collected at the ISCO location after application of ISCO and prior to backfilling.

Final dewatering of the SWMU prior to the placement of backfill was achieved by pumping water directly to the on-site treatment system. SWMU 36 was approved for post-backfill survey on March 29, 2010, per Field Order 31, and the post-backfill survey was completed on April 1, 2010. Approximately 4,042 tons of D018 hazardous soil was removed and disposed of off-site. Final grading, including the disturbed areas of the ring road, were included in the punch list items compiled at Substantial Completion.

7.9.1 ISCO Applications

SWMU 36 was one of two areas (the other was SWMU 35) in the ROD slated for consideration as a candidate for ISCO treatment of residual PAH contamination known to be present below grade. Although examination of post-excavation analytical results showed that there was no residual contamination at the floor of the exclusion zone in excess of the SCOs, the nature of the soils remaining in proximity to the proposed application area was observed to be conducive to the migration of water from the ground surface to the water table below. NYSDEC elected to apply oxidant to two areas of the SWMU based on the results of documentation sampling collected near sample location 008 and from the former pipe trench.

OpTech proposed an "as equal" method for applying the ISCO RegenOx and ORC products. EEEPC requested that OpTech provide a letter from the manufacturer stating that the revised application method proposed by OpTech would result in the precise level of remedial action as that was originally specified in Section 02221 of the project specifications. EEEPC also requested that OpTech provide a statement from Regenesis indicating the required quantities as well as approval of the application method proposed by the Contractor. The requested verifications were subsequently received from the manufacturer, and the ISCO agents were applied according to the modified protocol. (Letters relating to ISCO application are presented in Appendix C.) As OpTech's bid included sufficient oxidant to treat the full area prescribed in the Contract Documents, the corresponding reduction in cost to provide and apply the material was simply credited to the project in Change Order No. 1.

7.9.2 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the extent of contamination present in SWMU 36 was 21% larger than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 3,160 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 4,042 tons.

7.9.3 DUSR Review of Analytical Data

All final confirmatory analytical data for SWMU 36 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the

acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.10 EXCAVATION OF SOILS – AOC 45

AOC 45 encompassed the former Rail Spur, which served the Spaulding Rag House Building and the Former Tank Farm area, and was the seventh area excavated by OpTech under the SSF project. Based on the analytical data presented in the PDI report, contamination targeted in AOC 45 consisted of 2-methylphenol and zinc. There also were exceedances of several non-COCs above the SCOs in all test pits and boreholes in AOC 45, except for A45-BH04. Surface soils down to 2 feet contained staining, black soils, and general fill associated with the rail bed. Non-COCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-CD)pyrene, phenanthrene, and pyrene were also detected at depths ranging from 1 to 8 feet BGS within the AOC.

On November 24, 2009, OpTech began initial soil removals from grade to the proposed limits of excavation for AOC 45 specified in the SSF Contract Documents. Based on topographic information shown on the Contract Drawings, the Engineer also requested OpTech to remove an additional 160 tons of overburden placed on top of AOC 45 by others during previous remedial operations at the site, issuing Field Order 11 on December 2, 2009, to confirm this request. Large piles of debris, including tires, railroad ties, broken concrete, and iron and steel piping were pushed onto AOC 45 by others during above-grade structural demolition work.

When initial confirmatory sample results failed to meet the SCOs, Field Order 17, dated December 15, 2009, was issued requesting additional soil removals to address residual PAHs concentrations above the SCOs. An initial post-excavation survey was completed by the Contractor on January 13, 2010, for documentation and payment purposes, and the expanded areas of contaminated soil were then excavated.

A second round of soil samples were collected on January 27, 2010, including from areas outside the rail foundation walls. Based on the analytical results of this round of sampling, the Contractor was requested to remove additional soil from the areas listed in Field Order 23, dated February 5, 2010. These soils exhibited a black discoloration and a strong petroleum odor and were mixed with equipment and wood debris, which had been pushed into a former coal conveyor pit located outside the original AOC 45 exclusion zone. Dewatering of AOC 45 was achieved by pumping water to the auxiliary carbon treatment system.

All analytical data for AOC 45, including water treatment system sampling, is provided in Appendix E. AOC 45 was approved for final post-backfill survey on March 29, 2010, as per Field Order 31, and the survey was completed on April 1, 2010. Final grading of AOC 45 (except for the expanded area) was completed as a punch list item at Substantial Completion.

7.10.1 Coal Conveyor Pit Debris Removal and Disposal

A former coal conveyor pit, which apparently once housed coal transfer equipment, was discovered during soil remediation activities adjacent to AOC 45. This area was not included in the SSF Contract Documents. OpTech removed all debris from the pit and solidified the approximately 300 gallons of remaining fluid contents with portland cement prior to excavation and disposal. The contents of the pit were then excavated, transported, and disposed of as non-hazardous waste based on sample analytical results.

Under an agreement with the City of Tonawanda, for safety purposes, the excavated area in AOC 45 was originally slated to be backfilled to approximately 4 feet below the top of the remaining rail spur foundation walls; however, removal of the foundations of the aforementioned pit were not a part of the original SSF Contract. In March 2010, the Erie County Department of Environmental Protection (ECDEP), LiRo Engineers, and the City of Tonawanda Engineering Department agreed to have the ERP contractor (Cerone) demolish the pit and OpTech install backfill. A written statement by OpTech regarding the agreement was provided to EEEPC and is presented in Appendix D. This action resulted in the successful closure of AOC 45 and a final post-excavation survey by Shutt on March 2, 2010. At the request of the City of Tonawanda Engineering Department, final grading, including the disturbed areas of the ring road, were not included in the punch list items compiled at Substantial Completion, as the area would be significantly disturbed during subsequent deep foundation removals planned in the ERP remedial contract.

7.10.2 Non-Hazardous Soil Disposal

OpTech both directly loaded trucks and temporarily stockpiled excavated soil and debris from within the exclusion zone and loaded out trucks from each area as the availability of approved haulers permitted. Temporary stockpiles remaining at the end of daily operations were secured with tarps and weights.

All soil and debris removed from AOC 45 was disposed of as non-hazardous waste at the Modern landfill facility in Model City, New York. Approximately 2,880

tons of non-hazardous soil was removed from AOC 45, transported, and disposed of off-site (see Table 8-1).

Bills of lading for non-hazardous waste were imprinted with weight information at the landfill, and copies were returned to OpTech. Truck weight data were reviewed and tabulated by EEEPC for comparison of official manifest weights recorded at the disposal facility with the total weights submitted on the CAPs.

7.10.3 Expansion of the Excavated Area

During the course of excavation and confirmatory sampling, it was determined that the extent of contamination present in AOC 45 was 55% larger than originally shown on the SSF Contract Drawings. Based on procedures outlined in the SSF Contract Documents, where confirmatory sample results exceeded the SCOs, the limits of the excavation were extended outward. This process was repeated until confirmatory sample results met the SCOs. The original volume of contaminated soil was estimated to be 1,290 tons, whereas the final volume of contaminated soil removed from this SWMU was approximately 2,880 tons.

7.10.4 DUSR Review of Analytical Data

All final confirmatory analytical data for AOC 45 were determined to be within acceptable QA limits by Vali-Data. DUSR memorandums were prepared regarding the acceptability of data. Vali-Data DUSR reviews of analytical information collected during soil remediation are presented in Appendix F.

7.11 EXCAVATION OF SOILS – ACM LANDFILL

ACM Landfill is the description used by EEEPC to refer to the expanded remedial area between SWMU 8 and SWMU 26. This area was an extension of the excavation limits of both SWMUs and was listed as such for documentation and payment purposes. Soil removals at the ACM Landfill began on December 10, 2009, after OpTech was requested by EEEPC to perform test pits in the area following the discovery of substantial amounts of ACM-contaminated soil in the northwest corner of SWMU 8. The test pit locations were based on a sketch generated by the Engineer. Test pits were performed on a time-and-material basis by the Contractor in an attempt to define the limits and estimate the quantity of ACM-contaminated soil in the expanded area. The test pits were completed on December 17, 2009. OpTech used a tractor-mounted backhoe to remove soil in each pit location to approximately 10 feet BGS or until suspected ACM-contaminated soil was encountered. Test pit results (see Appendix E) indicated that both ACM- and TSCA/ACM-contaminated soils extended into the area between the SWMUs

at varying depths and into the National Grid (NGrid) transmission line right-of-way (ROW) to the west. (See DR 032 in Appendix I for additional information regarding the test pits.)

OpTech maintained the personnel decontamination station erected prior to ACM removals at SWMU 8 and SWMU 26 for use at the ACM Landfill. All personnel were required to wear appropriate PPE during all phases of investigation and soil removals in compliance with NYSDOL Industrial Code Rule 56 requirements. Third-party ELAP monitoring was provided by Empire and was in effect for each day abatement was in progress. Excavations of ACM-contaminated soil were completed on January 22, 2010, based upon visual confirmation of complete abatement by Empire. Independent third-party ELAP air monitoring coverage was extended to the period when stockpiled ACM-contaminated soil was loaded onto transport trucks by the Contractor under a standby subcontract agreement between Empire and NYSDEC Region 9.

OpTech removed contaminated soil from the ACM Landfill in a generally east to west direction, eventually reaching the eastern ROW limit of the NGrid transmission line. ACM-contaminated soils were partially removed from the ROW; however, soil removal was halted after EEEPC expressed concern over excavations occurring in proximity to the base of several transmission line poles. OpTech was requested to contact NGrid engineering representatives in Buffalo, New York, with regard to the Engineer's concerns. (See DR 049 in Appendix G for additional information regarding the remaining ACM-contaminated soil within the ROW.)

A post-excavation survey was completed on February 17, 2010, and the ACM Landfill was approved for final survey and backfilling on March 11, 2010, in compliance with Field Order 26. Final grading of the ACM Landfill was completed as a Substantial Completion punch list item on April 29, 2010.

Soil removals at the ACM Landfill placed a substantial burden upon the project budget and created the potential to delay the project schedule. Although the Contractor secured additional equipment to compensate for the increased requirement in soil removals, they did not add sufficient personnel to the project to maintain the schedule. This decision ultimately effected a delay in Substantial Completion of the project from April 2, 2010, to April 15, 2010. From a budgetary standpoint, the removal of approximately 3,771 tons of ACM-contaminated soil from the ACM Landfill alone resulted in an impact of just over $500,000 to the project. Although the cost of additional soil removals at the ACM Landfill was partially offset by the elimination of the SWMU 38 Therminol Basement from the project scope of work, it should be noted that NYSDEC recognized the potential for a substantial increase in cost early in the abatement process

and reserved additional funds to cover the cost increase prior to the completion of operations in the affected area. The final impact on the project cost is documented in CO No. 1, which is provided in Appendix H.

7.11.1 Test Pits

OpTech excavated 10 of the 17 requested test pits within the ACM Landfill between SWMU 8 and SWMU 26, in compliance with Field Order 15. This work was performed at the time and material rates established in PCO 004. Seven of the requested pits could not be completed due to the extremely saturated soil conditions, which resulted in the backhoe becoming stuck several times. Each completed pit was excavated to a depth of approximately 10 feet BGS, and the results were observed by Empire, as shown on the SSF Test Pit Map prepared by EEEPC. ACM was encountered at the locations and depths listed in the SSF Test Pit Map and Summary presented in Appendix E.

Test pit investigations related to the ACM Landfill were completed on November 30, 2009. Based on visual observations, it was apparent that Spaulding buried bulk ACM in two main areas, each an extension of either SWMU 8 or SWMU 26. This indicated that the ACM had been landfilled in these locations at different dates; however, as ACM removals progressed, it became apparent that Spaulding had not limited ACM disposals to just one or two locations at this site. Significant amounts of bulk ACM were encountered by the Contractor well beyond the original perimeters of either SWMU and eventually extended the landfill well into the NGrid ROW, as previously mentioned. At the request of NYSDEC, OpTech submitted signed Daily Progress Reports (DPR) for work performed during Test Pit and ACM excavations, per PCO 006, as these tasks were not required by the original scope of work for the Spaulding project. Each report submitted by the Contractor was reviewed and initialed by the Engineer for verification of work performed on a time-and-materials basis.

7.11.2 ACM-Contaminated Soil Disposal

ACM-contaminated soils in the ACM Landfill were excavated, segregated, transported, and disposed of as non-hazardous soil contaminated with friable asbestos at the Modern, Inc., facility in Model City, New York, or as TSCA PCB/ACM soil at either the Minerva, Inc., landfill in Ohio or the Waste Management landfill facility in Model City, New York, separately from other contaminated soil from the Spaulding Composites SSF Site. Trucks transporting ACM material were lined with protective poly sheeting prior to loading.

As required by the Contract Documents, OpTech erected a decontamination station at SWMU 8 for personnel working in the exclusion zone. A NYSDOL

representative visited the Spaulding Composites SSF Site during ACM removals and found the procedures in effect to be in compliance with current regulations under 12 NYCRR Part 56. This decontamination station was maintained by the Contractor for use by personnel working at the ACM-contaminated soil removals at SWMU 26 and the ACM Landfill areas.

7.11.3 ACM ELAP Air Monitoring

Independent third-party ACM air monitoring at the ACM landfill was provided by Empire under an existing standby contract with NYSDEC Region 9. Empire personnel maintained a continuous air sampling log for each day that asbestos removals took place. In addition to reviewing air quality during ACM removals with EEEPC site representatives, Empire prepared and submitted a monitoring report at the conclusion of ACM work at the ACM Landfill. The ACM air sampling logs were provided as a part of the monitoring report and are presented in Appendix E.

7.11.4 Summary of Remaining ACM Contamination

OpTech completely abated ACM-contaminated soil encountered within each of the SWMUs identified in the Contract Documents; however, as removals progressed in a westerly direction at the ACM Landfill, buried ACM was identified within an established high-voltage transmission line ROW owned by NGrid. EEEPC advised the Contractor to immediately contact the utility with regard to work within the ROW and, in the interim, to proceed with ACM removals in the area outside the ROW boundary. NGrid representatives inspected conditions at the work area on January 8, 2010, and were advised of the presence of suspected ACM contamination within the ROW. In response, NGrid issued a directive to the Contractor on January 15, 2010, which stipulated, in part, that "excavation shall be 25'or more from structures. Where existing excavation is already done, it cannot come closer." In addition, the utility requested that "fill and compaction within 25'of the poles, as showing on 01/08/10, will be done within one month."

Due to the restrictions on further abatement work imposed on the Contractor by NGrid, OpTech terminated excavation within the ROW and backfilled exposed boundary areas as requested. As a result, it was not possible to quantify or abate the full extent of contaminated soil within the ROW. Suspected ACM-contaminated soil remains in and around the base of the transmission line support poles within the ROW nearest the ACM Landfill limits, as indicated on as-built drawings prepared by the Contractor and included in Appendix I.

8.0 REMEDIAL PERFORMANCE

Remedial performance was evaluated through confirmation sampling performed in compliance with analytical QA/QC requirements established in the project specifications, which were later amended by Field Order 7 to address new SCO guidance published by NYSDEC regarding PCBs. Confirmation samples were collected and analyzed after excavation limits had been reached to determine whether the SCOs had been met. Confirmation samples were collected at pre-determined intervals, based on the area and depth of the excavation, in compliance with the specifications for each SWMU. Excavation bottom confirmatory samples were collected at evenly spaced horizontal intervals at a rate of about one sample per 2,500 square feet of excavated area, while excavation sidewall confirmatory samples were collected at a rate of about one sample per 50 linear feet of sidewall. For smaller excavations in SWMU 3 and SWMU 8, the sampling rate was reduced to approximately one bottom sample per 900 square feet of excavated area and one sidewall sample per 30 linear feet of sidewall.

Confirmatory grab samples were collected from the bottom of each excavation, while confirmatory composite samples were collected from the sidewalls of each excavation. Sidewall samples were initially a composite of the entire depth of the excavation. However, as previously noted, sampling procedures were amended under Field Order 19 so that two composite samples were taken from each sidewall location: one sample was collected from 0 to 2 feet BGS, and another sample was collected from 2 feet BGS to the bottom of the excavation. All locations sampled prior to this change in protocol were re-sampled in accordance with Field Order 19 as required.

Sampling locations were determined by the EEEPC Project Engineer or site representative prior to collection by the OpTech SSO. In the event of an SCO exceedance, project specifications called for the sample location to be resampled within 48 hours.

Analytical data related to hexavalent chromium contamination levels in soils removed from the Spaulding Composites SSF Site were monitored during the course of the project. EEEPC maintained a customized report summary for NYSDEC project management to provide a condensed reference specific to contaminant detections related to the SCOs for the project. Based upon confirmatory sample analytical data, NYSDEC

concluded that hexavalent chromium analytical results were non-detect and did not exceed the total chromium SCOs in most or all of the confirmatory samples and, therefore, hexavalent chromium samples would no longer be collected after February 2010. NYSDEC also concluded that, following additional excavation to address residual contamination identified in the initial confirmatory samples, the second round of confirmatory samples would be analyzed only for the COCs. Although NYSDEC and EEEPC continued to monitor all analytical data, EEEPC modified all custom report summaries to reflect NYSDEC's modifications.

In December 2009, OpTech switched laboratories from TestAmerica, Inc., to Adirondack Environmental Services, Inc. (Adirondack), located in Albany, New York. This change was made because TestAmerica repeatedly failed to meet the required turn-around times listed in the project specifications, resulting in unanticipated delays in the project schedule. In addition, TestAmerica did not provide timely notice of inaccurate analytical data, resulting in the potential for premature approval and backfill placement at SWMU 36. The change in laboratories resulted in an immediate restoration of TATs and the elimination of revisions to previously submitted data. Adirondack was subsequently requested to perform an analysis of the additional samples collected after the previously noted revision of methodology under Field Order 19. The analytical data packages and accompanying sample location figures for each area are provided in Appendix E.

8.1 REMEDIAL ACTIONS

8.1.1 Transport and Disposal of Project-Generated Waste Streams

Contaminated soil was excavated and transported to the appropriate off-site repository from eleven on-site locations. The as-built drawings prepared by Shutt identify the location and extent of the original SWMU and AOC boundaries and areas where excavations were performed. Topographical surveys conducted prior to soil removals, after soil removals, and following backfill placement present overall cut-and-fill quantities for remedial activities at the site and are included in Appendix I.

OpTech removed approximately 46,420 pounds of non-hazardous concrete during soil removals at the various SWMUs and AOCs remediated as part of the SSF project. The concrete was broken up and transported to the Modern landfill facility in Model City, New York. All waste characterization sample results are provided in Appendix J.

OpTech utilized the following off-site repositories for deposition of all hazardous and non-hazardous soils generated at the Spaulding site:

- Minerva Enterprises, Inc., Waynesburg, OH (ACM/TSCA soil)
- Waste Management Model City (Lewiston), NY (TSCA soil)
- CycleChem, Inc., Lewisberry, PA (hazardous drums)
- Modern Corporation Model City (Lewiston), NY (non-hazardous soil and drum carcasses)
- Waste Management, Chaffee, NY (non-hazardous soil)
- Biogenie Corporation, Montreal, CA (D018 hazardous soil)

OpTech utilized the following private haulers to transport all hazardous and non-hazardous soils generated at the Spaulding site:

- Page Transportation, Inc. (hazardous waste)
- Price Trucking (hazardous waste)
- B. Pariso Transport, Inc. (non-hazardous waste)
- LCA Transportation (non-hazardous waste)
- Mallare Enterprises, Inc. (non-hazardous waste)

Manifests and bills of lading are grouped by month and provided in Appendix K. Letters from OpTech to disposal facility owners and acceptance letters from disposal facility owners are provided in Appendix J.

8.1.2 Waste Profiles for Disposal Facility Acceptance

Prior to performing bulk soil excavations, OpTech collected waste characterization samples from test pits at each SWMU and AOC appearing on the contract drawings except for SWMU 38, which was removed from the project scope after bids were received. Each sample was analyzed for the required target contaminants, including PCBs, TCLP VOCs, TCLP sVOCs, TCLP metals, ignitability, corrosivity, and reactivity. Matrix spike/matrix spike duplicate (MS/MSD) samples were also collected at one SWMU. Based on the sample results, 10 waste profiles were submitted to and approved by the disposal facilities. Nine of the waste profiles pertained to contaminated soils. One waste profile pertained to the disposal of a UST that was excavated from SWMU 26. The waste profiles and the disposal facilities they were submitted to are presented below:

- Direct landfill of non-hazardous soil, Modern Corporation
- Direct landfill of non-hazardous soil and ACM, Modern Corporation
- Direct landfill of non-hazardous soil with drum carcasses, Modern Corporation
- Hazardous drums, CycleChem, Inc.
- Non-hazardous ACM soil, Minerva Enterprises, Inc.
- UST Removal, Waste Management (Chaffee)
- Hazardous TSCA (PCB) soil, Waste Management (Model City)
- Hazardous TSCA (PCB) and TSCA/ACM soil, Waste Management (Model City)
- D018 hazardous soil, Waste Management (Model City)
- D018 hazardous soil, Biogenie Corporation, Montreal, Canada

Section 8.2.5 provides additional details of waste characterization sampling.

8.1.3 Volumes of Waste Transported, by Specific Waste Streams

The total quantity of contaminated soils removed from the site was 35,253 tons. The time frame for the removal process was from November 2009 until May 2010. Table 3-1 shows the total quantities of each bid item unit cost (UC) of material removed from the site. Bid items were defined as the excavation, transportation, and off-site disposal of:

UC-3	Hazardous Waste
UC-4	TSCA Regulated PCB Contaminated Waste without TCLP metals
UC-5	TSCA Regulated PCB Contaminated Waste with TCLP Metals
UC-6	Non-Hazardous Waste
UC-7	D018 Waste
UC-8	Asbestos Containing Material
UC-9	55-Gallon Waste Drums Hazardous Waste
UC-10	55-Gallon Waste Drums Non-Hazardous Waste

Due to restrictions on ACM (UC-8) quantities in the SSF Contract Document, additional unit cost items were totaled for TSCA-regulated PCB-contaminated waste with ACM per PCO 005, and ACM per PCO 006.

Table 8-1 Spaulding Composites SSF Site - Total Volume of Waste Removed, by Area and Type

Area	Actual Volume (tons)								
	TSCA without TCLP Metal UC-4	TSCA with TCLP Metal UC-5	Non Haz Soil UC-6	D018 Soil UC-7	ACM Soil	TSCA/ ACM Soil per PCO 5	ACM Soil per PCO 6	UC-9	UC-10
Bid Quantity	2,500	500	20,000	4,500	100	250	0	250	150
ACM Landfill	0	0	0	0	0	0	3,771	0	0
SWMU 3	0	0	302	0	0	0	0	0	0
SWMU 5	0	0	5,509	0	0	0	0	0	0
SWMU 7	52	0	6,209	0	1,922	0	25	4	998
SWMU 8	0	0	0	0	100	137	367	0	0
SWMU 13	409	0	3,586	0	0	0	0	0	0
SWMU 14	0	0	1,349	0	0	0	0	0	0
SWMU 26	775	0	635	0	0	662	159	0	0
SWMU 35	0	0	828	0	0	0	0	0	0
SWMU 36	0	0	0	4,042	0	0	0	0	0
AOC 45	0	0	2,880	0	0	0	0	0	0
TOTAL	**1,236**	**0**	**21,297**	**4,042**	**2,022**	**800**	**4,321**	**4**	**998**

Key:
ACM = Asbestos-containing material
D018 = USEPA Hazardous Waste Number for Benzene
PCO = Potential Change Order
TCLP = Toxicity Characteristic Leaching Procedure
TSCA = Toxic Substances Control Act
UC = Unit cost

8.1.4 Certificates of Disposal and/or Destruction

Certificates of Disposal and/or Destruction are included in Appendix J.

8.2 DOCUMENTATION SAMPLING

8.2.1 Water Discharge Monitoring

OpTech collected samples of the water that accumulated in the excavations at the Spaulding Composites SSF Site. The samples were tested for COCs by TestAmerica or Adirondack within the five-day requirement period prior to pumping or discharging the water. The sample analytical results indicated that the contaminant concentrations in water in the excavation areas were below the Remedial Action Objectives (RAOs) for on-site discharge according to Section 02140, Appendix A, of the SSF Contract Documents. The water was discharged to the storm sewer on Wheeler Street or to ditches adjacent to excavated SWMUs, as shown on record drawings prepared for the project. The sewer along Wheeler Street was the designated discharge location by arrangement with the City of Tonawanda Engineering Department. Ditches used to channel water discharged from either SWMU 13 or SWMU 26 were protected with erosion control devices and sampled

for COC's in accordance with Section 02140 prior to release to prevent cross contamination. The ditch adjacent to SWMU 13 was subsequently regraded to improve flow after remediation of all contaminated sediment. The analytical results for all water samples are included in Appendix E.

8.2.2 Confirmation Documentation Sampling for Area Closure

Confirmatory soil samples were collected and analyzed as required by Specification Section 01425. The Contractor collected confirmatory samples at post-excavation locations as described in the specifications and as directed by the Engineer to confirm the extent of contamination and to enable the Engineer to verify the limits of excavation for payment purposes. The specifications required the collection of approximately 120 sidewall samples and 50 bottom samples.

Because excavation limits were extended in each target area shown on the SSF Contract Drawings, additional confirmatory sampling was required under Bid Items UC-17 (PCB Analysis) and UC-22 (Metals). The increase in these sampling costs was offset by a decrease in the number of samples collected under UC-18 (SVOCs), UC-19 (SVOC/TCLP), UC-20 (VOC), UC-21 (VOC/TCLP), UC-23 (Metals/TCLP) and UC-24 (ACM). Upon completion of excavation work, all additional sampling locations were documented on hand-marked sample location maps, and the analytical results were used to verify that remediation goals had been achieved. Documentation samples were collected in SWMU 14, where foundation removals were pending, and in SWMU 26, where RAOs had not been achieved due to restrictions on ACM removals. These areas were subject to further remediation under the ERP Contract.

8.2.3 Pre-and Post-Sampling for Project Completion

Pre- and post-remediation samples collected by OpTech were analyzed by TestAmerica or Adirondack to confirm that project RAOs had been met. The presence and locations of targeted contaminants was documented in previous remedial investigations and in waste characterization samples collected by OpTech prior to excavation in each SWMU. When the analytical results compiled by TestAmerica or Adirondack indicated that contaminant levels had been reduced to levels below the SCOs and that final excavation limits had been achieved, Shutt performed post-excavation surveys to document the extent of soil removals for each excavation. Additional post-remediation documentation sampling was performed on the soils under the on-site water treatment system and decontamination pad prior to their demobilization and removal.

8.2.4 Waste Characterization Sampling

Waste profiles developed by OpTech for submittal to and approval by landfill facilities were based on pre-excavation sampling performed by the Contractor at each SWMU and AOC. Waste profiles for excavated soil and materials transported to disposal facilities and waste characterization analytical results are presented in Appendix J.

8.2.5 Contaminated Soil Characterization

Each SWMU and AOC was surveyed by Shutt and staked out by OpTech prior to characterization sampling. Hazardous and non-hazardous areas were delineated based on results presented in the PDI report and other limited site data included with the bid documents. Samples were collected with a backhoe bucket in accordance with OpTech's sampling plan. At each sampling location, suspected contaminated soil was placed in a stainless steel pan, homogenized, and then transferred to 4- or 8-ounce amber jars. Following sampling, the bucket was decontaminated with distilled water and hexane. Potentially contaminated hexane was poured onto an absorbent pad; the bucket was wiped out with the absorbent pad, and the pads were then placed into a plastic garbage bag for disposal as contaminated waste by the Contractor.

Wm. Schutt surveyed boundaries at SWMUs 8, 14, 13, and 26 on October 15, 2009; however, highly contaminated areas were not fully delineated at the time. The Contractor precisely located and sampled these areas for classification purposes after initial characterization sampling was conducted. The following samples were collected:

- In SWMU 14, a 4-point composite sample was collected from the non-hazardous area at 2 to 5 feet BGS;
- In SWMU 8, a 2-point composite sample was collected from the non-hazardous area at 0 to 2 feet BGS;
- In SWMU 8, a 1-point sample was collected in the PCB-contaminated area at 2.5 feet BGS;
- In SWMU 26, a 4-point composite sample was collected along the eastern edge of the SWMU at 5 feet BGS, with about 15 feet of distance between the sample points;
- In SWMU 26, a 2-point composite sample was collected in the western portion of the hazardous area;
- In SWMU 13, a 6-point composite sample was collected along the North edge of the non-hazardous area; and

- In SWMU 13, a 1-point sample was collected in the hazardous area of S13TP01, which identified the location of a test pit performed during sampling for the EEEPC PDI report.

Wm. Schutt surveyed and flagged TSCA/PCB soil boundaries in SWMU 7, and OpTech subsequently collected a 10-point composite sample on November 2, 2009.

Wm. Schutt surveyed and staked out the remaining boundaries at SWMUs 3, 5, 35, and 36 and AOC 45 on November 3, 2009. Sample maps included in the waste disposal applications show that sampling was performed on November 13, 2009, in SWMUs 3 and 5 and AOC 45. Two-point composite samples were collected from both SWMU 3 and AOC 45. Two 4-point composite samples were collected from SWMU 5.

8.2.6 Drum Characterization

Samples of the drummed material in SWMU 7 were collected and submitted for waste characterization sampling prior to transportation and disposal. Drum sample results are provided in Appendix E.

8.2.7 Concrete Characterization

Pieces of concrete collected from SWMUs 13 and 36 were submitted for waste characterization sampling prior to transportation and disposal.

8.2.8 Additional Analytical Reporting

The SSF Contract Documents specified the anticipated number of samples required to provide adequate coverage for COCs at each of the SWMUs and AOCs. However, an expansion of the excavation limits at one or more SWMUs, based on the results of confirmatory sample analysis as well as observations of stained and discolored areas, resulted in the collection of more samples than originally specified under Section 01425 of the project specifications. In all cases, the costs to perform additional sampling were increased under Change Order No. 1 from those originally submitted by OpTech in their bid.

8.2.9 Analytical QA/QC Compliance

OpTech submitted the qualifications of TestAmerica and Adirondack to perform laboratory testing services for the project. These submittals were reviewed and verified for compliance with the requirements of the project specifications by the Engineer.

8.2.10 DUSR Review of Analytical Data

OpTech selected Vali-Data to prepare the DUSRs for the Analytical Category B deliverables under the Spaulding SSF Contract. Category B deliverables were required for all soils analyses for the project, including waste characterization and confirmation analytical results. Vali-Data certified that the data packages for the samples collected at the Spaulding Composites SSF Site contained all required deliverables consistent with the requirements outlined in Specification Section 01425. The sample-specific analyses performed included VOCs, SVOCs, PCBs, and TCLP metals. All analyses were performed using USEPA Standard Methods SW-846, 8082, or 8270 in compliance with the prescriptive requirements of the standards.

Vali-Data further certified that the data was validated according to the protocols and QC requirements of the analytical methods detailed in the Contractor's Quality Assurance Project Plan (QAPP) and by the project specifications. The reviewer noted no discrepancies in the chains of custody for sample handling, preservation, and transportation to the laboratory as stipulated for the designated samples. In addition, Vali-Data reviewed the following items for the DUSR:

- Sample data package narrative and deliverables compliance;
- Holding times;
- Surrogate compound recoveries;
- Matrix spike/Matrix spike duplicate (MS/MSD) recovery summary forms;
- Laboratory check sample/laboratory check duplicate (LCS/LCSD) recovery summary forms;
- Positive results reported for method blanks;
- Gas chromatography (GC)/mass spectroscopy (MS) tuning summary forms;
- Initial and continuing calibration summaries; and
- Internal standard area and retention time summary forms.

DUSRs were submitted to EEEPC as they became available from the Contractor. All DUSR submittals were delivered to EEEPC and reviewed by October 4, 2010. Electronic (.pdf) copies of the DUSRs prepared by Vali-Data are provided in Appendix F.

8.3 PROJECT AREA RESTORATION

Upon completion of soil remediation to the limits specified by the SSF Contract Documents, additional areas beyond the initial boundaries with contamination above the SCOs were encountered in several SWMUs. This additional soil was also removed from the excavated area(s) upon confirmation of required SCOs and then backfilled with approved borrow material. During winter conditions, ice and frozen soil removed from the excavations after remediation but prior to backfill placement were pushed into piles by the Contractor. When warmer conditions permitted, these soils were distributed with backfill, top-dressed, and graded as required under the Substantial Completion checklist.

8.3.1 Backfill Placement at Excavated Areas

Material used to backfill excavated areas consisted of clean soil from a pre-approved source, Wehrle Quarry Plant No. 23, operated by Buffalo Crushed Stone, Inc., in Lancaster, New York. The backfill material was described as Dirt-Fill Product ID 11-954. In accordance with Section 02920 of the Specifications, the full range of Target Compound List (TCL) analyses was conducted on all fill material to verify that it was acceptable for use and would not recontaminate the site. The backfill material was also tested for physical parameters, including particle size, soil classification, and moisture content. OpTech submitted the analytical results and identified the locations of borrow sources in a shop drawing submittal. EEEPC reviewed and approved the submittal as being in compliance with the SSF Contract Documents on November 16, 2010. Compaction requirements for backfill were waived at the request of NYSDEC under an agreement between the Erie County DEP, the City of Tonawanda Engineering Department, and OpTech. Settling in filled areas was addressed by OpTech during completion of punch list items. Backfill tickets are presented in Appendix K.

8.3.2 Topsoil, Mulch, and Seed

Specification Section 02920 established requirements for the installation and compaction of clean fill materials and restoration of the SSF project site. OpTech submitted the name and location of each proposed source of topsoil material, along with samples for the Engineer's approval, in compliance with Section 01425 - Confirmatory Sampling. The EEEPC PM visited the proposed topsoil source and observed the collection of a representative sample of topsoil material on March 11, 2010. Topsoil submittals, including sieve and grain size analysis provided by CME Laboratories in Horseheads, New York, were reviewed and approved by EEEPC on April 26, 2010.

Topsoil was provided by Rammer Nurseries, Inc., from a single source located off Pleasant View Drive in Lancaster, New York. The pH of the soil was 7.0 (neutral);

therefore, limestone amendment of the soil was not required. The sieve analysis results fell within the bid specifications, and the organic content was 6.7% by weight. The clay percentage was 28%, higher than the specified 15%.

Mulch materials were provided by Thieles' CountryMax Lawn and Garden Center in Tonawanda, New York. The materials consisted of 300 bales of barley straw that had been certified by the supplier as being free of noxious weed, mold, and other objectionable materials.

The seed mixture provided by OpTech was obtained from Preferred Seed, Inc., of Buffalo, New York. The seed was a mix of 30% timothy grass, 20% clover, 40% perennial ryegrass, and 10% annual ryegrass, as required by the project specification. All seed bags delivered to the City of Tonawanda Maintenance Department were documented by the EEEPC site representative.

At the request of the City of Tonawanda Engineering Department, topsoil slated to be placed over backfilled areas was stockpiled in the amount required to cover all areas disturbed during soil remediation activities by the Contractor. These areas included any additional expanded excavated area over and above the 14,000-square-foot total bid value specified at the direction of NYSDEC. OpTech stockpiled over 3,849 tons of topsoil at the site and coordinated topsoil deliveries with Cerone to offload materials in one of three different locations, as requested by LiRo Engineers. The primary bulk stockpile location was just north of SWMU 13, with smaller amounts deposited in both SWMU 5 and SWMU 26.

EEEPC monitored topsoil, mulch, seed, and fertilizer deliveries with respect to quality, moisture content, and tonnage as required. Topsoil and mulch deliveries were received at the project site; seed and fertilizer were shipped to the City of Tonawanda Maintenance Department for safe storage until ERP site restoration work was completed. Topsoil, mulch, seed, and fertilizer delivery tickets, including EEEPC's topsoil delivery log, are presented in Appendix K.

8.3.3 Demobilization of Equipment and Support Facilities

Site services provided by the Contractor were terminated upon removal of the Engineer's and Contractor's office trailers from the site on April 15, 2010. This was 3 days past the date of April 12, 2010, which appeared on the original project schedule submitted by OpTech and approved by EEEPC on October 4, 2009. Although the office complex was removed from the site, it is important to note that both EEEPC and OpTech personnel remained on site until final completion of all construction activities was achieved by the Contractor on Friday, May 5, 2010.

Copies of Substantial and Final Completion documentation are presented in Appendix L.

8.4 PROJECT COMPLETION

8.4.1 Substantial Completion

Section Vlll 13.6 of the General Conditions provided requirements for Substantial Completion under the terms of the SSF Contract. When the Contractor "considered all or part of the work ready for its intended use, the Contractor shall notify Department [NYSDEC] and Engineer in writing that the work, or specified part thereof, is substantially complete" and shall "request that the Engineer issue a Certificate of Substantial Completion for the Work." Within a reasonable time thereafter, not to exceed 30 days, NYSDEC, the Engineer, and the Contractor "shall make an inspection of the Work" to determine the status of completion.

Substantial Completion inspection was requested by OpTech on April 14, 2010, and EEEPC subsequently scheduled an inspection with representatives of NYSDEC, OpTech, and EEEPC. The inspection was performed on April 21, 2010. While the Substantial Completion inspection indicated that the field effort was substantially complete, a number of outstanding, critical project submittal items still needed to be provided before Final Project Completion could be granted. In a letter dated April 27, 2010, OpTech was informed by NYSDEC that the date of Substantial Completion was determined to be April 15, 2010, and was provided with the Certificate of Substantial Completion. Appended to the April 27 letter was a punch-list of remaining work items, including final grading of various areas; completion of backfill in SWMU 13; procurement and transfer of topsoil, seed, fertilizer, and mulch to the City of Tonawanda; ULSD Certification; and all remaining project submittals. Upon acceptance of the punchlist, the Contractor completed all remedial work and removed all equipment and materials, except those required for stockpiling topsoil, by April 15, 2010. Letters pertaining to Substantial Completion are included in Appendix L.

8.4.2 Final Completion

Section Vlll 13.9 of the General Conditions provided requirements for Final Completion under the terms of the SSF Contract, stating that, "Upon written notice from the Contractor that the entire work or an agreed portion thereof is complete, Engineer shall make a final inspection with the Department and Contractor and will notify the Contractor in writing of all particulars in which this inspection reveals that the Work is

incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies."

EEEPC, in conjunction with NYSDEC, prepared a Punch list of Work Items to be Completed and Estimate of Cost Value for Final Completion on April 27, 2010. In a letter dated May 11, 2010, OpTech was notified by NYSDEC that the date of Final Completion was determined to be May 5, 2010, and that OpTech could submit a Payment Request for any remaining costs and for release of retainage associated with the original SSF Contract amount. OpTech then prepared and submitted CAPs 7 and 8 requesting final payment of project costs applicable to Change Order No. 1; however, due to the lack of state budget approval, Change Order No. 1 was not executed by the New York State Office of State Comptroller (NYSOSC) until August 24, 2010. NYSDEC subsequently approved and processed CAP 7 on September 27, 2010.

The Final Completion Checklist items were essentially completed by September 15, 2010; however, payment issues with several subcontractors were not resolved until November 26, 2010. To the best of EEEPC's knowledge, no formal liens were filed against the project; however, at the time of this writing, NYSDEC had not received the required Final Payment Release and Payment Affidavit from OpTech.

Letters pertaining to Final Completion are included in Appendix L.

8.5 CHANGES TO THE CONTRACT AND PROJECT ISSUES

8.5.1 Changes to the Project Scope

Major revisions to the SSF project scope of work are listed in the following subsections. For a detailed list and description of all scope revisions, refer to Change Order No. 1, which is included in Appendix H.

8.5.1.1 Elimination of SWMU 38

The SSF Contract requirement "Demolition and Remediation of SWMU 38 – Former Therminol Basement" was eliminated under Addendum 2 to the SSF Contract Documents. This work was completed by OpTech under an existing State Standby Contract administered by NYSDEC Region 9.

8.5.1.2 Expansion of ACM-Contaminated Soil Removals

The amount of ACM-contaminated soil encountered during soil remediation efforts at SWMUs 8 and 26 resulted in a substantial increase in the overall cost of the SSF Contract.

8.5.1.3 Changes to the Project Schedule

The original SSF Contract time was 210 calendar days to final completion, with a Notice to Proceed (NTP) date of October 5, 2009, and a completion date of May 2, 2010. Construction delays in the project schedule were incurred due to the increase in excavated area.

Change Order No. 1 allowed 13 additional calendar days to the project schedule at no increase in contract cost, including:

- Two days for construction of a decontamination station at SWMU 7;
- Two days for additional excavation of PCB soils without TCLP metals;
- One day for increased excavation and disposal of non-hazardous waste;
- Six days for increased excavation and disposal of ACM; and
- Two days for increased placement of clean fill material.

The final SSF Contract time was 223 calendar days to final completion, with a Substantial Completion date of April 15, 2010, and a completion date of May 15, 2010.

8.5.2 Change Order No. 1

A single change order was prepared by EEEPC and subsequently executed during completion of the remediation, for a total of $187,793.14, or 0.067% of OpTech's original bid. Changed conditions or additional work necessitating the change order have been discussed throughout this report. A summary of Change Order No. 1 is provided in Table 8-2.

The final project cost, including Change Order No. 1 and all unit quantity adjustments, totaled $2,971,483.14. All revisions to the project scope are documented in Change Order No. 1, which is presented in Appendix H.

Table 8-2 Spaulding Composites SSF Site Project Change Order No. 1 Summary

Change Order	Date Issued	Changes	Value

1	June 30, 2010	■ Site Services
		■ Health and Safety
		■ Excavation, Transportation and Off-site Disposal of :
		  ■ Hazardous Waste
		  ■ TSCA-regulated PCB Soils without TCLP Metals
		  ■ TSCA Soils with TCLP Metals
		  ■ Non-Hazardous Waste
		  ■ D018 (Benzene Contaminated) Listed Hazardous Waste
		  ■ Hazardous 55-Gallon Waste Drums
		  ■ Non-Hazardous 55-Gallon Waste Drums
		  ■ Non-Hazardous Concrete
		  ■ Hazardous Concrete
		  ■ TSCA/ACM
		  ■ ACM
		■ Monitoring Well Decommissioning
		■ SWMU 35 and SWMU 36 Excavation Bottom ISCO and Oxygen Donor Treatment
		■ Soil Sampling
		  ■ PCB Analysis with 24-Hour TAT
		  ■ SVOC Analysis with 24-Hour TAT
		  ■ SVOC/TCLP Analysis with 7-Day TAT
		  ■ VOC Analysis with 24-Hour TAT
		  ■ VOC/TCLP Analysis with 7-Day TAT
		  ■ Metals/TCLP Analysis with 7-Day TAT
		  ■ Asbestos Analysis
		  ■ Metals Analysis with 24-Hour TAT
		  ■ Metals (Hexavalent Chromium) Analysis with 24-Hour TAT
		■ Site Preparation
		  ■ Field Office Toilet
		  ■ ACM Decontamination Station @ SWMU 7
		  ■ ACM Test Pits
		■ Site Services – Additional Site Surveys
		■ Clean Fill Material
		■ Final Grading, Topsoil, Seeding, and Mulch
			$187,793.14

8.5.3 Contract Quantities and Costs

The total cost of several unit-cost bid items changed due to changes in schedule and quantity, including excavation and disposal of waste types not previously identified in the Contract Documents, sampling and monitoring, and revisions to well removal requirements. A comparison of OpTech's bid with the estimated bid quantities versus the actual quantities and cost of those bid items that changed is presented in Table 8-3.

Table 8-3 Spaulding Composites SSF Site Estimated vs. Actual Quantities and Cost

Bid Payment Item No.	Bid Item Description	Estimated Quantity	Estimated Total Cost	Actual Quantity	Actual Total Cost
UC-1	Site Services	180 Days	$165,690.00	169	$155,564
UC-2	Health and Safety Services	120 Days	$72,000.00	119	$71,400
UC-3	Excavate/Transport Off-Site/Dispose Hazardous Waste	1,500 Tons	$161,400.00	1,500 tons	$0.00
UC-4	Excavate/Transport Off-Site/Dispose Hazardous, TSCA- Regulated PCB-Contaminated Waste Without TCLP Metals	2,500 Tons	$296,250.00	1,236 tons	$94,279.78
UC-5	Excavate/Transport Off-Site/Dispose Hazardous, TSCA- Regulated PCB-Contaminated Waste With TCLP Metals	500 Tons	$106,500.00	0 tons	$106,500.00
UC-6	Excavate/Transport Off-Site/Dispose Non-Hazardous Waste	20,000 Tons	$635,000.00	21,764 tons	$689,158.20
UC-7	Excavate/Transport Off-Site/Dispose D018 Waste	4,500 Tons	$486,000.00	4,526.83 tons	$489,092.04
UC-8	Excavate/Transport Off-Site/Dispose ACM (Asbestos Containing Material)	100 Tons	$12,500.00	2,022 tons	$ 165,583.14
UC-9	Excavate/Transport Off-Site/Dispose 55-Gallon Waste Drums - Hazardous Waste	250 Drums	$64,000.00	4 Drums	$1.024.00
UC-10	Excavate/Transport Off-Site/Dispose 55-Gallon Waste Drums - Non-Hazardous Waste	150 Drums	$11,700.00	998 Drums	$81,120.00
UC-11	Demolish/Transport Off-Site/Dispose Concrete Non-Hazardous	1,750 Tons	$35,000.00	109.73	$2,194.60

Table 8-3 Spaulding Composites SSF Site Estimated vs. Actual Quantities and Cost

Bid Payment Item No.	Bid Item Description	Estimated Quantity	Estimated Total Cost	Actual Quantity	Actual Total Cost
UC-12	Demolish/Transport Off-Site/Dispose Concrete – Hazardous	150 Tons	$18,300.00	0 Tons	$0.00
UC-13	Monitoring Well Decommissioning	140 LF	$3,780.00	60 LF	$1,620.00
UC-14	SWMU 35/SWMU 36 Excavation Bottom ISCO and Oxygen Donor Treatment	12,000 SF	$82,200.00	1,095 SF	$7,501.91
UC-15	Clean Fill	17,000 CY	$320,450.00	17,000 CY	$320,450.00
UC-16	Final Grading, Topsoil, Seeding	14,000 SY	$66,500.00	16,097.3 SY	$91,804.55
UC-17	Soil Sampling/PCB Analysis (24-Hr. TAT)	200 Each	$18,400.00	248 Each	$39,770.00
UC-18	Soil Sampling/SVOC Analysis (24-Hr. TAT)	200 Each	$46,550.00	238 Each	$54,588.90
UC-19	Soil Sampling/SVOC TCLP Analysis (7-Day TAT)	40 Each	$8,430.00	46 Each	$9,694.50
UC-20	Soil Sampling/VOC Analysis (24 Hr. TAT)	200 Each	$24,600.00	237 Each	$28,581.20
UC-21	Soil Sampling / VOC TCLP Analysis (7 Day TAT)	40 Each	$5,140.00	34 Each	$4,639.00
UC-22	Soil Sampling / Metals Analysis (24 Hr. TAT)	200 Each	$34,000.00	234 Each	$39,193.50
UC-23	Soil Sampling / Metals TCLP Analysis (7 Day TAT)	40 Each	$5,140.00	34 Each	$4,639.00
UC-24	Asbestos Analysis (24 Hr. TAT)	30 Each	$660.00	2 Each	$44.00
LS-1	Site Preparation (Limited to 5% of Total Bid)	1 LS	$86,000.00	1 LS	$93,678.17

Key:
CY = Cubic yards
LF = Linear feet
LS = Lump sum
SF = Square feet
SY = Square yards
TAT = turnaround time

8.5.4 Contractor Payments

OpTech submitted eight CAPs, including a final release of retention (pending) in accordance with the SSF Contract Documents. EEEPC evaluated the accuracy of each CAP for quantities and percentage of completion of each individual bid item and change order item prior to approval and reviewed each CAP for Contractor errors. When errors were encountered, the EEEPC PM met with the Contractor to discuss the discrepancy and

requested the Contractor to revise and resubmit the request. After the CAP was accepted and recommended for payment by EEEPC, each CAP was submitted to NYSDEC for processing through the NYSDEC PM and the NYSOSC. Copies of approved CAPs submitted to NYSDEC for approval as of the time of this report are included in Appendix M.

Table 8-4 Spaulding Composites SSF Site CAP Payments

CAP	Amount	Date Submitted
1	$73,007.74	11/11/09
2	$376,811.68	12/11/09
3	$753,902.61	01/14/10
4	$578,174.79	02/22/10
5	$278,641.83	03/29/10
6	$489,401.60	04/18/10
7	$232,749.75	07/21/10
8	$1,000.00	09/9/10
Total	**$2,970,483.14**	

8.5.5 Certified Payrolls

OpTech submitted certified payrolls based on prevailing wage rates published in the SSF Contract Documents to EEEPC with each CAP. Current wage rates were included in the SSF Contract Documents under Section XIII. EEEPC verified the proper wage rate and hours for individual OpTech employees and ensured that the certified payrolls were accurate before approving CAPs.

For work performed under the Spaulding SSF Contract, NYSDEC required that the Contractor and its subcontractors pay at least the prevailing wage and pay or provide the prevailing supplements, including premium rates for overtime pay, as issued by the NYSDOL. A copy of each CAP is presented in Appendix M along with appropriate certified payroll data.

8.6 PROJECT ISSUES

8.6.1 Weather Conditions during Construction

Weather conditions at the Spaulding Composites SSF Site during the construction phase of the project are documented in DRs prepared and submitted by EEEPC. Due to unforeseen delays in the contract award and NTP process, OpTech did not mobilize until late September 2009. The timing of the construction phase resulted in the Contractor working through difficult late fall and winter conditions, including freezing overnight temperatures and accumulation of substantial rain and snowmelt in excavated areas.

Despite significant snowfall events during January and February 2010, the Contractor minimized impacts on the schedule, which translated into approximately four days of lost time attributed to weather delays.

Dry, sunny weather experienced in March and April 2010 allowed the Contractor to excavate additional contaminated soil and place backfill materials at the exclusion zones at relatively stable moisture contents and under acceptable conditions. This factor increased the effectiveness of the Contractor's equipment, expedited the stockpiling of topsoil, and accelerated the demobilization effort.

8.6.2 Personnel Changes

OpTech attempted to maintain the same staff during the course of the construction phase; however, their original Site Superintendent resigned on March 12, 2010, prior to the completion of remedial activities. OpTech's PM assumed the responsibilities as interim Site Superintendent until a replacement became available to take over the position. The replacement Site Superintendent was qualified to fill the position, having previously served as OpTech's Site Asbestos Supervisor at SWMU 7 and during the performance of remedial work at OU-2 under OpTech's Call-Out Contract with NYSDEC. The Site Superintendent transition had no adverse impact on the project schedule.

8.6.3 Delays in Processing Change Order No. 1

Change Order No. 1 was submitted to the NYSOSC on June 30, 2010, and executed on August 24, 2010. In the interim, the EEEPC Project Manager was notified that three of OpTech's subcontractors had contacted the NYSDEC PM with regard to unpaid work. On July 14, 2010, NYSDEC received written notification from attorneys for B. Pariso Transport, Inc., to bring attention to the issue. Release of lien affidavits were subsequently received by EEEPC on November 3, 2010 (Modern, Inc.), November 15, 2010 (B. Pariso Transport, Inc.), and November 29, 2010 (Price Trucking), indicating that the outstanding amounts due to those subcontractors had been reconciled by the Contractor.

8.6.4 Institutional Controls

The SCOs established for the Spaulding SSF project were completed to restricted Residential Guidelines. Imposition of a deed restriction will be required to address residual soil and groundwater contamination remaining after remedial actions were completed The deed restriction will require compliance with an approved soils management plan and will prohibit the use of site groundwater and will restrict site use to

restricted residential use or higher. Periodic certification that the institutional controls are in place will also need to be provided to NYSDEC as required by the SMP

8.6.5 Contractor and Subcontractor Affidavits

Final payment affidavits from OpTech and its subcontractors are provided in Appendix N.

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES