REMEDIAL INVESTIGATION WORK PLAN

AOC G: CARRIER/DEWITT LANDFILL
THOMPSON ROAD
SYRACUSE, NEW YORK

For

CARRIER CORPORATION
THOMPSON ROAD FACILITY
CARRIER PARKWAY
SYRACUSE, NEW YORK

EnSafe Project Number
0888809671

Revision: 0

Prepared for:

UTC Remediation Shared Services
United Technologies Building
Hartford, Connecticut

Prepared by:

EnSafe Inc.
5724 Summer Trees Dr.
Memphis, Tennessee 38134
(901) 372-7962
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July 2011

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I Joe Matthews certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 (Professional Geologist — TN1112) and that this, *Area Of Concern G — Carrier/Dewitt Landfill And Thompson Road Parking Lot Remedial Investigation Work Plan* was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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List of Abbreviations and Acronyms

AOC	Area of Concern
AWQS	ambient water quality standards
bgs	below ground surface
btoc	below top of casing
C	Celsius
Carrier	Carrier Corporation
C&D	construction and demolition
c12DCE	cis-1,2-dichloroethene
CHA	Clough Harbor Associates
cm/sec	centimeter per second
COPC	chemicals of potential concern
CSM	conceptual site model
11DCE	1,1-dichloroethene
DER	Division of Environmental Remediation
DPT	Direct-Push Technology
DQO	Data quality objectives
DTW	depth to water
Eco SSL	ecological soil screening levels
EP	extraction procedure
EnSafe	EnSafe Inc.
FDEM	frequency domain electromagnetic
FSP	Field Sampling Plan
FWRIA	Fish and Wildlife Resource Impact Assessment
GE	General Electric
GPS	global positioning system
GWQS	Groundwater Quality Standards
LEL	lower effects level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
µg/L	micrograms per liter
µg/kg	micrograms per kilogram
msl	mean sea level
NAPL	nonaquious phase liquid
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation

PAH	polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyls
PCE	tetrachloroethene
PGW	protection of groundwater
PSG	passive soil gas
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RCRA	Resource, Conservation, and Recover Act
RI	Remedial Investigation
SCO	soil cleanup objectives
SEL	severe effects level
SSHSP	site-specific health and safety plan
SVOC	Semivolatile organic compound
t12DCE	trans-1,2-dichloroethene
TAL	target analyte list
TCL	target compound list
TIC	tentative identified compound
TOC	Total organic carbon
TRPL	Thompson Road Parking Lot
USGS	U. S. Geological Survey
UTC	United Technologies Corporation
VC	vinyl chloride
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This Remedial Investigation (RI) Work Plan was prepared for Area of Concern (AOC) G at the Carrier Corporation (Carrier), 6463 Thompson Road facility in Syracuse, New York under the Carrier-DeWitt Landfill Corrective Action Order, Index CO 7-20051118-4, January 4, 2006. The RI work plan has been prepared in general accordance with New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10).

1.1 Purpose

Field investigations conducted in 2008 and 2009 by EnSafe Inc. (EnSafe) and others have identified polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), and metals at concentrations exceeding soil cleanup objectives (SCOs) within the surface and subsurface landfill material of AOC G. Volatile organic compounds (VOCs) that exceeded the groundwater quality standards (GWQSs) were identified near the center of the AOC G landfill with a plume extending to the northwest toward an adjacent wetland.[1] PCBs, SVOCs, and metals have been identified in the adjacent wetland along the western boundary of the landfill.

The investigation findings were summarized in the *Final Thompson Road Parking Lot Phase II Investigation Report,* August 2010. NYSDEC provided comments on the draft Phase II Investigation report in June 2010 and requested a Remedial Investigation Work Plan for AOC G to address the following concerns:

- Wetland conditions
- Groundwater to surface water pathways
- Surface soil to surface water pathways
- Wetland discharge points and downgradient receptors, especially Sanders Creek
- Deep groundwater contamination on the southern end of the property
- Extent of PCBs at depth within the fill
- PCB runoff from the parking lots
- Background data on metals in the soil and groundwater
- Surface soils in any potentially impacted areas that will not be covered in the final site configuration during re-use

[1] *Division of Water Technical and Operational Guidance Series 1.1.1 (TOGs 1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.*

1.2 Objectives and Rationale

Six general objectives are listed in the DER-10 guidance that will be met by this RI and are shown below.

1. Delineate the lateral and vertical extent of contaminants in all media at or emanating from the site.

2. Determine the surface and subsurface characteristics of the site, including topography, geology, and hydrogeology, including depth to groundwater.

3. Identify the sources of contamination, the migration pathways, and actual or potential receptors of contaminants on or through air, soil, sediment, groundwater, or surface water without regard to property boundaries.

4. Collect and evaluate all data necessary for a fish and wildlife resource impact analysis (FWRIA) pursuant to DER-10, Section 3.10, to determine all actual and potential adverse impact to fish and wildlife resources.

5. Collect and evaluate all data necessary to evaluate the actual and potential threats to public health and the environment. This would include evaluating all current and future potential public health exposure pathways in accordance with DER-10, Appendix 3B, as well as potential impacts to biota.

6. Collect the data necessary to evaluate any release to an environmental medium and develop remedial alternative(s) to address the release.

1.3 Remedial Investigation Document Organization

This RI work plan at AOC G includes the following elements:

- Site History and description — Section 2
- Previous Investigations — Section 3
- Conceptual Site Model — Section 4
- Objectives and Rationale — Section 5
- Schedule — Section 6
- Deliverables — Section 7

- References — Section 8
- Quality Assurance Project Plan (QAPP) — Appendix A
- Field Sampling Plan (FSP) — Appendix B
- Site-Specific Health and Safety Plan (SSHSP) — Appendix C
- Previous Investigation — Appendix D
- Preliminary Wetland Reconnaissance — Appendix E
- Sediment Sampling Results November 2010 — Appendix F
- Geophysical Survey November 2010 — Appendix G

Collectively, these documents comprise the approach that will be conducted for the RI. To optimize data collection in a dynamic approach, the RI will be conducted in phases. This work plan and the associated FSP, QAPP, and SSHSP will address initial phases; however, changes to the approach described herein due to investigation findings will be documented as work plan addenda.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Description

AOC G includes an 11-acre inactive landfill within an 83-acre parcel (Property) and is at 6463 Thompson Road in Syracuse, New York, south of the New York State Thruway Interchange 35, and southwest of Carrier Circle, as shown on Figure 2-1.[2] AOC G is in the southeast central portion of the Property and is along the southern property boundary (Figure 2-2). The Property is bordered to the east by Thompson Road, to the northeast by a fast food store and a hotel, to the north by Sanders Creek, to the west by Court Street and commercial properties, and to the south by a commercial property. The Property includes the AOC G landfill area, the paved area of the Thompson Road Parking Lot (TRPL), the open-water marshes covering the western half of the Property, the wetlands north and west of AOC G, and upland areas in the northern part of the Property. These areas are described in more detail below:

- The AOC G landfill is an uneven, wooded and overgrown area. Scrap metal, concrete, coal ash, and asphalt debris are visible at the surface of the landfill. Concrete and asphalt are most evident in the southwest portion of the landfill. The wetlands and open-water marshes adjacent to the landfill are approximately 5 to 8 feet lower in elevation than the AOC G landfill.

- The TRPL on the eastern side of the Property comprises approximately 13.4 acres of asphalt pavement that may be divided into two general areas (Figure 2-2). The southern portion of the parking lot includes approximately 7.1 acres, of which the southernmost 4 acres have been unused for several years and the asphalt is deteriorating. The northern portion includes approximately 5.1 acres. A small connecting segment covering approximately 1.2 acres connects the northern parking lot to the southern parking lot. Storm water runoff for the remainder of the northern and southern parking lots is distributed via overland flow toward the parking lot edges.

- The current large open water marsh that covers the western portion of the Property is visible on aerial photographs from 1995, 2006, and 2009 (Figure 2-2). The northern extent of the western open-water marsh is linear along an old east-west fence line. The eastern extent of the open-water marsh is 600 feet west of the AOC G landfill and is also linear along an old north-south fence line. The western boundary of the marsh roughly parallels the western property line. The southern extent of the open-water marsh is approximately 150 to 200 feet north of the southern Property boundary. The open-water marshes and wetland areas range from 3 to 8 feet lower in elevation than the adjacent uplands.

[2] Acreage determined from http://ocfintax.ongov.net/

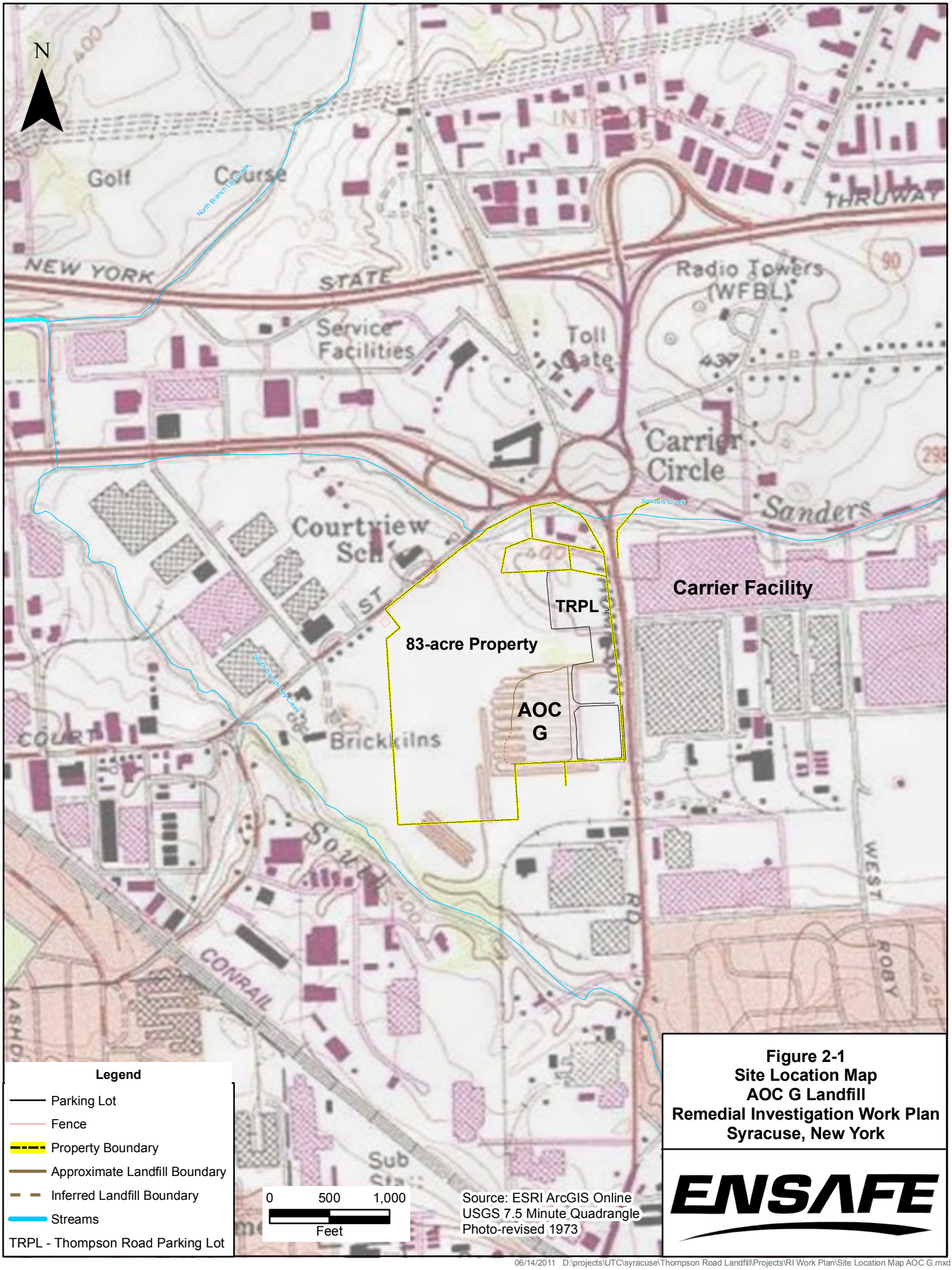

Figure 2-1
Site Location Map
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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N

Sanders Creek

P-2
Grantor: Carrier Corp.
Grantee: Carrier Foundation Inc.

P-3
Grantor: Carrier Corp.
Grantee: Onondaga County
Sewer Easment

Abandoned Hotel

Former Gas Station

Hotel

Fast-Food Store

Former Carrier Plant

P-4
Grantor: Carrier Corp
Grantee: Niagara/Mohawk Power

Court Street

P-1
Grantor: Sanders
Grantee: Carrier Corp.

North Uplands

North Parking Lot

Thompson Road

Electrical Substation

Fence Line

Fence Line

Connector

P-11
Grantor: Carrier Corp
Grantee: Sun Oil Company

Open-Water Marsh and Wetlands

P-5
Grantor: Carrier Corp.
Grantee: Onondaga County
Sewer Easment West Side
Thompson Road

P-6
Grantor: Syracuse Brick Corp
Grantee: Carrier Corp.

Central Parking Lot

Western Open-Water Marsh

Wetlands

AOC G Landfill

South Parking Lot

South Uplands

P-12
Grantor: Carrier Corp.
Grantee: Onondaga County
Highway Purposes

Commercial Truck Lot

P-7
Grantor: Syracuse Brick Corp
Grantee: Carrier Corp.
Overhead Powner Line Easement

Overhead Power Lines

P-8
Grantor: Reconstruction Finance Corp
Grantee: Carrier Corp.

P-9
Grantor: W.F. Jones
Grantee: Carrier Corp.

P-10
Grantor: P.J. Canavan
Grantee: Carrier Corp.

P-13
Grantor: Bradley & Williams Inc.
Grantee: Carrier Corp.

P-14
Grantor: Carrier Corp.
Grantee: New York Central
Railroad Company

South Branch Ley Creek

Legend

- Topographic Contour
- Parking Lot
- Fence
- Inpenetrable Not Surveyed
- Property Boundary

AOC G Landfill

- Approximate Boundary
- Inferred Boundary
- Streams
- Former Property Boundary

300 150 0 300

Feet

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

Figure 2-2
Site Layout
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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- Extending west from the landfill are elongated, east-west trending mounds with wetlands or low saturated area between. These mounds extend westward from the landfill from 100 to 200 feet to the west. Concrete and other debris have been observed extending into the wetland west of the landfill and mounded upland area along the southwest portion of the landfill.

2.2 Geology and Geohydrology

The surface geology in the area of North Syracuse is lake-deposited silts and clays overlying lake deposited sands. The lake deposits overlie glacial till comprising compacted, unsorted mud, sand, and gravel (Caldwell, D. H. 1986). The till layer thickness varies and overlies the Upper Silurian Vernon Shale of the Cobleskill Limestone and Salina Group (USGS Web page).[3]

Based on the observations and data collected from monitoring wells and soil borings, site geology comprises six lithologic layers with two saturated zones: the shallow (upper) saturated zone (water table) and the deep (lower) saturated zone (Table 2-1). The upper and lower water-bearing zones are separated by a 14- to 23-foot thick dense clay that is present across the site. The presence of the clay was confirmed by soil borings at each monitoring well location installed in the landfill during the Phase II investigation. Lithologic information is provided in Table 2-1 and the conceptual site cross section is provided in the Conceptual Site Model discussion in Section 4.0.

Table 2-1
Geologic and Hydrogeologic Descriptions

Lithologic Layer	Parking Lot	Landfill
Ground Cover	Asphalt with gravel base; Silty-Clay (see below)	Coal ash covering the majority of the central portion of the former fill area ranging from 1 to 6.5 feet thick where present.
Upper Unsaturated Zone	Silty Clay, brown, stiff, medium plasticity, slightly moist to moist; approximately 9 to 14 feet thick.	
Upper Saturated Zone (Water Table)	Silt and very fine-grained sand grading downward to medium-grained sand, very moist to saturated; approximately 9 to 11 feet thick; saturated zone 5 to 8 feet thick.	
Lower Unsaturated Zone	Clay, no silts or coarse-grained materials, very stiff, moderately plastic, slightly moist; approximately 14 to 23 feet thick. Hydraulic Conductivity of 6.16E-8 cm/sec	
Lower Saturated Zone	Sand, with trace silts grading downward to medium-grained sand and small gravel; approximately 5 to 16 feet thick	
Glacial Till	Sand, medium to coarse grained, dark red, tightly compacted, hard	
Vernon Shale	Shale, black, dark red; not penetrated, thickness not determined.	

[3] http://tin.er.usgs.gov/geology/state/sgmc-unit.php?unit=NYSv%3B2

No hydrologic testing has been conducted to determine the characteristics of the shallow or deep groundwater zones. Table 2-2 presents the depth-to-water measurements from September 2010 and the calculated groundwater elevation at each well. The potentiometric contours for the shallow and deep zones are presented in Figures 2-3 and 2-4.

Table 2-2
Potentiometric Measurements
September 2010

Well ID	Date Measured	TOC Elevation (ft msl)	Approximate Total Depth (ft bgs)	DTW BTOC (ft btoc)	Groundwater Elevation (ft msl)
Shallow Saturated Zone					
TR05	9/16/2010	410.67	15.7	11.14	399.53
TR06	9/16/2010	411.35	14.5	12.11	399.24
TR07	9/16/2010	404.69	13.6	9.05	395.64
TR08	9/16/2010	402.93	14.7	7.03	395.90
TR10	9/16/2010	405.40	15.2	NM	NM
TR11	9/16/2010	404.24	14.8	5.30	398.94
TR12	9/16/2010	406.12	14.8	7.58	398.54
TR15	9/16/2010	410.37	15.0	12.26	398.11
TR16	9/16/2010	407.71	20.0	9.53	398.18
TR17	9/16/2010	407.50	16.0	9.78	397.72
TR18	9/16/2010	407.18	19.0	7.75	399.43
TR19	9/16/2010	408.20	19.0	13.43	394.77
TR20	9/16/2010	409.21	20.0	10.66	398.55
TR21	9/16/2010	410.99	24.0	13.71	397.28
TR22	9/16/2010	411.94	20.0	13.34	398.60
TR23	9/16/2010	411.20	18.0	13.45	397.75
TR24	9/16/2010	412.57	20.0	15.83	396.74
Deep Saturated Zone					
TR09D	9/16/2010	410.80	59.0	17.08	393.72
TR13D	9/16/2010	405.40	57.0	12.56	392.84
TR14D	9/16/2010	404.24	70.0	9.01	395.23
TR25D	9/16/2010	406.62	49.0	13.68	392.94
TR26D	9/16/2010	410.42	52.0	17.54	392.88
TR27D	9/16/2010	412.84	51.0	19.91	392.93

Notes:
DTW = depth to water
ft msl = feet mean sea level
ft btoc = feet below top of casing
ft bgs = feet below ground surface
TR16 through TR24 were converted from temporary monitoring wells to permanent monitoring wells
The tops of casing elevations have been adjusted to reflect the permanent monitoring well elevations

N

TR08
395.9

TR14D

396

TR10
Not Measured

TR07
395.64

396

397

TR11
398.94

398

TR18
399.43

TR12
398.54

399

TR16
398.18

TR17
397.72

TR25D

TR19
394.77

395

396

397

TR15
398.11

TR20
398.55

TR06
399.24

398

TR22
398.6

TR23
397.75

TR13D

TR21
397.28

TR26D

397

398

399

399

TR24
396.74

TR27D

397

398

TR09D

TR05
399.53

Legend

- Deep Well
- Shallow Well
- Contour
- Inferred Contour
- Approximate Landfill Boundary
- Inferred Landfill Boundary
- Groundwater Flow Direction

100 50 0 100
Feet

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

Figure 2-3
Shallow Groundwater Potentiometric Map
September 16, 2010
AOC G Landfield
Remedial Investigation Work Plan
Syracuse, New York

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N

TR14D
395.23

TR08

395

TR07

TR10

394

TR11

TR18

393

TR12

TR16

TR17

TR25D
392.94

TR19

TR15

TR20

TR06

TR13D
392.84

TR26D
392.88

TR22

TR23

TR21

TR24

TR27D
392.93

TR09D
393.72

TR05

393

100 50 0 100
Feet

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

Legend

- Deep Well
- Shallow Well
- DeepPot_20100916
- Approximate Landfill Boundary
- Inferred Landfill Boundary
- Groundwater Flow Direction

Figure 2-4
Deep Groundwater Potentiometric Map
September 16, 2010
AOC G Landfield
Remedial Investigation Work Plan
Syracuse, New York

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Groundwater flow patterns have generally been consistent. The shallow zone indicates a high at TR06 that extends to the northeast toward TR18 (Figure 2-3). Shallow groundwater flow is generally to the west-northwest and toward the wetland and open-water marsh adjacent to the AOC G landfill. The deep groundwater zone has a generally flat gradient and flow is generally to the northwest at TR09D and to the southwest at TR14D (Figure 2-4).

2.3 Property History

The Property is owned by Carrier and is separated from the main manufacturing facility to the east by Thompson Road. Table 2-3 lists past ownership of the Property. The Carrier facility was initially developed in the early 1940s by General Electric (GE). GE, in partnership with the Government Defense Corporation, manufactured tanks and heavy military equipment during World War II at the Property. This parcel was sold to Carrier in the early 1950s. Carrier manufactured large air conditioning chiller units until 1997. Manufacturing processes included welding, grinding, surface preparation for painting, leak tests, and testing.

Table 2-3
Property Ownership History

Map Reference Number	Military Lot Number	Grantor	Grantee	Comments
P-1	21	Anna Quirk Sanders	Carrier Corporation	
P-2	21	Carrier Corporation	Carrier Foundation, Inc.	
P-3	21	Carrier Corporation	County of Onondaga	Easement for Sanitary Sewer
P-4	21 & 30	Carrier Corporation	Niagara Mohawk Power Corporation	
P-5	21 & 30	Carrier Corporation	County of Onondaga	Highway Purposes
P-6	30	Syracuse Brick Corporation	Carrier Corporation	
P-7	30	Syracuse Brick Corporation	Central New York Power Corporation	Easement for Power Line
P-8	30	Reconstruction Finance Corporation	Carrier Corporation	
P-9	30	William F. & Ruth M. Jones	Carrier Corporation	
P-10	30	Paul J. Canavan	Carrier Corporation	
P-11	30	Carrier Corporation	Sun Oil Company	
P-12	30	Carrier Corporation	County of Onondaga	Highway Purposes
P-13	30	Bradley & Williams, Inc	Carrier Corporation	
P-14	30	Carrier Corporation	New York Central Railroad Company	Easements Reserved for Utilities
P-15	30	Carrier Corporation	Niagara Mohawk Power Corporation	

Carrier began purchasing the lots that now comprise the Property in 1947 and 1949 when the Syracuse Brick Corporation conveyed "parts of Military Lots 29 and 30" to the Carrier Corporation (Table 2-3). In 1950, Carrier acquired "Lot 21" from Anna Quirk Sanders. Carrier sold a piece (P-15) of Military Lot 30 to Niagara Mohawk Power Company in 1952. This deed stated that this was part of the same premises described in the 1947 deed from Syracuse Brick Corporation to Carrier Corporation. In 1954, Carrier sold part or all of Parcels, 30, 31, and 32 to Onondaga County.

AOC G is west of the southern section of the TRPL and the landfill is bounded to the west and north by a wetland and to the south by commercial property used for tractor trailer parking. The landfill includes coal ash, concrete and asphalt debris, and some scrap metal. Some reports indicated a portion of the southern section of the asphalt parking lot was constructed over the eastern edge of the landfill; however, a geophysical survey conducted in November 2010 concluded fill material was not present beneath the parking lot.[4] Based on a review of historical U.S. Geological Survey (USGS) topographic maps and aerial photographs, a mapped feature indicating elongated mounds orientated east-west is depicted in the south central portion of the 83 acre Property; AOC G is within this area. This feature is present on the Syracuse East USGS topographic maps from 1938, 1943, 1957, and 1973 (photo revised). The Carrier facility is present on the 1957, 1973 (photo revised) and 1977 Syracuse East USGS topographic maps. Neither the landfill area nor the elongated mounds are indicated on the 1898 USGS topographic map. No other historical topographic maps or historical aerial photographs were discovered during the preparation of previous reports or this work plan.

Historical USGS topographic maps show Sanders Creek to the north and the South Branch of Ley Creek to the south of the Property, but the current open-water marshes and wetland are not indicated on the USGS topographic maps reviewed. Historical USGS topographic maps from 1938, 1943, and 1958 show a topographic depression and a small pond on the adjacent property to the west of the Property. The 1958 topographic map identifies the area of the pond as brick kilns, presumably used by Syracuse Brick Corporation, and shows access to this area from Court Street. The small pond as depicted on the USGS topographic maps (1938 to 1958) is not discernable in historic aerial photographs.

[4] Section 3.7.2 contains a summary of the geophysical survey; a technical memorandum is provided in Appendix G).

Historical aerial photographs from 1959, 1966, 1978, 1985, and 1988 show the areas of the current open-water marshes and wetlands as an open field that becomes partially wooded with time. The presence of surface water is initially apparent on the aerial photograph from 1988 where surface water is visible along the western boundary of the Property. The open-water marshes and wetlands are visible on the 1995, 2006 and 2009 aerial photographs in the general area observed during the EnSafe Phase II Investigation (October 2009).

3.0 PREVIOUS INVESTIGATIONS

This section presents a review of previous field investigations of AOC G and provides a summary of findings to date. Copies of the previously submitted reports are provided in electronic file format in Appendix D if additional information is needed. Figure 3-1 shows all the sample locations for the various media that are discussed below.

3.1 Phase I Investigation — Wehran Engineering May 1987

Wehran Engineering, P.C. submitted an *Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase I Investigations* to NYSDEC, Division of Solid and Hazardous Waste in May 1987. This Phase I assessed potential environmental or public health hazards associated with past disposal activities at the landfill.

The report noted that an industrial landfill was operated from the early 1940s until about 1983. Wehran Engineering reported concerns for the landfill from unknown early disposal practices reportedly involving oils, solvents, and acids from the Carrier Corporation. There was no information regarding other sources of waste. Wastes reportedly disposed of onsite or observed onsite by Wehran Engineering include concrete, asphalt, grinding swarf, parking lot sweepings, brush, municipal refuse, and an unknown solid black material. Wehran Engineering reported Carrier sampled the black material in January and February 1987 for Resource Conservation Recovery Act (RCRA) metals and extraction procedure (EP) metals and stated that the heavy metals were not "EP Toxic" (extraction procedure toxicity), and thus, the detections were not considered for further assessment.

The wetland adjacent to the landfill was noted in the report and was identified as regulated wetland SYE-29 on the Tentative Wetland Map. No formal hydrologic or environmental quality evaluations were completed as part of the 1987 Phase I Investigation.

Wehran Engineering recommended completing test pits and soil sampling/analysis to characterize the onsite waste. Additionally, Wehran Engineering recommended surface water sampling and analysis because of the high water table and observed contact of the refuse slope toe with surface water. No information was available regarding any additional sampling based on the recommendations of Wehran Engineering.

N

TP-1 TP-2 TP-3 TP-4 TR08 TR14D TP-5 TR07 TR10 TP-6 TP-7 TR11 ETP-16 SE013 SE014 SE015 SE016 SE004 TR18 SE002 SE003 SE017 SE006 SE001 TR12 SE018 SB04 SE005 SB06 TR17 SB08 TR16 TR25D SE007 ETP-6 SE008 TR20 TR19 SB10 TR15 SB11 ETP-8 TP-9 ETP-5 SE019 ETP-9 TR06 SB14 SB16 SB17 SE009 SB15 TP-10 SB13 ETP-7 ETP-1 SE010 ETP-3 ETP-2 TR13D SE020 TR26D TR22 SB21 TR23 TR21 SB19 ETP-4 TP-11 ETP-15 SB27 SB24 SB25 SB26 ETP-17 SB23 SE012 SE011 SB29 SB30 SB31 SB32 TP-12 SB28 TR24 SB34 SB35 SB36 SB37 TP-13 TR27D ETP-14 ETP-11 TP-14 ETP-13 TR05 SB41 SB39 ETP-12 SB38 SB40 TR09D ETP-10

Legend

- Sediment Collected May 2011
- Deep Well
- Shallow Well
- Soil Boring
- Sediment Collected November 2010
- Topographic Contour
- Parking Lot
- Fence
- Inpenetrable Not Surveyed
- Property Boundary
- Trenches

Landfill Boundary

- Approximate Boundary
- Inferred Boundary

Notes:
* TP-1 - Signifies Test Pit by CHA
* ETP-1 - Signifies Test Pit by EnSafe
* TR05 through TR08 EnSafe 2008
* TR09D through TR15 EnSafe Phase 1 2008
* SB soil borings and TR16 thorugh TR27D EnSafe Phase II 2009

150 75 0 150
Feet

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

Figure 3-1
Previous Sample Locations
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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06/24/2011 D:\projects\UTC\syracuse\Thompson Road Landfill\Projects\RI Work Plan\AOC G Previous Sample Locations.mxd

3.2 Phase II Due Diligence Investigation — CHA October 2008

Clough Harbour and Associates, LLP (CHA) submitted a Phase II Due Diligence Investigation Report to DeStefano Development, LLC on October 3, 2008, as part of a potential real estate transaction. The CHA report was provided to Carrier for further site evaluation. The developer had planned to construct commercial offices and retail structures over the area of the TRPL and the AOC G landfill. The field work conducted by CHA in September 2008 included advancing 10 direct-push technology (DPT) soil borings and temporary groundwater monitoring points, three geotechnical soil borings, and completing 14 test pits (TP-1 through TP-14 on Figure 3-1).[5]

Based on PID field screening results, five soil samples (S-1 through S-5) from the 10 DPT borings and three soil samples (SS-1 through SS-3) from the 14 test pits were submitted for laboratory analysis of RCRA 8 metals, VOCs, PCBs and SVOCs. Grab groundwater samples were collected from two temporary monitoring wells (GP-4/MW3 and GP-5/MW4) and were submitted for laboratory analysis of RCRA 8 metals, VOCs and SVOCs. PCBs, SVOCs, and metals were detected in the soil samples at concentrations greater than SCOs. Metals and VOCs were also detected in groundwater above their GWQSs. CHA did not delineate the extent of contamination, but concluded that the contamination detected was limited to the landfill area.

3.3 Thompson Road Parking Lot Investigation — 2008

In December 2008, EnSafe conducted an investigation to assess the contamination detected during the CHA Phase II Due Diligence investigation with emphasis on the area near CHA test pits TP-9 and TP-10 (Figure 3-1). EnSafe completed 17 test pits (ETP-1 through ETP-17), installed four monitoring wells (TR05, TR06, TR07, and TR08) and collected two surface water samples. Nine test pits (ETP-1 through ETP-9) were completed near the CHA test pits TP-9 and TP-10. Five test pits (ETP-10 through ETP-14) were completed in the southern portion of the wooded area along an access road for comparison with CHA Phase II tests pit findings. ETP-15 through ETP-17 were east and northeast of the CHA test pits.

Construction debris, including concrete, asphalt, brick, and wood, were observed in the test pits within the landfill area, as well as coal ash described as a black sludge-like material. Soil samples were collected from eight of the test pits and the samples were selected based either on the proximity to the samples collected during the CHA Phase II investigation or where a black sludge material was observed. Soil samples collected from the test pits were submitted for

[5] DPT soil borings and temporary groundwater monitoring points are not shown on Figure 3-1.

laboratory analysis of VOCs, PCBs, and RCRA 8 metals. The highest concentrations of VOCs were detected in soil samples collected from test pits ETP-2, ETP-3, and ETP-5 and for PCBs were in ETP-2, ETP-4, and ETP-5 (Figure 3-1). Based on these findings, monitoring well TR06 was placed near these test pits.

Four shallow monitoring wells (TR05 through TR08) were installed at AOC G (Figure 3-1) and sampled for VOC, RCRA 8 metals, and PCB analysis. Ten VOCs were detected in TR06 (adjacent to ETP-5) that exceeded GWQS including TCE at 100 micrograms per liter (µg/L), and breakdown products cis-1,2-dichloroethylene (c12DCE) at 2,580 µg/L and vinyl chloride (VC) at 8,990 µg/L. Other VOC exceedances included petroleum constituents, total xylene, toluene, naphthalene, and ethylbenzene. VOCs were not detected in TR05, TR07, and TR08.

Two surface water samples were also submitted for VOC, PCB, and RCRA 8 metals analyses and five VOCs, chromium, and barium were detected, but all detections were below their respective ambient water standard (AWQS).[6] The detected VOCs included 1,1-dichloroethene (11DCE), acetone, c12DCE, trichloroethene (TCE), and VC. PCBs were not detected in surface water samples.

Investigation results were submitted to NYSDEC in the *Thompson Road Parking Lot Investigation Report and Phase I Work Plan* (EnSafe, 2009).

3.4 Phase I Investigation 2009

The 2009 Phase I Investigation focused on further assessing the extent of shallow and deep groundwater contamination at the AOC G landfill. Four shallow (TR10, TR11, TR12, and TR15) and three deep (TR09D, TR13D, and TR14D) groundwater monitoring wells were installed to evaluate the horizontal and vertical extent of groundwater contamination at the site (Figure 3-1). Soil samples were also collected at 5-foot intervals from each monitoring well location.

Soil and groundwater samples were analyzed for VOCs, PCBs, and RCRA 8 metals. Chlorinated VOCs, including tetrachloroethene (PCE), TCE, c12DCE, trans-1,2-dichloroethene (t12DCE), and VC were detected at all sample intervals in boring TR15. Ethylbenzene, toluene and xylenes were also detected in the 5 to 7 foot interval and 13 to 15 foot interval of TR15.

[6] As a conservative estimate, the wetlands were evaluated as Source of Drinking Water (surface water).

Concentrations of VOCs in groundwater exceeding GWQS were found in TR06, TR09D, and TR15. Similar to the December 2008 investigation results, concentrations of total chlorinated solvents were collocated with concentrations of Total BTEX. Aroclor 1260 (1.3 µg/L) was detected in TR06 exceeding the GWQS of 0.09 µg/L.

In response to a NYSDEC letter dated May 22, 2009, EnSafe attempted to install two soil vapor probes along the southern border of AOC G; however, groundwater entered the boreholes at 1.4 feet below ground surface (bgs) and 0.8 feet bgs, respectively, precluding installation of vapor probes. No vapor samples were collected due to the shallow groundwater.

Investigation results were submitted to NYSDEC in the *Thompson Road Parking Lot Phase I Investigation Report* (EnSafe, September 2009).

3.5 Phase II Investigation — October 2009

The Phase II investigation was conducted by EnSafe in October and November 2009 to refine the nature and extent of shallow and deep groundwater and contamination at AOC G and to refine the conceptual site model. The scope of the Phase II investigation involved:

- Advancing 28 shallow soil borings (designated as "SB" on Figure 3-1) on a 100 ft by 100 ft grid across the landfill and collecting soil sample from near surface (0 to 4 feet bgs) and subsurface (4 to 8 feet bgs) to assess the horizontal and vertical extent of PCB contamination

- Advancing two deep lithologic borings (SB08 and SB27) at the eastern edge of the landfill to profile site geology and hydrogeology

- Installing nine shallow (TR16 through TR24) and three deep additional monitoring wells (TR25D, TR26D, and TR27D) within the landfill to further evaluate the nature and extent of both shallow and deep groundwater contamination

Soil results were compared to the Title 6 of the New York Codes, Rules and Regulations (NYCRR), Chapter IV, Subpart 375-6: Remedial Program SCO for Restricted Commercial Land Use. Soil results were also screened against Subpart 375-6 protection of groundwater (PGW) and ecological soil screening levels (Eco SSL).

Gridded soil sampling and analysis identified PCBs in soil above the SCO of 1.0 milligrams per kilogram (mg/kg) in approximately 40% of the near surface soil materials collected from 0 to 4 feet across the sampling grid. Notably, Aroclor 1260 was detected at 136 mg/kg from 0 to 4 feet bgs at TR24. PCBs exceeded the subsurface SCO or 10 mg/kg in three samples at SB19, SB24, and SB29.

NYSDEC requested SVOC and metal analysis from eight grid locations in the central area of the landfill (SB06, SB10, SB11, SB15, SB16, SB19, SB21, and SB25). SVOC and metal contamination was detected above SCOs in the 0 to 4 foot and 4 to 8 foot intervals at these locations. No site-specific background concentrations were determined for metals in soil, so the formal determination of a release of metals onsite is incomplete.

Observations from the deep lithologic borings SB08 and SB27 indicated that the dense clay between the two water bearing zones was between 14 to 23 feet thick. The top of the clay was observed at the locations where monitoring wells were installed during the Phase II investigation indicating the clay was present across the site. Hydraulic conductivity was measured at 6.16E-8 centimeters per second (cm/s) in a Shelby tube sample collected in the clay 33.7 to 35.7 feet bgs at TR26D. The deeper water-bearing zone is believed to be protected from the shallow groundwater contamination by the relatively impermeable clay.

Shallow groundwater monitoring wells were installed at select grid locations in a perimeter around TR06 and TR15 to further assess and delineate VOC groundwater contamination detected in these wells during the Phase I Investigation. In addition, three double-cased monitoring wells (TR25D, TR26D, and TR27D) were installed in the deep groundwater zone.

Consistent with Phase I results, the maximum chlorinated VOCs in shallow groundwater were detected in TR06 and TR15 in the central northern portion of the landfill. TCE concentrations were detected in TR15 at 1,040 milligrams per liter (mg/L), which is approaching the solubility limit of 1,100 mg/L to 1,400 mg/L. TCE was not detected at TR06. Degradation products including c12DCE, VC, and ethene were detected in the shallow groundwater in wells near TR15 and the surrounding the suspected source area. Based on potentiometric data, the shallow groundwater flows from the area of TR15 and TR06 toward TR19 and the wetland. Chlorinated VOC concentrations decline by three to five orders of magnitude at downgradient well TR19 and the source area at TR06 and TR15. The dominant contaminants at TR19 appear to be c12DCE and VC indicating TCE dechlorination is occurring.

Chlorinated VOCs were not detected in the deep zone at monitoring wells TR25D, TR26D and TR27D. c12DCE and VC were detected in TR09D at concentrations above GWQS and TCE and c12DCE were detected in TR13D at concentrations below GWQS. Based on groundwater flow direction, TR09D and TR13D are upgradient of AOC G.

Investigation results were submitted to NYSDEC in the *Thompson Road Parking Lot Phase II Investigation Report* (EnSafe, August 2010).

3.6 Interim Site Investigation

EnSafe provided NYSDEC with an Interim Site Investigation Work Plan (August 30, 2010) to address NYDCEC concerns listed in their review of the Phase II investigation and to facilitate preparation of this work plan. The tasks included in the Interim Site Investigation Work Plan contained the following four interim tasks:

- Topographic Survey
- Preliminary wetland reconnaissance
- Site-wide groundwater elevation measurements and measurements for free product at monitoring wells within the landfill
- Installation of permanent wellheads at each temporary monitoring well location

3.6.1 Topographic Survey

Due to record snowfall during winter 2010/2011 and above-average rainfall in spring, the topographic survey is approximately 75% completed to date. Draft contours are depicted on general site maps within this work plan, but the contours are pending final verification by a New York licensed land surveyor before final conclusions are reached based on the topographic data.

3.6.2 Preliminary Wetland Reconnaissance

Observations during the preliminary wetland reconnaissance indicate limited surface hydrologic connectivity exists between the Property and adjacent streams during high-flow periods. The areas adjacent to the toe slope of the AOC G landfill appear to be jurisdictional wetlands. In all test locations examined, the criteria for wetlands have been present. There are other wetlands onsite

associated with the open-water marsh site near the southwestern and western edges of the Property and adjacent to the historic meander scar feature that runs from the northeastern corner of the Property towards Sanders Creek. Other portions of the Property appear to receive surface water flow during such high water events as snowmelt and runoff, but do not demonstrate all the criteria required for jurisdictional wetlands. A technical memorandum presenting the details, maps, and photographs of the preliminary wetland reconnaissance is provided in Appendix E.

3.6.3 Potentiometric Measurements September 2010

Depth to groundwater measurements were collected September 16, 2010 and were discussed in Section 2.2. Also, each monitoring well was measured for non-aqueous phase liquids (NAPL) at the top and bottom of the water column within the monitoring well using a phase interface probe. No NAPL was detected in any site wells.

3.6.4 Conversion of Temporary Monitoring Wells

Temporary monitoring wells were converted to permanent monitoring wells in November 2010, by constructing 4-inch square protective stickup covers around each well riser, set within a 2-foot round concrete, 4-inch thick pads. Well casings were cut to facilitate the locking protective covers. The monitoring wells will be resurveyed for an elevation datum. Top of casing elevations presented in Table 2-2 represent the current survey elevation data of the wells.

3.7 November 2010 Investigations

In response to a request from Carrier, EnSafe collected sediment samples in November 2010 from along the boundary of the wetland to the toe of the raised waste disposal area of AOC G. Additionally, a geophysical survey was conducted over the western edge of the central parking lot, the majority of the southern parking lot, and accessible portions of the landfill area to evaluate the extent of buried waste. No formal work plan was submitted to NYSDEC; however, NYSDEC offered concurrence and NYSDEC personnel were onsite to observe part of the sediment sampling.

3.7.1 Sediment Sampling Results November 2010

EnSafe collected 12 sediment samples from the wetland shore line at the toe of the landfill and into the water between 25 feet and 50 feet offshore. Sediment samples collected at the toe of the fill were submitted for laboratory analysis of target analyte list metals (SW6010/7471), PCBs, SVOCs and total organic carbon (TOC) by the Lloyd Kahn 1988 method and samples collected offshore were analyzed for PCBs and TOC. Sediment sample results were evaluated in accordance of the NYSDEC Division of Fish, Wildlife and Marine Resources, *Technical Guidance for Screening*

Contaminated Sediments (revised January 25, 1999). Sediment sampling locations are shown on Figure 3-1. Sampling results are summarized in the text below, but a detailed technical memorandum is provided in Appendix F-1.

PCB Sediment Results: Two PCBs were detected: Aroclor-1254 was detected in four sediment samples, and Aroclor-1260 was detected in 10 sediment samples. PCBs were detected at 10 sediment sample locations with total PCB concentrations ranging from 79 micrograms per kilogram (µg/kg) to 4,370 µg/kg — exceeding sample-specific TOC normalized screening values[7] in 10 of 12 locations.

SVOCs Sediment Results: Six sediment samples collected along the toe of the landfill were analyzed for SVOCs. Twenty-one SVOCs were detected, and of these, 14 were evaluated as non-polar organics. The remaining seven detected SVOCs did not have listed standards in the sediment screening guidance or the AWQS and were not screened as part of this preliminary evaluation.

Six non-polar SVOCs exceeded their screening values: all are polynuclear aromatic hydrocarbons (PAHs). Exceedances of sediment screening values were observed at SE001, SE003, SE007 and SE011 for benzo(a)pyrene, benzo(b)fluoranthene, and chrysene. Indeno(1,2,3-cd)pyrene exceedances were observed at SE003, SE007 and SE011. Benzo(k)fluoranthene exceedances were observed at SE003 and SE007, and dibenz(a,h)anthracene exceeded its criteria at SE003.

Inorganic Sediment Results: In accordance with the sediment screening guidance referenced above, metals detected in sediment are screened against two levels of risk, the lowest effect level (LEL) and the severe effect level (SEL). This preliminary sediment sampling and analysis did not include collecting representative background samples; therefore, no natural background concentrations for metals are included in this screening evaluation. Twenty-three metals were detected in sediment samples. Four detected metals are considered essential nutrients were not evaluated for impact: calcium, magnesium, potassium and sodium. Additionally, seven metals detected did not have published LEL or SEL values and were not evaluated further. Ten metals exceeded LELs, but all were below SELs (antimony, arsenic, cadmium, chromium (total), copper, iron, lead, manganese, mercury, and nickel).

[7] NYSDEC Division of Fish, Wildlife and Marine Resources, *Technical Guidance for Screening Contaminated Sediments* (revised January 25, 1999)

3.7.2 Geophysical Investigation

The objective of the geophysical survey was to determine if waste exists beneath the south and center parking lots east of AOC G. For purposes of selecting the appropriate geophysical method and designing its field deployment, EnSafe assumed that fill material would exist within 20 feet of the surface, would yield a soil-moisture contrast with respect to natural soil, and would contain some metal. Based upon these assumptions, the frequency domain electromagnetics (FDEM) geophysical method was selected as most appropriate for this project. FDEM responses did not indicate buried waste beneath the paved areas of the site, although buried utilities were noted (electrical service to the parking lot lights). Some areas of the landfill exhibited expected FDEM responses for buried waste, but others indicated subdued responses, such as different waste materials or areas where waste is minimal or absent. In general, these results confirmed the eastern edge of the landfill boundary coincides with the western edge of the TRPL pavement surface. Results of the FDEM survey are summarized in Appendix G and show the interpreted landfill boundary along with information regarding the methodology, data processing, and a detailed discussion of the results.

3.8 Sediment Sampling May 2011

As a follow-up to the November 2010 sediment sampling EnSafe collected eight additional sediment samples from the wetland/open-water marsh north and west of AOC G landfill on May 14, 2011 (Figure 3-1). May 2011 sediment samples were submitted to Accutest Laboratories of New Jersey for SVOCs, PCBs, TAL metals, and TOC. Sampling results are summarized in the text below, but a detailed technical memorandum is provided in Appendix F-2.

Organic Analytical Results

Three SVOCs and one PCB were detected in the May 2011 sediment samples. None of the SVOCs detected exceeded screening values. PCB (Aroclor-1260) was detected in two of eight samples analyzed and exceeded the sample-specific screening criteria in both samples. The PCB exceedances are shown on Figure 3-1 along with PCB results from November 2010 for comparison.

Inorganic Analytical Results

Seventeen inorganics were detected in sediment samples of which six exceeded the LEL screening criteria. All inorganic detections were below the SEL screening criteria. No sediment background values have been determined for AOC G; therefore, no background evaluation was conducted.

4.0 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) for AOC G is presented in Figure 4-1. Potential past releases at the site are expected to have been surface and subsurface spills and releases from past disposal activities. Contaminants could migrate through the subsurface soil and impact groundwater, or move via overland flow or through the shallow groundwater to the sediments and surface water of the adjacent wetlands and open-water marsh to the west and north of AOC G.

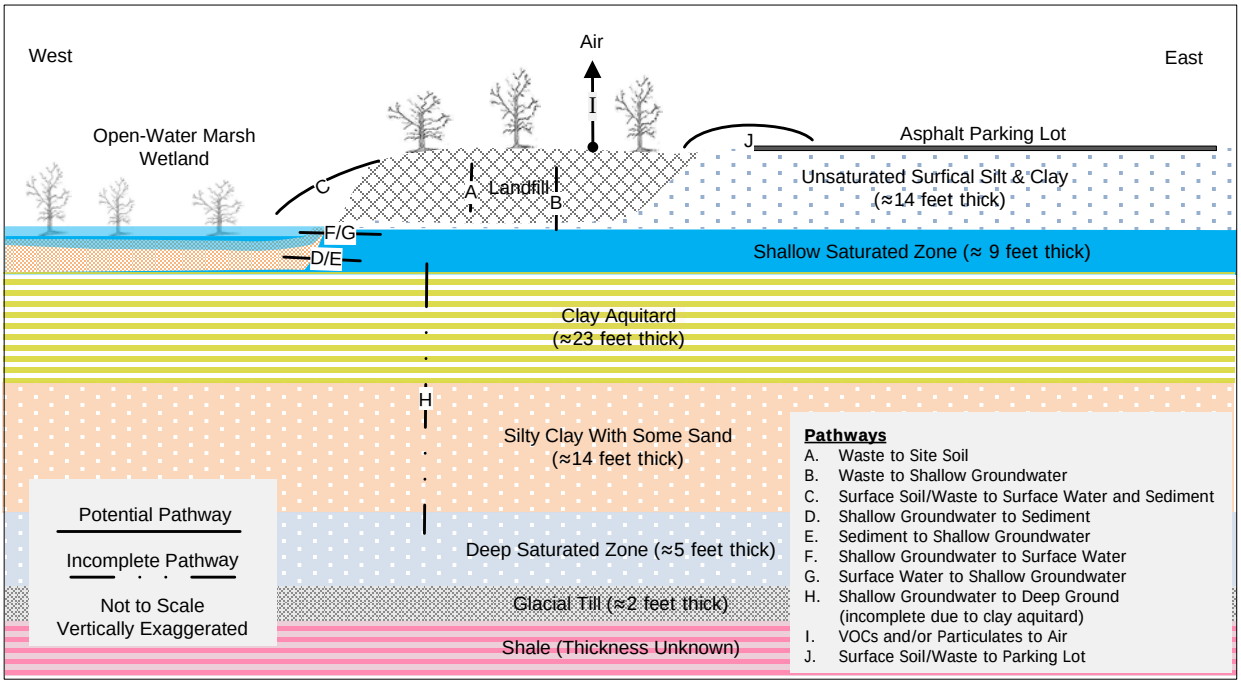
The landfill has reportedly been inactive since 1983 and is overgrown. Carrier operations do not occur at AOC G and there is no presence of site workers. In addition, there are no buildings or other structures onsite. Neither the shallow nor deep groundwater zones are locally used for potable supplies.

As shown in the CSM, current human receptors at AOC G are expected to be limited to site trespassers. Recreational use of the wetlands and open-water marshes are expected to be limited to trespassers as no established public or private recreational facilities are present and access to the wetlands and open-water marshes is limited by heavy vegetation over the majority of the Property. Ecological receptors include terrestrial and aquatic species. Exposure routes include ingestion, dermal contact, and inhalation.

Field investigations completed between 2008 and 2010 have identified multiple site-specific constituents of potential concern (COPCs) that exceed NYSDEC criteria. The RI activities will focus on COPCs which include:

- VOCs, primarily chlorinated solvents and benzene, toluene, ethylbenzene, and xylenes (shallow groundwater, surface and subsurface soil, surface water)
- SVOCs, primarily benzo(a)pyrene and associated polynuclear hydrocarbons (shallow groundwater, surface and subsurface soil, sediment, surface water)
- PCBs, primarily Aroclor 1260 (shallow groundwater, surface and subsurface soil, sediment, surface water)
- Inorganics (groundwater, surface and subsurface soil, sediment, surface water)

Figure 4-1
Conceptual Site Model



4.1 Contaminant Sources and Release Mechanisms

As discussed in the Phase II Investigation report (EnSafe, 2010), data are insufficient to prepare a complete CSM. However, a CSM will be developed regarding surface water, shallow groundwater, deep groundwater, the wetlands area, and soil transport onsite for soil and groundwater contaminants through the implementation of this work plan.

4.1.1 Primary Sources and Releases Mechanisms

The primary source of AOC G contaminants is presumed to be through the historical disposal of waste including parking lot sweepings, coal ash, grinding swarf, concrete, asphalt and other construction and demolition (C&D) debris. Concrete and asphalt debris is prominent along the southwest portion of the landfill area, but C&D materials and scrap metal (rebar) are found in the central portions of the landfill as well. No records have been found regarding disposal practices, the types of wastes, or if any containers (e.g., drums, tanks, etc.) were deposited in the landfill. Wastes were likely disposed of onto or buried in the soil at AOC G.

A significant portion of the disposal area is covered with coal ash ranging from 1 to 6.5 feet thick. The distribution likely reflects episodic disposal activities. Contamination typically associated with coal ash includes SVOCs and metals. Arsenic, beryllium, chromium, iron, lead, mercury, nickel, and zinc as well as other metals have been associated with coal ash (Scheetz, Mehnert and Hensel U.S. Office of Surface Mining web page). However, no site-specific background metal concentrations for soil have been determined to date; therefore, a comparison of impacted media, including coal ash, with background metals concentrations to determine whether a release has occurred will be incorporated into the RI.

4.1.2 Secondary Sources and Release Mechanisms

Secondary transport mechanisms may include any of the following:

- Overland transport/runoff
- Migration of soil contaminants to shallow groundwater
- Migration of shallow groundwater to surface water and sediment
- Migration of sediment from wetlands to downstream receptors

Pathways of particular concern are noted below; investigations will be focused to gather more information regarding these and other pathways.

Currently, data are insufficient to determine completeness of the hydrologic connection between the shallow groundwater zone and the wetlands to the north and west of the landfill. Silty clay matrix and the potentiometric gradient suggest migration rates may be slow in the shallow groundwater zone; however, no direct hydrologic testing has been conducted. The nature and completeness of the hydrologic connection between the wetlands and the shallow groundwater zone will be evaluated to assess the potential migration of VOC and other contamination to the wetlands.

VOC contamination migration from the shallow groundwater zone to the deep groundwater zone is not occurring within the landfill based on previous investigation results. The shallow groundwater zone and the deep groundwater zone are separated by a 14- to 23-foot thick clay-confining layer with a vertical hydraulic conductivity of 6E-8 centimeters per second. The clay-confining layer is expected to retard downward migration of the shallow groundwater contamination. Likewise, the presence of the clay-confining layer suggests that the surface water in the wetlands and the deep groundwater are not connected.

The wetland reconnaissance completed in September 2010 identified channeling potentially connecting the open-water marsh north of the landfill to Sanders Creek to the north and the large western open-water marsh on the west side of the Property to the South Branch of Ley Creek. The channeling connecting to offsite streams appear to be active during the wettest times of the year. No flow was observed in the offsite drainages during the September 2010 site visit which may represent a drier part of the year. The open-water marshes are still waters with little or negligible current (low energy), thus transport and deposition of sediment maybe very limited. During the sediment sampling conducted in November 2010, approximately 8 to 16 inches of decaying vegetation (leaves, brush, etc.) covered the bottom of the open-water marsh north of the landfill, which would further inhibit sediment migration. This pathway needs further assessment.

5.0 OBJECTIVES AND RATIONALE

The Field Sampling Plan outlines the data gaps associated with prior investigations, the new data proposed for collection and associated data quality objectives and rationale. The Quality Assurance Project Plan (QAPP, Appendix A) and Field Sampling Plan (Appendix B) present the approach, protocols, and sampling procedures to meet the Data Quality Objectives (DQOs) of this work plan.

5.1 Summary of Data Gaps

The objective of the RI is to delineate the extent of PCBs, VOCs, SVOCs, and inorganic compounds in soil and groundwater, and to complete the FWRIA with additional sediment and surface water evaluation as warranted. The following initial objectives have been identified for the RI:

- Surface soil sampling, to meet NYSDEC requirements for risk assessment.

- Additional soil sampling and analysis is needed to delineate PCB hot spots and delineate the extent of VOCs, SVOCs, and metals. VOCs were detected in soil within shallow groundwater plume; however no residual source mass was identified.

- A background study needs to be conducted for surface (0 to 0.5 feet bgs) and subsurface (0.5 to 2 feet bgs) soil, shallow and deep groundwater, and sediment to adequately evaluate site media for potential metals impacts.

- Surface water and sediment impacts have been detected; therefore, the DER-10 requires an FWRIA Part 1 (Resource Characterization, DER-10 §3.10.1) and, if required based on the results of Part 1, an FWRIA Part 2 (Ecological Impact Assessment, DER-10 §3.10.2) to determine an appropriate response action, if appropriate.

- Supplemental data collection for fate and transport, including (but not limited to) hydrologic testing to model contaminant migration, geochemistry and biological evaluation to understand contaminant fate, etc. These will be performed on a limited basis as noted below.

The investigation has been designed to meet the six general objectives listed in NYSDEC's DER-10 guidance and identified previously in Section 1.2. Investigation tasks will be performed in a phased approach, with site evaluation being performed dynamically, and discussed

with stakeholders as data become available. The following screening criteria will be used to assess analytical results:

- Soil results will be screened against Title 6 of the New York Codes, Rules and Regulations (NYCRR), Chapter IV, Subpart 375-6: Remedial Program SCO for Restricted Commercial Land Use, PGW, and Eco SSL.

- Groundwater results will be compared to the NYSDEC GWQS, 6 NYCRR 703.5 for class GA (fresh water) aquifers.

- Surface water results will be compared to the NYSDEC GWQS, 6 NYCRR 703.5, for Class B, C, and D waters (the onsite wetlands/water bodies have not been classified at this time).

- Sediment sample results will be evaluated in accordance with the NYSDEC Division of Fish, Wildlife and Marine Resources, *Technical Guidance for Screening Contaminated Sediments* (revised January 25, 1999).

Refinement of screening criteria will be performed once further site characterization has been completed, including wetlands characterization, identification of fate and transport pathways, and potential receptors.

Major components of investigative DQOs are described in Table 5-1. The phases for this investigation are outlined in detail in Table 5-2.

Table 5-1
Principal Study Questions, Alternative Actions, and Decision Statements

No.	Principal Study Questions	Alternative Action
1.	Are soil and groundwater concentrations above natural background values for metals, or area anthropogenic values PCBs and SVOC or NYSDEC commercial SCOs or PGWs (for soil) or above GWQS (for groundwater)?	a. No — No further action remediation request will be made. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: expanded investigations, risk assessment, and/or removal actions.
Decision Statement: Determine whether soil and groundwater contain constituents at concentrations that exceed background and/or SCOs or PGWs (for soil) or for groundwater GWQSs to decide whether or not follow-up action is needed.		

Table 5-1
Principal Study Questions, Alternative Actions, and Decision Statements

No.	Principal Study Questions	Alternative Action
2.	Do analytical results indicate ecological concerns at AOC G when compared to background or screening values?	a. No — No further action remediation request will be made. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: FWRIA Resource Characterization and, as needed, an Ecological Impact assessment including an expanded investigations, risk assessment, and/or remedial actions.
Decision Statement: Determine whether the study area contains constituents at concentrations that exceed background and/or ecological screening values to decide if follow-up action is needed.		
3.	Does contamination currently identified in shallow groundwater and soil pose a threat to the adjoining wetland?	a. No — No further action remediation request will be made. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: expanded investigations, risk assessment, and/or removal actions.
Decision Statement: Determine whether groundwater and soil contain constituents at concentrations that exceed background and/or ecological screening values are migrating to the wetland and if follow-up action is needed to assess conditions in the wetland.		
4.	Does contamination currently identified in shallow groundwater pose a threat to the underlying deep groundwater?	a. No — No further remedial evaluations will be made and a no further action determination will be sought. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: supplemental investigation, remedial action.
Decision Statement: Determine whether the confining unit is consistent across the site and if follow-up action is needed to assess conditions in deep groundwater.		
5.	Are contaminants north and west of the landfill impacting sediment or surface water?	No — No further remedial evaluations will be made and a no further action determination will be sought. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: supplemental investigation, remedial action.
Decision Statement: Determine whether impacted media contains constituents at concentrations that exceed background and/or ecological screening values are migrating to the wetland and if follow-up action is needed to assess conditions in the wetland.		
6.	Are site constituents being transported to Sanders Creek from the open-water marsh adjacent to AOC G landfill?	a. No — No further remedial evaluations will be made and a no further action determination will be sought. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: supplemental investigation, removal action, or other remedial action.
Decision Statement: Determine whether RI data indicate risk such that a feasibility study is required and whether data are sufficient to determine treatment volume.		
7.	Are site constituents being transported to the western open-water marsh and ultimately to the South Branch of Ley Creek from the open-water marsh adjacent to AOC G landfill?	a. No — No further remedial evaluations will be made and a no further action determination will be sought. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: supplemental investigation, removal action, or other remedial action.
Decision Statement: Determine whether RI data indicate risk such that a feasibility study is required and whether data are sufficient to determine treatment volume.		

Table 5-1
Principal Study Questions, Alternative Actions, and Decision Statements

No.	Principal Study Questions	Alternative Action
8.	Do site constituents present excess risk to human health and/or the environment such that remedial action may be required? If so, is nature and extent adequately defined to determine treatment volumes?	a. No — No further remedial evaluations will be made and a no further action determination will be sought. b. Yes — Follow-up action may be warranted. Possible follow-up actions include: supplemental investigation, development of remedial action objectives, technology screening, assembly of alternatives, and screening of potential remedial alternatives.
Decision Statement: Determine whether RI data indicate risk such that a feasibility study is required and whether data are sufficient to determine treatment volume.		

5.2 Approach

The work plan objectives will be met through a phased approach. The scope of each phase is based the results of investigations conducted between October 2008 and November 2010. More than one phase may be ongoing at one time to facilitate continued progress conducting the RI. These phases are detailed in Table 5-2.

5.2.1 RI Phase I Tasks

Phase I tasks can be summarized as identifying COPCs onsite and delineating contamination. The following sections describe the number and types of samples to be collected, the media which will be sampled, sample collection methods, and the sampling locations for each environmental media. Sample locations are shown on Figure 5-1 through 5-5. Analytical methods and quality assurance/quality control (QA/QC) procedures are outlined in the QAPP Appendix A. Field sampling procedures are provided in the Field Sampling Plan Appendix B.

Surface Soil Characterization

Surface soil will be characterized using biased sampling techniques from a 100-foot by 100-foot grid. Surface soil sampling locations are shown on Figure 5-1. The sampling grid will be offset from the 2009 sampling grid by adjusting the starting point 50 feet west and 50 feet north; approximately 35 samples will be collected from this grid. The surface soil interval will be analyzed for VOCs, SVOCs, PCBs, and metals. The soil samples for VOC analysis will be collected from 0 to 2 inches bgs and samples for all other analyses will be collected from 0 to 0.5 feet bgs for other analyses exclusive of rocks, twigs, leaves, and other vegetation.

Background Characterization

A three-part background characterization will be implemented to assess:

- naturally occurring concentrations of metals in groundwater, surface soil, subsurface soil, and sediment

- anthropogenic (urban) background levels of SVOCs and PCBs in surface soil, subsurface soil, and sediment

Proposed background sample locations for soil and groundwater are shown on Figure 5-2.

Two background monitoring wells upgradient of the Carrier main facility (MW09 shallow and MW16D deep) and 4 shallow and 2 deep monitoring wells within the TRPL (TR08, TR10, TR11, TR12 shallow and TR14D and TR13D deep) will be sampled for target analyte list (TAL) metals. Results will be reviewed for statistical trends using the current version of ProUCL.

To determine background soil concentrations, 12 to 15 locations will be sampled at two depth intervals (0 to 0.5 foot and 0.5 to 2 feet bgs) and analyzed for target compound list (TCL) SVOCs, PCBs, and TAL metals; tentative identified compounds (TICs) (10 VOC + 20 SVOC) will also be reported.

Sediment samples will be collected from 8 to 10 locations within the western open-water marsh area (locations to be determined by field inspection) and analyzed for TCL SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported.

Results from groundwater, soil, and sediment sampling will be reviewed for statistical trends using the current version of ProUCL. These data will then be used to generate a site-specific background concentration for metals, SVOCs, and PCBs.

Groundwater Characterization

To assess current groundwater conditions, samples will be collected from the following wells within AOC G and sampled for VOCs, SVOCs, PCBs, and TAL metals (the 10 highest concentration VOC TICs and 20 highest concentration SVOC TICS will also be reported) using, as practical, low flow/low stress or standard purging and sampling techniques:

Shallow		Deep
TR05	TR19	TR09D
TR06	TR20	TR25D
TR15	TR21	TR26D
TR16	TR22	TR27D
TR17	TR23	—
TR18	TR24	—

Select wells (up to 8 shallow and 2 deep) will also be sampled for geochemistry parameters and biological testing. Monitoring well locations are shown on Figure 5-3.

Hydrologic Characterization (Shallow and Deep Groundwater)

To assess the hydrologic characteristics of the shallow groundwater, specific capacity tests or slug tests will be performed on select wells. These tests will provide first order-estimates of aquifer characteristics. Procedures for testing are detailed in the FSP.

Groundwater to Surface Water Pathway Analysis

Prior sampling identified VOCs in surface water, and to assess potential pathways from AOC G groundwater to wetland sediment/surface water, pore water samples will be collected to evaluate the groundwater-to-surface water pathway.

To accomplish pore water assessments, 8 to 10 well points will be installed in the wetland. Samples will be collected for VOC, SVOC, and PCB analysis.[8] Locations will be downgradient of TR16, TR19, and TR17 and/or based on field observations.

Passive Soil-Gas Survey

NYSDEC identified concerns about residual VOC contamination in soil and groundwater near TR06 and TR15. As an initial phase to locate residual source material, a passive soil-gas survey (PSG) will be conducted. Approximately 35 PSG modules will be installed on a 50 foot by 50 foot grid that encompasses TR06 and TR15 out to 100 feet around the suspected source area. The total grid size will be approximately 300 feet by 250 feet (Figure 5-4). PSG sampler deployment and retrieval are detailed in the FSP. Findings will then be used to locate confirmation borings, to be collected during Phase II activities.

[8] The 10 highest concentration VOC TICs and 20 highest concentration SVOC TICS will also be reported

Wetland Sediment and Surface Water Characterization

To further characterize the wetlands immediately adjacent to AOC G, impacts will be assessed along transects extending north and west of the AOC G landfill boundary (Figure 5-5). The purpose of the transect investigation will be twofold: (1) to determine the presence/absence of contamination north and west of the landfill, and (2) to obtain initial characterization samples from sediment, surface water, and pore water in accordance with DER-10 and applicable guidance documents.

The transect sampling protocol will include the following steps:

- Inspecting the transect visually
- Performing a shovel survey of mounded areas to expose shallow subsurface materials
- Photographing shallow subsurface materials, transect vegetation, and transect wildlife
- Documenting transect conditions
- Identifying sampling locations
- Sampling select locations along the transect, including:
  - Representative mound/debris piles (high spots), presumed to be soil or waste samples
    - 0 to 6-inch interval, 2- to 4-foot interval
  - Sediment accumulation areas (low spots) – 0- to 6-inch interval
  - Surface water (where present)
  - Pore water at the lowest sediment elevation area
  - Pore water at the northern/western point along the transect

Sample locations will be marked using metal stakes and then located using global positioning position (GPS) for mapping purposes. All samples will be submitted for laboratory analysis of VOCs, SVOCs, PCBs, and TAL metals.[9, 10] TOC and grain size samples will also be collected at a frequency of one per five sediment samples. Additional sampling will be performed during Phase II activities, if data gaps on nature and extent remain.

Actual sample quantities will be determined in the field after walking each transect. For estimating purposes, however, the following sample quantities have been proposed:

[9] The 10 highest concentration VOC TICs and 20 highest concentration SVOC TICS will also be reported
[10] Pore water samples will not be analyzed for TAL metals.

- Soil — 17
- Sediment — 17
- Surface water — 17
- Pore water — 16

Concurrent with sampling activities, three to five staff gauges will be installed within the wetland adjacent to the AOC G landfill to assess seasonal water level fluctuations and to facilitate development of potentiometric surface maps.

Surface Soil to Sediment and Surface Water Runoff Pathway Analysis

To assess potential pathways from AOC G surface soil to wetland sediment, sampling will be performed in areas identified where surface soil runoff may discharge. During Phase I RI activities, low areas will be staked and samples collected for VOC, SVOC, PCB, TOC, and metals analysis.[11] Approximately 8 samples are proposed for collection; samples will be collected from the 0- to 0.5-foot interval. Locations will be based on the final topographic survey and field observations.

Similarly, surface water runoff will be sampled once overland flow pathways have been identified following observation of storm events. Locations will be staked. Storm water samples will be collected using grab sample techniques for VOC, SVOC, PCB, TOC, and metals analysis.[12] Approximately 5 samples are proposed for collection.

5.2.2 RI Phase II Tasks

Phase II RI investigation tasks will focus on the results of Phase I and, if needed are expected to focus on further delineate hotspots/source areas investigation, further assess migration pathways, and further evaluate impact to site receptors. Following the collection and review of Phase I data, a meeting will be held with the NYSDEC staff to discuss the Phase I results and data gaps that may require Phase II sampling.

[11] The 10 highest concentration VOC TICs and 20 highest concentration SVOC TICS will also be reported
[12] The 10 highest concentration VOC TICs and 20 highest concentration SVOC TICS will also be reported

Table 5-2
Phases for Sampling and Analysis

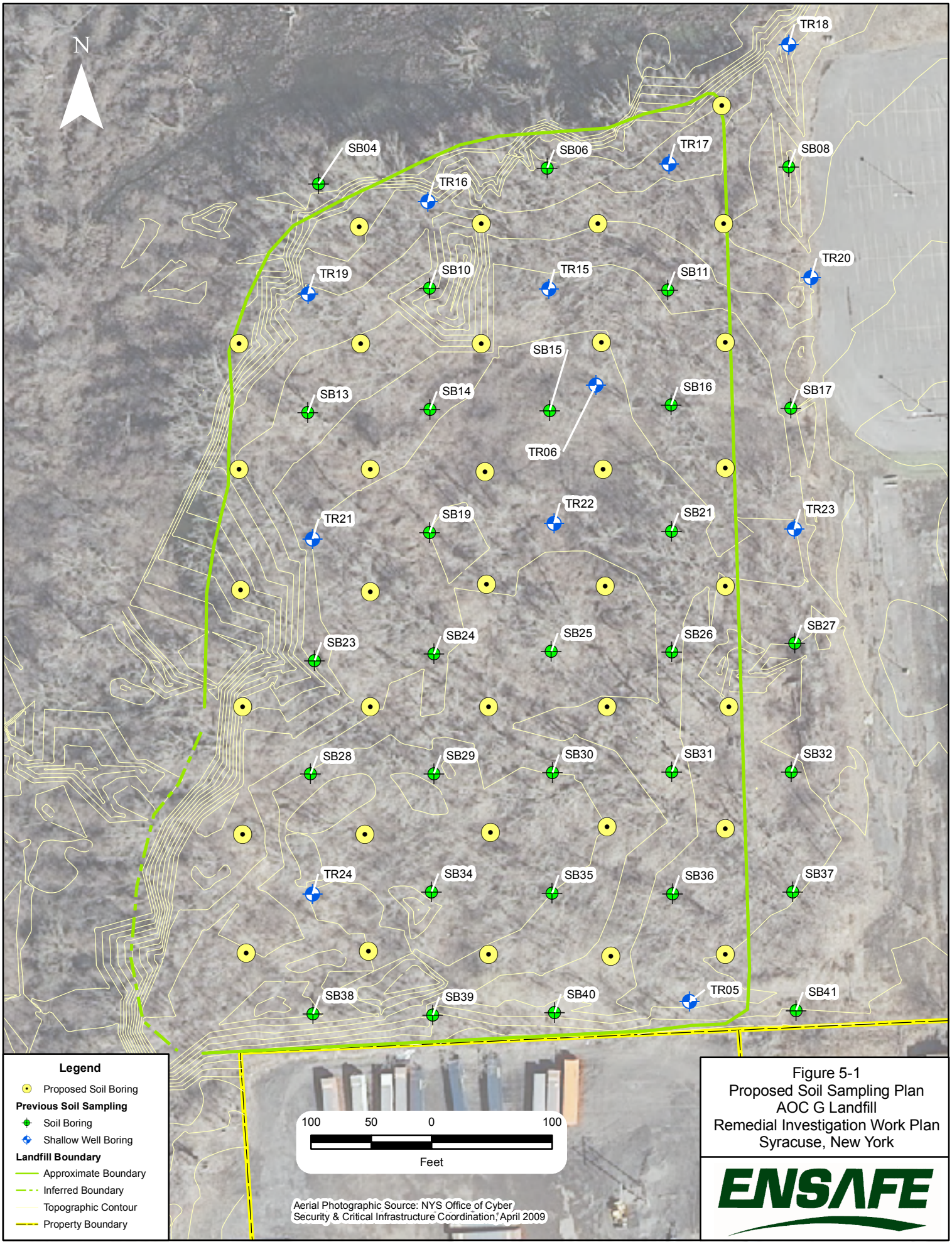
Task	Objective	Approach	Scope
PHASE I			
Surface soil sampling	To determine the presence/absence of contaminants across the landfill, and to identify site-specific COPCs.	Sampling will be performed in a grid pattern across AOC G. 100 foot by 100 foot grid offset from previous grid by 50 feet to the west and 50 feet to the north (Figure 5-1).	– 35 Surface soil samples will be collected at each grid node from (0 to 0.5 foot bgs) and analyzed for VOCs, SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported
Background Study	– To determine the naturally occurring concentrations of metals in groundwater, surface soil, subsurface soil, and sediment – To determine anthropogenic (urban) background levels of SVOCs and PCBs in area soil	– Sampling shallow and deep groundwater monitoring wells upgradient of the Carrier facility east of Thompson Road and monitoring wells within the TRPL upgradient of AOC G (Figure 5-2). – Sampling soil at representative background locations on and off the Property (Figure 5-2). – Sampling reference sediment locations from the open-water marshes on the Property.	– Groundwater — Sample background locations upgradient of the Carrier main facility (MW09 shallow, and MW16D deep) and 4 shallow and 2 deep monitoring wells within the TRPL (TR08, TR10, TR11, TR12 shallow and TR14D and TR13D deep) for TAL metals and conduct statistical background analysis using the current version of ProUCL – Soil — Sample 12 to 15 locations collecting samples from (0 to 0.5 foot and 0.5 to 2 feet bgs) and analyze for SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported – Sediment — Sample 8 to 10 locations from western open-water marsh area (locations to be determined by field inspection) and analyze for TCL VOC, SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported
Shallow Groundwater	– To assess aquifer to determine groundwater flow direction, and to obtain preliminary estimates of aquifer properties and geochemistry – To assess shallow groundwater to surface water migration pathway – To identify possible VOC source mass in soil near TR06 and TR15	– Sample shallow monitoring wells within the landfill (Figure 5-3) – Conduct hydrologic testing – Well points will be used in the wetland to assess groundwater-to-surface water discharge – Complete a passive soil gas (PSG) survey based on a 50 foot by 50 foot grid to assess the potential for a VOC source area in the area of TR06 and TR15 (Figure 5-4)	– Sample 12 shallow monitoring wells in landfill for TCL VOCs, SVOCs, PCBs, TAL metals (dissolved and field-filtered), TICs (10 VOC + 20 SVOC) will also be reported – Sample up to eight wells for geochemistry parameters and biological testing – Slug or specific capacity testing on 6 to 8 shallow monitoring within the landfill and install 3 to 5 staff gauges in the wetland (open-water marsh) adjacent to the AOC G Landfill – Install 8 to 10 well points (drive points) into the shallow groundwater zone and within the wetland and sample for TCL VOCs, SVOCs, and PCBs; TICs (10 VOC + 20 SVOC) will also be reported – Install 35 PSG samplers at 24 to 30 inches bgs based on a 50 foot by 50 foot grid in the area of TR06 and TR15 (Figure 5-2).

Table 5-2
Phases for Sampling and Analysis

Task	Objective	Approach	Scope
Deep Groundwater	– To monitor groundwater quality – To obtain preliminary estimates of aquifer properties	– Sample deep monitoring wells within landfill (Figure 5-3) – Conduct hydrologic testing	– Sample four deep monitoring wells in landfill for TCL VOCs, SVOCs, PCBs, and TAL metals (total and field-filtered), TICs (10 VOC + 20 SVOC) will also be reported – Sample two wells for geochemistry parameters – Slug or specific capacity testing on 4 deep monitoring within the landfill.
Wetland Sediment/Surface Water	To assess the presence/absence of contaminants in the wetland adjacent to the AOC G landfill.	– Sampling will be performed in areas identified where surface soil runoff may discharge. – Collect soil, sediment, surface water, and pore water samples along transects extending north and west from the edge of the AOC G landfill (Figure 5-5). – Conduct FWRIA Resource Characterization (RC).	– Assumed up to 8 sampling sites will be identified based on field inspection of runoff drainage from the landfill and samples will be collected from 0 to 0.5 feet for analysis of TCL VOCs, SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported. – Soil, sediment, and surface water samples will be collected along each transect and analyzed for TCL VOCs, SVOCs, PCBs, and TAL metals; TICs (10 VOC + 20 SVOC) will also be reported. Pore water will only be analyzed for TCL VOCs, SVOCs, and PCBs. Soil will be sampled from the 0- to 6-inch interval and the 2- to 4-foot interval; sediment will be sampled from the 0- to 6-inch interval. – TOC and grain size will be collected from 20% of grid samples – Following further assessment of topography in the TRPL area, collect storm water runoff samples (number to be determined) from topographic low areas/surface water collection areas following a storm event. – Collect additional information to supplement the data collected during the Wetland Reconnaissance to complete the FWRIA-Resource Characterization and evaluate the need for conducting a FWRIA Ecological Impact Assessment (EIA).

Notes:

bgs	=	below ground surface
COPCs	=	constituents of potential concern
AOC	=	Area of concern
VOC	=	Volatile organic compound
SVOC	=	Semivolatile organic compound
PCB	=	Polychlorinated biphenyl
TAL	=	Target analyte list
PSG	=	Passive soil gas


N
TR18
SB04
SB06
TR17
SB08
TR16
TR19
SB10
TR15
SB11
TR20
SB15
SB13
SB14
SB16
SB17
TR06
TR21
SB19
TR22
SB21
TR23
SB23
SB24
SB25
SB26
SB27
SB28
SB29
SB30
SB31
SB32
TR24
SB34
SB35
SB36
SB37
SB38
SB39
SB40
TR05
SB41
Legend
Proposed Soil Boring
Previous Soil Sampling
Soil Boring
Shallow Well Boring
Landfill Boundary
Approximate Boundary
Inferred Boundary
Topographic Contour
Property Boundary
100 50 0 100
Feet
Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009
Figure 5-1
Proposed Soil Sampling Plan
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York
ENSAFE
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Sanders Creek

Soil BG

TR08
TR14D
TR10
TR07
TR11
TR18
TR12
TR17
TR16
TR25D
TR15
TR20
TR19
TR06
TR21
TR22
TR23
TR13D
TR26D
TR24
TR27D
TR05
TR09D

MW-9
MW-16D

South Branch Ley Creek

N

Legend

- Soil Background Location
- Deep Well
- Shallow Well
- Background Well
- Background Soil
- Parking Lot
- Fence
- Property Boundary
- Streams

Landfill Boundary

- Approximate Boundary
- Inferred Boundary

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

400 200 0 400
Feet

Figure 5-2
Proposed Background Locations
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

ENSAFE

N

TR14D
TR08
TR07
TR10
TR11
TR18
TR12
TR17
TR16
TR25D
TR19
TR15
TR20
TR06
TR26D
TR22
TR23
TR21
TR13D
TR24
TR27D
TR09D
TR05

100 50 0 100
Feet

Aerial Photographic Source: NYS Office of Cyber Security & Critical Infrastructure Coordination, April 2009

Legend

- Deep Well
- Shallow Well
- Approximate Landfill Boundary
- Inferred Landfill Boundary
- Property Boundary
- Background — Proposed Background Sampling Location

Figure 5-3
Shallow and Deep Monitoirng Wells
Sampling Locations
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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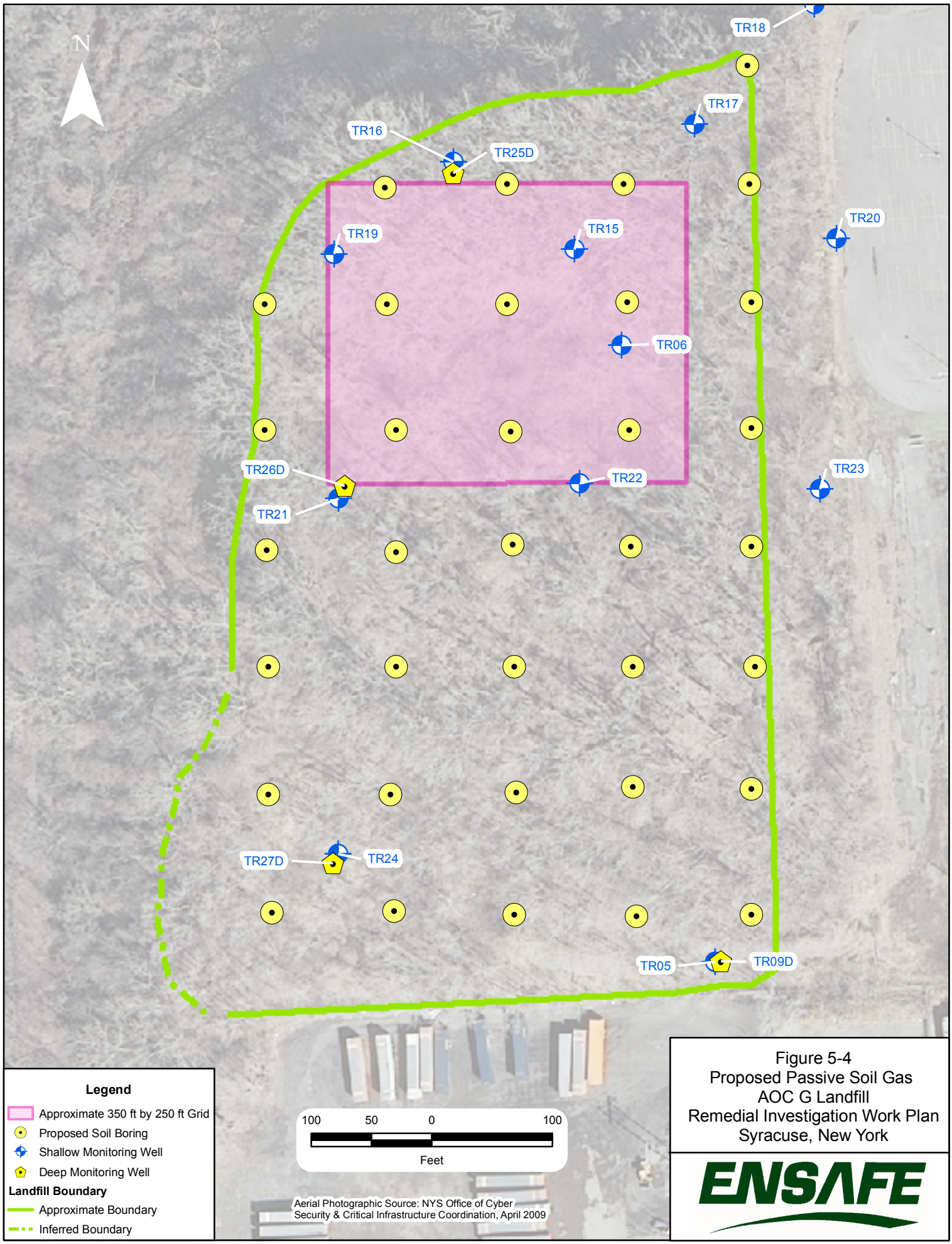

Figure 5-4
Proposed Passive Soil Gas
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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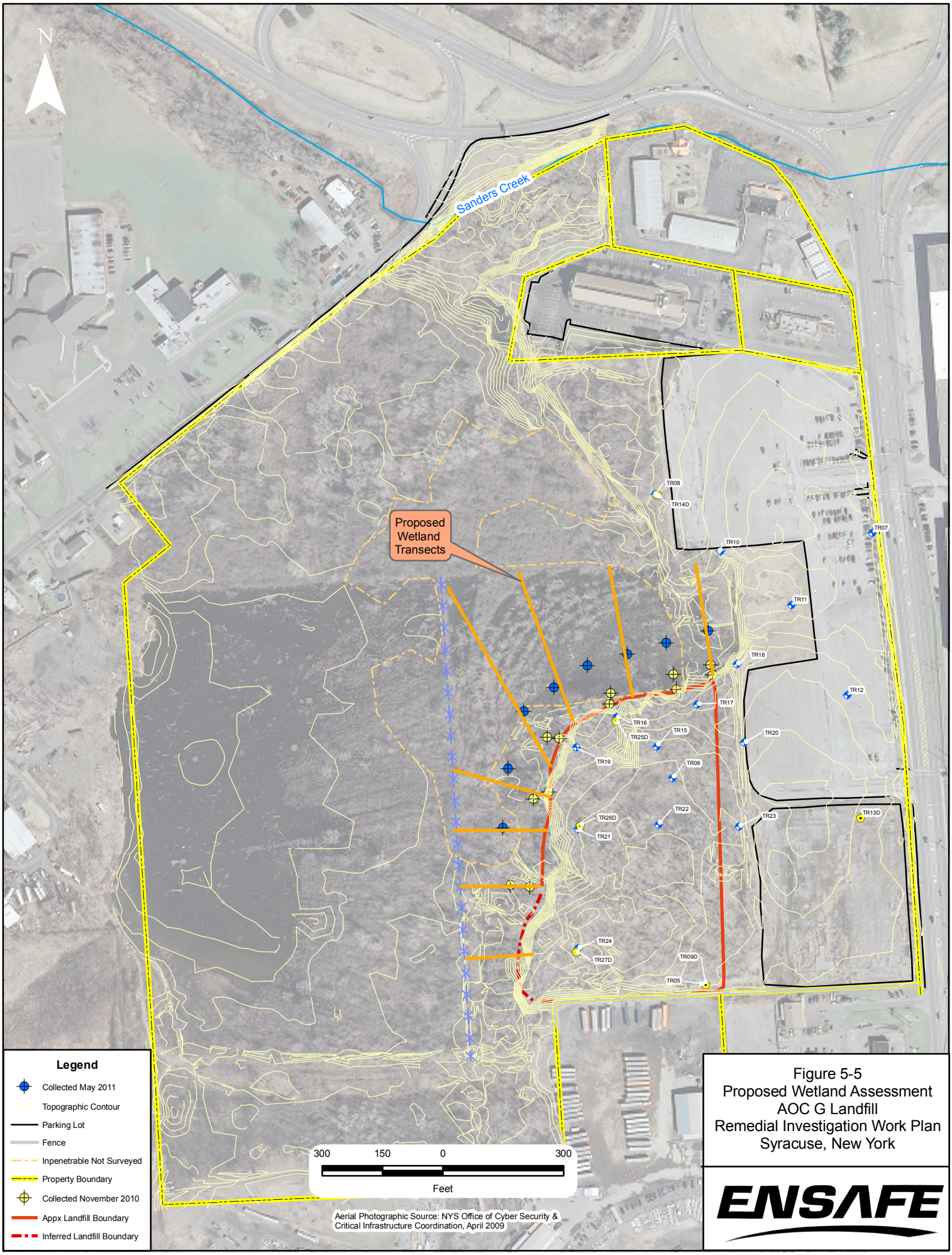

Figure 5-5
Proposed Wetland Assessment
AOC G Landfill
Remedial Investigation Work Plan
Syracuse, New York

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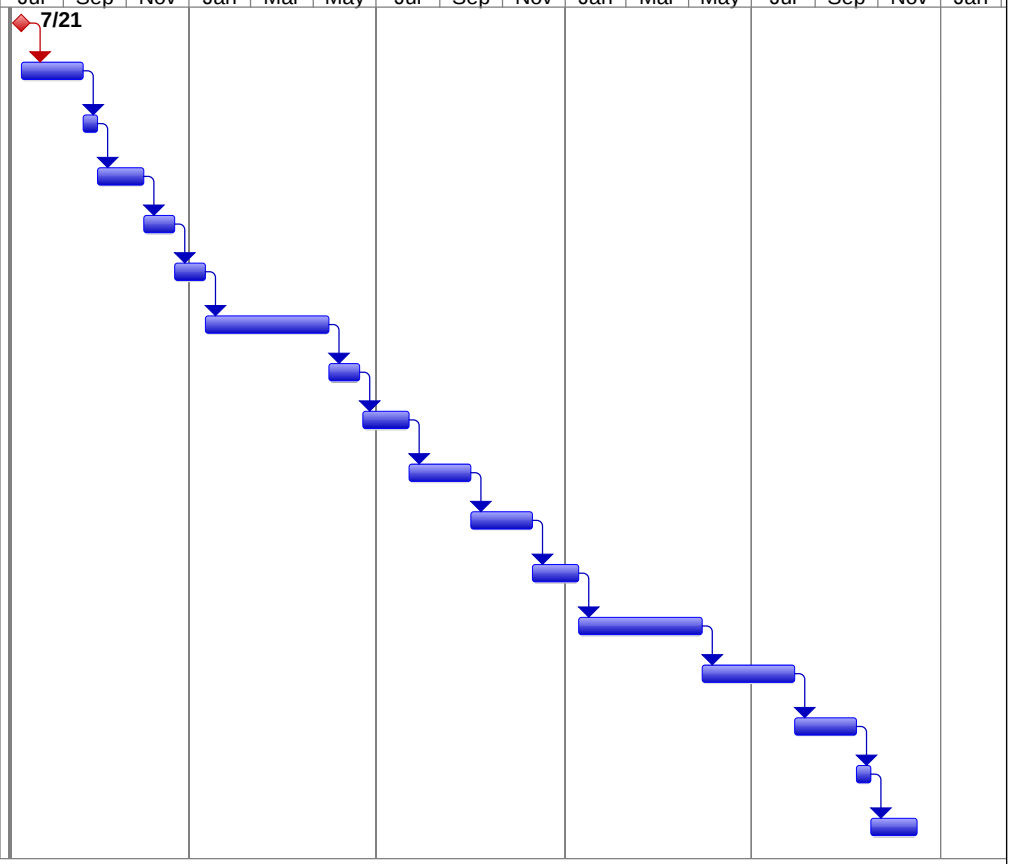
6.0 SCHEDULE

EnSafe estimates the planned field activities to require multiple field events to complete the RI. The anticipated start date will be with 45 days of approval of the work plan by NYSDEC. The analytical laboratory reports will be available approximately 30 days following sample receipt by the laboratory. Pending client review, technical memoranda will be prepared and submitted to NYSDEC within 120 days of receipt of the hardcopy laboratory report for each phase. The project schedule is presented in Figure 6-1.

ID	Task Name	Duration	Start	Finish
1	Draft RI Work Plan	0 days	Thu 7/21/11	Thu 7/21/11
2	DEC Review of Phase I RI Work Plan	60 days	Fri 7/22/11	Tue 9/20/11
3	Response to Comments Phase I Work Plan	14 days	Tue 9/20/11	Tue 10/4/11
4	Final RI Work Plan	45 days	Tue 10/4/11	Fri 11/18/11
5	DEC Approval of RI Work Plan	30 days	Fri 11/18/11	Sun 12/18/11
6	Phase I Planning & Contracting	30 days	Sun 12/18/11	Tue 1/17/12
7	Phase I Field Work (Mobilize)	120 days	Tue 1/17/12	Wed 5/16/12
8	Phase I Data Assessment	30 days	Wed 5/16/12	Fri 6/15/12
9	Phase I RI Results Technical Memo	45 days	Mon 6/18/12	Thu 8/2/12
10	Phase II RI Work Plan	60 days	Thu 8/2/12	Mon 10/1/12
11	DEC Review of Phase II RI Work Plan	60 days	Mon 10/1/12	Fri 11/30/12
12	Phase II Planning & Contracting	45 days	Fri 11/30/12	Mon 1/14/13
13	Phase II Field Work (Mobilize)	120 days	Mon 1/14/13	Tue 5/14/13
14	RI Data Assessment and Report Preparation	90 days	Tue 5/14/13	Mon 8/12/13
15	DEC Review of Draft RI Report	60 days	Mon 8/12/13	Fri 10/11/13
16	Response to Comments Draft RI Report	14 days	Fri 10/11/13	Fri 10/25/13
17	Final RI Report	45 days	Fri 10/25/13	Mon 12/9/13



Notes:

Actual field duration may be adjusted based on weather and site accessibility.

Figure 6-1
AOC G Landfill RI
Syracuse, New York

Task	External Milestone	Manual Summary Rollup	
Split	Inactive Task	Manual Summary	
Milestone	Inactive Milestone	Start-only	
Summary	Inactive Summary	Finish-only	
Project Summary	Manual Task	Progress	
External Tasks	Duration-only	Deadline	

7.0 DELIVERABLES

A technical memorandum for each phase will be submitted to NYSDEC 120 days following the receipt of the laboratory report. Each memorandum will present the results of field investigation and sampling including:

- Tabulated Analytical detected results
- Laboratory Data Sheets/Chains of Custody
- Field Forms
- Water Level Data
- Copy of Field Notes
- Brief Description of Field Activities including any deviations from the RI work plan along with all corrective Actions
- An evaluation of the results to determine if additional assessment is necessary to accomplish the phase goals
- Recommendations for proceeding with additional investigation
- Work Plan for follow-up Phases will be submitted within 120 days of completion of previous phase

8.0 REFERENCES

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Appendix A
Quality Assurance Project Plan

Appendix B
Field Sampling Plan

Appendix C
Site-Specific Health and Safety Plan

Appendix D
Previous Reports
Adobe Acrobat Format

Appendix E
Preliminary Wetland Reconnaissance

Appendix F
Sediment Sampling Results
Appendix F-1 — November 2010
Appendix F-2 — May 2011

Appendix G
Geophysical Survey
November 2010