



Division of Environmental Remediation

**Preliminary Site
Assessment**

**5565 River Road Site
Tonawanda, Erie County, New York
Site Number 915239**

August 2012

New York State Department of Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203

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1.0 EXECUTIVE SUMMARY

The 5565 River Road Site (the Site) consists of approximately 24 acres of a single parcel located at 5565 River Road (the Subject Property) in the Town of Tonawanda, Erie County, New York (Figure 1-1). The property is currently owned by the estate of Nick Magliarditti. The Subject Property is approximately 37 acres in size in a mixed commercial and industrial neighborhood, and is located approximately 900 feet south of River Road. Access to the property is by a gravel drive on adjacent property owned by the Town of Tonawanda (Figure 1-2). The Subject Property is bounded on the west by vacant, forested property owned by the Lake Ontario Steel Company and by the Riverview Industrial Center Site; on the south by commercial property owned by Enbridge Energy Partners; on the east by the gravel drive and vacant property owned by the Town of Tonawanda; and on the north by a truck terminal owned by RLR Investments, LLC (Figure 1-2). The Riverview Industrial Center Site was investigated by the NYSDEC between May and August 2009, and remediated by the NYSDEC between September 2009 and April 2010.

The 5565 River Road property is covered with a mixture of forested land, overgrown grass, scrub brush and shrubs, with the southern third of the property the most heavily vegetated (Figure 1-3).

Three creeks traverse the Site (Figure 1-2): (1) Rattlesnake Creek in the northern portion of the Site, which has been culverted across a large portion of the Site and adjacent property to the east; (2) an unnamed creek in the central portion of the Site (termed the middle creek), which has been culverted across the property to the east; and (3) an unnamed creek that forms the southern boundary of the Site (termed the south creek), which is culverted across the entire Site and a portion of the adjacent property to the east. All three creeks discharge to Two Mile Creek to the east (Figure 1-2), which discharges to the Niagara River approximately 2,500 feet downstream of the Site (Figure 1-1).

Historic information concerning the 5565 River Road Site is extremely limited, so the disposal history of the Site has largely been elucidated through a review of historical aerial photographs. These photographs reveal that from 1927 to sometime prior to 1966 the Subject Property was vacant with undeveloped shrub and forested land. A 1966 aerial photograph reveals several areas of apparent disturbance that appear to be associated with the individual fill observed

on the property. Dumping on the property appears to have continued through at least 1995. By 2005 dumping appears to have ceased, and trees were starting to grow on the former disposal areas.

A Phase I Environmental Site Assessment (ESA) of the Subject Property was completed for the Town of Tonawanda in September 2009. A site reconnaissance completed during the ESA identified several large mounds of industrial fill (described in more detail in Section 3.2), and 15 to 20 unlabeled 55-gallon drums in the central portion of the property. While the majority of these drums were empty, rusted and in poor condition, several drums contained a black, tar-like substance.

The New York State Department of Environmental Conservation (NYSDEC) conducted a Preliminary Site Assessment (PSA) at the Site in 2011 to obtain information sufficient to: (1) determine if the 5565 River Road Site should be included in the Registry of Inactive Hazardous Waste Disposal Sites In New York State (Registry), and if so, what the appropriate site classification should be; and (2) determine if the Site is eligible for NYSDEC's Brownfield Cleanup Program (BCP).

The stratigraphy of the Site was evaluated by examining the stratigraphic logs from test pits completed during the Preliminary Site Assessment. These logs reveal the presence of clean fill (thicknesses ranging from 0.4 to 9.0 feet), industrial fill (thicknesses ranging from 0.5 to 16.0 feet) and native silty clay soils at the Site. Clean fill consisted predominantly of reworked, native silty clay soil with trace amounts of brick, concrete, gravel and wood. Industrial fill consisted of homogeneous flyash or foundry sand containing drums, wood, metal and garbage. Flyash is the predominant fill type in the north-central portion of the Site.

Saturated soil/fill was not encountered at thicknesses sufficient to justify the installation of micro-wells. As a result, the hydrogeology of the 5565 River Road Site was not evaluated during the Preliminary Site Assessment.

The results of the Preliminary Site Assessment indicate that surface soil at the Site contains volatile organic compounds, semivolatile organic compounds, pesticides, polychlorinated biphenyls (PCBs) and metals. Concentrations of methylene chloride, toluene, xylene, endrin, heptachlor, PCBs, and the EPA priority pollutant metals arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. Concentrations of PCBs, arsenic and cadmium also exceeded the NYSDEC Part 375 commercial soil cleanup

objectives.

Foundry sand at the Site contains volatile organic compounds, semivolatile organic compounds, PCBs, metals, fuel oil, lube oil, and total petroleum hydrocarbons. Concentrations of acetone, methylene chloride, toluene, xylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, PCBs, and the EPA priority pollutant metals arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. Concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, PCBs, arsenic, cadmium, copper and nickel also exceeded the NYSDEC Part 375 commercial soil cleanup objectives. Two samples contained PCBs at concentrations that exceeded the 50 ppm hazardous waste criterion.

Flyash at the Site contains volatile organic compounds, semivolatile organic compounds, PCBs and metals. Concentrations of methylene chloride, toluene, xylene, (3+4)-methylphenol, benzo(a)anthracene chrysene, PCBs, and the EPA priority pollutant metals arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. Concentrations of PCBs, arsenic, cadmium and lead also exceeded the NYSDEC Part 375 commercial soil cleanup objectives. Barium, a non-priority pollutant metal, exceeded the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives.

Numerous subsurface drums were encountered during the Preliminary Site Assessment, with the waste from two drums collected for chemical analysis. These wastes included a putty-like material from a drum encountered in test pit D-37 and a pink sludge believed to be paint waste from a drum encountered in test pit J-30. Concentrations of 1,2,4-trimethylbenzene, ethylbenzene, methylene chloride, toluene, trichloroethene, xylene, naphthalene, PCBs, and the EPA priority pollutant metals cadmium, chromium, copper, lead, mercury and zinc exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. Concentrations of 1,2,4-trimethylbenzene, ethylbenzene, methylene chloride, toluene, trichloroethene, xylene, PCBs, cadmium, chromium, copper and lead also exceeded the NYSDEC Part 375 commercial soil cleanup objectives. Sample J-30 also contained 4-methyl-2-pentanone at a concentration that exceeded Commissioner's Policy CP-51 protection of groundwater soil cleanup objective. In addition, both samples contained barium, a non-priority pollutant metal, at concentrations that exceeded the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives. Sample D-37 contained PCBs at a concentration that exceeded the 50 ppm

hazardous waste criterion, while sample J-30 is a characteristic hazardous waste for ignitability (D001) and lead (D008).

Surface water at the 5565 River Road Site contains volatile organic compounds and metals. Concentrations of methylene chloride, aluminum and iron exceeded the NYSDEC surface water standards or guidance values.

Sediment at the Site contains volatile organic compounds, semivolatile organic compounds, pesticides, PCBs and metals. Concentrations of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, 4,4'-DDE, PCBs, and the EPA priority pollutant metals arsenic, cadmium, chromium, copper, lead, nickel and zinc exceeded the NYSDEC sediment criteria.

The Preliminary Site Assessment conducted at the 5565 River Road Site revealed that a consequential amount of hazardous waste (PCBs [concentrations >50 ppm], ignitability [D001] and lead [D008]) is present at the Site. This waste, and other industrial fill, appears to have adversely impacted sediment in Rattlesnake Creek and the middle creek adjacent to the Site. In addition, the presence of contaminated surface soil likely poses a public health risk through direct contact with exposed industrial fill and by inhalation of contaminated dust by ATV users. As a result, it is recommended that the 5565 River Road Site be listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site.

2.0 INTRODUCTION

Between October and December 2011 the NYSDEC conducted a Preliminary Site Assessment field investigation at the 5565 River Road Site in the Town of Tonawanda, Erie County, New York (Figure 1-1). A Phase I Environmental Site Assessment (ESA) conducted at the Site in 2009 by the Town of Tonawanda identified the presence of a significant quantity of industrial fill, which through erosion, had the potential to impact three on-Site tributaries to the Niagara River (Figure 1-2). The Site is also located within the Town of Tonawanda's Brownfield Opportunities Area (BOA). As a result, the Division of Environmental Remediation (DER) conducted a Preliminary Site Assessment at the 5565 River Road Site to determine if hazardous wastes or substances were present, and if present, to determine if there was a consequential amount. The Preliminary Site Assessment was also conducted to determine the degree to which historic waste disposal has contaminated environmental media at and near the Site. The study results will be utilized to determine whether the 5565 River Road Site should be included in the Registry, or if the property is eligible for NYSDEC's Brownfield Cleanup Program (BCP).

This report summarizes the findings of the Preliminary Site Assessment. The remaining sections of this report are organized as follows:

- **Section 3.0, Site History and Background:** This section describes the Site, and discusses the disposal history and previous investigations completed;
- **Section 4.0, Study Objectives and Assessment Activities:** This section describes the objectives of the Preliminary Site Assessment and the activities that were completed during the investigation;
- **Section 5.0, Geology and Hydrogeology:** This section describes the regional and Site geology and hydrogeology. The characteristics, areal extent and hydrogeologic properties of the strata are discussed;
- **Section 6.0, Investigation Results:** This section describes the findings of the Preliminary Site Assessment, including general observations and a summary of the analytical results obtained from various environmental media (i.e., surface soil, industrial fill, drum waste, surface water and sediment);

- **Section 7.0, Nature and Extent of Contamination:** This section evaluates the analytical results of the Preliminary Site Assessment to determine the nature and extent of contamination at the Site;
- **Section 8.0, Discussion and Recommendations:** This section summarizes the findings of the Preliminary Site Assessment as they relate to the objectives presented in Section 4.0. Recommendations for future activities regarding the Site are also discussed; and
- **Section 9.0, References:** This section contains a list of references utilized or cited in the report.

Figures, tables and appendices follow Section 9.0.

3.0 SITE HISTORY AND BACKGROUND

3.1 Site Description

The 5565 River Road Site occupies the northern 24 acres of a 37 acre parcel at 5565 River Road in the Town of Tonawanda, Erie County, New York (Figure 1-1). The Site, located approximately 900 feet south of River Road, is landlocked; access is by a gravel drive on adjacent property owned by the Town of Tonawanda (Figure 1-2). The Subject Property is rectangular in shape, is zoned for industrial use, and is currently vacant and undeveloped. The proposed future use of the property is for commercial purposes. The section, block and lot number (SBL) of the Subject Property is 52.06-3-8.

3.2 Site Features

The 5565 River Road property is heavily vegetated by a mixture of trees, tall grass, scrub brush and shrubs, with the southern third of the property the most heavily vegetated (Figure 1-3). The 5565 River Road Site is covered with industrial fill, with the northern and central portions of the Site containing large mounds of industrial fill that range in height from approximately 5 to 15 feet above the surrounding grade (Figure 3-1). Exposed fill in these mounds consist predominantly of flyash containing trace amounts of coal, slag and coke-like fragments.

The northernmost mound of industrial fill is adjacent to Rattlesnake Creek (Figure 3-1), a tributary to Two Mile Creek that discharges to the Niagara River approximately 2,500 feet downstream of the Site (Figure 1-1). Storm water run-off from the mound likely enters Rattlesnake Creek, and has the potential to adversely impact the Niagara River. A portion of the creek near the mound is culverted, and discharges into an open channel near Two Mile Creek Road (Figures 1-2 and 3-1). An unnamed creek (middle creek) in the south central portion of the Site (Figures 1-2 and 3-1), and an unnamed, culverted creek (south creek) at the south end of the Site (Figures 1-2 and 3-1) also traverse the property from west to east.

Clusters of surface drums were observed at six different areas of the Site (Figure 3-1; see Section 6.1 for more details). The majority of these drums were empty, rusted and in poor condition, although several drums observed by TVGA during their Phase I Environmental Site

Assessment reportedly contained a black, tar-like substance. These drums, however, were not found during the NYSDEC Preliminary Site Assessment.

Property access is unrestricted, and there are numerous ATV trails running across the industrial fill (Figure 3-1).

3.3 Site History & Ownership

Historic information concerning the 5565 River Road Site is extremely limited, so the disposal history of the Site has largely been elucidated through a review of historical aerial photographs. In 1927 the Subject Property was vacant with undeveloped shrub and forested land. A linear disturbed area along the eastern boundary of the property is likely the sewer line that is currently located along this property line. Rattlesnake Creek, the middle creek and the south creek are clearly visible. Adjoining properties were vacant with undeveloped agricultural and forested land.

By 1951 the adjoining property to the northwest was developed with tanks. The Subject Property and remaining adjoining properties were still undeveloped.

A 1966 aerial photograph reveals several areas of apparent disturbance that appear to be associated with the industrial fill. Trails on the property are clearly observed, as are Rattlesnake Creek, the middle creek and the south creek. A nearby property to the east appears to have been developed as a park (now known as Fireman's Park), and the tank farm is still present. The remaining adjoining properties were undeveloped brush and forested land; these properties no longer appear to be utilized for agricultural purposes.

In 1978 the area of disturbance was larger with the eastern portion of Rattlesnake Creek no longer visible. Disturbance was observed along the entire length of this creek west of the tank farm. The middle creek was still clearly visible, but the south creek was not. The adjoining properties to the north and northeast have been developed as truck terminals, and the tank farm was still present. The remaining adjoining properties were still undeveloped brush and forested land.

In 1983 the area associated with the industrial fill was clearly defined. The middle creek was still clearly visible as was the disturbed land to the south. The tank farm and truck terminals

were still present. The remaining adjoining properties were still undeveloped brush and forested land.

In 1995 the area associated with the industrial fill is more distinct. Rattlesnake Creek is again visible across the Site, but appears to have a straighter course than in previous aerial photographs. The middle creek was still clearly visible across the Site, but is no longer visible to the east. The disturbed land south of this creek was more clearly defined, and the south creek is again visible across the Site. The tank farm and trucking terminals were still present, although only three tanks remained in the tank farm. The remaining adjoining properties were still undeveloped brush and forested land.

In 2005 dumping appears to have ceased and trees were starting to grow on the former disposal areas. The tank farm and truck terminals were still present, although only one large tank remained in the tank farm. Rattlesnake Creek is visible across the western third of the Site, with disturbance again observed along the entire length of this creek west of the tank farm. The middle creek and south creek were still visible across the property. ATV trails running across the industrial fill were clearly defined.

In 2008 the former disposal areas are more heavily vegetated, and the ATV trails are more clearly defined. Only a small portion of Rattlesnake Creek in the western portion of the Site was still visible. The adjoining properties are similar to that in 2005, with the exception that Riverwalk Parkway (Figures 1-2 and 1-3) and the first building in the Riverview Solar Technology Park to the west have been constructed.

A Phase I Environmental Site Assessment (ESA) was completed by TVGA Consultants for the Town of Tonawanda in September 2009. A site reconnaissance completed during the ESA identified the large mounds of industrial fill and drums described in Section 3.2. TVGA reported that approximately 15 to 20 unlabeled 55-gallon drums were observed in the center of the site (believed to be Drum Area 2; Figure 3-1). As previously stated, a majority of these drums were empty, rusted and in poor condition, and several contained a black, tar-like substance. There was no evidence, however, of stains or leaks on the exterior of the drums or on the ground surface in the vicinity of the drums.

A records review was completed in 2011 by EmpireGeo Services, Inc. (Empire), a Standby Investigation & Remediation Contractor to the NYSDEC, during Phase I of the Preliminary Site

Assessment conducted at the Site. Information obtained from the Town of Tonawanda Assessor's office appeared to indicate that the Subject Property was previously part of a larger 48.6 acre parcel. Records obtained from the Town of Tonawanda Assessor's office and the Erie County Clerk's office indicated previous ownership of the property or nearby parcels by the following entities:

- D.F. Magliarditti (the Subject Property is currently owned by his estate);
- New K Realty, Inc. (James Sandonato) of 1365 Ashland Avenue, Niagara Falls, New York;
- William Strassner;
- Charles J. Rich;
- Merne E. Rich;
- Clayton Rich;
- Berdett Rich;
- L. Franklin Messer; and
- John Strassner.

Information obtained from the Tonawanda Assessor and the Erie County Clerk also indicated the presence of easements or ownership of small parts of the site or nearby parcels by the following entities:

- Lakehead Pipeline Company (1967, 1973; including a new oil pumping station in 1998);
- Goetz Oil;
- Shep-Par Trucking, George Shepherd, President (1972);
- Barbara Miller;
- Intermountain Terminal Company; and
- Town of Tonawanda (easement).

Due to the brief nature of the information on file at the Assessor's office and the Erie County Clerk's office, it is difficult to ascertain the exact property for each transaction. As a result, some of the entries in these two lists may pertain to parcels that were previously part of the larger property, or may pertain to nearby parcels.

Empire also completed interviews in 2011 during the Phase I PSA. Empire spoke with Mr. Hollywood of Pariso, Inc., a trucking company that owns property east of the Site. Mr. Hollywood

thought that some of the fill materials may have been brought to the Site by Nichter Construction from the former War Memorial Stadium in Buffalo, New York during the 1970s. He also thought that it was likely that some of the material may have come from the Niagara Mohawk Power Plant, located a few miles south on River Road, before their flyash landfill was constructed and opened.

Empire also spoke with Mr. John Podlucky, manager for R&L Carriers, Inc. that is located between the Site and River Road. Mr. Podlucky indicated that he has been at R&L Carriers for about 11 years and that he did witness dumping at the Site during that time.

Empire was not able to find a contact for the Lake Ontario Steel Company, Inc., the reputed owner of the property to the west.

The PSA Site Reconnaissance Report that describes Empire's findings is included in Appendix A.

3.4 Neighboring Properties

Properties surrounding the Site are zoned for commercial and industrial use. The adjoining property to the west is vacant and undeveloped, and consists of a mixture of forested land, overgrown grass and shrubs. Further west, the Riverview Solar Technology Park is being developed. The adjoining property to the north is occupied by R&L Carriers, Inc. and is utilized as a truck terminal. The adjoining property to the south is occupied by a crude oil pipeline pumping station operated by Enbridge Energy Inc., while the adjoining property to the east is being utilized for storage of soil, asphalt and concrete piles by Pariso, Inc.

A crude oil pipeline parallels the Subject Property to the west, while a sanitary sewer, storm sewer and water line parallel the property to the east (Figures 1-2 and 3-1).

4.0 STUDY OBJECTIVES AND ASSESSMENT ACTIVITIES

4.1 Objectives

The overall objective of the Preliminary Site Assessment was to obtain information sufficient to: (1) determine if the 5565 River Road Site should be included in the Registry, and if so, what the appropriate site classification should be; and (2) determine if the Site is eligible for NYSDEC's Brownfield Cleanup Program. The specific objectives of the PSA were to:

- Evaluate the Site to determine if hazardous wastes or substances are present, and if present, to determine if there is a consequential amount;
- Determine the nature and extent of contamination at the Site, and determine if the industrial fill is adversely impacting the three tributaries to the Niagara River;
- Determine the person(s) and/or corporation(s) responsible for the disposal of the industrial fill; and
- Quantify the volume of industrial fill at the Site.

These objectives were determined through a grided test pitting program, and the analysis of surface soil, industrial fill, drum waste, surface water and sediment samples collected during the Preliminary Site Assessment.

4.2 Preliminary Site Assessment Activities

To meet the study objectives, the following activities were completed during the Preliminary Site Assessment: (1) a detailed property survey; (2) a detailed Site reconnaissance; (3) a comprehensive test pitting program; (4) collection of environmental samples for chemical analysis; (5) a final Site survey; (6) fill volume calculations; and (7) report preparation. These activities are briefly described in the following sections. All field work was conducted in level D personal protective equipment, while air monitoring for organic vapors was completed during intrusive activities by EmpireGeo, Inc.

4.2.1 Detailed Property Survey and Mapping

A detailed map of the 5565 River Road Site, including property lines and topography, was not available prior to the initiation of the Preliminary Site Assessment. As a result, a detailed property survey was completed during Phase I of the Preliminary Site Assessment by Wm. Schutt and Associates, P.C. (Schutt), a surveyor licensed in the State of New York. This survey included the following:

- A topographic survey of the industrial fill mounds and surrounding areas sufficient to calculate an initial volume of fill at the Site;
- Rattlesnake Creek, the middle creek and the south creek (including the openings of the concrete and corrugated metal culverts);
- The manholes associated with the sewer line east of the Site;
- The gravel drive east of the Site;
- The stickups identifying the crude oil pipeline west of the Site;
- Other utilities in the vicinity of the Site; and
- The general location of the drum areas found throughout the Site.

Vertical control was established to the nearest ± 0.1 foot for all ground surface elevations. Elevations were determined relative to the North American Vertical Datum of 1988 (NAVD 88), with reference made to an existing monument in the vicinity of the Subject Property. Horizontal coordinates were given in the State Plane East Zone (feet), North American Datum (NAD) of 1983 to an accuracy of ± 0.5 foot.

Using the detailed property survey as a base map, Schutt established a 50 foot by 50 foot grid across the Site. This grid was aligned parallel to both the western and northern property lines. Once the grid was established, Schutt staked each of the proposed test pit locations (Figure 4-1). In addition, ground surface elevations were determined at each grid node. Vertical and horizontal controls were to the datums and accuracies described above.

4.2.2 Site Reconnaissance

Empire conducted a reconnaissance of the Subject Property during Phase I of the Preliminary Site Assessment to look for evidence of other disposal areas, abandoned drums, spills etc. that may indicate the presence of additional environmental concerns. The findings of the Site reconnaissance, included as Appendix A, were incorporated into the test pitting program.

4.2.3 Comprehensive Test Pitting Program

During the Preliminary Site Assessment 75 test pits were completed throughout the Site. The locations of these test pits are shown on Figure 4-2. The test pits were completed for the purpose of: (1) visually determining the physical characteristics of the industrial fill; (2) facilitating the collection of industrial fill samples for chemical analysis; and (3) determining the thickness of the industrial fill throughout the Site. Each test pit was advanced through the industrial fill until native soils were encountered.

Based upon visual and/or olfactory evidence, and at the direction of the NYSDEC field representative, additional test pits were completed to help delineate the areal extent of the industrial fill encountered during the assessment, or to further evaluate the nature and extent of contamination associated with the industrial fill.

4.2.4 Sample Collection and Analysis

During the Preliminary Site Assessment six (6) surface soil samples, seventeen (17) subsurface industrial fill samples, two (2) drum waste samples, two (2) surface water samples and seven (7) sediment samples (Figure 4-3) were collected and submitted to either TestAmerica in Amherst, New York or Upstate Laboratories, Inc. in East Syracuse, New York for chemical analysis. All samples were collected by Empire personnel in consultation with the NYSDEC field representative. Information concerning sample collection and analysis is given in Table 4-1.

4.2.5 Final Site Survey and Mapping

Following the completion of the Preliminary Site Assessment field activities, Schutt was tasked to complete final survey activities. These activities included the following:

- Horizontal locations and ground surface elevations of all test pits completed during the Preliminary Site Assessment that were not completed on the previously

surveyed grid nodes; and

- Horizontal locations and ground surface elevations of all surface soil, surface water and sediment samples collected during the investigation.

All test pit and sample locations were added to the base map. Vertical and horizontal controls were to the datums and accuracies described in Section 4.2.1.

4.2.6 Fill Volume Calculations

One of the specific objectives of the Preliminary Site Assessment was to quantify the volume of industrial fill at the 5565 River Road Site. To accomplish this objective, the elevation of the native soil below the industrial fill was determined at each test pit location. These elevations were added to the elevations obtained during the topographic survey and utilized to calculate the volume of industrial fill at the Site. This calculation was completed by Schutt.

4.2.7 Report Preparation

This report was prepared to: (1) describe Site history to the extent that it is known; (2) describe the field activities completed during the Preliminary Site Assessment; (3) present the analytical results of the samples collected during the investigation; (4) determine the nature and extent of contamination at the Site; (5) discuss the results as they relate to the objectives of the Preliminary Site Assessment; and (6) present recommendations for future activities at the Site.

5.0 GEOLOGY AND HYDROGEOLOGY

This section describes the regional and Site geology and hydrogeology, along with the characteristics, areal extent and hydrogeologic properties of the strata near and underlying the 5565 River Road Site.

5.1 Regional Geology

5.1.1 Overburden Geology

Geologic evidence suggests that at least four major glacial episodes covered parts of North America during the Pleistocene Epoch (Buehler and Tesmer, 1963). In western New York, however, there is evidence of only two such episodes. The last glacial event in the area, the Wisconsin, eroded and modified the earlier glacial deposits to such an extent that little evidence of their existence remains. These glacial events widened the preexisting valleys and basins, and led to the development of the present day drainage system in western New York (La Sala, 1968).

A complex sequence of proglacial lakes that formed during the final retreat of the Wisconsin ice sheet inundated an extensive area of western New York. This succession originated in the Erie-Huron Basin prior to 14,000 years ago as the ice sheet retreated from the basin, and ended approximately 9,800 year ago with the formation of Lake Tonawanda (Calkins and Brett, 1978). This lake sequence was responsible for the deposition of the stratified lacustrine clays, silts, sands and gravels that now cover much of western New York.

The Pleistocene Epoch presented a variety of environments that resulted in the deposition of unconsolidated deposits. In the Tonawanda area these deposits include the following (Malcolm Pirnie, 1987; Recra Environmental, 1990; URS, 1992; Woodward-Clyde, 1993; Conestoga Rovers & Associates, 1998; Weston, 1998):

- Glacial till consisting of a non-sorted, non-stratified mixture of sand, silt, clay, gravel and rock fragments deposited directly from glacial ice;
- Glaciolacustrine deposits consisting primarily of silt, sand and clay deposited in lakes that formed during melting and retreat of the ice sheets;
- Glaciofluvial deposits consisting of sand and gravel deposited either by glacial

meltwater streams or by the reworking of till and other glacial deposits along the shore of former glacial lakes; and

- Alluvial deposits consisting of silt, sand and gravel deposited by streams during comparatively recent geologic time.

La Sala (1968) reports that glacial till is the most widespread deposit in the Erie-Niagara Basin, ranging in thickness from 2 to 200 feet. Glaciolacustrine clay is also widespread, reaching thicknesses of 300 feet in some valleys within the basin (La Sala, 1968). Near the 5565 River Road Site, the glaciolacustrine clay is the dominant overburden deposit, ranging in thickness from 55.6 to 88.0 feet at the Ashland 2 FUSRAP Site located approximately 0.25 miles southwest of the Site (Figure 1-1).

5.1.2 Bedrock Geology

The bedrock underlying western New York is characterized as a thick sequence of shales, sandstones, limestones and dolostones deposited in ancient seas during the Silurian and Devonian Periods (Buehler and Tesmer, 1963). This stratigraphic sequence is summarized in Table 5-1. Bedrock bedding generally strikes in an east-west direction, approximately paralleling the Niagara and Onondaga escarpments, and dips to the south at approximately 30 to 40 feet per mile (Johnson, 1964; La Sala, 1968; Yager and Kappel, 1987). Erosion and weathering, however, have produced local differences in the bedrock surface configuration (Snyder Engineering, 1987).

The uppermost bedrock formation underlying the 5565 River Road Site is the Camillus Shale Formation of the Salina Group, which was deposited in a shallow sea environment during the Late Silurian Period (Rickard and Fisher, 1970). This formation extends across northern Erie County in an east-west trending belt approximately 6 to 8 miles wide (Conestoga-Rovers & Associates, 1998). Exposures of this formation are rare because of the low relief of the outcrop area and the mantle of glacial deposits. Buehler and Tesmer (1963, page 30) describe the Camillus Shale as a "thin bedded shale to massive mudstone. Color is gray or brownish gray with some beds showing a red or green tinge. Gypsum and anhydrite are present throughout the formation in Erie County," and occur in beds and lenses up to 5 feet in thickness (La Sala, 1968). Subsurface data indicate, however, that a considerable quantity of grey limestone and dolostone is interbedded within the shale (Stanley Consultants, 1981; GZA, 1983; URS, 1992; Woodward-Clyde, 1993; Parsons Engineering Science, 1995). The upper 10 to 25 feet of this formation can be heavily

weathered and often contains abundant bedding planes and vertical fractures enlarged by dissolution and glacial scour (La Sala, 1968). Buehler and Tesmer (1963) report that the maximum thickness of the Camillus Shale is 400 feet. Within the Erie-Niagara Basin, however, the thickness of this formation ranges from approximately 80 to 100 feet (Rickard, 1966).

5.2 Site Geology

Seventy-five test pits (Figure 4-2) were completed during the Preliminary Site Assessment to evaluate the thickness of the industrial fill throughout the 5565 River Road Site. All test pits penetrated the industrial fill and were completed in native silty clay soils (the glaciolacustrine deposit). The stratigraphic logs for these test pits are given in Appendix C, while a stratigraphic summary of these logs is given in Appendix B.

5.2.1 Non-Native Deposits

The test pitting program completed during the Preliminary Site Assessment revealed that two non-native deposits underlie the 5565 River Road Site: clean fill and industrial fill. Clean fill was encountered in thirty-three test pits completed at the Site, and consisted predominantly of reworked reddish brown silty clay with trace amounts of brick, concrete, gravel and wood (Figures 5-1 through 5-3). This fill was most commonly encountered at the ground surface, but was located beneath the industrial fill at five locations (Table B-1 of Appendix B). Where encountered, clean fill ranged in thickness from 0.4 to 9.0 feet (Table B-1 in Appendix B), with the average thickness being 2.3 feet.

Industrial fill was encountered at fifty-eight test pits completed at the 5565 River Road Site (Table B-1 of Appendix B), and overlies either clean fill or native soil. The industrial fill consisted of homogeneous dark gray to black flyash (Figures 5-4 through 5-6) or foundry sand containing drums, wood, metal and garbage (Figures 5-7 through 5-10). Flyash was the predominant fill material in the north-central portion of the Site, while foundry sand was the predominant fill material to the north and south (Figure 5-11). The flyash underlying the north-central portion of the Site that was heavily vegetated with phragmites (Test pits D-30, D-34, E-27, G-28 and G-31; see Figure 5-11 for locations) tended to be darker in color and blocky in nature (Figures 5-12 through 5-14), with many of the blocks containing a thin brick red coating (Figure 5-15).

The thickness of the industrial fill ranged from 0.5 to 16.0 feet (Table B-1 of Appendix B),

with the average thickness being 6.0 feet. Industrial fill was thickest in the north-central portion of the Site where the fill mounds are 5 to 10 feet higher than the surrounding grade. The volume of industrial fill at the Site was estimated by Schutt as approximately 216,900 cubic yards.

5.2.2 Glaciolacustrine Deposit

The native soils underlying the 5565 River Road Site consist predominantly of reddish brown, brown and tan, very firm to stiff, dry to moist, silty clays (Figures 5-1, 5-2, 5-5, 5-12, 5-13, 5-16 and 5-17) that were deposited in the glacial lakes that covered the area during the last ice age. The glaciolacustrine deposit generally underlies industrial fill, but is occasionally encountered below a thin topsoil or reworked soil layer (Table B-1 of Appendix B). The depth to this deposit ranges from 0.4 to 16.0 feet (Table B-1 of Appendix B), with the average depth being 5.7 feet.

During the Preliminary Site Assessment only the upper foot or two of this deposit was excavated, so the thickness of this deposit at the Site is unknown.

5.2.3 Bedrock

Bedrock was not encountered during the Preliminary Site Assessment.

5.3 Regional Hydrogeology

Many site investigations and hydrogeologic studies have been completed in the Tonawanda area. These studies indicate that there are three principal hydrogeologic zones in the area described as follows:

- The glaciolacustrine silty clay deposit, which can be characterized as an aquitard, confining groundwater from the underlying Camillus Shale;
- Shallow alluvium, glaciofluvial and fill deposits, which can be characterized as either unconfined (water table) or perched aquifers; and
- The Camillus Shale bedrock, which can be characterized as a confined aquifer.

In the Tonawanda area, unconfined groundwater is encountered largely within the glaciofluvial, alluvium and fill deposits. Where these deposits overlie the glaciolacustrine silty clay deposit, perched groundwater conditions occur. Well yields from these deposits in the Tonawanda

area are generally unknown, although wells installed in highly permeable outwash deposits in the Tonawanda Creek valley have yields ranging from 1,000 to 1,400 gallons per minute (gpm) (La Sala, 1968).

The glaciolacustrine deposit separates the water table and/or perched aquifer from the confined upper bedrock aquifer. The hydraulic conductivity of this deposit is extremely low, typically ranging from 10^{-6} to 10^{-8} cm/s. The glaciolacustrine deposit, therefore, can be considered an aquitard, preventing the vertical movement of shallow groundwater to the underlying Camillus Shale. Some vertical movement, however, can occur through desiccation cracks in the upper, unsaturated portion of this deposit. Horizontal groundwater flow within this deposit is also severely limited. This deposit, however, often contains thin seams and stringers of silt and sand that can allow limited horizontal groundwater flow.

Information regarding regional groundwater flow in the upper Camillus Shale bedrock near the 5565 River Road Site indicates that flow is toward Tonawanda Creek and the Niagara River, the principal discharge zones in the Tonawanda area (Malcolm Pirnie, 1987; Conestoga-Rovers & Associates, 1998; May, 2007).

5.4 Site Hydrogeology

During the Preliminary Site Assessment saturated soil/fill was not encountered at thicknesses sufficient to justify the installation of micro-wells, although four test pits filled with water (Figure 5-7, and Figures 5-18 through 5-20). In general, the test pits remained dry (Figures 5-1, 5-2, 5-4, 5-5, 5-12, 5-13 and 5-16), but at a few locations groundwater was observed flowing slowly into the pit at the fill/native soil interface (Figures 5-21 through 5-23).

Due to the general absence of groundwater in the fill material and upper glaciolacustrine deposit, the hydrogeology of the 5565 River Road Site was not evaluated during the Preliminary Site Assessment. Water level data from the nearby Riverview Industrial Center Site, however, indicates that groundwater in the area flows north toward the Niagara River. This flow direction is consistent with fundamental hydrogeologic principles, and observations from other sites along the Niagara River in the Tonawanda area (e.g., May, 2007).

6.0 INVESTIGATION RESULTS

A brief description of the activities completed during the Preliminary Site Assessment of the 5565 River Road Site was presented in Section 4.0. In this section, a detailed evaluation of the observations made during the investigation and the analytical results obtained from the samples are presented. Analytical results are summarized by environmental media (e.g., surface soil, industrial fill, drums, surface water and sediment).

For this report, analytical results for surface soil and industrial fill were evaluated against the unrestricted and commercial soil cleanup objectives of Tables 375-6.8(a) and 375-6.8(b) contained in the December 2006 NYSDEC publication entitled "*6NYCRR Part 375: Environmental Remediation Programs*". The commercial soil cleanup objective was utilized as this is the proposed future use of the property. For contaminants not included in 6 NYCRR Part 375, the soil cleanup objectives identified in the October 2010 NYSDEC Commissioner's Policy CP-51 entitled "*Soil Cleanup Guidance*" were utilized.

The regulatory limits for the hazardous waste characteristics were obtained from the January 1995 NYSDEC publication entitled "*6 NYCRR Part 371: Identification and Listing of Hazardous Wastes*".

Analytical results for surface water were evaluated against the water quality standards and guidance values contained in the June 1998 NYSDEC publication entitled "*Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*". The surface water standards and guidance values for individual contaminants were taken directly from Table 1.

Sediment criteria were developed from the January 1999 NYSDEC publication entitled "*Technical Guidance for Screening Contaminated Sediments*". This document contains guidance values for several levels of protection including: (1) human health bioaccumulation, (2) wildlife bioaccumulation, (3) acute toxicity to benthic aquatic life, and (4) chronic toxicity to benthic aquatic life. These guidance values are derived using equilibrium partitioning methodology and are calculated as a function of the organic carbon content of the sediment being evaluated. The average total organic carbon content of sediment collected during the Preliminary Site Assessment was 8.85%.

For screening purposes, the sediment criteria to protect benthic aquatic life from chronic toxicity were utilized. When these criteria were not available for a particular contaminant, the sediment criteria for human health bioaccumulation were utilized, and if these criteria were not available, the NYSDEC Part 375 soil cleanup objectives for the protection of ecological resources were used. For metals, the lowest effect levels from Table 2 of the *“Technical Guidance for Screening Contaminated Sediments”* were utilized. When these criteria were not available for a particular metal, the NYSDEC Part 375 soil cleanup objectives for the protection of ecological resources were utilized, and if these criteria were not available, the protection of ecological resources soil cleanup objectives from NYSDEC CP-51 were used.

6.1 General Observations

The 5565 River Road Site is heavily vegetated by a mixture of trees, tall grass, scrub brush and shrubs (Figures 6-1 through 6-5). Wetland vegetation (e.g., phragmites) was observed in the north-central portion of the Site, but free-standing water was not present in this area during the Preliminary Site Assessment field activities. No buildings are present on the Site.

While individuals were not observed on Site during the Preliminary Site Assessment activities, evidence of trespassing was observed (e.g., ATV trails; Figures 6-6 and 6-7).

As described in Section 3.2, the Site contains large mounds of industrial fill that range in height from approximately 5 to 15 feet above the surrounding grade to the west, but slope gently toward the east. Exposed fill in these mounds consist predominantly of flyash containing trace amounts of coal, slag and coke-like fragments. These mounds, however, appear to lie on top of other industrial fill as a scarp approximately 5 to 6 feet in height was observed along most of the western boundary of the Site (Figures 3-1, 6-2, 6-3 and 6-8).

Clusters of empty, 55-gallon drums were observed on the ground surface throughout the Site: (1) five empty drums were found near the north property line (Figures 6-9 through 6-11; Drum Area 4 on Figure 3-1); (2) four empty drums were found in the western portion of the middle creek in the central portion of the Site (Figures 6-12 and 6-13; Drum Area 5 on Figure 3-1); (3) approximately 15 to 20 empty drums were observed in the ravine along the culverted portion of rattlesnake Creek (Drum Area 1 on Figure 3-1); (4) approximately 10 empty drums were observed in the central portion of the Site south of the middle creek (Figure 6-4; Drum Area 2 on Figure 3-1);

(5) approximately 10 empty drums were observed along the western bank of the fill ridge south of the middle creek (Figure 6-3; Drum Area 3 on Figure 3-1); and (6) several empty drums along the southern bank of the fill ridge (Figure 6-14; Drum Area 6 on Figure 3-1).

In addition to the exposed industrial fill associated with the ATV trails, exposed industrial fill was observed at several areas with stressed vegetation (Figure 6-15 through 6-17).

6.2 Surface Soil

Six surface soil samples from the 5565 River Road Site were collected during the Preliminary Site Assessment. The locations of these samples are shown on Figure 4-3. All samples consisted of industrial fill, and were collected to evaluate the nature of surface soil contamination at the Site. Four samples were submitted to TestAmerica Laboratories in Amherst, New York for chemical analysis, while two samples were submitted to Upstate Laboratories, Inc. in East Syracuse, New York. Five samples were analyzed for Target Compound List (TCL) semivolatile organic compounds (SVOCs), TCL pesticides, TCL polychlorinated biphenyls (PCBs) and Target Analyte List (TAL) metals, with one of the samples also analyzed for TCL volatile organic compounds (VOCs). The sixth sample was analyzed for TCL PCBs only. The analytical results for these samples are summarized in Table 6-1, while information concerning sample collection and analysis is given in Table 4-1.

The results of the organic analyses revealed that both volatile and semivolatile organic compounds were detected in the surface soil samples collected from the 5565 River Road Site (Table 6-1). Volatile organic compounds detected in surface soil included methylene chloride (1 sample), toluene (1 sample) and xylene (1 sample). All three contaminants were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Twenty-two semivolatile organic compounds were detected in the surface soil samples with sixteen of these constituents being polycyclic aromatic hydrocarbons (PAHs). PAHs are a group of over 100 different chemicals that are ubiquitous in the environment. Sources of PAHs include incomplete combustion of coal, oil, gasoline, garbage, wood from stoves, automobiles and incinerators. PAHs are also found in coal tar, crude oil, creosote, roofing tar, medicines, dyes,

plastics and pesticides. Of the semivolatile organic compounds detected, however, none were detected at concentrations that exceeded the NYSDEC Part 375 or CP-51 soil cleanup objectives (Table 6-1).

The surface soil samples collected from the 5565 River Road Site were also analyzed for pesticides and PCBs (Table 6-1). Seven pesticides were detected in these samples with the concentrations of endrin (1 sample) and heptachlor (2 samples) exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1). PCBs were detected in five of the six samples with all concentrations exceeding the NYSDEC Part 375 unrestricted soil cleanup objective (Table 6-1). Four of the concentrations also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Sixteen metals were detected in the surface soil samples collected from the 5565 River Road Site (Table 6-1). Of these compounds, nine were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives, with eight of these metals being USEPA priority pollutant metals. USEPA priority pollutant metals are toxic metals for which technology-based effluent limitations and guidelines are required by Federal law. Arsenic (2 samples) and cadmium (1 sample), however, were the only priority pollutant metals that exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1). In addition, the concentration of aluminum in three surface soil samples exceeded the CP-51 soil cleanup objective for the protection of ecological resources, while the concentration of iron exceeded the CP-51 residential soil cleanup objective in all five samples analyzed for this contaminant (Table 6-1). There are no NYSDEC Part 375 soil cleanup objectives for aluminum and iron.

6.3 Industrial Fill

Seventeen subsurface industrial fill samples were collected from the 5565 River Road Site during the Preliminary Site Assessment. Eleven of these samples were collected from the foundry sand, while the remaining six samples were collected from the flyash. The locations of these samples are shown on Figure 4-3. All samples were submitted to Upstate Laboratories, Inc. for chemical analysis of TCL semivolatile organic compounds, TCL pesticides, TCL PCBs and TAL metals. Sixteen of the samples were also analyzed for TCL volatile organic compounds. Following a review of the TAL metal results, one industrial fill sample was further analyzed for chromium using

the Toxicity Characteristic Leaching Procedure (TCLP). One sample was additionally analyzed for petroleum products and total petroleum hydrocarbons (TPH). The analytical results for the industrial fill samples are summarized in Tables 6-2 (foundry sand) and 6-3 (flyash), while information concerning sample collection and analysis is given in Table 4-1.

6.3.1 Foundry Sand

The results of the organic analyses revealed that both volatile and semivolatile organic compounds were detected in the foundry sand samples collected from the 5565 River Road Site (Tables 6-2A and 6-2B). Twelve volatile organic compounds were detected in these samples with only the concentrations of acetone (2 samples), methylene chloride (5 samples), toluene (2 samples) and xylene (1 sample) exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Tables 6-2A and 6-2B). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2A and 6-2B). Methylene chloride was also detected in the associated blank so the presence of this compound in the foundry sand samples is likely related to laboratory contamination.

Twenty-three semivolatile organic compounds were detected in the foundry sand samples (Tables 6-2A and 6-2B) with fifteen of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, benzo(a)anthracene (3 samples), benzo(a)pyrene (2 samples), benzo(b)fluoranthene (3 samples), benzo(k)fluoranthene (1 sample), chrysene (3 samples) and indeno(1,2,3-cd)pyrene (1 sample) were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Tables 6-2A and 6-2B). The concentrations of benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene in sample D-41, and benzo(a)pyrene in sample DA-2 also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2A and 6-2B).

Phthalates [bis(2-ethylhexyl)phthalate and di-n-butylphthalate] were also detected in the foundry sand samples collected from the Site (Tables 6-2A and 6-2B). None of the concentrations, however, exceeded the NYSDEC CP-51 residential soil cleanup objectives. There are no NYSDEC Part 375 soil cleanup objectives for these contaminants. Biphenyl (5 samples), caprolactum (1 sample), carbazole (3 samples), dibenzofuran (5 samples), 2,4-dimethylphenol (3 samples) and (3+4)-methylphenol (1 sample) were also detected in the foundry sand samples. None of the

concentrations, however, exceeded the NYSDEC Part 375 soil cleanup objectives (Tables 6-2A and 6-2B).

The foundry sand samples collected from the 5565 River Road Site were also analyzed for pesticides and PCBs (Tables 6-2A and 6-2B). No pesticides were detected in these samples, while PCBs were detected in all eleven samples at concentrations that exceeded both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives. In addition, two samples (D-41 and I-10; Figure 4-3) contained PCBs at concentrations that exceeded the 50 ppm hazardous waste criterion (Tables 6-2A and 6-2B).

Sixteen metals were detected in the foundry sand samples collected from the 5565 River Road Site (Tables 6-2A and 6-2B). Of these compounds, ten were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives, with nine of these metals being USEPA priority pollutant metals. Arsenic, cadmium, copper and nickel concentrations in sample DA-2 were the only priority pollutant metals that exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2A and 6-2B). In addition, the concentration of aluminum in two foundry sand samples exceeded the CP-51 soil cleanup objective for the protection of ecological resources, while the concentration of iron exceeded the CP-51 residential soil cleanup objective in all eleven samples (Tables 6-2A and 6-2B). There are no NYSDEC Part 375 soil cleanup objectives for aluminum and iron.

Following a review of the TAL metal results, the sample from test pit DA-2 was analyzed for chromium using the Toxicity Characteristic Leaching Procedure. The TCLP chromium result for this sample is summarized in Table 6-2B, and reveals that the foundry sand from test pit DA-2 is not a characteristic hazardous waste for chromium.

The foundry sand sample from test pit G-44 was also analyzed for petroleum products and TPH. These analyses revealed the presence of fuel oil, lube oil and TPH (Table 6-2A). There are no NYSDEC Part 375 soil cleanup objectives for these contaminants.

6.3.2 Flyash

The results of the organic analyses revealed that both volatile and semivolatile organic compounds were detected in the flyash samples collected from the 5565 River Road Site (Table 6-3). Methylene chloride (4 samples), toluene (2 samples) and xylene (1 sample) were the only

volatile organic compounds detected in these samples, with all concentrations exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-3). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-3).

Fourteen semivolatile organic compounds were detected in the flyash samples (Table 6-3) with seven of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, only benzo(a)anthracene (1 sample) and chrysene (1 sample) were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-3). None of the concentrations exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-3).

Phthalates [bis(2-ethylhexyl)phthalate and di-n-butylphthalate] were also detected in the flyash samples collected from the Site (Table 6-3). None of the concentrations, however, exceeded the NYSDEC CP-51 residential soil cleanup objectives (Table 6-3). There are no NYSDEC Part 375 soil cleanup objectives for these contaminants. Biphenyl, dibenzofuran, 4-chloroaniline, 2,4-dimethylphenol and (3+4)-methylphenol were also detected in the flyash sample collected from test pit E-27 (see Figure 4-3 for location). Only the concentration of (3+4)-methylphenol exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-3). This concentration, however, did not exceed the NYSDEC Part 375 commercial soil cleanup objective (Table 6-3).

The flyash samples collected from the 5565 River Road Site were also analyzed for pesticides and PCBs (Table 6-3). No pesticides were detected in these samples, while PCBs were detected in all six samples. The concentrations of PCBs in two samples exceeded both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives.

Sixteen metals were detected in the flyash samples collected from the 5565 River Road Site (Table 6-3). Of these compounds, eleven were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives, with nine of these metals being USEPA priority pollutant metals. Concentrations of arsenic (4 samples), cadmium (1 sample) and lead (1 sample) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-3). Barium, a non-priority pollutant metal, exceeded the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives. In addition, the concentration of aluminum in four flyash samples exceeded the CP-51 soil cleanup objective for the protection of ecological resources, while the concentration of iron exceeded the CP-51 residential soil cleanup objective in all six samples (Table 6-3). There are no NYSDEC Part 375 soil cleanup objectives for aluminum and iron.

6.4 *Drum Waste*

In addition to the surface drums discussed in Section 6.1, numerous drums were encountered during the completion of the test pitting program (Figure 5-10, and Figures 6-18 through 6-25). Two drum waste samples were collected during the Preliminary Site Assessment for chemical analysis. These wastes included a putty-like material from a drum encountered in test pit D-37 and a pink sludge believed to be paint waste from a drum encountered in test pit J-30 (Figure 6-25). The locations of the test pits are shown on Figure 4-2. Both samples were submitted to Upstate Laboratories, Inc. for chemical analysis of TCL volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides, TCL PCBs and TAL metals. The drum waste sample from test pit D-37 was further analyzed for barium and lead using the Toxicity Characteristic Leaching Procedure, while the drum waste sample from test pit J-30 was further analyzed for barium, chromium and lead using TCLP. The drum waste sample from test pit J-30 was also analyzed for ignitability. The analytical results for the drum waste samples are summarized in Table 6-4, while information concerning sample collection and analysis is given in Table 4-1.

The results of the organic analyses revealed that both volatile and semivolatile organic compounds were detected in the drum waste samples collected from the 5565 River Road Site (Table 6-4). Eight volatile organic compounds were detected in these samples with the concentrations of 1,2,4-trimethylbenzene (sample J-30), ethylbenzene (sample J-30), methylene chloride (both samples), toluene (sample J-30), trichloroethene (sample J-30) and xylene (both samples) exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-4). Concentrations of 1,2,4-trimethylbenzene, ethylbenzene, methylene chloride, toluene, trichloroethene and xylene in sample J-30 also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-4). The concentration of 4-methyl-2-pentanone in sample J-30 exceeded the CP-51 soil cleanup objective for the protection of groundwater (Table 6-4). There are no NYSDEC Part 375 soil cleanup objectives for 4-methyl-2-pentanone and methylcyclohexane. Both drum waste samples also contained tentatively identified VOC compounds at total concentrations of 15.82 ppm (D-37) and 53,700 ppm (J-30).

Naphthalene was the only semivolatile organic compounds detected in the drum waste samples with the concentration in sample J-30 exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-4). This concentration, however, did not exceed the NYSDEC Part 375

commercial soil cleanup objective (Table 6-4). Both samples also contained tentatively identified SVOC compounds at total concentrations of 20,400 ppm (D-37) and 820 ppm (J-30).

The drum waste samples collected from the 5565 River Road Site were also analyzed for pesticides and PCBs (Tables 6-4). No pesticides were detected in these samples, while PCBs were detected in both samples at concentrations that exceeded both the NYSDEC Part 375 unrestrictive and commercial soil cleanup objectives. Sample D-37 contained PCBs at a concentration that exceeded the 50 ppm hazardous waste criterion (Tables 6-4).

Thirteen metals were detected in the drum waste samples collected from the 5565 River Road Site (Table 6-4). Of these compounds, seven were detected at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives, with six of these metals being USEPA priority pollutant metals. Concentrations of cadmium (sample J-30), chromium (sample J-30), copper (sample D-37) and lead (both samples) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-4). Barium, a non-priority pollutant metal, exceeded the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives in both samples. In addition, concentrations of iron in both samples exceeded the CP-51 residential soil cleanup objective (Table 6-4). There are no NYSDEC Part 375 soil cleanup objectives for iron.

Following a review of the TAL metal results, both samples were analyzed for barium, chromium and/or lead using the Toxicity Characteristic Leaching Procedure. The TCLP results are summarized in Table 6-4, and reveal that drum waste sample J-30 is a characteristic hazardous waste for lead (D008).

Drum waste sample J-30 was also analyzed for ignitability due to the high PID readings recorded in the field. This analysis (Table 6-4) revealed that the drum waste is also a characteristic hazardous waste for ignitability (D001).

6.5 Surface Water

Two surface water samples from the 5565 River Road Site were collected during the Preliminary Site Assessment. One sample was collected from Rattlesnake Creek near Two Mile Creek Road, while the second sample was collected from the middle creek where it exits the Site. The locations of these samples are shown on Figure 4-3. The October 2011 sample was submitted to TestAmerica Laboratories for chemical analysis of TCL volatile organic compounds, TCL

semivolatile organic compounds, TCL pesticides, TCL PCBs and TAL metals, while the December 2011 sample was submitted to Upstate Laboratories, Inc. for chemical analysis of TCL volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides, TCL PCBs and TAL metals. The analytical results for these samples are summarized in Table 6-5, while information concerning sample collection and analysis is given in Table 4-1.

The results of the organic analyses revealed that methylene chloride (1 sample) was the only volatile organic compound detected in the surface water samples collected from the 5565 River Road Site (Table 6-5). The concentration of this compound exceeded the NYSDEC surface water standard for this contaminant (Table 6-5). Semivolatile organic compounds, pesticides and PCBs were not detected in either surface water sample.

Six metals were detected in the surface water samples collected from the 5565 River Road Site (Table 6-5). Of these compounds, only aluminum and iron in the middle creek sample were detected at concentrations that exceeded the NYSDEC surface water standards. Neither metal is an EPA priority pollutant metal.

6.6 Sediment

Seven sediment samples from the 5565 River Road Site were collected during the Preliminary Site Assessment. Three samples were collected from Rattlesnake Creek (one upstream, one adjacent and one downstream), while the remaining four samples were collected from the middle creek (one upstream, two adjacent and one downstream). The locations of these samples are shown on Figure 4-3. The October 2011 sample was submitted to TestAmerica Laboratories for chemical analysis of TCL semivolatile organic compounds, TCL pesticides, TCL PCBs and TAL metals, while the December 2011 samples were submitted to Upstate Laboratories, Inc. for chemical analysis of TCL volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides, TCL PCBs, TAL metals and total organic carbon (TOC). The analytical results for these samples are summarized in Table 6-6, while information concerning sample collection and analysis is given in Table 4-1.

The results of the organic analyses revealed that acetone was the only volatile organic compound detected in the sediment samples collected from the 5565 River Road Site (Table 6-6). None of the concentrations, however, exceeded the NYSDEC sediment criteria (Table 6-6).

Twenty-three semivolatile organic compounds were detected in the sediment samples with sixteen of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, benzo(a)anthracene (1 sample), benzo(b)fluoranthene (4 samples), benzo(k)fluoranthene (1 sample), chrysene (5 samples) and indeno(1,2,3-cd)pyrene (2 samples) were detected at concentrations that exceeded the NYSDEC sediment criteria (Table 6-6).

Bis(2-ethylhexyl)phthalate was also detected in the sediment samples collected from the Site (Table 6-6). None of the concentrations, however, exceeded the NYSDEC sediment criteria (Table 6-6). Dibenzofuran (3 samples), 2,4-dimethylphenol (2 samples), 2-methylphenol (1 sample), (3+4)-methylphenol (2 samples) and 1,2,4,5-tetrachlorobenzene (1 sample) were also detected in the sediment samples (Table 6-6). There are no NYSDEC sediment criteria for these contaminants.

The sediment samples collected from the 5565 River Road Site were also analyzed for pesticides and PCBs (Table 6-6). 4,4'-DDE (sample SED-2) was the only pesticide detected in sediment at the Site, with the concentration exceeding the NYSDEC sediment criteria (Table 6-6). PCBs were detected in all seven sediment samples, with the concentrations in three samples exceeding the NYSDEC sediment criteria (Table 6-6).

Fifteen metals were detected in the sediment samples collected from the 5565 River Road Site (Table 6-6). Of these compounds, nine were detected at concentrations that exceeded the NYSDEC sediment criteria, with seven of these metals being EPA priority pollutant metals. The priority pollutant metals exceeding the sediment criteria included arsenic (4 samples), cadmium (7 samples), chromium (5 samples), copper (6 samples), lead (7 samples), nickel (6 samples) and zinc (3 samples). The non-priority pollutant metals exceeding the sediment criteria included iron (6 samples) and manganese (7 samples). In addition, the concentrations of aluminum (5 samples) and vanadium (4 samples) exceeded the CP-51 soil cleanup objectives for the protection of ecological resources (Table 6-6).

Six of the seven sediment samples collected from the 5565 River Road Site were analyzed for total organic carbon (TOC). These results, summarized in Table 6-6, were utilized to calculate sediment criteria for the Site. TOC concentrations ranged from 4.2% to 15.0%.

6.7 Groundwater

As discussed in Section 5.4, saturated conditions were not encountered at frequencies and thicknesses sufficient to justify the installation of micro-wells. As a result, groundwater samples were not collected from the 5565 River Road Site during the Preliminary Site Assessment.

7.0 NATURE AND EXTENT OF CONTAMINATION

The results of the 2011 NYSDEC Preliminary Site Assessment of the 5565 River Road Site were discussed in Section 6.0. In this section, those results are evaluated to determine the nature and extent of contamination at the Site.

7.1 *Surface Soil*

Six surface soil samples were collected from the 5565 River Road Site during the Preliminary Site Assessment to evaluate direct contact exposures to contaminated surface soil. The locations of these samples are shown on Figure 4-3. A detailed discussion of the analytical results from these samples was included in Section 6.2. In summary, all six samples contained contaminants at concentrations that exceeded the NYSDEC Part 375 soil cleanup objectives. These exceedances are summarized in Table 6-1, and illustrated on Figures 7-1 (unrestricted exceedances) and 7-2 (commercial exceedances).

Three volatile organic compounds were detected in the surface soil samples collected from the Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). These VOCs (with the number of exceedances and maximum concentrations) included methylene chloride (1 sample; 1.0 mg/kg), toluene (1 sample; 2.8 mg/kg) and xylene (1 sample; 0.72 mg/kg). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Two pesticides were detected in the surface soil samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). These pesticides (with the number of exceedances and maximum concentrations) included endrin (1 sample; 0.13J mg/kg) and heptachlor (2 samples; 0.42 mg/kg). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

PCBs were detected in five of the six surface soil samples collected from the Site, with all concentrations exceeding the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). The maximum concentration of total PCBs was 31J mg/kg in sample SS-4 (see Figure 4-3 for

location). Concentrations of PCBs in four samples also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1; Figure 7-2).

Eight EPA priority pollutant metals were detected in the surface soil samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-1). These metals (with the number of exceedances and maximum concentrations) included arsenic (2 samples; 51.8 mg/kg), cadmium (2 samples; 9.97 mg/kg), chromium (4 samples; 354 mg/kg), copper (3 samples; 145 mg/kg), lead (3 samples; 373 mg/kg), mercury (1 sample; 0.26 mg/kg), nickel (3 samples; 105 mg/kg) and zinc (4 samples; 1,040 mg/kg). Concentrations of arsenic (2 samples) and cadmium (1 sample) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1; Figure 7-2). In addition, concentrations of aluminum (3 samples; 13,700 mg/kg) exceeded the CP-51 soil cleanup objective for the protection of ecological resources, while concentrations of iron (5 samples; 83,400 mg/kg) exceeded the CP-51 residential soil cleanup objective (Table 6-1). There are no NYSDEC Part 375 soil cleanup objectives for aluminum and iron.

As illustrated by Figure 7-1, all surface soil samples collected from the 5565 River Road Site exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. These samples are located throughout the Site, and were collected from exposed fill along the ATV trails (SS-1 through SS-4) or from areas devoid of vegetation (SS-5) to evaluate worst case direct contact exposures. Figure 7-2 reveals that all surface soil samples also exceeded the NYSDEC Part 375 commercial soil cleanup objectives. Commercial exceedances were documented for PCBs, arsenic and cadmium.

7.2 Industrial Fill

Seventeen subsurface industrial fill samples were collected from the 5565 River Road Site during the Preliminary Site Assessment to evaluate the nature and extent of contamination at the Site. Eleven of these samples were collected from foundry sand, while the remaining six samples were collected from flyash. The locations of these samples are shown on Figure 4-3. A detailed discussion of the analytical results from these samples was included in Section 6.3. In summary, all seventeen samples contained contaminants at concentrations that exceeded the NYSDEC Part 375 soil cleanup objectives. These exceedances are summarized in Tables 6-2 and 6-3, and illustrated on Figures 7-1 (unrestricted exceedances) and 7-2 (commercial exceedances).

Four volatile organic compounds were detected in the industrial fill samples collected from the Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Tables 6-2 and 6-3). These compounds (with the number of exceedances and maximum concentrations) included acetone (2 samples; 0.46 mg/kg), methylene chloride (9 samples; 1.2 mg/kg), toluene (4 samples; 5.2 mg/kg) and xylene (2 samples; 1.3 mg/kg). None of the concentrations, however, exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2 and 6-3). Methylene chloride was also detected in the associated blank so the presence of this compound in the industrial fill samples is likely related to laboratory contamination.

Seven semivolatile organic compounds were detected in the industrial fill samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Tables 6-2 and 6-3). Six of these SVOCs were polycyclic aromatic hydrocarbons (PAHs). These PAHs (with the number of exceedances and maximum concentrations) included benzo(a)anthracene (4 samples; 11.0 mg/kg), benzo(a)pyrene (2 samples; 3.6 mg/kg), benzo(b)fluoranthene (3 samples; 7.3 mg/kg), benzo(k)fluoranthene (1 sample; 1.6 mg/kg), chrysene (4 samples; 8.9 mg/kg) and indeno(1,2,3-cd)pyrene (1 sample; 0.81 mg/kg). In addition, the concentration of (3+4)-methylphenol in one sample (2.8 mg/kg) also exceeded the NYSDEC Part 375 unrestricted soil cleanup objective for this contaminant (Tables 6-2 and 6-3). Concentrations of benzo(a)anthracene (1 sample), benzo(a)pyrene (2 samples) and benzo(b)-fluoranthene (1 sample) exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2 and 6-3; Figure 7-2).

PCBs were detected in all seventeen industrial fill samples collected from the Site, with the concentrations in thirteen samples exceeding both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives (Tables 6-2 and 6-3; Figure 7-2). Two samples (D-41 and I-10; see Figure 4-3 for locations) contained PCBs at concentrations (64.0 mg/kg and 140 mg/kg) that exceeded the 50 ppm hazardous waste criterion (Table 6-2).

Ten EPA priority pollutant metals were detected in the industrial fill samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Tables 6-2 and 6-3). These metals (with the number of exceedances and maximum concentrations) included arsenic (6 samples; 46.5 mg/kg), cadmium (8 samples; 37.8 mg/kg), chromium (13 samples; 1,300 mg/kg), copper (11 samples; 365 mg/kg), lead (9 samples; 1,190 mg/kg), mercury (6 samples; 0.442 mg/kg), nickel (8 samples; 338 mg/kg), selenium (1

sample; 11.9 mg/kg), silver (1 sample; 7.25 mg/kg) and zinc (10 samples; 4,650 mg/kg). Concentrations of arsenic (5 samples), cadmium (2 samples), copper (1 sample), lead (1 sample) and nickel (1 sample) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Tables 6-2 and 6-3; Figure 7-2). In addition, concentrations of barium (5 samples; 497 mg/kg), a non-priority pollutant metal, exceeded both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives (Tables 6-2 and 6-3; Figure 7-2). Concentrations of aluminum (6 samples; 18,600 mg/kg) exceeded the CP-51 soil cleanup objective for the protection of ecological resources, while concentrations of iron (17 samples; 201,000E mg/kg) exceeded the CP-51 residential soil cleanup objective (Tables 6-2 and 6-3). There are no NYSDEC Part 375 soil cleanup objectives for aluminum and iron.

As illustrated by Figure 7-1, all industrial fill samples collected from the 5565 River Road Site exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives. These samples are located throughout the Site, and included both foundry sand and flyash, the two principle fill types identified at the Site. Figure 7-2 reveals that all industrial fill samples also exceeded the NYSDEC Part 375 commercial soil cleanup objectives. Commercial exceedances were documented for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, PCBs, arsenic, barium, cadmium, copper, lead and nickel.

7.3 Drum Waste

Two drum waste samples were collected from the 5565 River Road Site during the Preliminary Site Assessment. These wastes included a putty-like material from a drum encountered in test pit D-37 and a pink sludge believed to be paint waste from a drum encountered in test pit J-30. The locations of these test pits, along with other test pits where subsurface drums were observed, are shown on Figure 7-3. A detailed discussion of the analytical results from these samples was included in Section 6.4. In summary, both samples contained contaminants at concentrations that exceeded the NYSDEC Part 375 soil cleanup objectives. These exceedances are summarized in Table 6-4, with the commercial exceedances illustrated on Figure 7-4.

Six volatile organic compounds were detected in the drum waste samples collected from the Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-4). These compounds (with the number of exceedances and maximum concentrations) included 1,2,4-trimethylbenzene (1 sample; 8,500 mg/kg), ethylbenzene (1 sample; 31,000 mg/kg),

methylene chloride (2 samples; 4,700 mg/kg), toluene (1 sample; 170,000 mg/kg), trichloroethene (1 sample; 6,600 mg/kg) and xylene (2 samples; 133,000 mg/kg). Concentrations of 1,2,4-trimethylbenzene (1 sample), ethylbenzene (1 sample), methylene chloride (1 sample), toluene (1 sample), trichloroethene (1 sample) and xylene (1 sample) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-4; Figure 7-4). In addition, the concentration of 4-methyl-2-pentanone in one sample (59,000 mg/kg) exceeded the CP-51 soil cleanup objective for the protection of groundwater (Table 6-4). There are no NYSDEC Part 375 soil cleanup objectives for 4-methyl-2-pentanone.

Naphthalene (1 sample) was the only semivolatile organic compound detected in the drum waste samples at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-4). The concentration of naphthalene (420 mg/kg), however, did not exceed the NYSDEC Part 375 commercial soil cleanup objective for this contaminant (Table 6-4).

PCBs were detected in both drum waste samples collected from the Site, with the concentrations exceeding both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives (Table 6-4; Figure 7-4). Drum sample D-37 contained PCBs at a concentration (740 mg/kg) that exceeded the 50 ppm hazardous waste criterion (Table 6-4).

Six EPA priority pollutant metals were detected in the drum waste samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives (Table 6-4). These metals (with the number of exceedances and maximum concentrations) included cadmium (1 sample; 41.6 mg/kg), chromium (2 samples; 1,750 mg/kg), copper (1 sample; 304 mg/kg), lead (2 samples; 30,100 mg/kg), mercury (1 sample; 0.338 mg/kg) and zinc (1 sample; 306 mg/kg). Concentrations of cadmium (1 sample), chromium (1 sample), copper (1 sample) and lead (2 samples) also exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-4; Figure 7-4). In addition, concentrations of barium (2 samples; 3,820 mg/kg), a non-priority pollutant metal, exceeded both the NYSDEC Part 375 unrestricted and commercial soil cleanup objectives (Tables 6-4; Figure 7-4), while concentrations of iron (2 samples; 6,340 mg/kg) exceeded the CP-51 residential soil cleanup objective (Table 6-4). There are no NYSDEC Part 375 soil cleanup objectives for iron.

7.4 Surface Water

Two surface water samples were collected from the 5565 River Road Site during the Preliminary Site Assessment to evaluate the impact of the Site on surface water. One sample was collected from Rattlesnake Creek near Two Mile Creek Road, while the second sample was collected from the middle creek where it exits the Site. The locations of these samples are shown on Figure 4-3. A detailed discussion of the analytical results from these samples was included in Section 6.5. In summary, only the sample from the middle creek contained contaminants at concentrations that exceeded the NYSDEC surface water standards or guidance values. These exceedances are summarized in Table 6-5, and illustrated on Figure 7-5.

Methylene chloride (1 sample) was the only organic compound detected in the surface water samples collected from the Site, with the concentration ($5.7 \mu\text{g/L}$) exceeding the NYSDEC surface water standard for this contaminant (Table 6-5; Figure 7-5).

Two metals were detected in the surface water samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC surface water standards or guidance values (Table 6-5; Figure 7-5). These metals (with the number of exceedances and maximum concentrations) included aluminum (1 sample; $280 \mu\text{g/L}$) and iron (1 sample; $1,600 \mu\text{g/L}$). Neither metal, however, is an EPA priority pollutant metal.

7.5 Sediment

Seven sediment samples were collected from the 5565 River Road Site during the Preliminary Site Assessment to evaluate the impact of the Site on sediment. Three samples were collected from Rattlesnake Creek (one upstream, one adjacent and one downstream), while the remaining four samples were collected from the middle creek (one upstream, two adjacent and one where the creek exits the Site). The locations of these samples are shown on Figure 4-3. A detailed discussion of the analytical results from these samples was included in Section 6.6. In summary, all seven samples contained contaminants at concentrations that exceeded the NYSDEC sediment criteria. These exceedances are summarized in Table 6-6, and illustrated on Figure 7-5.

Five semivolatile organic compounds were detected in the sediment samples collected from the Site at concentrations that exceeded the NYSDEC sediment criteria (Table 6-6; Figure 7-5). All five of these SVOCs were polycyclic aromatic hydrocarbons (PAHs). These PAHs (with the number

of exceedances and maximum concentrations) included benzo(a)anthracene (1 sample; 1.8 mg/kg), benzo(b)fluoranthene (4 samples; 2.8 mg/kg), benzo(k)fluoranthene (1 sample; 1.1 mg/kg), chrysene (5 samples; 1.8 mg/kg) and indeno(1,2,3-cd)pyrene (2 sample; 0.86 mg/kg).

4,4'-DDE (1 sample) was the only pesticide detected in the sediment samples collected from 5565 River Road Site, with the concentration (0.057) mg/kg exceeding the NYSDEC sediment criteria (Table 6-6; Figure 7-5).

PCBs were detected in all seven sediment samples collected from the Site, with the concentrations in three samples exceeding the NYSDEC sediment criteria (Table 6-6; Figure 7-5). The maximum concentration of total PCBs was 19.0 mg/kg in sample SED-1 collected from Rattlesnake Creek adjacent to the Site (see Figure 4-3 for location).

Seven EPA priority pollutant metals were detected in the sediment samples collected from the 5565 River Road Site at concentrations that exceeded the NYSDEC sediment criteria (Table 6-6; Figure 7-5). These metals (with the number of exceedances and maximum concentrations) included arsenic (4 samples; 69.0 mg/kg), cadmium (7 samples; 32.0 mg/kg), chromium (5 samples; 490 mg/kg), copper (6 samples; 870 mg/kg), lead (7 samples; 700 mg/kg), nickel (6 samples; 270 mg/kg) and zinc (3 samples; 4,740 mg/kg). The non-priority pollutant metals exceeding the sediment criteria included iron (6 samples; 200,000 mg/kg) and manganese (7 samples; 4,100 mg/kg). In addition, concentrations of aluminum (5 samples; 24,000 mg/kg) and vanadium (4 samples; 90.0 mg/kg) exceeded the CP-51 soil cleanup objectives for the protection of ecological resources (Table 6-6).

7.6 Groundwater

As discussed in Section 5.4, saturated conditions were not encountered at frequencies and thicknesses sufficient to justify the installation of micro-wells. As a result, groundwater samples were not collected from the 5565 River Road Site during the Preliminary Site Assessment.

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 Discussion

The overall objective of the Preliminary Site Assessment was to obtain information sufficient to: (1) determine if the 5565 River Road Site should be included in the Registry of Inactive Hazardous Waste Sites in New York State, and if so, what the appropriate site classification should be; and (2) determine if the Site is eligible for NYSDEC's Brownfield Cleanup Program. The specific objectives of the PSA were to:

- Evaluate the Site to determine if hazardous wastes or substances are present, and if present, to determine if there is a consequential amount;
- Determine the nature and extent of contamination at the Site, and determine if the industrial fill is adversely impacting the three tributaries to the Niagara River;
- Determine the person(s) and/or corporation(s) responsible for the disposal of the industrial fill; and
- Quantify the volume of industrial fill at the Site.

These objectives were determined through a grided test pitting program, and the analysis of surface soil, industrial fill, drum waste, surface water and sediment samples collected during the Preliminary Site Assessment. This section discusses the analytical results presented in Sections 6.0 and 7.0 as they relate to these objectives.

8.1.1 Hazardous Waste Presence

The results of the Preliminary Site Assessment indicated that one drum waste sample and two subsurface industrial fill samples were hazardous due to the presence of PCBs at concentrations that exceeded the 50 ppm hazardous waste criterion (Tables 6-2A, 6-2B and 6-4; Figure 8-1). In addition, a second drum waste sample collected during the Preliminary Site Assessment is a characteristic hazardous waste for ignitability (D001) and lead (D008) (Table 6-4; Figure 8-1). Although not all samples exceeded the hazardous waste criterion for PCBs or hazardous waste characteristics, the volume of industrial fill at the Site (see Section 8.1.4), areal

distribution of the hazardous samples (Figure 8-1) and the number of drums encountered that were not sampled, it is likely that a consequential amount of hazardous waste is present at the 5565 River Road Site.

8.1.2 Nature and Extent of Contamination

The nature and extent of contamination at the 5565 River Road Site was discussed in detail in Section 7.0, and will not be discussed further in this section.

8.1.3 Potential Responsible Parties

An interview conducted by the NYSDEC's consultant during the Phase I Preliminary Site Assessment revealed that some of the industrial fill may have come from the Niagara Mohawk (NiMo; now National Grid) Power Plant, located approximately 1.75 miles south of the Site on River Road, before NiMo constructed and opened the Huntley Flyash Landfill. This power plant, now known as the NRG Huntley Generating Station, produces electricity by burning coal. The presence of flyash at the 5565 River Road Site is consistent with such a source.

While completing test pits during the Preliminary Site Assessment, several drums from the Chevrolet Tonawanda Division of the General Motors Corporation were encountered (Figures 6-14 and 6-21). The General Motors Plant, located approximately four miles south of the Site on River Road, manufactures automobile engines. Historically, the plant operated a casting foundry that manufactured cast engine parts, such as cylinder blocks, heads and manifolds. Operation of the foundry was phased out by mid-1984. The presence of foundry sand at the 5565 River Road Site is consistent with such a source.

8.1.4 Volume of Industrial Fill

The thickness of the industrial fill throughout the 5565 River Road Site ranged from 0.5 to 16.0 feet (Table B-1 of Appendix B). Industrial fill was thickest in the north-central portion of the Site where the fill mounds are 5 to 10 feet higher than the surrounding grade (Figure 3-1). It is estimated that the volume of industrial fill at the Site is approximately 216,900 cubic yards.

8.2 Recommendations

The Preliminary Site Assessment conducted at the 5565 River Road Site revealed that a

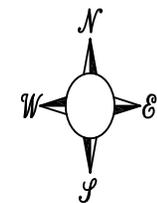
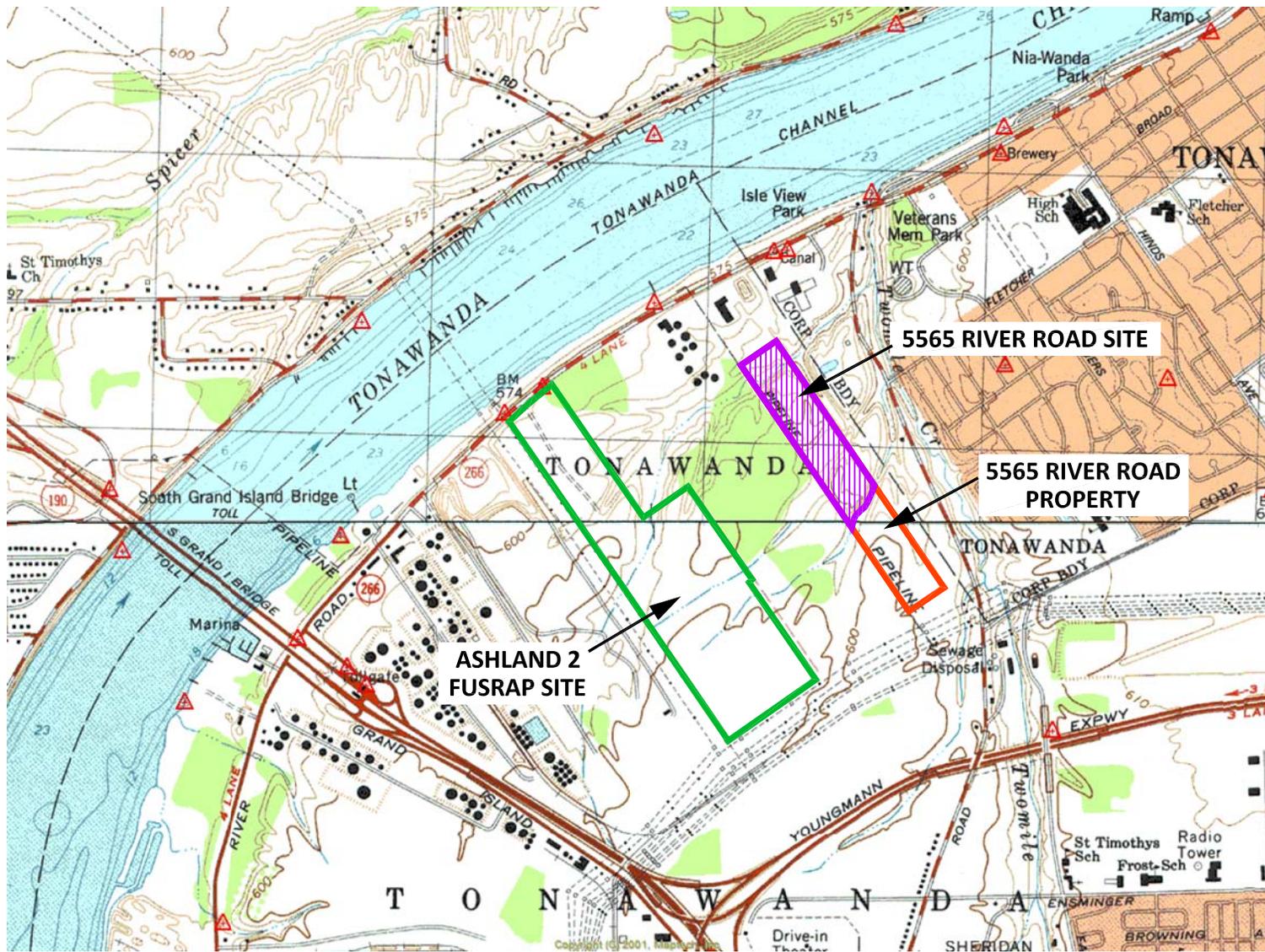
consequential amount of hazardous waste (PCBs [concentrations >50 ppm], ignitability [D001] and lead [D008]) is present at the Site. This waste, and other industrial fill, appears to have adversely impacted sediment in Rattlesnake Creek and the middle creek adjacent to the Site. In addition, the presence of contaminated surface soil likely poses a public health risk through direct contact with exposed industrial fill and by inhalation of contaminated dust by ATV users. As a result, it is recommended that the 5565 River Road Site be listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site.

9.0 REFERENCES

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**SELECT FIGURES
(SOME FIGURES DELETED
DUE TO SIZE CONSTRAINTS)**



LEGEND:

-  5565 RIVER ROAD PROPERTY
-  5565 RIVER ROAD SITE



SITE LOCATION MAP

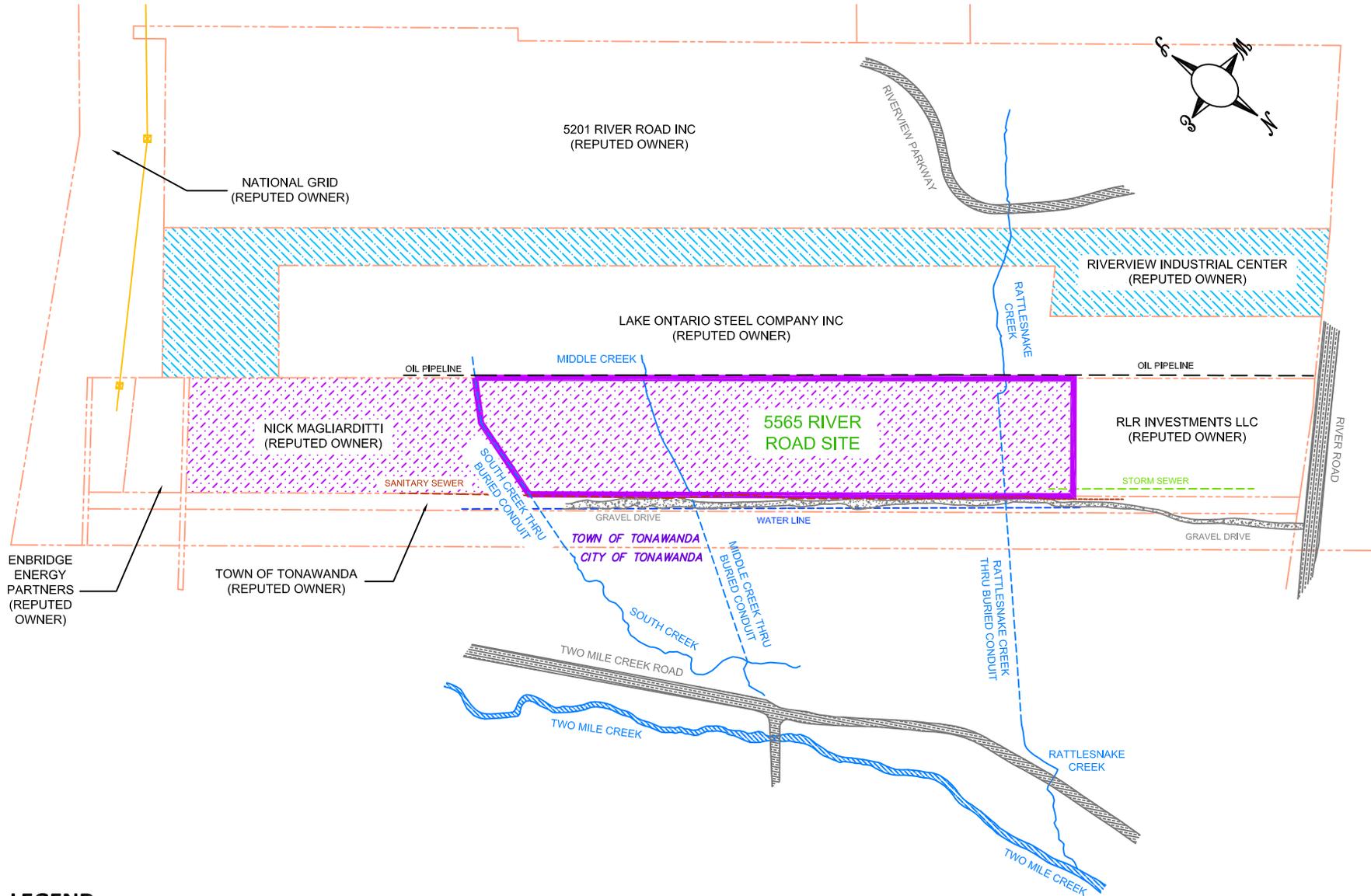
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 09/08/11 DRAWING: Site Location Map.dwg

SITE NAME: 5565 RIVER ROAD SITE



FIGURE 1-1



LEGEND:

-  RIVERVIEW INDUSTRIAL CENTER SITE
-  5565 RIVER ROAD PROPERTY

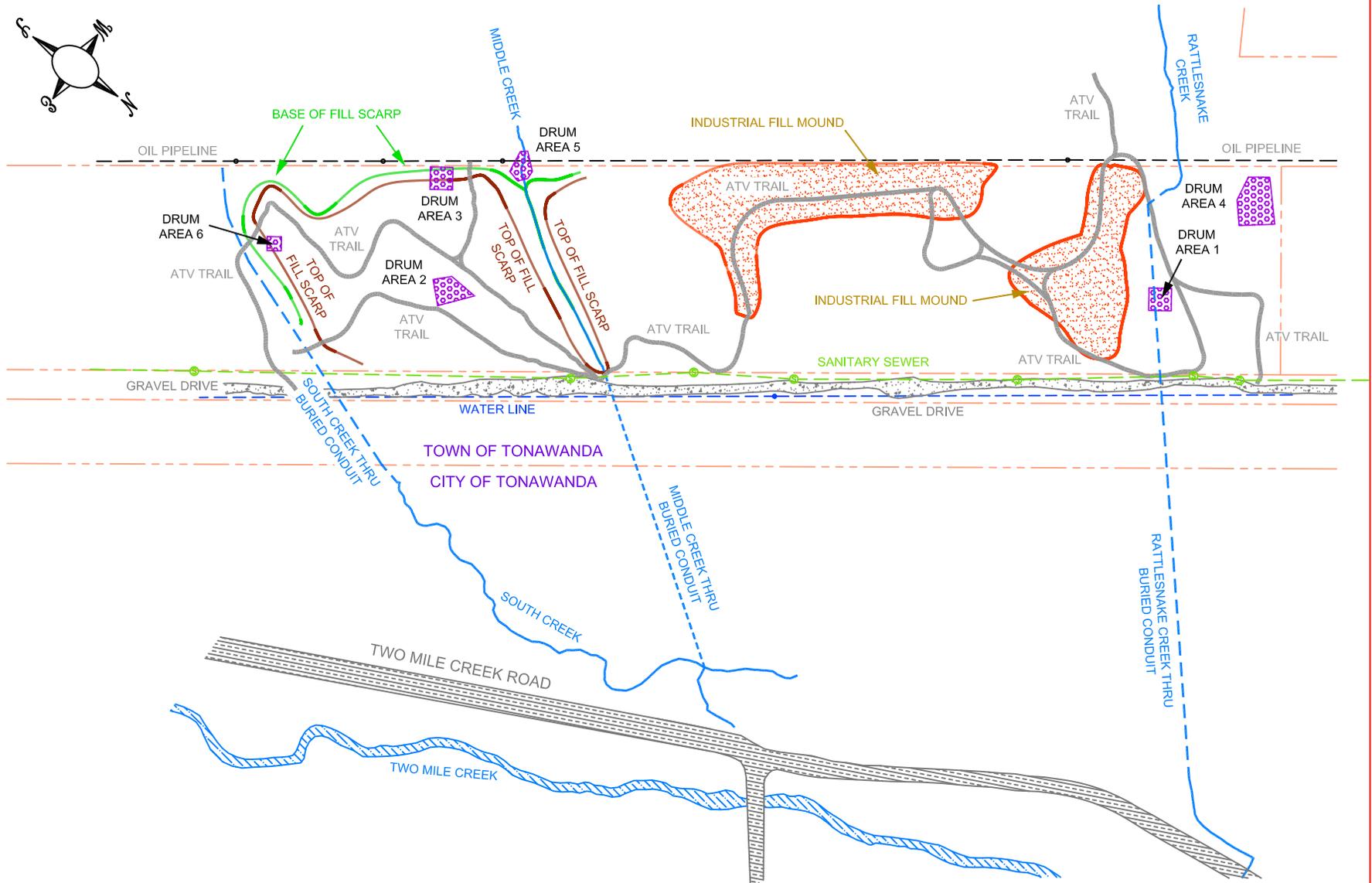
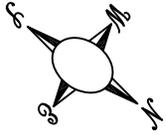


PROPERTY OWNER AND AREA FEATURES MAP		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 1-2



Figure 1-3. Aerial photograph of the 5565 River Road Property showing the mixed vegetation; forested land, overgrown grass, scrub brush and shrubs are found in the northern two-thirds of the property, while forested land is most predominant in the southern third of the property.



DETAILED SITE MAP

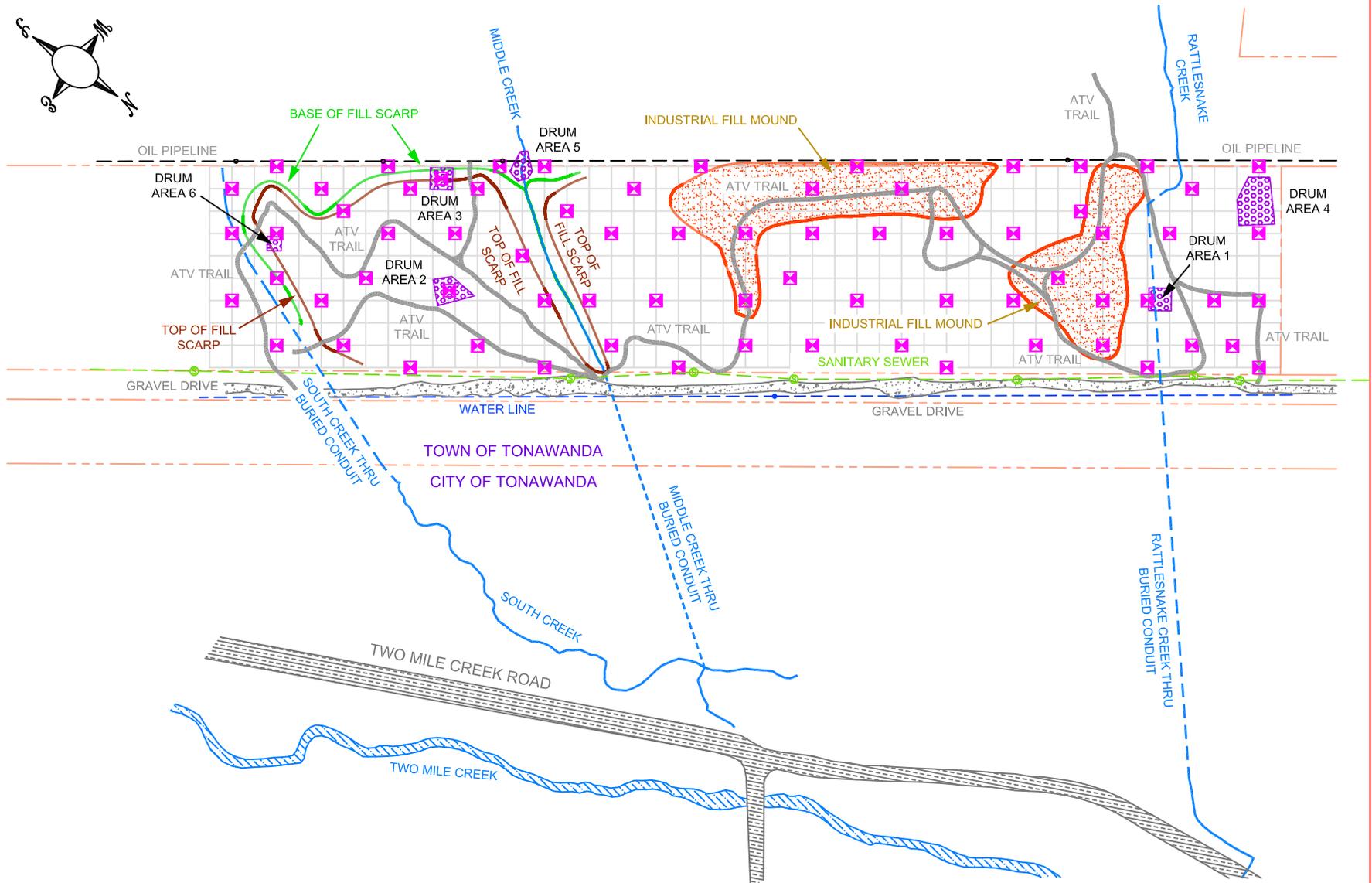
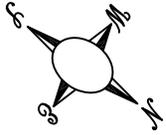
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 05/18/11 DRAWING: Phase II PSA SOW.dwg

SITE NAME: 5565 RIVER ROAD SITE



FIGURE 3-1



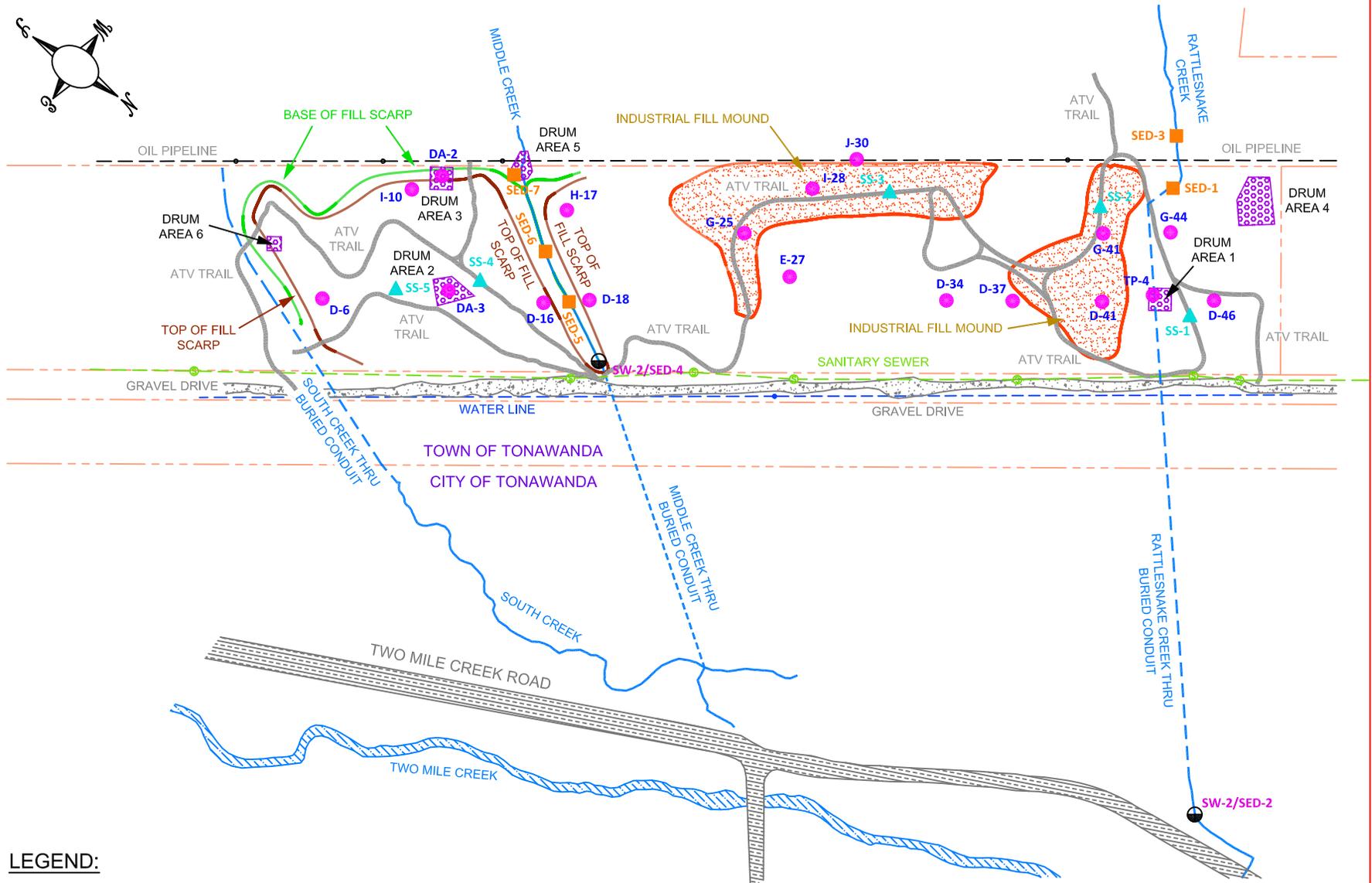
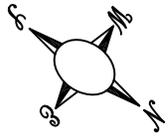
LEGEND:

-  PROPERTY LINE
-  PROPOSED TEST PIT



PROPOSED TEST PIT LOCATION MAP		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 4-1



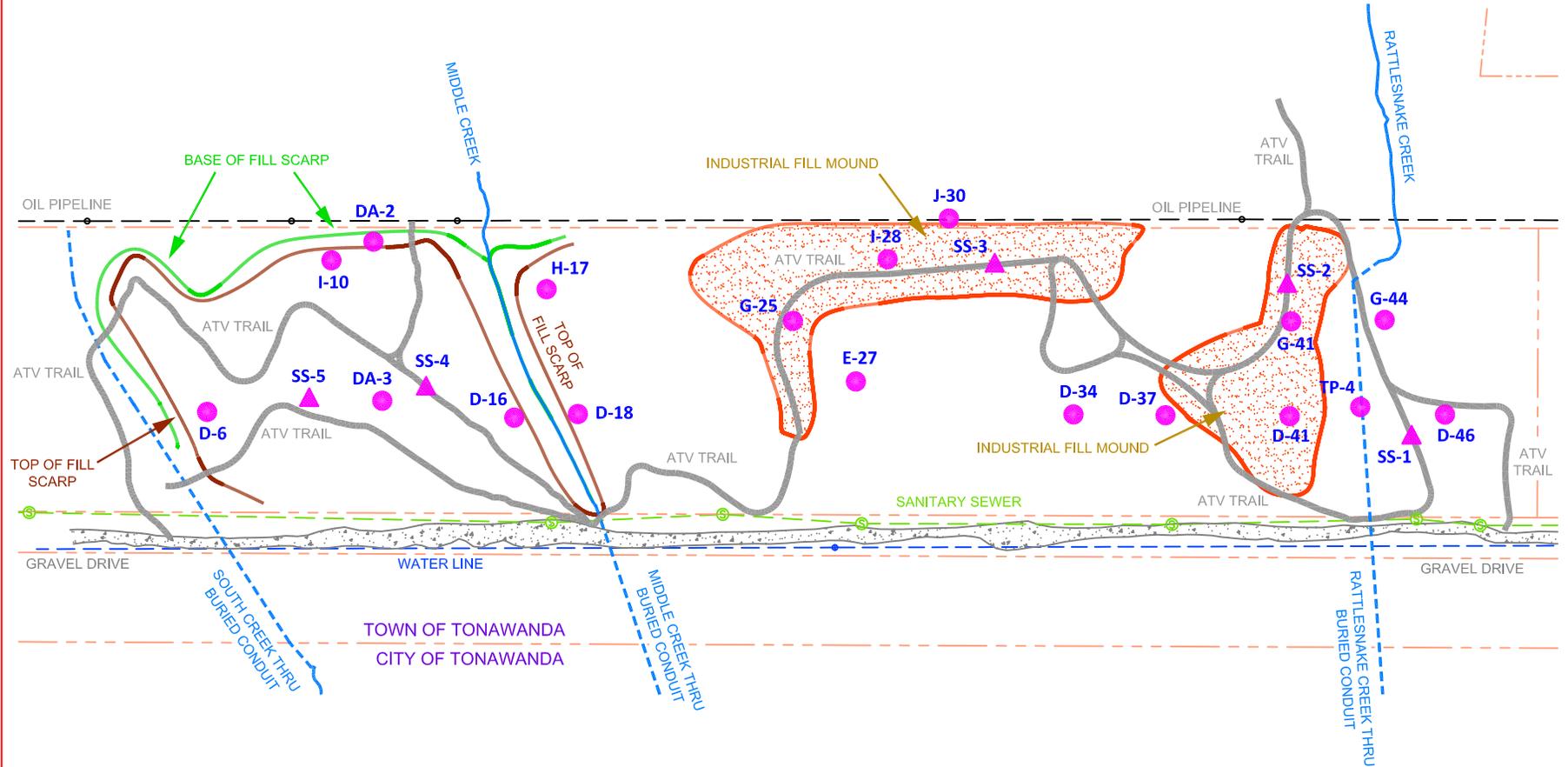
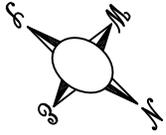
LEGEND:

- - - PROPERTY LINE
- ▲ SURFACE SOIL SAMPLE
- SUBSURFACE FILL OR DRUM SAMPLE
- SURFACE WATER/SEDIMENT SAMPLE
- SEDIMENT SAMPLE



SAMPLE LOCATION MAP		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 4-3

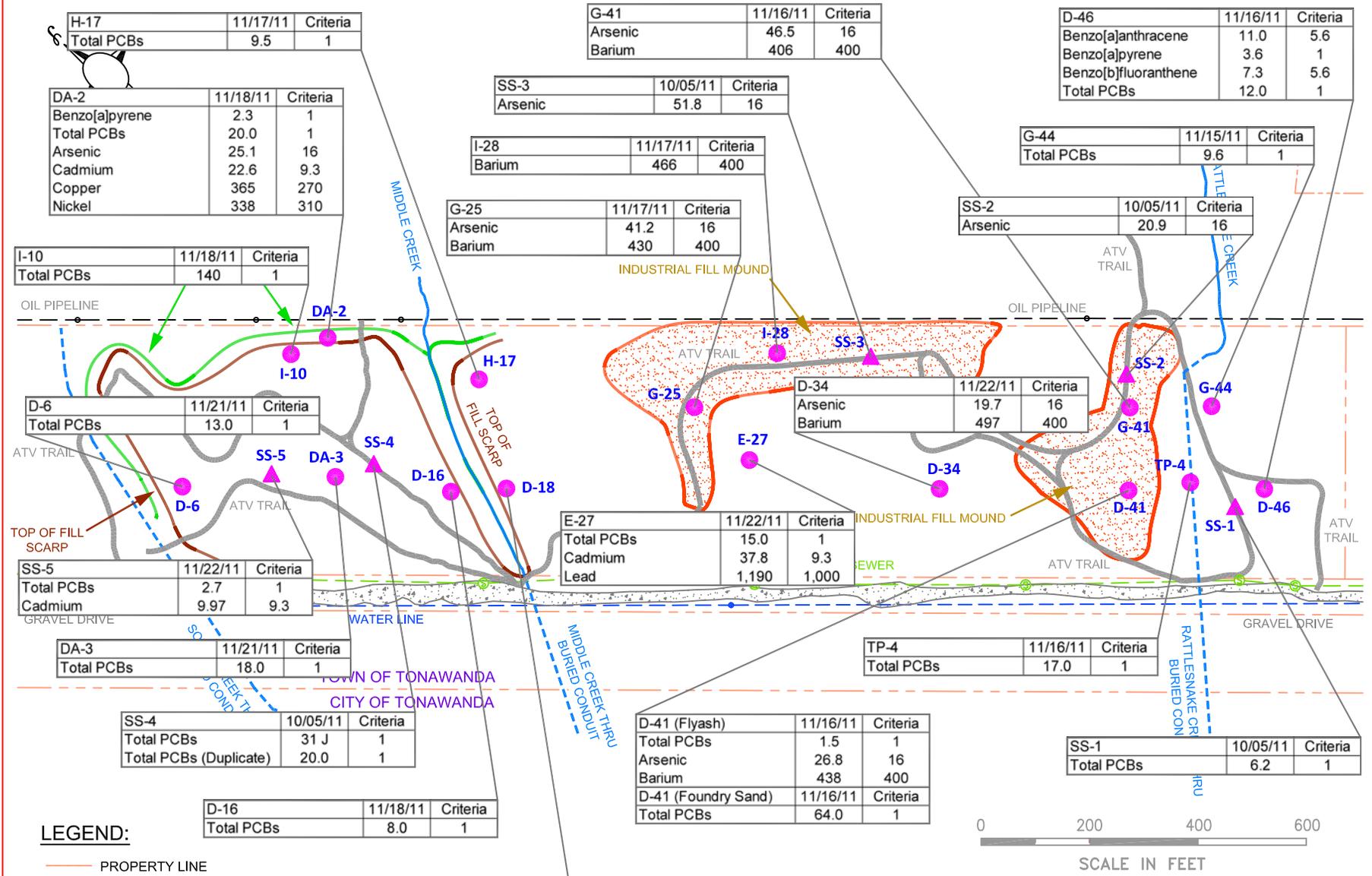


LEGEND:

- PROPERTY LINE
- ▲ SURFACE SOIL SAMPLE WITH NO EXCEEDANCE
- ▲ SURFACE SOIL SAMPLE WITH EXCEEDANCE
- SUBSURFACE INDUSTRIAL FILL SAMPLE WITH NO EXCEEDANCE
- SUBSURFACE INDUSTRIAL FILL SAMPLE WITH EXCEEDANCE

UNRESTRICTED SOIL CLEANUP OBJECTIVE EXCEEDANCE MAP		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 7-1



H-17	11/17/11	Criteria
Total PCBs	9.5	1

DA-2	11/18/11	Criteria
Benzo[a]pyrene	2.3	1
Total PCBs	20.0	1
Arsenic	25.1	16
Cadmium	22.6	9.3
Copper	365	270
Nickel	338	310

G-41	11/16/11	Criteria
Arsenic	46.5	16
Barium	406	400

D-46	11/16/11	Criteria
Benzo[a]anthracene	11.0	5.6
Benzo[a]pyrene	3.6	1
Benzo[b]fluoranthene	7.3	5.6
Total PCBs	12.0	1

G-44	11/15/11	Criteria
Total PCBs	9.6	1

SS-2	10/05/11	Criteria
Arsenic	20.9	16

SS-3	10/05/11	Criteria
Arsenic	51.8	16

I-28	11/17/11	Criteria
Barium	466	400

G-25	11/17/11	Criteria
Arsenic	41.2	16
Barium	430	400

I-10	11/18/11	Criteria
Total PCBs	140	1

D-6	11/21/11	Criteria
Total PCBs	13.0	1

D-34	11/22/11	Criteria
Arsenic	19.7	16
Barium	497	400

E-27	11/22/11	Criteria
Total PCBs	15.0	1
Cadmium	37.8	9.3
Lead	1,190	1,000

SS-5	11/22/11	Criteria
Total PCBs	2.7	1
Cadmium	9.97	9.3

DA-3	11/21/11	Criteria
Total PCBs	18.0	1

TP-4	11/16/11	Criteria
Total PCBs	17.0	1

SS-4	10/05/11	Criteria
Total PCBs	31 J	1
Total PCBs (Duplicate)	20.0	1

D-41 (Flyash)	11/16/11	Criteria
Total PCBs	1.5	1
Arsenic	26.8	16
Barium	438	400
D-41 (Foundry Sand)	11/16/11	Criteria
Total PCBs	64.0	1

SS-1	10/05/11	Criteria
Total PCBs	6.2	1

D-16	11/18/11	Criteria
Total PCBs	8.0	1

D-18	11/17/11	Criteria
Total PCBs	8.4	1

LEGEND:

- PROPERTY LINE
 - ▲ SURFACE SOIL SAMPLE WITH NO EXCEEDANCE
 - ▲ SURFACE SOIL SAMPLE WITH EXCEEDANCE
 - SUBSURFACE INDUSTRIAL FILL SAMPLE WITH NO EXCEEDANCE
 - SUBSURFACE INDUSTRIAL FILL SAMPLE WITH EXCEEDANCE
- ALL CONCENTRATIONS IN MG/KG (PPM)



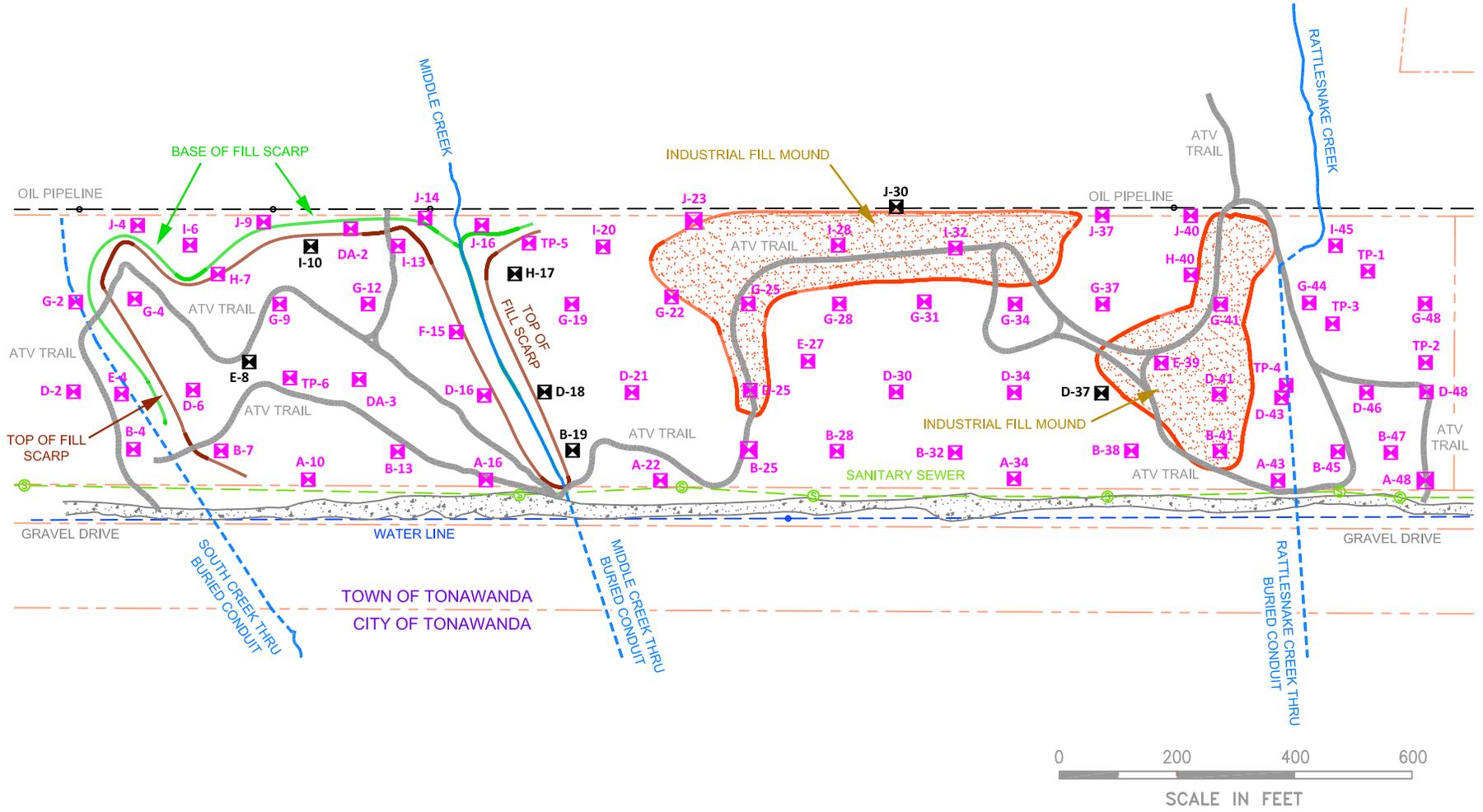
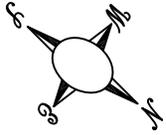
**COMMERCIAL SOIL CLEANUP
OBJECTIVE EXCEEDANCE MAP**

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 05/18/11 DRAWING: Phase II PSA SOW.dwg

SITE NAME: 5565 RIVER ROAD SITE

FIGURE 7-2

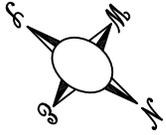


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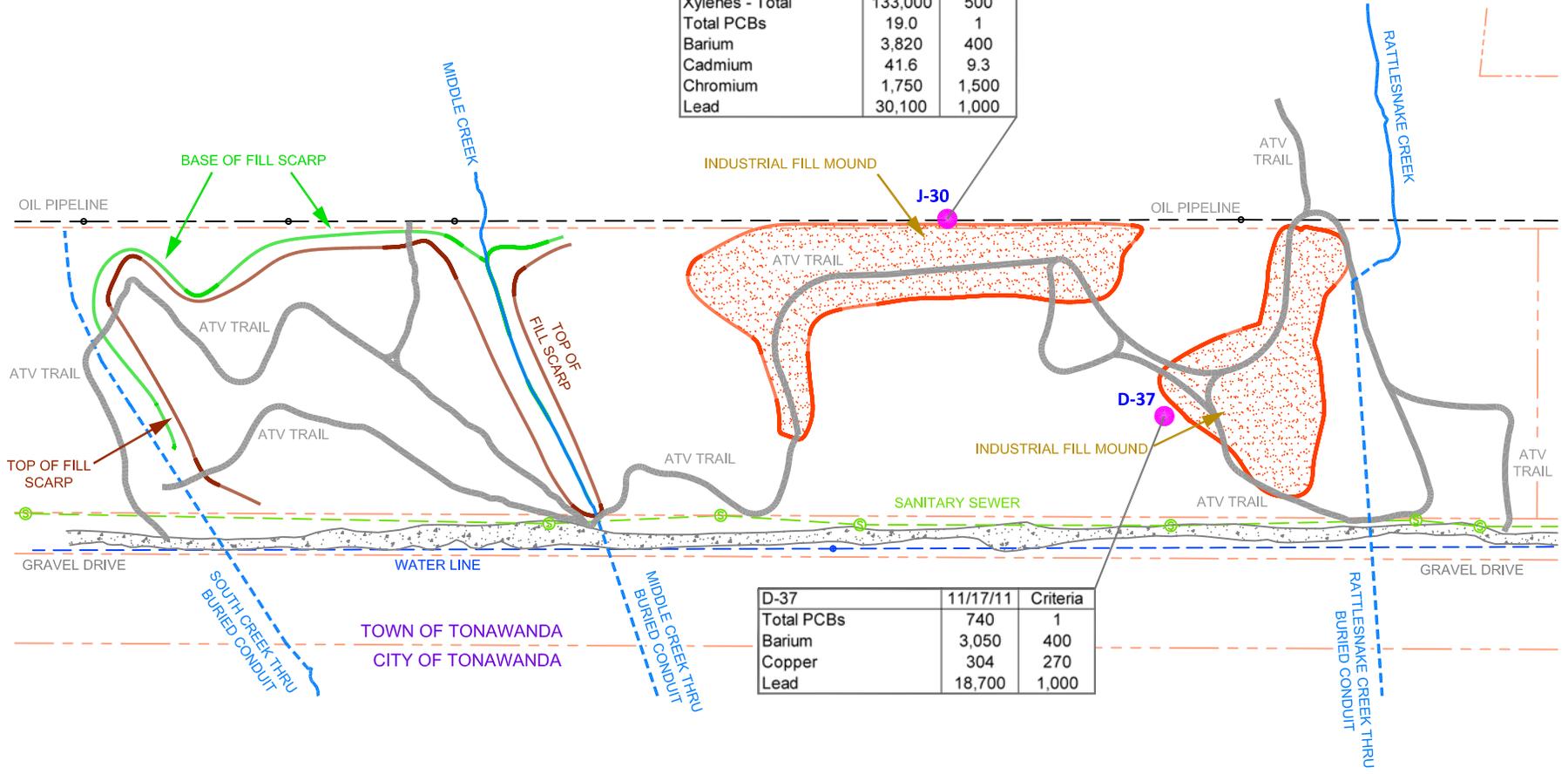
- PROPERTY LINE
- ⊠ TEST PIT WITH DRUMS
- ⊠ TEST PIT WITH NO DRUMS

MAP SHOWING TEST PITS WITH SUBSURFACE DRUMS		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 7-3



J-30	11/23/11	Criteria
1,2,4-Trimethylbenzene	8,500	190
Ethylbenzene	31,000	390
Methylene Chloride	4,700	500
Toluene	170,000	500
Trichloroethene	6,600	200
Xylenes - Total	133,000	500
Total PCBs	19.0	1
Barium	3,820	400
Cadmium	41.6	9.3
Chromium	1,750	1,500
Lead	30,100	1,000



D-37	11/17/11	Criteria
Total PCBs	740	1
Barium	3,050	400
Copper	304	270
Lead	18,700	1,000

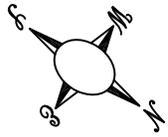


LEGEND:

- PROPERTY LINE
- DRUM WASTE SAMPLE WITH NO EXCEEDANCE
- DRUM WASTE SAMPLE WITH EXCEEDANCE
- ALL CONCENTRATIONS IN MG/KG (PPM)

COMMERCIAL EXCEEDANCE MAP FOR DRUM WASTE SAMPLES		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 7-4



SED-7	12/08/11	Criteria
Cadmium	2.5	0.6
Chromium	29.0	26
Copper	49.0	16
Lead	73.0	31
Nickel	40.0	16

SED-3	12/08/11	Criteria
Chrysene	0.20J	0.12
Total PCBs	12.0	1.7
Cadmium	24.0	0.6
Chromium	57.0	26
Copper	83.0	16
Lead	440	31
Nickel	57.0	16

SED-6	12/08/11	Criteria
Cadmium	2.4	0.6
Copper	49.0	16
Lead	66.0	31
Nickel	34.0	16

SED-1	12/08/11	Criteria
Benzo[b]fluoranthene	0.32J	0.12
Chrysene	0.40	0.12
Total PCBs	19.0	1.7
Arsenic	69.0	6
Cadmium	32.0	0.6
Chromium	490	26
Copper	870	16
Lead	700	31
Nickel	270	16
Zinc	900	120

SED-5	12/08/11	Criteria
Benzo[b]fluoranthene	0.53	0.12
Chrysene	0.29J	0.12
Total PCBs	3.9	1.7
Arsenic	27.0	6
Cadmium	12.0	0.6
Chromium	470	26
Copper	340	16
Lead	70.0	31
Nickel	110	16
Zinc	870	120

SW-2	12/08/11	Criteria
Methylene Chloride	5.7	5
Aluminum	280	100
Iron	1,600	300

SED-4	12/08/11	Criteria
Benzo[a]anthracene	1.8	1.1
Benzo[b]fluoranthene	2.8	0.12
Benzo[k]fluoranthene	1.1	0.12
Chrysene	1.8	0.12
Indeno(1,2,3-cd)pyrene	0.86	0.12
Arsenic	23.0	6
Cadmium	4.4	0.6
Chromium	41.0	26
Copper	34.0	16
Lead	52.0	31
Nickel	31.0	16

SED-2	10/05/11	Criteria
Benzo[b]fluoranthene	0.39J	0.12
Chrysene	0.28J	0.12
Indeno(1,2,3-cd)pyrene	0.18J	0.12
4,4'-DDE	0.057J	0.0033
Arsenic	8.5	6
Cadmium	1.4	0.6
Lead	51.3	31
Zinc	4,740	120

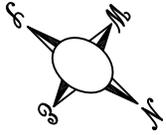
LEGEND:

- PROPERTY LINE
- SURFACE WATER AND SEDIMENT SAMPLE
- SEDIMENT SAMPLE
- CONCENTRATIONS FOR SURFACE WATER IN UG/L (PPB)
- CONCENTRATIONS FOR SEDIMENT IN MG/KG (PPM)



SURFACE WATER & SEDIMENT CRITERIA EXCEEDANCE MAP		
DIVISION OF ENVIRONMENTAL REMEDIATION		
DATE: 05/18/11	DRAWING: Phase II PSA SOW.dwg	
SITE NAME: 5565 RIVER ROAD SITE		

FIGURE 7-5

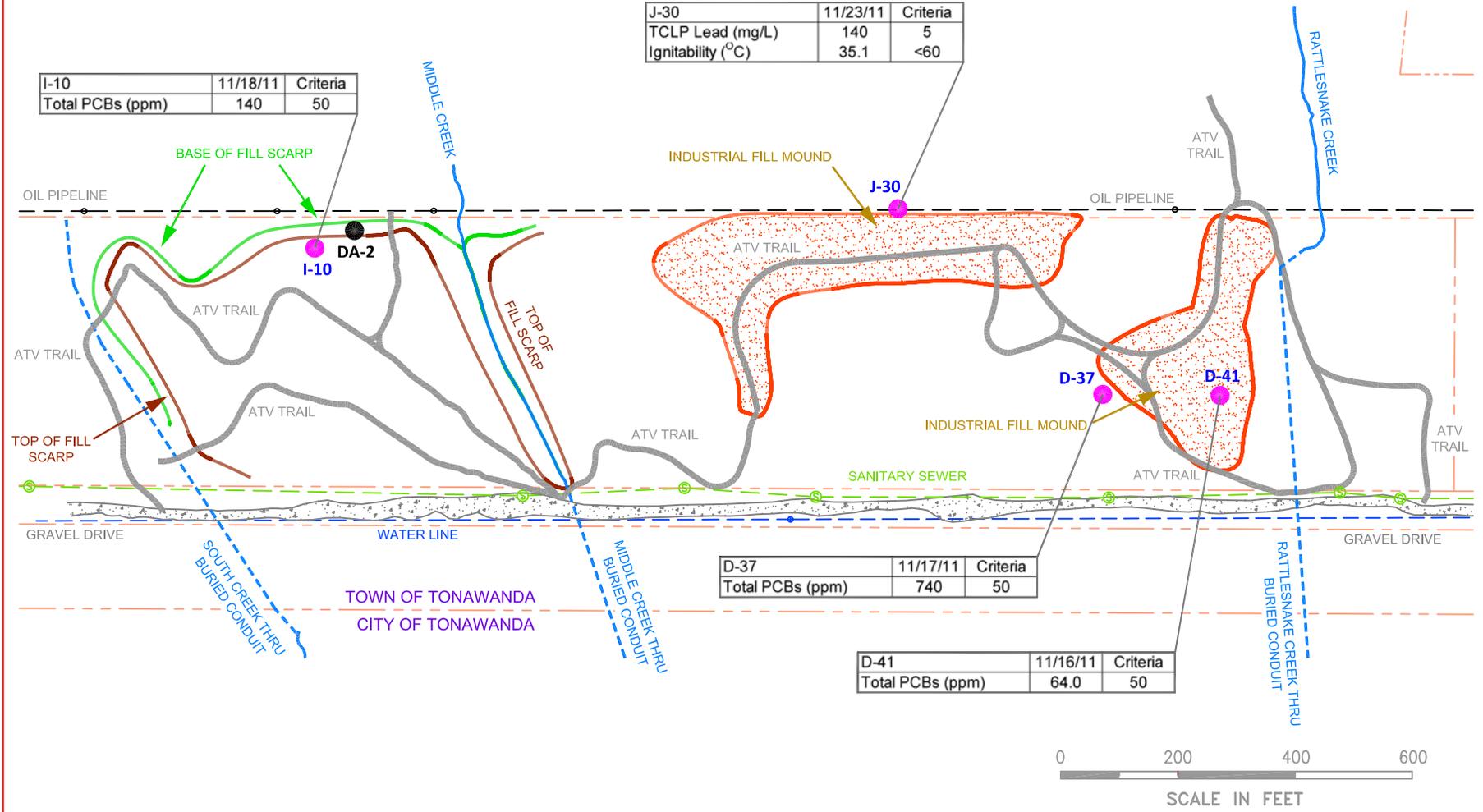


I-10	11/18/11	Criteria
Total PCBs (ppm)	140	50

J-30	11/23/11	Criteria
TCLP Lead (mg/L)	140	5
Ignitability (°C)	35.1	<60

D-37	11/17/11	Criteria
Total PCBs (ppm)	740	50

D-41	11/16/11	Criteria
Total PCBs (ppm)	64.0	50



LEGEND:

- PROPERTY LINE
- SAMPLE ANALYZED BY TCLP BUT NOT HAZARDOUS
- HAZARDOUS WASTE SAMPLE

HAZARDOUS WASTE MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 05/18/11 DRAWING: Phase II PSA SOW.dwg

SITE NAME: 5565 RIVER ROAD SITE



FIGURE 8-1

TABLES

Table 4-1
5565 River Road Site, Site No. 915239
Summary Key for Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 2

Sample ID	Date Sampled	Time Sampled	Analytical Parameters	Sample Type or General Location	Table Reference
Surface Soil Samples					
SS-1	10/05/11	1425	SVOCs, PCBs, Pesticides, Metals	Black foundry sand	Table 6-1
SS-2	10/05/11	1450	SVOCs, PCBs, Pesticides, Metals	Black flyash with slag	Table 6-1
SS-3	10/05/11	1515	SVOCs, PCBs, Pesticides, Metals	Black flyash mixed with topsoil	Table 6-1
SS-4	10/05/11	1545	SVOCs, PCBs, Pesticides, Metals	Black foundry sand	Table 6-1
"	11/21/11	1421	PCBs	Collected about 1 foot from original sample SS-4	Table 6-1
SS-5	11/22/11	0900	VOCs, SVOCs, PCBs, Pesticides, Metals	Brown foundry sand from bare spot with no vegetation	Table 6-1
Industrial Fill Samples					
G-44	11/15/11	1500	VOCs, SVOCs, PCBs, Pesticides, Metals, Hydrocarbon Scan, TPH	Foundry sand with fuel oil odor	Table 6-2
D-46	11/16/11	0950	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand with fuel oil odor	Table 6-2
TP-4	11/16/11	1150	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand below drums	Table 6-2
D-41	11/16/11	1345	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand with fuel oil odor	Table 6-2
"	11/16/11	1400	SVOCs, PCBs, Pesticides, Metals	Gray flyash	Table 6-3
G-41	11/16/11	1445	VOCs, SVOCs, PCBs, Pesticides, Metals	Black flyash	Table 6-3
I-28	11/17/11	0925	VOCs, SVOCs, PCBs, Pesticides, Metals	Dark gray flyash	Table 6-3
G-25	11/17/11	1005	VOCs, SVOCs, PCBs, Pesticides, Metals	Dark gray flyash	Table 6-3
D-18	11/17/11	1425	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand from pit with drums	Table 6-2
H-17	11/17/11	1530	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand from pit with drums	Table 6-2
D-16	11/18/11	0945	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand	Table 6-2
DA-2	11/18/11	1348	VOCs, SVOCs, PCBs, Pesticides, Metals, TCLP Chromium	Foundry sand with fuel oil odor	Table 6-2
I-10	11/18/11	1450	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand below drums	Table 6-2
DA-3	11/21/11	1410	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand below drums	Table 6-2
D-6	11/21/11	1530	VOCs, SVOCs, PCBs, Pesticides, Metals	Foundry sand	Table 6-2
E-27	11/22/11	1125	VOCs, SVOCs, PCBs, Pesticides, Metals	Black flyash	Table 6-3
D-34	11/22/11	1415	VOCs, SVOCs, PCBs, Pesticides, Metals	Black flyash	Table 6-3

Table 4-1
5565 River Road Site, Site No. 915239
Summary Key for Samples Collected During the 2011 Preliminary Site Assessment
Page 2 of 2

Sample ID	Date Sampled	Time Sampled	Analytical Parameters	Sample Type or General Location	Table Reference
Drum Waste Samples					
D-37	11/17/11	0845	VOCS, SVOCs, PCBs, Pesticides, Metals, TCLP Barium, TCLP Lead	Putty-like sludge	Table 6-4
J-30	11/23/11	1445	VOCS, SVOCs, PCBs, Pesticides, Metals, TCLP Barium, TCLP Chromium, TCLP Lead, Ignitability	Pink sludge believed to be paint waste	Table 6-4
Surface Water Samples					
SW-2	10/05/11	1145	VOCS, SVOCs, PCBs, Pesticides, Metals	Collected near Two-Mile Creek Road	Table 6-5
SW-2	12/08/11	1100	VOCS, SVOCs, PCBs, Pesticides, Metals	Collected near discharge pipe in the middle creek	Table 6-5
Sediment Samples					
SED-1	12/08/11	0834	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected near pipe in Rattlesnake Creek	Table 6-6
SED-2	10/05/11	1345	SVOCs, PCBs, Pesticides, Metals	Collected near Two-Mile Creek Road	Table 6-6
SED-3	12/08/11	0910	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected from Rattlesnake Creek upstream of Site	Table 6-6
SED-4	12/08/11	1100	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected near discharge pipe in the middle creek	Table 6-6
SED-5	12/08/11	1310	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected from the middle creek	Table 6-6
SED-6	12/08/11	1345	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected from the middle creek	Table 6-6
SED-7	12/08/11	1405	VOCS, SVOCs, PCBs, Pesticides, Metals, TOC	Collected from the middle creek	Table 6-6

Notes:

- VOCS = Volatile Organic Compounds.
- SVOCs = Semivolatile Organic Compounds.
- PCBs = Polychlorinated Biphenyls.
- TOC = Total Organic Carbon.
- TPHs = Total Petroleum Hydrocarbons.

**Table 5-1.
Stratigraphic Sequence of the Western New York Area.
Compiled from Buehler and Tesmer (1963) and Brett et al. (1995).**

Epoch	Group	Formation	Member
Middle Devonian	Hamilton	Moscow Shale	Windom Shale Kashong Shale
		Ludlowville Formation	Tichenor Limestone Wanakah Shale Ledyard Shale Centerfield Limestone
		Skaneateles Formation	Levanna Shale Stafford Limestone
		Marcellus Shale	Oatka Creek Shale
		Onondaga Limestone	Seneca Limestone Morehouse Limestone Nedrow Limestone Clarence Limestone Edgecliff Limestone
Late Silurian	Salina	Akron Dolostone	
		Bertie Dolostone	Williamsville Dolostone Scajaquada Dolostone Falkirk Dolostone Oatka Dolostone
		Camillus Shale Syracuse Formation Vernon Shale	
Middle Silurian	Lockport	Guelph Dolostone Eramosa Dolostone	
		Goat Island Dolostone	Vinemount Dolostone Ancaster Dolostone Niagara Falls Dolostone
		Gasport Limestone	Pekin Dolostone Gothic Hill Limestone
	Clinton	Decew Dolostone	
		Rochester Shale	Burleigh Hill Shale Lewiston Shale
		Irondequoit Limestone Rockway Dolostone Williamson Shale Merritton Limestone	
		Reynales Limestone	Hickory Corners Limestone
		Neahga Shale	
Early Silurian	Medina	Kodak Sandstone Cambria Shale Thorold Sandstone Grimsby Formation Devils Hole Shale Power Glen Shale Whirlpool Sandstone	
Late Ordovician	Richmond	Queenston Shale Oswego Sandstone	

Table 6-1
5565 River Road Site, Site No. 915239
Analytical Results for Surface Soil Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 3

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	SS-1 10/05/11 0.0-0.17 Foundry Sand	SS-2 10/05/11 0.0-0.17 Flyash	SS-3 10/05/11 0.0-0.17 Flyash	SS-4 10/05/11 0.0-0.17 Foundry Sand	SS-4 11/21/11 0.0-0.17 Foundry Sand	SS-5 11/22/11 0.0-0.17 Foundry Sand
Volatile Organic Compounds (mg/kg or ppm)								
Methylene Chloride	0.05	500	NA	NA	NA	NA	NA	1.0
Toluene	0.7	500	"	"	"	"	"	2.8
Xylenes - Total	0.26	500	"	"	"	"	"	0.72
Semivolatile Organic Compounds (mg/kg or ppm)								
2-Methylnaphthalene (PAH)	NC	NC	0.30	0.060 J	0.070 J	0.43	NA	
4-Chlorophenyl phenyl ether	NC	NC			0.041 J		"	
4-Methylphenol	0.33	500	0.017 J				"	
Acenaphthene (PAH)	20	500				0.018 J	"	
Acenaphthylene (PAH)	100	500				0.021 J	"	
Acetophenone	NC	NC	0.025 J		0.020 J	0.043 J	"	
Anthracene (PAH)	100	500	0.064 J			0.052 J	"	
Benzo[a]anthracene (PAH)	1	5.6	0.17 J	0.035 J	0.30	0.24	"	
Benzo[a]pyrene (PAH)	1	1	0.18 J	0.037 J	0.033 J	0.26	"	
Benzo[b]fluoranthene (PAH)	1	5.6	0.27	0.047 J	0.066 J	0.36	"	
Benzo[g,h,i]perylene (PAH)	100	500	0.11 J	0.023 J	0.024 J	0.15 J	"	
Benzo[k]fluoranthene (PAH)	0.8	56	0.13 J	0.027 J	0.018 J	0.13 J	"	
Biphenyl	NC	NC	0.079 J		0.12 J	0.057 J	"	
Carbazole	NC	NC				0.027 J	"	
Chrysene (PAH)	1	56	0.21	0.044 J	0.31	0.29	"	
Dibenzo(a,h)anthracene (PAH)	0.33	0.56	0.042 J			0.043 J	"	
Dibenzofuran	7	350	0.083 J	0.018 J	3.6	0.12 J	"	
Fluoranthene (PAH)	100	500	0.29	0.056 J	0.082 J	0.47	"	
Indeno(1,2,3-cd)pyrene (PAH)	0.5	5.6	0.10 J	0.021 J	0.026 J	0.14 J	"	
Naphthalene (PAH)	12	500	0.22	0.040 J		0.36	"	
Phenanthrene (PAH)	100	500	0.32	0.053 J	0.20 J	0.46	"	
Pyrene (PAH)	100	500	0.21	0.048 J	0.052 J	0.35	"	

Table 6-1
5565 River Road Site, Site No. 915239
Analytical Results for Surface Soil Samples Collected During the 2011 Preliminary Site Assessment
Page 2 of 3

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	SS-1 10/05/11 0.0-0.17 Foundry Sand	SS-2 10/05/11 0.0-0.17 Flyash	SS-3 10/05/11 0.0-0.17 Flyash	SS-4 10/05/11 0.0-0.17 Foundry Sand	SS-4 11/21/11 0.0-0.17 Foundry Sand	SS-5 11/22/11 0.0-0.17 Foundry Sand
Pesticides (mg/kg or ppm)								
4,4'-DDE	0.0033	62		0.0019			NA	
beta-BHC	0.036	3		0.00083 J			"	
Endosulfan I	2.4	200	0.13			0.59	"	
Endosulfan II	2.4	200				0.079 J	"	
Endrin	0.014	89			0.0068 J	0.13 J	"	
Endrin aldehyde	NC	NC	0.039 J				"	
Heptachlor	0.042	15	0.08 J	0.00065 J	0.0041 J	0.42	"	
PCBs (mg/kg or ppm)								
Aroclor 1248			6.2		0.14 J	29.0	20.0	2.7
Aroclor 1260						2 J		
Total PCBs	0.1	1	6.2		0.14 J	31 J	20.0	2.7
Metals (mg/kg or ppm)								
Aluminum	NC	10,000 ●	9,290	11,700	13,700	12,600	NA	4,520
Arsenic ■	13	16	9.0	20.9	51.8	7.4	"	
Barium	350	400	185	160	283	118	"	115
Beryllium ■	7.2	590	0.84	0.89	2.6	0.86	"	
Cadmium ■	2.5	9.3	0.76		1.4	8.5	"	9.97
Chromium ■	30	1,500	192	19.6	43.7	167	"	354
Cobalt	NC	30 **	7.3	3.1	7.9	6.7	"	9.09
Copper ■	50	270	145	11.2	28.1	139	"	127
Iron	NC	2,000 **	66,000	26,800	36,400	69,400	"	83,400
Lead ■	63	1,000	93.2	15.4	52.3	373	"	248
Manganese	1,600	10,000	2,340	81.3	214	2,090	"	908
Mercury ■	0.18	2.8	0.057	0.099	0.26	0.064	"	
Nickel ■	30	310	71.2	9.4	22.4	55.8	"	105
Silver ■	2	1,500				1.3	"	

Table 6-1
5565 River Road Site, Site No. 915239
Analytical Results for Surface Soil Samples Collected During the 2011 Preliminary Site Assessment
Page 3 of 3

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	SS-1 10/05/11 0.0-0.17 Foundry Sand	SS-2 10/05/11 0.0-0.17 Flyash	SS-3 10/05/11 0.0-0.17 Flyash	SS-4 10/05/11 0.0-0.17 Foundry Sand	SS-4 11/21/11 0.0-0.17 Foundry Sand	SS-5 11/22/11 0.0-0.17 Foundry Sand
Vanadium	NC	100 **	19.7	19.2	40.1	11.3	NA	19.7
Zinc ■	109	10,000	203	26.9	153	1,040	"	132

Notes:

* = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted and Commercial Soil Cleanup Objectives, NYSDEC, 2006.

** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance", NYSDEC, 2010.

● = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance", NYSDEC, 2010.

■ = Environmental Protection Agency priority pollutant metal.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not analyzed.

NC = No criteria.

PAH = Polycyclic aromatic hydrocarbon.

SCO = Soil cleanup objective.

Blanks = compound not detected.

Shaded = Result exceeds the 6 NYCRR Part 375 Unrestricted Use Objectives.

Shaded = Result exceeds the 6 NYCRR Part 375 Commercial Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Residential Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Ecological Resources Objectives.

Table 6-2A
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	G-44 11/15/11 Composite Foundry Sand	D-46 11/16/11 Composite Foundry Sand	TP-4 11/16/11 Composite Foundry Sand	D-41 11/16/11 Composite Foundry Sand	D-18 11/17/11 Composite Foundry Sand	H-17 11/17/11 Composite Foundry Sand
Volatile Organic Compounds (mg/kg or ppm)								
1,2,4-Trimethylbenzene	3.6	190						0.16
1,3,5-Trimethylbenzene	8.4	190						0.073
Acetone	0.05	500		0.46				
Carbon Disulfide	NC	100 **						0.019
Methylcyclohexane	NC	NC		0.21				
Methylene Chloride	0.05	500	0.006 B		0.0072 B	0.70 B	0.0072 B	
n-Propylbenzene	3.9	500						0.045
Toluene	0.7	500				0.47 J		0.0069 J
Trichloroethene	0.47	200					0.027	
Xylenes - Total	0.26	500						0.095
Semivolatile Organic Compounds (mg/kg or ppm)								
2,4-Dimethylphenol	NC	NC				0.99 J		0.042 J
2-Methylnaphthalene (PAH)	NC	NC	3.1	3.0 J	0.27	1.8 J	0.22	0.46
Acenaphthene (PAH)	20	500	7.2	8.1		0.93 J		0.086 J
Anthracene (PAH)	100	500	0.30	10.0				
Benzo[a]anthracene (PAH)	1	5.6	0.44	11.0	0.10 J	0.64 J	0.12 J	0.14 J
Benzo[a]pyrene (PAH)	1	1	0.41	3.6	0.099 J		0.13 J	0.12 J
Benzo[b]fluoranthene (PAH)	1	5.6	0.77	7.3	0.27		0.23	0.25
Benzo[g,h,i]perylene (PAH)	100	500	0.15 J					
Benzo[k]fluoranthene (PAH)	0.8	56	0.27	2.7 J				
Biphenyl	NC	NC	2.0		0.04 J		0.06 J	0.11 J
Bis(2-ethylhexyl)phtalate	NC	50 **	0.75 B	12.0	0.22 B	1.9 J	0.26 B	0.32 B
Caprolactam	NC	NC			0.063 J			
Carbazole	NC	NC		1.6 J				0.11 J
Chrysene (PAH)	1	56	0.48	8.9	0.15 J	0.64 J	0.14 J	0.16 J
Dibenzofuran	7	350		6.5	0.069 J		0.051 J	0.11 J

Table 6-2A
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 2 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	G-44 11/15/11 Composite Foundry Sand	D-46 11/16/11 Composite Foundry Sand	TP-4 11/16/11 Composite Foundry Sand	D-41 11/16/11 Composite Foundry Sand	D-18 11/17/11 Composite Foundry Sand	H-17 11/17/11 Composite Foundry Sand
Semivolatile Organic Compounds (Continued)								
Di-n-butylphthalate	NC	100 **					0.097 J	0.079 J
Fluorene (PAH)	30	500	2.1	12.0		1.4 J		
Fluoranthene (PAH)	100	500	0.77	46.0	0.16 J	2.1 J	0.23	0.19 J
Indeno(1,2,3-cd)pyrene (PAH)	0.5	5.6	0.18 J		0.064 J			
Naphthalene (PAH)	12	500	1.0	9.3	0.22	1.6 J	0.14 J	1.6
Phenanthrene (PAH)	100	500	1.9	18.0	0.20	1.8 J	0.25	0.37
Pyrene (PAH)	100	500	1.3	30.0	0.20	1.8 J	0.26	0.20
Pesticides (mg/kg or ppm)								
None Detected	NA	NA						
PCBs (mg/kg or ppm)								
Aroclor 1248			9.6	12.0	17.0	64.0	8.4	9.5
Aroclor 1260								
Total PCBs	0.1	1	9.6	12.0	17.0	64.0	8.4	9.5
Metals (mg/kg or ppm)								
Aluminum	NC	10,000 •	5,890	9,370	6,580	7,230	4,950	4,070
Barium	350	400	102	121	198	107	83.2	63.8
Cadmium ■	2.5	9.3	4.01	5.10	1.34	9.29	1.92	1.87
Chromium ■	30	1,500	142	188	27.9	230	65.6	65.0
Cobalt	NC	30 **		8.61		6.32		
Copper ■	50	270	181	103	29.2	121	55.5	54.9
Iron	NC	2,000 **	48,000	51,700	11,400	56,800	17,900	22,000
Lead ■	63	1,000	52.1	78.1	92.4	195	60.6	14.2
Manganese	1,600	10,000	1,470	1,590	1,910	2,310	1,660	1,050
Mercury ■	0.18	2.8	0.231	0.206		0.410		
Nickel ■	30	310	59.3	67.9	12.2	59.1	18.2	23.7

Table 6-2A
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 3 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	G-44 11/15/11 Composite Foundry Sand	D-46 11/16/11 Composite Foundry Sand	TP-4 11/16/11 Composite Foundry Sand	D-41 11/16/11 Composite Foundry Sand	D-18 11/17/11 Composite Foundry Sand	H-17 11/17/11 Composite Foundry Sand
Metals (Continues)								
Selenium ■	3.9	1,500		11.9				
Vanadium	NC	100 **	9.53	21.7	6.36	13.7	6.75	7.24
Zinc ■	109	10,000	234	627	139	883	131	73.1
Miscellaneous Compounds (mg/kg or ppm)								
Fuel #2	NC	NC	1,400	NA	NA	NA	NA	NA
Lube Oil	NC	NC	19,000	"	"	"	"	"
Total Petroleum Hydrocarbons	NC	NC	21,000	"	"	"	"	"

Notes:

* = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted and Commercial Soil Cleanup Objectives, NYSDEC, 2006.

** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

● = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

■ = Environmental Protection Agency priority pollutant metal.

B = Analyte detected in the associated blank, as well as in the sample.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not analyzed.

NC = No criteria.

PAH = Polycyclic aromatic hydrocarbon.

SCO = Soil cleanup objective.

Blanks = compound not detected.

Shaded = Result exceeds the 6 NYCRR Part 375 Unrestricted Use Objectives.

Shaded = Result exceeds the 6 NYCRR Part 375 Commercial Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Residential Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Ecological Resources Objectives.

Shaded = Result exceeds the 6 NYCRR Part 371 hazardous waste criteria.

Table 6-2B
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-16 11/18/11 Composite Foundry Sand	DA-2 11/18/11 Composite Foundry Sand	I-10 11/18/11 Composite Foundry Sand	DA-3 11/21/11 Composite Foundry Sand	D-6 11/21/11 Composite Foundry Sand	
Volatile Organic Compounds (mg/kg or ppm)								
4-Methyl-2-pentanone	NC	1.0 ●●				0.25		
Acetone	0.05	500		0.26				
Ethylbenzene	1.0	390				0.078	0.05 J	
Methylene Chloride	0.05	500	0.66 B	0.70 B	0.71 B	0.071		
Toluene	0.7	500		0.043 J	3.2	0.87	0.67	
Xylenes - Total	0.26	500		0.095 J	1.29 J	0.247	0.147 J	
Semivolatile Organic Compounds (mg/kg or ppm)								
2,4-Dimethylphenol	NC	NC	0.39					
2-Methylnaphthalene (PAH)	NC	NC	2.0	2.5		1.3 J		
(3+4)-Methylphenol	0.33	500	0.12 J					
Acenaphthene (PAH)	20	500	2.4			1.1 J		
Anthracene (PAH)	100	500	1.2					
Benzo[a]anthracene (PAH)	1	5.6	1.4	3.1				
Benzo[a]pyrene (PAH)	1	1	0.87	2.3				
Benzo[b]fluoranthene (PAH)	1	5.6	1.5	4.1				
Benzo[g,h,i]perylene (PAH)	100	500	0.19	0.75 J				
Benzo[k]fluoranthene (PAH)	0.8	56	0.60	1.6 J				
Biphenyl	NC	NC	0.45					
Bis(2-ethylhexyl)phthalate	NC	50 **	0.42 B	2.7				
Carbazole	NC	NC	0.49					
Chrysene (PAH)	1	56	1.1	3.5				
Dibenzofuran	7	350	1.6					
Fluorene (PAH)	30	500	2.1					
Fluoranthene (PAH)	100	500	4.8		6.3 J	2.2 J		
Indeno(1,2,3-cd)pyrene (PAH)	0.5	5.6	0.25	0.81 J				
Naphthalene (PAH)	12	500	6.5	1.7 J		1.8 J		

Table 6-2B
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 2 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-16 11/18/11 Composite Foundry Sand	DA-2 11/18/11 Composite Foundry Sand	I-10 11/18/11 Composite Foundry Sand	DA-3 11/21/11 Composite Foundry Sand	D-6 11/21/11 Composite Foundry Sand	
Semivolatile Organic Compounds (Continued)								
Phenanthrene (PAH)	100	500	6.9	17.0	12.0 J	2.4 J		
Pyrene (PAH)	100	500	3.7	11.0	5.3 J	1.5 J		
Pesticides (mg/kg or ppm)								
None Detected	NA	NA						
PCBs (mg/kg or ppm)								
Aroclor 1248			8.0	20.0	140	18.0	13.0	
Aroclor 1260								
Total PCBs	0.1	1	8.0	20.0	140	18.0	13.0	
Metals (mg/kg or ppm)								
Aluminum	NC	10,000 •	10,200	3,270	4,800	13,800	6,720	
Arsenic ■	13	16		25.1	12.7			
Barium	350	400	244	117	71.6	218	122	
Beryllium ■	7.2	590	0.92			1.38		
Cadmium ■	2.5	9.3	3.38	22.6	7.33	4.97	2.18	
Chromium ■	30	1,500	113	1,300 (846)	171	254	194	
Cobalt	NC	30 **	7.24	22.9	7.79			
Copper ■	50	270	76.5	365	225	65.2	57.9	
Iron	NC	2,000 **	36,500	201,000 E	101,000	29,900	15,400	
Lead ■	63	1,000	147	167	137	64.6	32.1	
Manganese	1,600	10,000	3,700	2,400	1,390	6,870	3,530	
Mercury ■	0.18	2.8	0.113	0.241	0.0929			
Nickel ■	30	310	40.7	338	84.2	25.7	35.7	
Vanadium	NC	100 **	15.7	48.9	12.5	15.3	9.71	
Zinc ■	109	10,000	281	173	209	203	42.1	
Miscellaneous Compounds (mg/kg or ppm)								
TCLP Chromium	5 mg/L ★	NC	NA	0.20	NA	NA	NA	

Table 6-2B
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Foundry Sand Samples Collected During the 2011 Preliminary Site Assessment
Page 3 of 3

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-16 11/18/11 Composite Foundry Sand	DA-2 11/18/11 Composite Foundry Sand	I-10 11/18/11 Composite Foundry Sand	DA-3 11/21/11 Composite Foundry Sand	D-6 11/21/11 Composite Foundry Sand	
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Notes:

* = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted and Commercial Soil Cleanup Objectives, NYSDEC, 2006.

** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

● = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

●● = Protection of groundwater soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

■ = Environmental Protection Agency priority pollutant metal.

★ = Hazardous waste criteria from 6 NYCRR Part 371: Identification and Listing of Hazardous Wastes, NYSDEC, 1995.

() = Result of a duplicate analysis.

B = Analyte detected in the associated blank, as well as in the sample.

E = Estimated value.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not analyzed.

NC = No criteria.

PAH = Polycyclic aromatic hydrocarbon.

SCO = Soil cleanup objective.

Blanks = compound not detected.

Shaded = Result exceeds the 6 NYCRR Part 375 Unrestricted Use Objectives.

Shaded = Result exceeds the 6 NYCRR Part 375 Commercial Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Residential Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Ecological Resources Objectives.

Shaded = Result exceeds the 6 NYCRR Part 371 hazardous waste criteria.

Table 6-3
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Flyash Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-41 11/16/11 Composite Flyash	G-41 11/16/11 Composite Flyash	I-28 11/17/11 Composite Flyash	G-25 11/17/11 Composite Flyash	E-27 11/22/11 Composite Flyash	D-34 11/22/11 Composite Flyash
Volatile Organic Compounds (mg/kg or ppm)								
Methylene Chloride	0.05	500	NA		0.084	0.084	1.2	1.1 B
Toluene	0.7	500	"				5.2	2.9
Xylenes - Total	0.26	500	"				1.3	
Semivolatile Organic Compounds (mg/kg or ppm)								
2-Methylnaphthalene (PAH)	NC	NC					8.2	
2,4-Dimethylphenol	NC	NC					2.2 J	
(3+4)-Methylphenol	0.33	500					2.8 J	
4-Chloroaniline	NC	100 **					2.4 J	
Benzo[a]anthracene (PAH)	1	5.6					1.3 J	
Biphenyl	NC	NC					1.7 J	
Bis(2-ethylhexyl)phthalate	NC	50 **	0.25 B	0.25 B	0.28 B	0.24 J	7.1	0.81 B
Chrysene (PAH)	1	56					2.0 J	
Dibenzofuran	7	350					2.1 J	
Di-n-butylphthalate	NC	100 **	0.12 J	0.11 J	0.11 J	0.096 J		
Fluoranthene (PAH)	100	500					2.4 J	
Naphthalene (PAH)	12	500					7.3	
Phenanthrene (PAH)	100	500					8.0	
Pyrene (PAH)	100	500					2.3 J	
Pesticides (mg/kg or ppm)								
None Detected	NA	NA						
PCBs (mg/kg or ppm)								
Aroclor 1248			1.5	0.019	0.054	0.026	15.0	0.096
Aroclor 1260								
Total PCBs	0.1	1	1.5	0.019	0.054	0.026	15.0	0.096

Table 6-3
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Flyash Samples Collected During the 2011 Preliminary Site Assessment
Page 2 of 3

Sample Number Date Sampled Depth Interval (ft) Sample Type	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-41 11/16/11 Composite Flyash	G-41 11/16/11 Composite Flyash	I-28 11/17/11 Composite Flyash	G-25 11/17/11 Composite Flyash	E-27 11/22/11 Composite Flyash	D-34 11/22/11 Composite Flyash
Metals (mg/kg or ppm)								
Aluminum	NC	10,000 ●	5,670	14,100	18,600	6,640	11,100	14,700
Arsenic ■	13	16	26.8	46.5	6.48	41.2	15.2	19.7
Barium	350	400	438	406	466	430	176	497
Beryllium ■	7.2	590	2.13	1.63	2.69	1.08	0.958	1.80
Cadmium ■	2.5	9.3	1.71	1.73	2.00		37.8	
Chromium ■	30	1,500	9.86	45.4	32.6	9.43	116	17.1
Cobalt	NC	30 **	4.72	7.93	9.29			
Copper ■	50	270	19.0	20.8	30.9	16.7	153	21.5
Iron	NC	2,000 **	13,900	19,300	22,200	11,800	53,900	6,160
Lead ■	63	1,000		20.8	1.57		1,190	92.9
Manganese	1,600	10,000	51.5	378	73.7	32.5	5,980	631
Mercury ■	0.18	2.8	0.0568	0.104	0.147	0.107	0.197	0.442
Nickel ■	30	310	11.3	16.7	21.8		46.2	
Silver ■	2	1,500					7.25	
Vanadium	NC	100 **	28.9	46.0	62.1	35.3	12.5	43.8
Zinc ■	109	10,000	18.3	50.5	47.1	16.9	4,650	98.6

Notes:

* = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted and Commercial Soil Cleanup Objectives, NYSDEC, 2006.

** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

● = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

■ = Environmental Protection Agency priority pollutant metal.

B = Analyte detected in the associated blank, as well as in the sample.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not analyzed.

NC = No criteria.

PAH = Polycyclic aromatic hydrocarbon.

SCO = Soil cleanup objective.

Table 6-3
5565 River Road Site, Site No. 915239
Analytical Results for Subsurface Flyash Samples Collected During the 2011 Preliminary Site Assessment
Page 3 of 3

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-41 11/16/11 Composite Flyash	G-41 11/16/11 Composite Flyash	I-28 11/17/11 Composite Flyash	G-25 11/17/11 Composite Flyash	E-27 11/22/11 Composite Flyash	D-34 11/22/11 Composite Flyash
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Notes Continued:

Blanks = compound not detected.

Shaded = Result exceeds the 6 NYCRR Part 375 Unrestricted Use Objectives.

Shaded = Result exceeds the 6 NYCRR Part 375 Commercial Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Residential Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Ecological Resources Objectives.

Table 6-4
5565 River Road Site, Site No. 915239
Analytical Results for Drum Waste Samples Collected During the 2011
Preliminary Site Assessment
Page 1 of 2

Sample Number	NYSDEC Part 375 Unrestricted SCO *	NYSDEC Part 375 Commercial SCO *	D-37 11/17/11 NA Sludge	J-30 11/23/11 NA Sludge
Volatile Organic Compounds (mg/kg or ppm)				
1,2,4-Trimethylbenzene	3.6	190	0.85	8,500
4-Methyl-2-pentanone	NC	1.0 ●●		59,000
Ethylbenzene	1.0	390		31,000
Methylcyclohexane	NC	NC		12,000
Methylene Chloride	0.05	500	1.1 B	4,700
Toluene	0.7	500		170,000
Trichloroethene	0.47	200		6,600
Xylenes - Total	0.26	500	7.8	133,000
Total VOC TICs	NC	NC	15.82	53,700
Semivolatile Organic Compounds (mg/kg or ppm)				
Naphthalene	12	500		420
Total SVOC TICs	NC	NC	20,400	820
Pesticides (mg/kg or ppm)				
None Detected	NA	NA		
PCBs (mg/kg or ppm)				
Aroclor 1248			740	
Aroclor 1260				19.0
Total PCBs	0.1	1	740	19.0
Metals (mg/kg or ppm)				
Aluminum	NC	10,000 ●	1,740	787
Arsenic ■	13	16		2.27
Barium	350	400	3,050	3,820
Beryllium ■	7.2	590		0.112
Cadmium ■	2.5	9.3		41.6
Chromium ■	30	1,500	101	1,750
Copper ■	50	270	304	11.3
Iron	NC	2,000 **	6,340	4,990
Lead ■	63	1,000	18,700	30,100
Manganese	1,600	10,000	48.5	41.8
Mercury ■	0.18	2.8	0.338	0.0347
Nickel ■	30	310		2.32
Zinc ■	109	10,000	90.7	306

Table 6-4
5565 River Road Site, Site No. 915239
Analytical Results for Drum Waste Samples Collected During the 2011
Preliminary Site Assessment
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Sample Number	NYSDEC Part 375	NYSDEC Part 375	D-37	J-30
Date Sampled	Unrestricted	Commercial	11/17/11	11/23/11
Depth Interval (ft)	SCO *	SCO *	NA	NA
Sample Type			Sludge	Sludge
Miscellaneous Compounds				
TCLP Barium	100 mg/L ★	NC	ND	1.2
TCLP Chromium	5 mg/L ★	NC	NA	0.15
TCLP Lead	5 mg/L ★	NC	4.0	140
Ignitability	< 60°C ★	NC	NA	35.1

Notes:

* = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted and Commercial Soil Cleanup Objectives, NYSDEC, 2006.

** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

● = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

●● = Protection of groundwater soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance".

■ = Environmental Protection Agency priority pollutant metal.

★ = Hazardous waste criteria from 6 NYCRR Part 371: Identification and Listing of Hazardous Wastes, NYSDEC, 1995.

B = Analyte detected in the associated blank, as well as in the sample.

NA = Not analyzed or not applicable.

NC = No criteria.

SCO = Soil cleanup objective.

TIC = Tentatively identified compound.

Blanks = compound not detected.

Shaded = Result exceeds the 6 NYCRR Part 375 Unrestricted Use Objectives.

Shaded = Result exceeds the 6 NYCRR Part 375 Commercial Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Residential Use Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Ecological Resources Objectives.

Shaded = Result exceeds the Commissioner's Policy CP-51 Protection of Groundwater Soil Cleanup Objectives.

Shaded = Result exceeds the 6 NYCRR Part 371 Hazardous Waste Criteria.

Table 6-5
5565 River Road Site, Site No. 915239
Analytical Results for Surface Water Samples Collected During the 2011
Preliminary Site Assessment
Page 1 of 1

Sample Number Date Sampled	Surface Water Standard *	SW-2 ** 10/05/11	SW-2 ** 12/08/11
Volatile Organic Compounds (µg/L or ppb)			
Methylene Chloride	5.0		5.7
Semivolatile Organic Compounds (µg/L or ppb)			
None Detected	NA		
Pesticides (µg/L or ppb)			
None Detected	NA		
PCBs (µg/L or ppb)			
None Detected	NA		
Metals (µg/L or ppb)			
Aluminum	100		280
Barium	1,000	51.0	
Copper ■	200		100
Iron	300	250	1,600
Manganese	300	97.0	190
Zinc ■	2,000 G	22.0	

Notes:

* = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998.

** = These samples were collected from different locations but were mistakenly given the same designation. The October 5, 2011 sample was collected from Rattlesnake Creek near Two Mile Creek Road, while the December 8, 2011 sample was collected from the middle creek where it exits the Site (Figure 4-3).

■ = Environmental Protection Agency priority pollutant metal.

G = Guidance value.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not applicable.

Blanks = compound not detected.

Shaded = Result exceeds the NYSDEC surface water standard or guidance value.

Table 6-6
5565 River Road Site, Site No. 915239
Analytical Results for Sediment Samples Collected During the 2011 Preliminary Site Assessment
Page 1 of 3

Sample Number	NYSDEC Sediment Criteria *	SED-1 12/08/11 0.0-0.17	SED-2 10/05/11 0.0-0.17	SED-3 12/08/11 0.0-0.17	SED-4 12/08/11 0.0-0.17	SED-5 12/08/11 0.0-0.17	SED-6 12/08/11 0.0-0.17	SED-7 12/08/11 0.0-0.17
Volatile Organic Compounds (mg/kg or ppm)								
Acetone	2.2 **		NA		0.26	0.35		0.33
Semivolatile Organic Compounds (mg/kg or ppm)								
1,2,4,5-Tetrachlorobenzene	NC	0.12 J						
2-Methylnaphthalene (PAH)	3.0	1.6		0.80		0.25 J		
2-Methylphenol	NC	0.24 J						
2,4-Dimethylphenol	NC	1.0		0.43				
(3+4)-Methylphenol	NC	0.50		0.32 J				
Acenaphthene (PAH)	12.4				0.29 J			
Anthracene (PAH)	9.5	0.33 J			0.50			
Benzo[a]anthracene (PAH)	1.1	0.29 J	0.42 J	0.15 J	1.8	0.28 J	0.19 J	
Benzo[a]pyrene (PAH)	2.6 **	0.21 J	0.31 J	0.14 J	1.6	0.28 J	0.19 J	
Benzo[b]fluoranthene (PAH)	0.12 ●	0.32 J	0.39 J		2.8	0.53		
Benzo[g,h,i]perylene (PAH)	NC				0.64			
Benzo[k]fluoranthene (PAH)	0.12 ●				1.1			
Bis(2-ethylhexyl)phthalate	10.6	5.3		2.3				
Carbazole	NC				0.28 J			
Chrysene (PAH)	0.12 ●	0.40	0.28 J	0.20 J	1.8	0.29 J		
Dibenzo(a,h)anthracene (PAH)	NC				0.22 J			
Dibenzofuran	NC	0.41		0.21 J	0.41			
Fluorene (PAH)	0.72	0.41		0.15 J	0.27 J			
Fluoranthene (PAH)	90.2	0.58	0.75 J	0.28 J	2.7	0.45	0.29 J	
Indeno(1,2,3-cd)pyrene (PAH)	0.12 ●		0.18 J		0.86			
Naphthalene (PAH)	2.7	1.3		0.66	0.22 J	0.20 J		
Phenanthrene (PAH)	10.6	1.6	0.83 J	0.81	1.9	0.33 J		
Pyrene (PAH)	85.0	0.90	0.55 J	0.36 J	4.5	0.55	0.31 J	

Table 6-6
5565 River Road Site, Site No. 915239
Analytical Results for Sediment Samples Collected During the 2011 Preliminary Site Assessment
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Sample Number	NYSDEC Sediment Criteria *	SED-1 12/08/11 0.0-0.17	SED-2 10/05/11 0.0-0.17	SED-3 12/08/11 0.0-0.17	SED-4 12/08/11 0.0-0.17	SED-5 12/08/11 0.0-0.17	SED-6 12/08/11 0.0-0.17	SED-7 12/08/11 0.0-0.17
Pesticides (mg/kg or ppm)								
4,4'-DDE	0.0033 **		0.057 J					
PCBs (mg/kg or ppm)								
Aroclor 1248		19.0	0.21 J	12.0	1.3	3.9	1.6	0.47
Aroclor 1254			0.14 J					
Aroclor 1260								
Total PCBs	1.7	19.0	0.35 J	12.0	1.3	3.9	1.6	0.47
Metals (mg/kg or ppm)								
Aluminum	10,000 ♦	12,000	4,710	24,000	9,800	14,000	17,000	19,000
Arsenic ■	6.0	69.0	8.5		23.0	27.0		
Barium	433 ●	190	70.0	130	210	200	160	190
Beryllium ■	10 ●		0.31					
Cadmium ■	0.6	32.0	1.4	24.0	4.4	12.0	2.4	2.5
Chromium ■	26.0	490	9.5	57.0	41.0	470	25.0	29.0
Cobalt	20 ♦	16.0	5.3	13.0		13.0		
Copper ■	16.0	870	10.7	83.0	34.0	340	49.0	49.0
Iron	20,000	200,000	17,100	37,000	99,000	180,000	24,000	26,000
Lead ■	31.0	700	51.3	440	52.0	70.0	66.0	73.0
Manganese	460	3,100	1,550	700	1,600	4,100	650	660
Mercury ■	0.15		0.029	0.147				
Nickel ■	16.0	270	12.2	57.0	31.0	110	34.0	40.0
Vanadium	39 ♦	90.0	16.2	51 J	29 J	42 J	36 J	40 J
Zinc ■	120	900	4,740	100	89.0	870	51.0	60.0
Miscellaneous Compounds								
Total Organic Carbon (%)	NC	11.0	NA	4.2	7.3	11.0	15.0	12.0

Table 6-6
5565 River Road Site, Site No. 915239
Analytical Results for Sediment Samples Collected During the 2011 Preliminary Site Assessment
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Sample Number	NYSDEC	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7
Date Sampled	Sediment	12/08/11	10/05/11	12/08/11	12/08/11	12/08/11	12/08/11	12/08/11
Depth Interval (ft)	Criteria *	0.0-0.17	0.0-0.17	0.0-0.17	0.0-0.17	0.0-0.17	0.0-0.17	0.0-0.17

Notes:

* = NYSDEC Technical Guidance for Screening Contaminated Sediments, January 1999. Sediment criteria calculated using a total organic carbon content of 8.85%.

Sediment criteria given are for the protection of benthic aquatic life from chronic toxicity (organics) and the lowest effect level (metals) unless otherwise noted.

** = 6 NYCRR Part 375: Environmental Remediation Programs, Soil Cleanup Objectives for the Protection of Ecological Resources, NYSDEC, 2006.

● = Sediment criteria for the protection of human health bioaccumulation.

◆ = Protection of ecological resources soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance", NYSDEC, 2010.

■ = Environmental Protection Agency priority pollutant metal.

J = Analyte is positively identified with concentration qualified as estimated value.

NA = Not analyzed.

NC = No criteria.

PAH = Polycyclic aromatic hydrocarbon.

Blanks = compound not detected.

Shaded = Result exceeds the NYSDEC sediment criteria.

APPENDICES
(APPENDICES DELETED
DUE TO SIZE CONSTRAINTS)